Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex Operations Plan

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SECTION K
OPERATIONS PLAN

K.1 TRAINING

In accordance with Rule 62-701.500(1), Florida Administrative Code (F.A.C.), key supervisory staff members at the Central County Solid Waste Disposal Complex (CCSWDC) have received Landfill Operator Certification training. The training plan can be found in Attachment K-1. Sarasota County staff or a qualified landfill operations contractor will operate the CCSWDC. Sarasota County will require the operating entity to provide at least one trained landfill operator certified in accordance with Chapter 62-701.320(15), F.A.C. and at least one trained spotter at each working face during operation when the landfill receives waste to detect unauthorized wastes from each load.

The spotters will be responsible for guiding vehicles and promoting an efficient operation during normal operation hours. The spotters shall also be responsible for enforcing provisions for controlling the waste received. These provisions are described in Section K.2.c.

The CCSWDC will be operated in compliance with all applicable regulations governing the operation of solid waste management facilities and surface water management facilities.

In addition, the equipment operators have sufficient training and knowledge to move waste and soil, and to develop the site in accordance with the design plans and operational standards.

Interim spotters, who do not have the formal spotter training, may be employed at the CCSWDC provided that the interim spotter is under the direct supervision of a trained operator or trained spotter. The interim spotter must receive training as an operator or spotter within three months of employment.

An interim operator may be employed at the CCSWDC provided that the interim operator has had at least one year of experience at the facility or a similar facility. An interim operator must receive operator training within one year of employment as interim operator. An interim operator shall serve as the operator for the facility in lieu of a trained operator for no more than three consecutive months.

In the event the spotter is located on heavy equipment spreading waste at the working face, then the equipment operator must be a trained landfill operator or spotter. The equipment operator will remove unauthorized waste from the working face to a temporary area next to the working face for later removal/management or stop operations and notify another operator or ground personnel to assist with removal/management of the unauthorized waste before resuming operations.

K.2 LANDFILL OPERATIONS PLAN

K.2.a Designation of Responsible Persons

The CCSWDC is owned by Sarasota County and operated under the direction of the Sarasota County Solid Waste Operations Division Manager (Manager). The Manager will be the designated responsible person for the operation of the CCSWDC.

A list of the designated landfill positions is provided below. The Contractor must have an adequate number of positions working to fulfill their contractual obligations which at all times shall include at a minimum a manager (general or operations), an equipment operator and a spotter. The County shall have a minimum of one position at the site when waste is being accepted. Training requirements are also provided for each position. The anticipated position list for both the Contractor and the County is provided below.

CONTRACTOR:

- General Manager (Operator)
- Operations Manager (Operator)
- Equipment Operators (Operator/Spotter)
- Laborer/Spotter (Spotter)

COUNTY:

- Manager (Operator)
- Compliance Specialist (Operator)
- Solid Waste Engineer (Operator)

K.2.b Contingency Operations for Emergencies

K.2.b.(1) Emergency Provisions

Emergency conditions at the landfill site may occur as a result of a natural disaster (hurricane, tornado, flooding, etc.) or fire. In the event emergency conditions will interrupt operations at the CCSWDC, the following safety and contingency plan will be implemented (see Attachment K-2). In addition, staff shall review and implement the most current version of the Sarasota County Solid Waste Operations Emergency Plan on file at the CCSWDC. Refuse is not normally delivered to the site during emergency conditions; however, should a major storm occur, the following actions shall be taken:

- Daily cover shall be applied to all exposed refuse before a major storm arrives, if possible.
- All landfill equipment shall be parked near any natural wind screens such as earthen mounds and berms.
- All lightweight signs and equipment shall be secured.
- When operation resumes, work shall commence in dry areas only (up from the active working face). Refuse shall not be deposited in standing water.
- Contract agreements with local contractors, equipment suppliers, or cooperative lending agreements with other County departments will be pursued for backup equipment, if necessary.

Small fires on the working face will be controlled by a bulldozer, landfill compactor and a water wagon and ample cover material to extinguish the fire. On-site stockpiles of soil cover material will always be available for suppressing fires. The large stormwater retention basins adjacent to the landfill will serve as the water source for firefighting purposes.

In the event of a fire or other emergency, the solid waste operations manager or their designee will notify the Florida Department of Environmental Protection (FDEP) within 24 hours by telephone and within seven days a written report will be submitted describing the origins of the emergency, actions taken, result of the actions taken, and an analysis of the success or failure of the actions. However, if the fire cannot be extinguished by CCSWDC personnel within one hour, the FDEP and the local government will be notified of the fire and informed of the fire control measures taken at the facility. If the fire cannot be extinguished within 48 hours or Solid Waste Operations determines additional assistance is needed at

anytime, the local fire control protection agency will be called.

In addition, the local government and neighbors, which may be impacted by the fire, will be notified.

The Nokomis Fire Department presently maintains a fire station at 111 Pavonia Road in Nokomis, approximately 10.9 miles from the CCSWDC. This station has equipment capable of obtaining water from surface sources for fire fighting. In addition, the City of Venice has a fire station located at 5300 Laurel Road in Venice, FL located approximately 7.6 miles from the CCSWDC.

Waste will continue to be accepted and disposal operations will continue in the event of a fire. Operations will be moved a safe distance from the fire location so as not to pose a hazard to operating personnel or customers.

A hot load area will be provided within the lined disposal area in a location away from the working face to allow vehicles arriving at the landfill with a fire in their load to dump quickly in an area where the material can be spread out and quickly covered with soil. The location of the hot load area will change from time to time with the changing working face locations. Hot loads will not be dumped on the working face until sufficiently cool to avoid combustion.

As described in Sections K.11.a. and K.11.b, the Contractor will provide adequate equipment on-site to ensure proper operation of the landfill and for excavating, spreading, compacting, and covering waste. As part of an agreement with a maintenance contractor, the Contractor will receive loaner equipment within 24 hours of equipment breakdown, if required. These basic emergency procedures should protect the landfill and equipment, and allow reactivation of the operation in an orderly and timely manner. Two mobile electrical generators are maintained on-site to provide power during outages for the administration building, scale house, and Contractor's maintenance building, and leachate collection system. There is also a stationary, dedicated emergency generator to provide power to the administration building, scale house and scales.

In case of an accidental spill of oil, fuel, leachate or chemicals, the spill will be minimized by controlling the source immediately (e.g., by closing valve, turning-off switch, or taking any other necessary action). The affected area will be controlled by diverting vehicular traffic. Runoff from the affected area will be controlled by building a berm, plugging drain or ditch, or adding absorbent material. The affected area will be cleaned, and the effectiveness of the cleanup confirmed by sampling, as needed depending on the nature of the spilled material. For spill countermeasures of secondary containment at the Leachate Storage Tank refer to Section K.8.b, Leachate Collection and Removal System.

A list of emergency telephone numbers is provided below.

Ambulance Service	911
Police Department	911
Fire Department	911
CCSWDC Administration Building	(941) 861-1573
Main Switchboard Sarasota County Government	(941) 861-5000
South District, Dept. of Environmental Protection	(239)-344-5600

Remember, if you are calling from a phone, which is connected to the County's switchboard, you must dial 9 then 911 to reach the emergency operator.

K.2.b.(2) Wet Weather Operations

Steps to be taken for accommodating wet weather solid waste disposal include: 1) set-aside elevated tipping areas with limestone or shell approaches or other acceptable base material as needed to allow uninhibited vehicular movement; 2) set-aside elevated sandy cover material, and 3) erect containment berms around wet weather tipping areas in accordance with Section K.2.h.

In order to avoid an excessive accumulation of standing water in the area of the working face, a small area of daily cover will be removed by grading to allow direct percolation to the underlying refuse and leachate collection system. In the event direct percolation into the waste does not drain leachate as quickly as needed, the operator may utilize other leachate drainage options including directing leachate to a leachate containment area along the west side of the Phase II active subcell to drain directly into the leachate collection system of the active subcell of Phase II, using drains at the working face constructed of cut/shredded tires to improve drainage at the working face, and using pumping equipment that is available on-site, if required, to remove ponded leachate by pumping it to either a tanker truck for proper treatment and disposal, or to a leachate collection manhole. Additional details and information regarding the operational options listed above for wet weather conditions and control of stormwater and leachate is included in Section K.2.f.(4), Stormwater Controls.

K.2.c Controlling the Type of Waste Received at the Site

The clerks at the scale house, the site security fence, and access gate system discourage unauthorized entry and disposal of unauthorized waste. A sign located at the entrance states the general regulations including the types of unauthorized solid waste.

At least one trained spotter will be at each working face when wastes are received at the landfill. Normally, one working face will be operating at the landfill. There may be occasions where two or more working faces are required such as when the first lift of waste is placed in a new subcell, during high volume periods such as after a storm, or when the size of a working face is limited such as at the corner of a subcell. The spotters will be trained in accordance with Rule 62-701.320(15) and in accordance with the training plan described in Attachment K-1 to recognize unauthorized waste. Each load of waste will be visually inspected at ground level by the spotter as well as by the equipment operators spreading the waste. The spotters and equipment operators will look for containers and other indicators of unauthorized waste. Upon detection of unauthorized waste, the spotters will require the hauler to remove the material for disposal at a proper facility. If the hauler has departed, the spotter will remove the material from the working face for temporary storage until the material is taken to the appropriate recycling, processing or disposal area.

A trained spotter at the working face will visually inspect the waste as it is deposited. If unauthorized waste (i.e., lead-acid batteries, used oil, yard trash, white goods, and whole tires) is found at the working face, as part of routine operations, the waste would be segregated and removed for recycling.

Sarasota segregates and/or removes from the Class I Landfill working face the following materials at the CCSWDC for the purpose of recycling these materials:

- Yard Wastes
- White Goods (i.e., household appliances)
- Waste Tires
- Construction and Demolition Wastes
- Lead Acid or Rechargeable Batteries
- Waste Oil
- Lawn Mowers
- Electronic Devices (CRT televisions and computers)

The segregation and removal of the above materials furthers the County's goals for achieving the state-wide mandated recycling goals. Please note that construction and demolition debris and yard waste mixed with MSW are not removed from the Class I working face since they are considered contaminated and are treated as Class I waste. Also, construction and demolition debris may be disposed in the Class I Landfill when the C&D processing facility is not able or not open to accept C&D.

K.2.c.(1) Household Hazardous Waste and Citizen's Convenience Center

The Household Hazardous Waste and Citizen's Convenience Center (HHWCCC) is located near the CCSWDC entrance, just east of the administration building and scalehouse as shown on the Site Plan provided in Attachment K-4. The HHWCCC consists of spaces for roll off containers for MSW, scrap metal, and recyclables. Tires, electronics, and household hazardous waste are also collected at this location. The roll off containers and electronics storage areas are located on concrete pads. Three permanent canopies that prevent the accumulation of water in the containers during inclement weather are available at the site. Household chemicals are stored in a pre-manufactured hazardous waste storage unit. HHWCCC has a full-time attendant and is in operation from 8:00 A.M. to 5:00 P.M. Monday through Friday. The attendant meets customers at the entrance, directs them to the appropriate area of the facility, and monitors the waste for unacceptable materials. The roll-off containers of MSW are emptied daily, however small quantities of waste may be left overnight in the containers from customers who arrive near the end of the day. The containers are under cover at the HHWCCC and the waste taken at the HHWCCC typically has deminimus quantities of putrescible waste. Tires are also taken to the designated Tire Area on a daily basis.

K.2.c.(2) Special Wastes

White goods and electronic wastes are accepted at the CCSWDC for recycling but are not allowed at the working face for disposal. Special wastes not authorized for disposal are accepted for staging at the CCSWDC until they are removed from the site for offsite recycling. These materials shall be stored in the designated white goods and recyclables storage area located near the southeast corner of Phase I as shown on the CCSWDC Site Plan provided in Attachment K-4.

K.2.c.(2).1 Shredded Waste

The CCSWDC does not currently accept shredded waste nor does the County shred waste at the CCSWDC.

K.2.c.(2).2 Motor Vehicles, Marine Vessels, and Mobile Homes

The CCSWDC does not accept motor vehicles for disposal. The CCSWDC will accept marine vessels (including motor boats, sail boats, jet skis or other marine vessel), but only when the marine vessel has had the engine(s), fuel tanks (emptied and punctured or completely removed), fluids, batteries or other appliances completely removed from the marine vessel. The CCSWDC will also accept mobile homes for disposal that have had all appliances and air conditioners, and other unacceptable materials, completely removed from the mobile home. These items will be accepted during the operating hours of the CCSWDC, however, in the event a marine vessel or mobile home is accepted near the end of the operating day and there is not sufficient cover or other waste available to properly dispose and cover the item in the working face, then the marine vessel or mobile home maybe kept near the working face overnight and disposed in the landfill the following operational day. Since the marine vessel or mobile home is non-putrescible, it will not contribute to vectors or odors during the time it is waiting at the working face for final disposal.

K.2.c.(2).3 Electronics

Electronic products that are discovered at the working face will be removed and stored in a safe area within the active working face (bermed area). At the end of the day, at a minimum, these materials will be transported directly to the designated storage area. Undamaged electronic wastes recovered for recycling shall be stored in an undamaged condition and records for all quantities received by each recycler shall be kept along with the receipts with the name and address of each recycler. Recovered electronic wastes that have been damaged and will not be recycled will be removed and stored at the HHWCCC. The electronics drop off at the HHWCCC is staffed by a full-time attendant who unloads all vehicles that come into the facility. The electronics are mainly from residential curbside collection routes and may include, but are not limited to, televisions, computers, monitors, copiers, etc… The electronics are physically unloaded and placed on pallets or the concrete pad and wrapped in cellophane or loaded into a container if undamaged. Damaged components, such as CRTs, are placed inside a cardboard box or container on a pallet. Electronics are routinely removed by an e-waste recycler such that the concrete pad and pallets have capacity to continue accepting the electronic wastes. Electronic device storage shall include up to 100 pallets of electronic devices on the e-waste slab, 3 e-waste roll-off containers, and 10 e-waste broken unit palletized boxes. Note that broken unit palletized boxes are kept under cover. FDEP will be notified if for any reason the e-waste storage quantities will be exceeded. The County will provide a plan for additional storage areas and/or containers, the amount of storage time needed for the additional quantity, and the schedule for removal.

K.2.c.(2).4 White Goods

White goods, as defined in Rule 62-701, FAC, will be removed from the working face and taken to the white goods storage area located south of Phase I as shown on the Site Plan provided as part of the Landfill Staging Plans provided in Attachment K-4. White goods shall be removed from the site at least monthly. Refrigeration units will be stored in an upright position until all liquids, CFCs and Freon are removed. Refrigerants are removed from the items on-site by a contractor licensed to perform this function. White goods that have had fluids and/or refrigerant removed from them will be clearly marked.

The white goods are periodically collected by a steel recycler who transports the materials to a facility that recycles the materials into new steel products.

A maximum of 1,250 (total) white goods and lawn mowers may be stored at the site at any time. The white goods shall be removed from the site at least monthly (every 30 days).

K.2.c.(2).5 Asbestos

Special waste such as asbestos will be accepted and managed in accordance with the requirements of 62-701.520(3), F.A.C. The asbestos waste haulers will be required to notify the County who will notify the landfill contract operator in advance and provide information on the estimated volume and delivery date of the asbestos. All incoming asbestos material will be required to comply with all applicable permit conditions and be wet down and properly wrapped or bagged. The uncompacted asbestos material will be covered with a minimum 6-inch layer of soil upon disposal. If additional asbestos deliveries are scheduled on the same day, the asbestos may remain uncovered until the end of the work day. The disposal location will be recorded in accordance with 40 C.F.R., Part 61.154, and a record of the asbestos location will be maintained.

K.2.c.(2).6 Waste Oil and Oily Waste

Used (waste) oil and oily wastes will not be mixed or commingled with solid waste that is to be disposed of at the CCSWDC. Waste oil will not be directly disposed of at the CCSWDC disposal areas.

Oily wastes, sorbents or other materials used for maintenance or to clean up or contain leaks, spills or accidental releases of used oil, and soils contaminated with used oil as a result of spills or accidental releases are not subject to the disposal prohibition listed above.

Waste oil or oily wastes that are collected for the purpose of recycling from residents or during routine waste collection routes by the franchise hauler are accepted at the HHWCCC. Waste oil and oily wastes are stored in containers until removed from the site for recycling or disposal. The CCSWDC has the following containers on-site.

- 2 - 500 gallon containers for used oil with double containment (HHWCCC).
- 3 - 55-gallon containers for oily wastes.
- 20 gallons of used oil placed upright in undamaged container (Contractor's maintenance building).

FDEP will be notified if for any reason the waste oil and oily waste storage quantities will be exceeded. The County will provide a plan for additional storage areas and/or containers, the amount of storage time needed for the additional quantity, and the schedule for removal.

K.2.c.(2).7 Lawn Mowers

Lawn mowers are accepted at the CCSWDC provided that all fluids have been drained. Lawn mowers are managed as white goods. After inspection for fluids, mowers are stored in the white goods area until collected by the white goods recycling contractor.

K.2.c.(2).8 Yard Waste

The yard waste processing facility location is south of Phase I as shown on the Site Plan. The facility is permitted under a separate yard waste processing facility registration. Yard wastes are brought to the CCSWDC as segregated loads, either from residential collection vehicles or commercial landscaping contractors. Yard waste loads are directed to the yard waste composting area located south of the Phase I Class I Landfill Area. New yard waste loads are deposited in a designated area of this site.

Bagged yard waste shall not be mulched at the site unless the bags are removed prior to mulching.

The incoming yard waste is stored in a pile until such time that enough material is accumulated to begin processing. Yard waste processing includes size reduction via a tub grinder and screening of the size reduced materials.

Once processing is completed, the resulting yard waste mulch is either placed into windrows for composting or is used by the landfill operations as erosion control and road stabilizing material. The composted material is used on site as a replacement for soil.

Any unprocessed yard trash will be removed from the facility within six months, or within the period required to accumulate 3,000 tons or 12,000 cubic yards, whichever comes first. Processed yard trash will be removed or marketed within 18 months. Yard waste shall be managed in accordance with the facility's yard waste processing facility registration and Rule 62-709.320, F.A.C.

K.2.c.(2).9 Lead Acid Batteries and Other Unauthorized Waste

Other unauthorized waste and small quantity household hazardous wastes such as lead-acid batteries, fluorescent tubes, pesticides, solvents, cadmium batteries, and thermometers are accepted at the HHWCCC. In the event these type of wastes are discovered at the working face, they are removed and temporarily stored in containers at the working face. Temporary storage of material removed from the working face is not a designated public household hazardous waste disposal facility or transfer station. The temporarily stored materials are taken at the end of each day to the HHWCCC for disposal or recycling.

Up to 100 lead-acid batteries may be stored on a secondary spill containment pallet under roof cover and protected from rainfall at the HHWCCC. Picked up by a battery recycling company and components (mainly lead) are recovered. Other wastes listed in this section are property containerized or packaged at the HHWCCC for disposal or recycling.

FDEP will be notified if for any reason the quantities listed above will be exceeded, the County will provide a plan for additional storage areas and/or containers, the amount of storage time needed for the additional quantity, and the schedule for removal.

K.2.c.(2).10 Contaminated Soil

Acceptance of contaminated soil, as defined by Rule 62-713, FAC, at the CCSWDC is conducted on a case-by-case basis whereby soils may be tested using the toxicity characteristic leaching procedure (TCLP) and the paint filter test for free liquids. Results of the tests are evaluated to determine whether the soil will be accepted at the landfill. In any case, contaminated soil accepted at CCSWDC would be placed directly into the lined active landfill subcell and not stockpiled at the site.

K.2.c.(2).11 Waste Tires

Waste tires are delivered to the CCSWDC in segregated loads by customers or delivered on waste hauler trucks when collected on the residential waste collection routes. The tires are taken to the waste tire processing facility located to the east of the yard waste processing area as shown on the Site Plan. Waste tires encountered during operations at the Class I Landfill working face will be placed in a container at the working face that will be removed when the container has reached capacity and taken to the waste tire processing within the CCSWDC. The CCSWDC may use the waste tires for initial cover or dispose of the tires in the Class I landfill as long as the tires are size reduced in accordance with Rule 62-711, FAC. Waste tires shall be managed in accordance with the current waste tire processing facility permit issued by FDEP and Rule 62-711, FAC.

K.2.c.(3) Liquid Waste

"Liquid Waste" means any waste material that is determined to contain free liquids as defined by Method 9095 (Paint Filter Liquids Test), as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Pub. No. SW-846).

Non-containerized liquid waste will not be accepted at the CCSWDC unless:

1. The liquid waste is household waste other than septic waste; or

2. The liquid waste is leachate or gas condensate derived from the CCSWDC, or byproducts of the treatment of such leachate or gas condensate, since the CCSWDC Class I Landfill is lined and has a leachate collection system.

Containers holding liquid waste shall not be accepted at the CCSWDC unless:

1. The container is a small container similar in size to that normally found in household waste;

2. The container is designed to hold liquids for use other than storage; or

3. The waste is household waste.

Containers or tanks twenty gallons or larger in capacity shall either have one end removed or cut open, or have a series of punctures around the bottom to ensure the container is empty and free of residue. The empty container or tank shall be compacted to its smallest practical volume for disposal.

K.2.c.(4) Hazardous Waste

If any hazardous waste is detected in the load, the hauler shall be informed immediately of the violation. In the event of discovery of hazardous materials, the procedures outlined in Items 3, 4, 5, and 6 of Section K.6 will be followed.

If unauthorized waste (i.e., hazardous, PCBs, untreated biomedical, or free liquid) are found at the landfill working face, the waste will be isolated and the contractor's general manager or designee would be promptly notified, who would then immediately notify the County Manager. The County Manger then notifies FDEP. The County's operation manager or designee will prepare a report and ensure that the waste is properly disposed. Hazardous waste will be isolated and restricted from access until it is removed from the CCSWDC Landfill by a licensed hazardous waste contractor and properly disposed in accordance with federal, state and local regulations. Hazardous wastes will be removed from the site within 48 hours or as soon as practical.

K.2.c.(5) Construction and Demolition Debris

Construction and Demolition (C&D) wastes are delivered to the CCSWDC in segregated loads. A specialized contractor operates a permitted C&D waste processing facility located at the CCSWDC, south of the Waste Tire Processing Facility. The contractor screens and sorts C&D waste and resells lumber, cardboard, concrete, and roofing shingles to various users or distributors of these materials.

The maximum quantities of C&D wastes that may be stored at the site, and the schedule for removal from the site, shall be as required under the current Waste Processing Facility Permit issued by FDEP.

K.2.c.(6) Biological Waste

The CCSWDC will accept for disposal the following provided the referenced provisions are met:

- Bodies of domestic animals, upon the death of such animals due to disease, shall be accomplished pursuant to Section 823.041(1), F.S.
- Bodies of captive wildlife, as well as bodies of domestic animals that have not died due to disease.
- Biomedical waste that has been treated, in accordance with Rule 62.701.300(6) by a method approved by the Department of Health, may be disposed of as solid waste that is not biomedical at the CCSWDC. Such treated waste must be in containers clearly labeled with the phrase "Treated Biomedical Waste." Sarasota County CCSWDC will only accept the waste if the generator notified the County that treated biomedical waste will be disposed of at the CCSWDC before such disposal. This requirement does not supersede the provisions of Section 381.0098(8), F.S., regarding acute care hospitals. It is the sole responsibility of the generator, not Sarasota County or the CCSWDC, to ensure that all transport vehicles transporting treated biomedical waste to the CCSWDC for disposal shall be fully enclosed and secured when unattended. Sarasota County and the CCSWDC may set limitations or restrictions on the disposal of treated biomedical waste at the CCSWDC.

K.2.d Weighing or Measuring Incoming Wastes

All waste entering the landfill site will be weighed. Three electronic 50-ton scales are installed at the CCSWDC entrance. An Information Management System (IMS) is linked to the scales to facilitate accurate data collection and measurement of incoming materials.

K.2.e Vehicle Traffic Control and Unloading

Directional signs will be placed to safely direct vehicles to the current waste unloading area. These signs will have large legible letters and will be cleaned when necessary. Signs will be strategically placed so that the route is clear to the drivers. Speed limit, safety, and prohibitive practice signs will be placed as necessary to encourage a safe, clean operating area. Unloading will be permitted only at the designated disposal or processing areas. Temporary signs, barricades, and flagged stakes will be used to direct vehicles to the proper tipping area. Haulers will be responsible for unloading their own vehicles. Wastes requiring special handling will be coordinated with and unloaded under the direct supervision of landfill contract operation personnel.

K.2.f Method and Sequence of Filling Waste

The Landfill Staging Plans for the Phase II Class I disposal area are provided in Attachment K-4. These plans provide a general guide for the Contractor to use during fill operations. The typical maximum height for each lift is 10 feet. The temporary roads and swales for access and surface water drainage will be phased in as the Phase II area is filled. The maximum width of the working face will be 200 feet. However, the landfill operations may be conducted with a working face width of less than 200 feet. These landfill staging plans are intended as a general guide for the operator and are not intended to indicate the exact daily fill operations. The operations will progress in accordance with these plans, however, based on actual site and weather conditions the Contractor may adjust filling location to achieve safe and efficient waste filling operations.

K.2.f.(1) Temporary Gas Vent Removal

Four temporary gas vents were installed within the bottom liner system during Phase II construction. These gas vents were required when naturally occurring gas within the soil beneath Phase II began to collect beneath the liner and caused the liner system to lift off of the subgrade in several locations. The vents were constructed near the center of Cells 2 and 3 close to the ridge line between the two cells. Attachment K-11 contains information on the construction and locations of the gas vents.

There is only one gas vent remaining in Phase II. The remaining gas vent is located in Subcell 3. The gas vents in Subcell 2 were removed and the liner repaired before waste operations began in that subcell. When the vent in Subcell 3 will need to be removed and the liner repaired, prior to placement of waste within the subcell, FDEP South District office will be notified at least two (2) weeks prior. Vent removal and liner repair will be performed in accordance with the following procedures:

1. Remove rain cover (if present) in vicinity of vent and excavate protective cover soil near repair area;
2. Remove protective casing from standpipe;
3. Remove clamp from primary liner boot, cut primary liner outside of boot weld, and lift boot over standpipe;
4. Remove clamp from secondary liner boot, cut secondary liner outside of boot weld, and lift boot over standpipe;

5. Remove any hydrated or damaged geosynthetic clay liner (GCL) as necessary to allow removal of vent pipe;
6. Remove vent pipe, being careful not to damage in-place liner components or subgrade;
7. Inspect subgrade, replace any soft soil with material meeting requirements of Phase II project specifications, and provide smooth surface for placement of overlying geosynthetics;
8. Patch GCL, secondary liner, secondary geocomposite, primary liner, and primary geocomposite in accordance with the requirements of Phase II project specifications and CQA Plan with the exception that no laboratory or field testing beyond vacuum testing of liner welds will be required of the repair materials due to the limited extent of the repairs;
9. Replace protective cover material over repair; and,
10. Replace rain cover if it was present before the repair.

All repairs shall be performed by a company approved by a liner manufacturer to perform liner installation. All repairs shall be observed by a third party inspector who will submit documentation to the FDEP South District office that the repairs were performed in general accordance with the Phase II specifications and CQA Plan.

K.2.f.(2) Filling in New Subcell

The initial lift of solid waste shall be deposited in each new Phase II subcell (designated disposal unit) beginning at the south end of the landfill subcell.

Waste will be placed within the designated edge of waste shown on the previously submitted Permit Drawings. The edge of waste will be located by measuring 7 feet inward from the edge of liner markers on the north and west sides of Phase II. The edge of waste will be located by measuring 14 feet inward from the edge of liner markers on the south side of Phase II. Periodic inspections will be made to ensure that the markers are in place and the edge of waste is located the required distance from the edge of the liner.

The initial lift of solid waste will progress from south to north across the width of the landfill subcell. The working face will primarily move in an east/west direction across the width of the landfill subcell. The width of the landfill may be the full width of the subcell or up to the limit of the leachate containment area if used in the subcell. The leachate containment area is discussed in detail in Section K.2.f.(4).1. The initial lift will be composed of select solid waste loads containing no rigid objects and will be a minimum of 4 feet thick. The initial 4 feet of select waste will be placed with a low ground pressure dozer and not the waste compactor in order to minimize the potential for damage to the bottom liner. A spotter will also be stationed on the bottom liner protective cover sand during placement of select waste in the initial lift to remove any large rigid objects. The top surface of the initial lift will be filled to the subcell's lined external containment berms in order to promote stormwater runoff. The lower lift thickness will be placed in the high end (south) of the cells and the greater lift thickness will be placed on the low end (north).

The method of waste disposal for each lift is described as follows. All incoming solid waste will be directed to the working face and placed against the side slope of the previous day's waste. The first row of waste in a new lift will be placed against the toe of a containment berm to provide a guide for the placement of waste for the remaining rows. A slope of not more than 3H:1V will be maintained. The working face shall be less than 200 feet wide. A maneuvering area shall be provided for large private and commercial vehicles. Depending on space limitation within the working face area, a section of the working face may also be designated for smaller loads and vehicles.

Solid waste will be placed at the working face and spread in 2-foot layers then compacted. The spreading of waste will be a continuous operation.

In compliance with 62-701.500(10), F.A.C., the stormwater management systems will be operated and maintained as necessary to meet applicable standards of Chapters 62-701, 62-302, and 62-25, F.A.C. The stormwater management system at the CCSWDC Class I landfill is designed to avoid mixing of stormwater with leachate. Stormwater or other surface water which comes into contact with the landfilled solid waste or mixes with leachate will be considered leachate and subjected to applicable requirements.

The filling of each lined subcell within the Phase II area will follow the sequence outlined below and as shown in the Landfill Staging Plans provided in Attachment K-4.:

Filling of each subcell will generally progress from the south end of the subcell to the north end, then from the north end to the south end of the subcell while providing a slope on the cover to allow storm water drainage as shown on the Landfill Staging Plans provided in Attachment K-4. In addition, during the wet weather season (generally May to October), the operator may progress from east to west only within the cell in order to keep drainage to the west from the Phase I side slope.

Subsequent waste lifts will be added to a subcell in accordance with the Landfill Staging Plans before opening new cells to waste disposal.

The surface runoff from unused portions of cells will be directed away from solid waste by grading and using temporary diversion berms.

Areas on the top and sides of each lift will be adequately covered and stabilized to maximize surface runoff away from the bermed, sloped working area and towards the stormwater drainage areas to minimize leachate generation, as shown on the Landfill Staging Plans provided in Attachment K-4. Intermediate cover operations are discussed in detail in Section K.7.g.

K.2.f.(3) Waste Compaction and Application of Cover

Cover material for daily operations of the landfill will be obtained from the designated stockpile area, C&D Site, and/or compost generated from yard waste recycling. Compost used with soil for cover material shall be free of waste. Cover material will be deposited in the stockpile area location shown on the Site Plan. The designated stockpile area will have 3H:1V side slopes in order to minimize erosion. Additional soil obtained from offsite borrow areas will be placed within the stockpile area during the operational life of the facility. A silt fence will be installed around the stockpile area if the side slopes of the stockpiles are not vegetated.

Waste will be spread in layers approximately two feet thick on the working face and compacted to approximately one foot in thickness before application of the next layer. The solid waste will be compacted with a minimum of three to five passes of a compactor. Initial, intermediate and final cover will be applied as detailed in Sections K.7.f, K.7.g, and K.7.h., of this Operations Plan.

K.2.f.(4) Stormwater and Leachate Controls

The stormwater management system at the CCSWDC consists of a series of swales, culverts, and detention ponds. The system is designed to comply with all of the requirements of both Chapters 62-25 F.A.C. and 40 D-4 F.A.C. The stormwater management system for CCSWDC was constructed under a permit issued by the South Florida Water Management District in 1993 and under a FDEP Environmental Resource Permit for Phase II issued in 2008. All components of the system were installed during Phase I and Phase II construction.

The side slope of each subcell within Phase II as well as the Phase I/Phase II overlay liner system were constructed with a rain cover to avoid erosion of the protective cover, limit plant growth, and assist with the management of stormwater until waste is deposited within the cells. The rain cover consists of a 20-mil scrim-reinforced polyethylene liner held in place with sand bags.

Stormwater collected on the protective sand layer of Phase II cells that have not yet received waste will flow north to the sump areas within each subcell. Any collected stormwater that has not been in contact with solid waste or otherwise contaminated by leachate will be collected in the temporary stormwater inlets installed in Subcells 3 and 4 and routed to the leachate collection manhole fitted with temporary stormwater piping that will outfall into the perimeter channel which is part of the permitted stormwater management system. Stormwater may also be pumped over the perimeter berm to the perimeter channel. Any stormwater collected in an open subcell that has been in contact with solid waste will be considered leachate. The leachate will not be allowed to enter the stormwater collection system and will be routed, drained or pumped to the existing Phase II pump station north of Subcell 2 or to the nearest active subcell as described later in this section. If it is not clear whether stormwater has been impacted by leachate, the County will collect samples and perform testing of the stormwater management system as specified within the current Environmental Resource Permit (ERP) prior to disposal as leachate or stormwater. One month prior to the acceptance of the waste into each subcell (Subcells 3 and 4), Sarasota County shall notify FDEP that the stormwater diversion modifications were removed. Sarasota County will provide FDEP a schedule of when the inlets are to be removed, the tee capped, the 8-inch outfall pipe from the leachate collection system to the perimeter channel is to be plugged or grout filled, and the downstream valve opened. After the work has been completed, Sarasota County shall provide a construction certification to the FDEP for the decommissioning of the Phase II stormwater diversion modification.

If the rain cover system on the side slopes in Phase II becomes irreparable, Sarasota County may elect to replace the rain cover, place a sod layer or simply maintain the protective sand layer cover in each subcell. Prior to receiving waste, the 24-inch protective sand layer will be restored to original design and permitted specifications for Subcells 3 and 4.

The rain cover or sod will be removed prior to the placement of waste within a subcell. The rain cover or sod within a subcell may be removed either all at once or in stages depending on how long it is anticipated it will take to place the first lift of waste within the subcell. If the rain cover or sod is removed

in stages, then stormwater that has not been in contact with waste may be collected and pumped over the top of the berm and into the perimeter channel or inactive adjacent subcell.

All stormwater runoff will be conveyed via perimeter drainage channels to detention facilities. Ditch blocks located in the perimeter channels at strategic locations act as sediment traps and will require periodic maintenance.

The ultimate discharge of the detention facilities will be to Old Cow Pen Slough or isolated wetlands through fixed control weirs and spreader swales.

On areas of the landfill that are covered with intermediate cover, pipes may be used from the top of the landfill to the areas of Phase II that are collecting only stormwater. The pipes will be installed as shown in the Landfill Staging Plans provided in Attachment K-4. As the filling of the waste progresses, temporary stormwater letdown structures will be installed from the intermediate cover to facilitate drainage without erosion. Temporary stormwater diversion berms will be installed around the top perimeter of each lift and connected to the temporary letdown structures. The temporary letdowns will be located in the approximate locations as shown on the Landfill Staging Plans provided in Attachment K-4. Stormwater will be directed to these temporary letdown structures by sloping the top of each lift to promote drainage as shown on the staging plans.

Sediment collection provided by perimeter ditches and ditch blocks will minimize siltation of the main retention areas. In addition, the active working face(s) will be surrounded by berms to capture stormwater that comes in contact with waste and to prevent run-on and mixing with the stormwater from outside the active working face. Stormwater collected within the berms surrounding the active working face(s) is considered to be leachate and will be allowed to percolate into the landfill for collection by the leachate collection system or will be routed to the collection area to the west of the subcell as described below.

K.2.f.(4).1 Leachate Containment Area

In order for the operator to limit leachate ponding at the working face during intense rainfall events, the operator may install piping which drains excessive leachate to the toe of the landfill and into the leachate collection system as shown in the Landfill Staging Plans provided in Attachment K-4, also referred to as the leachate containment area. The leachate containment area may extend the north-south length of the subcell or only a portion of the subcell. The subcell will be filled the width of the subcell to the subcell divider berm as shown in the detail sheets provided with the Landfill Staging Plans in Attachment K-4 if the leachate containment area is not used. If the leachate containment area is used, the subcell will be filled approximately 30 feet short of the entire width of the subcell as shown in the details provided in the Landfill Staging Plans provided in Attachment K-4. At the pipe inlet, tires or sand with silt fence maybe used as a filter medium to limit sediment transport through the pipe, allow leachate to freely drain to the inlet of the pipe, and to prevent objects from blocking the pipe inlet. Leachate may accumulate while the pipe is draining the area; however, the operator will inspect the inlet area periodically to ensure that the pipe inlet is not clogged and is allowing free drainage of water to the pipe to keep the accumulation at the inlet to a minimum. As the working face moves, the piping used to assist in drainage of excessive leachate will be relocated and reinstalled in a location selected by the operator which best drains the area. The general setup and installation of the piping will be as shown in the Landfill Staging Plans provided in Attachment K-4. If tires are used for the inlet and outlet areas, they will be temporary and before final

disposal of the tire pieces, they will be reduced in size in accordance with the tire disposal requirements of Rule 62-711, F.A.C.

The leachate may be pumped to a leachate cleanout pipe or leachate manhole as a means of discharging it to the leachate collection system from the containment area. The pumped leachate will be filtered through a screen on the pump intake prior to discharge to a cleanout pipe or manhole.

K.2.f.(4).2 Leachate Drains at Working Face

In order for the operator to limit leachate ponding and to improve leachate percolation back into the waste at the working face, the operator may install trench drains constructed of cut/shredded tires which meet the size requirements for disposal in accordance with Rule 62-711, F.A.C. The drains will be excavated near the working face to promote drainage of leachate. In general, the drains will be approximately 5 to 10 feet deep per lift, approximately 5 to 10 feet wide, and a length as needed to contain the runoff from the turnaround area and working face. These dimensions may require adjustment based on actual field conditions and drainage requirements. At no time will the bottom of the tire trenches be closer than 20 feet to the top of protective cover sand of the bottom liner. The tire trenches will improve drainage of leachate which accumulates at the working face, decrease the size of the area that may be exposed to leachate, and decrease the leachate amount that may be piped to the containment area.

K.2.f.(5) Stormwater Operation and Maintenance Procedures

The stormwater management system for the CCSWDC consists of a variety of treatment and conveyance methods. The treatment system for the main solid waste handling and disposal areas includes seven wet detention basins. Conveyance to these ponds is through a series of letdown structures, perimeter channels and swales, and culverts. Stormwater collection along the entrance road is provided by the roadside swales. All portions of the stormwater system will be visually inspected by Sarasota County weekly and immediately following a storm event of 0.5 inch or greater. The inspections will identify buildup of debris, surface sheen, erosion and sedimentation, overgrown or exotic vegetation, and structural problems. Any problems identified by these inspections will be corrected within three days. The wet detention basins will be inspected to estimate quantities of sediment within each pond. If the sediment occupies 30 percent of the volume below the normal pool elevation, the sediment will be removed and disposed of in the landfill. Vegetation in all portions of the conveyance systems will be removed on an as needed basis to prevent blockage. The ponds and stormwater conveyance systems will be maintained and operated in accordance with the SWFWMD and FDEP ERP Permits for the CCSWDC.

K.2.g Water Quality Monitoring Plan

Please refer to the Water Quality Monitoring Plan and addenda for the CCSWDC for information regarding the groundwater monitoring network and well locations.

K.2.h Maintaining Leachate Collection System

Leachate collection system maintenance will include daily inspection of all leachate pump stations, leachate collection manholes and leak detection manholes. All pump running data as well as leachate level and flow data will be recorded, as described in Section K.8 of the Operations Plan, and checked for irregularities. Pumps are pulled and checked for operational parameters every two years or as needed. An example leachate pump data form is provided in Attachment K-6. The leachate collection system will be cleaned and inspected as described in part K.8.h of this Operations Plan.

K.3 LANDFILL OPERATION RECORD

The Administrative office located adjacent to the scale facilities at the entrance of the CCSWDC is shown on the Site Plan. The office provides facilities for employees including a training/meeting room, sanitary facilities, and first aid equipment. Similar additional facilities are located at the County and Contractor's maintenance building. Files are located in the Administrative office and contain the operating record for the facilities as required by regulatory agencies/permits. Items that will be stored in the operation record include:

- This Operations Plan.
- All permits for the facility.
- All records and drawings used for developing permit applications.
- All monitoring information, calibration and maintenance records, and copies of reports required by permit (maintained for at least 10 years).
- Background water quality records.
- Annual estimates of the remaining life of the constructed landfill and other permitted landfill areas.
- All monthly waste records which shall include tonnages received for Class I, C&D, yard waste and recyclables.
- Asbestos records with location information if friable asbestos.
- All monitoring reports for groundwater, surface water, and landfill gas.
- Waste tire processing records.
- Copies of all notifications required by 62-701 F.A.C.
- On-site precipitation record.
- FDEP inspection reports.
- Load checking reports.
- Leachate storage tank inspection reports.
- All training verifications.
- All other reports related to the design, operation, monitoring and permitting for the facilities.

K.4 LANDFILL WASTE REPORTS

Each month, a summary report of waste tonnage received for Class I waste, C&D debris, yard waste, and recyclables will be compiled. Copies of the monthly reports will be submitted to FDEP annually or upon request.

K.5 EFFECTIVE BARRIER/ACCESS CONTROL

Access control at CCSWDC includes a perimeter fence with a locking access gate at the scalehouse, which is the only entrance/exit for the facility. The access gate will be kept open during hours of operations and an attendant will be at the scalehouse during those times. When CCSWDC is not in operation, this access gate will be kept closed and locked. During special events, emergencies, or due to construction that does not include waste filling operations, the gates may be open or unlocked when the CCSWDC is not in operation and not accepting waste. During these times, a County representative or designee (event organizers and volunteers etc…) will be onsite to monitor the activities and access to the site. Also, the County would barricade the internal access roads leading to the disposal areas of the site so that access is open to only the portions of the facility for the event (i.e. RC Fliers field).

In addition to the lockable access gates, which are the primary barriers and access controls when the CCSWDC is closed, the access lanes to the scales, the bypass lane and exits lanes include a powered access control arms that were voluntarily installed by the County. These gates are activated using HID cards issued to County and staff and other authorized users or can be activated by scale house and administration staff upon identification of visitors requesting access. These gates provide additional access control during the CCSWDC's operational hours.

K.6 LOAD CHECKING PROGRAM

At least three random loads of Class I Municipal Solid Waste (MSW) delivered to the landfill each week will be examined in accordance with the following procedure:

Mechanism for Inspections

(1) Specific locations within the active working face are to be dedicated to load examination. These areas should be relatively free from extraneous debris and capable of maintaining isolation of the material for one calendar week.

(2) The inspection of the load shall be controlled by a County or Contractor employee. In accordance with Rule 62-701.500(6)(a), FAC, a minimum of three random loads will be checked at the active working face(s) each week. The selected driver will be directed to discharge their load at a designated location adjacent to the working face. If any unauthorized waste (i.e., lead-acid batteries, used oil, yard trash, white goods, and whole tires) is found by the random inspection, or as part of routine operations, the waste will be segregated and removed from the site for recycling as described in Section K.2.c. These unauthorized wastes will be stored as described in Section K.2.c. and removed from the site within 30 days.

(3) The inspection form (see Attachment K-7) shall be filled out and signed off by the inspector. The inspector will identify and note all unauthorized waste found during random load inspection, estimated quantity, and the action taken. The inspector will sign the inspection form that will be retained at the CCSWDC. It shall be the County's responsibility to file/store/distribute the reports.

(4) The Sarasota County Solid Waste Operations Unit or the Solid Waste's Hazardous Waste Section will investigate violations found during the inspection process. The Contract Operator will remove or clean-up the disposed materials.

(5) Violations involving hazardous waste dumping will be handled by the Sarasota County Solid Waste's Hazardous Waste Section. Every attempt will be exhausted to place responsibility on the generator relative to having the hazardous waste in question removed from the landfill at the expense of the generator. In the event that generator responsibility cannot be determined and that the waste appears to be from a commercial source, it will be the Contract Operator's responsibility to segregate and secure the waste and pay all costs relative to safely disposing of said waste.

(6) A list of offenders will be compiled by the Solid Waste's Hazardous Waste Section and the list will be provided to Sarasota County with updates on a periodic basis.

K.7 PROCEDURES FOR SPREADING & COMPACTING WASTE AT THE LANDFILL

The following guidelines will provide an efficient and environmentally sound method of operation for the CCSWDC.

- Portable litter fencing will be placed at the working face where needed to reduce windblown litter.
- Cracks or eroded sections in the surface of any filled and covered area will be repaired and a regular maintenance program will be followed to eliminate pockets or depressions that may develop as waste settles.
- If 12 inches of intermediate cover (free of waste) has been placed over a partially filled area, it will be removed and either reused or stockpiled for later use prior to the placement of a new lift.
- The materials described in Attachment K-8 may be used for initial cover. Stormwater runoff will not be allowed from waste filled areas covered with tire chips or tarp. Runoff from outside of the bermed working face area will be considered stormwater only if the flow passes over areas that have no exposed waste and have been adequately covered with at least six inches of compacted soil (or a mixture of soil/mulch), free of waste, stabilized to control erosion, and the flow does not contact leachate.
- Sufficient cover material will be stockpiled near the working face to provide an adequate supply for initial cover operations. In some areas, daily stockpiling near the working face may not be necessary because of the proximity of the on-site soil stockpile area.

K.7.a Waste Layer Thickness and Compaction Frequencies

Waste will be spread in layers approximately two feet thick on the working face and compacted to approximately one foot in thickness before application of the next layer. The solid waste will be compacted with a minimum of three to five passes of a compactor.

K.7.b First Layer of Waste

Selected solid waste loads containing no large rigid objects will be used for at least the first four feet of the first lift of a new subcell in order to protect the liner and leachate collection system. The first lift will be a minimum of four feet deep to bring the daily cover grade to an elevation higher than the subcell's lined external containment berms in order to promote shedding of stormwater. The first 4 feet of select waste will be placed with a low ground pressure dozer and a spotter will be located on the sand layer during placement to remove any large, rigid objects. Waste will be deposited at the inside toe of the subcell's lined external containment berm on the south end of the subcell and spread to the north. For the initial lift, hauling vehicles will reach the working face by traveling on top of the previously deposited waste and depositing the loads at the top of the working face. The fill will be spread and compacted "down slope" to prevent vehicles from traveling on the protective sand layer. Also see Section K.2.f. in this Operations Plan.

K.7.c Slopes, Side Grades, and Lift Height

The typical height for each lift is 10 feet. All incoming solid waste will be directed to the working face and placed against the toe of the side slope of the previous day's refuse. The first row of waste in a new lift will be placed as shown in the Landfill Staging Plans provided in Attachment K-4. The toe of waste will be placed approximately 30 feet from the divider berm or on the lower portion of the divider berm, depending on if the operation is including a leachate containment area for leachate drainage. The leachate containment area at the toe of a subcell divider berm is discussed in subsequent sections. A maximum slope of 3H: 1V will be maintained on the working face. All top slope areas will be sloped to drain stormwater off of the landfill.

Waste will be placed within the limits of waste of Phase II. The edge of waste will be located by measuring seven feet inward from the edge of liner markers on the north and west sides of Phase II. The edge of waste will be located by measuring 14 feet inward from the edge of liner markers on the south side of Phase II. Periodic inspections will be made to ensure that the markers are in place and the edge of waste is located the required distance from the edge of the liner.

K.7.d Maximum Width of Working Face

Maximum width of the working face will be 200 feet. This will provide a sufficient area for maneuvering large private and commercial vehicles as well as minimize the exposed area and the unnecessary use of cover material.

K.7.e Initial Cover

For the Class I landfill, a minimum of six inches of compacted initial cover consisting of native sandy soils, top soil, soil-yard waste compost mixture, shredded tires, or other FDEP approved initial cover will be applied to the top of the lift and to the working face at the end of each day. Attachment K-8 provides a description and specification for initial cover materials previously approved for this facility.

A layer of shredded yard waste may be applied when needed to the top of the initial cover to minimize erosion during rainy weather and to prevent birds from pecking through the initial cover layer to the garbage. The shredded yard waste layer shall not exceed 12-inches and shall be removed prior to placement of additional waste. The application of initial cover over the landfilled waste will assure control of disease vector breeding/animal attraction, odors, waste combustion (fire), blowing litter, and moisture infiltration.

The initial cover material will be spread over the exposed waste and, with the exception of tarps, compacted by the equipment used to spread the cover (likely a bulldozer or scraper). The initial cover material will not be removed prior to placement of successive lifts of waste, with the exception of tarps, which would be removed prior to placement of successive lifts. To enhance the infiltration of leachate through the waste, the initial cover material may be broken up in place by a dozer blade or equipment traffic immediately prior to the placement of the subsequent lift of waste. As described in previous sections, other methods may be used during wet weather conditions to enhance infiltration of leachate as needed. Any remaining litter and cleanings from equipment will be placed at the bottom of the completed subcell and covered.

Before moving the working face, the area that will remain inactive will be covered with compacted cover soil (free of waste) or a mixture of 50 percent unscreened wood mulch and 50 percent soil, with sufficient thickness (minimum 6-inches) to prevent erosion and the mixing of leachate with stormwater.

K.7.f Application of Initial Cover

Initial cover will be applied at the end of each working day, except when solid waste will be placed on the working face within 18 hours. A temporary cover such as a tarpaulin may be used to cover the working face and removed before placement of additional waste. Initial cover alternative materials are listed in Attachment K-8.

K.7.g Intermediate Cover

Intermediate cover consisting of at least one foot of compacted native sandy soils or composted yard trash screened through ½-inch mesh mixed with 25 percent soil, by volume, will be applied within seven days if final cover or an additional lift is not to be applied within 180 days. Intermediate covered areas that will not be landfilled or covered with final cover within 6 months will have all external slopes sodded. Top slopes and internal areas will be either seeded and mulched or mulched only to avoid erosion. If only mulch is utilized, the mulch layer shall not exceed 12-inches in depth and shall be removed along with the intermediate soil cover layer prior to the placement of additional waste.

To conserve the intermediate cover material, a portion of the intermediate cover will be removed immediately before placement of additional solid waste on top of the lift or before placement of additional waste. The intermediate cover material (free of waste) will be stripped and reused as intermediate cover material. The stripped intermediate cover will be pushed ahead as needed for the perimeter containment berms constructed around the active working face area. The intermediate cover areas will be graded to promote drainage and seeded to prevent erosion.

Components of the landfill gas collection system may be installed in areas that receive intermediate cover. The locations of all underground piping associated with these systems will be marked to avoid damage to them during landfill operation and intermediate cover maintenance activities. Above ground structures

such as well heads, and valves, will be kept readily visible by such measures as clearing vegetation, painting components bright colors, and installing protective posts and flagging. These measures should protect the above ground structures from damage during routine intermediate cover maintenance activities such as mowing, grass repair, and washout repair.

K.7.h Final Cover

Following the receipt of a closure permit, final cover will be applied to the Class I landfill on the completed portions of Phase II. The perimeter side slopes of all completed subcells will have a slope of 3H:1V.

The cap and final cover will consist of a minimum of 12 inches of intermediate cover soil, a geomembrane layer that complies with FDEP rules, a geocomposite drainage layer, and 24 inches of local common soil of which the upper 6 inches will be capable of supporting vegetative cover. Specifications for the local common soil will be provided with the closure permit application.

Components of the landfill gas collection system may be installed in areas that receive final cover. The locations of all underground piping associated with these systems will be marked to avoid damage to them during landfill operation and final cover maintenance activities. Above ground structures such as well heads, and valves, will be kept readily visible by such measures as clearing vegetation, painting components bright colors, and installing protective posts and flagging. Protective posts shall be installed such that they do not damage the final cover system. These measures should protect the above ground structures from damage during routine final cover maintenance activities such as mowing, grass repair, and washout repair.

Additional information regarding final closure requirements, final cover design, closure and maintenance/long-term care of the Phase I Landfill area, which was closed in June 2013, except for the south slope which has a TPO geomembrane temporary final cover, is provided in the Phase I Closure and Long-term Care Plan provided in Attachment K-5.

K.7.i Scavenging and Salvaging Control Devices

Scavenging and salvaging is not allowed at CCSWDC. In the event spotters working in this area observe scavenging or salvaging activities, the Manager will be notified.

K.7.j Litter Control Devices

Litter will be controlled by requiring covered loads, efficient unloading and cover operations, litter fences, perimeter fencing, and routine clean-up. Litter outside the working area will be picked up within 24 hours.

A small litter fence will be placed at the limit of each landfill subcell area for the full length of the active working face.

K.7.k Erosion Control Procedures

Erosion control procedures at CCSWDC mainly consist of stormwater management for active working face areas and in areas surrounding the landfill phases. Stormwater management, for used portions of active subcells where initial or intermediate cover over the waste has been placed in accordance with FDEP requirements, is achieved by:

- Grading the waste-in-place with an adequate slope and adequately covering the waste to divert stormwater away from the working face.
- Use of terraces and letdown pipes.
- Maintaining internal and external berms.

The stormwater management system will be of critical importance during the filling sequence. As each lift is constructed, temporary stormwater diversion berms will be constructed.

A containment berm will isolate the working face from the remaining covered areas. Stormwater which accumulates behind the containment berm in the area of the working face is leachate and will be retained and allowed to percolate into the landfill where it will eventually be collected in the leachate collection system.

Other berms will divert stormwater from top slopes to letdown structures and will serve as erosion control to protect recently covered side slopes. These external berms will be sodded to minimize erosion and will be directly connected to the temporary letdown structures to facilitate proper management of stormwater runoff.

Sediments that reach the perimeter channels will collect behind the ditch blocks and will require periodic removal. Within 30 days after applying intermediate cover to side slopes that have reached designed dimensions, sod shall be applied. As filling progresses above the proposed first drainage terrace, the first set of temporary letdown structures will be constructed. This operating procedure will minimize the amount of erosion and sediment accumulation that must periodically be removed from the perimeter ditches.

Areas provided with intermediate cover, or other areas that discharge to the stormwater management system that exhibit significant erosion, will be repaired as follows:

- If greater than 50 percent of the soil cover material has eroded, then the area will be repaired within seven days.
- If waste or liner is exposed, then the area will be repaired by the end of the next working day.

K.8 PROCEDURE FOR LEACHATE MANAGEMENT

K.8.a Leachate Collection

The sump pumps located in Subcells 1 through 5 of Phase I will operate in an automatic mode based on the liquid level in the sump. Figure L-2 in Attachment K-3 shows the operation levels for the sump pumps. The pressure transducer located at the end of the pump housing accurately measures the level of liquid in the sump and provides a digital readout of this level at the control panel mounted on the valve box at the top of each subcell's lined external containment berm. As shown on Figure L-2, the high water alarm will result if leachate levels rise to cause 12 inches of head on the liner system adjacent to the sump area.

Two additional pump units are provided for backup of the Phase I sump pumps. This allows for removal of each pump on a regular scheduled basis to perform preventative maintenance. When a sump pump is removed for schedule maintenance and the pump will not be reinstalled within 24 hours, a spare pump will be reinstalled immediately while the maintenance is being performed. Each pump will receive preventative maintenance in accordance with the manufacturer's recommendations.

During normal operations, Subcells 1 through 4 of Phase II will drain by gravity to a duplex leachate pump station located north of Subcell 2. The pump station will operate in an automatic mode based on the liquid level within the wet well. Pump levels are set to keep the liquid level in the leachate collection sump below the inlet from the metering manhole and the pump off is set above the intake of the pumps to avoid air suction or running the pumps dry. The pressure transducers located at the end of the pump housing accurately measure the level of liquid within the wet well and provide a digital readout of this level at the control panel mounted adjacent to the pump station. The duplex pumps will operate on a lead/lag basis.

K.8.b Leachate Collection and Removal System

K.8.b.(1) Phase I Collection System

The Phase I Class I landfill leachate collection system consists of a geonet drainage layer and perforated collection pipe above the composite liner system to collect and convey leachate. The leachate that is conveyed to sumps will be pumped to an existing 1,800,000 gallon on-site leachate storage tank. A typical detail for the Phase I sumps is provided in Figure L-2 of Attachment K-3. The leachate collection piping system consists of 8-inch diameter perforated HDPE pipe sloped in such a manner that leachate flowing through the solid waste of the landfill will be collected and transported by gravity to a sump and leachate pump. The discharge line from the sump pump connects to a HDPE header line.

K.8.b.(2) Phase II Collection System

The Phase II Class I landfill leachate collection system consists of a geonet composite drainage layer and perforated collection pipe above the double synthetic liner system to collect and convey leachate. The leachate that is collected within the Phase II subcells will be pumped to the on-site leachate storage tank. The leachate collection piping system consists of 8-inch diameter perforated HDPE pipe sloped in such a manner that leachate flowing through the solid waste of the landfill will be collected and transported by gravity to a metering manhole located on the north perimeter berm of each subcell. The original design included measurement of leachate flows from each subcell using a Parshall flume and an ultrasonic water level sensor in the metering manholes. However, during periods of low flow below the measurement ability of the ultra-sonic level sensors or when methane gas interfered with operation of the ultrasonic flow sensor, flow was not registered at each subcell, but the total leachate collected was measured by the flow meter at the main Phase II pump station. This made the measurements at the metering manholes unreliable and unusable for leachate quantification. Therefore, in 2013, the County requested that flow from the Phase II Main Leachate Pump Station be recorded as well as flow from the leak detection manholes, but flow recording from the leachate metering manholes be discontinued since these measurements had considerable error associated with them. Each metering manhole drains by gravity to a duplex leachate pump station located adjacent to Subcell 2. The discharge from the leachate pump station is directed through a HDPE leachate forcemain installed along the north and west sides of Phase II, the

west and south sides of future Phase III and the south side of future Phase IV. Any stormwater accumulated in an unused subcell will be routed to the leachate collection manholes. The leachate collection manholes are fitted with a temporary stormwater piping that allows discharge of stormwater directly into the perimeter channel. Otherwise, the stormwater can be pumped out from the subcell using portable pumps and discharged to the perimeter channel. The valve connecting the leachate collection pipe within the subcell to the manhole will be in the closed position to prevent stormwater from draining to the leachate pump station. Prior to waste disposal within a subcell, the temporary stormwater diversion modifications will be removed. Immediately prior to solid waste being deposited into a new landfill subcell, the valve at the manhole will be opened to allow the free flow of leachate to the pump station.

Leachate collected within the geocomposite drainage layer of the leak detection system of Phase II will be drained by gravity to a leak detection manhole located on the north perimeter berm of each subcell. The discharge valve at the leak detection manhole will normally be closed to allow the quantity of leakage to be measured. An ultrasonic water level sensor calibrated to the storage volume within the manhole at a given level will be used to measure leakage rate. After the leakage rate has been determined, the leachate within the leak detection manholes will subsequently be drained by gravity to the leachate pump station and the valve closed for another measurement. The leak detection system has been designed such that a leak developing within the most remote part of a subcell will flow to the leak detection manhole within 12 hours. A Leakage Action Rate (LAR) of 100 gallons/acre/day has been established for the Phase II subcells, which corresponds to the Environmental Protection Agency guidance and FDEP experience with facilities containing similar liner systems. At this rate, the 470 gallon storage volume within the leak detection manhole will be exhausted within 8.75 hours. For leakage rates greater than 100 gallons/acre/day, measures should be initiated to find and repair or minimize leaks within the primary liner system.

The following procedures will be initiated if the LAR of 100 gallons/acre/day is exceeded:

1. Increase monitoring of the leakage quantity from the subcell(s) affected. This consists of increasing the frequency of monitoring liquid levels within the leak detection manhole(s) to determine the time required to fill the five-foot storage volume in the manholes. It is anticipated that readings will be made at least daily after the LAR is exceeded and the calculated leakage rates will be recorded.

2. Immediately notify FDEP once it is ascertained that the LAR is being exceeded and provide a plan on how Sarasota County intends to address the exceedance.

3. Attempt to locate and fix sources of leaks to the extent practical. Measures to locate leaks could include inspecting the leak detection manhole to determine whether groundwater is leaking into it, observing the surface of the subcell to determine if there are indications as to where leaks may be located such as large protrusions of waste that may have penetrated the liner system, and videotaping the leak detection pipe to determine where large inflows are occurring. If the location of a leak can be identified and excavation of waste is practical, then the liner will be exposed and repaired.

4. Adjust operational practices as needed to reduce the likelihood of future damage to the liner such as increasing the thickness of the initial layer of select waste on the subcell bottom.

5. If leaks cannot be specifically located or if it is not practical to find them, adjust operations to try to reduce the leakage to below the LAR. This could include measures to reduce the generation of leachate such as grading the landfill to promote runoff, installing drains and berms to direct runoff away from the landfill, the installation of additional intermediate or temporary cover, installing temporary geomembrane rain covers, or accelerating the placement of final cover in areas that have reached final elevation.

K.8.b.(3) Phase I/Phase II Overlay Liner System

The overlay liner system, located over the west side slope of Phase I, reduces the quantity of leachate entering the Phase I leachate collection system from the Phase II expansion areas by directing it to the Phase II leachate collection system. This will be accomplished by hydraulically separating the newer waste above it from the older waste beneath the overlay liner system.

The overlay liner system consists of (from the top down) two feet of protective cover material, a geonet composite drainage layer, a textured 60-mil HDPE liner, and a minimum of 12 inches of intermediate cover placed over the waste. The rain cover will be removed prior to the placement of waste against the overlay liner system.

Leachate percolating through the newer waste located above the overlay liner system will be captured by the liner and directed to the base of the overlay liner system by means of the geonet composite drainage layer. A stone-filled trench drain with an 8-inch diameter perforated HDPE pipe located at the Phase I/Phase II divider berm will collect the leachate and direct it to the low point within Subcell 1 of Phase II where it will flow out of the subcell with the rest of the leachate collected within Subcell 1. From there, the leachate will flow as previously described for the Phase II collection system.

K.8.b.(4) Leachate Disposal System: General Description

Leachate that is generated from the landfill subcells will be pumped to the existing 1.8 million gallon leachate storage tank. The leachate accumulated in the leachate storage tank will be removed by a leachate pumping station that will pump through a 4-inch PVC forcemain to a connection to the Sarasota County wastewater collection system south of the landfill on Knights Trail Road. The Sarasota County wastewater collection system in this area flows to the City of Venice Water Reclamation Facility (WRF) for treatment.

The leachate pumping and forcemain system is the primary disposal method for the CCSWDC leachate. Transfer pumps that discharge to tanker trucks for hauling to the Bee Ridge WRF will serve as a secondary emergency disposal location.

The following information provides a description of the above ground leachate storage tank in accordance with the requirements of 62-701.400(6)(c).

The existing leachate storage tank has a total capacity of 1.8 million gallons. The exposed plan area of the secondary containment system surrounding the existing leachate storage tank is 5,419 square feet. This will allow 27,000 gallons of water to accumulate after an 8-inch rainfall event. The liquid collected in the secondary containment area may be handled as leachate or discharged to the stormwater system. In the event the liquid in the secondary containment is pumped to the stormwater system then the liquid will be tested for specific conductance. Specific conductance of the stormwater in the secondary containment

shall not be more than 50 percent above the specific conductance of water in the nearest downstream stormwater pond (Stormwater Pond No. 6) or shall not exceed 1,275 *u*mhos/cm, whichever is greater. If the specific conductance is greater than these criteria or if a visible sheen is present, then the stormwater will be pumped directly into the leachate storage tank and managed as leachate. If the liquid collected in the secondary containment system is pumped back to the leachate storage tank to be handled as leachate then the liquid will not be tested for specific conductance.

A log of discharges from the secondary containment system will be maintained. The date, specific conductance measurements, and visual sheen observations shall be recorded.

An electronic water level sensor will automatically determine when the leachate storage tank reaches 90 percent capacity (1.62 million gallons) and a high water alarm will be activated. An electric actuated shutoff valve in the fill line will be activated to prevent overfilling the tank when the capacity reaches 1.8 million gallons in the tank. The electric actuated shutoff valve will be tested by inducing a false signal from the level sensor and confirming proper operation on a weekly schedule. The exposed tank exterior will be inspected weekly by visual observation. The inspection will include looking for leaks, corrosion, or other maintenance deficiencies. This will be accomplished by inspection from platforms at the top of the 20-foot high secondary containment wall, positioned 120 degrees apart around the circumference of the tank. The tank interior will be inspected annually when the tank is empty or at least once every three years. If any failures are detected, the tank construction company shall be contacted immediately and appropriate repairs conducted based on the nature of the problem. Leachate will be managed in accordance with the Contingency Plan (Section K.8.e) when the tank is out of service. Reports of the above inspections will be maintained by Sarasota County.

The leachate pumping station will have automatic controls with the following set points:

	Elevation (feet NGVD 1929)	Height from Bottom of Tank (feet)
High water alarm	40	18
Lag pump on	28	6
Lead pump on	27	5
Pumps off	26	4
Tank bottom	22	0

The set points can be modified by adjusting the pump control system. The duplex pumps will automatically alternate operation each time the pump is stopped by the level control system. The pumping station is equipped with a data logger to record flow.

K.8.c If Leachate Becomes Regulated as Hazardous Waste

Sarasota County will evaluate options for pre-treating the leachate and alternate disposal if it becomes regulated as a hazardous waste.

K.8.d Off-Site Treatment of Leachate

The primary disposal location for CCSWDC leachate is the City of Venice WWTP. A secondary disposal location is the Bee Ridge WRF. CCSWDC may use other secondary facilities for the offsite treatment or disposal of leachate; however, the County will notify FDEP of the change prior to use.

The CCSWDC will dispose of leachate at the primary treatment location provided the leachate meets the disposal quality requirements. Should leachate quality change such that it is no longer acceptable at the primary treatment location, the CCSWDC will dispose of leachate at the secondary facility.

K.8.e Contingency Plan for Leachate Management

Should one of the following events occur, the leachate contingency management plan shall be implemented.

- Any mechanical failure of the leachate management system that would prevent operation of the landfill leachate collection system pumps or the leachate transfer pumps for more than three consecutive days.
- Liquid accumulation in the leachate storage tank leak detection system in amounts greater than expected from rainfall.
- Rise of leachate levels inside the leachate storage tank greater than 46 feet NGVD (elevation represented by 24 foot mark on the external tank gauge).

Implementation of the contingency plan includes the following actions.

(1) The landfill manager shall notify the FDEP (within 24 hours) and leachate disposal facilities of the emergency event.

(2) If the problem is excess leachate in the detection system of the leachate storage tank, remedial measures shall be taken immediately to eliminate the leak. The detection system of the concrete leachate storage tank consists of a layer of gravel located between the bottom of the leachate storage tank and the top of the secondary containment slab that enables the detection of leaks at the bottom of the leachate storage tank. Additional tractor trailer tanker units and operators shall be called to the site to expedite transport of leachate to the receiving WWTP or additional quantities shall be pumped through the forcemain to the City of Venice lift station. The leachate storage tank shall be emptied completely, if required, to facilitate repairs. Leachate will be pumped to mobile tanks during repair periods.

(3) If the problem is excessive levels of leachate in the leachate storage tank (elevation exceeds the level listed above), the maximum amount of leachate shall be diverted from the tank by increasing the frequency or number of tanker trucks hauling leachate to the primary or secondary WWTPs, pumping additional quantities of leachate through the forcemain to the City of Venice lift station, or storing leachate in mobile tanks.

(4) Once the problem causing the implementation of the contingency plan has been resolved to an acceptable degree, the landfill manager shall notify FDEP (within three days) that the facility is ready to return to normal operating conditions.

(5) Inspections and repairs to the leachate storage tank will be scheduled during winter months to the extent possible in order to minimize the quantity of leachate that must be removed. While the leachate storage tank is out of service, leachate will be pumped directly to either tanker trucks, temporary storage tanks, or through the forcemain to the City of Venice lift station.

K.8.f Recording Quantities of Leachate Generated

K.8.f.(1) Phase I Leachate Pump Stations

A control panel for each sump pump in Cell Nos. 1 through 5 of Phase I is located near the pump station. Each pump station is equipped with a pump hour meter, level indicator, and flow meter.

A control panel for the Phase II duplex leachate pump station is mounted adjacent to the pump station. The control panel is equipped with a flow meter, water level indicator, and a pump hour meter.

The following information will be recorded once per operating day from each pump location.

Subcell No. or Phase
Flow Meter Reading
Hour Meter Reading
Sump or Wet Well Liquid Level

The above information is recorded on the form provided in Attachment K-6.

In the event a flow meter is not in operation, Sarasota County may record the run-time hours for the pump and convert time to flow using historical records, until the flow meter is returned to service.

K.8.f.(2) Phase II Leachate Metering Manholes and Leak Detection Manholes

Flow is not recorded from the separate leachate collection metering manholes at Subcells 1 through 4.

The level sensor reading at each leak detection manhole in Subcells 1 through 4 is recorded each operational day and the change in level converted to gallons/acre/day to compare to the allowable ALR as described in Section K.8.b.(2) above.

K.8.f.(3) Phase II Main Pump Station

The Phase II leachate collection manholes from Subcell 1 through 4 gravity drain to the main leachate pump station at Phase II where the leachate is pumped from the sump to the leachate storage tank. There are two sump pumps located in the pump station. The following information is recorded daily from the pump station location.

Flow Meter Reading
Hour Meter Reading (Both Pumps)

K.8.f.(4) Recording Methods

The leachate collection information included in the sections above for Phases I and II may be recorded visually at each pump station by recording the values directly from the pump station readouts or by the collection of the data via a telemetry system. Please note that the telemetry system, as of September 2013, is planned as a future installation. The telemetry system, when installed, will upload a minimum of one reading of the leachate pump station parameters per day. The readings can then be viewed by County staff via computer and recorded on the forms provided in Attachment K-6. The leachate data recorded on the individual pump station forms are used in the overall leachate generation form for the facility. These forms are provided in Attachment K-6.

K.8.g Precipitation and Leachate Generation Rates

Rainfall for each 24-hour period measured at an official gauge located on-site will be recorded and entered onto a spreadsheet (format included in Attachment K-6) to compare precipitation to leachate generation.

K.8.h Leachate Collection System Inspection and Cleaning

The County will water pressure clean or conduct a video inspection of the leachate collection systems in Phase I and Phase II at least once every five years in accordance with Rule 62-701.500 F.A.C. requirements. Leachate pumps, metering manholes, and leak detection manholes at CCSWDC will be inspected for operation failures at least daily. Control panels will be inspected and operational data recorded as described in Section K.8.f.

K.9 LANDFILL GAS MANAGEMENT AND MONITORING

K.9.a Landfill Gas Management

The CCSWDC is located near the center of over 6,000 acres of County-owned property. The minimum distance from the Class I landfill to the nearest property line is 1,800 feet. This distance represents a substantial buffer to allow for dispersion of odors normally associated with MSW landfill operations. Therefore, it is not anticipated that collection of landfill gas will be necessary for odor control.

In order to comply with air quality requirements, a Non-Methane Organic Compound (NMOC) emission report will be submitted to the implementing authority on an annual basis following the requirements of New Source Performance Standards (NSPS). Within 12 months after reporting NMOC emissions greater than or equal to 50 Mg/year (megagram per year), a detailed landfill gas collection and controls system design plan submittal shall be made to the NSPS implementing agency. Within 18 months after this submittal, the installation of the landfill gas collection and control system shall be completed. Based on current Tier 2 sampling and model projections, the CCSWDC Class I landfill has not exceeded the NMOC threshold at the time of this report and is not expected to exceed the threshold until 2015. Operation of the Landfill Gas System is provided in greater detail in Attachment K-9. Operation of the LFG Recovery Facility is provided in greater detail in Attachment K-12.

K.9.b Landfill Gas Monitoring Program

A gas monitoring program will be implemented to prevent explosions and fires and to minimize off-site odors and damage to vegetation. The landfill gas monitoring program for CCSWDC will include monitoring of the landfill perimeter and enclosed on-site structures at the monitoring locations shown on Figure 1 in Attachment K-3. Monitoring will be conducted on a quarterly basis and a report submitted to FDEP within 15 days after the end of the quarter in which monitoring occurred. The outside monitoring locations, as shown on Figure 1 provided in Attachment K-3, will consist of gas monitoring probes as shown on Figure L-3 in Attachment K-3. All gas probes will be clearly labeled and easily visible at all times.

The CCSWDC gas monitoring locations include four gas monitoring probes as described above and numbered GP-2, GP-3, GP-7, and GP-9 and six gas monitoring locations GM-1, GM-2, GM-3, GM-4, GM-5, and GM-7 in structures as shown on Figure 1 provided in Attachment K-3.

These locations are summarized in the table below:

CCSWDC Landfill Gas Monitoring Points

MONITORING POINT	TYPE OF MONITORING	LOCATION
GP-2	Probe	North of Phase I
GP-3	Probe	East of Phase I
GP-7	Probe	North of C&D Processing Area
GP-9	Probe	West of Subcell 4, Phase II
GM-1	Monitoring Location	Contractor's Maintenance Bldg.
GM-2	Monitoring Location	C&D Processing Area
GM-3	Monitoring Location	County Maintenance Bldg.
GM-4	Monitoring Location	Administrative Bldg.
GM-5	Monitoring Location	Scale House
GM-7	Monitoring Location	Control Panel at Leachate Storage Tank

Low areas, base boards, floor drains, and floor mounted cabinets shall be monitored inside the structures. Other structures on the site are not monitored because their great distance from the landfill (over 3,400 feet) and the shallow groundwater table (5 to 7 feet below surface) at the site would cause any migrating gas, if it existed, to purge to the atmosphere before it would travel to these structures through the ground. Also, there are no connections via conduit pipes between these structures and the landfill area.

Please note that gas monitoring probes north of Phase II are not necessary due to the presence of Stormwater Pond No. 1 that will effectively cut off the migration route of landfill gas in that direction. Also, gas monitoring probes south of Phase II are not necessary due to the long distance between the edge of waste and the property line and structures that can be adversely affected by migrating landfill gas. The high water table at the site also makes it unlikely that gas will migrate significant distances.

The landfill gas probes and monitoring locations shown on Figure 1 will be sampled at least quarterly for concentrations of combustible gases determined as a percent of the lower explosive limit (LEL) calibrated to methane as described in FAC 62-701.530.(2).

A methane/combustible gas detector (meter) will be used to measure the LEL at the monitoring locations. No purging of the probe will be allowed. Once the meter is connected to the sampling port, the valve will be opened and the meter pump will be engaged and meter reading observed. The highest value observed is recorded as well as the steady state value observed.

If the results of gas monitoring show that combustible gas concentrations exceed 25 percent of the LEL calibrated to methane in structures or 100 percent of the LEL calibrated to methane at the property boundary, Sarasota County will immediately take all necessary steps to ensure protection of human health and notify FDEP. Within seven days of detection, a gas remediation plan detailing the nature and extent of the problem and the proposed remedy will be submitted to FDEP for approval. The remedy will be completed within 60 days of detection unless otherwise approved by FDEP.

K.9.c Odor Reporting Procedures

The CCSWDC shall be operated to control objectionable odors in accordance with Rule 62-296.320(2), F.A.C. After being notified by the FDEP that objectionable odors have been confirmed beyond the landfill property boundary, the CCSWDC shall:

(1) Immediately take steps to reduce the objectionable odors. Such steps may include applying or increasing initial cover, reducing the size of the working face, and ceasing operations in the areas where odors have been detected;

(2) Submit to the FDEP for approval an odor remediation plan for the gas releases. The plan shall describe the nature and extent of the problem and the proposed long-term remedy. The remedy shall be initiated within 30 days of approval;

(3) Implement a routine odor monitoring program to determine the timing and extent of any off-site odors, and to evaluate the effectiveness of the odor remediation plan.

K.10 STORMWATER MANAGEMENT SYSTEM

The landfill stormwater management system for CCSWDC is discussed in Section K.2.f – Stormwater System.

K.11 EQUIPMENT AND OPERATION FEATURE REQUIREMENTS

K.11.a Adequate In-Service Equipment

Equipment proposed for the CCSWDC will include the equipment listed in Table K-1 . The exact equipment complement may vary from time to time and additional equipment will be acquired if needed. One roll-off container will be placed at the Class I landfill area.

Emergency Electrical Generation Equipment is of adequate size to assure complete operation of the Leachate Disposal and Collection Systems.

TABLE K-1. EQUIPMENT USED AT THE CCSWDC

NUMBER	EQUIPMENT
2	Bulldozer
1	Compactor
1	Dump Truck
1	Front-end Loader or Hydraulic Excavator
1	Grader
1	Water Truck

K.11.b Reserve Equipment

Cooperative lending agreements with the Contract Operator's company and standing agreements with local equipment suppliers will provide a means for procuring additional back-up equipment within 24 hours of a need being identified.

K.11.c Communication Equipment

Radios and cell phones will be the primary communications devices to provide safe conditions for landfill personnel.

K.11.d Dust Control Methods

Dust from unpaved haul roads and construction areas within the Class I landfill area will be controlled through the use of a water spray truck. An alternate dust control measure that may be used in active cells of the Class I landfill area is leachate reuse (see Attachment K-10 for FDEP approval letter). The reuse of leachate involves spraying small quantities of leachate from a spray bar mounted on the rear of a tank truck onto active fill areas of the landfill. The landfill operation crew will monitor the rate of leachate application, soil moisture conditions, and the specific landfill areas used to prevent the generation of leachate runoff. Leachate will only be applied under the following conditions:

- Leachate may only be sprayed on interior active, bermed fill areas, including the working face, and areas with the required six inches of initial cover.
- Leachate may not be sprayed on areas with intermediate or final cover.
- The maximum grade leachate will be sprayed on is a 5H:1V slope. Areas within 150 feet of a 4H:1V or steeper side slope will not be sprayed on. At all times areas receiving leachate must be controlled to prevent run-off from entering the stormwater system
- Leachate will not be sprayed during a rainfall event, and when the application area is in a saturated condition.
- The application rate of leachate should be such that leachate does not accumulate on the landfill surface, and infiltrates quickly into the covered refuse.
- Leachate will not be sprayed at the end of the day on the initial cover of the active working face or other areas. Spraying should be done early in the morning after any dew evaporates and continue until early afternoon or until all available areas have been used.
- If a water truck that is normally used for dust control on areas outside the working face is used, the operator, following leachate spraying, will fill the truck tank with clean water and the load sprayed as if it were leachate. This will flush and decontaminate the truck tank so that it may be used again for dust control outside the working face.

Daily volume of leachate sprayed (gallons), per this method, will be recorded.

If needed, dust masks will be available to personnel working in excessively dusty areas.

In general the CCSWDC will employ multiple methods for dust control as described above; in addition, many of the CCSWDC's roads are paved for all-weather conditions, as described in Section K.12 below.

Reasonable dust control precautions may include, but are not limited to, the following:

- Paving and maintenance of roads, parking areas and yards.
- Application of water to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.

- Application of asphalt, water, or other FDEP-approved dust suppressants to unpaved roads, yards, open stock piles and similar activities.
- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulate from becoming airborne.
- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.
- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

K.11.e Litter Control Devices

See Section K.7.j. in this Operations Plan.

K.11.f Signs Indicating Name of Operating Authority, Traffic Flow, Hours of Operations, and Charges for Disposal

Permanent signs at the facility identify the Sarasota County Central County Solid Waste Disposal Facility and indicate hours of operation and charges for different types of loads. The sign indicates materials that are not accepted for disposal in the landfill. Signs indicating approach and exit routes and one-way roads are strategically placed so traffic at the landfill will move smoothly and efficiently to and from the working face area.

K.12 ALL WEATHER ACCESS ROADS

A paved entrance from Knights Trail Road terminates at the landfill perimeter roadway. All weather access roads will be constructed within the Class I area to route traffic to the active working face. The all weather access roads will be constructed of earth, ground shingles, crushed rock, shell or any other stabilizing material, as appropriate.

K.13 ADDITIONAL RECORD KEEPING AND REPORTING

See Section K.3 of this Operations Plan for records and documents retained. Documents used for development, operations, construction, background water quality, and permitting of the CCSWDC will be kept for the design life of the CCSWDC. Weigh tickets shall be kept for five years. All monitoring information, including calibration and maintenance records, chart recordings, and all reports required by permit shall be kept for 10 years.

Records that are more than five years old may be archived at an off-site storage location. The archived records will be stored in a secure place where they will be protected from damage. Provisions will be made to retrieve records from storage as required within seven days. The County utilizes electronic archiving where a document is scanned and archived as an electronic document. The electronic files will be available and accessible within seven days as well.

ATTACHMENT K-1

TRAINING PLAN

TRAINING PLAN

As stated in 62-701.500(1), F.A.C., all landfills shall have at least one trained operator at the landfill during all times when the landfill receives waste. The operator training includes a 24-hour initial course and 16 hours of continuing education every 3 years. Spotter training includes an 8-hour initial course and 4 hours of continuing education every 3 years.

In accordance with Rule 62-701.320(15), the owner or operator of a landfill, or other solid waste management facility required by this chapter to have trained operators or spotters, shall not employ a person to perform, nor may any person perform, the duties of an operator or spotter at such a facility unless that person is a trained operator or trained spotter. Interim spotters, who do not have the formal spotter training, may be employed at the CCSWDC provided that the interim spotter is under the direct supervision of a trained operator or trained spotter. The interim spotter must receive training as an operator or spotter within 3 months of employment. An interim operator may be employed at the facility provided that it is for a period of no longer than 3 months from employment or if supervised by a trained operator, the interim operator must receive training within one year of employment.

Operator and spotter training courses are available at the University of Florida Center for Training, Research and Education for Environmental Occupations (UF/TREEO) and through other sources. A listing of the current year training courses available through TREEO can be found at the following website: http://www.treeo.ufl.edu/sw/. A listing of positions requiring training is provided in Section K.2.a.

ATTACHMENT K-2

SAFETY AND CONTINGENCY PLAN

SAFETY AND CONTINGENCY PLAN

The program shall consist of the following parts:

I. Training

A. General and safety training of all landfill and contractor personnel will be required.

B. Safety topics may include, but not be limited to the following: CPR, First Aid, Site Safety, Personal Protection Equipment (PPE), Lock Out / Tag Out, Weather Hazards, Heat Stress, and Fire Extinguisher training.

C. All staff shall receive training on the job-specific aspects of their position. This training will be provided by and is the responsibility of the employee's immediate supervisor, or their designee.

D. Special training shall be required for each employee on a job-specific basis. Each operator of a piece of equipment shall be trained in the operation of that piece of equipment by his immediate supervisor, or their designee. This training shall be given in accordance with the manufacturer's recommendations and operating manuals. This training will be provided by and is the responsibility of the immediate supervisor in charge of the employee, or their designee.

II. PPE

Special safety equipment such as rain gear including rubber boots, boots having steel toes and puncture resistant soles, work gloves, goggles, dust masks, protective eye glasses, rubber gloves, face guards, hearing protection, and rubber aprons shall be utilized as part of the day-to-day operational procedures where applicable. It shall be the responsibility of each individual employee and the immediate supervisor to assure that proper safety equipment is in use. All employees will be required to wear safety shoes or boots when working in an environment dictating the need for such equipment. Generally, safety shoes will be required except when working in the scalehouse or office. Safety shoes will be issued to all employees whose duties require the wearing of safety shoes.

III. Safety Meetings

A. Safety meetings shall be held periodically but no less than one meeting shall be held every month.

B. Safety meetings shall be the responsibility of the Solid Waste Operations Manager and all on-site contractors for their respectively personnel.

C. Safety meeting topics shall include a discussion of all incidents which have occurred since the last safety meeting was held along with topics of current importance and interest.

IV. Safety Officer

A. The Solid Waste Operations Safety Officer shall be appointed by the Manager of the Solid Waste Operations.

B. The position of Solid Waste Operations Safety Officer shall be held in conjunction with the regular duties of the position for which the person was hired. However, the Solid Waste Operations Safety Officer shall be given time during the regular working hours to perform the duties of the Safety Officer.

V. Emergency & Fire Safety

This section provides the standard operating procedures for all personnel in the event of an emergency or fire of any nature that may take place within the boundaries of landfill or transfer station.

A. Notification: CALL 911. As in any emergency, the first thing to do is to immediately notify the proper emergency response team. In the case of FIRE, immediately notify the Fire Department through the emergency phone number 911. Remember, if you are calling from a phone that is connected to the County phone system you must dial 9- 911 to reach the emergency operator.

B. Be sure to SPEAK SLOWLY, DISTINCTLY, DELIBERATELY, and remain as calm as possible. Briefly tell the person to whom you are reporting the emergency the following: the nature of the emergency, any injuries or persons involved, and where the emergency is located.

C. If there are injuries, you should render whatever assistance you can without endangering yourself. An Automatic Defibulator (AED) for CPR emergencies is located in the Landfill Administration Office.

D. If possible, evacuate any personnel or equipment that may be endangered.

E. In the event of small fires, the use of a fire extinguisher may be sufficient to contain the fire until the arrival of the Emergency Responders. Fire extinguishers can be found in every Solid Waste Operations vehicle, on every piece of heavy equipment, and in buildings located throughout the landfill site. Upon arrival of the Emergency Responders, you should take whatever steps necessary to assist.

F. In the event of fire in the landfill, it may be necessary to smother the fire using available dirt from the dirt stockpiles located at the landfill. In this case, the Manager of the landfill shall make immediate provisions to provide that earth cover. Also, the procedures described in Section K.2.b of the Operations Plan shall be followed.

VI. Waste Tire Storage Area

Refer to Waste Tire Storage Area Safety Plan included in this attachment.

VII. List of Emergency Response Equipment

A. In the event of a fire emergency, the following equipment may be available at the landfill and may be used as the situation dictates in the evolution of responding to a fire emergency, such as making berms, smothering with earth and materials, and then use of water in extinguishing fires:

- Front End Loaders.
- Tractors.
- Water Truck.
- Water Pumps.

B. It should be noted that from time to time the equipment available for fire emergency use may be changed, and it should be the responsibility of the persons in charge at the facility to be aware of those changes and respond accordingly with the appropriate equipment in the event of a fire emergency.

C. Dry hydrant connections are available as shown on the drawings for the purpose of supplying water in the event of a fire or other emergency. Upon arrival of the fire department, this water supply will be used under the direction of the officer in charge from the fire department.

VIII. Procedure to be Followed for Cleanup

Any residual from a fire shall be addressed as follows:

A. The County will conduct soil sampling as applicable of the area to confirm the absence or presence of contaminants.

B. If contaminants are found that exceed established clean-up target levels, then remedial actions may be taken that can include removal of soil.

CONTINGENCY PLAN

In the event an emergency should occur that would interrupt operations at the landfill, the emergency provisions of Section K.2.b. of the Operations Plan shall be followed and the following procedures shall be implemented:

The waste collection entities operating within the County shall be notified of the operational interruption and approximate time when operations will be restored.

If it is anticipated that the interruption of operations will be longer than 48 hours, an alternate disposal site shall be determined. The following alternate disposal sites are available and listed in order of preference. Should one facility also not be available the next facility on the list shall be contacted.

- Manatee County Lena Road Landfill
- Charlotte County Zemel Road Landfill
- Waste Management Landfill in Okeechobee County

SOLID WASTE OPERATIONS

CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX

SAFETY PLAN
WASTE TIRE STORAGE AREA

Updated June 1, 2012 as part of Waste Tire Processing Facility Permit Application

SAFETY

The program shall consist of the following parts:

I. Training

A. General & safety training of all landfill and contractor personnel will be required.

B. Safety topics may include, but not be limited to the following: CPR, First Aid, Site Safety, Personal Protection Equipment (PPE), Lock-out / Tag Out, Weather Hazards, Heat Stress, and Fire Extinguisher training.

C. All staff shall receive training on the job-specific aspects of their position. This training will be provided by and it the responsibility of the employee's immediate supervisor, or their designee.

D. Special training shall be required for each employee on a job-specific basis. Each operator of a piece of equipment shall be trained in the operation of that piece of equipment by his immediate supervisor, or their designee. This training shall be given in accordance with the manufacturer's recommendations and operating manuals. This training will be provided by and is the responsibility of the immediate supervisor in charge of the employee, or their designee.

II. PPE

A. Special safety equipment such a rain gear including rubber boots, boots having steel toes and puncture resistant soles, work gloves, goggles, dust masks, protective eye glasses, rubber gloves, face guards, hearing protection, and rubber aprons shall be utilized as part of the day-to-day operational procedures where applicable. It shall be the responsibility of each individual employee and their immediate supervisor to assure that proper safety equipment is in use.

III. Safety Meetings

A. Safety meeting shall be held periodically but no less than one meeting shall be held every other month.

B. Safety meeting shall be the responsibility of the Solid Waste Operations Manager and all on-site contractors for their respectively personnel.

C. Safety meeting topics shall include a discussion of all incidents which have occurred since the last safety meeting was held along with topics of current importance and interest.

IV. Safety Officer

A. The Solid Waste Operations Safety Officer shall be appointed by the Manager of the Solid Waste Operations.

B. The position of Solid Waste Operations Safety Officer shall be held in conjunction with the regular duties of the position for which the person was hired. However, the Solid Waste Operations Safety Officer shall be given time during the regular working hours to perform the duties of the Safety Officer.

V. Emergency & Fire Safety

This section provides the standard operating procedure for all personnel in the event of an emergency or fire of any nature that may take place within the boundaries of the landfill or transfer station.

A. Notification: Call 911. As in any emergency, the first thing to do is to notify the proper emergency response team. In the case of FIRE, notify the Fire Department through the emergency phone number 911. Remember; if you are calling from a phone that is connected to the County phone system you must dial 9-911 to reach an emergency operator.
B. Be sure to SPEAK SLOWLY, DISTINCTLY, DELIBERATELY, and remain as calm as possible. Briefly tell the person to whom you are reporting the emergency the following: the nature of the emergency, any injuries or persons involved, and where the emergency is located.
C. If there are injuries, you should render whatever assistance you can without endangering yourself. An Automatic Defibulator (AED) for CPR emergencies is located in the Landfill Administration Office.
D. If possible, evacuate any personnel or equipment that may be endangered.
E. In the event of small fires, the use of a fire extinguisher may be sufficient to contain the fire until the arrival of the Emergency Responders. Fire extinguishers can be found in every Solid Waste Operations vehicle, on every piece of heavy equipment and in buildings located throughout the landfill site.
F. Upon arrival of the Emergency Responders, you should take whatever steps necessary to assist.

Used Tire Storage Area Special Rules

In the event there is a fire or other emergency in the used tire storage area, the following rules shall apply:

A. After following the emergency procedure outlined above, personnel shall ensure that a berm is placed to the west of the waste tire pile area and the drain to the east is diked-off to assure that no oily material generated by the combustion of the tires escapes the designated Waste Tire area.
B. The State of Florida, Department of Environmental Protection shall be immediately notified by calling the South District Office at 239-332-6969. Within 7 days of any emergency involving potential impacts to the site, the Solid Waste Operations Manager shall submit to the Department a written report on the emergency, the results of the action taken and an action plan to mitigate future occurrences.
C. In addition, any special conditions as set forth by the jurisdictional Fire Department shall be met.

List of Emergency Response Equipment

A. In the event of a fire emergency, the following equipment may be available at the landfill and may be used as the situation dictates in the evolution of responding to a fire emergency, such

as making berms, smothering with earth & materials, and then use of water in extinguishing fires:

- Front End Loaders
- Tractors
- Water Truck
- Water Pumps

B. It should be noted that from time to time the equipment available for fire emergency use may be changed, and it should be the responsibility of the persons in charge at the facility to be aware of those changes and respond accordingly with the appropriate equipment in the event of a fire emergency.

C. Dry hydrant connections are available as shown on the drawings for the purpose of supplying water in the event of a fire or other emergency. Upon arrival of the fire department, this water supply will be used under the direction of the officer in charge from the fire department.

VI. Procedure to be Followed for Clean-up

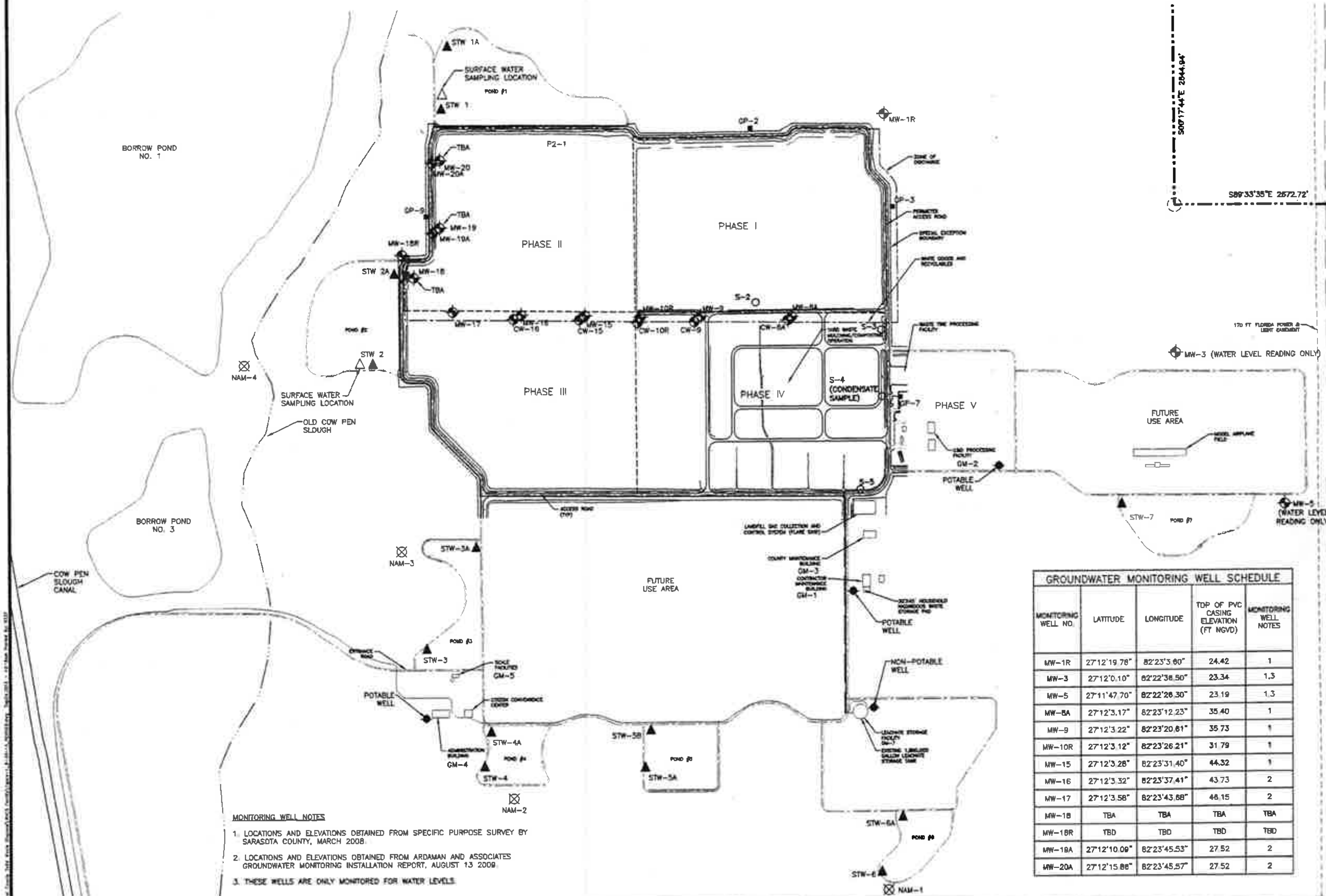
Any residual from a fire at the tire storage area shall be addressed as follows:

A. The County will conduct soil sampling of the waste tire area to confirm the absence or presence of contaminants.

B. If contaminants are found that exceed established clean-up target levels, then remedial actions may be taken that can include remove of soil.

ATTACHMENT K-3

FIGURES



SITE PLAN NOTES

1. LOCATIONS OF EXISTING PIEZOMETERS, MONITORING WELLS AND STAFF GAUGES OBTAINED FROM SPECIFIC PURPOSE SURVEY BY SARASOTA COUNTY, MARCH 2008.
2. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.
3. APPROXIMATE LOCATION OF LEACHATE FORCEMAIN TO OFFSITE WWTP OBTAINED FROM CONFORMED DRAWINGS BY PBS&J DATED JULY 2005. VERIFY LOCATION IN FIELD.
4. LOCATION OF CONDENSATE SUMPS OBTAINED FROM PHASE I LFGCCS AS-BUILT DRAWINGS DATED AUGUST 2010.

Brad D Pro
PG 1733
10-16-13

LEGEND

- S-2 — LANDFILL GAS CONDENSATE SUMP
- GP-1 — GAS PROBE
- MW-10R — GROUNDWATER MONITORING WELL
- GM-1 — GAS MONITORING LOCATION
- WATER SUPPLY WELL
- P-S-1 — PHASE II BORING/PIEZOMETER LOCATION
- STW-1 — STORMWATER MONITORING STATION
- C-1 — LEACHATE MONITORING LOCATION
- POND 1 — SURFACE WATER MONITORING LOCATION
- ZONE OF DISCHARGE
- WATERWAY
- LIMITS OF EASEMENT
- EASEMENT CENTERLINE
- EXISTING ROADWAY
- PHASE BOUNDARY
- PROPERTY BOUNDARY
- NATURAL ATTENUATION MONITORING WELLS
- TBA = TO BE ABANDONED
- TBD = TO BE DETERMINED

GROUNDWATER MONITORING WELL SCHEDULE

MONITORING WELL NO.	LATITUDE	LONGITUDE	TOP OF PVC CASING ELEVATION (FT NGVD)	MONITORING WELL NOTES
MW-1R	27°12'19.78"	82°23'3.60"	24.42	1
MW-3	27°12'0.10"	82°22'38.50"	23.34	1,3
MW-5	27°11'47.70"	82°22'28.30"	23.19	1,3
MW-8A	27°12'3.17"	82°23'12.23"	35.40	1
MW-9	27°12'3.22"	82°23'20.61"	35.73	1
MW-10R	27°12'3.12"	82°23'26.21"	31.79	1
MW-15	27°12'3.28"	82°23'31.40"	44.32	1
MW-16	27°12'3.32"	82°23'37.41"	43.73	2
MW-17	27°12'3.58"	82°23'43.68"	46.15	2
MW-18	TBA	TBA	TBA	TBA
MW-18R	TBD	TBD	TBD	TBD
MW-19A	27°12'10.09"	82°23'45.53"	27.52	2
MW-20A	27°12'15.88"	82°23'45.57"	27.52	2

MONITORING WELL NOTES

1. LOCATIONS AND ELEVATIONS OBTAINED FROM SPECIFIC PURPOSE SURVEY BY SARASOTA COUNTY, MARCH 2008.
2. LOCATIONS AND ELEVATIONS OBTAINED FROM ARDAMAN AND ASSOCIATES GROUNDWATER MONITORING INSTALLATION REPORT, AUGUST 13 2009.
3. THESE WELLS ARE ONLY MONITORED FOR WATER LEVELS.

FIGURE 1

ATKINS
462 SOUTH KELLER ROAD
Orlando, Fl 32810-6101
TEL (407) 647-7275
FAX (407) 647-0624
www.atkinsglobal.com
5300 W. BOY SCOUT BOULEVARD
TAMPA, FLORIDA 33607
FBPR CERTIFICATE OF AUTHORIZATION NO.24

CLIENT: SARASOTA COUNTY

PROJECT: CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX CLASS I LANDFILL

TASK: WATER QUALITY MONITORING PLAN

ORIGINAL 8/01/2012
REVISIONS:
1. 8/19/2013
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

Name:
Florida P.E. No.:
Address: ATKINS
462 S. Keller Road
Orlando, FL 32810-6101
Signature Date

JOB NO. 00-000.00
DRAWN GG
DESIGN RS
CHECKED
Q.C.
SHEET 1/1

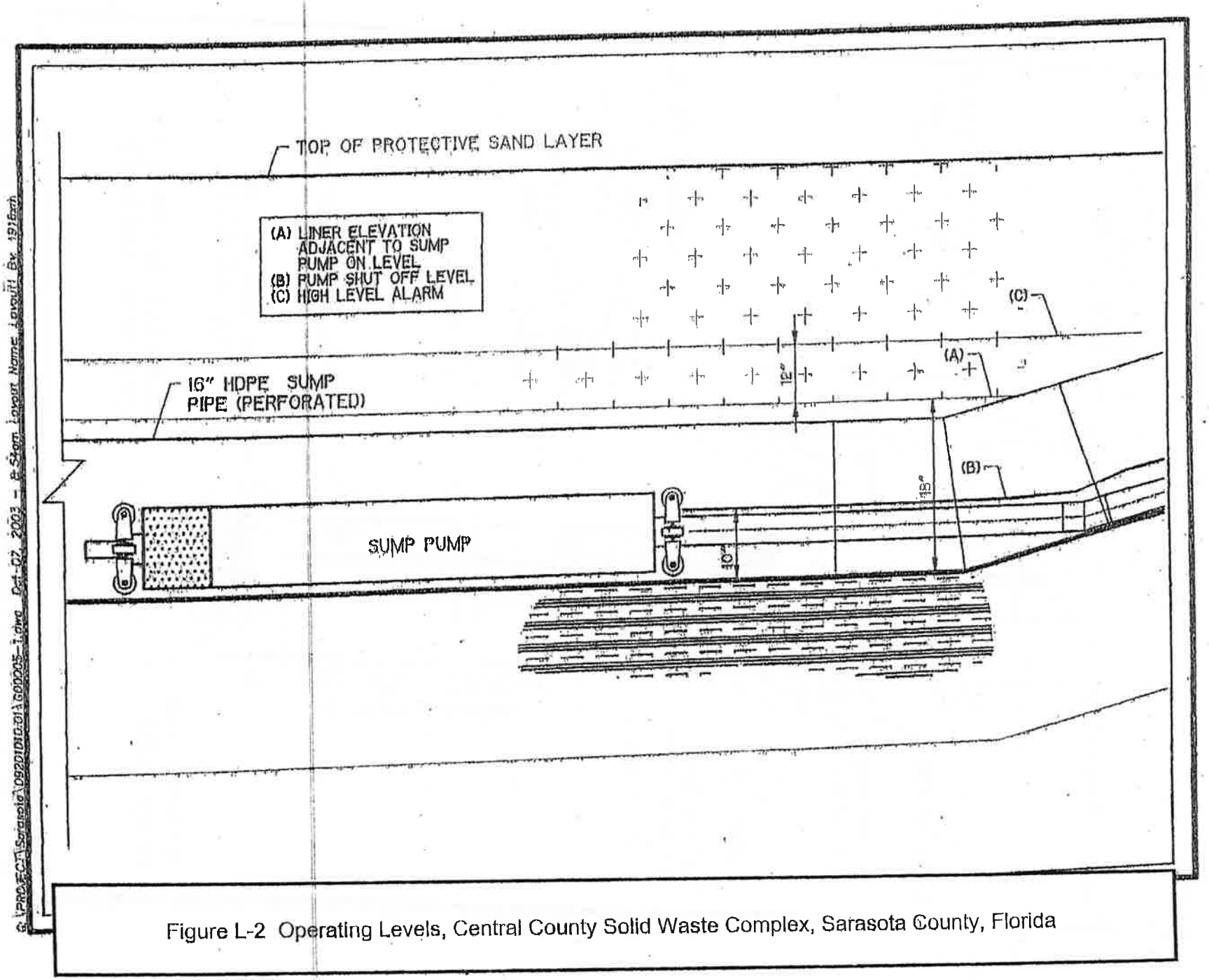


Figure L-2 Operating Levels, Central County Solid Waste Complex, Sarasota County, Florida

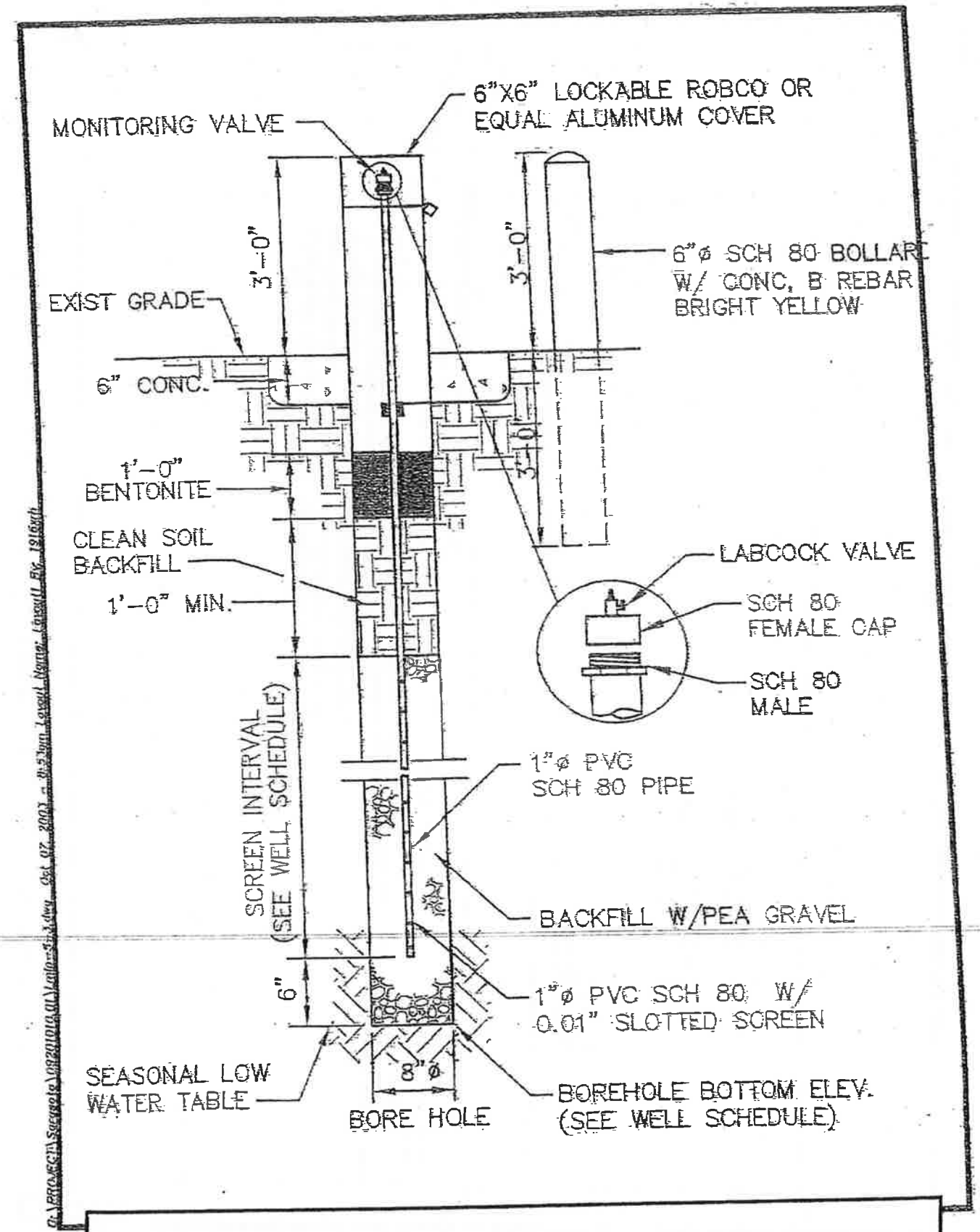


Figure L-3 LFG Monitor Probe, CCSWDC, Sarasota County, Florida

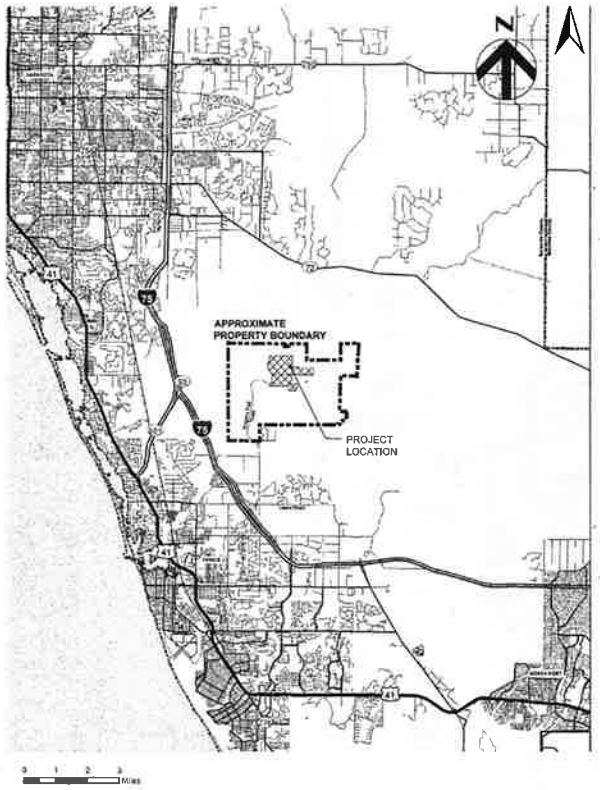
ATTACHMENT K-4

LANDFILL STAGING PLANS

Sarasota County

HDR

HDR Engineering, Inc.
2621 Cattlemen Road, Suite 106
Sarasota, FL 34232-6212
(941) 343.2700
CA00004213



Central County Solid Waste Disposal Complex

Phase II Class I Landfill Staging Plans

ADDRESS: 4000 KNIGHTS TRAIL ROAD
NOKOMIS, FLORIDA 34275

PROJECT NO. 096-185625-002

SARASOTA COUNTY, FLORIDA

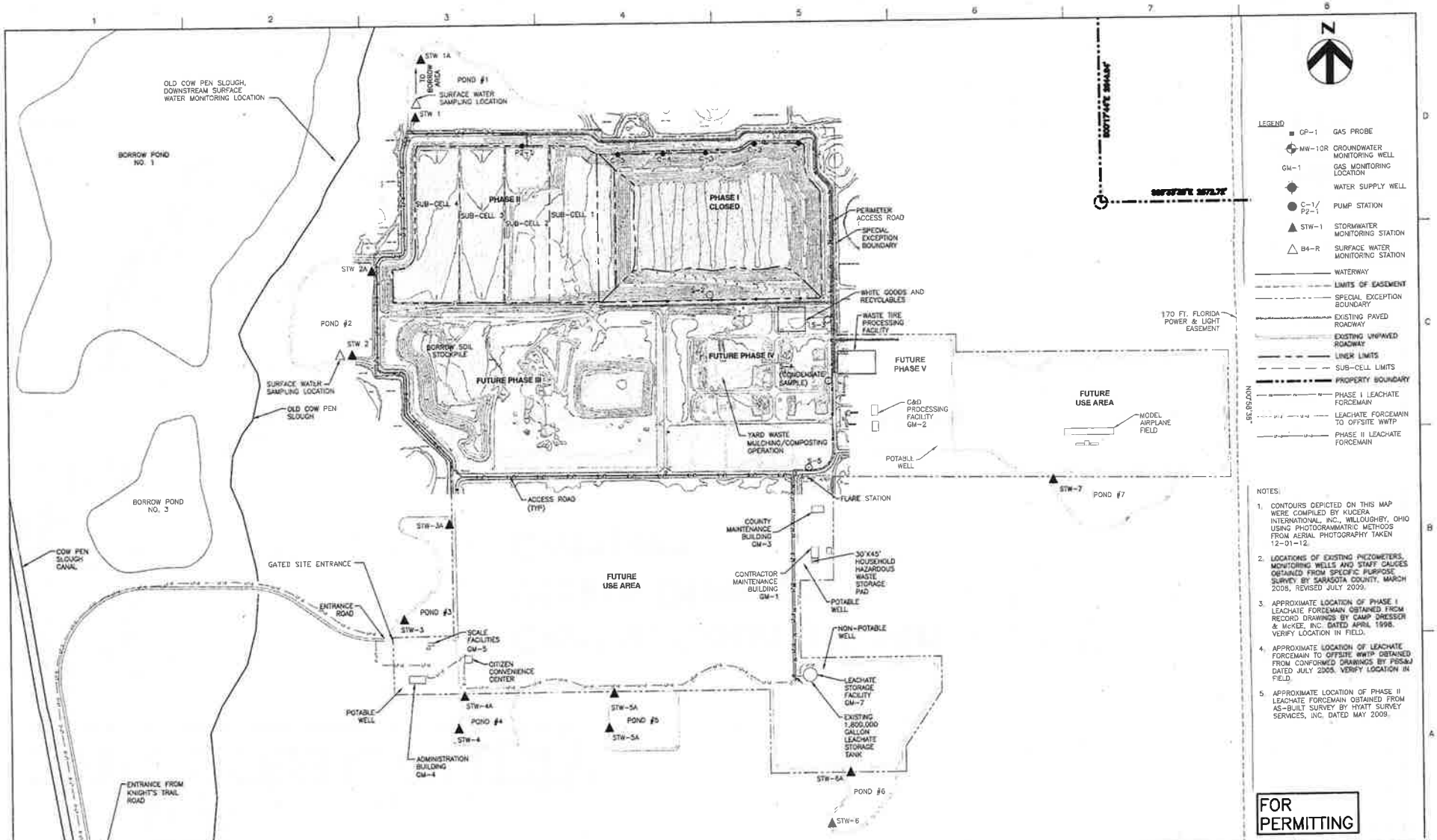
SEPTEMBER 2013

INDEX OF DRAWINGS

THOMAS M. VANOSDOL
No. 44200
STATE OF FLORIDA
PROFESSIONAL ENGINEER

FOR PERMITTING

SHEET G-01



HDR

ISSUE	DATE	DESCRIPTION
A	08/2013	ISSUED FOR REVIEW

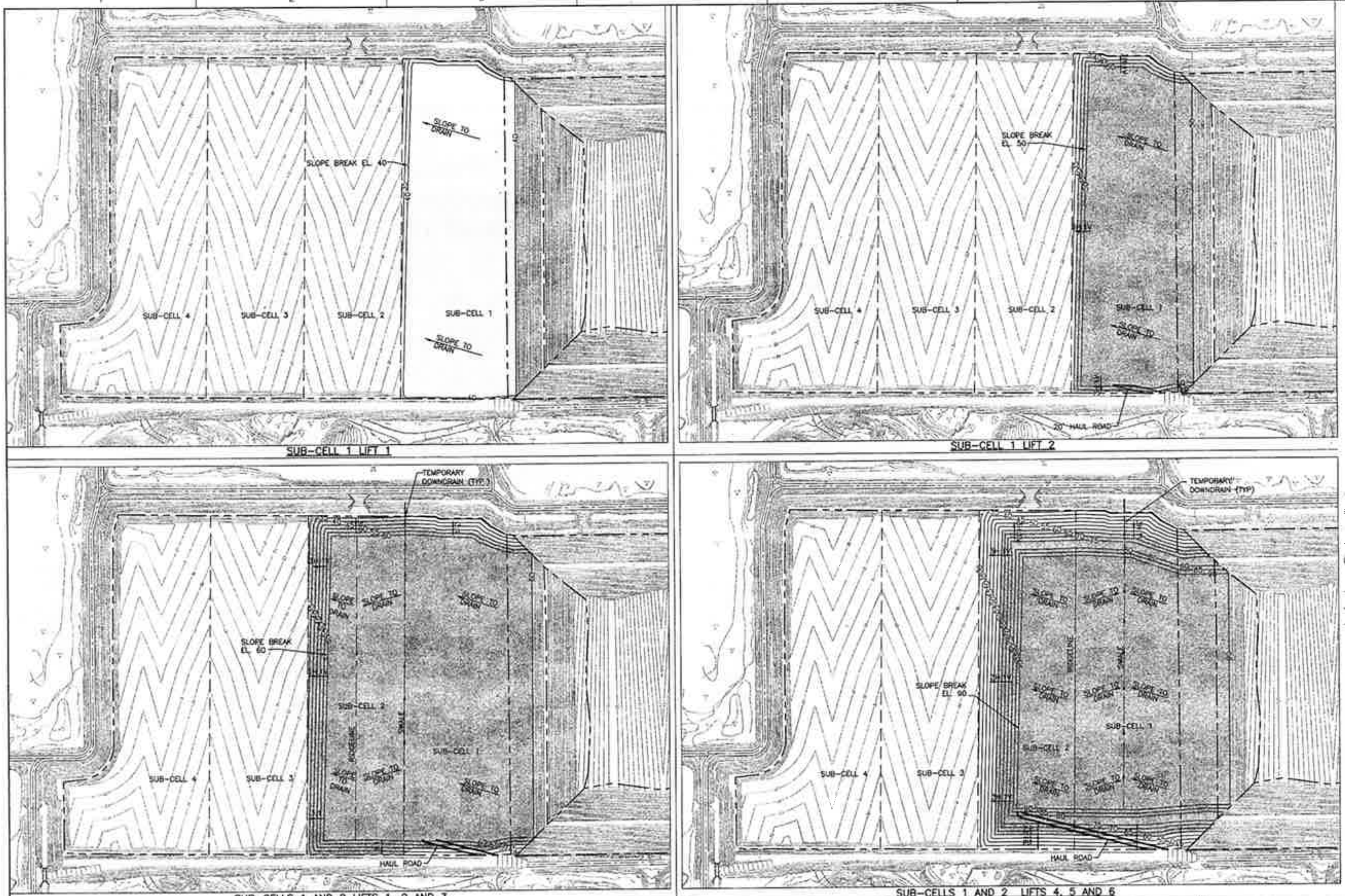
PROJECT MANAGER T.M. YANOZSCHAK
REVIEWED BY K. SIEMERING
DRAWN BY B. JOHNSON
PROJECT NUMBER 056-185625-002

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Sarasota County
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL
STAGING PLANS
SARASOTA COUNTY FLORIDA

SITE PLAN

FILENAME 00C-00.dwg
SCALE 1"=400'
SHEET **C-00**



N

NOTES:

1. CONTOURS WITHIN UNFILLED SUB-CELLS REPRESENT TOP OF PROTECTIVE COVER.
2. TYPICAL LIFT THICKNESS IS 10 FEET.
3. ALL STORMWATER THAT COMES IN CONTACT WITH WASTE WILL BE HANDLED AS LEACHATE AND WILL BE DIRECTED TO THE LEACHATE COLLECTION SYSTEM.
4. STORMWATER RUNOFF FROM PORTIONS OF LANDFILL WITH DAILY AND INTERMEDIATE COVER WILL BE DIRECTED TO PERIMETER DRAINAGE CHANNEL.
5. LIFT PROGRESSION WILL ALTERNATE BETWEEN SOUTH TO NORTH AND THEN NORTH TO SOUTH ACROSS THE ENTIRE WIDTH OF THE LANDFILL SUB-CELL.
6. EXTERIOR FILL SEQUENCE CONTOURS REPRESENT FINAL COVER GRADES.
7. LOCATION OF TEMPORARY DOWNDRAINS ARE APPROXIMATE.

LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- SUB-CELL WASTE FILLING
- VEGETATION
- TEMPORARY DRAINAGE SWALE
- TEMPORARY RIDGE LINE
- TEMPORARY DOWNDRAIN

INCREMENTAL VOLUME

SUB-CELL 1 LIFT 1 –	163,336.88 CY
SUB-CELL 1 LIFT 2 –	219,944.44 CY
SUB-CELLS 1 & 2 LIFTS 1, 2 AND 3 –	755,127.84 CY
SUB-CELLS 1 AND 2 LIFTS 4, 5 AND 6 –	1,091,520.89 CY

TOTAL VOLUME

2,229,930.05 CY

FOR PERMITTING

HDR

HDR Engineering, Inc. 5426 Bay Center Drive, Suite 400 Tampa, FL 33609-3444 (813) 282-2300 Florida Certificate of Authorization No. 00004213

ISSUE	DATE	DESCRIPTION
A	09/2013	ISSUED FOR REVIEW

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	R. SIEMERING
DRAWN BY	B. JOHNSON
PROJECT NUMBER	096-185625-002

THOMAS M. YANOSCHAK LICENSE No. 44200 STATE OF FLORIDA PROFESSIONAL ENGINEER

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Sarasota County

Central County Solid Waste Disposal Complex

PHASE II CLASS I LANDFILL STAGING PLANS

SARASOTA COUNTY FLORIDA

LANDFILL STAGING PLAN

0 1" 2"

FILENAME	00C-01.dwg	SHEET	C-01
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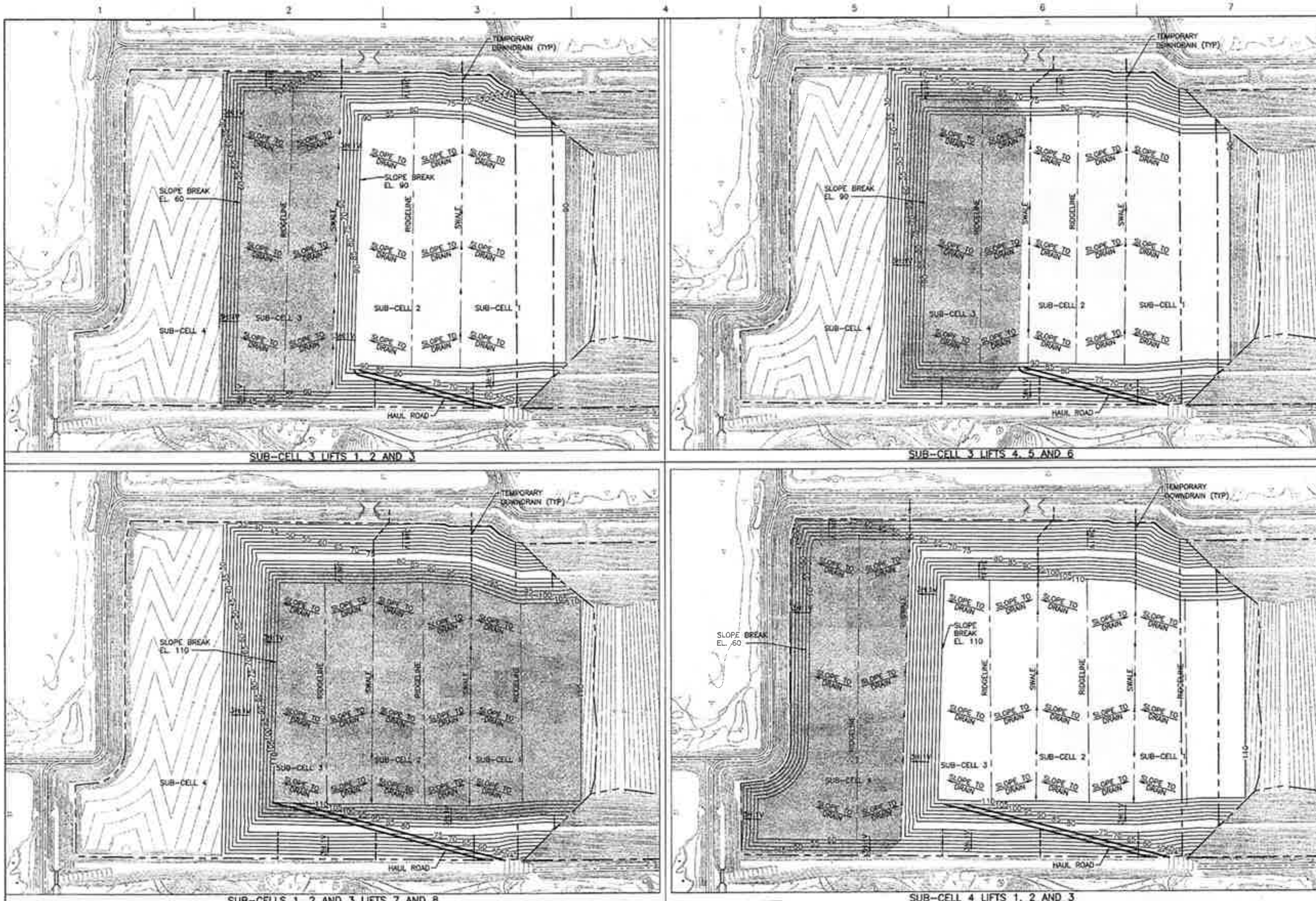

N

NOTES:

1. CONTOURS WITHIN UNFILLED SUB-CELLS REPRESENT TOP OF PROTECTIVE COVER.
2. TYPICAL LIFT THICKNESS IS 10 FEET.
3. ALL STORMWATER THAT COMES IN CONTACT WITH WASTE WILL BE HANDLED AS LEACHATE AND WILL BE DIRECTED TO THE LEACHATE COLLECTION SYSTEM.
4. STORMWATER RUNOFF FROM PORTIONS OF LANDFILL WITH DAILY AND INTERMEDIATE COVER WILL BE DIRECTED TO PERIMETER DRAINAGE CHANNEL.
5. LIFT PROGRESSION WILL ALTERNATE BETWEEN SOUTH TO NORTH AND THEN NORTH TO SOUTH ACROSS THE ENTIRE WIDTH OF THE LANDFILL SUB-CELL.
6. EXTERIOR FILL SEQUENCE CONTOURS REPRESENT FINAL COVER GRADES.
7. LOCATION OF TEMPORARY DOWNDRAINS ARE APPROXIMATE.

LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- SUB-CELL WASTE FILLING
- VEGETATION
- TEMPORARY DRAINAGE SWALE
- TEMPORARY RIDGE LINE
- TEMPORARY DOWNDRAIN

INCREMENTAL VOLUME

SUB-CELL 3 LIFTS 1, 2 AND 3 –	545,409.32 CY
SUB-CELL 3 LIFTS 4, 5 AND 6 –	514,631.63 CY
SUB-CELLS 1, 2 AND 3 LIFTS 7 AND 8 –	915,525.42 CY
SUB-CELL 4 LIFTS 1, 2 AND 3 –	619,716.62 CY

TOTAL VOLUME

4,825,213.04 CY

FOR PERMITTING

HDR
HDR Engineering, Inc.
Tampa, FL

ISSUE	DATE	DESCRIPTION
A	09/2013	ISSUED FOR REVIEW

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	R. SIEMERING
DRAWN BY	B. JOHNSON
PROJECT NUMBER	096-185825-002

THOMAS M. YANOSCHAK, LICENSE No. 44200, STATE OF FLORIDA, PROFESSIONAL ENGINEER

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Sarasota County

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL STAGING PLANS

SARASOTA COUNTY FLORIDA

LANDFILL STAGING PLAN

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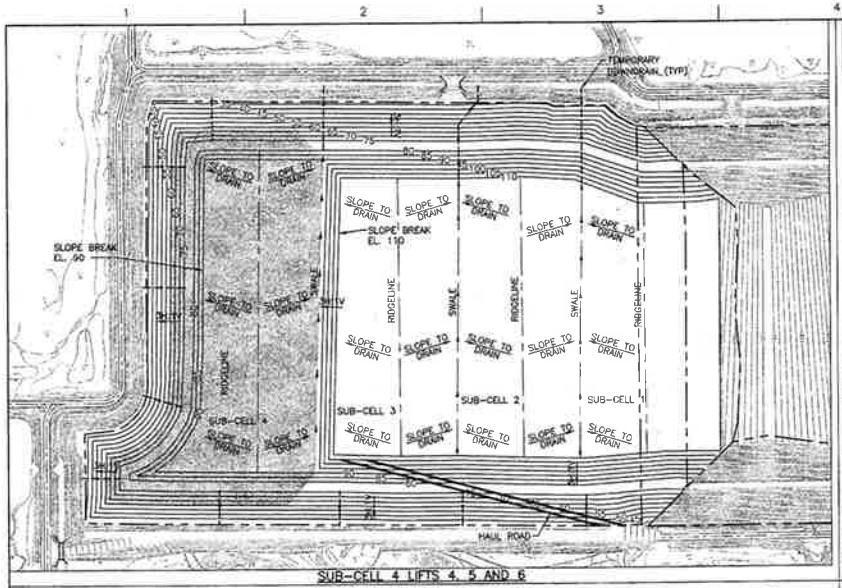
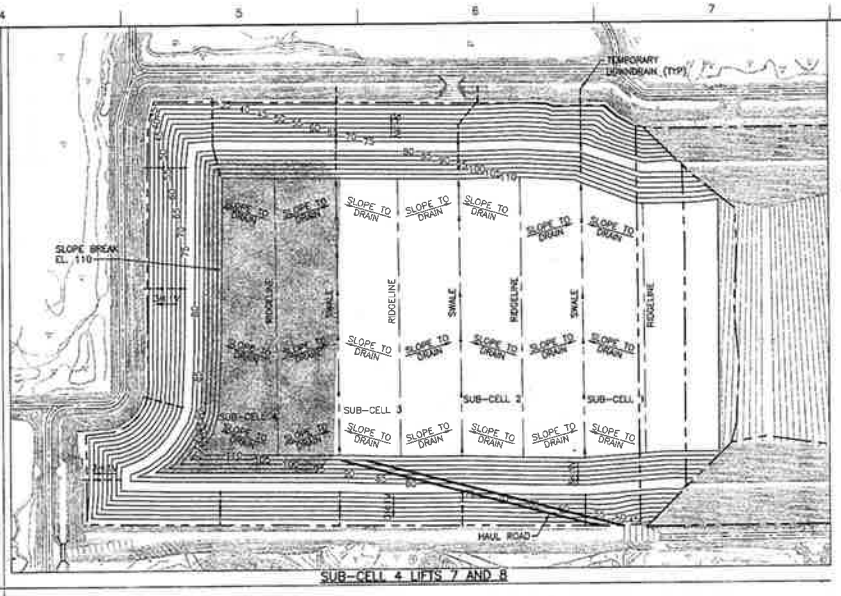
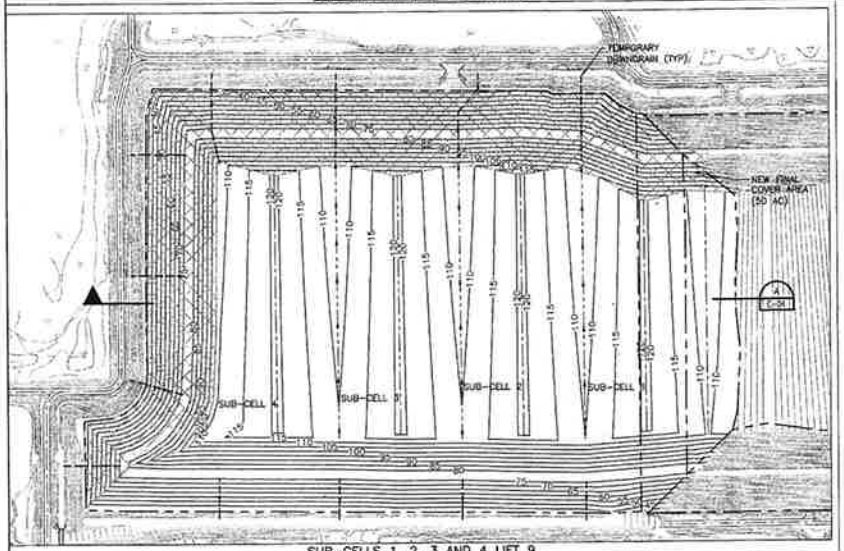
SHEET C-02



SUB-CELL 4 LIFTS 4, 5 AND 6



SUB-CELL 4 LIFTS 7 AND 8



SUB-CELLS 1, 2, 3 AND 4 LIFT 9

NOTES:

1. CONTOURS WITHIN UNFILLED SUB-CELLS REPRESENT TOP OF PROTECTIVE COVER.
2. TYPICAL LIFT THICKNESS IS 10 FEET.
3. ALL STORMWATER THAT COMES IN CONTACT WITH WASTE WILL BE HANDLED AS LEACHATE AND WILL BE DIRECTED TO THE LEACHATE COLLECTION SYSTEM.
4. STORMWATER RUNOFF FROM PORTIONS OF LANDFILL WITH DAILY AND INTERMEDIATE COVER WILL BE DIRECTED TO PERIMETER DRAINAGE CHANNEL.
5. STAGING ASSUMES FINAL COVER WILL NOT BE PLACED ON SOUTH SLOPE OF PHASE II PENDING CONSTRUCTION OF PHASE III.
6. DUE TO THE LIMITED HEIGHT AND LARGE TOP DECK FOR PHASE II, SUFFICIENT ACREAGE TO MAKE IT PRACTICAL TO PARTIALLY CLOSE PHASE II WILL NOT OCCUR UNTIL APPROXIMATELY OCTOBER 2020.
7. LIFT PROGRESSION WILL ALTERNATE BETWEEN SOUTH TO NORTH AND THEN NORTH TO SOUTH ACROSS THE ENTIRE WIDTH OF THE LANDFILL SUB-CELL.
8. EXTERIOR FILL SEQUENCE CONTOURS REPRESENT FINAL COVER GRADES.
9. LOCATION OF TEMPORARY DOWNDRAINS ARE APPROXIMATE.

LEGEND

- EXISTING ELEVATION CONTOUR
- PROPOSED ELEVATION CONTOUR
- CHAIN LINK FENCE
- CENTER LINE OF ROAD
- SUB-CELL WASTE FILLING
- VEGETATION
- TEMPORARY DRAINAGE SWALE
- TEMPORARY RIDGE LINE
- TEMPORARY DOWNDRAIN
- AREA RECEIVING FINAL COVER

INCREMENTAL VOLUME

SUB-CELL 4 LIFTS 4, 5 AND 6 –	536,143.23 CY
SUB-CELL 4 LIFTS 7 AND 8 –	286,628.20 CY
SUB-CELLS 1, 2, 3 AND 4 LIFT 9 –	252,219.87 CY

TOTAL VOLUME

5,900,204.34 CY

FOR PERMITTING

HDR
HDR Engineering, Inc
5426 Bay Center Drive - Suite 400
Tampa, FL 33609-3444
(813) 282-2500
Florida Certificate of Authorization No. 00000650

ISSUE	DATE	DESCRIPTION
A	09/2013	ISSUED FOR REVIEW

PROJECT MANAGER	T.M. YANOSHAK
REVIEWED BY	R. SIEWERING
DRAWN BY	B. JOHNSON
PROJECT NUMBER	096-185625-002

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Sarasota County
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL STAGING PLANS
SARASOTA COUNTY FLORIDA

LANDFILL STAGING PLAN

0 1" 2"

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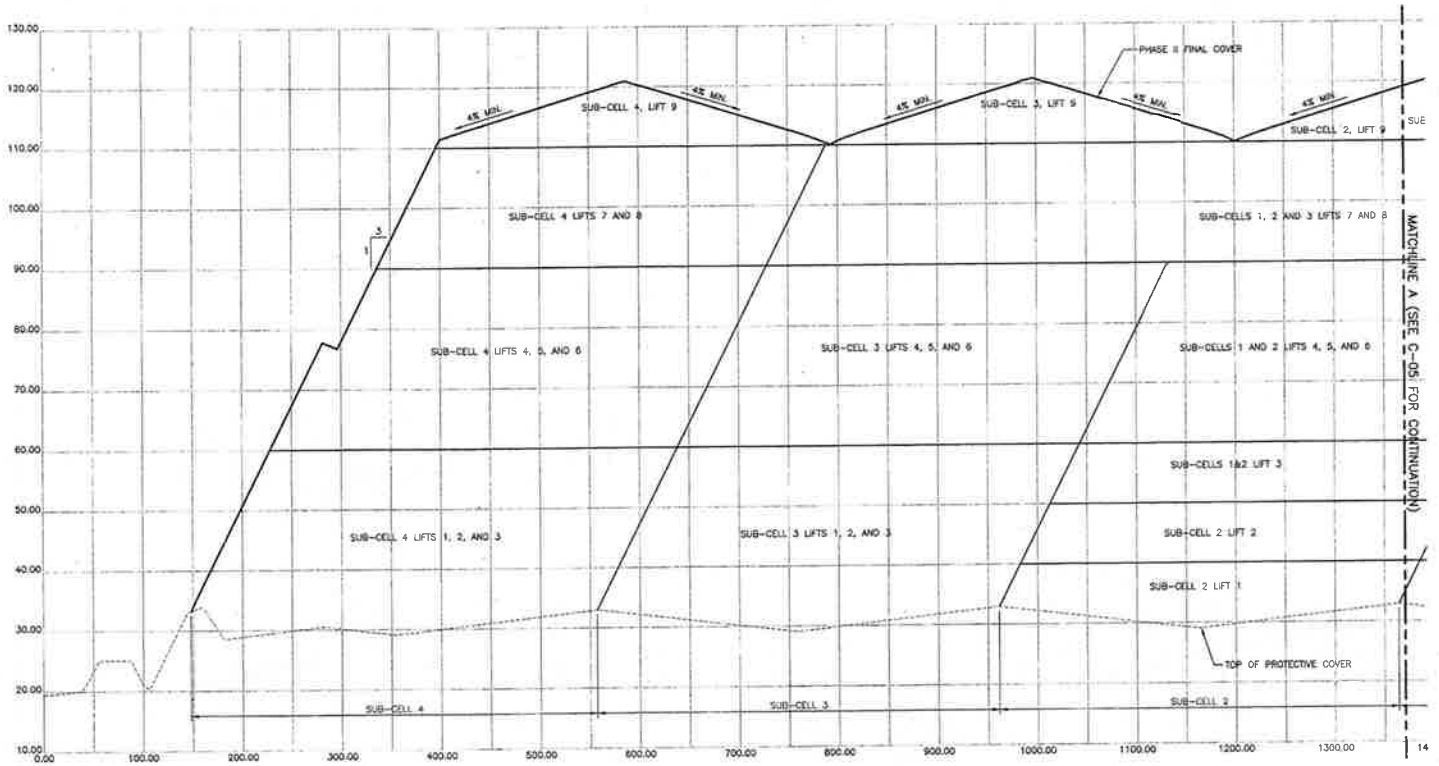
SHEET C-03



SECTION
HORIZ. - 1"=60' VERT. - 1"=10'

FOR PERMITTING

HDR Engineering, Inc.
6428 Bay Center Drive, Suite 400
Tampa, FL 33609-3444
(813) 282-2240
Florida Cert/Resale of Authorization
No. 00004213

ISSUE	DATE	DESCRIPTION
A	09/2013	ISSUED FOR REVIEW

PROJECT MANAGER: T.E. YANOSCHAK
REVIEWED BY: R. SIEMERING
DRAWN BY: B. JOHNSON
PROJECT NUMBER: 096-185625-002

THOMAS M. YANOSCHAK LICENSE No. 44200 STATE OF FLORIDA PROFESSIONAL ENGINEER
Thomas M. Yanoschak, P.E.
Certificate No. 44200

Sarasota County
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL STAGING PLANS
SARASOTA COUNTY FLORIDA

LANDFILL STAGING SECTIONS

0 1" 2"

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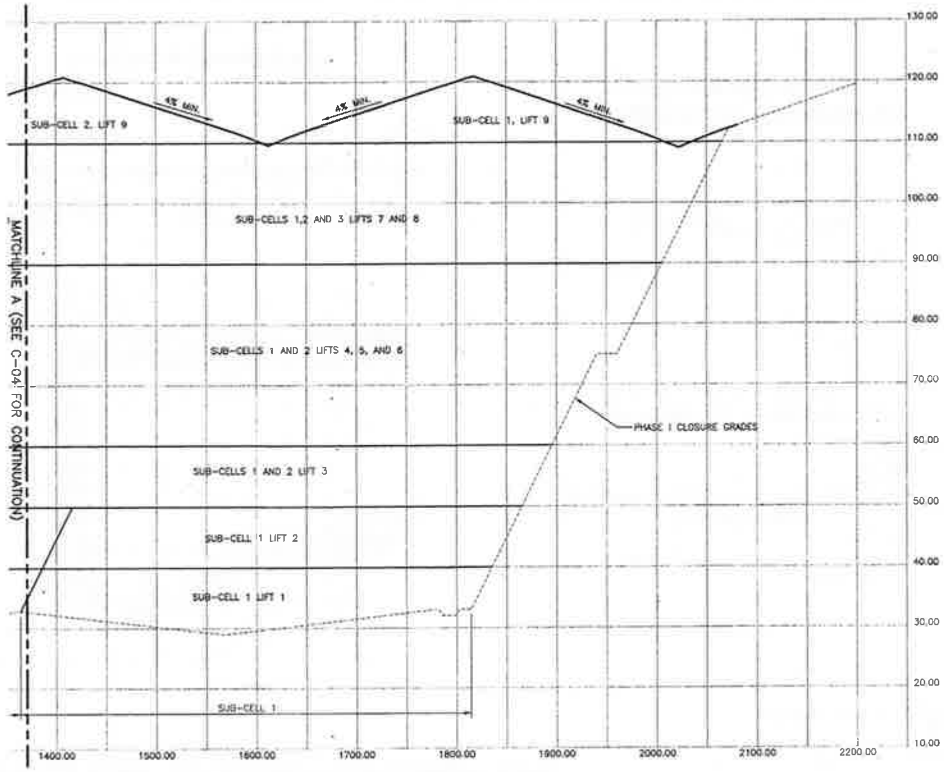
SCALE: AS SHOWN

SHEET: **C-04**



SECTION (CONT.)
HORIZ - 1"=60' VERT. - 1"=10'
A / C-03

PROPOSED PHASE II FILL SEQUENCE

1. SUB-CELL 1 – LIFT 1
2. SUB-CELL 1 – LIFT 2
3. SUB-CELL 2 – LIFT 1
4. SUB-CELL 2 – LIFT 2
5. SUB-CELL 1 AND 2 – LIFT 3
6. SUB-CELLS 1 AND 2 – LIFT 4
7. SUB-CELLS 1 AND 2 – LIFT 5
8. SUB-CELLS 1 AND 2 – LIFT 6
9. SUB-CELL 3 – LIFT 1
10. SUB-CELL 3 – LIFT 2
11. SUB-CELL 3 – LIFT 3
12. SUB-CELL 3 – LIFT 4
13. SUB-CELL 3 – LIFT 5
14. SUB-CELL 3 – LIFT 6
15. SUB-CELLS 1, 2, AND 3 – LIFT 7
16. SUB-CELLS 1, 2, AND 3 – LIFT 8
17. SUB-CELL 4 – LIFT 1
18. SUB-CELL 4 – LIFT 2
19. SUB-CELL 4 – LIFT 3
20. SUB-CELL 4 – LIFT 4
21. SUB-CELL 4 – LIFT 5
22. SUB-CELL 4 – LIFT 6
23. SUB-CELL 4 – LIFT 7
24. SUB-CELL 4 – LIFT 8
25. SUB-CELLS 1, 2, 3, AND 4 – LIFT 9

FOR PERMITTING

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	09/2013	ISSUED FOR REVIEW

PROJECT MANAGER T.M. YANOSCHAK
REVIEWED BY R. SIEMERING
DRAWN BY B. JOHNSON
PROJECT NUMBER 096-185625-002

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Sarasota County

Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL STAGING PLANS
SARASOTA COUNTY FLORIDA

LANDFILL STAGING SECTIONS

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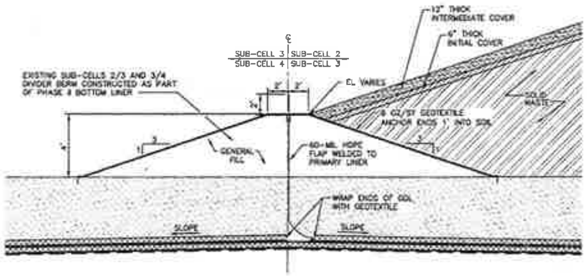
SCALE AS SHOWN
SHEET C-05



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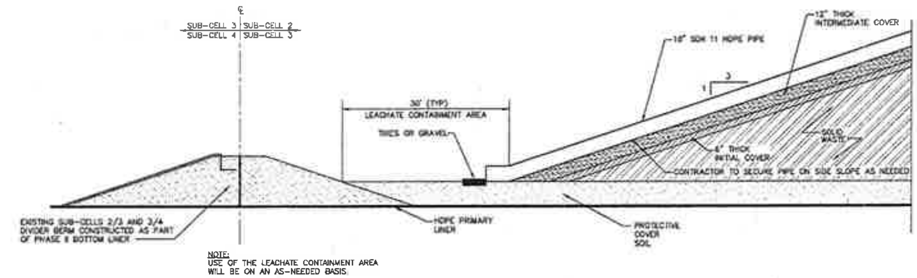

NOTE:
USE OF THE LEACHATE CONTAINMENT AREA WILL BE ON AN AS-NEEDED BASIS.

SUB-CELL DIVIDER BERM TIE-IN - LEACHATE CONTAINMENT AREA

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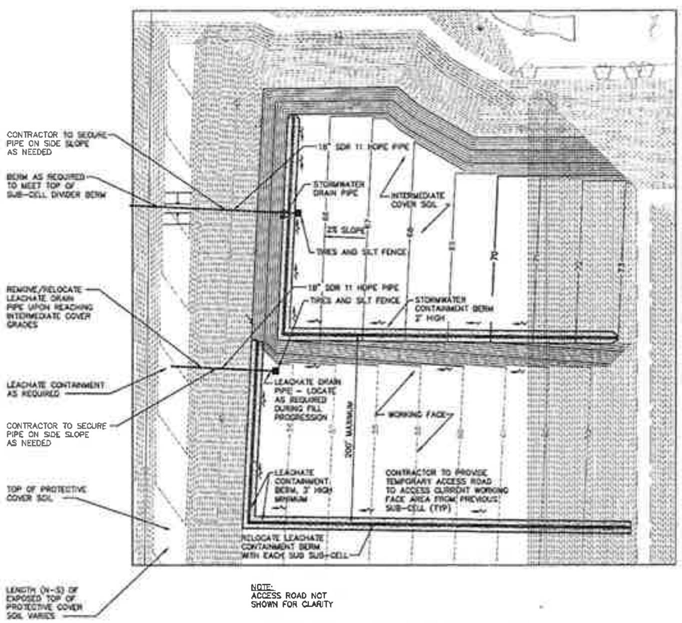

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TYPICAL WORKING FACE

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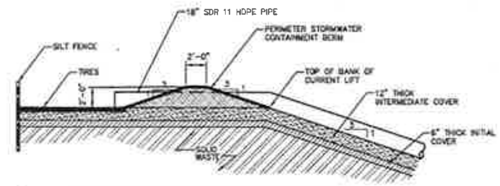

PERIMETER STORMWATER CONTAINMENT BERM

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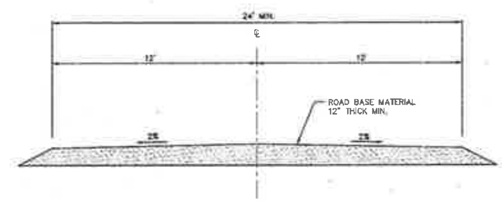

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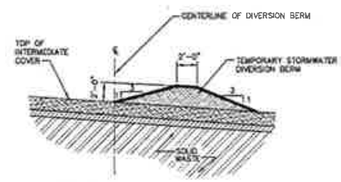

TEMPORARY STORMWATER DIVERSION BERM

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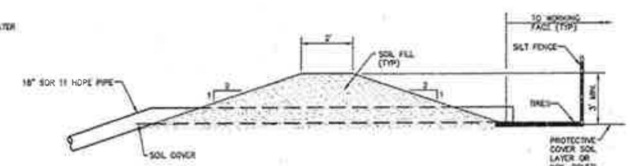

TYPICAL LEACHATE CONTAINMENT BERM

NOT TO SCALE

FOR PERMITTING

HDR
HDR Engineering, Inc
5426 Bay Center Drive, Suite 400
Tampa, FL 33609-3444
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Florida Certificate of Authorization No. 00004213

ISSUE	DATE	DESCRIPTION
A	09/2013	ISSUED FOR REVIEW

PROJECT MANAGER T.M. YANOSCHAK
REVIEWED BY R. SIEMERING
DRAWN BY B. JOHNSON
PROJECT NUMBER 096-185625-002

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Sarasota County
Central County Solid Waste Disposal Complex
PHASE II CLASS I LANDFILL
STAGING PLANS
SARASOTA COUNTY FLORIDA

DETAILS

FILENAME 00C-06.dwg
SCALE AS SHOWN
SHEET C-06

ATTACHMENT K-5

PHASE I CLOSURE AND LONG-TERM CARE PLAN

Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex Phase I Closure and Long Term Care Plan

September 2013

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1.0 INTRODUCTION

1.1 Purpose

The purpose of a Closure and Long-Term Care Plan (Plan) is to provide general guidelines and procedures for the closure requirements, closure construction, inspection, maintenance, repairs, monitoring, and record keeping. In 2010, Sarasota County received a Closure Construction Permit for Phase I of the Class I Landfill located at the Central County Solid Waste Disposal Complex (CCSWDC) from FDEP and completed construction in January 2013. The FDEP issued an approval of the closure construction certification in June 2013.

This Plan provides a combination of recommendations and Florida Department of Environmental Protection (FDEP) requirements. Only those permit items pertinent to the closure and routine maintenance and/or operation of the closed landfill and the stormwater system have been identified and discussed.

The Plan contains a general discussion of the following: (1) closure requirements specified in 62-701.600, F.A.C., and (2) long-term care requirements specified in 62-701.620(2), F.A.C., which include a description of the procedures for erosion control, filling areas of subsidence or other depressions, maintenance of stormwater management system, leachate collection and management, groundwater monitoring and monitor well maintenance, maintenance of vegetative cover, and general maintenance of the facility, and provisions and anticipated source of cover material and vegetation for long term care, consistent with the information provided in support of the financial assurance long-term care estimates required by Rule 62-701.630, F.A.C.

An overall Site Plan of the CCSWDC is provided in Appendix A. The site plan shows the locations of the various components of the CCSWDC including existing Phase I and future phases of the Class I landfill.

2.0 CLOSURE REQUIREMENTS

In accordance with the requirements of 62-701.600, F.A.C., the following describes the procedures that were followed for Phase I and will be followed for future closures.

2.1 Schedule Requirements

This Closure and Long Term Care Plan is for the final closure of Phase I of the CCSWDC Class I landfill.

2.2 Permit General Requirements

A closure construction permit application shall be submitted to the FDEP at least 90 days before final receipt of waste in accordance with FAC 62-701.600(3). Phase I was closed before final acceptance of waste at the CCSWDC, therefore the Phase I Closure is a close-as-you-go area, with current waste filling occurring in Phase II, adjacent, to the west of Phase I.

This Plan includes the following items:

- Closure report.
- Closure design plan.
- Closure operation plan.
- Closure procedures.
- Plan for long-term care.
- Demonstration of financial responsibility.

2.3 Closure Report Requirements

This Closure Report addresses closure of Phase I of the CCSWDC Class I landfill in accordance with 62-701.600(4), F.A.C.

2.3.1 General Information

The CCSWDC site encompasses approximately 6,150 acres located two miles east of I-75 and three miles south of S.R. 72 in central Sarasota County. The Class I landfill is located within a 550 acre special exception area which is located at the approximate center of the site. Ultimately, the Class I landfill will consist of five phases encompassing approximately 295 acres.

Permitting for Phase I of the CCSWDC Class I landfill began in the mid 1990's and the facility began receiving waste in June 1998. Phase I consists of approximately 55 acres of disposal area located within five cells. To ensure uninterrupted operation of the Class I landfill, a permit application for Phase II was initially submitted in February 2007. Phase II construction was completed on October 2009 and it was operational before the usable capacity of Phase I was exhausted. Phase II consists of approximately 54 acres of disposal area located directly west of Phase I.

A legal description of the property on which the Class I landfill is located was provided with the Phase II permit application. The legal description has not changed therefore this information is not being resubmitted.

Only wastes allowed by the operation permit are disposed within the CCSWDC Class I landfill. These include residential and commercial waste, C&D debris, shredded or cut tires, treated biomedical waste, yard trash, water treatment sludge, industrial waste, industrial sludge, agricultural waste, and domestic sludge.

2.3.2 Geotechnical Investigation Report

A geotechnical investigation report for Phase I was conducted as part of the original permit application for the CCSWDC site. Additional geotechnical analyses were performed when a permit modification was submitted to increase the waste side slopes to 3H:1V with a single 20-foot wide bench located approximately half way up the slope, which is the currently permitted configuration of the Phase I slopes. These analyses demonstrated that the foundation conditions beneath Phase I and the Phase I bottom liner were sufficient to support the waste mass at full build out. No additional geotechnical investigations were conducted for the Phase I closure construction permit application, however, final cover stability analyses were performed for the specific final cover design proposed for Phase I.

2.3.3 Water Quality Monitoring Plan

An addendum to the CCSWDC Water Quality Monitoring Plan (WQMP) was submitted with the Phase II Expansion Construction/Operation Permit Application that expanded the previously permitted monitoring system to include the Phase II expansion area. No changes to the amended water quality and leachate monitoring requirements were included for the Phase I closure aside from top of casing extension for two monitoring wells to the south of Phase I. These monitoring wells were extended to accommodate the construction of the south drainage ditch. The south drainage ditch increased capacity of the ditch to handle additional flow from the south slope of Phase I which was covered with TPO.

2.3.4 Land Use

The property surrounding the CCSWDC is zoned as government use, open use, and rural.

2.3.5 Landfill Gas Migration

The Phase I bottom liner system consists of a composite liner with a 60 mil High-Density Polyethylene (HDPE) geomembrane liner overlying 12 inches of compacted soil with a maximum hydraulic conductivity of $1x10^{-8}$ cm/sec. The bottom liner system serves as an effective barrier to prevent the migration of landfill gas into the surrounding soils as demonstrated by the absence of methane gas being observed within the gas probes surrounding Phase I during quarterly monitoring.

Phase I has an active gas collection system. The Phase I Closure Record Drawings, including the active gas collection system, are provided in Appendix B.

Landfill gas probes will be monitored following Phase I closure to ensure that landfill gas migration is not occurring.

2.3.6 Effectiveness of Landfill Design

Phase I of the CCSWDC Class I landfill has effectively met Sarasota County's waste disposal needs since it began receiving waste in June 1998.

Geotechnical investigations conducted in the landfill area during Phase I and Phase II permitting did not indicate any subsurface conditions such as solution features or poor soils that could make the site unsuitable for use as a landfill. During Phase II permitting, however, FDEP became concerned that routine videotaping of the leachate collection pipes within Phase I indicated the camera would repeatedly become submerged as it traversed the length of the pipe. The apparent cause of this submergence is differential settlement of the foundation soils that caused "dips" to develop along the pipe which do not freely drain the leachate. The design slope of the Phase I leachate collection pipes of 0.2 percent was apparently inadequate to compensate for the differential settlement that occurred within the foundation soils. As a result, FDEP has indicated that a vertical expansion over the top of Phase I will not be allowed. FDEP required a side slope liner system consisting of a 60 mil HDPE geomembrane to be constructed on the west slope of Phase I where Phase II abuts the existing landfill.

Stormwater runoff from Phase I that does not come into contact with waste is directed to a perimeter stormwater ditch where it flows to Stormwater Pond No. 1, located northwest of Phase I. Stormwater that comes in contact with waste is considered leachate and is contained for treatment. The clean runoff is detained in the pond to reduce turbidity and to reduce peak flows prior to discharge into Old Cow Pen Slough. The components of the CCSWDC stormwater control system were installed during Phase I construction. During Phase II permitting, jurisdiction over the CCSWDC stormwater control system was transferred from the Southwest Florida Water Management District to FDEP. The FDEP issued Environmental Resource Permit No. 58-0272622-001 on May 2, 2008 for the system. The stormwater control system at the site appears to be functioning as intended based on inspections by HDR and FDEP staff and results of surface water sampling which meet regulatory criteria.

The landfill gas controls employed within Phase I are effective in preventing gas migration as discussed in Section 2.3.5 of this Plan.

Initial cover consisting of a minimum of 6 inches of compacted soil or an approved alternate cover is placed daily over the active face of the landfill in accordance with the approved Operations Plan. A minimum of 1 foot of approved intermediate cover is placed in addition to the initial cover in areas that will not receive another lift of waste or final cover within 180 days. Intermediate covered areas that will not be landfilled or covered with final cover within 6 months are sodded (external slopes) or seeded and mulched (internal and top slopes) to avoid slope erosion. These cover methods have been effective in controlling erosion within Phase I and controlling leachate generation.

Only permitted wastes are disposed within Phase I of the Class I landfill. There is no evidence that the previously mentioned elevated levels of arsenic within the groundwater at the site are a result of the acceptance of any particular type of waste.

2.4 Closure Design Plan

The Closure Record Drawings are provided in Appendix B and the discussions provided within the following subsections.

2.4.1 Closure Phasing

The west and south sides of Phase I will eventually have additional waste placed against them when Phases II and IV are constructed and filled, respectively. Placement of final cover was therefore limited to the top slope, and to the north and east sides of Phase I where no future lateral expansions are planned.

A temporary final cover consisting of a 60 mil TPO geomembrane was installed on the south slope of Phase I. The temporary final cover will remain in place until Phase IV is operational. A side slope liner system consisting of a 60 mil HDPE geomembrane was constructed on the west slope of Phase I as part of Phase II construction. The FDEP required the side slope liner system for the west side of Phase I due to concerns about the functioning of the leachate collection system within Phase I.

2.4.2 Stormwater Control

During Phase II permitting, jurisdiction over the CCSWDC stormwater control system was transferred from the Southwest Florida Water Management District to FDEP. The FDEP issued Environmental Resource Permit (ERP) No. 58-0272622-001 on May 2, 2008 for the system. The ERP is valid for Phases I and II of the CCSWDC Class I landfill. The stormwater management and control system will be operated in accordance with the ERP requirements.

2.4.3 Access Control

The CCSWDC facility will remain in operation after Phase I closure is completed; therefore the current measures for limiting access to the facility will be maintained. Access to the Class I Landfill is controlled at the Knights Trail Road entrance with the use of gates. The entire facility is fenced.

2.4.4 Proposed Final Use

Currently, there are no planned final uses identified for Phase I of the CCSWDC Class I Landfill except for the potential possibility of a landfill gas to energy facility. Any final uses will be permitted through FDEP prior to their implementation.

2.4.5 Gas Management System

See Section 2.3.5 of this Closure and Long Term Care Plan for a description of the existing and proposed landfill gas management system for Phase I of the CCSWDC Class I landfill.

2.5 Closure Operation Plan

This Closure Operation Plan was provided as part of the closure permit application. The Closure of Phase I is completed. The Record Drawings are provided in Appendix C.

2.5.1 Supporting Documents

This Closure Operation Plan was prepared as part of the Central County Solid Waste Disposal Complex Class I Landfill Phase I Closure Construction Permit Application dated April 2010 and prepared by HDR Engineering, Inc.

Other supporting documents to this Closure Operation Plan include the current FDEP Operation Permit No. 130542-007-SO/01 for the CCSWDC Class I landfill, the current FDEP Environmental Resource Permit (ERP) No. 58-0272622-001 and associated documents supporting these permits.

2.5.2 Demonstration of Financial Responsibility

Sarasota County currently demonstrates financial responsibility for the closure and long term care of Phase I of the CCSWDC Class I landfill using a financial test.

2.5.3 Water Quality Monitoring Plan

Discussion of the Water Quality Monitoring Plan required by FAC 62-701.510 for the Phase I closure is provided in Section 2.3.3 of the Closure and Long Term Care Plan.

2.5.4 Gas Management System

Discussion of the gas management system required by FAC 62-701.530 for the Phase I closure is provided in Section 2.3.5 of the Closure and Long Term Care Plan.

2.5.5 Additional Equipment and Personnel Needed for Closure

Closure construction for installation of the landfill gas system and final cover for Phase I was performed by qualified contractors selected through the County's procurement system. Sarasota County also retained the services of consulting engineering companies to perform Construction Quality Assurance (CQA) services and Engineer of Record (EOR) services which included construction oversight and certification.

2.6 Temporary Final Cover

The temporary final cover was constructed on the south slope of Phase I and provides positive drainage of all stormwater runoff and reduces erosion of cover soils, a reduction in leachate generation, odor control, and landfill gas collection efficiency.

In order to facilitate Phase I maintenance operations, the Phase I closure incorporated an access road located on the south slope. An 8-inch stabilized limerock road base material, in accordance with FDOT Specification 230, and a Superpave Asphalt course were installed to provide an all weather driving surface. The access road was placed over additional compacted structural fill on top of the south slope interim final grade. The cross slope on the access road drains inwards to a TPO lined stormwater interceptor swale. The temporary final cover geomembrane was placed on top of the slope of the south access road fill grade but was not placed underneath the access road.

Temporary final cover system design included evaluation of the following components: geomembrane material, anchors, emergency gas venting, maintenance access, and stormwater management.

2.6.3 Landfill Gas

There are 12 gas extraction wells that are located within the temporary final cover area. The proposed extraction wells penetrate the temporary final cover. All temporary final cover penetrations are booted to the pipe and will allow for waste settlement over time. The extraction wells will avoid build up of gas pressure below the geomembrane. Furthermore, emergency gas vents will be located at each geomembrane panel to avoid build up of gas pressure below the geomembrane. These vents are generally closed with a removable end cap which will be opened manually in the event of pressure buildup. If during inspection of the temporary final cover, an area of the geomembrane is observed lifting, bubbling, or trampolining, the emergency gas vents may be opened to relieve the pressure built-up under the geomembrane. The gas vents are operated by opening the cap and are subsequently closed by re-securing the cap in place. The active gas collection system may be connected to these vents if deemed necessary in the future for continuous gas extraction.

2.6.4 Maintenance Access Road

The south access road provides the primary means of access to Phase I and the temporary final cover area. It will be difficult for individuals to walk on top of the exposed geomembrane installed on 3:1 or 2:1 slopes. Precaution shall be taken if walking on top of the slopes greater than 5% at all times. This is extremely important during rain events when the slick surface and runoff can lead to hazardous conditions. The temporary final cover was not installed underneath the south access road. The stabilized rock base material and asphalt surface used for the road construction will minimize infiltration of stormwater into the landfill.

2.6.5 Stormwater Management

Please refer to the Phase I Closure Record Drawings provided in Appendix C for details regarding the stormwater management systems.

2.6.6 Inspection and Material Testing

Detailed routine inspections will be conducted monthly to assess exposed geomembrane quality, geomembrane interface with other landfill areas, and damage. The goal is to inspect the entire geomembrane and surface and seams at least every 3 to 4 months. The temporary final cover geomembrane will be visually monitored for stretching, sagging, or wrinkling (not due to temperature variations) to evaluate the movement of the geomembrane due to creep and/or settlement. Inspections will also be conducted after extreme weather conditions, such as high wind events, heavy rain events, and hail storms. In addition to visual inspections, routine testing for degradation of original material properties may be conducted annually. During construction of the temporary final cover, material samples (coupons) are seamed on top the geomembrane for testing the effects of exposure on the material properties. Coupons will be sent to a qualified laboratory to test material properties, including thickness and tensile strength.

Evaluation of the temporary final cover will be performed annually for the total time the temporary final cover is used. It is important to note that the coupons will not be directly cut from the geomembrane covering the south slope but will be obtained from the coupons seamed

on top of the geomembrane. It should be noted that these tests will be conducted to evaluate the material for Owner's information only since this is a temporary closure. The test methods to be used in the evaluation of the geomembrane are as follows:

- Breaking strength ASTM D4885;
- Elongation at break ASTM D4885
- Material thickness ASTM D5994
- Ozone resistance ASTM D1149

A copy of the annual evaluation results will be submitted to FDEP, however, the report and associated results are not required by the permit.

2.6.7 Repair Procedure

All repairs will be done in accordance with the original material specifications. Surplus liner material will be maintained on site for potential damage repair allowing the site personnel to repair damage as quickly as possible. However, liner contractor contact information will also be kept on file. If geomembrane tears, seam failures, or similar damage is found during inspection, site personnel will immediately place sandbags, tires or similar items to completely cover the damage and prevent propagation of the problem. If appropriate, small sheets of geomembrane will be placed over the damaged area before placing sandbags. This temporary repair will be completed within 48 hours of detection. The County will contact a certified liner contractor to permanently repair the damaged area.

3.0 CLOSURE PROCEDURES

The following section describes the procedures that were followed in accordance with 62-701.600, F.A.C., for closure of Phase I of the CCSWDC Class I Landfill.

3.1 Survey Monuments

Survey monuments were not required for Phase I of the CCSWDC Class I landfill since the final elevation of the landfill was more than 20 feet above the natural land surface.

3.2 Final Survey Report

A final survey report of the constructed Phase I closure was conducted in compliance with 62-701.600(6)(b), F.A.C. The final survey report was prepared by a registered land surveyor and was submitted to the FDEP to verify that the final contours and elevations were in accordance with the plans approved in the closure permit. The contours in the final survey were shown at no greater than 5-foot intervals.

3.3 Closure Construction Certifications

In accordance with 62-701.600(6), F.A.C., a signed, dated, and sealed Certificate of Closure Construction Completion by the engineer of record was submitted to the FDEP upon completion of Phase I closure construction. Deviations from the permitted closure plans were noted in the report. The FDEP approved the closure construction certification report in June 2013.

3.4 Declaration to the public

After final closure operations are inspected and approved for the entire CCSWDC Class I landfill by the FDEP, the Sarasota County Solid Waste Department will file a declaration to the public in the deed records of Sarasota County. The declaration will include a legal description of the property and a site plan specifying the area actually filled with solid waste. The declaration was not be submitted after closure of Phase I since the landfill will remain in operation.

3.5 Official date of closing

The requirements identified in Sections 3.2 and 3.3 will be submitted to the FDEP after closure of each phase. The declaration to the public described in Section 3.4 will be completed when all phases are closed and the CCSWDC ceases waste disposal operations. Upon receipt, the FDEP will notify the Sarasota County Solid Waste Department in writing that the notice of termination of operations and closure of the facility has been received. The official date of the landfill closing will be the date of the FDEP letter.

3.6 Closed Landfill use

No use has been designated for the closed Phase I landfill area. In accordance with 62-701.610(1), F.A.C., Sarasota County will consult with the FDEP before conducting activities at the closed landfill. Sarasota County acknowledges that the FDEP retains regulatory control over any activities that may affect the integrity of the environmental protection measures of the landfill.

3.7 Relocation of Wastes

If at any time after closure the Sarasota County Solid Waste Department intends to relocate waste within the footprint of the landfill, a permit modification application will be submitted to the FDEP for approval.

4.0 LONG-TERM CARE REQUIREMENTS

The Sarasota County Solid Waste Department will be responsible for monitoring and maintaining the Phase I closure area in accordance with the FDEP-approved closure plan for a minimum of 30 years from the date of closing of the entire Class I landfill. The long-term-care period may be extended by FDEP to be consistent with 62-701.620(1), F.A.C.

If the landfill site is sold or leased to another authority, Sarasota County will ensure that the long-term care requirements of the permit are adhered to by contractual agreement or by retention of access rights. Any lease or transfer of property will include specific conditions to delineate the following responsibilities:

- Sarasota County is responsible for closure and shall maintain any required proof of financial responsibility until the person acquiring ownership, possession, or operation of the landfill establishes the required proof of financial responsibility with FDEP.
- Responsibility for the continuance of monitoring, maintenance, and correction of deficiencies or problems.
- Mineral rights attached to the property and the rights to any recoverable materials that may be buried on the property or landfill gases that may be produced. An FDEP permit shall be required if any onsite operations subsequent to closing of a landfill involve disturbing the landfill.

Sarasota County is obligated to retain the right of entry and to make provisions for access to the landfill property and the closed area of the landfill for the long-term-care period for inspection, monitoring, and maintenance of the site. Supervising the closed landfill is the responsibility of a person experienced in the closure requirements of a solid waste management facility.

Closed landfill areas, if disturbed, are a potential hazard to public health, groundwater, and the environment. Therefore, FDEP retains regulatory control over any activities that may affect the integrity of the environmental protection measures, such as the landfill cover, drainage, monitoring system, or stormwater controls. Consultation with the FDEP is required before conducting activities at the closed landfill.

The closure permit will be renewed every 10 years until the groundwater monitoring well analyses have stabilized along with gas production, settlement and leachate production, and the FDEP notifies the applicant in writing that renewal is not required. Sarasota County, in accordance with 62-701.620(3)(a) through (d), F.A.C., will demonstrate the required stabilization criteria.

An inspection checklist that Sarasota County proposes to use monthly is included in Appendix B. The checklist is used to ensure compliance with the long-term-care requirements and provide a log of landfill inspection activities including inspection and maintenance of the stormwater management system, landfill cap, groundwater and gas monitoring systems, gas vents, and other site structures. It is intended that this form will also be used during the interim period after Phase I is closed and before the 30-year long-term care period begins after closure of the entire Class I landfill. The checklist form is completed and signed by the individual conducting the monthly inspection. Items requiring attention are noted on the form and brought to the attention of the Sarasota County landfill manager.

4.1 Maintenance and Repair of Final and Temporary Final Cover System.

The Sarasota County Solid Waste Department will inspect and maintain the Phase I closure area to minimize impacts to the function and/or integrity of the final cover system. The County will provide for site access control, erosion control, grass cover maintenance, and prevention of ponding. Primary focus during the inspection will be the condition of the surface vegetation, landfill cap, gas collection and monitoring system, stormwater system, and monitoring devices. Monitoring of groundwater and landfill gas is addressed in additional detail in the CCSWDC Operations Plan and Water Quality Monitoring Plan.

Table 1 is a schedule for notification if corrective actions are required. Records of discovery will also be kept on the Inspection Checklist (Attachment 1).

Table 1 Schedule for Notification and Corrective Actions

Activity	Initial Notification	Written Notification/Corrective Action Plan	Corrective Action
Sinkhole within 500 ft	Within 24 hours of discovery	Within 7 days of discovery, including description, location, size shown on plan sheet, corrective action plan	Based on proposed schedule
Fire/Explosion	Within 24 hours of discovery	Within 7 days of discovery, including remedial measures and schedule of activities	Based on proposed schedule
Damage to Facilities/Failure of Systems	Within 24 hours of discovery with explanation	Within 7 days of discovery, including details of damage/failure, remedial measures, schedule of repairs	Based on proposed schedule
Damage to Groundwater Monitoring System	Within 24 hours of discovery with explanation	Within 7 days of discovery, including details of damage/failure, remedial measures, schedule of repairs	Based on proposed schedule
Damage to Stormwater System	Within 24 hours of discovery with explanation	Within 7 days of discovery, including details of damage/failure, remedial measures, schedule of repairs	Within 30 days of written notification
Erosion of Final Cover System >12-inches in depth	N/A	Description on Inspection Log	Within 72 hours of discovery
Leachate not accepted by Disposal Facility	Same as Written Notification	Within 3 days of cessation of leachate acceptance, including explanation of contingency measures and schedule of disposal	Within 7 days of cessation of acceptance

4.2 Grass

Grass cover maintenance will include mowing, fertilizing, seeding, mulching, and filling areas of subsidence. Mowing, fertilizing, seeding, mulching, and filling will continue to be performed as needed. The following is a general schedule and description of grass maintenance activities.

4.2.1 Mowing

The height of the grass will also be observed during monthly inspections. If the grass is found to be reaching a height that would be difficult to mow, mowing will be scheduled before the next inspection. In general, the site will be mowed every 6 weeks during the wet season (May to October) and as needed during the dry season (November to April) Caution will be exercised while mowing to keep heavy equipment away from the gas vents and monitoring devices and exposed geomembrane cover.

4.2.2 Fertilizing

The vegetative cover will be fertilized as needed to maintain growth and coverage. The general recommendations for commercial fertilizer are 12-8-2 formulation (nitrogen-potassium-phosphorus), of which 60% of the nitrogen is to be in the urea-formaldehyde form and in conformance with state laws. It should be applied in the early spring (March) and mid-summer (July) on an as-needed basis. The spread rate should be 8 to10 pounds per 1,000 square feet, or as instructed on the package. The local USDA extension office should be called to verify these recommendations.

4.2.3 Seed and Sod

Damaged areas or other areas where grass cover is sparse must be reseeded or sodded. Sod is generally recommended for use in all areas such as on steep slopes and in highly eroded or bare spots. Sod should be staked in place with sod pegs where necessary. Sod pegs shall extend no more than 12 inches into the ground to avoid damage to the final cover geomembrane liner.

Seeding, if done on relatively flat areas, should be performed in the early spring and late fall as needed in the following manner:

<u>Early spring</u>

- Scarified bahia with 20% bermuda seed.
- Minimum percent pure seed - 95
- Minimum percent germination and hard seed - 80
- Bahia seed will not germinate until overnight temperatures stay above 70° Fahrenheit.

<u>Late fall - Italian rye</u>

- Minimum percent pure—95
- Minimum percent germination and hard seed—90
- Seed will not germinate until overnight temperatures stay below 70° Fahrenheit and above 40° Fahrenheit.
- Bahia Sod—16-inch-by-24-inch slabs with 1-1/2-inch root bed

4.2.4 Seed Rates

Grass seed will be applied at the rates recommended by the seed supplier.

4.2.5 Watering

Sarasota County will water newly established grass as required to maintain the health of the grass until it matures; daily watering should never be necessary. If the blades of the grass begin to wilt and loose resiliency when walked on, water needs to be applied. Water shall be from the onsite stormwater ponds or water wells.

4.3 Erosion Control

Avoiding erosion is probably the most cost-effective means of protecting the closure cap. A relatively minor eroded area combined with a severe storm event can cause degradation of the final cover. The best way to avoid erosion is to maintain a healthy stand of grass and keep drainage swales free of silt and sediment. Cleaning the drainage swales will prevent overflow and backflow and reduce the risk of erosion from these causes. Large amounts of silt or sediment removed from the drainage swales may indicate damage to the closure cap. Soil for erosion control and maintenance of the cap system will be obtained from the on-site borrow area.

4.4 Stormwater Structures

All stormwater structures should be clean of all silt or soil deposits. All soil settlement surrounding these items should be brought to the attention of the Solid Waste Operations Manager and then repaired in a manner consistent with the surrounding area. Grass should be maintained, replaced, reseeded, and mowed as indicated in the section on grassing. The drainage swales will be cleaned as required in accordance with the CCSWDC Stormwater Pollution Prevention Plan and Permits.

4.5 Landfill Cover

Post-closure maintenance of the cover system is to include inspecting the system in those landfill areas that have a differential settlement of 5 feet or more in a horizontal distance of 100 feet. The system shall be repaired in those areas as necessary. Any differential settlement at the landfill is to be corrected, as necessary, to allow drainage paths to remain intact. Differential settlement is defined as one area of the closure subsiding or settling faster than the surrounding area. Differential level checks will be performed if evidence of settlement is detected during routine site inspections. Differential level check information will be kept on file and will be made available for FDEP review.

If the final cover requires replacement, repair will follow the original design specifications. Repairs to the final cover will be under the supervision of a professional engineer. Accounts of all repairs to the final cover system and test results will be documented in Daily Observation Reports and maintained by the Sarasota County Solid Waste Department. Repairs will be performed in accordance with industry standard practices. Soil repairs will include backfill placed in loose lifts and compacted with machinery. Soil shall be free of deleterious materials and rocks shall not exceed 3 inches in size. In addition the soils shall be classified as SP, SW, SM, SC, SP-SM, or SP-SC in accordance with ASTM 2487 and the fines content shall be a maximum of 50% passing the #200 sieve.

Machine compaction will typically achieve sufficient density that will not damage the underlying soils. Soil repairs greater than 10,000 square feet and greater 1 foot deep will require soil testing to ensure compaction to 90% of maximum dry density using a Standard Proctor Test. FDEP will be notified of any damage to cover system that requires soil repairs greater than 10,000 square feet and greater than 1 foot deep or liner repairs of any size for the final cover system, and greater than 100 square feet for the TPO temporary final cover.

Borrow soil required for maintenance of the Phase I final cover during the remaining operational life of the CCSWDC Class I landfill and the post closure care period will be obtained from the borrow area located adjacent to the CCSWDC site. In the event that the borrow area is no longer available, the County will make arrangements for material to be obtained from other off site sources. The borrow soil will be used to repair erosion damage, filling areas of subsidence or other depressions, maintaining berms, and general maintenance of the facility.

4.6 Landfill Access and Landfill Signs

The boundary of the landfill property is fenced. Access to the site is to be restricted to prevent unauthorized entry and dumping. As part of the routine check-list procedure, all of the fencing and signage is inspected for damage and repaired, repainted, and replaced if necessary to maintain the integrity of these items.

The site roadways are also inspected as part of the routine checklist procedure. If any of the access roads are severely damaged, corrective actions will be taken to maintain passable and safe roads on the site.

4.7 Management of Monitoring Devices

This section includes descriptions of procedures for maintaining and repairing groundwater and gas monitoring devices.

4.7.1 Groundwater Monitoring Wells

Please refer to the current Water Quality Monitoring Plan for the CCSWDC.

4.7.2 Ambient and Migration Gas Monitoring

Please refer to the current Operations Plan for the CCSWDC.

4.8 Record-Keeping Requirements

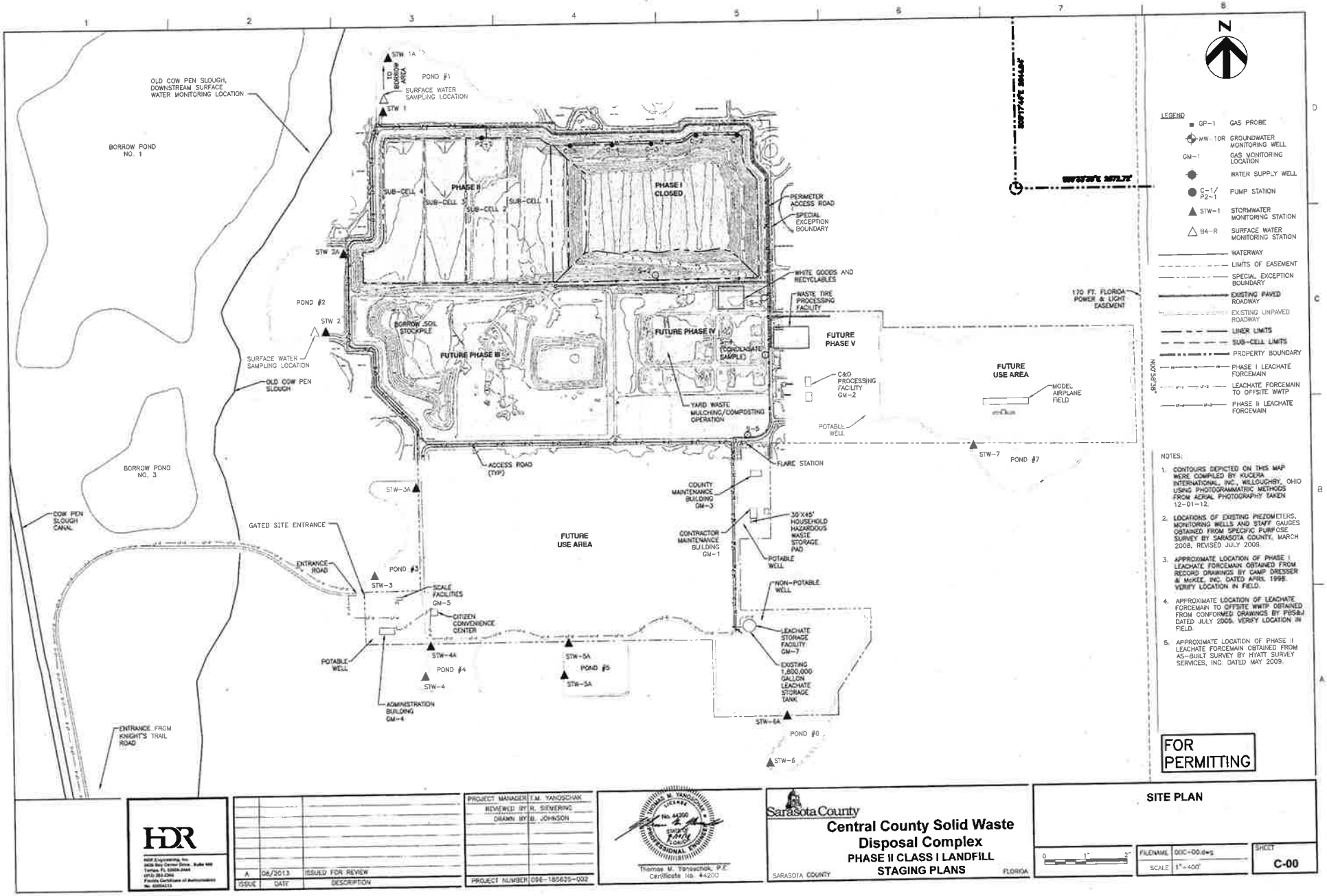
Records of information used to develop or support the permit applications and any supplemental information submitted to the FDEP shall be kept for the design life of the landfill. Records of monitoring information, including calibration and maintenance records, all original chart recordings for continuous monitoring instrumentation, and copies of all reports required by permit, will be kept for at least 10 years. Background water quality records will be kept for the design life of the landfill. Annual estimates of the remaining life and capacity and site life will be maintained. Records more than 5 years old, which are required to be retained, may be archived provided they can be retrieved within 7 days. Records may also be archived electronically by the County.

Inspections of the final cover and stormwater system will be documented and kept on file at the Sarasota County Solid Waste Operations Office. An example inspection form is provided in Appendix C.

Deficiencies observed in the fencing and security, access roads, monitoring devices, stormwater system, or final cover system will be documented by Sarasota County during inspections of the landfill. The extent of damaged areas, the extent of the areas repaired, and a detailed description of the repair work will be recorded.

APPENDIX A

SITE PLAN



HDR

ISSUE	DATE	DESCRIPTION
A	06/2013	ISSUED FOR REVIEW

PROJECT MANAGER	T.M. YANOSCHAK
REVIEWED BY	K. SIEMERING
DRAWN BY	B. JOHNSON
PROJECT NUMBER	096-185625-002

Thomas M. Yanoschak, P.E.
Certificate No. 44200

Sarasota County

Central County Solid Waste Disposal Complex

PHASE II CLASS I LANDFILL STAGING PLANS

SARASOTA COUNTY FLORIDA

SITE PLAN

0 1" 2"

FILENAME 00C-00.dwg

SCALE 1"=400'

SHEET C-00

APPENDIX B

EXAMPLE INSPECTION FORM

SOLID WASTE LANDFILL OPERATIONS
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
PHASE I - MONTHLY INPSECTION FORM

ITEM- INSPECTION	OK	Not OK	Unk
1) Site Access Controlled (Check any that are Not OK) _____ Fences _____ Gates _____ Signs _____ Locks			
2) Access Roads OK?			
3) Any waste within closed/long-term care areas?			
4) Stormwater System OK? (Check any that are Not OK) _____ Letdowns _____ Grout Filled Fabric _____ Ditches and Culverts _____ Slopes _____ Erosion _____ Inlets _____ Piping _____ Berms			
5) Final Cover OK?			
6) Any damage to Soil Cover?			
7) Settled areas being properly filled?			
8) Ponding of water in closed area?			
9) Vegetative Cover OK?			
10) Leachate Breakouts or Seeps?			
11) Exposed Geomembrane Cover (TPO			
(Check any that are Not OK) _____ Gas accumulation under liner controlled _____ Holes or cracks in cover _____ Seams _____ Boots _____ Structures _____ Drainage Features _____ TPO to Fabriform transitions _____ Piping _____ Grates			

SOLID WASTE LANDFILL OPERATIONS
CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
PHASE I - MONTHLY INPSECTION FORM

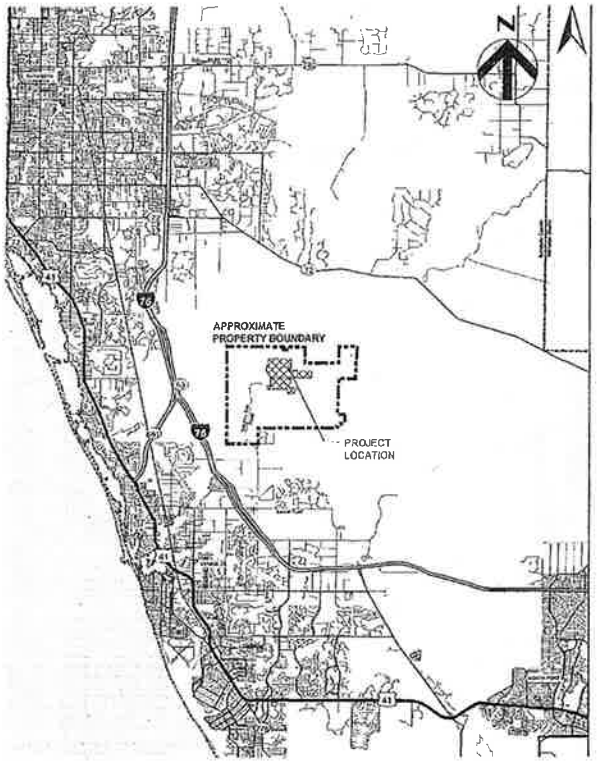
ITEM- INSPECTION	OK	Not OK	Unk
12) Pump Stations, pumps, and control panels OK?			
(Check any that are Not OK)			
_____ Cell 1			
_____ Cell 2			
_____ Cell 3			
_____ Cell 4			
_____ Cell 5			
13) Groundwater Monitoring Wells OK?			
14) Gas Collection and Control System			
(Check any that are Not OK)			
_____ Well heads			
_____ Sumps and Manholes			
_____ Access Points			
_____ Boots			
15) Edge of Liner Markers OK?			
16) Odors?			

NOTES

APPENDIX C

PHASE I CLOSURE
RECORD DRAWINGS

Sarasota County



sunshine state ONE CALL of florida

Always call 811 before you dig.
www.callsunshine.com

RECORD DRAWING

THIS DOCUMENT HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS AND DEPICTS THE CONTRACTOR'S RECORD OF INSTALLATIONS. HDR ENGINEERING, INC. DOES NOT WARRANT THE ACCURACY OF SUCH INFORMATION OR COMPLETENESS OR FOR ANY ERRORS OR OMISSIONS THAT MAY BE INCORPORATED INTO THIS DOCUMENT BASED ON THE INFORMATION

THOMAS M. MACGOWAN, P.E.
FLORIDA P.E. NO. 44206
HDR ENGINEERING, INC.

PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION AND CONTROL SYSTEM

ADDRESS: 4000 KNIGHTS TRAIL ROAD
NOKOMIS, FLORIDA 34275

PROJECT NO. 00096-130530-005

SARASOTA COUNTY, FLORIDA

CIP NO. 95206

BID NO. 111383CS

RECORD DRAWINGS

MARCH 2013

HDR

HDR Engineering, Inc.
2601 Cattlemen Road, Suite 106
Sarasota, FL 34232-6231
(941) 342-2700
CA00006213

INDEX OF DRAWINGS
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM DRAWINGS

CCSWDC BORROW FACILITY PHASE IV AND V DRAWINGS

SHEET G-01

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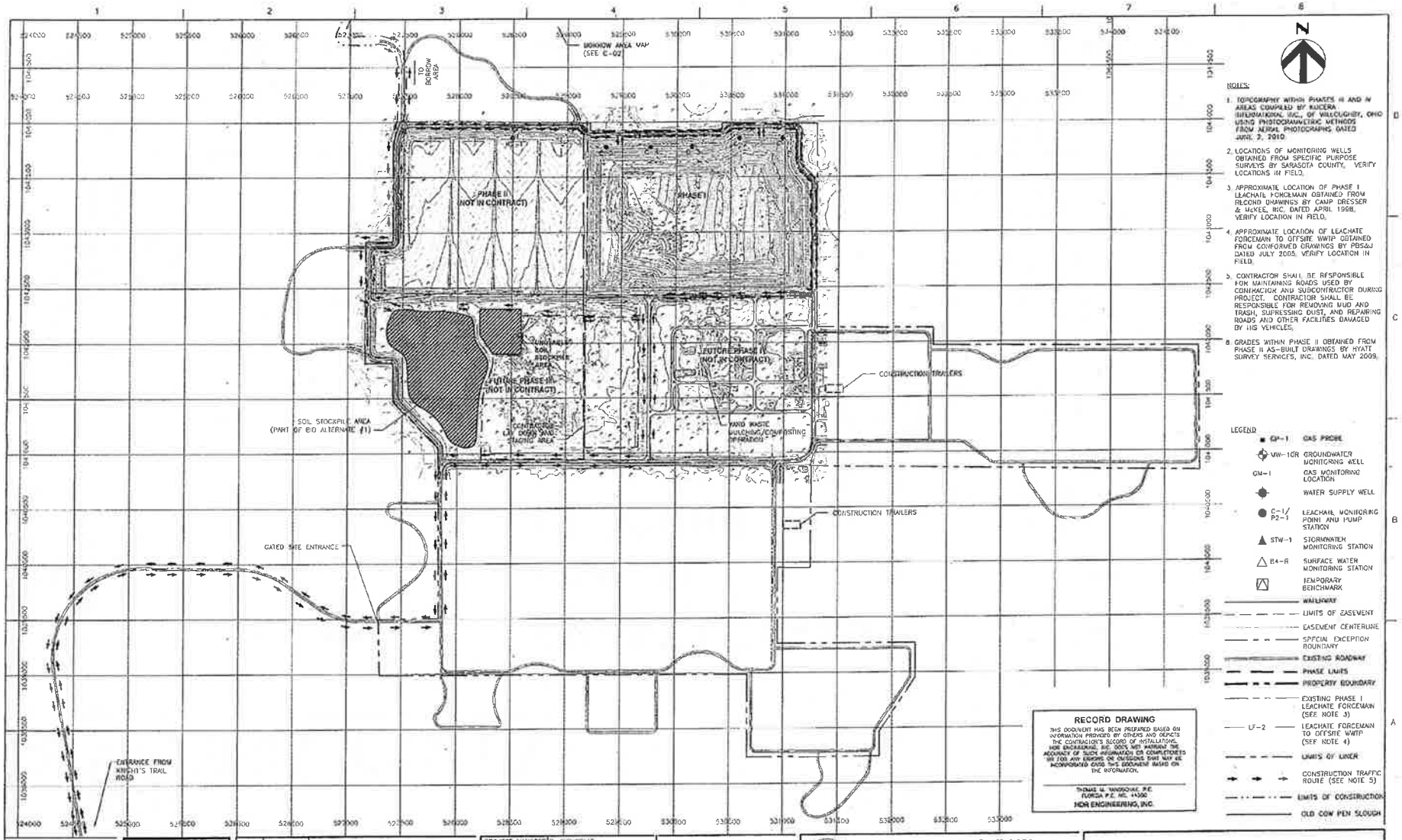


HDR

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEWERING
REVIEWED BY	J. TIMMONS, R. SIEWERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	60095-130530-005

THOMAS M. YANOSCHAK, P.E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

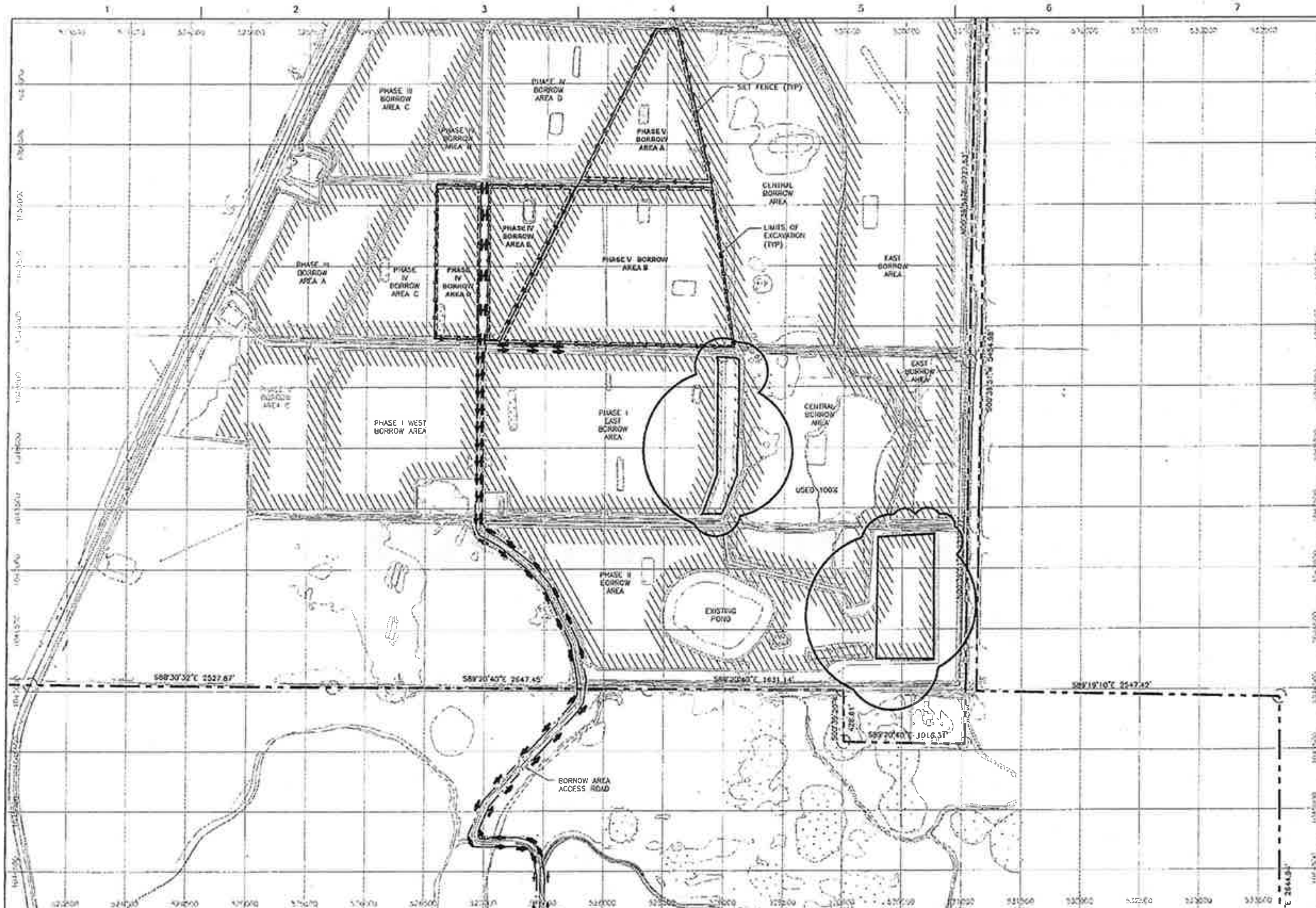
FLORIDA

OVERALL SITE PLAN

0 1" 2"

FILENAME: 00C-01.DWG
SCALE: 1"=400'

SHEET: C-01



NOTES:

1. EXISTING TOPOGRAPHY WITHIN LANDFILL PHASES III AND IV AREAS COMPILED BY KUCERA INTERNATIONAL, INC. OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED JUNE 2, 2010.
2. REFER TO PHASE IV AND V BORROW AREA DESIGN AND TOPOGRAPHIC INFORMATION OBTAINED FROM "CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX BORROW FACILITY-PHASE IV", DATED 5/2006 AND "CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX BORROW FACILITY-PHASE V" DATED 4/2009 BY PBS&J.
3. CONTRACTOR SHALL MAINTAIN AND OPERATE BORROW AREA IN ACCORDANCE WITH ALL PERMIT CONDITIONS AND OWNER REQUIREMENTS.
4. CONTRACTOR SHALL ONLY OPERATE IN AREAS OF BORROW PIT DESIGNATED BY OWNER.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ROADS USED BY CONTRACTOR AND SUBCONTRACTORS DURING PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING MUD AND TRASH, SUPPRESSING DUST, AND REPAIRING ROADS AND OTHER FACILITIES DAMAGED BY HIS VEHICLES.
6. CONTRACTOR SHALL PERFORM PRE-CONSTRUCTION SURVEYS TO CONFIRM QUANTITIES AND DEPTH OF EXCAVATION.
7. CONTRACTOR SHALL REMOVE ALL SILT FENCING AT COMPLETION OF BORROW EXCAVATION ACTIVITIES.
8. CONTRACTOR SHALL RESTORE ACCESS ROADS TO PRE-CONSTRUCTION CONDITION AND GRADES.
9. CONTRACTOR SHALL COORDINATE SOIL BORROW HAUL ROUTES WITH COUNTY STAFF AND OTHER ON-SITE CONTRACTORS.

LEGEND

- PROPERTY BOUNDARY
- SPECIAL EXCEPTION BOUNDARY
- EXISTING ROADWAY
- PHASE LIMITS
- LIMITS OF CONSTRUCTION
- SILT FENCE
- LIMITS OF EXCAVATION
- CONSTRUCTION TRAFFIC ROUTE (SEE NOTE 5)

RECORD DRAWING

THIS DOCUMENT HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS AND DEPICTS THE CONTRACTOR'S RECORD OF INSTALLATIONS. HDR ENGINEERING, INC. DOES NOT WARRANT THE ACCURACY OF SUCH INFORMATION OR COMPLETENESS OR FOR ANY ERRORS OR OMISSIONS THAT MAY BE INCORPORATED ONTO THIS DOCUMENT BASED ON THE INFORMATION.

THOMAS W. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

HDR

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER R. SIEMERING
REVIEWED BY J. TIMMONS, R. SIEMERING
CIVIL DESIGN C. RESTREPO, T. YANOSCHAK
DRAWN BY D. JOHNSON
PROJECT NUMBER 00098-130530-005

THOMAS W. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

Central County Solid Waste Disposal Complex

PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM

CONSTRUCTION DRAWINGS

SARASOTA COUNTY FLORIDA

BORROW AREA MAP

FILENAME C-02 AS-BLT.DWG
SCALE 1"=400'
SHEET C-02

C:\pwworking\tpa\d0429254\C-02 AS-BLT.dwg, Plot, 2/7/2013 10:40:16 AM, invera

RECORD DRAWING

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HDR ENGINEERING, INC.

HDR

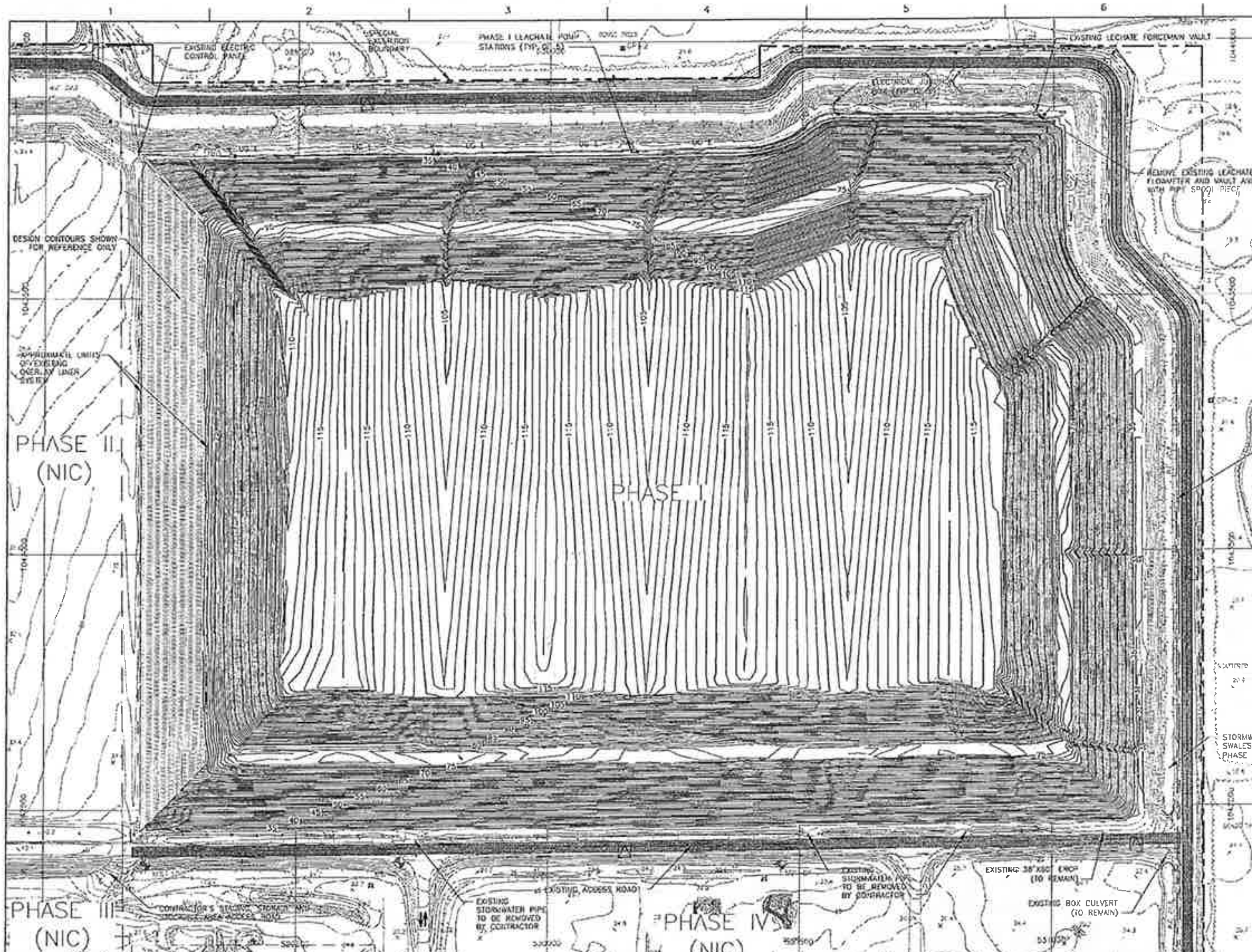
Central County Solid Waste Disposal Complex

PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

BORROW AREA MAP (2 OF 2)

C-03

C:\pwworking\tpa\d0429254\00C-03.dwg, Plot, 2/7/2013 2:52:55 PM, irivera



N

SURVEYOR'S NOTES:

1. THE PURPOSE OF THIS SURVEY IS TO SHOW THE HORIZONTAL AND VERTICAL LOCATIONS OF THE IMPROVEMENTS AS INSTALLED BY THE CONTRACTOR FOR THE PHASE I AREA FOR THE PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM PROJECT FOR SARASOTA COUNTY.
2. ELEVATIONS SHOWN ARE BASED ON BENCHMARK INFORMATION PROVIDED BY HDR ENGINEERING, INC. AND SHOWN IN CONSTRUCTION PLANS FOR THE PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM PROJECT FOR SARASOTA COUNTY, AS TEMPORARY BENCHMARKS (SEE SHEET C-01).
3. ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM 1929.
4. ALL UTILITIES SHOWN, EXCEPT FOR THE UTILITIES INSTALLED BY THE CONTRACTOR FOR THIS PROJECT, WERE NOT LOCATED BY THIS SURVEY AND ARE ON THE DRAWING PREVIOUSLY LOCATED BY ANOTHER SURVEY.
5. AS-BUILT DATA SHOWN IN BOLD.

LEGEND

- GAS PROBE
- GROUNDWATER MONITORING WELL
- GAS MONITORING LOCATION
- WATER SUPPLY WELL
- STORMWATER MONITORING STATION
- SURFACE WATER MONITORING STATION
- LEACHATE PUMP STATION
- TEMPORARY BENCH MARK
- WATERWAY
- LIMITS OF EASEMENT
- EASEMENT CENTERLINE
- SPECIAL EXCEPTION BOUNDARY
- EXISTING ROADWAY
- PHASE BOUNDARY
- CHAIN LINK FENCE
- APPROX. LOCATION OF PHASE I LEACHATE FORCEMAIN (SEE NOTE 3)
- OVERHEAD ELECTRIC LINE
- UNDERGROUND ELECTRIC LINE
- EXISTING LFG WELLS
- EXISTING LFG PIPE
- AS-BUILT INTERMEDIATE COVER 1' CONTOUR
- AS-BUILT INTERMEDIATE COVER 5' CONTOUR

ISSUE	DATE	DESCRIPTION
2	12/21/12	REVISED PER COMMENTS
1	11/9/12	AS-BUILT SURVEY

I hereby certify that the survey shown hereon is true and correct to the best of my knowledge and belief, based on actual measurements taken in the field. This survey meets the Minimum Technical Standards as set forth by the Florida Board of Professional Land Surveyors in Chapter 5J-17, Florida Administrative Code, pursuant to Section 472.027, Florida Statutes.

UNLESS IT BEARS THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER THIS DRAWING [illegible] FOR INFORMATIONAL PURPOSES ONLY AND IS NOT VALID.

LAYOUT SERVICES, INC.
3300 B PARK AVE STE F (321) 269-4419
TITUSVILLE, FL 32780 (321) 264-5746 (FAX)

James Zimmerman
Professional Land Surveyor No. 6545
State of Florida

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

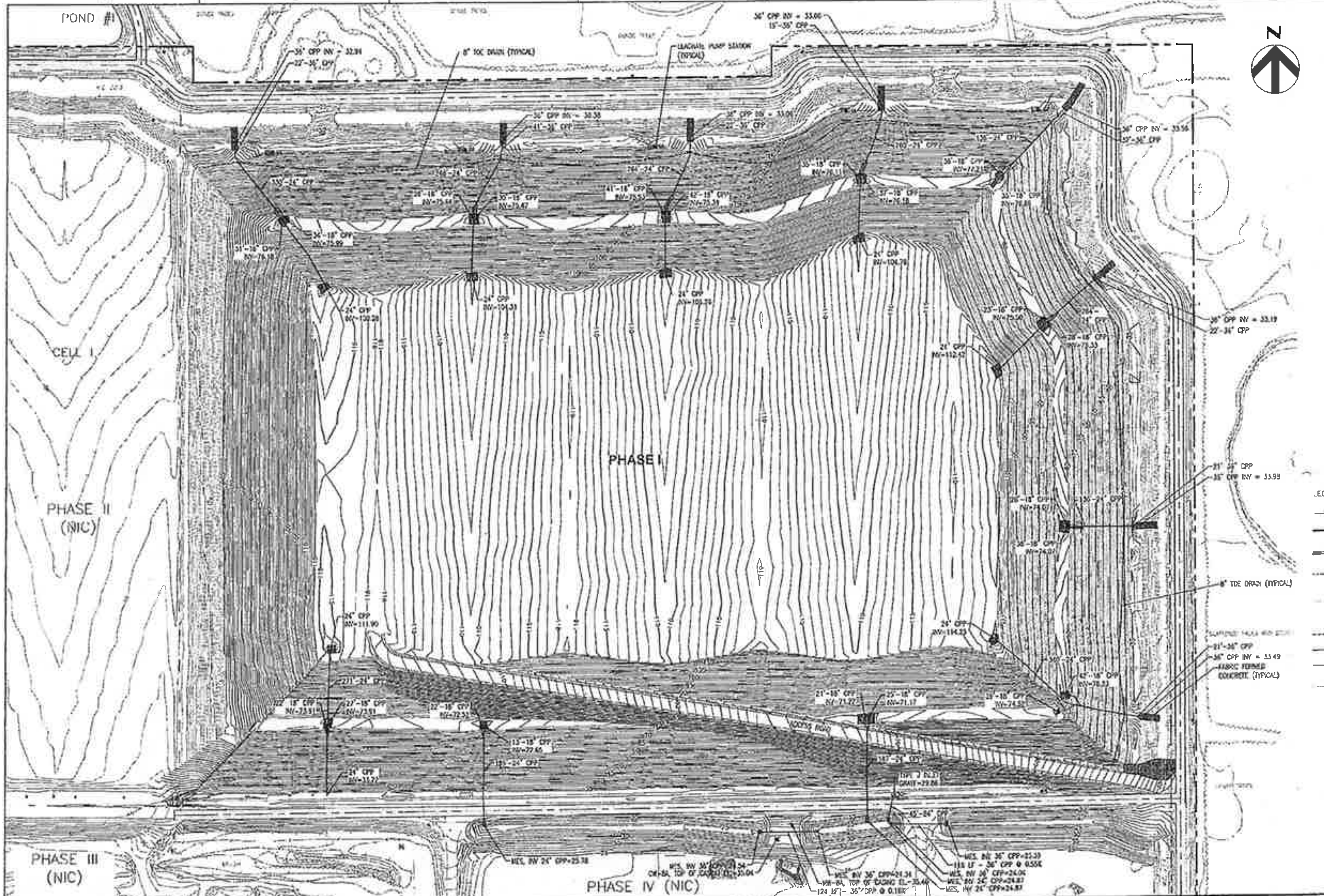
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM AS-BUILT SURVEY

FLORIDA

INTERMEDIATE COVER GRADES AS-BUILT SURVEY

PROJECT NUMBER 0009E-130530-000

FILENAME 00C-04A AS-BUILT.DWG
SCALE 1"=100'
SHEET C-04A



NOTES

1. TOPOGRAPHY WITHIN PHASES ... AREAS COMPILED BY ... INTERNATIONAL, INC. ... USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED ...
2. CONTOURS WITHIN PHASE I ... REPRESENT ... TOP OF ...
3. OPERATIONAL AND FINAL WASTE GRADES SHALL NOT BE EXCEEDED ...
4. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ROADS USED BY CONTRACTOR AND SUBCONTRACTORS DURING PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING MUD AND TRASH, SUPPRESSING DUST AND REPAIRING ROADS AND OTHER FACILITIES DAMAGED BY HIS VEHICLES.
6. LFG WELLS NOT SHOWN FOR CLARITY.

SURVEYOR'S NOTES:

1. THE PURPOSE OF THIS SURVEY IS TO SHOW THE HORIZONTAL AND VERTICAL LOCATIONS OF THE IMPROVEMENTS AS INSTALLED BY THE CONTRACTOR FOR THE PHASE I AREA FOR THE PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM PROJECT FOR SARASOTA COUNTY.
2. ELEVATIONS SHOWN ARE BASED ON BENCHMARK INFORMATION PROVIDED BY HDR ENGINEERING, INC. AND SHOWN IN CONSTRUCTION PLANS FOR THE PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM PROJECT FOR SARASOTA COUNTY, AS TEMPORARY BENCHMARKS (SEE SHEET C-01).
3. ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM 1929.
4. ALL UTILITIES SHOWN, EXCEPT FOR THE UTILITIES INSTALLED BY THE CONTRACTOR FOR THIS PROJECT, WERE NOT LOCATED BY THIS SURVEY AND ARE ON THE DRAWING PREVIOUSLY LOCATED BY ANOTHER SURVEY.
5. AS-BUILT DATA SHOWN IN BOLD.

LEGEND

- EXISTING CONTOUR
- SPECIAL BOUNDARY
- EXISTING ROADWAY
- LIMITS OF CONSTRUCTION
- APPROX. LOCATION OF PHASE I LEACHATE FORCEMAIN (SEE NOTE 4)
- TOE DRAIN
- DOWN DRAIN
- FINAL GRADE 1' CONTOUR
- FINAL GRADE 5' CONTOUR
- PHASE I LEACHATE PUMP STATIONS
- FABRIC FORMED CONCRETE LINING

CPP CORRUGATED PLASTIC PIPE
EL ELEVATION
INV INVERT
LF LINEAR FEET
MES MITERED END SECTION

ISSUE	DATE	DESCRIPTION
3	1/21/13	REVISED PER COMMENTS
2	12/21/12	REVISED PER COMMENTS
1	11/14/12	AS-BUILT SURVEY

I hereby certify that the survey shown hereon is true and correct to the best of my knowledge and belief, based on actual measurements taken in the field. This survey meets the Minimum Technical Standards as set forth by the Florida Board of Professional Land Surveyors in Chapter 5J-17, Florida Administrative Code, pursuant to Section 472.027, Florida Statutes.

UNLESS IT BEARS THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER THIS DRAWING, SKETCH, PLAT OR MAP IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT VALID.

LAYOUT SERVICES, INC.
4340 S PARK AVE STE 7, TITUSVILLE, FL 32780
(321) 749-2779
(321) 864-4740 (FAX)

James Zimmerman
Professional Land Surveyor No. 5546
State of Florida

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM AS-BUILT SURVEY

FLORIDA

PHASE I FINAL BUILDOUT GRADING PLAN AS-BUILT SURVEY

PROJECT NUMBER 00086-130530-005

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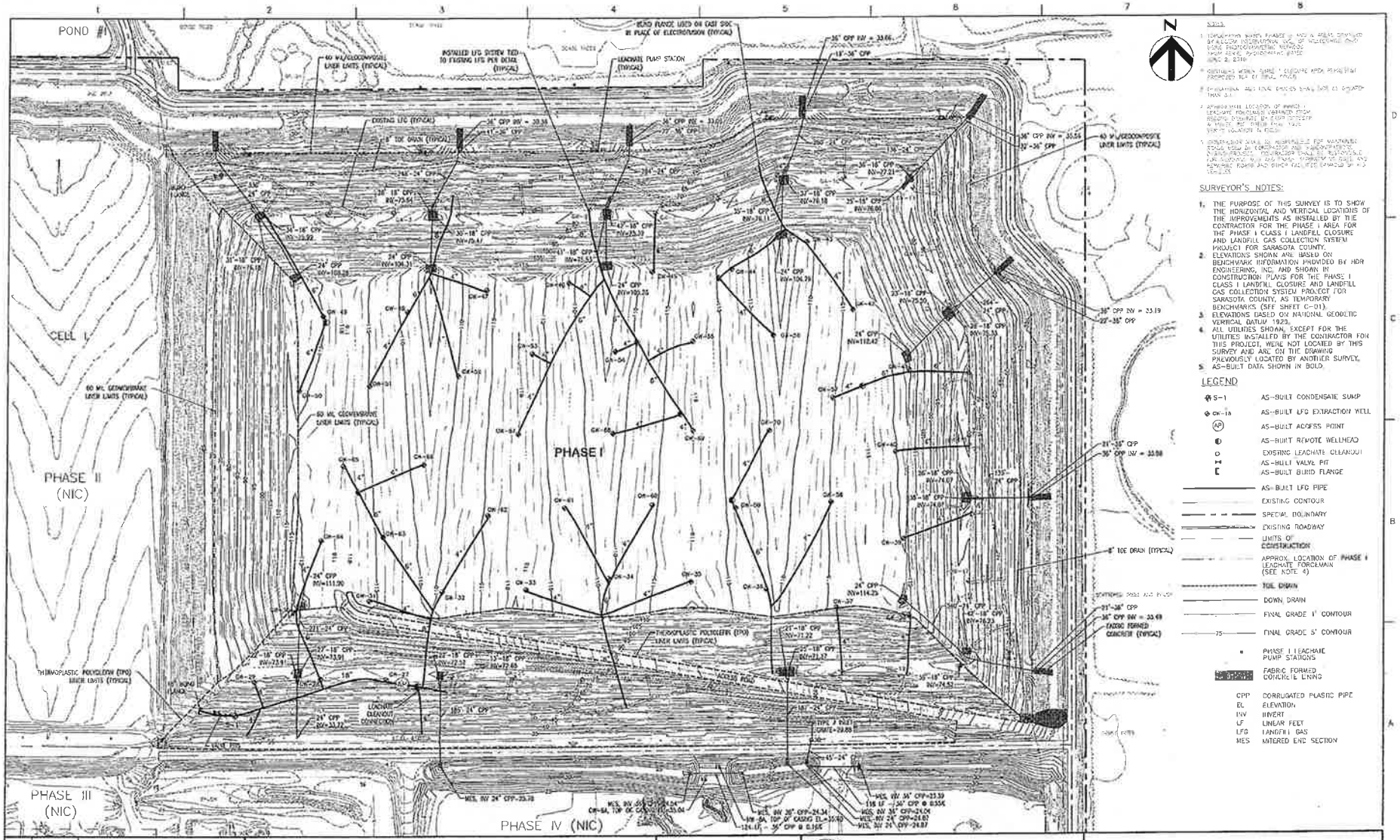
SCALE: 1"=100'
SHEET: C-05A



ISSUE	DATE	DESCRIPTION
3	1/21/13	REVISED PER COMMENTS
2	12/21/12	REVISED PER COMMENTS
1	11/14/12	AS-BUILT SURVEY

LAYOUT SERVICES, INC.
3560 S PARK AVE STE F (321) 269-4774
TITUSVILLE, FL 32780 (321) 504-9749 (FAX)

James Zimmerman
Professional Land Surveyor No. 6545
State of Florida

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM AS-BUILT SURVEY
SARASOTA COUNTY FLORIDA

PHASE I CLOSURE FINAL SITE PLAN AS-BUILT SURVEY

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FILENAME 60C-03B AS-BUILT.DWG
SCALE 1"=100'
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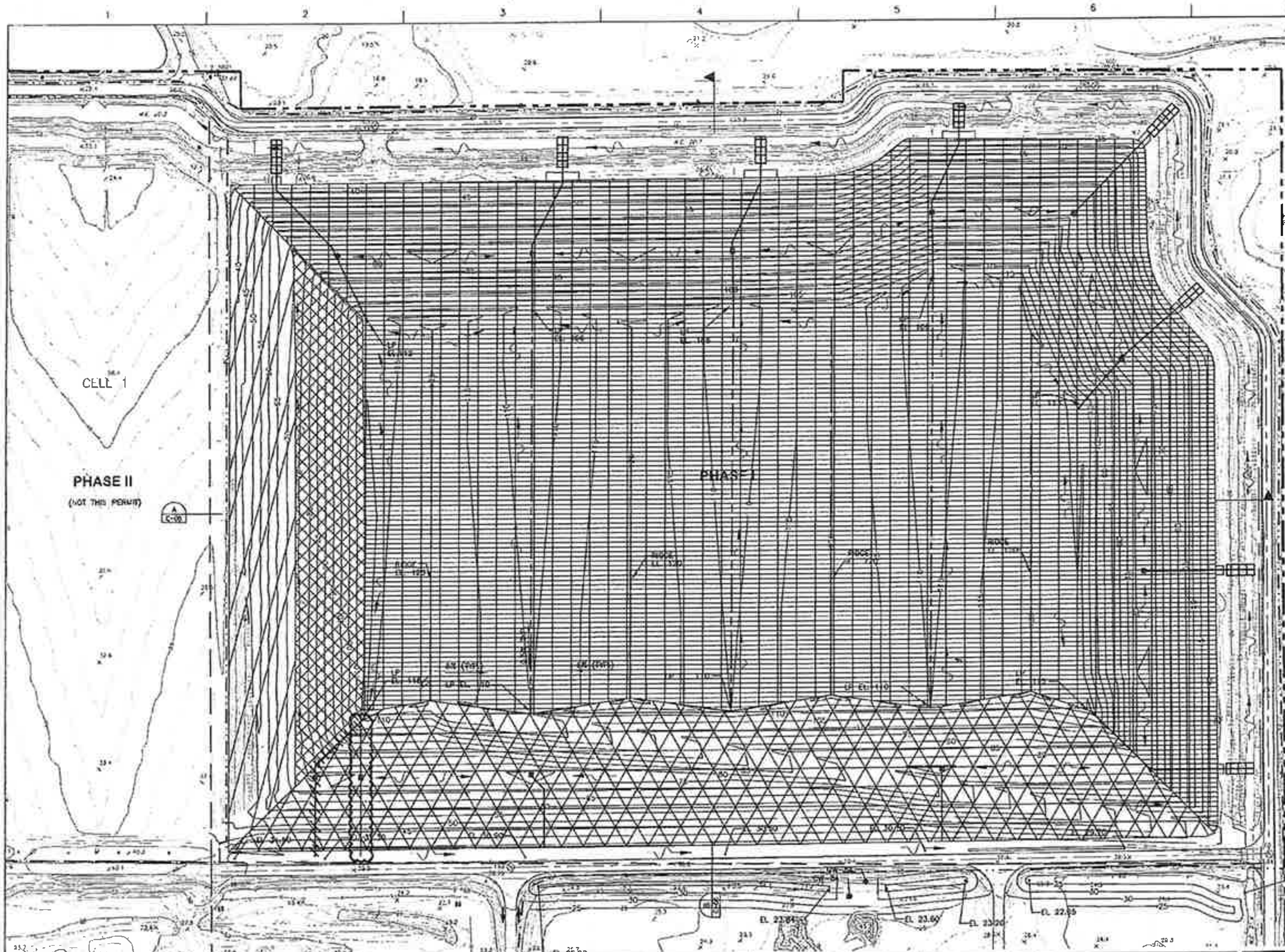

N

NOTES:

1. TOPOGRAPHY WITHIN PHASES III AND IV AREAS COMPILED BY KUCERA INTERNATIONAL INC., OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED JUNE 1, 2009.
2. CONTOURS WITHIN PHASE I CLOSURE AREA REPRESENT PROPOSED TOP OF FINAL COVER.
3. OPERATIONAL AND FINAL GRADES SHALL NOT BE GREATER THAN 3:1.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ROADS USED BY CONTRACTOR AND SUBCONTRACTOR DURING PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING MUD AND TRASH, SUPPRESSING DUST, AND REPAIRING ROADS AND OTHER FACILITIES DAMAGED BY HIS VEHICLES.

LEGEND

- EXISTING CONTOUR
- PROPOSED ELEVATION
- SPECIAL EXCEPTION BOUNDARY
- APPROX. LIMITS OF EXISTING LINER
- STORMWATER FLOW DIRECTION
- FABRIC-FORMED CONCRETE APRON
- LIMITS OF CONSTRUCTION
- PHASE LIMITS
- LP — LOW POINT
- TERRACE/DOWNDRAIN INTERSECTION
- CONSTRUCTION TRAFFIC ROUTE (SEE NOTE 4)
- EXISTING PHASE I/II OVERLAY LINER
- TEMPORARY FINAL COVER
- FINAL CLOSURE COVER
- NEW PHASE I/II OVERLAY LINER

RECORD DRAWING

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THOMAS M. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

HDR

HDR Engineering, Inc.
2601 Cattlemen Rd., Ste. 106
Sarasota, FL 34232
(941) 342-2703

ISSUE	DATE	DESCRIPTION
2	03/2013	RECORD DRAWINGS
1	12/2011	ISSUED FOR IFCA NO. 1
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	J. TIMMONS, R. SIEVERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00095-133530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

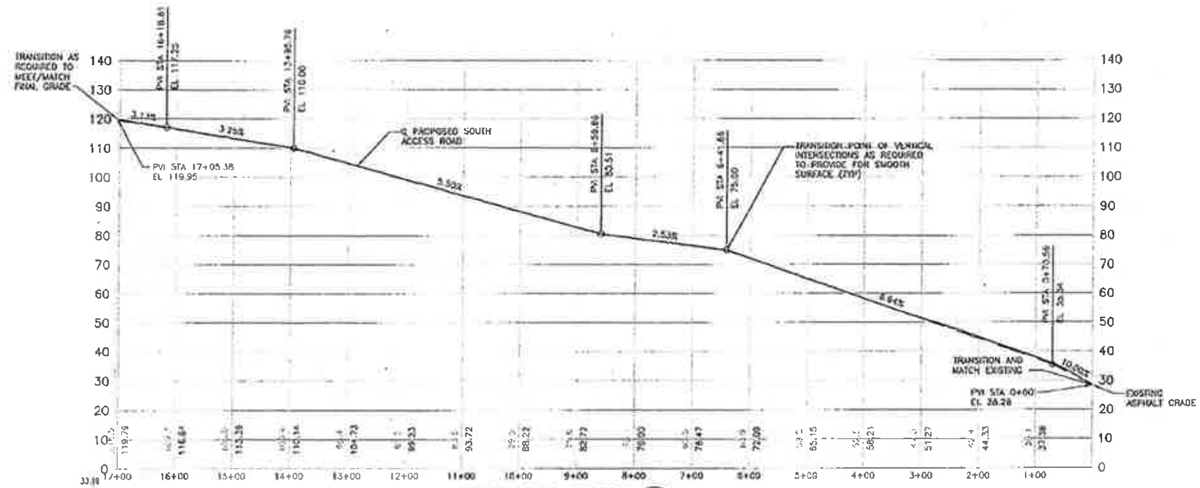
Central County Solid Waste Disposal Complex

PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

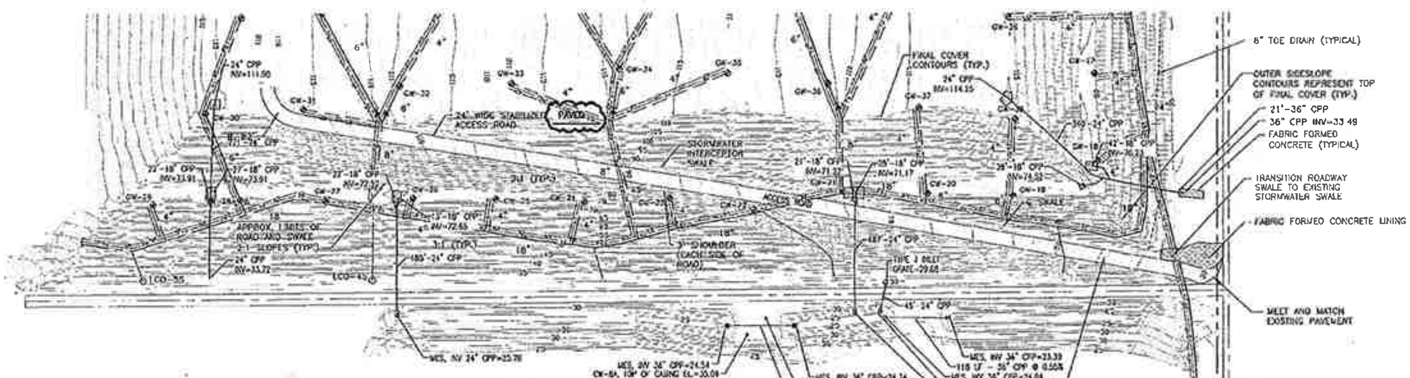
SARASOTA COUNTY FLORIDA

PHASE I CLOSURE COVER KEY SHEET

FILENAME: 00C-06_KEY-REV1.DWG
SCALE: 1"=100'
SHEET: C-06



ACCESS ROAD PROFILE
1" = 100' HORIZ. 1" = 20' VERT.
1 / C-07



ACCESS ROAD PLAN
SCALE 1" = 100' HORIZ.
2 / C-05

GRAPHIC SCALE
0 50 100 200
SCALE IN FEET
1" = 100'
AND AS SHOWN

NOTE
1. LANDFILL GAS COLLECTION SYSTEM AND STORMWATER FEATURES SHOWN TO PROVIDE CLARITY FOR CONSTRUCTION OF ROADWAY.

RECORD DRAWING

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HDR ENGINEERING, INC.

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PROJECT MANAGER	R. SIEVERING
REVIEWED BY	J. TIMMONS, R. SIEVERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00098-130530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

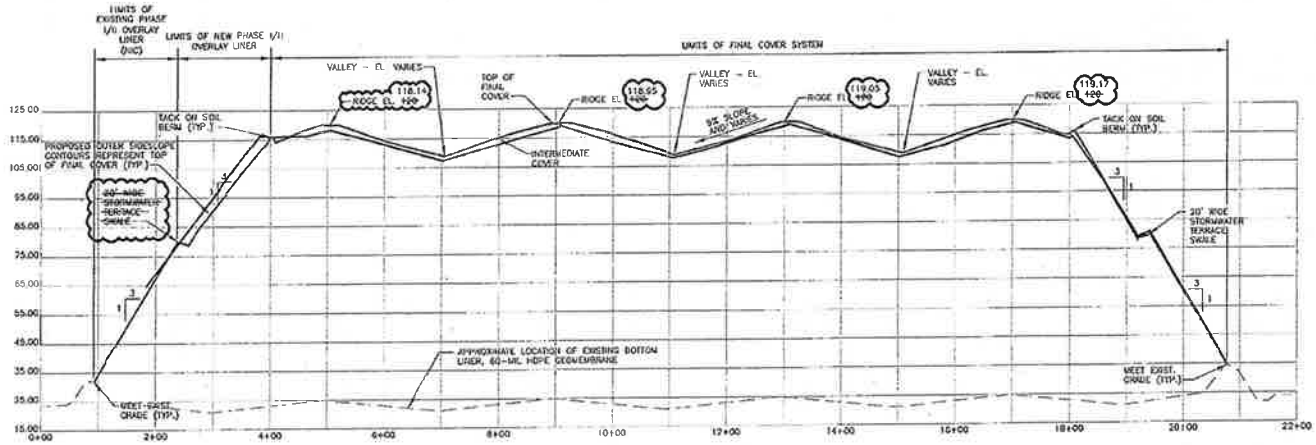
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

SARASOTA COUNTY FLORIDA

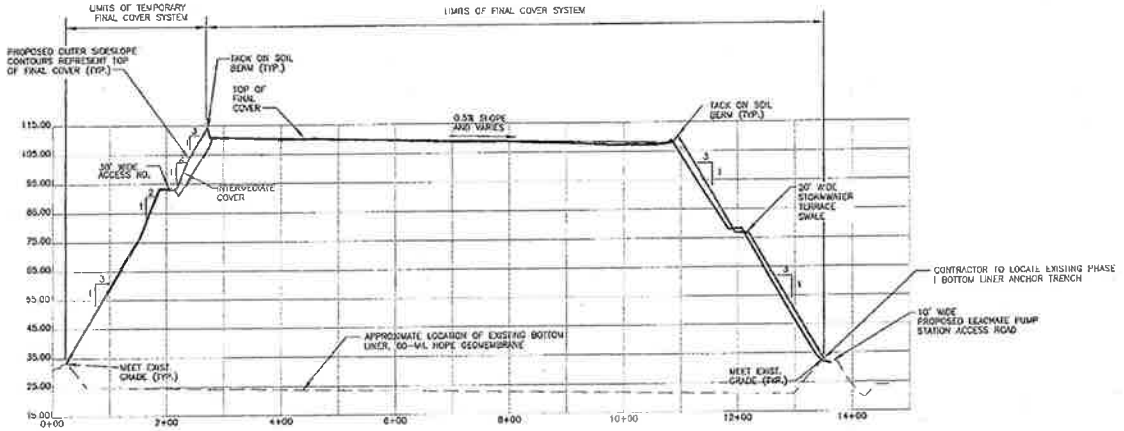
PLAN AND PROFILE PHASE I ACCESS ROAD

FILENAME: C-7 AS-BLT.DWG
SCALE: AS SHOWN
SHEET: C-07

C:\pwworking\pa\d0429254\C-7 AS-BLT.dwg, Plot, 2/7/2013 11:33:05 AM, irivera



SECTION A
1" = 100' HORIZ. 1" = 10' VERT. (A / C-05)



SECTION B
1" = 100' HORIZ. 1" = 10' VERT. (B / C-05)

NOTES

1. FILLING GRADES AND ELEVATIONS ARE APPROXIMATE, SEE PERMITTED FILLING PLAN PREPARE BY HDR ENGINEERING, INC DATED JANUARY 2008, FOR GRADES AND ELEVATIONS.
2. OPERATIONAL AND FINAL WASTE GRADES SHALL NOT BE GREATER THAN 3:1.
3. MAINTAIN OPERATION BERMS AT ALL ACTIVE WORKING FACES TO CONTAIN ALL STORMWATER COMMINGLED WITH WASTE.
4. MAINTAIN POSITIVE DRAINAGE AT ALL TIMES.

RECORD DRAWING

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THOMAS M. YANOSCHAK, P.E.
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CA 00004119

ISSUE	DATE	DESCRIPTION
2	03/2013	RECORD DRAWINGS
1	12/2011	ISSUED FOR BCA NO. 1
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEMERING
REVIEWED BY	J. TIMMONS, R. SIEMERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHAK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00096-130530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

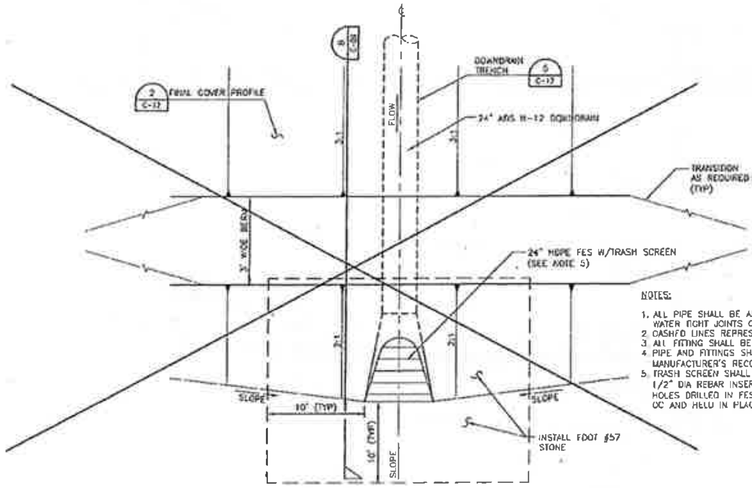
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL
CLOSURE AND LANDFILL GAS COLLECTION SYSTEM
CONSTRUCTION DRAWINGS
FLORIDA

FULL BUILDOUT SECTIONS

0 1" 2"

FILENAME	C-8 AS-BLT.DWG
SCALE	AS SHOWN
SHEET	C-08

C:\pw\working\tpa\d0422254\C-8 AS-BLT.dwg, FULL BUILDOUT SECTIONS, 2/7/2013 11:37:02 AM, invers



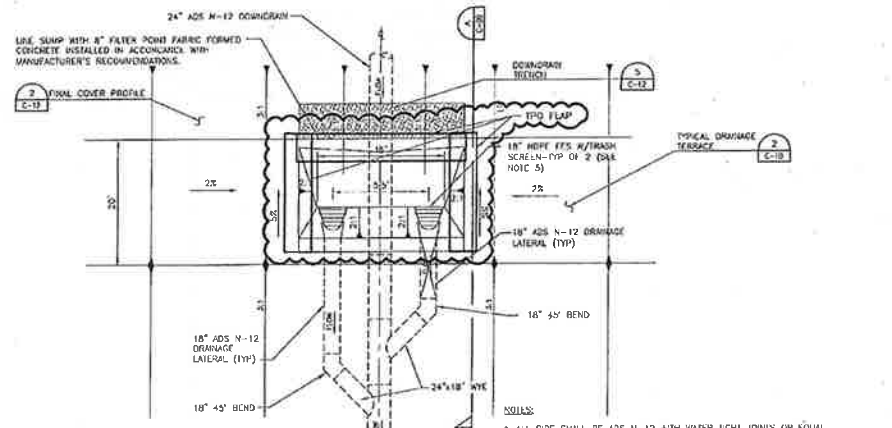
NOTES:

1. ALL PIPE SHALL BE ADS N-12 WITH WATER TIGHT JOINTS OR EQUAL.
2. DASHED LINES REPRESENT BURIED PIPE.
3. ALL FITTING SHALL BE PRE-FABRICATED.
4. PIPE AND FITTINGS SHALL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.
5. TRASH SCREEN SHALL BE CONSTRUCTED FROM 1/2" DIA REBAR INSERTED THROUGH HOLES DRILLED IN FES. BARS SHALL BE 6" OC AND HELD IN PLACE WITH LOCKNUTS.

PLAN VIEW

DOWNDRAIN AT TOP OF LANDFILL

NOT TO SCALE



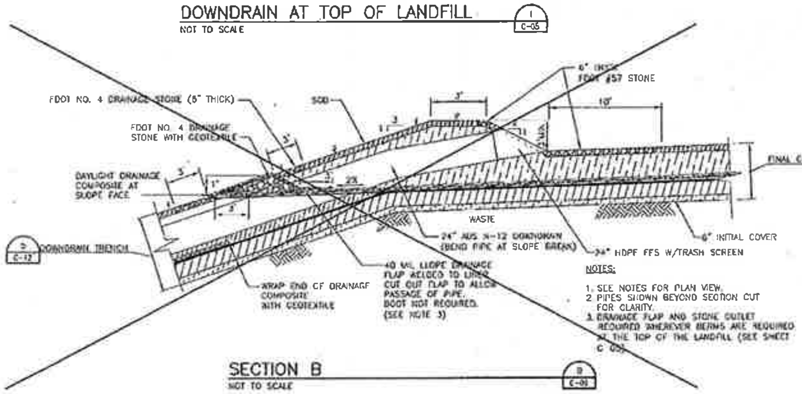
NOTES:

1. ALL PIPE SHALL BE ADS N-12 WITH WATER TIGHT JOINTS OR EQUAL.
2. DASHED LINES REPRESENT BURIED PIPE.
3. ALL FITTING SHALL BE PRE FABRICATED.
4. PIPE AND FITTINGS SHALL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.
5. TRASH SCREEN SHALL BE CONSTRUCTED FROM 1/2" DIA REBAR INSERTED THROUGH HOLES DRILLED IN FES. BARS SHALL BE 6" OC AND HELD IN PLACE WITH LOCKNUTS.
6. SEE DETAIL 1, SHEET C-18 FOR TYPICAL TEMPORARY FINAL COVER INSTALLATION FOR ...
7. TPO FLAPS ANCHORED TO FABRIC FORMED CONCRETE.

PLAN VIEW

TERRACE / DOWNDRAIN INTERSECTION (NORTH AND EAST SLOPES)

NOT TO SCALE



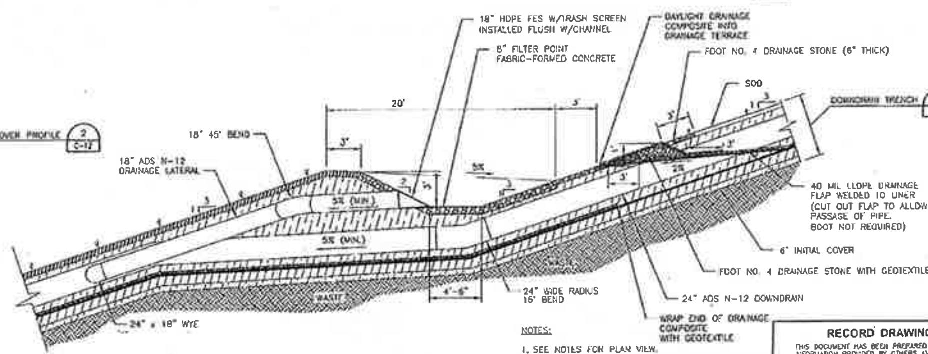
NOTES:

1. SEE NOTES FOR PLAN VIEW.
2. PIPES SHOWN BEYOND SECTION CUT FOR CLARITY.
3. DRAINAGE FLAP AND STONE OUTLET REQUIRED WHEREVER BERMS ARE REQUIRED AT THE TOP OF THE LANDFILL (SEE SHEET C-05).

SECTION B

NOT TO SCALE

SEE SHEET C-09A FOR REVISIONS



NOTES:

1. SEE NOTES FOR PLAN VIEW.
2. PIPES SHOWN BEYOND SECTION CUT FOR CLARITY.
3. EXCAVATE WASTE AS NEEDED TO ALLOW PLACEMENT OF 24" DOWNDRAIN.

SECTION A

NOT TO SCALE

RECORD DRAWING

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THOMAS M. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

HDR

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEWERING
REVIEWED BY	J. TAMMONS, R. SIEWERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00066-130530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

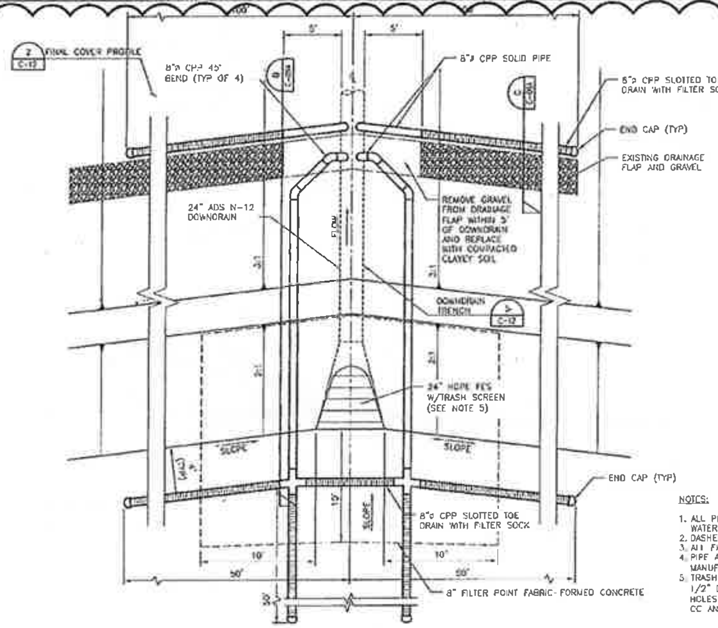
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

FLORIDA

PHASE I CLOSURE DETAILS

FILENAME C-9 AS-BLT.DWG
SCALE AS SHOWN
SHEET C-09

C:\pwworking\tpa\d0429254\C-9 AS-BLT.dwg, Plot, 2/7/2013 11:38:41 AM, linvera

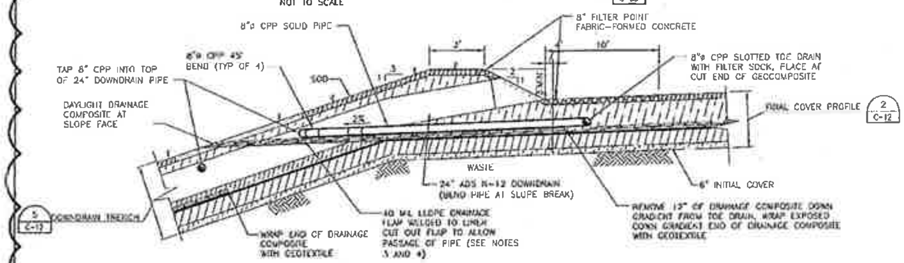


DOWNDRAIN AT TOP OF LANDFILL (1/C-05)

NOT TO SCALE

NOTES:

1. ALL PIPE SHALL BE ADS N-12 WITH WATER TIGHT JOINTS OR EQUAL.
2. DASHED LINES REPRESENT BURIED PIPE.
3. ALL FITTING SHALL BE PRE-FABRICATED.
4. PIPE AND FITTINGS SHALL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.
5. TRASH SCREEN SHALL BE CONSTRUCTED FROM 1/2" DIA REBAR INSERTED THROUGH HOLES DRILLED IN FES. BARS SHALL BE 6" CC AND HELD IN PLACE WITH LOCKNUTS.

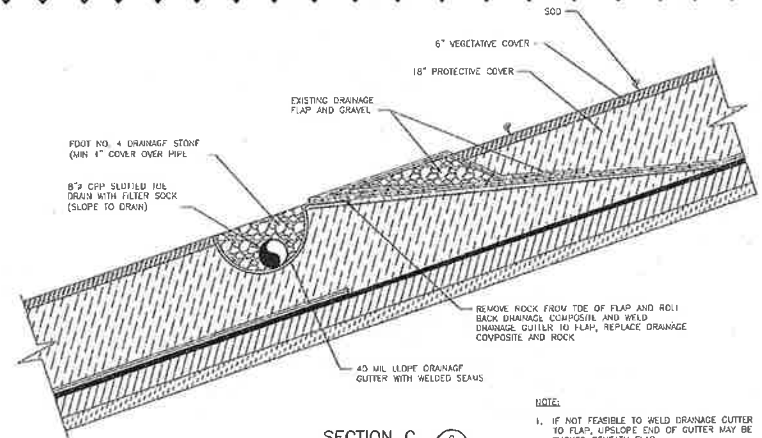


SECTION B (B/C-09A)

NOT TO SCALE

NOTES:

1. SEE NOTES FOR PLAN VIEW.
2. PIPES SHOWN BEYOND SECTION CUT FOR CLARITY.
3. DRAINAGE FLAP AND STONE OUTLET REQUIRED WHEREVER BERMS ARE REQUIRED AT THE TOP OF THE LANDFILL (SEE SHEET C-05).
4. FABRICATE 40 MIL LLDPE BOOT AROUND 24" DOWNDRAIN PIPE, CLAMP BOOT TO PIPE AND SEAL WITH SILICONE CAULK.



SECTION C (C/C-09A)

NOT TO SCALE

NOTE:

1. IF NOT FEASIBLE TO WELD DRAINAGE GUTTER TO FLAP, UPSLOPE END OF GUTTER MAY BE TUCKED BENEATH FLAP.

RECORD DRAWING

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THOMAS M. YANOSCHAK, P.E.
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HDR ENGINEERING, INC.

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1	03/2013	RECORD DRAWINGS
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PROJECT MANAGER	R. SIEMERING
REVIEWED BY	J. EMMONS, R. SIEMERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00096-120530-005

HDR

THOMAS M. YANOSCHAK, P.E.
CERTIFICATE NO. 44200

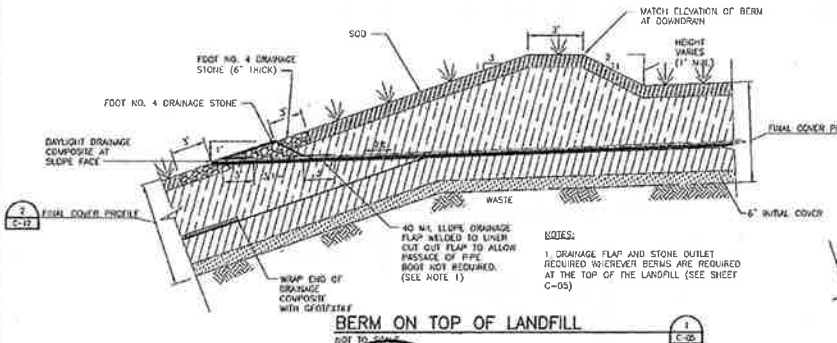
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

SARASOTA COUNTY FLORIDA

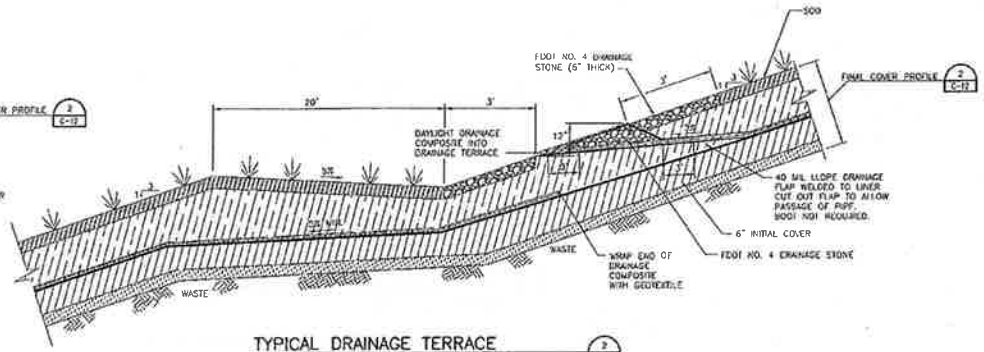
PHASE I CLOSURE DETAILS
DOWNDRAIN IMPROVEMENTS

FILENAME C-9A AS-BLT.DWG
SCALE AS SHOWN
SHEET C-09A

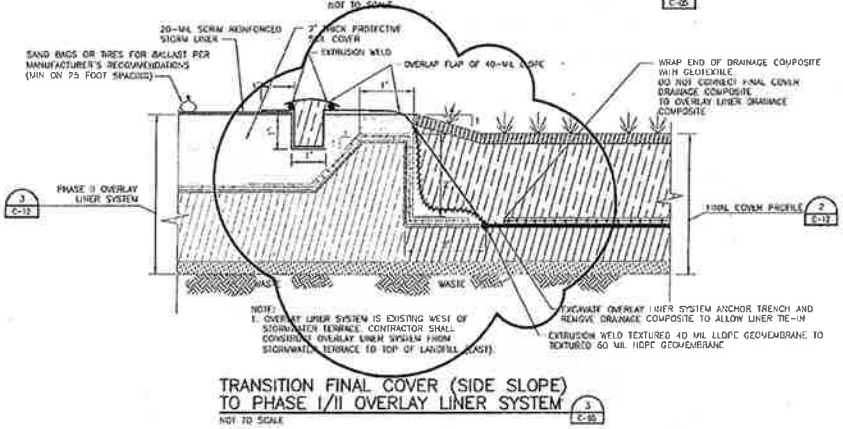
C:\pwworking\tpa\d0429254\C-9A AS-BLT.dwg, 22x34 Plan, 2/7/2013 11:41:57 AM, rivera



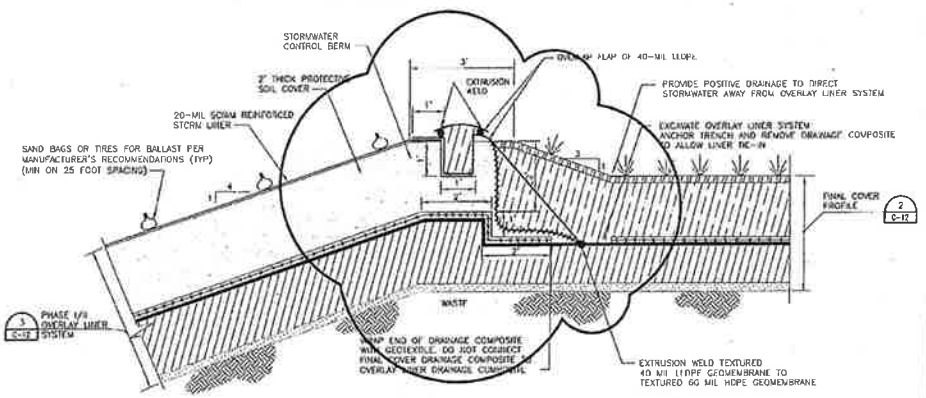
BERM ON TOP OF LANDFILL
NOT TO SCALE



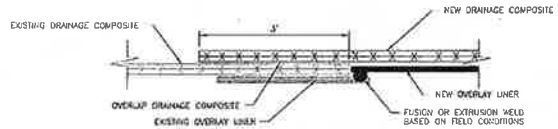
TYPICAL DRAINAGE TERRACE
NOT TO SCALE



TRANSITION FINAL COVER (SIDE SLOPE) TO PHASE I/II OVERLAY LINER SYSTEM
NOT TO SCALE



TRANSITION FINAL COVER (TOP SLOPE) TO PHASE I/II OVERLAY LINER SYSTEM
NOT TO SCALE



EXISTING OVERLAY LINER TO NEW OVERLAY LINER TIE-IN
NOT TO SCALE

RECORD DRAWING

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HDR Engineering, Inc.
2415 Cattlemen Rd., Ste. 108
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(813) 343-8750
CA0000178

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1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	J. TIMMONS, R. SIEVERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHAK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00098-120530-005

THOMAS M. YANOSCHAK, P.E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

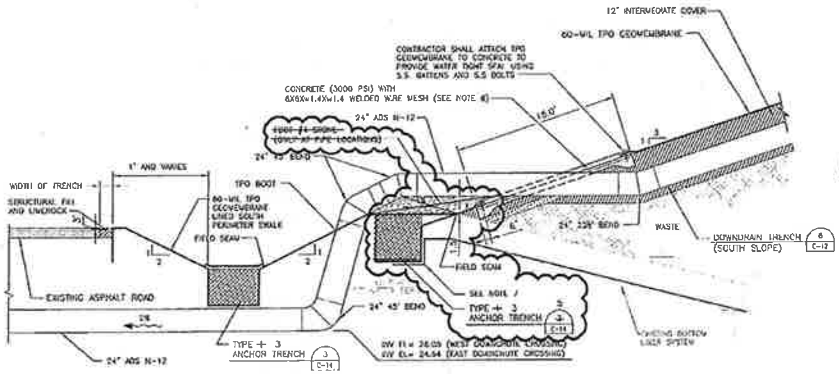
FLORIDA

PHASE I CLOSURE DETAILS

0 1" 2"

FILENAME	C-10 AS-BLT.DWG
SCALE	AS SHOWN
SHEET	C-10

C:\pw\working\tpa\d0429254\C-10 AS-BLT.dwg, Plot, 2/7/2013 10:44:39 AM, rivera



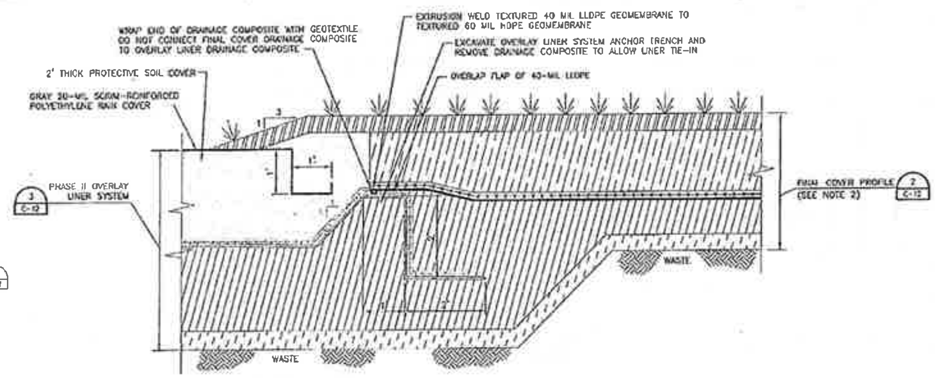
STORMWATER DOWNDRAIN DISCHARGE AT ROAD CROSSING

1 / C-05 / C-10A

NOT TO SCALE

NOTES:

1. ALL PIPE SHALL BE ADS N-12 WITH WATER TIGHT JOINTS OR EQUAL.
2. ALL PIPE FITTINGS SHALL BE PREFABRICATED AND SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. CAREFULLY EXPOSE EXISTING BOTTOM LINER AND PLACE TPO GEOMEMBRANE ON TOP.
4. DO NOT WELD TPO GEOMEMBRANE TO EXISTING BOTTOM LINER.
5. ANNULAR SPACE BETWEEN CONCRETE AND PIPE SHALL BE FILLED WITH WEATHER RESISTANT SEALANT OR APPROVED EQUAL.
6. CONCRETE PAD SHALL BE LENGTH SHOWN AND WIDTH BASED ON FDOT INDEX 273 FOR MITERED END SECTION FOR 24" HPL.
7. CONTRACTOR TO LOCATE EXISTING PHASE I BOTTOM LINER ANCHOR TRENCH.



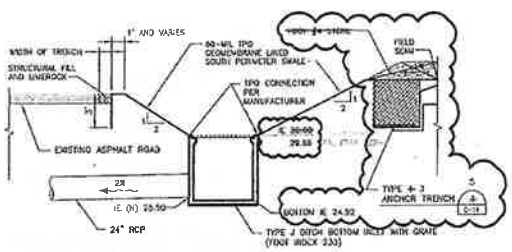
NOTE:

1. OVERLAY LINER SYSTEM IS EXISTING WEST OF STORMWATER TERRACE. CONTRACTOR SHALL CONSTRUCT OVERLAY LINER SYSTEM FROM STORMWATER TERRACE TO TOP OF LANDFILL (EAST).
2. THICKNESS OF INTERMEDIATE COVER VARIES. MINIMUM 1 FOOT.

TRANSITION FINAL COVER (SIDE SLOPE) TO PHASE I/II OVERLAY LINER SYSTEM

3 / C-05

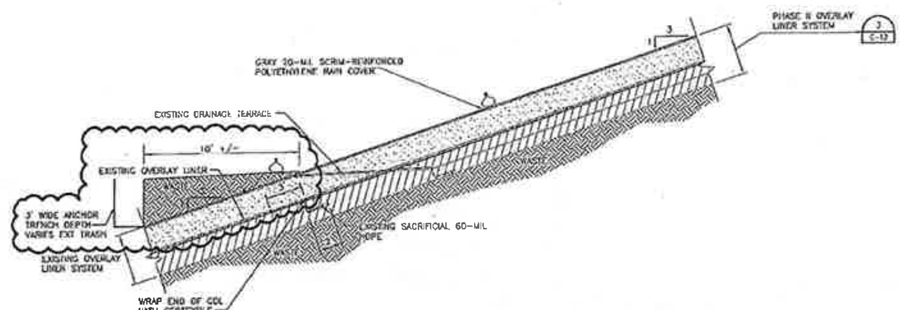
NOT TO SCALE



TPO CONNECTION TO DITCH BOTTOM INLET

4 / C-05

NOT TO SCALE



TRANSITION EXISTING OVERLAY LINER TO PROPOSED OVERLAY LINER

2 / C-05

NOT TO SCALE

RECORD DRAWING

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FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

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PROJECT MANAGER	R. SIEMERING
REVIEWED BY	J. TIMMONS, R. SIEMERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00006-136530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

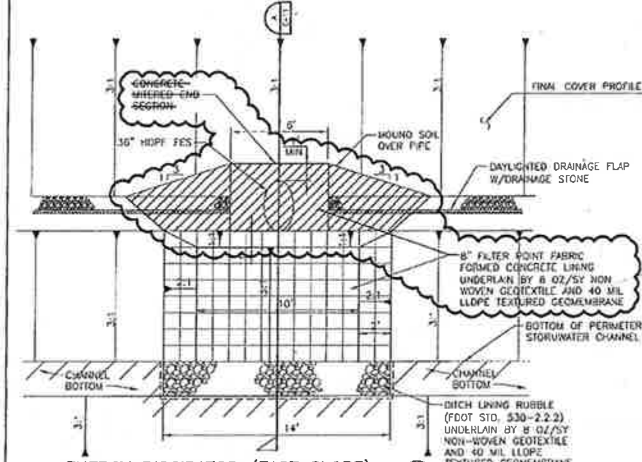
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM
CONSTRUCTION DRAWINGS

SARASOTA COUNTY — FLORIDA

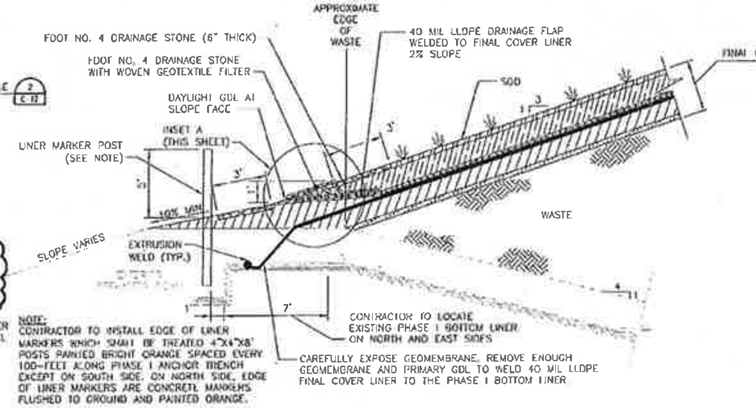
PHASE I CLOSURE DETAILS

FILENAME: C-10A AS-BLT.DWG
SCALE: AS SHOWN
SHEET: C-10A

C:\pwworking\tpa\d0429254\C-10A AS-BLT.dwg, Plot, 2/7/2013 10:46:07 AM, irivera

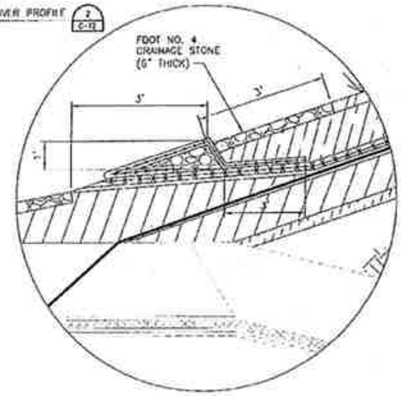


ENERGY DISSIPATOR (EAST SLOPE) 1 C-05
NOT TO SCALE

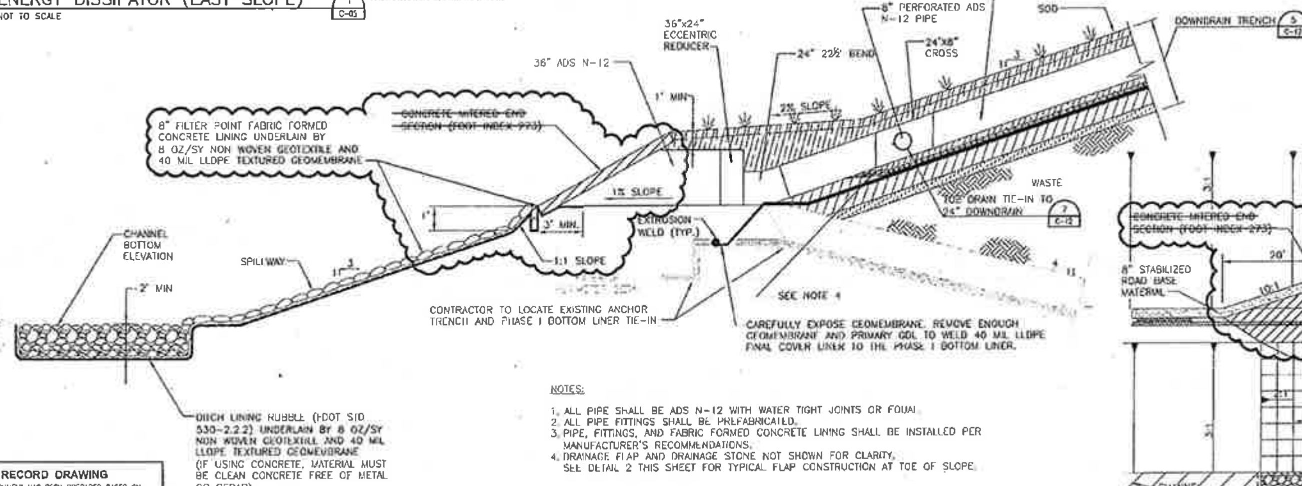


NOTE:
CONTRACTOR TO INSTALL EDGE OF LINER MARKERS WHICH SHALL BE TREATED 4"X4"X8' POSTS PAINTED BRIGHT ORANGE SPACED EVERY 100-FEET ALONG PHASE I ANCHOR TRENCH EXCEPT ON SOUTH SIDE. ON NORTH SIDE, EDGE OF LINER MARKERS ARE CONCRETE MARKERS FLUSHED TO GROUND AND PAINTED ORANGE.

FINAL COVER TIE-IN 2 C-03
NOT TO SCALE



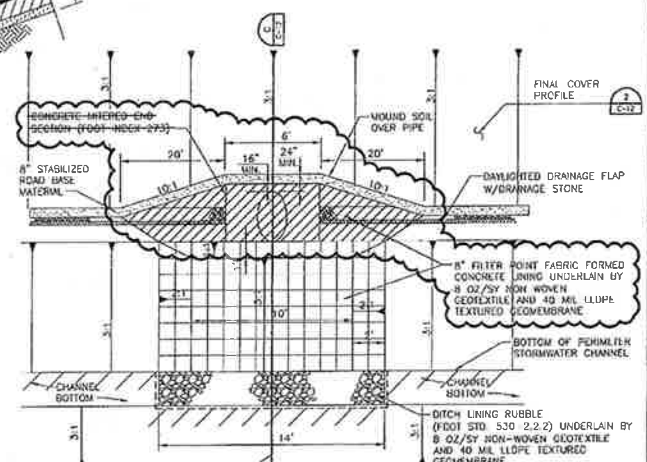
INSET A
SCALE: NOT TO SCALE



NOTES:

1. ALL PIPE SHALL BE ADS N-12 WITH WATER TIGHT JOINTS OR EQUAL.
2. ALL PIPE FITTINGS SHALL BE PREFABRICATED.
3. PIPE, FITTINGS, AND FABRIC FORMED CONCRETE LINING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
4. DRAINAGE FLAP AND DRAINAGE STONE NOT SHOWN FOR CLARITY. SEE DETAIL 2 THIS SHEET FOR TYPICAL FLAP CONSTRUCTION AT TOE OF SLOPE.

SECTION A A C-11
NOT TO SCALE



ENERGY DISSIPATOR (NORTH SLOPE) 3 C-05
NOT TO SCALE

RECORD DRAWING
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THOMAS M. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

HDR

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	J. TIMMONS, R. SIEVERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00095-130530-005

THOMAS M. YANOSCHAK, P.E.
CERTIFICATE NO. 44200

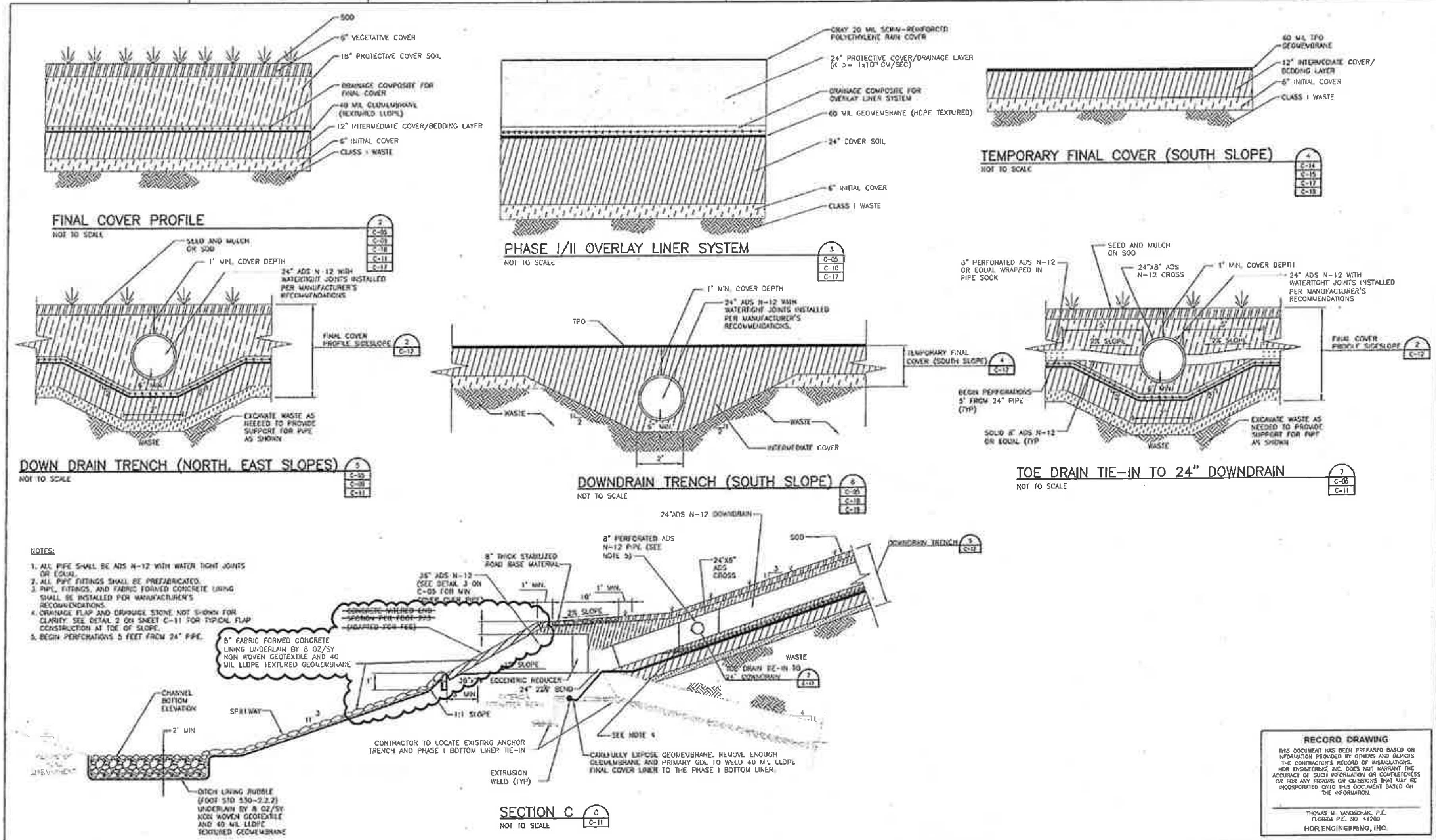
SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS
FLORIDA

PHASE I CLOSURE DETAILS

FILENAME: C-11 AS-BLT.DWG
SCALE: AS SHOWN
SHEET: C-11

C:\pwworking\tpa\d0429254\C-11 AS-BLT.dwg, Plot, 2/7/2013 10:48:04 AM, jrivera



NOTES:

1. ALL PIPE SHALL BE ADS N-12 WITH WATER TIGHT JOINTS OR EQUAL.
2. ALL PIPE FITTINGS SHALL BE PREFABRICATED.
3. PIPE, FITTINGS, AND FABRIC FORMED CONCRETE LINING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
4. DRAINAGE FLAP AND DRAINAGE STONE NOT SHOWN FOR CLARITY. SEE DETAIL 2 ON SHEET C-11 FOR TYPICAL FLAP CONSTRUCTION AT TOE OF SLOPE.
5. BEGIN PERFORATIONS 5 FEET FROM 24" PIPE.

RECORD DRAWING

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THOMAS M. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

HDR

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	K. SIEMERING
REVIEWED BY	J. TIMMONS, K. SIEMERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00065-130550-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

SARASOTA COUNTY — FLORIDA

Central County Solid Waste Disposal Complex

PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

PHASE I CLOSURE DETAILS

FILENAME: C-12A AS-BLT.DWG
SCALE: AS SHOWN
SHEET: C-12

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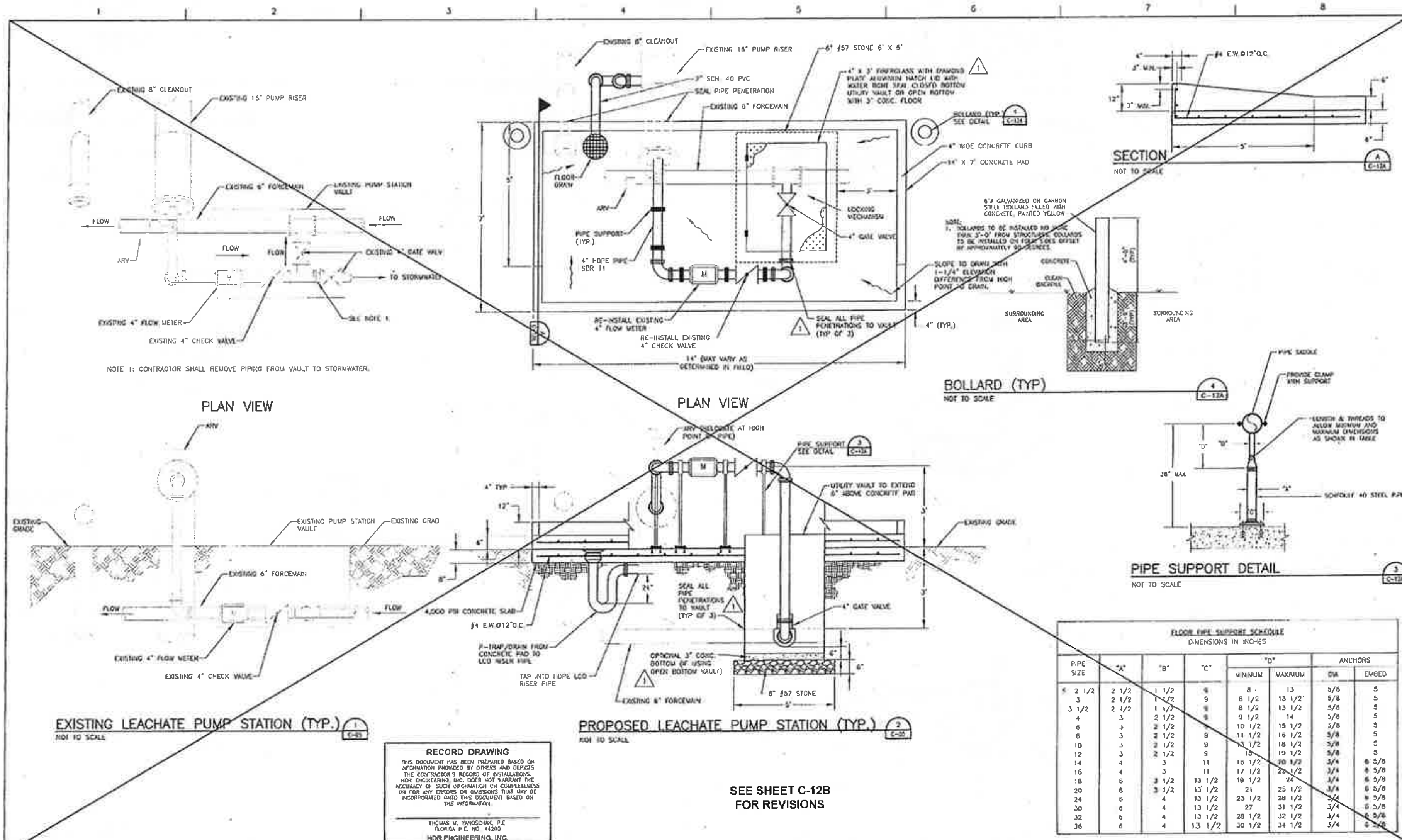

FLOOR PIPE SUPPORT SCHEDULE
DIMENSIONS IN INCHES

PIPE SIZE	"A"	"B"	"C"	"D" MINIMUM	"D" MAXIMUM	ANCHORS DIA	ANCHORS EMBED
2 1/2	2 1/2	1 1/2	9	8	13	5/8	5
3	2 1/2	1 1/2	9	8 1/2	13 1/2	5/8	5
3 1/2	2 1/2	1 1/2	9	8 1/2	13 1/2	5/8	5
4	3	2 1/2	9	9 1/2	14	5/8	5
6	3	2 1/2	[illegible]	10 1/2	15 1/2	5/8	5
8	3	2 1/2	9	11 1/2	16 1/2	5/8	5
10	3	2 1/2	9	[illegible] 1/2	18 1/2	5/8	5
12	3	2 1/2	9	15	19 1/2	5/8	5
14	4	3	11	16 1/2	20 1/2	3/4	6 5/8
16	4	3	11	17 1/2	22 1/2	3/4	6 5/8
18	6	3 1/2	13 1/2	19 1/2	24	3/4	6 5/8
20	6	3 1/2	13 1/2	21	25 1/2	3/4	6 5/8
24	6	4	13 1/2	23 1/2	28 1/2	3/4	6 5/8
30	6	4	13 1/2	27	31 1/2	3/4	6 5/8
32	6	4	13 1/2	28 1/2	32 1/2	3/4	6 5/8
36	6	4	13 1/2	30 1/2	34 1/2	3/4	6 5/8

RECORD DRAWING

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THOMAS M. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

SEE SHEET C-12B FOR REVISIONS

ISSUE	DATE	DESCRIPTION
2	03/2013	RECORD DRAWINGS
1	03/2011	ISSUED FOR BID
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	J. TIMMONS, R. SIEVERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00026-120530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

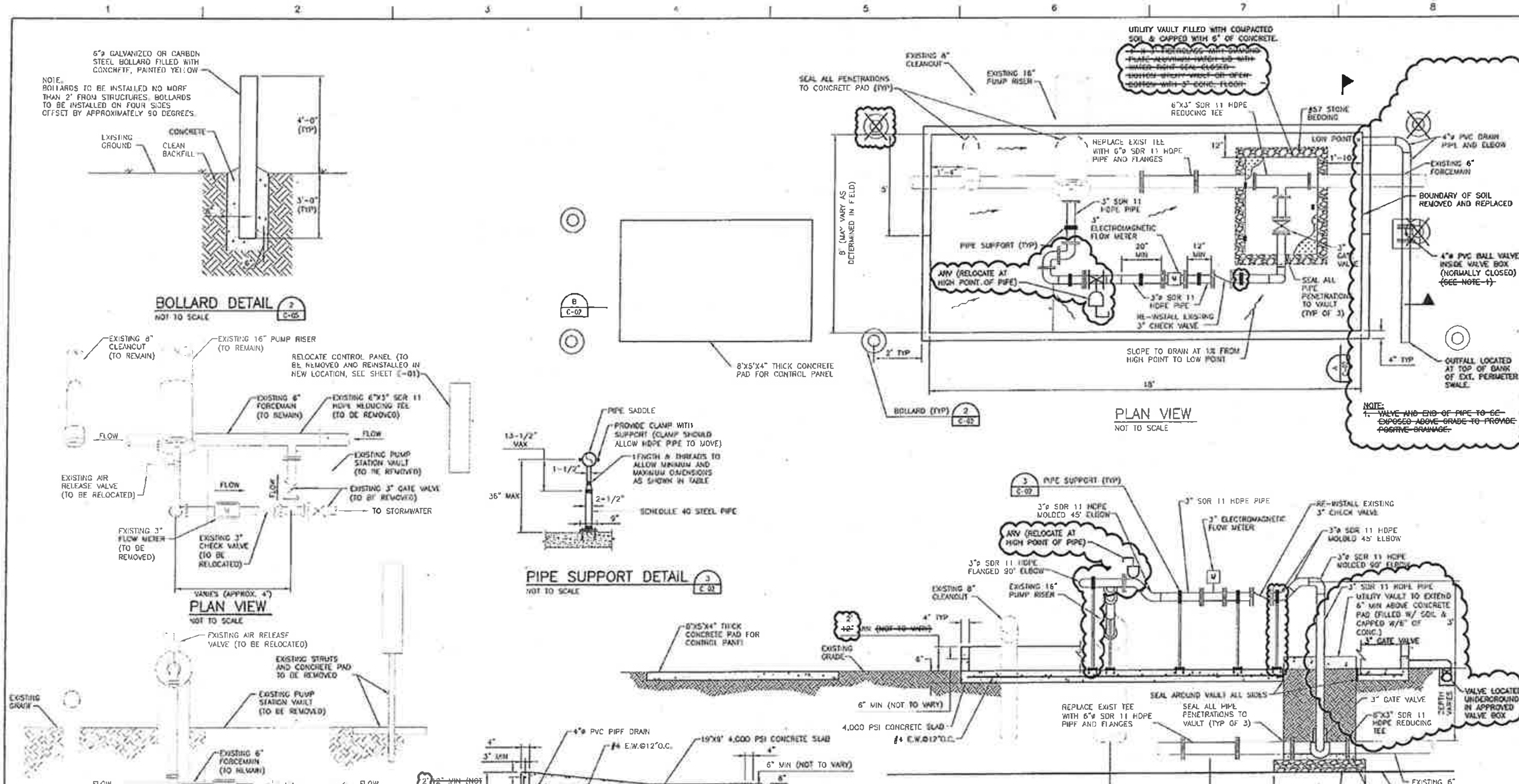
Central County Solid Waste Disposal Complex

PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

SARASOTA COUNTY FLORIDA

PHASE I CLOSURE DETAILS

FILENAME 000-12A-REV.DWG
SCALE AS SHOWN
SHEET C-12A



RECORD DRAWING

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THOMAS M. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC

HDR

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEMERING
REVIEWED BY	J. TIMMONS, R. SIEMERING
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	D. JOHNSON
PROJECT NUMBER	00090-130530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS
SARASOTA COUNTY FLORIDA

LEACHATE PUMP STATION CIVIL DETAILS

FILENAME	C-12B AS-BLT.DWG	SHEET
SCALE	AS SHOWN	C-12B

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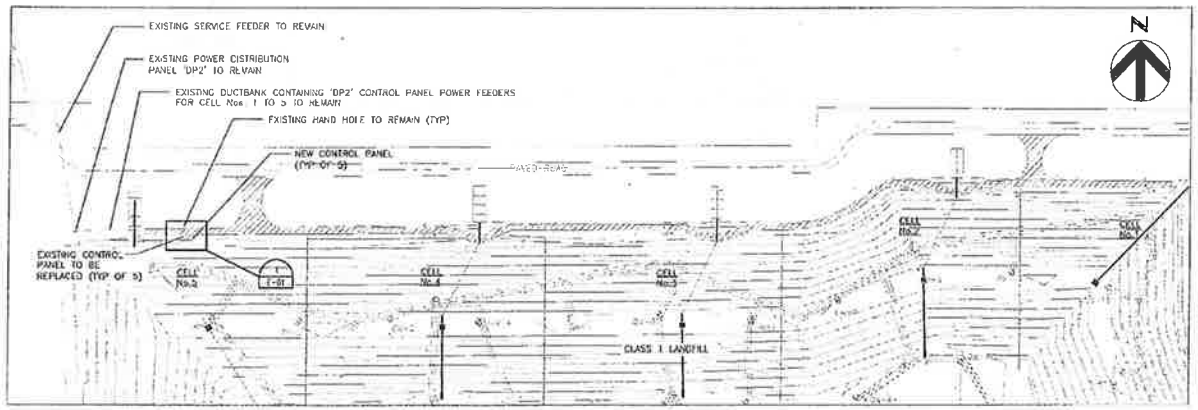
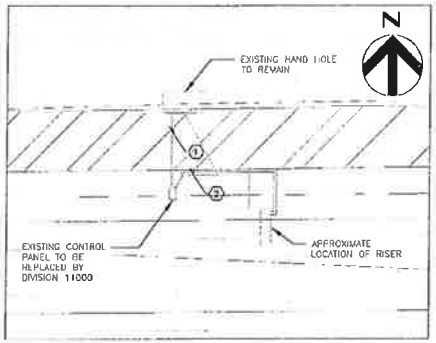


ELECTRICAL SITE PLAN

SCALE: 1"=100'-0"



EXISTING CELL PLAN VIEW (TYP. OF 5)

SCALE: 1"=10'-0"

GENERAL NOTES:

1. VERIFY ALL MEASUREMENTS AND CONDITIONS IN FIELD PRIOR TO BID SUBMITTAL.
2. CONTRACTOR TO PROVIDE CONDUIT SUPPORTS WHERE REQUIRED BY FIELD CONDITIONS IN ACCORDANCE WITH THE SPECIFICATIONS AND THE LATEST EDITION OF NFPA 70, NATIONAL ELECTRICAL CODE.
3. ALL UNDERGROUND RACEWAY SYSTEMS SHALL BE PVC SCHEDULE 40 UNTIL THE LAST ELBOW BEFORE THE TRANSITION TO ABOVE GROUND, THERE THE CONDUIT SHALL BE RIGID ALUMINUM CONDUIT (RAC). ALL ALUMINUM CONDUIT IN CONTACT WITH EARTH SHALL BE PAINTED WITH AT LEAST TWO COATS OF AN ASPHALT BASE PAINT.

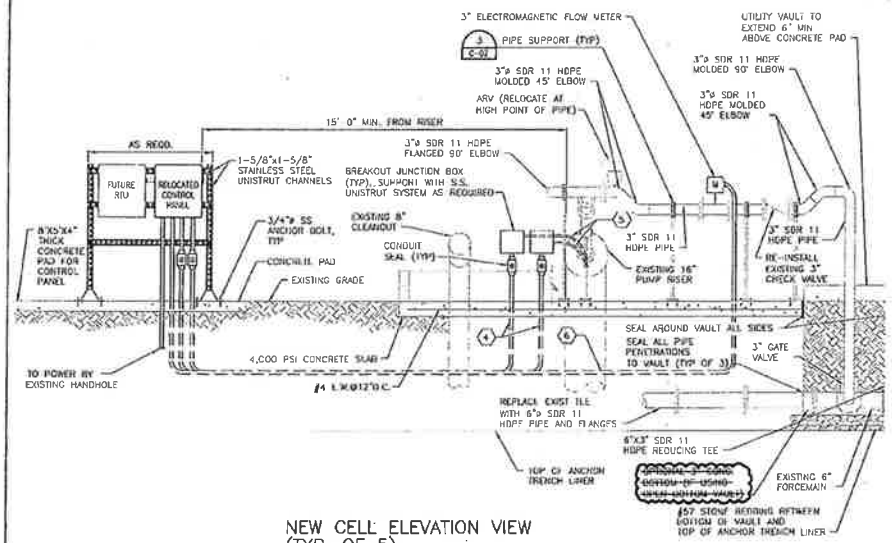
KEYED NOTES:

1. EXISTING CONTROL PANEL POWER FEEDER FROM PANEL 'DP2' TO BE REMOVED FROM EXISTING CONTROL PANEL TO ADJACENT HAND HOLE, LEAVING 5 FEET OF SLACK FOR SPLICING WITHOUT DAMAGING AND REWIRED FROM THE NEW BREAKOUT JUNCTION BOX TO THE PUMP AND CONTROL ELEMENTS. ANY DAMAGED WIRE SHALL BE REPLACED IN KIND WITH EXISTING AT THE CONTRACTORS EXPENSE.
2. EXISTING PUMP POWER FEEDERS AND CONTROL WIRING TO BE REMOVED.
3. NEW CONTROL PANEL POWER FEEDER TO MATCH EXISTING POWER FEEDER CABLES IN TYPE, SIZE, AND QUANTITY, AND SPLICED WITH EXISTING FEEDER FROM EXISTING POWER PANEL 'DP2'. MAKE ALL SPLICES WITH APPROVED AND UL LISTED WATER PROOF SPLICE KITS AND ALLOW ENOUGH SLACK ON THE CABLES TO PULL OUT OF PULLBOX. MARK ALL CABLES WITH THE APPROPRIATE CABLE NUMBER.
4. EXISTING PUMP AND LEVEL ELEMENT NEW POWER AND CONTROL RACEWAY SYSTEM AND WIRING. FIELD VERIFY EXISTING AND PROVIDE NEW RACEWAY SYSTEM AND WIRING FROM THE CONTROL PANEL TO THE NEW BREAKOUT JUNCTION BOX MATCHING THE EXISTING IN SIZE AND QUANTITY.
5. NEW PUMP AND LEVEL ELEMENT POWER AND CONTROL RACEWAY SYSTEM COORDINATE IN THE FIELD WITH OWNER AND EXISTING CONTROL PANEL TO PROVIDE THE NECESSARY RACEWAY SYSTEM AND REWIRE MANUFACTURER PROVIDED CABLES FROM BREAKOUT JUNCTION BOX TO THE PUMP MOTOR AND LEVEL ELEMENT.
6. NEW FLOW METER POWER AND CONTROL CABLES AND RACEWAY SYSTEM:
   - POWER – 3/4" CONDUIT CONTAINING 3#12 AWG.
   - CONTROL CABLE – 1/2" CONDUIT CONTAINING 18 GAGE WITH SHIELD PVC.

LEGEND:

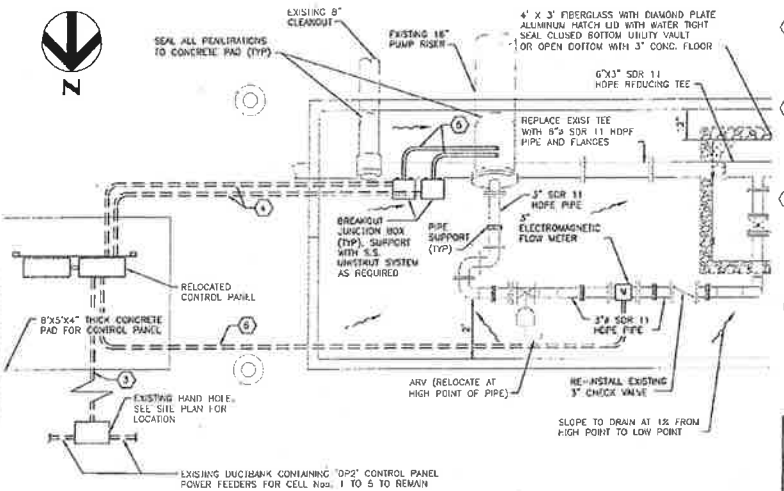
— — — CONDUIT RUN UNDERGROUND.

——— CONDUIT RUN ABOVE GROUND.



NEW CELL ELEVATION VIEW (TYP. OF 5)

SCALE: NOT TO SCALE



NEW CELL PLAN VIEW (TYP. OF 5)

SCALE: NOT TO SCALE

RECORD DRAWING

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THOMAS M. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

HDR

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2601 Cattlemen Rd., Ste. 126
Sarasota, FL 34232-6313
(941) 349-2700
CA0000435

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	JULY/2012	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	J. TIMMONS
CIVIL DESIGN	I. RIVERA
DRAWN BY	J. GONZOLEZ
	O. WESSON
	B. JOHNSON
PROJECT NUMBER	096-153175-009

THOMAS M. YANOSCHAK, P.E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

FLORIDA

ELECTRICAL SITE PLAN AND DETAILS

0 1" 2"

FILENAME: C-12C AS-BLT.DWG
SCALE: AS SHOWN

SHEET: C-12C

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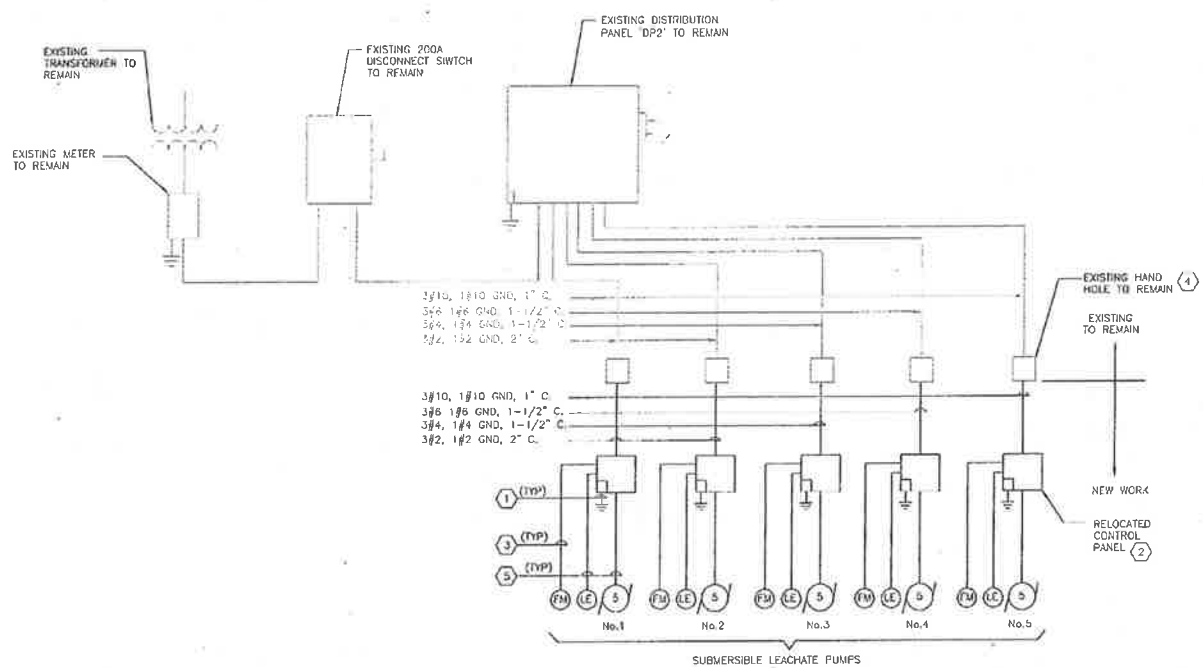

ONE LINE DIAGRAM
SCALE: NTS

GENERAL NOTES:

1. VERIFY ALL MEASUREMENTS AND CONDITIONS IN FIELD PRIOR TO BID SUBMITTAL.

KEYED NOTES:

(1) 3/4" CONDUIT GROUNDING ELECTRODE CONDUCTOR TO MATCH FEEDER GROUND CONDUCTOR SIZE.

(2) NEW CONTROL PANEL TO BE RELOCATED.

(3) NEW FLOW METER POWER AND CONTROL CABLES AND RACEWAY SYSTEM:
- POWER – 3/4" CONDUIT CONTAINING 3#12 AWG.
- CONTROL CABLE 1/2" CONDUIT CONTAINING 18 GAGE WITH SHIELD PVC.

(4) SPLICE EXISTING FEEDER WITH NEW FEEDER USING APPROVED AND UL LISTED WATER PROOF SPLICE KITS AND ALLOW ENOUGH SLACK ON THE CABLES TO PULL OUT OF PULLBOX.

(5) CONDUIT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR. MANUFACTURER FURNISHED WIRING TO BE INSTALLED AND TERMINATED BY THE CONTRACTOR (TYP)

LEGEND:

- (5) MOTOR WITH DESIGN HORSEPOWER
- (LE) LEVEL ELEMENT
- (FM) FLOW METER
- ⏚ GROUND

RECORD DRAWING

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HDR

HDR Engineering, Inc.
2601 Cattlemen Rd., Ste. 400
Sarasota, FL 34232 8313
(941) 342-2700
CA00004213

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	JULY/2012	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	J. TIMMONS
CIVIL DESIGN	I. RIVERA
DRAWN BY	J. GONZALEZ
	O. WESTOFF
	B. JOHNSON
PROJECT NUMBER	000-153175-009

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

FLORIDA

ELECTRICAL ONE LINE DIAGRAM

0 1" 2"

FILENAME	C-12D AS BLT.DWG
SCALE	AS SHOWN

SHEET C-12D

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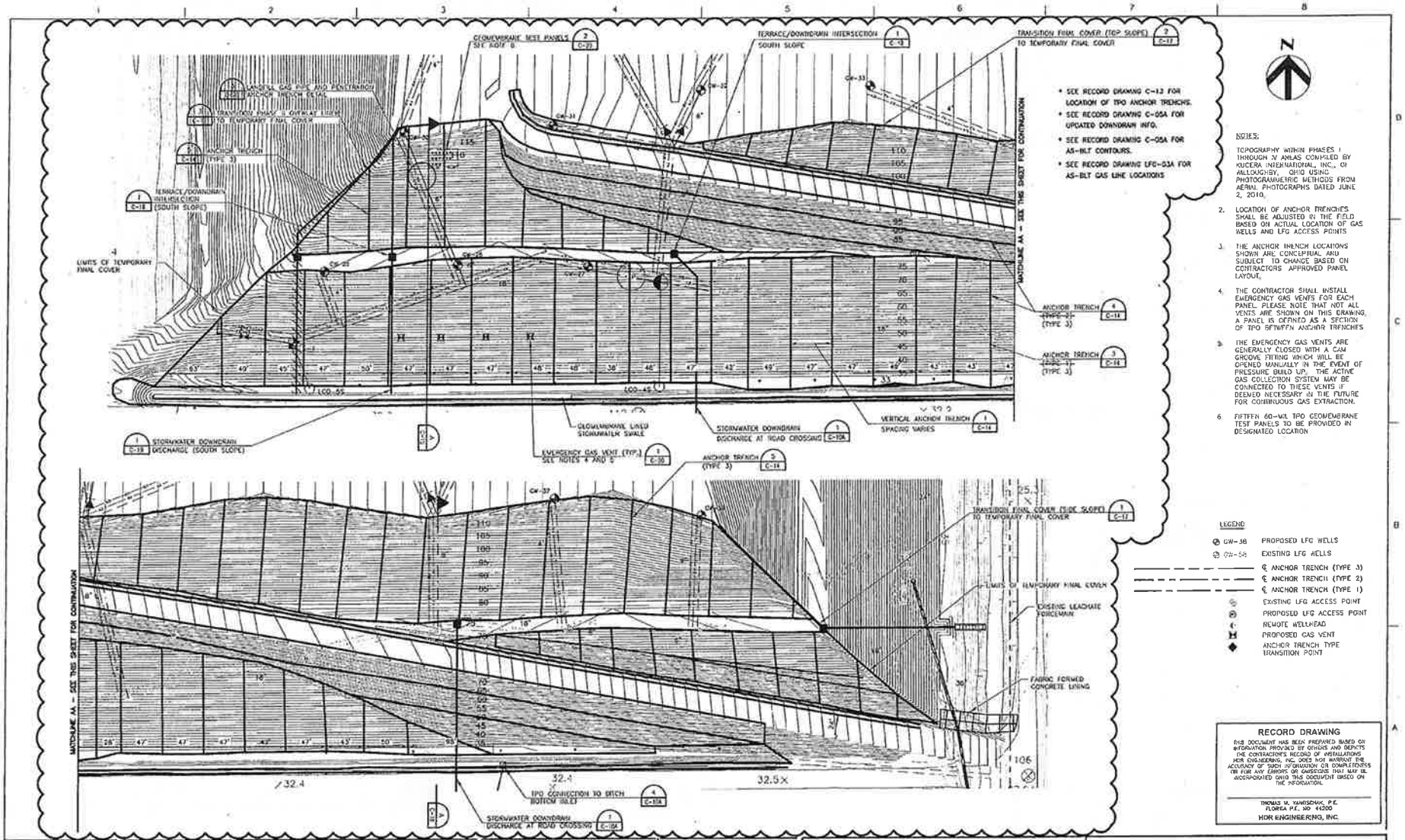


HDR

ISSUE	DATE	DESCRIPTION
2	03/2013	RECORD DRAWINGS
1	12/2011	ISSUED FOR IFCA NO. 1
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER M. SIEWERING
REVIEWED BY M. ROBERTS
CAD DESIGN K. PERERA
DRAWN BY L. KARSHNER
PROJECT NUMBER 00096-130530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

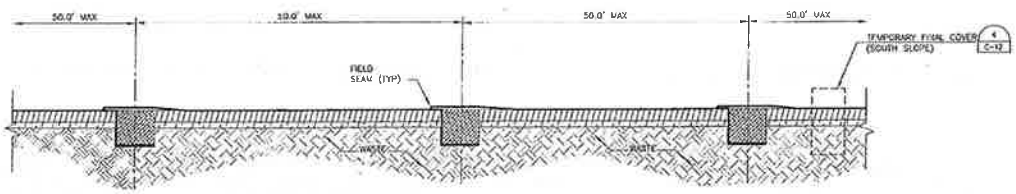
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

FLORIDA

PHASE I TEMPORARY FINAL COVER LAYOUT AND ANCHOR TRENCH PLAN

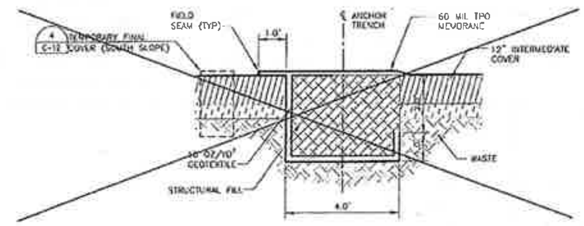
0 1" 2"

FILENAME C-13 AS-BLT.DWG
SCALE 1"=50'
SHEET C-13



VERTICAL ANCHOR TRENCH SPACING (1 / C-13, C-14)

NOT TO SCALE

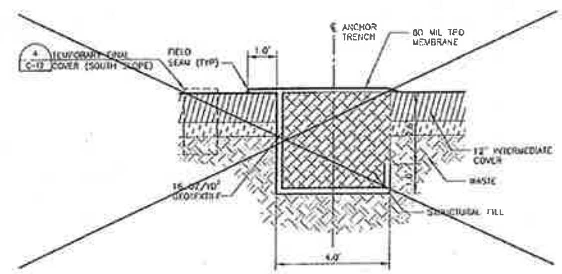


ANCHOR TRENCH (TYPE 1) – 3-FT DEPTH (2 / C-13, C-15, C-16, C-17, C-18)

NOT TO SCALE

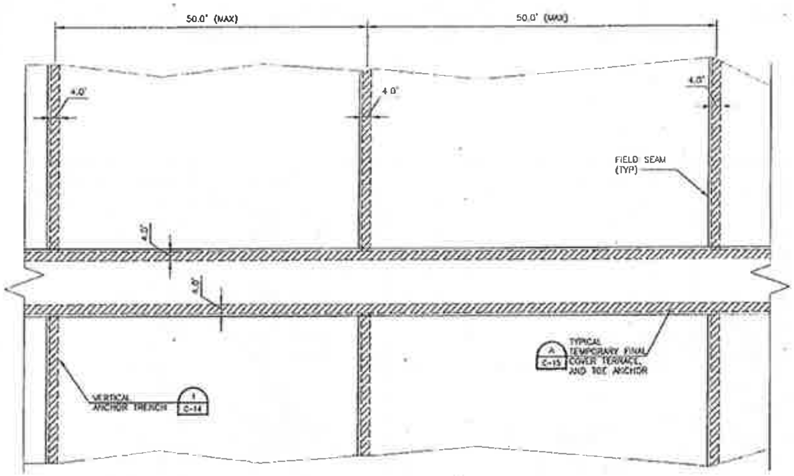
NOTES.

1. MAXIMUM CENTER TO CENTER DISTANCE OF VERTICAL ANCHOR TRENCHES SHALL NOT EXCEED 50 FT. ON 3:1 SIDESLOPES. HORIZONTAL ANCHOR TRENCHES SHOWN IN THE 2:1 SIDESLOPES SHALL NOT EXCEED 25 FT IN THE UPPER 1/3 OF SIDESLOPE AND 32 FT BELOW THE UPPER 1/3 OF THE SIDESLOPE.
2. THE CENTER TO CENTER DIMENSIONS SHOWN ARE CONCEPTUAL AND SUBJECT TO CHANGE BASED ON CONTRACTORS APPROVED PANEL LAYOUT.
3. DURING INSTALLATION OF TEMPORARY FINAL COVER (INCLUDING HORIZONTAL AND VERTICAL TRENCHES) THE CONTRACTOR SHALL MINIMIZE THE AMOUNT OF OPEN TRENCHES FOR ODOR AND STORMWATER CONTROL.
4. CONSTRUCTION ACTIVITIES SHALL BE SEQUENCED TO ALLOW GEOMEMBRANE TO BE PLACED IN THE ANCHOR TRENCH IMMEDIATELY FOLLOWING THE EXCAVATION OF THE ANCHOR TRENCH.
5. AS SOON AS CONSTRUCTION QUALITY ASSURANCE (CQA) PERSONNEL HAVE APPROVED THE DIMENSIONS. ALL OPEN TRENCHES SHALL BE BACKFILLED WITH SOIL AT THE END OF THE DAY.
6. CONTRACTOR SHALL USE CLEAN BACKFILL FOR ANCHORS. ANY SOLID WASTE REMOVED DURING EXCAVATION MUST BE PROPERLY DISPOSED OF IN ADJACENT ACTIVE LANDFILL CELL.
7. WEDGE WELD END OF GEOMEMBRANE PANEL TO BEGINNING OF NEW GEOMEMBRANE PANEL AND CONTINUE DOWNSLOPE. FLAP OF WEDGE WELD TO BE ON TOP IN THE DOWNSLOPE DIRECTION.
8. WELDS CONNECTING DOWNSLOPE SHEETS SHALL BE DOUBLE WEDGE WELDS, AND SHALL HAVE A MINIMUM 10 FT. VERTICAL OFFSET BETWEEN ADJACENT PANEL WELDS.
9. HOT ARC WELDS SHALL BE USED ONLY WHEN WEDGE WELDS ARE NOT FEASIBLE.
10. SEE SHEET 00C-13 FOR PLACEMENT OF TYPE 1, 2, AND 3 ANCHOR TRENCHES FOR VERTICAL ANCHOR TRENCHES.



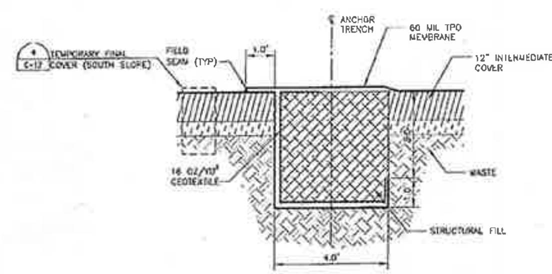
ANCHOR TRENCH (TYPE 2) – 3.5-FT DEPTH (4 / C-13)

NOT TO SCALE



TYPICAL ANCHORING PLAN (2 / C-14)

NOT TO SCALE



ANCHOR TRENCH (TYPE 3) – 4-FT DEPTH (5 / C-13, C-16)

NOT TO SCALE

RECORD DRAWING

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THOMAS V. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

HDR

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1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	M. ROBERTS
CIVIL DESIGN	K. PERERA
DRAWN BY	I. KARSHNER
PROJECT NUMBER	00006-130530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

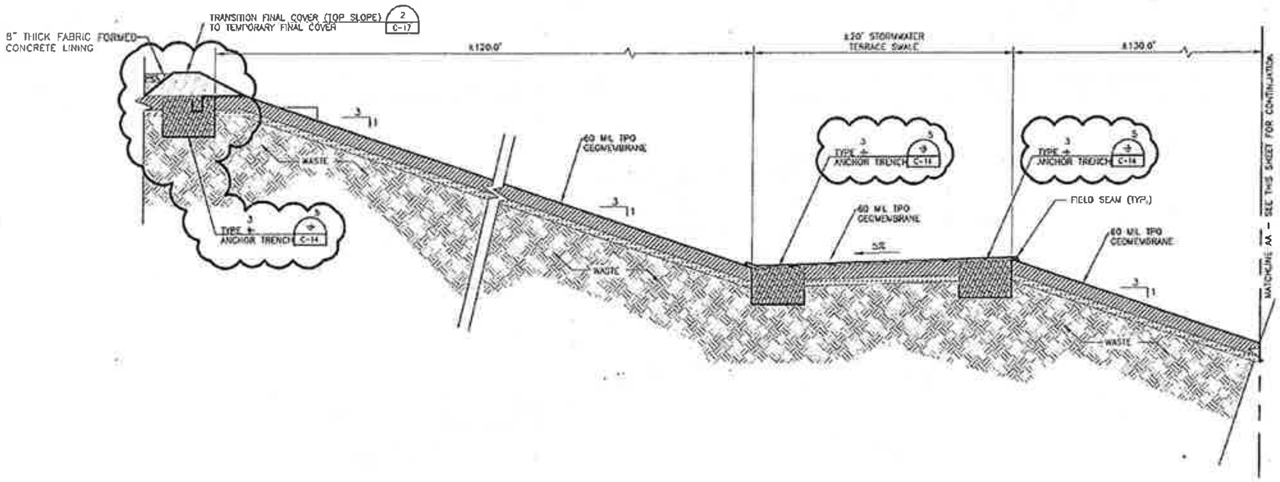
SARASOTA COUNTY

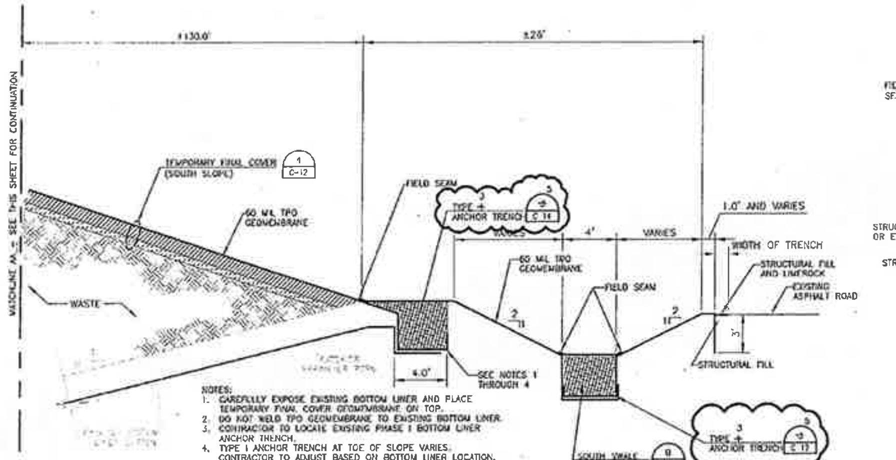
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL
CLOSURE AND LANDFILL GAS COLLECTION SYSTEM
CONSTRUCTION DRAWINGS
FLORIDA

PHASE I TEMPORARY FINAL COVER ANCHOR TRENCH SECTIONS AND DETAILS

FILENAME: C-14 AS-BLT.DWG
SCALE: AS SHOWN
SHEET: C-14

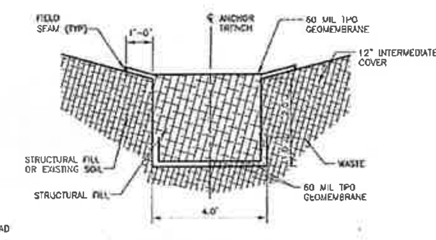
C:\pwworking\tpe\d0429254\C-14 AS-BLT.dwg, Plot, 2/7/2013 10:58:22 AM, irivera





NOTES:
1. CAREFULLY EXPOSE EXISTING BOTTOM LINER AND PLACE TEMPORARY FINAL COVER GEOMEMBRANE ON TOP.
2. DO NOT WELD TPO GEOMEMBRANE TO EXISTING BOTTOM LINER.
3. CONTRACTOR TO LOCATE EXISTING PHASE I BOTTOM LINER ANCHOR TRENCH.
4. TYPE I ANCHOR TRENCH AT TOE OF SLOPE VARIES. CONTRACTOR TO ADJUST BASED ON BOTTOM LINER LOCATION.

TYPICAL TEMPORARY FINAL COVER TERRACE AND TOE ANCHOR (A, C-13)
NOT TO SCALE



SOUTH SWALE ANCHOR TRENCH (B, C-15 / C-16)
NOT TO SCALE

RECORD DRAWING
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ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEMERING
REVIEWED BY	M. ROBERTS
CIVIL DESIGN	K. PERERA
DRAWN BY	I. KARSHNER
PROJECT NUMBER	00096-130530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

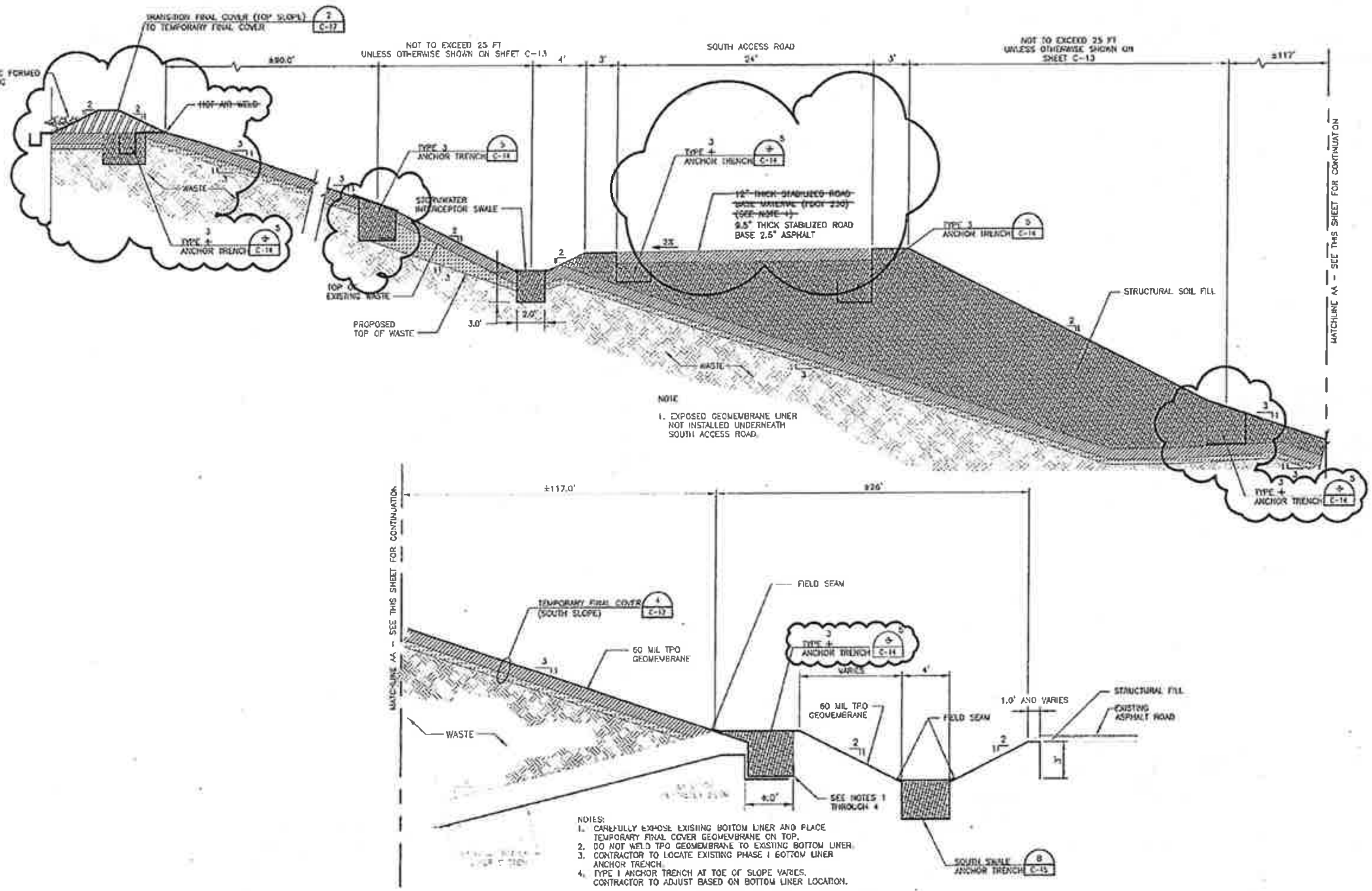
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS
FLORIDA

PHASE I TEMPORARY FINAL COVER ANCHOR TRENCH SECTIONS AND DETAILS

0 1" 2"

FILENAME	C-15 AS-BLT.DWG
SCALE	AS SHOWN
SHEET	C-15

C:\pwworking\tpa\d0429254\C-15 AS-BLT.dwg, Plot, 2/7/2013 11:01:30 AM, iriverа



NOTES:
1. CAREFULLY EXPOSE EXISTING BOTTOM LINER AND PLACE TEMPORARY FINAL COVER GEOMEMBRANE ON TOP.
2. DO NOT WELD TPO GEOMEMBRANE TO EXISTING BOTTOM LINER.
3. CONTRACTOR TO LOCATE EXISTING PHASE I BOTTOM LINER ANCHOR TRENCH.
4. TYPE I ANCHOR TRENCH AT TOE OF SLOPE VARIES. CONTRACTOR TO ADJUST BASED ON BOTTOM LINER LOCATION.

TYPICAL TEMPORARY FINAL COVER ALONG SOUTH ROAD SIDE SLOPE (A / C-13)

N.T.S.

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0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	M. ROBERTS
CIVIL DESIGN	M. PERDRA
DRAWN BY	L. KARSHNER
PROJECT NUMBER	00055-130520-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

SARASOTA COUNTY FLORIDA

PHASE I TEMPORARY FINAL COVER ANCHOR TRENCH SECTIONS AND DETAILS

0 1" 2"

FILENAME C-16 AS-BLT.DWG | SCALE AS SHOWN | SHEET C-16

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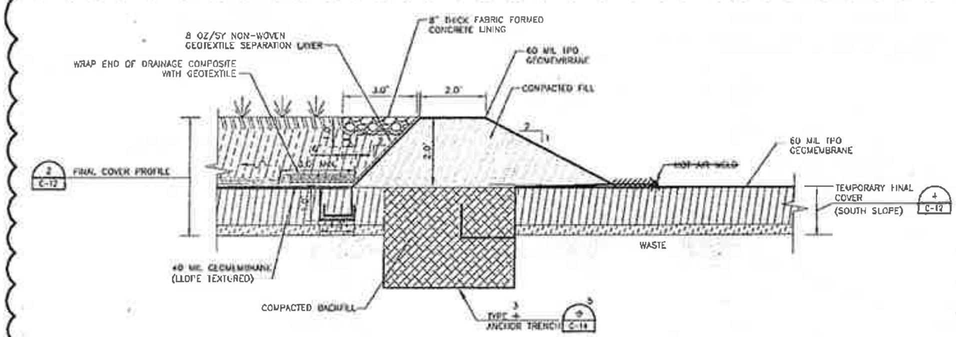
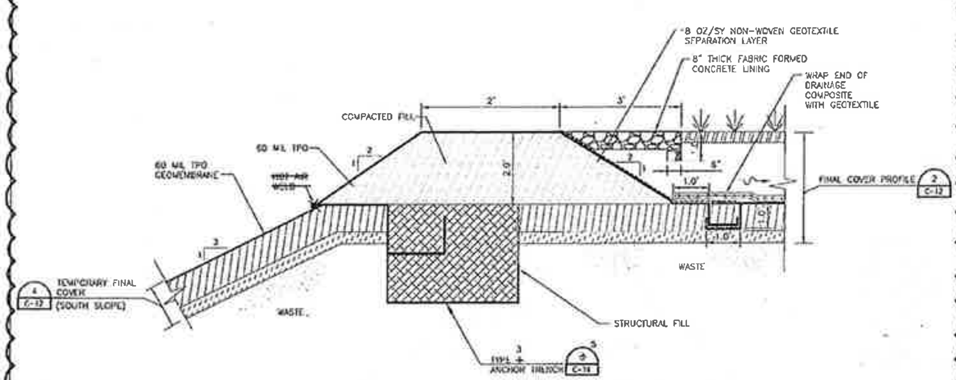


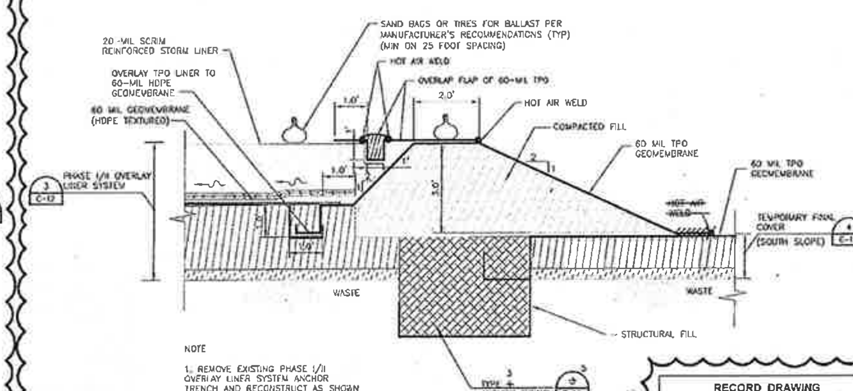
TRANSITION FINAL COVER (SIDESLOPE)
TO TEMPORARY FINAL COVER
NOT TO SCALE

1 C-05 C-13



TRANSITION FINAL COVER (TOPSLOPE)
TO TEMPORARY FINAL COVER
NOT TO SCALE

2 C-05 C-13 C-15



NOTE

1. REMOVE EXISTING PHASE I/II OVERLAY LINER SYSTEM ANCHOR TRENCH AND RECONSTRUCT AS SHOWN ABOVE.

TRANSITION PHASE I/II OVERLAY LINER
TO TEMPORARY FINAL COVER
NOT TO SCALE

3 C-05 C-13

RECORD DRAWING

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			REVIEWED BY
			CIVIL DESIGN
			DRAWN BY
			PROJECT NUMBER

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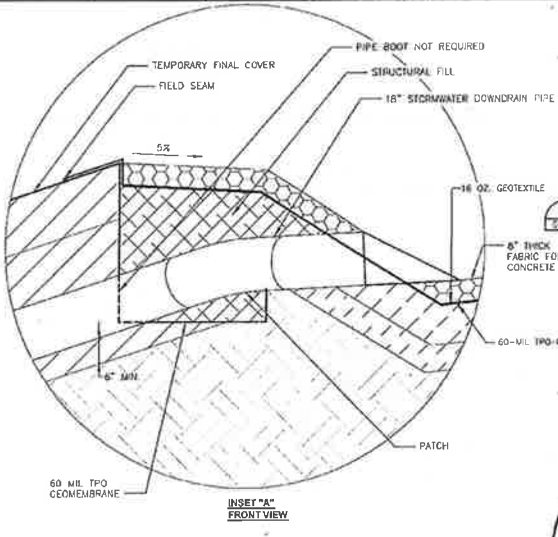
SARASOTA COUNTY

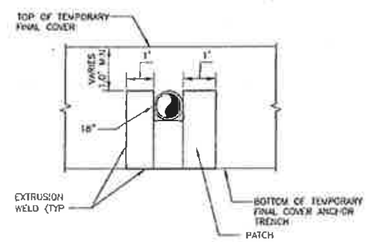
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS
FLORIDA

PHASE I TEMPORARY FINAL COVER CLOSURE DETAILS RECORD DRAWINGS

FILENAME C-17 AS-BLT.DWG
SCALE AS SHOWN
SHEET C-17



INSET "A" FRONT VIEW



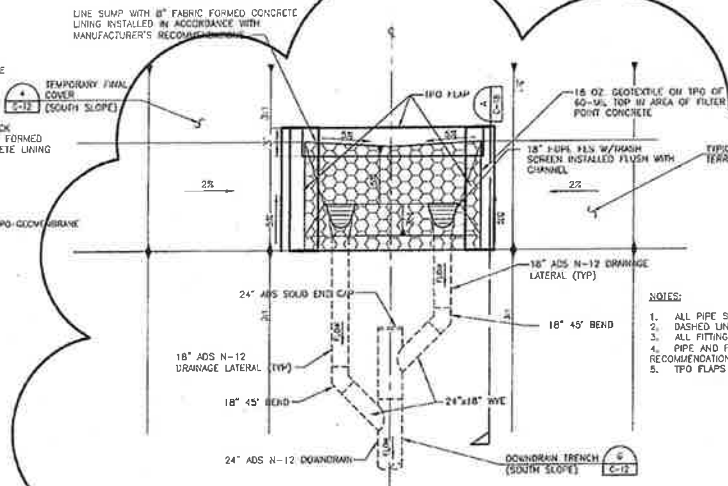
SIDE

NOTES:

1. CONTRACTOR TO USE CAUTION WHEN EXCAVATING AROUND EXISTING UNDERGROUND PIPING SYSTEM.
2. CUT GEOMEMBRANE AROUND EXISTING PIPE.
3. PLACE GEOMEMBRANE PATCH AROUND PIPE PENETRATION, OVERLAP MIN. 1' ON EACH SIDE AND EXTRUSION WELD ALL SEAMS.

TYPICAL TEMPORARY FINAL COVER ANCHOR TRENCH PENETRATION DETAIL (2 / C-18, C-18)

NOT TO SCALE



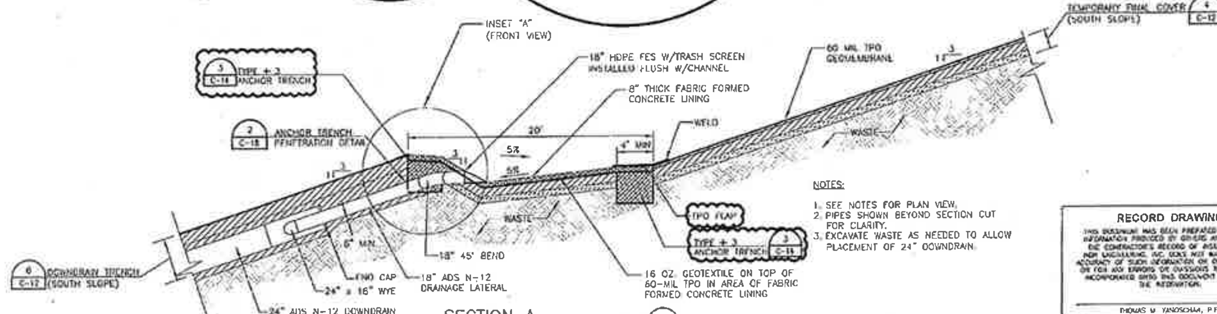
NOTES:

1. ALL PIPE SHALL BE ADS N-12 WITH WATER TIGHT JOINTS.
2. DASHED LINES REPRESENT BURIED PIPE.
3. ALL FITTINGS SHALL BE PRE-FABRICATED.
4. PIPE AND FITTINGS SHALL BE INSTALLED TO MANUFACTURER'S RECOMMENDATIONS.
5. TPO FLAPS ANCHORED TO FABRIC FORMED CONCRETE.

PLAN VIEW

TERRACE/DOWNDRAIN INTERSECTION (SOUTH SLOPE) (1 / C-06, C-13)

NOT TO SCALE



NOTES:

1. SEE NOTES FOR PLAN VIEW.
2. PIPES SHOWN BEYOND SECTION CUT FOR CLARITY.
3. EXCAVATE WASTE AS NEEDED TO ALLOW PLACEMENT OF 24" DOWNDRAIN.

SECTION A (A / C-18)

NOT TO SCALE

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ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEMERING
REVIEWED BY	M. ROBERTS
CIVIL DESIGN	X. PERERA
DRAWN BY	L. KARSHNER
PROJECT NUMBER	00096-130530-005

THOMAS M. YANOSCHAK, P.E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS
FLORIDA

PHASE I TEMPORARY FINAL COVER CLOSURE DETAILS

0 1" 2"

FILENAME: C-18 AS-BLT.DWG
SCALE: AS SHOWN
SHEET: C-18

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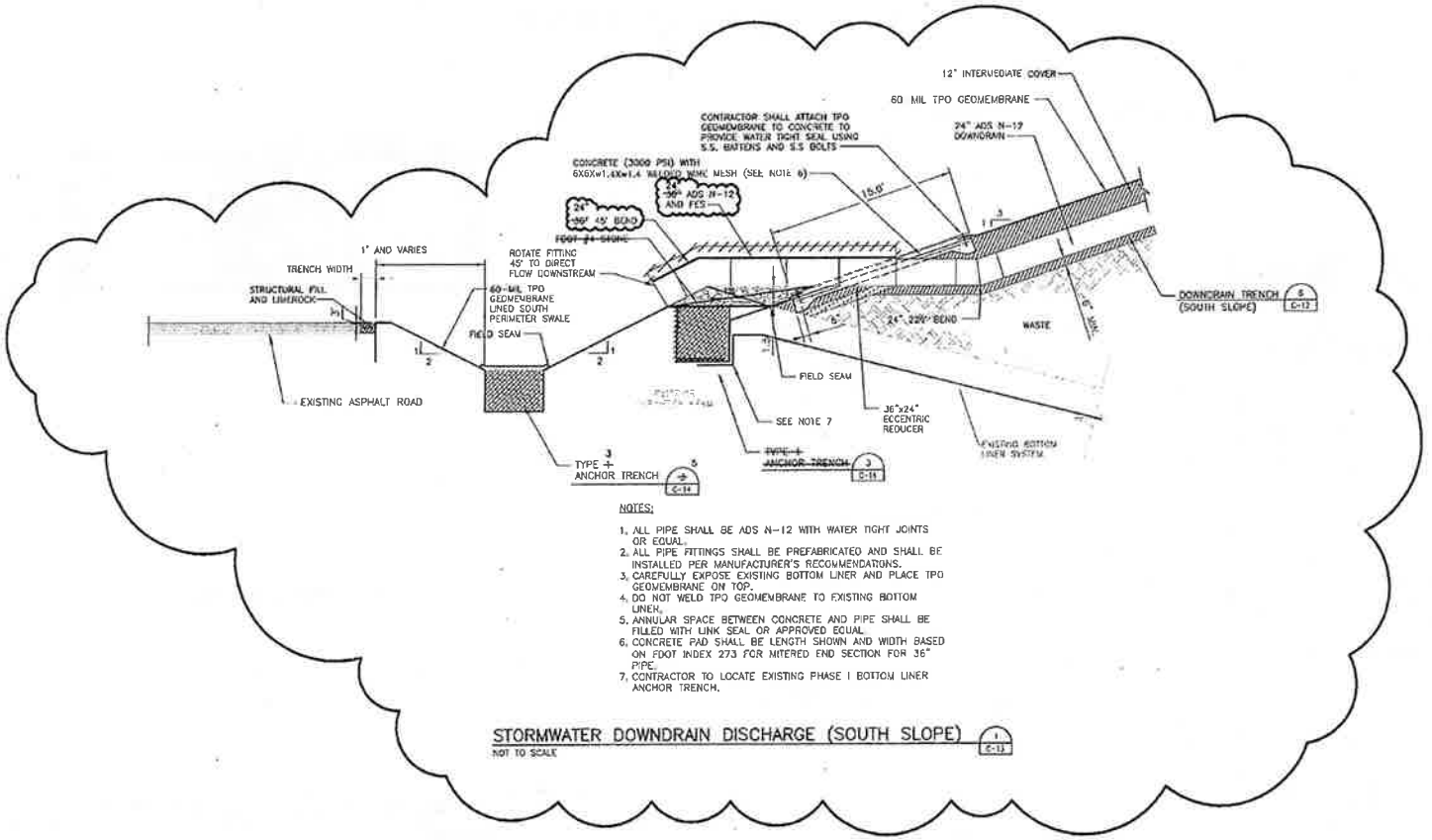

NOTES:

1. ALL PIPE SHALL BE ADS N-12 WITH WATER TIGHT JOINTS OR EQUAL.
2. ALL PIPE FITTINGS SHALL BE PREFABRICATED AND SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. CAREFULLY EXPOSE EXISTING BOTTOM LINER AND PLACE TPO GEOMEMBRANE ON TOP.
4. DO NOT WELD TPO GEOMEMBRANE TO EXISTING BOTTOM LINER.
5. ANNULAR SPACE BETWEEN CONCRETE AND PIPE SHALL BE FILLED WITH LINK SEAL OR APPROVED EQUAL.
6. CONCRETE PAD SHALL BE LENGTH SHOWN AND WIDTH BASED ON FDOT INDEX 273 FOR MITERED END SECTION FOR 36" PIPE.
7. CONTRACTOR TO LOCATE EXISTING PHASE I BOTTOM LINER ANCHOR TRENCH.

STORMWATER DOWNDRAIN DISCHARGE (SOUTH SLOPE) 1 C-13

NOT TO SCALE

RECORD DRAWING

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(941) 487-2700
CA 00004119

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER: R. SIEWERING
REVIEWED BY: M. ROGERS
CIVIL DESIGNER: PEREIRA
DRAWN BY: L. KARSHNER
PROJECT NUMBER: 00006-120530-005

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SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS FLORIDA

PHASE I TEMPORARY FINAL COVER CLOSURE DETAILS

0 1" 2"

FILENAME: C-19 AS-BLT.DWG
SCALE: AS SHOWN
SHEET: C-19

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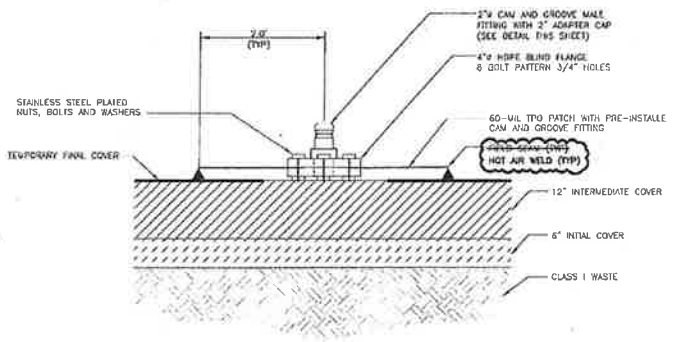
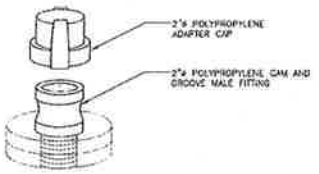
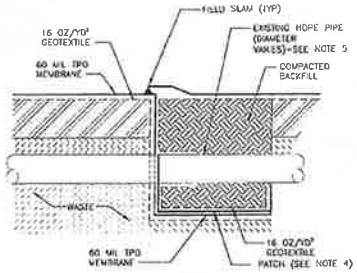


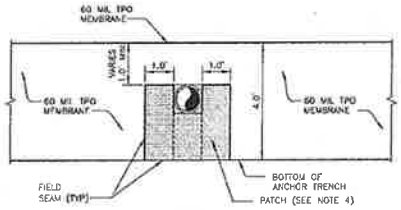
EMERGENCY GAS VENT
NOT TO SCALE



CAM AND GROOVE FITTING DETAIL
NOT TO SCALE



SIDE

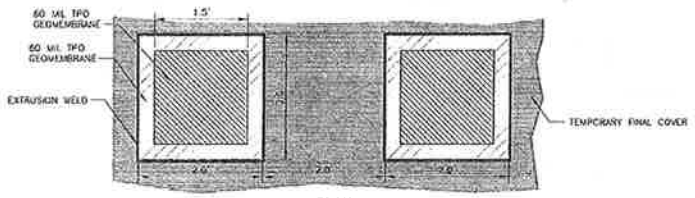


FRONT

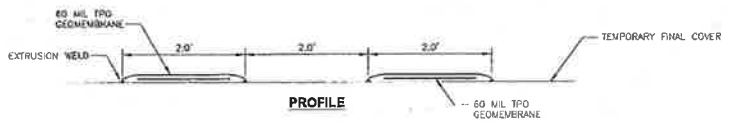
NOTES:

1. CONTRACTOR TO USE CAUTION WHEN EXCAVATING AROUND EXISTING UNDERGROUND PIPING SYSTEM.
2. CUT GEOMEMBRANE AROUND EXISTING PIPE.
3. PLACE GEOMEMBRANE PATCH AROUND PIPE PENETRATION, OVERLAP MIN 1' ON EACH SIDE AND FIELD SEAM AS SHOWN.
4. PATCH WALL CONSIST OF A 60 MIL TPO WELDED TO SEC AS SHOWN TO STRENGTHEN THE GEOMEMBRANE UNDERNEATH THE HEADER.
5. FOR LANDFILL GAS PIPING, PENETRATION WOULD BE REQUIRED FOR LATERAL OR HEADER, AIR LINE, AND FORCEMAIN, UP TO 3 PIPES AT EACH CROSSING

LANDFILL GAS PIPE AND ANCHOR TRENCH PENETRATION
N.T.S.



PLAN



PROFILE

GEOMEMBRANE TEST PANELS
NOT TO SCALE

RECORD DRAWING

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PROJECT MANAGER R. SIEVERING
REVIEWED BY N. ROBERTS
CIVIL DESIGNER K. PEREIRA
DRAWN BY L. KARSNER
PROJECT NUMBER 60096.130530.005

THOMAS M. YANOSCHAK, P.E.
CERTIFICATE NO. 44200

SARASOTA COUNTY

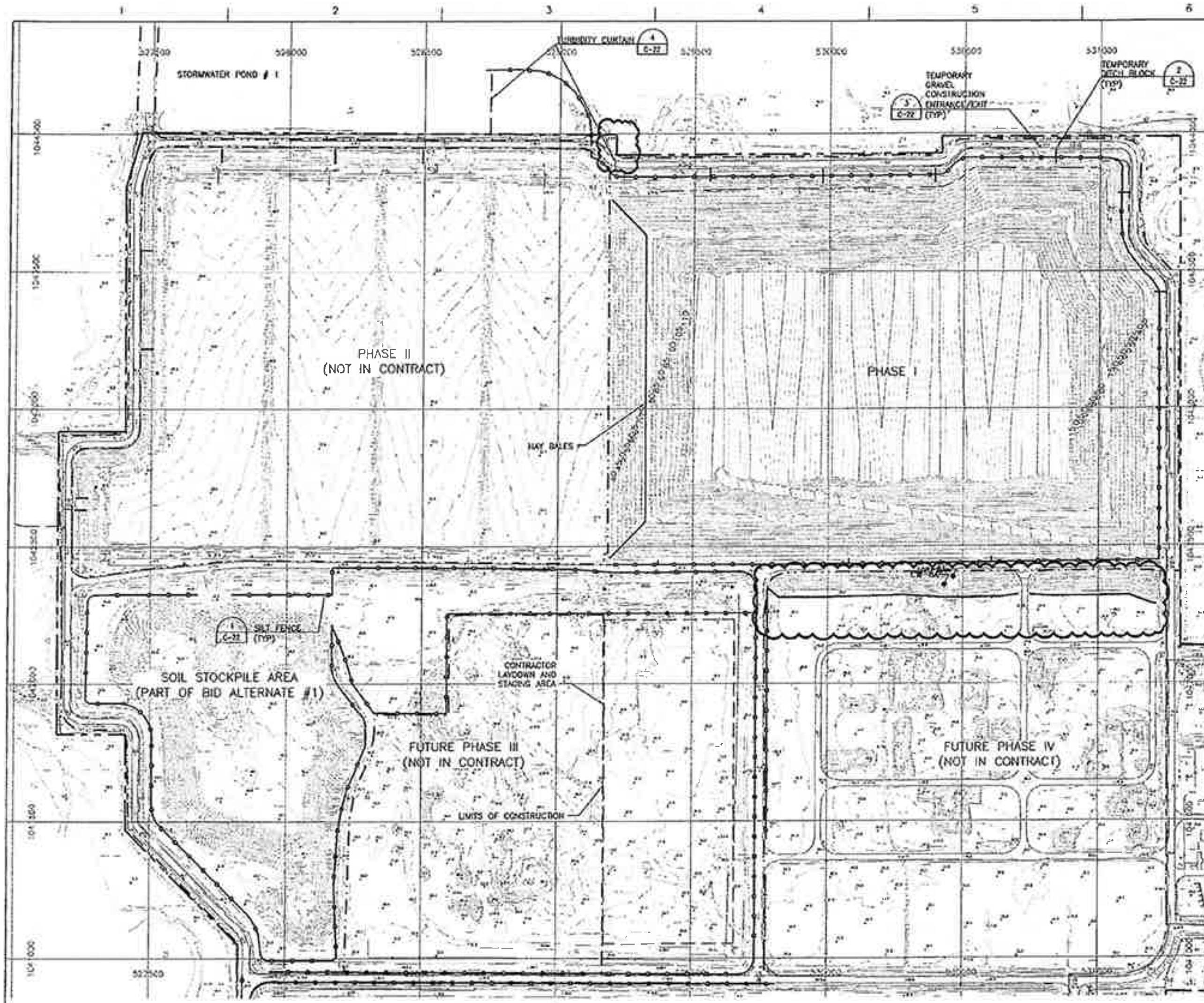
Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS
FLORIDA

PHASE I TEMPORARY FINAL COVER CLOSURE DETAILS

0 1" 2"

FILENAME C-20 AS-BLT.DWG
SCALE AS SHOWN

SHEET C-20



SEDIMENT AND EROSION CONTROL NOTES

1. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH STANDARDS IN THE CONSTRUCTION DOCUMENTS AND APPLICABLE ENVIRONMENTAL REGULATIONS.
2. ALL STORM WATER MANAGEMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED AND MADE OPERATIONAL PRIOR TO COMMENCEMENT OF EARTHWORK ACTIVITIES.
3. CONTRACTOR, OWNER AND ENGINEER WILL EVALUATE THE EXISTING CONDITION OF THE PERIMETER DRAINAGE CHANNELS AT START OF WORK. CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING THE CHANNEL AND PONDS AND RESTORING THEM TO THE ORIGINAL CONDITION AT START OF WORK PRIOR TO DEMOBILIZING.
4. EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED TO THE SATISFACTION OF THE ENGINEER. FAILURE TO DO SO WILL RESULT IN STOPPAGE OF ALL OTHER WORK UNTIL SAID MEASURES COMPLY WITH ACCEPTABLE STANDARDS.
5. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 8 WEEKS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS ACTIVITY IN THAT PORTION OF THE SITE WILL RESUME WITHIN 8 WEEKS.
6. ADDITIONAL TEMPORARY DITCHES AND/OR DIVERSIONS MAY BE REQUIRED TO PERFORM CONSTRUCTION. WHERE SUCH MEASURES ARE REQUIRED, THEY SHALL BE CONSTRUCTED SO AS TO DIRECT RUNOFF FROM DISTURBED AREAS TO APPROPRIATE TEMPORARY CONTROL FEATURES. NO ADDITIONAL PAYMENT SHALL BE MADE FOR ADDITIONAL MEASURES REQUIRED TO CONTROL EROSION.
7. ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT OF GREATER THAN ONE HALF INCH OF PRECIPITATION DURING ANY 24 HOUR PERIOD. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
8. RESTORE AND STABILIZE ALL DISTURBED AREAS INCLUDING STOCKPILES AND STORAGE AREAS. PERFORM PERMANENT SEEDING IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
9. BETWEEN SUBSTANTIAL COMPLETION AND FINAL COMPLETION OF THE WORK, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM THE EROSION CONTROL MEASURES THAT RECEIVED DRAINAGE DURING CONSTRUCTION UNLESS OTHERWISE DIRECTED BY OWNER.
10. ANY ERODED MATERIALS SHALL BE PROMPTLY REMOVED FROM ROADWAYS, DRIVES, WALKS, DITCHES, WATER COURSES, DRAINAGE CULVERTS, AND/OR STRUCTURES.
11. SILT FENCE, STRAW BALE BARRIERS, ETC. SHALL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION. CONTRACTOR SHALL REPLACE AS REQUIRED.
12. ALL TEMPORARY EROSION CONTROL AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED UPON SATISFACTORY COMPLETION OF WORK AND SITE STABILIZATION.

GENERAL NOTES

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV AREAS COMPILED BY KUCERA INTERNATIONAL, INC. OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED JUNE 2, 2010.
2. **APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.**
3. CONTOURS WITHIN PHASE I CLOSURE AREA REPRESENT PROPOSED TOP OF FINAL COVER.

LEGEND

- ■ GP-1 — GAS PROBE
- MW-1DR — GROUNDWATER MONITORING WELL
- VEGETATION
- WATERWAY
- SPECIAL EXCEPTION BOUNDARY
- EXISTING ROADWAY
- PHASE BOUNDARY
- SILT FENCE
- EXISTING PHASE I LEACHATE FORCEMAIN (SEE GENERAL NOTE 2)
- LIMITS OF CONSTRUCTION
- HAY BALES

RECORD DRAWING

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REVIEWED BY	M. ROBERTS
CIVIL DESIGN	K. PERERA
DRAWN BY	L. KARSHNER
PROJECT NUMBER	00090-130530-005

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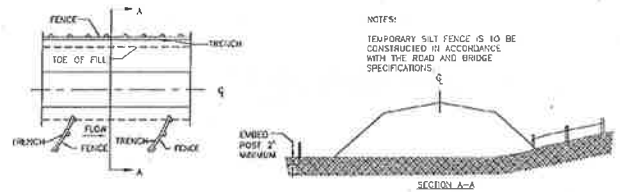
SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM
CONSTRUCTION DRAWINGS
FLORIDA

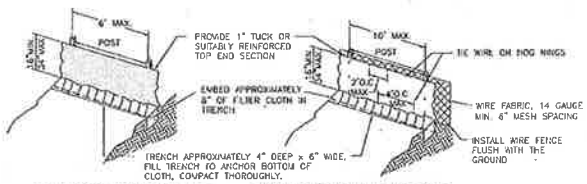
SEDIMENTATION AND EROSION CONTROL PLAN

FILENAME: C-21 AS-BLT.DWG
SCALE: 1"=200'
SHEET: C-21

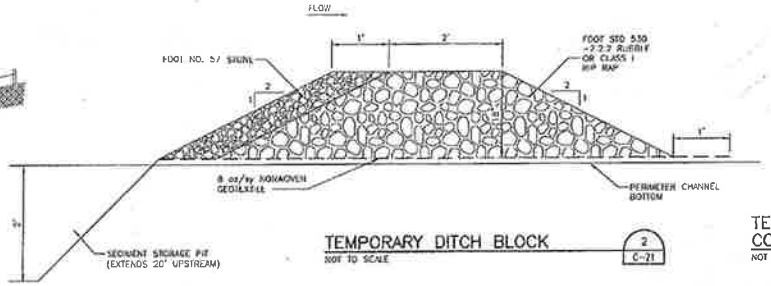


NOTES:

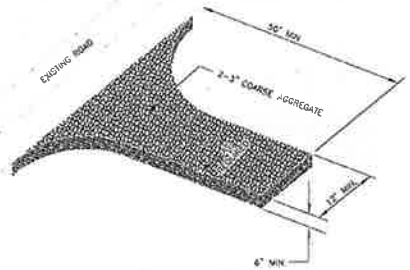
TEMPORARY SILT FENCE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS.



SILT FENCE
NOT TO SCALE — 1 / C-21



TEMPORARY DITCH BLOCK
NOT TO SCALE — 2 / C-21



TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT
NOT TO SCALE — 3 / C-21

CONSTRUCTION SPECIFICATIONS

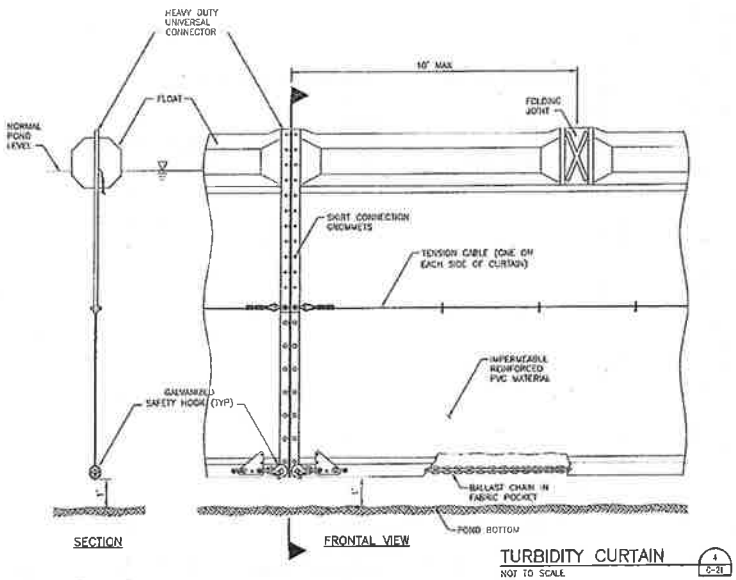
MATERIALS

1. SYNTHETIC FILTER FABRIC SHALL BE A PERVIOUS SHEET OF POLYPROPYLENE, NYLON POLYESTER, OR ETHYLENE YARN AND SHALL BE CERTIFIED BY THE MANUFACTURER OR SUPPLIER AS CONFORMING TO THE FOLLOWING REQUIREMENTS:

PHYSICAL PROPERTY	TEST	REQUIREMENTS
FILTERING EFFICIENCY	ASTM D-5141	75% (MIN)
TENSILE STRENGTH AT 20% (MAX.) ELONGATION*	VTM-52	EXTRA STRENGTH - 50 LBS./LIN. IN. (MIN.) STANDARD STRENGTH - 30 LBS./LIN. IN. (MIN.)
FLOW RATE	ASTM D-5141	0.3 GAL./SQ. FT./MIN.
ULTRAVIOLET RADIATION	ASTM D-4355 AND G-28	90% (MIN.)

* REQUIREMENTS REDUCED BY 50% AFTER 6 MONTHS OF INSTALLATION.

2. SYNTHETIC FILTER FABRIC SHALL CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 F TO 120 F.



TURBIDITY CURTAIN
NOT TO SCALE — 4 / C-21

NOTES

1. CONTRACTOR SHALL INSPECT TURBIDITY CURTAIN ACCORDING TO INSPECTION SCHEDULE AND REPAIR ANY OBSERVED DAMAGE.
2. CONTRACTOR SHALL MEASURE SEDIMENT LEVELS IMMEDIATELY UPSTREAM OF CURTAIN AFTER ANY STORM EVENT OF GREATER THAN ONE HALF INCH OF PRECIPITATION DURING ANY 24 HOUR PERIOD. SEDIMENT SHALL BE REMOVED OR CURTAIN MOVED FURTHER DOWNSTREAM IF SEDIMENT LEVEL REACHES BOTTOM OF CURTAIN.

TURBIDITY CURTAIN SPECIFICATIONS

CURTAIN MATERIAL: IMPERVIOUS REINFORCED PVC
MIN. TENSILE STRENGTH — 300 LB/IN
MIN. FABRIC WT. — 13 OZ/SY
TEAR STRENGTH — 60 LBS
TENSILE STRENGTH AFTER ABRASION — 200 LB/IN
RESISTANT TO MARINE GROWTH, ULTRA VIOLET LIGHT, AND MILDEW
ALL FABRIC SHALL BE HEAT SEALED.

FLOATS: SOLID, CLOSED-CELL, PLASTIC FOAM SEALED IN FABRIC POCKET. PROVIDE BUOYANT RATIO > 5
MAX. LENGTH 10'

BALLAST CHAIN: NON-CORROSIVE
2 LB/IN WEIGHT

TENSION CABLE: GALVANIZED OR STAINLESS STEEL WIRE ROPE

MOORING: AS RECOMMENDED BY MANUFACTURER FOR PROPOSED APPLICATION

RECORD DRAWING
THIS DOCUMENT HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS AND DEPICTS THE CONTRACTOR'S RECORD OF INSTALLATIONS. HDR ENGINEERING, INC. DOES NOT WARRANT THE ACCURACY OF SUCH INFORMATION OR COMPLETENESS OR FOR ANY UNKNOWN OR OMISSIONS THAT MAY BE INCORPORATED ONTO THIS DOCUMENT BASED ON THE INFORMATION.
THOMAS M. YANOSCHAK, P.E.
FLORIDA P.E. NO. 44200
HDR ENGINEERING, INC.

HDR
HDR Engineering, Inc.
2601 Cattlemen Rd., Ste 400
Sarasota, FL 34232-6312
(941) 342-8700
CA0000610

ISSUE	DATE	DESCRIPTION
1	03/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER R. SIEMERING
REVIEWED BY J. TIMMONS, R. SIEMERING
CIVIL DESIGN C. RESTREPO, T. YANOSCHACK
DRAWN BY B. JOHNSON
PROJECT NUMBER 00096-120530-005

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

SARASOTA COUNTY FLORIDA

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM CONSTRUCTION DRAWINGS

SEDIMENTATION AND EROSION CONTROL DETAILS

0 1" 2"

FILENAME C-22.DWG
SCALE AS SHOWN

SHEET 00C-22

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ENGINEERING SYMBOLOGY

Symbol	Description
HP	HIGH POINT
LP	LOW POINT
S-1	PROPOSED CONDENSATE SUMP
GW-19	PROPOSED LFG EXTRACTION WELL
(AP)	PROPOSED ACCESS POINT
(KO)	PROPOSED KNOCKOUT POT
(UT)	PROPOSED U-TRAP
	PROPOSED REMOTE WELLHEAD
	EXISTING LEACHATE SUMP
	EXISTING LEACHATE CLEANOUT
	PROPOSED AIRLINE/FORCE MAIN VALVE PIT
	PROPOSED HEADER ISOLATION VALVE PIT
	PROPOSED ECCENTRIC REDUCER
	PROPOSED STRAW BALE BARRIER
	PROPOSED TEMPORARY DITCH BLOCK
	EXISTING SOLAR FLARE
GP-7	EXISTING GAS PROBE
MW-14	EXISTING GROUNDWATER MONITORING WELL
	EXISTING WATER SUPPLY WELL
	PROPOSED ELECTRICAL HOUSING
	PROPOSED SILT FENCE
	PROPOSED 2" HDPE SDR 9 AIR SUPPLY LINE
	PROPOSED 4" HDPE SDR 9 CONDENSATE RETURN LINE
	PROPOSED 4" HDPE SDR 11 LATERAL
	PROPOSED 6" HDPE SDR 11 LATERAL
	PROPOSED 8" HDPE SDR 11 LATERAL
	PROPOSED HDPE SDR 17 HEADER
	EXISTING MAJOR/MINOR CONTOURS
40	PROPOSED MAJOR/MINOR CONTOURS
	PHASE LIMITS
	CELL LIMITS
	PROPERTY LINE
	EXISTING 6" LEACHATE FORCEMAIN
	PROPOSED CHAIN LINK FENCE
	EXISTING CHAIN LINK FENCE
	LIMITS OF CONSTRUCTION
UGE	PROPOSED UNDERGROUND ELECTRIC CONDUIT
UGT	PROPOSED UNDERGROUND TELEPHONE CONDUIT

DETAILS LEGEND OF PATTERNS

CLEAN BACKFILL

PIPE BEDDING (DEFINED AS FIELD COMPACTED AND LEVELED BACKFILL OR EQ.)

INTERMEDIATE COVER

WASTE

BENTONITE SEAL

EXISTING GROUND

STONE

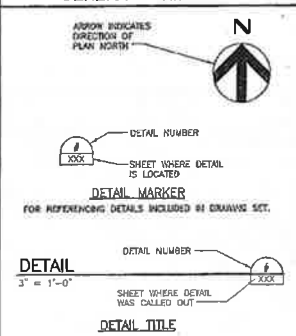
ONSITE SOIL

CONCRETE

ASPHALT

NOTE
SYMBOLOGY IS REPRESENTATIVE OF MAJOR LANDFILL GAS COMPONENTS.

GENERAL SYMBOLOGY



GENERAL NOTES

SURVEY AND MAP REPORT:

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV AREAS COMPILED BY KUCERA INTERNATIONAL INC., OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED JUNE 2010.

SPECIFIC NOTES:

1. 2 WEEKS PRIOR TO INITIATING WORK, THE CONTRACTOR WILL SUBMIT FOR APPROVAL A SCHEDULE TO THE ENGINEER, FOR COMPLETION OF THE PROJECT.
2. ALL EXCAVATION AND DRILLING WITHIN THE LANDFILL LIMITS SHALL CEASE PRIOR TO 5:00 PM. ALL WASTE EXCAVATED SHALL BE DELIVERED TO THE ACTIVE FACE OF THE LANDFILL DAILY BY 5:00 PM. WASTE NOT TAKEN TO WORKING FACE SHALL BE CONVERED OR CONTAINERIZED. CHANGES IN WORK HOURS ARE BASED UPON OWNER'S APPROVAL.
3. HOURS FOR CONSTRUCTION: 7:00 AM TO 7:00 PM MONDAY THRU SATURDAY, NO WORK ALLOWED ON SUNDAY UNLESS OTHERWISE APPROVED BY OWNER AND PERMIT WITH A MAXIMUM OF 60 HOURS PER WEEK.
4. CONTRACTOR MAY CONTAINERIZE WASTE AND TARP OVERNIGHT BASED ON OWNER APPROVAL.

EROSION AND SEDIMENT CONTROL:

1. CONTRACTOR WILL ADD EROSION AND SEDIMENT CONTROL AS NECESSARY TO PREVENT SEDIMENTATION AND DAMAGE TO ADJACENT AREAS AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
2. CONTRACTOR WILL INSPECT AND REPAIR, AS NECESSARY, ANY EROSION AND SEDIMENT CONTROL DAILY AND FOLLOWING EACH RAIN.
3. EROSION AND SEDIMENT CONTROL WILL BE INSTALLED PRIOR TO CONSTRUCTION AND SHALL BE MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED.
4. CONTRACTOR IS RESPONSIBLE FOR MONITORING DOWNSTREAM CONDITIONS THROUGHOUT THE CONSTRUCTION PERIOD AND CLEARING ANY DEBRIS AND SEDIMENT RESULTING FROM CONSTRUCTION.
5. EROSION CONTROL FENCING MUST MEET THE REQUIREMENT OF THE DEPARTMENT OF TRANSPORTATION, STATE OF FLORIDA STANDARD SPECIFICATIONS. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES.
6. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.

EARTHWORK:

1. EXCAVATION IS UNCLASSIFIED AND INCLUDES REMOVAL OF EARTH FILLS, RUBBLE, TRASH, AND OTHER MATERIALS ENCOUNTERED IN EXCAVATION AND GRADING OPERATIONS TO DEPTH AND EXTENT SHOWN ON DRAWINGS OR SPECIFIED. THE OWNER'S REPRESENTATIVE SHALL BE THE FINAL AUTHORITY AND SHALL MAKE THE FINAL DECISION DURING CONSTRUCTION AS TO THE DEPTH AND EXTENT TO WHICH MATERIALS MUST BE REMOVED AND REPLACED.
2. SURVEY BENCHMARKS, MONUMENTS AND OTHER REFERENCE POINTS WILL BE PROTECTED FROM DAMAGE AND DISPLACEMENT. IF DISTURBED OR DESTROYED, THEY WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
3. CONTRACTOR SHALL KEEP DIRT, DUST, NOISE AND OTHER OBJECTIONABLE NUISANCES TO A MINIMUM.
4. ALL FILL AREAS ARE TO BE COMPACTED AS DEFINED IN THE SPECIFICATIONS AND DRAWINGS.
5. CUT AND FILL SLOPES FOR STRUCTURAL EMBANKMENTS SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL.

UTILITIES:

1. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR LOCATIONS SHOWN AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF ALL UTILITIES WITHIN THE LIMITS OF THE WORK PRIOR TO CONSTRUCTION. ALL DAMAGE MADE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN THE AREA AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION. CALL FLORIDA SUNSHINE STATE ONE CALL CENTER AT 1-800-432-4770. ALL COORDINATION AND REQUIRED UTILITY COMPANY TEMPORARY PROTECTION SHALL BE AT THE CONTRACTOR'S EXPENSE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE UNINTERRUPTION OF SERVICE AND REPLACEMENT OF DAMAGED UTILITIES.

AS-BUILT SURVEY DATA:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MINIMIZING LANDFILL GAS EMISSIONS FROM SURVEY TUBES (E.G. SEAL TOP OF SURVEY TUBES).
2. THE CONTRACTOR SHALL PROVIDE SURVEY DATA TO THE ENGINEER SHOWING THE LANDFILL GAS SYSTEM HAS BEEN PROPERLY CONSTRUCTED AND MEETS THE MINIMUM SLOPES REQUIRED AS SHOWN ON THE DRAWINGS.
3. THE SURVEY DATA SUBMITTED TO THE ENGINEER SHALL BE GROUND SURFACE ELEVATIONS AND TOP OF PIPE ELEVATIONS AT 50 FOOT INTERVALS ON CENTER AND AT EACH FITTING, LATERAL CONNECTION, VALVE, BENDS AND OTHER SIGNIFICANT FEATURES.
4. ALL REQUESTED SURVEY DATA MUST BE PROVIDED TO OWNER'S REPRESENTATIVE IN FLORIDA STATE PLANE COORDINATES AND BE PERFORMED BY A STATE OF FLORIDA CERTIFIED SURVEYOR.

GENERAL NOTES:

1. THE CONTRACTOR IS ADVISED THAT NO ACTIVITIES MAY INTERFERE, DISRUPT, BLOCK, OR OTHERWISE CONFLICT WITH LANDFILL OPERATIONS. IF CONFLICTS ARE ANTICIPATED THEY SHALL BE COORDINATED AND APPROVED BY THE OWNER AND ENGINEER PRIOR TO DISRUPTION.
2. PROJECT SITE IS A SOLID WASTE LANDFILL, AS SUCH, CONDITIONS ARE SUBJECT TO CHANGE WITH TIME. CONTROLS, IN PARTICULAR VERTICAL CONTROL, SHOULD BE EXPECTED (AND ANTICIPATED) TO VARY FROM THOSE SHOWN ON THESE DRAWINGS DUE TO ONGOING SUBSIDENCE RESULTING FROM REFUSE DECOMPOSITION. RELATIVE ELEVATION DIFFERENCES IN EXISTING AND PROPOSED ELEVATIONS SHOWN ON THE DRAWINGS SHALL BE ADJUSTED ACCORDINGLY. LOCATION OF STRUCTURES SHALL BE PLACED IN ACCORDANCE WITH HORIZONTAL CONTROLS. VERTICAL PLACEMENT OF STRUCTURES SHALL BE IN ACCORDANCE WITH CONSTRUCTION DOCUMENTS, OR AS APPROVED BY THE ENGINEER.
3. CONSTRUCTION OF LANDFILL GAS COLLECTION SYSTEM WILL INVOLVE REFUSE EXCAVATION. THE CONTRACTOR SHALL MAKE ALL SAFETY AND ENVIRONMENTAL PRECAUTIONS TO PROTECT ITS WORKERS AND SUBCONTRACTORS, AT NO ADDITIONAL COST TO THE OWNER. ALL EXCAVATED WASTES SHALL BE PLACED AT THE WORKING FACE. CONTRACTOR IS ADVISED THAT THE POTENTIAL FOR ENCOUNTERING ASBESTOS CONTAINING MATERIAL EXISTS. SHOULD SUSPECT ASBESTOS-CONTAINING MATERIAL BE ENCOUNTERED, IT SHALL BE MAINTAINED IN A MOIST CONDITION DURING THE REMOVAL AND TRANSFER PROCESS TO MINIMIZE/PREVENT EMISSIONS FROM SUCH DISTURBED REFUSE (INCLUDING ANY SUSPECT ASBESTOS-CONTAINING MATERIAL) WILL BE TRANSPORTED TO THE WORKING FACE OF THE CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX BY THE END OF EACH WORKING DAY FOR PROPER DISPOSAL AND BURIED WITH A MINIMUM OF SIX (6) INCHES OF SOIL COVER.
4. ANY AND ALL FINES IMPOSED ON THE OWNER BY ANY REGULATORY AGENCY DUE TO ACTIONS OF THE CONTRACTOR SHALL BE PAID BY THE CONTRACTOR.
5. INSPECTION, EXAMINE AREAS FOR CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED. REPORT IN WRITING TO OWNER'S REPRESENTATIVE ALL CONDITIONS CONTRARY TO THOSE SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN AND ALL OTHER CONDITIONS THAT WILL AFFECT SATISFACTORY EXECUTION OF WORK. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. STARTING WORK CONSTITUTES ACCEPTANCE OF THE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED. AFTER SUCH ACCEPTANCE, THE CONTRACTOR SHALL, AT CONTRACTORS EXPENSE, BE RESPONSIBLE FOR CORRECTING ALL UNSATISFACTORY AND DEFECTIVE WORK RESULTING FROM SUCH UNSATISFACTORY CONDITIONS.
6. PROTECTIONS: INSTALL TEMPORARY BARRIERS, FENCES, BARRICADES, LIGHTS, WARNING SIGNS AND OTHER DEVICES NECESSARY TO PROTECT STRUCTURES, UTILITIES, LANDSCAPING, EXCAVATIONS, AND OTHER ITEMS AS NECESSARY. PROTECT SURVEY BENCHMARKS AND MONUMENTS FROM DISPLACEMENT.
7. ALL WORK SHALL BE PERFORMED IN A QUALITY WORKMANLIKE MANNER.
8. DEVIATIONS FROM THESE PLANS AND SPECIFICATIONS WITHOUT PRIOR WRITTEN CONSENT OF THE ENGINEER OR OWNER MAY CAUSE THE WORK TO BE UNACCEPTABLE AND WILL BE ADJUSTED OR REPAIRED AT THE CONTRACTOR'S EXPENSE.
9. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY LICENSES AND PERMITS ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT UNLESS NOTIFIED OTHERWISE IN WRITING BY THE OWNER.
10. LATERAL PIPING ALIGNMENTS ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY TO ASSURE REQUIRED SLOPE AND DIRECTION OF GAS AND CONDENSATE FLOW.
11. SUGGESTED INSTALLATION SEQUENCE: THE FOLLOWING INSTALLATION SEQUENCE HAS BEEN ASSUMED IN THE ENGINEER CALCULATIONS
    - (A.) DRILL ALL VERTICAL WELLS, INSTALLING AND COMPLETING WELL COMPONENTS AS PROCEEDING
    - (B.) TRENCH LATERAL PIPING FROM THE WELLS TO CONNECTION POINT IN THE ACTIVE GAS COLLECTION SYSTEM.
    - (C.) CONNECT ALL LATERALS TO ACTIVE GAS COLLECTION SYSTEM.
    - (D.) INSTALL FORCEMAIN AND AIR LINE PIPING
    - (E.) INSTALL PNEUMATIC PUMPS AT WELLS DESIGNATED BY ENGINEER.
    - (F.) COMPLETE WELLHEAD INSTALLATION AND PNEUMATIC PUMP CONNECTIONS.
12. PRIOR TO INSTALLATION OF GAS COLLECTION SYSTEM, ENGINEER TO BE PROVIDED WITH THE FINAL GRADING PLAN TO CONFIRM LAYOUT AND MINIMUM SLOPES.
13. ALL WORK SHALL HAVE A WARRANTY AS SPECIFIED IN THE CONTRACT DOCUMENTS.
14. ALL BORE HOLES THAT ARE NOT COMPLETED AT THE END OF THE DAY ARE TO BE COVERED WITH A METAL WELL COVER CAPABLE OF PREVENTING ANY PERSONS FROM FALLING INTO THE HOLE. THE HOLE MUST THEN BE COVERED WITH A PIECE OF PLYWOOD TO SUBSTANTIALLY COVER THE ENTIRE HOLE. SOIL MUST BE PLACED ON TOP OF THE PLYWOOD TO COMPLETELY COVER THE PLYWOOD TO FURTHER PREVENT GAS EMISSIONS. SUBSTITUTE SAFETY MEASURES MAY BE USED IF APPROVED BY ENGINEER.
15. ALL HDPE PIPES SHALL BE PRESSURE TESTED AFTER FUSION FOR LEAKS. THE STANDARD PRESSURE TEST SHALL BE 10 PSI FOR 1 HOUR WITH A MAXIMUM OF 5% LOSS.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL SURVEY TUBES AT THE END OF THE PROJECT, UNLESS INSTRUCTED OTHERWISE BY OWNER OR ENGINEER.
17. ACTUAL DIMENSIONS AND LOCATIONS MAY VARY BASED ON FIELD LOCATIONS.
18. TERMS "OWNER'S REPRESENTATIVE" AND "ENGINEER" ARE INTERCHANGEABLE.
19. CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER FOR APPROVAL.
20. THE CONTRACTOR IS ADVISED THAT THE LANDFILL CONTAINS A SYNTHETIC LINER AS PART OF THE SUBGRADE CONSTRUCTION. ALL COSTS ASSOCIATED WITH REPAIR RESULTING FROM DAMAGE TO THIS LINER SYSTEM SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THESE COSTS SHALL INCLUDE, BUT ARE NOT LIMITED TO ENGINEER'S REVIEW, REPAIR OR REPLACEMENT BY A QUALIFIED HDPE LINER INSTALLER, THIRD PARTY OBSERVATION, AND COUNTY REVIEW.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENGINEERING HOURS OVER THE 60 HOURS PER WEEK WORK SCHEDULE AT A RATE OF $100/HR.

RECORD DRAWING

CLIFFORD G. KOENIG, P.E.
FLORIDA P.E. NO. 64078
HDR ENGINEERING, INC.

HDR

ISSUE	DATE	DESCRIPTION
1	08/2012	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEMERING
REVIEWED BY	C. KOENIG
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00096-130530-005

CLIFFORD G. KOENIG, LICENSE No. 64078, STATE OF FLORIDA, PROFESSIONAL ENGINEER

CLIFFORD G. KOENIG, P. E.
CERTIFICATE NO. 64078

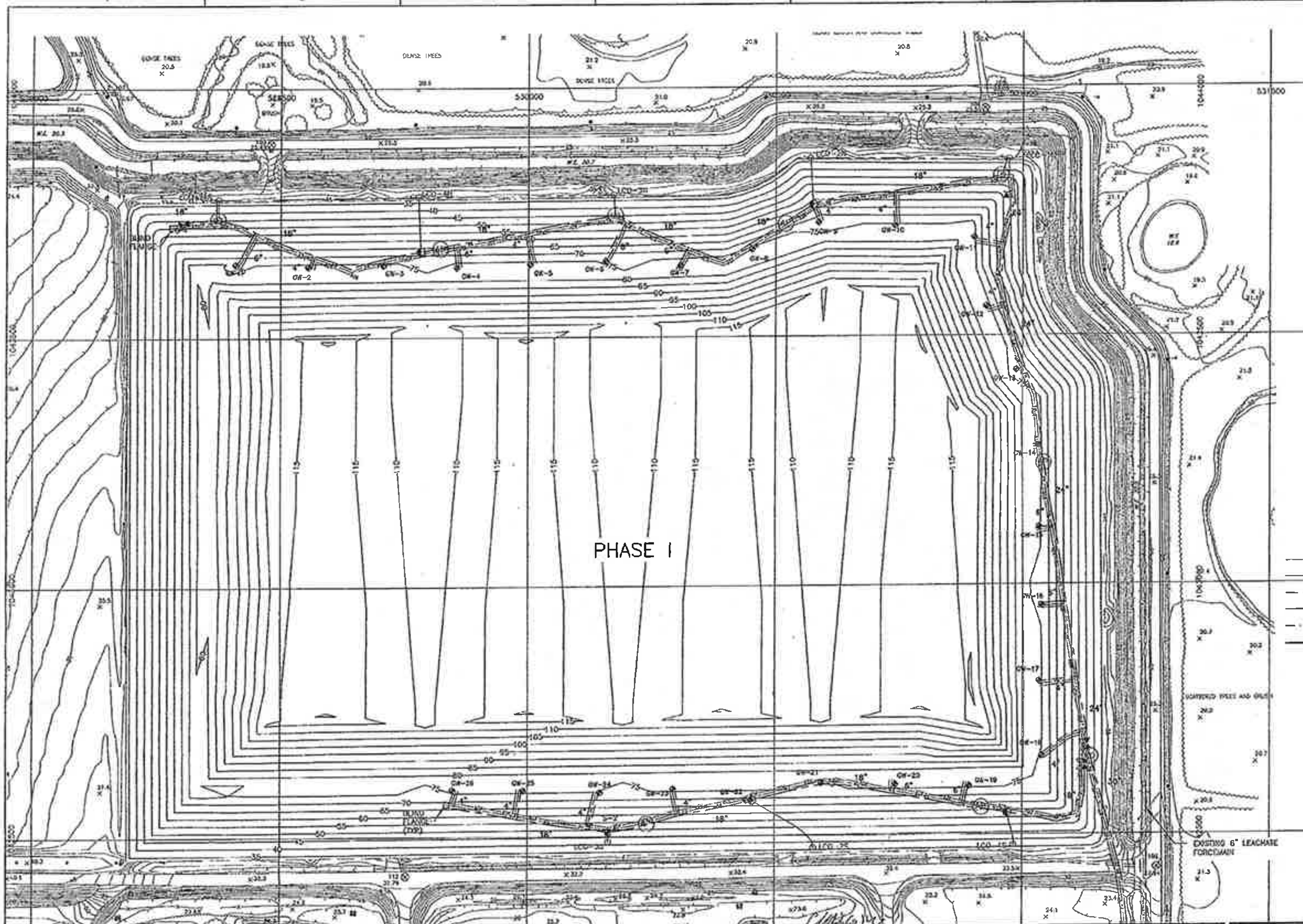
Sarasota County
SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE I SEQUENCE 2
LANDFILL GAS COLLECTION AND CONTROL SYSTEM
FLORIDA

GENERAL NOTES, LEGEND AND ABBREVIATIONS

FILENAME: 00C-07.DWG
SCALE: AS SHOWN
SHEET: LFG-02 LFG-01



NOTES:

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV WAS COMPILED BY KUCERA INTERNATIONAL INC. OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED JUNE 2, 2010.
2. PROPOSED PHASE I FINAL GRADES DESIGNED BY HDR ENGINEERING, INC. TAMPA, FLORIDA.
3. CONTRACTOR TO PROVIDE A PRE-CONSTRUCTION SURVEY, PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, TO VERIFY EXISTING CONDITIONS.
4. LOCATION AND DENSITY OF LFG EXTRACTION SYSTEM ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON EXISTING CONDITIONS.
5. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.
6. BLIND FLANGE AT END OF SOUTH HEADER SHALL BE LOCATED 20 FEET OUTSIDE OF PHASE 2 LIMITS OF LINER. ACTUAL LOCATION TO BE DETERMINED AFTER PRE-CONSTRUCTION SURVEY.
7. ALL LEACHATE CLEANOUT CONNECTIONS SHALL HAVE A REMOTE WELLHEAD, NOT SHOWN FOR CLARITY.
8. AIR AND FORCEMAIN SHOWN OFFSET FOR CLARITY.
9. CONTRACTOR TO REMOVE EXISTING BOLLARDS AND STOCKPILE FOR REUSE AS DIRECTED BY OWNER AND ENGINEER.

Symbol	Description
S-1	CONDENSATE SUMP
GW-18	LFG EXTRACTION WELL
AP	ACCESS POINT
KO	KNOCKOUT POT
	REMOTE WELLHEAD
	EXISTING LEACHATE CLEANOUT
—AP—	2" HDPE SDR 9 AIR SUPPLY LINE
—D—	4" HDPE SDR 9 CONDENSATE RETURN LINE
	4" HDPE SDR 11 LATERAL
	6" HDPE SDR 11 LATERAL
	8" HDPE SDR 11 LATERAL
	HDPE SDR 17 HEADER

RECORD DRAWING

CLIFFORD C. KOENIG, P.E.
FLORIDA P.E. NO. 64078

HDR ENGINEERING, INC.

HDR

ISSUE	DATE	DESCRIPTION
1	08/2012	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER: R. SIEVERING
REVIEWED BY: C. KOENIG
CIVIL DESIGN: C. RESTREPO, T. YANOSCHAK
DRAWN BY: B. JOHNSON
PROJECT NUMBER: 00095-130530-005

CLIFFORD C. KOENIG, P. E.
CERTIFICATE NO. 64078

Sarasota County

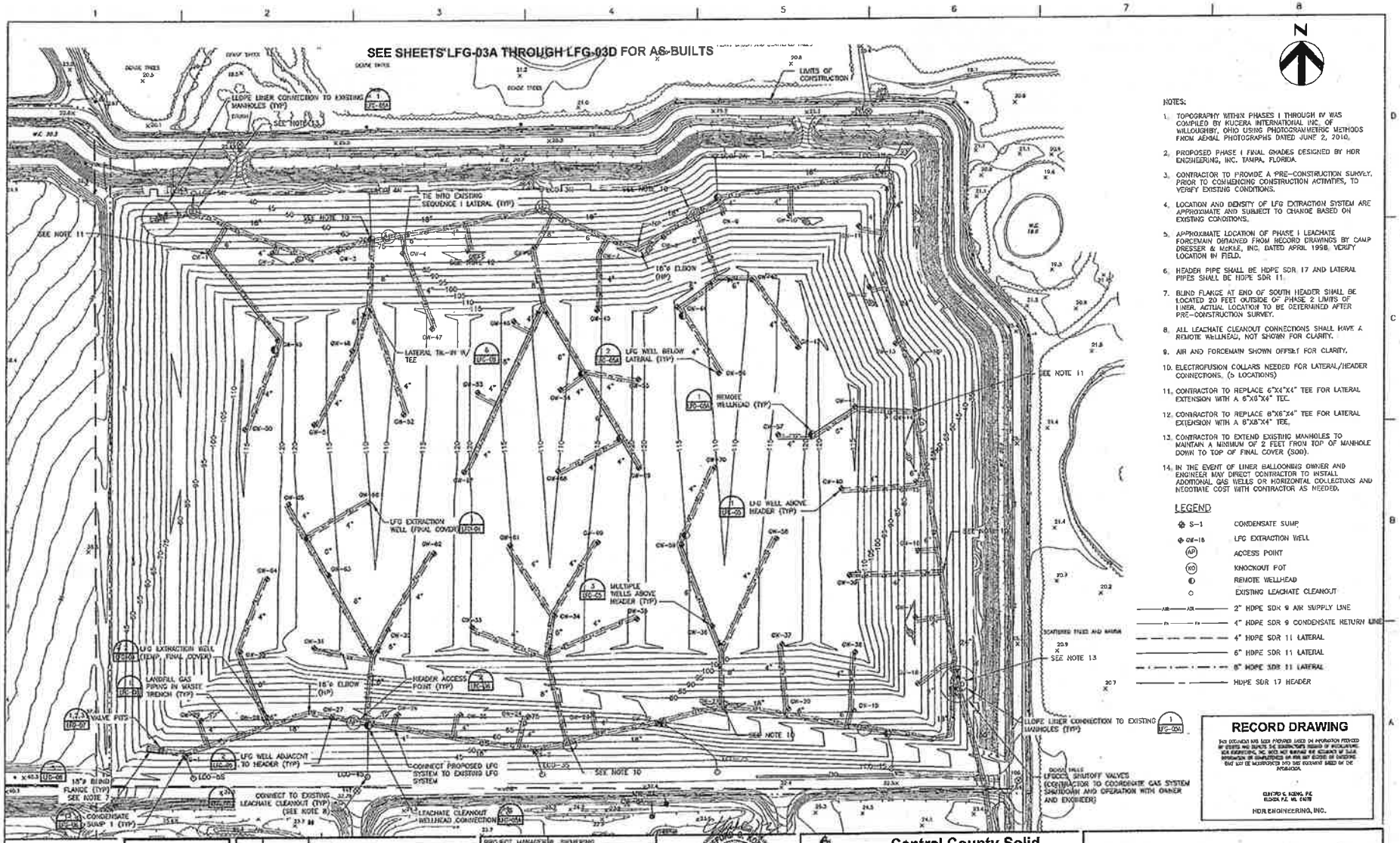
Central County Solid Waste Disposal Complex

PHASE I SEQUENCE 2 LANDFILL GAS COLLECTION AND CONTROL SYSTEM

SARASOTA COUNTY FLORIDA

PHASE I GAS SYSTEM LAYOUT - EXISTING CONDITIONS

FILENAME: 00LFG-02.DWG
SCALE: 1"=100'
SHEET: LFG-02



NOTES:

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2. PROPOSED PHASE I FINAL GRADES DESIGNED BY HDR ENGINEERING, INC. TAMPA, FLORIDA.
3. CONTRACTOR TO PROVIDE A PRE-CONSTRUCTION SURVEY, PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, TO VERIFY EXISTING CONDITIONS.
4. LOCATION AND DENSITY OF LFG EXTRACTION SYSTEM ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON EXISTING CONDITIONS.
5. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.
6. HEADER PIPE SHALL BE HDPE SDR 17 AND LATERAL PIPES SHALL BE HDPE SDR 11.
7. BLIND FLANGE AT END OF SOUTH HEADER SHALL BE LOCATED 20 FEET OUTSIDE OF PHASE 2 LIMITS OF LINER. ACTUAL LOCATION TO BE DETERMINED AFTER PRE-CONSTRUCTION SURVEY.
8. ALL LEACHATE CLEANOUT CONNECTIONS SHALL HAVE A REMOTE WELLHEAD, NOT SHOWN FOR CLARITY.
9. AIR AND FORCEMAIN SHOWN OFFSET FOR CLARITY.
10. ELECTROFUSION COLLARS NEEDED FOR LATERAL/HEADER CONNECTIONS. (5 LOCATIONS)
11. CONTRACTOR TO REPLACE 6"X4"X4" TEE FOR LATERAL EXTENSION WITH A 6"X6"X4" TEE.
12. CONTRACTOR TO REPLACE 8"X6"X4" TEE FOR LATERAL EXTENSION WITH A 8"X8"X4" TEE.
13. CONTRACTOR TO EXTEND EXISTING MANHOLES TO MAINTAIN A MINIMUM OF 2 FEET FROM TOP OF MANHOLE DOWN TO TOP OF FINAL COVER (SOIL).
14. IN THE EVENT OF LINER BALLOONING OWNER AND ENGINEER MAY DIRECT CONTRACTOR TO INSTALL ADDITIONAL GAS WELLS OR HORIZONTAL COLLECTORS AND NEGOTIATE COST WITH CONTRACTOR AS NEEDED.

LEGEND

- S-1 — CONDENSATE SUMP
- GW-18 — LFG EXTRACTION WELL
- AP — ACCESS POINT
- KO — KNOCKOUT POT
- REMOTE WELLHEAD
- EXISTING LEACHATE CLEANOUT
- 2" HDPE SDR 9 AIR SUPPLY LINE
- 4" HDPE SDR 9 CONDENSATE RETURN LINE
- 4" HDPE SDR 11 LATERAL
- 6" HDPE SDR 11 LATERAL
- 8" HDPE SDR 11 LATERAL
- HDPE SDR 17 HEADER

RECORD DRAWING

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS AND REFLECTS THE CONSTRUCTED RESULTS OF MODIFICATIONS. HDR ENGINEERING, INC. DOES NOT WARRANT THE ACCURACY OF SAID INFORMATION OR MODIFICATIONS OR THAT ANY ASPECTS OF EXISTING THAT MAY BE INCORPORATED INTO SAID DOCUMENT BASED ON THE INFORMATION.

CLIFFORD G. KOENIG, P.E.
FLORIDA P.E. NO. 54078

HDR ENGINEERING, INC.

HDR

NO.	DATE	DESCRIPTION
1	08/2012	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEMERING
REVIEWED BY	C. KOENIG
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00099-130530-005

CLIFFORD G. KOENIG, P. E.
CERTIFICATE NO. 54078

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

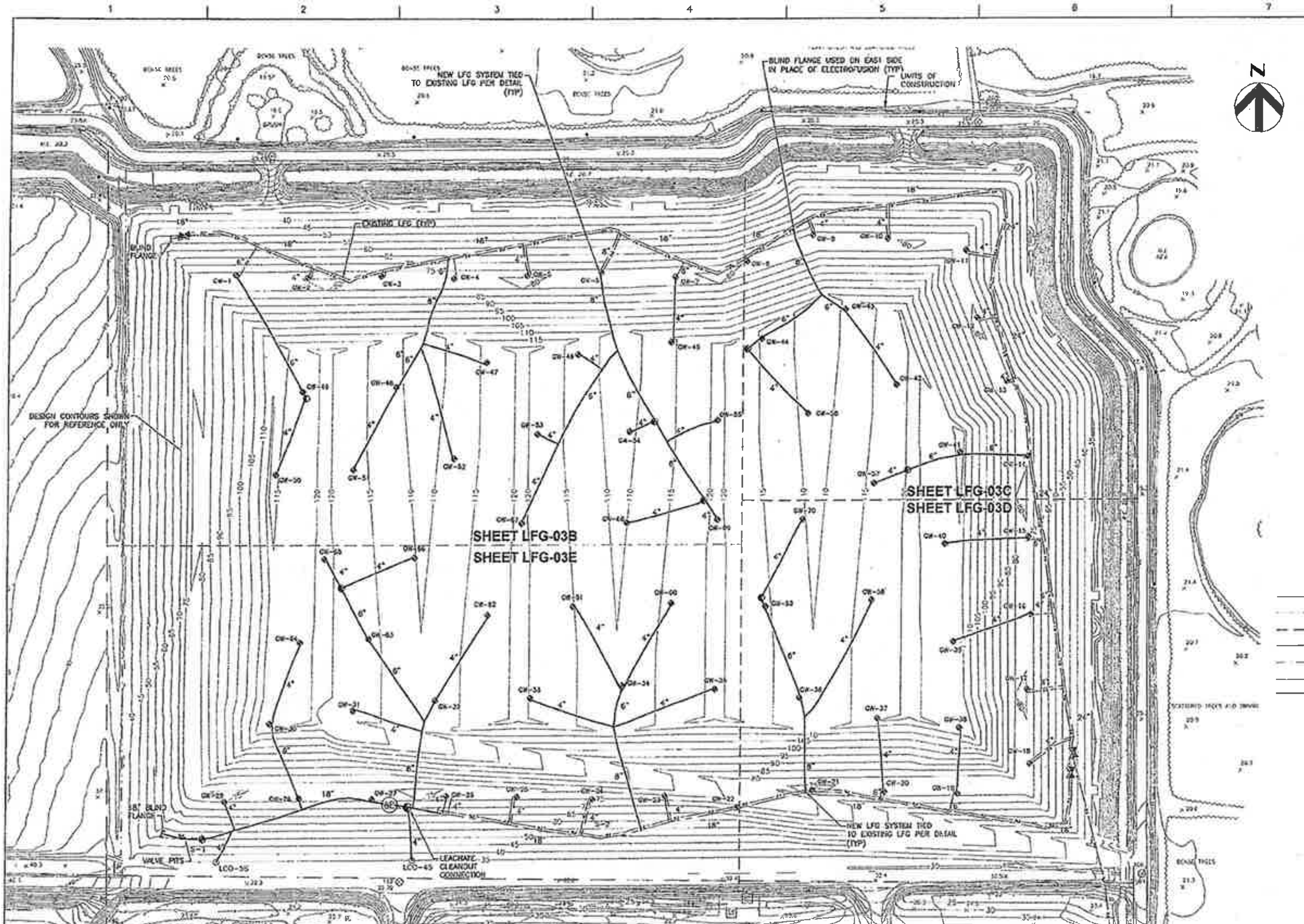
PHASE I SEQUENCE 2 LANDFILL GAS COLLECTION AND CONTROL SYSTEM

FLORIDA

PHASE I SEQUENCE 2 GAS SYSTEM LAYOUT AS-BUILT

0 1" 2"

FILENAME	00LFG-03.DWG
SCALE	1"=100'
SHEET	LFG-03A



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1. TOPOGRAPHY WITHIN PHASES I THROUGH IV WAS COMPILED BY KUCERA INTERNATIONAL INC. OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED JUNE 2, 2010.
2. PROPOSED PHASE I FINAL GRADES DESIGNED BY HDR ENGINEERING, INC. TAMPA, FLORIDA.
3. CONTRACTOR TO PROVIDE A PRE-CONSTRUCTION SURVEY, PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, TO VERIFY EXISTING CONDITIONS.
4. LOCATION AND DENSITY OF LFG EXTRACTION SYSTEM ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON EXISTING CONDITIONS.
5. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.
6. HEADER PIPE SHALL BE HDPE SDR 17 AND LATERAL PIPES SHALL BE HDPE SDR 11.
7. BLIND FLANGE AT END OF SOUTH HEADER SHALL BE LOCATED 20 FEET OUTSIDE OF PHASE 2 LIMITS OF LINER. ACTUAL LOCATION TO BE DETERMINED AFTER PRE-CONSTRUCTION SURVEY.
8. ALL LEACHATE CLEANOUT CONNECTIONS SHALL HAVE A REMOTE WELLHEAD, NOT SHOWN FOR CLARITY.
9. AIR AND FORCEMAIN SHOWN OFFSET FOR CLARITY.
10. ELECTROFUSION COLLARS NEEDED FOR LATERAL/HEADER CONNECTIONS. (5 LOCATIONS)
11. CONTRACTOR TO REPLACE 6"X4"X4" TEE FOR LATERAL EXTENSION WITH A 6"X6"X4" TEE.
12. CONTRACTOR TO REPLACE 8"X6"X4" TEE FOR LATERAL EXTENSION WITH A 8"X8"X4" TEE.
13. CONTRACTOR TO EXTEND EXISTING MANHOLES TO MAINTAIN A MINIMUM OF 2 FEET FROM TOP OF MANHOLE DOWN TO TOP OF FINAL COVER (SOD).
14. IN THE EVENT OF LINER BALLOONING OWNER AND ENGINEER MAY DIRECT CONTRACTOR TO INSTALL ADDITIONAL GAS WELLS OR HORIZONTAL COLLECTORS AND NEGOTIATE COST WITH CONTRACTOR AS NEEDED.

LEGEND

S-1	AS-BUILT CONDENSATE SUMP
GW-18	AS-BUILT LFG EXTRACTION WELL
(AP)	AS-BUILT ACCESS POINT
(KO)	KNOCKOUT POT
	AS-BUILT REMOTE WELLHEAD
	EXISTING LEACHATE CLEANOUT
	AS-BUILT VALVE PIT
	AS-BUILT BLIND FLANGE
—AIR—AIR—	2" HDPE SDR 9 AIR SUPPLY LINE
	4" HDPE SDR 9 CONDENSATE RETURN LINE
	4" HDPE SDR 11 LATERAL
	6" HDPE SDR 11 LATERAL
	8" HDPE SDR 11 LATERAL
	HDPE SDR 17 HEADER
	AS-BUILT LFG PIPE
+110.00	AS-BUILT TOP OF PIPE ELEVATION

SURVEYOR'S NOTES:

1. THE PURPOSE OF THIS SURVEY IS TO SHOW THE HORIZONTAL AND VERTICAL LOCATIONS OF THE IMPROVEMENTS AS INSTALLED BY THE CONTRACTOR FOR THE PHASE I AREA FOR THE PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM PROJECT FOR SARASOTA COUNTY.
2. ELEVATIONS SHOWN ARE BASED ON BENCHMARK INFORMATION PROVIDED BY HDR ENGINEERING, INC. AND SHOWN IN CONSTRUCTION PLANS FOR THE PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM PROJECT FOR SARASOTA COUNTY, AS TEMPORARY BENCHMARKS (SEE SHEET C-01).
3. ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM 1929.
4. ALL UTILITIES SHOWN, EXCEPT FOR THE UTILITIES INSTALLED BY THE CONTRACTOR FOR THIS PROJECT, WERE NOT LOCATED BY THIS SURVEY AND ARE ON THE DRAWING PREVIOUSLY LOCATED BY ANOTHER SURVEY.
5. AS-BUILT DATA SHOWN IN BOLD.

ISSUE	DATE	DESCRIPTION
2	7/31/12	PROGRESSIVE AS-BUILT
1	3/12/12	PROGRESSIVE AS-BUILT

I hereby certify that the survey shown hereon is true and correct to the best of my knowledge and belief, based on actual measurements taken in the field. This survey meets the Minimum Technical Standards as set forth by the Florida Board of Professional Land Surveyors in Chapter 5J-17, Florida Administrative Code, pursuant to Section 472.027, Florida Statutes.

LAYOUT SERVICES, INC.
TITUSVILLE, FL

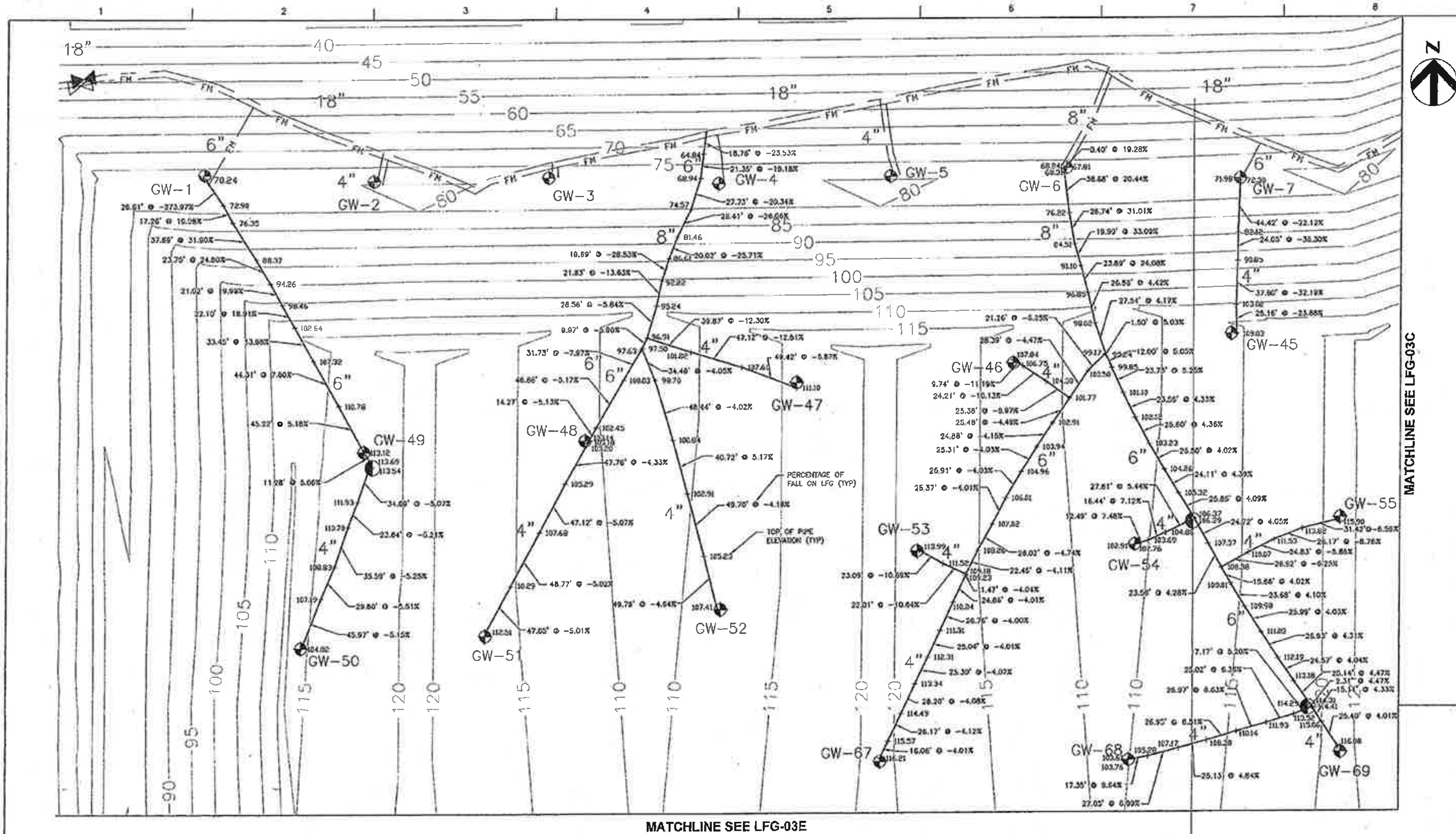
Professional Land Surveyor No. [illegible]
State of Florida

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM AS-BUILT SURVEY
SARASOTA COUNTY — FLORIDA

PHASE I SEQUENCE 2 GAS SYSTEM LAYOUT AS-BUILT SURVEY

PROJECT NUMBER 00085-120530-005
FILENAME 00C-12 AS-BUILT.DWG
SCALE 1"=100'
SHEET **LFG-03A**



ISSUE	DATE	DESCRIPTION
2	7/31/12	PROGRESSIVE AS-BUILT
1	3/12/12	PROGRESSIVE AS-BUILT

LAYOUT SERVICES, INC.

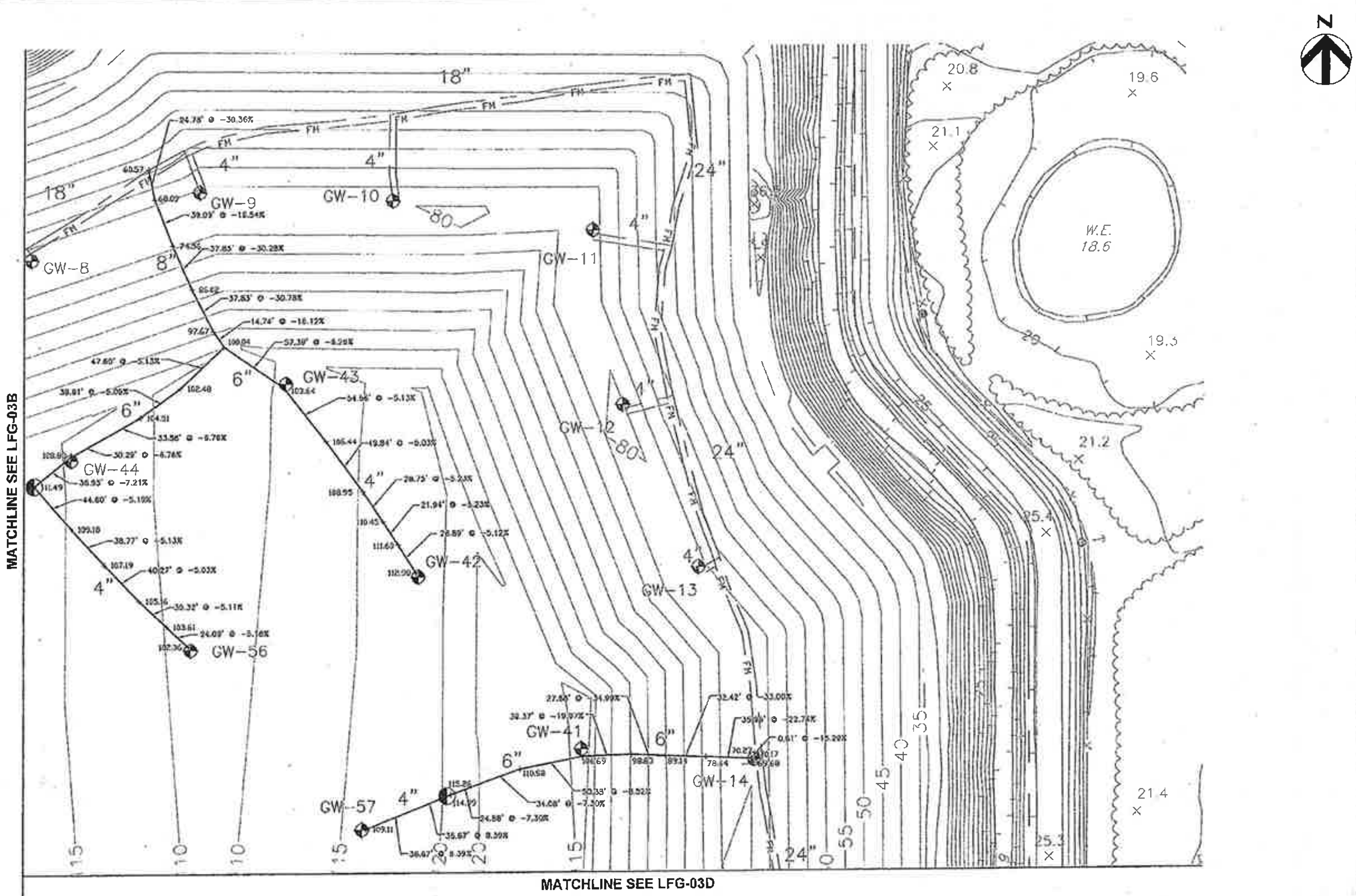
James Zimmerman
Professional Land Surveyor No. 6545
State of Florida

THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM AS-BUILT SURVEY
SARASOTA COUNTY FLORIDA

PHASE I SEQUENCE 2 GAS SYSTEM LAYOUT AS-BUILT SURVEY

PROJECT NUMBER 00095-130530-005
FILENAME 00C-12 AS-BUILT.DWG
SCALE 1"=40'
SHEET LFG-03B



ISSUE	DATE	DESCRIPTION
2	7/31/12	PROGRESSIVE AS-BUILT
1	3/12/12	PROGRESSIVE AS-BUILT

LAYOUT SERVICES, INC.

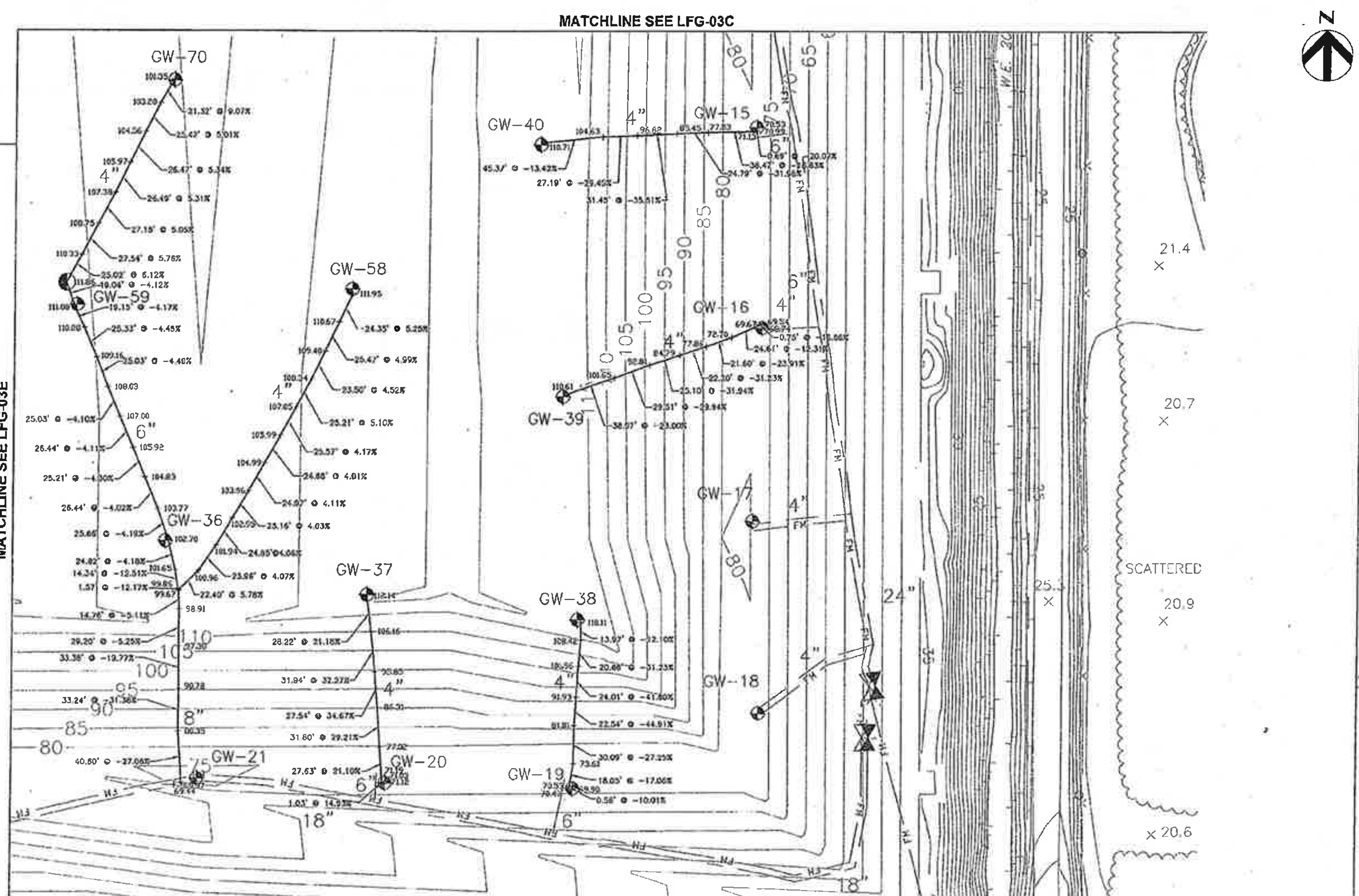
THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM AS-BUILT SURVEY

SARASOTA COUNTY FLORIDA

PHASE I SEQUENCE 2 GAS SYSTEM LAYOUT AS-BUILT SURVEY

FILENAME: 00C-12 AS-BUILT.DWG
SCALE: 1"=40'
SHEET: LFG-03C



ISSUE	DATE	DESCRIPTION
2	7/31/12	PROGRESSIVE AS-BUILT
1	3/12/12	PROGRESSIVE AS-BUILT

LAYOUT SERVICES, INC.

James Zimmerman
Professional Land Surveyor No. 6545
State of Florida

THOMAS M. YAKOSCHUK, P. E.
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SARASOTA COUNTY

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL
CLOSURE AND LANDFILL GAS
COLLECTION SYSTEM
AS-BUILT SURVEY

FLORIDA

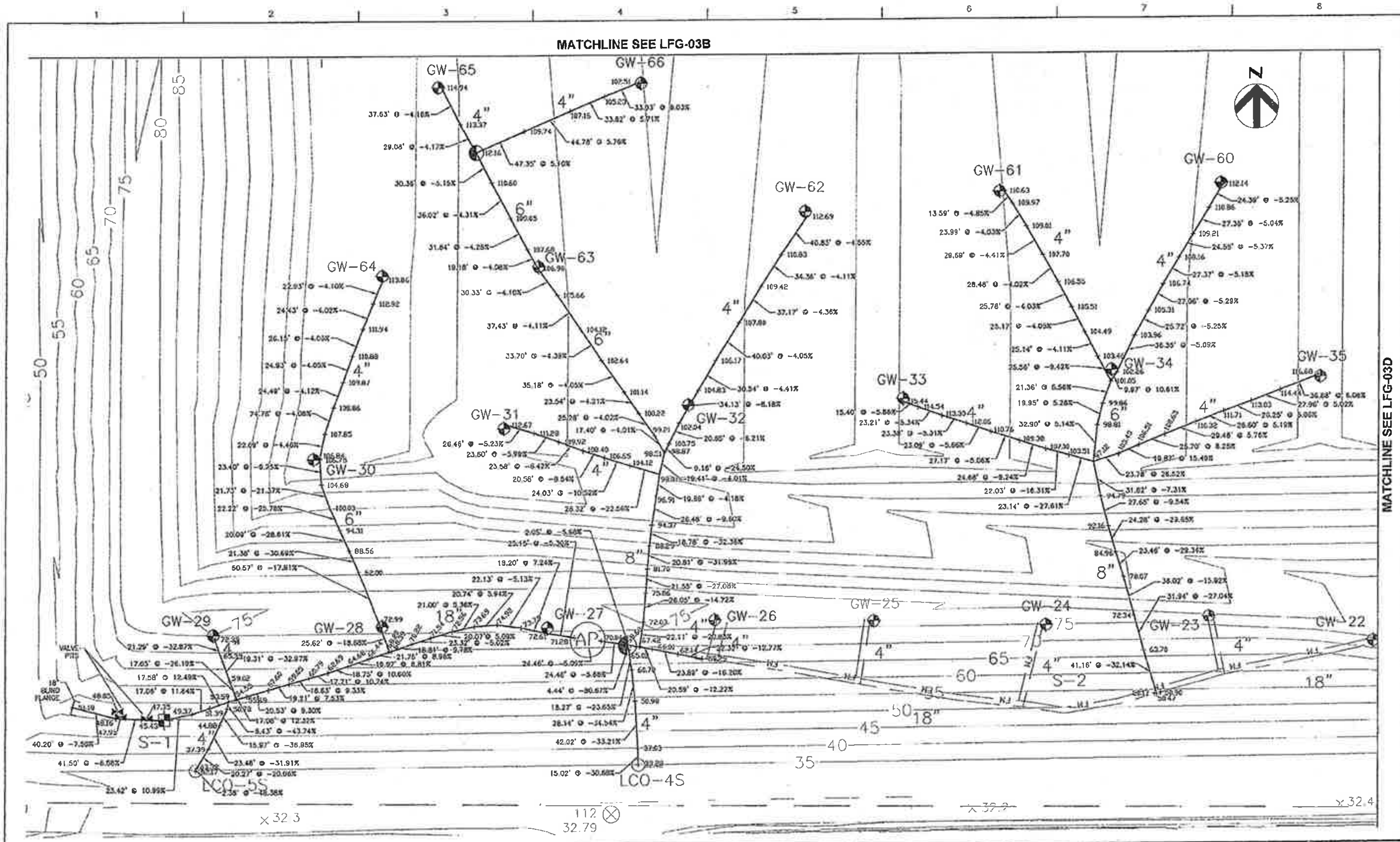
PHASE I SEQUENCE 2 GAS SYSTEM LAYOUT
AS-BUILT SURVEY

PROJECT NUMBER 00096-130530-005

FILENAME: 00C-12 AS-BUILT.DWG

SCALE: 1"=40'

SHEET: LFG-03D



ISSUE	DATE	DESCRIPTION
2	7/31/12	PROGRESSIVE AS-BUILT
1	3/12/12	PROGRESSIVE AS-BUILT

LAYOUT SERVICES, INC.

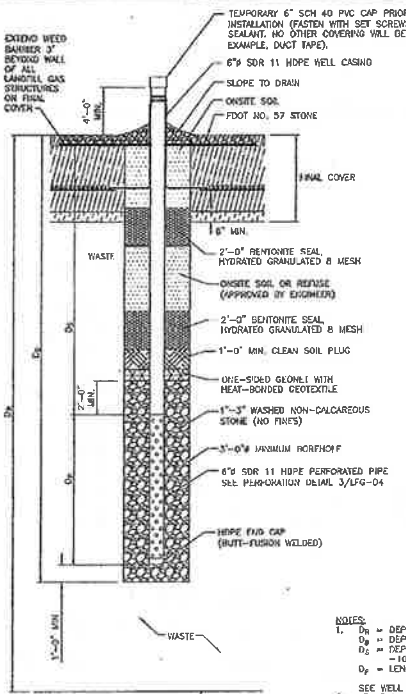
THOMAS M. YANOSCHAK, P. E.
CERTIFICATE NO. 44200

Central County Solid Waste Disposal Complex
PHASE I CLASS I LANDFILL CLOSURE AND LANDFILL GAS COLLECTION SYSTEM AS-BUILT SURVEY

SARASOTA COUNTY FLORIDA

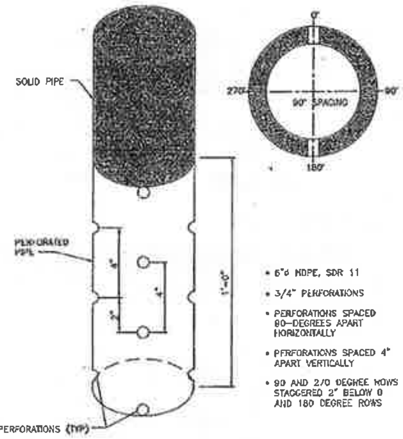
PHASE I SEQUENCE 2 GAS SYSTEM LAYOUT AS-BUILT SURVEY

FILENAME: 06C-12 AS-BUILT.DWG
SCALE: 1"=40'
SHEET: LFG-03E



LANDFILL GAS EXTRACTION WELL (FINAL COVER) 1/LFG-03

NOT TO SCALE



EXTRACTION WELL PERFORATION DETAIL 3/LFG-04

NOT TO SCALE

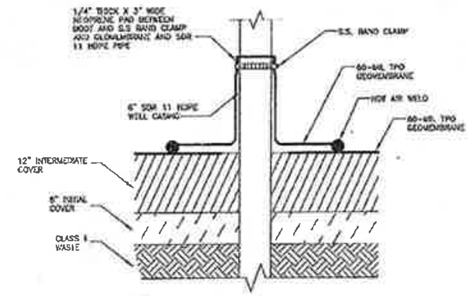
NOTES:

1. D_R = DEPTH OF REFUSE
   D_B = DEPTH OF BORING
   D_S = DEPTH OF SOLID PIPE (BELOW GRADE) -10 FEET MINIMUM
   D_P = LENGTH OF PERFORATED PIPE

   SEE WELL SCHEDULE THIS SHEET.
2. 1"-3" WASHED NON-CALCAREOUS STONE (NO FINES).
3. WELL DRILLING WILL NOT COMMENCE UNTIL EXISTING GRADE ELEVATIONS ARE IDENTIFIED AND VERIFIED BY PROJECT SURVEYOR, DESIGN ENGINEER, AND CQA REPRESENTATIVE.
4. WELL DRILLING TABLE WILL BE MANAGED BY OWNER OR DESIGNATED REPRESENTATIVE TO ENSURE ONLY THE VERIFIED WELL DEPTHS ARE PRESENT, AND THAT DRILLER AND CQA REPRESENTATIVE HAVE THE IDENTICAL INFORMATION PRIOR TO DRILLING.

WELL ID	NORTHING	EASTING	[illegible] ELEVATION	BD ELEVATION	DEPTH OF WASTE (D_R)	BOREHOLE (D_B)	SOLID PIPE (D_S)	PERFORATED PIPE (D_P)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

△1



NOTES:

1. EXTRUSION WELD LINER AROUND PIPE FOR ACCESS POINTS AND SUMP.

LANDFILL GAS EXTRACTION WELL (TEMP FINAL COVER) DETAIL 2/LFG-03

NOT TO SCALE

RECORD DRAWING

THIS DOCUMENT HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS AND DEPICTS THE CONTRACTOR'S RECORD OF INSTALLATIONS. HDR ENGINEERING, INC. DOES NOT GUARANTEE THE ACCURACY OF SUCH INFORMATION OR COMPLETENESS, OR FOR ANY ERRORS OR OMISSIONS THAT MAY BE INCORPORATED INTO THIS DOCUMENT BASED ON THE INFORMATION.

CLIFFORD G. KOENIG, P.E.
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HDR ENGINEERING, INC.

HDR
4830 Bay Center Drive, Ste. 400 Tampa, Florida 33609
HDR CERT. AUTH. NO. CA 4213

ISSUE	DATE	DESCRIPTION
1	08/2012	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEMERING
REVIEWED BY	C. KOENIG
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00094-130530-005

CLIFFORD G. KOENIG, P.E.
CERTIFICATE NO. 64078

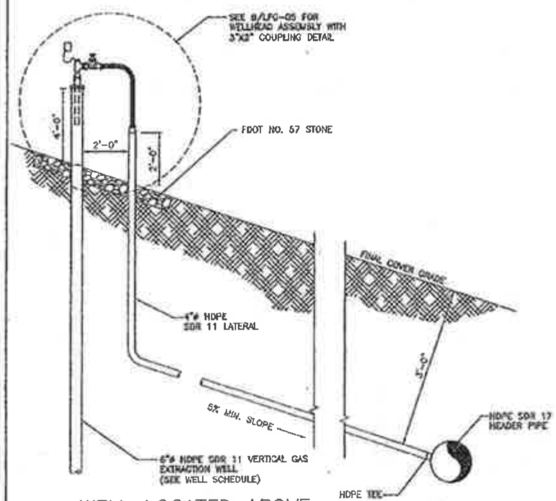
Sarasota County

Central County Solid Waste Disposal Complex
PHASE I SEQUENCE 2
LANDFILL GAS COLLECTION AND CONTROL SYSTEM

SARASOTA COUNTY FLORIDA

EXTRACTION WELL DETAILS AND WELL SCHEDULE

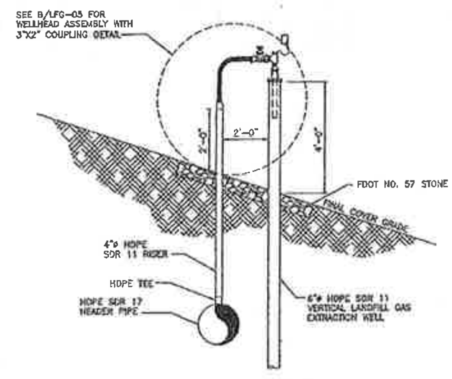
FILENAME 00LFG-04.DWG
SCALE AS SHOWN
SHEET LFG-04



WELL LOCATED ABOVE HEADER PIPE (TYPE #1)

NOT TO SCALE

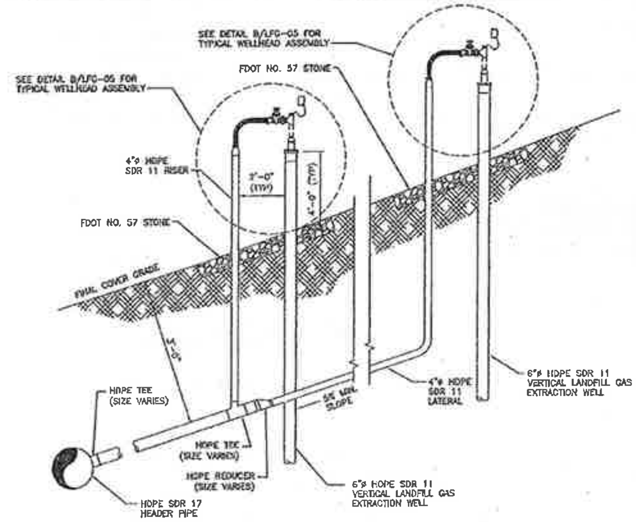
1 / LFG-03



WELL LOCATED ADJACENT TO HEADER PIPE (TYPE #2)

NOT TO SCALE

2 / LFG-03



MULTIPLE WELLS LOCATED ABOVE HEADER PIPE (TYPE #3)

NOT TO SCALE

3 / LFG-03

VERTICAL WELL HEAD CONFIGURATION SCHEDULE

TYPE #1

GW-29	GW-40	GW-53	GW-65
GW-31	GW-42	GW-55	GW-67
GW-33	GW-45	GW-58	GW-69
GW-35	GW-46	GW-60	
GW-37	GW-47	GW-61	
GW-38	GW-51	GW-62	
GW-39	GW-52	GW-64	

TYPE #2

GW-27

TYPE #3

GW-28	GW-44
GW-30	GW-48
GW-32	GW-49
GW-34	GW-59
GW-36	GW-63
GW-41	
GW-43	

TYPE #4

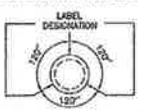
GW-50
GW-54
GW-56
GW-57
GW-66
GW-68
GW-70

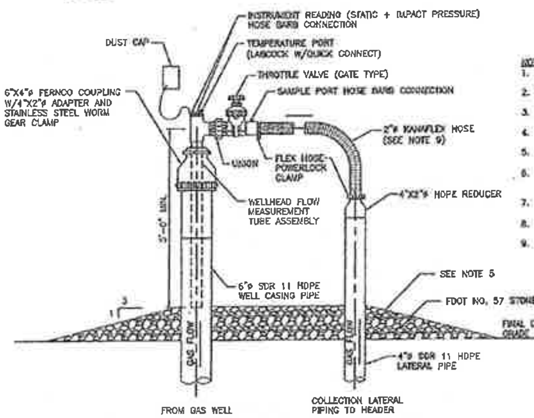
LCO

LCO-45
LCO-55

FOR INFORMATIONAL PURPOSES ONLY

SEE TYP WELL HEAD ASSEMBLIES FOR SIZES, DIMENSIONS AND SPECIFICS ON COMPONENTS. SEE ABOVE FOR WELL HEAD CONFIGURATION SCHEDULE.





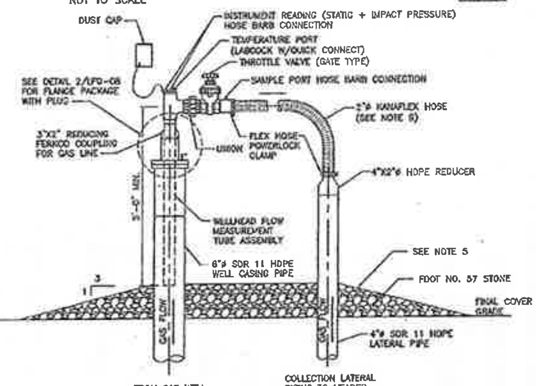
ABOVE GRADE WELLHEAD ASSEMBLY WITH 6"X4" COUPLING DETAIL

NOT TO SCALE

A / LFG-05

NOTES:

1. WELLHEAD ASSEMBLY SHOWN REPRESENTS 2"Ø LANDTEC VERTICAL ACCU-FLO WELLHEAD ASSEMBLY.
2. LABEL ALL WELL RISERS WITH IDENTIFICATION NUMBER TO MATCH EXISTING WELL RISERS.
3. AIR AND FORCEMAIN LINES NOT SHOWN FOR CLARITY (SEE DETAIL 4/LFG-06).
4. WELLHEAD TO BE CONSTRUCTED TO ALLOW INSTALLATION OF DEWATERING PUMP.
5. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'-0"Ø SURROUNDING SURFACE EXPRESSION.
6. 1" DIAMETER RISERS FOR FORCEMAIN AND AIRLINE WITH BALL VALVES ARE REQUIRED FOR ALL VERTICAL EXTRACTION WELLS.
7. ALL WELLS TO BE CONSTRUCTED WITH BOOT CONNECTION. SEE DETAILS 1 AND 2/LFG-04
8. 6"x4" COUPLING DETAIL A/LFG-05 CORRESPONDS TO LCO CONNECTIONS AND REMOTE WELLHEADS ONLY.
9. CONTRACTOR SHALL PROVIDE SUFFICIENT SLACK IN HOSE TO ALLOW FOR SETTLEMENT, HOWEVER HOSE MUST FREELY DRAIN TO THE LATERAL PIPE AND NOT HOLD WATER. THE FINAL HOSE LENGTH MUST BE APPROVED BY THE ENGINEER.



ABOVE GRADE WELLHEAD ASSEMBLY WITH 3"X2" COUPLING DETAIL

NOT TO SCALE

B / LFG-05

RECORD DRAWING

CLIFFORD G. KOENIG, P.E.
HDR ENGINEERING, INC.

HDR

ISSUE	DATE	DESCRIPTION
1	08/2012	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEMERING
REVIEWED BY	C. KOENIG
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00096-130530-005

CLIFFORD G. KOENIG, P.E.
CERTIFICATE NO. 64078

Sarasota County

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

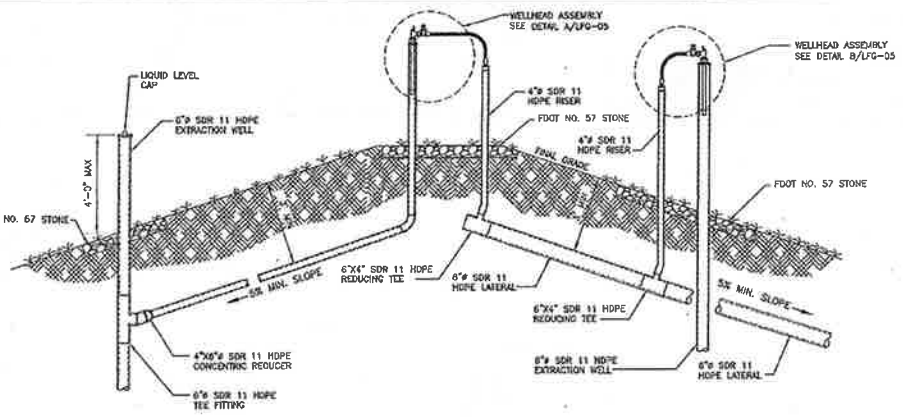
PHASE I SEQUENCE 2
LANDFILL GAS COLLECTION AND CONTROL SYSTEM

FLORIDA

WELLHEAD AND CONFIGURATION DETAILS

FILENAME: 00LFG-05.DWG
SCALE: AS SHOWN

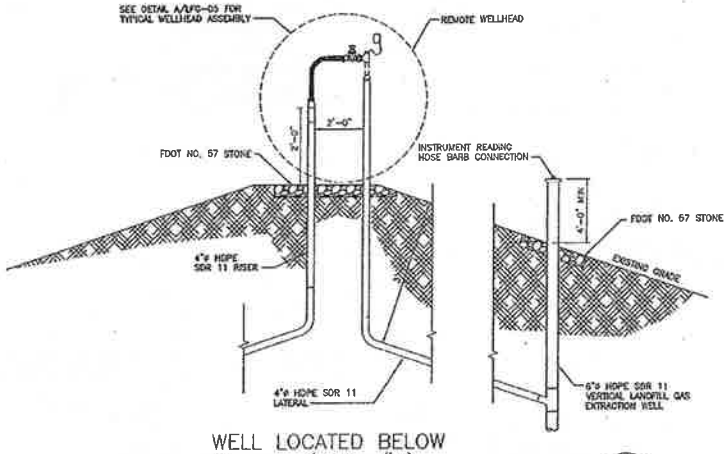
SHEET **LFG-05**



REMOTE WELLHEAD

NOT TO SCALE

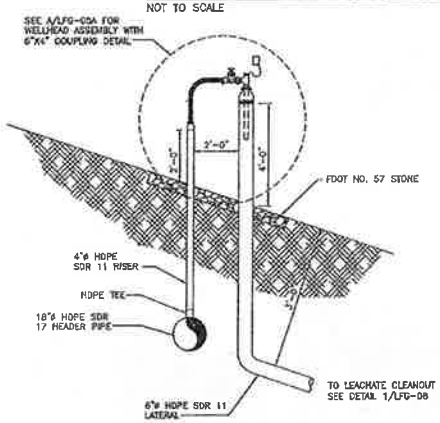
1 LFG-03



WELL LOCATED BELOW LATERAL (TYPE #4)

NOT TO SCALE

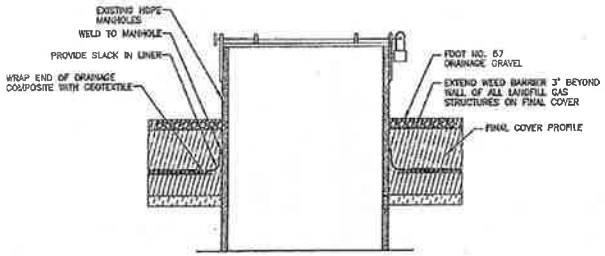
2 LFG-03



LEACHATE CLEANOUT CONNECTION

NOT TO SCALE

3 LFG-03



FINAL COVER LLDPE LINER CONNECTION TO EXISTING MANHOLES (TYP)

NOT TO SCALE

1 LFG-03

RECORD DRAWING

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CLIFFORD G. KOENIG, P.E.
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6430 Bay Center Drive, Ste. 400
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813-282-2700
HDR CHAT, AUTH. NO. CA 4216
FL REG. AA 0026457

ISSUE	DATE	DESCRIPTION
1	08/2013	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	C. KOENIG
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00095-130530-005

CLIFFORD G. KOENIG, P. E.
CERTIFICATE NO. 64078

Sarasota County

Central County Solid Waste Disposal Complex
PHASE I SEQUENCE 2
LANDFILL GAS COLLECTION AND CONTROL SYSTEM

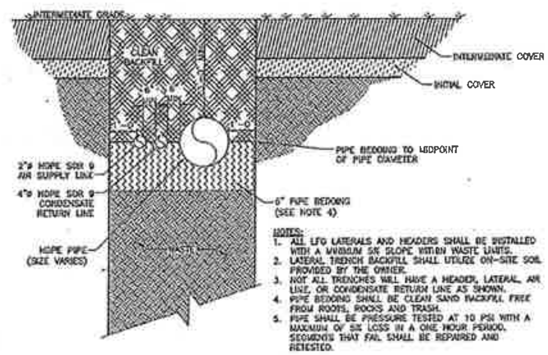
SARASOTA COUNTY FLORIDA

WELLHEAD AND CONFIGURATION DETAILS

0 1" 2"

FILENAME: 00LFG-05A.DWG
SCALE: AS SHOWN

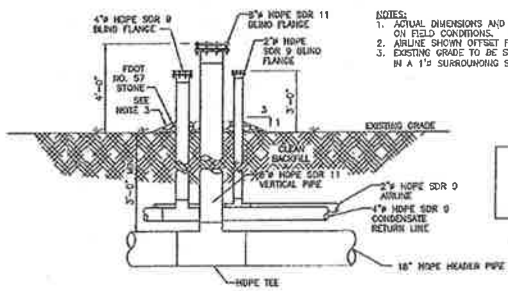
SHEET
LFG-5A



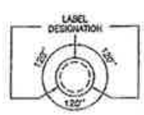
NOTES:
1. ALL LFG LATERALS AND HEADERS SHALL BE INSTALLED WITH A MINIMUM 5% SLOPE WITHIN WASTE LIMITS.
2. LATERAL TRENCH BACKFILL SHALL UTILIZE ON-SITE SOIL PROVIDED BY THE OWNER.
3. NOT ALL TRENCHES WILL HAVE A HEADER, LATERAL, AIR LINE, OR CONDENSATE RETURN LINE AS SHOWN.
4. PIPE BEDDING SHALL BE CLEAN SAND BACKFILL FREE FROM ROOTS, ROCKS AND TRASH.
5. PIPE SHALL BE PRESSURE TESTED AT 10 PSI WITH A MAXIMUM OF 5% LOSS IN A ONE HOUR PERIOD. SEGMENTS THAT FAIL SHALL BE REPAIRED AND RETESTED.

LANDFILL GAS PIPING IN WASTE TRENCH DETAIL (1 / LFG-06)

NOT TO SCALE

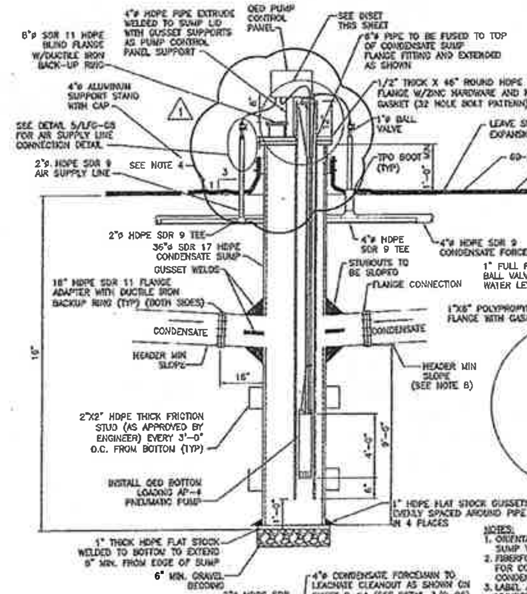


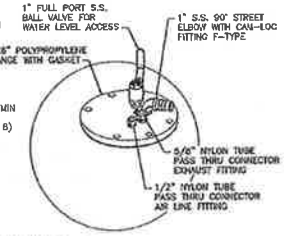
NOTES:
1. ACTUAL DIMENSIONS AND LOCATIONS MAY VARY BASED ON FIELD CONDITIONS.
2. AIRLINE SHOWN OFFSET FOR CLARITY.
3. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'ø SURROUNDING SURFACE EXPRESSION.



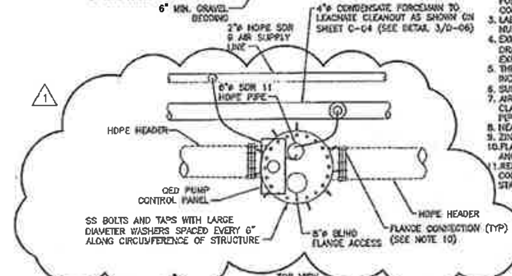
HEADER ACCESS POINT (2 / LFG-03)

NOT TO SCALE



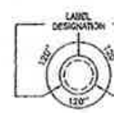


NOTES:
1. ORIENTATION OF HEADER LINES ENTERING CONDENSATE SUMP VARIES BASED ON FIELD CONDITIONS.
2. FIBERFOAM SONOTUBE FORM OR EQUAL AROUND SUMP FOR CONCRETE BALLAST TO BE CONSTRUCTED ON CONDENSATE SUMPS OUTSIDE OF WASTE.
3. LABEL ALL CONDENSATE SUMPS WITH IDENTIFICATION NUMBER TO MATCH EXISTING SUMPS.
4. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'ø SURROUNDING SURFACE EXPRESSION.
5. THE PNEUMATIC PUMP INSTALLATION SHALL ALSO INCLUDE A PUMP DATA MODULE.
6. SUMPS 1 – 36"ø SDR 17.
7. AIRLINE AND FORCEMAIN LINES SHOWN OFFSET FOR CLARITY. LINES LOCATED AT SPRINGLINE OF HEADER PIPE.
8. HEADER @ 5% SLOPE WITHIN LANDFILL FOOTPRINT.
9. ZINC HARDWARE AND NEOPRENE GASKET FOR FLANGES.
10. FLANGE ADAPTERS TO BE ADJUSTED BASED ON ANGLES FOR HEADER PIPE.
11. REPLACE CONTROL PANEL POST AT EXISTING CONDENSATE SUMP 2 WITH ROUND ALUMINUM SUPPORT STAND WITH TPO BOOT.



CONDENSATE SUMP DETAIL (TYP) (3 / LFG-03)

NOT TO SCALE



RECORD DRAWING

HDR ENGINEERING, INC.

HDR

1	08/2012	RECORD DRAWINGS
0	10/2011	ISSUED FOR CONSTRUCTION
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	C. KOENIG
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00096-130530-005

CLIFFORD G. KOENIG, P. E.
CERTIFICATE NO. 64078

Sarasota County

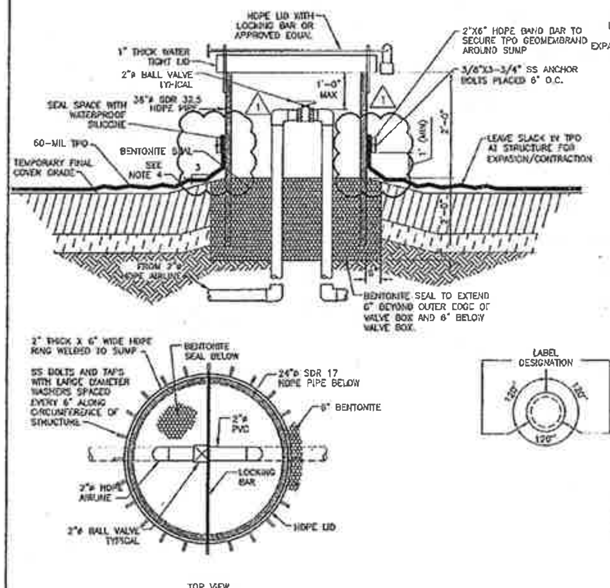
Central County Solid Waste Disposal Complex

PHASE I SEQUENCE 2
LANDFILL GAS COLLECTION AND CONTROL SYSTEM

SARASOTA COUNTY FLORIDA

GENERAL LFG DETAILS

FILENAME: 00LFG-06.DWG
SCALE: AS SHOWN
SHEET: LFG-06

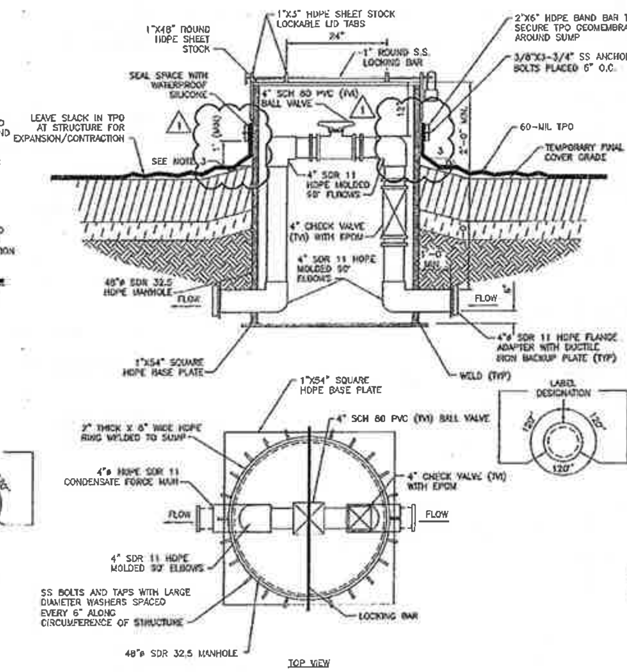


AIRLINE VALVE PIT

NOT TO SCALE

1 / LFG-03

NOTES:
1. ALL FITTINGS SHALL BE HDPE SDR 9 UNLESS OTHERWISE NOTED.
2. VALVE BOX AND COVER SHALL BE 2'-0"ø MIN. WITH LID AND LOCKING DEVICE.
3. LABEL ALL VALVE PITS WITH IDENTIFICATION NUMBER TO MATCH EXISTING VALVE PITS.
4. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'ø SURROUNDING SURFACE EXPRESSION.

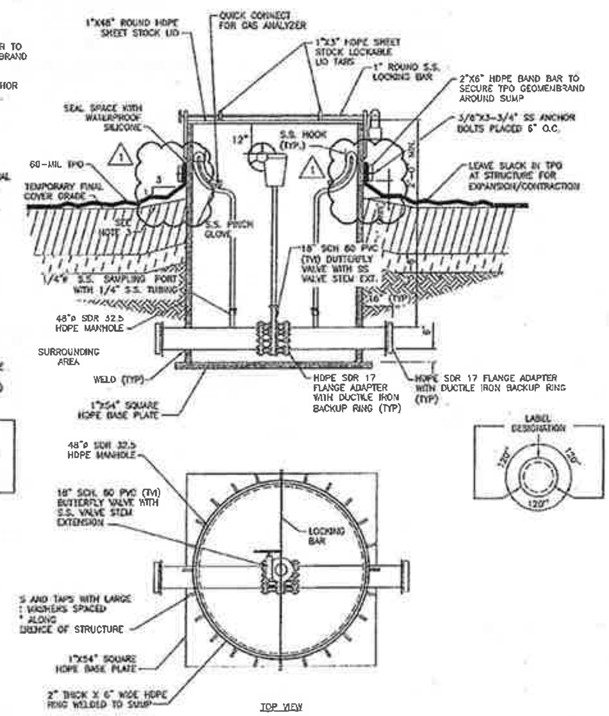


FORCE MAIN VALVE PIT

NOT TO SCALE

2 / LFG-03

NOTES:
1. ACTUAL DIMENSIONS AND LOCATIONS MAY VARY BASED ON FIELD CONDITIONS.
2. LABEL ALL VALVE PITS WITH IDENTIFICATION NUMBER TO MATCH EXISTING VALVE PITS.
3. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'ø SURROUNDING SURFACE EXPRESSION.



HEADER LINE ISOLATION VALVE PIT

NOT TO SCALE

3 / LFG-03

NOTES:
1. HOOK FOR SAMPLE PORT SHALL BE CONNECTED TO WALL OF VALVE PIT WITHIN REACH OF TOP OF VALVE PIT.
2. LABEL ALL VALVE PITS WITH IDENTIFICATION NUMBER MATCHING EXISTING VALVE PITS.
3. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'ø SURROUNDING SURFACE EXPRESSION.

RECORD DRAWING

HDR ENGINEERING, INC.

HDR

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0	10/2011	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	R. SIEVERING
REVIEWED BY	C. KOENIG
CIVIL DESIGN	C. RESTREPO, T. YANOSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00095-130030-003

CLIFFORD G. KOENIG, P. E.
CERTIFICATE NO. 54078

Sarasota County

SARASOTA COUNTY

Central County Solid Waste Disposal Complex

PHASE I SEQUENCE 2

LANDFILL GAS COLLECTION AND CONTROL SYSTEM

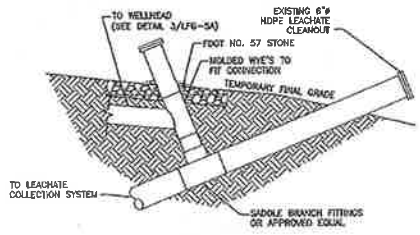
FLORIDA

VALVE PIT DETAILS

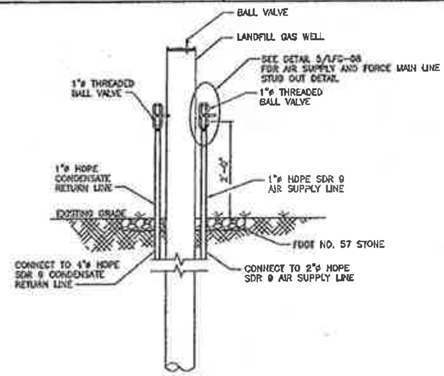
FILENAME: 00LFG-07.DWG

SCALE: AS SHOWN

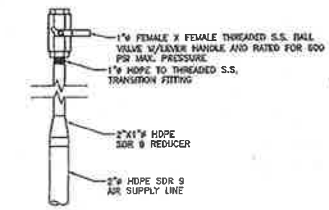
SHEET: LFG-07



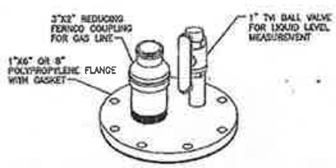
GAS COLLECTION FROM LEACHATE CLEANOUT CONNECTION (TYP)
NOT TO SCALE
1 LFG-03 LFG-5A



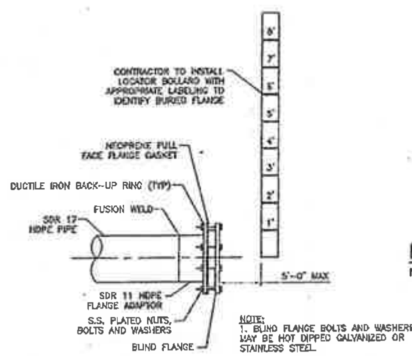
WELL RISER DETAIL (TYP)
NOT TO SCALE
4 LFG-05



AIR SUPPLY AND FORCE MAIN LINE CONNECTION DETAIL (TYP)
NOT TO SCALE
5 LFG-08

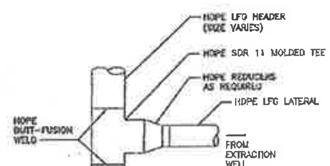


VERTICAL WELL WITHOUT PUMP FLANGE PACKAGE
NOT TO SCALE
2 LFG-05



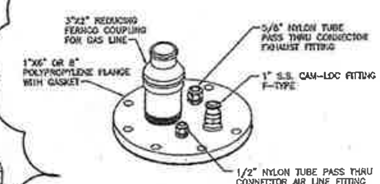
NOTE:
1. BLIND FLANGE BOLTS AND WASHERS MAY BE HOT DIPPED GALVANIZED OR STAINLESS STEEL.

BLIND FLANGE WITH LOCATOR BOLLARD DETAIL
NOT TO SCALE
3 LFG-03



NOTES:
1. SHOP FABRICATED BRANCH SADDLE FITTINGS MAY BE USED AS APPROVED BY THE ENGINEER. FIELD FABRICATED BRANCH SADDLE FITTINGS WILL NOT BE ACCEPTED.
2. 1" MIN. OF SAND WILL BE PLACED BELOW EACH TEE. THE SAND WILL BE INSTALLED SO IT EXTENDS 3'-0" MIN. ON EACH SIDE OF THE TEE. SAND WILL BE SLIGHTLY MOISTENED AND HAND-TAMPED PROVIDING SUPPORT TO ALL POINTS OF THE TEE. CLEAN, GRADED SOIL WILL BE HAND-TAMPED ABOVE TEE (1'-0" MIN.) BEING CAREFUL TO ELIMINATE ALL VOIDS.

LATERAL TIE-IN W/TEE
NOT TO SCALE
6 LFG-03



VERTICAL WELL WITH PUMP FLANGE PACKAGE
NOT TO SCALE
2 LFG-05

RECORD DRAWING

THIS DOCUMENT HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS AND DEPICTS THE CONTRACTOR'S RECORD OF INSTALLATION. HDR ENGINEERING, INC. DOES NOT WARRANT THE ACCURACY OF SUCH INFORMATION OR COMPLETENESS OR FOR ANY ERRORS OR OMISSIONS THAT MAY BE INCORPORATED INTO THIS DOCUMENT BASED ON THE INFORMATION.

CLIFFORD G. KOENIG, P.E.
FLORIDA P.E. NO. 64078
HDR ENGINEERING, INC.

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ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	R. SIEMERING
REVIEWED BY	C. KOENIG
CIVIL DESIGN	C. RESTREPO, T. YANDSCHACK
DRAWN BY	B. JOHNSON
PROJECT NUMBER	00095-130530-005

HDR

CLIFFORD G. KOENIG, P.E.
CERTIFICATE NO. 64078

Sarasota County

Central County Solid Waste Disposal Complex
PHASE I SEQUENCE 2
LANDFILL GAS COLLECTION AND CONTROL SYSTEM
SARASOTA COUNTY FLORIDA

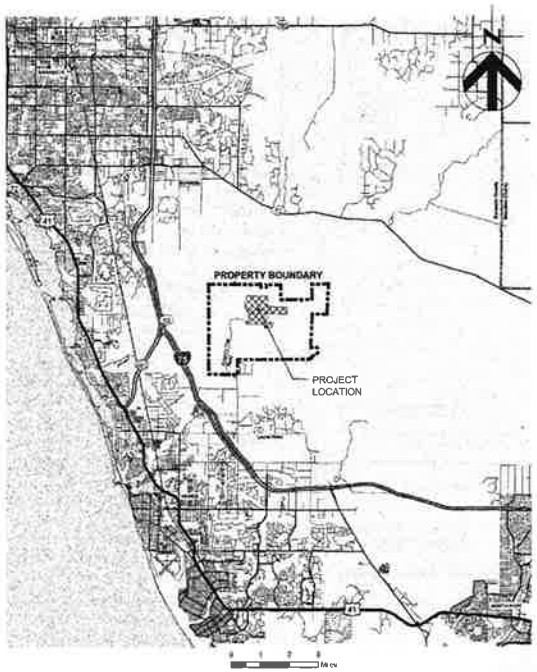
GENERAL LFG DETAILS

FILENAME 00LFG-08.DWG
SCALE AS SHOWN
SHEET LFG-08

Sarasota County

HDR

HDR Engineering, Inc.
200 W. Forsyth St
Suite 800
Jacksonville, FL 32202
Certificate of Authorization No. 4213



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Construction Drawings For

Central County Solid Waste Disposal Complex

Sarasota County

Phase 1 - Sequence 1
Landfill Gas Collection and Control System

Project No. 95215
BID No. 09803CS

Nokomis, Florida

Record Drawings
June, 2010

INDEX OF DRAWINGS

RECORD DRAWING
HDR ENGINEERING, INC.

AUG 13 2010

ENGINEERING SYMBOLOGY

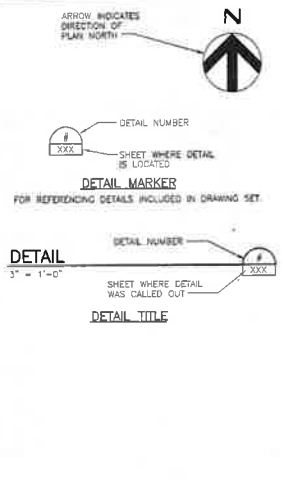
HP	HIGH POINT
LP	LOW POINT
S-1	PROPOSED CONDENSATE SUMP
GW-49	PROPOSED LFG EXTRACTION WELL
AP	PROPOSED ACCESS POINT
KO	PROPOSED KNOCKOUT POT
U1	PROPOSED U-TRAP
	PROPOSED REMOTE WELLHEAD
	EXISTING LEACHATE SUMP
	EXISTING LEACHATE CLEANOUT
	PROPOSED AIRLINE/FORCE MAIN VALVE PIT
	PROPOSED HEADER ISOLATION VALVE PIT
	PROPOSED ECCENTRIC REDUCER
	PROPOSED STRAW BALE BARRIER
	PROPOSED TEMPORARY DITCH BLOCK
	EXISTING SOLAR FLARE
GP-7	EXISTING GAS PROBE
MW-14	EXISTING GROUNDWATER MONITORING WELL
	EXISTING WATER SUPPLY WELL
	PROPOSED ELECTRICAL HOUSING
	PROPOSED SILT FENCE
	PROPOSED 2" HDPE SDR 9 AIR SUPPLY LINE
	PROPOSED 4" HDPE SDR 9 CONDENSATE RETURN LINE
	PROPOSED 4" HDPE SDR 11 LATERAL
	PROPOSED 6" HDPE SDR 11 LATERAL
	PROPOSED 8" HDPE SDR 11 LATERAL
	PROPOSED HDPE SDR 17 HEADER
	EXISTING MAJOR/MINOR CONTOURS
40	PROPOSED MAJOR/MINOR CONTOURS
	PHASE LIMITS
	CELL LIMITS
	PROPERTY LINE
FM FM	EXISTING 6" LEACHATE FORCEMAIN
	PROPOSED CHAIN LINK FENCE
	EXISTING CHAIN LINK FENCE
	LIMITS OF CONSTRUCTION
UGE	PROPOSED UNDERGROUND ELECTRIC CONDUIT
UGT	PROPOSED UNDERGROUND TELEPHONE CONDUIT

DETAILS LEGEND OF PATTERNS

- CLEAN BACKFILL
- PIPE BEDDING (DEFINED AS FIELD COMPACTED AND LEVELED BACKFILL OR ED.)
- INTERMEDIATE COVER
- WASTE
- BENTONITE SEAL
- EXISTING GROUND
- STONE
- ONSITE SOIL
- CONCRETE
- ASPHALT

NOTE
SYMBOLOGY IS REPRESENTATIVE OF MAJOR LANDFILL GAS COMPONENTS

GENERAL SYMBOLOGY



GENERAL NOTES

SURVEY AND MAP REPORT:

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV AREAS COMPILED BY KUCERA INTERNATIONAL INC., OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED APRIL 12, 2008.

SPECIFIC NOTES:

1. 2 WEEKS PRIOR TO INITIATING WORK, THE CONTRACTOR WILL SUBMIT FOR APPROVAL A SCHEDULE TO THE ENGINEER FOR COMPLETION OF THE PROJECT.
2. ALL EXCAVATION AND DRILLING WITHIN THE LANDFILL LIMITS SHALL CEASE PRIOR TO 3:00 PM M-F AND BY 1:00 PM SAT. ALL WASTE EXCAVATED SHALL BE DELIVERED TO THE ACTIVE FACE OF THE LANDFILL DAILY BY 4:00 PM M-F AND BY 2:00 PM SAT. CHANGES IN WORK HOURS ARE BASED UPON OWNER'S APPROVAL.
3. HOURS FOR CONSTRUCTION: 7:00 AM TO 5:30 PM MONDAY THRU FRIDAY, 8 AM TO 2 PM SATURDAY. NO WORK ALLOWED ON SUNDAY UNLESS OTHERWISE APPROVED BY OWNER AND PERMIT.
4. CONTRACTOR MAY CONTAINERIZE WASTE AND TARP OVERNIGHT BASED ON OWNER APPROVAL.

EROSION AND SEDIMENT CONTROL:

1. CONTRACTOR WILL ADD EROSION AND SEDIMENT CONTROL AS NECESSARY TO PREVENT SILTATION AND DAMAGE TO ADJACENT AREAS AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
2. CONTRACTOR WILL INSPECT AND REPAIR, AS NECESSARY, ANY EROSION AND SEDIMENT CONTROL DAILY AND FOLLOWING EACH RAIN.
3. EROSION AND SEDIMENT CONTROL WILL BE INSTALLED PRIOR TO CONSTRUCTION AND SHALL BE MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED.
4. CONTRACTOR IS RESPONSIBLE FOR MONITORING DOWNSTREAM CONDITIONS THROUGHOUT THE CONSTRUCTION PERIOD AND CLEARING ANY DEBRIS AND SEDIMENT RESULTING FROM CONSTRUCTION.
5. EROSION CONTROL FENCING MUST MEET THE REQUIREMENT OF THE DEPARTMENT OF TRANSPORTATION, STATE OF FLORIDA, STANDARD SPECIFICATIONS. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES.
6. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.

EARTHWORK:

1. EXCAVATION IS UNCLASSIFIED AND INCLUDES REMOVAL OF EARTH FILLS, RUBBLE, TRASH, AND OTHER MATERIALS ENCOUNTERED IN EXCAVATION AND GRADING OPERATIONS TO DEPTH AND EXTENT SHOWN ON DRAWINGS OR SPECIFIED. THE OWNER'S REPRESENTATIVE SHALL BE THE FINAL AUTHORITY AND SHALL MAKE THE FINAL DECISION DURING CONSTRUCTION AS TO THE DEPTH AND EXTENT TO WHICH MATERIALS MUST BE REMOVED AND REPLACED.
2. SURVEY BENCHMARKS, MONUMENTS AND OTHER REFERENCE POINTS WILL BE PROTECTED FROM DAMAGE AND DISPLACEMENT IF DISTURBED OR DESTROYED, THEY WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
3. CONTRACTOR SHALL KEEP DIRT, DUST, NOISE AND OTHER OBJECTIONABLE NUISANCES TO A MINIMUM.
4. ALL FILL AREAS ARE TO BE COMPACTED AS DEFINED IN THE SPECIFICATIONS AND DRAWINGS.
5. CUT AND FILL SLOPES FOR STRUCTURAL EMBANKMENTS SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL.

UTILITIES:

1. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR LOCATIONS SHOWN AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF ALL UTILITIES WITHIN THE LIMITS OF THE WORK PRIOR TO CONSTRUCTION. ALL DAMAGE MADE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN THE AREA AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION. CALL FLORIDA SUNSHINE STATE ONE CALL CENTER AT 1-800-432-4770. ALL COORDINATION AND REQUIRED UTILITY COMPANY TEMPORARY PROTECTION SHALL BE AT THE CONTRACTOR'S EXPENSE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE UNINTERRUPTION OF SERVICE AND REPLACEMENT OF DAMAGED UTILITIES.

AS-BUILT SURVEY DATA:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MINIMIZING LANDFILL GAS EMISSIONS FROM SURVEY TUBES (E.G. SEAL TOP OF SURVEY TUBES).
2. THE CONTRACTOR SHALL PROVIDE SURVEY DATA TO THE ENGINEER SHOWING THE LANDFILL GAS SYSTEM HAS BEEN PROPERLY CONSTRUCTED AND MEETS THE MINIMUM SLOPES REQUIRED AS SHOWN ON THE DRAWINGS.
3. THE SURVEY DATA SUBMITTED TO THE ENGINEER SHALL BE GROUND SURFACE ELEVATIONS AND TOP OF PIPE ELEVATIONS AT 50 FOOT INTERVALS ON CENTER AND AT EACH FITTING, LATERAL CONNECTION, VALVE, BENDS AND OTHER SIGNIFICANT FEATURES.
4. ALL REQUESTED SURVEY DATA MUST BE PROVIDED TO OWNER'S REPRESENTATIVE IN FLORIDA STATE PLANE COORDINATES AND BE PERFORMED BY A STATE OF FLORIDA CERTIFIED SURVEYOR.

GENERAL NOTES:

1. THE CONTRACTOR IS ADVISED THAT NO ACTIVITIES MAY INTERFERE, DISRUPT, BLOCK OR OTHERWISE CONFLICT WITH LANDFILL OPERATIONS. IF CONFLICTS ARE ANTICIPATED THEY SHALL BE COORDINATED AND APPROVED BY THE OWNER AND ENGINEER PRIOR TO DISRUPTION.
2. PROJECT SITE IS A SOLID WASTE LANDFILL. AS SUCH, CONDITIONS ARE SUBJECT TO CHANGE WITH TIME. CONTROLS, IN PARTICULAR VERTICAL CONTROL, SHOULD BE EXPECTED (AND ANTICIPATED) TO VARY FROM THOSE SHOWN ON THESE DRAWINGS DUE TO ONGOING SUBSIDENCE RESULTING FROM REFUSE DECOMPOSITION. RELATIVE ELEVATION DIFFERENCES IN EXISTING AND PROPOSED ELEVATIONS SHOWN ON THE DRAWINGS SHALL BE ADJUSTED ACCORDINGLY. LOCATION OF STRUCTURES SHALL BE PLACED IN ACCORDANCE WITH HORIZONTAL CONTROLS. VERTICAL PLACEMENT OF STRUCTURES SHALL BE IN ACCORDANCE WITH CONSTRUCTION DOCUMENTS, OR AS APPROVED BY THE ENGINEER.
3. CONSTRUCTION OF LANDFILL GAS COLLECTION SYSTEM WILL INVOLVE REFUSE EXCAVATION. THE CONTRACTOR SHALL MAKE ALL SAFETY AND ENVIRONMENTAL PRECAUTIONS TO PROTECT ITS WORKERS AND SUBCONTRACTORS, AT NO ADDITIONAL COST TO THE OWNER. ALL EXCAVATED WASTES SHALL BE PLACED AT THE WORKING FACE. CONTRACTOR IS ADVISED THAT THE POTENTIAL FOR ENCOUNTERING ASBESTOS CONTAINING MATERIAL EXISTS. SHOULD SUSPECT ASBESTOS CONTAINING MATERIAL BE ENCOUNTERED, IT SHALL BE MAINTAINED IN A MOIST CONDITION DURING THE REMOVAL AND TRANSFER PROCESS TO MINIMIZE/PREVENT EMISSIONS FROM SUCH DISTURBED REFUSE (INCLUDING ANY SUSPECT ASBESTOS-CONTAINING MATERIAL) WILL BE TRANSPORTED TO THE WORKING FACE OF THE CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX BY THE END OF EACH WORKING DAY FOR PROPER DISPOSAL AND BURIED WITH A MINIMUM OF SIX (6) INCHES OF SOIL COVER.
4. ANY AND ALL FINES IMPOSED ON THE OWNER BY ANY REGULATORY AGENCY DUE TO ACTIONS OF THE CONTRACTOR SHALL BE PAID BY THE CONTRACTOR.
5. INSPECTION: EXAMINE AREAS FOR CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED. REPORT IN WRITING TO OWNER'S REPRESENTATIVE ALL CONDITIONS CONTRARY TO THOSE SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN AND ALL OTHER CONDITIONS THAT WILL AFFECT SATISFACTORY EXECUTION OF WORK. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. STARTING WORK CONSTITUTES ACCEPTANCE OF THE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED. AFTER SUCH ACCEPTANCE, THE CONTRACTOR SHALL AT CONTRACTOR'S EXPENSE BE RESPONSIBLE FOR CORRECTING ALL UNSATISFACTORY AND DEFECTIVE WORK RESULTING FROM SUCH UNSATISFACTORY CONDITIONS.
6. PROTECTIONS: INSTALL TEMPORARY BARRIERS, FENCES, BARRICADES, LIGHTS, WARNING SIGNS AND OTHER DEVICES NECESSARY TO PROTECT STRUCTURES, UTILITIES, LANDSCAPING, EXCAVATIONS, AND OTHER ITEMS AS NECESSARY. PROTECT SURVEY BENCHMARKS AND MONUMENTS FROM DISPLACEMENT.
7. ALL WORK SHALL BE PERFORMED IN A QUALITY WORKMANLIKE MANNER.
8. DEVIATIONS FROM THESE PLANS AND SPECIFICATIONS WITHOUT PRIOR WRITTEN CONSENT OF THE ENGINEER OR OWNER MAY CAUSE THE WORK TO BE UNACCEPTABLE AND WILL BE ADJUSTED OR REPAIRED AT THE CONTRACTOR'S EXPENSE.
9. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY LICENSES AND PERMITS ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT UNLESS NOTIFIED OTHERWISE IN WRITING BY THE OWNER.
10. LATERAL PIPING ALIGNMENTS ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY TO ASSURE REQUIRED SLOPE AND DIRECTION OF GAS AND CONDENSATE FLOW.
11. SUGGESTED INSTALLATION SEQUENCE: THE FOLLOWING INSTALLATION SEQUENCE HAS BEEN ASSUMED IN THE ENGINEER CALCULATIONS.
    (A.) DRILL ALL VERTICAL WELLS, INSTALLING AND COMPLETING WELL COMPONENTS AS PROCEEDING
    (B.) TRENCH LATERAL PIPING FROM THE WELLS TO CONNECTION POINT IN THE ACTIVE GAS COLLECTION SYSTEM.
    (C.) CONNECT ALL LATERALS TO ACTIVE GAS COLLECTION SYSTEM
    (D.) INSTALL FORCEMAIN AND AIR LINE PIPING
    (E.) INSTALL PNEUMATIC PUMPS AT WELLS DESIGNATED BY ENGINEER.
    (F.) COMPLETE WELLHEAD INSTALLATION AND PNEUMATIC PUMP CONNECTIONS.
12. PRIOR TO INSTALLATION OF GAS COLLECTION SYSTEM, ENGINEER TO BE PROVIDED WITH THE FINAL GRADING PLAN TO CONFIRM LAYOUT AND MINIMUM SLOPES.
13. ALL WORK SHALL HAVE A ONE YEAR WARRANTY. ONE YEAR WARRANTY WILL BECOME EFFECTIVE WHEN THE PROJECT IS SUBSTANTIALLY COMPLETE, AS DETERMINED BY ENGINEER.
14. ALL BORE HOLES THAT ARE NOT COMPLETED AT THE END OF THE DAY ARE TO BE COVERED WITH A METAL WELL COVER CAPABLE OF PREVENTING ANY PERSONS FROM FALLING INTO THE HOLE. THE HOLE MUST THEN BE COVERED WITH A PIECE OF PLYWOOD TO SUBSTANTIALLY COVER THE ENTIRE HOLE. SOIL MUST BE PLACED ON TOP OF THE PLYWOOD TO COMPLETELY COVER THE PLYWOOD TO FURTHER PREVENT GAS EMISSIONS. SUBSTITUTE SAFETY MEASURES MAY BE USED IF APPROVED BY ENGINEER.
15. ALL HDPE PIPES SHALL BE PRESSURE TESTED AFTER FUSION FOR LEAKS. THE STANDARD PRESSURE TEST SHALL BE 10 PSI FOR 1 HOUR WITH A MAXIMUM OF 5% LOSS.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL SURVEY TUBES AT THE END OF THE PROJECT, UNLESS INSTRUCTED OTHERWISE BY OWNER OR ENGINEER.
17. ACTUAL DIMENSIONS AND LOCATIONS MAY VARY BASED ON FIELD LOCATIONS.
18. TERMS "OWNER'S REPRESENTATIVE" AND "ENGINEER" ARE INTERCHANGEABLE.
19. ALL ROAD CROSSINGS TO BE ENCASED IN A LARGER DIAMETER PIPE AS SHOWN IN DETAIL 1, SHEET D-05 FOR PROTECTION. CASING TO EXTEND 5' PAST THE ACCESS ROAD ON BOTH SIDES OF ACCESS ROAD.
20. CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER FOR APPROVAL.
21. EXISTING SOLAR FLARES WHICH PASSIVELY CONTROL LANDFILL GAS ACCUMULATED IN LEACHATE COLLECTION SYSTEM TO BE DECOMMISSIONED AND MOVED TO OWNER SPECIFIED LOCATION. ALL CONNECTIONS FROM LEACHATE COLLECTION SYSTEM TO SOLAR FLARES SHALL BE CAPPED IMMEDIATELY.
22. CONTRACTOR MUST COORDINATE ROAD CROSSING CONSTRUCTION WITH OWNER. ALL ROAD CROSSINGS SHALL BE COMPLETED WHILE THE LANDFILL IS CLOSED TO DISPOSAL OPERATIONS. ROADWAY CUTS SHALL NOT HINDER TRAFFIC.
23. THE CONTRACTOR IS ADVISED THAT THE LANDFILL CONTAINS A SYNTHETIC LINER AS PART OF THE SUBGRADE CONSTRUCTION; ALL COSTS ASSOCIATED WITH REPAIR RESULTING FROM DAMAGE TO THIS LINER SYSTEM SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THESE COSTS SHALL INCLUDE, BUT ARE NOT LIMITED TO ENGINEER'S REVIEW, REPAIR OR REPLACEMENT BY A QUALIFIED LLDPE LINER INSTALLER, THIRD PARTY OBSERVATION AND COUNTY REVIEW.
24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENGINEERING HOURS OVER THE 60 HOURS PER WEEK WORK SCHEDULE AT A RATE OF $150/HR.

RECORD DRAWING

HDR ENGINEERING, INC.

ISSUE	DATE	DESCRIPTION
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: D. SOSA
CHECKED BY: C. LEBRON, P.E.
PROJECT NUMBER: 101828

CLIFFORD G. KOENIG LICENSE No. 54078 STATE OF FLORIDA PROFESSIONAL ENGINEER

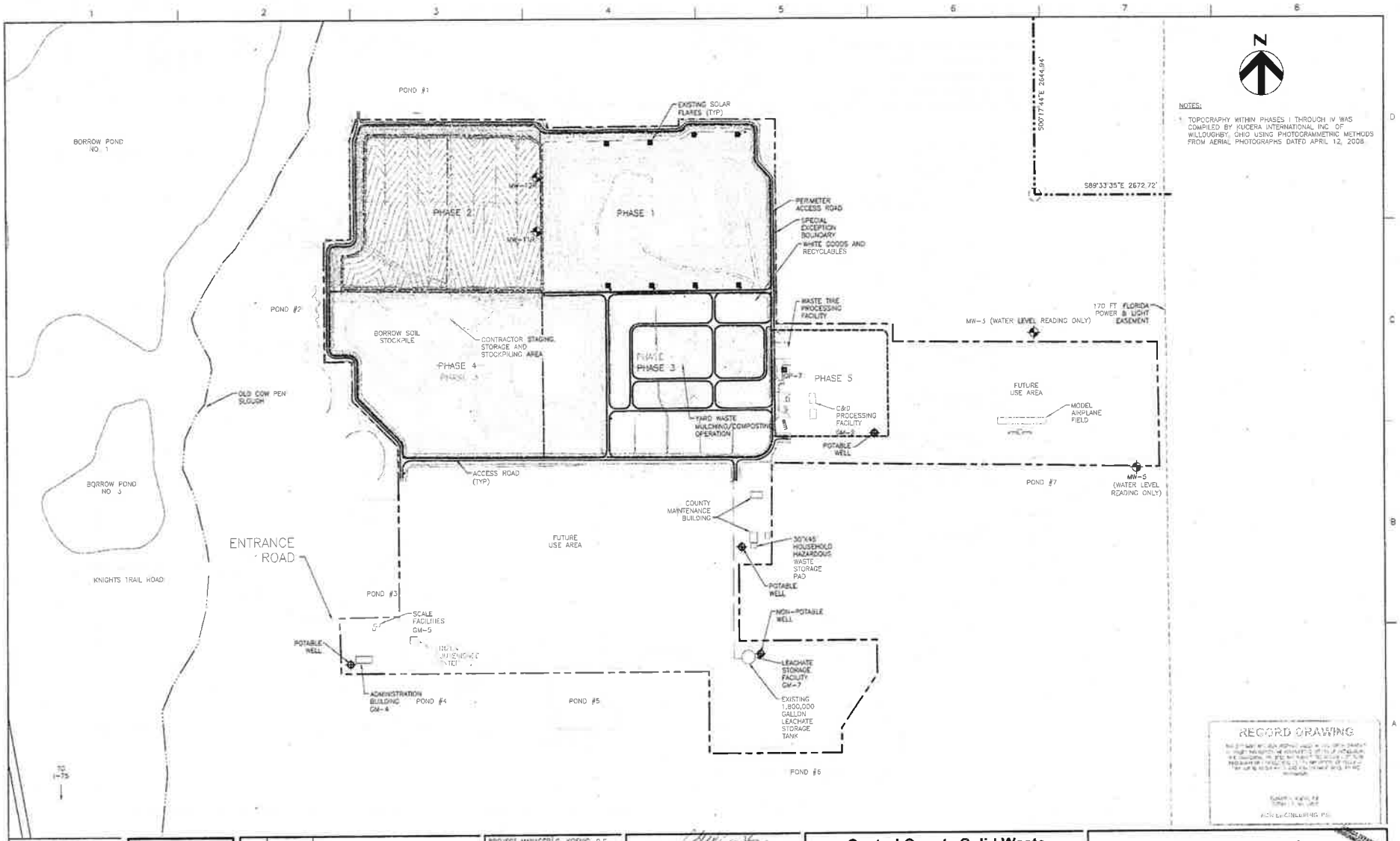
Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System

SARASOTA COUNTY FLORIDA

GENERAL NOTES

AUG 13 2010

FILENAME: 00G-01.dwg
SCALE: NOT TO SCALE
SHEET: 00G-01



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PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: D. SOSA
CHECKED BY: C. LEBRON, P.E.
PROJECT NUMBER: 101028

CLIFFORD G. KOENIG, LICENSE No. 64078, STATE OF FLORIDA, PROFESSIONAL ENGINEER

Central County Solid Waste Disposal Complex

Phase 1 - Sequence 1

Landfill Gas Collection and Control System

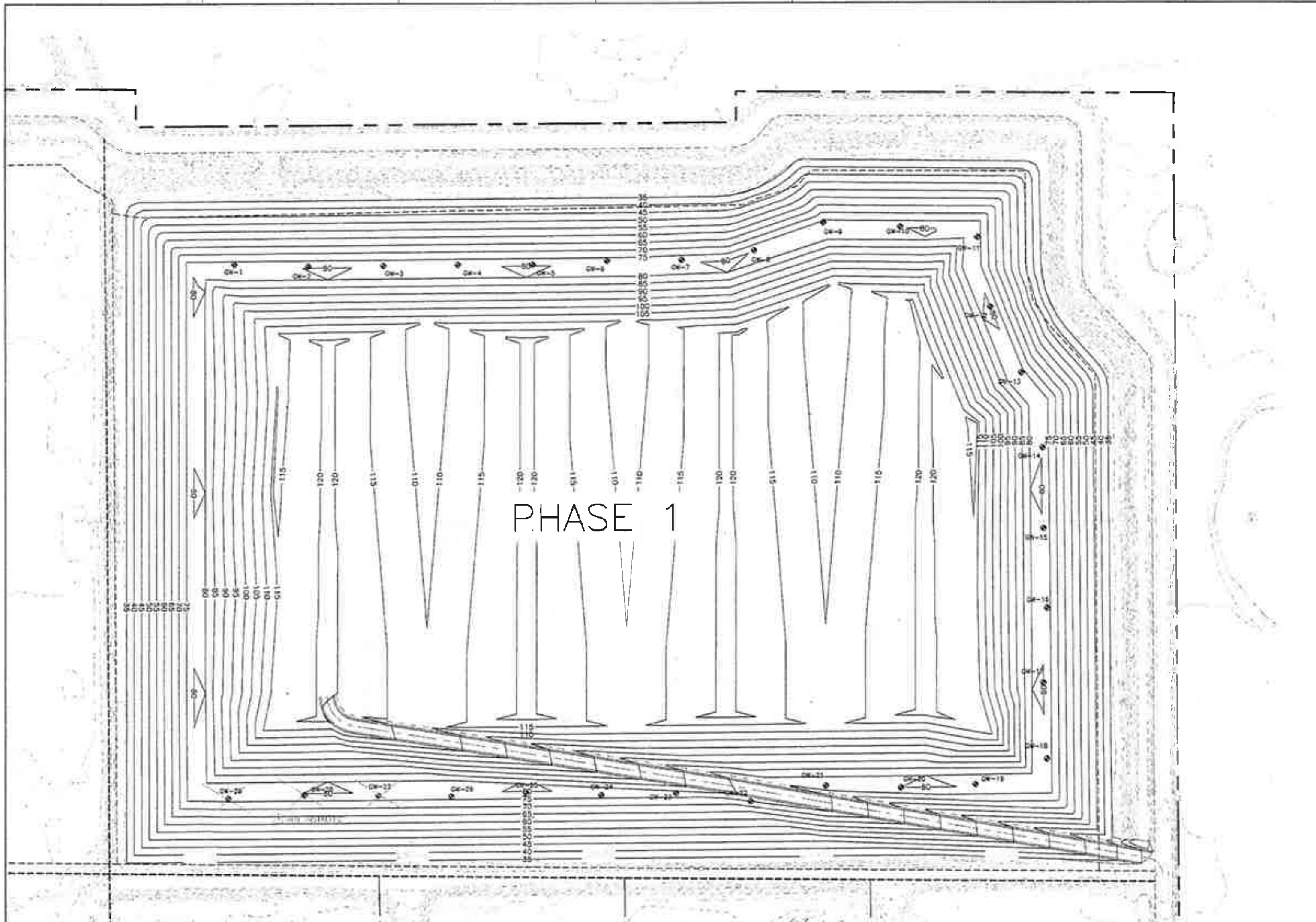
SARASOTA COUNTY FLORIDA

EXISTING CONDITIONS

AUG 13 2010

FILENAME: 00C-01.dwg
SCALE: 1" = 400'

SHEET 00C-01



NOTES:

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV WAS COMPILED BY KUCERA INTERNATIONAL INC. OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED APRIL 12, 2008
2. PHASE I FINAL GRADES DESIGNED BY HDR ENGINEERING, INC. TAMPA, FLORIDA
3. SEE SHEET 00C-03 FOR DETAILED LANDFILL GAS COLLECTION SYSTEM LAYOUT OF PHASE I.
4. WELLS TO BE LOCATED ON SIDE SLOPE SIDE OF TERRACE (i.e. NOT IN MIDDLE OF TERRACE).
5. SHEET 00D-01 PROVIDES A WELL SCHEDULE AND WELL DETAILS

RECORD DRAWING

AUG 13 2010

SARASOTA COUNTY

HDR

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
3		RECORD DRAWINGS
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER	C. KOENIG, P.E.
DESIGNED BY	A. BARKER, E.I.
DRAWN BY	D. SOSA
CHECKED BY	C. LEBRON, P.E.
PROJECT NUMBER	101828

CLIFFORD G. KOENIG LICENSE No. 64276 STATE OF FLORIDA PROFESSIONAL ENGINEER

8-13-2010

Central County Solid Waste Disposal Complex

Phase 1 - Sequence 1

Landfill Gas Collection and Control System

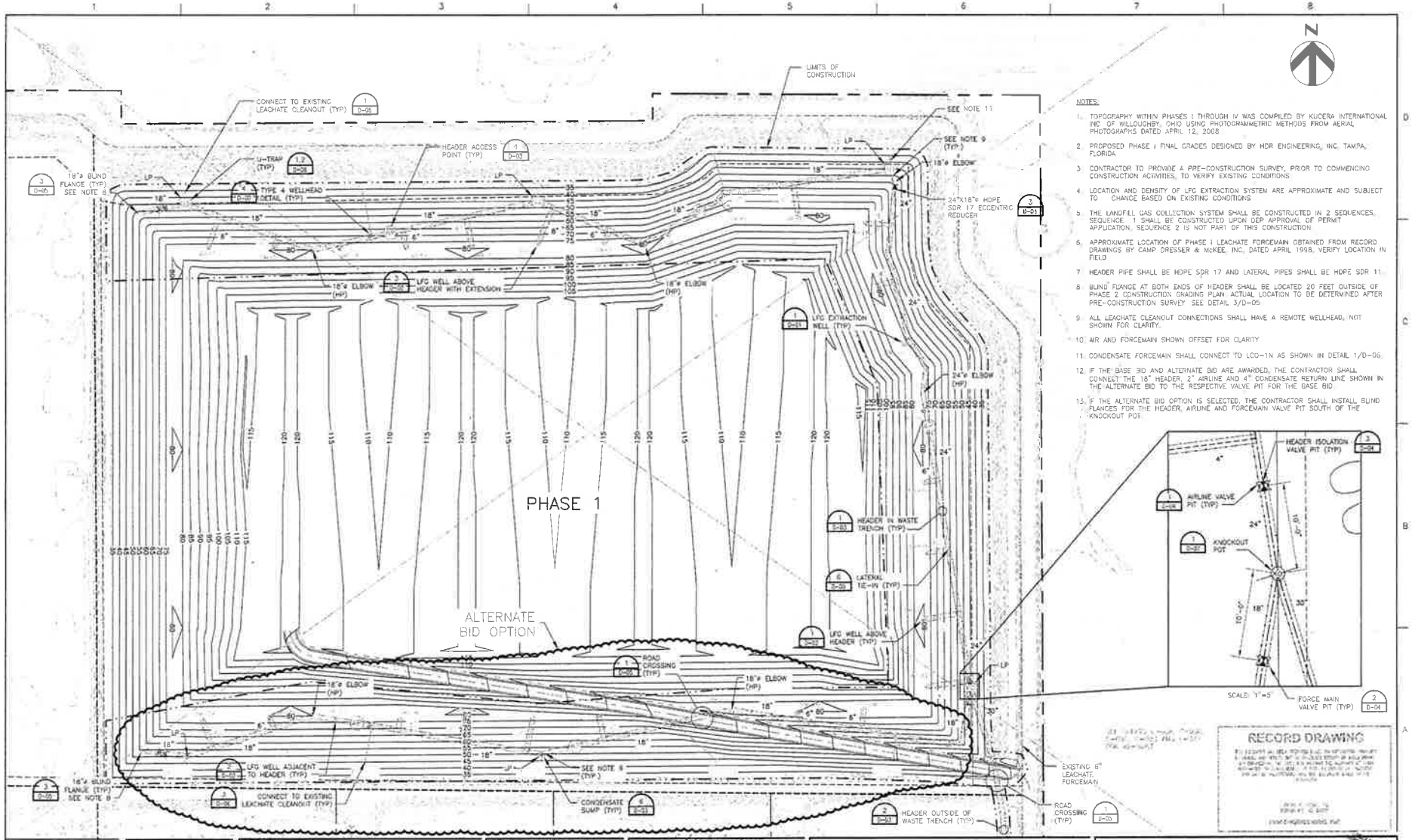
SARASOTA COUNTY FLORIDA

PHASE 1
LANDFILL GAS EXTRACTION WELL LAYOUT

FILENAME 00C-02.dwg

SCALE 1" = 100'

SHEET 00C-02



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5. THE LANDFILL GAS COLLECTION SYSTEM SHALL BE CONSTRUCTED IN 2 SEQUENCES. SEQUENCE 1 SHALL BE CONSTRUCTED UPON DEP APPROVAL OF PERMIT APPLICATION. SEQUENCE 2 IS NOT PART OF THIS CONSTRUCTION.
6. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & MCKEE, INC., DATED APRIL 1998. VERIFY LOCATION IN FIELD.
7. HEADER PIPE SHALL BE HDPE SDR 17 AND LATERAL PIPES SHALL BE HDPE SDR 11.
8. BLIND FLANGE AT BOTH ENDS OF HEADER SHALL BE LOCATED 20 FEET OUTSIDE OF PHASE 2 CONSTRUCTION GRADING PLAN. ACTUAL LOCATION TO BE DETERMINED AFTER PRE-CONSTRUCTION SURVEY. SEE DETAIL 3/D-05.
9. ALL LEACHATE CLEANOUT CONNECTIONS SHALL HAVE A REMOTE WELLHEAD, NOT SHOWN FOR CLARITY.
10. AIR AND FORCEMAIN SHOWN OFFSET FOR CLARITY.
11. CONDENSATE FORCEMAIN SHALL CONNECT TO LCO-1N AS SHOWN IN DETAIL 1/D-06.
12. IF THE BASE BID AND ALTERNATE BID ARE AWARDED, THE CONTRACTOR SHALL CONNECT THE 18" HEADER, 2" AIRLINE AND 4" CONDENSATE RETURN LINE SHOWN IN THE ALTERNATE BID TO THE RESPECTIVE VALVE PIT FOR THE BASE BID.
13. IF THE ALTERNATE BID OPTION IS SELECTED, THE CONTRACTOR SHALL INSTALL BLIND FLANGES FOR THE HEADER, AIRLINE AND FORCEMAIN VALVE PIT SOUTH OF THE KNOCKOUT POT.

RECORD DRAWING

ISSUE	DATE	DESCRIPTION
3	02/10	RECORD DRAWING
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: D. SOSA
CHECKED BY: C. LEBRON, P.E.
PROJECT NUMBER: 101028

CLIFFORD G. KOENIG LICENSE No. 64878 STATE OF FLORIDA PROFESSIONAL ENGINEER

Central County Solid Waste Disposal Complex

Phase 1 - Sequence 1

Landfill Gas Collection and Control System

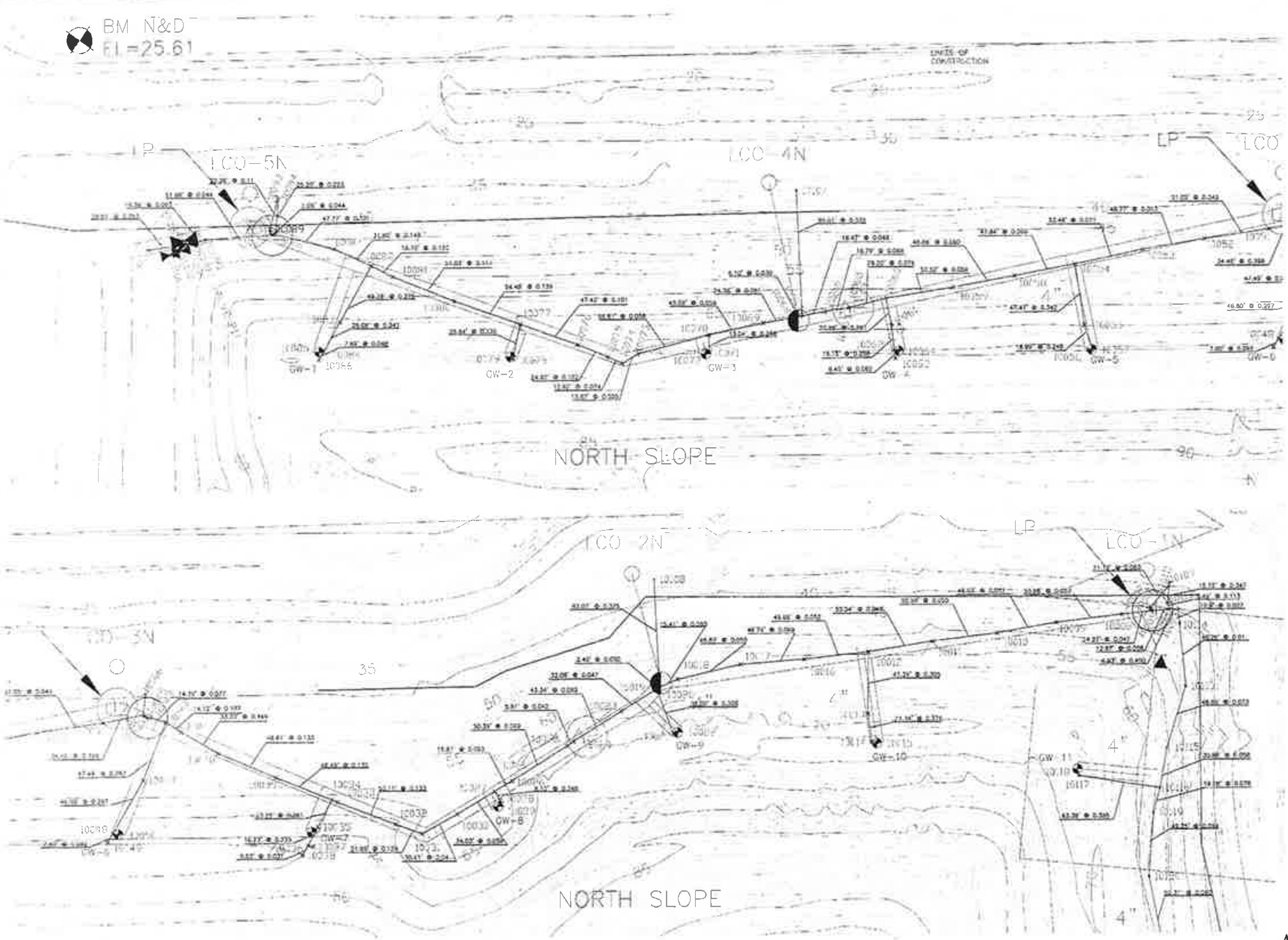
SARASOTA COUNTY FLORIDA

PHASE 1 GAS SYSTEM PIPING LAYOUT

AUG 13 2010

FILENAME	00C-03.dwg
SCALE	1" = 100'

SHEET 00C-03



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SURVEY NOTES

1. THIS SURVEY DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF THE PARTY OR PARTIES CERTIFIED TO BELOW FOR THE EXPRESS PURPOSE STATED HEREON AND/OR CONTAINED IN THE CONTRACT BETWEEN HYATT SURVEY SERVICES, INC AND THE CLIENT FOR THIS PROJECT. COPYING, DISTRIBUTING, AND/OR USING THIS DRAWING IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN ORIGINALLY INTENDED WITHOUT WRITTEN CONSENT FROM HYATT SURVEY SERVICES, INC IS STRICTLY PROHIBITED, AND RENDERS THE SURVEYORS CERTIFICATION, SIGNATURE, AND SEAL NULL AND VOID. ANY QUESTIONS CONCERNING THE CONTENT OR PURPOSE OF THIS DRAWING SHOULD BE DIRECTED TO HYATT SURVEY SERVICES, INC

2. ELEVATIONS SHOWN HEREON ARE BASED ON BENCHMARKS AS SHOWN IN THE DIGITAL FILES FOR THE CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX AS SUPPLIED BY THE PROJECT ENGINEER "HDR INC"

3. PLAN INFORMATION SHOWN HEREON TAKEN FROM THE CONSTRUCTION PLANS FOR THE CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX AS SUPPLIED BY THE PROJECT ENGINEER "HDR INC"

AUG 12 2010

AS-BUILT SURVEY

PHASE 1

GAS SYSTEM PIPING LAYOUT

Hyatt Survey Services, Inc.

SARASOTA COUNTY

HDR

HDR Engineering, Inc.

CLIFFORD G. KOENIG LICENSE No. 64079 STATE OF FLORIDA PROFESSIONAL ENGINEER

8-13-2010

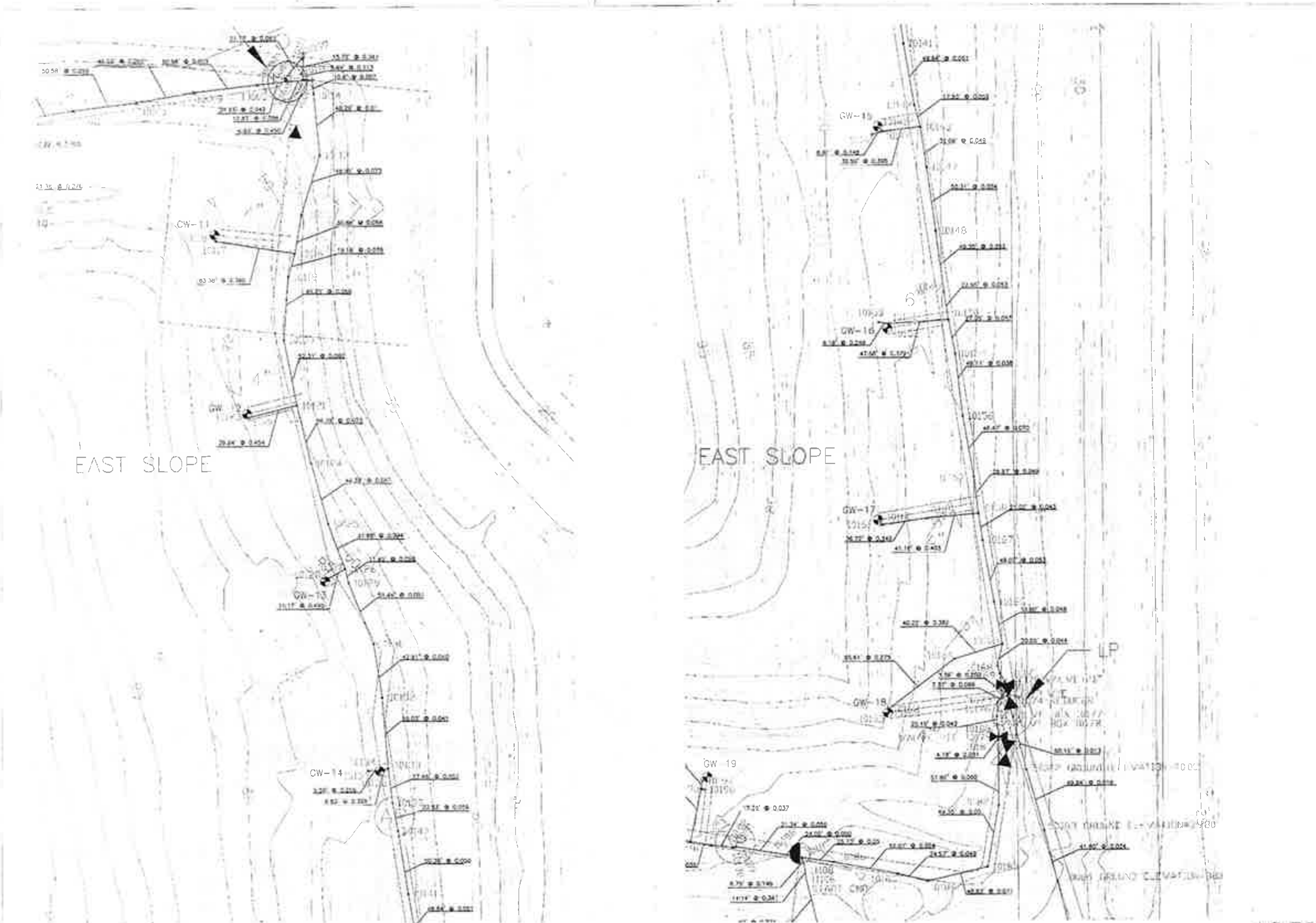
Central County Solid Waste Disposal Complex

Phase 1 - Sequence 1

Landfill Gas Collection and Control System

ISSUED FOR CONSTRUCTION

00C-03A



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AUG 13 2010

AS-BUILT SURVEY

PHASE 1
GAS SYSTEM PIPING LAYOUT

Hyatt Survey Services, Inc.

TOPOGRAPHIC SURVEY

SARASOTA COUNTY

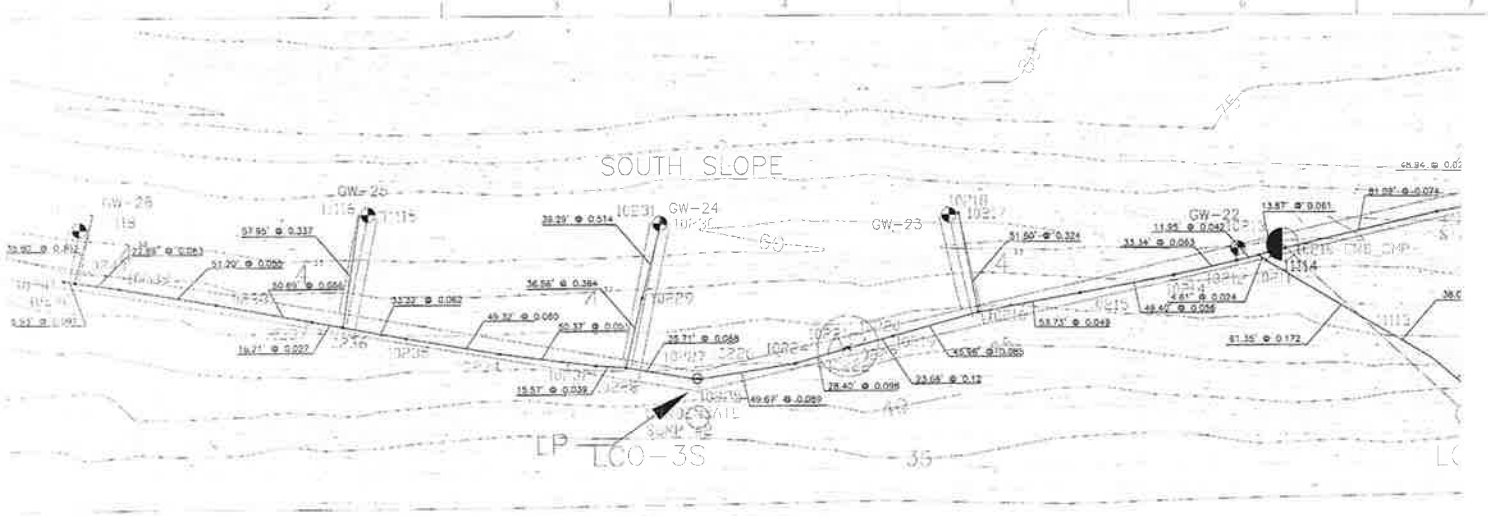
HDR
HDR Engineering Inc

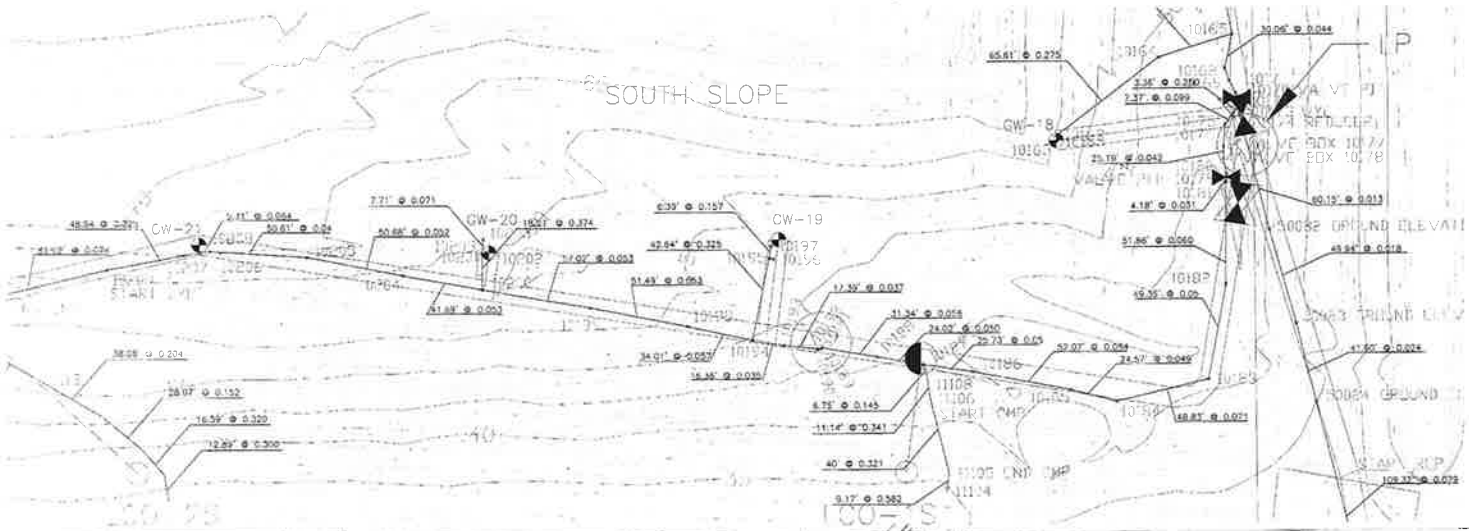
CLIFFORD G. KOENIG LICENSE No. 64079 STATE OF FLORIDA PROFESSIONAL ENGINEER

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System
ISSUED FOR CONSTRUCTION

SARASOTA COUNTY FLORIDA

00C-03B





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FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AUG 13 2010
SOUTHWEST DISTRICT

AS-BUILT SURVEY

SARASOTA COUNTY

HDR
HDR Engineering, Inc.

3	2/09	ISSUED FOR CONSTRUCTION
2	09/08	ISSUED FOR BID
1	05/08	ISSUED FOR 60% SUBMITTAL
NO.	DATE	DESCRIPTION

CLIFFORD G. HIGGINS
LICENSE
No. 66078
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System
ISSUED FOR CONSTRUCTION

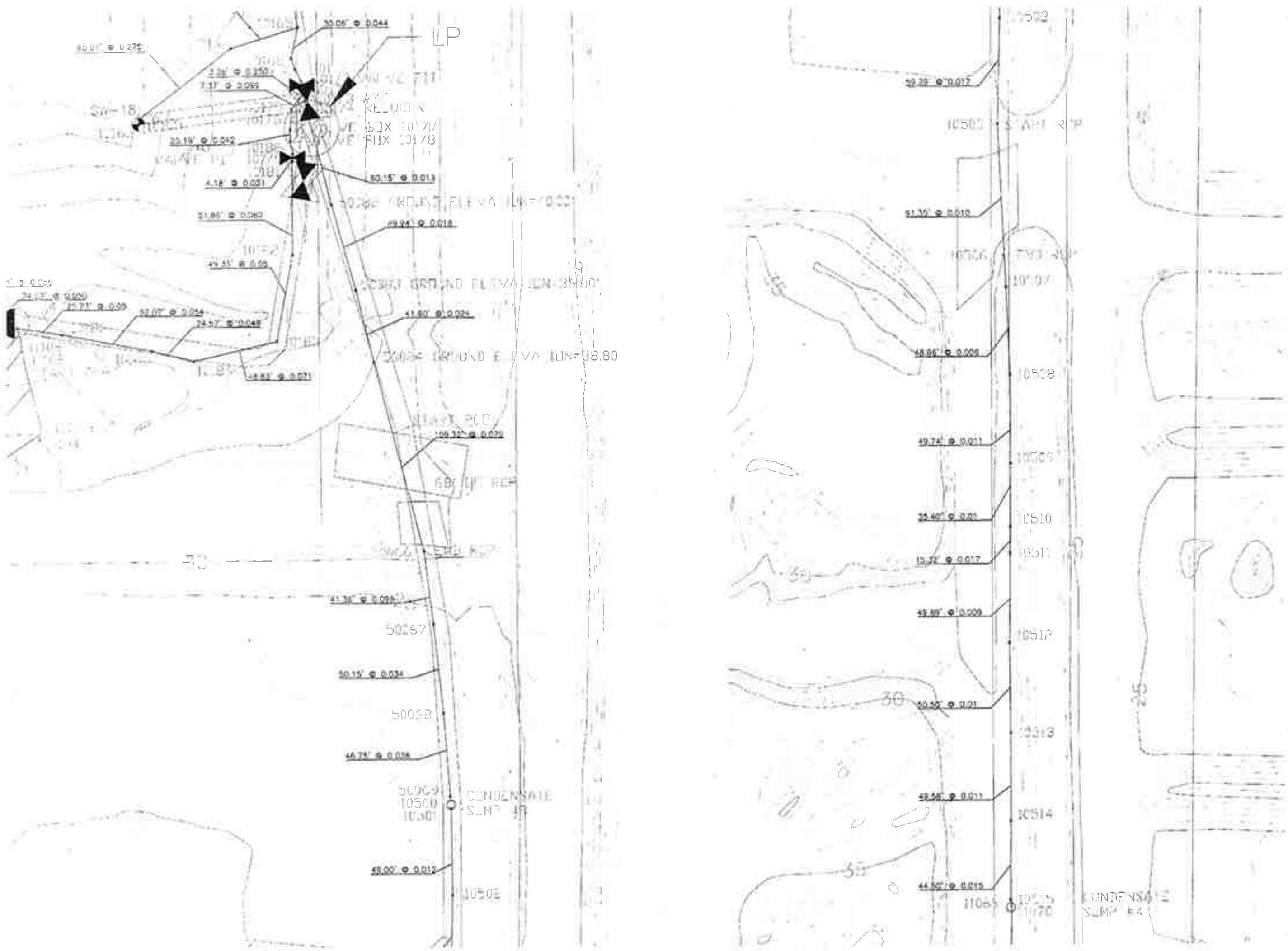
PHASE 1
GAS SYSTEM PIPING LAYOUT

Hyatt Survey Services, Inc.

TOPOGRAPHIC SURVEY

RPH

00C-03C



N

NOTES:

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AUG 13 2010

AS-BUILT SURVEY
PHASE 1
GAS SYSTEM PIPING LAYOUT

Hyatt Survey Services, Inc.

SARASOTA COUNTY

HDR

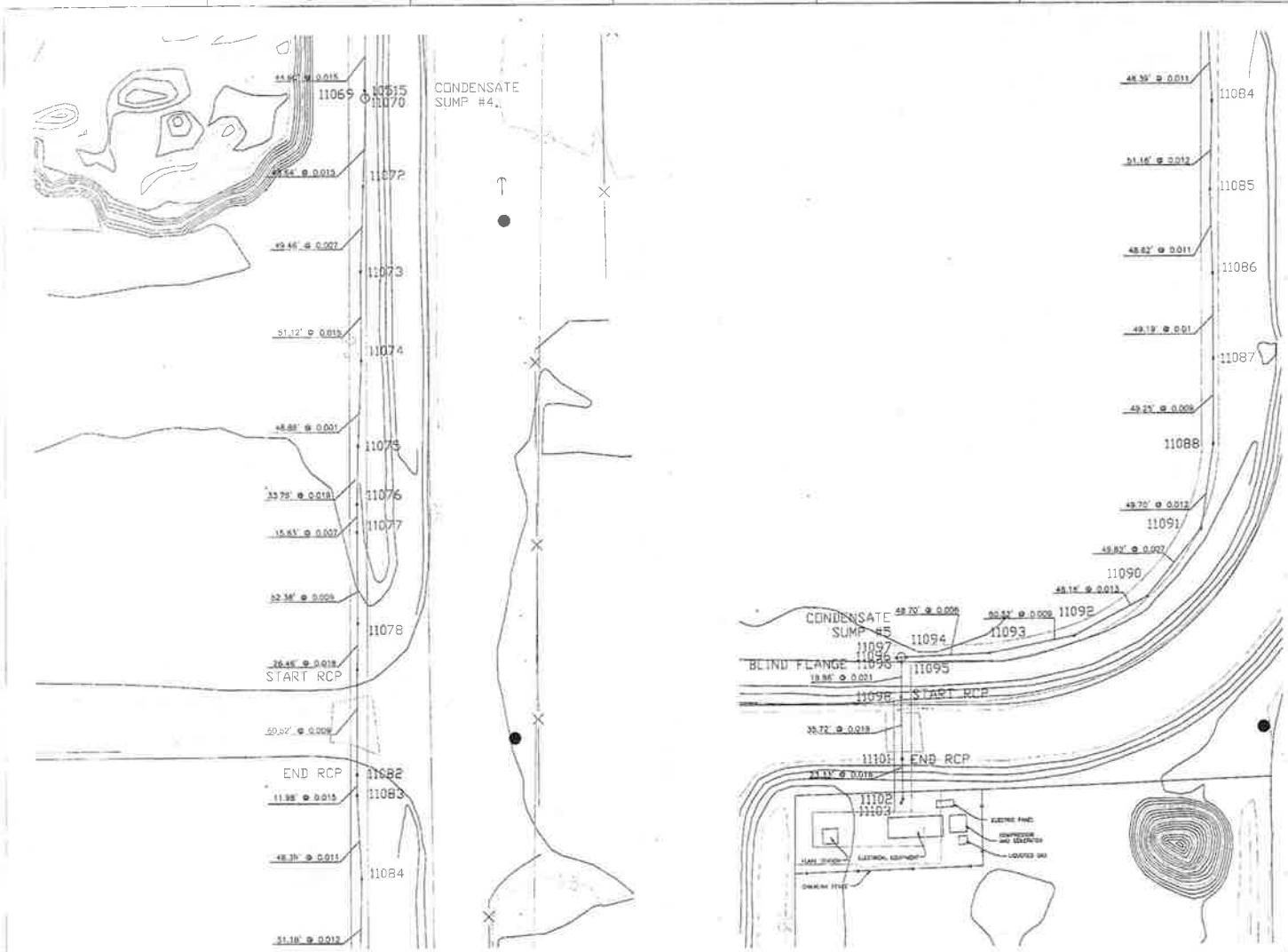
CLIFFORD G. KOENIG
LICENSE No. 54078
STATE OF FLORIDA
PROFESSIONAL ENGINEER

ISSUED FOR CONSTRUCTION

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System
ISSUED FOR CONSTRUCTION

SARASOTA COUNTY FLORIDA

00C-03D



N

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FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AUG 13 2010 SOUTHWEST DISTRICT TAMPA

AS-BUILT SURVEY

PHASE 1
GAS SYSTEM PIPING LAYOUT

SARASOTA COUNTY

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	06/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER	C. KOENIG, P.E.
DESIGNED BY	A. BARKER, E.I.
DRAWN BY	D. SOSA
CHECKED BY	C. LEBRON, P.E.
PROJECT NUMBER	101628

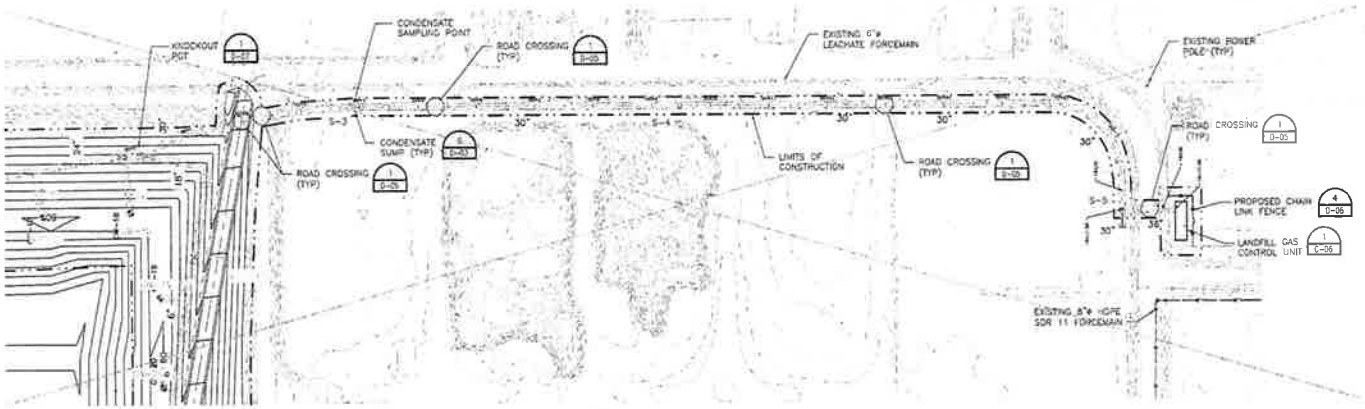
CLIFFORD G. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System
ISSUED FOR CONSTRUCTION
SARASOTA COUNTY FLORIDA

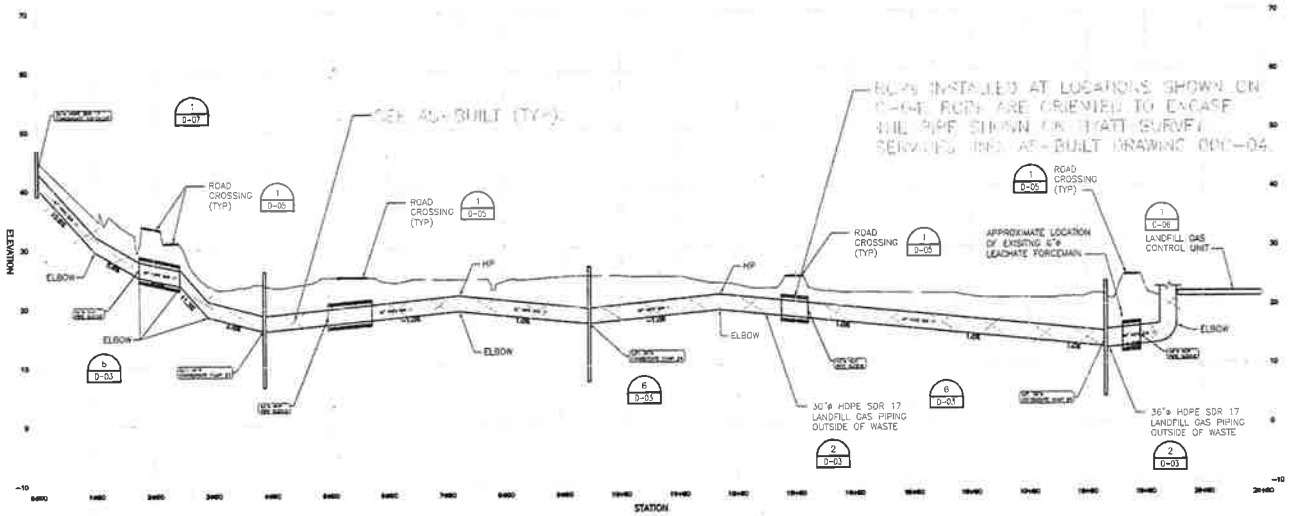
Hyatt Survey Services, Inc.
TOPOGRAPHIC SURVEY

0 1" 2"
AT FULL SIZE BAR LENGTH EQUALS TWO INCHES. ADJUST SCALE ACCORDINGLY.

FILENAME 00C-03.dwg
SCALE 1" = 100'
SHEET 00C-03E



PLAN VIEW
SCALE: 1"=100'



PROFILE VIEW
SCALE: 1"=10'V 1"=100'H

NOTE: AIRLINE/FORCEMAIN LINES NOT SHOWN FOR CLARITY

NOTES:

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV WAS COMPILED BY KUCERA INTERNATIONAL INC. OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED APRIL 12, 2008.
2. TRENCH DEPTHS ARE CURRENTLY DESIGNED TO BE NO SHALLOWER THAN 4 FEET AND NO DEEPER THAN 8 FEET FOR ALL PIPING. SEE SUMP DETAIL FOR TOTAL SUMP DEPTH.
3. ONLY PROFILE OF HEADERLINE IS SHOWN FOR CLARITY. HOWEVER, AN AIRLINE AND A CONDENSATE FORCEMAIN SHALL BE INSTALLED IN THE SAME TRENCH.
4. GAS LINE MARKERS SHALL BE INSTALLED EVERY 300 FEET NOTING LOCATION OF HEADERLINE.
5. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.
6. CONTRACTOR RESPONSIBLE FOR CONNECTING HEADER PIPE TO LANDFILL GAS CONTROL UNIT. CONTRACTOR RESPONSIBLE FOR CONDENSATE, DRAINAGE, ELECTRICAL CONNECTIONS AND PAD CONSTRUCTION.

RECORD DRAWING
HDR ENGINEERING INC.

ISSUE	DATE	DESCRIPTION
3	08/10	REVISED PER ADDENDUM
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: D. SOSA
CHECKED BY: C. LEBRON, P.E.
PROJECT NUMBER: 101028

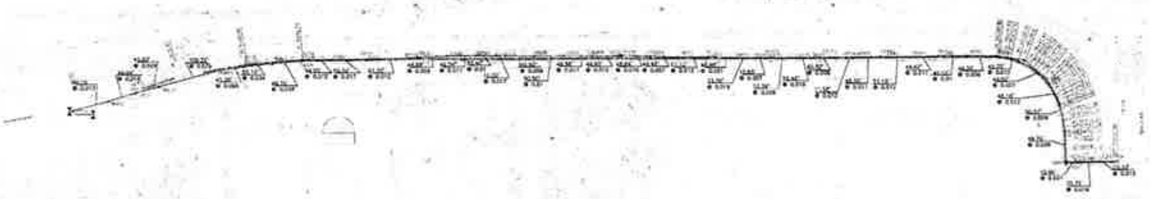
CLIFFORD G. KOENIG LICENSE No. 66078 STATE OF FLORIDA PROFESSIONAL ENGINEER
8-13-2010

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System
SARASOTA COUNTY FLORIDA

HEADER TO FLARE STATION PLAN & PROFILE

AUG 13 2010

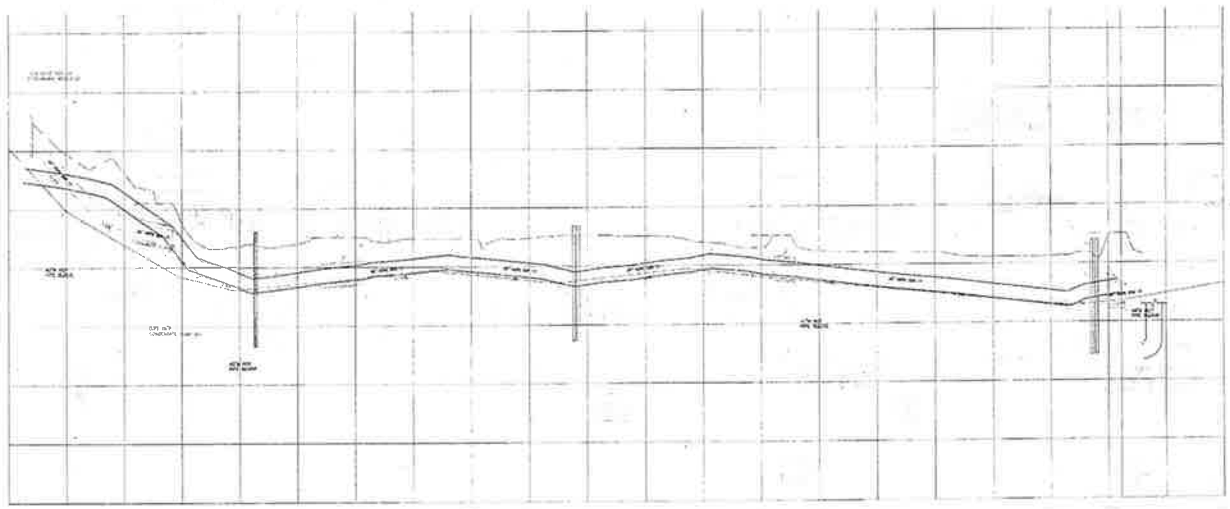
FILENAME: 00C-04.dwg
SCALE: AS NOTED
SHEET: 00C-04



N

NOTES:

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV WAS COMPILED BY KUCERA INTERNATIONAL INC. OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED APRIL 12, 2008.
2. TRENCH DEPTHS ARE CURRENTLY DESIGNED TO BE NO SHALLOWER THAN 4 FEET AND NO DEEPER THAN 8 FEET FOR ALL PIPING. SEE SUMP DETAIL FOR TOTAL SUMP DEPTH.
3. ONLY PROFILE OF HEADERLINE IS SHOWN FOR CLARITY. HOWEVER, AN AIR LINE AND A CONDENSATE FORCEMAIN SHALL BE INSTALLED IN THE SAME TRENCH.
4. GAS LINE MARKERS SHALL BE INSTALLED EVERY 200 FEET NOTING LOCATION OF HEADERLINE.
5. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE INC. DATED APRIL 1998. VERIFY LOCATION IN FIELD.
6. CONTRACTOR RESPONSIBLE FOR CONNECTING LEACHATE LINE TO LANDFILL GAS CONTROL UNIT. CONTRACTOR RESPONSIBLE FOR CONDENSATE DRAINAGE, ELECTRICAL CONNECTIONS, AND PAD CONSTRUCTION.



HDR
HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION

PROJECT NUMBER
DESIGNED BY
DRAWN BY
CHECKED BY
PROJECT NUMBER

CLIFFORD G. KOENIG LICENSE No. 64079 STATE OF FLORIDA PROFESSIONAL ENGINEER
8-13-2010

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System
ISSUED FOR CONSTRUCTION

SARASOTA COUNTY

HEADER TO FLARE STATION PLAN & PROFILE

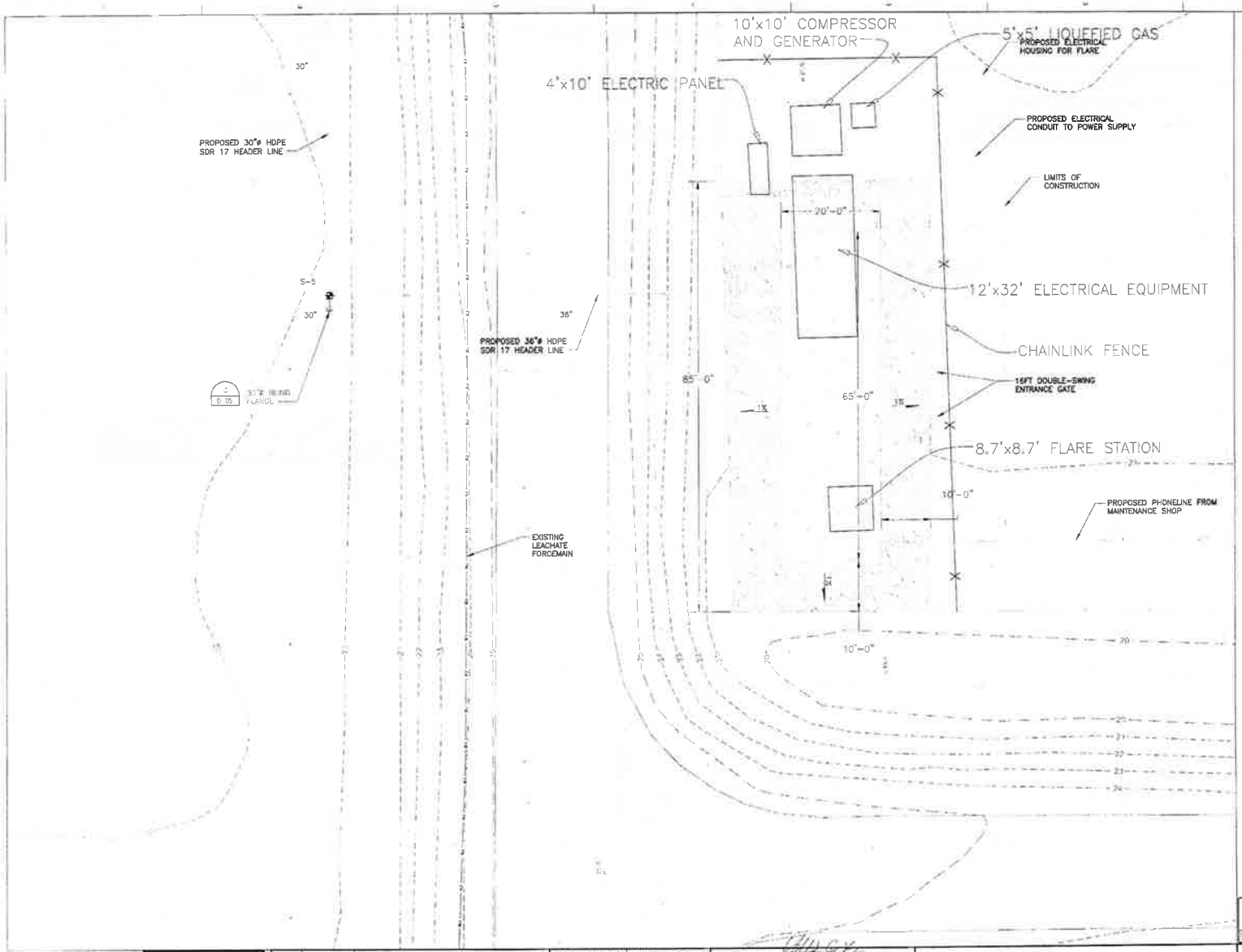
Hyatt Survey Services, Inc.

RECORD DRAWING
RPH

SCALE: AS NOTED

00C-04

AUG 13 2010



NOTES:

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV WAS COMPILED BY KUCERA INTERNATIONAL INC. OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED APRIL 12, 2008.
2. LOCATION AND DENSITY OF LFG EXTRACTION SYSTEM ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON EXISTING CONDITIONS.
3. APPROXIMATE LOCATION OF PHASE I LEACHATE FORCEMAIN OBTAINED FROM RECORD DRAWINGS BY CAMP DRESSER & McKEE, INC., DATED APRIL 1996. VERIFY LOCATION IN FIELD.
4. HEADER PIPE SHALL BE HDPE SDR 17.
5. 8" OF NO. 57 STONE IS REQUIRED TO BE INSTALLED WITHIN THE FENCED AREA AS SHOWN.
6. ELECTRICAL CONNECTION AND ROAD CROSSING OF ELECTRICAL MUST MEET FLORIDA CODE.
7. FLARE STATION ELEVATIONS ARE AS FOLLOWS:
   - CRUSHED GRAVEL – EL. 21.70
   - FLARE PAD – EL. 21.90

   CONTRACTOR TO FILL AND COMPACT FLARE STATION PAD AND GRAVEL AREA TO ELEVATION SPECIFIED. CONTRACTOR TO FILL AREA SURROUNDING GRAVEL AREA AT 3:1 SLOPE TO MEET EXISTING GRADES.
8. CONTRACTOR TO GRADE SOIL FOR STORMWATER DRAINAGE AROUND FLARE STATION.
9. AIR AND FORCEMAIN LINES NOT SHOWN FOR CLARITY.

AS-BUILT SURVEY

Hyatt Survey Services, Inc.

AS-BUILT SURVEY

SARASOTA COUNTY

HDR

ISSUE	DATE	DESCRIPTION
2	12/08	ISSUED FOR CONSTRUCTION
1	08/08	ISSUED FOR BID
0	05/08	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: G. SOSA
CHECKED BY: C. LEBRON, P.E.
PROJECT NUMBER: 101628

CLIFFORD G. KOENIG LICENSE No. 54072 STATE OF FLORIDA PROFESSIONAL ENGINEER

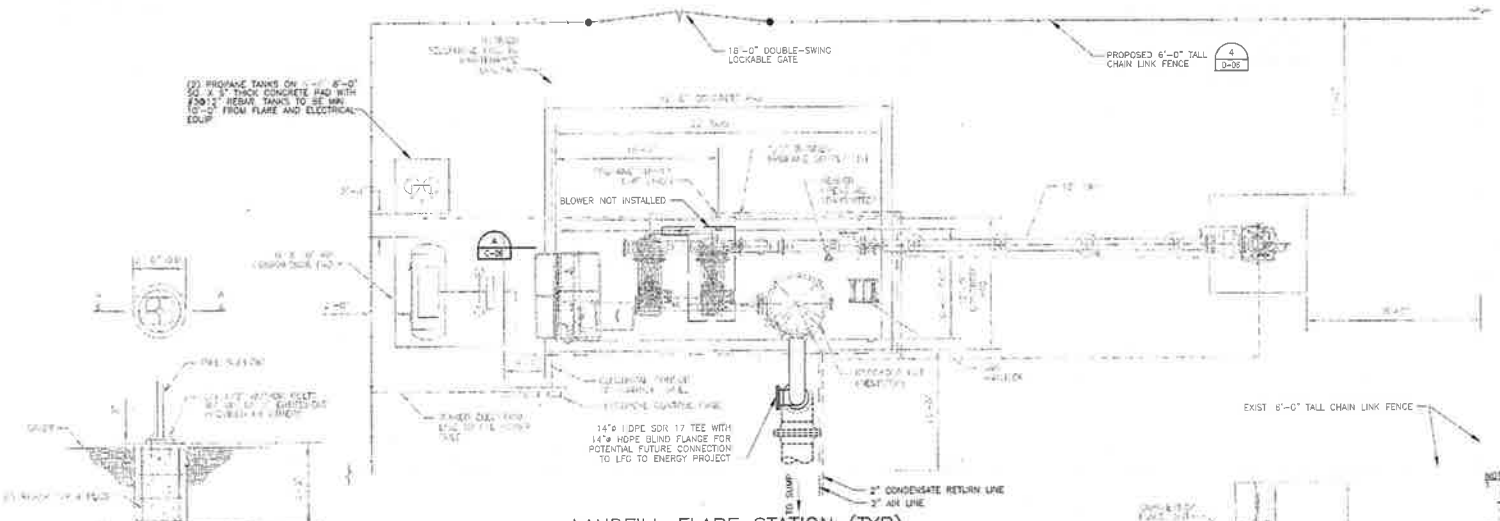
Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System
ISSUED FOR CONSTRUCTION

SARASOTA COUNTY FLORIDA

FLARE STATION GRADING PLAN

AUG 13 2009

FILENAME: 00C-05.dwg
SCALE: 1" = 30'
SHEET: 00C-05



LANDFILL FLARE STATION (TYP) PLAN VIEW

NOT TO SCALE

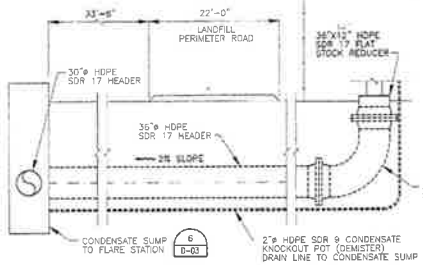
1 C-04 C-05 D-08

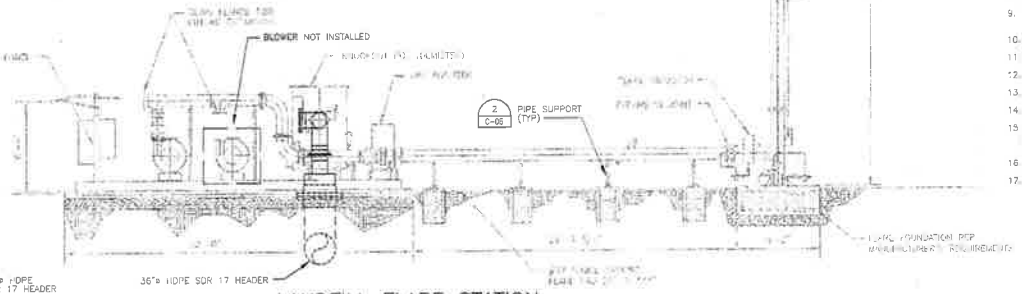
PIPE SUPPORT DETAIL

NOT TO SCALE

2 C-06

FLARE MANUFACTURER TO PROVIDE REINFORCED CONCRETE PAD FOUNDATION DESIGN, GROUNDING AND EARTHWORK COMPACTION REQUIREMENTS. THE CONSTRUCTION OF THE FLARE STATION PAD WILL BE COMPLETED BY THE GAS COLLECTION SYSTEM PIPING CONTRACTOR AND SHALL MEET THE FLARE VENDOR SPECIFICATIONS.





LANDFILL FLARE STATION SECTION

NOT TO SCALE

A C-06

NOTES:
1. POWER/PIPING PLAN AND SECTIONS ARE SHOWN FOR INFORMATION PURPOSES ONLY. IT IS A SCHEMATIC LAYOUT. ACTUAL LAYOUT AND DESIGN TO BE PROVIDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
2. DIMENSIONS SHOWN MAY BE MODIFIED TO SUIT BLOWER/FLARE MANUFACTURER'S REQUIREMENTS. CONTRACTOR SHALL COORDINATE PIPING TO SUIT EQUIPMENT.
3. BLOWERS AND EQUIPMENT MAY BE SUPPLIED AND INSTALLED AS INDIVIDUAL UNITS OR AS A COMPLETE SKID PACKAGE, PER APPROVAL OF ENGINEER.
4. THE CONTRACTOR SHALL INSTALL ALL CONDUITS AND CONDUCTORS NECESSARY FOR THE FLARE, BLOWER MOTORS, AND CONTROLS. DIMENSIONS MAY BE MODIFIED TO SUIT INDIVIDUAL SKID ASSEMBLY MANUFACTURER'S REQUIREMENTS.
5. GAS IMPERMEABLE SEAL-OFFS SHALL BE USED ON ALL UNDERGROUND ELECTRICAL CONDUITS.
6. FLARE TO BE MOUNTED ON A LEVEL SURFACE. SHIM OR GROUT AS REQUIRED.
7. PROVIDE 8" NO.57 GRAVEL ON 8 OZ/SY NON-WOVEN GEOTEXTILE WITHIN FENCE AREA EXCEPT IN LOCATION OF FOUNDATION.
8. CONTRACTOR TO INSTALL PHONE SERVICE TO CONTROL PANEL FROM LANDFILL OFFICE.
9. ONE FLARE STACK SHOWN FOR CLARITY. ADDITIONAL FLARE STACKS MAY BE NECESSARY TO MEET FUTURE FLOW RATE.
10. KNOCK-AND-OUTLET CONFIGURATIONS MAY VARY DEPENDING UPON EQUIPMENT PROVIDED.
11. FORMWORK, CONCRETE PLACEMENT, PROTECTION, AND CURING SHALL BE IN ACCORDANCE WITH ACI 318.
12. THE REINFORCED CONCRETE FLARE STATION PAD WILL BE SPECIFIED IN ADDENDUM NO. .
13. FLARE SUBGRADE TO BE COMPACTED TO 95% OF MODIFIED PROCTOR.
14. CONTRACTOR TO INSTALL SPECIFIED GROUNDING AS REQUIRED BY FLARE MANUFACTURER.
15. CONTRACTOR TO PURCHASE AND INSTALL INGERSOLL RAND COMPRESSOR WITH 1.25 HP AND 150 MAX. PSI CAPABILITY. CONTRACTOR TO SUBMIT MANUFACTURER SPECIFICATIONS FOR APPROVAL.
16. AIR COMPRESSOR MAY BE LOCATED ON SEPARATE CONCRETE PAD AS REQUIRED BY FLARE MANUFACTURER.
17. FLARE STATION WILL BE PROVIDED AND COMMISSIONED BY OTHERS. ALL NOTED CONNECTIONS TO THE FLARE STATION SHALL BE MADE BY THE GAS COLLECTION SYSTEM CONTRACTOR.

RECORD DRAWING

SARASOTA COUNTY

HDR

ISSUE	DATE	DESCRIPTION
3	12/09	ISSUED FOR CONSTRUCTION
2	08/09	ISSUED FOR BID
1	06/09	ISSUED FOR CLIENT REVIEW
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: D. SOSA
CHECKED BY: C. LEMRON, P.E.
PROJECT NUMBER: 101628

CLIFFORD G. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER
6-13-2010

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System

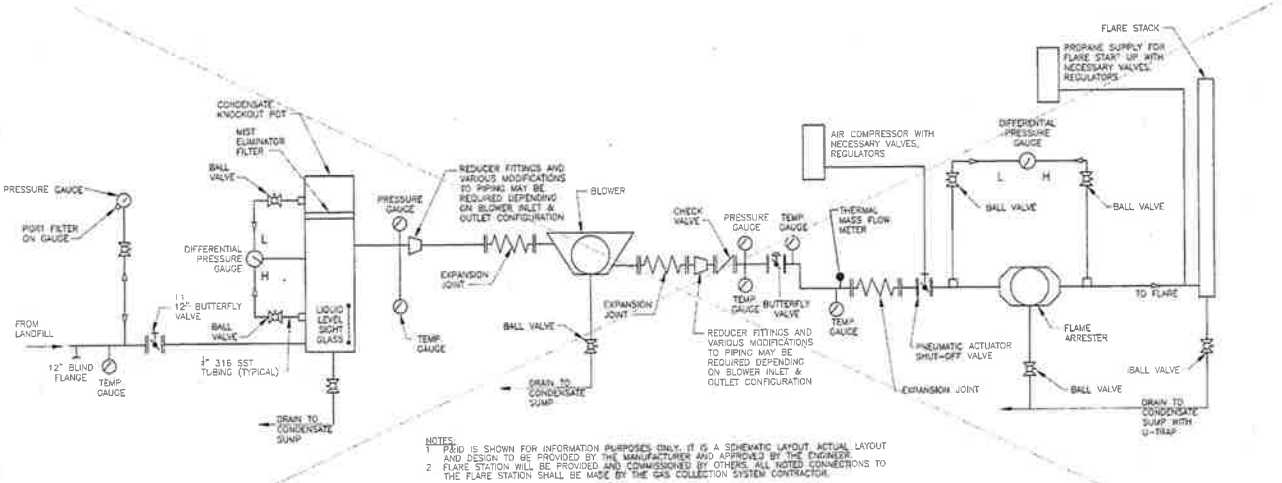
SARASOTA COUNTY FLORIDA

TYPICAL FLARE STATION LAYOUT

AUG 13 2010

FILENAME: 00C-06.dwg
SCALE: NOT TO SCALE

SHEET: **00C-06**



NOTES:
1. P&ID IS SHOWN FOR INFORMATION PURPOSES ONLY. IT IS A SCHEMATIC LAYOUT. ACTUAL LAYOUT AND DESIGN TO BE PROVIDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
2. FLARE STATION WILL BE PROVIDED AND COMMISSIONED BY OTHERS. ALL NOTED CONNECTIONS TO THE FLARE STATION SHALL BE MADE BY THE GAS COLLECTION SYSTEM CONTRACTOR.

FLARE STATION P&ID

NOT TO SCALE

1 / C-07

RECORD DRAWING

HDR ENGINEERING INC

ISSUE	DATE	DESCRIPTION
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER	C. KOENIG, P.E.
DESIGNED BY	A. BARKER, E.I.
DRAWN BY	D. SOSA
CHECKED BY	C. LEBRON, P.E.
PROJECT NUMBER	101628

CLIFFORD G. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER
5-13-2010

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System

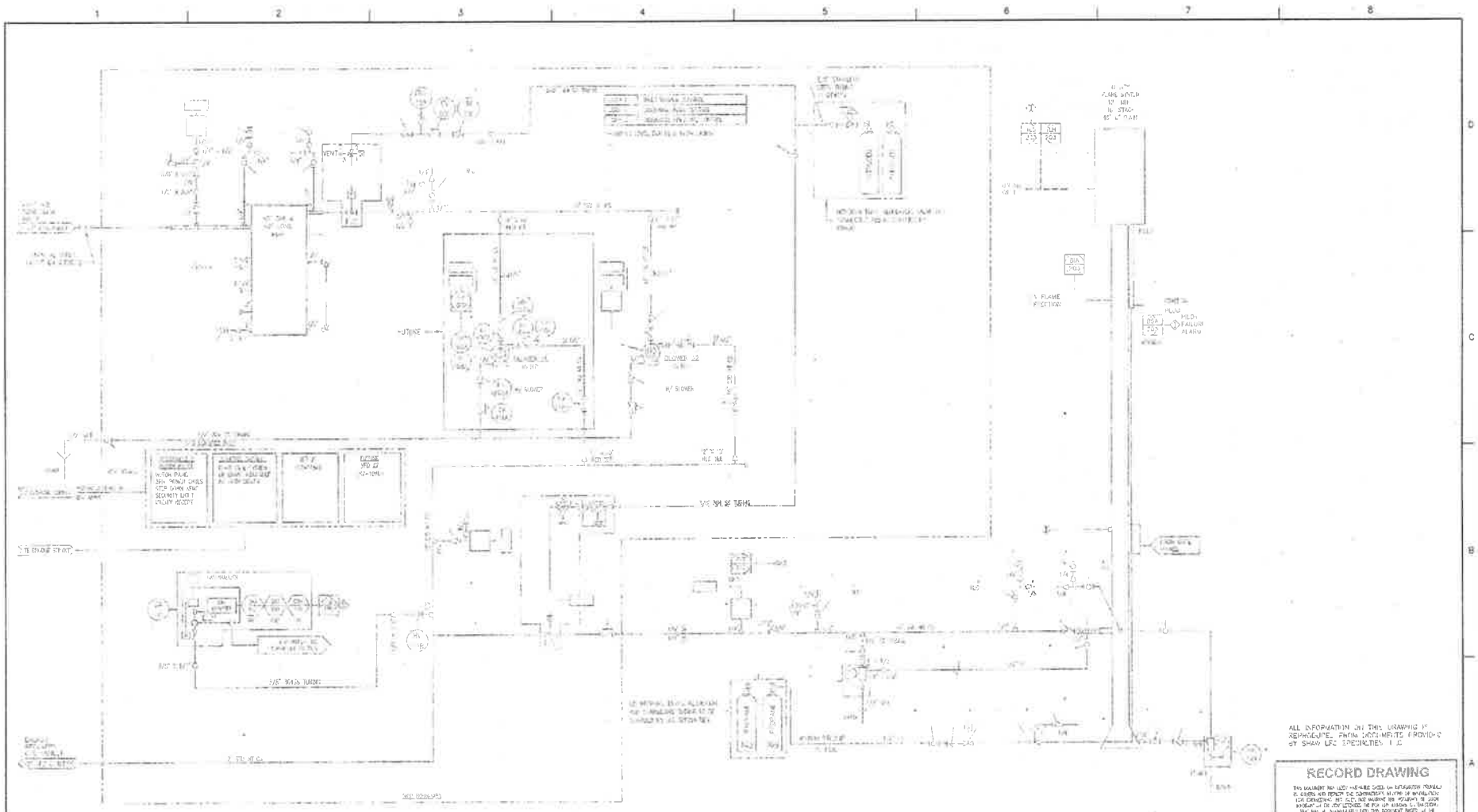
SARASOTA COUNTY FLORIDA

FLARE STATION P&ID

AUG 13 2010

FILENAME	00C-07.dwg
SCALE	NOT TO SCALE

SHEET 00C-07



SARASOTA COUNTY

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
	9/28/12	PERMIT SUBMITTAL

PROJECT MANAGER
DESIGNED BY SHAW LFG
DRAWN BY SHAW LFG
CHECKED BY
PROJECT NUMBER 101628

CLIFFORD G. KISENG LICENSED No. 84078 STATE OF FLORIDA PROFESSIONAL ENGINEER

Central County Solid Waste Disposal Complex

Phase 1 - Sequence 1

Landfill Gas Collection and Control System

SARASOTA COUNTY FLORIDA

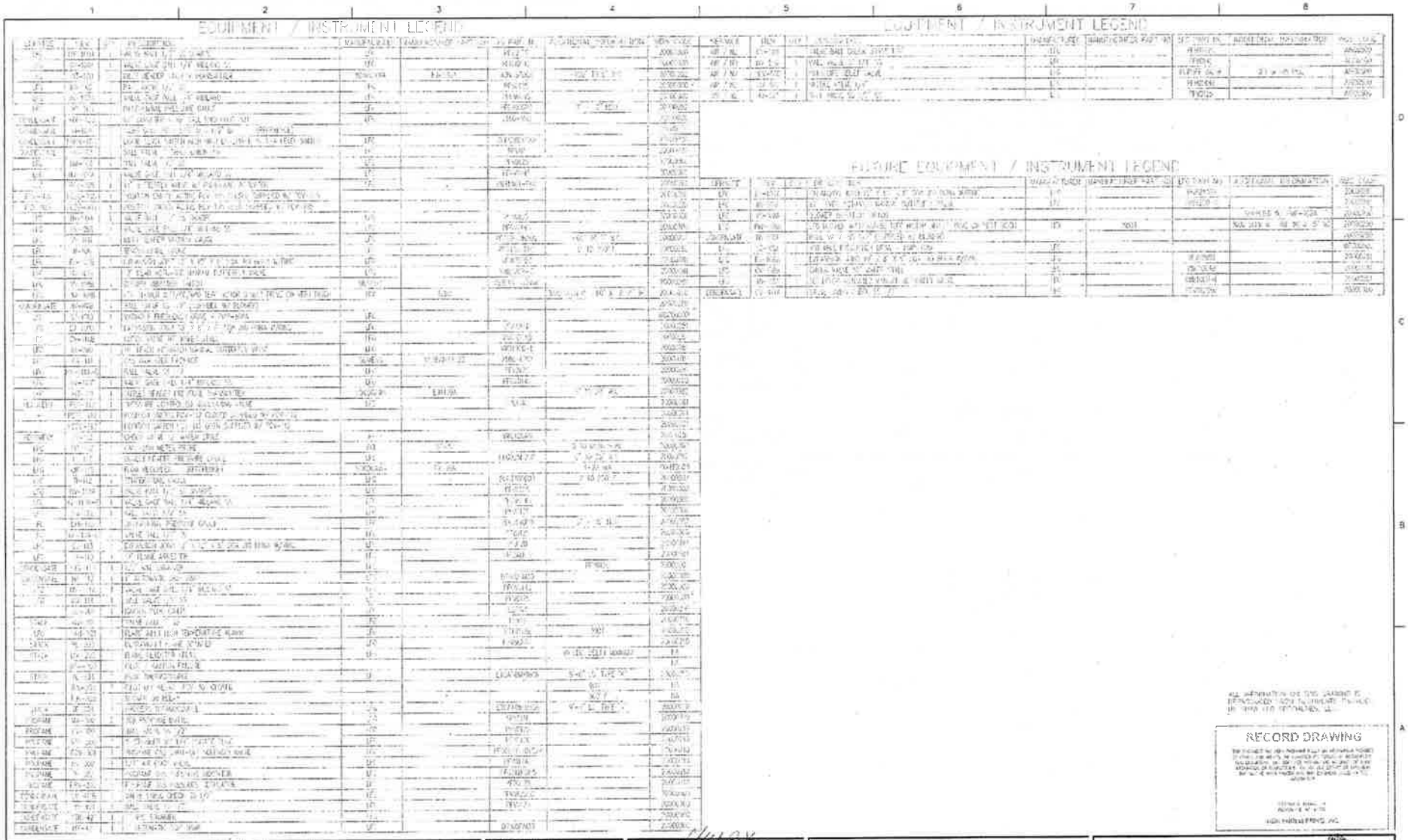
FLARE STATION P&ID BY SHAW

AUG 13 2013

AS SHOWN

FILENAME 00C-07A.dwg
SCALE NOT TO SCALE

SHEET 00C-07A



SARASOTA COUNTY

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
	07/2013	

PROJECT MANAGER
DESIGNED BY SHAW LFG
DRAWN BY SHAW LFG
CHECKED BY
PROJECT NUMBER 101628

CLIFFORD B. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER
8-13-2013

Central County Solid Waste Disposal Complex

Phase 1 - Sequence 1

Landfill Gas Collection and Control System

SARASOTA COUNTY FLORIDA

FLARE STATION P&ID LEGEND BY SHAW

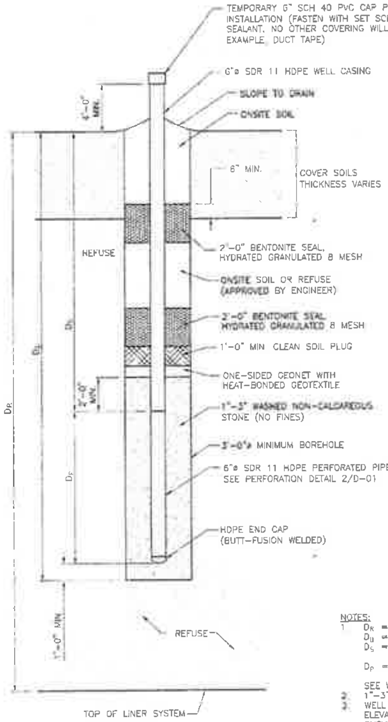
AUG 13 2013

AS SHOWN

FILENAME 00C-07B.dwg

SCALE NOT TO SCALE

SHEET 00C-07B

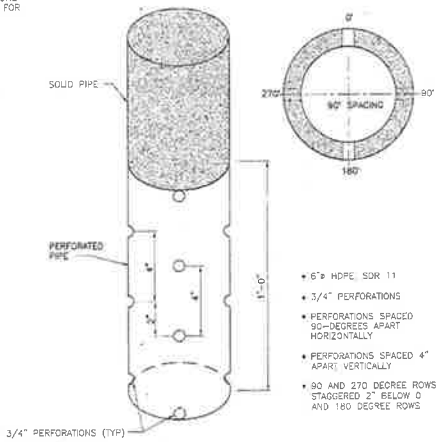


LANDFILL GAS EXTRACTION WELL

NOT TO SCALE

1 / C-03

NOTES:
1. D_R = DEPTH OF REFUSE
   D_B = DEPTH OF BORING
   D_S = DEPTH OF SOLID PIPE (BELOW GRADE) ~10 FEET MINIMUM
   D_P = LENGTH OF PERFORATED PIPE
   SEE WELL SCHEDULE THIS SHEET
2. 1"–3" WASHED NON-CALCAREOUS STONE (NO FINES)
3. WELL DRILLING WILL NOT COMMENCE UNTIL EXISTING GRADE ELEVATIONS ARE IDENTIFIED AND VERIFIED BY PROJECT SURVEYOR, DESIGN ENGINEER, AND CQA REPRESENTATIVE.
4. WELL DRILLING TABLE WILL BE MANAGED BY OWNER OR DESIGNATED REPRESENTATIVE TO ENSURE ONLY THE VERIFIED WELL DEPTHS ARE PRESENT, AND THAT DRILLER AND CQA REPRESENTATIVE HAVE THE IDENTICAL INFORMATION PRIOR TO DRILLING.

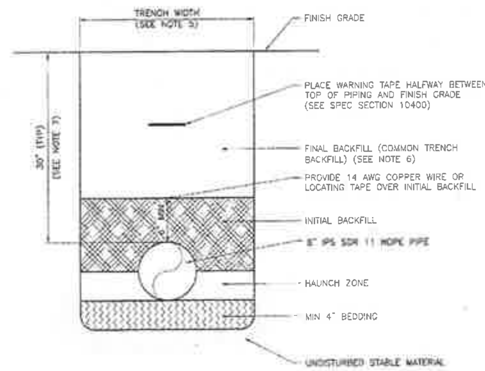


- 6"ø HDPE, SDR 11
- 3/4" PERFORATIONS
- PERFORATIONS SPACED 90-DEGREES APART HORIZONTALLY
- PERFORATIONS SPACED 4" APART VERTICALLY
- 90 AND 270 DEGREE ROWS STAGGERED 2" BELOW 0 AND 180 DEGREE ROWS

EXTRACTION WELL PERFORATION DETAIL

NOT TO SCALE

2 / D-01



NOTES:
1. TRENCHING AND PIPE INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH ASTM D2321, MAXIMUM PARTICLE SIZE = 1/2".
2. BEDDING, HAUNCHING AND INITIAL BACKFILL MATERIAL USED SHOULD BE CLASS I OR CLASS II AS PER ASTM D2487, "STANDARD METHOD FOR CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES." THIS MATERIAL SHALL BE COMPACTED TO 95% DENSITY PER AASHTO T-99. SEE SPECIFICATIONS.
3. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION. DEWATER TO ONE FOOT BELOW TRENCH BOTTOM. SEE SPECIFICATIONS.
4. INITIAL BACKFILL SHOULD BE PLACED IN 6" LAYERS AND EXTENDED TO AT LEAST 6" ABOVE THE TOP OF THE PIPE.
5. MINIMUM TRENCH WIDTH = PIPE OD + 16". MAXIMUM TRENCH WIDTH = MINIMUM TRENCH + 18".
6. FINAL BACKFILL SHALL BE CLASS I, CLASS II OR CLASS III MATERIAL AS PER ASTM D2487. THIS MATERIAL SHALL BE COMPACTED TO 95% DENSITY PER AASHTO T-99. SEE SPECIFICATIONS.
7. FORCEMAIN MAY BE INSTALLED DEEPER IN ACCORDANCE WITH SPECIFICATIONS TO MAINTAIN ADEQUATE CLEARANCE DURING HORIZONTAL DIRECTIONAL DRILLING OR DURING CROSSING OF EXISTING PIPELINES.
8. THIS DETAIL IS FOR INFORMATIONAL PURPOSES ONLY.

EXISTING LEACHATE FORCEMAIN BEDDING

NOT TO SCALE

3 / C-04 / C-05

LFG Extraction Well Number	Grid Coordinates NORTHING	Grid Coordinates EASTING	Final Grade Elevation	Basegrade Elevation	Calculated Depth of Waste (D_R)	Calculated Borehole (D_B)	Solid Pipe (Does Not Include 4' Above Grade Stickup) (D_S)	Perforated Pipe (D_P)	Grid Coordinates (Surveyed) NORTHING	Grid Coordinates (Surveyed) EASTING	Surveyed Cover Elevation	Calculated Well Depth	Calculated Perforated Length
GW-1	1043648.25	529407.18	77.0	26.0	51.0	34.0	10.0	24.0	[illegible]	[illegible]	[illegible]	37?	22
GW-2	1043643.78	529555.93	79.0	28.0	51.0	34.0	10.0	24.0	1043643.77	[illegible]	77.83	31?	23
GW-3	1043644.93	529707.20	78.0	26.0	52.0	34.0	10.0	24.0	[illegible]	529707.01	[illegible]	[illegible]	24
GW-4	1043646.49	529856.78	78.0	27.0	51.0	34.0	10.0	24.0	[illegible]	[illegible]	[illegible]	32	22
GW-5	1043646.70	530006.58	79.0	28.0	51.0	34.0	10.0	24.0	[illegible]	[illegible]	[illegible]	33	22
GW-6	1043653.81	530156.12	77.0	25.0	52.0	34.0	10.0	24.0	1043653.74	[illegible]	74.39?	35	24
GW-7	1043655.04	530306.24	78.0	28.0	50.0	33.0	10.0	23.0	[illegible]	[illegible]	73.17	30	19
GW-8	1043674.00	530451.01	79.0	27.0	52.0	34.0	10.0	24.0	[illegible]	[illegible]	76.06	34	23
GW-9	1043729.42	530590.25	76.0	26.0	50.0	33.0	10.0	23.0	[illegible]	[illegible]	74.33	[illegible]	[illegible]
GW-10	1043720.28	530744.59	79.0	28.0	51.0	34.0	10.0	24.0	[illegible]	[illegible]	[illegible]	34	23
GW-11	1043699.47	530900.23	77.0	27.0	50.0	33.0	10.0	23.0	[illegible]	[illegible]	74.82	33	22
GW-12	1043559.00	530925.66	80.0	27.0	53.0	35.0	10.0	25.0	[illegible]	[illegible]	[illegible]	35	24
GW-13	1043427.84	530987.70	77.0	27.0	50.0	33.0	10.0	23.0	[illegible]	530987.70	[illegible]	33	22
GW-14	1043278.66	531030.61	79.0	29.0	50.0	33.0	10.0	23.0	1043278.56	531030.60	[illegible]	[illegible]	21
GW-15	1043116.60	531032.49	79.0	29.0	50.0	33.0	10.0	23.0	[illegible]	[illegible]	[illegible]	32	21
GW-16	1042957.98	531039.64	77.0	29.0	48.0	32.0	10.0	22.0	[illegible]	[illegible]	[illegible]	30	19
GW-17	1042808.10	531031.73	80.0	29.0	51.0	34.0	10.0	24.0	[illegible]	[illegible]	79.09	34	23
GW-18	1042657.09	531038.82	78.0	29.0	49.0	32.0	10.0	22.0	[illegible]	[illegible]	[illegible]	32	21
GW-19	1042607.47	530894.94	79.0	30.0	49.0	32.0	10.0	22.0	[illegible]	[illegible]	75.19	[illegible]	18
GW-20	1042601.45	530744.79	80.0	31.0	49.0	32.0	10.0	22.0	1042601.42	[illegible]	[illegible]	31	20
GW-21	1042591.49	530594.32	77.0	29.0	48.0	32.0	10.0	22.0	[illegible]	530594.44	74.42	30	19
GW-22	1042596.53	530443.14	79.0	30.0	49.0	32.0	10.0	22.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GW-23	1042592.58	530293.30	78.0	30.0	48.0	32.0	10.0	22.0	[illegible]	[illegible]	[illegible]	31	20
GW-24	1042588.66	530143.85	77.0	28.0	49.0	32.0	10.0	22.0	[illegible]	[illegible]	[illegible]	32	21
GW-25	1042593.76	529992.42	79.0	31.0	48.0	32.0	10.0	22.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GW-26	1042586.82	529842.63	77.0	29.0	48.0	32.0	10.0	22.0	[illegible]	[illegible]	[illegible]	[illegible]	18
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10.0	[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10.0	[illegible]					

TOTALS:	Calculated Borehole (D_B)	Solid Pipe (D_S)	Perforated Pipe (D_P)
	[illegible]	300.00	[illegible]
	[illegible]	260.00	[illegible]

TOTALS:	Calculated Well Depth	Calculated Perforated Length
	834.00	546.00

RECORD DRAWING

2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: D. SOSA
CHECKED BY: C. LEBRON, P.E.
PROJECT NUMBER: 101625

HDR Engineering, Inc.

CLIFFORD G. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER

8-19-2010

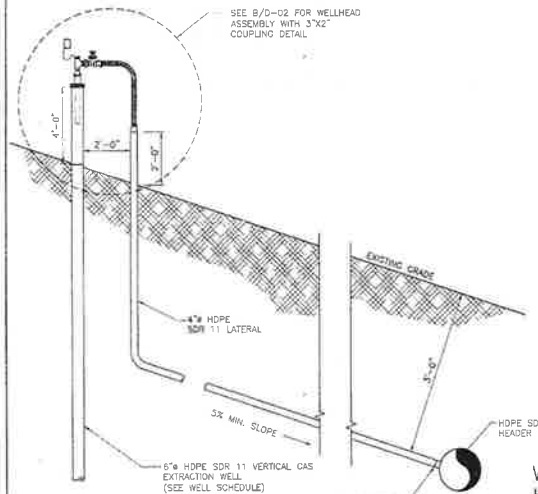
Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System

SARASOTA COUNTY — FLORIDA

EXTRACTION WELL DETAILS AND WELL SCHEDULE

FILENAME: 00D-01.dwg
SCALE: NOT TO SCALE
SHEET: 00D-01

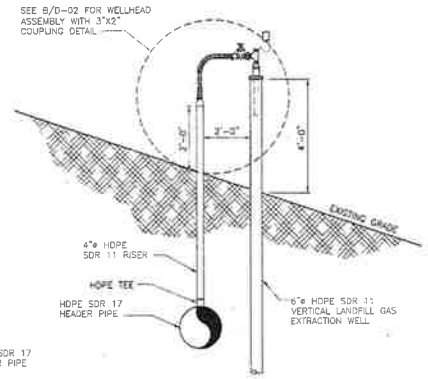
AUG 13 2010



WELL LOCATED ABOVE HEADER PIPE (TYPE #1)

NOT TO SCALE

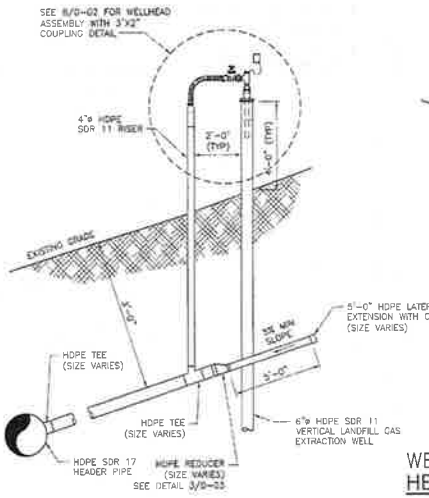
1 C-03



WELL LOCATED ADJACENT TO HEADER PIPE (TYPE #2)

NOT TO SCALE

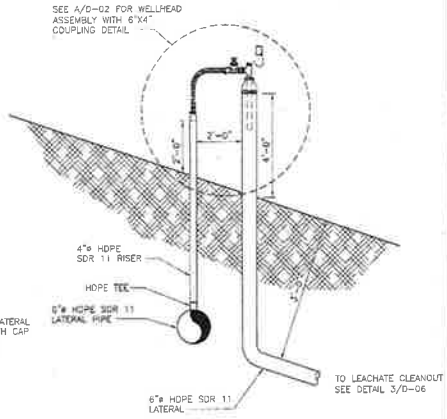
2 C-03



WELL LOCATED ABOVE HEADER PIPE WITH EXTENSION (TYPE #3)

NOT TO SCALE

3 C-03



WELL LOCATED BELOW HEADER (TYPE #4)

NOT TO SCALE

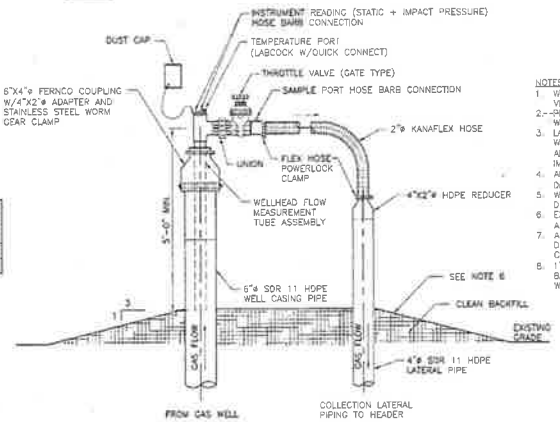
4 C-03

VERTICAL WELL HEAD CONFIGURATION SCHEDULE

TYPE #1		TYPE #2	TYPE #3		TYPE #4	
GW-2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	GW-17	GW-3	GW-1	GW-15	LCO-1N	LCO-1S
GW-5	GW-18	GW-8	GW-4	GW-16	LCO-2N	LCO-2S
[illegible]	GW-23	SW-13	GW-6	GW-19	LCO-3N	LCO-3S
GW-9	GW-24	GW-21	GW-7	GW-20	LCO-4N	LCO-4S
GW-10	GW-25	GW-22	GW-14	GW-26	LCO-5N	LCO-5S
GW-11	GW-26	GW-27				
GW-12	GW-28					

FOR INFORMATIONAL PURPOSES ONLY

SEE TYP WELL HEAD ASSEMBLIES FOR SIZES, DIMENSIONS AND SPECIFICS ON COMPONENTS. SEE ABOVE FOR WELL HEAD CONFIGURATION SCHEDULE.



ABOVE GRADE WELLHEAD ASSEMBLY WITH 6"X4" COUPLING DETAIL

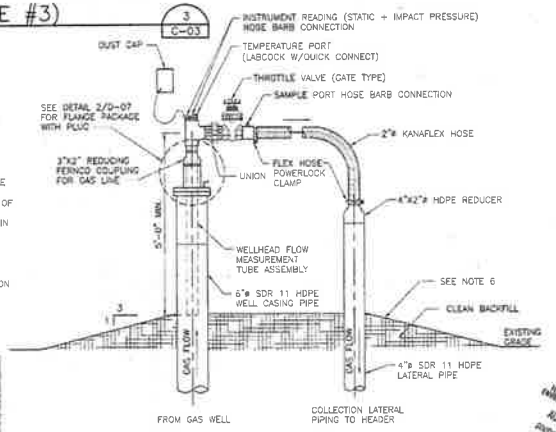
NOT TO SCALE

A D-02

NOTES:

1. WELLHEAD ASSEMBLY SHOWN REPRESENTS 2"ø LANDTEC VERTICAL ACCU-FLO WELLHEAD ASSEMBLY.
2. PROVIDE HIGH-VISIBILITY TAPE AROUND TOP 1 FOOT OF WELL CASING AND LATERAL PIPE.
3. LABEL ALL WELL RISERS WITH IDENTIFICATION NUMBER WITH YELLOW OR WHITE PAINT AND STENCILS OR ADHESIVE LABEL AT 2" MINIMUM HEIGHT AND LOCATED IMMEDIATELY BELOW HIGH VISIBILITY TAPE.
4. AIR AND FORCEMAIN LINES NOT SHOWN FOR CLARITY (SEE DETAIL 4/D-05).
5. WELLHEAD TO BE CONSTRUCTED TO ALLOW INSTALLATION OF DEWATERING PUMP.
6. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'-0"ø SURROUNDING SURFACE EXPRESSION.
7. A TOTAL OF TWO SOLAR FLARES SHALL BE DECOMMISSIONED AS PART OF THE TYPE 4 WELLHEAD CONNECTION.
8. 1" DIAMETER RISERS FOR FORCEMAIN AND AIRLINE WITH BALL VALVES ARE REQUIRED FOR ALL VERTICAL EXTRACTION WELLS.

RECORD DRAWING



ABOVE GRADE WELLHEAD ASSEMBLY WITH 3"X2" COUPLING DETAIL

NOT TO SCALE

B D-02

SARASOTA COUNTY

HDR

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
3	[illegible]	[illegible]
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: D. SOSA
CHECKED BY: C. LEBRON, P.E.
PROJECT NUMBER: 101628

CLIFFORD G. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER
8-13-2010

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System

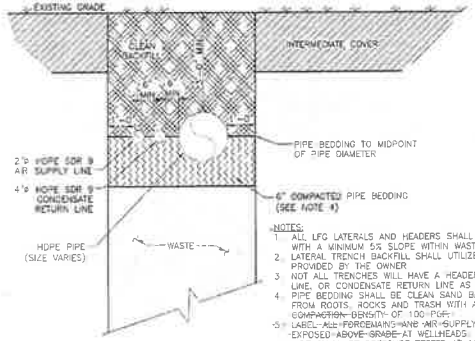
SARASOTA COUNTY FLORIDA

WELLHEAD AND CONFIGURATION DETAILS

0 1" 2"
IF THIS BAR DOES NOT MEASURE TWO INCHES, ADJUST SCALE ACCORDINGLY

FILENAME: 00D-02.dwg
SCALE: NOT TO SCALE
SHEET: 00D-02

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AUG 13 2010 SOUTHWEST DISTRICT TAMPA

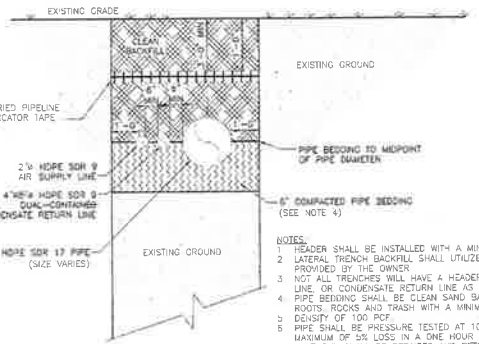


NOTES:
1. ALL LFG LATERALS AND HEADERS SHALL BE INSTALLED WITH A MINIMUM 5% SLOPE WITHIN WASTE LIMITS.
2. LATERAL TRENCH BACKFILL SHALL UTILIZE ON-SITE SOIL PROVIDED BY THE OWNER.
3. NOT ALL TRENCHES WILL HAVE A HEADER, LATERAL, AIR LINE, OR CONDENSATE RETURN LINE AS SHOWN.
4. PIPE BEDDING SHALL BE CLEAN SAND BACKFILL FREE FROM ROOTS, ROCKS AND TRASH WITH A MINIMUM ~~COMPACTION DENSITY OF 100 PCF.~~
5. ~~LABEL ALL FORCEMAINS HANDWRITTEN SUPPLY LINES WHERE EXPOSED ABOVE GRADE AT WELLHEADS.~~
6. PIPE SHALL BE PRESSURE TESTED AT 10 PSI WITH A MAXIMUM OF 5% LOSS IN A ONE HOUR PERIOD. SEGMENTS THAT FAIL SHALL BE REPAIRED AND RETESTED

LANDFILL GAS PIPING IN WASTE TRENCH DETAIL

NOT TO SCALE

1 / C-03

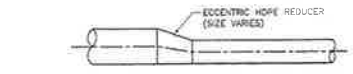


NOTES:
1. HEADER SHALL BE INSTALLED WITH A MINIMUM 1% SLOPE
2. LATERAL TRENCH BACKFILL SHALL UTILIZE ON-SITE SOIL PROVIDED BY THE OWNER.
3. NOT ALL TRENCHES WILL HAVE A HEADER, LATERAL, AIR LINE, OR CONDENSATE RETURN LINE AS SHOWN.
4. PIPE BEDDING SHALL BE CLEAN SAND BACKFILL FREE FROM ROOTS, ROCKS AND TRASH WITH A MINIMUM COMPACTION
5. DENSITY OF 100 PCF.
5. PIPE SHALL BE PRESSURE TESTED AT 10 PSI WITH A MAXIMUM OF 5% LOSS IN A ONE HOUR PERIOD. SEGMENTS THAT FAIL SHALL BE REPAIRED AND RETESTED.

LANDFILL GAS PIPING OUTSIDE OF WASTE TRENCH DETAIL

NOT TO SCALE

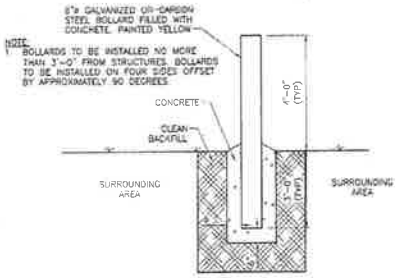
2 / C-03 / C-04



ECCENTRIC REDUCER DETAIL

NOT TO SCALE

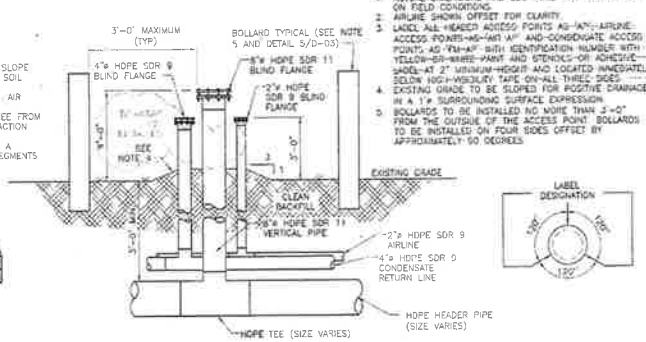
3 / D-02 / C-03



BOLLARD (TYP)

NOT TO SCALE

5 / D-03 / D-04 / D-07

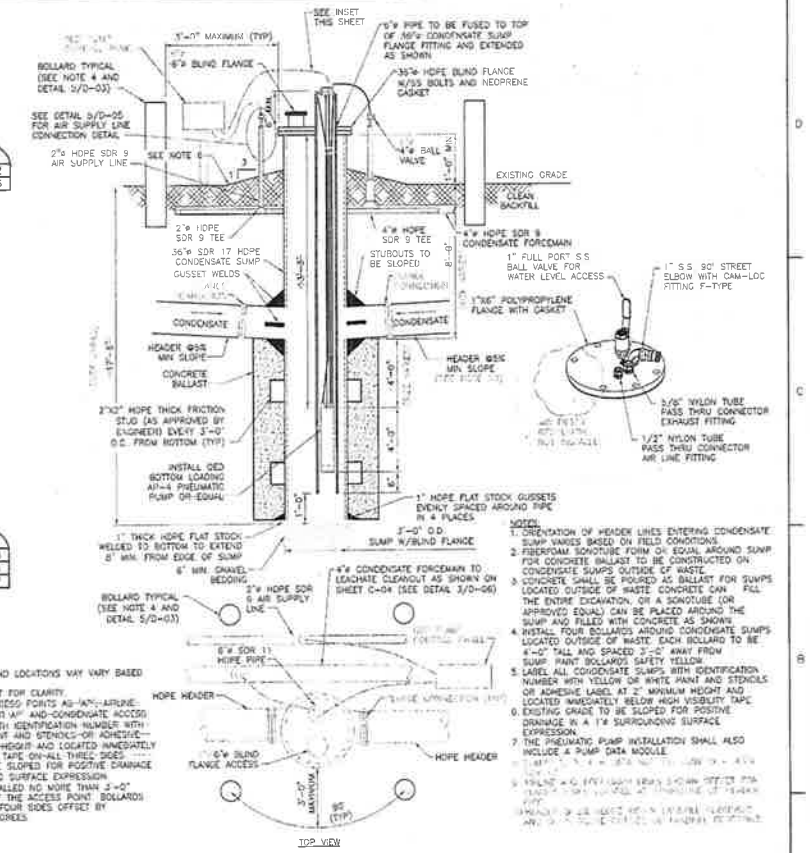


NOTES:
1. ACTUAL DIMENSIONS AND LOCATIONS MAY VARY BASED ON FIELD CONDITIONS.
2. AIRLINE SHOWN OFFSET FOR CLARITY.
3. LABEL ALL HEADER ACCESS POINTS AS "APC" AIRLINE ACCESS POINTS "HC" NOT "AP" AND CONDENSATE ACCESS POINTS AS "FM" NOT "AP" WITH IDENTIFICATION NUMBER WITH YELLOW OR WHITE PAINT AND STENCILS OR ADHESIVE LABEL AT 2" MINIMUM HEIGHT AND LOCATED IMMEDIATELY BELOW HIGH VISIBILITY TAPE ON ALL THREE SIDES.
4. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'-0" SURROUNDING SURFACE EXPRESSION.
5. BOLLARDS TO BE INSTALLED NO MORE THAN 3'-0" FROM THE OUTSIDE OF THE ACCESS POINT. BOLLARDS TO BE INSTALLED ON FOUR SIDES OFFSET BY APPROXIMATELY 90 DEGREES.

HEADER ACCESS POINT

NOT TO SCALE

4 / C-03

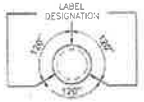


NOTES:
1. ORIENTATION OF HEADER LINES ENTERING CONDENSATE SUMP VARIES BASED ON FIELD CONDITIONS.
2. FIBERFOAM SONOTUBE FORM OR EQUAL AROUND SUMP FOR CONCRETE BALLAST TO BE CONSTRUCTED ON CONDENSATE SUMPS OUTSIDE OF WASTE.
3. CONCRETE SHALL BE POURED AS BALLAST FOR SUMPS LOCATED OUTSIDE OF WASTE. CONCRETE CAN FILL THE ENTIRE EXCAVATION, OR A SONOTUBE (OR APPROVED EQUAL) CAN BE PLACED AROUND THE SUMP AND FILLED WITH CONCRETE AS SHOWN.
4. INSTALL FOUR BOLLARDS AROUND CONDENSATE SUMPS LOCATED OUTSIDE OF WASTE. EACH BOLLARD TO BE 4'-0" TALL AND SPACED 3'-0" AWAY FROM SUMP. PAINT BOLLARDS SAFETY YELLOW.
5. LABEL ALL CONDENSATE SUMPS WITH IDENTIFICATION NUMBER WITH YELLOW OR WHITE PAINT AND STENCILS OR ADHESIVE LABEL AT 2" MINIMUM HEIGHT AND LOCATED IMMEDIATELY BELOW HIGH VISIBILITY TAPE.
6. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'-0" SURROUNDING SURFACE EXPRESSION.
7. THE PNEUMATIC PUMP INSTALLATION SHALL ALSO INCLUDE A PUMP DATA MODULE.

CONDENSATE SUMP DETAIL (TYP)

NOT TO SCALE

6 / C-03 / C-04



RECORD DRAWING

HDR ENGINEERING, INC.

SARASOTA COUNTY

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: O. SOSA
CHECKED BY: C. LEBRON, P.E.
PROJECT NUMBER: 101628

CLIFFORD G. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER

Central County Solid Waste Disposal Complex

Phase 1 - Sequence 1

Landfill Gas Collection and Control System

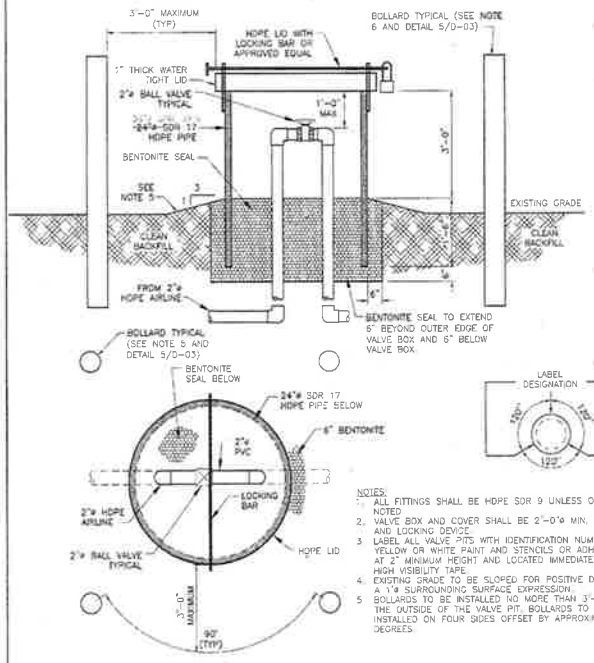
SARASOTA COUNTY — FLORIDA

GENERAL DETAILS

AUG 13 2010

FILENAME: 00D-03.dwg
SCALE: NOT TO SCALE

SHEET: 00D-03

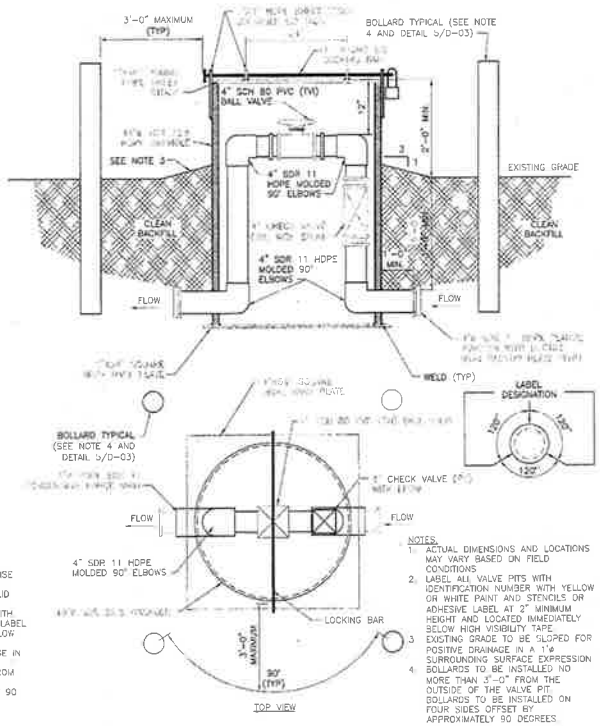


NOTES:
1. ALL FITTINGS SHALL BE HDPE SDR 9 UNLESS OTHERWISE NOTED
2. VALVE BOX AND COVER SHALL BE 2'-0"ø MIN. WITH LID AND LOCKING DEVICE.
3. LABEL ALL VALVE PITS WITH IDENTIFICATION NUMBER WITH YELLOW OR WHITE PAINT AND STENCILS OR ADHESIVE LABEL AT 2" MINIMUM HEIGHT AND LOCATED IMMEDIATELY BELOW HIGH VISIBILITY TAPE.
4. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'ø SURROUNDING SURFACE EXPRESSION.
5. BOLLARDS TO BE INSTALLED NO MORE THAN 3'-0" FROM THE OUTSIDE OF THE VALVE PIT. BOLLARDS TO BE INSTALLED ON FOUR SIDES OFFSET BY APPROXIMATELY 90 DEGREES.

AIRLINE VALVE PIT

NOT TO SCALE

1 C-03

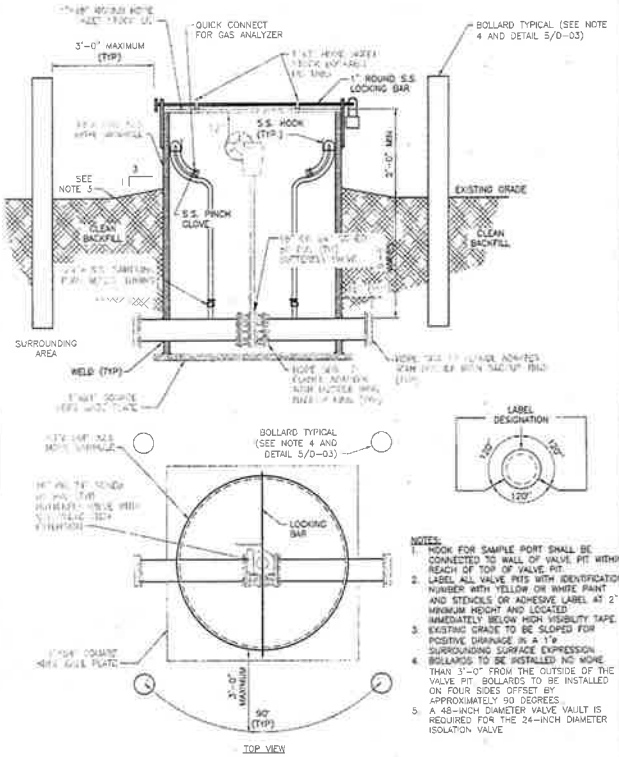


NOTES:
1. ACTUAL DIMENSIONS AND LOCATIONS MAY VARY BASED ON FIELD CONDITIONS
2. LABEL ALL VALVE PITS WITH IDENTIFICATION NUMBER WITH YELLOW OR WHITE PAINT AND STENCILS OR ADHESIVE LABEL AT 2" MINIMUM HEIGHT AND LOCATED IMMEDIATELY BELOW HIGH VISIBILITY TAPE.
3. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'ø SURROUNDING SURFACE EXPRESSION
4. BOLLARDS TO BE INSTALLED NO MORE THAN 3'-0" FROM THE OUTSIDE OF THE VALVE PIT. BOLLARDS TO BE INSTALLED ON FOUR SIDES OFFSET BY APPROXIMATELY 90 DEGREES.

FORCE MAIN VALVE PIT

NOT TO SCALE

2 C-03



NOTES:
1. HOOK FOR SAMPLE PORT SHALL BE CONNECTED TO WALL OF VALVE PIT WITHIN REACH OF TOP OF VALVE PIT.
2. LABEL ALL VALVE PITS WITH IDENTIFICATION NUMBER WITH YELLOW OR WHITE PAINT AND STENCILS OR ADHESIVE LABEL AT 2" MINIMUM HEIGHT AND LOCATED IMMEDIATELY BELOW HIGH VISIBILITY TAPE.
3. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'ø SURROUNDING SURFACE EXPRESSION.
4. BOLLARDS TO BE INSTALLED NO MORE THAN 3'-0" FROM THE OUTSIDE OF THE VALVE PIT. BOLLARDS TO BE INSTALLED ON FOUR SIDES OFFSET BY APPROXIMATELY 90 DEGREES.
5. A 48-INCH DIAMETER VALVE VAULT IS REQUIRED FOR THE 24-INCH DIAMETER ISOLATION VALVE

HEADER LINE ISOLATION VALVE PIT

NOT TO SCALE

3 C-03

RECORD DRAWING

HDR Engineering Inc

ISSUE	DATE	DESCRIPTION
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER	C. KOENIG, P.E.
DESIGNED BY	A. BARKER, E.I.
DRAWN BY	D. SOSA
CHECKED BY	C. LEBRON, P.E.
PROJECT NUMBER	101628

CLIFFORD B. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER

6-1-2010

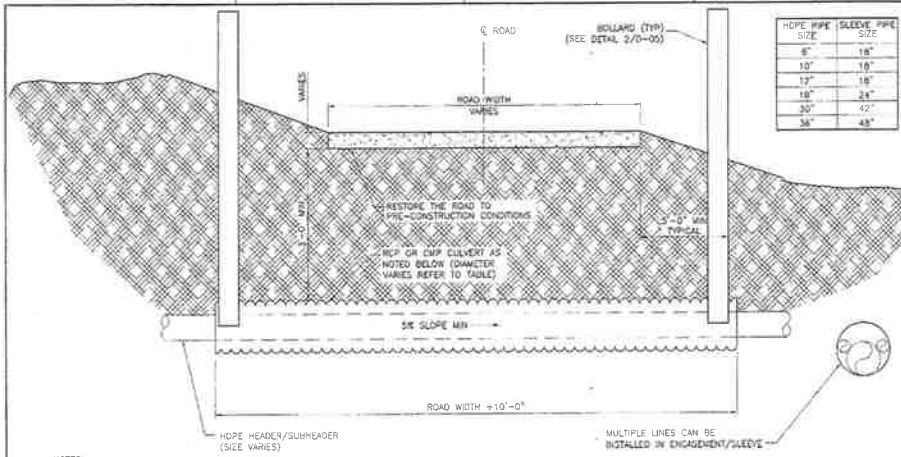
Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System

SARASOTA COUNTY FLORIDA

VALVE PIT DETAILS

AUG 13 2010

FILENAME	00D-04.dwg
SCALE	NOT TO SCALE
SHEET	00D-04



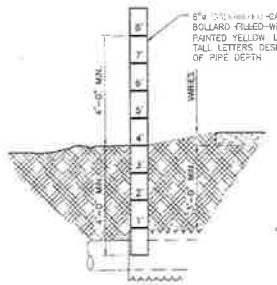
HDPE PIPE SIZE	SLEEVE PIPE SIZE
8"	18"
10"	18"
12"	18"
18"	24"
30"	42"
36"	48"

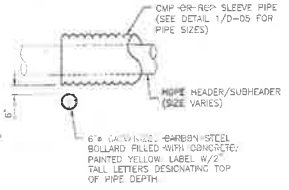
NOTES:
1. ACTUAL DIMENSIONS MAY VARY BASED ON FIELD CONDITIONS
2. CLASS V REINFORCED CONCRETE PIPE CULVERT SHALL BE USED FOR ALL ROAD CROSSING LOCATIONS LOCATED OUTSIDE OF PHASE 1 LIMITS OF WASTE
3. CORRUGATED METAL PIPE CULVERT SHALL BE USED FOR ROAD CROSSING LOCATIONS LOCATED WITHIN PHASE 1 LIMITS OF WASTE. STEEL PIPE SHALL HAVE A MINIMUM WALL THICKNESS OF 0.168 INCHES AND MINIMUM YIELD STRENGTH OF 20,000 PSI.
4. CUT ASPHALT WITH SAW TO MATCH TRENCH WIDTH PRIOR TO EXCAVATION.
5. CONTRACTOR SHALL RESTORE ROAD TO MATCH ORIGINAL CONDITIONS.
6. CONTRACTOR SHALL INSTALL 2 BOLLARDS, ONE AT EACH END OF THE [illegible] CONCRETE CASING WITHIN THE LANDFILL FOOTPRINT. THE BOLLARDS SHALL BE CONCRETE-FILLED STEEL PIPE BOLLARDS 6"ø X 8' TALL. BOLLARDS SHALL BE PAINTED SAFETY YELLOW AND LABELED "LANDFILL GAS PIPE BURIED BELOW".
7. LIMEROCK BASE COMPACTED TO 95% MODIFIED PROCTOR FOR ROAD CROSSINGS WITHIN THE LANDFILL FOOTPRINT.
8. LIMEROCK BASE COMPACTED TO 95% MODIFIED PROCTOR FOR THE PERIMETER ACCESS ROAD
9. SUBGRADE GRANULAR FILL COMPACTED TO 95% MODIFIED PROCTOR

ACCESS ROAD CROSSING DETAIL (TYP)

NOT TO SCALE

1 | C-03, C-04, D-05



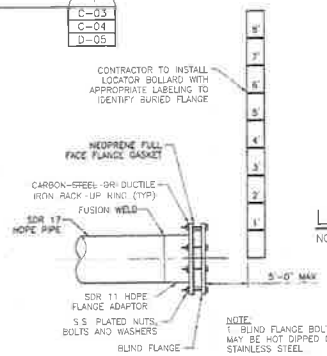


NOTE:
1. ACTUAL DIMENSIONS MAY VARY BASED ON FIELD CONDITIONS.

BOLLARD DETAIL (TYP)

NOT TO SCALE

2 | D-05

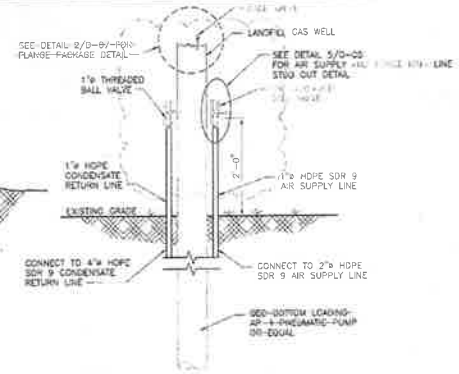


NOTE:
1. BLIND FLANGE BOLTS AND WASHERS MAY BE HOT DIPPED GALVANIZED OR STAINLESS STEEL

BLIND FLANGE WITH LOCATOR BOLLARD DETAIL

NOT TO SCALE

3 | C-03, C-05

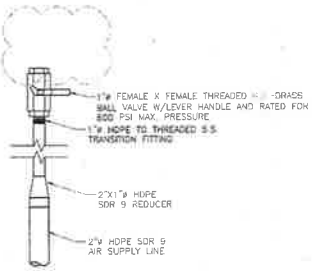


NOTES:
1. CONTRACTOR TO DIFFERENTIATE BETWEEN AIR SUPPLY LINE AND CONDENSATE RETURN LINE AT ALL STUB OUTS.
2. WELLHEAD FOR PIPES 1, 2 & 3 NOT SHOWN FOR CLARITY.
3. ALTERNATIVE ITEM TO BE INSTALLED IN SELECT VERTICAL WELLS TO BE DETERMINED BY OWNER AND ENGINEER.

WELL RISER WITH PUMP DETAIL (TYP)

NOT TO SCALE

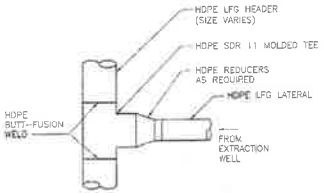
4 | D-02



AIR SUPPLY AND FORCE MAIN LINE CONNECTION DETAIL (TYP)

NOT TO SCALE

5 | D-03, D-05

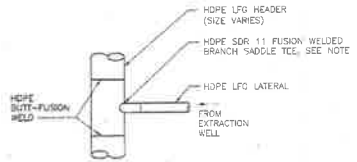


NOTES:
1. HDPE MOLDED TEES SHALL BE USED TO TIE-IN 2"ø AND LARGER LFG LATERALS TO 8"ø HEADER AND SMALLER
2. 1" MIN. OF SAND WILL BE PLACED BELOW EACH TEE. THE SAND WILL BE INSTALLED SO IT EXTENDS 3'-0" MIN. ON EACH SIDE OF THE TEE. SAND WILL BE SLIGHTLY MOISTENED AND HAND-TAMPED PROVIDING SUPPORT TO ALL POINTS OF THE TEE. CLEAN, GRADED SOIL WILL BE HAND-TAMPED ABOVE TEE (1" MIN.) BEING CAREFUL TO ELIMINATE ALL VOIDS

LATERAL TIE-IN W/TEE

NOT TO SCALE

6 | C-04



NOTES:
1. BRANCH SADDLE SHALL BE SHOP-FABRICATED (FIELD-FABRICATION WILL NOT BE ACCEPTED) AND INSTALLED TO MAINTAIN SLOPE INTO THE HEADER.
2. 1" MIN. OF SAND WILL BE PLACED BELOW EACH TEE. THE SAND WILL BE INSTALLED SO IT EXTENDS 3' MIN. IN EACH DIRECTION OF THE TEE. SAND WILL BE SLIGHTLY MOISTENED AND HAND-TAMPED PROVIDING SUPPORT TO ALL POINTS OF THE TEE. CLEAN, GRADED SOIL WILL BE HAND-TAMPED ABOVE TEE (1" MIN.) BEING CAREFUL TO ELIMINATE ALL VOIDS
3. HDPE SUPPORT GUSSETS (LOCATED AT 0, 90, 180, & 270 DEGREES) ARE REQUIRED FOR BRANCH SADDLE FITTINGS
4. HDPE BRANCH SADDLE FITTINGS SHALL BE USED TO TIE-IN 2"ø AND LARGER LANDFILL GAS LATERALS TO 10"ø HEADER AND LARGER.

LATERAL TIE-IN W/BRANCH SADDLE

NOT TO SCALE

7 | C-04

RECORD DRAWING

[illegible]
HDR ENGINEERING, INC.

SARASOTA COUNTY

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
3	02/10	[illegible]
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER	C. HOENIG, P.E.
DESIGNED BY	A. BARKER, E.I.
DRAWN BY	D. SOSA
	[illegible]
CHECKED BY	C. LEBRON, P.E.
PROJECT NUMBER	101622

CLIFFORD G. HOENIG LICENSE No. 64678 STATE OF FLORIDA PROFESSIONAL ENGINEER

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System

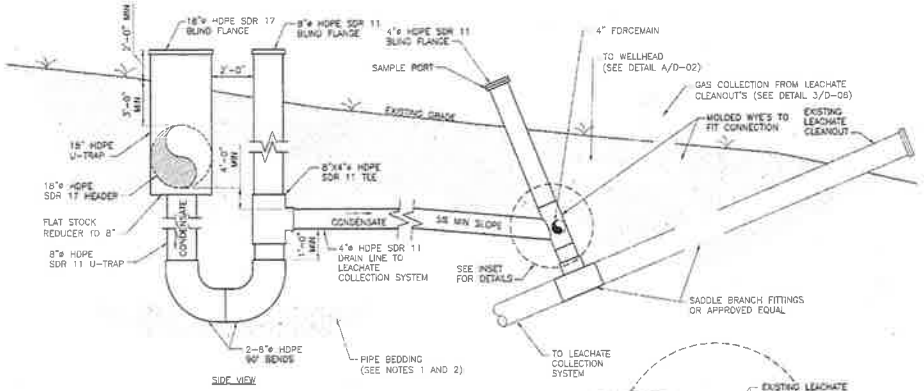
SARASOTA COUNTY — FLORIDA

ACCESS ROAD CROSSING AND BOLLARD DETAILS

[illegible] DEPARTMENT OF ENVIRONMENTAL PROTECTION AUG 13 2010 SOUTHWEST DISTRICT

FILENAME	D0D-05.dwg
SCALE	NOT TO SCALE

SHEET 00D-05



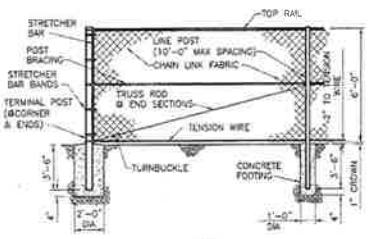
NOTES:
1. U-TRAP BEDDING TO BE COMPACTED 6" BELOW AND TO THE MIDPOINT OF ALL PIPING. ADDITIONAL SOIL BACKFILL SHALL BE PLACED AROUND U-TRAP TO PROVIDE STABILITY AND SUPPORT
2. PIPE BEDDING SHALL BE EITHER COARSE SAND, PEAGRAVEL, CRUSHED GRAVEL, GRAVEL, CRUSH STONE SCREENINGS OR CRUSHED STONE.
3. EXISTING LEACHATE CLEANOUT PIPE IS ASSUMED TO BE 6"ø HDPE. CONTRACTOR TO FIELD VERIFY.
4. ACTUAL DIMENSIONS AND LOCATIONS MAY VARY BASED ON FIELD CONDITIONS.
5. CONTRACTOR TO ADD WATER TO U-TRAP AFTER PRESSURE TEST.
6. BACKFILL AND BEDDING NOT SHOWN FOR CLARITY.
7. FORCEMAIN CONNECTION TO ACCESS RISER TO BE INSTALLED BELOW GRAVITY DRAIN LINE.

U-TRAP#	U-1	U-2	U-3
SIZE	18"	18"	18"

U-TRAP DETAIL FRONT/SIDE VIEWS (TYP)

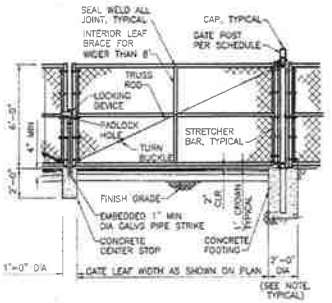
NOT TO SCALE

1 C-03



GATE POST SCHEDULE	
LEAF SPAN	NOMINAL DIA.
4'-8'	3"
8'-12'	4"
12'-18'	6"
18'-24'	8"

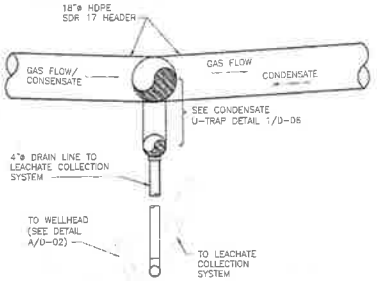
NOTE:
1. USE 4'-0" DIA CONCRETE FOOTING HOLE FOR POST DIAMETERS GREATER THAN 6"



CHAIN LINK FENCE DETAILS (TYP)

NOT TO SCALE

4 C-06

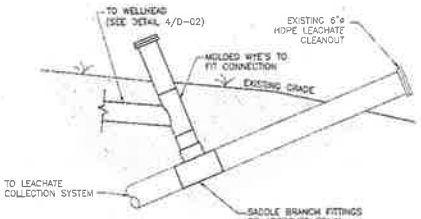


NOTES:
1. GRADE NOT SHOWN FOR CLARITY.
2. SEE SHEETS C-03 AND C-04 FOR U-TRAP LOCATIONS AND CLEANOUT LOCATIONS
3. ACTUAL DIMENSIONS AND LOCATIONS MAY VARY BASED ON FIELD CONDITIONS.
4. ORIENTATION OF HEADER PIPING ENTERING U-TRAP VARIES ON LOCATION OF U-TRAP

U-TRAP DETAIL PLAN VIEW (TYP)

NOT TO SCALE

2 C-03



GAS COLLECTION FROM LEACHATE CLEANOUT CONNECTION (TYP)

NOT TO SCALE

3 C-03 D-02 D-03

RECORD DRAWING

AUG 13 2010

SARASOTA COUNTY

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER	C. KOENIG, P.E.
DESIGNED BY	A. BARKER, E.I.
DRAWN BY	D. SOSA
CHECKED BY	C. LEBRON, P.E.
PROJECT NUMBER	101628

CLIFFORD G. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER 8-12-2010

Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System

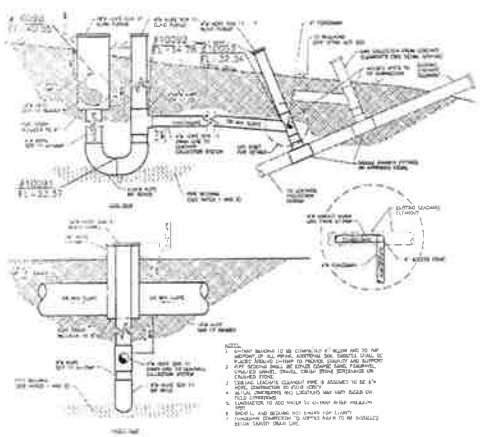
SARASOTA COUNTY FLORIDA

U-TRAP LAYOUT & DETAILS

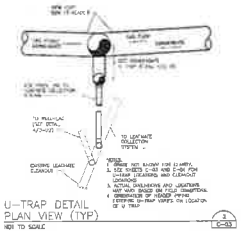
0 1" 2"

FILENAME	000-06.dwg
SCALE	NOT TO SCALE
SHEET	00D-06

U-TRAP 3

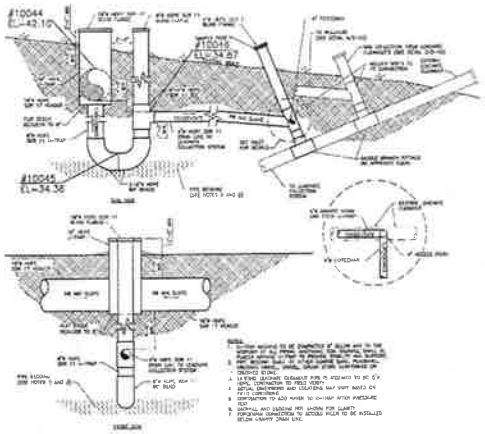


U-TRAP DETAIL
FRONT/SIDE VIEWS (TYP)
NOT TO SCALE

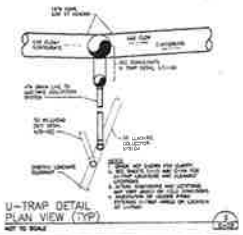


U-TRAP DETAIL
PLAN VIEW (TYP)
NOT TO SCALE

U-TRAP 2

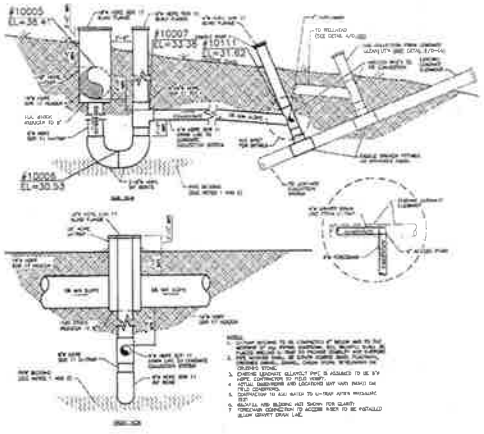


U-TRAP DETAIL
FRONT/SIDE VIEWS (TYP)
NOT TO SCALE

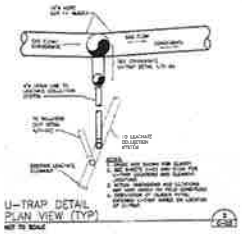


U-TRAP DETAIL
PLAN VIEW (TYP)
NOT TO SCALE

U-TRAP 1



U-TRAP DETAIL
FRONT/SIDE VIEWS (TYP)
NOT TO SCALE



U-TRAP DETAIL
PLAN VIEW (TYP)
NOT TO SCALE

U-TRAP#	U-1	U-2	U-3
SIZE	18"	18"	18"

AS-BUILT SURVEY

Hyatt Survey Services, Inc.

AS-BUILT SURVEY

SARASOTA COUNTY

HDR

2	12/09	ISSUED FOR CONSTRUCTION	
1	08/09	ISSUED FOR BID	
0	06/09	ISSUED FOR CLIENT REVIEW	
NO.	DATE	DESCRIPTION	

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: D. SOSA
CHECKED BY: C. LUMSON, P.E.
PROJECT NUMBER: 101828

CLIFFORD G. KOENIG LICENSE No. 54675 STATE OF FLORIDA PROFESSIONAL ENGINEER

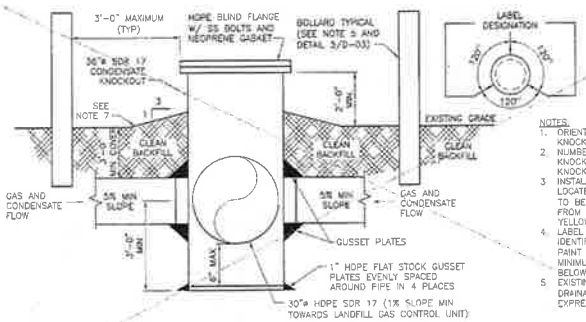
Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System
ISSUED FOR CONSTRUCTION

U-TRAP LAYOUT & DETAILS

0 1" 2"
AT FULL SIZE THIS LENGTH EQUALS 1"
UNLESS ADJUST SCALE ACCORDINGLY

FILENAME: 00D-06.dwg
SCALE: NOT TO SCALE

SHEET: 00D-06A

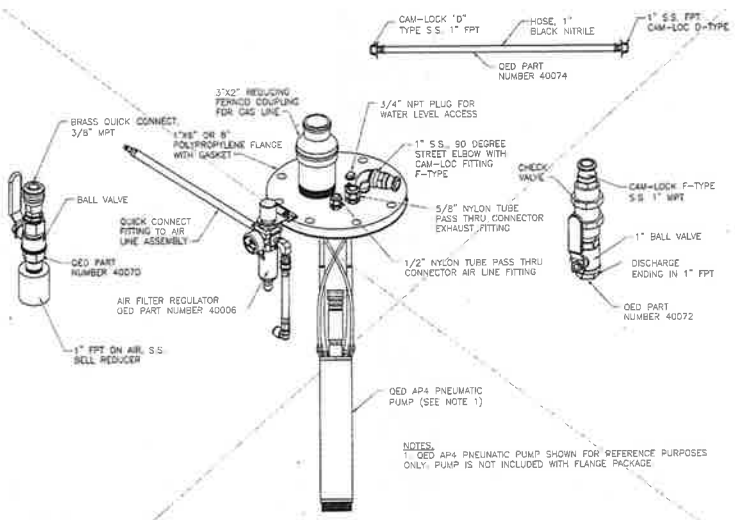


NOTES:
1. ORIENTATION OF HEADER LINES ENTERING KNOCKOUT POT VARIES.
2. NUMBER OF HEADER LINES ENTERING KNOCKOUT VARY DEPENDING ON LOCATION OF KNOCKOUT POT.
3. INSTALL 4 BOLLARDS AROUND KNOCKOUT POTS LOCATED OUTSIDE OF WASTE. EACH BOLLARD TO BE 4'-0" TALL AND SPACED 3'-0" AWAY FROM KNOCKOUT POT. PAINT BOLLARDS SAFETY YELLOW.
4. LABEL CONDENSATE KNOCKOUT POTS WITH IDENTIFICATION NUMBER WITH YELLOW OR WHITE PAINT AND STENCILS OR ADHESIVE LABEL AT 2" MINIMUM HEIGHT AND LOCATED IMMEDIATELY BELOW HIGH VISIBILITY TAPE.
5. EXISTING GRADE TO BE SLOPED FOR POSITIVE DRAINAGE IN A 1'ø SURROUNDING SURFACE EXPRESSION.

CONDENSATE KNOCKOUT POT

NOT TO SCALE

1 | C-03 | C-04

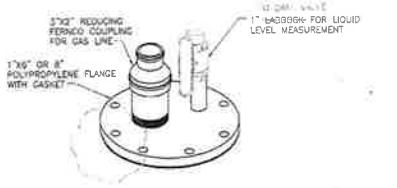


NOTES:
1. QED AP4 PNEUMATIC PUMP SHOWN FOR REFERENCE PURPOSES ONLY. PUMP IS NOT INCLUDED WITH FLANGE PACKAGE.

FLANGE PACKAGE WITH PLUG

NOT TO SCALE

2 | D-02 | D-05



VERTICAL WELL WITHOUT PUMP FLANGE PACKAGE

NOT TO SCALE

3 | C-03

RECORD DRAWING

ISSUE	DATE	DESCRIPTION
3	[illegible]	RECORD DRAWING
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR BID
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER: C. KOENIG, P.E.
DESIGNED BY: A. BARKER, E.I.
DRAWN BY: D. SOSA
CHECKED BY: C. LEBRON, P.E.
PROJECT NUMBER: 101628

CLIFFORD G. KOENIG LICENSE No. 54078 STATE OF FLORIDA PROFESSIONAL ENGINEER

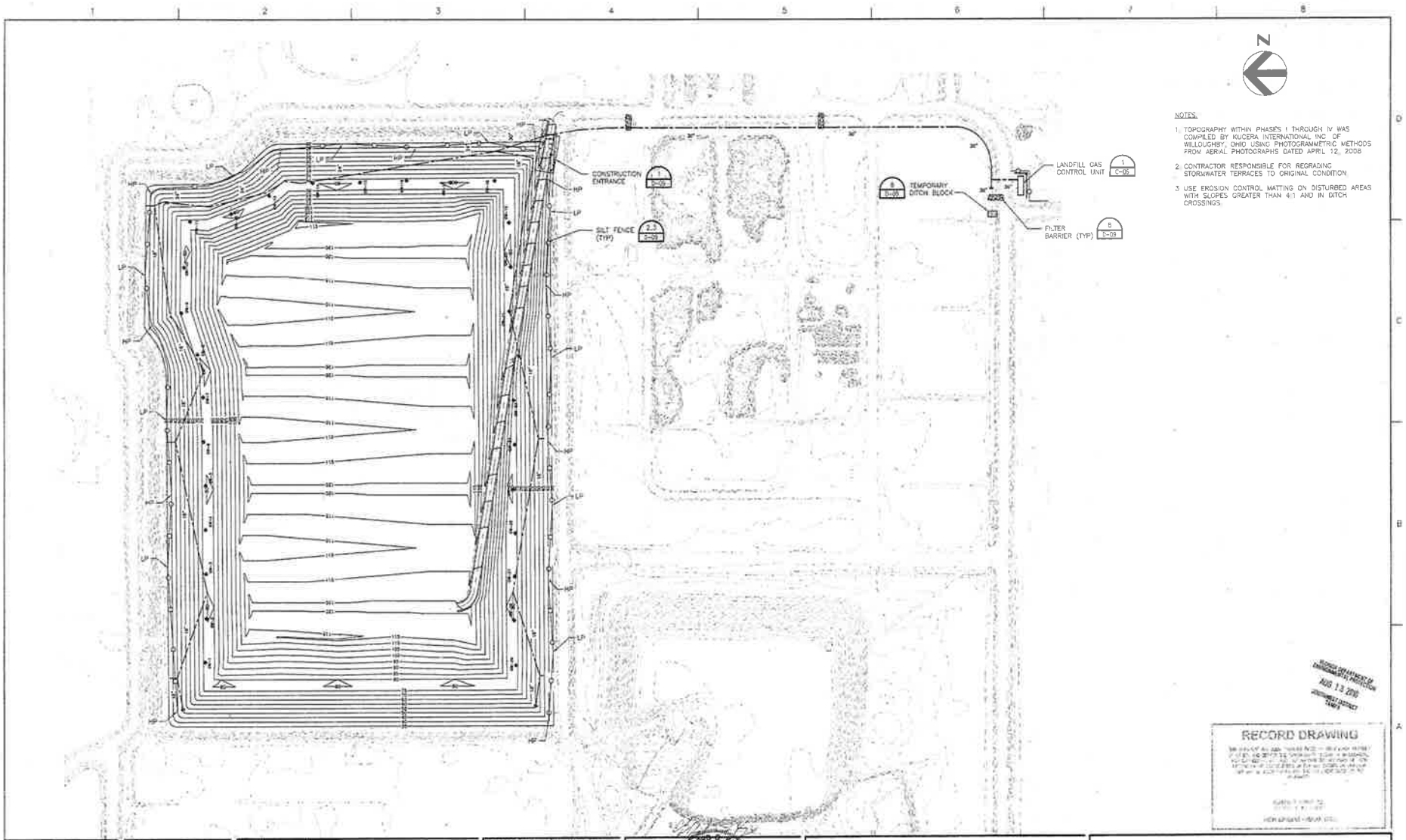
Central County Solid Waste Disposal Complex
Phase 1 - Sequence 1
Landfill Gas Collection and Control System

SARASOTA COUNTY FLORIDA

CONDENSATE KNOCKOUT POT DETAIL

AUG 13 2010

FILENAME: 00D-07.dwg
SCALE: NOT TO SCALE
SHEET: 00D-07



NOTES:

1. TOPOGRAPHY WITHIN PHASES I THROUGH IV WAS COMPILED BY KUCERA INTERNATIONAL INC OF WILLOUGHBY, OHIO USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED APRIL 12, 2008
2. CONTRACTOR RESPONSIBLE FOR REGRADING STORMWATER TERRACES TO ORIGINAL CONDITION.
3. USE EROSION CONTROL MATTING ON DISTURBED AREAS WITH SLOPES GREATER THAN 4:1 AND IN DITCH CROSSINGS.

RECEIVED
AUG 13 2010
SWFWMD DISTRICT

RECORD DRAWING

SARASOTA COUNTY

HDR

ISSUE	DATE	DESCRIPTION
3	09/10	RECORD DRAWING
2	12/09	ISSUED FOR CONSTRUCTION
1	08/09	ISSUED FOR WD
0	05/09	ISSUED FOR CLIENT REVIEW

PROJECT MANAGER C. KOENIG, P.E.
DESIGNED BY A. BARKER, E.I.
DRAWN BY O. SOSA
CHECKED BY C. LEBRON, P.E.
PROJECT NUMBER 101608

CLIFFORD C. KOENIG LICENSE No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER
8-17-2010

Central County Solid Waste Disposal Complex

Phase 1 - Sequence 1

Landfill Gas Collection and Control System

SARASOTA COUNTY FLORIDA

EROSION CONTROL LAYOUT

0 1" 2"

FILENAME 00D-08.dwg
SCALE 1" = 150'

SHEET 00D-08

ATTACHMENT K-6

LEACHATE PUMP DATA AND LEACHATE GENERATION FORMS

SARASOTA COUNTY CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX

DAILY PRECIPITATION DATA AND LEACHATE GENERATION/BALANCE REPORT

			Leachate Generation									Leachate Disposal				Leachate Balance
		Leachate Storage Tank Depth	1	2	3	4	5	6	7	8	9	10	11	12	13	
			Leachate Storage Tank	Phase I					Phase II	MRF	TOTAL LEACHATE COLLECTED (SUM of Columns 1 - 8)	Pumped to WWTP	Hauled to WWTP	Leachate Truck Spraying at Working Face	TOTAL LEACHATE DISPOSAL (SUM of Columns 10 - 12)	TOTAL COLLECTED MINUS TOTAL DISPOSAL (Column 9 - Column 13)
			Direct Rainfall	Subcell 1	Subcell 2	Subcell 3	Subcell 4	Subcell 5	Main Pump Station	Collection						
DATE	RAINFALL[1]	DEPTH	LC	LC	LC	LC	LC	LC	LC and LD	PUMPED						
	(inches)	(feet)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)
1																
2																
3																
4																
5																
6																
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26																
27																
28																
29																
30																
31																
TOTALS																

Notes:
Precipitation recorded by the County from rain gauges or the weather station located at the CCSWDC.
Column 1: Rainfall falling into the leachate storage tank (13,275 square feet area) which is classified as leachate.
Columns 2 - 6: Based on flowmeter data, the amount of leachate pumped from the Phase I pump stations to the leachate storage tank.
Column 7: Based on flow meter data, the amount of leachate pumped from the Class I Landfill Phase II main pump station to the storage tank.
Column 8: Based on flow meter data, the amount of leachate pumped from the MRF leachate collection sump to the leachate storage tank.
Column 10: Based on flow meter data, the amount of leachate pumped from the leachate storage tank to the WWTP.
Column 11: Based on flow meter data, the amount of leachate pumped from the leachate storage tank to leachate tanker trucks.
Column 12: Based on flow meter data, the amount of leachate pumped from the leachate storage tank to a tanker truck to spray leachate at the working face.
NR = No Reading

SARASOTA COUNTY CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
PHASE I LEACHATE COLLECTION AND LEACHATE STORAGE TANK
DAILY PUMP METER LOG

MONTH **YEAR**

DATE	RAIN (inches)	TIME	SUBCELL NO. 1			SUBCELL NO. 2			SUBCELL NO. 3			SUBCELL NO. 4			SUBCELL NO. 5			MRF			LEACHATE STORAGE TANK TO TRUCKS			LEACHATE STORAGE TANK TO WWTP			LEACHATE TANK
			Level (inches)	Flowmeter (gallons)	Pump Hours	Level (inches)	Flowmeter (gallons)	Pump Hours	Level (inches)	Flowmeter (gallons)	Pump Hours	Level (inches)	Flowmeter (gallons)	Pump Hours	Level (inches)	Flowmeter (gallons)	Pump Hours	Level (inches)	Flowmeter (gallons)	Pump Hours	Pump Hours #1	Pump Hours #2	Flowmeter (gallons)	Pump Hours #1	Pump Hours #2	Flowmeter (gallons)	Level (feet)
1																											
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
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30																											
31																											

SARASOTA COUNTY CENTRAL COUNTY SOLID WASTE DISPOSAL COMPLEX
PHASE II LEACHATE COLLECTION AND LEAK DETECTION
DAILY PUMP METER LOG

MONTH **YEAR**

DATE	RAIN (inches)	TIME	Subcell No. 1			Subcell No. 2			PHASE II MAIN PUMP STATION				
			Leak Detection Manhole Level (feet)	Leak Detection Manhole Level After Opening (feet)	Leak Detection Collected from Previous Reading (gallons)	Leak Detection Manhole Level (feet)	Leak Detection Manhole Level After Draining (feet)	Leak Detection Collected from Previous Reading (gallons)	Totalized Flowmeter Reading Leachate Collection and Detection (gallons)	Pump 1 Total Hour Meter Reading (hours)	Pump 2 Total Hour Meter Reading (hours)	Total Leak Detection Collected Subcells 1 - 4	Total Leachate Collection Subcells 1 - 4
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
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29													
30													
31													

Subcells 3 and 4 of Phase II are currently draining to stormwater and are hidden within the spreadsheet.
Subcell 1 Collection Area =
Subcell 2 Collection Area =
Subcell 3 Collection Area =
Subcell 4 Collection Area =

ATTACHMENT K-7

LOAD INSPECTION FORM

SARASOTA COUNTY SOLID WASTE DEPARTMENT
SOLID WASTE LOAD INSPECTION FORM

Florida Administrative Code 62-701 requires landfills to periodically inspect loads presented for disposal. If unauthorized wastes are found, the responsible party shall be required to cause removal of said waste and the Florida Department of Environmental Protection shall be notified. Inspection records shall be maintained for a period of three years.

Inspection Location _____

Date _____ Time _____ Truck No. _____

Hauler _____ Vehicle License Plate No. _____

Source of Waste _____

Driver (print name) _____

Driver (signature) _____

Inspector/Title _____

Waste Observed _____

Unauthorized Waste _____

FDEP Contacted _____ Name of Contact _____

What action was taken to properly dispose of the unauthorized waste?

(Use attachments if necessary)

ATTACHMENT K-8

INITIAL COVER SPECIFICATIONS

ATTACHMENT K-8

INITIAL COVER SPECIFICATIONS

Materials approved for use as initial cover shall include soils as well as the following:

- Waste tires that have been cut into sufficiently small parts, which means that 70 percent of the waste tire materials cut into pieces of 4 square inches or less and 100 percent of the waste tire material is 32 square inches or less, and applied in a six (6) inch compacted layer, may be used as initial cover within the bermed working area.
- Processed yard waste, unscreened, and then mixed in the ratio of 50 percent processed yard waste to 50 percent soil, and applied in a six (6) inch compacted layer may be used as initial cover within the bermed working area.
- Shredded asphalt roofing shingles, screened through a 1 inch mesh, and then mixed in the ratio of 50 percent shredded shingles to 50 percent soil, and applied in a six (6) inch compacted layer may be used as initial cover within the bermed working area.
- Ground-up construction and demolition debris, unscreened, and applied in a six (6) inch compacted layer, may be used as initial cover within the bermed working area. Ninety percent of the unscreened ground-up debris shall pass a 2 inch screen and 50 percent shall pass a ¼ inch screen.
- Processed yard waste, screened through ½ inch mesh, and then mixed in the ratio of 75 percent screened compost to 25 percent soil, and applied in a six (6) inch compacted layer may be used as initial cover, or applied in a one (1) foot compacted layer in addition to the six (6) inch initial cover may be used as intermediate cover.
- Street sweeping which is material consisting primarily of soil, rocks, asphalt, leaves and other vegetative matter generated during routine cleaning of roads and is not mixed with any Class I waste. It does not include material generated during the cleanup of an oil of hazardous chemical spill or material that is believed to be contaminated.

ATTACHMENT K-9

LFGCCS OPERATIONS AND MAINTENANCE PLAN

Sarasota County
Solid Waste Operations

Central County Solid Waste Disposal Complex LFGCCS Operations and Maintenance Plan

September 2013

TABLE OF CONTENTS

OPERATIONS AND MAINTENANCE PLAN
LANDFILL GAS COLLECTION AND CONTROL SYSTEM
SARASOTA COUNTY CCSWDC

1 INTRODUCTION

This Operations and Maintenance Plan (O&M Plan) has been prepared to summarize steps necessary to operate and maintain the Gas Collection and Control System (gas system) at the Central County Solid Waste Disposal Complex (CCSWDC) in Sarasota County, Florida. This O&M Plan is an integral part of the development and successful operation of the gas system. Therefore, a copy of this plan must be maintained with the CCSWDC records. This document is to be an attachment to the existing Operations Plan for the site.

2 FACILITY DESCRIPTION

2.1 Location and Description

The CCSWDC is a multi-function solid waste management facility which includes Class I waste disposal, construction and demolition (C&D) waste processing facility, yard waste mulching, household hazardous waste storage and processing, and storage of tires, white goods and other bulky waste materials for processing off-site by private firms. The CCSWDC was opened in 1998 and has been owned by Sarasota County and operated under the direction of the Sarasota County Solid Waste Operations Unit. The majority of waste received at the CCSWDC is mixed garbage and trash, which requires disposal in a permitted Class I waste disposal facility.

2.2 Gas Extraction and Control System Description

The gas system is designed to collect landfill gas generated within the existing Landfill at the CCSWDC as the waste decomposes. The landfill gas is collected at a proposed on-site landfill gas control facility where it will be flared.

In the absence of active control measures, positive gas pressure builds up within the landfill through the anaerobic decomposition of the waste materials, which produces primarily methane (typically 40-50%) and carbon dioxide (typically 50-60%). If not relieved, pressure within the landfill can force these gases to move laterally below the ground and eventually into the atmosphere, potentially causing hazardous conditions to develop in underground and/or above ground structures on and off the CCSWDC site. The gas system helps relieve the positive pressure by applying a vacuum throughout the landfill. The gas is then conveyed to a control unit, located near the southeast corner of the Landfill.

The vertical gas extraction wells are drilled into the landfill to a depth equivalent to two-thirds of the waste depth and leaving a minimum 15 foot buffer between the base liner and the bottom of the well. The wells are designed to be perforated below grade to extract gas from each level of the landfill, and include a slip-coupling to help negate the effects of settlement on the extraction wells.

The active gas system incorporates strategically placed valves and cross lateral pipelines to provide a degree of flexibility and control in the application of vacuum at the extraction wells. Therefore, the

vacuum can be selectively applied based upon actual gas generation at specific gas extraction points. The placement of the valves in the network of collection pipelines allows for sections of the gas system to be segregated for maintenance while the remainder of the system is operated.

While the gas system is operating, the change in temperature of the landfill gas results in the precipitation of moisture, which produces condensate within the gas system pipelines. The condensate from the gas system flows by gravity through the gas collection pipelines into condensate sumps, condensate traps, and knock-out pots where the moisture is allowed to drop out from the gas. From the sumps, condensate traps, and knock-out pots, the condensate flows by gravity or is pumped to the existing leachate management system for removal from the site.

3 Operation Procedures

3.1 General

In general, a constant vacuum is applied from the gas control unit to collect the landfill gas from the landfill. The vacuum can be adjusted at each extraction location to either collect more or less gas, based on the quality of the gas collected. At each gas collection location (i.e. wells), methane, carbon dioxide, and oxygen concentrations are measured on a regular basis. As the concentrations of these parameters change due to landfill and environmental conditions at the site (i.e. age of waste, moisture content, cover material, etc.), the vacuum is adjusted to ensure concentrations stay within permitted ranges. The initial vacuum values indicated in this report are rules of thumb, and should only be used as a starting point. The only way to accurately determine the vacuum needed for any given well is to take readings at each well and adjust the vacuum accordingly.

Vacuum adjustments throughout the gas system can be made by adjusting the valves at each wellhead and at various locations on the pipeline. By adjusting the valves to increase or decrease the applied vacuum, the gas system can be balanced and the maximum amount of gas can be collected without pulling air into the waste, which would diminish anaerobic decomposition and increase the potential for landfill fires. To assist with system balancing and verify efficient operation of the gas extraction system, the following will be measured and recorded:

- Gas flow rates at each wellhead and to the gas control unit;
- Methane, carbon dioxide, oxygen, and balance gas concentrations at each wellhead and at the gas control unit;
- Vacuum at each wellhead; and
- Gas temperature at each wellhead

Initially, to balance the gas system, daily measurements will be necessary. As the system begins to stabilize and the built up gas stored in the landfill is removed, measurements may be taken less frequently. To maintain a balanced system once the system is stabilized, weekly well measurements of the vacuum, the gas temperature, and the methane, carbon dioxide, oxygen, and balance gas concentrations should be performed. Periodic gas flow rates at the wells must be recorded so that the correlation between the vacuum applied and the gas flow rate can be established for each well.

The amount of vacuum applied at each well will vary through time and is influenced by many factors, including the type of landfill cover. The typical values indicated below are used in the landfill gas industry and are suggested as a starting point in conjunction with validation or adjustment of this vacuum based on readings at each well for oxygen and methane concentrations. Typically, the vacuum applied at exterior gas extraction wells should be approximately 1 to 3 inches of water column to provide adequate gas control and avoid excessive air infiltration along the landfill slope. The vacuum that can typically be applied to interior gas extraction wells is 3 to 7 inches of water column without producing excessive air infiltration. Some experimentation will be required to find the proper vacuum to apply to these wellheads.

As a starting point, the valves should be nearly closed at the wellheads and opened slightly until the gas readings are within the required ranges. In this way, excessive air infiltration into the gas system can be avoided. The required ranges for each constituent of the landfill gas are discussed in the following sections.

3.2 Gas Readings

Gas readings for oxygen, carbon dioxide, and methane are commonly measured at wells using instruments such as the Landtec GEM or other similar measurement devices. These instruments only measure percentages of methane, oxygen and carbon dioxide. The remaining percentage of gas is the "balance gas". Typically the balance gas is nearly all nitrogen, and the terms balance gas and nitrogen, are sometimes used interchangeably when talking about landfill gas.

The concentration of these various gases at each wellhead is the primary indicator of how much vacuum should be applied at each gas collection location. Landfill gas typically contains approximately 40%-50% methane and 50%-60% carbon dioxide, with trace amounts of other non-methane organic compounds (NMOCs).

If the concentration of methane is high at a particular wellhead (>50%), then the volume of gas at that location may be greater than what is currently being collected, and the vacuum applied should be increased.

If the concentration of methane is less than 45%, the concentration of oxygen is above 1%, or the balance gas concentration is above 12%, these conditions may indicate air leaks in the wellfield components or excessive vacuum on extraction wells. The vacuum should be decreased and the location should be monitored again later that same day. If the conditions have not changed, or have gotten worse, the vacuum will be shut off at that gas collection point until an evaluation of the cause of the variance can be performed, and the issue corrected, as necessary. A diagnostic approach includes measuring and comparing gas component concentrations at the wellhead, lateral, and the main header line.

Please note that the gas quality will not change immediately after opening or closing the valve and must be measured the next day to assure accurate methane concentrations.

The following tables may be used as general guidelines for wellhead adjustments based on gas readings:

For Gas Collection Wellheads:

Balance Gases	Oxygen	Methane	Action
<10%	<5%	>45%	Normal/Optimal Range – No Action Required
10 – 20%	5 – 10%	35 – 45%	Possible Air Intrusion – Close valve by ¼ to ½ turns
>20%	10 – 20%	<35%	Condition Should be Avoided – Close Valve Completely

For Leachate Collection Cleanouts:

Balance Gases	Oxygen	Methane	Action
<5%	<1%	>45%	Normal/Optimal Range – No Action Required
5 – 15%	1 – 5%	35 – 45%	Possible Air Intrusion – Close valve by ¼ to ½ turns
>15%	5 – 20%	<35%	Condition Should be Avoided – Close Valve Completely

The tables above are provided as guidelines to help in determining required action. The landfill gas system operator may apply these guidelines based on site specific observations of the gas system performance.

3.3 Vacuum Readings

The vacuum readings are used to develop an understanding of the relationship between the flow rate and the vacuum applied. By measuring and recording the gas flows and vacuums at each well during various weather conditions, some trends related to the gas collection on the landfill can be observed. Drastic changes in these trends, such as reduced flow or a sudden spike in oxygen or balance gas, could be an indicator that there is a problem with the gas collection system (i.e. leak or blockage in a header pipe, water in the gas collection well, etc.) or an issue with the landfill itself (i.e. air filtration, landfill fire, diminishing gas production, etc.). Closer evaluation of the operation of the gas system is warranted if drastic changes occur in the operational trends of the system.

3.4 Temperature Readings

The temperature of the landfill gas at each wellhead can be an indicator of the amount of air infiltrating into the landfill. The temperature at a wellhead should remain relatively constant. If the temperature at a well increase sharply or exceeds 131° Fahrenheit, excessive air may have infiltrated into the landfill, especially if the concentration of methane has decreased and/or balance gas has increased. An elevated temperature reading at a well requires immediate attention, since over time this situation increases the possibility of a landfill fire. The well should be shut down and an evaluation of the condition around the well should be performed as soon as practical after the elevated temperature reading is recorded. Corrective actions should be performed based on the results of the evaluation.

The following table provides general guidelines for actions based on temperature readings:

Temperature	Action
<125°F	Normal/Optimal Range – No Action Required
125°F - 131°F	Possible Air Intrusion – Close valve by ¼ to ½ turns
>131°F	Condition Should be Avoided – Close Valve Completely

3.5 Isolation Valves

Valves are located at several locations throughout the header system to provide the ability to isolate portions of the gas system for maintenance or repair. Through the use of these valves, portions of the gas system can be shut down while other portions remain in operation. When portions of the system are isolated, the balance of vacuum to the wells can be affected, and must be monitored closely to ensure that excessive vacuum is not applied to the individual wells.

Additionally, individual wells can be shut down by closing the valve on the wellhead. This can be useful when conducting preventative maintenance or making repairs to individual wells.

3.6 Condensate Collection

Condensate is a by-product of the extraction of gases from the landfill. At the pressure and temperature inside the body of the landfill, gases are typically saturated with moisture. Once released or extracted, these gases are subject to different environmental conditions (i.e. lower temperature and pressure) that result in condensation within the gas collection system.

If not properly managed, condensate can accumulate to the extent where it disrupts the flow of landfill gas from the landfill by blocking pipes. To avoid this problem, all gas collection header pipelines are designed to allow the condensate to flow to the condensate collection structures prior to entering the gas control unit. Condensate forming in the wells is pumped in to condensate return lines installed with the header and lateral pipes. The condensate return lines then pump or gravity drain condensate to the leachate collection system or to condensate drop-out structures which then gravity drain or pump condensate to the leachate collection system.

Pipelines off of the landfill are designed to have a minimum one percent (1%) slope and pipelines on the landfill are designed with a minimum five percent (5%) slope, to allow for settlement. Pipes will be installed at a slope greater than these minimum requirements wherever possible to allow easier

transmission of the condensate. Additionally, the pipes have been sized to allow the condensate to flow without affecting the gas flow capacity of the pipelines. The condensate collected at the gas control unit is designed to drain into condensate collection structures which then drain or pump the condensate to the existing leachate collection system.

4 System Start-Up and Balancing

The gas system start-up and initial balancing of the system must be conducted carefully to maximize gas flow and prevent excessive vacuum at the gas extraction points. The system must be gradually balanced by adjusting the valves at the wellheads. Initially, the wellhead valves should be adjusted according to their distance from the gas control unit. Greater vacuum will be available at the wells nearer to the facility, and the valves on these wells should be opened less than the valves further away on the opposite side of the hill. In all cases, the wells should only be opened slightly at first, and should be monitored and adjusted daily until the readings stabilize on the landfill.

The monitoring of the wells will include measurements of methane, carbon dioxide, oxygen, balance gas, pressure, temperature, and flow rate. These readings will be utilized to make vacuum adjustments at the wellheads to balance the system. The startup phase of operation requires more frequent measurements and readings in order to initially "balance" the system. These readings are typically taken weekly and some may be taken daily during the initial balancing of the system. Once balanced, the system can enter performance testing which requires less frequent measurements and readings and is the normal operational condition of the gas collection system.

Due to a buildup of gases within the landfill, the flow rates of the system will be greater when the system is first operated or turned on after a system shut down. Once this positive pressure is eliminated and the system is balanced, the gas collection will equalize and remain relatively constant. Once the system is stabilized, flow rate measurements can be performed in accordance with normal performance testing.

5 System Performance Testing during Normal Operations

Once the gas system is operational following startup and the system has been balanced to a steady state of gas collection, performance testing is necessary to ensure the proper operation of the system and to troubleshoot potential problems. Performance testing is an essential component in the efficient and safe operation of the gas system. Performance testing must be conducted routinely, and the results recorded in a permanent logbook and digitally in a spreadsheet or similar program. Monthly measurements of the following parameters should be made at the wellheads:

- Temperature
- Vacuum
- Methane concentration
- Carbon dioxide concentration
- Oxygen concentration
- Balance gas concentration

Monthly measurements of the following parameters should be made at the inlet of the gas control unit:

- Gas flow rate
- Temperature at the knockout pot
- Methane concentration
- Carbon dioxide concentration
- Oxygen concentration
- Balance gas concentration

The following sections describe performance testing in more detail.

5.1 Gas Component Measurements

The measurements of the following gas components at the wellheads are the principal parameters used to balance the gas system:

- Methane concentration
- Carbon dioxide concentration
- Oxygen concentration
- Balance gas concentration

Measurements of these components at the wellheads, following initial startup and tuning of the system, should be conducted at least monthly to make adjustments during normal operation. The concentrations of these gases should also be determined at the blower/flare station.

The methane production at each gas extraction point (i.e. wellhead) will change over time, requiring periodic adjustments in the vacuum applied to maintain optimal system efficiency. As discussed previously and provided in guidance tables, the gas component concentrations and temperature can be used to help determine adjustments.

Visual, auditory, touch, and olfactory senses may be helpful in isolating wellfield air leaks. Leaks can sometimes be heard (hissing) or smelled ("the rotten egg" smell associated with hydrogen sulfide). However, smelling or hearing gas leaks does not replace regular gas monitoring as a way to determine if there are leaks in the gas system. Air leaks in a gas collection system are typically first noticed when a sudden spike in oxygen or balance gas is observed in the gas monitoring results.

5.2 Temperature Measurements

Monthly measurements of temperature must be used in conjunction with the gas component measurements to determine the positioning of the wellhead valves. The temperature of the landfill gas at each collection point can be used as an indication of air infiltration into the landfill. The temperature at a wellhead should remain relatively constant and in no case reach 131° degrees Fahrenheit. If the temperature at a wellhead increases sharply, excessive air may have infiltrated into the landfill, especially if the concentration of methane has decreased. This situation indicates an increased possibility of a landfill fire and requires immediate attention.

If elevated temperatures are observed at any well, it should be shut down and monitored for carbon monoxide, a common by-product of combustion activities such as landfill fires. Nearby wells should also

be monitored for carbon monoxide to ascertain if subsurface activities are occurring in the area. A carbon monoxide concentration of 100 parts per million (ppm) is generally a good indication that a subsurface oxidation event (i.e. landfill fire) is occurring. Wells with elevated carbon monoxide readings should be shut down and monitored regularly until the readings are reduced.

In the event that carbon monoxide readings do not decrease, or increase and spread to other wells, the proper authorities, as listed in Section 6.0, will be notified of a potential landfill fire. Other signs of landfill fires are visible smoke, open flames, burning odors, wells that have melted, or subsidence of the landfill in localized areas. Excavation around the problem area should NOT be performed, since this would introduce additional fuel (oxygen) to the fire.

5.3 Vacuum Measurements

Vacuum (negative pressure) measurements indicate the amount of vacuum being applied at each gas collection point. Monthly measurements (in inches of water column) should be taken at the wellheads, the inlet to the knockout pots, and the blower inlet and outlet. The results of the vacuum measurements could indicate possible problem conditions at these locations. Reduced wellhead vacuum may be indicative of a blocked lateral pipe or of a blocked or broken header pipe if the decreased vacuum occurs at two or more well locations. Isolated low vacuum conditions may be alleviated by repeatedly closing and opening the valve, thus surging the well. In many cases, a minor blockage can be alleviated by surging, followed by re-adjusting the flow to the established optimal performance level.

5.4 Flow Rate Measurements

The flow rates measured in the gas system are used to determine individual well performance, and overall system performance. Typical well performance will be evident over time at each location. If the flow rate drops at a particular collection point, a blockage in the well or lateral line may exist.

5.5 Water Level/Well Depth Measurements

In some cases, perched water within a landfill can cause an extraction well to clog with water. This is not expected to occur at this site since the cover soil materials used in the past have been fairly permeable and each well is installed with a pneumatic pump. However, if blockage of an extraction well is suspected for any reason, a water level measurement should be taken to make sure that the well is not filled with water.

In cases where the performance of an extraction well deteriorates over time, water level measurements can be used to determine if water within a well is covering the perforated section of the well screen and inhibiting the free flow of gas to the well. An electronic water level indicator will be used for this purpose. Well depth measurements will be used to check for well blockages due to sediments from the waste. Even partial blockages of a well can affect its ability to effectively extract gases. Water level and depth measurements should be performed promptly at wells where a blockage due to liquid or sediments is suspected. The well heads have access ports that will allow insertion of a water depth indicator. Ensure that the well head valve is closed before opening the port and inserting the depth indicator.

Remedial actions for blockages in extraction wells due to excessive liquids or sediments will be determined on a case by case basis and can range from no action to installation of a permanent pump in the well. The decision on whether remedial action is necessary will be based on various factors, such as

the location and past productivity of the well, and proximity of the well to gas migration pathways from the landfill.

5.6 Blower Maintenance

The blower system provides the vacuum that draws the landfill gas from the extraction wells, through the header piping, and through the condensate collection equipment. The blower system also pushes the gas to the flare stack. Therefore, it is essential to the overall system performance that the blower system is functioning properly. Some of the more common maintenance items are listed below.

1. Bearing and motor lubrication.
2. Valve operation.
3. Pipe and valve leak detection
4. Tightness of connectors that could vibrate loose.
5. Electrical connections.

5.7 Condensate System Maintenance

The condensate drop-out structures, such as sumps, knock-out pot, and condensate traps, act as moisture separators and allow any condensate that collects in the gas collection pipeline to fall out from the gas and be collected separately. As the gas enters the drop-out structure or knockout pot, it slows down and allows moisture to drop out and/or collect on baffles or mesh screens. The condensate then flows by gravity or is pumped to the existing leachate management system.

The condensate drop-out structures preceding the knockout pot before the blower at the gas processing unit allows a majority of the condensate to drop out of the gas collection system before it reaches the gas control unit. Knockout pots typically incorporate a sight glass that allows observation of the level of condensate within the structure. Condensate should not build up within the knockout pot during normal operations. If condensate accumulates in the knockout pot, then the outlet of the knockout pot must be cleaned. If the vacuum required to pull the gas through the knockout pot increases over time, then the baffles within the knockout pot should be cleaned. An increase in the vacuum required to draw the landfill gas through the knockout pot is a good indicator that maintenance is required.

5.8 Gas Extraction Wellhead Maintenance

During the routine performance monitoring, the following will be conducted at each wellhead in addition to the monitoring previously described:

1. Check valve operation.
2. Observe piping, valves, and fittings for leakage.
3. Check the well and pipelines for accumulated liquid and repair, as necessary.
4. Check borehole seal and the condition of the landfill surface around the well.

The wellheads shall be operated and maintained in accordance with the manufacturer's specifications and operational instructions. If any problems are found at the wellheads, wells, or nearby pipeline, repairs shall be initiated at that time, if possible. In any case, all repair activities shall be recorded in a logbook and on the well data spreadsheet prepared by the wellfield operator.

6 CONDENSATE MANAGEMENT PLAN

Condensate will be conveyed through the gas collection system and collected at condensate drop-out structures located throughout the gas collection system and also at the knockout pot prior to the blower at the gas control unit. The condensate will either drain or be pumped from the condensate collection trap/sump and gas control unit into the existing leachate collection system for disposal. Condensate will be collected for sampling from the condensate drop out structure (Sump S-4) located just prior to the knock out pot at the Landfill Gas Control Unit.

According to calculations performed for this site, about 7,962gallons per day of condensate is expected to be collected from the gas system during peak gas generation (year 2054). This equates to only about 5.5 gallons per minute from the entire gas collection system. This minimal amount of condensate from the gas system will not significantly impact the operations of the leachate collection and storage system, even at peak discharge.

7 STAFFING PLAN

Sarasota County will provide adequate staff to perform the operations detailed in this plan.

8 CONTINGENCY PLAN

8.1 Fire Control

Please refer to Attachment K-2 of the CCSWDC Operations Plan.

8.2 Wellfield Repairs

Over time, damage to the wellfield components of the gas collection system will occur due to aging equipment, accidental damage during landfill operations, or due to weather conditions. Damage to the wellheads or collection pipelines will usually result in fluctuations of the gas readings at the wellheads and/or at the gas control unit. Based on the gas monitoring results from the wellfield, the problem areas will be identified and repaired as quickly as possible after the problem is observed. Under normal conditions, broken seals or disconnected wellheads will not cause enough disruption to the gas concentrations to require the flare and collection system to shut down. The valve on the wellhead can be shut off to minimize air infiltration into the gas system. Then, repairs can be made at the well while the collection system continues to operate.

However, if the damage to the collection system is substantial enough to make the gas from the landfill unusable in the flare (due to high oxygen or low methane concentrations), the gas control unit will be shut down until repairs can be made. When the gas control unit is shut down, gas will not be allowed to vent to the atmosphere through the gas collection system where the final cover system has been installed. In the event that the gas control unit is shut down for an extended period of time, the Kanaflex hose at each well head will be disconnected. The control valve for each well head will also be fully turned to the open position. In areas where the final cover system has not been installed, landfill gas will vent to the atmosphere. Prior to bringing the gas control unit online, the Kanaflex hose should be reconnected at each

well head. Once the gas control unit is brought back online, the gas system will need to be balanced as discuss in previous sections of this plan.

The main valve at the gas processing unit, located prior to the blowers, will automatically close if the gas control unit is shut down for any reason (maintenance, power outage, severe weather, engine malfunction, etc.). This is the only valve that will be closed during shutdowns. Shutting the main valve effectively contains the gas in the collection system, since the system is closed off from the atmosphere. Gas can and will build up in the gas collection system on the landfill side of the closed valves, as well as in the landfill. Excess gas will vent to the atmosphere through the landfill cover in those areas of the landfill that have not received a final cover system with liner until the system is brought back online. For those areas that have a lined final cover, in extreme instances where the landfill gas system will be offline for more than 24 to 48 hours, the gas well head caps may be removed to allow the gas wells to vent to the atmosphere.

The gas system has been designed with a loop system to allow the collection of gas from a majority of the landfill, even when one section is isolated and closed for repairs. This is accomplished by shutting off valves on the main headers and laterals to isolate sections of pipeline from the vacuum applied to the system. If sections of pipe are to be isolated in this way for an extended period of time, such as a day or more, gas readings should be taken at each well and the wellheads adjusted accordingly, since the vacuum will be distributed differently through the collection system.

8.3 Condensate Collection

A condensate knock-out pot located before the gas control unit has been designed into the system to collect as much condensate as possible before the gas enters the gas control unit. The condensate drop-out is designed to hold as much as 200 gallons of condensate as a contingency, in case blockages or other problems occur in the condensate drainage system.

8.4 Natural Disasters

Please refer to Attachment K-2 of the CCSWDC Operations Plan.

9 CONSTRUCTION PLAN

9.1 Documentation

During construction, careful documentation must be maintained by the contractor and verified by an experienced construction inspector. The information to be gathered as the system is constructed includes the following:

- Extraction well locations and construction details, including borehole logs and well construction diagrams for all gas extraction wells (existing and proposed);
- Pipe sizes and types;
- As-built pipe and appurtenance locations, elevations, and slope verifications;
- Pressure testing of installed solid pipes at 10 psi for one hour (no drop in pressure allowed);
- Documentation of installation, operation, and maintenance procedures for all items supplied by the contractor; and

- As-built drawings for all materials installed.

At the completion of the construction phase of the project, a professional engineer's certification must be submitted to the FDEP in accordance with F.A.C. 62-701.310(9)(a).

9.2 Construction Contingency Plan

9.2.1 Health and Safety

Performing construction work on and around a landfill requires adherence to certain precautionary measures to ensure the safety of all workers. The contractor must develop and maintain a Health and Safety Plan that meets or exceeds minimum regulatory requirements and procedures. The contractor must have supervisory personnel on-site to monitor construction activities and to assess the environmental condition of the workspace. The personnel will be responsible for establishing the hazard level of the workspace and establishing hazard level classifications for different areas of the site for the contractor.

Since the project involves excavation of landfill cover materials and previously deposited solid wastes, the progress of the work should be observed to provide an indication of potential problems. The excavations should be limited to a depth necessary to install the structures and provide the desired slope on the piping systems.

Workers must undertake all necessary safety precautions and comply with all provisions of federal, state, and local safety laws, regulations, and codes to prevent accidents and injury to personnel in the vicinity of the work area.

The contractor must inform his personnel that the construction site is a landfill and that inherent dangers exist. Workers must be required to utilize appropriate personnel protective devices and to observe safe working practices. Smoking is strictly prohibited at the work site.

Workers must be advised of the hazards associate with the work to be accomplished. Of particular concern are physical hazards associated with heavy equipment and excavations, and hazards of landfill gasses including methane, carbon dioxide, hydrogen sulfide, volatile organics, and any other known or suspected gas or vapor which may be encountered. Precautions must be taken based upon known or suspected hazards.

The contractor must designate a Site Health and Safety Officer. The Health and Safety Officer should be trained in the use of gas detection instruments, safety equipment, and health and safety procedures associated with the work conducted. The Health and Safety Officer should be present at all times when construction work is being conducted and periodically monitor the atmosphere within the breathing zone of the workers. At a minimum, the Health and Safety Officer should monitor the concentration of oxygen, the percent of the lower explosive limit for methane, and hydrogen sulfide.

Welding will not be permitted in trenches or other enclosed spaces unless properly performed over ground mats and approved by the Health and Safety Officer.

As construction progresses, valves, pipe, and other openings must be closed as soon as possible after installation to prevent gas migration though the pipeline network and to prevent foreign material from entering.

Excavation and boreholes greater than two feet in depth may not be left unattended unless covered. Storm water must be prevented from entering excavation and boreholes. Extreme caution must be exercised if manholes or other types of vaults must be entered. Confined space entry procedures must be strictly adhered to. Fire extinguishers rated at least A, B, and/or C should be readily available at the work area.

Construction equipment should be equipped with vertical exhaust and spark arrestors. Spark arrestors may not be required if motors are powered by diesel fuel. Motors used in excavated areas should be explosion proof. Start up and shut down of equipment should be conducted outside of excavations. Soil stockpiles should be situated in the vicinity of work areas for firefighting purposes. Refuse excavated during construction will be containerized or disposed of at the active landfill face and covered by the end of the day with at least six inches of soil.

The Contractor shall comply with Safety and Health Regulations for Construction, promulgated by the Secretary of Labor under Section 107 of the Contract Work Hours and Safety Standards Act, as set forth in Title 29, C.F.R. Copies of these regulations may be obtained from the Labor Building, 14th and Constitution Avenue N.W., Washington, DC 20013.

The Contractor shall also comply with the provisions of the Federal Occupational Safety and Health Act, as amended.

9.2.2 Spoils Disposal and Handling

Spoils from excavation areas below the final cover and in areas where final cover has not been installed must be treated and handled as solid waste. This means all special handling procedures associated with normal landfill operations must be adhered to and all necessary protective clothing (hard hats, coveralls, gloves, etc.) should be worn by working personnel.

The spoils must be inspected as they are removed from the excavation to assess workspace conditions and to assure proper management of the spoils. Spoils that are deemed inappropriate for disposal at the active face of the landfill must be segregated and containerized. The FDEP and local fire department must be notified upon the discovery of suspected hazardous materials prior to arranging for proper off-site disposal.

Spoils from the construction activities on the landfill which are comprised of municipal solid wastes must be taken from the working area to the active face of the landfill, on an as needed basis, but at least daily. During well drilling activities, spoils will be brought to the active face frequently and mixed with new waste materials. This is done to help minimize the effects of odors associated with the older waste.

9.2.3 Emergency Situations

All personnel working on the landfill must be informed of the location of the closest medical facility and the telephone numbers for the local police and fire departments, and the local ambulance service. A list of emergency telephone numbers is provided in the Operations Plan for the CCSWDC.

9.3 System Decommissioning

The gas system can be relatively easily decommissioned if the system sustains irreparable damage or the gas system is no longer needed to manage gases from the landfill. To safely and properly decommission the gas system, the following tasks will be performed.

1. Shut down the gas control unit and appurtenant equipment.
2. Open the in-line control valve at each gas well to allow gases still in the gas system to passively vent to the atmosphere and relieve residual pressure in the system.
3. Locate the inlet pipe to the blower. Once located, this pipe will be cut and sealed.
4. Measurements will be taken to be sure the location can be re-established in the future.
5. Disassemble and remove the gas processing equipment.
6. Disassemble yard piping at the gas control unit. Remove the gas processing equipment from the support base as needed for salvage or disposal.
7. Remove the disassembled equipment from site for salvage or disposal.

If gas collection is no longer necessary, reconstruct gas wellhead assemblies to allow passive venting.

10 ENVIRONMENTAL MONITORING

Landfill Gas Sampling and Testing

Additional source testing may be performed after the gas system is operational, to characterize the quality of the gas generated by the landfill. This testing is different than the routine monitoring of the wellheads and the inlet of the gas control unit discussed in Section 3.3, which includes taking readings for temperature, methane, oxygen, carbon dioxide and balance gas. The objective of this testing is to monitor the constituents and combustibility of the landfill gas at the inlet to the gas control unit. Testing could include measuring the concentration of volatile organic compounds, nitrogen, hydrogen sulfide, other sulfides, siloxanes, and other parameters, as necessary.

11 RECORDKEEPING AND REPORTING

Reports and records pertaining to the gas collection system including the information reported and collected as part of Title V EPA and FDEP requirements or other agency permitting requirements, will be maintained in accordance with the provisions provided in Section K.3 and K.13 of the CCSWDC Operations Plan.

ATTACHMENT K-10

FDEP APPROVAL LETTER FOR LEACHATE REUSE

SARASOTA COUNTY
"Dedicated to Quality Service"

January 12, 2000

Kim B. Ford, P. E.
Florida Department of Environmental Protection
3804 Coconut Palm Drive
Tampa, Florida 33619-8318

Re: Central County Solid Waste Disposal Complex
Leachate Reuse

Dear Mr. Ford:

Our Contract Landfill Operator, Waste Management has requested leachate reuse as a dust control agent. They have submitted the attached "Operations Plan for Leachate Reuse via Truck Mounted Spraying" which outlines their proposed activity.

We would require the following additional conditions if the proposed activity is acceptable to the Department.

a) Leachate reuse is subject to the acceptance of the Sarasota County Solid Waste Operations Manager or his designee and will be suspended or terminated at his discretion.
b) The leachate reuse management system will operate to prevent the exposure of leachate to the stormwater control network.
c) The truck used for leachate hauling must be thoroughly cleaned before being used for any other watering purpose.
d) The truck tank must be free of leaks. If a leak is discovered the truck must be decommissioned for the purpose of repair.
e) Use of the leachate for dust control must not result in ponding within the authorized operation area of the landfill cell(s).

Sincerely,

Gerald L. Bennett
Solid Waste Operations Manager

GLB:lh
Attachment
c: Anita Largent, General Manager, Solid Waste
Stephen Barton, WM/Englewood Disposal Company
Robert J. Buteri, P.E., Florida Department of Environmental Protection, Tampa
Ed Norris, Sarasota Landfill Management

ENVIRONMENTAL SERVICES, Solid Waste Operations • 4000 Knights Trail Road, Nokomis, FL 34275
Tel 941-486-2600 • Fax 941-486-2620

FILE COPY

SOLID WASTE OPERATIONS

JAN 20 2000

RECEIVED

Department of Environmental Protection

Jeb Bush
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

David B. Struhs
Secretary

January 18, 2000

Mr. Gary Bennett
Sarasota County
Solid Waste Operations
4000 Knights Trail Road
Nokomis, FL 34275

Re: Leachate Reuse at SCSWDC
Permit #SO58-299180, Sarasota County

Dear Mr. Bennett:

The Department has no objection to the reuse of leachate for dust control (not re-circulation) on active areas as described in your January 12, 2000 letter and operations plan for leachate reuse via truck mounted spraying (attached), subject to the conditions in these referenced letters and attachments. The reuse of leachate for dust control at SCSWDC is considered experimental and over-application should be avoided.

If any inspections disclose problems with this leachate reuse, such as failure to maintain normal operation and prevent ponding and leachate discharge outside the active disposal area, approval may be discontinued. If you have any questions you may call me at (813) 744-6100, extension 382.

Sincerely,

Kim B. Ford, P.E.
Solid Waste Section
Division of Waste Management

KBF/ab
Attachments

cc: Paul Wingler, P.E., Sarasota County
Robert Butera, P.E., FDEP Tampa
Steve Morgan, FDEP Tampa

asota County Central Solid Waste Disposal Complex
Procedures for Leachate Reuse
Operator: Sarasota Landfill Management

December 6, 1999

Operations Plan for Leachate Reuse via Truck Mounted Spraying

Leachate reuse will be employed for dust control and as a supplemental method to manage leachate. The reuse of leachate involves spraying small quantities of leachate from a spray bar mounted on the rear of a tank-truck onto active fill areas of the landfill. This approach has been used successfully at numerous Class I landfills in Florida. The advantages of this method are the reduction of leachate by evaporation, the promotion of the decomposition of organic matter in the landfilled refuse and dust control.

The landfill operation crew will monitor the rate of leachate application, soil moisture conditions and the specific landfill areas used so that leachate application does not generate run-off. This form of leachate reuse should be acceptable as a supplementary means of leachate management. Leachate may be applied under the following conditions:

- Leachate may only be sprayed on active, bermed fill areas, including the working face, and areas with the required six (6) inches of initial cover.
- Leachate may not be sprayed on areas with intermediate or final cover.
- At all times areas receiving leachate must be controlled to prevent run-off from entering the stormwater system.
- Leachate may not be sprayed when the application area is in a saturated condition.
- The application rate of leachate should be such that leachate does not accumulate on the landfill surface, nor infiltrate quickly into the covered refuse.
- Leachate should not be sprayed at the end of the day on the initial cover of the working face or other areas. Spraying should be done early in the morning after any dew evaporates and continue until early afternoon or until all available areas have been utilized.

The Site Manager will record daily the gallons of leachate sprayed per this method and provide this information to the County on a weekly basis. Leachate reuse will be conducted in strict compliance with these procedures.

ATTACHMENT K-11

PHASE II TEMPORARY GAS VENT INFORMATION

HDR | ONE COMPANY | *Many Solutions*

September 16, 2009

Mr. Steve Morgan
Florida Department of Environmental Protection
Southwest District
13051 N. Telecom Parkway
Temple Terrace, FL 33637

Re: Central County Solid Waste Disposal Complex (CCSWDC)
Phase II Expansion
Permit No.: 130542-006-SC/01
Bottom Liner Temporary Gas Vent Installation

Dear Steve:

As requested during our phone conversation earlier today, this letter discusses the proposed installation of temporary gas vents within a portion of the Phase II landfill expansion area. Areas near the Cell 2/Cell 3 interface of Phase II have exhibited gas bubbles accumulating beneath the recently installed bottom liner system. The gas pressure has led to visible lifting of portions of the protective cover over the liner system. Several of the locations have been already been vented and repaired, however, the gas generally accumulates again after the repairs are made. Analysis of the gas indicates it is naturally occurring methane and not landfill gas.

The attached sketch illustrates the proposed temporary vent design and installation instructions. The vents consist of short lengths of perforated 4-inch diameter polyethylene pipe inserted beneath the liner system and connected to a riser pipe with a tee. The riser pipe will extend 2 feet above the protective cover soil and will be perforated above the protective cover soil to allow the gas to escape. An 18-inch diameter section of open-ended polyethylene pipe will be centered over the vent to protect it. Currently we estimate a maximum of approximately 6 vents will be installed although we hope this number can be reduced based on field observations after the initial vents are installed.

The vents will be removed prior to the placement of waste in the area. CQA will be provided during vent removal to verify that all pipes are removed, all geosynthetic layers are properly patched, and that a minimum of 2-feet of protective cover soil is placed over the patched area.

We understand that you will require a minor modification for the temporary gas vent installation. Since the geosynthetics installer is going to be demobilizing from the site very soon, we would appreciate your expedited review of this proposal so the County can install the vents without incurring a remobilization charge.

Please do not hesitate to contact us if you have any questions during your review.

HDR Engineering, Inc. of the Carolinas
3733 National Drive
Suite 207
Raleigh, NC 27612-4845
Phone: (919) 785-1118
Fax: (919) 785-1187
www.hdrinc.com

Sincerely,

HDR Engineering, Inc.

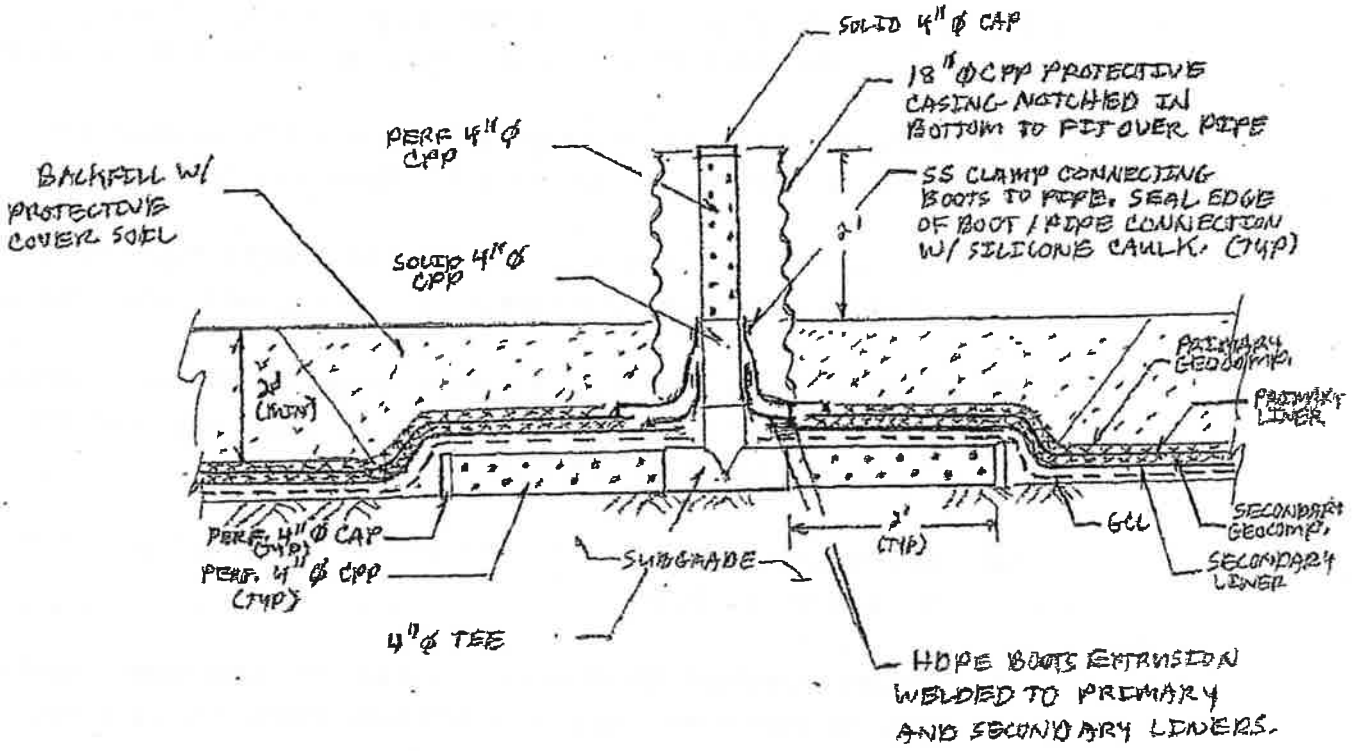
Thomas M. Yanoschak, PE, BCEE
Senior Project Manager

Enclosures as noted.

cc: Gary Bennett, Sarasota County
Frank Coggins, Sarasota County
Spencer Anderson, Sarasota County
Jack Gibson, Sarasota County
Rich Siemering, HDR
Joe Readling, HDR

HDR | ONE COMPANY *Many Solutions*®

Project: CCSWNC	Computed: TMH	Date: 4/10/09	
Subject: phase II	Checked:	Date:	
Task: Gas Vent	Page: 1	of: 2	
Job #:	No:		



TEMPORARY GAS VENT DETAIL

NTS.

NOTE: ALL PIPE AND BOOTS TO BE REMOVED, GEOSYNTHETICS REPAIRED, AND MIN. 2' PROTECTIVE COVER SOIL REPLACED PRIOR TO THE PLACEMENT OF WASTE WITHIN OR NEAR THE VENT AREA.

HDR | ONE COMPANY *Many Solutions*®

Project:		Computed:	Date:
Subject:		Checked:	Date:
Task:		Page: 2	of: 2
Job #:		No:	

TEMPORARY GAS VENT CONSTRUCTION SEQUENCE

1. EXCAVATE PROTECTIVE COVER SOIL TO EXPOSE MIN. 2'x5' OF PRIMARY GEOCOMPOSITE OVER GAS BUBBLE.

2. CUT APPROX. 12" Ø HOLE THROUGH EACH LAYER OF GEOSYNTHETICS AT CENTER OF EXPOSED AREA.

3. INSERT 2 - 2' LENGTHS OF PERFORATED 4" Ø CPP W/ CAPS ON FAR ENDS BETWEEN GCL AND SUBGRADE PER DETAIL.

4. INSERT 4" Ø CPP TEE THROUGH HOLE IN GEOSYNTHETICS AND CONNECT PERFORATED PIPE TO TEE PER DETAIL. ORIENT SIDE-OUT OF TEE VERTICAL.

5. CONNECT APPROX. 1.5' LENGTH OF SOLID 4" Ø CPP TO SIDE-OUT OF TEE.

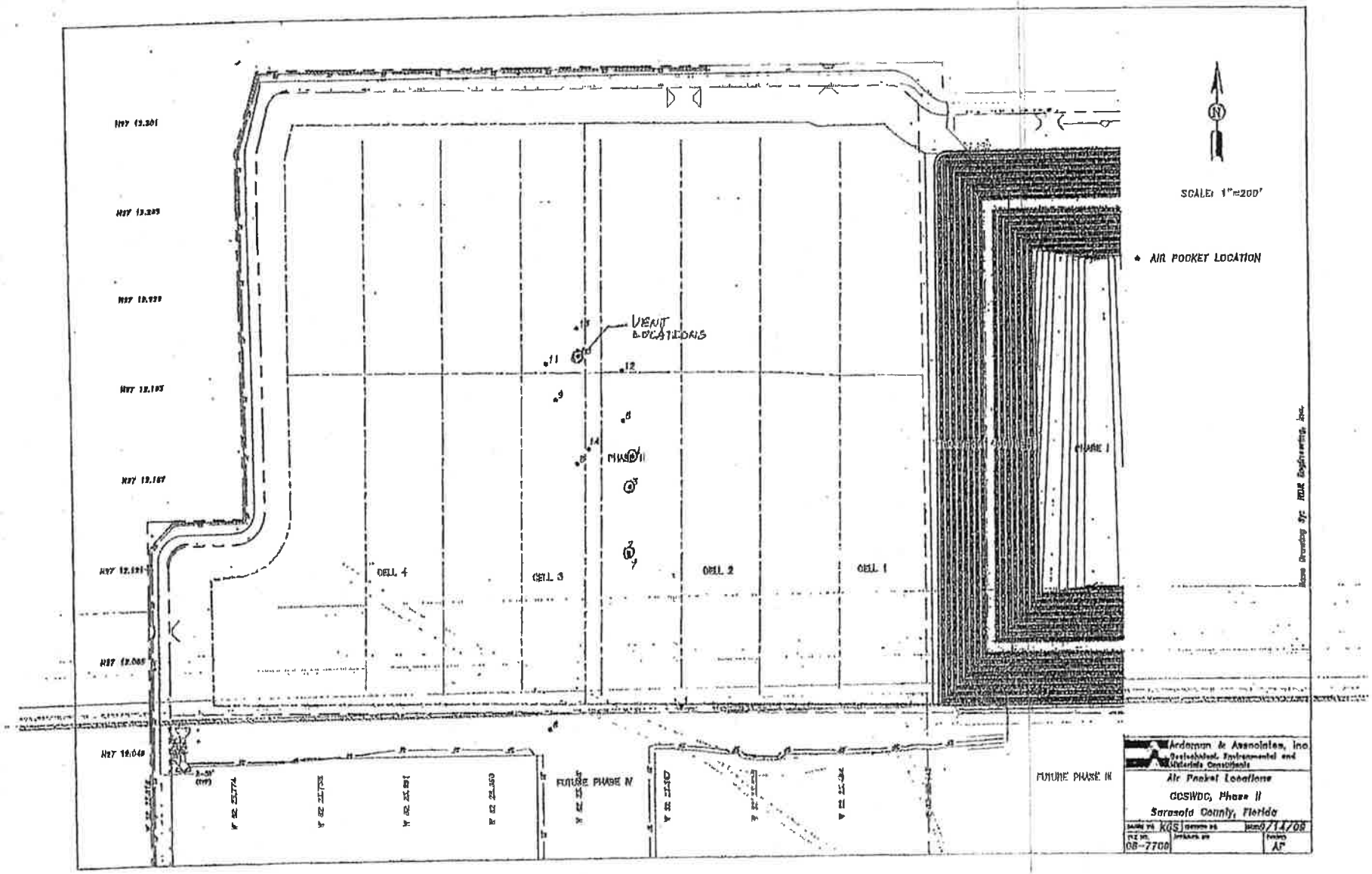
6. FABRICATE BOOT EXTRUSION WELDED TO SECONDARY HDPE LINER AND CONNECTED TO VERTICAL PIPE W/ SS CLAMP AND SEALED W/ SILICONE CAULK.

7. FABRICATE BOOT EXTRUSION WELDED TO PRIMARY HDPE LINER AND CONNECTED TO VERTICAL PIPE SAME AS ABOVE.

8. CONNECT PERF. 4" Ø CPP TO VERTICAL SOLID PIPE TO EXTEND APPROX. 2' ABOVE PROTECTIVE COVER SOIL. ATTACH SOLID CAP TO END OF PIPE.

9. CENTER 18" Ø CPP PROTECTIVE CASING OVER VERTICAL PIPE. NOTCH OUT BOTTOM OF CASING TO FIT OVER BOOTS / PIPE.

10. BACKFILL OVER PIPE AND AROUND PROTECTIVE CASING W/ MIN. 2' OF PROTECTIVE COVER SOIL.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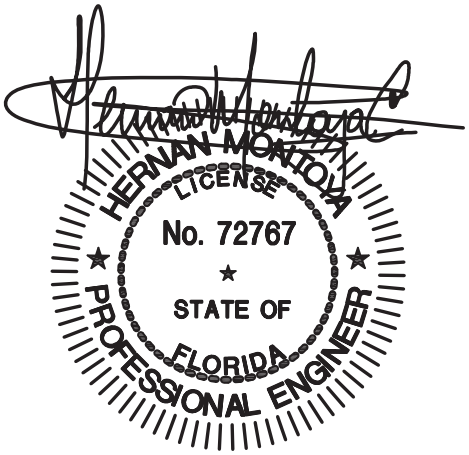
AIR POCKET LOCATION
VENT LOCATIONS
PHASE II
PHASE I
CELL 4
CELL 3
CELL 2
CELL 1
FUTURE PHASE IV
FUTURE PHASE III
Ardaman & Associates, Inc
Geotechnical, Environmental and Materials Consultants
Air Pocket Locations
GCSWDC, Phase II
Sarasota County, Florida
KGS
7/14/08
08-7700
AP

ATTACHMENT K-12

LANDFILL GAS RECOVERY FACILITY OPERATION & MAINTENANCE PLAN

ATTACHMENT K-12

LANDFILL GAS RECOVERY FACILITY OPERATION & MAINTENANCE PLAN



February 14, 2014

TABLE OF CONTENTS

1.0 Introduction and Purpose

As discussed in previous sections of this Operations & Maintenance Plan, the County operates and maintains the landfill gas collection and control system (LFGCCS). This document presents an Operation and Maintenance (O&M) Plan for the Sarasota Landfill Gas-to-Energy Project (GTE Facility) owned by Landfill Energy Systems Florida, LLC.

Landfill Energy Systems Florida (LES) will operate a reciprocating internal combustion engine (RICE) GTE Facility at the Central County Solid Waste Disposal Complex which is located in Sarasota County at 4000 Knights Trail Road, Nokomis, Florida. The GTE Facility is permitted for the operation of four lean-burn engine-generator sets that will fire landfill gas to produce up to a combined nominal 6.4 megawatts (MW) of power to the electrical grid. Methane rich landfill gas is produced by the decomposition of material in the landfill. This gas will be collected, treated, and compressed to be used as fuel to run the engine-generator sets. The gas treatment will include dewatering (a moisture knockout vessel), gas compressors and blowers, air-to-gas coolers and 1 micron filtration.

2.0 Personnel Requirements

2.1 Management Organization

LES is responsible for the management and operation of the Sarasota Landfill Gas-to-Energy Project (GTE Facility). The Regional Manager is responsible for making all primary decisions related to the administration and operation of all the LES sites in Florida. A GTE Lead Operator is responsible for the operation of the GTE Facility and reports to the Regional Manager. The GTE Lead Operator also receives instructions from the Operations staff concerning the daily operation of the GTE Facility; technical repairs and diagnostic troubleshooting; and purchasing tools, equipment and supplies for the GTE Facility.

2.2. Personnel Responsibilities

Operation of the GTE Facility requires full-time staff. The GTE Facility staff members can vary in number and level of responsibility. However, in general, staff members and their responsibilities follow:

- One Regional Manager who will manage all LES Florida GTE operations.
- One Manager of Environmental Programs who will (i) ensure that the GTE Facility is operating in compliance with the terms and conditions of all permits; (ii) monitor the environmental compliance of the facility.
- Two (2) GTE Facility Plant Operators who will operate and maintain the landfill gas recovery plant. The Plant Operator's responsibilities will include: (i) the management of all daily activities with regard to the operation, maintenance, and security of the facility in compliance with all regulatory requirements; (ii) the provision of scheduled transportation and disposal of materials and residue from production and storage areas; (iii) procedures which maintain a high degree of personnel safety and housekeeping standards through appropriate planning; (iv) engine and facility maintenance including

appropriate recordkeeping; (v) engine oil analysis management; and (vi) compression and gas treatment system maintenance.

In addition to the normal full-time staff, additional engineering, operations and safety personnel may be obtained from other LES facilities/offices during periods of scheduled and unscheduled maintenance at the facility. The Plant Operators will be scheduled to work five days a week, 7:00 AM to 3:30 PM and will be on call the remainder of the time. A plant system failure will alert the Operator by phone if the Operator is away from the plant.

Personnel related to the GTE Facility operations are trained to perform their specific duties and to recognize potentially hazardous or dangerous situations at the GTE Facility. Training for the GTE Facility includes but is not limited to the following topics:

- Safety Topics (including Lock Out Tag Out Procedures)
- Equipment Operation
- Construction and Operating Permit Conditions
- Spill Prevention
- Emergency Management and Reporting Procedures

3.0 Facility Operations

The GTE Facility operation is divided into five main segments:

- Facility Startup and Shutdown
- Landfill Gas Collection System
- Engine-Generator
- Facility Control System

Electrical power transmission to the local utilities transmission lines is controlled by two main circuit breakers, 52U and 52T. Tie breaker 52T is used to control electrical power from the generators, and utility circuit breaker 52U is the main breaker connecting the GTE Facility to the utility's grid system. Breaker 52U is located in the transformer switchyard and breaker 52T is located in the switchgear in the control room with generator breakers. For initial start up of the GTE Facility, power from the local electrical utility system is used via a 4.16 KV switchgear, to activate the GTE Facility systems. This is accomplished by closing the utility circuit breaker (52U), and tie breaker (52T). An electrical interlock controls the sequencing of the utility breaker (52U) and tie breaker (52T). The tie breaker (52T) cannot be closed until the utility breaker (52U) has been closed.

3.1 Facility Startup

3.1.1 Startup Precautions

The following section describes the precautionary activities and procedures which must be followed during facility start-up.

- Before beginning start-up procedures, ensure all maintenance work is completed and all HOLD and WARNING tags are cleared and removed.
- For normal operation, maintain engine outlet cooling water temperature between 220°F and 235°F.
- For normal operation, maintain engine oil temperature above 190°F.
- For normal operation, engine exhaust temperature should be between 900°F and 1000°F. Temperatures higher or lower can be an indication of serious mechanical problems.
- Do not attempt to operate the engine and/or gas blower by wiring around (Jumping) automatic shutdown devices.
- Do not allow the engine to be motored by the generator or rotated in a direction opposite from normal. Rotation without lubrication can be harmful to the engine bearings and reverse rotation can damage engine components.
- Check the oil levels and proper lubrication of all equipment. If necessary, lubricate using the proper type and amount of lubricant.
- Verify fluid levels and coolant and oil valve positions for each engine prior to startup.
- Particular attention should be paid to normal operating conditions so that the operator will be able to detect any variation from normal. Abnormal conditions shall be reported to the Plant Operator.
- Check coolant levels of all engines/generators.
- Check engine air filters for high differential pressure. Do not attempt to run engine if differential pressure exceeds manufacturer's recommendations.
- Check gas blower belts for tension.

3.1.2 Start-up Prerequisites

Prior to facility start-up, the Plant Operator must verify the following system or components are in service:

- Incoming Electrical Power Supply.
- 24 volt DC Control Power System.
- Instrument Air System.
- Fire Protection System.
- Explosive Gas Detection System.
- Auto Dialer System.
- Condensate Pump System.
- Check all protective relays for flags, and reset.

3.1.3 Engine-Generator Start-Up

After the auxiliary load has been activated, normal operation of the reciprocating engine-generator set is started as follows:

- Verify that the Main Gas Inlet Valve for the wellfield header to the plant is in the open position.
- Open Main Header Bleed valve for re-circulation of gas to the condensate knockout tank.
- Start the compressor and verify compressor pressure to the main gas header.
- Place Engine Control Switch to the Run position.
- Depress start button on switchgear to initiate engine start sequence.
- Unit should start and obtain normal operating RPM.
- After engine oil has obtained a minimum temperature of 190°F, then the unit can be paralleled with utility and loaded to desired load.
- Once at load, verify proper operation by checking all panels and instrument readings.

After achieving the required voltage and frequency, the generator is synchronized with the utility electrical system and breaker 52G1 is closed. After breaker 52G1 is closed, generator loading takes place and the generator power is supplied to the 4.16 KV switchgear and the utility system. This procedure is the same for the remaining generators (G2, G3, G4).

3.2 Facility Shutdown

- Unload engine by depressing the unload button. The engine will gradually unload at a rate of 3 kW per second and then will automatically trip the generator breaker at 50 kW.
- Once the main generator breaker trips offline, the unit will then go into cool down mode. The engine will operate for an additional five minutes and will then shutdown.
- Once all three or four units have been shut down, the gas compressors will be automatically switch from “run” to “off” mode.

3.3 Landfill Gas Collection System

The existing LFG collection system at the Central County Solid Waste Disposal Complex, operated by the County, consists of vertical gas extraction wells and associated header piping. The collected gas is currently being flared. The GTE Facility will be the prime consumer of the landfill gas once operational. However, if the gas collected exceeds the gas needed to operate the engines or the GTE engine-generators are offline, the existing candlestick flare system will ensure control of all the gas collected by burning off the excess gas. The volume of gas sent to the flare will be greater than or equal to the lowest turn down ratio for continuous flare operation.

3.4 Gas Treatment System

The GTE Facility gas treatment room contains the equipment required to draw the LFG from the main header and treat the LFG prior to combustion in the engines. The equipment and processes used to treat (dewater, filter and compress) the LFG received from the landfill (prior to combustion as fuel in the IC engines) will consist of:

1. Initial two-stage inlet gas dewatering/filter vessels (bottom chambers are used for moisture knockout, top chambers are equipped with coalescing filters to remove gas particles having a diameter of 1-micron and larger).
2. Gas compressor/blowers.
3. Air-to-gas coolers, which will be used to reduce the elevated temperatures of LFG received from the compressors to approximately 10°F above ambient temperatures.
4. Final two-stage dewatering/filter vessels (the bottom chambers are used for moisture knock out, top chambers are equipped with coalescing filter media to remove gas particles having a diameter of 1-micron and larger).

Components of the specified gas treatment system will not be equipped with atmospheric vents. Therefore, all of the LFG received by the system will be directed to the IC engines for use as a fuel.

3.5 Engine-Generator Sets

The four engine-generator sets are comprised of a Caterpillar G3520C landfill gas V-20 engine driving a Caterpillar 1600 kilovolts (kV) generator. The Caterpillar G3520C engine/generator set is rated at 1000 KVA, 1200 RPM, 0.8 power factor, 3 phase, 4160 volts output, wye connected 60 hertz. The generator output is connected to a 4.16 KV switchgear, providing power to station auxiliary loads with the balance of power exported to the utility grid via a 3 phase station transformer which steps up the generated voltage from 4160V to the high line voltage (13200V) and provides power as “sell-back” to the utility grid.

The engine-generator sets are supplied lube oil and coolant from two storage tanks located in the outdoor tank storage area. Adjacent to these two tanks is the used oil storage and used coolant storage. A level alarm panel in the remote transfer areas in the engine room monitors the tank levels and leak detection.

3.6 Facility Control System

The GTE Facility control room contains master controls for landfill gas recovery through the gas compressor, control of the engine and generator systems, synchronization control for the utility grid, and an annunciation panel and autodialer in the event of an upset condition in the GTE Facility.

Seven control panels make up the station switchboard and include a Utility Tie Compartment, Plant Load Compartment, Master Compartment, Generator Control Compartments. These compartments include the following:

- One Utility Tie compartment, which contains the digital metering display, a synchroshope switch and synchronizing model selector switch for manual paralleling. This compartment also contains the bus tie breaker control switches, tie breaker status indicators, tie breaker protective relays, and the 86T lockout relay.
- One Plant Load compartment, which contains digital metering display, control switches, status indicators and protective relays.

- One Master compartment, which contains the station operator interface module with a touch screen mounted on the cubical door, system indicating lights and control switches, and the utility protective relays.
- Three/Four engine-generator set control cubicles for Generator 1 (52G1), Generator 2 (52G2), Generator 3 (52G3), and Generator 4 (52G4). The cubicle contains a digital metering display, generator protective relays, engine control module with a touchscreen on the mounted on the cubicle door, control switches, a high speed relay trip (86 device) and the generator emergency stop pushbutton.

Each cubicle is constructed of a metal cabinet with internal steel barriers. Each cabinet has hinged front and rear doors for access to the cabinet interiors.

3.7 Planned and Unplanned Shutdowns

Company records indicate that the average online time for a GTE Facility operated by LES using Caterpillar engines exceeds 95%. The 5% offline time includes planned and unplanned shutdowns. Any planned or unplanned shutdowns are recorded in the daily log book and/or on EnergyWeb. This information includes the date/time offline, date/time online, shutdown cause and corrective actions.

3.7.1 Planned Shutdowns

Planned shutdowns are generally performed for maintenance reasons, or at scheduled intervals as requested by the utility receiving the electrical power from the GTE facility. The Lead Operator will use the following Facility Maintenance as a general guideline. Scheduled Facility Maintenance items shown below may be adjusted for specific operating conditions:

- Change gas treatment system micron filters every 4,500 to 9,000 hours based on sample results
- Change oil and oil filter in gas compressors every 4,500 to 9,000 hours based on inspection.
- All other repairs as needed.

Engine preventative maintenance is scheduled at intervals based on the operational experience of LES. The Lead Operator will use the following maintenance schedule as a general guideline. Scheduled maintenance items, shown below, may be adjusted for specific operating conditions as required by the engine:

- Replace engine oil and filter every 800 to 1,800 hours.
- Check and clean or replace spark plugs every 1,000 to 1,800 hours.
- Engine valve inspections and adjustments every 1,000 to 1,800 hours.
- Inspect cylinder heads, clean and replace as necessary every 8,000 to 10,000 hours.

The replacement of IC engine parts (such as cylinder seals) is performed during top-end IC engine overhauls that are performed every 8,000 to 10,000 operating hours.

Planned shutdowns for regularly scheduled maintenance occur as follows:

- Each engine is typically shutdown for approximately 1.5 hours each month for general service including oil, filter and sparkplug changes. These guidelines may be adjusted if operational characteristics require change.
- Each engine is typically shutdown annually for approximately 8 to 12 hours for overhauling of the engine top end (heads and valves) based on operating characteristics of the engine.
- The plant is shut down for approximately one day each year in order to service the LFG compressor (treatment) system and the electrical system by changing oil and filters in the compressor and checking the safety system. Specific maintenance schedules and procedures are described in the manufactures operational and maintenance guides, which is kept onsite and can be provided upon request.
- The flow meter will be calibrated annually in accordance with instructions and guidelines in the manufacturer's operation and maintenance manual.
- Leak testing if the gas header entry to the plant will be performed prior to commissioning of the plant. Leak tests will also be performed on pipe connections and valves whenever an engine or compressor is replaced.
- Methane detection is provided throughout the plant. The system is calibrated and maintained as per the manufacturer's recommendations. In the event of a methane leak, an alarm will sound, the gas supply to the plant will be shutoff, and the engines will shut down.

3.7.2 Unplanned Shutdowns

Unplanned shutdowns are generally the result of unexpected events such as:

- Power interruptions within the local utility grid due to increased power usage tripping main breakers or weather related incidents.
- High levels of oxygen in the LFG.
- Failure of a LFG treatment compressor/blower within the GTE Facility.
- Radiator faults/trips.
- Detection of explosive concentrations of flammable gases within the GTE Facility.

In all cases, unexpected events listed above will trigger an automatic shutdown of the fuel supply to the GTE Facility, the compressor/blowers and automatic shutdown of the engine-generator sets. At the same time, an annunciator alarm and panel light will be activated in the control room and the GTE on-call operator will be automatically notified of the shutdown through the autodialer.

The on-call operator, as part of his/her job responsibilities, is required to respond to the alert and troubleshoot and correct the cause of the unexpected shutdown.

During times when the GTE Facility is down for planned or unplanned reasons, LFG that will be normally combusted in the plant will be diverted to the open flare by automatic valve operation and starting the flare. LES and Landfill personnel will work together on this.

4.0 Description of Safety Features

The GTE Facility has been designed to detect a number of upset conditions during facility operation as described below. Upset conditions are sensed by relay elements that will cause the autodialer to be activated notifying the on-call operator of the upset condition. The autodialer functions as a remote alarm monitor. Operators are on call 24 hours a day, seven days a week to respond to upset conditions at the GTE Facility.

In addition to notifying the on-call operator of an upset condition, the relay elements can also shutdown all or a portion of the GTE Facility. An upset condition might result in the termination of electrical energy flow to the utility grid, shutdown of one or more engine-generator sets, and/or shutdown of the compressor/blowers (gas treatment system).

4.1 Power Interruptions

When a power failure, voltage or frequency disturbance occurs on the utility line, the event is detected by one of the relays which will initiate a trip to the utility breaker (52U). Opening breaker 52U will cause the tie breaker 52T to trip. Upon restoration of the utility line voltage, the on-call operator can close the utility breaker (52U) and the process of restarting power generation can occur.

Overpower, overcurrent or a grounding fault on the utility line side of the main transformer is detected by relays which will trip the utility breaker (52U) and tie breaker (52T) via lockout relays 86U and 86T.

Each generator is equipped with an automatic voltage regulator and an automatic power factor controller. The generator is also protected by a relay against unbalanced current, instantaneous and time delay overcurrent, reverse power, loss of excitation and faults that cause a flow of differential currents through the generator windings. Neutral grounding of the generator is achieved through the neutral grounding resistor, to limit ground fault current to 100 amps.

The facility high voltage distribution system is provided with the necessary relay protective devices to guard against the ever present threat of damage caused by overcurrents and transient over voltages that can result in equipment loss and system failure. The relays utilized at this plant are solid-state devices which require no routine maintenance. Each relay should be checked annually as described in the Vendor Operations and Maintenance Manual to confirm its operation. If a relay is found to be inoperative it should be returned to the vendor for repair.

The programmable logic controller (PLC) and remote terminal units (RTU) connects all relays/sensors in the GTE Facility and converts the relays/sensor signals to digital data. During upset conditions, most control actions are performed automatically by RTUs or by PLCs. Data acquisition begins at the RTU or PLC level and includes meter readings and equipment status reports that are communicated to supervisory control and data acquisition (SCADA) as required. Data is then compiled and formatted in such a way that an operator using the human-machine interface (HMI) can make supervisory decisions to adjust or override normal RTU (PLC) controls.

4.2 Fire Prevention within the Facility

The GTE Facility has been designed so that if any of the following faults occur, the generator breaker (52Gx) is tripped and the engine-generator set is shutdown:

- High oxygen.
- Blower failure.
- Air compressor failure.
- Fire detection alarm.
- High methane alarm.

The engine-generator set is shutdown in order to control the potential for fire and explosion within the plant. It should be noted that the GTE Facility building is constructed with minimum of combustible material, so as to limit the propagation of fire. The building fire protection consists of ionization detectors, thermal detectors, smoke detectors on the ceiling and duct work, methane detectors, audible and visual alarm devices, and manual fire pull stations.

4.3 Gas Treatment System Alarms

The GTE Facility has a HMI Gas Panel located in the gas treatment room (which can also be accessed in the control room). The Gas Panel has screens for system alarms. Each screen is provided with alarm windows labeled for alarm and shutdown functions.

The on-call operator uses the Gas Panel as an initial diagnostic tool to determine where the upset condition is. Each screen also provides an acknowledge button to acknowledge alarms. There is also a system reset button to reset/clear an alarm once the upset condition has been corrected.

4.4 Engine-Generator Alarms

Each generator control panel has an HMI located in the system control cubical in the control room. The HMI has screens for system alarms. Each screen is provided with alarm windows labeled for both alarm and shutdown functions.

The on-call operator uses the panel as an initial diagnostic tool to determine where the upset condition is. Each screen panel provides an acknowledge button to acknowledge the alarm. There is also a button to reset/clear an alarm once the upset condition has been corrected.

4.5 Methane Detection Alarm Panel

The LFG GTE Facility will be equipped with an Explosive Gas Detection System which is utilized to continuously monitor ambient air in the gas treatment room, engine-generator room and plant control room for the presence of methane gas. The gas detection system control panel, located in the control room, measures methane concentrations taken from four methane sensors.

Methane gas is explosive only between certain concentrations. This explosive range is 5% to 15% methane in air. The 5% level is defined as the LOWER EXPLOSIVE LIMIT (LEL) and the 15% level is defined as the UPPER EXPLOSIVE LIMIT (UEL). Below the LEL, an explosion will not occur

because the concentration of methane is not high enough to support an explosion. Above the UEL, an explosion will not occur because the methane concentration in relation to the oxygen concentration is too high to support an explosion. An explosion being the VERY RAPID combustion of gas. Methane concentration levels are indicated on the methane detection control panel from 0 to 100% of the LEL.

Should the methane detection unit detect a concentration of methane, the unit will initiate the alarms as described in the following:

- High Concentration of Methane Gas (10% LEL, or 0.5% in air by volume)
  Initiates HIGH FACILITY GAS CONCENTRATION alarm in the control room.
  Illuminates an ALARM CONDITION on the methane detection control panel.
- High-High Concentration of Methane Gas (25% LEL, 1.25% in air by volume)
  Indicates HIGH-HIGH FACILITY GAS CONCENTRATION alarm in the control room.
  Illuminates an ALARM CONDITION on the methane detection control panel.

The control panel is provided with back-lights labeled for both alarm and fault conditions. The on-call operator uses the panel as an initial diagnostic tool to determine where the alarm/fault is located. After the area with the high methane condition has been determined, the operator should proceed to the affected area with a portable gas detector to determine the validity and/or source of the methane gas leak. If a leak is confirmed, the GTE Facility should be shutdown and the affected area should be ventilated using confined space blowers and/or the exhaust/supply fans. After sufficient time has been allowed for ventilation, recheck the concentration from the control room panel. When safe limits are met, enter the affected building with a portable gas detector and attempt to find and repair the leak.

4.6 Storage Tank Alarms

The GTE Facility will have an alarm panel for the Oil and Coolant Storage System. The tank level alarm panel has nine channels/indicators (eight of which are used) as noted below. When an alarm is received, a light on the alarm panel is illuminated; the green light at the pump controls/transfer station in the engine room turn off as well as sounding an audible alarm.

- Coolant Tank #1 High Level.
- Coolant Tank #2 High Level.
- Lube Oil Tank High Level.
- Used Oil Tank High Level.
- Coolant Tank #1 Leak Detection.
- Coolant Tank #2 Leak Detection.
- Lube Oil Tank Leak Detection.
- Used Oil Tank Leak Detection.

The on-call operator uses the alarm panel as an initial diagnostic tool to determine where the upset condition is. The alarm panel has a button to clear the horn. The alarm indicator will remain lit until the alarm condition has been corrected.

5.0 Site Security

The landfill is enclosed by a fence with locking gates in all areas where the public has access. The GTE Facility is locked during times when the GTE operators are not present. The access doors to the control room, engine room and gas treatment room from the outside are steel insulated doors with locking deadbolts. Steel overhead doors also provide access to engine room and gas treatment room. The overhead doors are controlled from inside the GTE Facility.

6.0 Emergency Response

Site emergencies are handled in accordance with the CCSWDC emergency response/contingency plan. This plan covers the following:

- Fire response.
- Medical emergencies response.
- Spill/release/emission response.
- Natural disasters.

A list of emergency telephone numbers is provided below:

- Ambulance Service 911
- Police Department 911
- Fire Department 911
- CCSWDC Administration Building (941) 861-1573
- Main Switchboard Sarasota County Government (941) 861-5000
- South District, Dept. of Environmental Protection (239)-344-5600

7.0 Recordkeeping

Various readings are recorded at the start of each daily shift. The different spreadsheets used by the facility are generated by using the information recorded in the Plant Daily Readings sheet as provided below. All records and data relating to the physical operations of the facility will be made available for inspection by Florida Department of Environmental Protection employees during normal hours of operations.

Daily Readings - Sarasota LFGTE Facility

Unit #	1	2	3	4	Date:
Serial #					
JW Temperature Out / In F	/	/	/	/	
M/U Oil Level (fill below 6 gal)	gal	gal	gal	gal	
Dipstick Oil Level					Time:
Combustion Air Temp	F	F	F	F	
Battery Charger Amps / Volts	A/ V	A/ V	A/ V	A/ V	
SCAC Temperature In / Out F	/	/	/	/	
Gas Pressure	psi	psi	psi	psi	Operartor:
Engine Hours	Hrs	Hrs	Hrs	Hrs	
Generator KW Setpoint	kW	kW	kW	kW	
Megawatt Hours (489)					
Filtered Engine Oil Pressure	psi	psi	psi	psi	Engine Room Temperature:
Engine Oil Diff. Press.	psi	psi	psi	psi	
Engine Coolant Pressure	psia	psia	psia	psia	
Engine Coolant Temp	F	F	F	F	
Engine Oil Temp	F	F	F	F	Ambient Temperature:
MAP/MAT	/	/	/	/	
Turbo Inlet Temps (Even/Odd)	/	/	/	/	
Throttle Angle	%	%	%	%	

Compressor Station		Frequency (HZ)	Temp Left	Temp Right
Compressor 1	amps	HZ	F	F
Compressor 2	amps	HZ	F	F
Compressor 3	amps	HZ	F	F
Compressor 4	amps	HZ	F	F

Gas Filter Towers		Primary Filter
Differential Pressure (IN H2O)		Empty/Full
Primary	Polishing	Polish Filter
"H2O	"H2O	Empty/Full

Tie Screen Panel		Gas Quality		Plant		
Date	/ /	Field VAC ("H20)		Air Press Hrs/psi	Hrs/ psi	
Time		Post Pri VAC ("H20)		Air Comp Temp	F	
Volts	V	CH4	%	Plant/Outside	F	
Amps	A	CO2	%	Cond Count	gal	
Total KW (Tie Meter Screen)	kW	O2	%	Flare Flow	scfm	
kW HR Total (Tie Meter Screen)	kWH	Balance	%	CCV-DP	North- Yes/No	South- Yes/No
kWh Total Net (Ion 7330)	kWH	BTU		48 Volt Batteries:	A	V
kW swd (Ion 7330)	kW	Gas Head Temp	F	Notes: (any leaks or other potential problems below		
Gas Flow Rate (scf/m)	scfm	Gas Head Press	psi			
Gas Flow Total (scf)	scfm	Oil Tanks		Coolant Tanks		
Parasitic load kW (Ion 6200)	kW	New:	gal	New:	gal	
Total Parasitic kWH (ion 6200)	kWH	Used:	gal	Used:	gal	