ORDOT DUMP
ORDOT-CHALAN PAGO, GUAM

Revised 2008 Closure Plan

Prepared for
Department of Public Works, Government of Guam
542 North Marine Drive
Tamuning, Guam 96911

January 2008

Prepared by
Dueñas, Bordallo, Camacho & Associates Project Team (Dueñas, Bordallo, Camacho & Associates, Inc. and URS Corporation)

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EXHIBIT A

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IN THE DISTRICT COURT OF GUAM
TERRITORY OF GUAM

UNITED STATES OF AMERICA Plaintiff, vs. GOVERNMENT OF GUAM, Defendant.	CIVIL CASE NO. 02-00022 **ORDOT DUMP CLOSURE REPORT**

In its December 14, 2007 Order Re: Conditions To Enforce Consent Decree, the Court ordered the Government of Guam ("GovGuam") to file an Ordot Dump Closure Report containing actions that are needed to prepare the Ordot Dump site for closure and containing a schedule that corresponds to the implementation and completion of each action. Attached hereto as **Exhibit A** is a report from Duenas, Bordallo, Camacho & Associates Project Team

titled Revised 2008 Closure Plan (the "Duenas Report"). The Duenas Report is filed in response to the Court's Order for an Ordot Dump Closure Report.

GovGuam will have a representative available at the January 24, 2008-hearing to respond to any inquiries the Court may have about the Duenas Report.

Respectfully submitted this 8th day of January, 2008.

OFFICE OF THE ATTORNEY GENERAL
Alicia G. Limtiaco, Attorney General of Guam

By: _____
J. PATRICK MASON
Deputy Attorney General

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1.0 INTRODUCTION

This document presents the Updated Closure Plan for the Ordot Dump (the Dump) and was prepared in accordance with Title 22, Division 4, Chapter 23, Article 6 (§23601) of the Rules and Regulations for the Guam Environmental Protection Agency (GEPA) Solid Waste Disposal (Appendix A) and Part IV of the Solid Waste Management Facility Permit Application, Landfill, at the request of the Government of Guam, Department of Public Works (DPW).

This Updated Closure Plan is a revision of the previously submitted Closure Plan. This Updated Closure Plan addressess the following:

1. *Installation of the a temporary scale.* This temporary scale shall be installed at the Ordot Dump site and will be operated by DPW Solid waste personnel. Results from the use of this temporary scale will be utilized by engineers to asertain critical waste stream data for the purposes of refining design conditions and estimates of remaining useful life of the facility.

2. *Additional waste stream resulting from delays in the opening af a new solidwaste facility.* A 33 month period will be used as timeline for opening a new solid waste facility and ultimatly the ceasing of solide waste into the Ordot Dump. The 33 month time will begin September 2007 (closure date set forth in the 2003 consent decree)

3. *Ongoing closure pratacies.* The Operators (DPW) may incorporate operations which will accoodate the ultiamte closure of the Ordot Dump. These operations may include strom water polluiton precentoin and permanten soil cover over waste areas no loger activly used.

4. *Waste stream and volume reduction measures.* A feasibility matrix outlining waste stream and volume reduction measures will be presented. This matrix will be the starting point for an Action Plan which will ultimately project the remaining airspace (capacity) at the Ordot Dump based on the 2004 closure design, design basis and waste stream information obtained from Item 1 above. The matrix will also identify key components available for solid waste management which will be used in reducing the waste stream and volume.

5. *Closure conditions and basis for deisgn.* The basis of design assumes the closure cap and system will follow those system previously submitted by DPW to the USEPA/GEPA as required under the 2003 constent decree

The starting date for the use of the site as a dump is not documented, but it is known that the Ordot Dump was in use during World War II. The dump was used as a disposal area by the Japanese during the Japanese occupation of Guam from December 8, 1941 to July 21, 1944 (Juan C. Tenorio & Associates, Inc. 1993). Following the liberation of Guam, the U.S. Navy continued to use the site as a disposal area. Ownership of the Ordot Dump was transferred from the United States Naval Government of Guam to the Government of Guam in 1950 under the Organic Act. Since then, the Government of Guam, specifically the DPW, has been operating the Ordot Dump as a municipal solid waste disposal facility.

The Dump is located approximately 2.5-miles south of Guam's capital, Hagatna, and about 1-mile west of the Route 4-Dero Drive intersection (Figure 1-1). The area surrounding the Dump is a dense brush, wooded area

with scattered residences. The nearest residences are approximately 200-feet from the Dump. The Dump is situated in a ravine that is a tributary to the Lonfit River, located approximately 500-feet to the south of the site.

The Dump occupies and borders property of the Government of Guam on the northeast, east, south, and southwest boundary lines of the Dump. The north and west limits of the Dump border public land in the form of a road and privately owned land, respectively.

The Dump waste footprint area, based on the 2004 limits of waste delineation performed by Dueñas & Associates, Inc. and projected filling footprint per the Operations Plan (Dueñas & Associates Project Team (DPT, 2005a), has been estimated to be 46.8-acres. This waste footprint area will be reduced to approximately 45.8-acres during closure construction as waste will be relocated from the western edge of the Dump and consolidated behind a mechanically stabilized earth (MSE) wall (DPT, 2005b). The precise limits of waste will be defined as a part of the Dump closure construction. The final waste volume of the Dump at the time of closure will be approximately 4.4 million-cubic yards (DPT, 2005a).

The Dump is an unlined disposal facility and has few to no control systems to manage landfill gas, leachate, surface water, erosion and sedimentation, or vectors.

Figure 1-1: Vicinity Map

2.0 SITE CHARACTERISTICS

2.1 CLIMATE

Guam has a tropical marine climate, which is primarily warm and humid throughout the year. The mean annual temperature is 81.2° F (27.3° C); the average maximum temperature is highest during the month of June (87.0° F, 30.6° C); and the average minimum temperature is lowest during the month of February (74.5° F, 23.6° C) (DPT, 2005c). Guam has northeasterly to easterly prevailing trade winds that are generally strongest during the dry season. During the wet season the wind pattern eddies and may develop into westward moving typhoons and tropical storms. One of the most damaging typhoons to ever strike Guam was Typhoon Karen, which passed over the southern part of the island in 1962. Wind gusts were estimated near 185-miles per hour (mph). During the time the Dump has been operational, Guam has suffered numerous typhoons and super-typhoons with recorded wind speeds of over 200-mph. Many of these storms have contributed to the significant waste generation and adverse conditions found at the Dump. This and other waste generation aspects are addressed in the Operations Plan (DPT, 2005a).

The wet season is from August through October. During the wet season, Guam receives 50% of its annual average 101-inch rainfall (National Climate Data Center, 2004). The dry season (December through June) experiences 30% of the annual rainfall. The remaining 20% of annual rainfall occurs during the transitional months of July and November.

2.2 VEGETATION

The following plant communities were identified at the Ordot Dump and its surroundings during pedestrian surveys by field biologists: disturbed vegetation, wetlands, savanna, and riparian forest. Generally, disturbed vegetation occurs within areas filled with waste. Savanna and riparian vegetation occurs outside of the dump footprint and are likely indicators of the original plant community. Wetland vegetation occurs along drainage courses, low-lying areas, and river valleys. An environmental impact assessment for the expansion of the Dump reported three vegetation communities in an approximately 59.5-acre area west of the dump footprint (Juan C. Tenorio and Associates, Inc., 1993); these communities were classified as highly disturbed weedy second growth; ravine and riparian forest; and savanna grasslands.

2.3 TOPOGRAPHY

The topography surrounding the Dump is characterized as hilly and primarily undisturbed. The original site was a southerly flowing ravine outletting to the Lonfit River. Even though the Dump has filled in the ravine, the general slope of the area remains southward, towards the river. The current 2005 Dump topography forms a hill rising out of the ravine to an elevation of 318-feet above mean sea level (MSL). As filling will continue until closure in 2007, the Dump is anticipated to have a final elevation of 391-feet MSL (DPT, 2005a).

The current 2005 Dump sideslopes are as steep as 1 horizontal to 1 vertical (1:1), benched at approximately every 15-feet of vertical ascent. The top and benches of the Dump are essentially flat with a minimal slope to provide drainage and prevent ponding of surface water.

More detail regarding the site topography can be found in the Environmental Baseline Survey (DPT, 2005c).

2.4 GEOLOGY

Guam is a volcanically derived island. The island is split geologically into two regions by the east/west Adelup-Pago fault. The surface of the northern region is primarily limestone while the southern region is primarily exposed volcanics. Ordot Dump is located just south of the fault, in the volcanic region.

The geology of the Dump region is made up of the Alutom formation and its residual surface products. The Alutom consists dominantly of tuffaceous shale and sandstone interbedded with basaltic and andesitic lava flows as well as beds of volcanic conglomerate and breccia. All of these rocks were originally deposited beneath the sea, and consequently the tuff and its derivative sediments settled in compact layers, and the lavas were quenched. Both processes are unfavorable to the creation of permeability in the rock mass. Subsequently, precipitation from hydrothermal fluids filled much of the porosity, reducing permeability even further. The final result is a sequence of layered rocks lacking intrinsic permeability. The permeability that does exist is mostly due to secondary fractures (Mink and Yuen, 2004).

More detail regarding the site geology can be found in the Environmental Baseline Survey (DPT, 2005c)

2.5 SOILS

The Dump is situated on volcanic soils and rocks of the Alutom formation. The site is underlain with a few inches to several feet thick of dark-brown to mottled red-orange-brown to green-grey-yellow clayey and silty soils which are the weathered products of the underlying volcanic rocks, except some alluvial soils at the low lying areas. The fine-grained, cohesive and relatively impermeable silty and clayey soils are generally firm. Underlying the silty and clayey soils are generally fine-grained, volcanic formation of tuffaceous siltstone and shale.

Additional data from the October 2004 test pitting activities at the site can be found in the Environmental Baseline Survey (DPT, 2005c).

2.6 HYDROGEOLOGY

The Alutom formation is a very poor medium for groundwater movement. The hydraulic conductivity is extremely small; normally less than 0.1-ft/day (3.5×10^{-5}-cm/sec), and consequently the groundwater gradient is high, greater than 10-vertical feet to 100-horizontal feet. One of the earlier studies on the environment of the Dump (Greenleaf-Telesca-Ahn, 1970) reported hydraulic conductivities of 0.0386-ft/day (1.36×10^{-5}-cm/sec) and 0.4535-ft/day (1.60×10^{-4}-cm/sec) from samples taken at a depth of 10 to 15-feet in a borehole. These conductivities are so poor that ordinarily the rock mass would be considered a nearly impervious aquiclude rather than an aquifer. They are of the same magnitude as hydraulic conductivities determined from pumping tests in deep wells drilled in the Alutom formation.

Even though the permeability of the volcanics is very low, the rocks are not truly impervious. Groundwater accumulates and moves very slowly through them. In the typical volcanic terrain of Southern Guam, the water table slopes downward toward stream valleys, and groundwater discharge takes place in the stream channels and a zone on the valley walls several tens of feet above a channel. This slow, invisible seepage sustains ravine forests during the dry season.

Subsurface regional geological conditions in the vicinity of the Ordot Dump are complicated by the presence of the Adelup-Pago fault, which divides Guam into two provinces, the northern one covered by limestone and the southern one consisting chiefly of exposed volcanics. The vertical displacement caused

by the fault adjacent to the Dump is about 400 feet, which results in a down-throw of the original volcanic surface from 200-feet above MSL to 200-feet below MSL (Mink and Yuen, 2004).

3.0 WASTE CHARACTERISTICS

3.1 GENERAL

The majority of the waste received at the Dump consists of non-hazardous residential and commercial solid waste. The Dump also receives construction/demolition waste, bulky metal, and other related wastes.

DPW does not accept hazardous wastes. DPW is permitted to receive wastewater treatment sludge with prior approval from GEPA. According to Operations personnel, the receipt of sewage sludge is a rare occurrence.

The current (as of April 2005) waste volume at the Dump is 3.2 million-cubic yards. At the time of closure in 2011, it is anticipated that the final waste volume of the Dump will be approximately ____million-cubic yards. This analysis is detailed in the Operations Plan (DPT, 2005a).

Information from the temporary scale shall be used to determine compacted (packer trucks) and non-compacted waste volumes (tons/day) streaming into the Ordot Dump.

3.2 SERVICE AREA

All non-hazardous, non-designated municipal solid wastes generated on the island of Guam, excluding those wastes generated at the Naval Station, Naval Magazine, Naval Computer and Telecommunications Station (NCTS), Naval Regional Medical Center (NRMC) and Andersen Air Force Base, are currently accepted at the Dump for disposal. The majority of the waste is delivered to the site by commercial vehicles. The Dump also accepts waste delivered by private and government vehicles.

3.3 WASTE PROPERTIES

3.3.1 DENSITY

Previous reports have assumed an *in situ* waste density of 600-pounds per cubic yard (lb/yd^3) (Dames & Moore, 1978 and Juan C. Tenorio & Associates, 1998). As the waste management practices at the Dump have improved via the use of a compactor it is more likely that current *in situ* waste densities are approximately 800-lb/yd^3 as placed. Aged waste at the bottom of the Dump that has had a chance to decompose and consolidate under the weight of ascending lifts of waste may have an *in situ* waste density on the order of 1,200-lb/yd^3. In this regard, it can be assumed that there is a somewhat linear relationship between the waste densities of the older, deeper waste grading up to the recently placed waste at the Dump surface.

The density of the *in situ* waste is a critical component in determining airspace. The greater the density of the *in situ* waste the longer available airspace can be utilized for filling operations. A density of 800-lb/yd^3 will ultimately be used to determine the in place density of newly placed and compacted solid waste. An *in situ* waste density 800-lb/yd^3 is considered conservative. This density will be adjusted accordingly should it be determined that the *in situ* waste density is greater than 800-lb/yd^3 . Compaction assumes current practices used at the Ordot Dump. These conventional practices include the use of a mobile compactor.

3.3.2 INCOMING WASTE QUANTITIES

Incoming waste quantities have historically been recorded, based on visible haul vehicle capacity, with no consideration to percent full. The volumes are recorded into daily vehicle logs that are then summarized as weekly and monthly averages, which yield an annual projection. Other annual projections have been developed by GEPA and Dueñas & Associates, Inc. The average of these annual incoming waste projections is 434,500-cubic yards. From 2005 to the Dump closure in 2007, it is estimated that the Dump will receive 1.17 million-cubic yards of additional waste.

These quantities will be revised to accurately depict existing conditions once the temporary scale is in place and operating.

4.0 TEMPORARY SCALE

As stated earlier, a temporary scale will be installed at the Ordot Dump. This scale will be used to properly bill residential, Private and government customers. The scale will also provide critical information needed for the design of the closure of the Ordot Dump and estimating the remaining airspace at the Ordot Dump. DPW solid waste personnel will operate the scale.

As part of DPW's permit conditions listed in GEPA's Solid Waste Disposal Facility Permit No, 05-060LFL (Permit), DPW must obtain and operate a scale at the Ordot Dump. The Installation of this temporary scale will satisfy this requirement.

The new scale will be located at the existing (non-functioning) scale location

5.0 ADDITIONAL WASTE STREAM

The 2003 Consent decree ordered DPW to close the Ordot Dump by September 2007. DPW has not met this date and as a direct result the Ordot Dump remains in operation. DPW has stated that an additional 33 months will be required to open a new landfill site. Presently Ordot Dump remains the Government of Guam's sole dumpsite resulting in a continuous waste stream.

The 2004 closure design submitted by DPW will be used as the cap for available airspace (capacity) at the Ordot dump. A January 2008 survey will be conducted to ascertain the existing conditions. Once the January 2008 survey is complete, the difference between the closure design cap and existing conditions will be calculated. This difference will be the remaining air space presented in cubic yards (yd3). Four cut sections have been recently developed (January 2008) using data collected from surveys of the north-south and east-west sections of the dump. These profiles were overlaid against the final closure design and 2004 survey. A review of these profiles indicates that the Ordot dump has not reached the limits of the closure design. Exhibit 2 presents these profiles.

As part of DPW's permit conditions listed in GEPA's Permit and sound engineering practice, DPW will use soil cover of soil. A ratio of 1:4 (daily cover: *in situ* waste) will be used to estimate the volume of daily cover. This volume will be subtracted from the available airspace as it does not represent the incoming waste stream.

The 2004 closure design requires the relocation of waste from the western waste boundary of the dump. This portion of waste has encroached into a tributary stream and cannot be capped. As a result the closure

design calls for the relocation of this volume to the eastern face of the dump. This volume will be subtracted from the available airspace as it does note represent the incoming waste stream.

In general the additional airspace will follow the following equations:

Closure topography – January 2008 topography = available airspace (yd3)

Available airspace (yd3) – daily cover (yd3) – relocated waste (yd3) = Available Airspace for Solid Waste (yd3)

The final filling plan previously provided in 2004 operations must be followed. Appendix E provides the information needed in order to follow this filling plan

6.0 ONGOING CLOSURE PRACTICES

Ordot Dump operators may incorporate the following practices which will ultimate assist in the Ordot Dumps Closure:

Storm Water Pollution Prevention (SWPP)

Storm water generated within the boundaries of the waste mass and from run-on result in increased leachate, which is ultimately discharged to the Lonfit River. Storm Water Pollution Prevention measures shall be under taken to reduce the amount of storm water impacting the waste mass. These measures include:

1. Construction of the east perimeter ditch. This ditch will reduce the amount of the run-on impacting the waste mass. The construction of this ditch will also assists in the final closure of the Ordot Dump. Details on the construction of this ditch are provided on Exhibit 1.

2. Continued soil cover over active faces of the Ordot dump will also minimize the amount of storm water impacting the waste mass. The 2004 operations plan previously developed for DPW provides guidelines for the placement of daily soil cover. An ongoing operations concern is obtaining a constant supply of daily cover. The Guam International Airport Authority has committed to providing 75,000 cubic yard of soil. This supply shall be immediately tapped and used for daily soil cover. Daily cover from ongoing construction sites and DPW quarry may also be used.

7.0 WASTE STREAM AND VOLUME REDUCTION

The present waste stream into the Ordot Dump consists of typical municipal solid waste delivered by residential, commercial and government haulers. Recent efforts have been undertaken to reduce this waste stream through recycling. Although mandated by public law and set forth in the Guam Integrated Solid Waste Management Plan, recycling initiatives have been sporadic and un-sustained. Increased recycling

and other volume reduction measures are encouraged but they need to be reinforced by DPW in particular and by the Government of Guam in general. Material recovery facilities (MRF) have been proposed as one option for reducing the waste stream into the Ordot Dump. Additional options are also available.

As mentioned earlier *in situ* waste density is a critical component in available airspace. Increased compaction will result in an increase in *in situ* waste density and will in turn reduce the air space requirement per ton of waste. Increased compaction options such as deep compaction, mobile compactors, and others have been researched by DPW.

The results of this research will be provided in the Ordot Dump Action Plan, (to be submitted under separate cover)

8.0 CLOSURE DESIGN

The Dump closure design was developed in accordance with the Rules and Regulations for the Rules and Regulations for the GEPA Solid Waste Disposal, Title 22, Division 4, Chapter 23, Article 6. The primary purpose of the closure regulations is to minimize infiltration of surface water, and erosion of the cover, as well as prevent threats to human health and the environment. The closure design is discussed below and describes the final cover system as is required by the regulations. Additionally, other aspects and control systems are also explained to give a global understanding of the Dump closure design. A more detailed discussion of the closure design and accompanying analyses can be found in the 100% Design Report (DPT, 2005b). Closure Design Drawings supporting this plan are located in Appendix B.

REGULATION GUIDANCE

The guidance provided in GEPA Solid Waste Disposal, Title 22, Division 4, Chapter 23, Article 6 was used for the closure design. Specific attention was given to the following:

> *"§23601 Closure Criteria*
>
> *§23601(b)_The administrator may approve an alternate final cover design that includes:*
>
> *(1) and infiltration that achieves an equivalent reduction as the infiltration layer specified in item (1) of subsection (a) of this §23601; and*
>
> (2) *an erosion layer that provides equivalent protection from wind and water erosion as the erosion layer specified in Item (1) of subsection (a) of this §23601"*

The steps necessary to comply with §23601(b) as well as the other requirements of §23601 are detailed in the following sections.

Subpart WWW-Standards of Performance for Municipal Solid Waste Landfills 61 FR 9919 was used as guidance for the active landfill gas system.

8.1 ELEMENTS OF THE CLOSURE DESIGN

The Dump closure design includes the following construction elements:

- Final grading and layout of the Dump, including provision of access roads and surface drainage features, constructed over the final cover area;
- A final cover system, constructed over an approximately 45.8-acre footprint area;
- A leachate management system;
- A surface water management system that intercepts clean surface water runoff from the closed area and conveys it to the on-site sedimentation ponds;
- Erosion and sedimentation control facilities; and
- An active landfill gas (LFG) management system.

Design criteria for each of these systems are presented in the following sections. These criteria are based on:

- The Rules and Regulations for the GEPA Solid Waste Disposal, Title 22, Division 4, Chapter 23, Article 6;
- Current waste management practices for landfill closure;
- Input from DPW; and
- Input from the GEPA.

8.2 FINAL GRADING

The overall objectives for final grading and access road design for the closure design are as follows:

- Provide access to areas and facilities requiring maintenance and inspection;
- Generate final filling levels that maximize the quantity of waste that can be placed within the Dump without compromising the landfill stability and provision of positive drainage; and
- Account for long-term settlement to promote positive drainage over time.

Proposed design criteria for the Dump closure are summarized in the following sections.

8.2.1 DECK

The deck is that area of the top of the Dump, for which minimum surface grades are maintained. The criteria for design of the deck include:

- The minimum surface gradient of the deck or top slopes, at the time of cover construction, will be 5 percent; and
- The final grading shall be accomplished so as to facilitate redevelopment for parkland uses.

8.2.2 COVER SIDESLOPES

The sideslopes of the cover system have been designed in accordance with the following criteria:

- The construction grades during closure will conform to the contours developed by Operations and according to the final filling levels prepared by the Dueñas and Associates Project Team;

- The maximum sideslope will not exceed 1:1 with intermediate benches within the sideslopes to enhance stability; and
- Liner grades at surface water runoff control berms and ditches will be benched into the Dump sideslopes.

8.2.3 GENERAL REQUIREMENTS FOR ACCESS ROADS

Access around, and to the top of, the closed Dump shall be maintained throughout the post-closure period. For purposes of this document, two types of roads are considered: perimeter access roads around the perimeter of the main Dump footprint; and top access roads up the sideslope benches and around the deck. Design Drawing Sheet C-1 (Appendix B) provides an illustration of the access road(s) layout.

General access road requirements include:

- LFG pipe alignments located near access roads, wherever possible, to permit access to clean-outs for inspection and maintenance;
- A 30-inch-minimum vertical separation provided between the cover barrier and the road finished grade;
- A roadside ditch constructed adjacent to the cover sideslope. The roadside ditch will collect and convey surface water runoff from the road and surrounding cover surface; and
- A 3-percent minimum cross-slope grade will be provided toward a roadside ditch along the road interior.

8.2.3.1 PERIMETER ACCESS ROADS

The perimeter access roads around the Dump embankment provide access for maintenance and monitoring personnel. Requirements specific to perimeter access roads are as follows:

- The perimeter access roads around the Dump shall be a single lane in width;
- Service Duty: Light duty maintenance and grounds-keeping vehicles;
- The maximum longitudinal road grade shall be 6-percent;
- A geo-textile & geo-cell shall be placed beneath the crushed surface aggregate
- Perimeter access roads will have a minimum width of 15-feet for single lane roads & 24-feet for two-way traffic; and
- Perimeter access road surfacing materials shall consist of crushed surfacing aggregate.

8.2.3.2 TOP ACCESS ROADS

Access to the top of the Dump from the perimeter road will be provided in one location. The west top access road will continue to the center of the deck where a turn-around will be constructed. Requirements specific to the top access road are as follows:

- Top access roads shall be two-lanes wide for two-way traffic;
- Service Duty: Light duty maintenance and grounds-keeping vehicles;
- Passenger vehicles for post-closure access;
- Downslope road embankment sideslopes shall not exceed 2 (horizontal) to 1 (vertical);
- The maximum longitudinal road grade shall be 10-percent;
- A geo-textile & geo-cell shall be placed beneath the crushed surface aggregate;
- Top access roads shall have a minimum width of 24-feet, including shoulders;

- Top access road surfacing materials shall consist of crushed surfacing aggregate; and
- Barrier system to preclude off-road travel.

8.2.3.3 ACCESS CONTROLS

The following shall be the provided to control access to various closure components:

- Barrier system to preclude off-road travel;
- Barrier system to provide protection against steep embankments;
- Signage shall be provided where necessary;
- All critical area (LFG systems, generators) shall be fenced; and
- Padlocks shall be provided on all LFG extraction & monitoring wells, fence gates and groundwater monitoring wells.

8.3 COVER SYSTEM

The cover system for the Dump closure will consist of approximately 46-acres of final cover system. The area of final cover will be permanently closed.

Design Drawing Sheet C-12 (Appendix B) of the closure design provides an illustration of the infiltration layer. Design Drawing Sheets C-1, C-4, C-10 & C-11 (Appendix B) provide an illustration of the final cover system and corresponding cut sections.

8.3.1 FINAL COVER SYSTEM

The final cover system shall be in accordance with the Rules and Regulations for the GEPA Solid Waste Disposal, Title 22, Division 4, Chapter 23, Article 6. Specific criteria that will govern the final cover system installed as part of the Dump closure require that for the final cover system:

- The infiltration layer must have a permeability less than or equal to the permeability of any bottom liner system or natural sub soils present, or a permeability no greater than 1×10^{-5}-centimeters per second (cm/sec), whichever is less as per section §23601 (a)(1) of the GEPA Rules and Regulations;
- Minimize infiltration to the cover by the use of an infiltration layer that contains a minimum 18-inches of earthen material; and
- Minimize erosion of the final cover by the use of an erosion control layer that contains a minimum of 6-inches of earthen material that is capable of sustaining native plant growth.

8.3.1.1 FINAL COVER CROSS SECTION

The Dump closure final cover system for the deck and benches consists of the following components, from top to bottom:

- 6-inch thick erosion/vegetative layer (topsoil);
- 18-inch thick soil layer);
- Geocomposite infiltration collection/drainage layer to collect and convey surface water that may percolate through the 24-inch soil layers;
- 80-mil thick high density polyethylene (HDPE) geomembrane barrier layer;

- Geocomposite leachate seepage/LFG collection layer; and
- Minimum 6-inch thick soil cover layer, including the existing daily cover, above the waste, prepared to provide a suitable surface for construction of the Dump closure cover system. Additional soil cover shall be placed in localized area where waste protrudes through the 6-inch soil cover layer.

The Dump closure final cover system for the sideslopes differs from that of the deck and benches due to the potential instability of the cover material on 1:1 sideslopes. In this case, the geomembrane will be left exposed and overlain by a geogrid to facilitate vine vegetation and restrain against excessive displacement of the geomembrane under high wind conditions. The vine vegetation will partially protect the geomembrane from ultraviolet light while still allowing rapid removal of water from the geomembrane surface. The exposed geomembrane is sufficiently resistant to UV exposure to ensure long term integrity of the system. This vine coverage will provide an aesthetic look to the closure cap. The exposed geomembrane is not subject to erosion. The exposed sideslopes are no-traffic areas.

8.3.2 COVER SYSTEM DESIGN CRITERIA

The design of the cover system shall conform to the requirements of the regulations. The barrier layer for the system is an alternative to the prescriptive barrier. Justification for this alternative is presented herein, based on the criteria for equivalency. The primary components of the cover system for which design criteria must be developed include:

- The top soil layer;
- The barrier layer; and
- The leachate seepage/LFG collection layer.

These components of the final cover system are described below.

8.3.2.1 TOP SOIL LAYER – DECK AND BENCHES

The infiltration collection system for the final cover shall consist of a geocomposite installed directly above the barrier layer and overlain by a soil layer. The vegetative/erosion layer at the surface of the cover system will be incorporated into the soil layer. This infiltration collection layer shall only be applied to the deck and benches. The purpose of the infiltration collection layer will be to protect the geomembrane, provide ballast for stability and to ensure that the seepage height above the barrier layer is maintained below the established maximum. There are no regulatory requirements governing the design of the infiltration collection system, other than provision of an infiltration layer at least 18-inches thick.

The design criteria, key components, and function of the infiltration collection layer are summarized as follows:

- The geocomposite shall be placed over the entire footprint of the final cover system deck and benches. The geocomposite will ensure the removal of water that is able to infiltrate through the cover soils above the barrier layer.
- The maximum allowable seepage height is 0.2-inches, approximately corresponding to the thickness of the geonet core of the geocomposite. The veneer stability calculations demonstrate that this restriction ensures the stability of the landfill cover. This calculation can be found in the Ordot Dump Closure 100% Design Report (2005) by the Dueñas and Associates Project Team.
- Infiltration collector pipes will collect and convey the water off the cover system by daylighting into surface water conveyance ditches.

- No clean-outs will be provided for infiltration collector pipes. Clean-outs are not considered necessary because the pipe will daylight directly into surface water ditches and are accessible from the Dump surface without penetration of the cover barrier layer.
- The soil layer will be constructed of non-granular fine-grained material. This will limit the quantity of water that is able to infiltrate through the cover soils and inhibit to the underlying geocomposite and barrier layer. The final gradation of the infiltration soil layer will be dependent on the materials available locally to the site. The surface water management system will be designed to be consistent with the limited infiltration allowed by the infiltration soil layer. This soil layer will also provide the necessary ballast needed for uplift stability.

8.3.2.2 EXPOSED SIDESLOPES

The sideslopes will have exposed geomembrane and will not have an infiltration collection layer. The sideslopes will remain protected because the steep 1:1 slope does not make them trafficable. UV protection will be provided by the use of HDPE geomembrane and the presence of vegetative layer supported by a geogrid.

Articulate block matting armored ditch will be provided at the toe of each sideslope. This ditch will convey the runoff generated by the sideslopes and protect against scour.

8.3.2.3 BARRIER LAYER

The barrier layer is the critical component of the cover system, which inhibits the influx of precipitation into the waste after closure. This low permeability barrier may consist of a 1.5-foot thick layer of low permeability soil, having a hydraulic conductivity not greater than 1.0×10^{-5} cm/sec. It shall be at least as impermeable as the bottom liner for the landfill. In the case of Ordot Dump, there is no bottom liner, so the 1.0×10^{-5} cm/sec criterion applies. The regulations provide opportunity for the substitution of a different barrier layer, provided that it can be demonstrated that the substitution has equivalent protection and performance as that of the soil barrier. This process is called an equivalency demonstration, whereby the equivalent performance of the alternative barrier is shown by technical analysis. This demonstration can be found in the Ordot Dump Closure 100% Design Report (2005), by the Dueñas and Associates Project Team.

HDPE Geomembrane

For this application, an HDPE geomembrane material having the following properties is proposed:

- Nominal thickness of 80-mils;
- Textured on both sides to enhance the frictional properties of the geomembrane;
- Minimum tensile strength at break of 60 lb/in; and
- Minimum puncture resistance of 44 lb.

HELP Model Analysis

The results of the Hydrologic Evaluation of Landfill Performance (HELP) Model analyses was utilized to compare existing leachate generation at Ordot Dump to leachate generation after closure. The results suggest that the cover system will reduce the total infiltration rate from about 119 gpm, for the existing site conditions, to about 25 gpm, a decrease in volume of approximately 80 per cent . Detailed results of the HELP Model analysis are presented in the Ordot Dump Closure 100% Design Report (2005) by the Dueñas and Associates Project Team (DPT, 2005b).

8.3.2.4 LEACHATE SEEPAGE/LFG COLLECTION LAYER

A leachate seepage/LFG collection layer will be included in the cover system to protect the cover from damage. The mechanisms by which leachate seepage could potentially damage the cover include: uplift forces and a reduction in the slope stability. LFG could similarly damage the cover via uplift forces and reduction in slope stability. There are no regulatory requirements governing the design of the leachate seepage/LFG collection layer.

Leachate collected in the seepage collection layer below the barrier layer will be collected in seepage collection pipes and conveyed to a sump at the south end of the Dump. LFG will be collected in the collection layer and actively collected with the LFG extraction wells. Standard design practice for landfill closure relies on the use of a high permeability drainage sand or geocomposite material for a leachate seepage/LFG collection layer.

Specific design criteria for the leachate seepage/LFG collection layer include the following:

- A geocomposite layer will be provided above the prepared base grading and below the cover barrier;
- Seepage collection trenches with perforated collection pipe will be installed at benches constructed in association with surface water ditches;
- LFG active extraction wells will be installed along the deck and benches; and
- The leachate seepage/LFG collection layer will also be sized to accommodate removal of LFG condensate generated.

8.4 SURFACE WATER MANAGEMENT

Surface water management constructed as part of the Dump closure is consistent with the operational requirements of the regulations. Specific criteria that will govern the surface water control system (Rules and Regulations for the GEPA Solid Waste Disposal, Title 22, Division 4, Chapter 23, Article 3) include:

- A run-on control system to prevent flow onto the active portion of the Dump at all times, but especially during the peak discharge from a twenty five-year storm; and
- A runoff control system from the active portion of the Dump to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

In addition to these requirements, the surface water management design is in accordance with the guidelines provided in the Commonwealth of the Northern Mariana Islands and Guam Stormwater Management Criteria (Horsley Witten Group, 2004) as requested by the Guam Environmental Protection Agency and Guam Storm Drainage Manual (U.S. Army Corps of Engineers, 1980). The greater values produced the two referenced manuals was used in determining the storm events. Surface water management has been designed to conform to the National Pollutant Discharge Elimination System (NPDES) requirements for discharge of surface water from the Dump to the Lonfit River.

8.4.1 GENERAL DESIGN CRITERIA

The surface water management system was designed to collect surface water runoff from the Dump closure area. The surface water management system will convey the surface water from the Dump to an area of detention and/or a sedimentation pond. A system of runoff control berms, ditches, and culverts will be installed. The runoff will be routed via gravity drainage. Overflow from the sedimentation pond will discharge to the Lonfit River.

The required capacity and performance of the sedimentation pond was determined as part of the surface water management design. Surface water run-on controls around the perimeter of the Dump closure will be modified to ensure consistency with the appropriate regulations.

The general design criteria to be adopted include the following:

- The surface water collection and conveyance facilities shall be designed to withstand anticipated settlement. This will be achieved through the provision of a substantial freeboard allowance and construction at grades such that flow paths are maintained following the anticipated settlements.
- Erosion control measures provided as part of the surface water control ditch construction above the waste will be flexible, such that they are not compromised by the anticipated settlements. Examples of suitable erosion control measures utilized, include erosion control matting, turf reinforcement matting, and armoring of ditches using Armorform. Asphalt-lined ditches may be used on native ground or structural fill.
- Rock armor reinforcement will be provided at all points of discharge from one ditch to another to deter erosion.
- Rock armor reinforcement will be provided at all culvert entrances and discharge points to deter erosion.

8.4.2 SPECIFIC DESIGN CRITERIA

Specific design criteria for surface water management facilities include the following considerations.

8.4.2.1 FLOWS

Flow within ditches and other conveyance measures shall be determined from the following:

- The peak flow resulting from a 24-hour duration, 25-year recurrence interval storm event, in accordance with the requirements specified in the regulations.
- Flow for the 100-year recurrence interval storm event will be evaluated to confirm that the surface water conveyance features will not fail.

8.4.2.2 DITCHES

The critical component of the surface water conveyance system is surface ditches on and around the Dump. Design criteria include:

- Ditches should be triangular or trapezoidal in shape to facilitate conveyance of both low and high flow volumes.
- Ditches shall be benched into waste, as necessary.
- Ditch sideslopes will be a maximum of 1:1.

8.4.2.3 RUNOFF CONTROL BERMS

Runoff control berms shall be provided as an erosion-resistant barrier to focus flows. Design criteria include:

- Adopt a minimum berm crest width of 1-foot.
- Control berms should produce ditches of triangular or trapezoidal shape, to facilitate conveyance of both low and high flow volumes.
- Sideslopes of berms should be a maximum of 2:1.

8.4.2.4 CULVERTS

Culverts shall be provided below roads and through berms, as required. Design criteria include:

- Size culverts to convey the peak flow for the 24-hour, 25-year storm event, such that the depth of headwater above the culvert invert does not exceed:
  - 1.5 times the culvert diameter for culverts larger than 18-inches in diameter; and
  - 2.0 times the culvert diameter for culverts 18-inches in diameter and smaller.
- Check that culverts will convey the peak 24-hour, 100-year flow under surcharged conditions without causing flooding or erosion problems.

8.4.2.5 SEDIMENTATION BASIN

The capacity of the sedimentation basin was designed such that sufficient capacity is provided to retain the surface water runoff from a 1-hour, 50-year storm event that would originate from areas designed to drain into the sedimentation pond.

All surface water runoff must go through the sedimentation basin prior to being discharged to the Lonfit River. The sedimentation pond and associated conveyance facilities will be designed to convey the excess surface water runoff resulting from a 24-hour, 100-year storm event. Excess water shall be managed by decanting from the sedimentation ponds to the Lonfit River.

8.5 EROSION AND SEDIMENTATION CONTROL

The objective of post-closure erosion and sedimentation control is to minimize sedimentation damage to on-site sensitive areas and off-site drainage systems. Disturbance of natural vegetation and soil conditions following closure activities increases susceptibility to erosion and sediment loading of surface water runoff, until such time as natural vegetation re-establishes. A plan for minimizing sediment-laden runoff from leaving the site after closure will be implemented. The plan incorporates the use of erosion and sedimentation control, as specified in the Guam Soil Erosion and Sediment Control Regulations.

8.5.1 GENERAL DESIGN CRITERIA

The erosion and sedimentation control design criteria presented herein are consistent with the methods presented in the Guam Soil Erosion and Sediment Control Regulations; and best management practices (BMPs) commonly used in similar construction. The basic principles of erosion and sedimentation control are as follows:

- Design the project to fit the natural topography, soils, and drainage patterns;
- Emphasize erosion control, rather than sedimentation control;
- Minimize the extent to which, and duration for which an area is exposed;
- Keep runoff velocities low;
- Retain sediment on-site; and
- Thoroughly monitor and maintain all erosion and sedimentation control measures.

Requirements for the control of fugitive dust will also be developed based on the Guam Air Pollution Control Standards and Regulations.

8.5.2 SPECIFIC DESIGN CRITERIA

To achieve effective erosion and sedimentation control during construction, the following BMPs will be employed:

- Clearing limits will be established;
- Cover measures, including nets, blankets, hydro seeding, or plastic, will be used, as required, to reduce exposed surface erosion;
- Perimeter protection will be provided through use of silt fences;
- Surface water control measures will be provided, including runoff control berms, ditches, inlet and outlet protection, and piping;
- Sediment retention will be provided by directing surface water flows to a sedimentation pond;
- Dust control measures will be implemented to minimize wind transport of soil onto roadways, drainage ways, and surface waters;
- Maintenance of erosion and sedimentation control measures will be on a regular basis, as required, to maintain the system's effectiveness; and
- Final site stabilization will occur prior to removal of temporary erosion and sedimentation control facilities installed during construction. All disturbed areas of the site will be vegetated or otherwise permanently stabilized.

8.6 LEACHATE SYSTEM

Leachate is formed generally when migrating water comes in contact with waste. Secondary sources of leachate include liquids contained in the waste at the time of disposal and liquids formed during decomposition of the waste.

The Dump was constructed within a southerly flowing ravine outletting to the Lonfit River. No bottom liner system or leachate collection system was constructed as part of the development of the Dump; however it is presumed that the existing soil is of low permeability and tends to provide a natural barrier layer. This barrier layer greatly reduces leachate flow into the natural groundwater and directs leachate flow out the southern base of the Dump. This leachate will then be collected by the closure leachate collection system, which was discussed in detail in Section 4.3.2.4 above. Once collected in a sump, leachate will be discharged to an off-site wastewater treatment plant.

8.7 LANDFILL GAS SYSTEM

The LFG system for the Dump closure will be designed to comply with the requirements of the regulations. Design Drawing Sheet LFG-1 (Appendix B) is provided to illustrate the locations of the landfill gas extraction and landfill gas monitoring systems. Specific criteria that will govern the LFG system installed include:

- Rules and Regulations for the GEPA Solid Waste Disposal, Title 22, Division 4, Chapter 23, Article 3; and
- Title 40, Chapter 1, Parts 51, 52, and 60 of the Code of Federal Regulations, commonly referred to as the New Source Performance Standards and Emission Guidelines (NSPS/EG).
- 61 FR 9919 Subpart WWW – Standards for Performance for Municipal Landfills

8.7.1 GENERAL DESIGN CRITERIA

The basic principles for the control of LFG for the Dump closure are as follows.

- Collect LFG generated in the Dump and burn it in a flare;
- Minimize gas migration, through the unlined sides and bottom of the Dump, to neighboring property;
- Minimize gas emissions through the lined top surface of the Dump.
- Ensure the concentration of methane gas generated by the facility does not exceed twenty-five percent of the lower explosive limit for methane in facility structures (excluding gas control or recovery system components;
- Ensure the concentration of methane gas does not exceed the lower explosive limit (5%) for methane at the facility property boundary;
- Meet NSPS/EG requirements;
  - Reduce non-methane organic compounds (NMOC) by at least 98% (by weight);
  - Have oxygen concentration less than 5% in LFG;
  - Landfill temperature does not exceed 131°F; and
  - Methane emissions do not exceed 500 parts per million (ppm) over the surface of the Dump; and
- Reduce landfill odors.

The LFG system will have the following major components.

- Extraction Wells: to withdraw LFG from the lower levels of the Dump.
- Interceptors: to capture LFG beneath the surface cover of the Dump.
- Piping: to collect and transport the LFG to the Flare System.
- Valve stations: to control the flow of LFG at the wells, interceptors, or other piping locations.
- Blowers: to apply vacuum to the piping system and draw LFG to the flare station.
- Flare: to combust odorous LFG and render it non-explosive.
- Instrumentation and controls: to operate the LFG system and determine LFG flow rate, pressure and temperature.

The LFG monitoring system will be provided around the perimeter of the closed landfill. This monitoring system will include:

- LFG Monitoring probes
- Gas Sampling ports
- Traffic barriors (as required)

A post-closure landfill gas monitoring plan is provided in the Ordot Dump Closure 100% Post-Closure Plan (2005), by the Dueñas and Associates Project Team.

8.8 GROUNDWATER MONITORING SYSTEM

As part of the Ordot Dump Closure project, a groundwater monitoring plan was prepared. This plan shall be implemented through 2007. In addition to the planned groundwater monitoring, there have been occasional water quality investigations. Generally, these investigations compared concentrations of select constituents of upstream water from the Lonfit River, leachate, and downstream water from the Lonfit River. The constituents focused on nitrogen and some heavy metals such as iron and manganese.

Three investigations were performed at the site and are well documented: one analysis by Black and Veatch in 1983; one study by Camp-Dresser-McKee in 1987; and one analysis by UNITEK in 1998 (Mink & Yuen, 2004). All three investigations demonstrated the same result: that result being that there were higher concentrations of constituents localized where the leachate entered the Lonfit River, but that within a short distance downstream of the Dump, contaminant levels returned to the approximate background concentrations.

A post-closure groundwater monitoring system will be installed and implemented in accordance with the GEPA Rules and Regulations for Solid Waste Disposal, Title 22, Division 4, Chapter 23, Article 5. The groundwater monitoring system will be operated and maintained for the entire post-closure period in accordance with the GEPA Rules and Regulations for Solid Waste Disposal, Title 22, Division 4, Chapter 23, Article 6. Any damage to the groundwater monitoring system shall be repaired as soon as it is detected. These repairs shall be performed as a component of the ongoing care and maintenance of the facility. Repairs shall be carried out using the same types of materials as were damaged or destroyed. Any questions or issues that may arise with regard to the groundwater monitoring system should be addressed by the Dueñas and Associates Project Team, through DPW.

The locations of the existing and new groundwater monitoring wells may be found in Design Drawing Sheet G-1 (Appendix B).

9.0 ADMINISTRATION REQUIREMENTS

9.1 CLOSURE PROCEDURES

Closure procedures are fully documented by a set of construction documents, including the 100% Design Report, Design Drawings, Specifications, Construction Quality Assurance Plan, Construction Schedule, and Post-Closure Care and Maintenance Plan for the facility. These documents provide the minimum criteria for work activities. All work shall conform to the regulatory requirements prescribed in 40 Code of Federal Regulations (CFR), Part 258 (Subtitle D) and the GEPA Rules and Regulations for Solid Waste Disposal, Title 22, Division 4, Chapter 23. Closure construction will be monitored by the full-time presence of a representative of the design engineer, a construction manager, and construction quality assurance personnel for the design engineer, to ensure that the intent of the design is met and that the construction documents are adhered to.

Construction work will be product oriented with the contractor responsible for execution of the work, all forms of construction-related environmental compliance, and acceptance of the final end product. The contractor will be required to conform to 40 CFR Part 265 Subparts F through R. The important issues associated with these sections are:

- All workers, who may contact waste, are health and safety trained;
- The potential offsite migration of waste or waste products (e.g., leachate and landfill gas) will be controlled;
- Human health and the environment shall be protected;
- Safe working conditions shall be maintained;
- Safety records shall be maintained;
- Proper permits shall be obtained and maintained; and
- Emergency action plans shall be established for the event of a spill or accident.

DPW will obtain necessary approvals in accordance with the applicable regulations and provisions of the Consent Decree, and notify the Director of the GEPA before beginning closure of Ordot Dump.

9.2 HEALTH AND SAFETY

All engineering and contractor personnel who perform excavation, handling, sampling, and monitoring of the soils and water during the closure of the Dump will be subject to Occupational Safety and Health Administration standards for hazardous waste operations (29 CFR Part 1910). A Health and Safety Plan will be prepared describing procedures to be followed to protect all on-site personnel involved with or affected by closure activities. Of particular importance, the Health and Safety Plan will include the following information:

- Selection of adequate personal protective equipment;
- Establishment of work zones;
- Decontamination procedures;
- Emergency response procedures; and
- Personnel training program.

An on-site Safety Supervisor will be designated and be present on-site during construction. This person will be responsible for enforcing the Health and Safety Plan by conducting daily safety meetings for all on-site personnel performing closure activities, supervising all necessary workplace monitoring, documenting all health and safety related incidents, and requiring all personnel who enter the work area to wear appropriate protective clothing and follow all safety procedures.

9.3 QUALITY ASSURANCE/QUALITY CONTROL

Construction quality assurance and construction quality control (CQA/CQC) procedures will be implemented to ensure that closure activities are conducted in accordance with this Closure Plan and the contract documents. The on-site representative of the registered professional civil engineer responsible for certifying closure will be present on a regular basis to conduct inspections and on a full-time basis at critical stages of closure.

On-site QC will be conducted by the contractor to verify the documentation of the closure activities. An inspection of the sampling procedure will verify the sampling locations and methodology used during the collection of each sample. The CQA manager will be responsible for providing necessary oversight and audits to ensure compliance with the plan.

9.4 CERTIFICATION OF CLOSURE

Following the closure of Ordot Dump, DPW will notify the Administrator of GEPA that a certification, signed by a registered professional engineer, verifying that closure has been completed in accordance with the plan, has been placed in the operating record.

DPW will record a notation on the deed to the Dump facility property notifying any potential purchaser of the property that the land has been used as a disposal facility and its use is restricted.

9.5 POST-CLOSURE MAINTENANCE

The construction documents will also contain requirements for the on-going maintenance of the cover system and monitoring systems following final closure. A Post-Closure Plan has been prepared in accordance with Rules and Regulations for the GEPA Solid Waste Disposal, Title 22, Division 4, Chapter 23, Article 6. Key items of post-closure include:

- Maintaining the integrity and effectiveness of the final cover;
- Maintaining and operating the leachate collection system;
- Monitoring groundwater and maintaining the monitoring system; and
- Maintaining the LFG control system and monitoring LFG migration.

The post-closure maintenance period is anticipated to encompass 30 years.

10.0 REFERENCES

CFR, Title 29, Part 1910 – Occupational Safety and Health Standards.

CFR, Title 40, Part 257 – Criteria for Classification of Solid Waste Disposal Facilities and Practices.

CFR, Title 40, Part 258 – Criteria for Municipal Solid Waste Landfills.

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APPENDIX A
Title 22, Division 4, Article 6 (§23601) of the Rules and Regulations for the Guam Environmental Protection Agency (GEPA) Solid Waste Disposal

RULES AND REGULATIONS FOR THE GUAM ENVIRONMENTAL PROTECTION AGENCY (GEPA) SOLID WASTE DISPOSAL

Title 22

Division 4

Chapter 23

Article 1

General regulations

Article 2

Location restrictions

Article 6

Closure and post-closure care

§23601. Closure criteria. (a) Owners or operators of all MSWLF units must install a final cover system that is designed to minimize infiltration and erosion. The final cover system must be comprised of an erosion layer underlain by an infiltration layer as follows:

(1) the infiltration layer must be comprised of a minimum of Eighteen (18) inches of earthen material that has a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less, and

(2) the erosion layer must consist of a minimum Six (6) inches of earthen material that is capable of sustaining native plant growth.

(b) The Administrator may approve an alternative final cover design that includes:

(1) an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in Item (1) of Subsection (a) of this §23601; and

(2) an erosion layer that provides equivalent protection from wind and water erosion as the erosion layer specified in Item (2) of Subsection (a) of this §23601.

(c) The owner or operator must prepare a written closure plan that describes the steps necessary to close all MSWLF units at any point during its active life in accordance with the cover design requirements in Subsections (a) or (b) of this §23601, as applicable. This plan must be approved by Guam EPA prior to the initiation of closure activities. The closure plan, at a minimum, must include the following information:

(1) a description of the final cover, designed in accordance with Subsections

(a) of this §23601 and the methods and procedures to be used to install the cover;

(2) an estimate of the largest area of the MSWLF unit ever requiring a final cover as required under Subsections (a) of this §23601 at any time during the active life;

(3) an estimate of the maximum inventory of wastes ever on-site over the active life of the landfill facility; and

(4) a schedule for completing all activities necessary to satisfy the closure criteria in this §23601.

(d) The owner or operator must notify the Administrator that a closure plan has been prepared and placed in the operating record immediately or by the initial receipt of waste, whichever is later.

(e) Prior to beginning closure of each MSWLF unit as specified in Subsections (f) of this §23601, an owner or operator must notify the Administrator that a notice of the intent to close the unit has been placed in the operating record.

(f) The owner or operator must begin closure activities of each MSWLF unit no later than Thirty (30) days after the date on which the MSWLF unit receives the known final receipt of wastes or, if the MSWLF unit has remaining capacity and there is a reasonable likelihood that the MSWLF unit will receive additional wastes, no later than One (1) year after the most recent receipt of wastes. Extensions beyond the One (1) year deadline for beginning closure may be granted by the Administrator if the owner or operator demonstrates that the MSWLF unit has the capacity to receive additional wastes and the owner or operator has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the unclosed MSWLF unit.

(g) The owner or operator of all MSWLF units must complete closure activities of each MSWLF unit in accordance with the closure plan within One hundred and eighty (180) days following the beginning of closure as specified in Subsection (f) of this §23601. Extensions of the closure period may be granted by the Administrator if the owner or operator demonstrates that closure will, of necessity, take longer than One hundred and eighty (180) days and he has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed MSWLF unit.

(h) Following closure of each MSWLF unit, the owner or operator must notify the Administrator that a certification, signed by an independent registered professional engineer and approved by the Administrator, verifying that closure has been completed in accordance with the closure plan, has been placed in the operating record.

(i) Following closure of all MSWLF units, the owner or operator must record a notation on the deed to the landfill facility property, or some other instrument that is normally examined during title search, and notify the Administrator that the notation has been recorded and a copy has been placed in the operating record.

(j) The notation on the deed must in perpetuity notify any potential purchaser of the property that:

(1) the land has been used as a landfill facility; and

(2) its use is restricted under Item (3) of Subsection (c) of this §23602.

(k) The owner or operator may request permission from the Administrator to remove the notation from the deed if all wastes are removed from the facility.

§23602. Post-closure care requirements. (a) Following closure of each

MSWLF unit, the owner or operator must conduct post-closure care. Post-closure care must be conducted for Thirty (30) years, except as provided under Subsection (b) of this §23602, and consist of at least the following:

(1) maintaining the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;

(2) maintaining and operating the leachate collection system in accordance with the requirements in §23401 of this Chapter. The Administrator may allow the owner or operator to stop managing leachate if the owner or operator demonstrates that leachate no longer poses a threat to human health and the environment;

(3) monitoring the ground-water in accordance with the requirements of Article 5 of this Chapter and maintaining the ground-water monitoring system, if applicable; and

(4) Maintaining and operating the gas monitoring system in accordance with the requirements of §23306.

(b) The length of the post-closure care period may be:

(1) decreased by the Administrator if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is approved by the Administrator; or

(2) increased by the Administrator, if the Administrator determines that the lengthened period is necessary to protect human health and the environment.

(c) The owner or operator of all MSWLF units must prepare a written post-closure plan that includes, at a minimum, the following information:

(1) a description of the monitoring and maintenance activities required in Subsection (a) of this §23602, for each MSWLF unit, and the frequency at which these activities will be performed;

(2) name, address, and telephone number of the person or office to contact about the facility during the post-closure period; and

(3) a description of the planned uses of the property during the post-closure period. Post-closure use of the property shall not disturb the integrity of the final cover, liner(s), or any other components of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements in this Chapter. The Administrator may approve any other disturbance if the owner or operator demonstrates that disturbance of the final cover, liner or other component of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment.

(d) The owner or operator must notify the Administrator that a post-closure plan has been prepared and placed in the operating record immediately or by the initial receipt of waste, whichever is later.

(e) Following completion of the post-closure care period for each MSWLF unit, the owner or operator must notify the Administrator that a certification, signed by an independent registered professional engineer and approved by the Administrator, verifying that post-closure care has been completed in accordance with the post-closure plan, has been placed in the

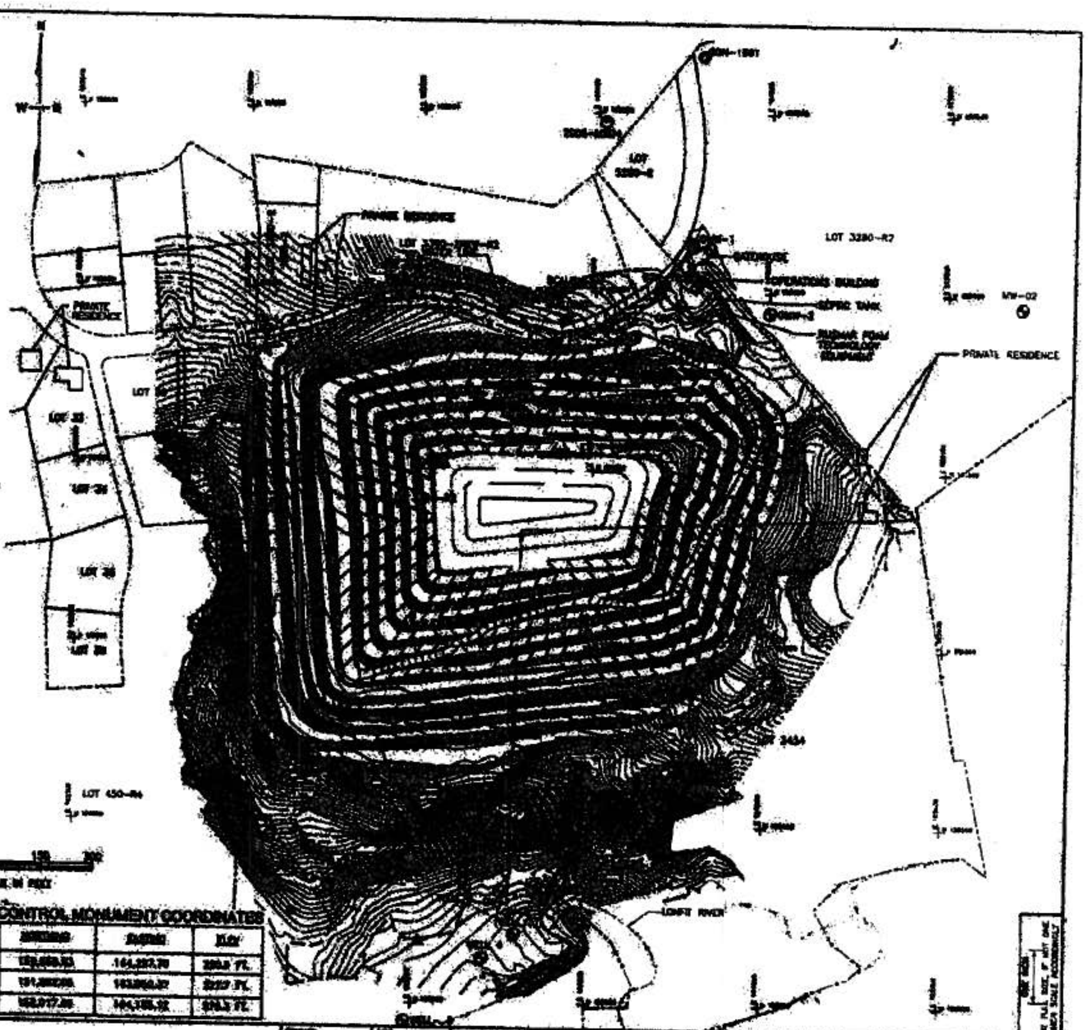
APPENDIX B
Design Sheet References

GENERAL NOTES:

1. THERE IS A POSSIBILITY THAT THE ORDOT DUMP WILL BE AN ACTIVE DISPOSAL SITE DURING A PORTION OF THE CLOSURE CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE ITS ACTIVITIES SO THAT NO INTERFERENCE WITH ONGOING OPERATIONS OCCURS. YIELD RIGHT-OF-WAY TO ALL OPERATIONS TRAFFIC IN THE VICINITY OF THE SITE ENTRANCE AND ACTIVE DISPOSAL AREA AT ALL TIMES.
2. THE CONSTRUCTION AREAS ARE LOCATED OVER THE EXISTING DUMP. WASTE, LEACHATE, LFG, AND LFG CONDENSATE MAY BE PRESENT AND POSE A SAFETY AND HEALTH HAZARD. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SAFETY AND HEALTH REQUIREMENTS IN THE SPECIFICATIONS. WASTE MATERIALS EXCAVATED DURING CONSTRUCTION SHALL BE DISPOSED OF AS DIRECTED BY THE CONSTRUCTION MANAGER.
3. SITE TOPOGRAPHY IS BASED ON A SURVEY PERFORMED BY D&A BETWEEN JULY 2004 AND NOVEMBER 2004. THE SURVEYED TOPOGRAPHY HAS BEEN MODIFIED TO REFLECT EITHER PROJECTED EXISTING OR FINAL GRADES AT THE TIME OF CLOSURE. SOME LOCALIZED SETTLEMENT OF SITE GRADES AND SURFACE ELEVATIONS HAVE OCCURRED IN LANDFILLED AREAS AND MAY NOT BE REFLECTED ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF SITE TOPOGRAPHY AND PLANIMETRIC FEATURES PRIOR TO CONSTRUCTION.
4. HORIZONTAL CONTROL SURVEY IS BASED ON THE 1963 GUAM GEODETIC TRIANGULATION NETWORK (GGTN) GEODETIC DATUM.
5. VERTICAL CONTROL SURVEY IS BASED ON MEAN SEA LEVEL (MSL), AS DETERMINED BY THE GGTN GEODETIC DATUM.
6. MANY OF THE SYMBOLS SHOWN ON THE GENERAL LEGEND OF SYMBOLS ARE USED ONLY WHERE THEY PROVIDE CLARITY AND ARE NOT NECESSARILY USED FOR ALL APPLICATIONS. SOME DRAWINGS HAVE ADDITIONAL LEGENDS APPLICABLE TO THOSE SPECIFIC DRAWINGS.
7. SURVEY CONTROL MONUMENTS, PROVIDED BY D&A, ARE LISTED FOR CONSTRUCTION STAKING AND SURVEYING. SEE THIS SHEET FOR TABLE OF SURVEY CONTROL MONUMENT COORDINATES.
8. THE DRAWING REFLECTS THE APPROXIMATE LOCATION OF KNOWN FEATURES. THE INFORMATION IS PROVIDED AS REFERENCE ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE TRUE AND CORRECT LOCATION PRIOR TO CONSTRUCTION. ALL FEATURES SHALL BE PROTECTED, INCLUDING THOSE MARKED AS PREVIOUSLY ABANDONED, UNLESS SPECIFICALLY NOTED ON DRAWING NO. C-2.
9. THE CONTRACTOR SHALL PROVIDE FLAGGERS AND TRAFFIC CONTROL DEVICES CONSISTENT WITH THE TRAFFIC CONTROL PLAN AND AT TIMES AND LOCATIONS AS REQUESTED BY THE CM TO PROVIDE PUBLIC ACCESS, AND TO ENSURE TRAFFIC SAFETY.
10. THE CONTRACTOR SHALL PROVIDE ACCESS FOR DPW OR GEPA PERSONNEL AND THEIR REPRESENTATIVES TO AND THROUGH ALL SITE AREAS AT ALL TIMES.
11. EXISTING MONITORING WELLS SHALL NOT BE DAMAGED DURING CONSTRUCTION. IF ANY MONITORING WELL IS DAMAGED, CONTRACTOR SHALL PROVIDE A NEW, EQUIVALENT WELL, AT NO COST TO THE OWNER.
12. ELECTRICITY AND WATER ARE SUPPLIED TO THE OPERATIONS BUILDING AND GATEHOUSE. THERE IS NO READILY AVAILABLE AS-BUILT [illegible] OF EXISTING UNDERGROUND [illegible]. EXISTING [illegible] HAS BEEN APPROXIMATED BASED ON VISUAL [illegible] FEATURES. EXISTING ELECTRICAL POWER POLES WERE [illegible] LOCATED BY SURVEY. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING UNDERGROUND UTILITIES. EXISTING UTILITIES SHALL NOT BE [illegible] DURING CONSTRUCTION, UNLESS SPECIFICALLY NOTED. IF ANY UTILITY IS DAMAGED, CONTRACTOR SHALL PROVIDE A NEW, EQUIVALENT UTILITY, AT NO COST TO THE OWNER.
13. EXISTING SURVEY CONTROL FEATURES SHALL NOT BE DAMAGED DURING CONSTRUCTION. IF ANY SURVEY MONUMENTS, PK'S, REBARS, ETC. ARE DISTURBED DURING CONSTRUCTION, THEY SHALL BE RESET BY A REGISTERED LAND SURVEYOR AT NO COST TO THE OWNER.
14. WASTE/CONTAMINATED MATERIAL EXPOSED DURING CONSTRUCTION SHALL BE COVERED AT THE END OF EACH WORKING DAY WITH DAILY COVER MATERIAL IF WASTE IS PERMANENTLY RELOCATED OR WITH APPROVED ALTERNATE COVER MATERIAL (I.E., PLASTIC SHEETING) IF WASTE IS TEMPORARILY EXPOSED.
15. WETLAND DELINEATION AND FIELD LOCATING OF WELLS WERE PERFORMED BY D&A DURING FIELD ACTIVITIES BETWEEN JULY 2004 AND NOVEMBER 2004. THE WETLAND DELINEATION WAS APPROVED BY THE U.S. ARMY CORPS OF ENGINEERS ON JANUARY 5, 2005 AND BY THE GUAM DEPARTMENT OF AGRICULTURE AND GEPA ON JANUARY 18 AND JANUARY 17, 2005, RESPECTIVELY.
16. OF THE EXISTING WELLS SHOWN, ONLY GW-4 (WELL 9), GW-6 (WELL 3), AND GW-7 HAVE BEEN FIELD LOCATED.
17. PROPOSED GROUNDWATER MONITORING WELL SHALL BE AS SHOWN IN 1/C-38.
18. STRUCTURES, FACILITIES, STREAMS, AND THE LONFIT RIVER, WHICH ARE OUTSIDE THE SURVEY AREA, WERE APPROXIMATELY LOCATED USING AERIAL PHOTOGRAPHS.

LEGEND:

- EXISTING GW WELL
- PROPOSED GW WELL
- WETLAND DELINEATION
- STREAM/RIVER
- PROPERTY BOUNDARY
- CHAINLINK FENCE
- EXISTING LIMITS OF WASTE
- CONTROL MONUMENT
- TILT STATION



SCALE IN FEET (150 0 150 300)

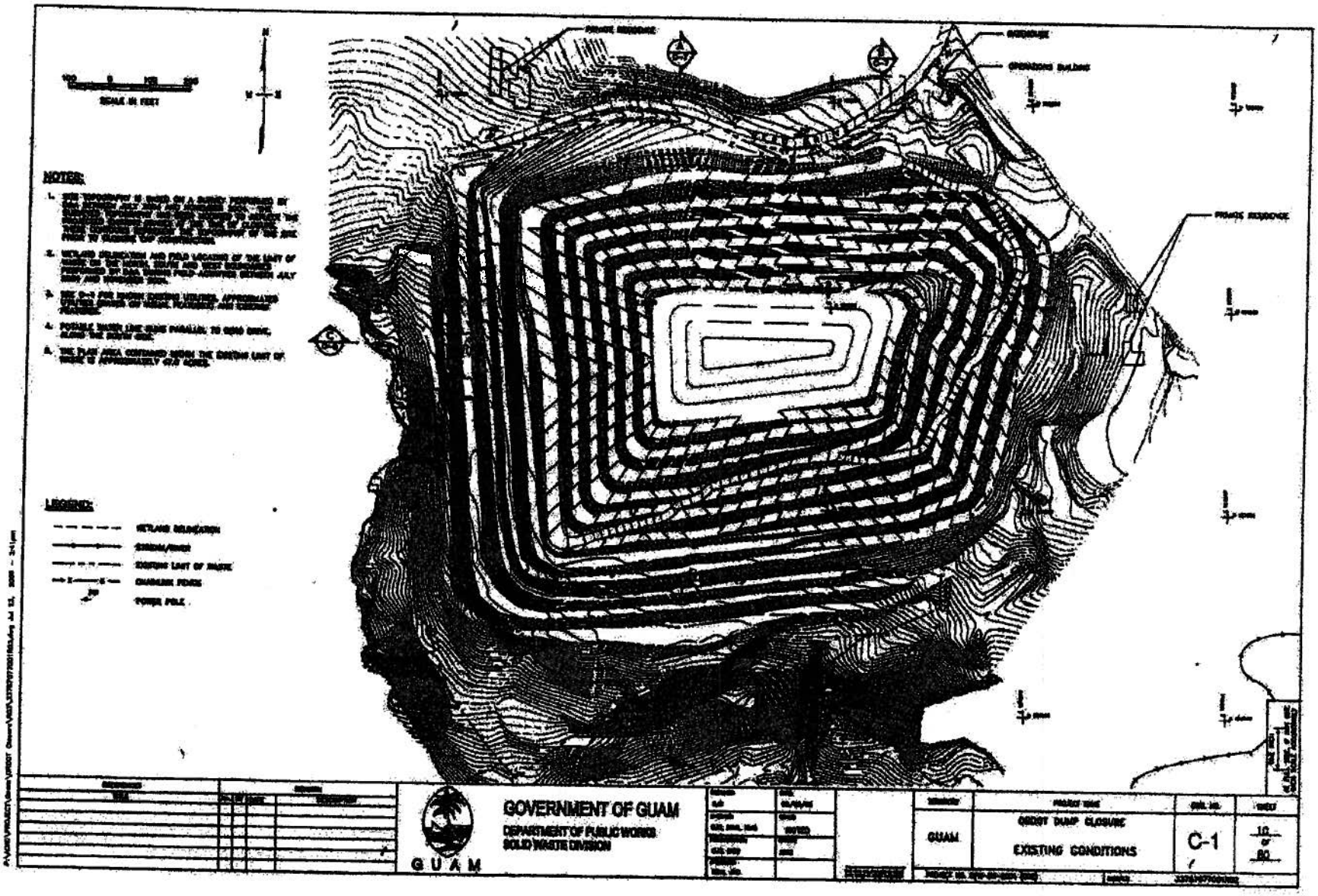
SURVEY CONTROL MONUMENT COORDINATES

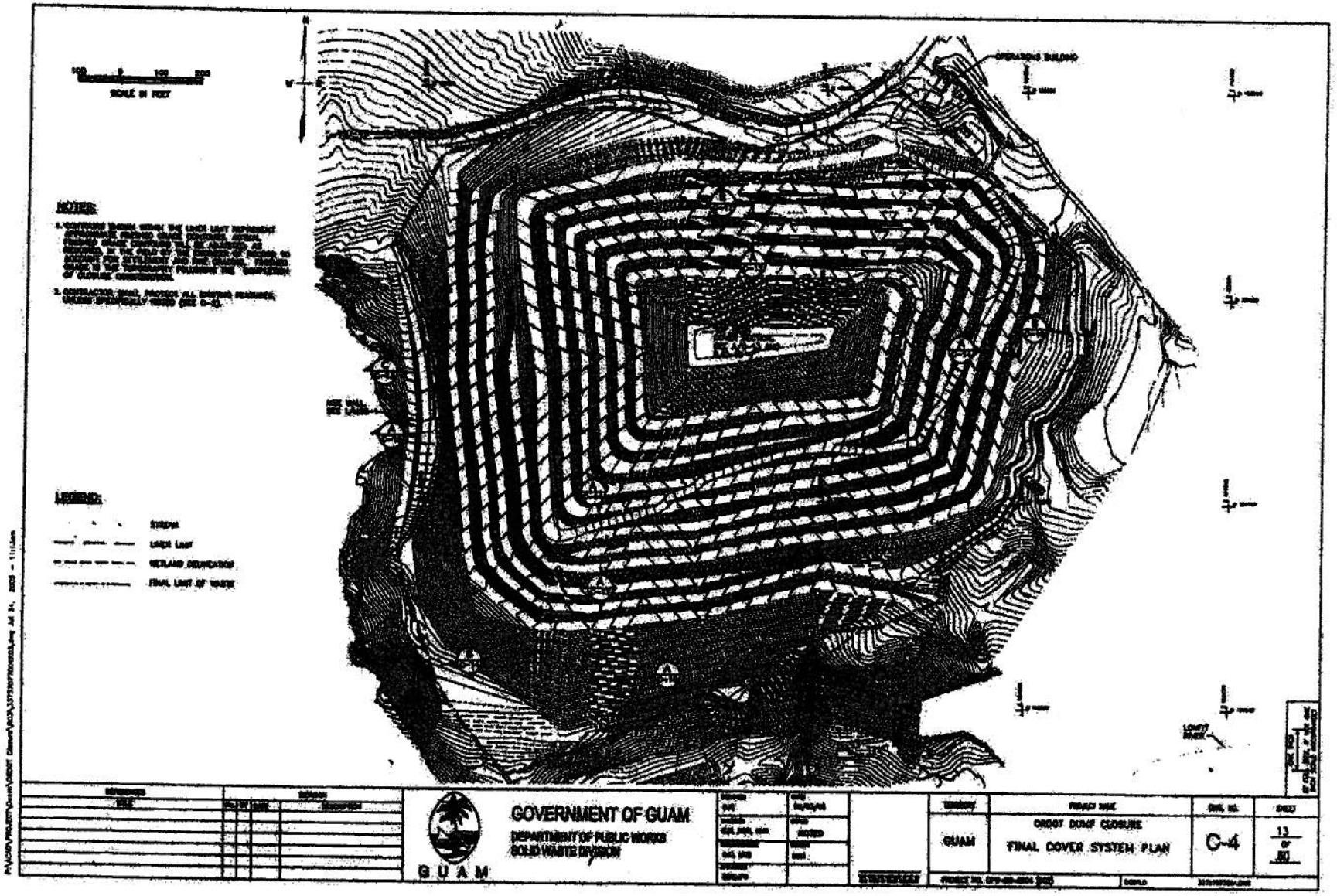
POINT NO.	NORTHING	EASTING	ELEV
GGN-1581	[illegible]	164,297.70	[illegible] FT.
GGN-[illegible]	[illegible]	[illegible]	[illegible] FT.
CP-1	[illegible]	[illegible]	[illegible] FT.

GUAM

GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION

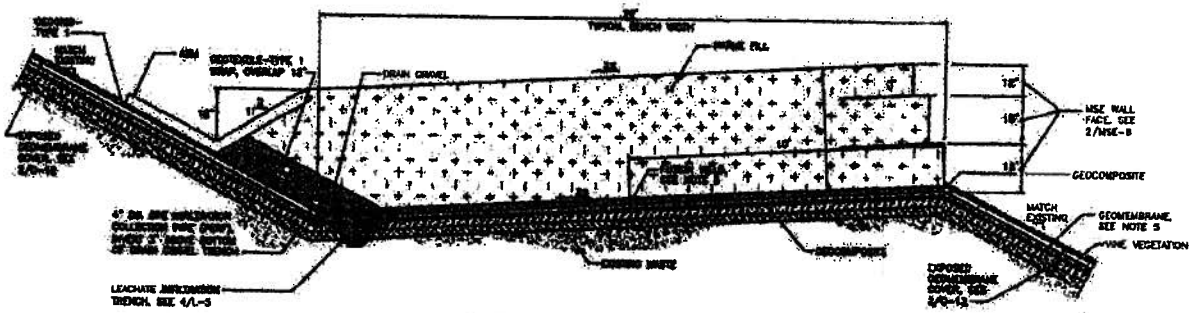
TERRITORY	PROJECT NAME	DWG. NO.	SHEET
GUAM	ORDOT DUMP CLOSURE SITE PLAN AND GENERAL NOTES	G-4	4 OF 80


NOTES:
LEGEND:
PRIVATE RESIDENCE
OPERATIONS BUILDING
GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION
GUAM
OROT DUMP CLOSURE
EXISTING CONDITIONS
C-1

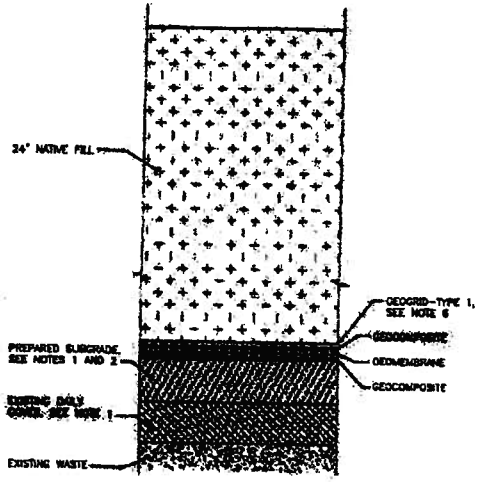

SCALE IN FEET
NOTES:
LEGEND:
GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION
GUAM
GUAM
ORDOT DUMP CLOSURE
FINAL COVER SYSTEM PLAN
C-4

NOTES:

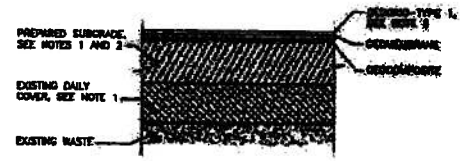
1. THICKNESS OF EXISTING DAILY COVER SOIL VARIES. ADD PREPARED SUBGRADE AS NEEDED TO ENSURE A 6-INCH MINIMUM SOIL LAYER BETWEEN EXISTING WASTE AND GEOCOMPOSITE.
2. PLACE ADDITIONAL FILL OVER EXISTING DAILY COVER WHERE SOIL IS ABSENT OR REQUIRES GRADING TO ACHIEVE AN EVEN WORKING SURFACE.
3. EXCAVATION OF ALL TRENCHES SHALL BE COMPLETED IN ACCORDANCE WITH FEDERAL AND LOCAL REQUIREMENTS OF TRENCH EXCAVATIONS. CUT SLOPE OF TRENCH EXCAVATION SHALL BE DEPENDENT UPON THE COMPOSITION OF EXCAVATED MATERIAL AND DETERMINED BY A GEOTECHNICAL ENGINEER, AS REQUIRED.
4. EXISTING BENCHES ARE SLOPED AT A 3 PERCENT GRADE IN THE DIRECTION AWAY FROM THE DUMP. CONTRACTOR SHALL SLOPE THE BENCHES AT A 3 PERCENT GRADE IN THE DIRECTION TOWARD THE DUMP. GRADING SHALL BE PERFORMED PRIOR TO INSTALLING THE GEOCOMPOSITE.
5. INSTALL HDPE GEOMEMBRANE, IN THE DOWNSLOPE DIRECTION, ONE LIFT AT A TIME. FUSION WELD GEOMEMBRANE PANELS AT THE MIDPOINT OF EACH BENCH.
6. GEOGRID SHALL EXTEND A MINIMUM OF 20' INTO THE SLOPE SOIL COVER SECTION WHEN TRANSITIONING FROM EXPOSED GEOMEMBRANE COVER.



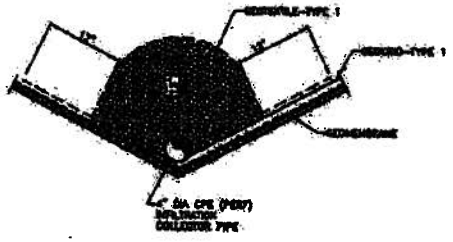
TYPICAL BENCH COVER SECTION (A, C-4)
NTS



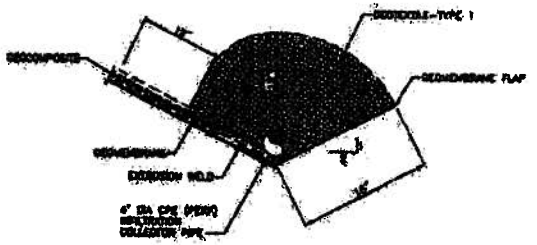
SLOPE SOIL COVER DETAIL (1, C-13, C-14, C-17)
NTS



EXPOSED GEOMEMBRANE COVER DETAIL (2, C-12, C-13, C-14, C-17)
NTS



INFILTRATION COLLECTOR (3, C-13)
NTS



INFILTRATION COLLECTOR WITH FLAP (4, C-14, C-16)
NTS

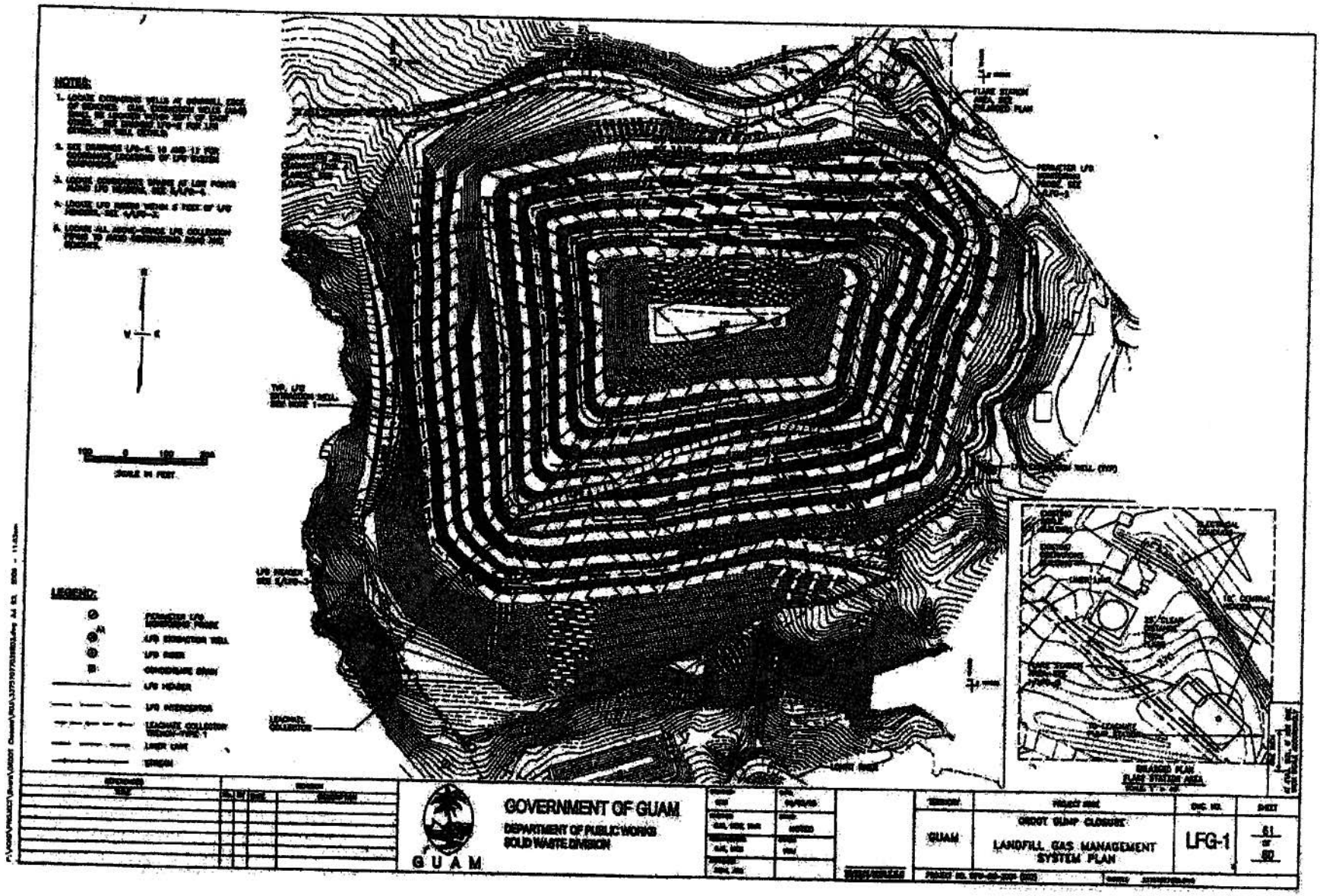
GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION

GUAM

ORDOT DUMP CLOSURE
FINAL COVER SYSTEM DETAILS 1/7

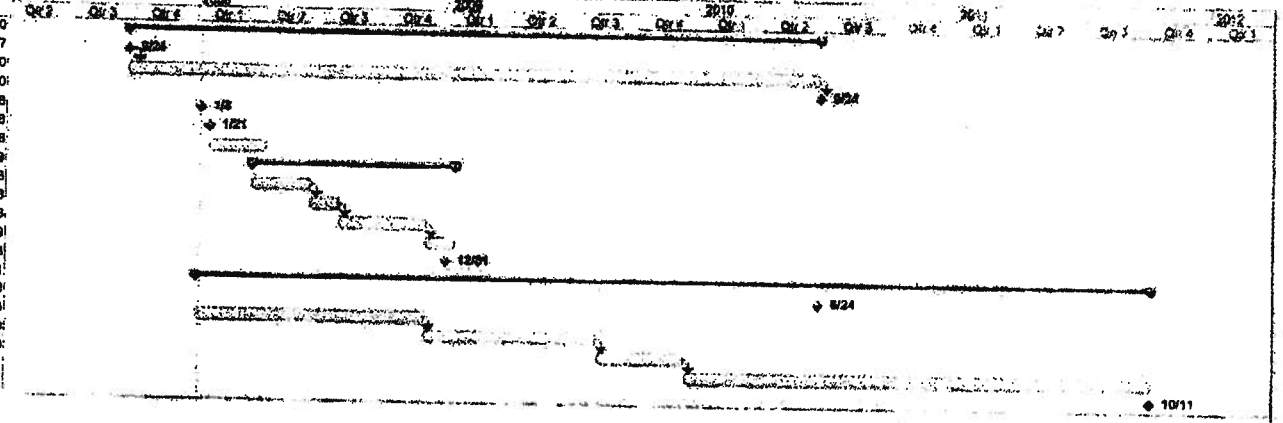
DWG. NO. C-12

SHEET 21 OF 30


NOTES:
LEGEND:
GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION
GUAM
ORDOT DUMP CLOSURE
LANDFILL GAS MANAGEMENT SYSTEM PLAN
LFG-1

APPENDIX C
Revised Closure Schedule

ID	Task Name	Duration	Start	Finish
1	Ordot Dump Operations	719 days?	Mon 9/24/07	Thu 6/24/10
2	Initial Closure Date	0 days	Mon 9/24/07	Mon 9/24/07
3	Dump Receiving Waste	719 days?	Mon 9/24/07	Thu 6/24/10
4	Estimated New Landfill Opening	0 days	Thu 6/24/10	Thu 6/24/10
5	Closure Plan	0 days	Tue 1/8/08	Tue 1/8/08
6	Action Plan	0 days	Mon 1/21/08	Mon 1/21/08
7	Begin SWPP Measures	60 days	Mon 1/21/08	Fri 4/11/08
8	Waste Stream Reduction Measures	211 days?	Mon 3/24/08	Mon 1/12/09
9	Design and Bid	61 days?	Mon 3/24/08	Mon 6/16/08
10	Phase I Trial	30 days	Tue 6/17/08	Mon 7/28/08
11	Material Recovery Phase II	90 days	Tue 7/29/08	Mon 12/1/08
12	Phase II Trial	30 days	Tue 12/2/08	Mon 1/12/09
13	Restrict Residential Haulers	0 days	Wed 12/31/08	Wed 12/31/08
14	Closure Design and Construction	984 days?	Thu 1/3/08	Tue 10/11/11
15	Cessation of Incoming Waste	0 days	Thu 6/24/10	Thu 6/24/10
16	Assessment Report and RI	237 days	Thu 1/3/08	Fri 11/28/08
17	Final Design	180 days	Mon 12/1/08	Fri 8/7/09
18	Dump Closure RFP/BID	80 days	Mon 8/10/09	Fri 12/11/09
19	Dump Closure Construction	477 days?	Mon 12/14/09	Tue 10/11/11
20	Closure Construction Completion	0 days	Tue 10/11/11	Tue 10/11/11



Project: Ordot Closure Schedule 1-08
Date: Mon 1/7/08

Task | Progress | Summary | External Tasks
Split | Milestone | Project Summary | External MileTask

APPENDIX D
Conditions to Enforce Consent Decree

IN THE UNITED STATES DISTRICT COURT

FOR THE TERRITORY OF GUAM

UNITED STATES OF AMERICA Plaintiff, v. GOVERNMENT OF GUAM, Defendant.	CIVIL CASE NO. 02-00022 **ORDER RE: CONDITIONS TO ENFORCE CONSENT DECREE**

The court, having considered the U.S. Magistrate Judge's Report & Recommendations ("Report") filed on July 6, 2007, as well as the parties' responses to the Report, supplemental briefs, and oral argument at the status hearings on October 23, 2007 and November 20, 2007, hereby DENIES the Government of Guam's ("GovGuam") Motion to Modify the Consent Decree and GRANTS the United States Government's Motion to Enforce the Consent Decree as follows herein.

The Consent Decree required GovGuam to operate a new landfill by September 23, 2007, to complete the closure of the Ordot Dump by October 23, 2007, and to cease all discharges from the Ordot Dump to waters of the United States by October 23, 2007. GovGuam is currently in violation of the above obligations under the Consent Decree. As of November 20, 2007, $2,855,000 in stipulated penalties have accrued for GovGuam's violations of the Consent Decree, and stipulated penalties continue to accrue on a daily basis.

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In light of GovGuam's failure to meet its obligations, and in particular, the failure of both the executive and legislative branches of the Government of Guam to present a unified position on how best to comply with the Consent Decree, this court is left with the duty and responsibility to consider various options which will ultimately result in the enforcement of the Decree. Such options include the imposition of fines, contempt proceedings and the appointment of a federal receiver to assume management and control of the Solid Waste Management division ("SWM") of the Department of Public Works ("DPW").

The court has carefully reviewed the U.S. Magistrate Judge's Report, which sets forth a series of interim measures designed to ensure GovGuam's compliance with the Consent Decree. Taking into consideration the reasons for GovGuam's current failure to timely comply with the Decree's deadlines, the court agrees in part with the recommended actions as delineated in the Report, and adopts such recommendations, to the extent set forth in this Order. The court notes that some of the recommendations if adopted will only serve to delay the closure of the dump. Accordingly, this court declines to order any measure that will prolong the closing of the Ordot Dump. Time is of the essence.

In addition, the court addresses issues herein that, although not specifically raised in the U.S. Magistrate Judge's Report, are nevertheless essential to ensure that GovGuam comes into compliance with the Consent Decree.

1. ACQUISITION OF THE DANDAN SITE

After extensive studies and research compiled by USEPA and the Guam EPA, GovGuam chose the Dandan site in 2005 as the best location for a landfill. According to Messrs. Tor Gudmudsen, a professional civil engineer, and Pankaj Arora, an environmental engineer for the USEPA Region IX, the Dandan site will pose no risk to the nearby water sources and no risk of leachate as the new landfill will have a minimum of a five-foot liner. *See* Docket No. 170. Additionally, a site visit to Dandan conducted by the court revealed the existence of monitoring wells designed to further prevent the risk of contamination.

There is nothing in the court's record to indicate that the selection of Dandan – the landfill site selected by GovGuam – will have a detrimental impact to the population of Guam or that

GovGuam is reconsidering its selection of the Dandan site. In fact, the Governor of Guam through his counsel, Mr. Ray Haddock, assured the court on November 20, 2007 that GovGuam is "prepared to move forward with the acquisition, and we still have the money set aside for the acquisition." *See* Docket No. 170 at 12.

In light of the Governor's commitment to move forward with the acquisition, and further, that GovGuam has set aside the funds, the court hereby orders that GovGuam negotiate the purchase of the Dandan site for the new landfill, or initiate eminent domain proceedings to acquire the site, on or before January 24, 2008.[1/]

2. THE DANDAN SITE'S HYDROGEOLOGICAL REPORT AND FINAL DESIGN

DPW has contracted with Tor Gudmundsen of TG Engineering to complete a hydrogeological study and the final design for the Dandan landfill. According to representations made to this court by GovGuam, the hydrogeological study and final design will be completed by mid-December 2007. Notwithstanding the near completion of the study, Mr. Gudmundsen has informed the court that his work has been halted due to the lack of payment by GovGuam. The resolution of this issue should be undertaken by both the executive and legislative branches of the Government of Guam. A written Progress Report on the status of payment, the study, and final design shall be filed by GovGuam no later than January 8, 2008.

To the extent that the Consent Decree remains in effect, all existing impediments to progress in constructing and operating the Dandan landfill are potentially subject to scrutiny and challenge.[2/] Moreover, GovGuam will be held to answer to such impediments, whether by way of fines or contempt proceedings or similar action within the powers of this court to enforce its own orders.

3. FINES

As of November 20, 2007, $2,855,000 in stipulated penalties have accrued for GovGuam's

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[1/] At the November 20, 2007 Status Hearing, Dominic Muna gave this date as when the Ordot Dump will be at capacity.

[2/] The court is deeply concerned that there is legislation enacted that seemingly prohibits the opening of the new landfill. It cannot be ignored that GovGuam has already contracted approximately $9.3 million in work under the Consent Decree.

violations of the Consent Decree, and stipulated penalties continue to accrue on a daily basis.[3]/ Accordingly, the court hereby orders this amount due in full and payable to the United States Government on or by January 24, 2008, for such violations.

4. CONTEMPT

Parties shall file briefs concerning the extent of this court's civil contempt powers. In particular, parties should address the entity, or the person(s) who may be held in contempt, and shall discuss the appropriate sanction(s) that may be imposed. The United States Government is hereby ordered to file its brief by January 8, 2008. GovGuam is ordered to file its response by January 14, 2008. The United States Government may file a reply by January 17, 2008.

5. RECEIVERSHIP

GovGuam's failure to abide by the mandates of the Consent Decree is disconcerting. The inaction and lack of interest in giving the issue of the Ordot Dump closure the priority that it is due ignores the current environmental and health concerns resulting from the failure to close the dump. In light of GovGuam's failure to act, the court ordered the parties to submit a list of qualified receivers recommended to assume operation and control of SWM by January 18, 2008. The court still finds such submissions necessary.

6. OPERATIONS REPORT AND CLOSURE OF ORDOT DUMP

Evidence has been presented to the court by DPW Superintendent, Mr. Dominic Muna, that by January 24, 2008, the Ordot Dump will have no available airspace for municipal solid waste. Mr. Muna also noted that DPW currently lacks equipment to compact material at the Ordot Dump. GovGuam has failed to present or offer any concrete proposals to ameliorate these problems.

Accordingly, the court orders, with respect to the operations and closure of Ordot Dump, the following:

A. GovGuam shall file an Action Report by January 21, 2008. The report shall provide an estimate of the remaining airspace at the Ordot Dump and set forth a detailed

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[3]/ This figure is based on the figure the United States submitted in its brief filed on November 21, 2007. *See* Docket No. 167. In subsequent pleadings, GovGuam did not dispute that amount.

explanation of the steps GovGuam intends to take concerning municipal solid waste disposal when the Ordot Dump is closed and the new landfill is not yet operational.

B. GovGuam shall file an Ordot Dump Closure Report to the court, and copies shall be served to USEPA and Guam EPA, no later than January 8, 2008. The report shall contain a list of required actions that are needed to prepare the Ordot Dump site for closure and a schedule that corresponds to the implementation and completion of each action.

C. USEPA and Guam EPA shall use their best efforts to review and file comments regarding the Ordot Dump Closure Report to GovGuam and this court, by January 14, 2008.

D. Upon receipt of USEPA and Guam EPA's comments, if any, GovGuam shall respond to and/or incorporate USEPA and Guam EPA's comments in a Revised Ordot Dump Closure Report, which shall then be due to this court no later than January 17, 2008.

7. **PUBLIC AUDITOR'S REPORT**

The Public Auditor issued a Performance Audit entitled "Department of Public Works Commercial Tipping Fees," OPA Report No. 07-08 (August 2007). *See* Docket No. 138. The Public Auditor identified the following deficiencies at DPW: (1) an inefficient billing and collection process; (2) the commercial haulers' continued use of the Ordot Dump despite being delinquent on payments to DPW; (3) DPW's loss of an estimated $4 million in revenue from October 2003 to January 2007 due to DPW's inability to provide service to 12,000 residential customers; (4) the loss of an undetermined amount of revenue since 1997 because of an inoperable weigh scale at the Ordot Dump; (5) the loss of an undetermined amount of revenue due to the lack of procedures to bill and collect from government agencies that use Ordot Dump; (6) DPW's inability to enforce penalties against commercial haulers for non-payment, due to the lack of service agreements and contracts for the collection and disposal of solid waste; it does not have the ability to enforce penalties such as denying access to the Ordot Dump to commercial haulers for non-payment; and (7) the loss of approximately $43,470 in tipping fee revenues from April 2006 to January 2007 due to payment

exemptions to all village Mayors.

The Performance Audit also provided a list of specific recommendations to the DPW Director and the Department of Administration Director. *See* OPA Report No. 07-08 (Aug. 2007) at 21.

In order to ensure that GovGuam promptly assesses and/or implements the Public Auditor's recommendations, the court hereby orders that GovGuam shall submit a Response to Performance Audit Recommendations to the court by February 14, 2008. In the Response, GovGuam shall provide details regarding the actions it has taken to implement the Public Auditor's recommendations. If for some reason GovGuam has not implemented a recommendation, GovGuam shall provide a schedule for its planned implementation. If GovGuam does not plan to implement any recommendation in the Performance Audit, GovGuam shall also provide a detailed explanation of its reasons for not implementing the recommendation and shall propose an alternate plan, together with an implementation schedule, to address the underlying problem identified in the Performance Audit.

8. MONTHLY STATUS HEARINGS AND SITE VISITS

The court hereby gives notice that a status hearing shall be held every month to determine: (1) whether GovGuam is in compliance with this Order; (2) the steps GovGuam has taken to close the Ordot Dump; (3) the progress GovGuam has made in opening the new landfill at Dandan; and (4) whether the court should order additional measures to ensure GovGuam's continued progress toward compliance with the Consent Decree. For such time as the Ordot Dump remains operational, GovGuam shall file a declaration under oath by the Governor and DPW Director that GovGuam has provided sufficient daily cover over the trash at the Ordot Dump. Such declaration shall be filed one week prior to the scheduled status hearing(s).[4/]

The court also gives notice that monthly site visits will occur to the Ordot Dump, the Lonfit River, the Dandan landfill site, the military landfill sites on Guam, DPW's transfer stations, or other sites the court deems to be relevant to this matter. The court invites every member of the Legislature to attend any of the site visits. Upon visiting the Ordot Dump, one cannot help but appreciate more acutely the gravity of the situation.

4/ The filing of these declarations will no longer be required upon the closure of the Ordot Dump.

The court hereby orders the personal appearance of Governor of Guam,[5] the A[illegible] Speaker,[6] Senator Espaldon, DPW Director Larry Perez, DPW's Project Manager for the Co[illegible] Decree, and Guam EPA Administrator Lorilee T. Crisostomo at all monthly status hearings and [illegible] visits. In light of her past participation and knowledge in this matter, the court also requires [illegible] Cynthia U. Jackson also personally appear at all status conferences and site visits as long as s[illegible] employed by DPW.

9. SOLID WASTE LAW REVIEW COMMISSION

In his Report, the U.S. Magistrate Judge recommends that GovGuam establish a [illegible] Revision Committee to address GovGuam's general legislative policy regarding the closure of [illegible] Ordot Dump and the opening of a new landfill.

In response to the U.S. Magistrate Judge's Report, on July 23, 2007, GovGuam's Ac[illegible] Governor issued Executive Order 2007-09, wherein he recognized that "the Ordot Dump contin[illegible] to pose a threat to public and environmental health and must be closed pursuant to a Cons[illegible] Decree." The executive order also established a Solid Waste Law Review Commission ("LRC" [illegible] address solid waste management legislative policy for the Government of Guam.

Thus, because of the executive branch's direct response to the U.S. Magistrate Judg[illegible] recommendation regarding the Law Review Commission, the court need not address the merits [illegible] the U.S. Magistrate Judge's recommendation.[7]

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[5] If the Governor is unable to attend, he may designate the Lieutenant Governor to attend.

[6] If the Acting Speaker is unable to attend, he may designate the Vice-Speaker to attend.

[7] It should be noted that while this court's assessment of the U.S. Magistrate Judg[illegible] recommendation regarding the Law Review Commission has been rendered moot by virtue [illegible] Executive Order 2007-09, the court would have been inclined to reject the U.S. Magistrate Judge[illegible] recommendation in this regard. While the LRC has shown its commitment to the process, the co[illegible] recognizes its inherent limitation. The LRC is without the aid of environmental and engineeri[illegible] professionals and the actual authority to implement needed measures. With that said, it is the court [illegible] view that any further delegation of responsibility to the LRC only serves to remove ar[illegible] accountability and responsibility held by the island's elected officials.

10. SOLID WASTE MANAGEMENT'S RECONSTITUTION AS A PUBLIC CORPORATION

The U.S. Magistrate Judge through his Report also recommended that DPW's SWM be reconstituted as a public corporation under the oversight of the Consolidated Commission on Utilities ("CCU"). While the court recognizes that incorporation may be a solution to accomplish the mandates of the Consent Decree and should be considered, the court can find no authority by which it may explicitly order DPW, an entity of the executive branch, to reorganize and move in this direction. Accordingly, the court declines to adopt such recommendation.[1]/

It is without a doubt the responsibility of the Governor of Guam and every member of the Guam Legislature to diligently ensure that the Ordot Dump is closed and that the new landfill at Dandan be opened. It cannot be overemphasized that, at the end of the day, it will take a commitment and concerted effort by both the executive and legislative branches of the Government of Guam to solve one of the most urgent crises facing the island and its people.

The court retains its jurisdiction to enforce both this Order and the Consent Decree, and will closely monitor GovGuam's progress in moving toward eventual compliance with the terms of the Consent Decree.[2]/

IT IS SO ORDERED.

/s/ Frances M. Tydingco-Gatewood
Chief Judge
Dated: Dec 14, 2007

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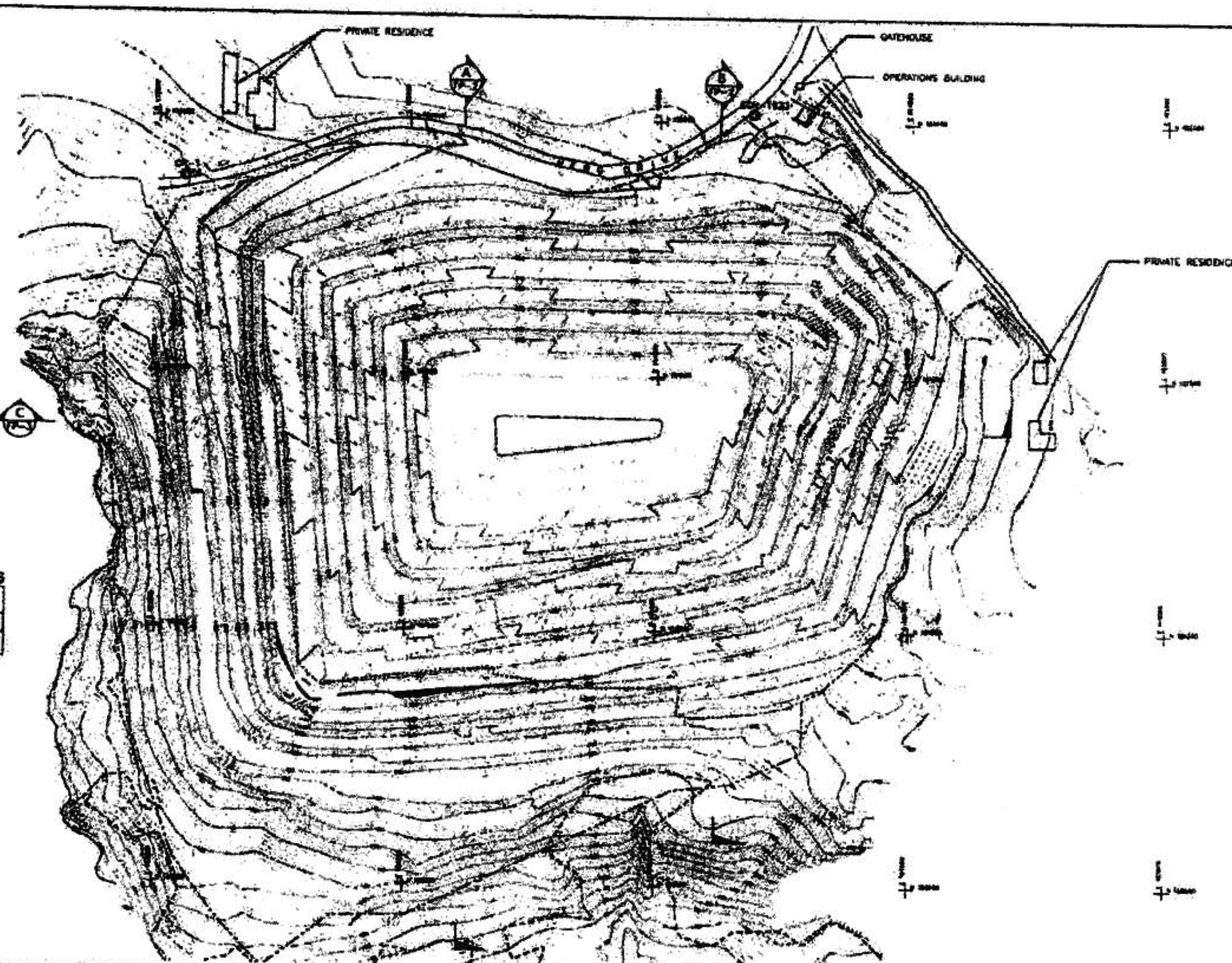
[1]/ While the court declines to adopt the recommendation that SWM be reconstituted as a public corporation under the oversight of the CCU, it does not appear that DPW is prohibited from seeking assistance directly from the CCU. Additionally, GovGuam is cautioned that the process of any incorporation will not serve as justification for further delay.

[2]/ The January schedule is as follows: the site visit is set for January 23, 2008, at 8:30 a.m. at the Ordot Dump followed by the status hearing on January 24, 2008 at 9:00 a.m.

APPENDIX E
Filling Plan



100 0 100 200
SCALE IN FEET

N W E

NOTES:

1. EXISTING CONTOURS ARE FROM A SURVEY PERFORMED BY DUENAS AND ASSOCIATES, INC. BETWEEN JULY 2004 AND NOVEMBER 2004.
2. FINAL CONTOURS SHOW TOPOGRAPHY FOR FILLING THROUGH 2007.
3. THE AREA CONTAINED WITHIN THE FINAL LIMIT OF WASTE IS APPROXIMATELY 47.1 ACRES.

SURVEY CONTROL MONUMENT COORDINATES

POINT NO.	NORTHING	EASTING	ELEV
GGN-1923	181,882.05	183,092.37	227.7 FT
CP-1	182,017.09	184,186.12	276.3 FT

LEGEND

NEW FILLING DELINEATION
FINAL LIMIT OF WASTE
WETLAND DELINEATION
CP-1 SURVEY CONTROL MONUMENT

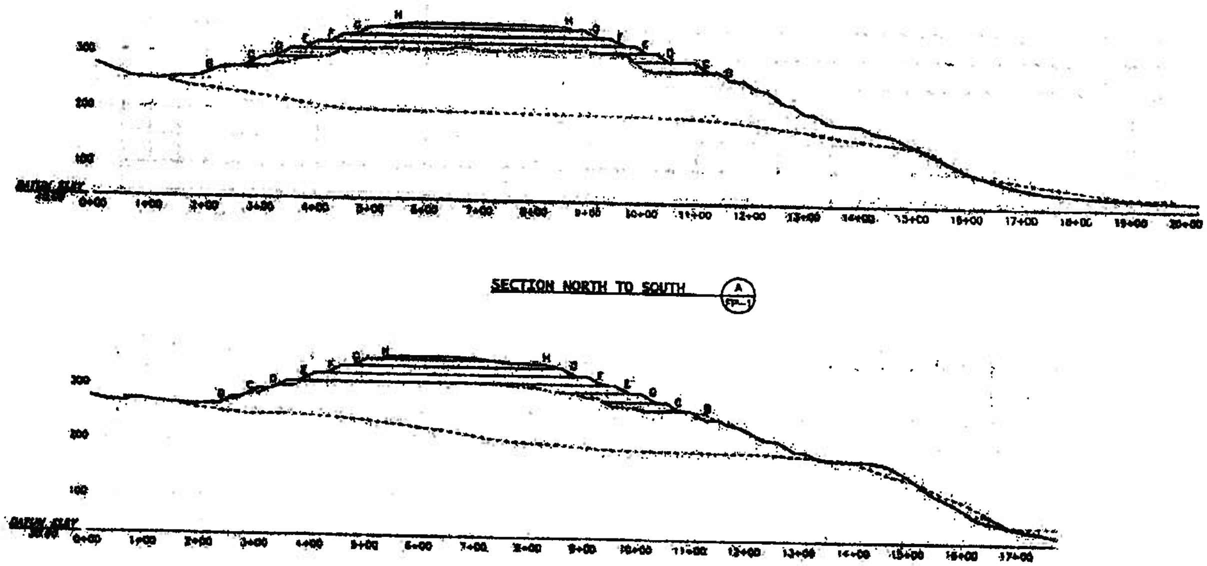
REFERENCES | REVISIONS

GUAM

GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION

DESIGNED: C. CASTRO	DATE: 08/03/05	TERRITORY: GUAM	PROJECT NAME: ORDOT DUMP FINAL FILLING PLAN	DWG NO: FP-1
DRAWN: H. JORGSSEN	SCALE: NOTED			SHEET: OF
CHECKED: C. CASTRO	DESIGN: T. PHAM	PROJECT NO: DPW-SW-2004 (002)	CADFILE: 73757077FP-1.DWG	
APPROVED: W. WALLACE				

P:\GAO\PROJECT\Guam\ORDOT Closure\Operations Plan 2\37570777FP-1.dwg Aug 05, 2005 - 4:11pm



SECTION NORTH TO SOUTH (A / FP-1)

SECTION NORTH TO SOUTH (B / FP-1)

NOTES:

1. PRE-FILLING TOPOGRAPHY IS BASED ON A TOPOGRAPHIC MAP FROM A REPORT TITLED OPERATIONAL PLAN FOR SOLID WASTE MANAGEMENT, DATED DECEMBER 1970, AND PREPARED BY GREENLEAF/TELESCA-ANN

LEGEND:

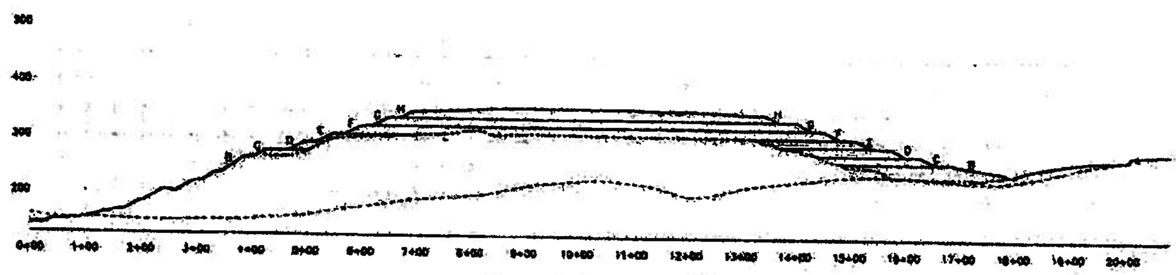
- ———— FILLING PLAN SURFACE
- —·—·—· 2004 SURFACE
- - - - - - PRE-FILLING SURFACE

100 0 100 200
SCALE IN FEET

GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION
GUAM

TERRITORY	PROJECT NAME	DWG NO	SHEET
GUAM	ORDOT DUMP CROSS SECTIONS 1/2	FP-2	OF

PROJECT NO. DPW-SW-2004 (002)
CADFILE 33757077FP-3



SECTION WEST TO EAST

NOTES:

1. PRE-FILLING TOPOGRAPHY IS BASED ON A TOPOGRAPHIC MAP FROM A REPORT TITLED OPERATIONAL PLAN FOR SOLID WASTE MANAGEMENT, DATED DECEMBER 1970 AND PREPARED BY GREENLEAF/TELESCA-AHH

LEGEND:

- FILLING PLAN SURFACE
- 2004 SURFACE
- PRE-FILLING SURFACE

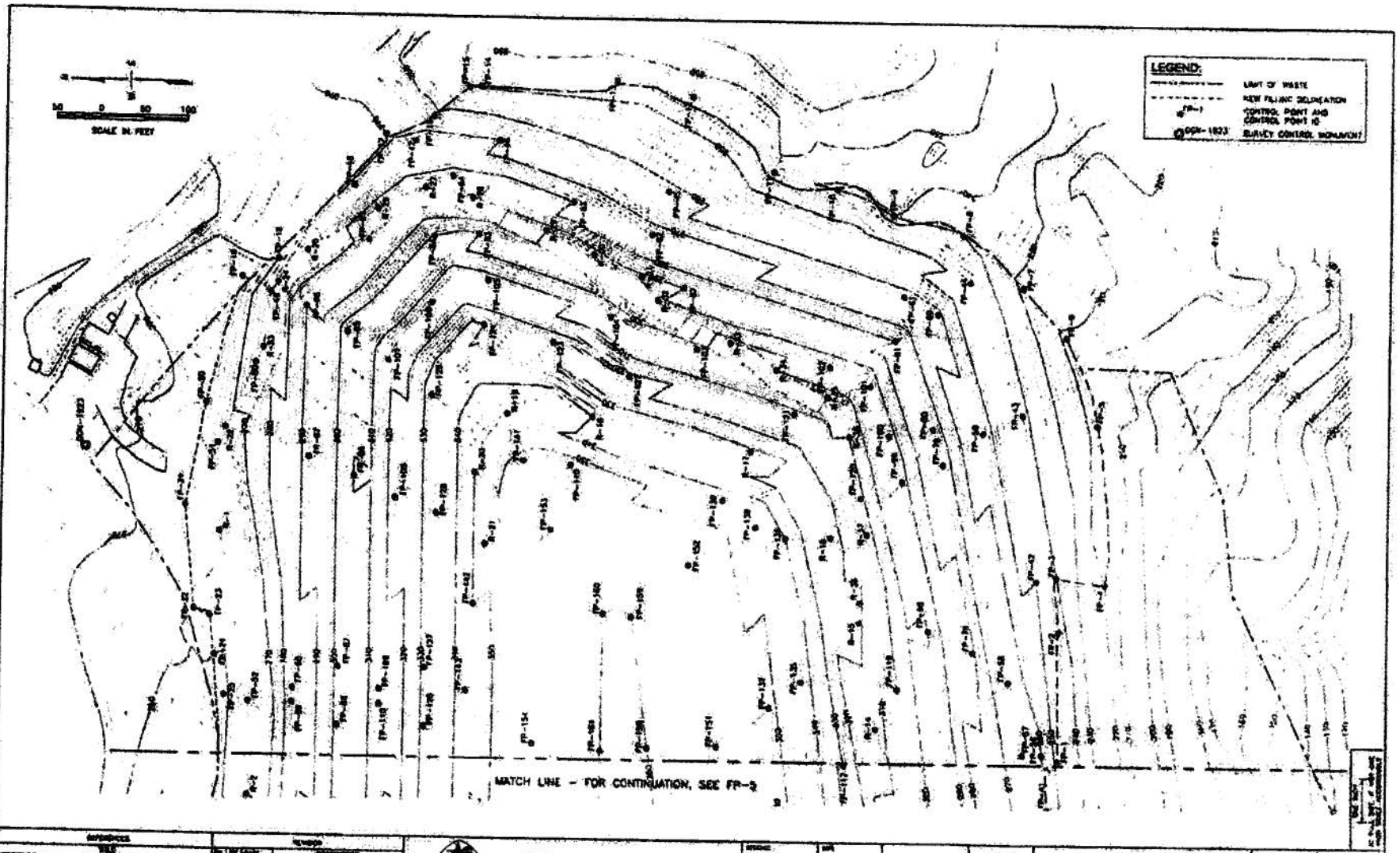
100 0 100 200

SCALE IN FEET

GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION

GUAM

TERRITORY	PROJECT NAME	DWG. NO.	SHEET
GUAM	ORDOT DUMP FINAL FILLING CROSS SECTIONS 2/2	FP-3	

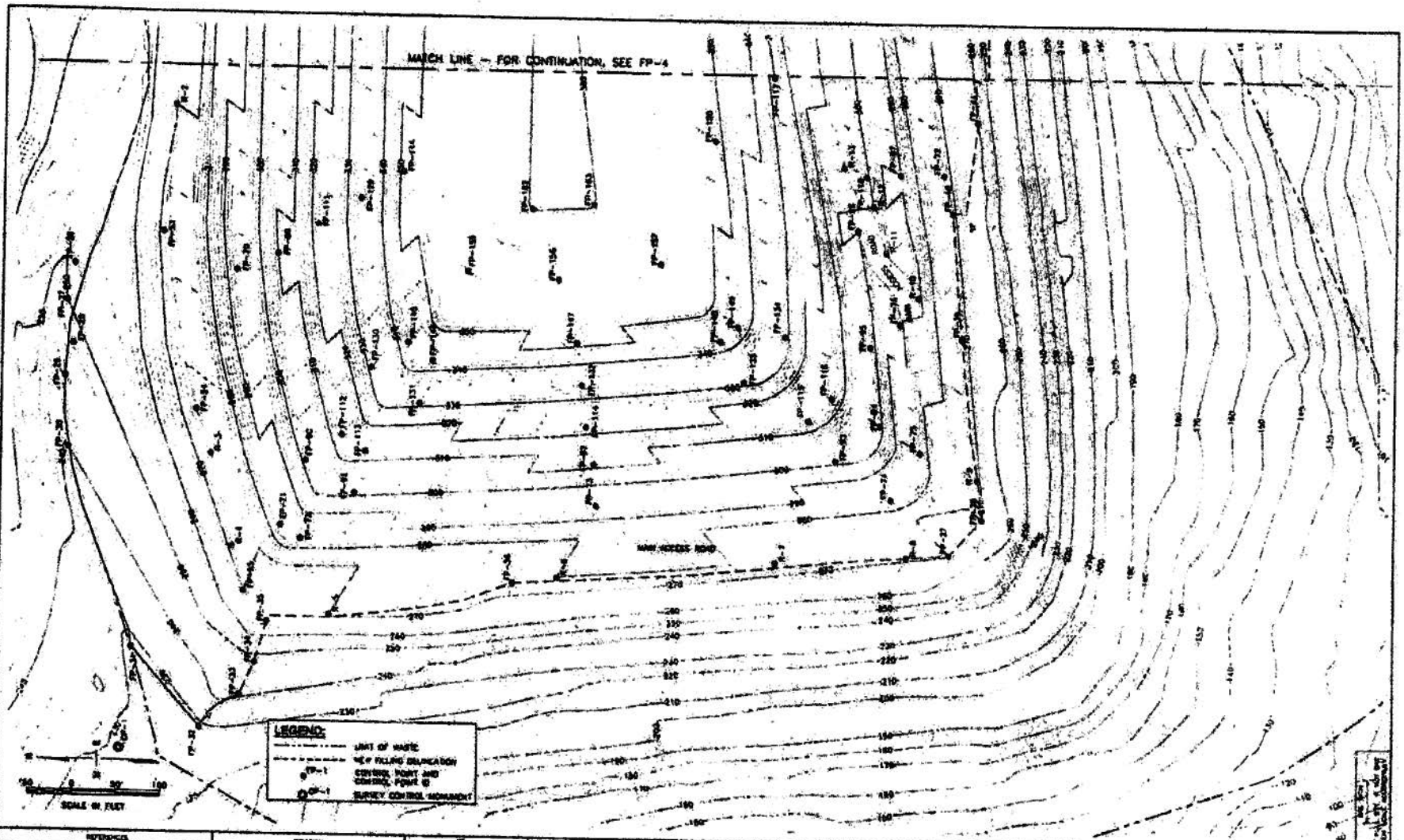


GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION

GUAM

TERRITORY	PROJECT NAME	DRG NO	SHEET
GUAM	ORDOT DUMP FINAL FILLING CONTROL POINTS PLAN 1/2	FP-4	— OF —

PROJECT NO. DPW-SW-2004 (002)


MATCH LINE – FOR CONTINUATION, SEE FP-4
NAVY HOUSES ROAD
LEGEND:
LIMIT OF WASTE
NEW FILLING DELINEATION
CONTROL POINT AND CONTROL POINT ID
SURVEY CONTROL MONUMENT
SCALE IN FEET
0
50'
100
GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION
GUAM
TERRITORY
GUAM
PROJECT NAME
ORDOT DUMP
FINAL FILLING
CONTROL POINTS PLAN 2/2
DWG NO
FP-5
SHEET

NOTES:

1. CONTROL POINTS ARE SHOWN ON FP-4 AND FP-5.
   CONTROL POINTS ARE APPROXIMATE AND MAY DIFFER DUE TO CONSOLIDATION OF WASTE AND SETTLEMENT OF SURFACE.

COORDINATES FOR FILLING PLAN CONTROL POINT LOCATIONS

CONTROL POINT	NORTHING	EASTING	ELEVATION
FP-1	[illegible]	163640.1	248.0
FP-2	1509897.5	163888.1	244.0
FP-3	[illegible]	164051.0	240.0
FP-4	[illegible]	164042.9	220.0
FP-5	[illegible]	[illegible]	276.0
FP-6	1509892.7	164328.4	218.0
FP-7	[illegible]	[illegible]	226.0
FP-8	1510003.6	[illegible]	252.0
FP-9	1510084.2	[illegible]	240.0
FP-10	1511181.0	[illegible]	240.0
FP-11	1511224.4	[illegible]	242.0
FP-12	1511319.5	[illegible]	243.0
FP-13	[illegible]	[illegible]	244.0
FP-14	1511568.7	[illegible]	248.0
FP-15	[illegible]	164800.9	250.0
FP-16	[illegible]	[illegible]	262.0
FP-17	1511677.2	[illegible]	270.0
FP-18	1511798.1	[illegible]	270.0
FP-19	[illegible]	[illegible]	264.0
FP-20	[illegible]	164137.6	258.0
FP-21	1511801.7	[illegible]	264.5
FP-22	1511800.1	164001.9	263.5
FP-23	[illegible]	[illegible]	262.0
FP-24	[illegible]	[illegible]	260.5
FP-25	[illegible]	[illegible]	250.0
FP-26	[illegible]	[illegible]	252.0
FP-27	[illegible]	[illegible]	230.0
FP-28	[illegible]	163514.1	248.5
FP-29	1511948.7	163478.0	246.0
FP-30	[illegible]	163387.1	240.0
FP-31	[illegible]	[illegible]	238.0
FP-32	1511781.0	[illegible]	220.0
FP-33	[illegible]	[illegible]	247.0
FP-34	[illegible]	[illegible]	246.0
FP-35	[illegible]	[illegible]	248.0
FP-36	[illegible]	[illegible]	277.5
FP-37	[illegible]	[illegible]	269.5
FP-38	[illegible]	[illegible]	265.5
FP-39	1509914.4	[illegible]	273.5
FP-40	[illegible]	[illegible]	271.5
FP-41	[illegible]	163765.1	280.0
FP-42	[illegible]	[illegible]	250.0
FP-43	[illegible]	164337.1	241.5
FP-44	[illegible]	[illegible]	247.5
FP-45	[illegible]	[illegible]	261.5
FP-46	[illegible]	[illegible]	269.5
FP-47	[illegible]	[illegible]	271.5
FP-48	1511713.1	[illegible]	271.5
FP-49	[illegible]	[illegible]	278.0
FP-50	[illegible]	[illegible]	276.0

COORDINATES FOR FILLING PLAN CONTROL POINT LOCATIONS

CONTROL POINT	NORTHING	EASTING	ELEVATION
FP-51	[illegible]	164182.3	[illegible]
FP-52	[illegible]	[illegible]	[illegible]
FP-53	[illegible]	[illegible]	271.5
FP-54	[illegible]	[illegible]	275.5
FP-55	[illegible]	[illegible]	[illegible]
FP-56	[illegible]	[illegible]	[illegible]
FP-57	[illegible]	[illegible]	[illegible]
FP-58	[illegible]	[illegible]	[illegible]
FP-59	[illegible]	[illegible]	[illegible]
FP-60	[illegible]	[illegible]	281.5
FP-61	[illegible]	[illegible]	[illegible]
FP-62	[illegible]	[illegible]	[illegible]
FP-63	[illegible]	[illegible]	[illegible]
FP-64	[illegible]	[illegible]	[illegible]
FP-65	[illegible]	[illegible]	[illegible]
FP-66	[illegible]	[illegible]	[illegible]
FP-67	[illegible]	[illegible]	[illegible]
FP-68	[illegible]	163817.4	[illegible]
FP-69	[illegible]	[illegible]	[illegible]
FP-70	[illegible]	[illegible]	[illegible]
FP-71	1511701.3	[illegible]	[illegible]
FP-72	[illegible]	[illegible]	[illegible]
FP-73	[illegible]	[illegible]	[illegible]
FP-74	[illegible]	[illegible]	[illegible]
FP-75	[illegible]	[illegible]	[illegible]
FP-76	[illegible]	163537.1	[illegible]
FP-77	[illegible]	[illegible]	[illegible]
FP-78	[illegible]	[illegible]	281.5
FP-79	1510223.7	164179.1	275.5
FP-80	1510359.7	164270.3	279.5
FP-81	[illegible]	[illegible]	[illegible]
FP-82	[illegible]	[illegible]	[illegible]
FP-83	[illegible]	[illegible]	[illegible]
FP-84	[illegible]	164432.5	[illegible]
FP-85	[illegible]	[illegible]	[illegible]
FP-86	[illegible]	[illegible]	[illegible]
FP-87	[illegible]	[illegible]	301.5
FP-88	[illegible]	[illegible]	301.5
FP-89	[illegible]	[illegible]	[illegible]
FP-90	[illegible]	[illegible]	301.5
FP-91	[illegible]	[illegible]	301.5
FP-92	[illegible]	[illegible]	311.5
FP-93	[illegible]	[illegible]	301.5
FP-94	[illegible]	[illegible]	[illegible]
FP-95	[illegible]	[illegible]	[illegible]
FP-96	1510326.5	[illegible]	[illegible]
FP-97	[illegible]	163723.0	[illegible]
FP-98	[illegible]	[illegible]	[illegible]
FP-99	[illegible]	164129.2	293.5
FP-100	[illegible]	164213.0	293.5

COORDINATES FOR FILLING PLAN CONTROL POINT LOCATIONS

CONTROL POINT	NORTHING	EASTING	ELEVATION
FP-101	1511109.5	[illegible]	[illegible]
FP-102	1511134.8	[illegible]	[illegible]
FP-103	1511311.2	[illegible]	[illegible]
FP-104	1511417.8	[illegible]	307.5
FP-105	[illegible]	[illegible]	[illegible]
FP-106	[illegible]	[illegible]	[illegible]
FP-107	1511871.1	[illegible]	317.5
FP-108	[illegible]	[illegible]	[illegible]
FP-109	[illegible]	[illegible]	[illegible]
FP-110	[illegible]	[illegible]	[illegible]
FP-111	[illegible]	[illegible]	[illegible]
FP-112	[illegible]	[illegible]	[illegible]
FP-113	[illegible]	[illegible]	[illegible]
FP-114	[illegible]	[illegible]	[illegible]
FP-115	[illegible]	[illegible]	[illegible]
FP-116	[illegible]	[illegible]	[illegible]
FP-117	[illegible]	[illegible]	[illegible]
FP-118	1511027.5	[illegible]	301.5
FP-119	1511074.0	[illegible]	[illegible]
FP-120	1511179.1	[illegible]	311.5
FP-121	[illegible]	[illegible]	[illegible]
FP-122	[illegible]	[illegible]	[illegible]
FP-123	[illegible]	[illegible]	[illegible]
FP-124	[illegible]	[illegible]	[illegible]
FP-125	[illegible]	[illegible]	[illegible]
FP-126	[illegible]	[illegible]	[illegible]
FP-127	[illegible]	[illegible]	331.5
FP-128	[illegible]	[illegible]	[illegible]
FP-129	[illegible]	[illegible]	337.5
FP-130	[illegible]	[illegible]	331.5
FP-131	[illegible]	[illegible]	331.5
FP-132	[illegible]	[illegible]	[illegible]
FP-133	[illegible]	[illegible]	331.0
FP-134	[illegible]	[illegible]	337.5
FP-135	[illegible]	[illegible]	[illegible]
FP-136	[illegible]	[illegible]	[illegible]
FP-137	[illegible]	[illegible]	[illegible]
FP-138	[illegible]	[illegible]	345.5
FP-139	[illegible]	[illegible]	349.5
FP-140	[illegible]	[illegible]	353.5
FP-141	[illegible]	164177.6	353.5
FP-142	[illegible]	[illegible]	[illegible]
FP-143	[illegible]	[illegible]	[illegible]
FP-144	[illegible]	[illegible]	[illegible]
FP-145	[illegible]	[illegible]	[illegible]
FP-146	[illegible]	[illegible]	[illegible]
FP-147	[illegible]	[illegible]	[illegible]
FP-148	[illegible]	[illegible]	345.5
FP-149	[illegible]	[illegible]	[illegible]
FP-150	[illegible]	[illegible]	[illegible]
FP-151	[illegible]	[illegible]	[illegible]
FP-152	[illegible]	[illegible]	[illegible]
FP-153	[illegible]	[illegible]	[illegible]
FP-154	[illegible]	[illegible]	[illegible]
FP-155	[illegible]	[illegible]	[illegible]
FP-156	[illegible]	[illegible]	358.0
FP-157	[illegible]	[illegible]	[illegible]
FP-158	[illegible]	[illegible]	360.0
FP-159	[illegible]	[illegible]	360.0
FP-160	[illegible]	[illegible]	[illegible]
FP-161	[illegible]	[illegible]	[illegible]
FP-162	[illegible]	[illegible]	[illegible]
FP-163	[illegible]	[illegible]	[illegible]

COORDINATES FOR MAIN ACCESS ROAD CONTROL POINT LOCATIONS

CONTROL POINT	NORTHING	EASTING	ELEVATION
R-1	[illegible]	[illegible]	264.0
R-2	[illegible]	163789.0	270.0
R-3	1511782.1	[illegible]	278.0
R-4	[illegible]	[illegible]	272.0
R-5	[illegible]	[illegible]	270.0
R-6	[illegible]	[illegible]	278.0
R-7	[illegible]	[illegible]	276.0
R-8	[illegible]	[illegible]	[illegible]
R-9	[illegible]	163374.8	[illegible]
R-10	[illegible]	[illegible]	292.0
R-11	[illegible]	[illegible]	296.0
R-12	[illegible]	[illegible]	300.0
R-13	[illegible]	163730.1	304.0
R-14	[illegible]	[illegible]	318.0
R-15	[illegible]	[illegible]	[illegible]
R-16	[illegible]	[illegible]	328.0
R-17	[illegible]	164182.3	332.0
R-18	[illegible]	[illegible]	340.0
R-19	[illegible]	[illegible]	[illegible]
R-20	[illegible]	[illegible]	350.0
R-21	[illegible]	[illegible]	[illegible]

COORDINATES FOR SERVICE ROAD CONTROL POINT LOCATIONS

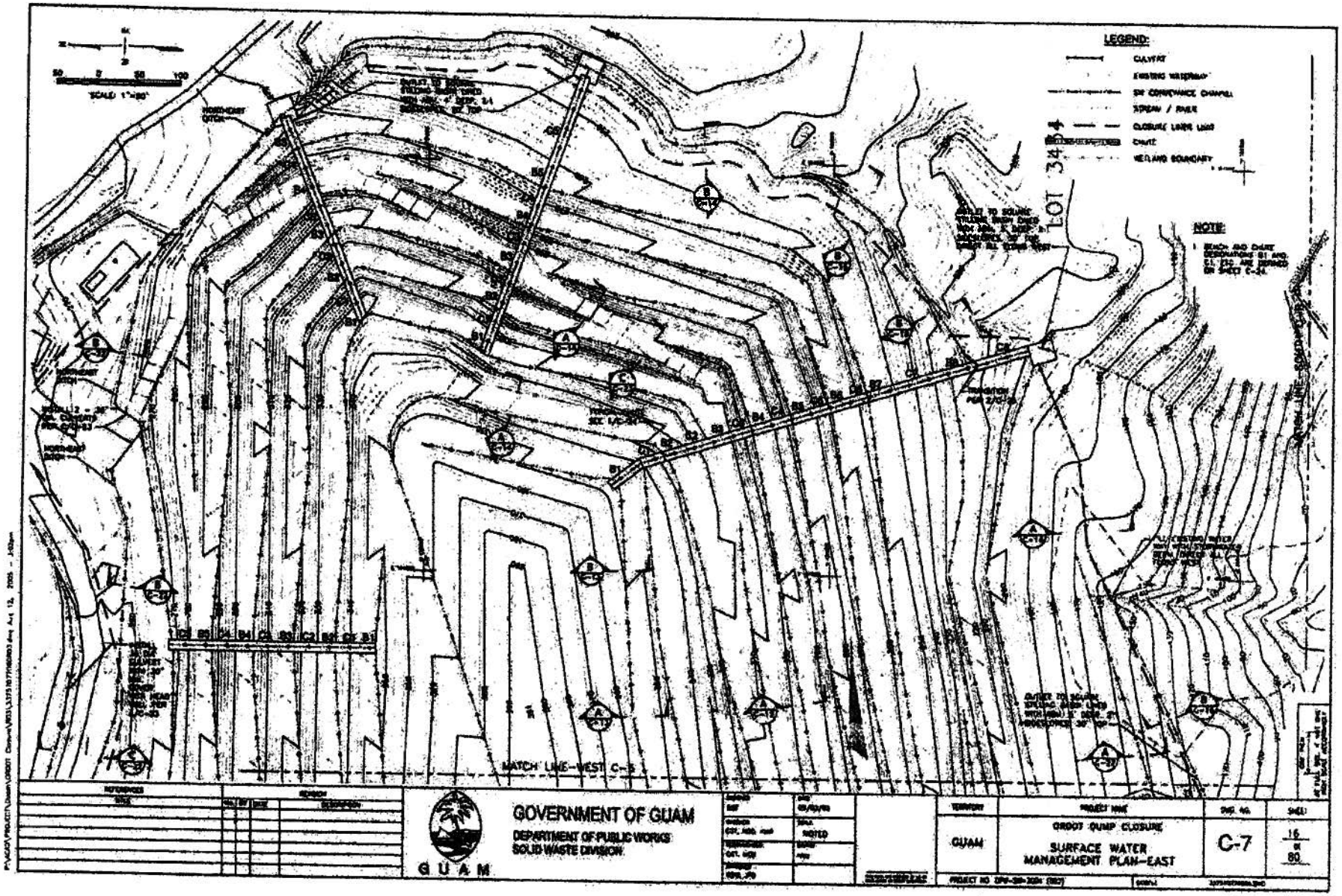
CONTROL POINT	NORTHING	EASTING	ELEVATION
R-22	[illegible]	164240.0	[illegible]
R-23	[illegible]	[illegible]	270.0
R-24	[illegible]	164376.7	278.0
R-25	[illegible]	164413.7	274.0
R-26	[illegible]	[illegible]	[illegible]
R-27	[illegible]	[illegible]	[illegible]
R-28	[illegible]	[illegible]	[illegible]
R-29	[illegible]	[illegible]	[illegible]
R-30	[illegible]	[illegible]	[illegible]
R-31	[illegible]	[illegible]	292.2
R-32	[illegible]	[illegible]	[illegible]
R-33	[illegible]	[illegible]	[illegible]
R-34	[illegible]	[illegible]	300.0
R-35	[illegible]	[illegible]	306.0
R-36	[illegible]	[illegible]	310.0
R-37	[illegible]	[illegible]	314.0
R-38	[illegible]	[illegible]	322.0

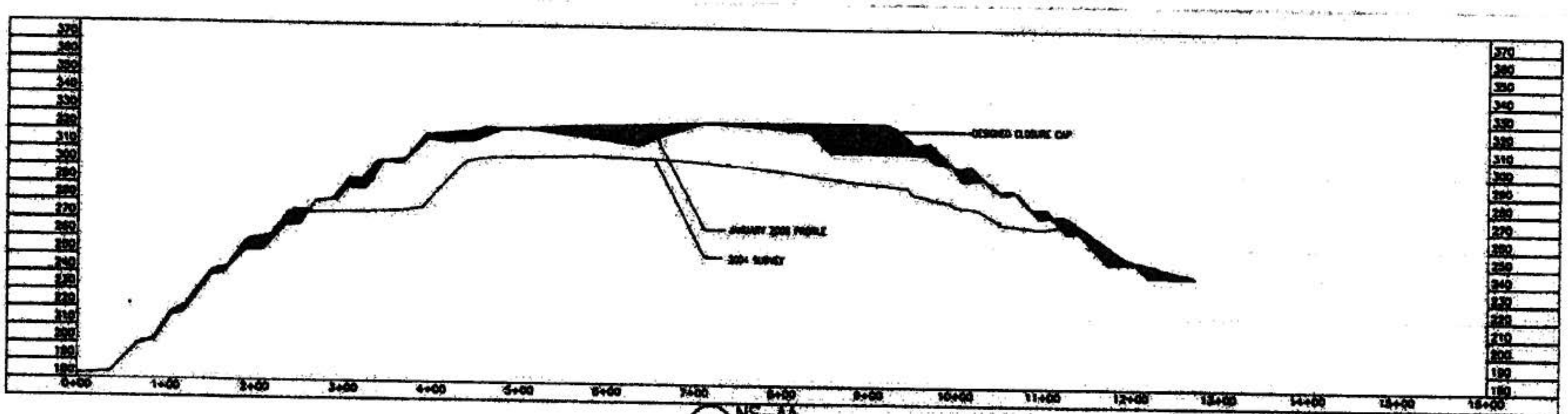
GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION

GUAM

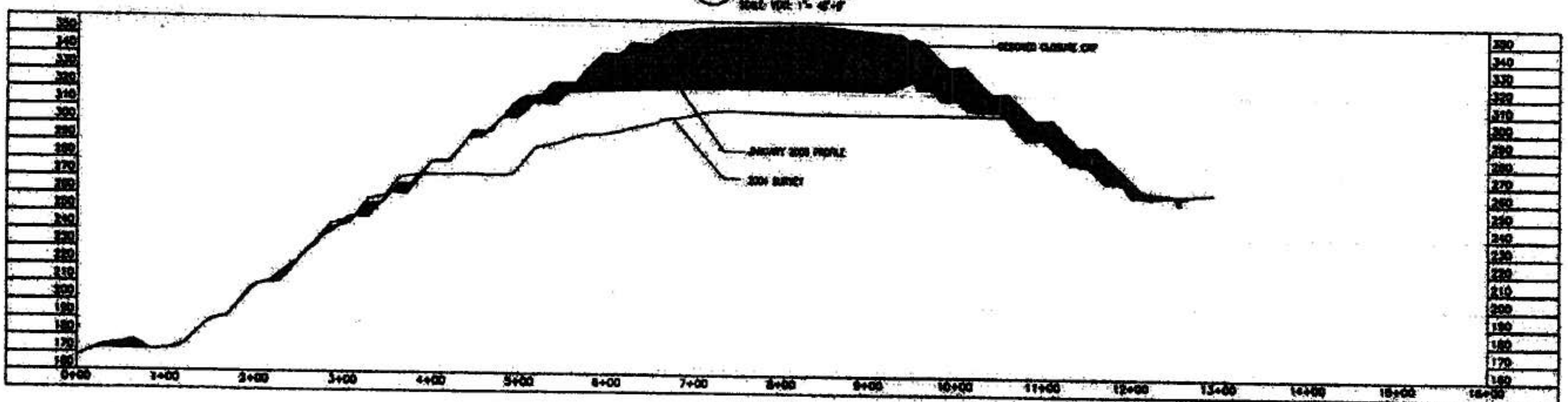
TERRITORY	GUAM
PROJECT NAME	ORDOT DUMP
	FINAL FILLING
	TABLE OF CONTROL POINTS
DWG NO	FP-6

EXHIBITS


LEGEND:
CULVERT
EXISTING WATERWAY
DIVERSION CHANNEL
STREAM / RIVER
CLOSURE LIMIT LINE
CHUTE
WETLAND BOUNDARY
NOTE:
LOT 34
MATCH LINE - WEST C-8
GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION
GUAM
GROOT DUMP CLOSURE
SURFACE WATER MANAGEMENT PLAN-EAST
C-7
16
80

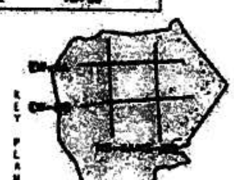


① NS–AA



② NS–BB

EXCESS FILL
AVAILABLE AIR SPACE

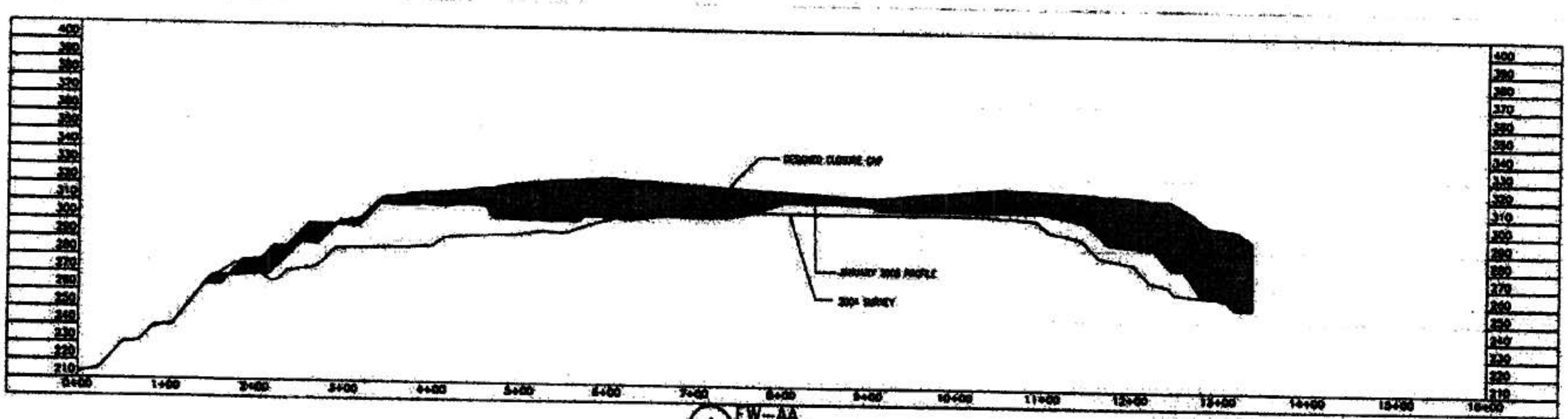


REFERENCES	REVISION

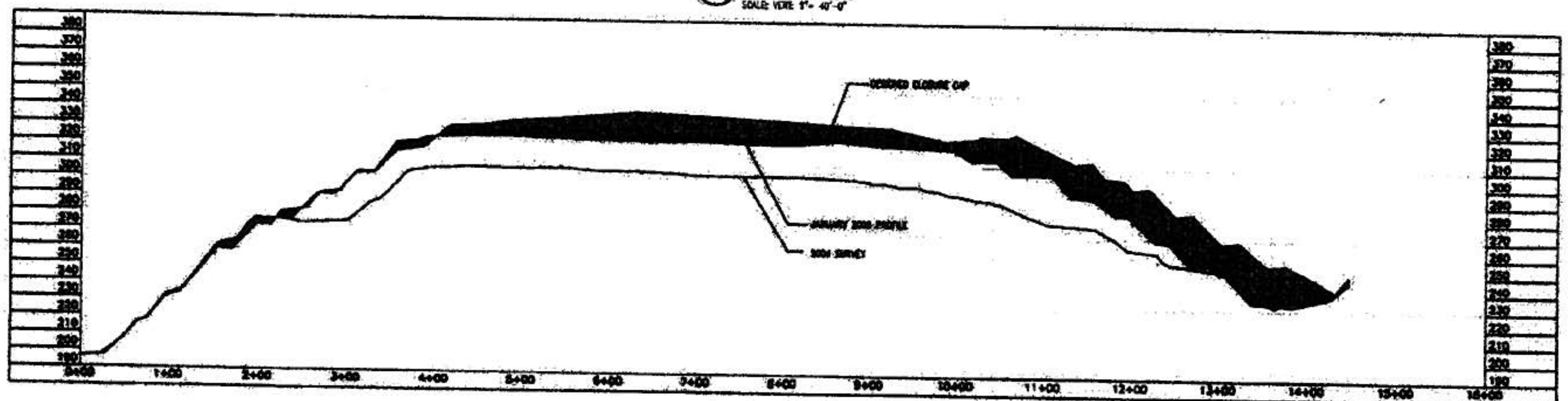
GUAM

GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION

TERRITORY	PROJECT NAME	DWG. NO.	SHEET
GUAM	ORDOT DUMP CLOSURE EXHIBIT 2A NORTH/SOUTH		OF

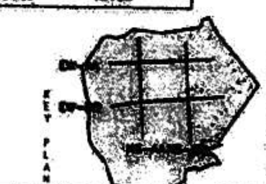


1 EW—AA
SCALE: HORIZ: 1" = 80'-0"
SCALE: VERT: 1" = 40'-0"



2 EW—BB
SCALE: HORIZ: 1" = 80'-0"

EXCESS FILL
AVAILABLE AIR SPACE



REFERENCES

REVISION

GUAM

GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC WORKS
SOLID WASTE DIVISION

TERRITORY	PROJECT NAME	DWG. NO.	SHEET
GUAM	ORDOT DUMP CLOSURE EXHIBIT 2B EAST/WEST		OF