

Munisport Landfill (aka Biscayne Landing)

Master Closure Plan Conformed Permit Application Modification #10

Client: Oleta Partners LLC

Issued: December 11, 2013

ATKINS

December 11, 2013

William "Lee" Martin, P.E.
Solid Waste Section, MS 4565
Department of Environmental Protection
Bureau of Solid and Hazardous Waste
2600 Blare Stone Road
Tallahassee, Florida 32399-2400

Re: Munisport Landfill (a.k.a. Biscayne Landing)
Closure Permit No. 0219514-001-SF
Conformed Permit Application - December 11, 2013
Modification No. 10 – Extension of Biscayne Landing Boulevard

Dear Mr. Martin:

On behalf of Oleta Partners, LLC and the City of North Miami, Atkins hereby submits one copy of the application for Modification No. 10 to the above referenced Florida Department of Environmental Protection (FDEP) closure permit and a computer disk containing one electronic copy of the application in Adobe format. Development and closure activities described in Modifications 3, 5 and 6 have been superseded by this new Modification which is based on a revised conceptual site development plan. This is a request for an intermediate modification to the closure permit and includes revisions to the following parts of the permit:

- Part O – Facilities referenced in Modifications 5 and 6 have been deleted as their construction has been canceled and superseded by the revised conceptual site development plan included in this modification. The Methane Gas Management Plan has been similarly updated to reflect the new conceptual site development plan. New methane gas barriers and monitoring stations have been added where underground utilities exit the site above the water table.
- Part P – The history of the landfill has been updated to reflect changes in the groundwater remediation system and recent construction and operation of Phase I of this system. References in Modifications 5 and 6 to facilities that were to be constructed, but since have been canceled, have been deleted. New construction of the extension of Biscayne Boulevard and its associated drainage and utilities has been added.
- Part Q – An updated Waste Relocation Plan reflecting the new conceptual site development plan has been included in this part.
- Part S – No modification to this part has been made, as the financial responsibility requirements are up-dated annually based on actual closure activities that have occurred during the previous year.

Once approval of these permit modifications is granted by FDEP, these changes will be incorporated into the document as normal text.

We are enclosing a check for the permit processing fee in the amount of \$3,750.00 in accordance with 62-701.320(4)(d).

We understand that you will distribute the electronic version of this application to the FDEP Southeast District, and to DERM Pollution and Remediation Section in Miami.

If you have any questions or comments regarding this application for the Closure Permit Modification please feel free to contact me at David.Deans@Atkinsglobal.com or at 407-806-4104.

Very truly yours,

David E. Deans, P.E., BCEE
Senior Consultant
Florida P.E. No. 31095

C: Darryl Lee, Oleta Partners, LLC
Herb Tillman, Oleta Partners, LLC
Stephen E. Johnson, City of North Miami



Florida Department of Environmental Protection
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, FL 32399-2400

DEP Form # 62-701.900(1)
Form Title Solid Waste Management Facility Permit
Effective Date 05-27-01

DEP Application No. _____
(Filled by DEP)

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**APPLICATION FOR A PERMIT TO CONSTRUCT,
OPERATE, MODIFY OR CLOSE
A SOLID WASTE MANAGEMENT FACILITY**

APPLICATION INSTRUCTIONS AND FORMS

Northwest District
160 Governmental Center
Pensacola, FL 32501-5794
850-595-8360

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-448-4300

Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
3804 Coconut Palm Dr.
Tampa, FL 33619
813-744-6100

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
941-332-6975

Southeast District
400 North Congress Ave.
West Palm Beach, FL 33401
561-681-6600

INSTRUCTIONS TO APPLY FOR A SOLID WASTE MANAGEMENT FACILITY PERMIT

I. General

Solid Waste Management Facilities shall be permitted pursuant to Section 403.707, Florida Statutes, (FS) and in accordance with Florida Administrative Code (FAC) Chapter 62-701. A minimum of four copies of the application shall be submitted to the Department's District Office having jurisdiction over the facility. The appropriate fee in accordance with Rule 62-701.315, FAC, shall be submitted with the application by check made payable to the Department of Environmental Protection (DEP).

Complete appropriate sections for the type of facility for which application is made. Entries shall be typed or printed in ink. All blanks shall be filled in or marked "not applicable" or "no substantial change". Information provided in support of the application shall be marked "submitted" and the location of this information in the application package indicated. The application shall include all information, drawings, and reports necessary to evaluate the facility. Information required to complete the application is listed on the attached pages of this form.

II. Application Parts Required for Construction and Operation Permits

- A. Landfills and Ash Monofills - Submit parts A,B, D through T
- B. Asbestos Monofills - Submit parts A,B,D,E,F,G,J,L,N, P through S, and T
- C. Industrial Solid Waste Facilities - Submit parts A,B, D through T
- D. Non-Disposal Facilities - Submit parts A,C,D,E,J,N,S and T

NOTE: Portions of some parts may not be applicable.

NOTE: For facilities that have been satisfactorily constructed in accordance with their construction permit, the information required for A,B,C and D type facilities does not have to be resubmitted for an operation permit if the information has not substantially changed during the construction period. The appropriate portion of the form should be marked "no substantial change".

III. Application Parts Required for Closure Permits

- A. Landfills and Ash Monofills - Submit parts A,B,M, O through T
- B. Asbestos Monofills - Submit parts A,B,N, P through T
- C. Industrial Solid Waste Facilities - Submit parts A,B, M through T
- D. Non-Disposal Facilities - Submit parts A,C,N,S and T

NOTE: Portions of some parts may not be applicable.

IV. Permit Renewals

The above information shall be submitted at time of permit renewal in support of the new permit. However, facility information that was submitted to the Department to support the expiring permit, and which is still valid, does not need to be re-submitted for permit renewal. Portions of the application not re-submitted shall be marked "no substantial change" on the application form.

V. Application Codes

S	-	Submitted
LOCATION	-	Physical location of information in application
N/A	-	Not Applicable
N/C	-	No Substantial Change

VI. LISTING OF APPLICATION PARTS

PART A:	GENERAL INFORMATION
PART B:	DISPOSAL FACILITY GENERAL INFORMATION
PART C:	NON-DISPOSAL FACILITY GENERAL INFORMATION
PART D:	PROHIBITIONS
PART E:	SOLID WASTE MANAGEMENT FACILITY PERMIT REQUIREMENTS, GENERAL
PART F:	LANDFILL PERMIT REQUIREMENTS
PART G:	GENERAL CRITERIA FOR LANDFILLS
PART H:	LANDFILL CONSTRUCTION REQUIREMENTS
PART I:	HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS
PART J:	GEOTECHNICAL INVESTIGATION REQUIREMENTS
PART K:	VERTICAL EXPANSION OF LANDFILLS
PART L:	LANDFILL OPERATION REQUIREMENTS
PART M:	WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS
PART N:	SPECIAL WASTE HANDLING REQUIREMENTS
PART O:	GAS MANAGEMENT SYSTEM REQUIREMENTS
PART P:	LANDFILL CLOSURE REQUIREMENTS
PART Q:	CLOSURE PROCEDURES
PART R:	LONG TERM CARE REQUIREMENTS
PART S:	FINANCIAL RESPONSIBILITY REQUIREMENTS
PART T:	CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
APPLICATION FOR A PERMIT TO CONSTRUCT, OPERATE, MODIFY OR CLOSE
A SOLID WASTE MANAGEMENT FACILITY

Please Type or Print

A. GENERAL INFORMATION

1. Type of facility (check all that apply):

☒ Disposal

☒ Class I Landfill

☐ Ash Monofill

☐ Class II Landfill

☐ Asbestos Monofill

☐ Class III Landfill

☐ Industrial Solid Waste

☐ Other Describe: _____

☐ Non-Disposal

☐ Incinerator For Non-biomedical Waste

☐ Waste to Energy Without Power Plant Certification

☐ Other Describe: _____

NOTE: Waste Processing Facilities should apply on Form 62-701.900(4), FAC;
Land Clearing Disposal Facilities should notify on Form 62-701.900(3), FAC;
Compost Facilities should apply on Form 62-701.900(10), FAC; and
C&D Disposal Facilities should apply on Form 62-701.900(6), FAC

2. Type of application:

☐ Construction

☐ Operation

☐ Construction/Operation

☒ Closure

3. Classification of application:

☐ New

☐ Substantial Modification

☐ Renewal

☒ Intermediate Modification

☐ Minor Modification

4. Facility name: Munisport Landfill (aka Biscayne Landing)

5. DEP ID number: 0219514-001-SF County: Miami-Dade

6. Facility location (main entrance): US Highway 1 (Biscayne Boulevard) between
NE 135th Street and NE 151st Street in North Miami

7. Location coordinates:

Section: 21 Township: 52S Range: 42E

Latitude: 25 ° 54 ' 09 " Longitude: 80 ° 09 ' 05 "

8. Applicant name (operating authority): City of North Miami
- Mailing address: 776 N.E. 125th Street North Miami FL 33161
Street or P.O. Box City State Zip
- Contact person: Mr. Stephen E. Johnson, MPA Telephone: (305) 895-9888
- Title: City Manager
- sjohnson@northmiamifl.gov
E-Mail address (if available)
9. Authorized agent/Consultant: Atkins North America
- Mailing address: Street or P.O. Box City State Zip
- Contact person: David E. Deans, P.E., BCEE Telephone: (407) 806-4104
- Title: Senior Consultant
- David.deans@atkinsglobal.com
E-Mail address (if available)
10. Landowner (if different than applicant): **SAME AS ABOVE**
- Mailing address: Street or P.O. Box City State Zip
- Contact person: Telephone: ()
- E-Mail address (if available)
11. Cities, towns and areas to be served: N/A
12. Population to be served:
Current: N/A Five-Year Projection: N/A
13. Date site will be ready to be inspected for completion: N/A
14. Expected life of the facility: N/A years
15. Estimated costs:
Total Construction: \$ Closing Costs: \$
16. Anticipated construction starting and completion dates:
From: To:
17. Expected volume or weight of waste to be received:
N/A yds³/day N/A tons/day N/A gallons/day

B. DISPOSAL FACILITY GENERAL INFORMATION

1. Provide brief description of disposal facility design and operations planned under this application:

The facility is an unlined 170-acre landfill that operated from _____
Approximately 1940 to 1980. The facility was never closed according to the _____
applicable regulations. This permit modification is for the construction of the _____
extension of Biscayne Landing Boulevard from its current terminus south of _____
151st Street south and then west to tie into Biscayne Blvd. at 143rd Street. _____

2. Facility site supervisor: _____ N/A _____

Title: _____ N/A _____ Telephone: (____) _____ N/A _____

_____ N/A _____
E-Mail address (if available)

3. Disposal area: Total 170 acres; Used 170 acres; Available 0 acres.

4. Weighing scales used: ☐ Yes ☐ No

5. Security to prevent unauthorized use: ☐ Yes ☐ No

6. Charge for waste received: _____ \$/yds³ _____ \$/ton

7. Surrounding land use, zoning:

☒ Residential	☐ Industrial
☐ Agricultural	☐ None
☒ Commercial	☒ Other Describe: <u>Public Use (Wetlands)</u>

8. Types of waste received:

☒ Residential	☒ C & D debris
☐ Commercial	☐ Shredded/cut tires
☐ Incinerator/WTE ash	☒ Yard trash
☐ Treated biomedical	☐ Septic tank
☐ Water treatment sludge	☐ Industrial
☐ Air treatment sludge	☐ Industrial sludge
☐ Agricultural	☐ Domestic sludge
☐ Asbestos	
☐ Other Describe: _____	

9. Salvaging permitted: ☐ Yes ☐ No

10. Attendant: ☐ Yes ☐ No Trained operator: ☐ Yes ☐ No

11. Spotters: Yes ☐ No ☐ Number of spotters used: _____

12. Site located in: ☒ Floodplain ☒ Wetlands ☐ Other _____

13. Property recorded as a Disposal Site in County Land Records: ☒ Yes ☐ No
14. Days of operation: N/A
15. Hours of operation: N/A
16. Days Working Face covered: N/A
17. Elevation of water table: 2 Ft. (NGVD 1929)
18. Number of monitoring wells: 45
19. Number of surface monitoring points: 21
20. Gas controls used: ☒ Yes ☐ No Type controls: ☐ Active ☒ Passive
Gas flaring: ☐ Yes ☒ No Gas recovery: ☐ Yes ☒ No
21. Landfill unit liner type:
- | | |
|--|--|
| ☐ Natural soils | ☐ Double geomembrane |
| ☐ Single clay liner | ☐ Geomembrane & composite |
| ☐ Single geomembrane | ☐ Double composite |
| ☐ Single composite | ☒ None |
| ☐ Slurry wall | |
| ☐ Other Describe: _____ | |
22. Leachate collection method:
- | | |
|--|---|
| ☐ Collection pipes | ☐ Sand layer |
| ☐ Geonets | ☐ Gravel layer |
| ☐ Well points | ☐ Interceptor trench |
| ☐ Perimeter ditch | ☒ None |
| ☐ Other Describe: _____ | |
23. Leachate storage method:
- | | |
|--|------------|
| ☐ Tanks | |
| ☐ Surface impoundments | |
| ☐ Other Describe: _____ | <u>N/A</u> |
24. Leachate treatment method:
- | | |
|--------------------------------------|---|
| ☐ Oxidation | ☐ Chemical treatment |
| ☐ Secondary | ☐ Settling |
| ☐ Advanced | |
| ☐ None | |
| ☐ Other _____ | <u>N/A</u> |

25. Leachate disposal method:

- | | |
|--|--|
| ☐ Recirculated | ☐ Pumped to WWTP |
| ☐ Transported to WWTP | ☐ Discharged to surface water |
| ☐ Injection well | ☐ Percolation ponds |
| ☐ Evaporation | |
| ☐ Other _____ | N/A _____ |

26. For leachate discharged to surface waters:

Name and Class of receiving water: _____ N/A _____

27. Storm Water:

Collected: ☒ Yes ☐ No

Type of treatment: _____

Name and Class of receiving water: _____

28. Environmental Resources Permit (ERP) number or status: _____

C. NON-DISPOSAL FACILITY GENERAL INFORMATION N/A

1. Provide brief description of the non-disposal facility design and operations planned under this application:

2. Facility site supervisor: _____

Title: _____ Telephone: (____) _____

_____ E-Mail address (if available)

3. Site area: Facility _____ acres; Property _____ acres

4. Security to prevent unauthorized use: ☐ Yes ☐ No

5. Site located in: ☐ Floodplain ☐ Wetlands ☐ Other _____

6. Days of operation: _____

7. Hours of operation: _____

8. Number of operating staff: _____

9. Expected useful life: _____ Years

10. Weighing scales used: ☐ Yes ☐ No

11. Normal processing rate: _____ yd³/day _____ tons/day _____ gal/day

12. Maximum processing rate: _____ yd³/day _____ tons/day _____ gal/day

13. Charge for waste received: _____

14. Storm Water Collected: ☐ Yes ☐ No

Type of treatment: _____

Name and Class of receiving water: _____

15. Environmental Resources Permit (ERP) number or status: _____

16. Final residue produced:

_____ % of normal processing rate _____ % of maximum processing rate

_____ Tons/day _____ Tons/day

Disposed of at:

Facility name: _____ County: _____

17. Estimated operating costs: \$ _____
Total cost/ton: \$ _____ Net cost/ton: \$ _____
18. Provide a site plan, at a scale not greater than 200 feet to the inch, which shows the facility location and identifies the proposed waste and final residue storage areas, total acreage of the site, and any other features which are relevant to the prohibitions or location restrictions in Rule 62-701.300, FAC, such as water bodies or wetlands on or within 200 feet of the site, and potable water wells on or within 500 feet of the site.
19. Provide a description of how the waste and final residue will be managed to not be expected to cause violations of the Department's ground water, surface water or air standards or criteria
20. Provide an estimate of the maximum amount of waste and final residue that will be store on-site.
21. Provide a detailed description of the technology use at the facility and the functions of all processing equipment that will be utilized. The descriptions shall explain the flow of waste and residue through all the proposed unit operations and shall include: (1) regular facility operations as they are expected to occur; (2) procedures for start up operations, and scheduled and unscheduled shut down operations; (3) potential safety hazards and control methods, including fire detection and control; (4) a description of any expected air emissions and wastewater discharges from the facility which may be potential pollution sources; (5) a description and usage rate of any chemical or biological additives that will be used in the process; and (6) process flow diagrams for the facility operations.
22. Provide a description of the loading, unloading and processing areas.
23. Provide a description of the leachate control system that will be used to prevent discharge of leachate to the environment and mixing of leachate with stormwater. Note: Ground water monitoring may be required for the facility depending on the method of leachate control used.
24. Provide an operation plan for the facility which includes: (1) a description of general facility operations, the number of personnel responsible for the operations including their respective job descriptions, and the types of equipment that will be used at the facility; (2) procedures to ensure any unauthorized wastes received at the site will be properly managed; (3) a contingency plan to cover operation interruptions and emergencies such as fires, explosions, or natural disasters; (4) procedures to ensure operational records needed for the facility will be adequately prepared and maintained; and (5) procedures to ensure that the wastes and final residue will be managed to not be expected to cause pollution.
25. Provide a closure plan that describes the procedures that will be implemented when the facility closes including: (1) estimated time to complete closure; (2) procedures for removing and properly managing or disposing of all wastes and final residues; (3) notification of the Department upon ceasing operations and completion of final closure.

D. PROHIBITIONS (62-701.300, FAC)

N/A

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
—	_____	—	—	1. Provide documentation that each of the siting criteria will be satisfied for the facility; (62-701.300(2), FAC)
—	_____	—	—	2. If the facility qualifies for any of the exemptions contained in Rules 62-701.300(12) through (16), FAC, then document this qualification(s).
—	_____	—	—	3. Provide documentation that the facility will be in compliance with the burning restrictions; (62-701.300(3), FAC)
—	_____	—	—	4. Provide documentation that the facility will be in compliance with the hazardous waste restrictions; (62-701.300(4), FAC)
—	_____	—	—	5. Provide documentation that the facility will be in compliance with the PCB disposal restrictions; (62-701.300(5), FAC)
—	_____	—	—	6. Provide documentation that the facility will be in compliance with the biomedical waste restrictions; (62-701.300(6), FAC)
—	_____	—	—	7. Provide documentation that the facility will be in compliance with the Class I surface water restrictions; (62-701.300(7), FAC)
—	_____	—	—	8. Provide documentation that the facility will be in compliance with the special waste for landfills restrictions; (62-701.300(8), FAC)
—	_____	—	—	9. Provide documentation that the facility will be in compliance with the special waste for waste-to-energy facilities restrictions; (62-701.300(9), FAC)
—	_____	—	—	10. Provide documentation that the facility will be in compliance with the liquid restrictions; (62-701.300(10), FAC)
—	_____	—	—	11. Provide documentation that the facility will be in compliance with the used oil restrictions; (62-701.300(11), FAC)

E. SOLID WASTE MANAGEMENT FACILITY PERMIT REQUIREMENTS, GENERAL (62-701.320, FAC) N/A

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
_____	_____	_____	_____	1. Four copies, at minimum, of the completed application form, all supporting data and reports; (62-701.320 (5) (a), FAC)
_____	_____	_____	_____	2. Engineering and/or professional certification (signature, date and seal) provided on the applications and all engineering plans, reports and supporting information for the application; (62-701.320 (6), FAC)
_____	_____	_____	_____	3. A letter of transmittal to the Department; (62-701.320 (7) (a), FAC)
_____	_____	_____	_____	4. A completed application form dated and signed by the applicant; (62-701.320 (7) (b), FAC)
_____	_____	_____	_____	5. Permit fee specified in Rule 62-701.315, FAC in check or money order, payable to the Department; (62-701.320 (7) (c), FAC)
_____	_____	_____	_____	6. An engineering report addressing the requirements of this rule and with the following format: a cover sheet, text printed on 8 1/2 inch by 11 inch consecutively numbered pages, a table of contents or index, the body of the report and all appendices including an operation plan, contingency plan, illustrative charts and graphs, records or logs of tests and investigations, engineering calculations; (62-701.320 (7) (d), FAC)
_____	_____	_____	_____	7. Operation Plan and Closure Plan; (62-701.320 (7) (e) 1, FAC)
_____	_____	_____	_____	8. Contingency Plan; (62-701.320 (7) (e) 2, FAC)
_____	_____	_____	_____	9. Plans or drawings for the solid waste management facilities in appropriate format (including sheet size restrictions, cover sheet, legends, north arrow, horizontal and vertical scales, elevations referenced to NGVD 1929) showing; (62-702.320 (7) (f), FAC)
_____	_____	_____	_____	a. A regional map or plan with the project location;
_____	_____	_____	_____	b. A vicinity map or aerial photograph no more than 1 year old;
_____	_____	_____	_____	c. A site plan showing all property boundaries certified by a registered Florida land surveyor;

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART E CONTINUED

- | | | | | |
|---|---|---|---|--|
| — | — | — | — | d. Other necessary details to support the engineering report. |
| — | — | — | — | 10. Documentation that the applicant either owns the property or has legal authority from the property owner to use the site; (62-701.320(7)(g), FAC) |
| — | — | — | — | 11. For facilities owned or operated by a county, provide a description of how, if any, the facilities covered in this application will contribute to the county's achievement of the waste reduction and recycling goals contained in Section 403.706, FS; (62-701.320(7)(h), FAC) |
| — | — | — | — | 12. Provide a history and description of any enforcement actions taken by the Department against the applicant for violations of applicable statutes, rules, orders or permit conditions relating to the operation of any solid waste management facility in this state; (62-701.320(7)(i), FAC) |
| — | — | — | — | 13. Proof of publication in a newspaper of general circulation of notice of application for a permit to construct or substantially modify a solid waste management facility; (62-702.320(8), FAC) |
| — | — | — | — | 14. Provide a description of how the requirements for airport safety will be achieved including proof of required notices if applicable. If exempt, explain how the exemption applies; (62-701.320(13), FAC) |
| — | — | — | — | 15. Explain how the operator training requirements will be satisfied for the facility; (62-701.320(15), FAC) |

F. LANDFILL PERMIT REQUIREMENTS (62-701.330, FAC) N/A

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
_____	_____	_____	_____	1. Vicinity map or aerial photograph no more than 1 year old and of appropriate scale showing land use and local zoning within one mile of the landfill and of sufficient scale to show all homes or other structures, water bodies, and roads other significant features of the vicinity. All significant features shall be labeled; (62-701.330(3)(a),FAC)
_____	_____	_____	_____	2. Vicinity map or aerial photograph no more than 1 year old showing all airports that are located within five miles of the proposed landfill; (62-701.330(3)(b),FAC)
_____	_____	_____	_____	3. Plot plan with a scale not greater than 200 feet to the inch showing; (62-701.330(3)(c),FAC)
_____	_____	_____	_____	a. Dimensions;
_____	_____	_____	_____	b. Locations of proposed and existing water quality monitoring wells;
_____	_____	_____	_____	c. Locations of soil borings;
_____	_____	_____	_____	d. Proposed plan of trenching or disposal areas;
_____	_____	_____	_____	e. Cross sections showing original elevations and proposed final contours which shall be included either on the plot plan or on separate sheets;
_____	_____	_____	_____	f. Any previously filled waste disposal areas;
_____	_____	_____	_____	g. Fencing or other measures to restrict access.
_____	_____	_____	_____	4. Topographic maps with a scale not greater than 200 feet to the inch with 5-foot contour intervals showing; (62-701.330(3)(d),FAC):
_____	_____	_____	_____	a. Proposed fill areas;
_____	_____	_____	_____	b. Borrow areas;
_____	_____	_____	_____	c. Access roads;
_____	_____	_____	_____	d. Grades required for proper drainage;
_____	_____	_____	_____	e. Cross sections of lifts;

S **LOCATION** **N/A** **N/C**

PART F CONTINUED

- | | | | | |
|-------|-------|-------|-------|---|
| _____ | _____ | _____ | _____ | f. Special drainage devices if necessary; |
| _____ | _____ | _____ | _____ | g. Fencing; |
| _____ | _____ | _____ | _____ | h. Equipment facilities. |
| | | | | 5. A report on the landfill describing the following;
(62-701.330(3)(e),FAC) |
| _____ | _____ | _____ | _____ | a. The current and projected population and area to
be served by the proposed site; |
| _____ | _____ | _____ | _____ | b. The anticipated type, annual quantity, and
source of solid waste, expressed in tons; |
| _____ | _____ | _____ | _____ | c. The anticipated facility life; |
| _____ | _____ | _____ | _____ | d. The source and type of cover material used for
the landfill. |
| _____ | _____ | _____ | _____ | 6. Provide evidence that an approved laboratory shall
conduct water quality monitoring for the facility in
accordance with Chapter 62-160,FAC;
(62-701.330(3)(h),FAC) |
| _____ | _____ | _____ | _____ | 7. Provide a statement of how the applicant will
demonstrate financial responsibility for the closing
and long-term care of the landfill;
(62-701.330(3)(i),FAC) |

G. GENERAL CRITERIA FOR LANDFILLS (62-701.340,FAC) N/A

- | | | | | |
|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | 1. Describe (and show on a Federal Insurance
Administration flood map, if available) how the
landfill or solid waste disposal unit shall not be
located in the 100-year floodplain where it will
restrict the flow of the 100-year flood, reduce the
temporary water storage capacity of the floodplain
unless compensating storage is provided, or result in a
washout of solid waste; (62-701.340(4)(b),FAC) |
| _____ | _____ | _____ | _____ | 2. Describe how the minimum horizontal separation between
waste deposits in the landfill and the landfill
property boundary shall be 100 feet, measured from the
toe of the proposed final cover slope;
(62-701.340(4)(c),FAC) |
| _____ | _____ | _____ | _____ | 3. Describe what methods shall be taken to screen the
landfill from public view where such screening can
practically be provided; (62-701.340(4)(d),FAC) |

H. LANDFILL CONSTRUCTION REQUIREMENTS (62-701.400, FAC) N/A

S LOCATION N/A N/C

- | | | | | | |
|-------|-------|-------|-------|-----|---|
| _____ | _____ | _____ | _____ | 1. | Describe how the landfill shall be designed so that solid waste disposal units will be constructed and closed at planned intervals throughout the design period of the landfill; (62-701.400(2), FAC) |
| | | | | 2. | Landfill liner requirements; (62-701.400(3), FAC) |
| | | | | a. | General construction requirements; (62-701.400(3)(a), FAC): |
| _____ | _____ | _____ | _____ | (1) | Provide test information and documentation to ensure the liner will be constructed of materials that have appropriate physical, chemical, and mechanical properties to prevent failure; |
| _____ | _____ | _____ | _____ | (2) | Document foundation is adequate to prevent liner failure; |
| _____ | _____ | _____ | _____ | (3) | Constructed so bottom liner will not be adversely impacted by fluctuations of the ground water; |
| _____ | _____ | _____ | _____ | (4) | Designed to resist hydrostatic uplift if bottom liner located below seasonal high ground water table; |
| _____ | _____ | _____ | _____ | (5) | Installed to cover all surrounding earth which could come into contact with the waste or leachate. |
| | | | | b. | Composite liners; (62-701.400(3)(b), FAC) |
| _____ | _____ | _____ | _____ | (1) | Upper geomembrane thickness and properties; |
| _____ | _____ | _____ | _____ | (2) | Design leachate head for primary LCRS including leachate recirculation if appropriate; |
| _____ | _____ | _____ | _____ | (3) | Design thickness in accordance with Table A and number of lifts planned for lower soil component. |

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART H CONTINUED

c. Double liners; (62-701.400(3)(c), FAC)

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|-------|-------|-------|-------|---|
| _____ | _____ | _____ | _____ | (1) Upper and lower geomembrane thicknesses and properties; |
| _____ | _____ | _____ | _____ | (2) Design leachate head for primary LCRS to limit the head to one foot above the liner; |
| _____ | _____ | _____ | _____ | (3) Lower geomembrane sub-base design; |
| _____ | _____ | _____ | _____ | (4) Leak detection and secondary leachate collection system minimum design criteria ($k \geq 10$ cm/sec, head on lower liner ≤ 1 inch, head not to exceed thickness of drainage layer); |

d. Standards for geosynthetic components; (62-701.400(3)(d), FAC)

- | | | | | |
|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | (1) Field seam test methods to ensure all field seams are at least 90 percent of the yield strength for the lining material; |
| _____ | _____ | _____ | _____ | (2) Geomembranes to be used shall pass a continuous spark test by the manufacturer; |
| _____ | _____ | _____ | _____ | (3) Design of 24-inch-thick protective layer above upper geomembrane liner; |
| _____ | _____ | _____ | _____ | (4) Describe operational plans to protect the liner and leachate collection system when placing the first layer of waste above 24-inch-thick protective layer. |
| _____ | _____ | _____ | _____ | (5) HDPE geomembranes, if used, meet the specifications in GRI GM13; |
| _____ | _____ | _____ | _____ | (6) PVC geomembranes, if used, meet the specifications in PGI 1197; |
| _____ | _____ | _____ | _____ | (7) Interface shear strength testing results of the actual components which will be used in the liner system; |
| _____ | _____ | _____ | _____ | (8) Transmissivity testing results of geonets if they are used in the liner system; |
| _____ | _____ | _____ | _____ | (9) Hydraulic conductivity testing results of geosynthetic clay liners if they are used in the liner system; |

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART H CONTINUED

e. Geosynthetic specification requirements;
(62-701.400 (3) (e), FAC)

- | | | | | |
|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | (1) Definition and qualifications of the designer, manufacturer, installer, QA consultant and laboratory, and QA program; |
| _____ | _____ | _____ | _____ | (2) Material specifications for geomembranes, geocomposites, geotextiles, geogrids, and geonets; |
| _____ | _____ | _____ | _____ | (3) Manufacturing and fabrication specifications including geomembrane raw material and roll QA, fabrication personnel qualifications, seaming equipment and procedures, overlaps, trial seams, destructive and nondestructive seam testing, seam testing location, frequency, procedure, sample size and geomembrane repairs; |
| _____ | _____ | _____ | _____ | (4) Geomembrane installation specifications including earthwork, conformance testing, geomembrane placement, installation personnel qualifications, field seaming and testing, overlapping and repairs, materials in contact with geomembrane and procedures for lining system acceptance; |
| _____ | _____ | _____ | _____ | (5) Geotextile and geogrid specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil materials and any overlying materials; |
| _____ | _____ | _____ | _____ | (6) Geonet and geocomposite specifications including handling and placement, conformance testing, stacking and joining, repair, and placement of soil materials and any overlying materials; |
| _____ | _____ | _____ | _____ | (7) Geosynthetic clay liner specifications including handling and placement, conformance testing, seams and overlaps, repair, and placement of soil material and any overlying materials; |

f. Standards for soil components
(62-710.400 (3) (f), FAC):

- | | | | | |
|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | (1) Description of construction procedures including overexcavation and backfilling to preclude structural inconsistencies and procedures for placing and compacting soil component in layers; |
|-------|-------|-------|-------|--|

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART H CONTINUED

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|---|-------|-------|-------|---|
| _____ | _____ | _____ | _____ | (2) Demonstration of compatibility of the soil component with actual or simulated leachate in accordance with EPA Test Method 9100 or an equivalent test method; |
| _____ | _____ | _____ | _____ | (3) Procedures for testing in-situ soils to demonstrate they meet the specifications for soil liners; |
| _____ | _____ | _____ | _____ | (4) Specifications for soil component of liner including at a minimum: |
| _____ | _____ | _____ | _____ | (a) Allowable particle size distribution, Atterberg limits, shrinkage limit; |
| _____ | _____ | _____ | _____ | (b) Placement moisture and dry density criteria; |
| _____ | _____ | _____ | _____ | (c) Maximum laboratory-determined saturated hydraulic conductivity using simulated leachate; |
| _____ | _____ | _____ | _____ | (d) Minimum thickness of soil liner; |
| _____ | _____ | _____ | _____ | (e) Lift thickness; |
| _____ | _____ | _____ | _____ | (f) Surface preparation (scarification); |
| _____ | _____ | _____ | _____ | (g) Type and percentage of clay mineral within the soil component; |
| _____ | _____ | _____ | _____ | (5) Procedures for constructing and using a field test section to document the desired saturated hydraulic conductivity and thickness can be achieved in the field. |
| 3. Leachate collection and removal system (LCRS); (62-701.400 (4), FAC) | | | | |
| a. The primary and secondary LCRS requirements; (62-701.400 (4) (a), FAC) | | | | |
| _____ | _____ | _____ | _____ | (1) Constructed of materials chemically resistant to the waste and leachate; |
| _____ | _____ | _____ | _____ | (2) Have sufficient mechanical properties to prevent collapse under pressure; |
| _____ | _____ | _____ | _____ | (3) Have granular material or synthetic geotextile to prevent clogging; |
| _____ | _____ | _____ | _____ | (4) Have method for testing and cleaning clogged pipes or contingent designs for rerouting leachate around failed areas; |

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART H CONTINUED

b. Primary LCRS requirements;
(62-701.400 (4) (b), FAC)

- | | | | | |
|-------|-------|-------|-------|---|
| _____ | _____ | _____ | _____ | (1) Bottom 12 inches having hydraulic conductivity $\geq 1 \times 10^{-3}$ cm/sec; |
| _____ | _____ | _____ | _____ | (2) Total thickness of 24 inches of material chemically resistant to the waste and leachate; |
| _____ | _____ | _____ | _____ | (3) Bottom slope design to accomodate for predicted settlement; |
| _____ | _____ | _____ | _____ | (4) Demonstration that synthetic drainage material, if used, is equivalent or better than granular material in chemical compatibility, flow under load and protection of geomembrane liner. |

4. Leachate recirculation; (62-701.400 (5), FAC)

- | | | | | |
|-------|-------|-------|-------|---|
| _____ | _____ | _____ | _____ | a. Describe general procedures for recirculating leachate; |
| _____ | _____ | _____ | _____ | b. Describe procedures for controlling leachate runoff and minimizing mixing of leachate runoff with storm water; |
| _____ | _____ | _____ | _____ | c. Describe procedures for preventing perched water conditions and gas buildup; |
| _____ | _____ | _____ | _____ | d. Describe alternate methods for leachate management when it cannot be recirculated due to weather or runoff conditions, surface seeps, wind-blown spray, or elevated levels of leachate head on the liner; |
| _____ | _____ | _____ | _____ | e. Describe methods of gas management in accordance with Rule 62-701.530, FAC; |
| _____ | _____ | _____ | _____ | f. If leachate irrigation is proposed, describe treatment methods and standards for leachate treatment prior to irrigation over final cover and provide documentation that irrigation does not contribute significantly to leachate generation. |

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART H CONTINUED

5. Leachate storage tanks and leachate surface impoundments; (62-701.400 (6), FAC)

a. Surface impoundment requirements; (62-701.400 (6) (b), FAC)

- | | | | | |
|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | (1) Documentation that the design of the bottom liner will not be adversely impacted by fluctuations of the ground water; |
| _____ | _____ | _____ | _____ | (2) Designed in segments to allow for inspection and repair as needed without interruption of service; |
| _____ | _____ | _____ | _____ | (3) General design requirements; |
| _____ | _____ | _____ | _____ | (a) Double liner system consisting of an upper and lower 60-mil minimum thickness geomembrane; |
| _____ | _____ | _____ | _____ | (b) Leak detection and collection system with hydraulic conductivity ≥ 1 cm/sec; |
| _____ | _____ | _____ | _____ | (c) Lower geomembrane placed on subbase ≥ 6 inches thick with $k \leq 1 \times 10^{-5}$ cm/sec or on an approved geosynthetic clay liner with $k \leq 1 \times 10^{-7}$ cm/sec; |
| _____ | _____ | _____ | _____ | (d) Design calculation to predict potential leakage through the upper liner; |
| _____ | _____ | _____ | _____ | (e) Daily inspection requirements and notification and corrective action requirements if leakage rates exceed that predicted by design calculations; |
| _____ | _____ | _____ | _____ | (4) Description of procedures to prevent uplift, if applicable; |
| _____ | _____ | _____ | _____ | (5) Design calculations to demonstrate minimum two feet of freeboard will be maintained; |
| _____ | _____ | _____ | _____ | (6) Procedures for controlling disease vectors and off-site odors. |

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART H CONTINUED

b. Above-ground leachate storage tanks;
(62-701.400 (6) (c), FAC)

- | | | | | |
|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | (1) Describe tank materials of construction and ensure foundation is sufficient to support tank; |
| _____ | _____ | _____ | _____ | (2) Describe procedures for cathodic protection if needed for the tank; |
| _____ | _____ | _____ | _____ | (3) Describe exterior painting and interior lining of the tank to protect it from the weather and the leachate stored; |
| _____ | _____ | _____ | _____ | (4) Describe secondary containment design to ensure adequate capacity will be provided and compatibility of materials of construction; |
| _____ | _____ | _____ | _____ | (5) Describe design to remove and dispose of stormwater from the secondary containment system; |
| _____ | _____ | _____ | _____ | (6) Describe an overflow prevention system such as level sensors, gauges, alarms and shutoff controls to prevent overflowing; |
| _____ | _____ | _____ | _____ | (7) Inspections, corrective action and reporting requirements; |
| _____ | _____ | _____ | _____ | (a) Overflow prevention system weekly; |
| _____ | _____ | _____ | _____ | (b) Exposed tank exteriors weekly; |
| _____ | _____ | _____ | _____ | (c) Tank interiors when tank is drained or at least every three years; |
| _____ | _____ | _____ | _____ | (d) Procedures for immediate corrective action if failures detected; |
| _____ | _____ | _____ | _____ | (e) Inspection reports available for department review. |

c. Underground leachate storage tanks;
(62-701.400 (6) (d), FAC)

- | | | | | |
|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | (1) Describe materials of construction; |
| _____ | _____ | _____ | _____ | (2) A double-walled tank design system to be used with the following requirements; |

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART H CONTINUED

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|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | (a) Interstitial space monitoring at least weekly; |
| _____ | _____ | _____ | _____ | (b) Corrosion protection provided for primary tank interior and external surface of outer shell; |
| _____ | _____ | _____ | _____ | (c) Interior tank coatings compatible with stored leachate; |
| _____ | _____ | _____ | _____ | (d) Cathodic protection inspected weekly and repaired as needed; |

_____	_____	_____	_____	(3) Describe an overfill prevention system such as level sensors, gauges, alarms and shutoff controls to prevent overfilling and provide for weekly inspections;
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_____	_____	_____	_____	(4) Inspection reports available for department review.
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_____	_____	_____	_____	d. Schedule provided for routine maintenance of LCRS; (62-701.400 (6) (e), FAC)
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6. Liner systems construction quality assurance (CQA); (62-701.400 (7), FAC)

_____	_____	_____	_____	a. Provide CQA Plan including:
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_____	_____	_____	_____	(1) Specifications and construction requirements for liner system;
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_____	_____	_____	_____	(2) Detailed description of quality control testing procedures and frequencies;
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_____	_____	_____	_____	(3) Identification of supervising professional engineer;
-------	-------	-------	-------	--

_____	_____	_____	_____	(4) Identify responsibility and authority of all appropriate organizations and key personnel involved in the construction project;
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_____	_____	_____	_____	(5) State qualifications of CQA professional engineer and support personnel;
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_____	_____	_____	_____	(6) Description of CQA reporting forms and documents;
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<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART H CONTINUED

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|--|--|--|--|---|
| | | | | b. An independent laboratory experienced in the testing of geosynthetics to perform required testing; |
|--|--|--|--|---|

7. Soil Liner CQA (62-701.400(8)FAC)

- | | | | | |
|--|--|--|--|---|
| | | | | a. Documentation that an adequate borrow source has been located with test results or description of the field exploration and laboratory testing program to define a suitable borrow source; |
| | | | | b. Description of field test section construction and test methods to be implemented prior to liner installation; |
| | | | | c. Description of field test methods including rejection criteria and corrective measures to insure proper liner installation. |

8. Surface water management systems; (62-701.400(9),FAC)

- | | | | | |
|--|--|--|--|--|
| | | | | a. Provide a copy of a Department permit for stormwater control or documentation that no such permit is required; |
| | | | | b. Design of surface water management system to isolate surface water from waste filled areas and to control stormwater run-off; |
| | | | | c. Details of stormwater control design including retention ponds, detention ponds, and drainage ways; |

9. Gas control systems; (62-701.400(10),FAC)

- | | | | | |
|--|--|--|--|--|
| | | | | a. Provide documentation that if the landfill is receiving degradable wastes, it will have a gas control system complying with the requirements of Rule 62-701.530, FAC; |
|--|--|--|--|--|

10. For landfills designed in ground water, provide documentation that the landfill will provide a degree of protection equivalent to landfills designed with bottom liners not in contact with ground water; (62-701.400(11),FAC)

I. **HYDROGEOLOGICAL INVESTIGATION REQUIREMENTS** (62-701.410(1), FAC) **N/A**

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
				1. Submit a hydrogeological investigation and site report including at least the following information:
_____	_____	_____	_____	a. Regional and site specific geology and hydrogeology;
_____	_____	_____	_____	b. Direction and rate of ground water and surface water flow including seasonal variations;
_____	_____	_____	_____	c. Background quality of ground water and surface water;
_____	_____	_____	_____	d. Any on-site hydraulic connections between aquifers;
_____	_____	_____	_____	e. Site stratigraphy and aquifer characteristics for confining layers, semi-confining layers, and all aquifers below the landfill site that may be affected by the landfill;
_____	_____	_____	_____	f. Description of topography, soil types and surface water drainage systems;
_____	_____	_____	_____	g. Inventory of all public and private water wells within a one-mile radius of the landfill including, where available, well top of casing and bottom elevations, name of owner, age and usage of each well, stratigraphic unit screened, well construction technique and static water level;
_____	_____	_____	_____	h. Identify and locate any existing contaminated areas on the site;
_____	_____	_____	_____	i. Include a map showing the locations of all potable wells within 500 feet, and all community water supply wells within 1000 feet, of the waste storage and disposal areas;
_____	_____	_____	_____	2. Report signed, sealed and dated by PE or PG.

J. GEOTECHNICAL INVESTIGATION REQUIREMENTS (62-701.410(2), FAC) N/A

S LOCATION N/A N/C

1. Submit a geotechnical site investigation report defining the engineering properties of the site including at least the following:
 - a. Description of subsurface conditions including soil stratigraphy and ground water table conditions;
 - b. Investigate for the presence of muck, previously filled areas, soft ground, lineaments and sink holes;
 - c. Estimates of average and maximum high water table across the site;
 - d. Foundation analysis including:
 - (1) Foundation bearing capacity analysis;
 - (2) Total and differential subgrade settlement analysis;
 - (3) Slope stability analysis;
 - e. Description of methods used in the investigation and includes soil boring logs, laboratory results, analytical calculations, cross sections, interpretations and conclusions;
 - f. An evaluation of fault areas, seismic impact zones, and unstable areas as described in 40 CFR 258.13, 40 CFR 258.14 and 40 CFR 258.15.
2. Report signed, sealed and dated by PE or PG.

K. VERTICAL EXPANSION OF LANDFILLS (62-701.430, FAC) N/A

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
_____	_____	_____	_____	1. Describe how the vertical expansion shall not cause or contribute to leachate leakage from the existing landfill or adversely affect the closure design of the existing landfill;
_____	_____	_____	_____	2. Describe how the vertical expansion over unlined landfills will meet the requirements of Rule 62-701.400, FAC with the exceptions of Rule 62-701.430(1)(c), FAC;
_____	_____	_____	_____	3. Provide foundation and settlement analysis for the vertical expansion;
_____	_____	_____	_____	4. Provide total settlement calculations demonstrating that the final elevations of the lining system, that gravity drainage, and that no other component of the design will be adversely affected;
_____	_____	_____	_____	5. Minimum stability safety factor of 1.5 for the lining system component interface stability and deep stability;
_____	_____	_____	_____	6. Provide documentation to show the surface water management system will not be adversely affected by the vertical expansion;
_____	_____	_____	_____	7. Provide gas control designs to prevent accumulation of gas under the new liner for the vertical expansion.

L. LANDFILL OPERATION REQUIREMENTS (62-701.500, FAC) N/A

- | | | | | | |
|-------|-------|-------|-------|----|--|
| _____ | _____ | _____ | _____ | 1. | Provide documentation that landfill will have at least one trained operator during operation and at least one trained spotter at each working face;
(62-701.500(1), FAC) |
| _____ | _____ | _____ | _____ | 2. | Provide a landfill operation plan including procedures for: (62-701.500(2), FAC) |
| _____ | _____ | _____ | _____ | a. | Designating responsible operating and maintenance personnel; |
| _____ | _____ | _____ | _____ | b. | Contingency operations for emergencies; |
| _____ | _____ | _____ | _____ | c. | Controlling types of waste received at the landfill; |
| _____ | _____ | _____ | _____ | d. | Weighing incoming waste; |
| _____ | _____ | _____ | _____ | e. | Vehicle traffic control and unloading; |
| _____ | _____ | _____ | _____ | f. | Method and sequence of filling waste; |
| _____ | _____ | _____ | _____ | g. | Waste compaction and application of cover; |
| _____ | _____ | _____ | _____ | h. | Operations of gas, leachate, and stormwater controls; |
| _____ | _____ | _____ | _____ | i. | Water quality monitoring. |
| _____ | _____ | _____ | _____ | j. | Maintaining and cleaning the leachate collection system; |
| _____ | _____ | _____ | _____ | 3. | Provide a description of the landfill operation record to be used at the landfill; details as to location of where various operational records will be kept (i.e. FDEP permit, engineering drawings, water quality records, etc.) (62-701.500(3), FAC) |
| _____ | _____ | _____ | _____ | 4. | Describe the waste records that will be compiled monthly and provided to the Department quarterly;
(62-701.500(4), FAC) |
| _____ | _____ | _____ | _____ | 5. | Describe methods of access control; (62-701.500(5), FAC) |
| _____ | _____ | _____ | _____ | 6. | Describe load checking program to be implemented at the landfill to discourage disposal of unauthorized wastes at the landfill; (62-701.500(6), FAC) |
| _____ | _____ | _____ | _____ | 7. | Describe procedures for spreading and compacting waste at the landfill that include: (62-701.500(7), FAC) |
| _____ | _____ | _____ | _____ | a. | Waste layer thickness and compaction frequencies; |

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART L CONTINUED

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|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | b. Special considerations for first layer of waste placed above liner and leachate collection system; |
| _____ | _____ | _____ | _____ | c. Slopes of cell working face and side grades above land surface, planned lift depths during operation; |
| _____ | _____ | _____ | _____ | d. Maximum width of working face; |
| _____ | _____ | _____ | _____ | e. Description of type of initial cover to be used at the facility that controls: |
| _____ | _____ | _____ | _____ | (1) Disease vector breeding/animal attraction |
| _____ | _____ | _____ | _____ | (2) Fires |
| _____ | _____ | _____ | _____ | (3) Odors |
| _____ | _____ | _____ | _____ | (4) Blowing litter |
| _____ | _____ | _____ | _____ | (5) Moisture infiltration |
| _____ | _____ | _____ | _____ | f. Procedures for applying initial cover including minimum cover frequencies; |
| _____ | _____ | _____ | _____ | g. Procedures for applying intermediate cover; |
| _____ | _____ | _____ | _____ | h. Time frames for applying final cover; |
| _____ | _____ | _____ | _____ | i. Procedures for controlling scavenging and salvaging. |
| _____ | _____ | _____ | _____ | j. Description of litter policing methods; |
| _____ | _____ | _____ | _____ | k. Erosion control procedures. |
| _____ | _____ | _____ | _____ | 8. Describe operational procedures for leachate management including; (62-701.500 (8), FAC) |
| _____ | _____ | _____ | _____ | a. Leachate level monitoring, sampling, analysis and data results submitted to the Department; |
| _____ | _____ | _____ | _____ | b. Operation and maintenance of leachate collection and removal system, and treatment as required; |
| _____ | _____ | _____ | _____ | c. Procedures for managing leachate if it becomes regulated as a hazardous waste; |
| _____ | _____ | _____ | _____ | d. Agreements for off-site discharge and treatment of leachate; |
| _____ | _____ | _____ | _____ | e. Contingency plan for managing leachate during emergencies or equipment problems; |

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART I CONTINUED

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|-------|-------|-------|-------|---|
| _____ | _____ | _____ | _____ | f. Procedures for recording quantities of leachate generated in gal/day and including this in the operating record; |
| _____ | _____ | _____ | _____ | g. Procedures for comparing precipitation experienced at the landfill with leachate generation rates and including this information in the operating record; |
| _____ | _____ | _____ | _____ | h. Procedures for water pressure cleaning or video inspecting leachate collection systems. |
| _____ | _____ | _____ | _____ | 9. Describe how the landfill receiving degradable wastes shall implement a gas management system meeting the requirements of Rule 62-701.530, FAC;
(62-701.500(9),FAC) |
| _____ | _____ | _____ | _____ | 10. Describe procedures for operating and maintaining the landfill stormwater management system to comply with the requirements of Rule 62-701.400(9);
(62-701.500(10),FAC) |
| _____ | _____ | _____ | _____ | 11. Equipment and operation feature requirements;
(62-701.500(11),FAC) |
| _____ | _____ | _____ | _____ | a. Sufficient equipment for excavating, spreading, compacting and covering waste; |
| _____ | _____ | _____ | _____ | b. Reserve equipment or arrangements to obtain additional equipment within 24 hours of breakdown; |
| _____ | _____ | _____ | _____ | c. Communications equipment; |
| _____ | _____ | _____ | _____ | d. Dust control methods; |
| _____ | _____ | _____ | _____ | e. Fire protection capabilities and procedures for notifying local fire department authorities in emergencies; |
| _____ | _____ | _____ | _____ | f. Litter control devices; |
| _____ | _____ | _____ | _____ | g. Signs indicating operating authority, traffic flow, hours of operation, disposal restrictions. |
| _____ | _____ | _____ | _____ | 12. Provide a description of all-weather access road, inside perimeter road and other roads necessary for access which shall be provided at the landfill;
(62-701.500(12),FAC) |
| _____ | _____ | _____ | _____ | 13. Additional record keeping and reporting requirements;
(62-701.500(13),FAC) |

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART L CONTINUED

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|-------|-------|-------|-------|---|
| _____ | _____ | _____ | _____ | a. Records used for developing permit applications and supplemental information maintained for the design period of the landfill; |
| _____ | _____ | _____ | _____ | b. Monitoring information, calibration and maintenance records, copies of reports required by permit maintained for at least 10 years; |
| _____ | _____ | _____ | _____ | c. Maintain annual estimates of the remaining life of constructed landfills and of other permitted areas not yet constructed and submit this estimate annually to the Department; |
| _____ | _____ | _____ | _____ | d. Procedures for archiving and retrieving records which are more than five year old. |

M. WATER QUALITY AND LEACHATE MONITORING REQUIREMENTS (62-701.510, FAC) N/A

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
_____	_____	_____	<u>X</u>	1. Water quality and leachate monitoring plan shall be submitted describing the proposed ground water, surface water and leachate monitoring systems and shall meet at least the following requirements;
_____	_____	_____	<u>X</u>	a. Based on the information obtained in the hydrogeological investigation and signed, dated and sealed by the PG or PE who prepared it; (62-701.510 (2) (a), FAC)
_____	_____	_____	<u>X</u>	b. All sampling and analysis performed in accordance with Chapter 62-160, FAC; (62-701.510 (2) (b), FAC)
_____	_____	_____		c. Ground water monitoring requirements; (62-701.510 (3), FAC)
_____	_____	_____	<u>X</u>	(1) Detection wells located downgradient from and within 50 feet of disposal units;
_____	_____	_____	<u>X</u>	(2) Downgradient compliance wells as required;
_____	_____	_____	<u>X</u>	(3) Background wells screened in all aquifers below the landfill that may be affected by the landfill;
_____	_____	_____	<u>X</u>	(4) Location information for each monitoring well;
_____	_____	_____	<u>X</u>	(5) Well spacing no greater than 500 feet apart for downgradient wells and no greater than 1500 feet apart for upgradient wells unless site specific conditions justify alternate well spacings;
_____	_____	_____	<u>X</u>	(6) Well screen locations properly selected;
_____	_____	_____	<u>X</u>	(7) Procedures for properly abandoning monitoring wells;
_____	_____	<u>X</u>	_____	(8) Detailed description of detection sensors if proposed.

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART M CONTINUED

_____	_____	_____	<u>x</u>
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_____	_____	_____	<u>x</u>
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_____	_____	<u>X</u>	_____
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_____	_____	<u>X</u>	_____
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_____	_____	<u>X</u>	_____
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_____	_____	<u>X</u>	_____
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_____	_____	<u>X</u>	_____
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_____	_____	_____	<u>X</u>
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_____	_____	_____	<u>X</u>
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_____	_____	_____	<u>X</u>
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_____	_____	_____	<u>X</u>
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d. Surface water monitoring requirements;
(62-701.510 (4), FAC)

(1) Location of and justification for all proposed surface water monitoring points;

(2) Each monitoring location to be marked and its position determined by a registered Florida land surveyor;

e. Leachate sampling locations proposed;
(62-701.510 (5), FAC)

f. Initial and routine sampling frequency and requirements; (62-701.510 (6), FAC)

(1) Initial background ground water and surface water sampling and analysis requirements;

(2) Routine leachate sampling and analysis requirements;

(3) Routine monitoring well sampling and analysis requirements;

(4) Routine surface water sampling and analysis requirements.

g. Describe procedures for implementing evaluation monitoring, prevention measures and corrective action as required; (62-701.510 (7), FAC)

h. Water quality monitoring report requirements;
(62-701.510 (9), FAC)

(1) Semi-annual report requirements;

(2) Bi-annual report requirements signed, dated and sealed by PG or PE.

N. SPECIAL WASTE HANDLING REQUIREMENTS (62-701.520, FAC) N/A

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	
___	_____	___	___	1. Describe procedures for managing motor vehicles; (62-701.520(1), FAC)
___	_____	___	___	2. Describe procedures for landfilling shredded waste; (62-701.520(2), FAC)
___	_____	___	___	3. Describe procedures for asbestos waste disposal; (62-701.520(3), FAC)
___	_____	___	___	4. Describe procedures for disposal or management of contaminated soil; (62-701.520(4), FAC)
___	_____	___	___	5. Describe procedures for disposal of biological wastes; (62-701.520(5), FAC)

O. GAS MANAGEMENT SYSTEM REQUIREMENTS (62-701.530, FAC)

				1. Provide the design for a gas management systems that will (62-701.530(1), FAC):
x	Pg 0-12	___	a. ___	Be designed to prevent concentrations of combustible gases from exceeding 25% the LEL in structures and 100% the LEL at the property boundary;
___	_____	___	x	b. Be designed for site-specific conditions;
___	_____	___	x	c. Be designed to reduce gas pressure in the interior of the landfill;
___	_____	x	___	d. Be designed to not interfere with the liner, leachate control system or final cover.
x	Pg. 0-12	___	___	2. Provide documentation that will describe locations, construction details and procedures for monitoring gas at ambient monitoring points and with soil monitoring probes; (62-701.530(2), FAC):
___	_____	___	x	3. Provide documentation describing how the gas remediation plan and odor remediation plan will be implemented; (62-701.530(3), FAC):
				4. Landfill gas recovery facilities; (62-701.530(5), FAC):
___	_____	x	___	a. Information required in Rules 62-701.320(7) and 62-701.330(3), FAC supplied;
___	_____	x	___	b. Information required in Rule 62-701.600(4), FAC supplied where relevant and practical;
___	_____	x	___	c. Estimate of current and expected gas generation rates and description of condensate disposal methods provided;

S LOCATION N/A N/C

PART O CONTINUED

_____	_____	<u> x </u>	_____	d.	Description of procedures for condensate sampling, analyzing and data reporting provided;
_____	_____	<u> x </u>	_____	e.	Closure plan provided describing methods to control gas after recovery facility ceases operation and any other requirements contained in Rule 62-701.400(10), FAC;
_____	_____	<u> x </u>	_____	f.	Performance bond provided to cover closure costs if not already included in other landfill closure costs.

P. LANDFILL FINAL CLOSURE REQUIREMENTS (62-701.600, FAC)

				1.	Closure schedule requirements; (62-701.600(2), FAC)
_____	_____	_____	<u> x </u>	a.	Documentation that a written notice including a schedule for closure will be provided to the Department at least one year prior to final receipt of wastes;
_____	_____	_____	<u> x </u>	b.	Notice to user requirements within 120 days of final receipt of wastes;
_____	_____	_____	<u> x </u>	c.	Notice to public requirements within 10 days of final receipt of wastes.
				2.	Closure permit general requirements; (62-701.600(3), FAC)
_____	_____	_____	<u> x </u>	a.	Application submitted to Department at least 90 days prior to final receipt of wastes;
				b.	Closure plan shall include the following:
_____	_____	_____	<u> x </u>	(1)	Closure Report
<u> x </u>	<u> Pg. P-7 </u>	_____	_____	(2)	Closure design plan;
_____	<u> Pg P-21 </u>	_____	_____	(3)	Closure operation plan;
<u> x </u>	<u> Part Q </u>	_____	_____	(4)	Closure procedures;
_____	_____	_____	<u> x </u>	(5)	Plan for long term care;
<u> x </u>	<u> Part S </u>	_____	_____	(6)	A demonstration that proof of financial responsibility for long term care will be provided.
				3.	Closure report requirements; (62-701.600(4), FAC)
				a.	General information requirements;
_____	_____	_____	<u> x </u>	(1)	Identification of landfill;

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	PART P CONTINUED	
_____	_____	_____	<u>x</u>	(2)	Location, description and vicinity map;
_____	_____	_____	<u>x</u>	(3)	Total acres of disposal areas and landfill property;
_____	_____	_____	<u>x</u>	(4)	Legal property description;
<u>x</u>	Pg. P-2	_____	_____	(5)	History of landfill;
_____	_____	_____	<u>x</u>	(6)	Identification of types of waste disposed of at the landfill.
_____	_____	_____	<u>x</u>	b.	Geotechnical investigation report and water quality monitoring plan required by Rule 62-701.330 (3), FAC;
_____	_____	_____	<u>x</u>	c.	Land use information report indicating: identification of adjacent landowners; zoning; present land uses; and roads, highways right-of-way, or easements.
_____	_____	_____	<u>x</u>	d.	Report on actual or potential gas migration at landfills containing degradable wastes which would allow migration of gas off the landfill property;
_____	_____	_____	<u>x</u>	e.	Report assessing the effectiveness of the landfill design and operation including results of geotechnical investigations, surface water and storm water management, gas migration and concentrations, condition of existing cover, and nature of waste disposed of at the landfill;
				4.	Closure design requirements to be included in the closure design plan: (62-701.600 (5), FAC)
_____	_____	_____	<u>x</u>	a.	Plan sheet showing phases of site closing;
<u>x</u>	Pg. P-7	_____	_____	b.	Drawings showing existing topography and proposed final grades;
_____	_____	_____	<u>x</u>	c.	Provisions to close units when they reach approved design dimensions;
<u>x</u>	Pg. P-10	_____	_____	d.	Final elevations before settlement;
_____	_____	_____	<u>x</u>	e.	Side slope design including benches, terraces, down slope drainage ways, energy dissipators and discussion of expected precipitation effects;
				f.	Final cover installation plans including:
_____	_____	<u>x</u>	_____	(1)	CQA plan for installing and testing final cover;

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>	PART P CONTINUED
_____	_____	_____	<u>x</u>	(2) Schedule for installing final cover after final receipt of waste;
_____	_____	_____	<u>x</u>	(3) Description of drought-resistant species to be used in the vegetative cover;
_____	_____	_____	<u>x</u>	(4) Top gradient design to maximize runoff and minimize erosion;
_____	_____	_____	<u>x</u>	(5) Provisions for cover material to be used for final cover maintenance.
				g. Final cover design requirements:
_____	_____	_____	<u>x</u>	(1) Protective soil layer design;
_____	_____	_____	<u>x</u>	(2) Barrier soil layer design;
_____	_____	_____	<u>x</u>	(3) Erosion control vegetation;
_____	_____	_____	<u>x</u>	(4) Geomembrane barrier layer design;
_____	_____	_____	<u>x</u>	(5) Geosynthetic clay liner design if used;
_____	_____	_____	<u>x</u>	(6) Stability analysis of the cover system and the disposed waste.
<u>x</u>	Pg. P-16	_____	_____	h. Proposed method of stormwater control;
_____	_____	_____	<u>x</u>	i. Proposed method of access control;
_____	_____	_____	<u>x</u>	j. Description of proposed final use of the closed landfill, if any;
_____	_____	_____	<u>x</u>	k. Description of the proposed or existing gas management system which complies with Rule 62-701.530, FAC.
				5. Closure operation plan shall include: (62-701.600 (6), FAC)
<u>x</u>	Pg. P-21	_____	_____	a. Detailed description of actions which will be taken to close the landfill;
<u>x</u>	Pg. P-23	_____	_____	b. Time schedule for completion of closing and long term care;
<u>x</u>	Part S	_____	_____	c. Describe proposed method for demonstrating financial responsibility;
_____	_____	_____	<u>x</u>	d. Indicate any additional equipment and personnel needed to complete closure.

<u>S</u>	<u>LOCATION</u>	<u>N/A</u>	<u>N/C</u>
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PART P CONTINUED

- | | | | | | |
|----------|--------|-------|----------|----|---|
| _____ | _____ | _____ | _____ | e. | Development and implementation of the water quality monitoring plan required in Rule 62-01.510, FAC. |
| <u>x</u> | Part O | _____ | _____ | f. | Development and implementation of gas management system required in Rule 62-701.530, FAC. |
| _____ | _____ | _____ | <u>x</u> | 6. | Justification for and detailed description of procedures to be followed for temporary closure of the landfill, if desired; (62-701.600 (7),FAC) |

Q. CLOSURE PROCEDURES (62-701.610, FAC)

S **LOCATION** **N/A** **N/C**

- | | | | | |
|-------|---------|-------|-------|---|
| _____ | _____ | _____ | _____ | 1. Survey monuments; (62-701.610(2), FAC) |
| _____ | _____ | _____ | _____ | 2. Final survey report; (62-701.610(3), FAC) |
| _____ | _____ | _____ | _____ | 3. Certification of closure construction completion; (62-701.610(4), FAC) |
| _____ | _____ | _____ | _____ | 4. Declaration to the public; (62-701.610(5), FAC) |
| _____ | _____ | _____ | _____ | 5. Official date of closing; (62-701.610(6), FAC) |
| _____ | _____ | _____ | _____ | 6. Use of closed landfill areas; (62-701.610(7), FAC) |
| X | Pg. Q-2 | _____ | _____ | 7. Relocation of wastes; (62-701.610(8), FAC) |

R. LONG TERM CARE REQUIREMENTS (62-701.620, FAC) **N/A**

- | | | | | |
|-------|-------|-------|-------|---|
| _____ | _____ | _____ | _____ | 1. Maintaining the gas collection and monitoring system; (62-701.620(5), FAC) |
| _____ | _____ | _____ | _____ | 2. Right of property access requirements; (62-701.620(6), FAC) |
| _____ | _____ | _____ | _____ | 3. Successors of interest requirements; (62-701.620(7), FAC) |
| _____ | _____ | _____ | _____ | 4. Requirements for replacement of monitoring devices; (62-701.620(9), FAC) |
| _____ | _____ | _____ | _____ | 5. Completion of long term care signed and sealed by professional engineer (62-701.620(10), FAC). |

S. FINANCIAL RESPONSIBILITY REQUIREMENTS (62-701.630, FAC) **N/A**

- | | | | | |
|-------|-------|-------|-------|--|
| _____ | _____ | _____ | _____ | 1. Provide cost estimates for closing, long term care, and corrective action costs estimated by a PE for a third party performing the work, on a per unit basis, with the source of estimates indicated; (62-701.630(3)&(7), FAC). |
| _____ | _____ | _____ | _____ | 2. Describe procedures for providing annual cost adjustments to the Department based on inflation and changes in the closing, long-term care, and corrective action plans; (62-701.630(4)&(8), FAC). |
| _____ | _____ | _____ | _____ | 3. Describe funding mechanisms for providing proof of financial assurance and include appropriate financial assurance forms; (62-701.630(5), (6), &(9), FAC). |

T. CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

1. Applicant:

The undersigned applicant or authorized representative of The City of North Miami
_____ is aware that statements made in this form and attached
information are an application for a Landfill Closure Permit from the
Florida Department of Environmental Protection and certifies that the information in
this application is true, correct and complete to the best of his/her knowledge and
belief. Further, the undersigned agrees to comply with the provisions of Chapter
403, Florida Statutes, and all rules and regulations of the Department. It is
understood that the Permit is not transferable, and the Department will be notified
prior to the sale or legal transfer of the permitted facility.

_____ Signature of Applicant or Agent	<u>776 N.E. 125th Street</u> _____ Mailing Address
<u>Stephen E. Johnson, MPA</u> _____ Name and Title (please type)	<u>North Miami, Florida 33161</u> _____ City, State, Zip Code
<u>sjohnson@northmiamifl.gov</u> _____ E-Mail address (if available)	<u>(305) 895-9888</u> _____ Telephone Number

Date: _____

Attach letter of authorization if agent is not a governmental official, owner, or
corporate officer.

**2. Professional Engineer registered in Florida (or Public Officer if authorized under
Sections 403.707 and 403.7075, Florida Statutes):**

This is to certify that the engineering features of this solid waste management
facility have been designed/examined by me and found to conform to engineering
principles applicable to such facilities. In my professional judgment, this
facility, when properly maintained and operated, will comply with all applicable
statutes of the State of Florida and rules of the Department. It is agreed that the
undersigned will provide the applicant with a set of instructions of proper
maintenance and operation of the facility.

_____ Signature	<u>482 South Keller Road</u> _____ Mailing Address
<u>David E. Deans, P.E., BCEE</u> _____ Name and Title (please type)	<u>Orlando, Florida 32810</u> _____ City, State, Zip Code
	<u>David.Deans@Atkinsglobal.com</u> _____ E-Mail address (if available)
<u>31095</u> _____ Florida Registration Number (please affix seal)	<u>(407) 806-4104</u> _____ Telephone Number

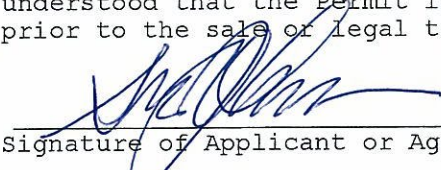
Date: _____

T. CERTIFICATION BY APPLICANT AND ENGINEER OR PUBLIC OFFICER

1. Applicant:

The undersigned applicant or authorized representative of The City of North Miami
_____ is aware that statements made in this form and attached

information are an application for a Landfill Closure Permit from the Florida Department of Environmental Protection and certifies that the information in this application is true, correct and complete to the best of his/her knowledge and belief. Further, the undersigned agrees to comply with the provisions of Chapter 403, Florida Statutes, and all rules and regulations of the Department. It is understood that the Permit is not transferable, and the Department will be notified prior to the sale or legal transfer of the permitted facility.



Signature of Applicant or Agent

Stephen E. Johnson, MPA

Name and Title (please type)

sjohnson@northmiamifl.gov

E-Mail address (if available)

776 N.E. 125th Street

Mailing Address

North Miami, Florida 33161

City, State, Zip Code

(305) 895-9888

Telephone Number

Date: 12/6/13

Attach letter of authorization if agent is not a governmental official, owner, or corporate officer.

2. Professional Engineer registered in Florida (or Public Officer if authorized under Sections 403.707 and 403.7075, Florida Statutes):

This is to certify that the engineering features of this solid waste management facility have been designed/examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, this facility, when properly maintained and operated, will comply with all applicable statutes of the State of Florida and rules of the Department. It is agreed that the undersigned will provide the applicant with a set of instructions of proper maintenance and operation of the facility.



Signature

David E. Deans, P.E., BCEE

Name and Title (please type)

31095

Florida Registration Number
(please affix seal)

482 South Keller Road

Mailing Address

Orlando, Florida 32810

City, State, Zip Code

David.Deans@Atkinsglobal.com

E-Mail address (if available)

(407) 806-4104

Telephone Number

Date: 12/11/13

Part 0- Gas Management System Requirements

1.1 Introduction

Various landfilling activities occurred during years 1940 to 1980 at the Munisport Landfill. Although there are no accurate records of landfilling operation prior to the early 1970's, aerial photographs identify active landfilling operations from the 1960's and appear to be centered within the southern sections of the site. Aerial photographs indicate that from 1970 to 1972 landfilling activities were restricted to the central and southern areas.

Aerials photographs and FDER solid waste inspection reports from the 70's identify three categories of solid wastes deposited at Munisport landfill:

- Domestic refuse - located predominantly in the northern sections of the landfill and seem to have been deposited during 1974 to 1980. This type of waste is most dominant throughout the site;
- Yard waste, including grass and tree clippings; and,
- Construction debris - located toward the southern sections of the site.

Since the landfill closed in 1980, the site has been undisturbed and has vegetated naturally with a hearty dense vegetative cover dominated by Brazilian pepper and Australian pines.

1.2 Gas Management System Design

1.2.1 Regulatory Standards

The Standards of Performance for New Municipal Solid Waste Landfills, 40 Code of Federal Regulation (CFR) Part 60, Subpart WWW, are federal regulations affecting air emissions for new landfills or landfills that began construction, modification or reconstruction on or after May 30, 1991. The Emission Guidelines require States to develop State Plans to regulate existing landfills that began construction before May 30, 1991, and that have accepted waste since November 8, 1987, or have capacity to accept additional waste (EPA, 1997a). Since the Munisport Landfill ceased operation in 1980, the landfill is not regulated under the current air and/or emission guidelines.

FDEP regulates gas management systems under 62-701.530 FAC. Tills rule requires that the gas management system be designed to prevent explosions and fires, minimize off-site odors, lateral migration of gasses, and damage to vegetation.

1.2.2 Gas Generation Modeling

The biodegradation of refuse in landfills produces landfill gas, consisting primarily of methane and carbon dioxide, both colorless and odorless gases, with trace amounts (less than 1% of the total landfill gas) of non-methane organic compounds (NMOC) that even at very low concentration produce an unpleasant odor. Refuse in landfills may produce landfill gas for approximately 20 to 30 years, depending on environmental factors of the landfill (moisture content of waste, nutrient concentration, pH, and temperature) (EPA, 1997a). The Lower Explosive Limit (LEL) and Upper Explosive Limit (UEL) of Methane in air is 5 percent and 15 percent Methane, respectively. In order to determine the potential for explosions, fires, off-site odors and damage to vegetation, PBS&J reviewed the gas generation potential utilizing the Landfill Gas Emissions Model (LandGEM), a model developed by USEPA, which estimates air-pollutant emissions from municipal solid waste (MSW) landfills.

Gas Modeling Scenarios and Assumptions

The LandGEM model estimates emission rates based on the landfill gas-generation rate and the amount of refuse in the landfill. The landfill gas generation rate in the model is based on a first order decomposition model, which estimates the landfill gas-generation rate using two parameters:

- L_0 (methane-generation potential), that specifies the maximum amount of methane that can be generated by a given amount of refuse
- k (methane generation-decay rate), that specifies the exponential rate of decomposition of landfill refuse and determines the amount of methane a given parcel of refuse will release in a specified time. The methane-generation rate is assumed to be at its peak upon placement of the refuse in the landfill.

Since no site-specific data was available for the landfill, the methane (CRT) emission rates expected to be emitted from the landfill was determined utilizing a set of default values based on emission factors in the U.S. Environmental Protection Agency's (EPA's) Compilation of Air Pollutant Emission Factors, AP-42. The default values are derived from Chapter 2.4 in AP-42, Emission Factors for Estimating Emissions from Solid Waste Disposal in Landfills (EPA, 1997a). This set of default values is typically used to produce emission estimates in the absence of site-specific test data. EPA Method 2E, the method for Determination of Landfill Gas Production Flow Rate, could be performed to calculate the site-specific L_0 and k values.

Landfill gas continues to be produced from decomposing refuse even after closure of the landfill; therefore, the model estimates emissions from the landfill up to the closure of landfill and for a certain number of years past closure. By default, the model estimates emissions for 200 years past closure.

Two Scenarios were run utilizing the LandGEM model based on our review of records describing the possible operating scenarios for this landfill:

1. 100% of MSW (landfill design capacity 1.93×10^6 Mega grams (Mg)) - % of waste deposited last 10 years of landfill operation and 1/4 of waste deposited first 30 years

of landfill operation.

2. 50% of MSW (landfill design capacity 9.33×10^5 Mg) -% of waste deposited last 10 years of landfill operation and 1/4 of waste deposited first 30 years of landfill operation.

The emission rates generated utilizing the LandGEM model is for municipal solid waste that consists of mostly biodegradable waste. Since this site is a mixture of biodegradable and non-biodegradable material (e.g., concrete, rocks, or other demolition debris), research was done to determine if values of L, and k, that are more representative of this site (mix of biodegradable and non-biodegradable waste), could be determined/calculated and used in the model.

To compensate for non-biodegradable debris in the landfill, the LandGEM User Manual recommends calculating the Landfill Design Capacity minus the volume of non-biodegradable waste. It was suggested by historical records regarding the operation of this landfill that approximately half of the waste material at this site could be non-biodegradable. Therefore, the Landfill Scenario Model Parameter Data remained unchanged from the first scenario, but the Landfill Design Capacity and Annual Refuse Acceptance Rate of the Landfill Scenario Operating Parameter Data were modified by reducing both the design capacity and acceptance rate by half.

Records seem to indicate that a majority of the waste was deposited the last ten years of the landfill disposal life, 1971 through 1980. To simulate the disposal pattern at the landfill, it was assumed that % of the waste was deposited during 1971 to 1980 and 1/4 of the waste was deposited from 1941 through 1970. An analysis was performed assuming all of the waste was MSW and that only 50% of the waste was MSW.

The following is a summation of the two landfill scenario models and operating parameter data utilized in this review for the Munisport Landfill:

- 1) *Landfill Scenario Model Parameter Data (100% MSW –3/4 of waste deposited last 10 years of landfill operation and 1/4 of waste deposited first 30 years of landfill operation)*

Methane Generation Potential (L_0):	100 m ³ /Mg of refuse (AP-42 default)
Methane Generation Decay Rate (k):	0.041/ year (AP-42 default)
Percentage Composition of CH ₄ andCO ₂ :	50%150%
Concentration of NMOC:	595 ppmv (AP-42 default with no codisposal)
Landfill Type:	No Codisposal

Landfill Scenario Operating Parameter Data (100% MSW- % of waste deposited last 10 years of landfill operation and 1/4 of waste deposited first 30 years of landfill operation):

Year Opened:	1940
Year Closed:	1980
Landfill Design Capacity (System calculated- 170 acres, 14.5 feet waste depth):	1.93×10^6 Mg capacity
Annual Refuse Acceptance Rate:	
1941 to 1970:	16,115 Mg/year

1971 to 1980:

145,033 Mg/year

The Munisport Landfill gas emissions generated from the model for years 1940 through 2179 are shown in the attached Table 0-1A and Table 0-1B. The data indicates that the methane emission rate was constantly increasing from year 1941 until the peak year, year 1980, when the methane was calculated as 3,768 Mg/year. From year 1981 to the present and beyond, the methane is consistently decreasing and for year 2003 was calculated as 1,502 Mg/year.

- 2) *Landfill Scenario Model Parameter Data (50% MSW- 3/4 of waste deposited last 10 years of landfill operation and 1/4 of waste deposited first 30 years of landfill operation.*

Methane Generation Potential (L_0):	100 m ³ /Mg of refuse (AP-42 default)
Methane Generation Decay Rate (k):	0.04 L/year (AP-42 default)
Percentage Composition of CH ₄ and CO ₂ :	50% / 50%
Concentration of NMOC:	595 ppmv (AP-42 default with no codisposal)
Landfill Type:	No Co disposal

Landfill Scenario Operating Parameter Data (50% MSW. biodegradable and non-Biodegradable waste):

Year Opened:	1940
Year Closed:	1980
Landfill Design Capacity (System calculated- 170 acres, 7 feet waste depth):	9.33 x 10 ⁵ Mg capacity
Annual Refuse Acceptance Rate:	
1941 to 1970:	7,780 Mg/year
1971 to 1980:	70,016 Mg/year

The Munisport Landfill gas emissions generated from the model for this scenario for years 1940 through 2179 are shown in the attached Table 0-2A and Table 0-2B. The data indicates that with approximately half of the waste assumed non-biodegradable, the methane generation rate was decreased by approximately one-half of the methane calculated from the previous scenario (all of the waste biodegradable). The methane emission rate was constantly increasing from year 1941 until the peak year, year 1980, when the methane was calculated as 1,819 Mg/year. From year 1981 to the present and beyond, the methane is consistently decreasing and for year 2003 was calculated as 724.9 Mg/year

1.2.3 Ross Investigation

As discussed in their 1987 Site Investigation Report, a subsurface exploration analysis was performed by H.J. Ross Associates (Ross). A copy of this report is included in Appendix 0-1. The analysis involved the excavation and logging of 71 exploratory trenches. The thickness of the cover material, thickness of refuse, type of waste, and depth to natural ground were measured and recorded.

Combustible gas was measured at each of the exploratory trenches utilizing an Explosimeter (a.k.a. Combustible Gas Indicator (CGI)). Some combustible gas was detected at relatively low

concentrations. The highest value measured was 10% of the LEL for methane (see Attachment). Assuming all the combustible gas was Methane, the highest possible concentration of methane was 0.5%, which is well below the LEL of 5%.

1.2.4 HSA Investigations

In July 2003 HSA performed a landfill gas survey as part of their geotechnical engineering investigation for the building designs. This survey included the drilling of test holes at various locations on the 170-acre site, taking an initial reading in the hole for the presence of methane, and then purging the hole, allowing it to stabilize for 7 days and re-testing for the presence of methane. This survey confirms the LandGEM model results that indicate LFG is still being generated by the waste in the landfill, but the survey was not able to measure the rate of LFG production. Appendix 0-2 is the Survey Report prepared by HSA that includes the data collection methodology, data collected and the test hole location map. The HSA report entitled "Report of Preliminary Subsurface Exploration and Geotechnical Evaluation", dated August 27, 2003, has been included as Appendix 0-2A. This report includes additional information concerning subsurface conditions and updated site maps displaying test pit and boring locations.

1.2.5 Conclusion

Currently, the Munisport Landfill has a permeable cover with a large amount of vegetation that allows gas to escape rather than build up to high pressures within the waste. Since the landfill ceased operation in 1980, the landfill is not regulated under the current EPA air and/or emission guidelines.

Landfill gas continues to be produced from decomposing refuse even after closure of the landfill and may produce landfill gas for approximately 20 to 30 years, depending on environmental factors of the landfill (moisture content of waste, nutrient concentration, pH, and temperature). Considering the age of the Munisport landfill, the LandGEM Model indicates that the rate of landfill gas generation is minimal and will continue to decrease over time. According to the model, the methane emission rate was consistently increasing from year 1941 until the peak year, year 1980, and from year 1981 to the present and beyond, the methane is consistently decreasing. Current methane generation rates are estimated by LandGEM to be between 724.9 Mg/year and 1,502 Mg/year.

To put these modeling results into perspective, the allowable surface emission rate for LFG under the Title V Regulations is 500 ppm at 10 cm above the landfill surface. The methane generation rate necessary to produce such a concentration is 2,000 Mg per year.

The LEL for methane is 5% or 50,000 ppm; 100 times the allowable Title V Regulation surface emission rate.

The LandGEM model results for 100% MSW waste in the landfill indicates a methane production rate of only 1,502 Mg per year is being produced. Experience has confirmed that the AP-42 default parameters input to LandGEM will greatly overstate methane production rates when compared with actual emission rates determined through Tier II testing.

Therefore, these modeling results indicate that the current methane generation rate is well below any established maximum emission rate or safety threshold, and is continuing to decrease with time.

Assuming all gas generated is escaping through the cover material at a constant rate, the emission rate from this landfill is well below LEL.

Since termination of the landfill operation, the site has vegetated naturally and consists of a dense cover of Brazilian pepper and Australian pines. With the final cover of the site consisting only of soil and vegetation, the landfill gas can escape naturally through the cover and into the atmosphere. Since the gas generated from the closed site is not impeding vegetative growth this also illustrates that the gas levels produced are minimal.

A concern with methane is when the gas levels accumulate to exceed the LEL. The LEL of methane in air is 5% methane. Regardless of the rate of generation, it is possible over time to accumulate enough methane gas in confined spaces to exceed the LEL. Therefore, design considerations should address the venting of the gas away from structures and sealing of confined spaces to prevent the accumulation of gas.

1.2.6 Recommendations

1.2.6.1 Cover Soil

A 24-inch thick permeable cap is being recommended for this site based on the recommendations contained in the Record of Decision issued by EPA (See Drawing C-7, Green space cover detail). The permeable cap benefits the landfill gas (LFG) management system by preventing the build-up of LFG pressures within the solid waste pile and instead allows the uniform release of LFG through the permeable surface. This emission rate is so low that neither environmental, safety nor odor impacts are expected.

1.2.6.2 Structures

A Gas Management System Basis of Design Document has been included in Appendix 0-5. The final design of each phase will be submitted to the Department for approval as part of a closure permit modification prior to the construction of each phase.

Permit Modification No. 1

There are no structures associated with Permit Modification No. 1.

Permit Modification No. 2

For proposed Tower 1 and Tower 2, included in Phase IA-1, gas management beneath the structure will consist of the installation of passive gas collection trenches designed to vent any methane that may come into contact with the bottom of the crawl space floor slab. The locations of the trenches are shown on Phase IA-1, Sheet ENV-3 and ENV-4, and the details of the trenches are shown on Phase IA-1, Sheet ENV-7. The passive gas collection system consists of 4" diameter slotted PVC pipes enclosed in a gravel-filled trench, which are vented to the atmosphere. These trenches and pipes create a preferential pathway for any methane which migrates from the underlying solid waste to the bottom of the floor slab. We note that much of the solid waste will be removed beneath Tower 1 and Tower 2 during installation of the piles and pile caps beneath the buildings. In addition to the gas collection system, an HDPE liner will be



placed beneath the elevator shaft to provide further protection to this "confined space." A detail of the HDPE liner system is provided on **Phase IA-1** Sheet ENV-7. There is a 7'-6" high crawl space beneath each Tower, with the exception on the elevator shaft. There will also be at least ten (10) methane alarms installed in each crawl space of Tower 1 and Tower 2. If the alarms do go off, then a gas remediation program will be implemented as described in Section 1.5 of Part 0 and detailed in the Methane Gas Management Plan included in Appendix 0-6.

For the Parking Garage, the gas management system will consist of passive gas collection trenches installed at the approximate locations shown on **Phase IA-1** Sheet ENV-5. The details of the trenches are shown on **Phase IA-1** Sheet ENV-7. The passive gas collection system consists of 4" diameter slotted PVC pipes enclosed in a gravel-filled trench, which is vented to the atmosphere. These trenches and pipes create a preferential pathway for any methane which migrates from the underlying solid waste to the bottom of the floor slab. There are several "confined spaces" in the Parking Garage as shown on **Phase IA-1** Sheet ENV-5. Beneath these confined spaces, an HDPE liner will be placed to prevent the migration of gas into these confined spaces. Since the confined spaces in the Parking Garage are all on the outside of the structure, the interior end of the liner will need to be tied into the floor slab as shown on **Phase IA-1** Sheet ENV-5.

There will also be a Guardhouse in Phase 1A- 1, and gas management for this structure will consist of an HDPE liner beneath the entire structure, as shown on **Phase IA-1** Sheet ENV-5. The detail for the liner system for the Guardhouse is included on **Phase IA-1** Sheet ENV-7.

Permit Modification No. 3

Due to the redesign activities involving Phase 1A-2, a revised gas management narrative for the structures described above is included in Permit Modification No. 5 located below.

Permit Modification No. 4

There are no structures associated with Permit Modification No. 4. This minor modification was related to the revision and update of the site schedule and phasing plan.

Permit Modification No. 5

Towers 3 and 4

~~The gas management system for Towers 3 and 4, presented in Phase 1A-2 Sheets ENV-2.00 and ENV-2.01, will consist of a passive gas collection system utilizing slotted Schedule 40 PVC collection piping or Geovent® within a coarse gravel layer beneath the entire tower footprints. Towers 3 and 4 are designed in a "split level" fashion with the eastern half (rear portion) of the structures being approximately 10 feet, or one floor, below the western half (front portion). The waste beneath the footprint of these structures has been removed and is situated on clean fill.~~

~~The collection pipe network, located beneath the first floor slabs of the towers at two different elevations as explained above, will divert and vent collected gases at the perimeter of the structures. The collection piping will be located beneath the entire footprint as shown on the attached Sheets.~~

~~In lieu of the previously proposed vertical barrier cut off, selected areas of the towers will be~~



lined with a vapor barrier membrane. Liquid Boot®, a cold spray applied impermeable vapor barrier membrane, will be applied both horizontally and vertically to the concrete slabs located beneath confined and habitable spaces. The vertical portions will have a coarse gravel collection trench to divert and vent any gases migrating towards the vertical vapor barrier. Continuous methane monitors will be placed in areas of concern and integrated into the present monitoring network operating in Tower 1 and Garage 1.

Final locations of the continuous methane monitors within occupied spaces of the towers will be based on the recommendations and professional opinion of a qualified gas engineer. An addendum will be submitted to the FDEP with revised Sheets for review and approval prior to installation of the continuous gas sensors.

Garage 2

The gas management system for Garage 2, located under Towers 3 and 4 and presented in Phase IA 2 Sheets ENV 2.00 and ENV 2.01, will consist of a passive gas collection system utilizing slotted Schedule 40 PVC collection piping or Geovent® within a coarse gravel layer extending the entire footprint area. The collection piping will divert collected gases to the perimeter of the structure. The continuous methane monitors will be placed in areas of concern and integrated into the present monitoring network as shown on the Sheets. The gas collection system layout, Liquid Boot® lined areas, and proposed locations of methane monitors for both garage levels are also shown on the above mentioned Sheets. Garage 2 meets open garage requirement (40% open) in accordance with State of Florida Building Code.

Final locations of the continuous methane monitors within the garage, if necessary, will be based on the recommendations and professional opinion of a qualified gas engineer. An addendum will be submitted to the FDEP with revised Sheets for review and approval prior to installation of the continuous gas sensors.

Clubhouse and Town Home Amenities Poolhouse Pool Pavilion

The gas management system for the Clubhouse and Town Home Amenities Poolhouse Pool Pavilion structures will consist of a passive gas collection system utilizing slotted Schedule 40 PVC piping or Geovent® within a coarse gravel layer extending beneath the structures. The collection piping will be spaced approximately every 10 to 30 feet, depending on the structure size and pile cap configuration. Liquid Boot® will be applied beneath the entire footprint of both structures and vertically to the subgrade concrete slab portions of the Clubhouse. The front and partially subgrade portion of the Clubhouse will be vertically lined with Liquid Boot® as mentioned above. This side of the Clubhouse will feature a coarse gravel collection trench along the entire length of the subgrade perimeter to divert and vent any gases migrating towards the vertical vapor barrier. Continuous methane monitors will be placed in both structures to address areas of concern and integrated into the present monitoring network. The gas collection system layout, Liquid Boot® lined areas, and proposed locations of methane monitors for the Town Home Amenities Poolhouse Pool Pavilion and Clubhouse are presented in Phase IA 2 Sheets ENV 4.00 and ENV 5.00, respectively.

Final locations of the continuous methane monitors within the occupied spaces of the Clubhouse and Town Home Amenities Poolhouse Pool Pavilion will be based on the recommendations and professional opinion of a qualified gas engineer. An addendum will be submitted to the FDEP with revised Sheets for review and approval prior to installation of the continuous gas sensors.

Town Home

The gas management system for the typical Town Home, as presented in Sheets ENV 3.00, will consist of a passive gas collection system utilizing Schedule 40 PVC slotted piping or Geovent® within a coarse gravel layer extending beneath the structures and vent any gas collected beneath the slab to the atmosphere through a riser pipe at the perimeter of the structure. Crawl spaces will intercept any vertical migration of methane into the habitable or occupied space and will be passively vented through the space to the atmosphere through louvers in the walls of the space. Continuous methane monitors will also be installed in each crawl space to alert property management of significant methane accumulation.

Final locations of the continuous methane monitors within the crawl space of the Town Homes will be based on the recommendations and professional opinion of a qualified gas engineer. An addendum will be submitted to the FDEP with revised Sheets for review and approval prior to installation of the continuous gas sensors.

Guardhouse Gate House

The gas management system for the Guardhouse Gate House, as presented in Sheet ENV 6.00, will consist of a passive gas collection system utilizing Schedule 40 PVC piping or Geovent® within a coarse gravel layer extending beneath the structure. Liquid Boot® will be applied beneath the entire footprint of the structure. Continuous methane monitors will be installed to address the occupied spaces, such as the proposed restroom.

Final locations of the continuous methane monitors within the occupied spaces of the Guardhouse will be based on the recommendations and professional opinion of a qualified gas engineer. An addendum will be submitted to the FDEP with revised Sheets for review and approval prior to installation of the continuous gas sensors.

Permit Modification No. 6

This permit modification includes the proposed TownCenter Blocks A South and C, Biscayne Landing Boulevard, Buttonwood Street, and N.E. 143'd Street. A Key Sheet showing the limits of this permit modification proposed for closure is attached as TownCenter ENV 1.00. The following sections provide a description of the gas management systems proposed for the structures and thoroughfares included in this submittal.

TownCenter Blocks A South and C, Biscayne Landing Boulevard, and Buttonwood Street

TownCenter Blocks A South and C, Biscayne Landing Boulevard, and Buttonwood Street will be constructed within the "podium" limits of the TownCenter development. The "podium" concept involves the construction of a subgrade or basement level to be utilized as an automobile parking garage, location of building ancillary systems, and other building features such as elevators, stairwells, and a storage area beneath the hotel.

The gas management system for Blocks A South and C, presented in TownCenter Sheets ENV 2.00 and ENV 3.00, will consist of a passive gas collection system utilizing slotted Schedule 40 PVC collection piping or Geovent® within a coarse gravel trench beneath the TownCenter garage



area. The gas collection piping trenches beneath Block A South are located between the proposed pile and pile caps. LFG that may migrate into the "podium" will be vented by the carbon monoxide (CO) mechanical ventilation system. The CO mechanical ventilation system is independent of the TownCenter gas management system, yet provides an adequate LFG venting alternative.

The partially subgrade garage portions of both Blocks A South and C, with the exception of the western perimeter of Block A South along Buttonwood Street, will be mechanically vented on a continual basis to provide approximately over 60 air exchanges per day and vent potential methane gas migrating through the TownCenter concrete slab along with CO. The CO mechanical ventilation system will "sweep" the Block A South and C garage areas by introducing ambient air from the exterior perimeter of the TownCenter "podium" and venting near Biscayne Landing Boulevard.

TownCenter garage ventilation sheets outlining the CO mechanical system information are presented in sheets (AD)M7.001 and (CC)M7.001 provided by TLC Engineering for Architecture.

Liquid Boot®, a cold spray-applied impermeable vapor barrier membrane, will be applied beneath confined and habitable spaces such as elevator pits, stairwells, mechanical rooms, or around densely packed pile areas limiting gas collection such as the future hotel site footprint.

In addition, a gas detection system of continuous methane monitors will be placed within habitable spaces and confined spaces (e.g., elevator shafts) designated areas and integrated into the present monitoring network.

Proposed final locations of the continuous methane monitors within the garage areas for TownCenter Blocks A South and C are provided in TownCenter Sheets ENV-2.00 and ENV-3.00, respectively.

N.E. 143rd Street (Banyan Avenue)

There are no above-grade structures associated with N.E. 143rd Street. However, lighting poles potentially installed along N.E. 143rd Street shall reference previous gas management strategies outlined for Phase IA-1 and Phase IA-2 in Permit Modifications #2 and #3, and include the use of pull boxes or conduit seals in order to prevent the migration of LFG. References to these gas management systems are located in the design sheets for Permit Modifications #2 and #3.

On October 17, 2008 Biscayne Landing, LLC requested that formal review of this permit modification be suspended pending possible design changes in the area. See Permit Modification No. 10 which addresses these design changes.

Permit Modification No's. 7, 8 and 9

There are no structures associated with Permit Modifications 7, 8 and 9. These modifications relate to the groundwater remediation system schedule.

Permit Modification No. 10

There are no structures associated with Permit Modification No. 10.



1.2.6.3 Underground Utilities

The bedding material and trench backfill for underground utilities can provide a preferential pathway for LFG to travel. A gas collection trench constructed of gravel will be installed in the unsaturated zone above the low-water table elevation at each location along the perimeter of the landfill where buried utilities transition from waste fill areas to native soil areas in order to prevent the LFG from migrating along the utility line to offsite structures (see Drawing C-7, Gas Stop in Utility Trench).

Permit Modification No. 1

Two trenches, located on both the east and west sides of Biscayne Landing Boulevard, were installed across the entire length of the road right-of-way along the perimeter of the landfill at 151st Street and Biscayne Landing Boulevard where buried utilities transition from waste fill area to native soil areas in order to prevent the LFG from migrating offsite along the utility line. (See Biscayne Landing Boulevard Sheets ENV I and 2). Gas monitoring probes will be installed during the Biscayne Landing Boulevard construction within five feet of the gas collection trench near the north property line to determine if gas is migrating offsite from each utility pipe or conduit.

Permit Modification No. 2

A gas collection trench and a gas monitoring probe were proposed where the water main will enter the property off N.E. 151st Street at the location shown on Phase IA-1 Sheet ENV-1. This water main was installed beneath the water table and, therefore, did not require a gas collection trench or gas monitoring probe.

Permit Modification No. 3

There are no new underground utilities coming in from off-site locations.

Permit Modification No. 4

There are no new underground utilities associated with Permit Modification No. 4. This minor modification was related to the revision and update of the site schedule and phasing plan

Permit Modification No. 5

~~Underground utility systems that leave the site in the unsaturated zone (above the water table) have the potential to provide a preferential pathway for methane gas that is generated within the on-site waste to migrate off-site. However, because this site is located in an area of low ground elevation and high water table, some of the utilities are below the water table at the property line and the water table acts as a natural barrier to the migration of the gas offsite. Any utility installed below Elevation -2.0 (NGVD) will remain totally submerged even as the water table fluctuates seasonally, and the water prevents off-site gas migration.~~

A gas management system is proposed for underground utility systems leaving the site in the unsaturated zone. This system, shown in Figure 2-5 of the included Methane Gas Management and Monitoring Plan (MGMP), is designed to prevent the migration of landfill gas along the utility lines and trenches and off site or into protected spaces.

Permit Modification No. 6

Underground utility conduits potentially entering the "podium" area will be directed into a pull box (See TownCenter ENV 5.00 for detailed drawing of pull box) in order to allow gas potentially migrating within the conduit pipes to vent before entering the TownCenter area.

On October 17, 2008 Biscayne Landing, LLC requested that formal review of this permit modification be suspended pending possible design changes in the area. See Permit Modification No. 10 which addresses these design changes.

Permit Modification No's. 7, 8 and 9

There are no structures associated with Permit Modifications 7, 8 and 9. These modifications relate to the groundwater remediation system schedule.

Permit Modification No. 10

Two separate utility trenches, located on the 143rd Street section of the roadway extension exit the landfill and enter into native soil surrounding the site. The electric power, telephone, tv and home heating gas contained in one of the trenches exits the landfill straight down 143rd street. The other utility trench containing an 18-inch HDPE water main crosses from the north side of 143rd street and exits the site adjacent to the existing trailer building along the toe side of the landfill.

A landfill gas barrier and venting system will be installed across the entire width of each utility trench where buried utilities transition from waste fill area to native soil areas in order to prevent the LFG from migrating offsite along the utility line. Gas monitoring probes will be installed during within five feet of the gas barrier and venting system to determine if gas is migrating offsite from each utility pipe or conduit (See Biscayne Landing Boulevard Sheets ENV 1 and 2).

1.3 Gas Monitoring System

Currently, the gas generation rate does not appear to be a concern at the Munisport Landfill. The very low gas generation rates estimated by the LandGEM Model are very conservative and are expected to be even lower than the model estimates. This is further indicated by the dense vegetation that has been established on the landfill surface over time. What little gas is being



generated is venting through the soil without impacting the vegetation present. Use of a permeable cover to continue to prevent gas pressure build-up in the landfill interior is recommended for the site prior to development of the residential subdivision. The north, east and south property lines of the site are protected against off-site gas migration by a very shallow water table below ground surface in these locations, and the absence of preferential pathways for gas migration (i.e., underground utilities).

A site-wide Methane Gas Management and Monitoring plan has been developed for this project and is included as Appendix 0-6. This plan addresses the design, operation, monitoring, maintenance and requirements of the gas management system. As new closure redevelopment occurs, this plan will be expanded to incorporate the new construction into the plan.

This plan is intended to incorporate the requirements of FDEP for all permanently constructed components of the closure and end use of the landfill as well as DERM's requirements for monitoring temporary structures and facilities. The responsibility for gas management and monitoring under this plan is vested in one single entity.

1.4 Gas Remediation Plan

Sections 5 and 6 of the MGMP address response actions and contingency plan should gas be detected at concentrations at or above prescribed levels.



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10 - December 11, 2013
Part O – Gas Management System Requirements

*FIGURE O-1
SITE PLAN*





Figure O-1: CONCEPTUAL SITE DEVELOPMENT PLAN

Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10-December 11, 2013
Part 0-Gas Management System Requirements

*FIGURE 0-2
GASPROBE DETAIL*

(NO CHANGE Mod 10 December 11, 2013)



Munispmt Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10 – December 11, 2013
Part 0 - Gas Management System Requirements

TABLE 1-A
METHANE GENERATION MODEL
SCENARIO 1
(NO CHANGE Mod 10 December 11, 2013)



Munispo11 Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10-December 11, 2013
Part 0 -Gas Management System Requirements

TABLE 1-B
NMOC GENERATION MODEL
SCENARIO 1
(NOCHANGE Mod 10 December 11, 2013)



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No.10 – December 11, 2013
Part O Gas Management System Requirements

TABLE 2-A
METHANE GENERATION MODEL
SCENARIO 2
(NO CHANGE Mod 10 December 11, 2013)



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10 –December 11, 2013
Part 0- Gas Management System Requirements

TABLE2-B

NMOC GENERATION MODEL

SCENARIO 2

(NO CHANGE Mod 10 December 11, 2013)



Munisport Landfill Master Closure Plan
Confirmed Permit Application July 12, 2004
Permit Modification No.10 – December 11, 2013
Part 0- Gas Management System Requirements

APPENDIX 0-1
H.J. ROSSASSOCIATES -SITE INVESTIGATION REPORT
JANUARY 1987
(NO CHANGE Mod 10 December 11, 2013)



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10-December 11, 2013
Part 0 - Gas Management System Requirements

APPENDIX 0-2
HSA LANDFILL GAS SURVEY
JULY2003
(NO CHANGE Mod 10 December 11, 2013)



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 6 December 1, 2007
Part 0 Gas Management System Requirements

APPENDIX 0-3
~~HABITABLE SPACE GAS VENTING SYSTEM CALCULATIONS~~
~~JANUARY 2004~~
~~TOWNCENTER GARAGE GAS VENTING SYSTEM CALCULATIONS~~
~~DECEMBER 2007~~
Permit Modification No. 10-December 11, 2013



MUNISPORT LANDFILL CLOSURE (TOWN CENTER)

Date 11/5/07 By R. HOGG

Project No. 2070032 Location Biscayne Landing

Page 1 of 1

Reviewed by Eduardo Smith



ES CONSULTANTS, INC.
Environmental and Civil Engineering

Assumptions:

CH₄ generation rate from Landgem model:

$$1.840 \times 10^6 \text{ m}^3/\text{yr} \text{ for entire site}$$

$$\Rightarrow 178,021 \text{ ft}^3/\text{day} \text{ for entire site}$$

$$Q = 0.0249 \text{ ft}^3/\text{day} \text{ per square foot}$$

GAS CONCENTRATION

Area under consideration: (Blocks AS, C, E1B + Bullwamp)

$$A = 11.637 \text{ Acres} = 430,664.5 \text{ sq. ft}$$

$$\text{Volume of methane} = QA = 12,623.00 \text{ ft}^3 = V_M$$

$$\text{Volume of garage} = A \cdot \bar{h} = V_G$$

$$\text{(where } \bar{h} = \text{average indoor height of space} = 13.5') \\ = 0.814 \times 10^6 \text{ ft}^3$$

Max Concentration of Methane in Garage

$$= \frac{V_M}{V_G} = \frac{12,623 \text{ ft}^3}{5,83,969 \text{ ft}^3} \text{ PER DAY}$$

$$= 0.00217$$

$$= 0.217\% \text{ or } 4.34\% \text{ LEL per day}$$

in air / day

$$\text{No. of Garage Air Exchanges} = 62 \text{ per day} \\ \Rightarrow 2.6 \text{ per hr}$$

Permit Modification No. 10-December 11, 2013

Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10 – December 11, 2013
Part O – Gas Management System Requirements

APPENDIX O-4
TYPICAL METHANE MONITOR AND ALARM
(NO CHANGE Mod 10 December 11, 2013)

Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10-December 11,
2013

Part 0 - Gas Management System Requirements

APPENDIX 0-5
GAS MANAGEMENT SYSTEM BASIS OF DESIGN DOCUMENT
(SUPERCEDED BY METHANE GAS MANAGEMENT PLAN
IN PERMIT MODIFICATION NUMBER #5, DATED JUNE 5, 2007)
(NO CHANGE Mod 10 December 11, 2013)



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10 - December 11, 2013
Part 0 - Gas Management System Requirements

APPENDIX 0-6
METHANE GAS MANAGEMENT PLAN

ATKINS

**Munisport Landfill
Master Closure Plan
Conformed Permit
Application July 12, 2004**

Permit Modification No. 10 – December 11, 2013

Part 0 - Gas Management System Requirements

APPENDIX 0-6

METHANE GAS MANAGEMENT PLAN

**Biscayne Landing
(F.N.A. Munisport Landfill)**

Methane Gas Management Plan

April 2005

Rev. 1: June 23, 2005

Rev. 2: August 25, 2005

Rev. 3: August 30, 2005

Rev. 4: June 5, 2007

Rev. 5: December 1, 2007

**Rev. 6: December 11, 2013 Permit
Modification No. 10**



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Appendix

A	Site Health and Safety Program
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C	Continuous Methane Monitor Manufacturer Information (Permanent Structures)

1.1 Introduction

1.2 Background

The Munisport Landfill is an unlined landfill that was operated during the period 1940 to 1980. Biscayne Landing is a new development located on the site of the closed former Munisport Landfill located within the city limits of North Miami, Florida. The site lies between Biscayne Boulevard and Biscayne Bay, south of the Oleta River and west of Bakers Haulover Inlet. The site is bordered on the south by Northeast 135th Street and on the north by Northeast 151st Street.

The Biscayne Landing Development Project consists of closure of the Munisport Landfill and redeveloping the site to include multi family residences, parking garages, clubhouses, retail/office space and a hotel/spa with associated roadways and park areas. The project will be developed in phases from 2005 to 2015.

1.3 Methane Generation at Landfills

The biodegradation of refuse in landfills produces landfill gas, consisting primarily of methane and carbon dioxide, both colorless and odorless gases, with trace amounts (less than 1% of the total gas) of non-methane organic compounds (NMOC) that even at very low concentration produce an unpleasant odor. Refuse in landfills may produce landfill gas for approximately 20 to 30 years, depending on environmental factors of the landfill (moisture content of the waste; nutrient concentration; pH; and temperature). The Lower Explosive Limit (LEL) and the Upper Explosive Limit (UEL) of methane in air is 5 percent and 15 percent, respectively.

While this landfill is near the end of its life regarding the generation of methane, surveys of the waste pile confirm the continued presence of landfill gas in the waste. Since the termination of the landfill operation, the site became vegetated naturally and consisted of Brazilian pepper and Australian pines. With final cover consisting only of soil and vegetation, the landfill gas being generated could escape naturally through the cover and into the atmosphere. Since the gas generation was not impeding the growth of vegetation, this provides evidence that the recent gas generation rate has reduced to minimal levels.

1.4 Objective

The development plans for Biscayne Landing incorporate landfill gas management and monitoring systems that prevent landfill gas from seeping into confined spaces or occupied spaces that are part of the development, and prevent the migration of landfill gas off site along underground utility lines that serve the development. This plan addresses the on-going monitoring and reporting of methane concentrations in designated locations, preventative maintenance of the management and monitoring system components, procedures to be followed if gas is detected in protected spaces and a contingency plan should there be a failure of any component of the management and monitoring system.

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An outline of the major sections of this document with a concise and general description of the topics and issues discussed therein is provided below:

Section 1.0 – Introduction -This section provides a brief history of the site and the proposed development activities, general information on methane generation and detection, and outlines the overall purpose of the document.

Section 2.0 – Gas Management and Monitoring System Description – This section outlines the gas management and monitoring systems that will be utilized at the site based on the foundations of the temporary and permanent structures and underground utility layouts.

Section 3.0 – Methane Gas Monitoring and Reporting – This section outlines the methane gas monitoring procedures and reporting schedules for the structures at the site.

Section 4.0 -System Maintenance -This section provides general maintenance, testing, and reporting guidelines for the methane gas management systems utilized at the site.

Section 5.0 – Response to Gas Detection – This section details specific action levels, in terms of (lower explosive limit) LEL, for the systems introduced in Section 3.0 and outlines response actions in the event of an exceedance.

Section 6.0 – Contingency Plan - This section outlines the contingency plan in the event of an electrical power loss.

Section 7.0 – Institutional Controls – This section summarizes the administrative and institutional controls that will be utilized at the site.

In addition, this document replaces and supersedes the Gas Management System Basis of Design Document located in Appendix 0-5. Future modifications or revisions that were previously made to the Basis of Design shall be incorporated into this document.

2.0 Gas Management and Monitoring System Description

2.1 Introduction

The Gas Management System for this project will vary depending on type of foundation and building space that is utilized. Open space will utilize the proposed permeable cap for passive venting of the gas through the cover soil due to the low flux rate predicted by LandGEM.

Alternative building and foundation configurations include the following:

- Occupied space over waste with slab on grade foundation;
- Occupied space over waste with pile foundation;
- Occupied space over clean fill (slab or pile foundation); and,
- Parking Garage over waste.

The following sections contain a description of the gas management system for each of the alternatives described above. Please note the use and definitions of the following terms throughout the document:

- Sand layer – Layer of coarse sand or gravel located beneath or above concrete slab, 60-mil high-density polyethylene (HDPE) membrane liner, or 60 mil cold spray- applied adhesive rubberized asphalt membrane;
- Gas Probes – Polyvinyl chloride (PVC) 2" diameter piping utilized for sampling layer between concrete slab and HDPE liner;
- Monitor, Sensor, or Detector – Continuous combustible gas sensor used to monitor ambient LEL in crawl, confined, and habitable spaces;
- Gas Vent or Collectors – Slotted or perforated PVC gas collection piping utilized to collect gas fluxing from waste and divert to exterior vent above grade;
- Point of Detection (POD) – Area sampled for methane gas in order to assess potential migration of landfill gas (LFG) into crawl, confined, or habitable spaces. Gas probes and continuous methane monitors are used to sample the PODs;
- Responsible Person – Individual or group designated to supervise and coordinate activities related to the methane gas management at the site; and,
- Area(s) of Concern-Space or area where an action level has been exceeded.

2.1 Occupied Space over Waste with Slab on Grade Foundation

The gas management system proposed for this foundation configuration is shown in Figure 2-1 and is divided into two alternatives based on the gas management strategy adopted, including the following elements from the foundation sub-grade to the finished floor:

Alternative 2.2(A) - Slab on Grade with HDPE Membrane Liner

- In-situ solid waste
- Sand layer below membrane liner to collect and divert gas fluxing from the waste, which may include horizontal gas collectors in lieu of perimeter gravel trench (convertible to active gas collection system if necessary)
- A membrane liner (60 mil HDPE or equivalent) barrier to prevent the gas from entering the foundation elements where the gas could then enter occupied spaces
- Sand monitoring layer above the membrane
- Gas probes within the sand layer (POD)
- Concrete floor slab
- Continuous methane monitors in habitable spaces (Located and spaced in accordance with qualified gas engineer's recommendations)
- Perimeter gravel trench keyed to collect gas from the sand layer under the membrane

Alternative 2.2 (B) - Slab on Grade with Spray-Applied Membrane Liner

- In-situ solid waste
- Sand layer to collect and divert gas fluxing from the waste
- A membrane liner (60 mil cold spray-applied adhesive rubberized asphalt membrane) barrier to prevent the gas from entering the foundation elements where the gas could then enter occupied spaces
- Concrete floor slab
- Perimeter gravel trench keyed to collect gas from the sand layer under the membrane or horizontal gas collectors under the membrane to collect and vent gas (convertible to active gas collection system if necessary)
- Continuous methane monitors in habitable spaces (Located and spaced in accordance with qualified gas engineer's recommendations) (POD)

2.2 Occupied Space over Waste with Pile Foundation

The gas management system proposed for this foundation configuration is shown in Figure 2-2 and is divided into three alternatives based on the gas management strategy adopted including the following elements from the foundation sub-grade to the finished floor:

Alternative 2.3 (A) - Pile Foundation with Vented Crawl Space

- In-situ solid waste
- Sand layer to collect and divert gas fluxing from the waste

- Concrete floor slab in crawl space
- Perimeter gravel trench keyed to collect gas from the sand under the concrete floor slab for crawl space or horizontal gas collectors to collect and vent gas (convertible to active gas collection system if necessary)
- Vented crawl space (natural) - one air change per day required. Not accessible to the public (provide means of restriction in final design)
- First floor slab
- Continuous methane monitors in crawl space (Located and spaced in accordance with qualified gas engineer's recommendations) (POD)
- Permanently installed sampling tubes to collect ambient air samples in the immediate vicinity of methane monitors (as appropriate)

Alternative 2.3 (B)- Pile Foundation with HDPE Membrane Liner

- In-situ solid waste
- Sand layer to collect and divert gas fluxing from the waste
- Perimeter gravel trench keyed to collect gas from the sand layer under the membrane or horizontal gas collectors under the membrane to collect and vent gas (convertible to active gas collection system if necessary)
- A membrane liner (60 mil HDPE or equivalent) barrier to prevent the gas from entering the foundation elements where the gas could then enter occupied spaces Sand monitoring layer above the membrane
- Gas probes within the sand layer (POD)
- Concrete floor slab
- Continuous methane monitors in habitable spaces (Located and spaced in accordance with qualified gas engineer's recommendations)

Alternative 2.3 (C)- Pile Foundation with Spray-Applied Membrane Liner

- In-situ solid waste
- Sand layer to collect and divert gas fluxing from the waste
- Perimeter gravel trench keyed to collect gas from the sand layer under the membrane or horizontal gas collectors under the membrane to collect and vent gas (convertible to active gas collection system if necessary)
- A membrane liner (60 mil cold spray-applied adhesive rubberized asphalt membrane) barrier to prevent the gas from entering the foundation elements where the gas could then enter occupied spaces
- Concrete floor slab
- Continuous methane monitors in confined or habitable space above membrane-lined area (Located and spaced in accordance with qualified gas engineer's recommendations) (POD)

2.1 Occupied Space over Clean Fill (Slab or Pile Foundation)

The gas management system proposed for this foundation configuration is shown in Figure 2-3 and includes the following elements from the foundation sub-grade to the finished floor:

- Impermeable vertical barrier and vent system separating solid waste filled areas from clean filled areas
- Any existing solid waste within the barrier area will be removed down to the native substrate and replaced with clean fill
- Vertical gas probes adjacent to the vertical barrier (convertible to active gas collection system if necessary)
- First floor slab

In lieu of impermeable vertical barrier, Sections 2.2 or 2.3 alternatives may be utilized.

2.2 Parking Garage over Waste

The gas management system proposed for this foundation configuration is shown in Figure 2-4 and includes the following elements from the foundation sub-grade to the finished floor:

- In-situ solid waste
- Sand monitoring layer below the floor slab (only beneath confined spaces) or use of 60-mil cold spray-applied adhesive rubberized asphalt membrane as a vapor barrier
- Gas vents within the coarse fill (convertible to active gas collection system if necessary)
- First floor slab
- Parking Garage mechanical ventilation system designed to exhaust carbon monoxide fumes or natural ventilation meeting the "open garage" requirement (40% open) according to State of Florida Building Code that will also vent any combustible gases that may pass through penetrations or construction joints in the floor slab
- Continuous methane monitors in habitable and confined spaces (Located and spaced in accordance with qualified gas engineer's recommendations)

Any confined or occupied spaces within the parking garage will be specially protected against the intrusion of landfill gas. Such spaces include, but are not limited to, stairwells, elevator shafts, mechanical rooms, and utility or storage rooms. Details of the gas barrier or venting system for these spaces will be provided on the construction drawings for these facilities once the details of these structures become known.

Currently, gas management alternatives found in Sections 2.2 and 2.3 may be utilized for the confined or occupied spaces. The construction drawings will be submitted to the Department for approval prior to construction of the facilities.

2.3 Underground Utility Systems

Underground utility systems that leave the site in the unsaturated zone (above the water table) have the potential to provide a preferential pathway for methane gas that is generated within the on-site

waste to migrate off-site. However, because this site is located in an area of low ground elevation and high water table, some of the utilities are below the water table at the property line and the water table acts as a natural barrier to the migration of the gas offsite. Any utility installed below Elevation 2.0 (NGVD) will remain totally submerged even as the water table fluctuates seasonally, and the water prevents off site gas migration.

A gas management system is proposed for underground utility systems leaving the site in the unsaturated zone. This system, shown in Figure 2-5, is designed to prevent the migration of landfill gas along the utility lines and trenches and off-site or into protected spaces. The gas management system proposed for underground utility systems as shown in Figure 2-5 is designed to prevent the migration of landfill gas along the utility lines and trenches and off-site or into protected spaces. The gas management and monitoring system should be located in native material as close as practical to the edge of waste. This gas management system includes the following elements from the gas containing area, along the utility line to the protected area:

- Vertical gravel filled trench across the entire cross section of the utility trench
- Perforated gas collection and venting pipe to transport gas from the gravel trench to the atmosphere.
- Vertical impervious barrier booted to the utility line and sealing off the entire cross section of the utility trench
- Vertical gas probe installed down stream of the impervious barrier to monitor the performance of the barrier and vent pipe.

Underground utility conduits will be directed into a pull box (See ENV-5.00 for detailed drawing of pull box) in order to allow gas potentially migrating within the pipes to vent to the atmosphere.

2.7 Temporary Construction Office Trailers

The gas management monitoring system for the Construction Office Trailers and Material Storage Containers (discussed below in Section 2.8), are regulated by the Miami-Dade Department Environmental Resource Management (DERM).

The gas management system proposed for these temporary facilities is shown on Figure 2-6 and includes the following elements from the solid waste to finished grade:

- In-situ solid waste
- 6-inch minimum of clean fill or an appropriate thickness of subgrade soil and pavement, limerock, asphalt or concrete)
- Pedestal support for the trailer (height varies)
- Office Trailer

2.8 Temporary Material Storage Containers

The gas management system proposed for these temporary facilities is shown on Figure 2-7 and includes the following elements from the solid waste to finished grade:

- In-situ solid waste
- 6-inch minimum of clean fill or an appropriate thickness of subgrade soil and pavement (limerock, asphalt or concrete)
- Block support for the container
(height varies) Office Trailer

3.0 Methane Gas Monitoring and Reporting

3.1 Introduction

Gas management and monitoring systems installed under this plan for temporary facilities are regulated by DERM. Those systems installed in permanent facilities as part of the final closure and redevelopment of the site is regulated by the Florida Department of Environmental Protection (FDEP). DERM monitoring and reporting requirements are met by complying with those requirements contained in FDEP's Solid Waste Rule 62-701.530(2) F.A.C. This rule generally requires gas monitoring as follows:

- Monitor to ensure that the system design requirements outlined in 62-701.530(1) are being met
- Monitor ambient points in on-site structures that can be impacted by combustible gases
- Monitor soil monitoring probes along each and within 100 feet of the property boundary to detect gas migration
- Monitoring points will be sampled on a quarterly basis and reported in terms of LEL and reported to the FDEP and DERM

3.2 Monitoring Procedures

The monitoring procedures will vary depending on the type of building foundation and gas management strategy employed. Combustible gas measuring equipment will be calibrated to methane and reported as a percent of the LEL for methane. During monitoring activities, gas measurements will be recorded and reported for pre-purge (stagnant) and purged conditions for the sampling points. A description of the procedures applicable to each foundation type follows.

3.2.1 Occupied Space over Waste with 60 mil HDPE Membrane Liner

The ambient air in the confined or habitable spaces located above the lined areas will be monitored using a commercially available methane monitoring and alarm system set to a specified percent LEL (LEL action levels will be selected based on the building type as discussed in Section 5.0). Gas monitoring probes located above the membrane liner and below the slab will be monitored to identify possible migration of LFG through the vapor barrier. The passive vent stack will also be monitored from a sampling port to determine the quality of the gas being diverted from beneath the slab.

3.2.2 Occupied Space over Waste with Crawl Space

The ambient air in the crawl space for this foundation type will be continuously monitored using a commercially available methane monitoring and alarm system.

Ambient air samples will be collected through permanently installed sampling tubes as a backup to the methane sensors, as appropriate. The passive vent stack will also be monitored from a sampling port to determine the quality of the gas being diverted from beneath the crawl space floor slab.

3.2.3 Occupied Space over Waste with Spray-Applied Adhesive Membrane (Slab or Pile Foundation)

The monitoring procedures for the building scenario above are described based on the alternatives presented in Sections 2.2 and 2.3:

The ambient air in the confined or habitable spaces located above the lined areas will be monitored using a commercially available methane monitoring and the alarm system set to a specified percent LEL (LEL action levels will be selected based on the building type as discussed in Section 5.0). The passive vent stack will also be monitored from a sampling port to determine the quality of the gas being diverted from beneath the slab.

3.2.4 Occupied Space over Clean Fill (Slab or Pile Foundation)

Gas monitoring probes shall be located every 200 feet along the length of the vertical cut off wall, and five feet inside the clean fill side of the wall.

The passive vent stack for the impermeable barrier and vent system will also be monitored from a sampling port to determine the quality of the gas being diverted from the landfill.

See Sections 3.2.1 through 3.2.3 for alternative monitoring procedures if impermeable vertical barrier is replaced with alternative gas management methods aforementioned in Sections 2.2 or 2.3.

3.2.5 Parking Garage over Waste

The clean fill below the concrete slab foundation associated with the confined spaces of the garage will be monitored for methane gas presence. The passive vent stack for the perimeter gravel trench or horizontal collection system will also be monitored from a sampling point in its vent stack to determine the quality of the gas being diverted from under the garage. The ambient air within the confined space of the garage will be continuously monitored using a commercially available methane monitoring and alarm system. In addition, periodic ambient air monitoring will be conducted using hand-held metering equipment as back up to the alarm system

3.2.6 Utility Systems

The clean fill in the utility trenches at the property line will be monitored for methane gas through passive gas vents. A gas interceptor wall is installed across the utility trench to

capture and vent any gas that is present and gas monitoring probes are installed within 5 feet of the interceptor wall within the utility trench to monitor potential offsite gas migration.

3.3 Monitoring Locations

As the closure and redevelopment of the landfill advances, more and more facilities will be developed that will require gas management and monitoring.

These facilities will be categorized as temporary facilities, permanent structures and utility systems and perimeter gas probes at the property line.

Gas management and monitoring plans have been prepared for several temporary facilities at the Biscayne Landing Site and have been approved by DERM as follows:

- Interim Sales Center- Sales Trailer; Approved March 25, 2003
- Interim Sales Center- Sales Building; Approved November 13, 2003
- Administration Compound; Approved April 2, 2004

Gas Management and monitoring plans have been prepared for several stages of construction of permanent closure and redevelopment and have been approved by FDEP as follows:

- Biscayne Landing Boulevard; Approved January 12, 2004
- Phase 1A-1 for Towers 1&2, Garage I, and underground utilities at 151st Street; Approved March 4, 2005
- Phase 1A-2 Towers 3&4, Garage II, Amenities Building and Town Homes; Approved January 20, 2006
- Redesign for Phase 1A-2 Towers 3&4, Garage II, Amenities Building, Town Homes, Town Homes Amenities Poolhouse and Guardhouse; Submitted for approval June 5, 2007; Pending; Approved April 15, 2006, no buildings were constructed
- TownCenter Blocks A South and C, Biscayne Landing Boulevard, Buttonwood Street. and N.E. 143rd Street; Submitted for approval December 1, 2007; Review suspended at Applicant's request on October 17, 2008.

Figures 3-1 through 3-3 show the locations of each monitoring point for the temporary facilities approved for construction and Figures 3-4 through 3-7 3-19 show the locations of the permanent facilities approved for construction as listed above. The location of the underground utility systems at 151st Street is shown on Figures 3-8.

All submittals, notifications and updates of this document and quarterly reports required by the Departments (DERM and FDEP) shall be made to both Departments.

Tables 3-1 through ~~3-3~~ ~~3-10~~ ~~3-5~~ are lists of each established monitoring point, its current status and the figure number where it is shown in plan view.

3.4 Monitoring Frequencies

The schedule for monitoring concentrations of combustible gases at ambient monitoring points, soil monitoring probes and crawl spaces shall be as follows:

- a. Weekly for the first month;
- b. Quarterly thereafter; and,
- c. More frequent monitoring may be required as detailed in Section 5.

3.5 Reporting Requirements

Gas management and monitoring systems installed under this plan for temporary facilities are regulated by DERM. Those systems installed in permanent facilities as part of the final closure and re-development of the site are regulated by the FDEP. Each agency requires quarterly reporting of the results of gas monitoring, and DERM requires that a copy of the report also be submitted to Miami-Dade Fire Rescue. Any gas concentrations measured above the limits specified in this plan are reported in accordance with Section 5 of this plan.

4.0 System Maintenance

4.1 Introduction

The Methane Gas Management Plan as currently permitted and designed includes passive gas venting systems under protected spaces with monitoring devices above the gas barrier to monitor the performance of the venting and barrier system. Section 2 contains a detailed description of these system components which are summarized here as follows:

- Gas collection and venting pipes
- Horizontal and vertical gas monitoring probes
- Self-contained methane monitor/alarm units
- Methane detectors reporting to a central monitoring panel

The Site Safety Plan attached to this Plan as Appendix A describes the issues relating to working on and within the landfill. All construction, maintenance and repairs to the methane gas management system or other systems and utilities constructed within the landfill mass are required to follow this Site Safety Plan. The following parts of this section describe the procedures to be followed for the inspection, maintenance and repair of these system components.

4.2 Inspection and Testing

Each quarter when methane monitoring occurs, each monitoring location will be visited by an environmental technician trained in the measurement of methane concentrations using a Landtec GEM 2000 gas analyzer. This same technician will inspect and, where appropriate, test the monitoring system components in accordance with the following procedures.

4.2.1 Gas Collection and Venting Pipes

The venting pipes will be inspected for visible signs of blockage, and gas readings will be made to determine if methane is venting from the pipes. These readings will be compared to historical readings of the same location to determine if there has been a change in system performance from the previous quarter. Other conditions such as flooding or clogging of the system will be observed and noted.

4.2.2 Horizontal and Vertical Gas Monitoring Probes

These probes will be inspected to determine the condition of the protective cap, fittings, etc.,

relating to their protection and performance. The readings taken from these probes will be compared to historical readings of the same location to determine if there has been a change in system performance from the previous quarter.

4.2.3 Self-Contained Methane Monitor/Alarm Units

Presently, two types of methane detectors are active at the site to monitor temporary and permanent occupied structures. The inspection and testing procedures for these monitors, located in both temporary and permanent structures, is presented below:

Temporary Structures

These units will be inspected quarterly to check the power connection to the unit. The vendor will test the unit's response to sample gas. The manufacturer's recommendations will be followed in conducting this response test. See Appendix B for the manufacturer's instructions for the units installed at the Sales Complex and Administration Compound.

Permanent Structures

These units will be inspected quarterly to check the power connection to the unit. The vendor, Quest Controls (Quest), will test the unit's response remotely, perform periodic calibrations, and alert the Responsible Person of any malfunction. The manufacturer's recommendations will be followed in conducting this response test. See Appendix C for the manufacturer's instructions for the units installed in Tower 1, Tower 2, and Garage 1.

As additional units are installed, their manufacturer instructions will be added to this section.

4.2.4 Methane Detectors Reporting to a Central Control Panel

Methane detectors located in the structures will report to a central control panel located near the southwest corner of Garage 1. As additional structures are constructed, the associated methane detectors will be integrated into the existing monitoring network.

4.3 Maintenance and Repair

Since the methane gas management system is at this time a passive system there are no operating equipment components that require routine maintenance to assure their function and performance.

Repairs to the system would consist of responding to conditions discovered during the quarterly inspection and monitoring events. Any methane detectors in temporary structures found not responding to the sample gas test and those located in permanent structures found to be malfunctioning by Quest will be replaced. Any damage to system components would be

repaired appropriately. Further detailed information on the maintenance and repair of gas management system components and devices will be detailed in the Operations, Maintenance, and Monitoring Manual (OMMM) utilized by site personnel.

Reporting

The results of the system inspection and any subsequent repair or replacement of system components will be reported as part of the quarterly report to the regulatory agencies. A maintenance log will be completed by site personnel for record purposes during routine maintenance inspections, to be included in the OMMM, and attached to agency reports, if requested.

In addition, summary reports for the individual methane monitors or areas of interest, if needed or requested, will be included in the quarterly reports.

5.0 Response to Gas Detection

5.1 Introduction

The Florida Department of Environmental Protection's Solid Waste Management Facilities Rule specifies the requirements for a gas remediation plan in Rule 62-701.530(3)(a) F.A.C. This rule generally requires remedial action to respond to gas concentrations in excess of the LEL as follows:

- a. Immediately take all necessary steps to ensure protection of human health and notify FDEP and DERM of the occurrence.
- b. Within seven days of detection, submit to FDEP for approval a Gas Remediation Plan. The Plan shall describe the nature and extent of the problem and the proposed remedy. The remedy shall be completed within 60 days of detection unless otherwise approved by FDEP.

If gas concentrations cause objectionable odors, the Rule requires the following actions to be taken:

- a. Implement a routine odor monitoring program to determine the timing and extent of any off-site odors
- b. If the monitoring program confirms the existence of objectionable odors, submit to FDEP for approval an Odor Mitigation Plan for gas releases. The plan shall describe the nature and extent of the problem and proposed remedy. The remedy shall be initiated within 30 days of approval of FDEP.

DERM requires that they be notified as discussed above for those facilities that are under their jurisdiction rather than FDEP's.

5.2 Response Action

If landfill gas is detected in locations and at the site at action levels as specified in this plan, an evaluation will be performed to determine if the gas concentrations are nearing levels of concern to the public safety or, if the gas emissions are not harmful but are aesthetically unpleasing to the public. A contingency plan for addressing these scenarios is discussed below.

Action levels will dictate the method of response. There will be a LEL action level that will trigger field verification and subsequent action, as necessary. A higher LEL action level will trigger MDFD notification and response. A detailed discussion of these action levels and responses, dependent upon foundation configuration and gas management methods, is provided below.

5.2.1 Gas Probes

Gas probes will be installed where HDPE liner is utilized as the vapor barrier as outlined in Section 2.0. Additionally, gas probes will be installed beneath temporary structures and along the property line. Gas concentrations will be manually monitored in the gas probes.

Confined or Habitable Spaces

If LFG is detected to be greater than, or equal to, 5% of the LEL in the gas probes located beneath the confined or habitable spaces, the following protocol will be followed:

- An environmental field technician or trained responder will verify the LEL concentration by taking three successive measurements with a hand-held gas analyzer with a complete calibration performed between measurements.
- Recorded readings will be confirmed and reported to the Responsible Person.
- The Responsible Person will contact Quest to discuss methane monitor readings in confined or habitable spaces above the areas of concern. If methane monitor readings are reported above 1% LEL, then see Section 5.2.2 for action levels associated with methane monitors.
- Daily monitoring of the gas probes within the area of concern will be conducted for 1 week following the confirmed exceedance (5% LEL).
- If readings above 5% persist, then an investigation into possible sources will be initiated.
- If readings persist above 5% or appear to be a recurring problem, active ventilation of the area beneath the liner using the gas collector network may be implemented using blowers or vacuum pumps connected to the gas vents.

Property Boundary Gas Probes

If landfill gas is detected at greater than, or equal to, 25% of the LEL in the perimeter gas probes at the edges of the site or utilities trench, a plan for mitigation and/or monitoring of this condition will be developed and submitted to the Department for approval.

5.2.2 Methane Monitors

A field verification action level of 15% LEL and a MDFD notification action level of 25% LEL will be used for continuous methane monitors in crawl spaces. A field verification action level of 1% LEL and a MDFD notification action level of 10% LEL will be used for continuous methane monitoring in crawl spaces. A field verification level of 1% LEL and a MDFD notification of 10% LEL will be used for continuous methane monitors in confined or habitable spaces.

Crawl Spaces

The following protocol will be followed in the event of a detection outlined above and communicated by Quest **or an equivalent monitoring company**:

- If gas is detected at greater than, or equal to, 15% LEL for 10 consecutive minutes, Quest shall contact the Responsible Person and verification by the field technician will be performed. **The technician shall monitor the crawl space atmosphere for %LEL, prior to mobilizing from each area of concern to another, to determine and confirm safe atmospheric conditions.**
- The technician will verify the LEL concentration by taking three successive measurements in the area(s) of concern with a hand-held gas analyzer with a complete calibration performed between measurements.
- Confirmed readings will be discussed with the Responsible Person. The environmental technician may investigate potential alternate sources causing the exceedance.
- If the concentration is confirmed above 15% LEL, the environmental field technician will attempt to increase or maximize ventilation by opening crawl space access doors or latches.
- If gas is detected at greater than, or equal to, 25% LEL in the crawl space at any time, Quest will immediately notify MDFRD.
- Active ventilation using the gas collector network may be implemented using blowers or vacuum pumps connected to the gas vents.

If LEL levels persist above 25% LEL after these mitigation measures have been undertaken, a plan for mitigation and/or monitoring of this condition will be developed and submitted to the Department for approval.

Habitable Spaces

This protocol will be followed in the event of a detection outlined above and communicated by Quest:

- If gas is detected at greater than, or equal to, 1% LEL for 10 consecutive minutes, Quest shall contact the Responsible Person and verification by the field technician will be performed. The technician shall monitor the habitable space atmosphere for % LEL, prior to mobilizing from each area of concern to another. to determine and confirm safe atmospheric conditions.

- The technician, at the direction of the Responsible Person, will verify the LEL concentration by taking three successive measurements with a hand-held gas analyzer with a complete calibration performed between measurements.
- Confirmed readings will be discussed with the Responsible Person. The environmental technician may investigate potential alternate sources causing the exceedance and, at the direction of the Responsible Person, may attempt to increase or maximize ventilation (air flow or equilibration to atmospheric air) by opening doors or windows. If the Area of Concern is located within the TownCenter a garage, the technician may attempt to manually increase the fan speed and air exchange rate in order to maximize ventilation and ambient air flow.
- If gas is detected at greater than, or equal to, 10% LEL m at any time, Quest will immediately notify MDFR.
- Active ventilation using the gas collector network may be implemented using blowers or vacuum pumps connected to the gas vents.

If LEL levels persist above 10%, a plan for mitigation and/or monitoring of this condition will be developed and submitted to the Department for approval.

5.2.3 Odor

The facility shall be operated to control objectionable odors in accordance with Rule 62- 296.320(2), FAC. If gas concentrations cause objectionable odors, the following actions shall be taken:

- a. Implement a routine odor monitoring program to determine the timing and extent of any off-site odors; and
- b. If the monitoring program confirms the existence of objectionable odors, submit to DERM's PRS section for approval an Odor Mitigation Plan for the gas releases. The plan shall describe the nature and extent of the problem and the proposed remedy. The remedy shall be initiated within 30 days of approval by DERM.

6.0 Contingency Plan

The Methane Gas Management Plan as currently permitted and designed includes passive gas venting systems and continuous methane monitor above the gas barrier. Section 5 discusses the plan of action should the system detect the presence of methane.

The continuous methane monitors and the monitoring center are tied into the site commercial power supply. A 48-hour back-up power supply will be provided for the system. After 48 hours if power is not restored, daily manual monitoring of the PODs using a hand-held gas analyzer will be conducted (See Section 5.0 for action levels and responses). Should a total power system failure occur, ambient monitoring with handheld meters will be instituted. In the event of a data connection loss between the continuous methane monitors and the Quest monitoring center, visual inspection of the monitor's display will be conducted and recorded daily similar to the loss of power scenario.

7.1 Institutional Controls

7.2 Introduction

Oleta Partners, LLC is currently in the process of forming a Master Association Biscayne Landing Owners Association, Inc. (Association) ~~is the master condominium association~~ for the Biscayne Landing development. The Association ~~has~~ will have jurisdiction over areas common to the whole development and also will regulate the establishment of sub-associations that address neighborhood-specific issues and common ground within the particular neighborhood that are exclusive of the development as a whole. The City of North Miami retains Fee title to the land and has leased this land to the Developer Oleta Partners, LLC until such time as the Developer transfers the lease to the Association. Therefore, park areas, main and subsidiary roadways, etc., would be considered common to the development as a whole, but parking lots and driveways to specific buildings and the green spaces around those buildings would be exclusively neighborhood common ground.

7.2 Notification to Owners

The Master Association Condominium documents ~~(Section 2.5 Environmental Conditions)~~ will provide notice to all owner/members of the environmental considerations relating to this site, including the potential for the former landfill to generate methane.

7.3 Homeowner Association Responsibility and Authority

In accordance with the terms of this association agreement ~~(Section 4.2 Maintenance of Common Areas and Other Property)~~, it ~~is also~~ will also be the responsibility of the Association to manage the Environmental Services and Surface Water Management System in accordance with all Government requirements.

7.4 Institutional Controls

The Association documents will contain provisions for the Developer to implement a gas management program and for the Association to maintain the system.

This Methane Gas Management Plan, OMMM, and the Site Safety Plan will control the maintenance and repair of the gas system and any other underground utility or structure covered under this plan.

Munisport Landfill Master Closure Plan
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Methane Gas Management Plan

FIGURES



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No.10- December 11, 2013

Methane Gas Management Plan

*FIGURES 2-1 THROUGH 3-10
(NO CHANGE 12/01/2007)*

Delete Figures 3-11 through 3-19

U:\Draw\SYNCHRO\WATERMAN\Main\port\Temp\muc\Temp\VALPH\Carved\011305\Figure 3-9 - ADMIN_revised(12-10-13).dwg Dec 10, 2013 - 9:46pm

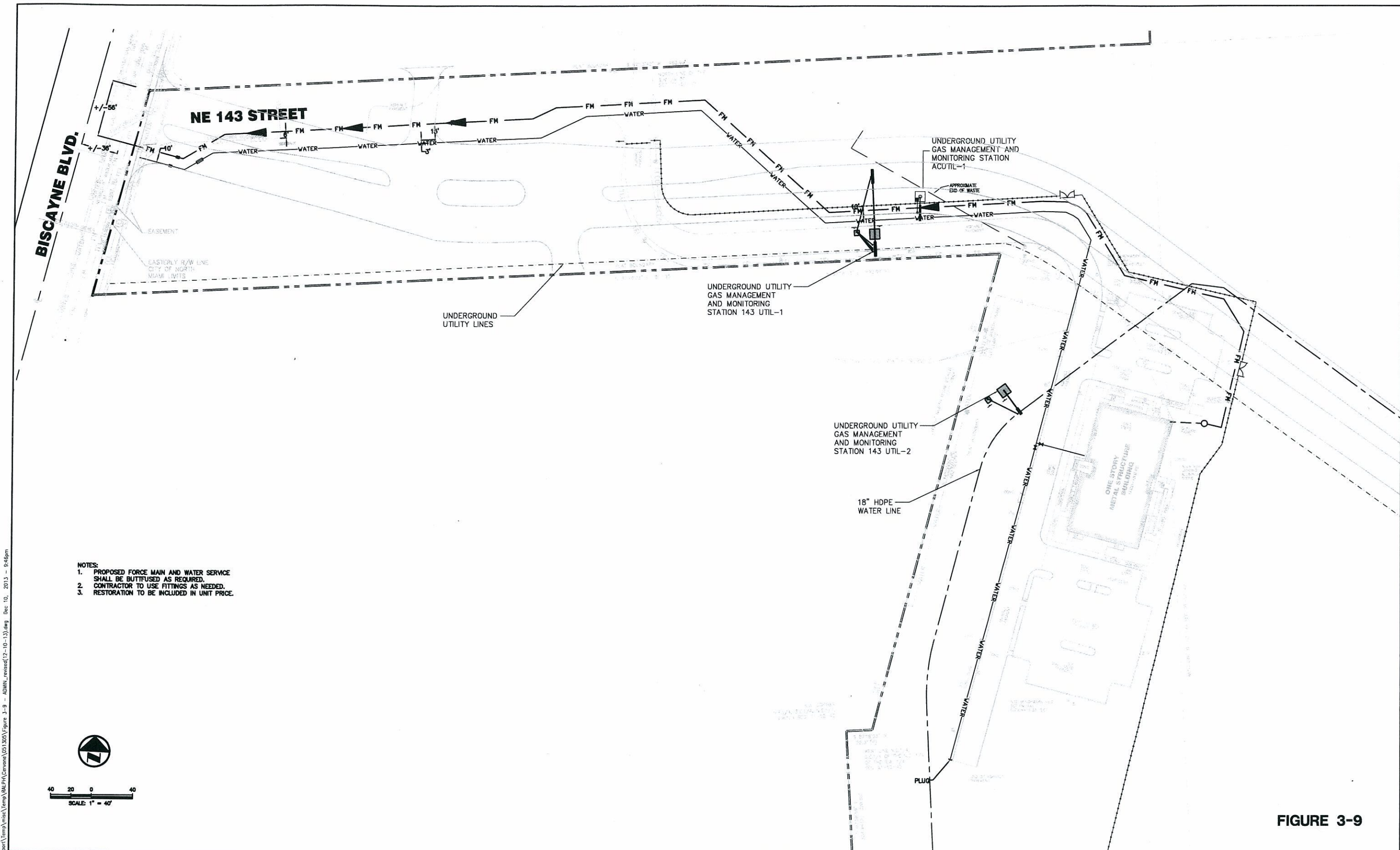
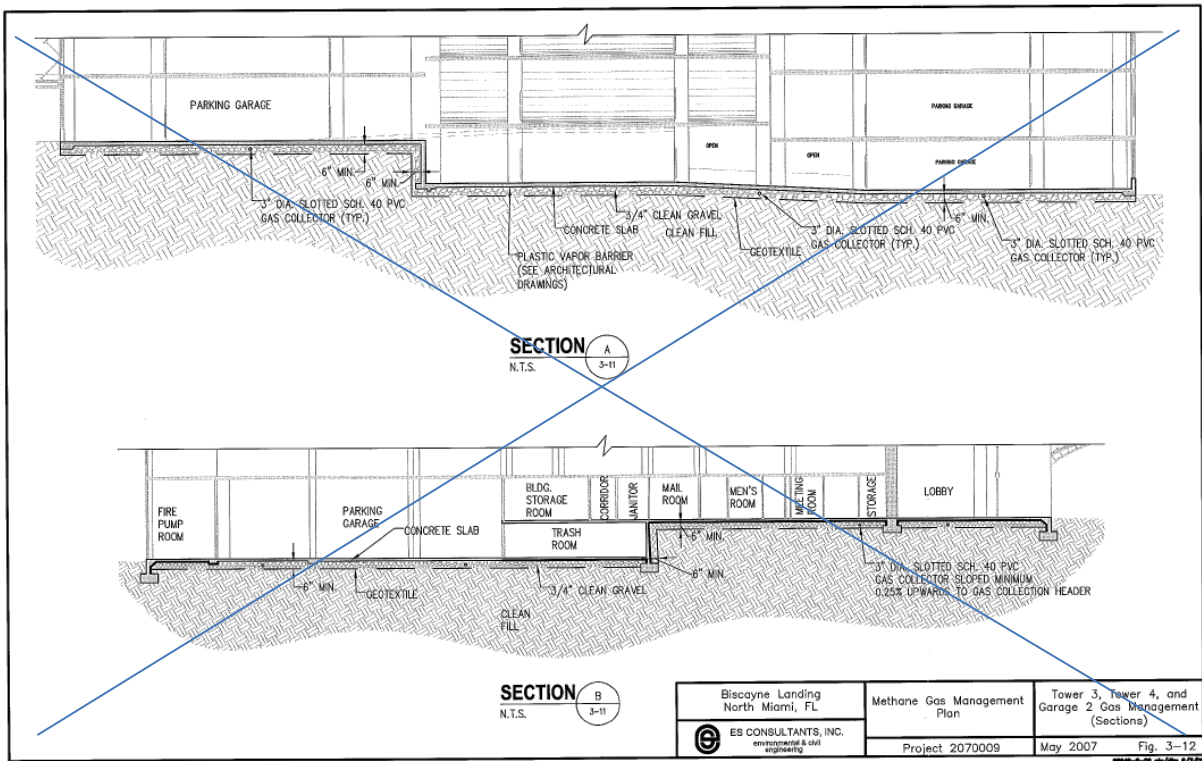
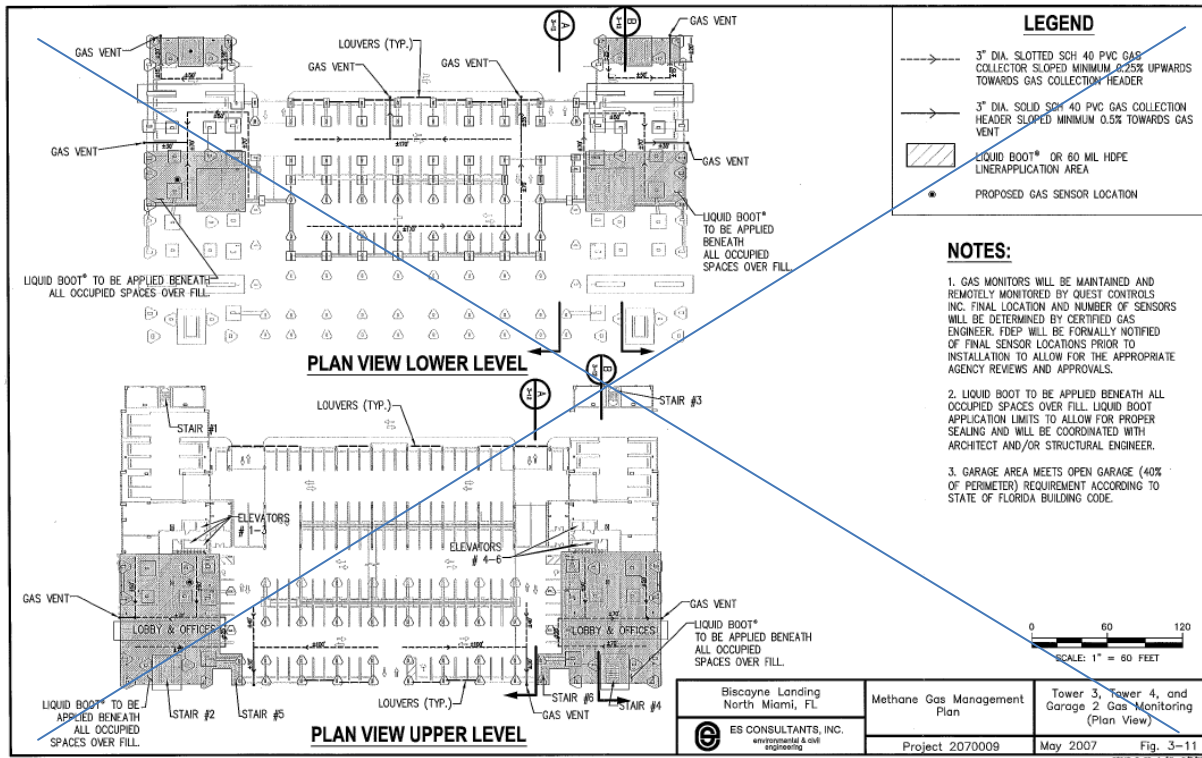
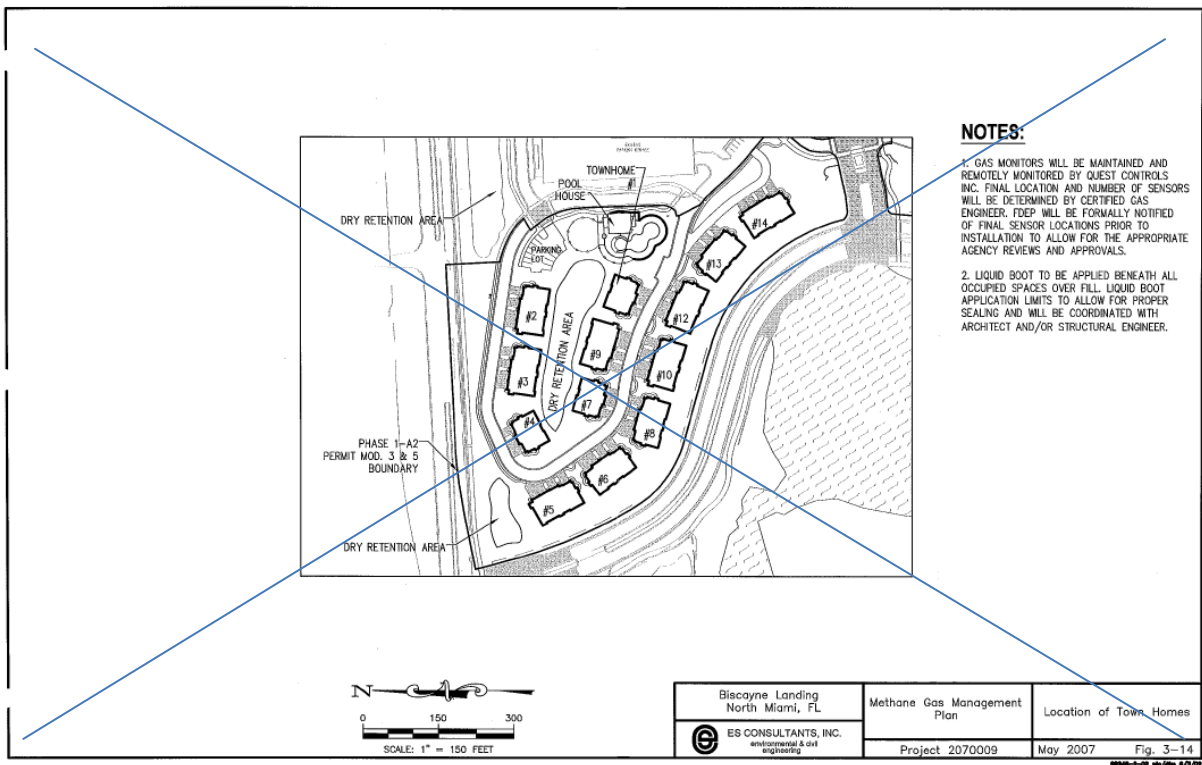
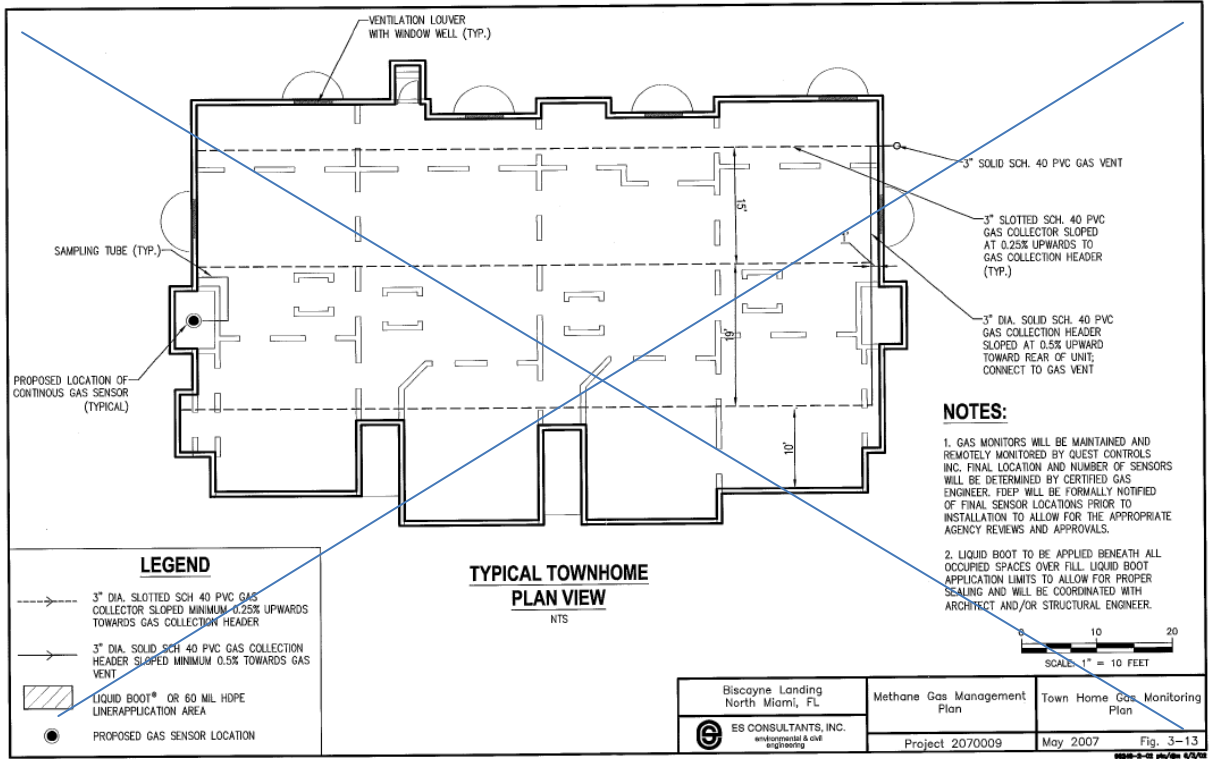
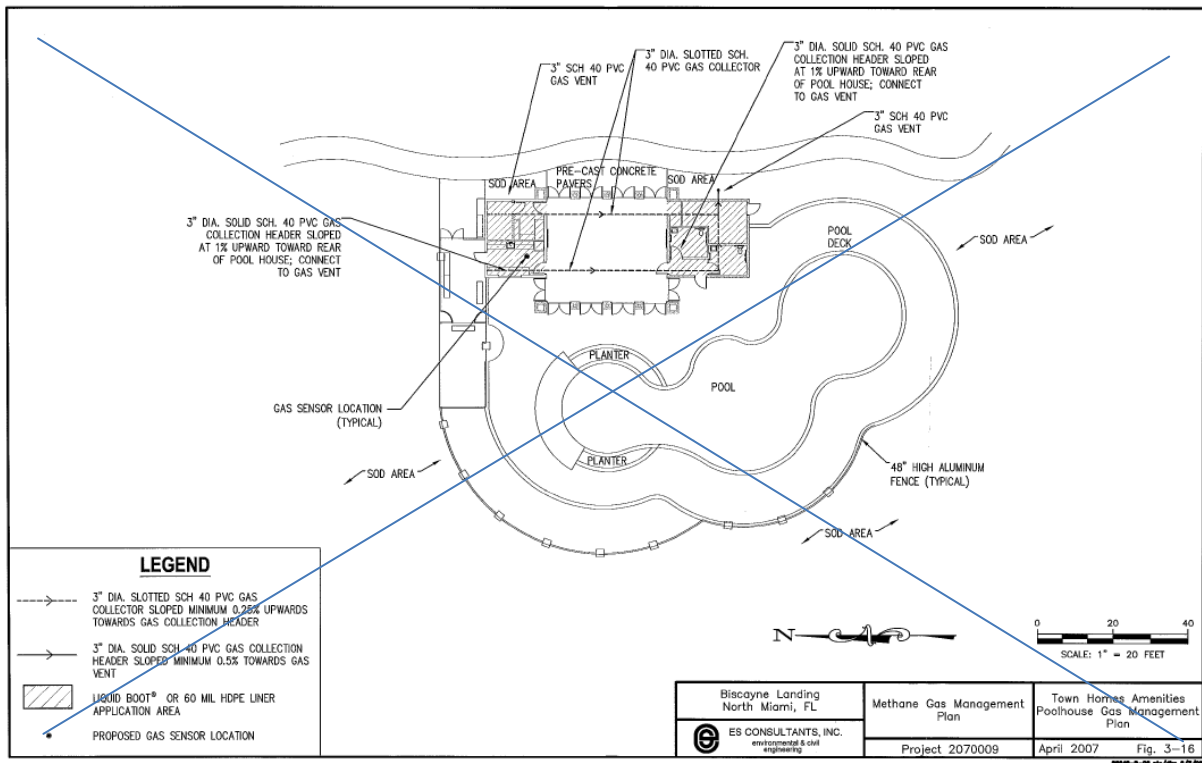
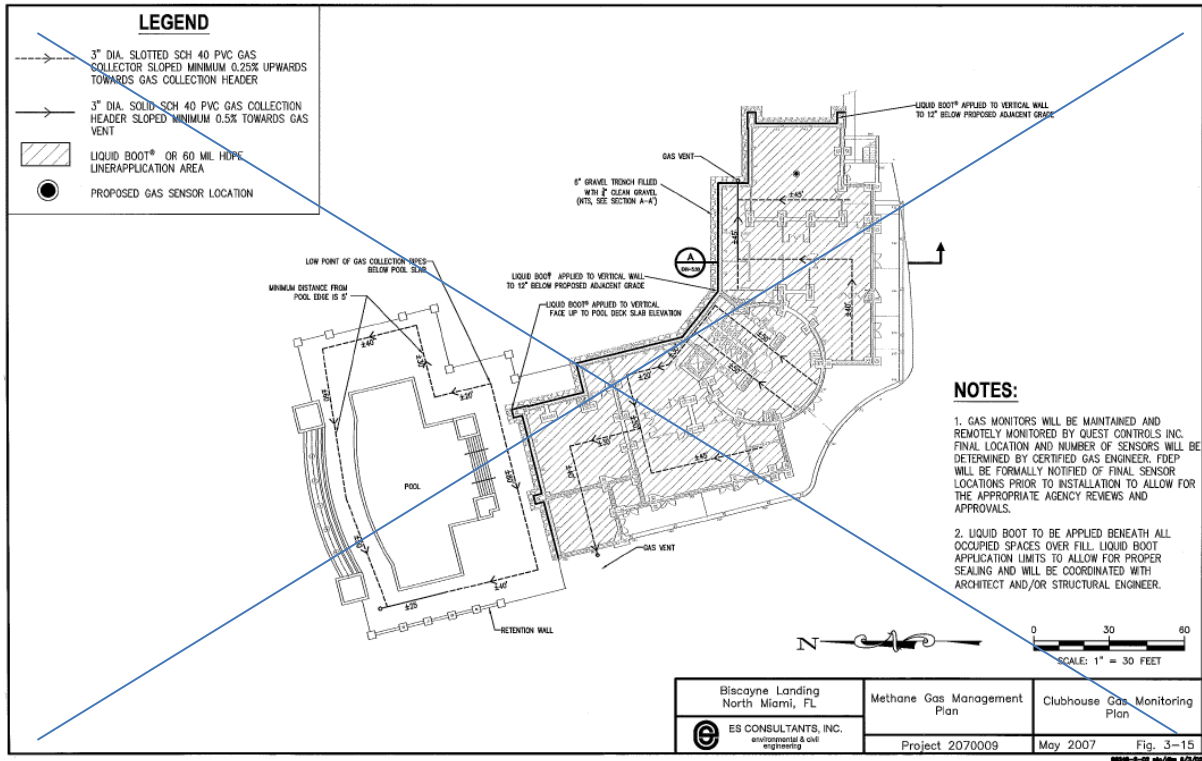


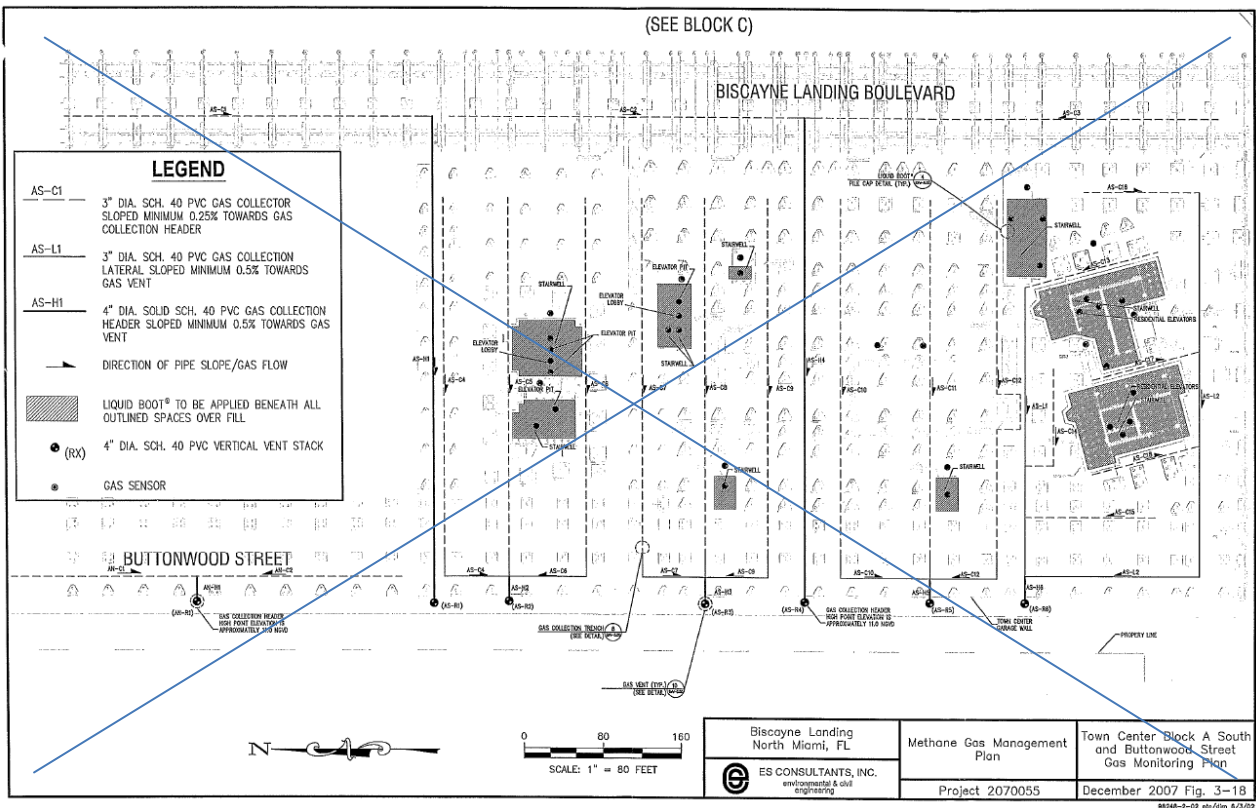
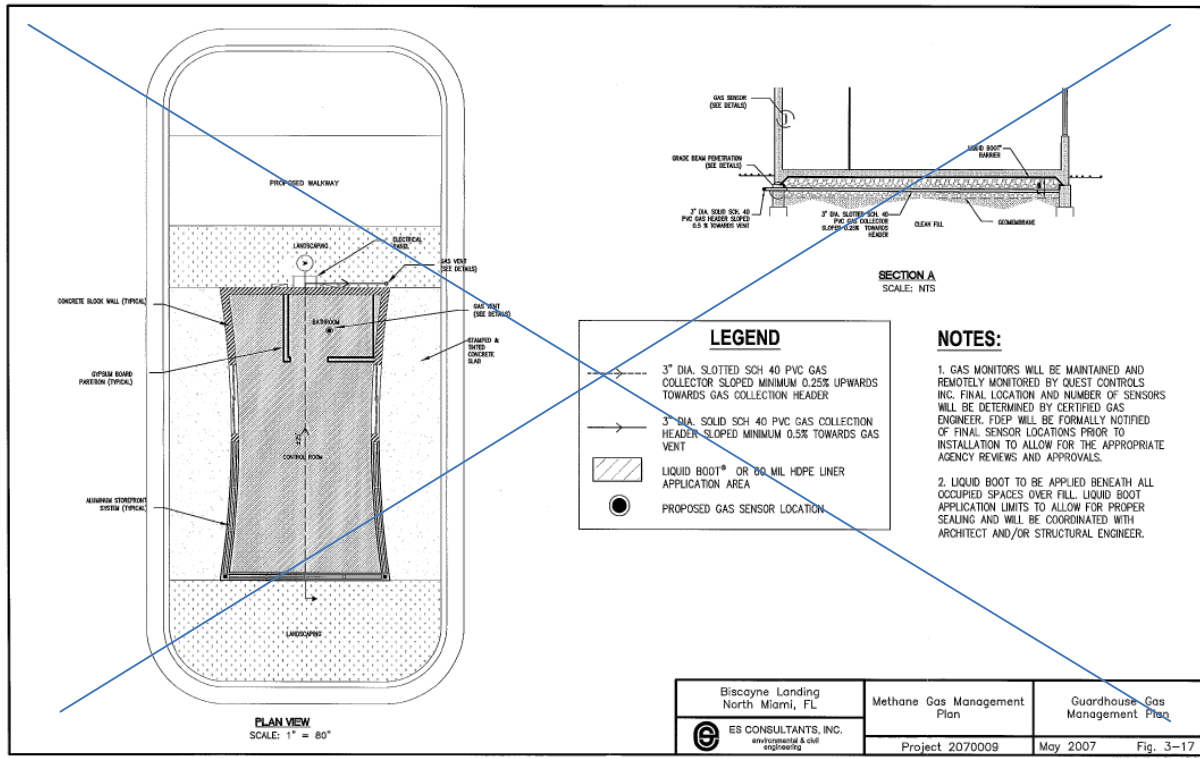
FIGURE 3-9

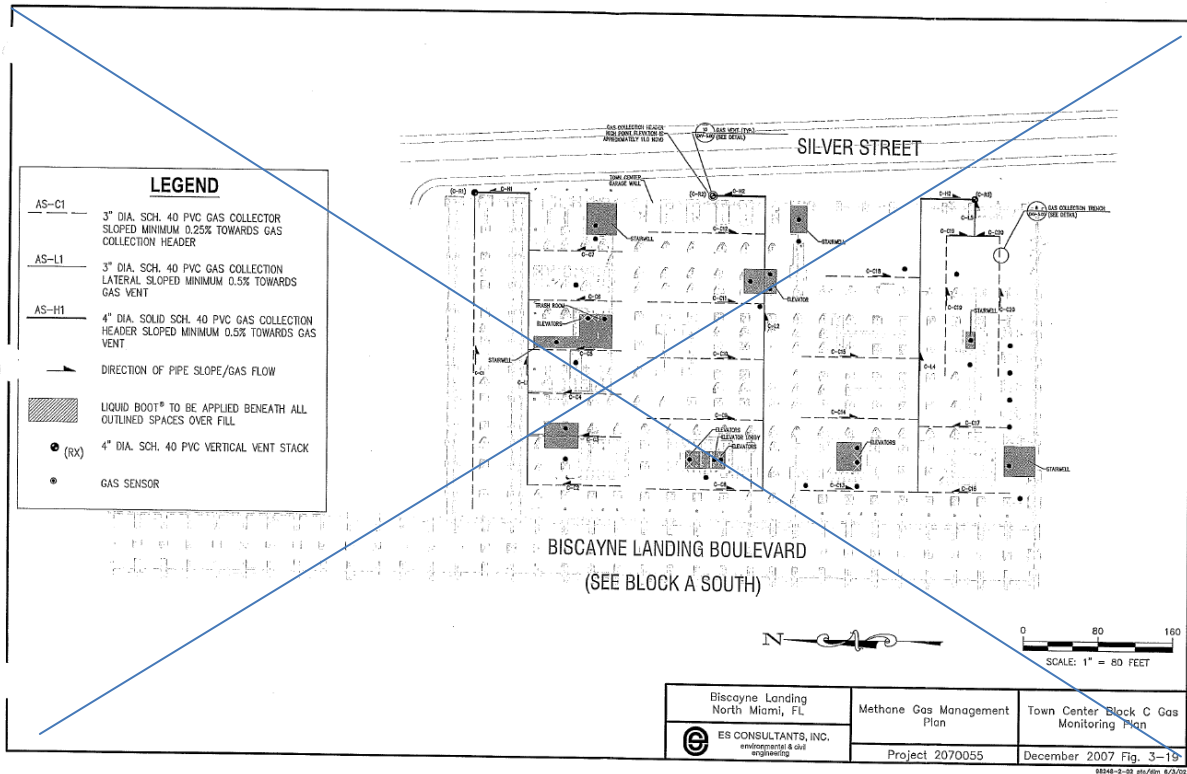
 ARCHITECTURE ENGINEERING SURVEYING PLANNING 2001 N.W. 107th AVENUE MIAMI, FLORIDA 33172-2507 (305) 592-7275	 CITY OF MIAMI	CLIENT	PROJECT	TASK	ORIGINAL: 06-08-05 REVISIONS: 12-10-13	JOB NO. 01-1414.31
		SWERDLOW BOCA DEVELOPERS GROUP, LLC	BiscayneLanding ADMINISTRATIVE AND SALES CENTERS GRINDER PUMP STATIONS	ADMINISTRATION CENTER ENVIRONMENTAL MANAGEMENT AND MONITORING SYSTEM PLAN	DAVID E. DEANS, P.E. #31095 PROFESSIONAL ENGINEER OFFICIAL SEAL	DRAWN LLL DESIGNED LLL CHECKED DC QC DC SHEET:











Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
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Methane Gas Management Plan

TABLES



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
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Methane Gas Management Plan

TABLES 3-1 THROUGH 3-3
(NO CHANGE Mod. No 10, December 11, 2013)

Table 3-4:	Delete T-3-1 through T-3-21; T-4-1 through T-4-21; G2-1 through G-2-6
Table 3-5:	Delete the BLB extension sites from Mod 5; Add in for Mod 10
Table 3-6:	Delete entire table
Table 3-7:	Delete entire table
Table 3-8:	Delete entire table
Table 3-9:	Delete entire table
Table 3-10:	Delete entire table



TABLE 3-4

Gas Monitoring Locations – Buildings and Garages

Location Number	Description	Type	Status	Figure No.
PV-G1-1	<u>Garage 1</u>	<u>Vent</u>	<u>Active</u>	3-5
PV-G1-2				
PV-G1-3				
PV-G1-4				
PV-G1-5				
PV-G1-6				
PV-G1-7				
PV-G1-8				
GP-G1-10		<u>Gas Probe</u>		
GP-G1-11				
GP-G1-12				
GP-G1-13				
GP-G1-14				
GP-G1-15				
GP-G1-16				
S-G1-8		<u>Sensor</u>		
S-G1-9				
S-G1-10				
G-1-20				
G-1-21				
G-1-22				
G-1-23				
G-1-24				
G-1-25				
PV-T1-5	<u>Elevator Shaft – N</u>	<u>Vent</u>		
PV-T1-1	<u>Tower 1</u>			
PV-T1-2				
PV-T1-3				
PV-T1-4				
PV-T1-6	<u>Elevator Shaft – S</u>			
S-T1-7	<u>Crawl Space</u>	<u>Sensor</u>		
S-T1-8				
S-T1-9				

TABLE 3-4 (Continued)

Gas Monitoring Locations – Buildings and Garages

Location Number	Description	Type	Status	Figure No.
S-T1-10	<u>Crawl Space</u>	<u>Sensor</u>	<u>Active</u>	3-6
S-T1-11				
S-T1-12				
GP-T1-13	<u>Elevator Shaft - S</u>	<u>Gas Probe</u>		
GP-T1-14	<u>Elevator Shaft - N</u>			
S-T1-15	<u>Crawl Space</u>	<u>Sensor</u>		
S-T1-16				
S-T1-17				
S-T1-18				

TABLE 3-4 (Continued)

Gas Monitoring Locations – Buildings and Garages

Location Number	Description	Type	Status	Figure No.
T-2-1	<u>Tower 2</u>	<u>Vent</u>		3-7
T-2-2			Pending CO	
T-2-3				
T-2-4				
T-2-5				
T-2-6				
T-2-7			Pending CO	
T-2-8				
T-2-9				
T-2-10				
T-2-11				
T-2-12	<u>Stairwell</u>	<u>Vent</u>		
T-2-13		<u>Gas Probe</u>		
T-2-14	<u>Elevator</u>	<u>Vent</u>		
T-2-15				
T-2-16		<u>Gas Probe</u>		
T-2-17				
T-2-18		<u>Vent</u>		
T-2-19		<u>Gas Probe</u>		
				Pending Approval

TABLE 3-4 (Continued)

Gas Monitoring Locations – Buildings and Garages

Location Number	Description	Type	Status	Figure No.
T-3-1	Tower 3 (LL)	Sensor	Pending Construction	3-11
T-3-2				
T-3-3				
T-3-4				
T-3-5				
T-3-6				
T-3-7				
T-3-8				
T-3-9				
T-3-10				
T-3-11				
T-3-12				
T-3-13	Tower 3 (UL)	Gas Vent	Pending Construction	3-12
T-3-14				
T-3-15				
T-3-16				
T-3-17				
T-3-18				
T-3-19	Tower 3 (LL)	Gas Vent	Pending Construction	3-11
T-3-20	Tower 3 (UL)	Sensor	Pending Construction	3-11
T-4-1	Tower 4 (LL)	Sensor	Pending Construction	3-11
T-4-2				
T-4-3				
T-4-4				
T-4-5				
T-4-6				
T-4-7				
T-4-8				
T-4-9				
T-4-10				
T-4-11				
T-4-12				
T-4-13				

TABLE 3-4 (Continued)

Gas Monitoring Locations – Buildings and Garages

Location Number	Description	Type	Status	Figure No.
T-4-14	Tower 4 (UL)	Sensor	Pending Construction	3-12
T-4-15	Tower 4 (UL)	Sensor	Pending Construction	3-12
T-4-16	Tower 4 (UL)	Sensor	Pending Construction	3-12
T-4-17	Tower 4 (UL)	Sensor	Pending Construction	3-12
T-4-18	Tower 4 (UL)	Sensor	Pending Construction	3-12
T-4-19	Tower 4 (LL)	Gas Vent	Pending Construction	3-11
T-4-20	Tower 4 (LL)	Gas Vent	Pending Construction	3-12
T-4-21	Tower 4 (UL)	Sensor	Pending Construction	3-12
G-2-1	Garage 2 (LL)	Sensor	Pending Construction	3-11
G-2-2	Garage 2 (LL)	Sensor	Pending Construction	3-12
G-2-3	Garage 2 (UL)	Sensor	Pending Construction	3-12
G-2-4	Garage 2 (UL)	Sensor	Pending Construction	3-12
G-2-5	Garage 2 Stair #5	Sensor	Pending Construction	3-12
G-2-6	Garage 2 Stair #6	Sensor	Pending Construction	3-12

CO = Certificate of Occupancy

TABLE 3-5

Gas Monitoring Locations – Underground Utilities

Location Number	Description	Type	Status	Figure No.
SC-UTIL-1	Underground Utilities	Gas Probe	Pending Approval	3-8
SC-UTIL-2				3-9
AC-UTIL-1				
BLB-UTIL-1				3-10
BLB-UTIL-2				
BLB-UTIL-3				
BLB-UTIL-4				3-11
151-UTIL-1				
143-UTIL-1				3-9
143-UTLI-2				

TABLE 3-6
Gas Monitoring Locations – Townhomes

Location Number	Description	Type	Status	Figure No.
TH-1-1	Town Home 1	Sensor	Pending Construction	3-14
TH-1-2				
TH-1-3				
TH-1-4				
TH-1-5				
TH-1-6				
TH-1-7				
TH-1-8				
TH-1-9				
TH-1-10		Gas Vent		
TH-2-1	Town Home 2	Sensor		
TH-2-2				
TH-2-3				
TH-2-4				
TH-2-5				
TH-2-6				
TH-2-7				
TH-2-8				
TH-2-9				
TH-2-10				
TH-2-11				
TH-2-12				
TH-2-13		Gas Vent		
TH-3-1	Town Home 3	Sensor		
TH-3-2				
TH-3-3				
TH-3-4				
TH-3-5				
TH-3-6				
TH-3-7				
TH-3-8				
TH-3-9				
TH-3-10				
TH-3-11				
TH-3-12				
TH-3-13		Gas Vent		
TH-4-1	Town Home 4	Sensor		
TH-4-2				

TABLE 3-6
Gas Monitoring Locations – Townhomes (Continued)

Location Number	Description	Type	Status	Figure No.
TH-4-3	<u>Town Home 4</u>	<u>Sensor</u>	<u>Pending Construction</u>	<u>3-14</u>
TH-4-4				
TH-4-5				
TH-4-6				
TH-4-7				
TH-4-8	<u>Town Home 5</u>	<u>Gas Vent Sensor</u>		
TH-4-9				
TH-4-10				
TH-5-1				
TH-5-2				
TH-5-3	<u>Town Home 6</u>	<u>Gas Vent Sensor</u>		
TH-5-4				
TH-5-5				
TH-5-6				
TH-5-7				
TH-5-8				
TH-5-9				
TH-5-10				
TH-5-11				
TH-5-12				
TH-5-13				
TH-6-1				
TH-6-2				
TH-6-3	<u>Town Home 7</u>	<u>Gas Vent Sensor</u>		
TH-6-4				
TH-6-5				
TH-6-6				
TH-6-7				
TH-6-8				
TH-6-9				
TH-6-10				
TH-6-11				
TH-6-12				
TH-6-13				
TH-7-1				
TH-7-2				
TH-7-3				

TABLE 3-6
Gas Monitoring Locations – Townhomes (Continued)

Location Number	Description	Type	Status	Figure No.
TH-7-4	Town Home 7	Sensor	Pending Construction	3-14
TH-7-5				
TH-7-6	Town Home 8			
TH-7-7				
TH-7-8				
TH-7-9				
TH-7-10		Gas Vent		
TH-8-1		Sensor		
TH-8-2				
TH-8-3				
TH-8-4				
TH-8-5				
TH-8-6				
TH-8-7				
TH-8-8				
TH-8-9				
TH-8-10				
TH-8-11				
TH-8-12				
TH-8-13		Gas Vent		
TH-9-1	Town Home 9	Sensor		
TH-9-2				
TH-9-3				
TH-9-4				
TH-9-5				
TH-9-6				
TH-9-7				
TH-9-8				
TH-9-9				
TH-9-10				
TH-9-11				
TH-9-12				
TH-9-13		Gas Vent		
TH-10-1	Town Home 10	Sensor		
TH-10-2				
TH-10-3				
TH-10-4				

TABLE 3-6
Gas Monitoring Locations – Townhomes (Continued)

Location Number	Description	Type	Status	Figure No.
TH-10-5	Town Home 10	Sensor	Pending Construction	3-14
TH-10-6				
TH-10-7				
TH-10-8				
TH-10-9				
TH-10-10				
TH-10-11				
TH-10-12	Town Home 11	Gas Vent		
TH-10-13		Sensor		
TH-11-1				
TH-11-2				
TH-11-3				
TH-11-4				
TH-11-5				
TH-11-6	Town Home 12			
TH-11-7				
TH-11-8				
TH-11-9				
TH-11-10				
TH-11-11				
TH-11-12				
TH-11-13	Town Home 13	Gas Vent		
TH-12-1		Sensor		
TH-12-2				
TH-12-3				
TH-12-4				
TH-12-5				
TH-12-6				
TH-12-7				
TH-12-8				
TH-12-9				
TH-12-10				
TH-12-11				
TH-12-12				
TH-12-13				
TH-13-1		Gas Vent		
TH-13-2		Sensor		
TH-13-3				

TABLE 3-6
Gas Monitoring Locations – Townhomes (Continued)

Location Number	Description	Type	Status	Figure No.
TH-13-4	Town Home 13	Sensor	Pending Construction	3-14
TH-13-5				
TH-13-6				
TH-13-7				
TH-13-8				
TH-13-9				
TH-13-10				
TH-13-11				
TH-13-12				
TH-13-13		Gas Vent		
TH-14-1	Town Home 14	Sensor		
TH-14-2				
TH-14-3				
TH-14-4				
TH-14-5				
TH-14-6				
TH-14-7				
TH-14-8				
TH-14-9				
TH-14-10				
TH-14-11				
TH-14-12				
TH-14-13		Gas Vent		

TABLE 3-7
Gas Monitoring Locations – Clubhouse

Location Number	Description	Type	Status	Figure No.
CH-1	<u>Clubhouse</u>	<u>Sensor</u>	<u>Pending Construction</u>	<u>3-15</u>
CH-2				
CH-3				
CH-4				
CH-5				
CH-6				
CH-7				
CH-8				
CH-9				
CH-10				
CH-11				
CH-12				
CH-13				
CH-14		<u>Gas Vent</u>		
CH-15				
CH-16				
CH-17				

TABLE 3-8

Gas Monitoring Locations – Town Homes Amenities Poolhouse

Location Number	Description	Type	Status	Figure No.
PL-1	<u>Pool House</u>	<u>Sensor</u>	<u>Pending Construction</u>	<u>3-16</u>
PL-2				
PL-3				
PL-4				
PL-5				
PL-6		<u>Gas Vent</u>		
PL-7				

TABLE 3-9

Gas Monitoring Locations – Guardhouse Monitoring Locations

Location Number	Description	Type	Status	Figure No.
GH-1	Guardhouse	Sensor	Pending Construction	3-17
GH-2		Gas Vent		
GH-IN		Ambient		

TABLE 3-10
Gas Monitoring Locations TownCenter Blocks A South
and C, Biscayne Landing Boulevard, and Buttonwood Street

Location Number	Description	Type	Status	Figure No.
AS-R1	TownCenter Block A South	<u>Gas Vent</u>	Pending	3-18
AS-R2			Construction	
AS-R3				
AS-R4				
AS-R5				
AS-R6				
TC-AS-1 through TC-AS-XX		Sensor		
C-R1	TownCenter Block C	<u>Gas Vent</u>		3-19
C-R2				
C-R3				
TC-C-1 through TC-C-XX		Sensor		
AN-R1	Buttonwood Street	Gas Vent		3-18

Note: Final gas sensor numbers and locations to be field verified.

Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
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Methane Gas Management Plan

APPENDIX A
SITE HEALTH AND SAFETY PROGRAM
(NO CHANGE 12/01/2007)



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No.10- December 11, 2013
Methane Gas Management Plan

APPENDIX B
CONTINUOUS METHANE MONITOR MANUFACTURER INFORMATION
(TEMPORARY STRUCTURES)
(NO CHANGE 12/01/2007)



Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
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Methane Gas Management Plan

APPENDIX C
CONTINUOUS METHANE MONITOR MANUFACTURER INFORMATION
(PERMANENT STRUCTURES)
(NO CHANGE 12/01/2007)



Part P-Landfill Closure Requirements

1.0 Introduction

The following are the elements of the landfill final closure requirements as specified in Part P of the FDEP Application for a permit to construct, operate, modify or close a solid waste management facility. Included in this part of the Master Closure Plan application are the Closure Report, Closure Design Plan, and Closure Operation Plan. Also submitted separately and included herein for reference is a request for an Alternate Procedure for landfill closure regarding the proposed landfill cap.

1.1 Closure Schedule Requirements

The requirements of this section relate to providing notice to the Department and to the public regarding the pending closure and do not apply because the landfill ceased operations over 23 years ago.

1.2 Closure Permit General Requirements

This master closure plan is being submitted for the purpose of gaining regulatory approval of the closure approach and the end use of the site as a condominium community. The site will be closed and re-developed in phases, with each phase having its own final design drawings prepared in general accordance with the approved master closure plan. Landfill closure will occur by phase and will be incorporated into the re-development of the site phase by phase. As such, each phase will have its own closure construction permit application that incorporates the closure requirements into the development construction.

1.3 Closure Report

1.3.1 General Information Requirements

1.3.1.1 Identification of Landfill

The Munisport Landfill is owned by the City of North Miami (City) and a portion of the City-owned property, 193 acres which includes the entire landfilled area, existing lakes and un-filled upland areas, is under a development agreement to Preserve Partners LTD. for the closure and redevelopment of this property. This Landfill Master Closure Plan is being submitted in general accordance with Chapter 62-701 of the Florida Administrative Code (FAC). The applicant for this closure plan and the owner of the property is the City of North Miami.

1.3.1.2 Location, Description and Vicinity Map

The Munisport Landfill is located on the east side of Biscayne Boulevard (U.S. Highway 1) between NE 135th Street and NE 151st Street in North Miami, Dade County, Florida. The site is bounded to the west by U.S. Highway 1 and commercial development, on the north by NE 151st Street and undeveloped land, on the east by a State mangrove preserve, and on the south by a



residential (mobile home) development located just north of 135th Street. See Figure P-1 for a map of the vicinity of the landfill.

1.3.1.3 Total Acres of Disposal Areas and Landfill Property

The total portion of the site considered for landfill closure and end use encompasses approximately 193 acres of land, and can be broken down into four distinct areas: the landfilled areas (170 acres) an upland area (6 acres) and on-site man-made lakes (17 acres).

1.3.1.4 Legal Property Description

The legal description of the property is included as Appendix P-1.

1.3.1.5 History of the Landfill Tract

Landfilling activities on this site began in the 1940's and continued until July 1980 when the Florida Department of Environmental Regulation (FDER) revoked the operating permit for this facility. The City acquired the site in 1971, and since then, the site operated under various names including the "North Miami Dump", "Pressler's Dump", and the "Interama Dump." During the 1970s, the site received dredge and fill permits from the US Army Corps of Engineers to fill submerged lands with clean fill. These permits were modified, and temporary operating permits (TOPs) were issued by FDER, the precursor to FDEP, for the operation of a sanitary landfill at this site.

A portion of this site was placed on the United States Environmental Protection Agency's (EPA's) National Priority List (NPL) in 1983. After completion of numerous studies and assessments, the EPA issued its record of decision (ROD) in July of 1990. The ROD concluded that "...the Munisport Landfill represents no current or foreseeable threat to human health or welfare." However, there did exist the potential for harm to the aquatic life in the adjacent (east) mangrove preserve from ammonia-contaminated groundwater migrating to the east-southeast.

Because of this threat, the EPA required that a groundwater treatment system be installed to remediate the ammonia-impacted groundwater such that there would not be adverse impacts to the mangrove preserve. In February 1994, a Final Remedial Design Studies Report was submitted by the City and received approval from both the FDEP and the EPA. However, that plan has not yet been implemented. A pilot test to evaluate the feasibility of an alternative in-situ remediation technique was completed and established a November 2003 target date for the start-up and evaluation monitoring of the prototype groundwater remediation system. This target date was revised with the appropriate regulatory agencies and the prototype groundwater remediation system began operating during November 2004. A final report summarizing groundwater remediation activities at the site was submitted in January 2007. Subsequently, in April 2007, the in-situ treatment system was disapproved by DERM. In late 2007 under DERM's direction, an Implementation Plan and a pilot test plan was submitted to DERM for an enhanced pump and treat system that included a "funnel and gate" component to capture and control the groundwater flow. On November 19, 2007, DERM issued a letter in which it did not object to the funnel and gate system, and also acknowledged the need for additional groundwater modeling and geotechnical investigation. However, DERM also stated that the discharge criteria for nitrate would be 0.08 mg/l. DERM further stated that it would consider an alternate nitrate discharge

criteria level if effluent disposal was via deep injection. A conceptual approval of the deep injection concept was issued by DERM in a letter dated June 10, 2010. DERM therefore required a revised, detailed implementation plan with specific design criteria based on the results of the groundwater modeling and geotechnical investigation. A Remedial Action Plan (RAP) was submitted to DERM in December 2011 and was jointly approved by FDEP and DERM on August 22, 2012. Phase I of the treatment facility was constructed and began operation on July 16, 2013. In accordance with the RAP approval, a three month Pilot Study of Phase I will be implemented which will serve as the design basis for Phase II of the system which is expected to be constructed and operational by July 2014.

1.3.1.6 Identification of Types of Waste Disposed of at the Landfill

According to a "Site Investigation Report" dated January 1987 prepared by H.J. Ross Associates, various landfilling activities occurred at the Munisport site from 1940 to 1980, although the landfilling prior to the mid-1960s was generally sporadic dumping. The materials placed at the site have included yard trash, construction debris, and household garbage. While no definitive map regarding the precise quantities and locations of the various materials has been produced, the Ross report indicates that construction and demolition debris was deposited "...towards the southern sections of the site in an area immediately north of the mobile home developments." and "Domestic refuse...appeared to be located predominantly in the northern sections of the landfill area..."

1.3.2 Geotechnical Investigation Report and Water Quality Monitoring Plan

These reports and plans can be found in Part M of this permit application.

1.3.3 Land Use Information Report Indicating Identification of Adjacent Landowners; Zoning; Present Land Uses; and Roads, Highways, Right-of-way, or Easements

The Munisport Landfill is bounded to the west by commercial facilities (Target, Costco, U.S. Post Office), the closed Pace landfill, and U.S. Highway 1 (Biscayne Boulevard); on the south by a mobile home community (Highland Village); on the east by a City owned and State owned mangrove preserves; and on the north by N.E. 151st Street and undeveloped areas further north. Current zoning for the subject site is listed as Public Use/Planned Urban Development (PU/PUD). The Biscayne Commons commercial center, including a Publix Supermarket, was completed on the Pace Landfill property west of the subject site. See Appendix P-2 for aerial photographic maps, zoning and adjacent property ownership information.

1.3.4 Report on Actual or Potential Gas Migration at Landfills Containing Degradable Waste, Which Would Allow Migration of Gas off the Landfill Property

This issue is discussed in Part O of this permit application.

1.3.5 Report Assessing the Effectiveness of the Landfill Design and Operation including Results of Geotechnical Investigations, Surface Water and Stormwater Management, Gas Migration and Concentrations, Condition of Existing Cover and Nature of Waste Disposed of at the Landfill

This landfill was designed and operated under rules and regulations in effect in the late 1970's. Operation ceased in July 1980. No formal closure of the landfill was ever conducted, although it is reported that sections of the landfill did receive final cover. Therefore, this master closure plan includes new designs to address stormwater management, gas control and final cover of the landfill. These designs are addressed in the following locations:

Surface water and stormwater	Part P, Item 4 H
Gas migration	Part O
Cover material condition	Part P, Item 4 G

1.4 Closure Design Plan

1.4.1 Plan Sheet Showing Phases of Site Closing

Sheet C-5 in the Closure Plan drawing set is a plan sheet showing the phases of closure and re-development of the site.

1.4.2 Drawing Showing Existing Topography and Proposed Final Grades

Sheet C-3 shows the existing topography of the site, and the phases of closure and re-development of the site are shown on Sheet C-5. Final grades for each phase of closure and re-development will be prepared and submitted to the Department for approval prior to the commencement of closure construction activities. The re-development plans for this site work with the existing topography and do not require radical relocation of waste.

Sheet C-3 of the Closure Plan drawings shows the limits of waste on the Bessemer tract. These limits were established as part of a wetlands jurisdictional determination line. The City of North Miami is proceeding with wetlands mitigation plans in two phases for this area that includes removal of this waste to approximately elevation 1.0 NG VD. Should this mitigation activity not completely remove all this waste, the groundwater remediation system will be adjusted (if necessary) to capture all impacted groundwater from this area. Figures 3 and 4 of HSA'S geotechnical report (Appendix 0-2A) address the thickness of waste in various locations on site.

Permit Modification No.1

Biscayne Landing Boulevard Development Plans, Sheets LBC-1 through LBC- 19 are the Contract No. 1 Biscayne Landing Boulevard Development construction plans for Permit Modification No. 1. Construction consists of a portion of Biscayne Landing Boulevard from N.E. 151st Street southward approximately 1,800 feet. Contract No. 1 also includes the installation of



the following utilities:

- Water main
- Force main
- Electric
- Gas main
- Stormwater
- Cable
- Telephone

The utilities will be constructed along Biscayne Landing Boulevard and will be plugged until future phases are constructed.

Biscayne Landing Boulevard Development Plan **Biscayne Landing Boulevard** Sheet LBC-5 shows the existing and proposed final elevations of the Phase 1A roadway centerline.

Permit Modification No.2

Biscayne Landing Phase 1-AI Plans, Sheets C-1 through C-24 are the Contract No. 2 (Biscayne Landing Phase 1-AI Closure Documents) construction plans for Permit Modification No. 2. Construction consists of the following:

- Tower No. 1 and Tower No. 2
- Parking Garage No. 1
- Infrastructure
 - Water main
 - Force main
 - Electric
 - Gas main
 - Cable
 - Telephone
 - Stormwater

Biscayne Landing Phase 1A-1 Plan, Sheet C-5 shows the existing and proposed final elevations of the Phase 1A-1.

Permit Modification No.3

A revised narrative due to the redesign activities involving Phase 1A-**2** is provided in Permit Modification No.5 located below.

Permit Modification No.4

There are no underground utilities associated with Permit Modification No. 4. This minor modification was related to the revision and update of the site schedule and phasing plan.

Permit Modification No.5

The Biscayne Landing Phase 1A-2 Redesign, Sheets C-1.00 through C-10.03, E-1 through E-13, M-1, and Phase 1A-2 ENV-1.00 through ENV-6.00 are for the same Contract No. 3 construction



plans included for the submitted Permit Modification No. 3 described above. The revised construction consists of the following:

- Tower No. 3 and Tower No. 4
- Parking Garage No. 2
- Town Homes (formerly Townhouses)
- Town Homes Amenities Building
- Clubhouse
- Guardhouse
- Infrastructure
 - Water main
 - Force main
 - Electric
 - Gas Main
 - Cable
 - Telephone
 - Stormwater

Biscayne Landing Phase 1 A2 Redesign, Sheets C-2.00 and C-4.00 through C-4.02 show the existing and proposed final elevations of the Phase 1 A2.

Permit Modification No. 6

The proposed Biscayne Landing TownCenter development and associated streets are presented in the attached civil design package. The design package is comprised primarily of paving, grading, and drainage (PG&D) sheets for the proposed areas and one sheet detailing the proposed deep dynamic compaction (DDC) areas. The construction activities associated with this modification consist of the following:

- TownCenter Block A South
- TownCenter Block C
- Biscayne Landing Boulevard
- Buttonwood Street (within the TownCenter development boundaries)
- N.E. 143rd Street (also referred to as Banyan Avenue)
- Infrastructure
 - Water main
 - Force main
 - Electric
 - Gas Main
 - Cable
 - Telephone
 - Stormwater

The attached design package is organized in the following order for review:

- TownCenter Blocks A South and C, Biscayne Landing Boulevard, and Buttonwood Street are presented in sheets C-001, C-002, C-100, C-101, C-300 through C-306, C-400 through C-406, C-514, and DDC-1 provided by URS, Inc (URS) and ES Consultants.
- N.E. 143rd Street is presented sheets 1 through 13A provided by URS.

➤ TownCenter garage ventilation sheets are presented in sheets (AD)M7.001 and (CC)M7.001 (See Part O for further discussion of gas management issues) provided by TLC Engineering for Architecture.

➤ TownCenter Development and Closure Design plans showing the proposed gas management systems are presented in sheets ENV 1.00 through ENV 5.00 (See Part O for further discussion of gas management issues) provided by ES Consultants.

On October 17, 2008 Biscayne Landing, LLC requested that formal review of this permit modification be suspended pending possible design changes in the area. See Permit Modification No. 10 which addresses these design changes.

Permit Modification No. 7, 8 and 9

There is no closure construction associated with Permit Modification No. 7,8 or 9. These modifications relate to the groundwater remediation system schedule.

Permit Modification No. 10

Biscayne Landing Boulevard Extension Plans, Sheets C-1 through C- 61 are the Biscayne Landing Boulevard Extension construction plans for Permit Modification No. 10. Construction consists of extending Biscayne Landing Boulevard from south of N.E. 151st Street at its current terminus southward and then westward approximately 4,200 feet to tie into 143rd Street. Extension of this roadway also includes the installation of the following utilities:

- Water main
- Force main
- Electric
- Gas main
- Stormwater
- Cable
- Telephone

The utilities will be constructed along Biscayne Landing Boulevard and will be plugged until future phases are constructed.

Biscayne Landing Boulevard Extension Plans Sheets C-30 to C-37 show the existing and proposed final elevations of the roadway centerline.

1.4.2.-1 Bessemer Tract

The proposed full-scale groundwater remediation treatment system will be designed to encompass all impacted areas and to treat-extract the groundwater before discharging to the mangrove preserve. The treatment system consists of subsurface horizontal wells to deliver oxygen and carbon along the southern and eastern boundary of the site, and horizontal recovery wells to provide sugar solution "make up" water and improve carbon distribution in the groundwater. Horizontal recovery wells exist along the southern and eastern boundary of the site with the exception of the Bessemer Tract. The existing horizontal recovery wells do not encompass this area, as they terminate roughly 100 feet south of the Bessemer Tract. The recently approved groundwater remediation system consists of



A network of extraction wells and deep injection wells for disposal

Figure 4 in Appendix O-2A illustrates the thickness of trash across the site. This figure shows trash located in the southeastern area of the Site extending within close proximity of the existing horizontal recovery wells in this area. A subsurface investigation will be completed in this area before the full scale system is installed to delineate the extent of trash, if any, located beyond (i.e., downgradient) the existing horizontal recovery wells. In the event that waste is identified downgradient of the existing horizontal recovery wells, the treatment system wells will be installed further east or south, depending on the location, and an additional horizontal recovery well may be necessary to augment or replace the existing recovery well. It is important to consider that the *in situ* system proposed has residual treatment capability for down gradient areas, and the volume of solid waste outside the previously proposed treatment area is small and not likely to contribute significantly to groundwater impacts. Nevertheless, the proposed full scale system will be designed to encompass all impacted areas. Additionally, new horizontal recovery wells will be installed in the Bessemer Tract area, since there are no existing wells in this area.

Additional horizontal wells will be installed in the area west of the Bessemer Tract and any other areas needed to control ammonia from migrating off site. If the final design of the remedial system conflicts with the existing approved groundwater monitoring wells near the Bessemer Tract, that conflict shall be resolved by relocating the groundwater monitoring wells eastward of the remedial system.

Approximately 50,000 cubic yards of trash exist across 4.5 acres of the southwest corner of the Bessemer Tract. The amount of trash was estimated using previous maps (REM 11, CDM, 1988) that show a trash layer 6.4 feet thick in this area. The volume of trash in the Bessemer Tract represents approximately 1% of the total volume of trash (5 million cubic yards) on site (see attached figure). Closure plans currently call for the relocation of the trash in the Bessemer Tract to other areas on site and the development of the Bessemer Tract into wetlands. Recent groundwater data collected in 2003 (PBS&J) show shallow groundwater containing between 1.5 and 94 mg/L of ammonia as nitrogen in the Bessemer Tract. To address this source, the full scale *in situ* system will be installed along the western border of the Bessemer Tract, or downgradient of the source. Therefore, any contamination originating from the Bessemer Tract will be treated before discharging into the mangrove preserve.

A long-term monitoring program will be used to ensure site compliance. Additional monitoring in the Bessemer Tract area should not be required beyond the monitoring network already proposed.

1.4.3 Provisions to Close Units When They Reach Approved Design Dimensions

Each phase of the landfill closure is designed such that the phase is incorporated into and becomes an integral part of the re-development of that part of the landfill. No other future phase of closure is required to support its function or operation with respect to stormwater management, gas management or placement of final cover.

1.4.4 Final Elevations Before Settlement

Re-development of the site will require additional compaction of the existing waste before



construction. This additional compaction will be accomplished by preloading the site or by dynamic compaction. Final grades will be established to provide for drainage, to eliminate peaks and fill in by re-grading the landfill surface and using waste removed from excavations for utilities and structures that are part of the end use development of the site.

Permit Modification No. 1

Biscayne Landing Boulevard Development Plan, Sheets LBC-3, LBC-4 and LBC-5 show the existing and proposed final elevations of the Phase 1A roadway in plan and in profile.

Permit Modification No. 2

Biscayne Landing Phase 1A:1 Plan, Sheets C-1 and C-28 show the existing and proposed final elevations of Phase 1-AI for Tower No. 1, Tower No. 2 and Parking Garage No. 1.

Permit Modification No. 3

A revised narrative due to the redesign activities involving Phase 1A-2 is provided in Permit Modification No. 5 located below.

Permit Modification No. 4

This Permit Modification had no changes to the final elevations. This minor modification was related to the revision and up-date of the site schedule and phasing plan.

Permit Modification No. 5

~~The Biscayne Landing Phase 1A-2 Redesign Plan, Sheets C-2.00 and C-4.00 through C-4.02 shows existing and proposed grades for Towers 3 and 4, Garage 2, Clubhouse, Town Homes, Guardhouse, and Town Homes Amenities Building.~~

~~The proposed finished floor elevations for the lower level of Towers 3 and 4, the Garage, and the Clubhouse is 10.67 ft NGVD. Proposed finished floor elevations for the Town Homes vary from 17.00 ft NGVD to 12.00 ft NGVD. The finished floor elevation of the proposed Amenities Building is 15.00 ft NGVD. The proposed grade for paved areas varies from 10.28 ft NGVD to 22.04 ft NGVD.~~

~~Areas to be paved will be deep dynamic compacted (DDC) and a geosynthetic fabric will be placed on the sub-base prior to installing the base and asphalt layers to reduce potential settling. Buildings are to be constructed on piles.~~

Permit Modification No. 6

~~TownCenter Blocks A South and C, Biscayne Landing Boulevard, and Buttonwood Street will be constructed within the "podium" limits of the TownCenter development. The "podium" concept involves the construction of a subgrade or basement level to be utilized as an automobile parking garage, location of building ancillary systems, and other building features such as elevators, stairwells, and a storage area beneath the hotel. TownCenter sheet ENV-1.00 shows the limits of the "podium" construction and ENV-4.00 illustrates a sectional view of below and above grade.~~

Sheets C-300 through C-306 in the TownCenter civil plans, and Sheets 10-12 of the NE-143rd Street Civil plans show proposed final grades for the area closed under this modification. The proposed finished floor elevation for the Town Center parking structure (podium) is 11 ft NGVD. Buildings will be located on top of the podium structure with proposed finished floor elevation for each of the buildings at 23.5 ft NGVD. Final grades throughout the remainder of the development vary from 4.5 ft NGVD at the bottom of the stormwater retention areas to 23.5 ft NGVD adjacent to the buildings.

Areas to be paved will undergo DDC and a geosynthetic fabric will be placed on the sub-base prior to installing the base and asphalt layers to reduce potential settling. Buildings as well as the "podium" structure are to be constructed on piles.

On October 17, 2008 Biscayne Landing, LLC requested that formal review of this permit modification be suspended pending possible design changes in the area. See Permit Modification No. 10 which addresses these design changes.

Permit Modification No. 7, 8 and 9

There was no closure construction associated with these permit modifications.

Permit Modification No. 10

The Biscayne Landing Boulevard Extension Roadway Improvement Plans, sheets C-22 through C-37 show the existing and proposed final elevations of the roadway Extension in plan and profile.

1.4.5 Side Slope Design Including Benches, Terraces, Down Slope Drainage Ways, Energy Dissipaters and Discussion of Expected Precipitation Effects

Stormwater management of the closed and re-developed site will include management of roof drain water, sheet flow from grassy areas and road and parking lot runoff. Grassy slopes are gentle in grade and planted with sod for erosion control as well as aesthetic appeal. Swales, catch basins, culverts and drain pipes will be incorporated into the final design and will be designed to consider peak flows and velocities and dissipation of energy. Paragraph 1.4.8 of this section provides additional details of the proposed methods of stormwater management.

1.4.6 Final Cover Installation Plans

As discussed in Section 1.4.7 below, the proposed final cover for this landfill consists of two feet of permeable fill and sod or grassing and mulching in those areas where no further development is to occur (green areas). In those areas of the site where further development is planned either below, within or on top of the landfill cover, the final cover will consist of the development features such as buildings, sidewalks, and parking lots forming all (for buildings) or a part (for paved areas) of the final cover over the waste. The placement of this fill will not require a detailed CQA Plan for installing and testing the final cover. Confirmation of the depth of cover,



where applicable, will be made by either a pre- and post-construction topographic survey or by a soil probe measurement program once the cover is in place. See Sheet C-7 for construction details with the alternatives final cover conditions.

The vegetation planted on the cover will be consistent with the residential condominium community and will be irrigated and maintained on a routine basis.

Due to the nature of the final cover material and the EPA's Record of Decision that recommends against an impermeable cap on this landfill, the cover and vegetation will be designed to minimize erosion of the cover soil, but will not necessarily maximize runoff.

1.4.7 Final Cover Design Requirements

Along with the Master Closure Plan Application, the Applicant is submitting a Request for an Alternate Procedure for Landfill Closure in accordance with Chapter 62-70 1.315(8)(a) FAC. This application is requesting that the requirement of Chapter 62-701.600(g) relating to the design of an impermeable final cover, shall not apply to this facility, and that an alternate procedure (permeable cover) be approved. A complete discussion of this request is contained in Appendix P-3 and includes the basis for the exception, a description of the alternate procedure for which approval is sought, and a demonstration of the effectiveness of the proposed procedure.

The final design for each phase of landfill closure and development will include an evaluation of the stability of the cover system and the disposed waste. Pre-loading or dynamic compaction of the waste is expected to be a part of the site development techniques applied to minimize post development settling of the landfill surface. The stability analysis will be for post-consolidation activity, and shall include an analysis of the potential for slides along the weakest interface of the final cover system and of the potential for deep-seated rotation or transitional failures through the waste and the final cover.

1.4.7.1 HELP Model

The Hydrologic Evaluation of Landfill Performance (HELP) model simulations of the pre-closure and post-closure development site conditions are summarized in Attachment A of Appendix P-3. The curve number used in the HELP model for post-development conditions is 92. This is the average curve number for the entire site based on individual basin sizes and curve numbers. The curve number used to model the pre-development site conditions is 72. Based on final determination of basin sizes and characteristics, the actual average curve number estimate for the pre-development conditions is 78. Since run off increases with increasing curve number, the model actually overstated the amount of leachate being produced in the pre-development condition, but by an insignificant amount. The model results show that leachate production will decrease from about 10 to 12 inches per year in the pre-development condition to about 3 to 4 inches in the post-development condition.

1.4.6.1 Alternate Procedure for Landfill Cover

The closure and redevelopment of the Munisport Landfill incorporates an integrated system of environmental controls, site development and groundwater remediation that function together to provide an equivalent degree of protection to the environment as does the closure requirements contained in 62-701.600 F.A.C. The following discussion is offered to provide reasonable assurance that the protections incorporated into the closure plan are equivalent.

The alternate procedure for construction of a permeable cap is based on the recommendation in the EPA Record of Decision for the remediation of the groundwater impacts which is included in Appendix P-3A. The past 23 years that the site has been dormant has allowed for some natural attenuation of groundwater impacts to occur. This is demonstrated in the July 2003 comprehensive sampling event that showed minimal groundwater impacts.

The re-development plans for the site include improvements that are anticipated to result in approximately 50% of the site being impervious due to the nature of their construction (i.e., building roofs, paved roads, sidewalks, parking areas, etc.). This degree of impervious area is a compromise between the current regulations that require a barrier layer in the cap over the entire waste filled area and the EPA ROD that seeks a permeable cap over that same area. The impervious development area included in the closure plan reduces the amount of leachate from this landfill by more than 64% as shown by the HELP model results contained in Appendix P-3 of our original application.

Prior studies by FDEP, DERM and EPA have determined that the groundwater contamination by ammonia does not constitute a threat to human health or welfare. Instead, the only presently identified potential threat is to the mangroves and their environs adjacent to the site, even though our review of these mangroves shows them to be in a healthy condition.

PBS&J has conducted an environmental risk assessment of the site to determine the potential risk to this Mangrove Preserve and to Biscayne Bay. The risk analysis indicates no risk of acute adverse ecological effects to aquatic organisms due to ammonia in the areas sampled. A slight risk of adverse chronic effects occurs at the surface water outfall, but high uncertainty is associated with that risk because concentrations exceeding benchmarks are relatively low and infrequent.

A recent study of the Mangrove Preserve area was conducted by Thomas E. Lodge Advisors, Inc. (Thomas Lodge) in April 2007 to determine biological indications of ecosystem impairment that could be attributed to ammonia leaching into two non-tidal mangrove impoundments on the site. Large differences were reported in the study between the isolated impoundments, called the North Altered Wetland (NAW) and South Altered Wetland (SAW), and the tidal mangrove preserve. Thomas Lodge concluded that the changes in the impoundments could be explained by generally reduced flooding, reduced salinity, lack of tidal flushing/transport, invasions by exotic trees (especially Australian pine), and hurricane effects. The study reported that no evidence was found indicating that significant nutrient enrichment or toxicity in the impounded mangrove areas caused any of these changes or impaired existing ecosystem functions.

There is an ongoing program to remediate the existing ammonia impacted groundwater. This program implements the EPA's Record of Decision for this site under a Consent Agreement with the City. The program incorporates an in-situ bioremediation reactive wall treatment system as an alternative to the conventional pump and treat system included in the ROD.

The bench and pilot scale studies that have been previously conducted under this program confirm that the reactive wall treatment system will ensure compliance with ammonia/nitrate groundwater standards within the subject property. These studies also confirm that the complete treatment reaction occurs in as little as six hours. Based on groundwater travel rate of approximately 12 feet per day, the existing design incorporates a factor of safety that is greater than 10 times the needed retention time. The proposed prototype system now being reviewed by DERM will allow scale up of this technology to allow for optimization studies to ensure efficiencies of the full scale treatment system. Extensive monitoring has been built into the prototype design and

implementation phase to ensure that the needed reaction is continuously monitored at multiple depths and locations and that all design criteria and engineering and environmental data upon which to finalize a full scale treatment system are obtained.

Modeling is underway that will answer all questions related to groundwater flow patterns as they respond to site development. The results will be completed far in advance of the full scale installation of the system, which is planned for completion upon regulatory approval, and is notified to closure and development phasing. Thus, while there may be measurable alterations to groundwater flow within the site, the quality of groundwater leaving the site will not be adversely impacted improved due to the presence of the full scale treatment system.

Under the consent agreement, the City has a legal obligation to construct a remedial system for groundwater treatment. **As previously mentioned in Section 1.4.2.1, the groundwater remediation system consists of a network of extraction wells and deep injection wells for disposal.** Alternatively, an enhanced pump and treat system with a "funnel and gate" component is now being proposed to control, capture, and treat the ammonia plume. Under the guidance of DERM, additional information is currently being gathered to determine the effectiveness and viability of this system and includes groundwater modeling and geotechnical investigations. Once the background data is collected, The funnel and gate system will be tested through a pilot test prior to the full scale design. **This system is being installed along the eastern perimeter of the site.**

In the highly unlikely event that the reactive wall treatment system does not work, the City will construct the pump and treat system that has already been approved or some other system agreed upon by all parties.

Given that the proposed closure and development will reduce the pervious area by 50% and leachate production by this landfill by more than 64%, and the proposed **reactive wall** remediation system will capture and treat on site the ammonia impacted groundwater, and--that there is no risk of acute adverse ecological effects and only a slight, but highly uncertain, risk of adverse chronic effects of the ammonia contaminated groundwater, we believe we have provided reasonable assurance that the alternate procedure for closure and re-development of the Munisport landfill as proposed in the application for closure will provide an equal degree of protection.

1.4.8 Proposed Method of Stormwater Control

The stormwater management system for the closure and end-use plan was developed following the requirements of Chapter 62-70 I and DERM regulations. Design criteria include peak flow and water quality considerations. The peak flow from Post-Condition Basins will be attenuated through stormwater detention basins so as to not exceed pre-development peak rates of discharge. Water quality retention volume will be provided for in either stormwater ponds or environmental swales.

The post-development stormwater system consists of a system of treatment and attenuation basins that will discharge off site via environmental swales, drain to on-site lakes, or discharge to new drain wells.

Appendix P-4 includes the drainage calculations detailing the design of the system. Sheet C-6 is the drainage plan showing the boundaries of the drainage basins when the landfill closure and



end-use plan are fully constructed. Sheet C-4 shows the pre-development drainage areas and peak discharge rates.

An ERP permit application for the project ~~has been~~ **was previously** submitted to the South Florida Water Management District and was approved by their governing board on January 15, 2004. The stormwater management system included in the ERP application was developed in close coordination with the closure and end use plan. **Most recently, an application for the modification of the ERP was submitted to the SFWMD on January 3, 2013 to reflect the current master development plan for the site. SFWMD requested additional information on January 29, 2013 and a response was submitted on October 7, 2013 and is now pending review and approval.**

Permit Modification No. 1:

The stormwater drainage system for the Biscayne Landing Boulevard Development (Permit Modification No. 1) falls into two basins. Basin "A" includes stormwater from roadway stations 82+00 to 97+31 (1551 linear feet), and Basin "B" includes stormwater from roadway stations 97+31 to 99+45, or 214 linear feet. Basin "A" is the southern section of the road, and the water quality is handled by CDS pollution retardant units and discharged to drainage wells with emergency overflow to the on-site lake. The drainage wells will be 24 inches in diameter and approximately 100 feet deep. Basin "A" drains an area of approximately 3.58 acres, which is comprised of 2.44 acres of impervious area and 1.14 acres of pervious area. The peak runoff rate in Basin "A" was calculated to be 12.32 cubic feet per second (cfs).

The pollution control structures are manufactured by CDS Technologies (CDS), and one of these structures will be installed immediately upstream of each drainage well. These structures provide pre-treatment equivalent to the 1/2 inch retention required by FDEP. In addition to removing suspended solids the structures also remove floatable materials including oil and grease. The CDS structures are being used due to the lack of suitable space in the road right-of-way to construct retention ponds. Both FDEP and DERM have approved the use of these structures for other projects in Miami-Dade County.

Stormwater from Basin "B" flows into the NE 151st Street drainage system, and encompasses an area of approximately 0.52 acres.

The stormwater system design plans for Biscayne Landing Boulevard are included in the Biscayne Landing Boulevard Development Plans. The stormwater design for this phase will incorporate the use of two drainage wells, in general agreement with the methodologies described in the master plan of the original permit. The stormwater design calculations for Biscayne Landing Boulevard are included in Appendix P-4A.

In accordance with F.A.C. 62-528 rules, an Underground Injection Control (UIC) permit is required for the stormwater drainage wells. Monitoring is not required by the rule, as drinking water will not be affected by the injections.

Permit Modification No.2

The stormwater drainage system as designed is generally consistent with the methodologies described in the conceptual permits issued by SFWMD and FDEP. Stormwater runoff from the Phase 1A-1 development will be directed to a lined dry retention area, which provides water quality treatment and peak discharge and at higher stages, discharge to a drainage well and overflows to the onsite lake and northern wetlands will occur. The drainage well will provide both water quality treatment and peak discharge attenuation. The first one inch of runoff will be captured for water

quality treatment in the retention area and the drainage well, with the first half inch captured prior to discharge to the drainage well. After the treatment volume requirement is satisfied, runoff flows can be discharged to the onsite lake and northern wetlands as long as a) peak discharges do not exceed pre-development conditions for both the 5-year/24-hour and the 25-year/72-hour design storm events, and b) pre-development stages in the existing lake does not exceed post development stages also for both the 5-year/24-hour and the 25-year/72-hour design storm events.

The development area for Phase 1A-1 is 10.9 acres although the proposed stormwater drainage system has been designed to accommodate future developed areas as indicated in the attached report. The Phase 1A-1 pervious and impervious areas are approximately 6.0 acres and 4.9 acres, respectively.

Permit Modification No.3

The stormwater drainage system as designed is generally consistent with the methodologies described in the conceptual permits issued by SFWMD and FDEP. Stormwater runoff from the Phase 1A development will be directed to lined dry areas, which provide water quality treatment and peak discharge attenuation, at higher stages, discharge to drainage wells and overflow to the onsite lake and northern wetlands will occur. The drainage wells will provide both water quality treatment and peak discharge attenuation. The first one inch of runoff will be captured for water quality treatment in the retention area and the drainage well, with the first half inch captured prior to discharge to the drainage well. After the treatment volume requirement is satisfied, runoff flows can be discharged to the onsite lake and northern wetlands as long as: a) peak discharges do not exceed pre development conditions for both the 5-year/24 hour and the 25-year/72 hour design storm events, and b) pre-development stages in the existing lake does not exceed post-development stages for both the 5-year/24 hour and the 25-year/72 hour design storm events.

The development area for Phase 1A is 24.07 acres. The Phase 1A pervious and impervious areas are approximately 17.32 acres and 10.69 acres, respectively. The stormwater design calculations for Phase 1A2 are included in Appendix P-4C and supersede the calculations that were previously submitted in P-4B.

Due to the redesign activities involving Phase 1A-2, a revised stormwater management design for this area is located in Permit Modification No. 5.

Permit Modification No.4

This Permit Modification had no changes to the stormwater drainage system. This minor modification was related to the revision and update of the site schedule and phasing plan.

Permit Modification No. 5

The development area for Phase 1A, excluding Biscayne Landing Boulevard is 24.94 acres of which 14.62 acres are pervious and 10.32 are impervious. The stormwater design calculations for Phase 1A are included in Appendix P-4C and supersede the calculations that were previously submitted in Modification No.3.

Permit Modification No. 6

The stormwater drainage system as designed is generally consistent with the methodologies described in the conceptual permits issued by SFWMD and FDEP. Stormwater runoff from the Town Center and NE 143rd Street development will be directed to dry retention areas which provide water quality treatment and peak discharge attenuation, at higher stages, discharge to

drainage wells and overflow to the onsite lake and northern wetlands will occur. The drainage wells will provide both water quality treatment and peak discharge attenuation. The first one inch of runoff will be captured for water quality treatment in the retention area and the drainage well, with the first half inch captured prior to discharge to the drainage well. After the treatment volume requirement is satisfied, runoff flows are discharged to the onsite lake and northern wetlands because the following conditions are met : a) peak discharges do not exceed pre-development conditions for the 25 year/72 hour and 100 year/72 hour design storm events, and b) pre-development stages in the existing lake does not exceed post development stages for both the 25 year/72 hour and 100 year/72 hour design storm events.

The Stormwater Management Reports for both Town Center and NE 143rd Street have not been provided with this modification. The solid waste closure permit requires that the surface water/stormwater management system meet the requirements of Chapters 373 and 403, F.S. and Chapter 24 Miami Dade County, which will be accomplished by permits issued by the SFWMD and DERM. The FDEP is copied on these permit applications for comment to ensure compliance with the closure permit : therefore, they are not provided herein to avoid conflicts with any subsequent revisions that may be required.

Permit Modification No. 7, 8 and 9

There was no closure construction associated with these permit modifications.

Permit Modification No. 10

The stormwater drainage system as designed is generally consistent with the methodologies described in the conceptual permits issued by SFWMD and FDEP. Stormwater runoff from the extension of Biscayne Landing Boulevard will be directed to dry retention areas which provide water quality treatment and peak discharge attenuation, at higher stages, discharge to drainage wells and overflow to the onsite lake and eastern wetlands will occur. The drainage wells will provide both water quality treatment and peak discharge attenuation. The first one inch of runoff will be captured for water quality treatment in the retention area and the drainage well, with the first half inch captured prior to discharge to the drainage well. After the treatment volume requirement is satisfied, runoff flows are discharged to the onsite lake and eastern wetlands because the following conditions are met : a) peak discharges do not exceed pre-development conditions for the 25-year/72 hour and 100-year/72 hour design storm events, and b) pre-development stages in the existing lake does not exceed post-development stages for both the 25-year/72 hour and 100-year/72 hour design storm events.

The Stormwater Management Report for the extension of Biscayne Landing Boulevard has not been provided with this modification. The solid waste closure permit requires that the surface water/stormwater management system meet the requirements of Chapters 373 and 403, F.S. and Chapter 24 Miami Dade County, which will be accomplished by permits issued by the SFWMD and DERM. The FDEP is copied on these permit applications for comment to ensure compliance with the closure permit : therefore, they are not provided herein to avoid conflicts with any subsequent revisions that may be required.

1.4.9 Proposed Method of Access Control

Access to the site upon complete development will be unrestricted. The community grounds will



remain under the jurisdiction of the City and the Developer. Maintenance of the site will be the responsibility of the Developer via a development agreement between the City and Preserve Partners LTD. Restrictions on land use and recreation will be part of the final design of each phase of closure and re-development.

Restricted access to construction areas will be maintained throughout the construction of Contract No. 1, the portion of Biscayne Landing Boulevard, Contract No.2, Biscayne Landing Phase I-AI, Contract No. 3, Biscayne Landing Phase I-A2, and Contract No. 4, ~~the TownCenter Biscayne Landing Boulevard Extension~~.

1.4.10 Description of Proposed Final Use of the Closed Landfill

The landfill area ~~will~~ **is conceptually planned to** be re-developed into a ~~condominium residential community consisting of~~ **mixed use community consisting of** residential condominium units, ~~with club houses, pools, tennis courts, parking and related amenities for this community, active and passive parks, a retail center, auto dealers, and assisted living facilities.~~ Also included in the re-development ~~plan is~~ **will be** at least 35 acres of passive parks, including passive lakes with no active recreation. ~~A~~ **a 150 room** hotel with a minimum of 150 rooms and a Town Center consisting of retail and office space are also included. Figure P-2 is the current ~~Conceptual~~ Master Site Plan of the fully developed community ~~which was recently approved by the City of North Miami.~~

1.4.10.1 Available Water and Sewer Capacity

Since this closure is interconnected with the development of the site, a letter from the Assistant Public Works Director for the City of North Miami certifying the adequacy of the sewer and potable water capacity to serve the entire development is included in Appendix P-5.

In conjunction with various requirements of the County and the Department of Community Affairs, a report on the availability of water and sewer was prepared and submitted to those government agencies. The sewer and water element from the reports is included Appendix P-6 and discusses the available capacities to service this project.

The City does not have its own wastewater treatment system. The City collects sewage and transmits that sewage to Miami-Dade Water and Sewer Departments (MDWASD) collection system that ultimately discharges to the North District Plant (NDWWTP). A letter from

MDWASD regarding the available capacity of the NDWWTP is issued based on final design drawings for the development and is therefore not available at this time. However, capacity information is included in the excerpts of the enclosed report in Appendix P-6.

The City produces its own potable water in its water treatment plant. The City also has an agreement with Miami-Dade County for the rendition of water service to supplement its own production capacity. A copy of this agreement is included in Appendix P-7.

The permitted capacity of the City's water treatment plant is 9.3 million gallons per day (MGD). According to the monthly operating records obtained from the City, the treated water produced from October 1, 2002 to September 30, 2003 was 3,167.34 million gallons, or 8.68 MGD. In October of 2002 and January, February, March, April, and May of 2003, the City did have instances where they did produce more than 9.3 million gallons of treated water in a single day; however, the monthly average water production for each of those months was always less than 9.3 MGD. According to City personnel, the maximum day overages in October of 2002 and early

2003 were due to the City Engineer at that time experimenting with closing some of the Miami Dade interconnects. This was an effort to try to produce as much of their own water as possible and to purchase less water from Miami Dade County. The Water Plant Management brought to his attention that his experiment had caused the plant to go over the allotted MGD permitted by SFWM. Currently the plant management uses a spreadsheet that extrapolates the plants MGD on an hourly basis as the operator records the plant influent every hour; if it is over 9.3 MGD a warning flashes, alerting the plant operators that they need to make the necessary adjustments not to go over the permitted withdrawal of 9.3 MGD. Since this spreadsheet has been implemented, the City has not gone above 9.3 MGD as per attached reports.

The City is committed to purchasing additional water from the County to meet its demand. A letter from MDWASD regarding the available capacity of water produced by County facilities has been requested. As noted, however, both the City and the County have contracted for the County to supply as needed water to the City and the two systems are already interconnected and such supply has been available to the City for a number of years already.

1.4.11 Description of the Proposed or Existing Gas Management System

Part O of this application addresses the proposed gas management and monitoring at this site.

1.5 Closure Operation Plan

1.5.1 Detailed Description of Actions that will be Taken to Close the Landfill

Closure of the landfill is expected to proceed in the following sequence:

- Submittal of this Master Closure Plan for approval by regulatory agencies
- Implementation of the Environmental Monitoring Systems included in the Plan when approved by the regulatory agencies
- Preparation of final design drawings for the closure of the landfill and redevelopment of the site by phase
- Review of final design drawings by regulatory agencies for conformity with the approved Master Closure Plan, and issuance of a permit to construct the closure
- Construction of the closure and site re-development in phases
- Submittal of the certification of construction completion for that phase, and
- Commencement of the long-term care period for that phase.

1.5.1.1 ~~Contract No. 1~~ Construction of a portion of Biscayne Landing Boulevard

~~Contract No. 1 for this~~ This project consists of construction of a portion of Biscayne Landing Boulevard which will act as the main access to the site from NE 151st Street as well as the main utility corridor for the site. Construction Contract No. 1 will involve excavation and relocation of approximately 21,000 cubic yards of solid waste, which includes waste excavated from the following areas:

Water/Sewer Trench- 5,500 yd³
Drainage Trench - 2,500 yd³
Other Utilities - 1,500 yd³
Retaining Wall - 5,500 yd³
Road (net cut) - 6,000 yd³

Part Q, Section 1.7 describes the waste relocation plan in more detail.

The solid waste beneath the roadway lanes will be compacted using deep dynamic compaction (DDC). Based on a preliminary DDC pilot test at the site, it is anticipated that average compaction in areas subjected to DDC will be approximately 2 feet.

Construction **Contract No. 1** will include gas management and monitoring for utilities. The system will include:

- Gas collection trench
- Gas probe for utility trenches
- Signage for enterable spaces

Stormwater management for this project involves two drain wells, two pollution control structures and associated piping.

Two groundwater investigation wells will be abandoned during construction of Contract No. 1, a portion of Biscayne Landing Boulevard, are shown on Figure 1 and are listed below:

- Closure Monitoring Well- 20
- Closure Monitoring Well- 24R

These wells will be abandoned in accordance with SFWMD Rule 40E-3.041 procedures for well abandonment.

1.5.1.2 **Contract No. 2 Construction of Biscayne Landing Phase 1-A1**

Contract No. 2 of the project consists of the construction of a 26-story condominium tower, a three-story parking garage, and a single-story guardhouse, along with associated asphalt-paved parking and drive areas, stormwater management facilities, and utilities. The waste will be generated from the excavation for the utilities, drainage system, net cut from the roadway cut and fill balance, excavation for the pile caps, and installation of the piles. Based on a review of information collected from various sources, the approximate volume of waste to be excavated for these activities is approximately 112,500 cubic yards, which includes waste excavated from the following areas:

Utility Trenches- 9,000 yd³
Foundation/Pile Cap Excavation for Tower No. 1 and No.2- 18,000 yd³
Roads - 10,000 yd³
Open spaces/retention area - 10,500 yd³
General Site Grading- 65,000 yd³

Part Q, Section 1.7 describes the waste relocation plan in more detail.

The solid waste beneath the structures will be compacted using deep dynamic compaction (DDC). Based on a preliminary DDC pilot test at the site, it is anticipated that average compaction in areas subjected to DDC will be approximately 2 feet.

Construction **Contract No. 2** will include gas management and monitoring for utilities. The system will include:

- Gas collection trench
- Gas probe for utility trenches
- Signage for enterable spaces

Stormwater management for this project involves one drain well, two pollution control structures and associated piping.

Groundwater Investigation Wells, Gas Probes, and Monitoring Wells

Two (2) groundwater investigation wells and two (2) monitoring wells will be abandoned during construction of Contract No. 2. The wells are shown on Sheets ENV-1 and ENV-2 and listed below :

- Closure Monitoring Well- 20
- Closure Monitoring Well - 24
- Monitoring Well- 2B
- Monitoring Well- 45

These wells will be abandoned in accordance with SFWMD Rule 40E-3.041 procedures for well abandonment.

Two (2) groundwater investigation wells and one (1) monitoring well will be abandoned and reinstalled during construction of Contract No. 2. The wells are shown on Sheets ENV-1 and ENV-2 and listed below:

- Closure Monitoring Well- 2B
- Closure Monitoring Well - 31
- Monitoring Well- 2A

These wells will be abandoned in accordance with SFWMD Rule 40E-3.041 procedures for well abandonment and the replacement wells will be installed in accordance with the groundwater monitoring plan in Section M.

1.5.1.3 ~~Contract No.3~~ Construction of Biscayne Landing Phase 1-A2

~~Contract No.3 of the project consists of the construction of two condominium towers, a parking garage, townhomes, clubhouse, and townhomes amenities building poolhouse, and a guardhouse along with associated asphalt paved parking and drive areas, stormwater management facilities, and utilities. The waste was generated and relocated from the excavation for the utilities, drainage system, net cut from the roadway cut and fill balance, excavation for the pile caps, and installation of the piles as follows:~~

<u>Source</u>	<u>Volume (cubic yards)</u>
Towers 3 and 4, Garage 2	72,500
Amenities Bldg.	16,000
Town Homes	40,000
Utilities, Site Grading	63,500
Total	192,000

~~Part Q, Section 1.7 describes the waste relocation plan in more detail.~~

~~The solid waste beneath the structures may be compacted using deep dynamic compaction (DDC). Based on a preliminary DDC pilot test at the site, it is anticipated that average compaction in areas subjected to DDC will be approximately 2 feet.~~

Stormwater management for this project involves 3 drain wells, one pollution control structure and associated piping.

New gas probes installed inside the sloped liner gas barrier are shown on Sheet ENV-3 and included in the Methane Gas Management and Monitoring plan found in Appendix 0-6.

This section will be amended with further details relating to the relocation of site waste in a future permit modification. The revised waste relocation plan will be submitted to DERM under separate cover and forwarded to FDEP.

1.5.1.4 Contract No. 4 TownCenter Blocks A South and C, Biscayne Landing Boulevard, Buttonwood Street, and N.E. 143rd Street

Contract No. 4 of the project consists of the construction of half of the proposed TownCenter development (Blocks A South and C), Biscayne Landing Boulevard, Buttonwood Street, and N.E. 143rd Street within the site limits. It is important to note that only portions of Biscayne Landing Boulevard and Buttonwood Street within the TownCenter design limits will be constructed. The waste generated and relocated from the excavation for the utilities, drainage systems, net cut from the roadway cut and fill balance, excavation for the pile caps, and installation of the piles as follows:

Source	Volume (cubic yards)
TownCenter Block A South	238,000
TownCenter Block C	(combined total for
Biscayne Landing Boulevard	TownCenter portions)
Buttonwood Street	
N.E. 143rd Street	22,000
Total	260,000

Part 0, Section 1.7 describes the waste relocation plan in more detail. In addition, a Waste Relocation Plan (WRP) was submitted to DERM on September 28, 2007 outlining general best management practices (CBMPs) to be implemented during waste removal and relocation activities.

The solid waste beneath the structures may be compacted using DDC. In the event of DDC activities, seismographs will be placed in the approximate perimeter of the TownCenter development area, similar to Phase 1A activities, to monitor potential ground vibration levels.

1.5.1.4 Biscayne Landing Boulevard Extension Roadway Improvements

This project consists of construction of an extension of Biscayne Landing Boulevard south of NE 151st Street at its current terminus southward and then westward approximately 4,200 feet to tie into Biscayne Boulevard at 143rd Street. Construction Contract No. 4 will involve excavation and relocation of approximately 21,000 cubic yards of solid waste, which includes waste excavated

from the following areas:

Water/Sewer Trench-	2,800 yd ³
Drainage Trench -	2,400 yd ³
Other Utilities -	9,000 yd ³
Road (net cut)	0 yd ³

Mass grading of the site will result in the roadway right of way being at the subgrade elevation for starting construction. Part Q, Section 1.7 describes the waste relocation plan in more detail.

The solid waste beneath the roadway lanes will be compacted using deep dynamic compaction (DDC). Based on a preliminary DDC pilot test at the site, it is anticipated that average compaction in areas subjected to DDC will be approximately 2 feet.

Construction will include a gas management and monitoring system for utilities. The system will include:

- Gas collection trench
- Gas probe for utility trenches
- Signage for enterable spaces

Stormwater management for this project involves four new drain wells, two new lined stormwater detention basins and associated piping.

1.5.2 Time Schedule for Completion of Closing and Long-term Care

The closure construction and re-development construction activities are an integrated activity that will occur in a phased manner, with initial development occurring at the north end of the property and proceeding in a southerly direction. The sales and occupancy rate for the re-development will dictate the actual time frames for the construction of future phases. The business plan for this development project is based on four phases of development spanning a 10-year period. A project-phasing plan and project schedule have been provided in Appendix P-8.

Permit Modification No. 1

The time schedule for Contract No. 1 is as follows:

- | | |
|--|------------------------|
| • Submit Permit Modification | August 1, 2004 |
| • FDEP Permit Review and Issuance of RAI No. 1 | September 2004 |
| • FDEP Review | October 2004 |
| • Submit RAI No. 1 Response | November 2004 |
| • Start Construction | January 2005 |
| • Construction | January 2005-July 2005 |

Permit Modification No. 2

The time schedule for Contract No. 2 is as follows:

- | | |
|--|---------------------|
| • Submit Permit Modification | August 25, 2004 |
| • FDEP Permit Review and Issuance of RAI No. 1 | September 2004 |
| • Submit RAI No. 1 Response | October 2004 |
| • FDEP Review | November 2004 |
| • Start Construction | January 2005 |
| • Construction | January 2005 - 2007 |

Permit Modification No. 3

The time schedule proposed for Contract No. 3 was revised due to the redesign activities in Phase-1A. A revised time schedule for this contract is included in this permit modification and provided below No. 5.

Permit Modification No. 4

This Permit Modification had no changes to the proposed contracts. This minor modification was related to the revision and update of the site schedule and phasing plan.

Permit Modification No. 5

The proposed time schedule for Contract No. 3 is as follows:

- | | |
|--|------------------|
| • Submit Permit Modification | May 2007 |
| • FDEP Permit Review and Issuance of RAI No. 1 | June 2007 |
| • Submit RAI No. 1 Response | July 2007 |
| • FDEP Review | August 2007 |
| • Start Construction | To be determined |
| • Construction | To be determined |

Permit Modification No. 6

The proposed time schedule for Contract No. 4 is as follows:

- | | |
|--|-------------------------|
| • Submit Permit Modification | December 2007 |
| • FDEP Permit Review and Issuance of RAI No. 1 | January 2008 |
| • Submit RAI No. 1 Response | February 2008 |
| • FDEP Review | February 2008 |
| • Start Construction | March 2008 |
| • Construction | March 2008 - March 2010 |

On October 17, 2008 Biscayne Landing, LLC requested that formal review of this permit modification be suspended pending possible design changes in the area. See Permit Modification No. 10 which addresses these design changes.

Permit Modification No. 7, 8 and 9

There is no closure construction associated with these permit modifications. These modifications relate to the groundwater remediation system schedule.

Permit Modification No. 10

The proposed time schedule for Contract No. 4 is as follows:

- | | |
|--|---------------|
| • Submit Permit Modification | October 2013 |
| • FDEP Permit Review and Issuance of RAI No. 1 | November 2013 |
| • Submit RAI No. 1 Response | November 2013 |
| • FDEP Review | December 2013 |
| • Start Construction | March 2014 |

1.5.3 Describe Proposed Method for Demonstrating Financial Responsibility

Part S of this Application addresses the requirements for financial responsibility.

1.5.4 Indicate Any Additional Equipment and Personnel Needed to Complete Closure

The Developer will engage the design engineers and contractors necessary for the phased permitting, design and construction of the closure and site re-development. They will manage each phase of permitting, design and construction, and through a development agreement with the Applicant, will be responsible for compliance with applicable environmental regulations and permits relating to the closed Landfill.

1.5.5 Development and Implementation of the Water Quality Monitoring Plan Required in Rule 62-701.510 FAC.

Part M of this application contains the water quality monitoring plan for this site. Appropriate components of this plan will be implemented immediately upon approval, and other components such as stormwater monitoring will be implemented as each phase of closure is accomplished.

1.5.6 Development and Implementation of the Gas Monitoring Plan Required in Rule 62-701.530 FAC.

Part O of this application contains the Gas Monitoring Plan for this site. Appropriate components of this plan will be implemented immediately upon approval, and other components related directly to the development features of this project will be implemented as each phase of closure is accomplished.

1.6 Temporary Closure Provisions

The landfill closure will proceed in accordance with the approved closure schedule and conducted in phases. Phases of the landfill to be closed later in the site re-development program shall remain in their undisturbed condition until site re-development in those areas commences. If partial development of future phases of development are determined to be necessary or desirable, the Developer will prepare temporary closure plans for those areas and will apply to the Department for a permit to construct in those areas.

The complete groundwater monitoring network and perimeter gas probes will be installed as soon as the closure permit is issued. There are some additional surface water and gas monitoring locations that will get constructed as part of the phased closure and re-development of the site, and these will get incorporated into the monitoring plan upon completion of construction of that phase.

Under the direction of FDEP and DERM, the groundwater remediation system consisting of extraction wells and a deep injection well has been approved, and Phase I has been constructed. Currently the pilot study is being operated in Phase I, which will serve as the design basis for Phase II, which is expected to be constructed in the first half of 2014. The complete full scale system is expected to be operational by the third quarter of 2014. implementation plan is being reviewed on an implementation track that started with a bench scale

test and a field pilot test. Currently, Aadditional data is being gathered to determine the viability of the funnel and gate type of pump and treat system. Following approval of the implementation plan, a pilot test will be constructed, and operated prior to design and construction of a full scale system. The next phase of implementation is to construct and operate a prototype system on a 300 foot section of the property line and use the data and experience from this system to design, construct and operate the full system for the site. These steps do not correlate with the phased implementation of the closure and end use, and it is anticipated that the full scale remedial system construction will come after closure and redevelopment of the first phases of this project and before the development of the latter phases of the project.

Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10 –December 11, 2013
Part P -Landfill Closure Requirements

FIGURE P-1 VICINITY MAP

(NO CHANGE Permit Modification No. 10 –December 11, 2013)

Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10 –December 11, 2013
Part P -Landfill Closure Requirements

FIGURE P-2 Current Master Plan

CONCEPTUAL MASTER PLAN MAP



SWERDLOW GROUP
LeFrak Organization
LeFrak Organization



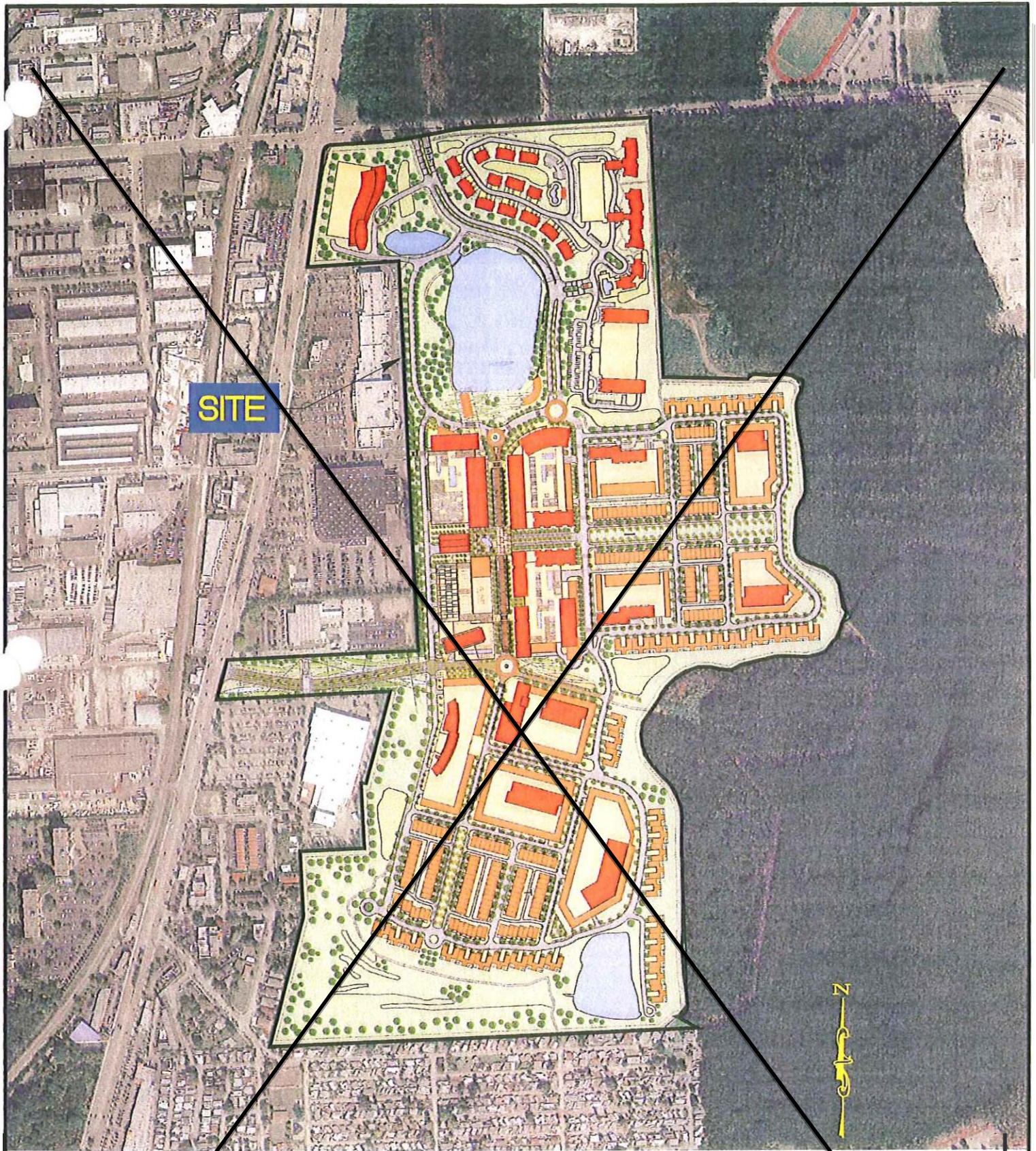
OLETA PARTNERS



OLETA PARTNERS

BIBA - BISCAYNE LANDING
 DEVELOPMENT PLAN
 NORTH MIAMI, FL





SITE



SCALE: N.T.S.

Biscayne Landing

Part P-Landfill Closure Requirements Munisport Landfill
Master Closure Plan Conformed Permit Application July 12,
2004 **Permit Modification No. 10 - December 11, 2013**



ES CONSULTANTS, INC.
environmental & civil
engineering

Project 2070055

Nov. 2007

Fig. P-2

Part Q- Closure Procedures

1.1 Introduction

The closure of the Munisport landfill is integrated with the development of the site as a residential condominium community. The required closure elements of this project are to be incorporated into the design of the development, and will be constructed as an integral part of the development in phases as the development progresses.

1.2 Survey Monuments

Several parts of the 170-acre landfill are less than 20 feet above the natural land surface. As part of the design of each phase of closure and project development, concrete monuments will be installed to mark the boundaries of the landfill property, and other permanent markers will be installed to outline the general waste filled areas. These markers will be tied to one or more of the boundary markers by a survey performed by an engineer or a registered land surveyor. The location and elevation of all markers will be shown on a site plan filed with the "Declaration to the Public" described below.

1.3 Final Survey Report

A final survey will be performed after each phase of closure and site development has been completed. The survey will be prepared by an engineer or registered land surveyor to verify that the final contours and elevations of the facility are in accordance with the plans approved in the closure construction permit issued for each phase. Aerial mapping techniques which provide equivalent survey accuracy may be used for this survey. The survey or mapping information will be included in the report along with information reflecting the conditions of the landfill as constructed. Contours shall be shown at no greater than five-foot intervals. This report shall be submitted to the Department in accordance with the closure schedule.

1.4 Closure Report

Once construction of each phase of the closure and development has been completed, a certification of closure construction completion signed and sealed by a professional engineer independent of the contractor, will be provided to the Department. All substantial deviations from the permitted closure and development plans will be noted.

1.5 Declaration to the Public

In accordance with the Special Condition No. 25 of the permit issued on July 14, 2004, "...within 60 days of the issuance of this permit the applicant [City] shall file a declaration to the public, as described in Rule 62-701.610(5), F.A.C., in the office of the county clerk of Miami-Dade County. This declaration shall address the entire landfill area."

1.6 Official Closing Date

Upon receipt of the documents described in Sections 1.2, 1.3 and 1.4 above, the Department shall, within 30 days, acknowledge by letter to the facility operator that notice of closing of that part of the facility has been received. The long term care period for the facility will commence once the final phase of closure has been completed.

1.7 Use of Closed Landfill Areas

In order to maintain control over the use of the landfill, the City of North Miami will maintain ownership of the property. A long-term lease to the developer has been entered into for the purpose of developing and maintaining the project. Condominium owners will own their unit, but that ownership will not extend to any land included in the development. No disturbance of the landfill outside the permitted closure and project development approvals will occur without Department consultation.

1.8 Relocation of Waste

As each phase of closure and project development is designed, and the closure construction permit applied for, it may be desirable to relocate waste on site to improve the landfill surface and enhance the performance of closure features. If waste is planned to be relocated during any phase of closure and project development, a Waste Relocation Plan will be prepared for Department approval that will demonstrate that:

- (a) The activity will not cause or contribute to any leachate leakage from the landfill, and will not adversely affect the closure design of the landfill.
- (b) Any leachate, stormwater runoff, or gas that is generated by the activity is controlled on site.
- (c) Any hazardous waste that is generated by the activity will be managed in accordance with Chapter 62-730, F.A.C.
- (d) Immediately after the activity is completed, the landfill will be graded, covered with 6-inches of temporary cover, and vegetated until all development and closure activities in this Phase are complete. The final closure requirements that apply to the landfill, which shall include a final cover of at least two feet of soil or other site development features, will then be constructed in accordance with the approved closure and end use plans to complete that phase of closure.
- (e) The appropriate District Office of the Department is notified at least seven days before the activity takes place in order to have the opportunity to inspect the site.

Mass grading of designated areas is required in advance of development and closure activities within these areas. Appendix P-1 is a Waste Relocation Plan approved by Miami-Dade County RER, Permitting Section that establishes these areas, sets a proposed schedule for mass grading these areas, and establishes the procedures to be followed during the waste relocation activities.

Additional waste excavation during the development and closure activities will be in accordance with this Waste Relocation Plan, and the Closure Permit Application will designate the area in which the excavated material will be relocated.

1.7.1 ~~Contract No.1~~ Waste Relocation Plan: Permit Modification No. 1

~~Contract No. 1 of~~ This project consists of the installation of approximately 1,800 linear feet of Biscayne Landing Boulevard southward from N.E. 151st Street, along with the installation of several underground utilities. The waste will be generated from the excavation for the utilities, the drainage system, net cut from the roadway cut and fill balance, and construction of a retaining wall along the lake shore. Based on a review of information collected from various sources, the approximate volume of waste to be excavated for these activities is approximately 21,000 cubic yards. The waste will be relocated to an area of the site where a Trash Processing Pilot Test will be stationed, as shown on the attached plan. Once there, the material will be processed (screened) and possibly reused on site as rough grading fill material.

The waste will be relocated as identified on Sheet ENV-5 under the following criteria:

- Only waste generated from the excavation from construction of Biscayne Landing Boulevard (as described above) will be transported to the Trash Processing area (not counting the material already transported there from the Test Pile program). It is necessary to excavate the waste material in these areas to avoid unacceptable settlement of these structures.
- Any waste suspected of being hazardous will be segregated and subsequently inspected and tested to determine if it is hazardous. If the material is determined to be hazardous, the FDEP will be notified within 24 hours and the waste will be managed and disposed of in accordance with applicable regulations.
- Any waste materials that are excavated, but not relocated, will be disposed of at a regulated facility in compliance with applicable regulations. Temporary storage of excavated waste that will be disposed of will not exceed 7 days, and will be covered while being temporarily stored.
- The approximate size of the waste stock pile awaiting screening will be 250 feet by 250 feet by 10 feet high.

1.7.2 ~~Contract No.2~~ Waste Relocation Plan Permit Modification No.2

~~Contract No. 2 of the~~ This project consists of the construction of two 26-story condominium towers, a three-story parking garage, and a single-story guardhouse, along with associated asphalt-paved parking and drive areas, stormwater management facilities, and utilities. The waste to be relocated will be generated from the excavation for the pile caps, and installation of the piles. Based on a review of information collected from various sources, the approximate volume of waste to be excavated for these activities is approximately 112,500 cubic yards. The waste will be relocated to an area of the site where a Trash Processing Pilot Test will be stationed, as shown on the attached plan. Once there, the materials will be processed (screened) and possibly reused on site as rough grading fill material.

The waste will be relocated as identified on Sheet ENV-8 under the following criteria:

- Only waste generated from the excavation from construction of Biscayne Landing Boulevard (as described above) will be transported to the Trash Processing area (not



- counting the material already transported there from the Test Pile program). It is necessary to excavate the waste material in these areas to avoid unacceptable settlement of these structures.
- Any waste suspected of being hazardous will be segregated and subsequently inspected and tested to determine if it is hazardous. If the material is determined to be hazardous, the FDEP will be notified within 24 hours and the waste will be managed and disposed of in accordance with applicable regulations.
- Any waste materials that are excavated, but not relocated, will be disposed of at a regulated facility in compliance with applicable regulations. Temporary storage of excavated waste that will be disposed of will not exceed 7 days, and will be covered while being temporarily stored.
- The approximate size of the waste stock pile awaiting screening will be 450 feet by 450 feet by 15 feet high.

1.7.3 ~~Contract No.3~~ Waste Relocation Plan Permit Modification No.3

~~Contract No. 3 of the project consists of the construction of two condominium towers, a parking garage, townhomes, a security building and an amenities building, along with associated asphalt paved parking and drive areas, stormwater management facilities, and utilities. The waste to be relocated will be generated from the excavation for the utilities, drainage system, net cut from the roadway cut and fill balance, excavation for the pile caps, and installation of the piles. Based on a review of information collected from various sources, the approximate volume of waste to be excavated for these activities is approximately 192,000 cubic yards. The waste will be relocated to the designated waste disposal area in the southwest corner of the site.~~

~~The waste will be relocated under the following criteria:~~

- ~~• Only waste generated from the construction of Phase 1A will be transported to the waste disposal. It is necessary to excavate the waste material in these areas to avoid unacceptable settlement of these structures.~~
- ~~• Any waste suspected of being hazardous will be segregated and subsequently inspected and tested to determine if it is hazardous. If the material is determined to be hazardous, the FDEP will be notified within 24 hours and the waste will be managed and disposed of in accordance with applicable regulations.~~
- ~~• Any waste materials that are excavated, but not relocated, will be disposed of at a regulated facility in compliance with applicable regulations. Temporary storage of excavated waste that will be disposed of off-site will be covered while being temporarily stored.~~

~~Permit Modifications No.4 and No.5 did not involve the relocation of waste on the site.~~

1.7.4 ~~Contract No.4~~ Waste Relocation Plan Permit Modification No. 6

~~Contract No. 4 of the project consists of the construction of one half of the proposed Town Center Blocks and associated thoroughfares shown in sheet ENV-1.00. In addition to the construction~~



Blocks A South and C, asphalt paved parking areas, driveways, and concrete sidewalks will be constructed including Biscayne Landing Boulevard, Buttonwood Street, and N.E. 143rd Street. The waste to be relocated will be generated from the excavation for the utilities, drainage system, net cut from the roadway cut and fill balance, excavation for the pile caps, installation of the piles, and excavation for the general TownCenter area. Based on a review of information

collected from various sources, the volume of waste to be excavated for these activities is approximately 260,000 cubic yards. The waste will be relocated to the designated waste disposal area in the southern portion of the site.

The waste will be relocated under the following criteria:

- Waste suspected of being hazardous will be segregated and subsequently inspected and tested to determine if it is hazardous. If the material is determined to be hazardous, the FDEP will be notified within 24 hours and the waste will be managed and disposed of in accordance with applicable regulations.
- Waste materials that are excavated, but not relocated, will be disposed of at a regulated facility in compliance with applicable regulations. Temporary storage of excavated waste that will be disposed of off-site will be covered while being temporarily stored.

Based on the above criteria, a Waste Relocation Plan was submitted to DERM, dated September 28, 2007, outlining general best management practices (BMPs) for the on-site relocation of waste. A copy of this document is provided in Permit Modification No.6 as **Attachment 9**.

On October 17, 2008 Biscayne Landing, LLC requested that formal review of this permit modification be suspended pending possible design changes in the area. See Permit Modification No. 10 which addresses these design changes.

Permit Modifications No.7,8 and 9 did not involve the relocation of waste on the site.

Permit Modification No. 10

In preparation for the construction of the Extension of Biscayne Landing Boulevard and the areas adjacent to this roadway, Phase I(a) and Phase I(b) as shown on Figure C-1 of the Waste Relocation Plan will be mass graded beginning in November 2013.

Permit Modification No. 10 consists of extending Biscayne Landing Boulevard south from its current terminus and then west to tie into Biscayne Boulevard at 143rd Street. In addition to the roadway, site utilities and stormwater management facilities will be constructed. The waste to be relocated will be generated from the excavation for the utilities, drainage system and net cut from the roadway cut and fill balance. The volume of waste to be excavated for these activities will be approximately cubic yards. The waste will be relocated to the designated disposal area in the southern portion of the site, in accordance with the processes and procedures contained in the Waste Relocation Plan.

t

Munisport Landfill Master Closure Plan
Conformed Permit Application July 12, 2004
Permit Modification No. 10 – December 11, 2013
Part Q – Closure Procedures

APPENDIX A
Waste Relocation Plan & Hazardous Waste Contingency Plan

SCS ES CONSULTANTS

August 1, 2013
File No. 26212032.00

Mr. Rashid Istambouli, P.E.
Environmental Permitting Section
Miami-Dade Regulatory and Economic Resources Department
701 NW 1st Court, 7th Floor
Miami, Florida 33136

**Re: Biscayne Landing (F.K.A. Munisport Landfill)
2200 NE 143rd St. North Miami, Florida
(SW-1178/File- 12838)**

**Subject: Waste Relocation Plan & Hazardous Waste Contingency Plans
Response to RER's Letter Dated July 16, 2013**

Dear Mr. Istambouli:

On behalf of Oleta Partners, LLC, SCS ES Consultants (SCS) is herein submitting to the Regulatory and Economic Resources Department (RER) the enclosed Waste Relocation Plan and Hazardous Waste Contingency Plan for the redevelopment activities at the above-referenced site, which have been revised to address the Regulatory and Economic Resources' (RER) comments provided in the letter dated July 16, 2013. Responses to the individual comments provided in the aforementioned letter are provided below, with each comment provided in bold followed by our response.

- 1. The site plan provided was not entirely legible and as such, a revised site plan sized at least 24 inches by 36 inches and signed and sealed by a Professional Engineer registered in Florida shall be provided showing:**
 - a) **The proposed cut and fill locations for each area clearly delineated with current and proposed final elevations.**
 - b) **All locations and corresponding volumes of Recovered Screened Material (RSM) currently stockpiled on site.**
 - c) **All Active Monitoring Well Locations.**
 - d) **All on-site lakes appropriately labeled with corresponding approximate sizes.**
 - e) **Proposed and existing stormwater retention areas.**
 - f) **Designated area(s) for storage of any recovered bulky/unacceptable solid waste shall be depicted.**

A revised site plan addressing the above comments is enclosed.

- 2. The submittal indicates that a portion of the waste relocation will be generated from rough/mass grading (cut and fill). However, it is unclear whether the RSM located on site will also be used in the cut and fill activities in addition to being used as**



temporary daily cover. Therefore a clarification regarding this shall be provided. If the RSM will be so otherwise used, all the areas where it will be applied with the approximate volumes shall be clearly identified.

The RSM is intended to be used, as available, as temporary cover for the rough graded waste and is not included in the cut and fill calculations. The RSM may will not be used as part of the final cover system for the landfill. The exact areas of use are not known at this time.

- 3. The submittal indicates a projected deficit in the volume of material required for the cut and fill process in the amount of 6,474 cubic yards, however the source of this material was not identified. Be advised that all on-site RSM shall be completely used prior to the acceptance of any additional off-site fill material to account for any material deficit except for the final fill material. The use of RSM from off-site sources, if necessary, shall require prior specific RER approval.**

No additional waste material is proposed to be brought on site. The cut and fill analysis was performed to calculate the approximate rough-grades across the site to allow for balancing of the existing waste material throughout the site to avoid taking waste material offsite. This analysis is approximate and purposefully left a deficit in the fill volume calculations as a safety factor. Rough grades will be modified in the field as appropriate to balance the waste material and the cut and fill analysis may be periodically redone as development progresses to confirm the remaining waste material will be able to be balanced within the site.

- 4. The submittal did not include a schedule of the waste relocation activities or indicate how exactly these activities will be accomplished for the duration of the entire project (e.g., phased approach, etc).**

Waste relocation activities will progress with development, which is subject to market demands and various regulatory and planning approvals. The waste relocation plan has been modified (Section 5.0) to illustrate the currently proposed phasing and schedule, which is subject to change.

- 5. The submittal did not include provisions for the management of odors and vectors.**

The Waste Relocation Plan has been modified to include provisions for the management of odors and vectors (Section 4.0).

- 6. Additional information pertaining to the closure requirements of the disturbed areas of the landfill, including specific final cover requirements in accordance with the FDEP closure permit referenced in the submittal, shall be provided.**

The subject submittal was for the relocation and mass grading of the existing waste located on the site. Mass waste relocation and rough grading must commence well in

advance of final development. Specific final cover requirements will be addressed with final development plans and will be permitted accordingly through landfill closure permit modifications and the plan review process through the FDEP, RER, the City of North Miami, and SFWMF (if necessary).

In addition to the above, the Waste Relocation plan shall be revised to include the following notations/requirements:

- 7. Temporary storage of bulky/unacceptable solid waste that will be disposed off site shall not exceed thirty (30) days. A monthly Operating Report shall be submitted to the RER with the types and quantities of waste relocated. Said Operating Report shall be submitted by the 15th day of every month using the RER Operating Report form attached.**

Section 3.0 of the Waste Relocation Plan has been revised to include this provision.

- 8. Any bulky/unacceptable solid waste identified during the waste relocation activities shall be disposed of at an approved and permitted disposal facility (e.g., Class I landfill for non-hazardous waste if disposed of in Miami-Dade County) in compliance with local, State and Federal requirements, rules and regulations. For information regarding disposal at county-owned landfills, contact German Hernandez of the Miami-Dade County Department of Public Works and Waste Management, at (305) 594-1670 or via email at germanh@miamidade.gov.**

Section 3.0 of the Waste Relocation Plan has been revised to include this provision.

- 9. Waste suspected of being hazardous shall be segregated and inspected by a licensed hazardous waste handler. If determined to be hazardous, the E (sic) and the Florida Department of Environmental Protection (FDEP) shall be notified in writing within 24 hours and the waste shall be managed and disposed of in accordance with Chapter 62-701 and 62-730, Florida Administrative Code (FAC), and Title 40, Code of Federal Regulations, Parts 260 and 261.**

Section 3.0 of the Hazardous Waste Contingency Plan has been modified to include these provisions.

- 10. Material for the waste relocation activities shall not be used for lake filling of any of the on-site lakes.**

Section 3.0 of the Waste Relocation Plan has been modified to clearly state that no relocated waste material shall be placed below 4 ft NGVD within an existing lake footprint.

- 11. No waste shall be placed/stockpiled within fifty (50) feet of any on-site lakes.**

Section 3.0 of the Waste Relocation Plan has been modified to state that no relocated waste shall be placed within 50 feet of the most current edge of water.

12. No screening of waste to be used in the relocation activity shall take place.

Section 3.0 of the Waste Relocation Plan has been modified to state that waste shall not be screened without first obtaining the necessary regulatory approvals.

13. Concrete removed from the waste shall first be deemed as clean fill prior to being used as such.

Section 3.0 of the Waste Relocation Plan has been revised to state that concrete removed from the waste shall be stockpiled and deemed as clean fill by RER prior to being used for lakefill or other clean fill applications.

14. Existing groundwater monitoring wells shall be protected during the limited site clearing activities and use of the cleared site. Wells shall be repaired or replaced accordingly within 15 days of being damaged and RER notified in writing three (3) days prior to any repair/replacement work is initiated. Approval from the City of North Miami shall be obtained for the proposed clearing activities.

Section 3.0 of the Waste Relocation Plan has been revised to include this provision.

15. RER shall be notified in writing at least (3) working days prior to the commencement of any waste relocation activity. Event notifications shall be sent via facsimile at (305)372-6982 or via email at DERMPCD@miamidade.gov. In addition, RER shall be notified in writing within 24 hours of discovering soil and/or groundwater contamination.

Section 3.0 of the Waste Relocation Plan has been revised to include this provision.

Additionally, be advised of the following:

A. A copy of the approved Waste Relocation and Hazardous Waste Contingency Plans shall be maintained on-site throughout the duration of the waste relocation activities.

The waste relocation plan has been revised to include this provision.

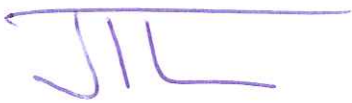
B. Prior to the waste relocation activities, the developer and/or property owner shall obtain all required approvals from the City of North Miami and other applicable local (e.g. RER's Water Control Section, Natural Resources Division - Wetlands and Forest Resources Section, Environmental Monitoring and Restoration etc.), State (e.g., NPDES Generic Permit for Storm water Discharge from Large and Small Construction Activities), and or other Federal agencies.

Mr. Rashid Istambouli, P.E.
August 1, 2013
Page 5

Noted. Oleta Partners plans to submit separate plans for permitting of the rough grading of specific area with the appropriate details required for review and permitting of the work. An NPDES permit for the work has already been obtained (Project ID: FLR10MV56).

We trust that our above responses and the enclosed revised Waste Relocation Plan and Hazardous Waste Contingency Plan addresses your concerns. Please contact us if you have any questions or further comments. In the interest of time, we request the opportunity to address potential additional comments in advance of receiving a formal request for additional information.

Sincerely,



Jeffrey P. Thompson, P.E.
Project Director
SCS ES CONSULTANTS



Fangmei Zhang, P.E.
Project Professional
SCS ES CONSULTANTS

Enclosures

cc: Darryl Lee, Oleta Partners LLC
Wilbur Mayorga, RER
Aleem Ghany, City of North Miami



BISCAYNE LANDING HAZARDOUS WASTE CONTINGENCY PLAN

15045 Biscayne Blvd.
North Miami, Florida
(SW-1178/File 12838/FDEP Permit No. 0219514-009-SF)

Prepared for:

Oleta Partners, LLC
15045 Biscayne Boulevard
North Miami, Florida 33181

Prepared by:

SCS ES CONSULTANTS
7700 North Kendall Drive, Suite 300
Miami, FL 33156
(305) 412-8185

April 2013
Revised August 2013
File No. 26212032.00

Offices Nationwide
www.scsengineers.com

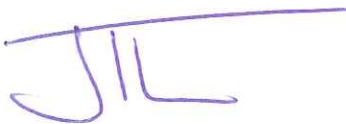
**BISCAYNE LANDING
HAZARDOUS WASTE CONTINGENCY PLAN**

Prepared for:

Oleta Partners, LLC
15045 Biscayne Boulevard
North Miami, Florida 33181

Prepared by:

SCS ES Consultants
7700 North Kendall Drive, Suite 300
Miami, FL 33156
(305) 412-8185



Jeffrey P. Thompson, P.E.
Project Director



Fangmei Zhang, P.E.
Project Professional

File No. 26212032.00
April 2013
Revised August 2013

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Figure 1 Existing Site Plan

1.0 INTRODUCTION

This Hazardous Waste Contingency Plan (HWCP) has been prepared on behalf of Oleta Partners LLC (Owner) for the redevelopment of Biscayne Landing (aka Munisport Landfill). Biscayne Landing is a proposed mixed use residential/commercial development located in North Miami, Florida. The 193.5-acre site is owned by the City of North Miami and is located between Biscayne Boulevard and Biscayne Bay, south of the Oleta River and west of Haulover Inlet. A portion of the former landfill in the northeast was previously developed as a residential project. It is 9.74 acres, referred to as the Oaks I development and is excluded from Oleta Partners' long term lease with the City of North Miami for the remaining 183.8 acres (Site). Biscayne Landing Boulevard running north-south through the northern portion of the site (approximately 3.5 acres) is the other existing permanent development feature of the site. Refer to **Figure 1** for an overall site plan of the property showing the developed and bifurcated areas.

Historically, land filling activities on this site began in the 1940s and continued until approximately July 1980. The landfill received approximately six million cubic yards of solid waste, generally including construction and demolition (C&D) debris and institutional and municipal solid wastes (MSW). It is unknown if hazardous waste were ever disposed onsite. However, it is our understanding that hazardous waste has not been encountered during the numerous site investigation and remedial activities onsite or during previous redevelopment activities at the site. Therefore, this HWCP has been prepared for the Owner to describe the procedures for identifying and responding to hazardous waste that may be encountered during site development activities, especially during mass grading and waste relocation activities. Contractors working on the site must comply with applicable OSHA rules and regulations, with the understanding that additional requirements may be required specifically for earthwork activities because of the presence of solid waste and the potential for encountering hazardous waste disposed of at the Site.

2.0 HAZARDOUS WASTE IDENTIFICATION

Hazardous waste, if present onsite, may include RCRA hazardous waste and biomedical waste, as defined by Title 40 of the Code of Federal Regulations 261 and 262. Hazardous wastes are typically characterized because of their reactive, corrosive, flammable, ignitable, and/or toxic properties.

Biomedical waste may include the following:

- Blood-soaked bandages
- Culture dishes and other glassware
- Discarded surgical gloves, surgical instruments, and lancets
- Discarded needles (e.g., medical sharps)

Drums or other suspicious containers should be considered to contain hazardous waste prior to identifying the contents and should only be handled by authorized personnel. Other indicators of potential hazardous waste may include containers with hazardous waste labels (i.e., "flammable", "corrosive", "reactive" or "hazardous"), evidence of corrosivity (i.e., immediate

rusting of metals), evidence of reactivity (i.e., bubbling, foaming, visible fumes, etc.), excessively hot earth, smoke, or evidence of abnormal odors. No earth moving operations should resume until the area is cleared by authorized personnel.

Refer to Section 3.0 for the proper response procedure if suspect hazardous waste is encountered.

3.0 HAZARDOUS WASTE RESPONSE

If material is encountered that is suspected of being hazardous waste as discussed in Section 2.0, the following actions will be taken:

- **The suspected hazardous waste will not be handled by unauthorized personnel**
- **In case of fire or explosion, the Miami-Dade Fire Department will be called immediately (DIAL 9-1-1)**
- The area will be secured and cleared of unauthorized personnel – personnel will evacuate to an upwind position out of the immediate area of the container and/or spill
- The emergency coordinator will be notified immediately – contact info and procedure is defined in Section 4.0
- The emergency coordinator will assess the condition and take appropriate actions, as follows:
 - Site Safety Officer, or other authorized person, will initially assess the situation to determine the potential nature and hazards associated with the suspect material.
 - If it is confirmed that the material is suspect hazardous waste the emergency coordinator, or other authorized person, will contact a qualified environmental professional to confirm whether the material is hazardous or they will contact licensed waste handler or emergency response teams (examples are listed below) for management and disposal in accordance with applicable regulations, including Chapter 62-701 and 62-730, Florida Administrative Code (FAC), and Title 40, Code of Federal Regulations, Parts 260 and 261).
 - The emergency coordinator, or other authorized person, will notify the FDEP and Miami-Dade County RER in writing within 24 hours upon confirmation of the presence of hazardous material
- The contractor may resume work in the associated area once either a qualified environmental professional determines the material is not hazardous, or the material has been properly removed by a licensed waste handler or emergency response team
- Should a large-scale spill/release occur that cannot be handled by a third-party waste disposal company or it has determined that the situation is immediately dangerous to life and health by the Emergency Coordinator or other authorized person, the Miami-Dade County Hazardous Materials Emergency Response Team (HAZMAT) shall be contacted via the “911” system.
- Within 30 days of conducting the emergency activities, the authorized person shall submit to the FDEP and RER a complete written summary of the incidents, which clearly specify the type and amount of waste, the manner and location of their treatment, storage, or disposal; and other pertinent information

County and State Notification Numbers:

Florida 24-hour State Warning Point 800-320-0519
RER Compliance Complaint 305-275-1186

Waste Handler and Emergency Response Team Numbers:

Safety-Kleen 888-375-5336
SWS Environmental Services 877-742-4215
Medi-Waste Transportation Solutions 866-301-3404

4.0 EMERGENCY COORDINATOR

As required in 40 CFR 265.55, the Emergency Coordinator will be on call (i.e. available to respond to an emergency by reaching the site within a short period of time) at all times. The Emergency Coordinator must be:

- Familiar with the site layout, site operations and activities
- Familiar with the procedure for handling the suspect hazardous waste
- Have the authority to commit the site resources in the event of an emergency

The following contact hierarchy must be followed in the order presented until somebody is reached in case of suspect hazardous waste or hazardous waste constituents being encountered:

Name	Role/Organization	Office Phone	Cell Phone
Richard Medlecot	Site Superintendent, Oleta Partners, LLC	786-629-3140	954-294-3911
Darryl Lee	Site Developer Project Manager, Oleta Partners, LLC	305-442-6531	561-504-0909
Herb Tillman	Site Developer Vice President, Oleta Partners, LLC	305-442-6529	561-239-0076

Additional contact information may be added upon selection of a contractor(s).

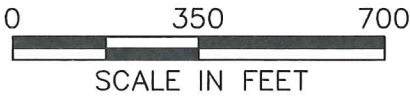


SITE AREA LISTING

SITE PORTION	AREA, AC	PROPERTY STATUS
PHASE 1A BISCAYNE LANDING BLVD	9.70	BIFURCATED, KNOWN AS THE OAKS
REMAINING	3.50	LEASED TO OLETA PARTNERS, LLC
TOTAL	180.30	

LEGEND

- PROPERTY LINE
- 10.0 EXISTING CONTOUR



Prepared For OLETA PARTNERS, LLC	Project Name and Address BISCAYNE LANDING MASS GRADING NORTH MIAMI, FLORIDA	Sheet Title EXISTING SITE PLAN
Prepared By SCS ES CONSULTANTS 7700 NORTH KENDALL DRIVE, SUITE 300 MIAMI, FLORIDA 33156 PH 305.412.8185 FX 305.412.8105	Project No. 26212032.00	Date APRIL 2013
		Sheet FIGURE 1



BISCAYNE LANDING WASTE RELOCATION PLAN

15045 Biscayne Blvd.
North Miami, Florida
(SW-1178/File 12838/FDEP Permit No. 0219514-009-SF)

Prepared for:

Oleta Partners, LLC
15045 Biscayne Boulevard
North Miami, Florida 33181

Prepared by:

SCS ES CONSULTANTS
7700 North Kendall Drive, Suite 300
Miami, FL 33156
(305) 412-8185

April 2013
Revised August 2013
File No. 26212032.00

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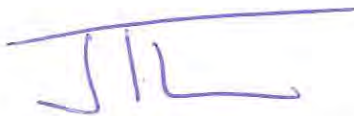
**BISCAYNE LANDING
WASTE RELOCATION PALN**

Prepared for:

Oleta Partners, LLC
15045 Biscayne Boulevard
North Miami, Florida 33181

Prepared by:

SCS ES Consultants
7700 North Kendall Drive, Suite 300
Miami, FL 33156
(305) 412-8185



Jeffrey P. Thompson, P.E.
Project Director



Fangmei Zhang, P.E.
Project Professional

File No. 26212032.00
March 2013
Revised August 2013

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Figure 2 Proposed Elevations and Cut & Fill Volume

Sheet C-1 Conceptual Mass Grading Plan

List of Attachments

Attachment A Monthly Operating Report

1.0 INTRODUCTION

This Waste Relocation Plan (WRP) has been prepared on behalf of Oleta Partners LLC (Owner) for the redevelopment of Biscayne Landing (aka Munisport Landfill). Biscayne Landing is a proposed mixed use residential/commercial development located in North Miami, Florida. The 193.5-acre site is owned by the City of North Miami and is located between Biscayne Boulevard and Biscayne Bay, south of the Oleta River and west of Haulover Inlet. A portion of the former landfill in the northeast was previously developed as a residential project. It is 9.74 acres, referred to as the Oaks I development and is excluded from Oleta Partners' long term lease with the City of North Miami for the remaining 183.8 acres (Site). Biscayne Landing Boulevard running north-south through the northern portion of the site (approximately 3.5 acres) is the other existing permanent development feature of the site. Refer to **Figure 1** for an overall site plan of the property showing the developed and bifurcated areas.

Historically, land filling activities on this site began in the 1940s and continued until approximately July 1980. The landfill received approximately six million cubic yards of solid waste, generally including construction and demolition (C&D) debris and institutional and municipal solid wastes (MSW).

The proposed waste relocation procedures described herein were prepared in general accordance with Florida Department of Environmental Protection (FDEP) requirements located in the Florida Administrative Code (FAC) Chapter 62-701; Guidance for Disturbance and Use of Closed Landfills or Waste Disposal Areas in Florida (FDEP, February 3, 2011), and Minimum Requirements for Use of Former Landfills (RER, July 12, 2001), as applicable. This WRP is prepared to provide field guidance to contractors when encountering MSW and C&D during the development of the Oleta Partners leasehold area of the former landfill.

Below is a summary of the proposed earth work activities, approximate cut and fill quantities, and waste handling procedures for the on-site relocation of waste.

A copy of the approved waste relocation plan and hazardous waste contingency plan shall be maintained on-site throughout the duration of the waste relocation activities.

2.0 PROPOSED EARTHWORK ACTIVITIES

Waste relocation will be required for earthwork activities associated with the development of the site. Waste requiring relocation is anticipated to be generated from the following activities:

- Rough grading/mass grading (cut and fill)
- Excavation for dry retention areas
- Utility trenches
- Building piles and pile cap excavations

Mass grading of the site has been separated into three areas as depicted on **Figure 2**. Material balance calculations were performed so that the existing onsite material is balanced during mass grading, eliminating or minimizing the amount of material that may need to be disposed of

offsite. The existing onsite material included in the material balance includes the solid waste and existing cover (typically six inches or greater throughout the site). **Figure 1** and **2** and Sheet C-1 depict the existing and proposed grades. The proposed maximum waste elevation is approximately 20.5 ft NGVD, based on the cut & fill (C&F) calculations and site redevelopment requirements. The proposed grades shown do not include the final cover required to meet the landfill closure requirements, and may be reduced if significant compaction is implemented, such as dynamic compaction. The proposed elevations are in accordance with the City of North Miami zoning restriction for the site. The proposed slope across the site is not steeper than 5%, with the exception of stormwater retention area side slopes.

The C&F calculations were conducted by comparing the existing and proposed grades in each phase. The table below summarizes the C&F quantities in each area.

Table 1 Cut and Fill Volumes

AREA ID	AC	CUT, CY	FILL, CY	NET, CY
AREA I	92.28	-513,818	360,805	-153,013
AREA II	72.78	-254,631	364,608	109,977
AREA III	18.97	-53,951	90,513	36,562
TOTAL	184.0	-822,400	815,926	-6,474

Note: Area I includes 3.5-acre of the existing Biscayne Landing Boulevard.

As shown in **Table 1**, a total of approximate 822,000 cubic yards of solid waste will be relocated onsite during mass grading activities, with Area I being exporter and the others being importers. An accurate cut and fill quantity is subject to change based on a final redevelopment plan. See **Figure 2** for the separate areas.

3.0 WASTE HANDLING PROCEDURES

Best Management Practices (BMPs) will be implemented during waste relocation activities at the site. These BMPs are listed below.

- RER shall be notified in writing at least (3) working days prior to the commencement of any waste relocation activity. Event notifications shall be sent via facsimile at (305)372-6982 or via email at DERMPCD@miamidade.gov. In addition, RER shall be notified in writing within 24 hours of discovering soil and/or groundwater contamination.
- Prior to waste relocation in the areas that already received six inches of cover or greater, the cover material may be relocated to an onsite designated staging area, and used for cover once the relocation is completed and area is graded.
- During waste excavation and relocation activities, bulky/unacceptable solid waste identified during the waste relocation activities shall be disposed of at an approved and permitted disposal facility (e.g., Class I landfill for non-hazardous waste if

disposed of in Miami-Dade County) in compliance with local, State and Federal requirements, rules and regulations. For information regarding disposal at county-owned landfills, contact German Hernandez of the Miami-Dade County Department of Public Works and Waste Management, at (305) 594-1670 or via email at germanh@miamidade.gov.

- Temporary storage of bulky/unacceptable solid waste that will be disposed off-site shall not exceed thirty (30) days. A monthly Operating Report shall be submitted to the RER with the types and quantities of waste relocated. Said Operating Report shall be submitted by the 15th day of every month using the RER Operating Report form provided in Attachment A.
- Waste suspected of being hazardous will be segregated and subsequently inspected and tested to determine if it is a characteristic hazardous waste. If material is determined to be hazardous, the FDEP and Miami-Dade County RER will be notified within 24 hours and the waste will be managed and disposed of in accordance with applicable regulations. Refer to separate Hazardous Waste Contingency Plan for further information regarding hazardous waste that may be encountered.
- No relocated waste material shall be placed within 50 feet from the most current edge of water of the onsite lakes or below 4 ft NGVD within the footprint of an existing lake.
- Concrete removed from the waste shall be stockpiled and deemed as clean fill by RER prior to being used for lakefill or other clean fill applications.
- Waste shall not be screened without first obtaining the necessary regulatory approvals.
- During waste compaction and grading operations, cover will be placed on the exposed waste at the end of each working day. Initial cover may consist of clean fill, recycled screened material (RSM), or acceptable alternative daily cover (ADC), such as foam-based cover or geosynthetic covers. The cover shall be sufficient to minimize adverse environmental, safety, or health effects, such as those resulting from birds, blowing litter, odors, disease vectors, or fires. A temporary cover, such as a tarp, may be used in areas where additional solid waste will be cut or filled within 18 hours of the conclusion of work, which may be removed prior to deposition of additional waste.
- After proposed final waste grade is achieved in an area, the area will be graded and covered with six-inches of initial cover or other approved material or ADC until development and closure activities are complete. In the event that an ADC material is utilized, consideration will be given to the ADC's performance based on weather conditions (wind and rain), manufacturer recommendations, and life expectancy. Accordingly, proper supervision for the correct application of the ADC and

maintenance/replacement will be performed, as necessary. Final waste grade slopes will not be steeper than a 3:1 ratio.

- Stormwater runoff that is generated by the activity will be controlled on site by temporary cover, as listed above, and re-direction of stormwater sheet flow to the appropriate permanent or temporary drainage areas.
- Erosion control methods (silt fence, etc.) will be implemented in accordance with the Site's Stormwater Pollution Prevention Plan (SWPPP) and the NPDES Generic Permit for Stormwater Discharge from Large and Small Construction Activities (CGP)
- Daily logs will be kept for approximate amounts of waste relocated, approximate stockpile amounts, and location on the site.
- The final closure requirements that apply to the landfill, including an adequate cover or other site development features, will be constructed in accordance with the FDEP-approved Master Closure Plan (Closure Permit No. 0219514-011-SF or updated).
- Existing groundwater monitoring wells shall be protected during the limited site clearing activities and use of the cleared site. Wells shall be repaired or replaced accordingly within 15 days of being damaged and RER notified in writing three (3) days prior to any repair/replacement work is initiated. Approval from the City of North Miami shall be obtained for the proposed clearing activities.

Additionally, the contractors responsible for the waste relocation activities shall prepare a Site Specific Health and Safety Plan (HASP) in accordance with 29 CFR Part 1910.

4.0 CONTROL OF ODORS AND VECTORS

Odor Control

Odors were not an issue with waste relocation activities previously conducted at the site. Odors will be controlled by the use of temporary cover over relocated waste. If required, mobile and stationary misting systems may be used at active area boundaries to control odors from the active area. Odors will be monitored at the active area boundaries and a more detailed odor control plan will be developed if deemed necessary.

Vector Control

Vectors, animals, or insects that transmit pathogens will be kept within acceptable limits. Maintaining the working area as small as possible, providing initial cover on exposed areas, and eliminating water-ponding are the primary safeguards against vector problems. Well-compacted wastes and cover material effectively prevent vectors emerging from or burrowing into wastes.

If problems with rodents or insects occur, monitoring and surveys for vectors will be conducted to verify the effectiveness or identify and implement improved vector control practices.

5.0 SCHEDULE

The following table provides the currently proposed schedule in accordance with the phases shown on Sheet C-1.

Table 2 Phasing Schedule

PHASE ID	AREA, AC	START DATE	END DATE	DURATION
PHASE I(A)	32.42	Nov. 2013	Jan. 2014	3 Months
PHASE I(B)	24.74	Nov. 2013	April 2014	6 Months
PHASE I(C)	33.24	Jan. 2014	April 2014	4 Months
PHASE II(A)	8.94	April 2014	May 2014	1 Month
PHASE II(B)	17.45	April 2014	May 2014	2 Months
PHASE II(C)	9.99	April 2014	May 2014	1 Month
PHASE II(D)	27.74	May 2014	Oct. 2014	6 Months
PHASE II(E)	8.66	Oct. 2014	Nov. 2014	1 Month
PHASE III	20.85	Dec. 2014	Feb. 2015	3 Months
TOTAL	184.0	Nov. 2013	Feb. 2015	1.25 Years

FIGURES

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4/25/2013

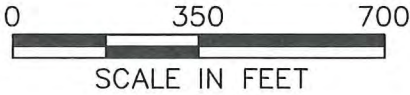


SITE AREA LISTING

SITE PORTION	AREA, AC	PROPERTY STATUS
PHASE 1A BISCAYNE LANDING BLVD REMAINING	9.70 3.50 180.30	BIFURCATED, KNOWN AS THE OAKS LEASED TO OLETA PARTNERS, LLC
TOTAL	193.50	

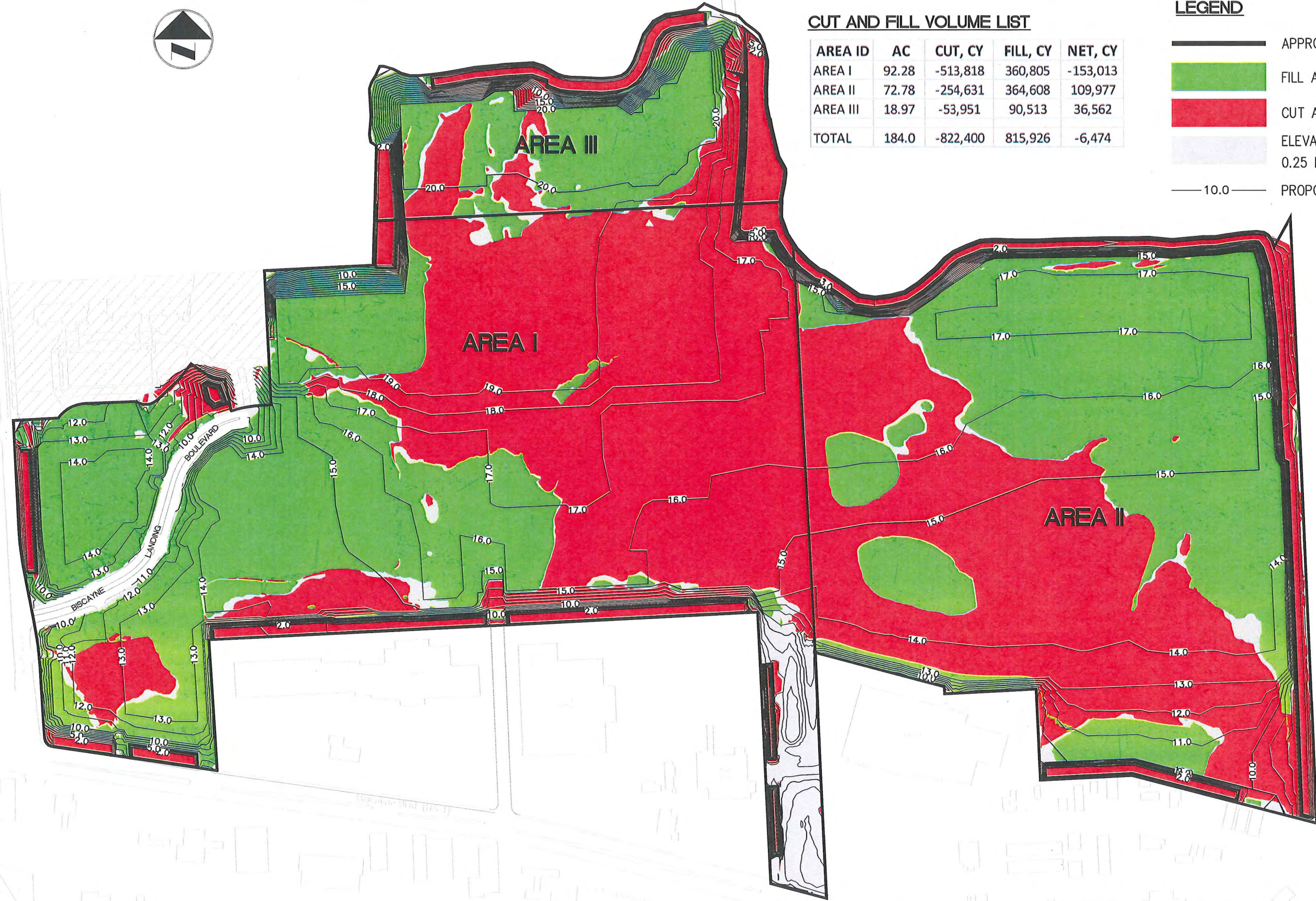
LEGEND

- PROPERTY LINE
- 10.0 EXISTING CONTOUR



Prepared For OLETA PARTNERS, LLC	Project Name and Address BISCAYNE LANDING MASS GRADING NORTH MIAMI, FLORIDA	Sheet Title EXISTING SITE PLAN
Prepared By SCS ES CONSULTANTS 7700 NORTH KENDALL DRIVE, SUITE 300 MIAMI, FLORIDA 33156 PH 305.412.8185 FX 305.412.8105	Project No. 26212032.00	Date APRIL 2013
		Sheet FIGURE 1

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4/25/2013

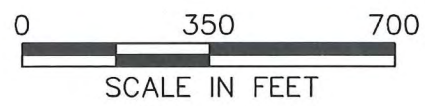


CUT AND FILL VOLUME LIST

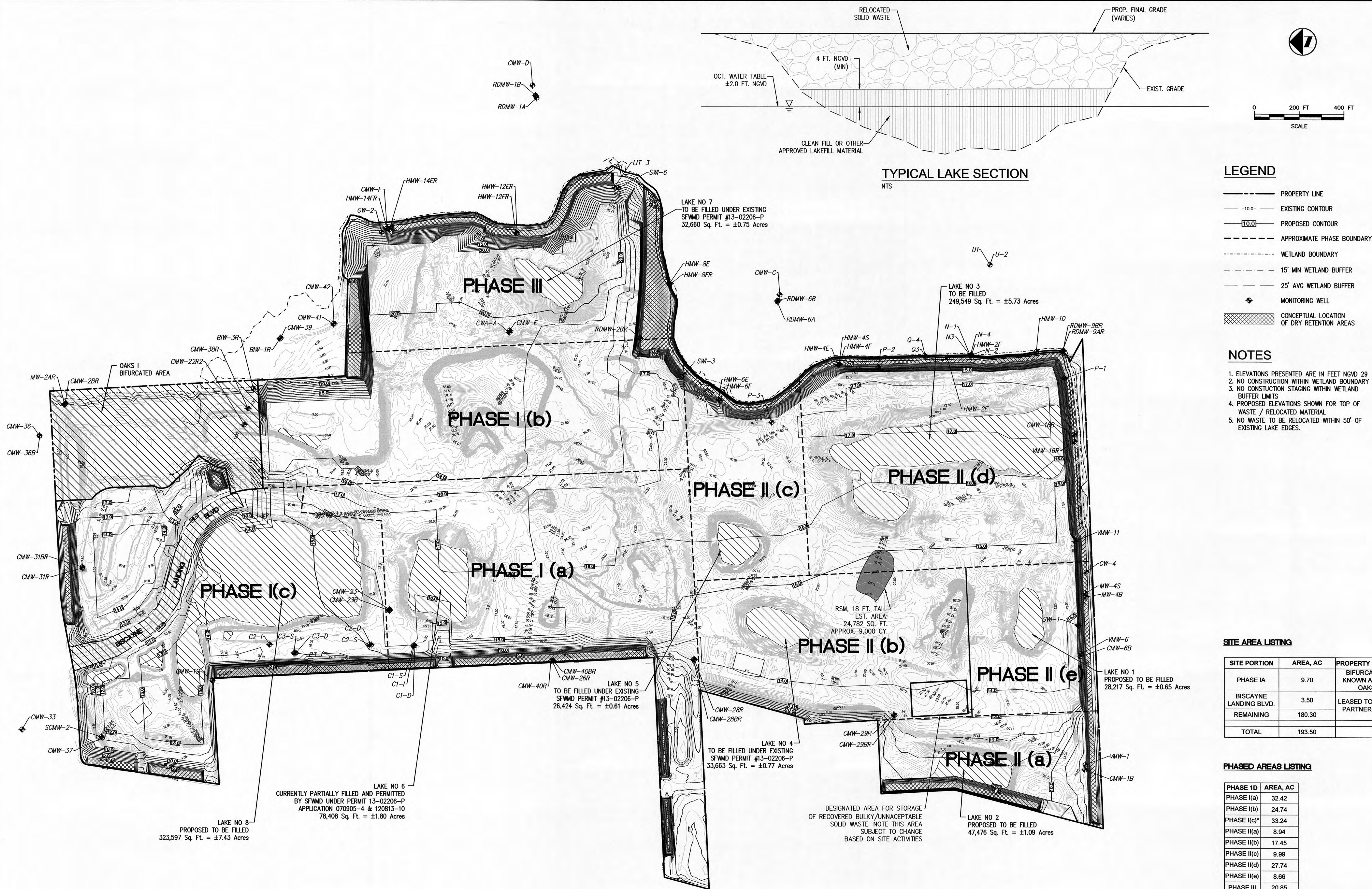
AREA ID	AC	CUT, CY	FILL, CY	NET, CY
AREA I	92.28	-513,818	360,805	-153,013
AREA II	72.78	-254,631	364,608	109,977
AREA III	18.97	-53,951	90,513	36,562
TOTAL	184.0	-822,400	815,926	-6,474

LEGEND

- APPROXIMATE PHASE BOUNDARY
- FILL AREA (>0.25 FT DIFFERENCE)
- CUT AREA (<-0.25 FT DIFFERENCE)
- ELEVATION REMAINS (<-0.25 FT TO 0.25 FT DIFFERENCE)
- 10.0 PROPOSED CONTOUR



Prepared For OLETA PARTNERS, LLC	Project Name and Address BISCAYNE LANDING MASS GRADING NORTH MIAMI, FLORIDA	Sheet Title PROPOSED ELEVATIONS AND CUT & FILL VOLUME
Prepared By SCS ES CONSULTANTS 7700 NORTH KENDALL DRIVE, SUITE 300 MIAMI, FLORIDA 33156 PH 305.412.8185 FX 305.412.8105	Project No. 26212032.00	Date APRIL 2013
		Sheet FIGURE 2



SCS ES CONSULTANTS STEVENSON CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC. 7700 N. KENDALL DRIVE, SUITE 607, MIAMI, FL 33156 PH. (305) 412-8185 FAX. (305) 412-8105 FL CERTIFICATE OF AUTHORIZATION NO. 00004892	CLIENT OLETA PARTNERS LLC 15045 BISCAYNE BLVD. NORTH MIAMI, FL 33181		SHEET TITLE CONCEPTUAL MASS GRADING PLAN PROJECT TITLE BISCAYNE LANDING STORMWATER MASTER PLAN	REV Δ Δ Δ Δ Δ	DATE	DESCRIPTION	CHK. BY
	CADD FILE: DATE: 7/30/2013 SCALE: AS SHOWN DRAWING NO. C-1 SHEET 1 of 1	FZ JPT JPT					

ATTACHMENT A
MONTHLY OPERATING REPORT

RER SOLID WASTE OPERATING REPORT FORM

Facility Name: _____

Facility Type (Landfill, C&D MRF, etc.): _____

Facility Address: _____

Permit Number: _____

Operating Schedule: _____ hrs./day _____ days/week or _____ days/quarter

Reporting Period (Month/Year): _____

Waste Type	Waste Received this Reporting Period		On-Site Disposal this Reporting Period		Off-Site Disposal this Reporting Period ⁽¹⁾		
	Amount	Units ⁽²⁾	Amount	Units ⁽²⁾	Facility Name and address	Amount	Units ⁽²⁾
Concrete, Stone, Brick, Ceramic Tiles, etc.							
Soil							
Construction & Demolition (C&D) Debris							
Recovered Screen Material (RSM)							
RSM Reused ⁽⁴⁾							
C & D Residuals (screening overs)							
Metals (Ferrous)							
Metals (Non Ferrous)							
Land Clearing Debris/Lumber							
C & D Wood							
Roofing							
Plastic							
Tires							
Paper/Cardboard							
Glass							
Garbage							
Filters							
Bio-hazardous Waste							
Unacceptable (list below)							
Mixed Waste (list below)							
TOTALS					TOTALS		

The undersigned hereby certify that operational records and disposal receipts (where applicable) have been reviewed and the information given in this report is accurate.

Name of Operating Authority Representative⁽³⁾

Signature of Operating Authority Representative⁽³⁾

Date

Facility Operator

Signature of Operator

Date

- Notes: (1) **ATTACH DISPOSAL RECEIPTS FOR ALL WASTE DISPOSED OFF SITE**
 (2) Cubic Yards or Tons
 (3) Corporate Officer or Authorized Representative (letter of authorization must be on-file with RER if not a Corporate Officer)
 (4) RER Approval required for REUSE of RSM

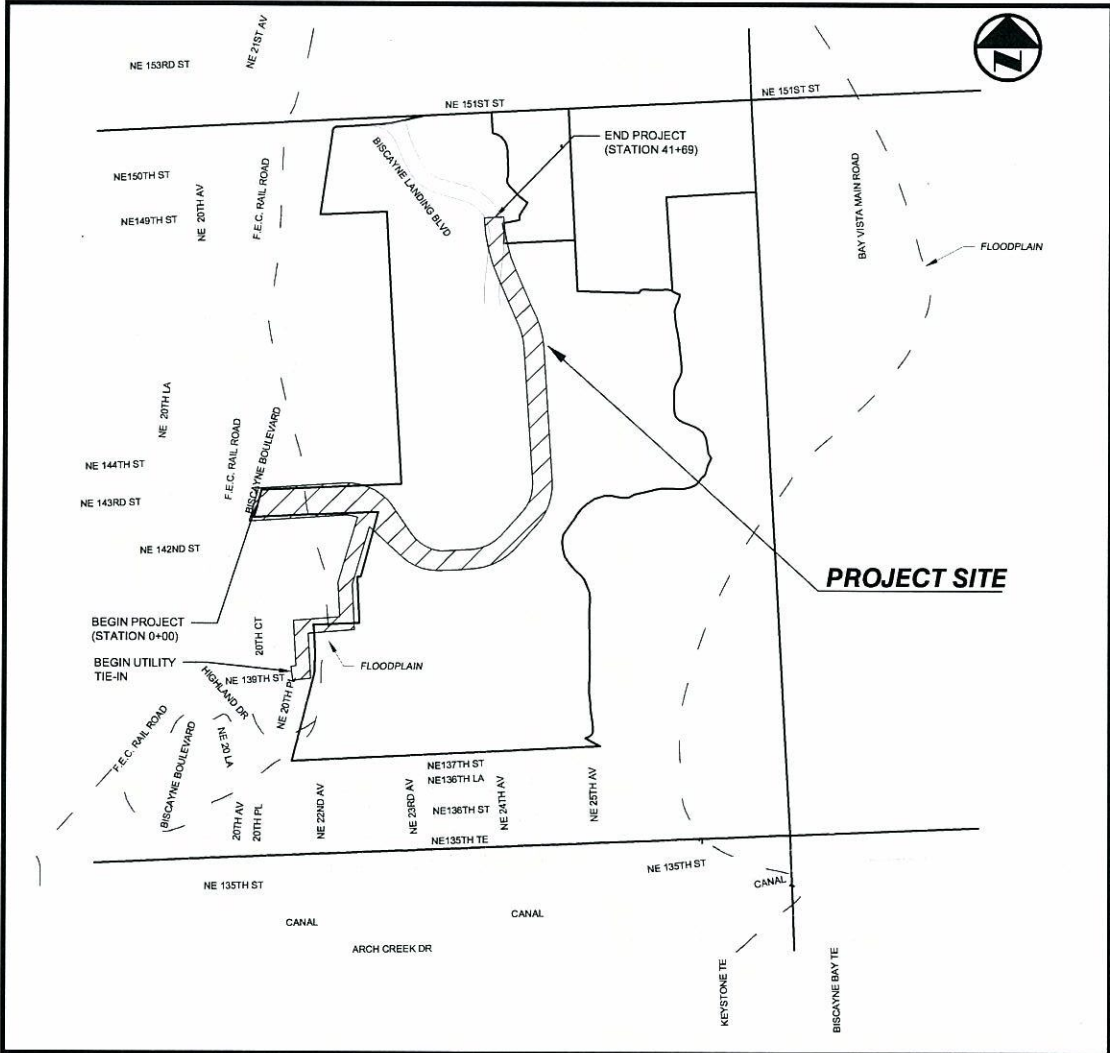
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Part S- Financial Assurance

1.1 Introduction

The financial assurance cost estimate is updated annually based on the actual closure construction that has occurred during the year. Adjustments to the financial assurance requirements will continue to be made in this manner and will be submitted to the Department for review and approval.

BISCAYNE LANDING BOULEVARD EXTENSION
ROADWAY IMPROVEMENT PLANS
FDEP CLOSURE PERMIT 0219514-001-SF MODIFICATION NO. 10
CITY OF NORTH MIAMI, FLORIDA



LOCATION MAP
NOT TO SCALE

INDEX OF DRAWINGS

CIVIL

SHEET #	SHEET TITLE
C-1	COVER SHEET
C-2	OVERALL SITE PLAN
C-3	SITE PLAN - PERMIT MODIFICATION NO.10
C-22	ROADWAY PLAN
C-23	ROADWAY PLAN
C-24	ROADWAY PLAN
C-25	ROADWAY PLAN
C-26	ROADWAY PLAN
C-27	ROADWAY PLAN
C-28	ROADWAY PLAN
C-29	ROADWAY PLAN
C-30	ROADWAY PROFILES
C-31	ROADWAY PROFILES
C-32	ROADWAY PROFILES
C-33	ROADWAY PROFILES
C-34	ROADWAY PROFILES
C-35	ROADWAY PROFILES
C-36	ROADWAY PROFILES
C-37	ROADWAY PROFILES
C-38	CROSS-SECTIONS
C-39	CROSS-SECTIONS
C-40	CROSS-SECTIONS
C-41	CROSS-SECTIONS
C-42	CROSS-SECTIONS
C-43	SUMMARY OF DRAINAGE STRUCTURES
C-44	PAVING AND DRAINAGE DETAILS
C-45	PAVING AND DRAINAGE DETAILS
C-46	PAVING AND DRAINAGE DETAILS
C-47	STORM WATER POLLUTION PREVENTION NOTES
C-48	STORM WATER POLLUTION PREVENTION PLAN
C-49	STORM WATER POLLUTION PREVENTION PLAN
C-50	STORM WATER POLLUTION PREVENTION DETAILS
C-51	STORM WATER POLLUTION PREVENTION DETAILS
C-52	UTILITY PLAN
C-53	UTILITY PLAN
C-54	UTILITY PLAN
C-55	UTILITY PLAN
C-56	UTILITY PLAN
C-57	UTILITY PLAN
C-58	UTILITY PLAN
C-59	UTILITY PLAN
C-60	UTILITY DETAILS
C-61	UTILITY DETAILS

ENVIRONMENTAL

SHEET #	SHEET TITLE
ENV-1	GAS MANAGEMENT_PLAN
ENV-2	GAS MANAGEMENT_PLAN
ENV-3	GAS MANAGEMENT_DETAILS
ENV-4	GAS MANAGEMENT_DETAILS

PREPARED BY:

ATKINS

2001 NW 107th Avenue
Miami, Florida 33172
305.592.7275
FBPR Certificate of Authorization No. 24

CLIENT:



3390 MARY STREET, SUITE 200
MIAMI, FL 33133



NOT APPROVED FOR CONSTRUCTION
UNLESS STAMPED APPROVED FOR
CONSTRUCTION

OCTOBER 11, 2013