August 16, 2023

Florida Department of Environmental Protection
Southeast District Office
3301 Gun Club Road MSC 7210-1
West Palm Beach, Florida 33406

RE: FPL Miami-Dade Clean Water Recovery Center Project
Turkey Point Conditions of Certification (PA03-45G)
Post-Certification Submittal for Dewatering – CWRC Waterline Phase 2

To Whom It May Concern:

Florida Power & Light Company (FPL) is providing notification of proposed construction dewatering for the FPL Miami-Dade Clean Water Recovery Center (CWRC) Project in accordance with Section A, Condition XXIX.B.10 of the Turkey Point Conditions of Certification (PA03-45G). Section A, Condition XXIX.B.10 states,

> *"The DEP District must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in off-site discharge or sediment transport into wetlands or surface waters, a written dewatering plan must be submitted to and approved by the Department prior to the dewatering event"*

The enclosed dewatering plan is for Phase 2 of the CWRC waterline (northern third of the waterline, see Figure 1). Dewatering associated with construction of the remainder of the waterline (Phase 1) was previously reviewed and approved.

If you have any comments or questions regarding the enclosed plan or project, please feel free to contact me.

Sincerely,

Danielle Hall
Senior Project Manager
Danielle.Hall@fpl.com
(904) 439-9183

ENVIRONMENTAL ENGINEERING || GEOLOGY
SURVEYING AND MAPPING
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August 15, 2023

Mr. Marsel Fakhrutdinov, P.E.
Miami-Dade County Department of Regulatory and Economic Resources
Environmental Resources Management
Water Control Section
701 NW 1st Court, 6th Floor
Miami, FL 33136-3912

Subject: **FPL Miami-Dade Clean Water Recovery Center (CWRC) Waterline Phase 2 (42-inch Pipeline from Survey Station 0+00 to 170+00)**
Turkey Point Conditions of Certification (PA03-45G)
Post-Certification Submittal for Dewatering Compliance Determination

Dear Mr. Fakhrutdinov,

On behalf of Giannetti Contracting Corp., Tierra Group proposes a dewatering plan to support pipeline installation between the South District Wastewater Treatment Plant (Latitude 25°32'56.36" North/ Longitude 80°20'48.07" West) and project survey station STA 170+00 (Latitude 25°30'20.69" North/ Longitude 80°20'52.27" West) in Miami-Dade County, Florida.

1.0 Project Description

Dewatering is necessary to support the installation of an eight-mile long, 42" subsurface pipeline for reclaimed water in Miami-Dade County. This application will address the northern third of the project (Phase 2); the central and southern two-thirds (Phase 1) were addressed under separate cover dated April 24, 2023 and approved. The project location is shown on **Figure 1**.

Trenching begins at Survey Station 0+00, where an HDPE Transition connection will be installed. Open trench runs 85 feet southwest to Station 0+85, where a directional bore will run south-southwest across the C-1 Canal to Station 10+00. From Station 10+00, open trench runs south-southwest 200 feet to Station 12+00, then turns south, continuing for 3,100 feet to Station 43+10, near the intersection of SW 97th Avenue and Coconut Palm Drive, where a directional bore runs west-southwest beneath the L-31E (Goulds) Canal, resurfacing at Station 49+00.

From Station 49+00, open trench runs west approximately 120 feet, then turns south and continues for 2,580 feet to Station 76+00. At Station 76+00, the trench route turns east 620 feet to Station 82+20. From Station 82+20, open trench continues south 3,280 feet to Station 115+00, where a directional bore will run south beneath the C-102 (Princeton) Canal, resurfacing at Station 126+20. From Station 126+20, open trench continues south for 4,380 feet, where it will connect to the pipeline of Phase 1 at Survey Station 170+00.

The total excavated trench length is approximately 14,365 feet across three-hundred and sixty-four trench sections. The pipeline will be placed within approximately 8.0-foot wide by 40-foot-long linear trench segments; five sections are planned for completion each day. The site plan and dewatering locations with subsurface profiles are shown in FPL Site Drawings *Miami-Dade Clean Water Recovery Center, Offsite 42" Reuse Pipeline – SDWWTP to Turkey Point, Drawing Numbers 3610 through 3628*, annotated by Tierra Group and included as **Figure 2**.

2.0 Estimation of the Dewatering Radius of Influence & Maximum Flow Rate

Tierra Group used Sichardt's Equation to calculate the dewatering groundwater volume of the northern third of the project based on the hydraulic conductivity (K = 40.7 feet/day or 0.000144 meters/second) and aquifer depth (H = 150 feet). The K value (4.71E-04) was referenced from *Geotechnical Data Report, Miami-Dade Clean Water Recovery Center Pipeline*, prepared March 2023 by Blascom Engineering, Inc.; the aquifer depth was referenced from *United States Geological Survey: Water-Resources Investigations Report 90-4108, Hydrogeology of the Surficial Aquifer System*, Dade County, Florida, 1991. Select pages of the referenced documents are provided in **Attachment A**.

The calculated maximum radius of influence (ROI) and dewatering flow rate are 316 feet and 515 gallons per minute (gpm), respectively. The estimated maximum daily dewatering pumpage calculated using Sichardt's Equation is 303,312 gallons per day for the proposed production rate of five (5) sections per day. The variables and supporting calculations for these values are provided in **Attachment A**.

3.0 Contaminated Facilities File Review

Environmental records from the Florida Department of Environmental Protection (FDEP) and Miami-Dade County Department of Regulatory and Economic Resources (RER) indicated that three contaminated facilities are within 500 feet of proposed trenching activities, as shown in **Figure 3**.

Facility Name	Address	Facility Type	Pollutant Type	Regulatory Status	Facility ID
South Dade Landfill	SW 97th Ave. & SW 237th Street Homestead, FL 33032	Landfill	Ammonia, Chlorides, Metals, Nitrate, and TDS	Ongoing semi-annual monitoring	MDC ID#: SW-01013
Old South Dade Landfill	SW 97th Ave. & SW 248th St. Homestead, FL 33032	Landfill	Ammonia, Chlorides, Metals, Nitrate, and TDS	Monitoring suspended pending no changes to adjacent properties	MDC ID#: SW-01325
Florida Rock & Sand – Cutler Pit	26801 SW 107th Ave. Homestead, FL 33032	Limestone Quarry	Ammonia	NFAC w/ Restrictions & DRC pending Opinion of Title	MDC ID#: SW-01328

<u>South Dade Landfill (MDC ID# SW-01013)</u>

The South Dade Landfill (SDL), a 320-acre Class I Municipal Solid Waste facility owned and operated by Miami-Dade County, receives approximately 960 tons of solid waste per day. It is located in coastal Miami-Dade County, approximately 12 miles northeast of Homestead and 20 miles south of Miami.

The SDL disposal area consists of five zones, designated as Cell 1 through Cell 5. Cells 1 and 2 cover a combined 92 acres and were active between 1978 and 1988; closure activities were completed in August 1997. Cell 3 covers 46 acres and was active from 1986 to 2008; closure activities were completed in February 2011. Cell 4, constructed in 1994, covers approximately 60 acres. It began accepting waste in 2003 and is currently active. Cell 5 was graded to form five separate sub-cells (Cells 5A through 5E) from south to north. Construction of Cell 5 was completed in 2021, and sub-cell 5E began receiving solid waste in July 2021.

The SDL's FDEP Solid Waste Permits (*0126800-010-SC* and *0126800-011-SO*) include requirements for ongoing water quality monitoring and semi-annual reporting. A total of 63 clustered wells of varied depth intervals are installed throughout the site, as shown in **Figure 3**. Each cluster is measured for field parameters including turbidity, dissolved oxygen, specific conductivity, temperature, color or sheen, and pH. Samples are further analyzed by a contract laboratory for total dissolved solids (TDS), nitrate, chlorides, and ammonia.

The most recent publicly-available water monitoring report, included in **Attachment B**, is dated November 4, 2022. Analytical results appear consistent with previous monitoring reports, and ammonia levels in all wells appear to be trending lower. TDS, sodium, and chloride are elevated, likely due to the site's proximity to the marine waters of Biscayne Bay. Most metals are reported below laboratory method detection limits.

The pipeline dewatering excavation sections nearest to SDL groundwater monitoring wells S-1 (section S-24) and S-21 (section S-60) have a calculated maximum radius of influence of 210 feet and 217 feet, respectively. Although these radii intersect with SDL S-1 and S-21, both of these wells have demonstrated compliance at the 10' and 15' intervals during semi-annual sampling since 2018. As such, dewatering at these sections is not expected to influence any residual contamination at this facility.

Old South Dade Landfill (MDC ID# SW-01325)

Landfill operations began at the Old South Dade Landfill (OSDL) as early as 1952. The old landfill tract constitutes approximately 300 acres. The eastern-most portion of the tract, roughly 40 acres, reportedly did not receive waste materials and remains covered by mangrove vegetation. Waste materials were disposed in open trenches below the water table. Solid waste ranged from 6 to 8 feet thick east of SW 97th Avenue, to about 15 feet thick to the west. Disposal operations ceased in 1979 when the landfill was closed.

The Miami-Dade County Department of Public Works and Waste Management completed closure enhancement activities at the OSDL in 2014. These activities consisted of wetland restoration, clearing and grading, relocation of waste, placement of a lime rock cap over relocated landfill material, and installation of stormwater management, groundwater extraction, treatment, injection, and monitoring systems. Extracted groundwater was piped to a sequencing batch reactor (SBR) treatment plant, where impacted groundwater was treated to meet the Miami-Dade County groundwater standard for ammonia. Treated groundwater was then piped to gravity drainage wells on the east side of the OSDL.

In addition to sampling from the effluent tank of the SBR, a network of thirty-eight monitoring wells were installed and sampled to track contaminants of concern. All samples were within the required range for field pH; TDS and chlorides were above maximum contaminant levels (MCLs) in most samples. Chlorides were below the MCL in 6 of the 38 wells sampled. Nitrate was below its MCL in all wells sampled. Ammonia ranged between <0.04 milligrams per liter (mg/L) and 17.6 mg/L, which exceeds the Groundwater Cleanup Target Level (GCTL) of 2.8 mg/L, as provided by Chapter 62-777, Florida Administrative Code (F.A.C.). All metals except iron, sodium, lead, and thallium were below their respective MCLs. Antimony, beryllium, cadmium, cobalt, nickel, selenium, silver, thallium, and mercury were below the laboratory method detection limit in all wells tested.

In April 2015, Miami-Dade County Department of Public Works and Waste Management submitted a Site Rehabilitation Completion Report (SRCR), included in **Attachment B**, to FDEP demonstrating that remediation goals had been achieved and ammonia concentrations at perimeter monitoring wells were below the GCTL. Miami-Dade County requested groundwater pumping, SBR treatment, reinjection, and monitoring requirements be discontinued. In July 2015, FDEP issued a Permit Modification, which no longer required remediation and monitoring activities at the facility.

Quarterly perimeter monitoring for methane gas began in 2014; however, no gas migration was detected, and monitoring was suspended by 2019. Applicable pages of the regulatory file documents are included in **Attachment B**.

Based on a December 2012 FDEP memorandum, the toxicological basis for relying on the ammonia GCTL as an indicator of groundwater quality was withdrawn. Further, Department solid waste staff were instructed not to enforce ammonia as a minimum criteria contaminant for groundwater at permitted or non-permitted solid waste management facilities, unless there were sufficient scientific reasons to believe that the groundwater would be discharged to surface waters (**Attachment C**).

Review of the OSDL regulatory file did not identify a history of ammonia concentrations exceeding the 35,000 micrograms per liter (ug/L) taste threshold for ammonia, which has been approved as an alternative GCTL (AGCTL) at other sites in the vicinity of the project site. Therefore, the application of an ammonia AGCTL of 35,000 ug/L serves as an appropriate guidance criterion for this site. Additional information and supporting documents for the ammonia AGCTL are provided in Paragraph **4.1 Basis for Ammonia AGCTL** below.

The calculated maximum radius of influence for the nearest and deepest dewatering excavation section (S-174) is estimated at 294 feet. As a precautionary measure, dewatering fluids generated within 500 feet of the OSDL will be directed to weir sedimentation tank(s) prior to discharge to temporary deep drainage well(s). Therefore, proposed dewatering activities will not adversely impact the shallow groundwater aquifer or nearby surface waters.

Florida Rock & Sand – Cutler Pit (MDC ID# SW-01328)

Domestic sludge and solid waste materials were previously disposed of at this facility in the 1970s, some of which was performed in accordance with a Dade County approval issued in May 1975. This material was excavated during limestone quarrying operations and stockpiled in the southern portion of the facility. Miami-Dade County issued a Solid Waste permit for sorting of the stockpiled mix of sludge and solid waste. Sorting and disposal operations were completed in 2008, groundwater monitoring conducted in the vicinity of sorting operations indicated ammonia concentrations above the GCTL.

Following the removal of solid waste and impacted soils, DERM required additional groundwater testing to verify conditions at the site. In 2011, additional monitoring wells were installed, sampled, and tested to further delineate groundwater impacts. Based on these sampling events, a Natural Attenuation Monitoring (NAM) Plan was proposed and approved in October 2011. Quarterly sampling was conducted and submitted to DERM for the next four years.

In January 2015, DERM indicated a No Further Action with Conditions (NFAC) could be approved for the facility, pending additional assessment. Accordingly, a monitoring well installation and sampling plan was approved for consideration of NFAC. Groundwater samples were documented as compliant, and a Draft Restrictive Covenant was developed in 2017. Applicable pages of the regulatory file documents showing monitoring well locations are included in **Attachment B**.

The calculated maximum radius of influence for the nearest and deepest dewatering excavation section (S-345), estimated at 286 feet, does not intersect with the nearest groundwater monitoring well of this facility (MW-11R). As such, dewatering of this section is not anticipated to influence any residual contamination at this facility.

4.0 Dewatering Plan

Ground surface elevation at the proposed dewatering site varies with a maximum elevation of +9.0 feet relative to the North American Vertical Datum of 1988 (NAVD). Average groundwater elevation at the dewatering site is -0.4 feet NAVD, and the maximum trench dewatering depth is -6.9 feet NAVD.

Sections S-1 through S-78 and S-179 through S-364

Dewatering fluids will be pumped from the excavation trenches using a self-priming six-inch (6") vacuum pump, or equivalent, to a nominal 40' wide by 400' long, above-grade infiltration basin using soil excavated from the trenches. For the first 400 feet of excavation, dewatering operations will require extracted groundwater to be pumped directly into an 18,000-gallon weir sedimentation tank before discharging to a temporary deep drainage well.

Once more than 400 feet of space becomes available behind the working open trench, the sedimentation basin area will serve as the primary recipient of dewatering fluids. As the trenching proceeds, the basin will

be constructed over the backfilled trenches to minimize the disturbed area. The footprint of the basin will move forward as the trenching work proceeds.

The trigger criteria for pumping out of this bermed infiltration area (if needed) will be set at one foot from the top of berm (freeboard). A graduated staff gauge will be set within the infiltration basin to monitor water levels approaching one foot from top of berm. Prior to reaching this trigger point, a transfer pump will be engaged to move dewatering fluids from the infiltration basin to the weir tank, then to a temporary deep drainage well.

Materials used to backfill piping trenches will include local virgin quarried #57 rock to serve as a uniform bedding under pipe segments. The balance of the trench along the sides and on top of newly placed pipe will be filled with native substrates removed from its immediate vicinity at equivalent depth intervals. These materials generally will not be compacted for load-bearing purposes and do not require density testing; therefore, the site-specific hydraulic conductivity used in referenced calculations presented in **Attachment A** is reliable for estimating the water balance of the dewatering infiltration and discharge. Please note that all topsoil set aside for wetland restoration purposes will remain segregated until after dewatering and backfilling operations are complete.

The infiltration basin walls will be covered with polyethylene sheeting to prevent lateral migration and will be further protected by silt fencing. Turbidity curtains will be installed spaced 100' apart, as shown in **Figure 4**. Infiltration trench size requirements, and associated infiltration basin area requirements, derived using the *Florida Department of Transportation (FDOT) Drainage Handbook Exfiltration Systems* (February 2012), are included in **Attachment A**.

Steel trench boxes with approximate dimensions of 20 feet in length, 8 feet in width, and 10 feet in height will be used during the excavation work to ensure sidewall stability and serve as a temporary solid barrier below the natural water table to reduce horizontal groundwater flow. The trench boxes will also reduce potential localized exfiltration from the L-31E Canal. Additionally, the positive elevation head differential of the infiltration basin will further reduce potential exfiltration from the L-31E Canal via recharge into the subsurface aquifer.

Additional best management work practices may be implemented, as necessary, to provide further reasonable assurance of compliant project operations and reduced hydrogeologic interaction with nearby canals. These include:

- Performing pipe installation partially "in the wet" to reduce the drawdown requirement for groundwater by two feet (the net benefit will reduce the pumped volume by as much as 25%);
- Increasing the length of the temporary bermed infiltration basin to add more working storage capacity; and
- Providing a second hose connection to split the water pumped out of the weir tank or infiltration basin into two drainage wells simultaneously (the net benefit will double the drainage well discharge capacity).

<u>Sections S-79 through S-178</u>

For trench sections S-79 through S-178, located within 500 feet of the OSDL, dewatering fluids will be pumped directly into 18,000-gallon weir sedimentation tank(s) prior to discharge to temporary deep drainage well(s). The expected capacity of drainage wells is 495 gallons per minute per foot of head.

Temporary drainage well specifications, provided in **Figure 5**, include a minimum of 56 feet of 24-inch diameter steel casing set below grade with an open-hole interval from 56 feet to 106 feet below grade. These depth criteria were established by a licensed well driller, All Webbs, using local knowledge of subsurface conditions derived from a full-scale pilot test well. Final drainage well locations shown in **Figure 2** and **Figure 6**, are contingent on underground and overhead utility clearance.

Dewatering assumptions are based on the time to dig, dewater, and install subsurface infrastructure during daylight working hours. Dewatering duration for this portion of the pipeline project is estimated at ten (10) hours per day for seventy (70) working days based on a production rate of 200 linear feet per day. A 1.25 factor of safety has been added to the schedule to account for weather delays, equipment breakdowns, and other unforeseen circumstances.

4.1 Basis for Ammonia AGCTL

In December 2012, FDEP issued a memorandum (**Attachment C**) confirming the toxicological basis for relying on the ammonia GCTL as an indicator of groundwater quality had been withdrawn. Further, Department solid waste staff were instructed not to enforce ammonia as a minimum criteria contaminant for groundwater at permitted or non-permitted solid waste management facilities, unless there were sufficient scientific reasons to believe that the groundwater would be discharged to surface waters.

At FDEP's request, the University of Florida (UF) Center for Environmental and Human Toxicology issued a letter (**Attachment C**) to derive health-based and odor-based AGCTLs accounting for the influence of groundwater temperature and pH. Given the groundwater temperature and pH ranges in Florida, the UF AGCTLs ranged from 4,200 ug/L to 3,100,000 ug/L. Based on guidance indicating the lowest ammonia concentration of the health-based AGCTL (calculated using pH and temperature), acute exposure AGCTL, odor threshold (using pH and temperature), and taste threshold (35,000 ug/L) should be used when selecting a site-specific AGCTL, an ammonia AGCTL of 35,000 ug/L serves as an appropriate guidance criterion for this site.

To ensure protection of surface waters and potential receptors in the project site vicinity, dewatering fluids generated within trench sections S-79 through S-178 will be directed to temporary deep drainage well(s). Therefore, nearby surface waters and potential receptors will not be adversely impacted by the proposed dewatering activities.

4.2 Soil and Sediment Management Plan

Soil excavated soil from trenches will be segregated and used to create the temporary berm around the infiltration basin. Upon completion of pipeline section installation, stockpiled soil will be returned to the trenches as backfill. Excess soil will be properly disposed of off-site.

Dewatering fluids will be processed through a weir sedimentation tank to allow sediment to settle from the effluent prior to discharge. Accumulated sediment removed from the tank will be returned to the excavation from which it originated or be properly disposed of off-site. Turbidity control includes the provision of turbidity curtains in the infiltration basin and a weir sedimentation tank; particle settling calculations are included in **Attachment A**. Pump and sedimentation tank specification data are found in **Attachment D**.

4.3 Stormwater Management

Dewatering effluent from excavation trenches will be pumped into an infiltration basin or temporary deep drainage well(s) where effluent will discharge into the subsurface aquifer. The basin will be constructed, expanded upon, then deconstructed and removed as the piping moves down the installation route.

A project SWPPP has been developed in accordance with the provisions of *F.A.C. Section 62-621.300(4)*, (**Attachment E)**. Silt fencing and other stormwater management features are detailed in **Figure 4** and the SWPPP. Best Management Practices (BMPs) to control sedimentation and stormwater pollution runoff will be observed during dewatering operations. Existing catch basins and accessible drainage entry points at the site will be protected with curb barriers, including hay bales wrapped in silt filter fabric and/or booms, to deter sediment in stormwater from entry into the existing roadway drainage system.

Temporary grade changes and surface flow restrictions will occur but no grading work that permanently changes the existing grade or surface drainage flow will be performed. No discharge to surface waters will occur, therefore the provisions of *F.A.C. Section 62-621.300 – Permits,* are not applicable.

5.0 Authorization to Perform Work

Wetland impacts for the project are authorized via USACE Permit SAJ-2004-00813. Additionally, the Site Certification (PA 03-45G) is the comprehensive state and local agency approval for the project. Select pages of PA 03-45G are included in **Attachment F**.

6.0 Conclusion

The proposed dewatering activities are necessary to lower natural groundwater elevation to support the installation of a reclaimed water pipeline between the SDWWTP and the project survey station STA 170+00 in Miami-Dade County, Florida. The installation is required to provide a primary source of cooling water for the FPL natural gas power plant at Turkey Point.

As a precautionary measure for managing dewatering fluids in proximity to the southern perimeter of the Old South Dade Landfill, dewatering fluids generated within trench sections S-79 through S-178 will be discharged to temporary deep drainage well(s).

Accordingly, Tierra Group concludes the project, with maximum ROI of 316 feet, maximum flow rate of 515 gpm, and daily maximum pumping of 303,312 gallons/day, is temporary in nature and not expected to adversely impact the shallow groundwater aquifer nor cause an influence on any potential residual contamination in the vicinity.

Contact information for the entity assuming responsibility for the conditions of the permit is:

Giannetti Contracting Corp.
Attn: Ilia Lyssenko
1801 NW 18th St
Pompano Beach, FL 33069
Ilia@giannetticorp.com

If additional information is required to expedite the review and approval of dewatering activities, please contact Scott Zednek or Laurie Sheldon at (954) 202-9226 with any questions.

Respectfully,

Robert L Vinson III
Digitally signed by Robert L Vinson III
Date: 2023.08.15 18:33:45 -05'00'

Robert L. Vinson III, P.E.
Senior Project Engineer

Robert L. Vinson III, Professional Engineer, State of Florida, License No. PE53438

This item has been electronically signed and sealed by Robert L. Vinson III, PE, on the date of this document using an SHA authentication code.

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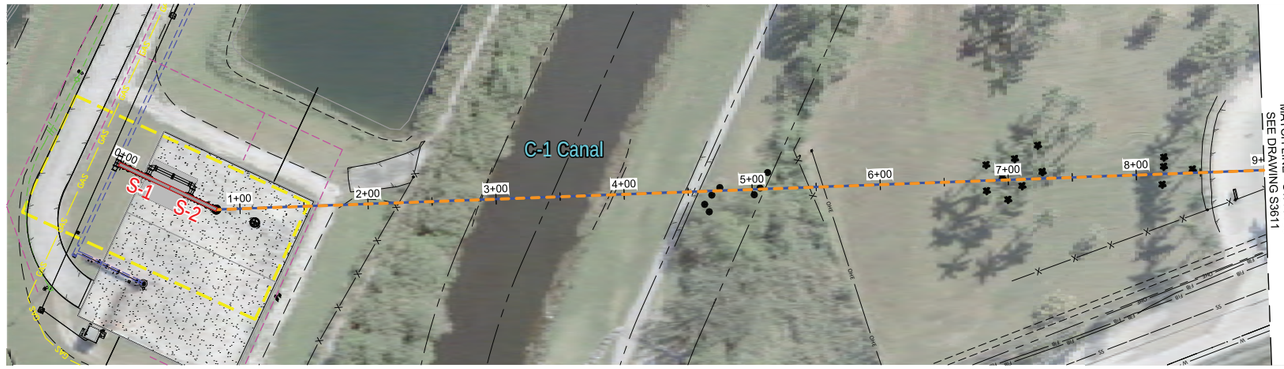
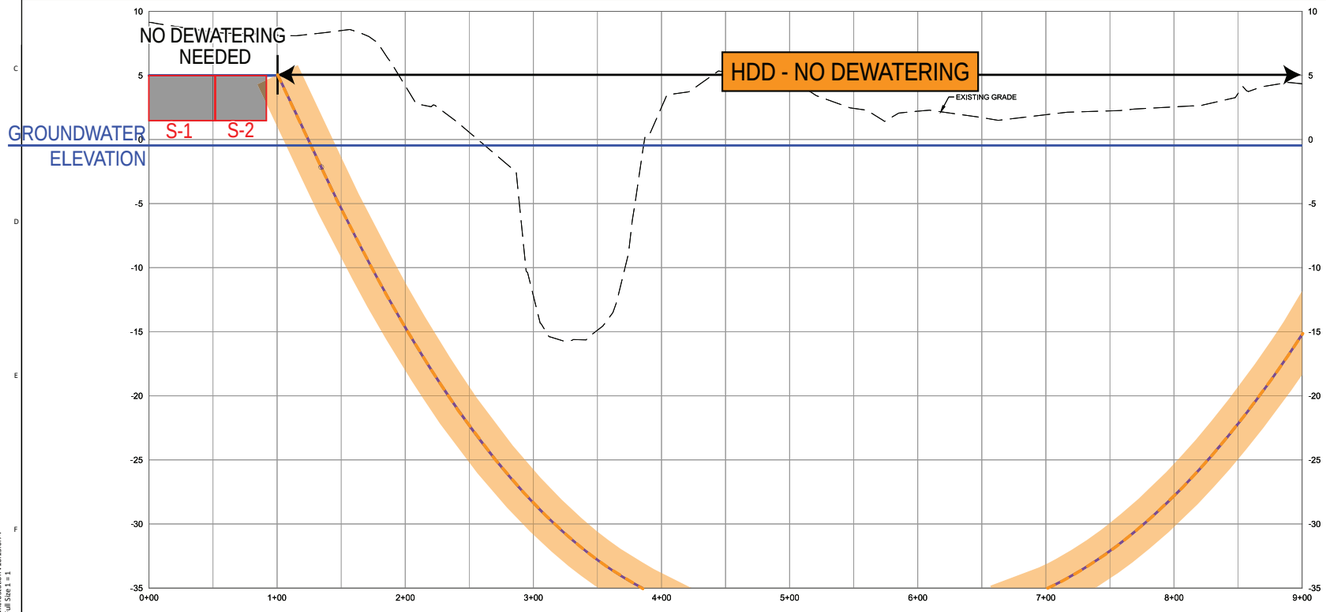
FIGURES

TIERRA GROUP™ Assured Geoscience Solutions	PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.
FIGURE 1 - PROJECT LOCATION MAP	SCALE: APPROX. 1" = 0.5 Mile (0' 1,320' 2,640')	DATE: 7/18/2023	DRAWN BY: LS

O: (954) 202 9226 **E: ADMIN@TIERRASOLUTIONS.COM** **WWW.TIERRASOLUTIONS.COM**





40' 20' 0 40' 80'
HORIZONTAL SCALE 1"=40'

5' 0 5' 10'
VERTICAL SCALE 1"= 5'

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FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT
PLAN AND PROFILE
STA 0+00 TO STA 9+00

PROJECT 412398-5WWRRCW-3610 | DRAWING NUMBER | REV B
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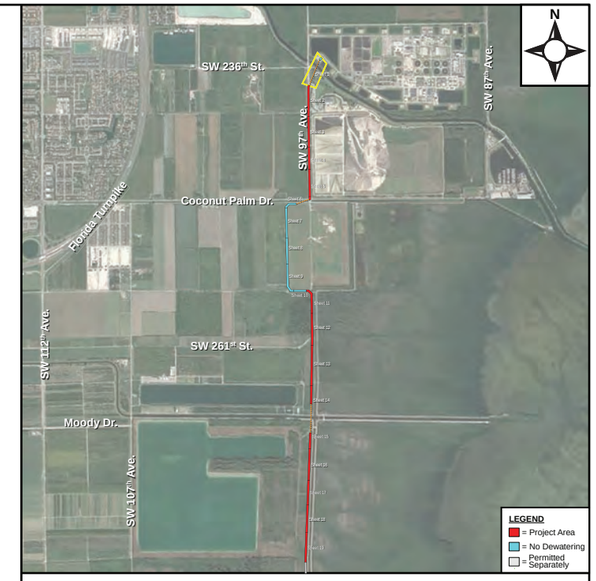
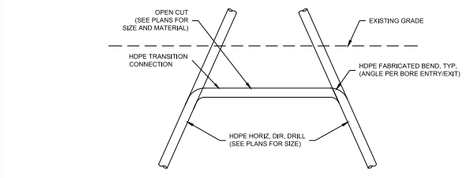
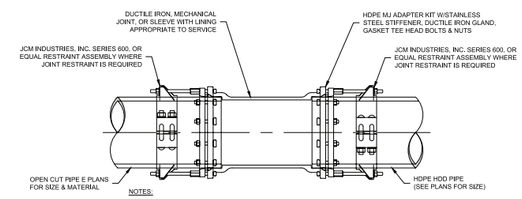


PROJECT LOCATION MAP



HDD TIE-IN



NOTES:
1. PROVIDE JOINT RESTRAINT IF SLEEVE IS IN ZONE REQUIRING RESTRAINED JOINTS.
2. PROVIDE JOINT RESTRAINT WHERE SHOWN ON PLANS.

HDPE TRANSITION CONNECTION

HDD CONNECTION DETAIL

Know what's below. Call before you dig. 811

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

TIERRA GROUP™ Assured Geoscience Solutions

PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 1 OF 19

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Robert L Vinson III
Digitally signed by Robert L Vinson III
Date: 2023.08.15 17:38:17 -05'00'

Robert L. Vinson III, Professional Engineer, State of Florida, License No. PE53438

This item has been electronically signed and sealed by Robert L. Vinson III, PE, on the date of this document using an SHA authentication code.

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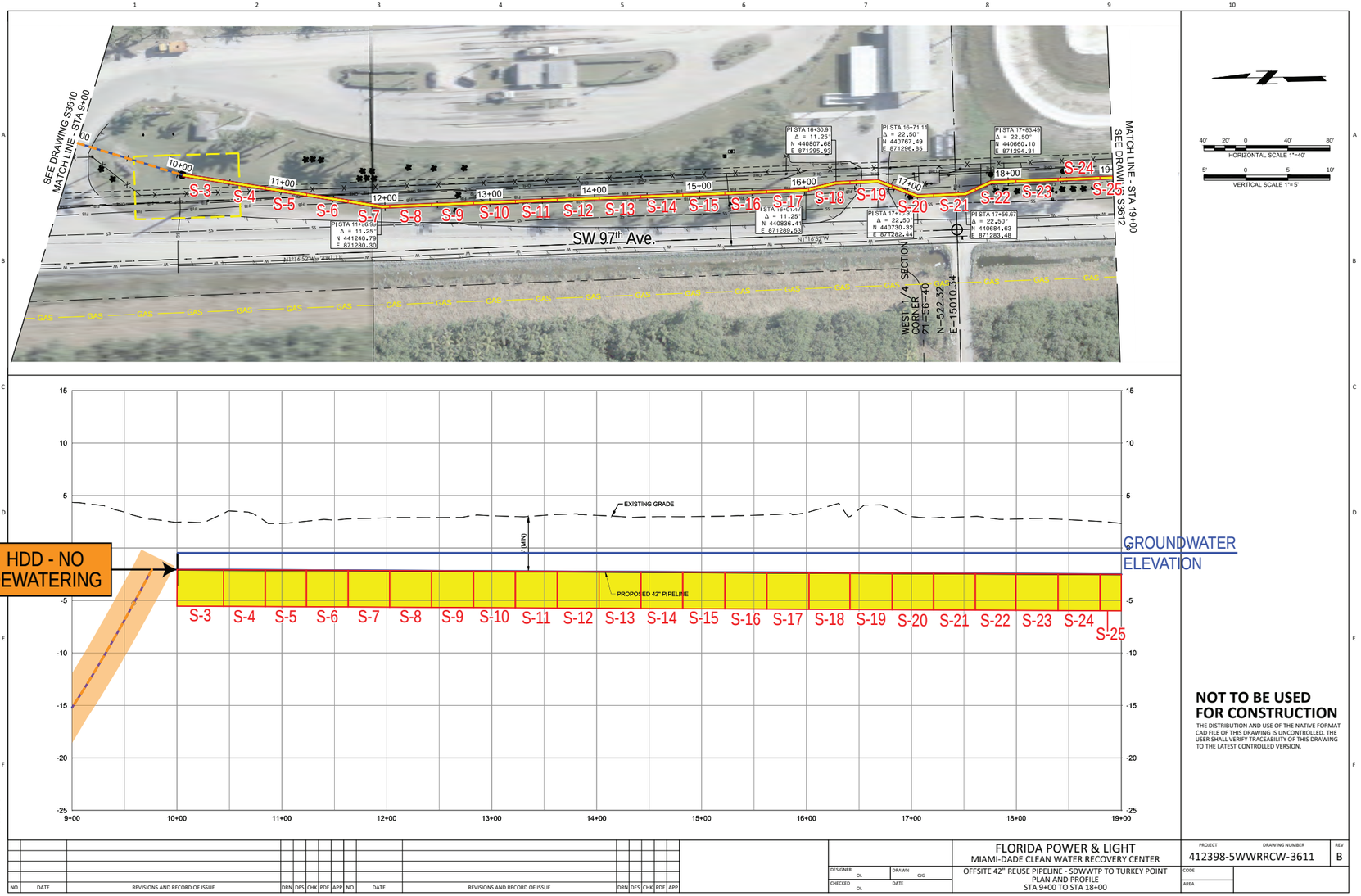

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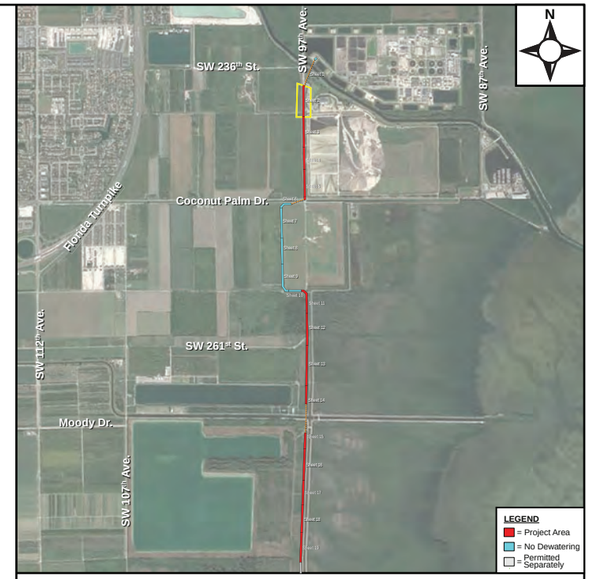
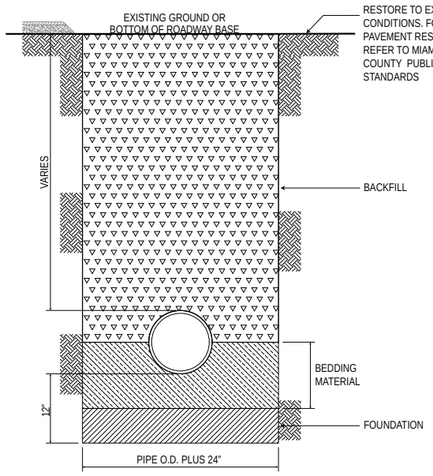
FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT
PLAN AND PROFILE
STA 9+00 TO STA 18+00

PROJECT	DRAWING NUMBER	REV
412398-5WWRRCW-3611		B
CODE		
AREA		



PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

Know what's below. Call before you dig. 811

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 2 OF 19

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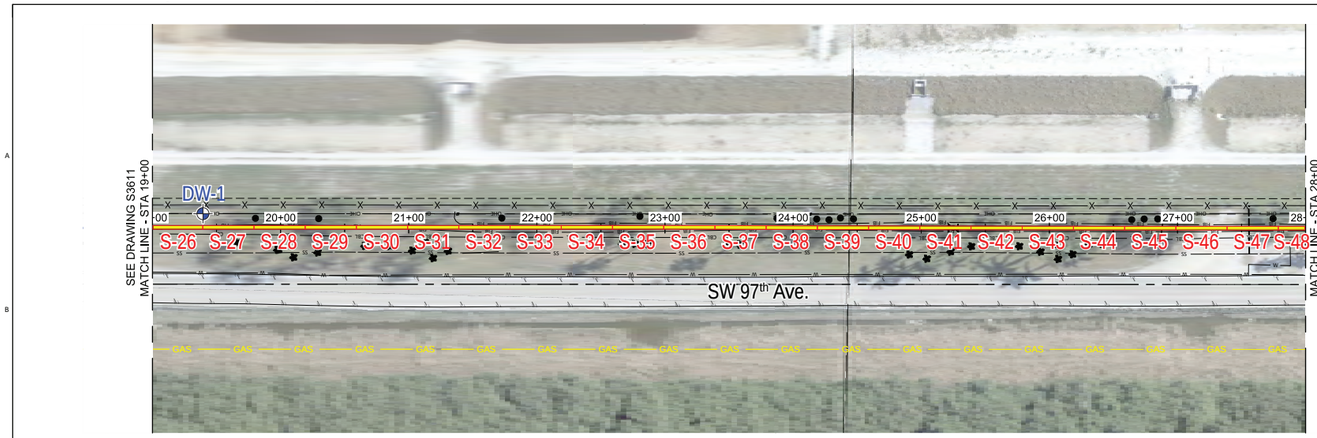

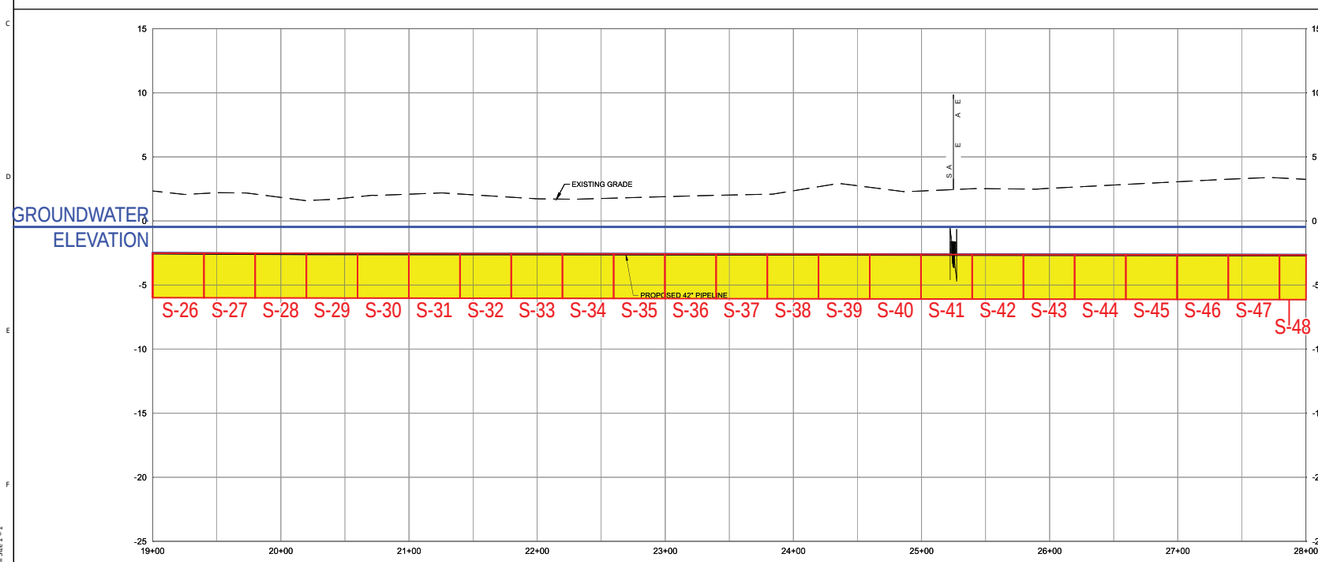

40' 20' 0 40' 80'
HORIZONTAL SCALE 1"=40'

5' 0 5' 10'
VERTICAL SCALE 1"= 5'

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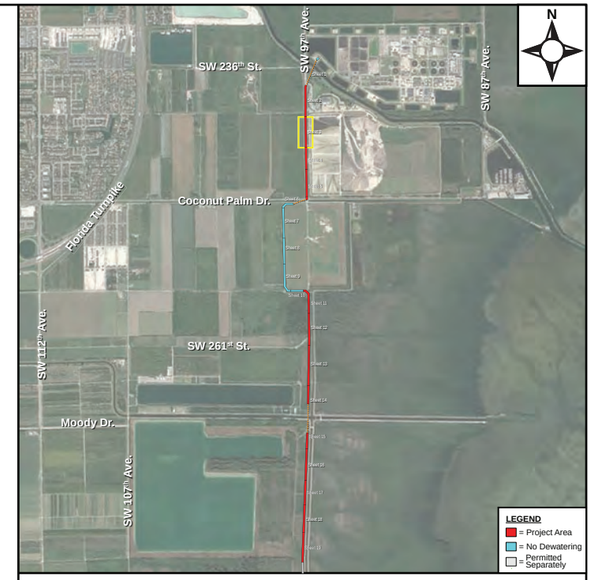
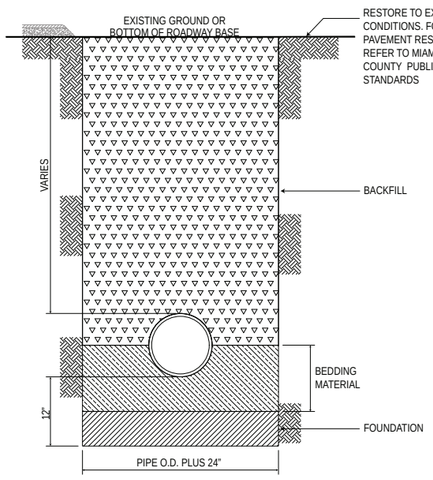
FLORIDA POWER & LIGHT	PROJECT	DRAWING NUMBER	REV
MIAMI-DADE CLEAN WATER RECOVERY CENTER	412398-5WWRRCW-3612		B
OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT PLAN AND PROFILE STA 18+00 TO STA 28+00	CODE		
DESIGNER OL / DRAWN CJG / CHECKED OL / DATE	AREA		

MicroStation v10.15.0.74
Full Size = 1
gls104920
ANSI D 34x22



PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

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PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 3 OF 19

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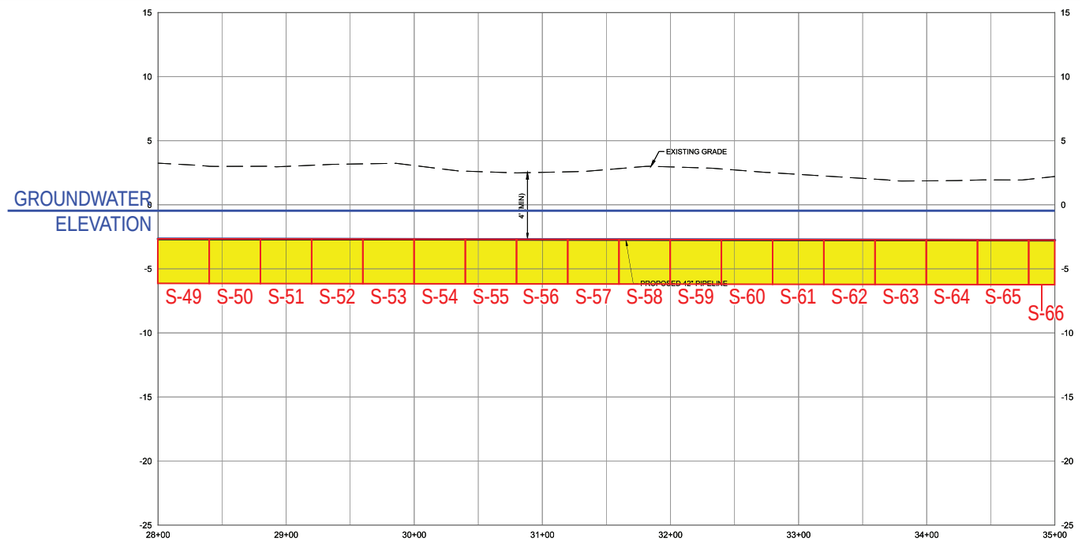

40' 20' 0 40' 80'
HORIZONTAL SCALE 1"=40'

5' 0 5' 10'
VERTICAL SCALE 1"= 5'

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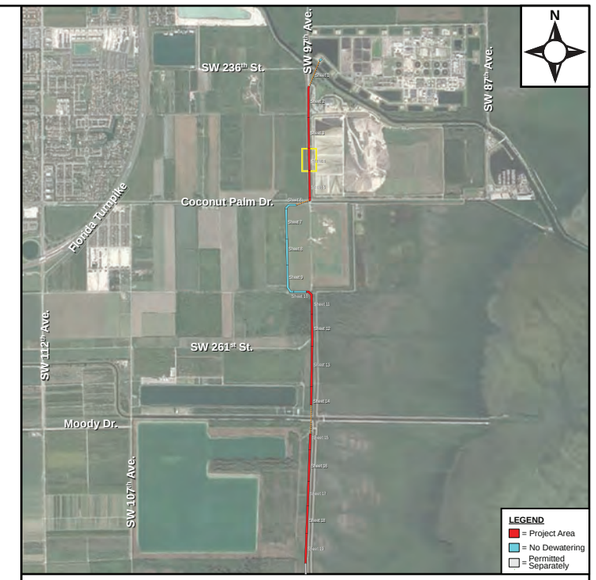
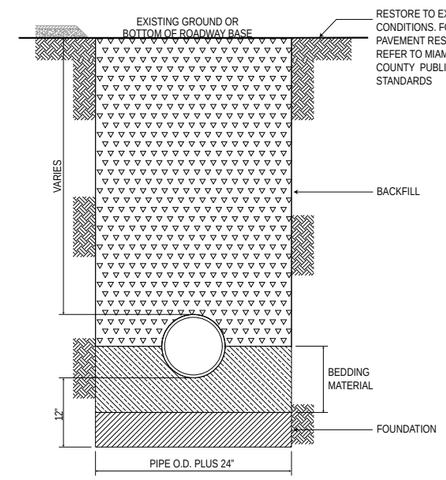
NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP

DESIGNER OL	DRAWN CJG	FLORIDA POWER & LIGHT MIAMI-DADE CLEAN WATER RECOVERY CENTER	PROJECT 412398-5WWRRCW-3613	REV B
CHECKED OL	DATE	OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT PLAN AND PROFILE STA 28+00 TO STA 35+00	CODE AREA	



PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

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PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 4 OF 19

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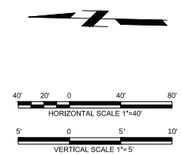

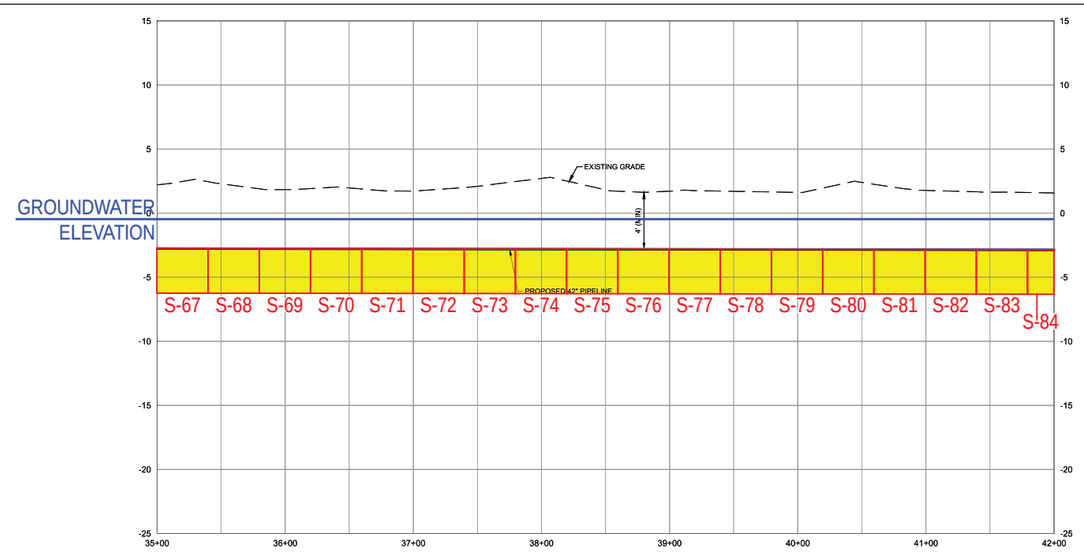

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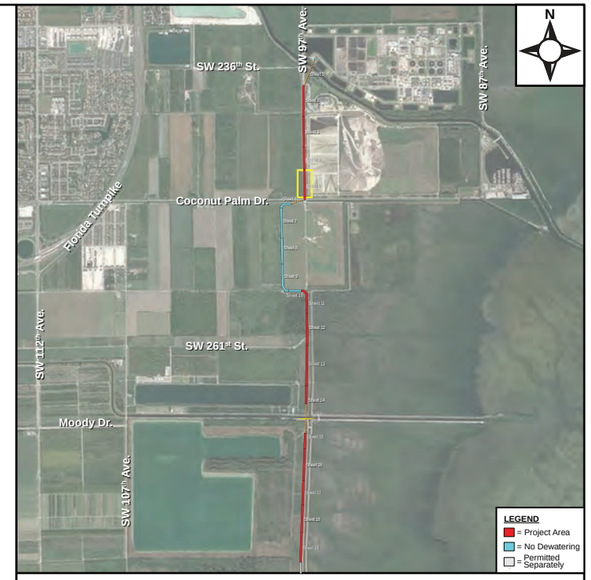
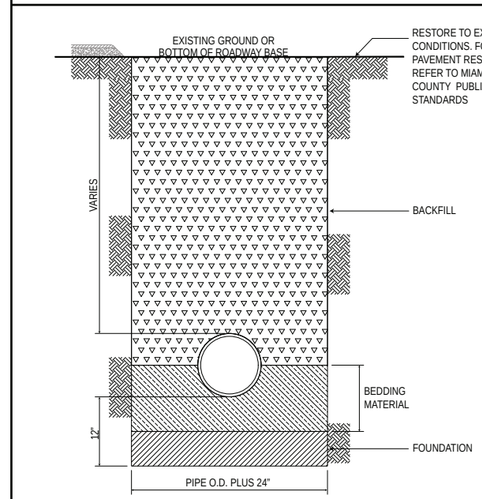
CHECKED OL	DATE	OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT PLAN AND PROFILE STA 35+00 TO STA 42+00	CODE / AREA



PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

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PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 5 OF 19

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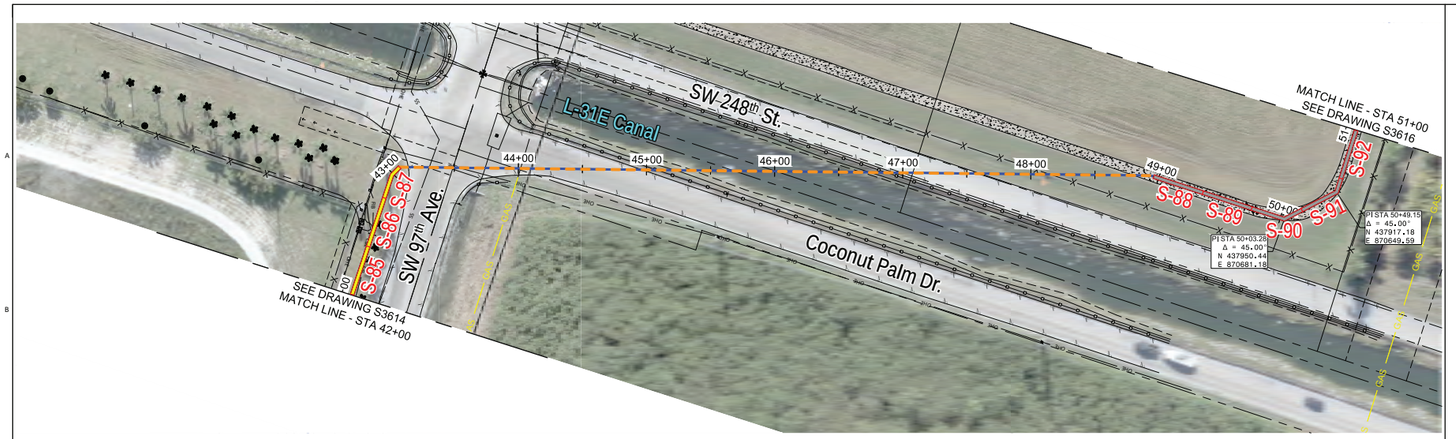

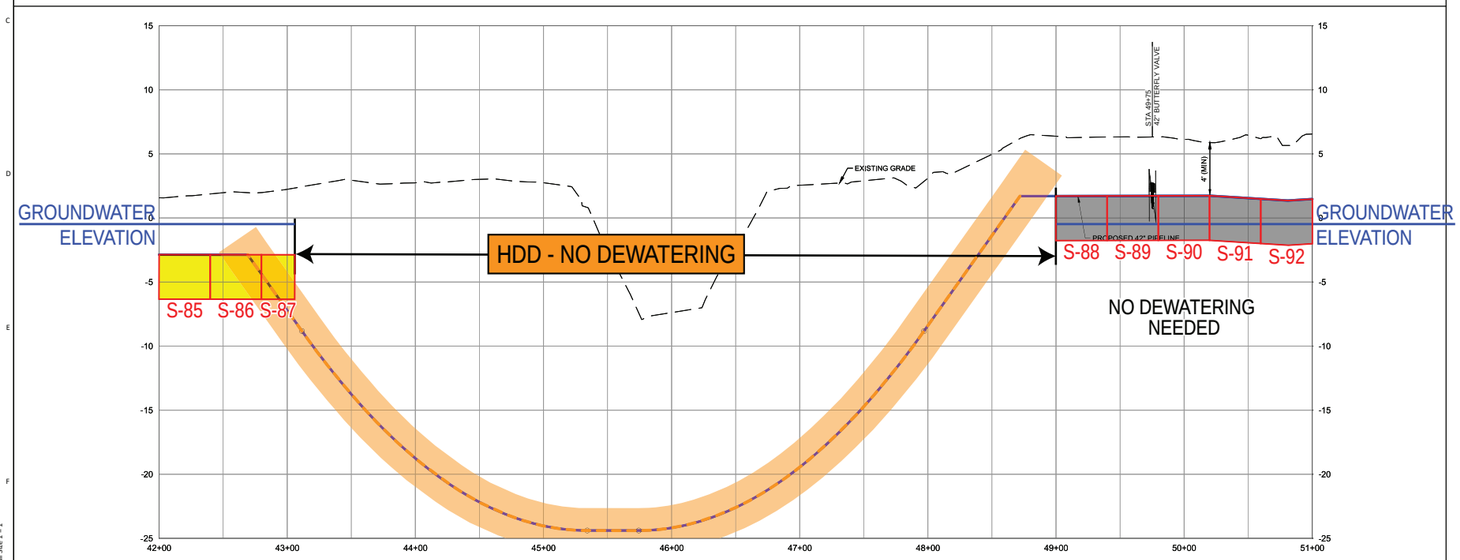

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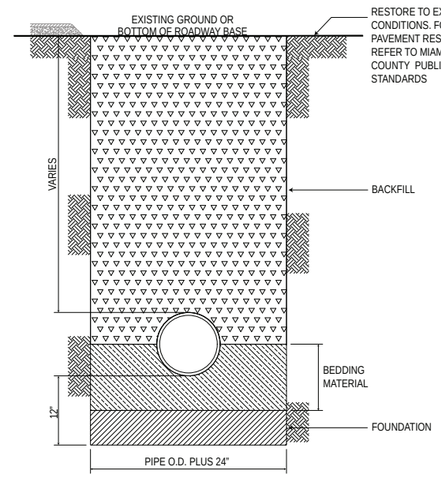
DESIGNER OL	DRAWN CJG	FLORIDA POWER & LIGHT MIAMI-DADE CLEAN WATER RECOVERY CENTER	PROJECT 412398-5WWRRCW-3615 / DRAWING NUMBER / REV B
CHECKED OL	DATE	OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT PLAN AND PROFILE STA 42+00 TO STA 51+00	CODE / AREA

PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

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PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 6 OF 19

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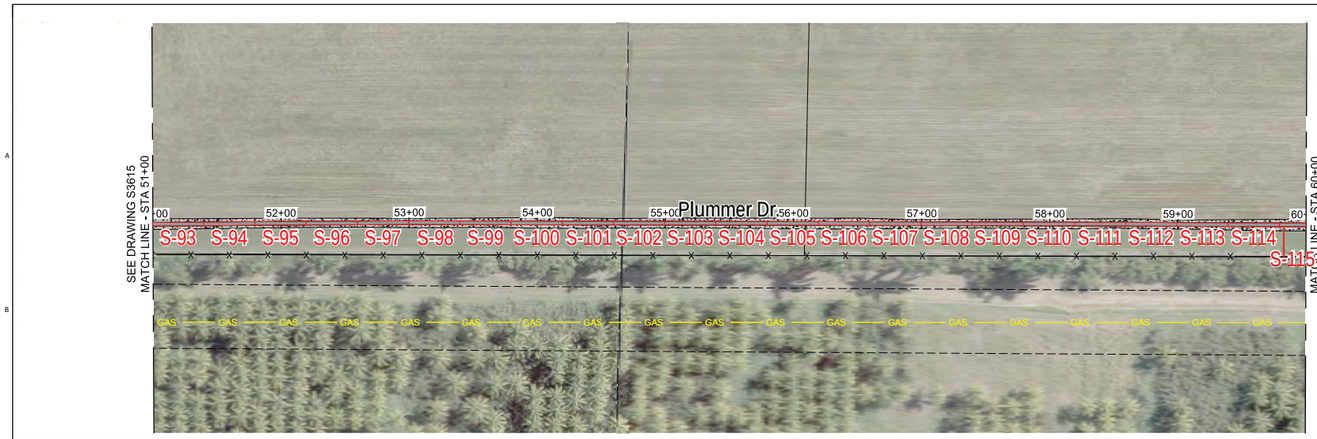

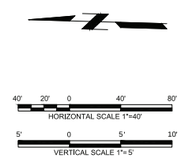

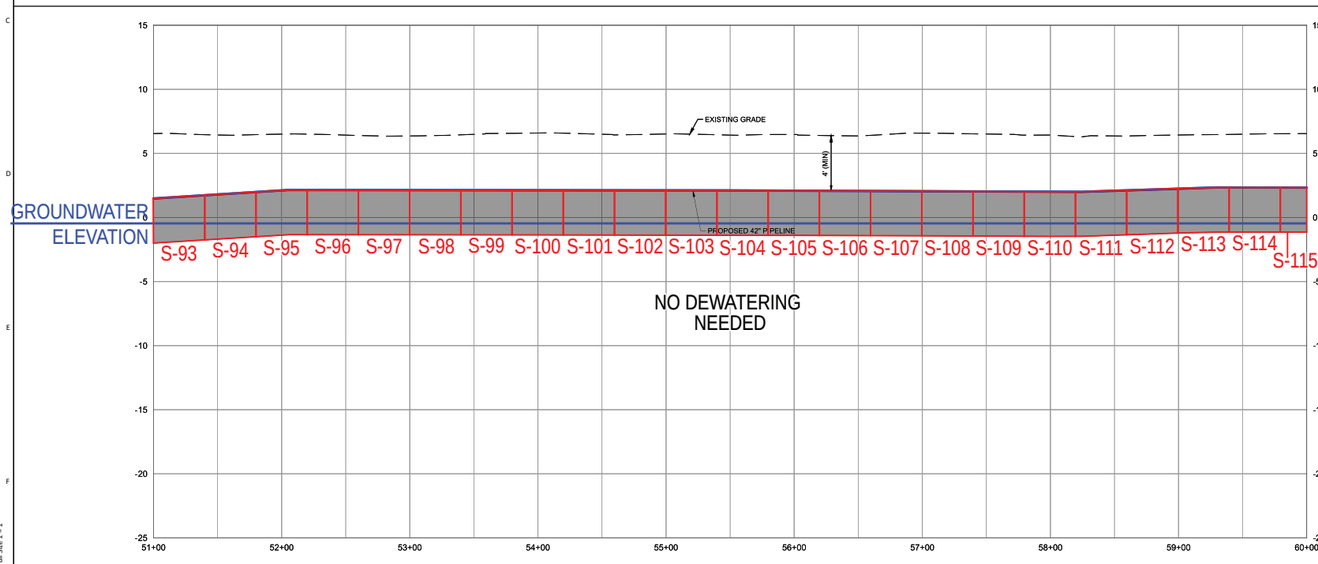

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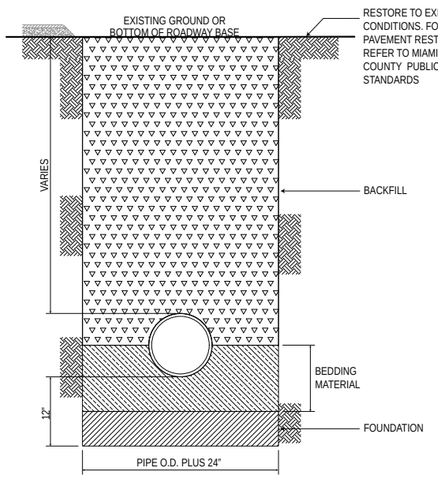
CHECKED OL	DATE	OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT PLAN AND PROFILE STA 51+00 TO STA 60+00	CODE / AREA

PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 7 OF 19

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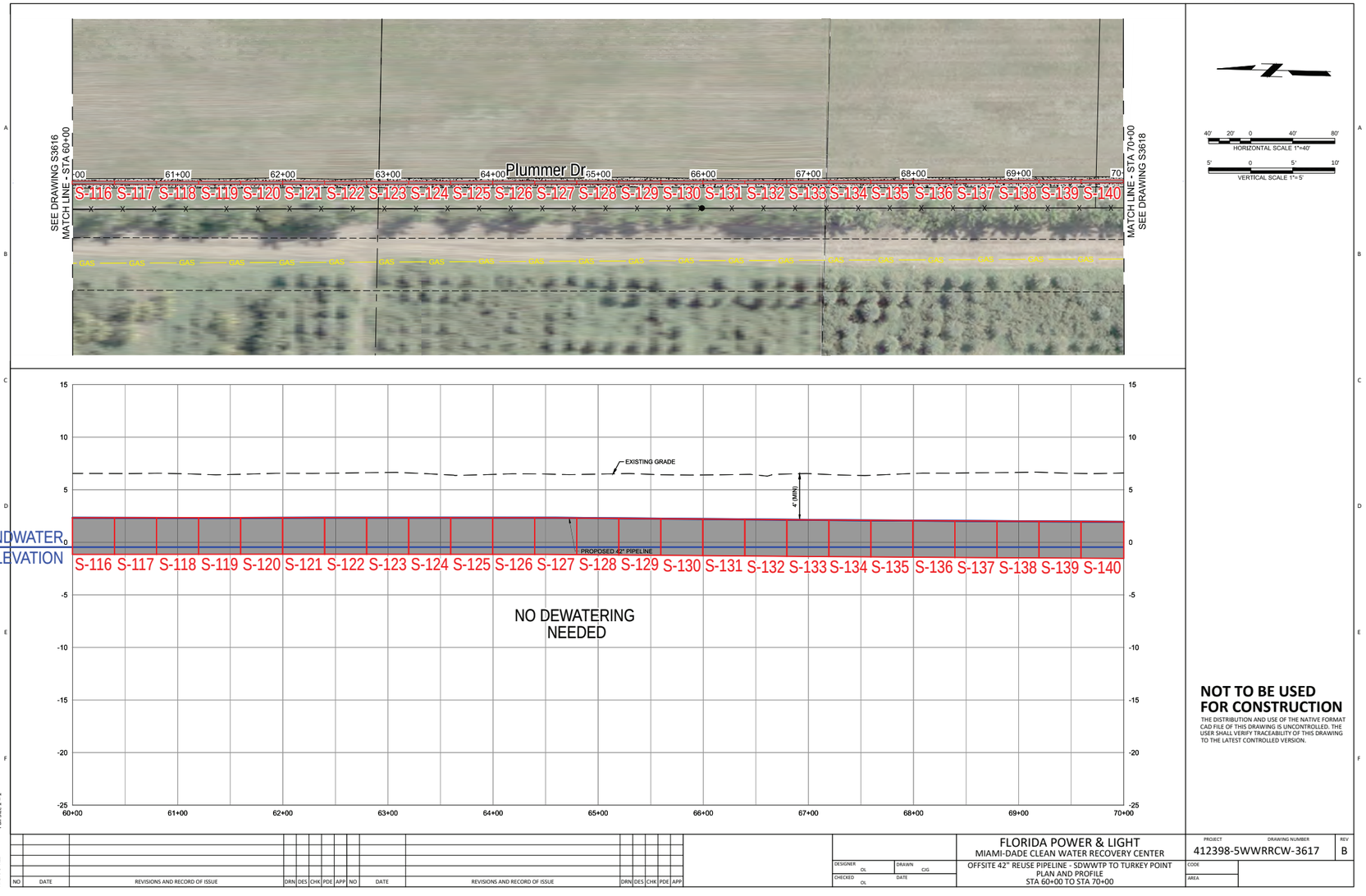

40' 20' 0 40' 80'
HORIZONTAL SCALE 1"=40'

5' 0 5' 10'
VERTICAL SCALE 1"= 5'

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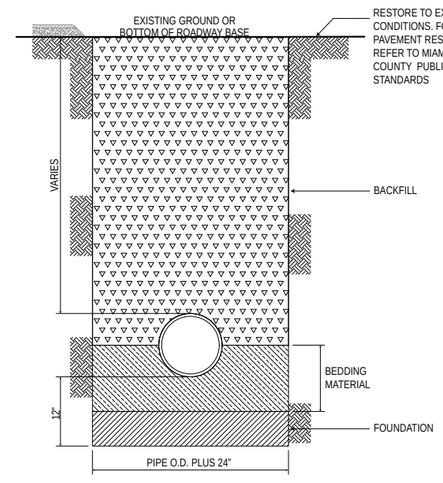
DESIGNER OL	DRAWN CJG	FLORIDA POWER & LIGHT MIAMI-DADE CLEAN WATER RECOVERY CENTER	PROJECT 412398-5WWRRCW-3617 / DRAWING NUMBER / REV B
CHECKED OL	DATE	OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT PLAN AND PROFILE STA 60+00 TO STA 70+00	CODE AREA

PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

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PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 8 OF 19

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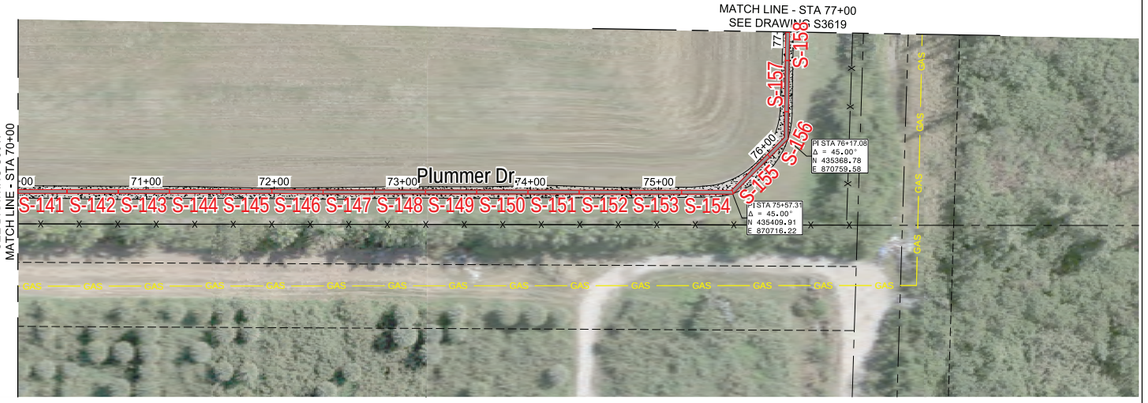
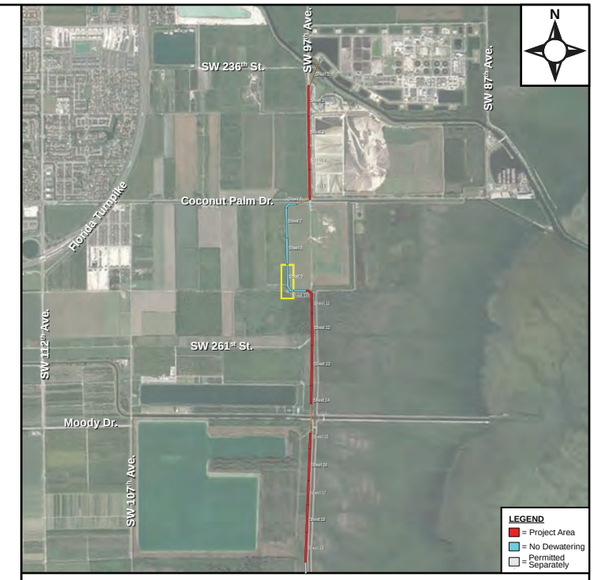
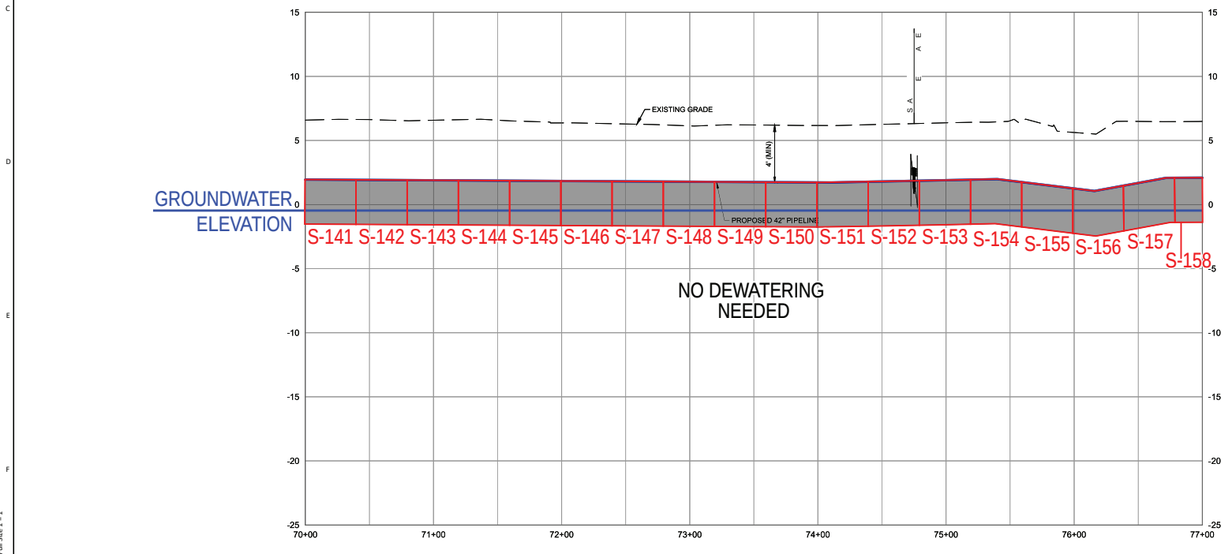
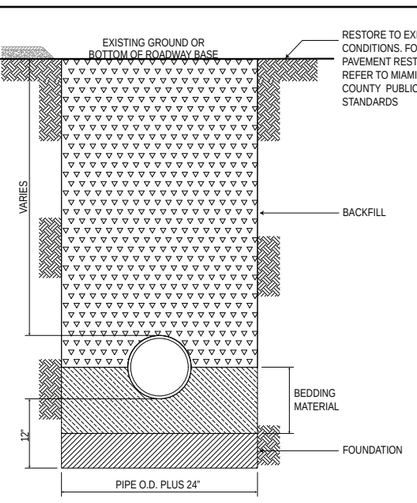




PROJECT LOCATION MAP





TYPICAL TRENCH DETAIL

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FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT
PLAN AND PROFILE
STA 70+00 TO STA 77+00

DESIGNER OL | DRAWN CJG | CHECKED OL | DATE

PROJECT 412398-5WWRRCW-3618 | DRAWING NUMBER | REV B | CODE | AREA

MicroStation v10.15.0.74
Full Size 1 = 1
gal104920
A80 D 14x22

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

811 Know what's below. Call before you dig.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 9 OF 19

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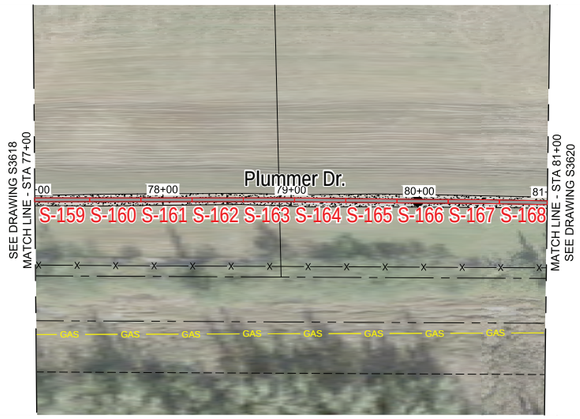

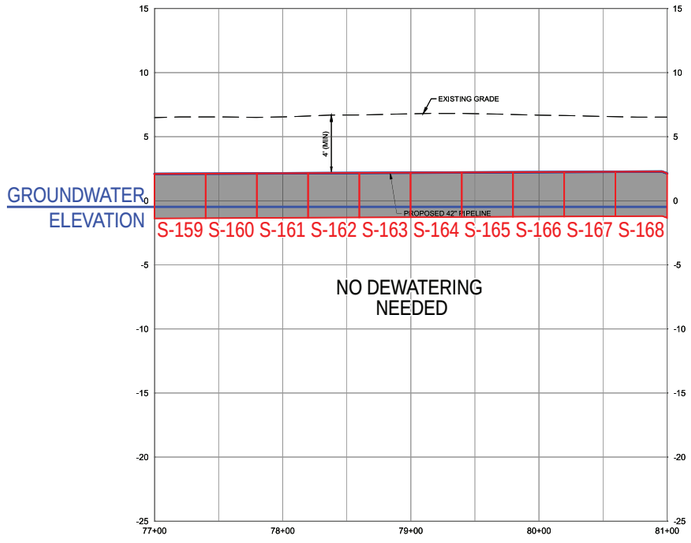

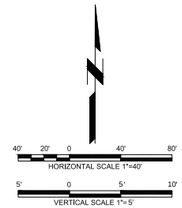

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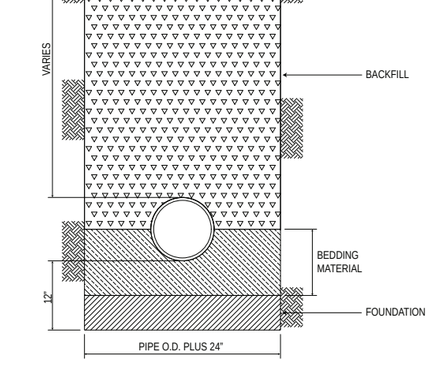
FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT
PLAN AND PROFILE
STA 77+00 TO STA 81+00

PROJECT	DRAWING NUMBER	REV
412398-5WWRRCW-3619		B
CODE		
AREA		

PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 10 OF 19

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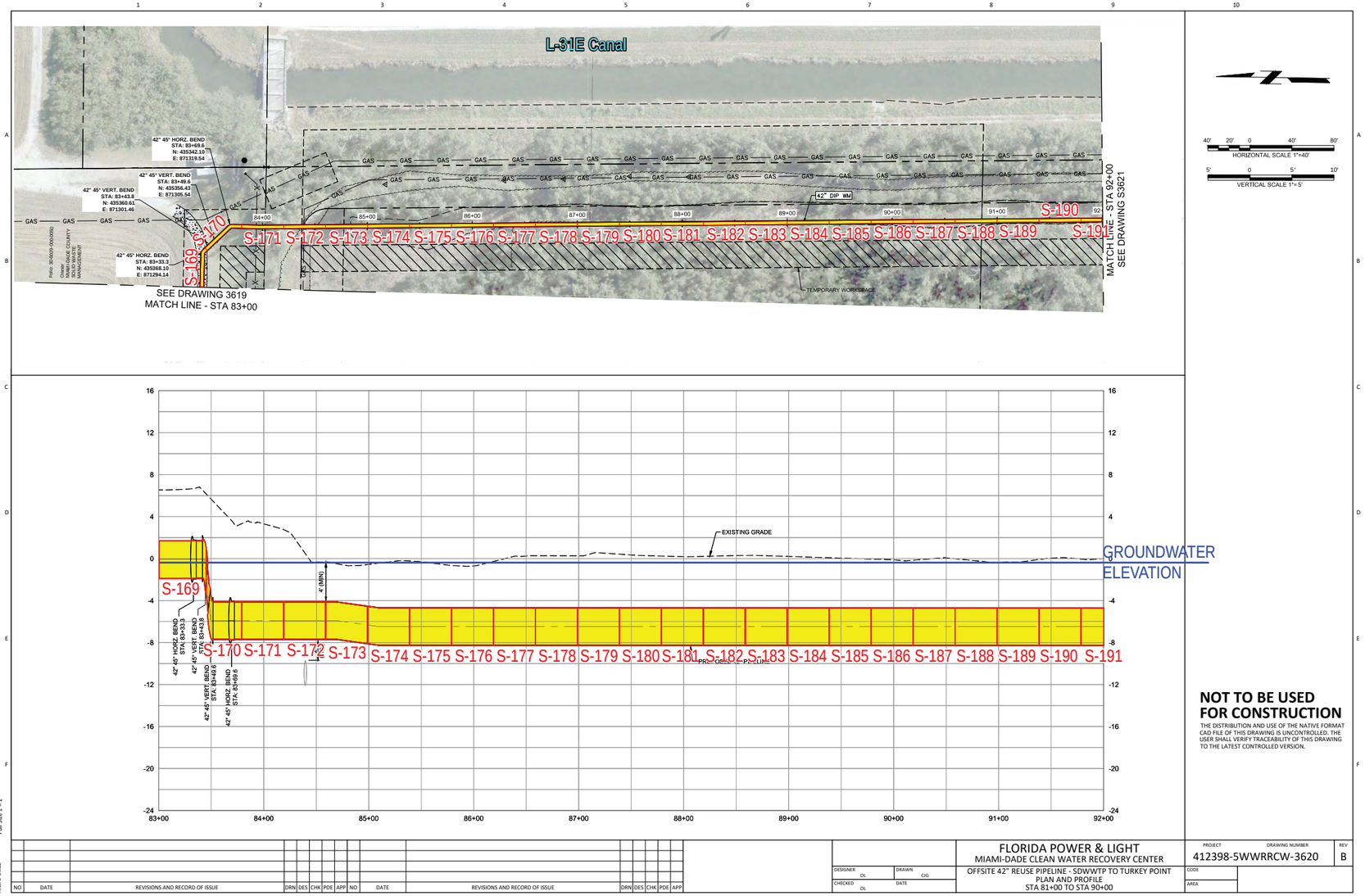
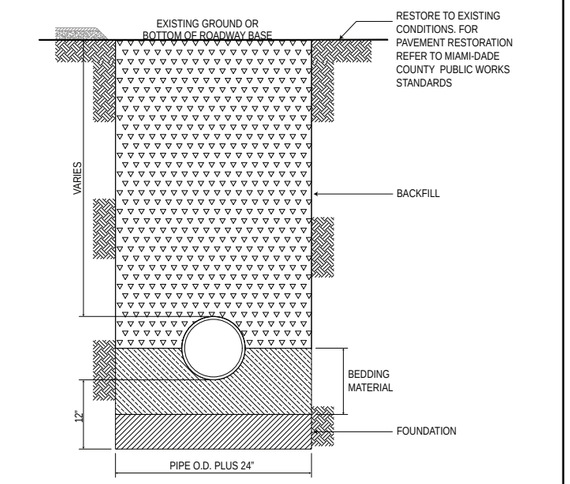


PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

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DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

TIERRA GROUP™ Assured Geoscience Solutions

PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 11 OF 19

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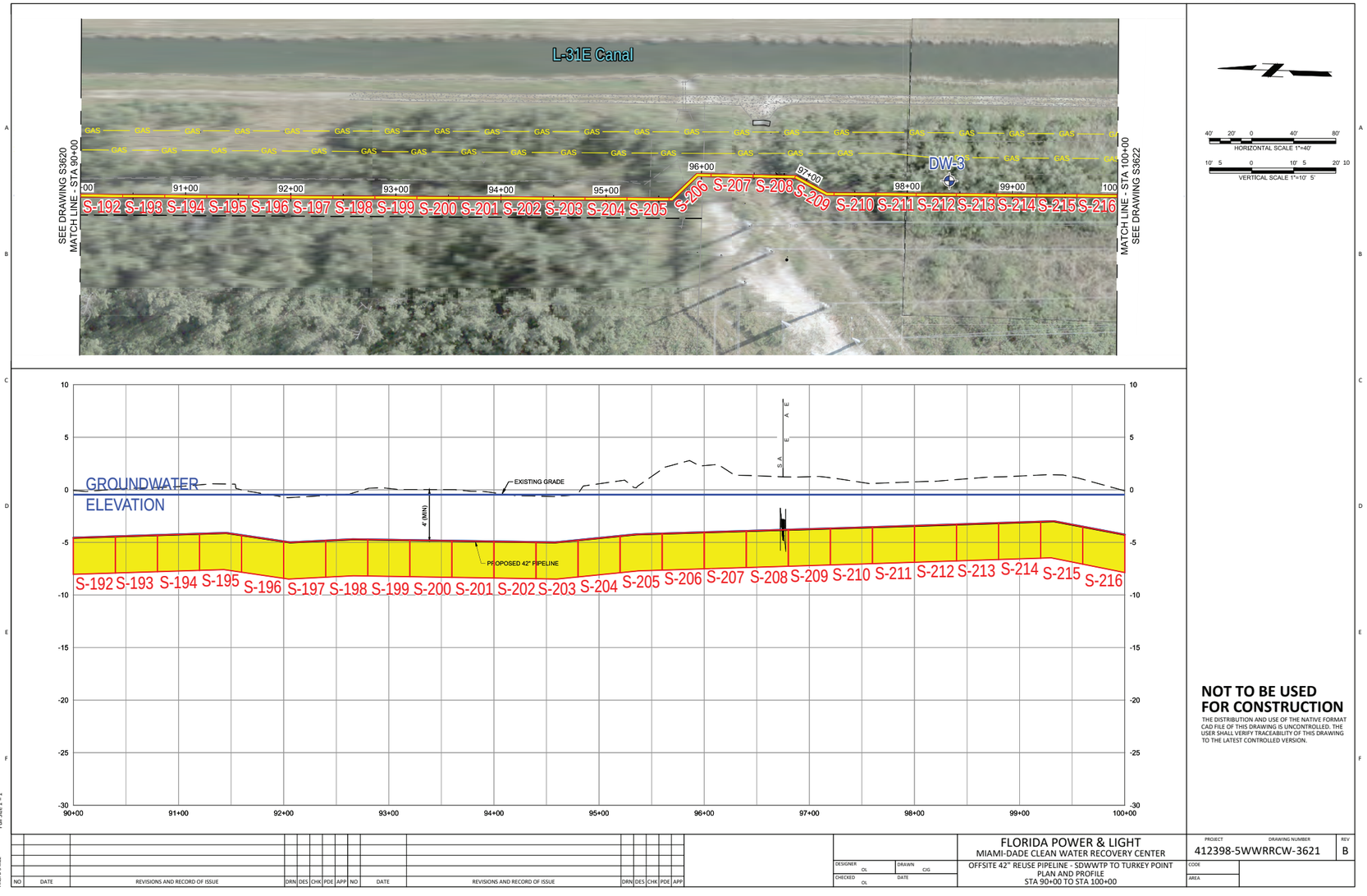

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FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDW/WTP TO TURKEY POINT
PLAN AND PROFILE
STA 90+00 TO STA 100+00

DESIGNER OL | DRAWN CJG | CHECKED OL | DATE

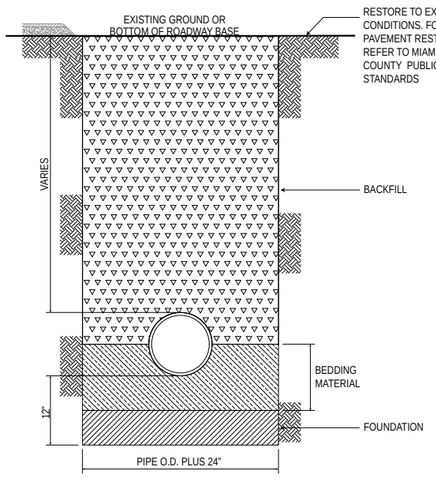
PROJECT 412398-5WWRRCW-3621 | DRAWING NUMBER | REV B | CODE | AREA

MicroStation v10.15.0.74 Full Size 1 = 1

g8104920 AMD 03-Aug-22

PW 7/19/2023 11:06:28 PM

PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

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DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

TIERRA GROUP™ Assured Geoscience Solutions

PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 12 OF 19

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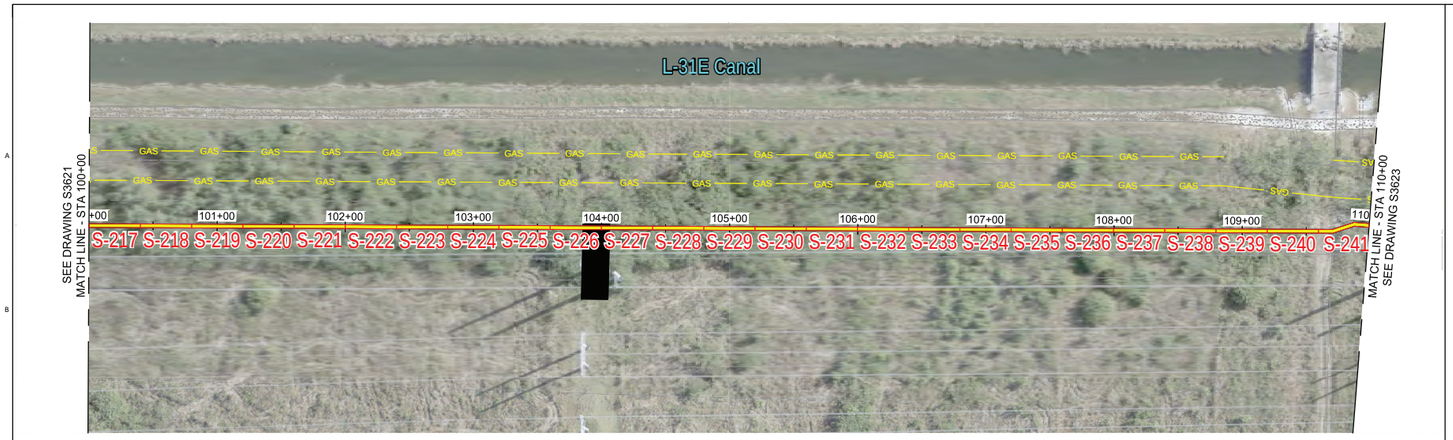

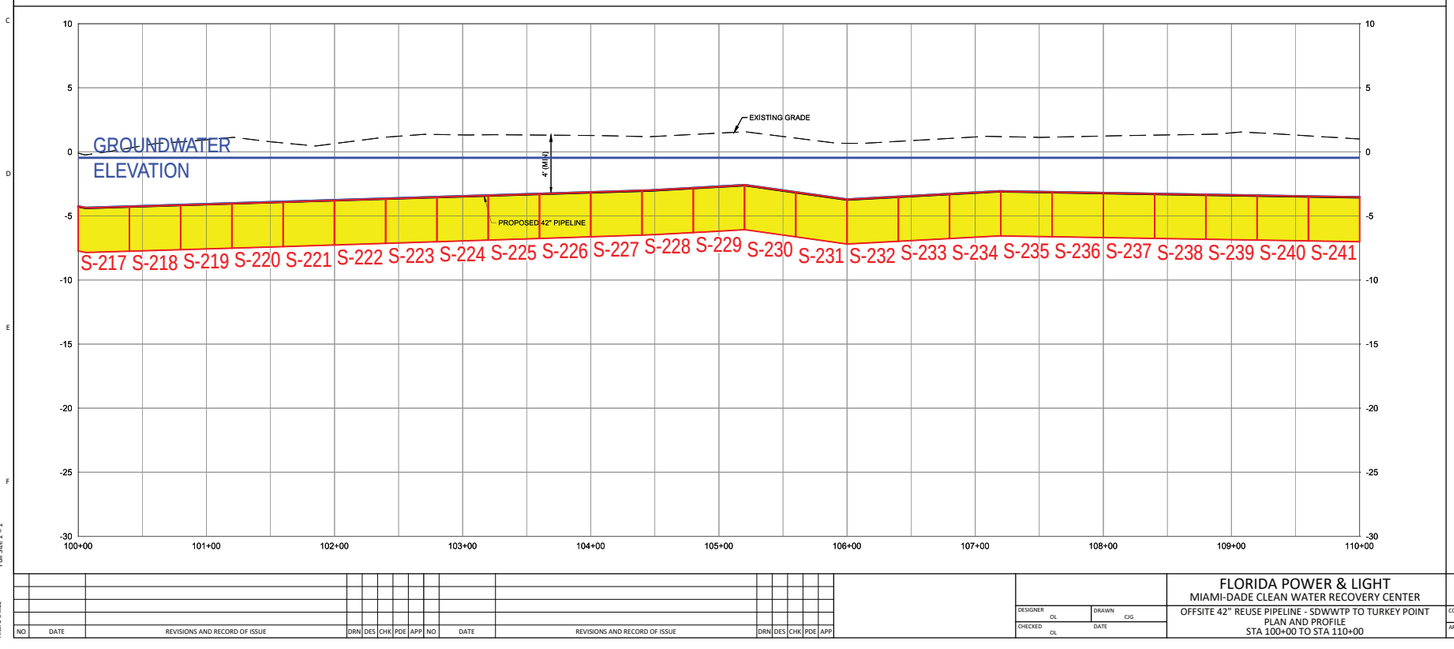

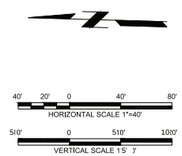

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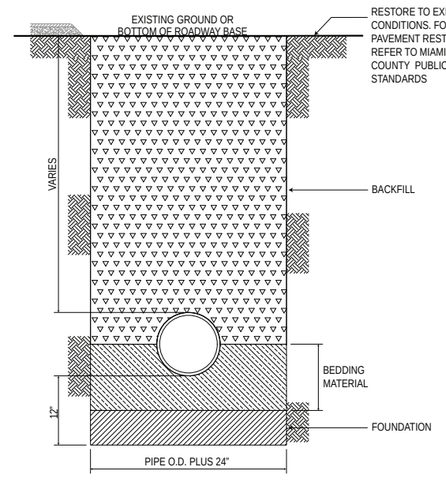
OL	CJG
CHECKED	DATE
OL	

FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDW/WTP TO TURKEY POINT
PLAN AND PROFILE
STA 100+00 TO STA 110+00

PROJECT	DRAWING NUMBER	REV
412398-5WWRRCW-3622		B
CODE		
AREA		

PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

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DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

TIERRA GROUP™ Assured Geoscience Solutions

PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 13 OF 19

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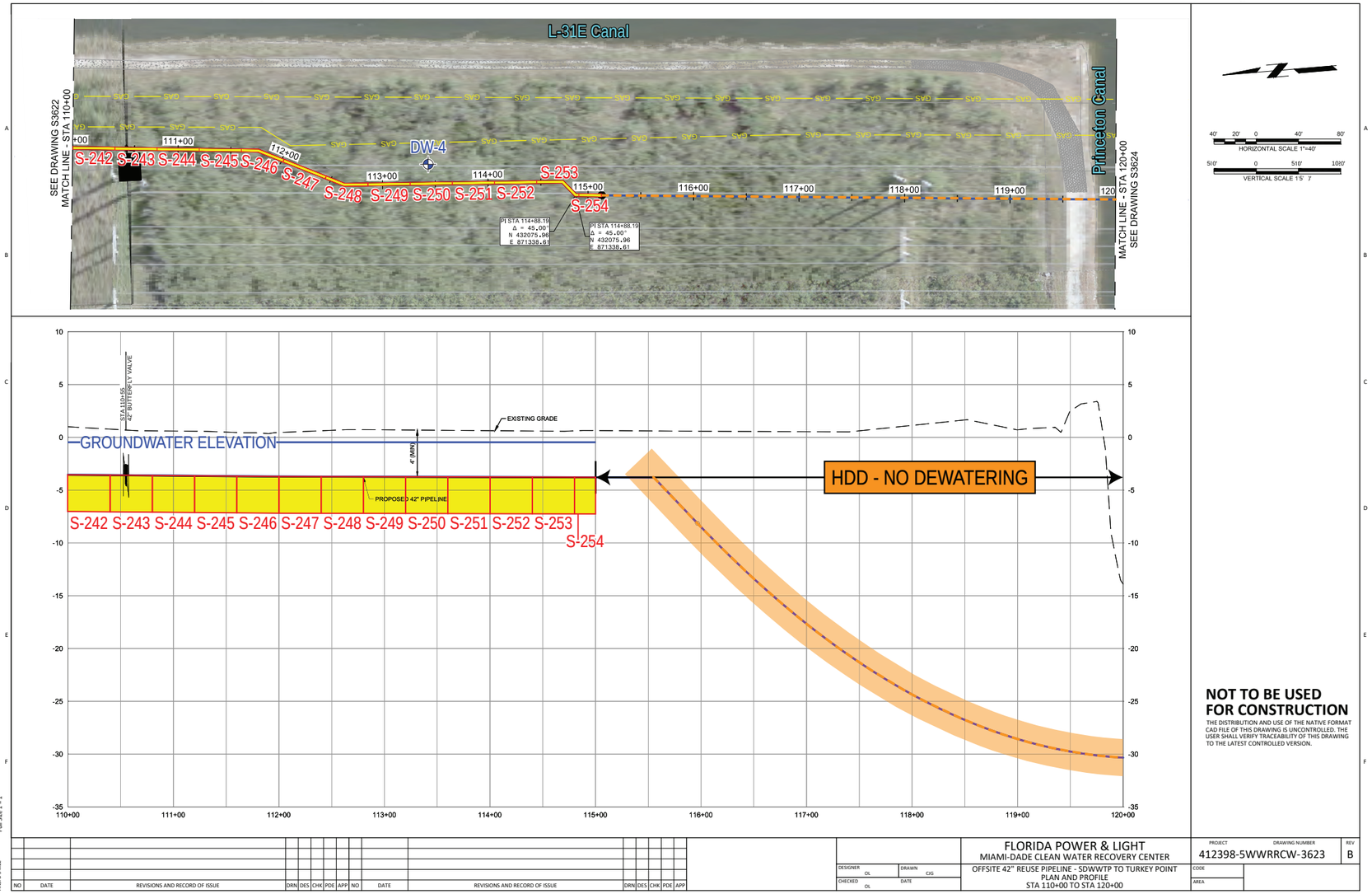

HORIZONTAL SCALE 1"=40'

VERTICAL SCALE 1"5' 7'

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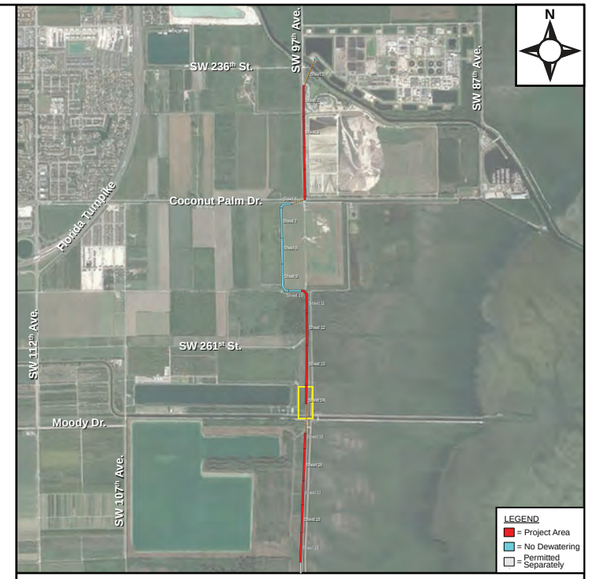
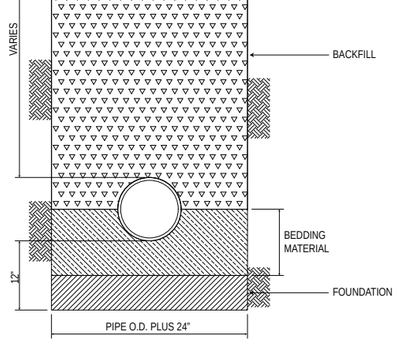
FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT
PLAN AND PROFILE
STA 110+00 TO STA 120+00

PROJECT 412398-5WWRRCW-3623 | DRAWING NUMBER | REV B



PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 14 OF 19

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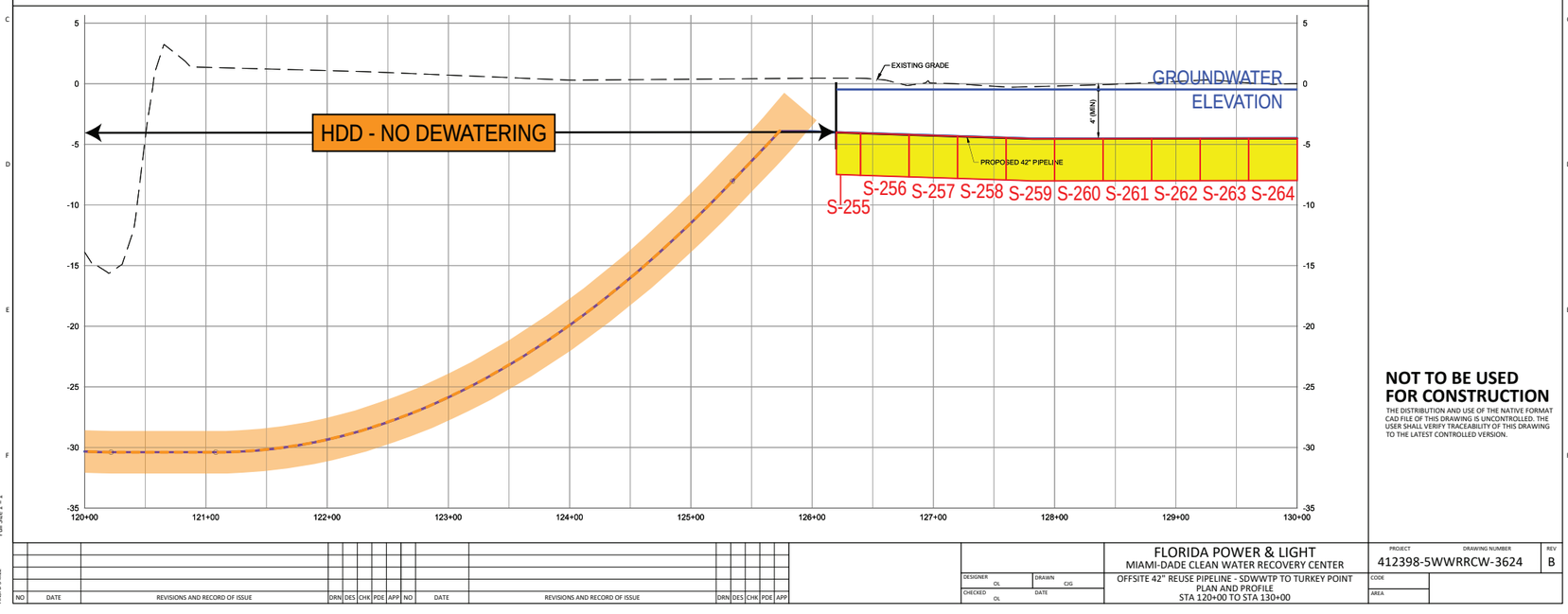

HORIZONTAL SCALE 1"=40'

VERTICAL SCALE 1"5' 1"

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AMD 0 14x22

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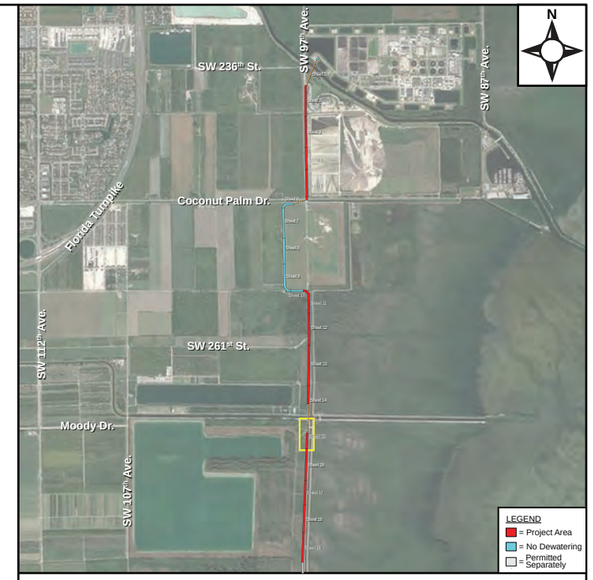
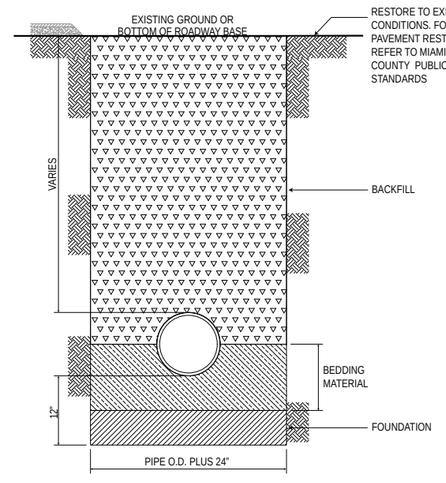
OL	CJG
CHECKED	DATE
OL	

FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDW/WTP TO TURKEY POINT
PLAN AND PROFILE
STA 120+00 TO STA 130+00

PROJECT	DRAWING NUMBER	REV
412398-5WWRRCW-3624		B
CODE		
AREA		



PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

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PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 15 OF 19

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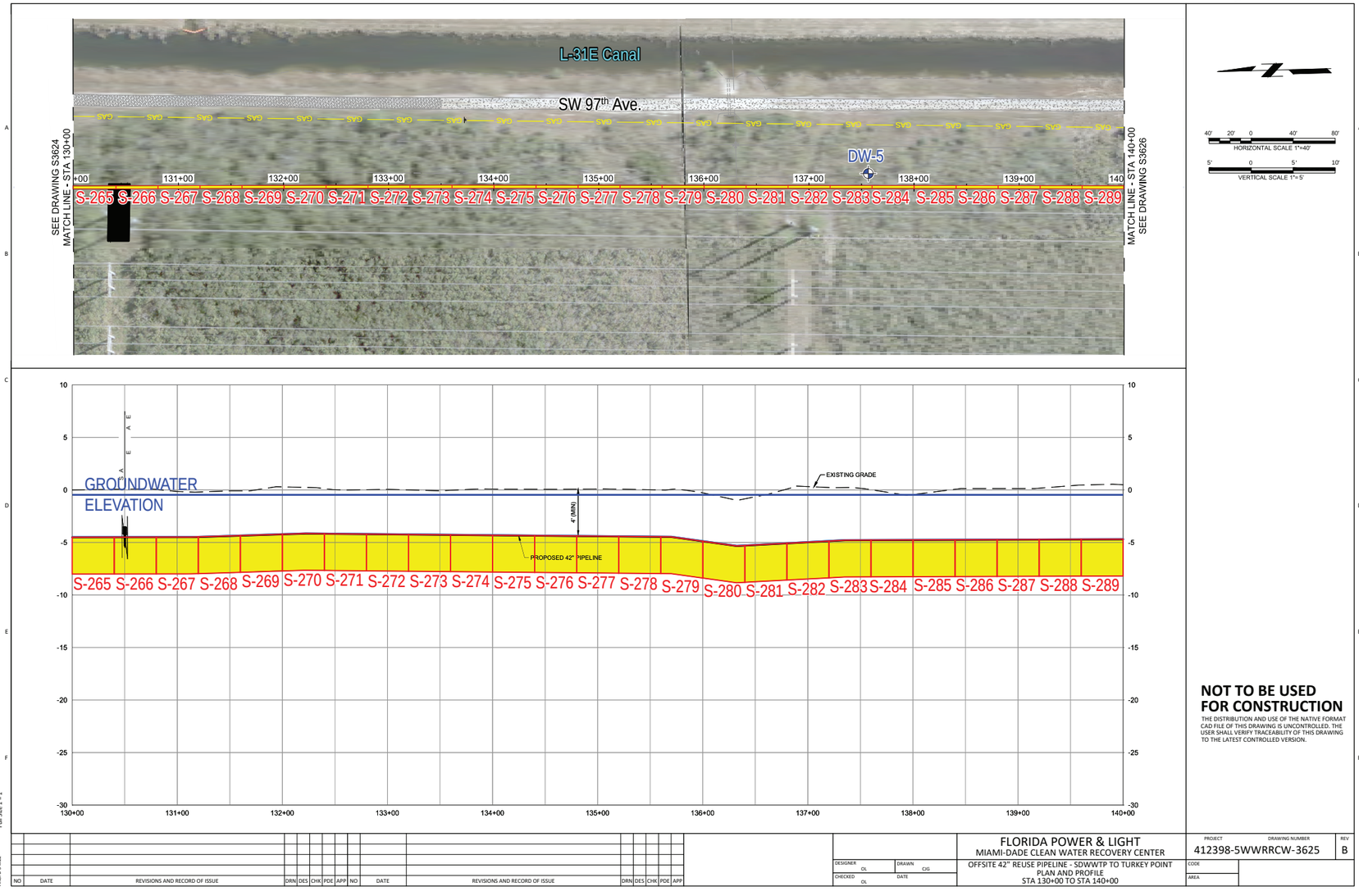

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HORIZONTAL SCALE 1"=40'

5' 0 5' 10'
VERTICAL SCALE 1"= 5'

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AM0 0 14x22

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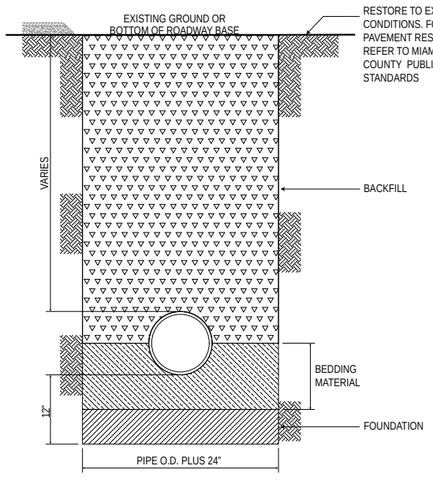
DESIGNER	DRAWN
OL	CJG
CHECKED	DATE
OL	

FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT
PLAN AND PROFILE
STA 130+00 TO STA 140+00

PROJECT	DRAWING NUMBER	REV
412398-5WWRRCW-3625		B
CODE		
AREA		

PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

811 Know what's below. Call before you dig.

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 16 OF 19

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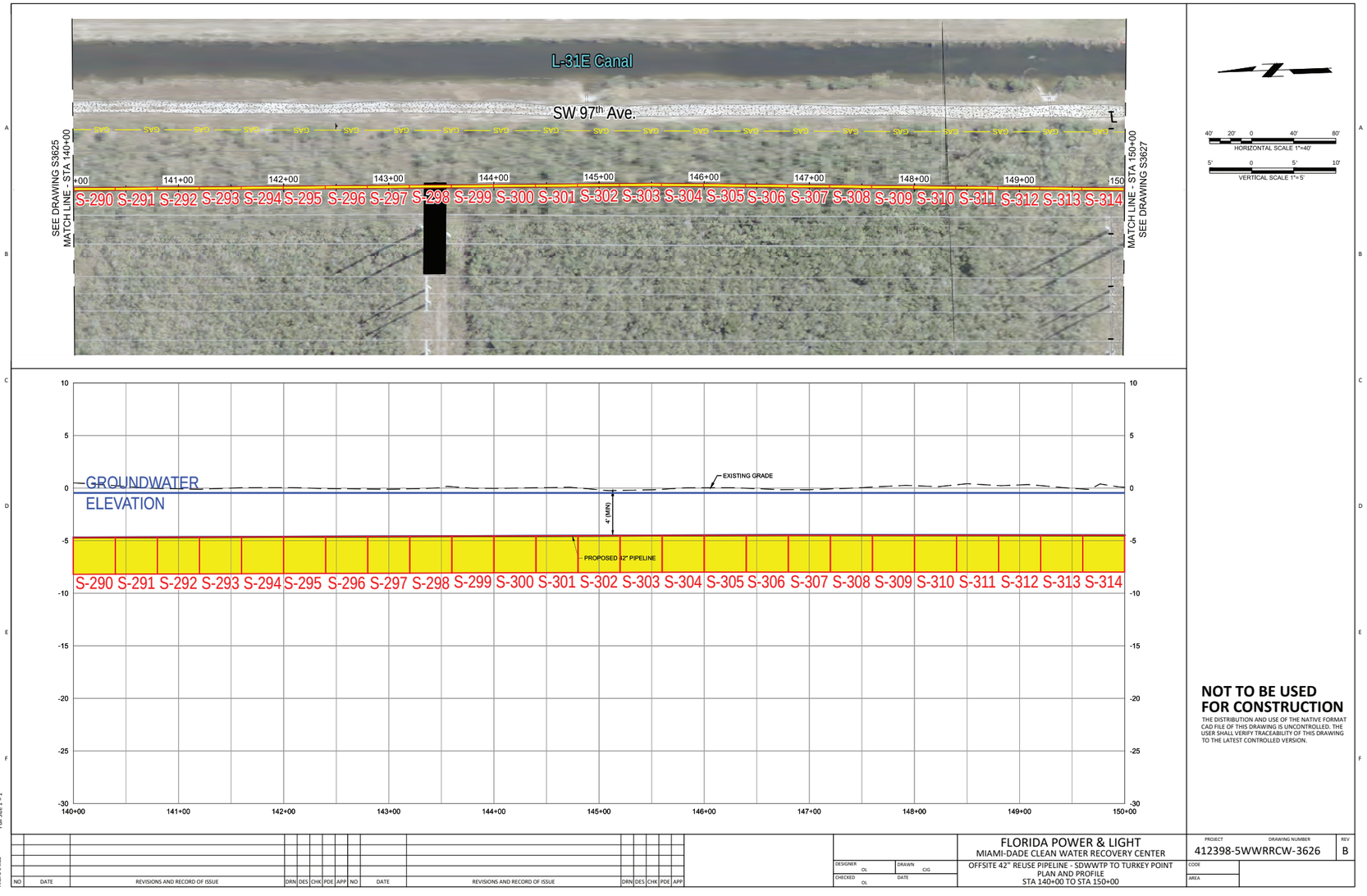

40' 20' 0 40' 80'
HORIZONTAL SCALE 1"=40'

5' 0 5' 10'
VERTICAL SCALE 1"= 5'

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DRAWN	CJG
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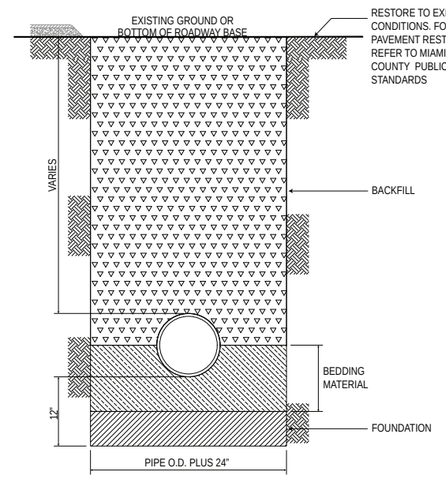
DATE	

FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDW/WTP TO TURKEY POINT
PLAN AND PROFILE
STA 140+00 TO STA 150+00

PROJECT	DRAWING NUMBER	REV
412398-5WWRRCW-3626		B
CODE		
AREA		

PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

811 Know what's below. Call before you dig.

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 17 OF 19

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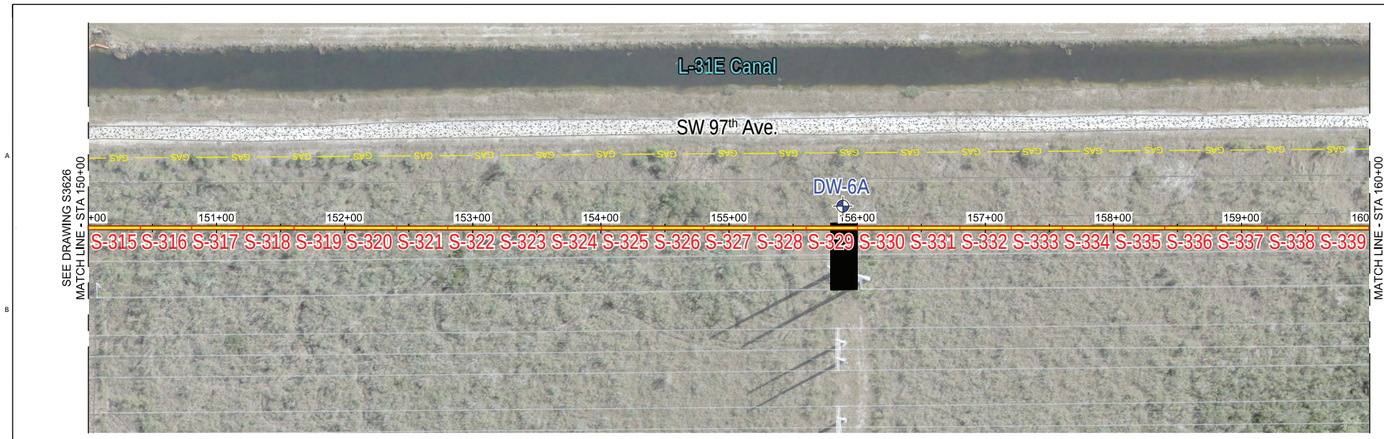

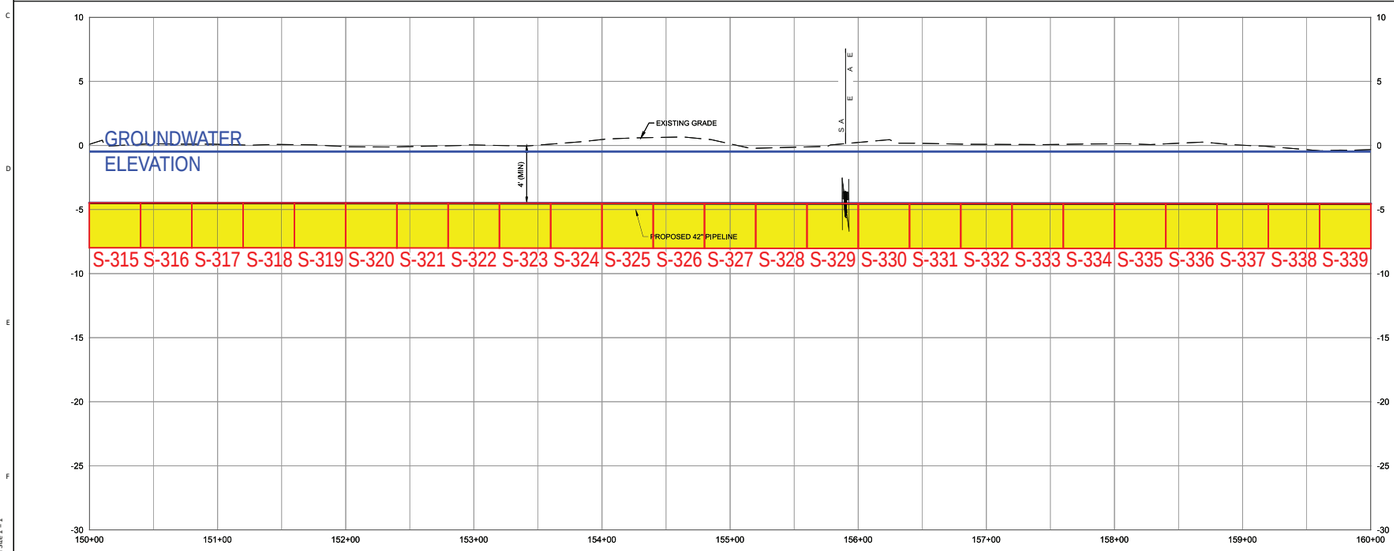

40' 20' 0 40' 80'
HORIZONTAL SCALE 1"=40'

5' 0 5' 10'
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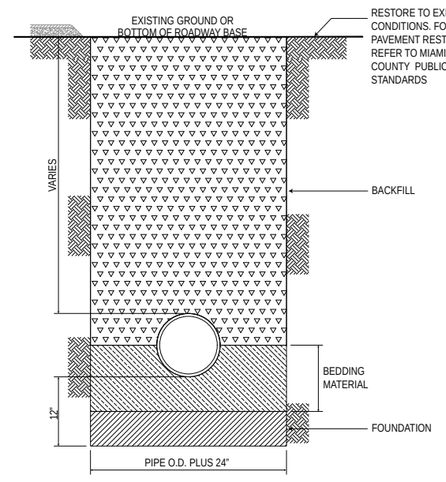
FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDW/WTP TO TURKEY POINT
PLAN AND PROFILE
STA 150+00 TO STA 160+00

PROJECT	DRAWING NUMBER	REV
412398-5WWRRCW-3627		B
CODE		
AREA		

PROJECT LOCATION MAP



TYPICAL TRENCH DETAIL

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PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 18 OF 19

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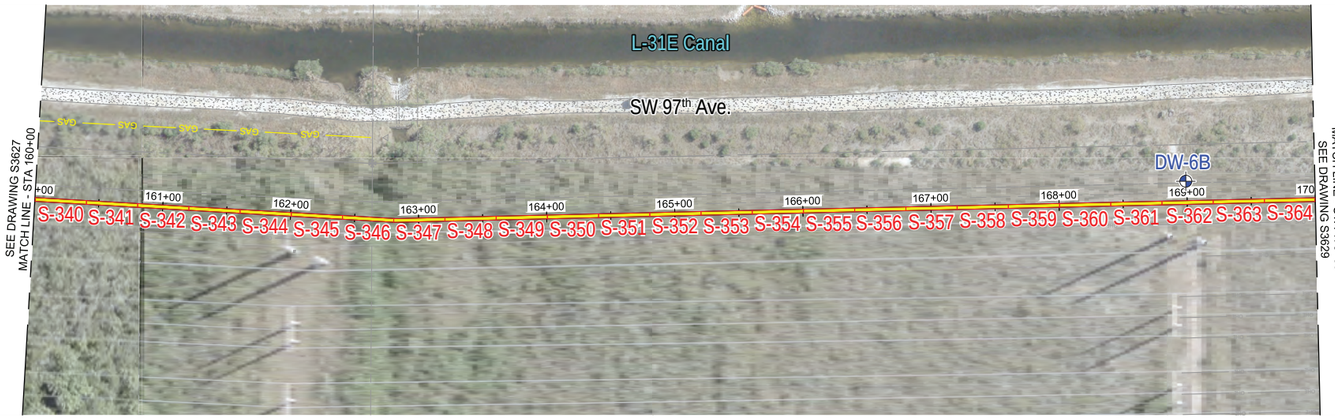
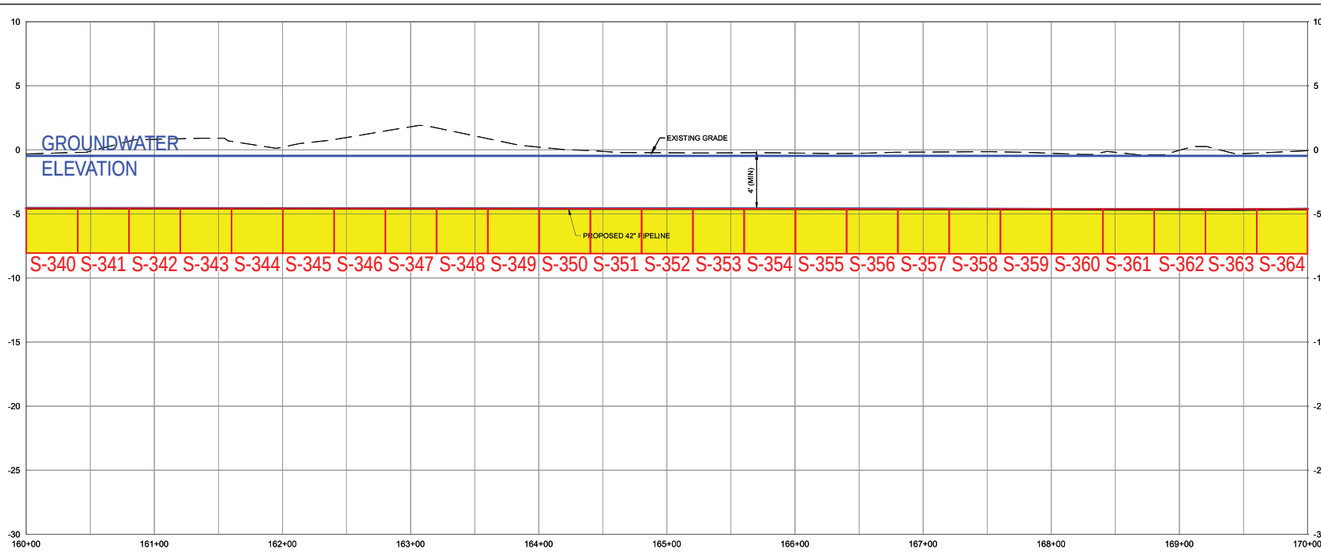
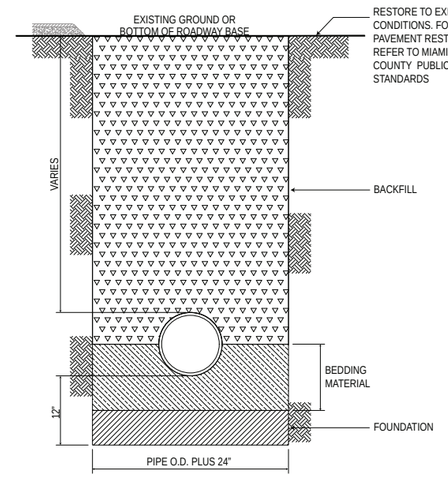




PROJECT LOCATION MAP



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FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDW/WTP TO TURKEY POINT
PLAN AND PROFILE
STA 160+00 TO STA 170+00

PROJECT: 412398-5WWRRCW-3628 | DRAWING NUMBER | REV: B
CODE
AREA

MicroStation v10.15.0.74
Full Size 1 = 1
gb3104520
AMD 03-Mar-22

PROJECT GENERAL NOTES: Maximum Daily Pumpage: 303,312 US Gallons/day Maximum Dewatering Depth: -8.9' NAVD

DEWATERING SAFETY NOTE: FINAL PLACEMENT OF TEMPORARY WEIR TANKS, WELLS, PUMP SYSTEM, AND HOSE ROUTING IS ALWAYS SUBJECT TO UTILITY CONFLICT AND SUBSURFACE GEOLOGY. LOCATE/SOFT DIGGING ARE REQUIRED TO ENSURE SAFE INSTALLATION AND OPERATION OF SYSTEM AND COMPLIANCE WITH OTHER SITE SAFETY CONSIDERATIONS.

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PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
FIGURE 2 - DEWATERING PLAN	PROJECT NO. 18374-B	DRAWN BY: LS 7/18/23	SHEET 19 OF 19

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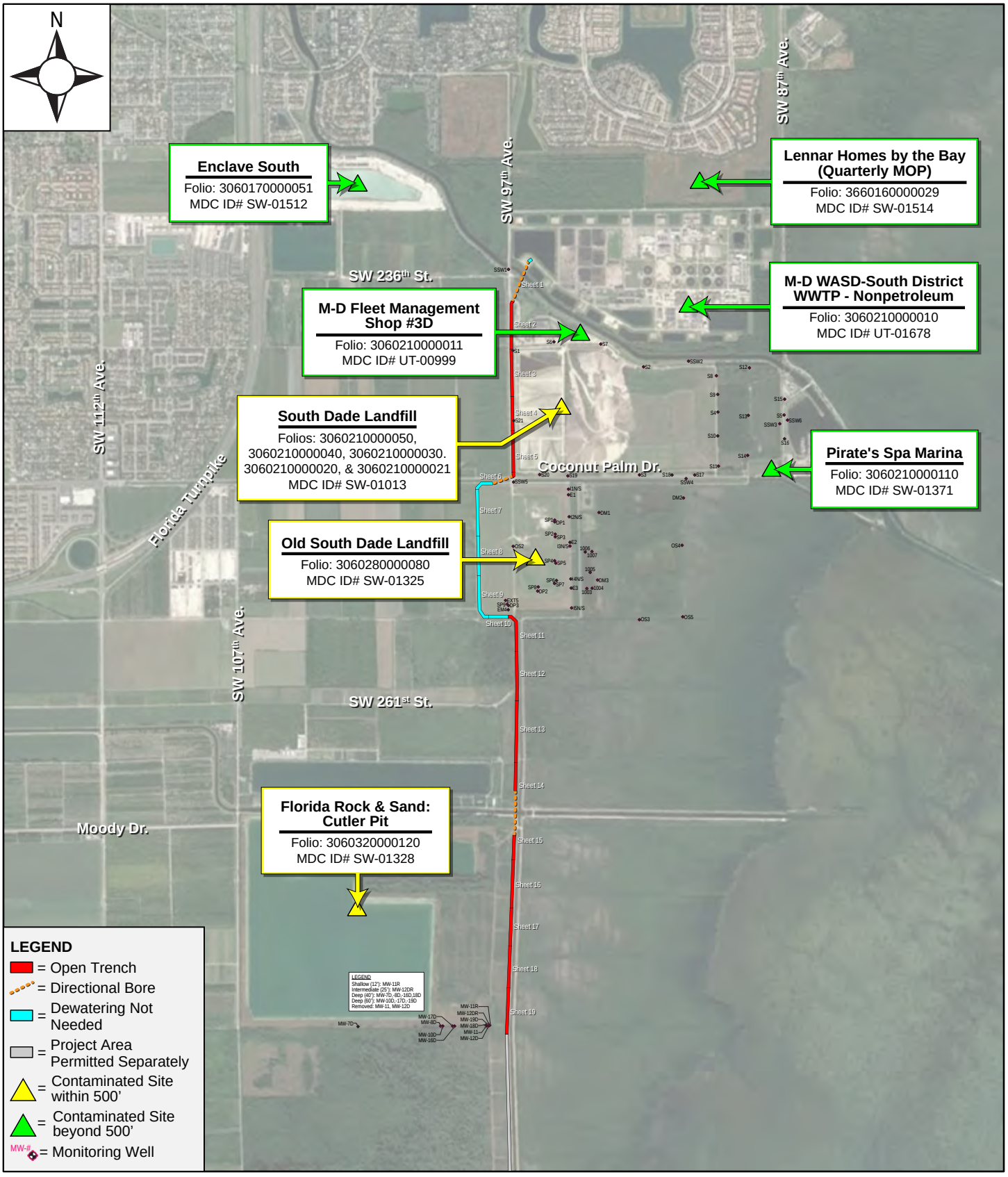

TIERRA GROUP™ Assured Geoscience Solutions	PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
	FIGURE 3 - CONTAMINATION MAP	SCALE: APPROX. 1" = 0.5 Mile 0' 1,320' 2,640'	DATE: 7/18/2023	DRAWN BY: LS

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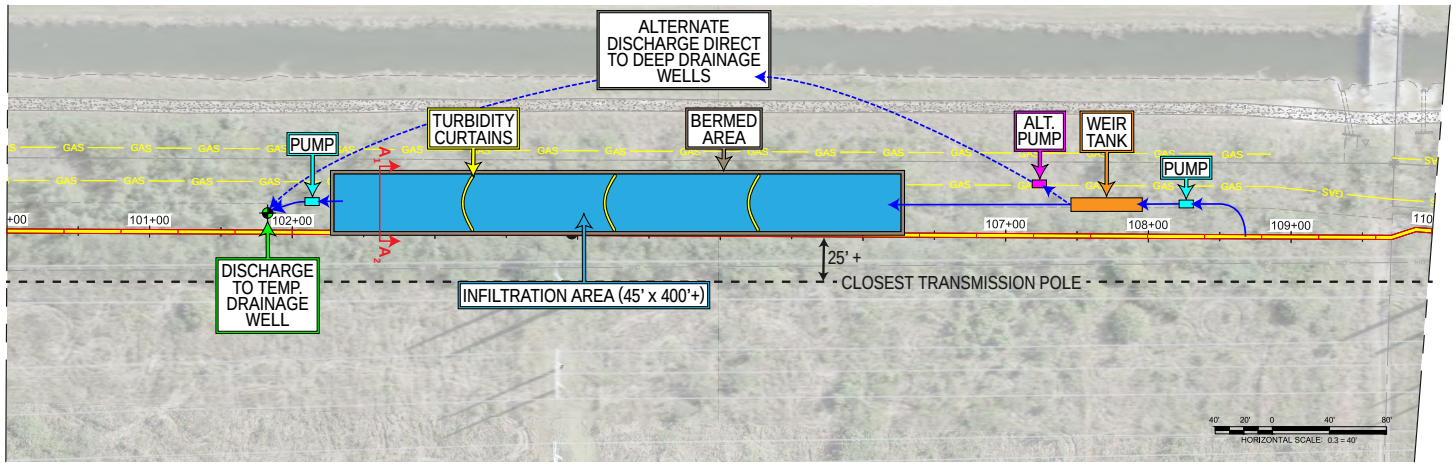

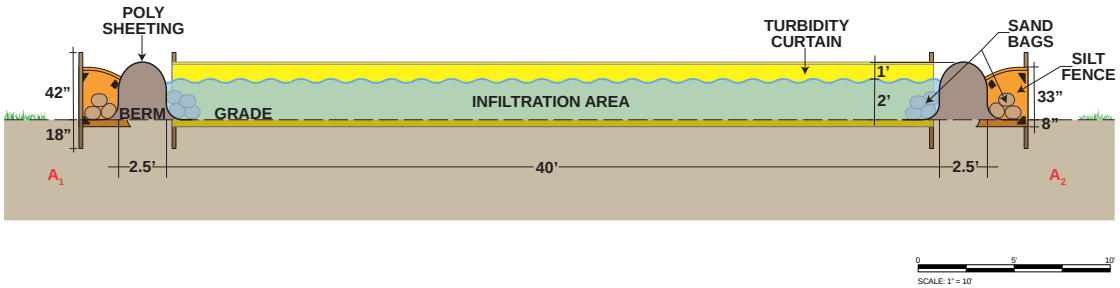

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FLORIDA POWER & LIGHT
MIAMI-DADE CLEAN WATER RECOVERY CENTER
OFFSITE 42" REUSE PIPELINE - SDWWTP TO TURKEY POINT
PLAN AND PROFILE
STA 100+00 TO STA 110+00

PROJECT: 412398-5WWRRCW-3622 | DRAWING NUMBER | REV: B
CODE
AREA

TIERRA GROUP™ Assured Geoscience Solutions	PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2	CLIENT: GIANNETTI CONTRACTING CORP.		SHEET 1 OF 1
	FIGURE 4 - TYPICAL SYSTEM LAYOUT	SCALE: AS INDICATED	DATE: 8/1/2023	DRAWN BY: LS

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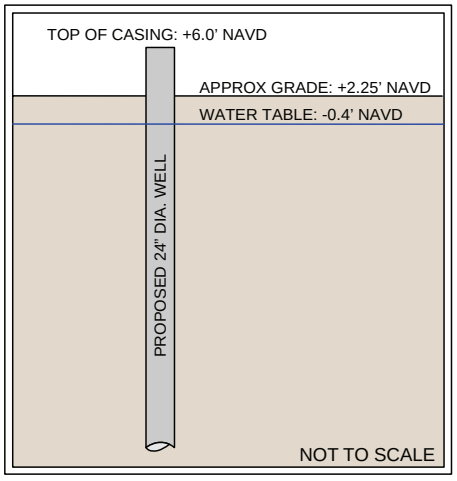
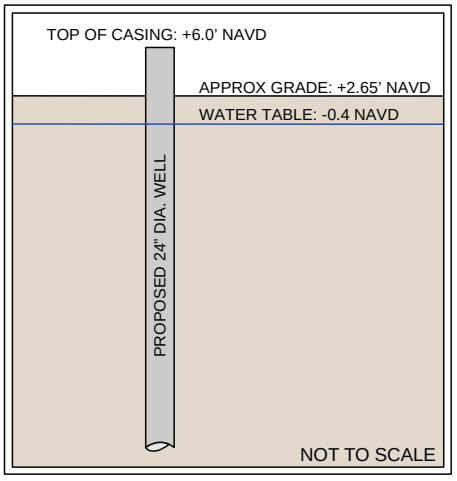
PROPOSED TEMPORARY DEWATERING WELLS

NAME	LATITUDE	LONGITUDE	PROPOSED TOTAL DEPTH	PROPOSED CASING DEPTH	WELL DIAMETER
DW-1	25°32'38.60" N	80°20'51.20" W	106' +/-	56' +/-	24"
DW-2	25°32'25.45" N	80°20'50.63" W	106' +/-	56' +/-	24"

DW-1 DETAIL



DW-2 DETAIL



TEMPORARY DEWATERING WELL CAPACITY CALCULATIONS

	DW-1	DW-2
AVAILABLE HEAD	6 - (-0.4 + 1.0*) = 5.4 FT	6 - (-0.4 + 1.0*) = 5.4 FT
DESIGN-SPECIFIC CAPACITY	495 GPM/FT	495 GPM/FT
ESTIMATED CAPACITY	5.4 FT x 495 GPM = 2,673 GPM	5.4 FT x 495 GPM = 2,673 GPM
CAPACITY W/ SAFETY FACTOR	2,673 GPM / 1.5 = 1,782 GPM PER WELL	2,673 GPM / 1.5 = 1,782 GPM PER WELL
EST. CAPACITY vs. MAX GPM**	1,782 GPM > 515 GPM	1,782 GPM > 515 GPM

*DENSITY CORRECTION

**PER DEWATERING CALCULATIONS (ATTACHMENT A)

TEMPORARY DEWATERING WELL SPECIFICATIONS

CLASS V INJECTION WELL TYPE	GROUP 6 - DRAINAGE WELL FOR TEMPORARY DEWATERING
DISCHARGE TYPE	TEMPORARY DEWATERING DISCHARGE
CASING TYPE	STEEL
MAX. DISCHARGE VOLUME	515 GPM
PROPOSED PRE-TREATMENT	40' x 400' INFILTRATION BASIN AND ONE (1) 18,000 GALLON SEDIMENTATION WEIR TANK

NOTES:
1. DEWATERING WELLS SHALL BE PLUGGED AND ABANDONED WHEN THEY NO LONGER PERFORM THEIR INTENDED PURPOSE.
2. PLUGGING AND ABANDONMENT PLAN SHALL BE SUBMITTED TO FDEP WITH THE CONSTRUCTION PERMIT APPLICATION IN ACCORDANCE WITH CHAPTER 62-528 F.A.C.

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TIERRA GROUP™ Assured Geoscience Solutions	PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
	FIGURE 5 - TEMP. DEWATERING WELL DETAILS	DRAWN BY: LS	DATE: 7/18/2023	SHEET 1 OF 4

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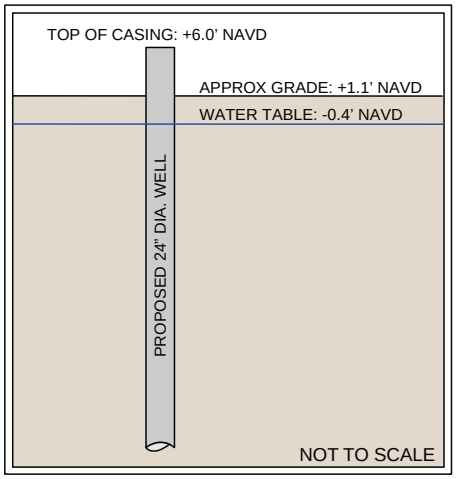
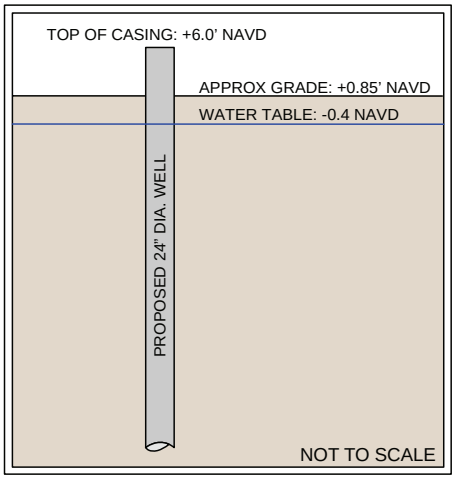
PROPOSED TEMPORARY DEWATERING WELLS

NAME	LATITUDE	LONGITUDE	PROPOSED TOTAL DEPTH	PROPOSED CASING DEPTH	WELL DIAMETER
DW-3	25°31'31.87" N	80°20'50.66" W	106' +/-	56' +/-	24"
DW-4	25°31'16.65" N	80°20'50.66" W	106' +/-	56' +/-	24"

DW-3 DETAIL



DW-4 DETAIL



TEMPORARY DEWATERING WELL CAPACITY CALCULATIONS

	DW-3	DW-4
AVAILABLE HEAD	6 - (-0.4 + 1.0*) = 5.4 FT	6 - (-0.4 + 1.0*) = 5.4 FT
DESIGN-SPECIFIC CAPACITY	495 GPM/FT	495 GPM/FT
ESTIMATED CAPACITY	5.4 FT x 495 GPM = 2,673 GPM	5.4 FT x 495 GPM = 2,673 GPM
CAPACITY W/ SAFETY FACTOR	2,673 GPM / 1.5 = 1,782 GPM PER WELL	2,673 GPM / 1.5 = 1,782 GPM PER WELL
EST. CAPACITY vs. MAX GPM**	1,782 GPM > 515 GPM	1,782 GPM > 515 GPM

*DENSITY CORRECTION

**PER DEWATERING CALCULATIONS (ATTACHMENT A)

TEMPORARY DEWATERING WELL SPECIFICATIONS

CLASS V INJECTION WELL TYPE	GROUP 6 - DRAINAGE WELL FOR TEMPORARY DEWATERING
DISCHARGE TYPE	TEMPORARY DEWATERING DISCHARGE
CASING TYPE	STEEL
MAX. DISCHARGE VOLUME	515 GPM
PROPOSED PRE-TREATMENT	40' x 400' INFILTRATION BASIN AND ONE (1) 18,000 GALLON SEDIMENTATION WEIR TANK

NOTES:
1. DEWATERING WELLS SHALL BE PLUGGED AND ABANDONED WHEN THEY NO LONGER PERFORM THEIR INTENDED PURPOSE.
2. PLUGGING AND ABANDONMENT PLAN SHALL BE SUBMITTED TO FDEP WITH THE CONSTRUCTION PERMIT APPLICATION IN ACCORDANCE WITH CHAPTER 62-528 F.A.C.

Robert L Vinson III

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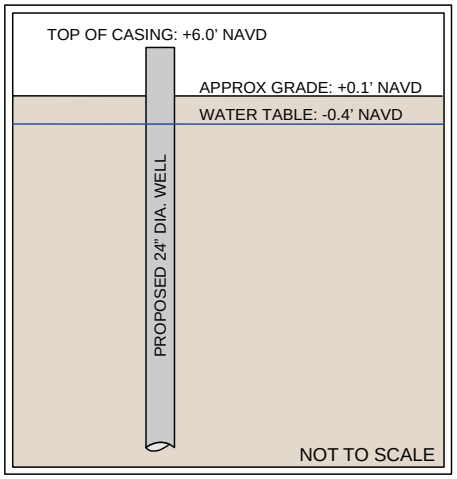
	FIGURE 5 - TEMP. DEWATERING WELL DETAILS	DRAWN BY: LS	DATE: 7/18/2023	SHEET 2 OF 4

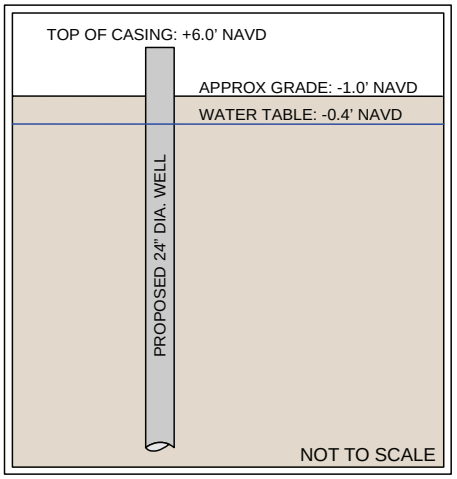
PROPOSED TEMPORARY DEWATERING WELLS

NAME	LATITUDE	LONGITUDE	PROPOSED TOTAL DEPTH	PROPOSED CASING DEPTH	WELL DIAMETER
DW-5	25°30'52.66" N	80°20'51.26" W	106' +/-	56' +/-	24"
DW-6A	25°30'34.46" N	80°20'52.24" W	106' +/-	56' +/-	24"

DW-5 DETAIL



DW-6A DETAIL



TEMPORARY DEWATERING WELL CAPACITY CALCULATIONS

	DW-5	DW-6A
AVAILABLE HEAD	6 - (-0.4 + 1.0*) = 5.4 FT	6 - (-0.4 + 1.0*) = 5.4 FT
DESIGN-SPECIFIC CAPACITY	495 GPM/FT	495 GPM/FT
ESTIMATED CAPACITY	5.4 FT x 495 GPM = 2,673 GPM	5.4 FT x 495 GPM = 2,673 GPM
CAPACITY W/ SAFETY FACTOR	2,673 GPM / 1.5 = 1,782 GPM PER WELL	2,673 GPM / 1.5 = 1,782 GPM PER WELL
EST. CAPACITY vs. MAX GPM**	1,782 GPM > 515 GPM	1,782 GPM > 515 GPM

*DENSITY CORRECTION

**PER DEWATERING CALCULATIONS (ATTACHMENT A)

TEMPORARY DEWATERING WELL SPECIFICATIONS

CLASS V INJECTION WELL TYPE	GROUP 6 - DRAINAGE WELL FOR TEMPORARY DEWATERING
DISCHARGE TYPE	TEMPORARY DEWATERING DISCHARGE
CASING TYPE	STEEL
MAX. DISCHARGE VOLUME	515 GPM
PROPOSED PRE-TREATMENT	40' x 400' INFILTRATION BASIN AND ONE (1) 18,000 GALLON SEDIMENTATION WEIR TANK

NOTES:

1. DEWATERING WELLS SHALL BE PLUGGED AND ABANDONED WHEN THEY NO LONGER PERFORM THEIR INTENDED PURPOSE.
2. PLUGGING AND ABANDONMENT PLAN SHALL BE SUBMITTED TO FDEP WITH THE CONSTRUCTION PERMIT APPLICATION IN ACCORDANCE WITH CHAPTER 62-528 F.A.C.

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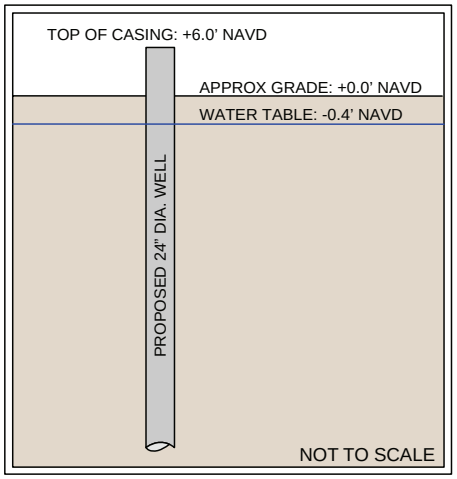
	FIGURE 5 - TEMP. DEWATERING WELL DETAILS	DRAWN BY: LS	DATE: 7/18/2023	SHEET 3 OF 4

PROPOSED TEMPORARY DEWATERING WELLS

NAME	LATITUDE	LONGITUDE	PROPOSED TOTAL DEPTH	PROPOSED CASING DEPTH	WELL DIAMETER
DW-6B	25°30'21.67" N	80°20'52.30" W	106' +/-	56' +/-	24"

DW-6B DETAIL



TEMPORARY DEWATERING WELL CAPACITY CALCULATIONS

	DW-6B
AVAILABLE HEAD	6 - (-0.4 + 1.0*) = 5.4 FT
DESIGN-SPECIFIC CAPACITY	495 GPM/FT
ESTIMATED CAPACITY	5.4 FT x 495 GPM = 2,673 GPM
CAPACITY W/ SAFETY FACTOR	2,673 GPM / 1.5 = 1,782 GPM PER WELL
EST. CAPACITY vs. MAX GPM**	1,782 GPM > 515 GPM

*DENSITY CORRECTION

**PER DEWATERING CALCULATIONS (ATTACHMENT A)

TEMPORARY DEWATERING WELL SPECIFICATIONS

CLASS V INJECTION WELL TYPE	GROUP 6 - DRAINAGE WELL FOR TEMPORARY DEWATERING
DISCHARGE TYPE	TEMPORARY DEWATERING DISCHARGE
CASING TYPE	STEEL
MAX. DISCHARGE VOLUME	515 GPM
PROPOSED PRE-TREATMENT	40' x 400' INFILTRATION BASIN AND ONE (1) 18,000 GALLON SEDIMENTATION WEIR TANK

NOTES:
1. DEWATERING WELLS SHALL BE PLUGGED AND ABANDONED WHEN THEY NO LONGER PERFORM THEIR INTENDED PURPOSE.
2. PLUGGING AND ABANDONMENT PLAN SHALL BE SUBMITTED TO FDEP WITH THE CONSTRUCTION PERMIT APPLICATION IN ACCORDANCE WITH CHAPTER 62-528 F.A.C.

Robert L Vinson III
Digitally signed by Robert L Vinson III
Date: 2023.08.15 17:14:16 -05'00'

This item was digitally signed and sealed by Robert L Vinson III, Florida PE #53438.

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TIERRA GROUP™ Assured Geoscience Solutions	PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2		CLIENT: GIANNETTI CONTRACTING CORP.	
	FIGURE 5 - TEMP. DEWATERING WELL DETAILS	DRAWN BY: LS	DATE: 7/18/2023	SHEET 4 OF 4

TIERRA GROUP™ Assured Geoscience Solutions	PROJECT: FPL MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, PHASE 2	CLIENT: GIANNETTI CONTRACTING CORP.			
	FIGURE 6 - PROPOSED DEEP DRAINAGE WELL LOCATIONS	SCALE: 1" = 1,000' (0' 500' 1,000')	DATE: 7/19/2023	DRAWN BY: LS	SHEET 1 OF 1

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ATTACHMENT A

Dewatering Calculations - Sichardt's Equation
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Rectangular Excavation

1. $Radius\ of\ Influence\ (m) = 3000 \times Drawdown\ (m) \times \sqrt{Hydraulic\ Conductivity\ (\frac{m}{s})}$

2. $Effective\ Radius\ (m) = \sqrt{\frac{Excavation\ Width\ (m) \times Excavation\ Length\ (m)}{\pi}}$

3. $Flow\ Rate\ (m^3/_S) = \frac{\pi \times Hydraulic\ Conductivity\ \left(\frac{m}{s}\right) \times |H(m)^2 - h(m)^2|}{\left[Ln\left(Radius\ of\ Influence\ (m)\right) - Ln(Effective\ Radius\ (m))\right]}$

Sheet #	Excavation	GW Elevation[1] (ft)	Exc. Bottom Elevation[2] (ft)	Drawdown (ft)	Aquifer Head[3] (H) (ft)	Aquifer Head (H) (m)	Dewatered Aquifer Head (h) (ft)	Dewatered Aquifer Head (h) (m)	Hydraulic Conductivity[4] (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Radius of Influence (ROI) (ft)	Radius of Influence (ROI) (m)	Excavation Width[5] (ft)	Excavation Width (m)	Excavation Length[5] (ft)	Excavation Length (m)	Effective Radius (r_e) (ft)	Effective Radius (r_e) (m)	Total Radius of Influence (ft)	Total Radius of Influence (m)	Flow Rate (gpm)	Section Pumpage (gallons)
1	S-1	-0.40	-1.50	1.10	150.00	45.72	148.90	45.38	40.70	0.000144	39.54	12.05	8.00	2.44	45.00	13.72	10.71	3.26	50.25	15.32	0.00	0
1	S-2	-0.40	-1.50	1.10	150.00	45.72	148.90	45.38	40.70	0.000144	39.54	12.05	8.00	2.44	40.00	12.19	10.10	3.08	49.64	15.13	0.00	0
2	S-3	-0.40	-5.50	5.10	150.00	45.72	144.90	44.17	40.70	0.000144	183.33	55.88	8.00	2.44	40.00	12.19	10.10	3.08	193.43	58.96	344.39	41,327
2	S-4	-0.40	-5.52	5.12	150.00	45.72	144.88	44.16	40.70	0.000144	184.05	56.10	8.00	2.44	40.00	12.19	10.10	3.08	194.15	59.18	345.25	41,430
2	S-5	-0.40	-5.54	5.14	150.00	45.72	144.86	44.15	40.70	0.000144	184.77	56.32	8.00	2.44	40.00	12.19	10.10	3.08	194.87	59.39	346.11	41,534
2	S-6	-0.40	-5.57	5.17	150.00	45.72	144.83	44.14	40.70	0.000144	185.85	56.65	8.00	2.44	40.00	12.19	10.10	3.08	195.94	59.72	347.40	41,688
2	S-7	-0.40	-5.59	5.19	150.00	45.72	144.81	44.14	40.70	0.000144	186.57	56.87	8.00	2.44	40.00	12.19	10.10	3.08	196.66	59.94	348.26	41,791
2	S-8	-0.40	-5.61	5.21	150.00	45.72	144.79	44.13	40.70	0.000144	187.29	57.08	8.00	2.44	40.00	12.19	10.10	3.08	197.38	60.16	349.12	41,894
2	S-9	-0.40	-5.63	5.23	150.00	45.72	144.77	44.13	40.70	0.000144	188.01	57.30	8.00	2.44	40.00	12.19	10.10	3.08	198.10	60.38	349.98	41,997
2	S-10	-0.40	-5.65	5.25	150.00	45.72	144.75	44.12	40.70	0.000144	188.72	57.52	8.00	2.44	40.00	12.19	10.10	3.08	198.82	60.60	350.83	42,100
2	S-11	-0.40	-5.67	5.27	150.00	45.72	144.73	44.11	40.70	0.000144	189.44	57.74	8.00	2.44	40.00	12.19	10.10	3.08	199.54	60.82	351.69	42,203
2	S-12	-0.40	-5.70	5.30	150.00	45.72	144.70	44.10	40.70	0.000144	190.52	58.07	8.00	2.44	40.00	12.19	10.10	3.08	200.62	61.15	352.97	42,357
2	S-13	-0.40	-5.73	5.33	150.00	45.72	144.67	44.10	40.70	0.000144	191.60	58.40	8.00	2.44	40.00	12.19	10.10	3.08	201.70	61.48	354.25	42,510
2	S-14	-0.40	-5.75	5.35	150.00	45.72	144.65	44.09	40.70	0.000144	192.32	58.62	8.00	2.44	40.00	12.19	10.10	3.08	202.41	61.70	355.11	42,613
2	S-15	-0.40	-5.77	5.37	150.00	45.72	144.63	44.08	40.70	0.000144	193.04	58.84	8.00	2.44	40.00	12.19	10.10	3.08	203.13	61.92	355.96	42,715
2	S-16	-0.40	-5.79	5.39	150.00	45.72	144.61	44.08	40.70	0.000144	193.76	59.06	8.00	2.44	40.00	12.19	10.10	3.08	203.85	62.13	356.81	42,817
2	S-17	-0.40	-5.81	5.41	150.00	45.72	144.59	44.07	40.70	0.000144	194.48	59.28	8.00	2.44	40.00	12.19	10.10	3.08	204.57	62.35	357.66	42,919
2	S-18	-0.40	-5.84	5.44	150.00	45.72	144.56	44.06	40.70	0.000144	195.55	59.61	8.00	2.44	40.00	12.19	10.10	3.08	205.65	62.68	358.94	43,072
2	S-19	-0.40	-5.87	5.47	150.00	45.72	144.53	44.05	40.70	0.000144	196.63	59.93	8.00	2.44	40.00	12.19	10.10	3.08	206.73	63.01	360.21	43,225
2	S-20	-0.40	-5.89	5.49	150.00	45.72	144.51	44.05	40.70	0.000144	197.35	60.15	8.00	2.44	40.00	12.19	10.10	3.08	207.45	63.23	361.06	43,327
2	S-21	-0.40	-5.91	5.51	150.00	45.72	144.49	44.04	40.70	0.000144	198.07	60.37	8.00	2.44	40.00	12.19	10.10	3.08	208.17	63.45	361.91	43,429
2	S-22	-0.40	-5.93	5.53	150.00	45.72	144.47	44.03	40.70	0.000144	198.79	60.59	8.00	2.44	40.00	12.19	10.10	3.08	208.88	63.67	362.76	43,531
2	S-23	-0.40	-5.95	5.55	150.00	45.72	144.45	44.03	40.70	0.000144	199.51	60.81	8.00	2.44	40.00	12.19	10.10	3.08	209.60	63.89	363.60	43,632
2	S-24	-0.40	-5.97	5.57	150.00	45.72	144.43	44.02	40.70	0.000144	200.23	61.03	8.00	2.44	40.00	12.19	10.10	3.08	210.32	64.11	364.45	43,734
2	S-25	-0.40	-6.00	5.60	150.00	45.72	144.40	44.01	40.70	0.000144	201.31	61.36	8.00	2.44	20.00	6.10	7.14	2.18	208.44	63.53	327.76	39,331
3	S-26	-0.40	-6.00	5.60	150.00	45.72	144.40	44.01	40.70	0.000144	201.31	61.36	8.00	2.44	40.00	12.19	10.10	3.08	211.40	64.44	365.72	43,886
3	S-27	-0.40	-6.00	5.60	150.00	45.72	144.40	44.01	40.70	0.000144	201.31	61.36	8.00	2.44	40.00	12.19	10.10	3.08	211.40	64.44	365.72	43,886
3	S-28	-0.40	-6.01	5.61	150.00	45.72	144.39	44.01	40.70	0.000144	201.67	61.47	8.00	2.44	40.00	12.19	10.10	3.08	211.76	64.54	366.14	43,937
3	S-29	-0.40	-6.01	5.61	150.00	45.72	144.39	44.01	40.70	0.000144	201.67	61.47	8.00	2.44	40.00	12.19	10.10	3.08	211.76	64.54	366.14	43,937
3	S-30	-0.40	-6.02	5.62	150.00	45.72	144.38	44.01	40.70	0.000144	202.03	61.58	8.00	2.44	40.00	12.19	10.10	3.08	212.12	64.65	366.56	43,987
3	S-31	-0.40	-6.02	5.62	150.00	45.72	144.38	44.01	40.70	0.000144	202.03	61.58	8.00	2.44	40.00	12.19	10.10	3.08	212.12	64.65	366.56	43,987
3	S-32	-0.40	-6.03	5.63	150.00	45.72	144.37	44.00	40.70	0.000144	202.38	61.69	8.00	2.44	40.00	12.19	10.10	3.08	212.48	64.76	366.98	44,038
3	S-33	-0.40	-6.03	5.63	150.00	45.72	144.37	44.00	40.70	0.000144	202.38	61.69	8.00	2.44	40.00	12.19	10.10	3.08	212.48	64.76	366.98	44,038
3	S-34	-0.40	-6.04	5.64	150.00	45.72	144.36	44.00	40.70	0.000144	202.74	61.80	8.00	2.44	40.00	12.19	10.10	3.08	212.84	64.87	367.40	44,089
3	S-35	-0.40	-6.04	5.64	150.00	45.72	144.36	44.00	40.70	0.000144	202.74	61.80	8.00	2.44	40.00	12.19	10.10	3.08	212.84	64.87	367.40	44,089
3	S-36	-0.40	-6.05	5.65	150.00	45.72	144.35	44.00	40.70	0.000144	203.10	61.91	8.00	2.44	40.00	12.19	10.10	3.08	213.20	64.98	367.83	44,139
3	S-37	-0.40	-6.05	5.65	150.00	45.72	144.35	44.00	40.70	0.000144	203.10	61.91	8.00	2.44	40.00	12.19	10.10	3.08	213.20	64.98	367.83	44,139
3	S-38	-0.40	-6.05	5.65	150.00	45.72	144.35	44.00	40.70	0.000144	203.10	61.91	8.00	2.44	40.00	12.19	10.10	3.08	213.20	64.98	367.83	44,139
3	S-39	-0.40	-6.06	5.66	150.00	45.72	144.34	43.99	40.70	0.000144	203.46	62.02	8.00	2.44	40.00	12.19	10.10	3.08	213.56	65.09	368.25	44,190
3	S-40	-0.40	-6.06	5.66	150.00	45.72	144.34	43.99	40.70	0.000144	203.46	62.02	8.00	2.44	40.00	12.19	10.10	3.08	213.56	65.09	368.25	44,190
3	S-41	-0.40	-6.07	5.67	150.00	45.72	144.33	43.99	40.70	0.000144	203.82	62.13	8.00	2.44	40.00	12.19	10.10	3.08	213.92	65.20	368.67	44,240
3	S-42	-0.40	-6.07	5.67	150.00	45.72	144.33	43.99	40.70	0.000144	203.82	62.13	8.00	2.44	40.00	12.19	10.10	3.08	213.92	65.20	368.67	44,240
3	S-43	-0.40	-6.08	5.68	150.00	45.72	144.32	43.99	40.70	0.000144	204.18	62.23	8.00	2.44	40.00	12.19	10.10	3.08	214.28	65.31	369.09	44,291
3	S-44	-0.40	-6.08	5.68	150.00	45.72	144.32	43.99	40.70	0.000144	204.18	62.23	8.00	2.44	40.00	12.19	10.10	3.08	214.28	65.31	369.09	44,291
3	S-45	-0.40	-6.09	5.69	150.00	45.72	144.31	43.99	40.70	0.000144	204.54	62.34	8.00	2.44	40.00	12.19	10.10	3.08	214.64	65.42	369.51	44,341
3	S-46	-0.40	-6.09	5.69	150.00	45.72	144.31	43.99	40.70	0.000144	204.54	62.34	8.00	2.44	40.00	12.19	10.10	3.08	214.64	65.42	369.51	44,341
3	S-47	-0.40	-6.10	5.70	150.00	45.72	144.30	43.98	40.70	0.000144	204.90	62.45	8.00	2.44	40.00	12.19	10.10	3.08	215.00	65.53	369.93	44,392
3	S-48	-0.40	-6.10	5.70	150.00	45.72	144.30	43.98	40.70	0.000144	204.90	62.45	8.00	2.44	20.00	6.10	7.14	2.18	212.04	64.63	331.74	39,809
4	S-49	-0.40	-6.10	5.70	150.00	45.72	144.30	43.98	40.70	0.000144	204.90	62.45	8.00	2.44	40.00	12.19	10.10	3.08	215.00	65.53	369.93	44,392
4	S-50	-0.40	-6.11	5.71	150.00	45.72	144.29	43.98	40.70	0.000144	205.26	62.56	8.00	2.44	40.00	12.19	10.10	3.08	215.36	65.64	370.35	44,442
4	S-51	-0.40	-6.11	5.71	150.00	45.72	144.29	43.98	40.70	0.000144	205.26	62.56	8.00	2.44	40.00	12.19	10.10	3.08	215.36	65.64	370.35	44,442
4	S-52	-0.40	-6.12	5.72	150.00	45.72	144.28	43.98	40.70	0.000144	205.62	62.67	8.00	2.44	40.00	12.19	10.10	3.08	215.71	65.75	370.77	44,493

Dewatering Calculations - Sichardt's Equation
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation[1] (ft)	Exc. Bottom Elevation[2] (ft)	Drawdown (ft)	Aquifer Head[3] (H) (ft)	Aquifer Head (H) (m)	Dewatered Aquifer Head (h) (ft)	Dewatered Aquifer Head (h) (m)	Hydraulic Conductivity[4] (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Radius of Influence (ROI) (ft)	Radius of Influence (ROI) (m)	Excavation Width[5] (ft)	Excavation Width (m)	Excavation Length[5] (ft)	Excavation Length (m)	Effective Radius (r_e) (ft)	Effective Radius (r_e) (m)	Total Radius of Influence (ft)	Total Radius of Influence (m)	Flow Rate (gpm)	Section Pumpage (gallons)
4	S-53	-0.40	-6.12	5.72	150.00	45.72	144.28	43.98	40.70	0.000144	205.62	62.67	8.00	2.44	40.00	12.19	10.10	3.08	215.71	65.75	370.77	44,493
4	S-54	-0.40	-6.13	5.73	150.00	45.72	144.27	43.97	40.70	0.000144	205.98	62.78	8.00	2.44	40.00	12.19	10.10	3.08	216.07	65.86	371.19	44,543
4	S-55	-0.40	-6.13	5.73	150.00	45.72	144.27	43.97	40.70	0.000144	205.98	62.78	8.00	2.44	40.00	12.19	10.10	3.08	216.07	65.86	371.19	44,543
4	S-56	-0.40	-6.14	5.74	150.00	45.72	144.26	43.97	40.70	0.000144	206.34	62.89	8.00	2.44	40.00	12.19	10.10	3.08	216.43	65.97	371.62	44,594
4	S-57	-0.40	-6.15	5.75	150.00	45.72	144.25	43.97	40.70	0.000144	206.70	63.00	8.00	2.44	40.00	12.19	10.10	3.08	216.79	66.08	372.04	44,644
4	S-58	-0.40	-6.15	5.75	150.00	45.72	144.25	43.97	40.70	0.000144	206.70	63.00	8.00	2.44	40.00	12.19	10.10	3.08	216.79	66.08	372.04	44,644
4	S-59	-0.40	-6.16	5.76	150.00	45.72	144.24	43.96	40.70	0.000144	207.06	63.11	8.00	2.44	40.00	12.19	10.10	3.08	217.15	66.19	372.46	44,695
4	S-60	-0.40	-6.16	5.76	150.00	45.72	144.24	43.96	40.70	0.000144	207.06	63.11	8.00	2.44	40.00	12.19	10.10	3.08	217.15	66.19	372.46	44,695
4	S-61	-0.40	-6.17	5.77	150.00	45.72	144.23	43.96	40.70	0.000144	207.42	63.22	8.00	2.44	40.00	12.19	10.10	3.08	217.51	66.30	372.88	44,745
4	S-62	-0.40	-6.18	5.78	150.00	45.72	144.22	43.96	40.70	0.000144	207.78	63.33	8.00	2.44	40.00	12.19	10.10	3.08	217.87	66.41	373.29	44,795
4	S-63	-0.40	-6.19	5.79	150.00	45.72	144.21	43.96	40.70	0.000144	208.14	63.44	8.00	2.44	40.00	12.19	10.10	3.08	218.23	66.52	373.71	44,846
4	S-64	-0.40	-6.19	5.79	150.00	45.72	144.21	43.96	40.70	0.000144	208.14	63.44	8.00	2.44	40.00	12.19	10.10	3.08	218.23	66.52	373.71	44,846
4	S-65	-0.40	-6.20	5.80	150.00	45.72	144.20	43.95	40.70	0.000144	208.50	63.55	8.00	2.44	40.00	12.19	10.10	3.08	218.59	66.63	374.13	44,896
4	S-66	-0.40	-6.20	5.80	150.00	45.72	144.20	43.95	40.70	0.000144	208.50	63.55	8.00	2.44	20.00	6.10	7.14	2.18	215.63	65.73	335.71	40,285
5	S-67	-0.40	-6.20	5.80	150.00	45.72	144.20	43.95	40.70	0.000144	208.50	63.55	8.00	2.44	40.00	12.19	10.10	3.08	218.59	66.63	374.13	44,896
5	S-68	-0.40	-6.21	5.81	150.00	45.72	144.19	43.95	40.70	0.000144	208.86	63.66	8.00	2.44	40.00	12.19	10.10	3.08	218.95	66.74	374.55	44,946
5	S-69	-0.40	-6.21	5.81	150.00	45.72	144.19	43.95	40.70	0.000144	208.86	63.66	8.00	2.44	40.00	12.19	10.10	3.08	218.95	66.74	374.55	44,946
5	S-70	-0.40	-6.22	5.82	150.00	45.72	144.18	43.95	40.70	0.000144	209.21	63.77	8.00	2.44	40.00	12.19	10.10	3.08	219.31	66.85	374.97	44,997
5	S-71	-0.40	-6.23	5.83	150.00	45.72	144.17	43.94	40.70	0.000144	209.57	63.88	8.00	2.44	40.00	12.19	10.10	3.08	219.67	66.96	375.39	45,047
5	S-72	-0.40	-6.23	5.83	150.00	45.72	144.17	43.94	40.70	0.000144	209.57	63.88	8.00	2.44	40.00	12.19	10.10	3.08	219.67	66.96	375.39	45,047
5	S-73	-0.40	-6.23	5.83	150.00	45.72	144.17	43.94	40.70	0.000144	209.57	63.88	8.00	2.44	40.00	12.19	10.10	3.08	219.67	66.96	375.39	45,047
5	S-74	-0.40	-6.24	5.84	150.00	45.72	144.16	43.94	40.70	0.000144	209.93	63.99	8.00	2.44	40.00	12.19	10.10	3.08	220.03	67.06	375.81	45,097
5	S-75	-0.40	-6.25	5.85	150.00	45.72	144.15	43.94	40.70	0.000144	210.29	64.10	8.00	2.44	40.00	12.19	10.10	3.08	220.39	67.17	376.23	45,147
5	S-76	-0.40	-6.25	5.85	150.00	45.72	144.15	43.94	40.70	0.000144	210.29	64.10	8.00	2.44	40.00	12.19	10.10	3.08	220.39	67.17	376.23	45,147
5	S-77	-0.40	-6.26	5.86	150.00	45.72	144.14	43.93	40.70	0.000144	210.65	64.21	8.00	2.44	40.00	12.19	10.10	3.08	220.75	67.28	376.65	45,198
5	S-78	-0.40	-6.27	5.87	150.00	45.72	144.13	43.93	40.70	0.000144	211.01	64.32	8.00	2.44	40.00	12.19	10.10	3.08	221.11	67.39	377.07	45,248
5	S-79	-0.40	-6.27	5.87	150.00	45.72	144.13	43.93	40.70	0.000144	211.01	64.32	8.00	2.44	40.00	12.19	10.10	3.08	221.11	67.39	377.07	45,248
5	S-80	-0.40	-6.28	5.88	150.00	45.72	144.12	43.93	40.70	0.000144	211.37	64.43	8.00	2.44	40.00	12.19	10.10	3.08	221.47	67.50	377.48	45,298
5	S-81	-0.40	-6.29	5.89	150.00	45.72	144.11	43.92	40.70	0.000144	211.73	64.54	8.00	2.44	40.00	12.19	10.10	3.08	221.83	67.61	377.90	45,348
5	S-82	-0.40	-6.29	5.89	150.00	45.72	144.11	43.92	40.70	0.000144	211.73	64.54	8.00	2.44	40.00	12.19	10.10	3.08	221.83	67.61	377.90	45,348
5	S-83	-0.40	-6.30	5.90	150.00	45.72	144.10	43.92	40.70	0.000144	212.09	64.65	8.00	2.44	40.00	12.19	10.10	3.08	222.19	67.72	378.32	45,398
5	S-84	-0.40	-6.30	5.90	150.00	45.72	144.10	43.92	40.70	0.000144	212.09	64.65	8.00	2.44	20.00	6.10	7.14	2.18	219.23	66.82	339.66	40,759
6	S-85	-0.40	-6.30	5.90	150.00	45.72	144.10	43.92	40.70	0.000144	212.09	64.65	8.00	2.44	40.00	12.19	10.10	3.08	222.19	67.72	378.32	45,398
6	S-86	-0.40	-6.30	5.90	150.00	45.72	144.10	43.92	40.70	0.000144	212.09	64.65	8.00	2.44	40.00	12.19	10.10	3.08	222.19	67.72	378.32	45,398
6	S-87	-0.40	-6.30	5.90	150.00	45.72	144.10	43.92	40.70	0.000144	212.09	64.65	8.00	2.44	20.00	6.10	7.14	2.18	219.23	66.82	339.66	40,759
6	S-88	-0.40	-1.75	1.35	150.00	45.72	148.65	45.31	40.70	0.000144	48.53	14.79	8.00	2.44	40.00	12.19	10.10	3.08	58.62	17.87	0.00	0
6	S-89	-0.40	-1.75	1.35	150.00	45.72	148.65	45.31	40.70	0.000144	48.53	14.79	8.00	2.44	40.00	12.19	10.10	3.08	58.62	17.87	0.00	0
6	S-90	-0.40	-1.75	1.35	150.00	45.72	148.65	45.31	40.70	0.000144	48.53	14.79	8.00	2.44	40.00	12.19	10.10	3.08	58.62	17.87	0.00	0
6	S-91	-0.40	-2.00	1.60	150.00	45.72	148.40	45.23	40.70	0.000144	57.52	17.53	8.00	2.44	40.00	12.19	10.10	3.08	67.61	20.61	0.00	0
6	S-92	-0.40	-2.10	1.70	150.00	45.72	148.30	45.20	40.70	0.000144	61.11	18.63	8.00	2.44	40.00	12.19	10.10	3.08	71.21	21.70	0.00	0
7	S-93	-0.40	-2.00	1.60	150.00	45.72	148.40	45.23	40.70	0.000144	57.52	17.53	8.00	2.44	40.00	12.19	10.10	3.08	67.61	20.61	0.00	0
7	S-94	-0.40	-1.75	1.35	150.00	45.72	148.65	45.31	40.70	0.000144	48.53	14.79	8.00	2.44	40.00	12.19	10.10	3.08	58.62	17.87	0.00	0
7	S-95	-0.40	-1.50	1.10	150.00	45.72	148.90	45.38	40.70	0.000144	39.54	12.05	8.00	2.44	40.00	12.19	10.10	3.08	49.64	15.13	0.00	0
7	S-96	-0.40	-1.25	0.85	150.00	45.72	149.15	45.46	40.70	0.000144	30.56	9.31	8.00	2.44	40.00	12.19	10.10	3.08	40.65	12.39	0.00	0
7	S-97	-0.40	-1.25	0.85	150.00	45.72	149.15	45.46	40.70	0.000144	30.56	9.31	8.00	2.44	40.00	12.19	10.10	3.08	40.65	12.39	0.00	0
7	S-98	-0.40	-1.25	0.85	150.00	45.72	149.15	45.46	40.70	0.000144	30.56	9.31	8.00	2.44	40.00	12.19	10.10	3.08	40.65	12.39	0.00	0
7	S-99	-0.40	-1.26	0.86	150.00	45.72	149.14	45.46	40.70	0.000144	30.91	9.42	8.00	2.44	40.00	12.19	10.10	3.08	41.01	12.50	0.00	0
7	S-100	-0.40	-1.26	0.86	150.00	45.72	149.14	45.46	40.70	0.000144	30.91	9.42	8.00	2.44	40.00	12.19	10.10	3.08	41.01	12.50	0.00	0
7	S-101	-0.40	-1.26	0.86	150.00	45.72	149.14	45.46	40.70	0.000144	30.91	9.42	8.00	2.44	40.00	12.19	10.10	3.08	41.01	12.50	0.00	0
7	S-102	-0.40	-1.27	0.87	150.00	45.72	149.13	45.45	40.70	0.000144	31.27	9.53	8.00	2.44	40.00	12.19	10.10	3.08	41.37	12.61	0.00	0
7	S-103	-0.40	-1.27	0.87	150.00	45.72	149.13	45.45	40.70	0.000144	31.27	9.53	8.00	2.44	40.00	12.19	10.10	3.08	41.37	12.61	0.00	0
7	S-104	-0.40	-1.27	0.87	150.00	45.72	149.13	45.45	40.70	0.000144	31.27	9.53	8.00	2.44	40.00	12.19	10.10	3.08	41.37	12.61	0.00	0
7	S-105	-0.40	-1.28	0.88	150.00	45.72	149.12	45.45	40.70	0.000144	31.63	9.64	8.00	2.44	40.00	12.19	10.10	3.08	41.73	12.72	0.00	0
7	S-106	-0.40	-1.28	0.88	150.00	45.72	149.12	45.45	40.70	0.000144	31.63	9.64	8.00	2.44	40.00	12.19	10.10	3.08	41.73	12.72	0.00	0
7	S-107	-0.40	-1.28	0.88	150.00	45.72	149.12	45.45	40.70	0.000144	31.63	9.64	8.00	2.44	40.00	12.19	10.10	3.08	41.73	12.72	0.00	0
7	S-108	-0.40	-1.29	0.89	150.00	45.72	149.11	45.45	40.70	0.000144	31.99	9.75	8.00	2.44	40.00	12.19	10.10	3.08	42.09	12.83	0.00	0

Dewatering Calculations - Sichardt's Equation
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation[1] (ft)	Exc. Bottom Elevation[2] (ft)	Drawdown (ft)	Aquifer Head[3] (H) (ft)	Aquifer Head (H) (m)	Dewatered Aquifer Head (h) (ft)	Dewatered Aquifer Head (h) (m)	Hydraulic Conductivity[4] (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Radius of Influence (ROI) (ft)	Radius of Influence (ROI) (m)	Excavation Width[5] (ft)	Excavation Width (m)	Excavation Length[5] (ft)	Excavation Length (m)	Effective Radius (r_e) (ft)	Effective Radius (r_e) (m)	Total Radius of Influence (ft)	Total Radius of Influence (m)	Flow Rate (gpm)	Section Pumpage (gallons)
7	S-109	-0.40	-1.29	0.89	150.00	45.72	149.11	45.45	40.70	0.000144	31.99	9.75	8.00	2.44	40.00	12.19	10.10	3.08	42.09	12.83	0.00	0
7	S-110	-0.40	-1.29	0.89	150.00	45.72	149.11	45.45	40.70	0.000144	31.99	9.75	8.00	2.44	40.00	12.19	10.10	3.08	42.09	12.83	0.00	0
7	S-111	-0.40	-1.30	0.90	150.00	45.72	149.10	45.45	40.70	0.000144	32.35	9.86	8.00	2.44	40.00	12.19	10.10	3.08	42.45	12.94	0.00	0
7	S-112	-0.40	-1.20	0.80	150.00	45.72	149.20	45.48	40.70	0.000144	28.76	8.77	8.00	2.44	40.00	12.19	10.10	3.08	38.85	11.84	0.00	0
7	S-113	-0.40	-1.10	0.70	150.00	45.72	149.30	45.51	40.70	0.000144	25.16	7.67	8.00	2.44	40.00	12.19	10.10	3.08	35.26	10.75	0.00	0
7	S-114	-0.40	-1.10	0.70	150.00	45.72	149.30	45.51	40.70	0.000144	25.16	7.67	8.00	2.44	40.00	12.19	10.10	3.08	35.26	10.75	0.00	0
7	S-115	-0.40	-1.10	0.70	150.00	45.72	149.30	45.51	40.70	0.000144	25.16	7.67	8.00	2.44	20.00	6.10	7.14	2.18	32.30	9.85	0.00	0
8	S-116	-0.40	-1.10	0.70	150.00	45.72	149.30	45.51	40.70	0.000144	25.16	7.67	8.00	2.44	40.00	12.19	10.10	3.08	35.26	10.75	0.00	0
8	S-117	-0.40	-1.10	0.70	150.00	45.72	149.30	45.51	40.70	0.000144	25.16	7.67	8.00	2.44	40.00	12.19	10.10	3.08	35.26	10.75	0.00	0
8	S-118	-0.40	-1.11	0.71	150.00	45.72	149.29	45.50	40.70	0.000144	25.52	7.78	8.00	2.44	40.00	12.19	10.10	3.08	35.62	10.86	0.00	0
8	S-119	-0.40	-1.12	0.72	150.00	45.72	149.28	45.50	40.70	0.000144	25.88	7.89	8.00	2.44	40.00	12.19	10.10	3.08	35.98	10.97	0.00	0
8	S-120	-0.40	-1.13	0.73	150.00	45.72	149.27	45.50	40.70	0.000144	26.24	8.00	8.00	2.44	40.00	12.19	10.10	3.08	36.34	11.08	0.00	0
8	S-121	-0.40	-1.14	0.74	150.00	45.72	149.26	45.49	40.70	0.000144	26.60	8.11	8.00	2.44	40.00	12.19	10.10	3.08	36.70	11.19	0.00	0
8	S-122	-0.40	-1.15	0.75	150.00	45.72	149.25	45.49	40.70	0.000144	26.96	8.22	8.00	2.44	40.00	12.19	10.10	3.08	37.06	11.29	0.00	0
8	S-123	-0.40	-1.16	0.76	150.00	45.72	149.24	45.49	40.70	0.000144	27.32	8.33	8.00	2.44	40.00	12.19	10.10	3.08	37.42	11.40	0.00	0
8	S-124	-0.40	-1.17	0.77	150.00	45.72	149.23	45.49	40.70	0.000144	27.68	8.44	8.00	2.44	40.00	12.19	10.10	3.08	37.77	11.51	0.00	0
8	S-125	-0.40	-1.18	0.78	150.00	45.72	149.22	45.48	40.70	0.000144	28.04	8.55	8.00	2.44	40.00	12.19	10.10	3.08	38.13	11.62	0.00	0
8	S-126	-0.40	-1.19	0.79	150.00	45.72	149.21	45.48	40.70	0.000144	28.40	8.66	8.00	2.44	40.00	12.19	10.10	3.08	38.49	11.73	0.00	0
8	S-127	-0.40	-1.19	0.79	150.00	45.72	149.21	45.48	40.70	0.000144	28.40	8.66	8.00	2.44	40.00	12.19	10.10	3.08	38.49	11.73	0.00	0
8	S-128	-0.40	-1.20	0.80	150.00	45.72	149.20	45.48	40.70	0.000144	28.76	8.77	8.00	2.44	40.00	12.19	10.10	3.08	38.85	11.84	0.00	0
8	S-129	-0.40	-1.20	0.80	150.00	45.72	149.20	45.48	40.70	0.000144	28.76	8.77	8.00	2.44	40.00	12.19	10.10	3.08	38.85	11.84	0.00	0
8	S-130	-0.40	-1.20	0.80	150.00	45.72	149.20	45.48	40.70	0.000144	28.76	8.77	8.00	2.44	40.00	12.19	10.10	3.08	38.85	11.84	0.00	0
8	S-131	-0.40	-1.21	0.81	150.00	45.72	149.19	45.47	40.70	0.000144	29.12	8.88	8.00	2.44	40.00	12.19	10.10	3.08	39.21	11.95	0.00	0
8	S-132	-0.40	-1.22	0.82	150.00	45.72	149.18	45.47	40.70	0.000144	29.48	8.98	8.00	2.44	40.00	12.19	10.10	3.08	39.57	12.06	0.00	0
8	S-133	-0.40	-1.23	0.83	150.00	45.72	149.17	45.47	40.70	0.000144	29.84	9.09	8.00	2.44	40.00	12.19	10.10	3.08	39.93	12.17	0.00	0
8	S-134	-0.40	-1.24	0.84	150.00	45.72	149.16	45.46	40.70	0.000144	30.20	9.20	8.00	2.44	40.00	12.19	10.10	3.08	40.29	12.28	0.00	0
8	S-135	-0.40	-1.25	0.85	150.00	45.72	149.15	45.46	40.70	0.000144	30.56	9.31	8.00	2.44	40.00	12.19	10.10	3.08	40.65	12.39	0.00	0
8	S-136	-0.40	-1.26	0.86	150.00	45.72	149.14	45.46	40.70	0.000144	30.91	9.42	8.00	2.44	40.00	12.19	10.10	3.08	41.01	12.50	0.00	0
8	S-137	-0.40	-1.27	0.87	150.00	45.72	149.13	45.45	40.70	0.000144	31.27	9.53	8.00	2.44	40.00	12.19	10.10	3.08	41.37	12.61	0.00	0
8	S-138	-0.40	-1.28	0.88	150.00	45.72	149.12	45.45	40.70	0.000144	31.63	9.64	8.00	2.44	40.00	12.19	10.10	3.08	41.73	12.72	0.00	0
8	S-139	-0.40	-1.29	0.89	150.00	45.72	149.11	45.45	40.70	0.000144	31.99	9.75	8.00	2.44	40.00	12.19	10.10	3.08	42.09	12.83	0.00	0
8	S-140	-0.40	-1.30	0.90	150.00	45.72	149.10	45.45	40.70	0.000144	32.35	9.86	8.00	2.44	40.00	12.19	10.10	3.08	42.45	12.94	0.00	0
9	S-141	-0.40	-1.30	0.90	150.00	45.72	149.10	45.45	40.70	0.000144	32.35	9.86	8.00	2.44	40.00	12.19	10.10	3.08	42.45	12.94	0.00	0
9	S-142	-0.40	-1.40	1.00	150.00	45.72	149.00	45.42	40.70	0.000144	35.95	10.96	8.00	2.44	40.00	12.19	10.10	3.08	46.04	14.03	0.00	0
9	S-143	-0.40	-1.50	1.10	150.00	45.72	148.90	45.38	40.70	0.000144	39.54	12.05	8.00	2.44	40.00	12.19	10.10	3.08	49.64	15.13	0.00	0
9	S-144	-0.40	-1.60	1.20	150.00	45.72	148.80	45.35	40.70	0.000144	43.14	13.15	8.00	2.44	40.00	12.19	10.10	3.08	53.23	16.23	0.00	0
9	S-145	-0.40	-1.63	1.23	150.00	45.72	148.77	45.35	40.70	0.000144	44.22	13.48	8.00	2.44	40.00	12.19	10.10	3.08	54.31	16.55	0.00	0
9	S-146	-0.40	-1.65	1.25	150.00	45.72	148.75	45.34	40.70	0.000144	44.93	13.70	8.00	2.44	40.00	12.19	10.10	3.08	55.03	16.77	0.00	0
9	S-147	-0.40	-1.67	1.27	150.00	45.72	148.73	45.33	40.70	0.000144	45.65	13.92	8.00	2.44	40.00	12.19	10.10	3.08	55.75	16.99	0.00	0
9	S-148	-0.40	-1.70	1.30	150.00	45.72	148.70	45.32	40.70	0.000144	46.73	14.24	8.00	2.44	40.00	12.19	10.10	3.08	56.83	17.32	0.00	0
9	S-149	-0.40	-1.73	1.33	150.00	45.72	148.67	45.31	40.70	0.000144	47.81	14.57	8.00	2.44	40.00	12.19	10.10	3.08	57.91	17.65	0.00	0
9	S-150	-0.40	-1.75	1.35	150.00	45.72	148.65	45.31	40.70	0.000144	48.53	14.79	8.00	2.44	40.00	12.19	10.10	3.08	58.62	17.87	0.00	0
9	S-151	-0.40	-1.75	1.35	150.00	45.72	148.65	45.31	40.70	0.000144	48.53	14.79	8.00	2.44	40.00	12.19	10.10	3.08	58.62	17.87	0.00	0
9	S-152	-0.40	-1.70	1.30	150.00	45.72	148.70	45.32	40.70	0.000144	46.73	14.24	8.00	2.44	40.00	12.19	10.10	3.08	56.83	17.32	0.00	0
9	S-153	-0.40	-1.60	1.20	150.00	45.72	148.80	45.35	40.70	0.000144	43.14	13.15	8.00	2.44	40.00	12.19	10.10	3.08	53.23	16.23	0.00	0
9	S-154	-0.40	-1.70	1.30	150.00	45.72	148.70	45.32	40.70	0.000144	46.73	14.24	8.00	2.44	40.00	12.19	10.10	3.08	56.83	17.32	0.00	0
9	S-155	-0.40	-2.10	1.70	150.00	45.72	148.30	45.20	40.70	0.000144	61.11	18.63	8.00	2.44	40.00	12.19	10.10	3.08	71.21	21.70	0.00	0
9	S-156	-0.40	-2.50	2.10	150.00	45.72	147.90	45.08	40.70	0.000144	75.49	23.01	8.00	2.44	40.00	12.19	10.10	3.08	85.58	26.09	0.00	0
9	S-157	-0.40	-2.00	1.60	150.00	45.72	148.40	45.23	40.70	0.000144	57.52	17.53	8.00	2.44	40.00	12.19	10.10	3.08	67.61	20.61	0.00	0
9	S-158	-0.40	-1.30	0.90	150.00	45.72	149.10	45.45	40.70	0.000144	32.35	9.86	8.00	2.44	20.00	6.10	7.14	2.18	39.49	12.04	0.00	0
10	S-159	-0.40	-1.30	0.90	150.00	45.72	149.10	45.45	40.70	0.000144	32.35	9.86	8.00	2.44	40.00	12.19	10.10	3.08	42.45	12.94	0.00	0
10	S-160	-0.40	-1.28	0.88	150.00	45.72	149.12	45.45	40.70	0.000144	31.63	9.64	8.00	2.44	40.00	12.19	10.10	3.08	41.73	12.72	0.00	0
10	S-161	-0.40	-1.25	0.85	150.00	45.72	149.15	45.46	40.70	0.000144	30.56	9.31	8.00	2.44	40.00	12.19	10.10	3.08	40.65	12.39	0.00	0
10	S-162	-0.40	-1.22	0.82	150.00	45.72	149.18	45.47	40.70	0.000144	29.48	8.98	8.00	2.44	40.00	12.19	10.10	3.08	39.57	12.06	0.00	0
10	S-163	-0.40	-1.20	0.80	150.00	45.72	149.20	45.48	40.70	0.000144	28.76	8.77	8.00	2.44	40.00	12.19	10.10	3.08	38.85	11.84	0.00	0
10	S-164	-0.40	-1.18	0.78	150.00	45.72	149.22	45.48	40.70	0.000144	28.04	8.55	8.00	2.44	40.00	12.19	10.10	3.08	38.13	11.62	0.00	0

Dewatering Calculations - Sichardt's Equation
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation[1] (ft)	Exc. Bottom Elevation[2] (ft)	Drawdown (ft)	Aquifer Head[3] (H) (ft)	Aquifer Head (H) (m)	Dewatered Aquifer Head (h) (ft)	Dewatered Aquifer Head (h) (m)	Hydraulic Conductivity[4] (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Radius of Influence (ROI) (ft)	Radius of Influence (ROI) (m)	Excavation Width[5] (ft)	Excavation Width (m)	Excavation Length[5] (ft)	Excavation Length (m)	Effective Radius (r_e) (ft)	Effective Radius (r_e) (m)	Total Radius of Influence (ft)	Total Radius of Influence (m)	Flow Rate (gpm)	Section Pumpage (gallons)
10	S-165	-0.40	-1.15	0.75	150.00	45.72	149.25	45.49	40.70	0.000144	26.96	8.22	8.00	2.44	40.00	12.19	10.10	3.08	37.06	11.29	0.00	0
10	S-166	-0.40	-1.12	0.72	150.00	45.72	149.28	45.50	40.70	0.000144	25.88	7.89	8.00	2.44	40.00	12.19	10.10	3.08	35.98	10.97	0.00	0
10	S-167	-0.40	-1.10	0.70	150.00	45.72	149.30	45.51	40.70	0.000144	25.16	7.67	8.00	2.44	40.00	12.19	10.10	3.08	35.26	10.75	0.00	0
10	S-168	-0.40	-1.30	0.90	150.00	45.72	149.10	45.45	40.70	0.000144	32.35	9.86	8.00	2.44	40.00	12.19	10.10	3.08	42.45	12.94	0.00	0
11	S-169	-0.40	-1.90	1.50	150.00	45.72	148.50	45.26	40.70	0.000144	53.92	16.44	8.00	2.44	40.00	12.19	10.10	3.08	64.02	19.51	177.42	21,290
11	S-170	-0.40	-7.80	7.40	150.00	45.72	142.60	43.46	40.70	0.000144	266.01	81.08	8.00	2.44	40.00	12.19	10.10	3.08	276.11	84.16	439.39	52,727
11	S-171	-0.40	-7.80	7.40	150.00	45.72	142.60	43.46	40.70	0.000144	266.01	81.08	8.00	2.44	40.00	12.19	10.10	3.08	276.11	84.16	439.39	52,727
11	S-172	-0.40	-7.80	7.40	150.00	45.72	142.60	43.46	40.70	0.000144	266.01	81.08	8.00	2.44	40.00	12.19	10.10	3.08	276.11	84.16	439.39	52,727
11	S-173	-0.40	-8.10	7.70	150.00	45.72	142.30	43.37	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	451.26	54,151
11	S-174	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-175	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-176	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-177	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-178	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-179	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-180	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-181	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-182	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-183	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-184	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-185	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-186	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-187	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-188	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-189	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-190	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
11	S-191	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	20.00	6.10	7.14	2.18	291.12	88.73	415.91	49,909
12	S-192	-0.40	-8.10	7.70	150.00	45.72	142.30	43.37	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	451.26	54,151
12	S-193	-0.40	-7.90	7.50	150.00	45.72	142.50	43.43	40.70	0.000144	269.61	82.18	8.00	2.44	40.00	12.19	10.10	3.08	279.70	85.25	443.36	53,203
12	S-194	-0.40	-7.75	7.35	150.00	45.72	142.65	43.48	40.70	0.000144	264.21	80.53	8.00	2.44	40.00	12.19	10.10	3.08	274.31	83.61	437.41	52,489
12	S-195	-0.40	-7.60	7.20	150.00	45.72	142.80	43.53	40.70	0.000144	258.82	78.89	8.00	2.44	40.00	12.19	10.10	3.08	268.92	81.97	431.42	51,771
12	S-196	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
12	S-197	-0.40	-8.50	8.10	150.00	45.72	141.90	43.25	40.70	0.000144	291.18	88.75	8.00	2.44	40.00	12.19	10.10	3.08	301.27	91.83	466.91	56,029
12	S-198	-0.40	-8.20	7.80	150.00	45.72	142.20	43.34	40.70	0.000144	280.39	85.46	8.00	2.44	40.00	12.19	10.10	3.08	290.49	88.54	455.19	54,622
12	S-199	-0.40	-8.10	7.70	150.00	45.72	142.30	43.37	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	451.26	54,151
12	S-200	-0.40	-8.20	7.80	150.00	45.72	142.20	43.34	40.70	0.000144	280.39	85.46	8.00	2.44	40.00	12.19	10.10	3.08	290.49	88.54	455.19	54,622
12	S-201	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
12	S-202	-0.40	-8.40	8.00	150.00	45.72	142.00	43.28	40.70	0.000144	287.58	87.65	8.00	2.44	40.00	12.19	10.10	3.08	297.68	90.73	463.01	55,561
12	S-203	-0.40	-8.50	8.10	150.00	45.72	141.90	43.25	40.70	0.000144	291.18	88.75	8.00	2.44	40.00	12.19	10.10	3.08	301.27	91.83	466.91	56,029
12	S-204	-0.40	-8.30	7.90	150.00	45.72	142.10	43.31	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	459.11	55,093
12	S-205	-0.40	-7.90	7.50	150.00	45.72	142.50	43.43	40.70	0.000144	269.61	82.18	8.00	2.44	40.00	12.19	10.10	3.08	279.70	85.25	443.36	53,203
12	S-206	-0.40	-7.60	7.20	150.00	45.72	142.80	43.53	40.70	0.000144	258.82	78.89	8.00	2.44	40.00	12.19	10.10	3.08	268.92	81.97	431.42	51,771
12	S-207	-0.40	-7.50	7.10	150.00	45.72	142.90	43.56	40.70	0.000144	255.23	77.79	8.00	2.44	40.00	12.19	10.10	3.08	265.32	80.87	427.42	51,290
12	S-208	-0.40	-7.40	7.00	150.00	45.72	143.00	43.59	40.70	0.000144	251.63	76.70	8.00	2.44	40.00	12.19	10.10	3.08	261.73	79.77	423.40	50,808
12	S-209	-0.40	-7.20	6.80	150.00	45.72	143.20	43.65	40.70	0.000144	244.44	74.51	8.00	2.44	40.00	12.19	10.10	3.08	254.54	77.58	415.33	49,840
12	S-210	-0.40	-7.10	6.70	150.00	45.72	143.30	43.68	40.70	0.000144	240.85	73.41	8.00	2.44	40.00	12.19	10.10	3.08	250.94	76.49	411.27	49,353
12	S-211	-0.40	-7.00	6.60	150.00	45.72	143.40	43.71	40.70	0.000144	237.25	72.31	8.00	2.44	40.00	12.19	10.10	3.08	247.35	75.39	407.20	48,864
12	S-212	-0.40	-6.90	6.50	150.00	45.72	143.50	43.74	40.70	0.000144	233.66	71.22	8.00	2.44	40.00	12.19	10.10	3.08	243.75	74.30	403.12	48,374
12	S-213	-0.40	-6.80	6.40	150.00	45.72	143.60	43.77	40.70	0.000144	230.06	70.12	8.00	2.44	40.00	12.19	10.10	3.08	240.16	73.20	399.02	47,883
12	S-214	-0.40	-6.70	6.30	150.00	45.72	143.70	43.80	40.70	0.000144	226.47	69.03	8.00	2.44	40.00	12.19	10.10	3.08	236.56	72.10	394.91	47,389
12	S-215	-0.40	-7.00	6.60	150.00	45.72	143.40	43.71	40.70	0.000144	237.25	72.31	8.00	2.44	40.00	12.19	10.10	3.08	247.35	75.39	407.20	48,864
12	S-216	-0.40	-7.90	7.50	150.00	45.72	142.50	43.43	40.70	0.000144	269.61	82.18	8.00	2.44	40.00	12.19	10.10	3.08	279.70	85.25	443.36	53,203
13	S-217	-0.40	-7.90	7.50	150.00	45.72	142.50	43.43	40.70	0.000144	269.61	82.18	8.00	2.44	40.00	12.19	10.10	3.08	279.70	85.25	443.36	53,203
13	S-218	-0.40	-7.80	7.40	150.00	45.72	142.60	43.46	40.70	0.000144	266.01	81.08	8.00	2.44	40.00	12.19	10.10	3.08	276.11	84.16	439.39	52,727
13	S-219	-0.40	-7.70	7.30	150.00	45.72	142.70	43.49	40.70	0.000144	262.42	79.98	8.00	2.44	40.00	12.19	10.10	3.08	272.51	83.06	435.41	52,250
13	S-220	-0.40	-7.50	7.10	150.00	45.72	142.90	43.56	40.70	0.000144	255.23	77.79	8.00	2.44	40.00	12.19	10.10	3.08	265.32	80.87	427.42	51,290

Dewatering Calculations - Sichardt's Equation
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation[1] (ft)	Exc. Bottom Elevation[2] (ft)	Drawdown (ft)	Aquifer Head[3] (H) (ft)	Aquifer Head (H) (m)	Dewatered Aquifer Head (h) (ft)	Dewatered Aquifer Head (h) (m)	Hydraulic Conductivity[4] (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Radius of Influence (ROI) (ft)	Radius of Influence (ROI) (m)	Excavation Width[5] (ft)	Excavation Width (m)	Excavation Length[5] (ft)	Excavation Length (m)	Effective Radius (r_e) (ft)	Effective Radius (r_e) (m)	Total Radius of Influence (ft)	Total Radius of Influence (m)	Flow Rate (gpm)	Section Pumpage (gallons)
13	S-221	-0.40	-7.30	6.90	150.00	45.72	143.10	43.62	40.70	0.000144	248.04	75.60	8.00	2.44	40.00	12.19	10.10	3.08	258.13	78.68	419.37	50,325
13	S-222	-0.40	-7.10	6.70	150.00	45.72	143.30	43.68	40.70	0.000144	240.85	73.41	8.00	2.44	40.00	12.19	10.10	3.08	250.94	76.49	411.27	49,353
13	S-223	-0.40	-7.05	6.65	150.00	45.72	143.35	43.69	40.70	0.000144	239.05	72.86	8.00	2.44	40.00	12.19	10.10	3.08	249.15	75.94	409.24	49,109
13	S-224	-0.40	-7.00	6.60	150.00	45.72	143.40	43.71	40.70	0.000144	237.25	72.31	8.00	2.44	40.00	12.19	10.10	3.08	247.35	75.39	407.20	48,864
13	S-225	-0.40	-6.90	6.50	150.00	45.72	143.50	43.74	40.70	0.000144	233.66	71.22	8.00	2.44	40.00	12.19	10.10	3.08	243.75	74.30	403.12	48,374
13	S-226	-0.40	-6.80	6.40	150.00	45.72	143.60	43.77	40.70	0.000144	230.06	70.12	8.00	2.44	40.00	12.19	10.10	3.08	240.16	73.20	399.02	47,883
13	S-227	-0.40	-6.60	6.20	150.00	45.72	143.80	43.83	40.70	0.000144	222.87	67.93	8.00	2.44	40.00	12.19	10.10	3.08	232.97	71.01	390.78	46,894
13	S-228	-0.40	-6.40	6.00	150.00	45.72	144.00	43.89	40.70	0.000144	215.69	65.74	8.00	2.44	40.00	12.19	10.10	3.08	225.78	68.82	382.49	45,899
13	S-229	-0.40	-6.20	5.80	150.00	45.72	144.20	43.95	40.70	0.000144	208.50	63.55	8.00	2.44	40.00	12.19	10.10	3.08	218.59	66.63	374.13	44,896
13	S-230	-0.40	-6.60	6.20	150.00	45.72	143.80	43.83	40.70	0.000144	222.87	67.93	8.00	2.44	40.00	12.19	10.10	3.08	232.97	71.01	390.78	46,894
13	S-231	-0.40	-7.10	6.70	150.00	45.72	143.30	43.68	40.70	0.000144	240.85	73.41	8.00	2.44	40.00	12.19	10.10	3.08	250.94	76.49	411.27	49,353
13	S-232	-0.40	-7.10	6.70	150.00	45.72	143.30	43.68	40.70	0.000144	240.85	73.41	8.00	2.44	40.00	12.19	10.10	3.08	250.94	76.49	411.27	49,353
13	S-233	-0.40	-7.00	6.60	150.00	45.72	143.40	43.71	40.70	0.000144	237.25	72.31	8.00	2.44	40.00	12.19	10.10	3.08	247.35	75.39	407.20	48,864
13	S-234	-0.40	-6.80	6.40	150.00	45.72	143.60	43.77	40.70	0.000144	230.06	70.12	8.00	2.44	40.00	12.19	10.10	3.08	240.16	73.20	399.02	47,883
13	S-235	-0.40	-6.70	6.30	150.00	45.72	143.70	43.80	40.70	0.000144	226.47	69.03	8.00	2.44	40.00	12.19	10.10	3.08	236.56	72.10	394.91	47,389
13	S-236	-0.40	-6.75	6.35	150.00	45.72	143.65	43.78	40.70	0.000144	228.27	69.58	8.00	2.44	40.00	12.19	10.10	3.08	238.36	72.65	396.97	47,636
13	S-237	-0.40	-6.80	6.40	150.00	45.72	143.60	43.77	40.70	0.000144	230.06	70.12	8.00	2.44	40.00	12.19	10.10	3.08	240.16	73.20	399.02	47,883
13	S-238	-0.40	-6.85	6.45	150.00	45.72	143.55	43.75	40.70	0.000144	231.86	70.67	8.00	2.44	40.00	12.19	10.10	3.08	241.96	73.75	401.07	48,129
13	S-239	-0.40	-6.90	6.50	150.00	45.72	143.50	43.74	40.70	0.000144	233.66	71.22	8.00	2.44	40.00	12.19	10.10	3.08	243.75	74.30	403.12	48,374
13	S-240	-0.40	-6.95	6.55	150.00	45.72	143.45	43.72	40.70	0.000144	235.46	71.77	8.00	2.44	40.00	12.19	10.10	3.08	245.55	74.84	405.16	48,620
13	S-241	-0.40	-7.00	6.60	150.00	45.72	143.40	43.71	40.70	0.000144	237.25	72.31	8.00	2.44	40.00	12.19	10.10	3.08	247.35	75.39	407.20	48,864
14	S-242	-0.40	-7.00	6.60	150.00	45.72	143.40	43.71	40.70	0.000144	237.25	72.31	8.00	2.44	40.00	12.19	10.10	3.08	247.35	75.39	407.20	48,864
14	S-243	-0.40	-7.02	6.62	150.00	45.72	143.38	43.70	40.70	0.000144	237.97	72.53	8.00	2.44	40.00	12.19	10.10	3.08	248.07	75.61	408.02	48,962
14	S-244	-0.40	-7.04	6.64	150.00	45.72	143.36	43.70	40.70	0.000144	238.69	72.75	8.00	2.44	40.00	12.19	10.10	3.08	248.79	75.83	408.83	49,060
14	S-245	-0.40	-7.05	6.65	150.00	45.72	143.35	43.69	40.70	0.000144	239.05	72.86	8.00	2.44	40.00	12.19	10.10	3.08	249.15	75.94	409.24	49,109
14	S-246	-0.40	-7.07	6.67	150.00	45.72	143.33	43.69	40.70	0.000144	239.77	73.08	8.00	2.44	40.00	12.19	10.10	3.08	249.87	76.16	410.05	49,206
14	S-247	-0.40	-7.08	6.68	150.00	45.72	143.32	43.68	40.70	0.000144	240.13	73.19	8.00	2.44	40.00	12.19	10.10	3.08	250.22	76.27	410.46	49,255
14	S-248	-0.40	-7.10	6.70	150.00	45.72	143.30	43.68	40.70	0.000144	240.85	73.41	8.00	2.44	40.00	12.19	10.10	3.08	250.94	76.49	411.27	49,353
14	S-249	-0.40	-7.12	6.72	150.00	45.72	143.28	43.67	40.70	0.000144	241.57	73.63	8.00	2.44	40.00	12.19	10.10	3.08	251.66	76.71	412.09	49,450
14	S-250	-0.40	-7.13	6.73	150.00	45.72	143.27	43.67	40.70	0.000144	241.93	73.74	8.00	2.44	40.00	12.19	10.10	3.08	252.02	76.82	412.49	49,499
14	S-251	-0.40	-7.15	6.75	150.00	45.72	143.25	43.66	40.70	0.000144	242.65	73.96	8.00	2.44	40.00	12.19	10.10	3.08	252.74	77.04	413.30	49,596
14	S-252	-0.40	-7.17	6.77	150.00	45.72	143.23	43.66	40.70	0.000144	243.36	74.18	8.00	2.44	40.00	12.19	10.10	3.08	253.46	77.25	414.11	49,694
14	S-253	-0.40	-7.18	6.78	150.00	45.72	143.22	43.65	40.70	0.000144	243.72	74.29	8.00	2.44	40.00	12.19	10.10	3.08	253.82	77.36	414.52	49,742
14	S-254	-0.40	-7.20	6.80	150.00	45.72	143.20	43.65	40.70	0.000144	244.44	74.51	8.00	2.44	20.00	6.10	7.14	2.18	251.58	76.68	374.59	44,951
15	S-255	-0.40	-7.40	7.00	150.00	45.72	143.00	43.59	40.70	0.000144	251.63	76.70	8.00	2.44	20.00	6.10	7.14	2.18	258.77	78.87	382.21	45,865
15	S-256	-0.40	-7.50	7.10	150.00	45.72	142.90	43.56	40.70	0.000144	255.23	77.79	8.00	2.44	40.00	12.19	10.10	3.08	265.32	80.87	427.42	51,290
15	S-257	-0.40	-7.55	7.15	150.00	45.72	142.85	43.54	40.70	0.000144	257.02	78.34	8.00	2.44	40.00	12.19	10.10	3.08	267.12	81.42	429.42	51,531
15	S-258	-0.40	-7.60	7.20	150.00	45.72	142.80	43.53	40.70	0.000144	258.82	78.89	8.00	2.44	40.00	12.19	10.10	3.08	268.92	81.97	431.42	51,771
15	S-259	-0.40	-7.65	7.25	150.00	45.72	142.75	43.51	40.70	0.000144	260.62	79.44	8.00	2.44	40.00	12.19	10.10	3.08	270.71	82.51	433.42	52,010
15	S-260	-0.40	-7.70	7.30	160.00	48.77	152.70	46.54	40.70	0.000144	262.42	79.98	8.00	2.44	40.00	12.19	10.10	3.08	272.51	83.06	465.17	55,820
15	S-261	-0.40	-7.75	7.35	160.00	48.77	152.65	46.53	40.70	0.000144	264.21	80.53	8.00	2.44	40.00	12.19	10.10	3.08	274.31	83.61	467.30	56,076
15	S-262	-0.40	-7.80	7.40	160.00	48.77	152.60	46.51	40.70	0.000144	266.01	81.08	8.00	2.44	40.00	12.19	10.10	3.08	276.11	84.16	469.43	56,331
15	S-263	-0.40	-7.90	7.50	160.00	48.77	152.50	46.48	40.70	0.000144	269.61	82.18	8.00	2.44	40.00	12.19	10.10	3.08	279.70	85.25	473.68	56,841
15	S-264	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
16	S-265	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
16	S-266	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
16	S-267	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
16	S-268	-0.40	-7.90	7.50	160.00	48.77	152.50	46.48	40.70	0.000144	269.61	82.18	8.00	2.44	40.00	12.19	10.10	3.08	279.70	85.25	473.68	56,841
16	S-269	-0.40	-7.80	7.40	160.00	48.77	152.60	46.51	40.70	0.000144	266.01	81.08	8.00	2.44	40.00	12.19	10.10	3.08	276.11	84.16	469.43	56,331
16	S-270	-0.40	-7.75	7.35	160.00	48.77	152.65	46.53	40.70	0.000144	264.21	80.53	8.00	2.44	40.00	12.19	10.10	3.08	274.31	83.61	467.30	56,076
16	S-271	-0.40	-7.80	7.40	160.00	48.77	152.60	46.51	40.70	0.000144	266.01	81.08	8.00	2.44	40.00	12.19	10.10	3.08	276.11	84.16	469.43	56,331
16	S-272	-0.40	-7.83	7.43	160.00	48.77	152.57	46.50	40.70	0.000144	267.09	81.41	8.00	2.44	40.00	12.19	10.10	3.08	277.19	84.49	470.70	56,484
16	S-273	-0.40	-7.86	7.46	160.00	48.77	152.54	46.49	40.70	0.000144	268.17	81.74	8.00	2.44	40.00	12.19	10.10	3.08	278.26	84.81	471.98	56,637
16	S-274	-0.40	-7.90	7.50	160.00	48.77	152.50	46.48	40.70	0.000144	269.61	82.18	8.00	2.44	40.00	12.19	10.10	3.08	279.70	85.25	473.68	56,841
16	S-275	-0.40	-7.93	7.53	160.00	48.77	152.47	46.47	40.70	0.000144	270.68	82.50	8.00	2.44	40.00	12.19	10.10	3.08	280.78	85.58	474.95	56,994
16	S-276	-0.40	-7.96	7.56	160.00	48.77	152.44	46.46	40.70	0.000144	271.76	82.83	8.00	2.44	40.00	12.19	10.10	3.08	281.86	85.91	476.22	57,146

Dewatering Calculations - Sichardt's Equation
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation[1] (ft)	Exc. Bottom Elevation[2] (ft)	Drawdown (ft)	Aquifer Head[3] (H) (ft)	Aquifer Head (H) (m)	Dewatered Aquifer Head (h) (ft)	Dewatered Aquifer Head (h) (m)	Hydraulic Conductivity[4] (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Radius of Influence (ROI) (ft)	Radius of Influence (ROI) (m)	Excavation Width[5] (ft)	Excavation Width (m)	Excavation Length[5] (ft)	Excavation Length (m)	Effective Radius (r_e) (ft)	Effective Radius (r_e) (m)	Total Radius of Influence (ft)	Total Radius of Influence (m)	Flow Rate (gpm)	Section Pumpage (gallons)
16	S-277	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
16	S-278	-0.40	-8.10	7.70	160.00	48.77	152.30	46.42	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	482.13	57,856
16	S-279	-0.40	-8.30	7.90	160.00	48.77	152.10	46.36	40.70	0.000144	283.99	86.56	8.00	2.44	40.00	12.19	10.10	3.08	294.08	89.64	490.54	58,865
16	S-280	-0.40	-8.90	8.50	160.00	48.77	151.50	46.18	40.70	0.000144	305.55	93.13	8.00	2.44	40.00	12.19	10.10	3.08	**315.65**	96.21	**515.47**	**61,857**
16	S-281	-0.40	-8.85	8.45	160.00	48.77	151.55	46.19	40.70	0.000144	303.76	92.59	8.00	2.44	40.00	12.19	10.10	3.08	313.85	95.66	513.41	61,609
16	S-282	-0.40	-8.75	8.35	160.00	48.77	151.65	46.22	40.70	0.000144	300.16	91.49	8.00	2.44	40.00	12.19	10.10	3.08	310.26	94.57	509.28	61,114
16	S-283	-0.40	-8.50	8.10	160.00	48.77	151.90	46.30	40.70	0.000144	291.18	88.75	8.00	2.44	40.00	12.19	10.10	3.08	301.27	91.83	498.90	59,868
16	S-284	-0.40	-8.20	7.80	160.00	48.77	152.20	46.39	40.70	0.000144	280.39	85.46	8.00	2.44	40.00	12.19	10.10	3.08	290.49	88.54	486.34	58,361
16	S-285	-0.40	-8.18	7.78	160.00	48.77	152.22	46.40	40.70	0.000144	279.67	85.24	8.00	2.44	40.00	12.19	10.10	3.08	289.77	88.32	485.50	58,260
16	S-286	-0.40	-8.16	7.76	160.00	48.77	152.24	46.40	40.70	0.000144	278.95	85.02	8.00	2.44	40.00	12.19	10.10	3.08	289.05	88.10	484.66	58,159
16	S-287	-0.40	-8.14	7.74	160.00	48.77	152.26	46.41	40.70	0.000144	278.23	84.81	8.00	2.44	40.00	12.19	10.10	3.08	288.33	87.88	483.82	58,058
16	S-288	-0.40	-8.12	7.72	160.00	48.77	152.28	46.41	40.70	0.000144	277.51	84.59	8.00	2.44	40.00	12.19	10.10	3.08	287.61	87.66	482.98	57,957
16	S-289	-0.40	-8.10	7.70	160.00	48.77	152.30	46.42	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	482.13	57,856
17	S-290	-0.40	-8.10	7.70	160.00	48.77	152.30	46.42	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	482.13	57,856
17	S-291	-0.40	-8.10	7.70	160.00	48.77	152.30	46.42	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	482.13	57,856
17	S-292	-0.40	-8.09	7.69	160.00	48.77	152.31	46.42	40.70	0.000144	276.44	84.26	8.00	2.44	40.00	12.19	10.10	3.08	286.53	87.33	481.71	57,805
17	S-293	-0.40	-8.08	7.68	160.00	48.77	152.32	46.43	40.70	0.000144	276.08	84.15	8.00	2.44	40.00	12.19	10.10	3.08	286.17	87.23	481.29	57,755
17	S-294	-0.40	-8.07	7.67	160.00	48.77	152.33	46.43	40.70	0.000144	275.72	84.04	8.00	2.44	40.00	12.19	10.10	3.08	285.81	87.12	480.87	57,704
17	S-295	-0.40	-8.06	7.66	160.00	48.77	152.34	46.43	40.70	0.000144	275.36	83.93	8.00	2.44	40.00	12.19	10.10	3.08	285.45	87.01	480.45	57,653
17	S-296	-0.40	-8.05	7.65	160.00	48.77	152.35	46.44	40.70	0.000144	275.00	83.82	8.00	2.44	40.00	12.19	10.10	3.08	285.09	86.90	480.02	57,603
17	S-297	-0.40	-8.04	7.64	160.00	48.77	152.36	46.44	40.70	0.000144	274.64	83.71	8.00	2.44	40.00	12.19	10.10	3.08	284.73	86.79	479.60	57,552
17	S-298	-0.40	-8.03	7.63	160.00	48.77	152.37	46.44	40.70	0.000144	274.28	83.60	8.00	2.44	40.00	12.19	10.10	3.08	284.37	86.68	479.18	57,501
17	S-299	-0.40	-8.02	7.62	160.00	48.77	152.38	46.45	40.70	0.000144	273.92	83.49	8.00	2.44	40.00	12.19	10.10	3.08	284.02	86.57	478.76	57,451
17	S-300	-0.40	-8.01	7.61	160.00	48.77	152.39	46.45	40.70	0.000144	273.56	83.38	8.00	2.44	40.00	12.19	10.10	3.08	283.66	86.46	478.33	57,400
17	S-301	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-302	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-303	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-304	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-305	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-306	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-307	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-308	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-309	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-310	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-311	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-312	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-313	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
17	S-314	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
18	S-315	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
18	S-316	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
18	S-317	-0.40	-8.00	7.60	160.00	48.77	152.40	46.45	40.70	0.000144	273.20	83.27	8.00	2.44	40.00	12.19	10.10	3.08	283.30	86.35	477.91	57,349
18	S-318	-0.40	-8.01	7.61	160.00	48.77	152.39	46.45	40.70	0.000144	273.56	83.38	8.00	2.44	40.00	12.19	10.10	3.08	283.66	86.46	478.33	57,400
18	S-319	-0.40	-8.01	7.61	160.00	48.77	152.39	46.45	40.70	0.000144	273.56	83.38	8.00	2.44	40.00	12.19	10.10	3.08	283.66	86.46	478.33	57,400
18	S-320	-0.40	-8.01	7.61	160.00	48.77	152.39	46.45	40.70	0.000144	273.56	83.38	8.00	2.44	40.00	12.19	10.10	3.08	283.66	86.46	478.33	57,400
18	S-321	-0.40	-8.01	7.61	160.00	48.77	152.39	46.45	40.70	0.000144	273.56	83.38	8.00	2.44	40.00	12.19	10.10	3.08	283.66	86.46	478.33	57,400
18	S-322	-0.40	-8.01	7.61	160.00	48.77	152.39	46.45	40.70	0.000144	273.56	83.38	8.00	2.44	40.00	12.19	10.10	3.08	283.66	86.46	478.33	57,400
18	S-323	-0.40	-8.02	7.62	160.00	48.77	152.38	46.45	40.70	0.000144	273.92	83.49	8.00	2.44	40.00	12.19	10.10	3.08	284.02	86.57	478.76	57,451
18	S-324	-0.40	-8.02	7.62	160.00	48.77	152.38	46.45	40.70	0.000144	273.92	83.49	8.00	2.44	40.00	12.19	10.10	3.08	284.02	86.57	478.76	57,451
18	S-325	-0.40	-8.02	7.62	160.00	48.77	152.38	46.45	40.70	0.000144	273.92	83.49	8.00	2.44	40.00	12.19	10.10	3.08	284.02	86.57	478.76	57,451
18	S-326	-0.40	-8.03	7.63	160.00	48.77	152.37	46.44	40.70	0.000144	274.28	83.60	8.00	2.44	40.00	12.19	10.10	3.08	284.37	86.68	479.18	57,501
18	S-327	-0.40	-8.03	7.63	160.00	48.77	152.37	46.44	40.70	0.000144	274.28	83.60	8.00	2.44	40.00	12.19	10.10	3.08	284.37	86.68	479.18	57,501
18	S-328	-0.40	-8.03	7.63	160.00	48.77	152.37	46.44	40.70	0.000144	274.28	83.60	8.00	2.44	40.00	12.19	10.10	3.08	284.37	86.68	479.18	57,501
18	S-329	-0.40	-8.03	7.63	160.00	48.77	152.37	46.44	40.70	0.000144	274.28	83.60	8.00	2.44	40.00	12.19	10.10	3.08	284.37	86.68	479.18	57,501
18	S-330	-0.40	-8.03	7.63	160.00	48.77	152.37	46.44	40.70	0.000144	274.28	83.60	8.00	2.44	40.00	12.19	10.10	3.08	284.37	86.68	479.18	57,501
18	S-331	-0.40	-8.04	7.64	160.00	48.77	152.36	46.44	40.70	0.000144	274.64	83.71	8.00	2.44	40.00	12.19	10.10	3.08	284.73	86.79	479.60	57,552
18	S-332	-0.40	-8.04	7.64	160.00	48.77	152.36	46.44	40.70	0.000144	274.64	83.71	8.00	2.44	40.00	12.19	10.10	3.08	284.73	86.79	479.60	57,552

Dewatering Calculations - Sichardt's Equation
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation[1] (ft)	Exc. Bottom Elevation[2] (ft)	Drawdown (ft)	Aquifer Head[3] (H) (ft)	Aquifer Head (H) (m)	Dewatered Aquifer Head (h) (ft)	Dewatered Aquifer Head (h) (m)	Hydraulic Conductivity[4] (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Radius of Influence (ROI) (ft)	Radius of Influence (ROI) (m)	Excavation Width[5] (ft)	Excavation Width (m)	Excavation Length[5] (ft)	Excavation Length (m)	Effective Radius (r_e) (ft)	Effective Radius (r_e) (m)	Total Radius of Influence (ft)	Total Radius of Influence (m)	Flow Rate (gpm)	Section Pumpage (gallons)
18	S-333	-0.40	-8.04	7.64	160.00	48.77	152.36	46.44	40.70	0.000144	274.64	83.71	8.00	2.44	40.00	12.19	10.10	3.08	284.73	86.79	479.60	57,552
18	S-334	-0.40	-8.04	7.64	160.00	48.77	152.36	46.44	40.70	0.000144	274.64	83.71	8.00	2.44	40.00	12.19	10.10	3.08	284.73	86.79	479.60	57,552
18	S-335	-0.40	-8.04	7.64	160.00	48.77	152.36	46.44	40.70	0.000144	274.64	83.71	8.00	2.44	40.00	12.19	10.10	3.08	284.73	86.79	479.60	57,552
18	S-336	-0.40	-8.04	7.64	160.00	48.77	152.36	46.44	40.70	0.000144	274.64	83.71	8.00	2.44	40.00	12.19	10.10	3.08	284.73	86.79	479.60	57,552
18	S-337	-0.40	-8.05	7.65	160.00	48.77	152.35	46.44	40.70	0.000144	275.00	83.82	8.00	2.44	40.00	12.19	10.10	3.08	285.09	86.90	480.02	57,603
18	S-338	-0.40	-8.05	7.65	160.00	48.77	152.35	46.44	40.70	0.000144	275.00	83.82	8.00	2.44	40.00	12.19	10.10	3.08	285.09	86.90	480.02	57,603
18	S-339	-0.40	-8.05	7.65	160.00	48.77	152.35	46.44	40.70	0.000144	275.00	83.82	8.00	2.44	40.00	12.19	10.10	3.08	285.09	86.90	480.02	57,603
19	S-340	-0.40	-8.05	7.65	160.00	48.77	152.35	46.44	40.70	0.000144	275.00	83.82	8.00	2.44	40.00	12.19	10.10	3.08	285.09	86.90	480.02	57,603
19	S-341	-0.40	-8.05	7.65	160.00	48.77	152.35	46.44	40.70	0.000144	275.00	83.82	8.00	2.44	40.00	12.19	10.10	3.08	285.09	86.90	480.02	57,603
19	S-342	-0.40	-8.06	7.66	160.00	48.77	152.34	46.43	40.70	0.000144	275.36	83.93	8.00	2.44	40.00	12.19	10.10	3.08	285.45	87.01	480.45	57,653
19	S-343	-0.40	-8.06	7.66	160.00	48.77	152.34	46.43	40.70	0.000144	275.36	83.93	8.00	2.44	40.00	12.19	10.10	3.08	285.45	87.01	480.45	57,653
19	S-344	-0.40	-8.06	7.66	160.00	48.77	152.34	46.43	40.70	0.000144	275.36	83.93	8.00	2.44	40.00	12.19	10.10	3.08	285.45	87.01	480.45	57,653
19	S-345	-0.40	-8.07	7.67	160.00	48.77	152.33	46.43	40.70	0.000144	275.72	84.04	8.00	2.44	40.00	12.19	10.10	3.08	285.81	87.12	480.87	57,704
19	S-346	-0.40	-8.07	7.67	160.00	48.77	152.33	46.43	40.70	0.000144	275.72	84.04	8.00	2.44	40.00	12.19	10.10	3.08	285.81	87.12	480.87	57,704
19	S-347	-0.40	-8.07	7.67	160.00	48.77	152.33	46.43	40.70	0.000144	275.72	84.04	8.00	2.44	40.00	12.19	10.10	3.08	285.81	87.12	480.87	57,704
19	S-348	-0.40	-8.07	7.67	160.00	48.77	152.33	46.43	40.70	0.000144	275.72	84.04	8.00	2.44	40.00	12.19	10.10	3.08	285.81	87.12	480.87	57,704
19	S-349	-0.40	-8.07	7.67	160.00	48.77	152.33	46.43	40.70	0.000144	275.72	84.04	8.00	2.44	40.00	12.19	10.10	3.08	285.81	87.12	480.87	57,704
19	S-350	-0.40	-8.07	7.67	160.00	48.77	152.33	46.43	40.70	0.000144	275.72	84.04	8.00	2.44	40.00	12.19	10.10	3.08	285.81	87.12	480.87	57,704
19	S-351	-0.40	-8.08	7.68	160.00	48.77	152.32	46.43	40.70	0.000144	276.08	84.15	8.00	2.44	40.00	12.19	10.10	3.08	286.17	87.23	481.29	57,755
19	S-352	-0.40	-8.08	7.68	160.00	48.77	152.32	46.43	40.70	0.000144	276.08	84.15	8.00	2.44	40.00	12.19	10.10	3.08	286.17	87.23	481.29	57,755
19	S-353	-0.40	-8.08	7.68	160.00	48.77	152.32	46.43	40.70	0.000144	276.08	84.15	8.00	2.44	40.00	12.19	10.10	3.08	286.17	87.23	481.29	57,755
19	S-354	-0.40	-8.08	7.68	160.00	48.77	152.32	46.43	40.70	0.000144	276.08	84.15	8.00	2.44	40.00	12.19	10.10	3.08	286.17	87.23	481.29	57,755
19	S-355	-0.40	-8.09	7.69	160.00	48.77	152.31	46.42	40.70	0.000144	276.44	84.26	8.00	2.44	40.00	12.19	10.10	3.08	286.53	87.33	481.71	57,805
19	S-356	-0.40	-8.09	7.69	160.00	48.77	152.31	46.42	40.70	0.000144	276.44	84.26	8.00	2.44	40.00	12.19	10.10	3.08	286.53	87.33	481.71	57,805
19	S-357	-0.40	-8.09	7.69	160.00	48.77	152.31	46.42	40.70	0.000144	276.44	84.26	8.00	2.44	40.00	12.19	10.10	3.08	286.53	87.33	481.71	57,805
19	S-358	-0.40	-8.09	7.69	160.00	48.77	152.31	46.42	40.70	0.000144	276.44	84.26	8.00	2.44	40.00	12.19	10.10	3.08	286.53	87.33	481.71	57,805
19	S-359	-0.40	-8.09	7.69	160.00	48.77	152.31	46.42	40.70	0.000144	276.44	84.26	8.00	2.44	40.00	12.19	10.10	3.08	286.53	87.33	481.71	57,805
19	S-360	-0.40	-8.09	7.69	160.00	48.77	152.31	46.42	40.70	0.000144	276.44	84.26	8.00	2.44	40.00	12.19	10.10	3.08	286.53	87.33	481.71	57,805
19	S-361	-0.40	-8.10	7.70	160.00	48.77	152.30	46.42	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	482.13	57,856
19	S-362	-0.40	-8.10	7.70	160.00	48.77	152.30	46.42	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	482.13	57,856
19	S-363	-0.40	-8.10	7.70	160.00	48.77	152.30	46.42	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	482.13	57,856
19	S-364	-0.40	-8.10	7.70	160.00	48.77	152.30	46.42	40.70	0.000144	276.80	84.37	8.00	2.44	40.00	12.19	10.10	3.08	286.89	87.44	482.13	57,856
PROJECT TOTALS															*14,365.00*	*4,378.45*						*14,411,953*

TABLE NOTES:

NAVD: North American Vertical Datum of 1988

[1,4] Groundwater elevation and hydraulic conductivity referenced from *Geotechnical Data Report, Miami-Dade Clean Water Recovery Center Pipeline,* prepared March 2023 by Blascom Engineering, Inc.

[2] Maximum dewatering depth is -8.9 ft relative to NAVD

[3] Aquifer Head (H) determined from *United States Geological Survey: Water-Resources Investigations Report 90-4108 Hydrology of the Surficial Aquifer System, Dade County, Florida, 1991.*

[5] Conventional trench excavations are 8.0 ft. wide and 40.0 ft. long.

Bold/Shaded Values: Maximum values for the radius of influence (ROI), dewatering flow rate, and daily dewatering pumpage. Maximum daily dewatering flow occurs in Sections 279-283

DEWATERING SUMMARY :

*Average section pumpage :	0.051	MG
*Maximum section pumpage :	0.062	MG
*Average daily pumpage :	0.256	MGD
*Maximum daily pumpage :	0.303	MGD
**Project pumpage :	17.951	MG
**Dewatering duration:	70	Days

*Estimated project construction rate is five (5) sections per day.

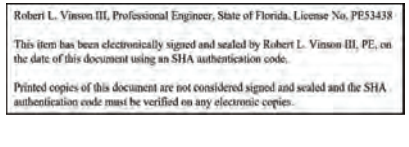
**Totals may differ due to potential variability of hydrogeologic conditions.

The calculations presented are deemed appropriate and in accordance with State of Florida Rules and Regulation as certified by a registered Professional Engineer authorized by Chapter 471, Florida Statutes and defined by the Florida State Board of Professional Engineering. To the best of my knowledge, all information summarized in this report is true, accurate, complete, and in accordance with applicable State of Florida Rules and Regulations.

Reviewed and Approved by:

Robert L Vinson III
Digitally signed by Robert L Vinson III
Date: 2023.08.15 17:16:47 -05'00'

Robert L. Vinson III, P.E.
License No. 53438



Infiltration Calculations
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

SFWMD Permit Application Manual, Volume IV, FDOT Drainage Handbook Exfiltration Systems 2007

NOTE:

(1) This method calculates the required length of infiltration trench based on one-hour of infiltration. Therefore, the volume used in this equation is the sum of the initial open hole water volume and the dewatering effluent generated in one hour.

(2) Existing grade elevations per North American Vertical Datum of 1988.

(3) Use L2 when saturated depth of trench is greater than non-saturated depth or the trench width is greater than 2 times trench depth

1. $Radius\ of\ Influence\ (m) = 3000 \times Drawdown\ (m) \times \sqrt{Hydraulic\ Conductivity\ (\frac{m}{s})}$

2. $Effective\ Radius\ (m) = \sqrt{\frac{Excavation\ Width\ (m) \times Excavation\ Length\ (m)}{\pi}}$

3. $Flow\ Rate\ (^{m^3}/_{S}) = \frac{\pi \times Hydraulic\ Conductivity\ \left(\frac{m}{s}\right) \times [H(m)^2 - h(m)^2]}{\left[Ln\left(Radius\ of\ Influence\ (m)\right) - Ln(Effective\ Radius\ (m))\right]}$

$L = Length\ of\ Trench\ (feet)$
$V = Volume\ Treated\ (acre-inches)$
$W = Trench\ Width\ (feet)$
$K = Hydraulic\ Conductivity\ (cfs/ft^2 - ft\ head)$
$H_2 = H_{eff} = Depth\ to\ Water\ Table\ (feet)$
$D_U = Non-Saturated\ Trench\ Depth\ (feet)$
$D_S = Saturated\ Trench\ Depth\ (feet)$

$$L = \frac{V}{K\left(H_2W + 2H_2D_U - {D_U}^2 + 2H_2D_S\right) + (1.39 \times 10^{-4})WD_U}$$

$$L_2 = \frac{V}{K\left(2H_{eff}D_U - {D_U}^2 + 2H_{eff}D_S\right) + (1.39 \times 10^{-4})WD_U}$$

Sheet #	Excavation	GW Elevation (ft)	Grade[1]	Depth to GW (ft)	Exc. Bottom Elevation (ft)	Drawdown	Exc. Bottom from Surface (ft)	Non Saturated Trench Depth (ft)	Saturated Trench Depth (ft)	Hydraulic Conductivity (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Hydraulic Conductivity (K) (cfs/ft^2-ft head)	Excavation Width (ft)	Excavation Width (m)	Excavation Length (ft)	Excavation Length (m)	Infiltration Flow Rate (gpm)	Total Hourly Pumpage (gallons)	Total Hourly Pumpage (acre-in)	Minimum Trench Length L (ft)	Minimum Trench Length L_2 (ft)	Minimum Trench Length (ft)[2]
1	S-01	-0.40	9.00	9.40	-1.50	1.10	10.50	9.40	1.10	40.70	0.000144	0.000471	8.00	2.44	45.00	13.72	0.0	0.0	0.00	0.00	0.00	0.00
1	S-02	-0.40	8.25	8.65	-1.50	1.10	9.75	8.65	1.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
2	S-03	-0.40	3.00	3.40	-5.50	5.10	8.50	3.40	5.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	344.4	20,663.5	0.76	19.83	29.77	30.00
2	S-04	-0.40	3.50	3.90	-5.52	5.12	9.02	3.90	5.12	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	345.3	20,715.1	0.76	16.95	25.17	26.00
2	S-05	-0.40	2.50	2.90	-5.54	5.14	8.04	2.90	5.14	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	346.1	20,766.8	0.76	23.78	36.02	37.00
2	S-06	-0.40	2.75	3.15	-5.57	5.17	8.32	3.15	5.17	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	347.4	20,844.1	0.77	21.69	32.64	33.00
2	S-07	-0.40	2.90	3.30	-5.59	5.19	8.49	3.30	5.19	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	348.3	20,895.6	0.77	20.59	30.86	31.00
2	S-08	-0.40	3.00	3.40	-5.61	5.21	8.61	3.40	5.21	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	349.1	20,947.1	0.77	19.92	29.77	30.00
2	S-09	-0.40	3.00	3.40	-5.63	5.23	8.63	3.40	5.23	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	350.0	20,998.6	0.77	19.94	29.77	30.00
2	S-10	-0.40	3.00	3.40	-5.65	5.25	8.65	3.40	5.25	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	350.8	21,049.9	0.78	19.95	29.77	30.00
2	S-11	-0.40	3.00	3.40	-5.67	5.27	8.67	3.40	5.27	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	351.7	21,101.3	0.78	19.97	29.77	30.00
2	S-12	-0.40	3.20	3.60	-5.70	5.30	8.90	3.60	5.30	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	353.0	21,178.3	0.78	18.73	27.77	28.00
2	S-13	-0.40	3.00	3.40	-5.73	5.33	8.73	3.40	5.33	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	354.3	21,255.1	0.78	20.01	29.76	30.00
2	S-14	-0.40	3.00	3.40	-5.75	5.35	8.75	3.40	5.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	355.1	21,306.3	0.78	20.03	29.76	30.00
2	S-15	-0.40	3.00	3.40	-5.77	5.37	8.77	3.40	5.37	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	356.0	21,357.5	0.79	20.04	29.76	30.00
2	S-16	-0.40	3.10	3.50	-5.79	5.39	8.89	3.50	5.39	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	356.8	21,408.6	0.79	19.41	28.74	29.00
2	S-17	-0.40	3.30	3.70	-5.81	5.41	9.11	3.70	5.41	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	357.7	21,459.7	0.79	18.22	26.86	27.00
2	S-18	-0.40	4.20	4.60	-5.84	5.44	10.04	4.60	5.44	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	358.9	21,536.2	0.79	14.16	20.52	21.00
2	S-19	-0.40	4.10	4.50	-5.87	5.47	9.97	4.50	5.47	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	360.2	21,612.7	0.80	14.55	21.09	22.00
2	S-20	-0.40	3.50	3.90	-5.89	5.49	9.39	3.90	5.49	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	361.1	21,663.6	0.80	17.21	25.19	26.00
2	S-21	-0.40	3.00	3.40	-5.91	5.51	8.91	3.40	5.51	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	361.9	21,714.5	0.80	20.15	29.75	30.00
2	S-22	-0.40	3.00	3.40	-5.93	5.53	8.93	3.40	5.53	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	362.8	21,765.3	0.80	20.16	29.75	30.00
2	S-23	-0.40	2.90	3.30	-5.95	5.55	8.85	3.30	5.55	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	363.6	21,816.1	0.80	20.87	30.84	31.00
2	S-24	-0.40	2.75	3.15	-5.97	5.57	8.72	3.15	5.57	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	364.4	21,866.9	0.81	22.02	32.59	33.00
2	S-25	-0.40	2.30	2.70	-6.00	5.60	8.30	2.70	5.60	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	327.8	19,665.6	0.72	23.47	35.02	36.00
3	S-26	-0.40	2.30	2.70	-6.00	5.60	8.30	2.70	5.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	365.7	21,943.0	0.81	26.19	39.07	40.00
3	S-27	-0.40	2.20	2.60	-6.00	5.60	8.20	2.60	5.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	365.7	21,943.0	0.81	27.31	40.83	41.00
3	S-28	-0.40	2.00	2.40	-6.01	5.61	8.01	2.40	5.61	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	366.1	21,968.3	0.81	29.84	44.78	45.00
3	S-29	-0.40	1.80	2.20	-6.01	5.61	7.81	2.20	5.61	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	366.1	21,968.3	0.81	32.83	49.47	50.00
3	S-30	-0.40	2.00	2.40	-6.02	5.62	8.02	2.40	5.62	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	366.6	21,993.7	0.81	29.85	44.78	45.00
3	S-31	-0.40	2.10	2.50	-6.02	5.62	8.12	2.50	5.62	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	366.6	21,993.7	0.81	28.54	42.72	43.00
3	S-32	-0.40	2.10	2.50	-6.03	5.63	8.13	2.50	5.63	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	367.0	22,019.0	0.81	28.55	42.71	43.00
3	S-33	-0.40	1.80	2.20	-6.03	5.63	7.83	2.20	5.63	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	367.0	22,019.0	0.81	32.85	49.46	50.00
3	S-34	-0.40	1.80	2.20	-6.04	5.64	7.84	2.20	5.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	367.4	22,044.3	0.81	32.86	49.45	50.00
3	S-35	-0.40	1.90	2.30	-6.04	5.64	7.94	2.30	5.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	367.4	22,044.3	0.81	31.30	47.01	48.00
3	S-36	-0.40	2.00	2.40	-6.05	5.65	8.05	2.40	5.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	367.8	22,069.6	0.81	29.88	44.76	45.00
3	S-37	-0.40	2.00	2.40	-6.05	5.65	8.05	2.40	5.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	367.8	22,069.6	0.81	29.88	44.76	45.00
3	S-38	-0.40	2.60	3.00	-6.05	5.65	8.65	3.00	5.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	367.8	22,069.6	0.81	23.32	34.52	35.00
3	S-39	-0.40	3.00	3.40	-6.06	5.66	9.06	3.40	5.66	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	368.2	22,094.9	0.81	20.26	29.74	30.00
3	S-40	-0.40	2.60	3.00	-6.06	5.66	8.66	3.00	5.66	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	368.2	22,094.9	0.81	23.33	34.52	35.00

Infiltration Calculations
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation (ft)	Grade[1]	Depth to GW (ft)	Exc. Bottom Elevation (ft)	Drawdown	Exc. Bottom from Surface (ft)	Non Saturated Trench Depth (ft)	Saturated Trench Depth (ft)	Hydraulic Conductivity (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Hydraulic Conductivity (K) (cfs/ft^2-ft head)	Excavation Width (ft)	Excavation Width (m)	Excavation Length (ft)	Excavation Length (m)	Infiltration Flow Rate (gpm)	Total Hourly Pumpage (gallons)	Total Hourly Pumpage (acre-in)	Minimum Trench Length L (ft)	Minimum Trench Length L_2 (ft)	Minimum Trench Length (ft)[2]
3	S-41	-0.40	2.50	2.90	-6.07	5.67	8.57	2.90	5.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	368.7	22,120.2	0.81	24.24	35.92	36.00
3	S-42	-0.40	2.50	2.90	-6.07	5.67	8.57	2.90	5.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	368.7	22,120.2	0.81	24.24	35.92	36.00
3	S-43	-0.40	2.50	2.90	-6.08	5.68	8.58	2.90	5.68	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	369.1	22,145.5	0.82	24.25	35.92	36.00
3	S-44	-0.40	2.80	3.20	-6.08	5.68	8.88	3.20	5.68	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	369.1	22,145.5	0.82	21.71	31.98	32.00
3	S-45	-0.40	3.00	3.40	-6.09	5.69	9.09	3.40	5.69	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	369.5	22,170.7	0.82	20.28	29.74	30.00
3	S-46	-0.40	3.10	3.50	-6.09	5.69	9.19	3.50	5.69	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	369.5	22,170.7	0.82	19.62	28.72	29.00
3	S-47	-0.40	3.30	3.70	-6.10	5.70	9.40	3.70	5.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	369.9	22,196.0	0.82	18.42	26.86	27.00
3	S-48	-0.40	3.30	3.70	-6.10	5.70	9.40	3.70	5.70	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	331.7	19,904.5	0.73	16.52	24.09	25.00
4	S-49	-0.40	3.10	3.50	-6.10	5.70	9.20	3.50	5.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	369.9	22,196.0	0.82	19.63	28.72	29.00
4	S-50	-0.40	3.00	3.40	-6.11	5.71	9.11	3.40	5.71	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	370.4	22,221.2	0.82	20.29	29.74	30.00
4	S-51	-0.40	3.00	3.40	-6.11	5.71	9.11	3.40	5.71	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	370.4	22,221.2	0.82	20.29	29.74	30.00
4	S-52	-0.40	3.10	3.50	-6.12	5.72	9.22	3.50	5.72	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	370.8	22,246.5	0.82	19.64	28.72	29.00
4	S-53	-0.40	3.10	3.50	-6.12	5.72	9.22	3.50	5.72	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	370.8	22,246.5	0.82	19.64	28.72	29.00
4	S-54	-0.40	3.00	3.40	-6.13	5.73	9.13	3.40	5.73	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	371.2	22,271.7	0.82	20.31	29.74	30.00
4	S-55	-0.40	2.60	3.00	-6.13	5.73	8.73	3.00	5.73	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	371.2	22,271.7	0.82	23.38	34.51	35.00
4	S-56	-0.40	2.60	3.00	-6.14	5.74	8.74	3.00	5.74	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	371.6	22,296.9	0.82	23.39	34.50	35.00
4	S-57	-0.40	2.90	3.30	-6.15	5.75	9.05	3.30	5.75	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	372.0	22,322.1	0.82	21.02	30.82	31.00
4	S-58	-0.40	3.00	3.40	-6.15	5.75	9.15	3.40	5.75	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	372.0	22,322.1	0.82	20.32	29.74	30.00
4	S-59	-0.40	3.00	3.40	-6.16	5.76	9.16	3.40	5.76	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	372.5	22,347.3	0.82	20.33	29.74	30.00
4	S-60	-0.40	2.80	3.20	-6.16	5.76	8.96	3.20	5.76	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	372.5	22,347.3	0.82	21.77	31.96	32.00
4	S-61	-0.40	2.50	2.90	-6.17	5.77	8.67	2.90	5.77	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	372.9	22,372.5	0.82	24.32	35.90	36.00
4	S-62	-0.40	2.20	2.60	-6.18	5.78	8.38	2.60	5.78	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	373.3	22,397.7	0.82	27.47	40.77	41.00
4	S-63	-0.40	2.00	2.40	-6.19	5.79	8.19	2.40	5.79	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	373.7	22,422.9	0.83	30.01	44.70	45.00
4	S-64	-0.40	2.00	2.40	-6.19	5.79	8.19	2.40	5.79	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	373.7	22,422.9	0.83	30.01	44.70	45.00
4	S-65	-0.40	2.10	2.50	-6.20	5.80	8.30	2.50	5.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	374.1	22,448.0	0.83	28.70	42.65	43.00
4	S-66	-0.40	2.20	2.60	-6.20	5.80	8.40	2.60	5.80	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	335.7	20,142.5	0.74	24.66	36.57	37.00
5	S-67	-0.40	2.60	3.00	-6.20	5.80	8.80	3.00	5.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	374.1	22,448.0	0.83	23.44	34.49	35.00
5	S-68	-0.40	2.30	2.70	-6.21	5.81	8.51	2.70	5.81	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	374.6	22,473.2	0.83	26.37	39.01	40.00
5	S-69	-0.40	1.90	2.30	-6.21	5.81	8.11	2.30	5.81	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	374.6	22,473.2	0.83	31.46	46.92	47.00
5	S-70	-0.40	2.00	2.40	-6.22	5.82	8.22	2.40	5.82	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	375.0	22,498.3	0.83	30.04	44.69	45.00
5	S-71	-0.40	2.00	2.40	-6.23	5.83	8.23	2.40	5.83	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	375.4	22,523.5	0.83	30.04	44.68	45.00
5	S-72	-0.40	2.00	2.40	-6.23	5.83	8.23	2.40	5.83	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	375.4	22,523.5	0.83	30.04	44.68	45.00
5	S-73	-0.40	2.50	2.90	-6.23	5.83	8.73	2.90	5.83	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	375.4	22,523.5	0.83	24.37	35.89	36.00
5	S-74	-0.40	2.90	3.30	-6.24	5.84	9.14	3.30	5.84	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	375.8	22,548.6	0.83	21.08	30.81	31.00
5	S-75	-0.40	2.50	2.90	-6.25	5.85	8.75	2.90	5.85	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	376.2	22,573.7	0.83	24.38	35.88	36.00
5	S-76	-0.40	1.75	2.15	-6.25	5.85	8.00	2.15	5.85	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	376.2	22,573.7	0.83	33.90	50.64	51.00
5	S-77	-0.40	1.80	2.20	-6.26	5.86	8.06	2.20	5.86	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	376.6	22,598.8	0.83	33.07	49.33	50.00
5	S-78	-0.40	1.75	2.15	-6.27	5.87	8.02	2.15	5.87	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	377.1	22,623.9	0.83	33.92	50.62	51.00
5	S-79	-0.40	2.00	2.40	-6.27	5.87	8.27	2.40	5.87	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	377.1	22,623.9	0.83	30.08	44.66	45.00
5	S-80	-0.40	2.50	2.90	-6.28	5.88	8.78	2.90	5.88	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	377.5	22,649.0	0.83	24.40	35.87	36.00
5	S-81	-0.40	2.10	2.50	-6.29	5.89	8.39	2.50	5.89	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	377.9	22,674.1	0.84	28.78	42.61	43.00
5	S-82	-0.40	2.75	3.15	-6.29	5.89	9.04	3.15	5.89	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	377.9	22,674.1	0.84	22.25	32.55	33.00
5	S-83	-0.40	2.60	3.00	-6.30	5.90	8.90	3.00	5.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	378.3	22,699.1	0.84	23.51	34.47	35.00
5	S-84	-0.40	2.50	2.90	-6.30	5.90	8.80	2.90	5.90	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	339.7	20,379.6	0.75	21.92	32.20	33.00
6	S-85	-0.40	2.00	2.40	-6.30	5.90	8.30	2.40	5.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	378.3	22,699.1	0.84	30.11	44.65	45.00
6	S-86	-0.40	2.00	2.40	-6.30	5.90	8.30	2.40	5.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	378.3	22,699.1	0.84	30.11	44.65	45.00
6	S-87	-0.40	2.30	2.70	-6.30	5.90	8.60	2.70	5.90	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	339.7	20,379.6	0.75	23.74	35.00	35.00
6	S-88	-0.40	6.30	6.70	-1.75	1.35	8.05	6.70	1.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
6	S-89	-0.40	6.30	6.70	-1.75	1.35	8.05	6.70	1.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
6	S-90	-0.40	6.00	6.40	-1.75	1.35	7.75	6.40	1.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
6	S-91	-0.40	6.50	6.90	-2.00	1.60	8.50	6.90	1.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
6	S-92	-0.40	6.50	6.90	-2.10	1.70	8.60	6.90	1.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00

Infiltration Calculations
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation (ft)	Grade[1]	Depth to GW (ft)	Exc. Bottom Elevation (ft)	Drawdown	Exc. Bottom from Surface (ft)	Non Saturated Trench Depth (ft)	Saturated Trench Depth (ft)	Hydraulic Conductivity (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Hydraulic Conductivity (K) (cfs/ft^2-ft head)	Excavation Width (ft)	Excavation Width (m)	Excavation Length (ft)	Excavation Length (m)	Infiltration Flow Rate (gpm)	Total Hourly Pumpage (gallons)	Total Hourly Pumpage (acre-in)	Minimum Trench Length L (ft)	Minimum Trench Length L_2 (ft)	Minimum Trench Length (ft^2)
7	S-93	-0.40	6.50	6.90	-2.00	1.60	8.50	6.90	1.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-94	-0.40	6.50	6.90	-1.75	1.35	8.25	6.90	1.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-95	-0.40	6.50	6.90	-1.50	1.10	8.00	6.90	1.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-96	-0.40	6.50	6.90	-1.25	0.85	7.75	6.90	0.85	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-97	-0.40	6.50	6.90	-1.25	0.85	7.75	6.90	0.85	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-98	-0.40	6.50	6.90	-1.25	0.85	7.75	6.90	0.85	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-99	-0.40	6.50	6.90	-1.26	0.86	7.76	6.90	0.86	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-100	-0.40	6.50	6.90	-1.26	0.86	7.76	6.90	0.86	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-101	-0.40	6.50	6.90	-1.26	0.86	7.76	6.90	0.86	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-102	-0.40	6.50	6.90	-1.27	0.87	7.77	6.90	0.87	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-103	-0.40	6.50	6.90	-1.27	0.87	7.77	6.90	0.87	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-104	-0.40	6.50	6.90	-1.27	0.87	7.77	6.90	0.87	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-105	-0.40	6.50	6.90	-1.28	0.88	7.78	6.90	0.88	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-106	-0.40	6.50	6.90	-1.28	0.88	7.78	6.90	0.88	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-107	-0.40	6.50	6.90	-1.28	0.88	7.78	6.90	0.88	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-108	-0.40	6.50	6.90	-1.29	0.89	7.79	6.90	0.89	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-109	-0.40	6.50	6.90	-1.29	0.89	7.79	6.90	0.89	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-110	-0.40	6.50	6.90	-1.29	0.89	7.79	6.90	0.89	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-111	-0.40	6.50	6.90	-1.30	0.90	7.80	6.90	0.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-112	-0.40	6.50	6.90	-1.20	0.80	7.70	6.90	0.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-113	-0.40	6.50	6.90	-1.10	0.70	7.60	6.90	0.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-114	-0.40	6.50	6.90	-1.10	0.70	7.60	6.90	0.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
7	S-115	-0.40	6.50	6.90	-1.10	0.70	7.60	6.90	0.70	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	0.0	0.0	0.00	0.00	0.00	0.00
8	S-116	-0.40	6.50	6.90	-1.10	0.70	7.60	6.90	0.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-117	-0.40	6.50	6.90	-1.10	0.70	7.60	6.90	0.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-118	-0.40	6.50	6.90	-1.11	0.71	7.61	6.90	0.71	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-119	-0.40	6.50	6.90	-1.12	0.72	7.62	6.90	0.72	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-120	-0.40	6.50	6.90	-1.13	0.73	7.63	6.90	0.73	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-121	-0.40	6.50	6.90	-1.14	0.74	7.64	6.90	0.74	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-122	-0.40	6.50	6.90	-1.15	0.75	7.65	6.90	0.75	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-123	-0.40	6.50	6.90	-1.16	0.76	7.66	6.90	0.76	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-124	-0.40	6.50	6.90	-1.17	0.77	7.67	6.90	0.77	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-125	-0.40	6.50	6.90	-1.18	0.78	7.68	6.90	0.78	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-126	-0.40	6.50	6.90	-1.19	0.79	7.69	6.90	0.79	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-127	-0.40	6.50	6.90	-1.19	0.79	7.69	6.90	0.79	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-128	-0.40	6.50	6.90	-1.20	0.80	7.70	6.90	0.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-129	-0.40	6.50	6.90	-1.20	0.80	7.70	6.90	0.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-130	-0.40	6.50	6.90	-1.20	0.80	7.70	6.90	0.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-131	-0.40	6.50	6.90	-1.21	0.81	7.71	6.90	0.81	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-132	-0.40	6.50	6.90	-1.22	0.82	7.72	6.90	0.82	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-133	-0.40	6.50	6.90	-1.23	0.83	7.73	6.90	0.83	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-134	-0.40	6.50	6.90	-1.24	0.84	7.74	6.90	0.84	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-135	-0.40	6.50	6.90	-1.25	0.85	7.75	6.90	0.85	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-136	-0.40	6.50	6.90	-1.26	0.86	7.76	6.90	0.86	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-137	-0.40	6.50	6.90	-1.27	0.87	7.77	6.90	0.87	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-138	-0.40	6.50	6.90	-1.28	0.88	7.78	6.90	0.88	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-139	-0.40	6.50	6.90	-1.29	0.89	7.79	6.90	0.89	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
8	S-140	-0.40	6.50	6.90	-1.30	0.90	7.80	6.90	0.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-141	-0.40	6.50	6.90	-1.30	0.90	7.80	6.90	0.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-142	-0.40	6.50	6.90	-1.40	1.00	7.90	6.90	1.00	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-143	-0.40	6.50	6.90	-1.50	1.10	8.00	6.90	1.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00

Infiltration Calculations
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation (ft)	Grade[1]	Depth to GW (ft)	Exc. Bottom Elevation (ft)	Drawdown	Exc. Bottom from Surface (ft)	Non Saturated Trench Depth (ft)	Saturated Trench Depth (ft)	Hydraulic Conductivity (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Hydraulic Conductivity (K) (cfs/ft^2-ft head)	Excavation Width (ft)	Excavation Width (m)	Excavation Length (ft)	Excavation Length (m)	Infiltration Flow Rate (gpm)	Total Hourly Pumpage (gallons)	Total Hourly Pumpage (acre-in)	Minimum Trench Length L (ft)	Minimum Trench Length L_2 (ft)	Minimum Trench Length (ft)[2]
9	S-144	-0.40	6.50	6.90	-1.60	1.20	8.10	6.90	1.20	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-145	-0.40	6.50	6.90	-1.63	1.23	8.13	6.90	1.23	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-146	-0.40	6.30	6.70	-1.65	1.25	7.95	6.70	1.25	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-147	-0.40	6.20	6.60	-1.67	1.27	7.87	6.60	1.27	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-148	-0.40	6.10	6.50	-1.70	1.30	7.80	6.50	1.30	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-149	-0.40	6.10	6.50	-1.73	1.33	7.83	6.50	1.33	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-150	-0.40	6.10	6.50	-1.75	1.35	7.85	6.50	1.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-151	-0.40	6.10	6.50	-1.75	1.35	7.85	6.50	1.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-152	-0.40	6.20	6.60	-1.70	1.30	7.90	6.60	1.30	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-153	-0.40	6.30	6.70	-1.60	1.20	7.90	6.70	1.20	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-154	-0.40	6.50	6.90	-1.70	1.30	8.20	6.90	1.30	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-155	-0.40	6.60	7.00	-2.10	1.70	8.70	7.00	1.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-156	-0.40	5.50	5.90	-2.50	2.10	8.00	5.90	2.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-157	-0.40	6.50	6.90	-2.00	1.60	8.50	6.90	1.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
9	S-158	-0.40	6.50	6.90	-1.30	0.90	7.80	6.90	0.90	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	0.0	0.0	0.00	0.00	0.00	0.00
10	S-159	-0.40	6.50	6.90	-1.30	0.90	7.80	6.90	0.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
10	S-160	-0.40	6.50	6.90	-1.28	0.88	7.78	6.90	0.88	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
10	S-161	-0.40	6.60	7.00	-1.25	0.85	7.85	7.00	0.85	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
10	S-162	-0.40	6.75	7.15	-1.22	0.82	7.97	7.15	0.82	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
10	S-163	-0.40	6.80	7.20	-1.20	0.80	8.00	7.20	0.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
10	S-164	-0.40	6.90	7.30	-1.18	0.78	8.08	7.30	0.78	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
10	S-165	-0.40	6.90	7.30	-1.15	0.75	8.05	7.30	0.75	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
10	S-166	-0.40	6.80	7.20	-1.12	0.72	7.92	7.20	0.72	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
10	S-167	-0.40	6.75	7.15	-1.10	0.70	7.85	7.15	0.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
10	S-168	-0.40	6.50	6.90	-1.30	0.90	7.80	6.90	0.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	0.0	0.0	0.00	0.00	0.00	0.00
11	S-169	-0.40	6.50	6.90	-1.90	1.50	8.40	6.90	1.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	177.4	10,644.9	0.39	5.95	9.84	6.00
11	S-170	-0.40	6.50	6.90	-7.80	7.40	14.30	6.90	7.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	439.4	26,363.6	0.97	9.32	12.41	13.00
11	S-171	-0.40	3.50	3.90	-7.80	7.40	11.30	3.90	7.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	439.4	26,363.6	0.97	18.19	25.09	26.00
11	S-172	-0.40	3.00	3.40	-7.80	7.40	10.80	3.40	7.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	439.4	26,363.6	0.97	21.23	29.48	30.00
11	S-173	-0.40	0.00	0.40	-8.10	7.70	8.10	0.40	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	451.3	27,075.4	1.00	202.28	291.39	292.00
11	S-174	-0.40	**-0.20**	0.20	-8.30	7.90	8.10	0.20	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	408.48	586.46	**0.00**
11	S-175	-0.40	**-0.10**	0.30	-8.30	7.90	8.20	0.30	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	271.29	388.86	**0.00**
11	S-176	-0.40	**-0.20**	0.20	-8.30	7.90	8.10	0.20	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	408.48	586.46	**0.00**
11	S-177	-0.40	0.10	0.50	-8.30	7.90	8.40	0.50	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	161.55	230.81	231.00
11	S-178	-0.40	0.10	0.50	-8.30	7.90	8.40	0.50	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	161.55	230.81	231.00
11	S-179	-0.40	0.50	0.90	-8.30	7.90	8.80	0.90	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	88.42	125.54	126.00
11	S-180	-0.40	0.50	0.90	-8.30	7.90	8.80	0.90	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	88.42	125.54	126.00
11	S-181	-0.40	0.10	0.50	-8.30	7.90	8.40	0.50	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	161.55	230.81	231.00
11	S-182	-0.40	0.10	0.50	-8.30	7.90	8.40	0.50	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	161.55	230.81	231.00
11	S-183	-0.40	0.10	0.50	-8.30	7.90	8.40	0.50	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	161.55	230.81	231.00
11	S-184	-0.40	0.10	0.50	-8.30	7.90	8.40	0.50	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	161.55	230.81	231.00
11	S-185	-0.40	0.00	0.40	-8.30	7.90	8.30	0.40	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	202.70	290.07	291.00
11	S-186	-0.40	0.00	0.40	-8.30	7.90	8.30	0.40	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	202.70	290.07	291.00
11	S-187	-0.40	0.00	0.40	-8.30	7.90	8.30	0.40	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	202.70	290.07	291.00
11	S-188	-0.40	0.00	0.40	-8.30	7.90	8.30	0.40	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	202.70	290.07	291.00
11	S-189	-0.40	**-0.50**	-0.10	-8.30	7.90	7.80	-0.10	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	-826.36	-1192.40	**0.00**
11	S-190	-0.40	0.00	0.40	-8.30	7.90	8.30	0.40	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	202.70	290.07	291.00
11	S-191	-0.40	0.00	0.40	-8.30	7.90	8.30	0.40	7.90	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	415.9	24,954.5	0.92	183.63	262.78	263.00
12	S-192	-0.40	0.00	0.40	-8.10	7.70	8.10	0.40	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	451.3	27,075.4	1.00	202.28	291.39	292.00
12	S-193	-0.40	0.10	0.50	-7.90	7.50	8.00	0.50	7.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	443.4	26,601.6	0.98	160.84	232.88	233.00
12	S-194	-0.40	0.50	0.90	-7.75	7.35	8.25	0.90	7.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	437.4	26,244.3	0.97	87.82	126.93	127.00

Infiltration Calculations
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation (ft)	Grade[1]	Depth to GW (ft)	Exc. Bottom Elevation (ft)	Drawdown	Exc. Bottom from Surface (ft)	Non Saturated Trench Depth (ft)	Saturated Trench Depth (ft)	Hydraulic Conductivity (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Hydraulic Conductivity (K) (cfs/ft^2-ft head)	Excavation Width (ft)	Excavation Width (m)	Excavation Length (ft)	Excavation Length (m)	Infiltration Flow Rate (gpm)	Total Hourly Pumpage (gallons)	Total Hourly Pumpage (acre-in)	Minimum Trench Length L (ft)	Minimum Trench Length L_2 (ft)	Minimum Trench Length (ft)[2]
12	S-195	-0.40	0.60	1.00	-7.60	7.20	8.20	1.00	7.20	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	431.4	25,885.4	0.95	78.56	113.94	114.00
12	S-196	-0.40	0.00	0.40	-8.30	7.90	8.30	0.40	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	202.70	290.07	291.00
12	S-197	-0.40	**-0.50**	-0.10	-8.50	8.10	8.00	-0.10	8.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	466.9	28,014.4	1.03	-827.70	-1186.39	**0.00**
12	S-198	-0.40	0.10	0.50	-8.20	7.80	8.30	0.50	7.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	455.2	27,311.2	1.01	161.38	231.32	232.00
12	S-199	-0.40	0.10	0.50	-8.10	7.70	8.20	0.50	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	451.3	27,075.4	1.00	161.21	231.84	232.00
12	S-200	-0.40	0.00	0.40	-8.20	7.80	8.20	0.40	7.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	455.2	27,311.2	1.01	202.50	290.73	291.00
12	S-201	-0.40	0.00	0.40	-8.30	7.90	8.30	0.40	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	202.70	290.07	291.00
12	S-202	-0.40	**-0.20**	0.20	-8.40	8.00	8.20	0.20	8.00	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	463.0	27,780.7	1.02	408.85	585.08	**0.00**
12	S-203	-0.40	**-0.60**	-0.20	-8.50	8.10	7.90	-0.20	8.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	466.9	28,014.4	1.03	-415.42	-596.43	**0.00**
12	S-204	-0.40	1.00	1.40	-8.30	7.90	9.30	1.40	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	459.1	27,546.3	1.01	55.81	78.64	79.00
12	S-205	-0.40	2.00	2.40	-7.90	7.50	9.90	2.40	7.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	443.4	26,601.6	0.98	31.21	43.85	44.00
12	S-206	-0.40	3.00	3.40	-7.60	7.20	10.60	3.40	7.20	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	431.4	25,885.4	0.95	21.14	29.52	30.00
12	S-207	-0.40	2.20	2.60	-7.50	7.10	9.70	2.60	7.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	427.4	25,645.2	0.94	28.39	40.25	41.00
12	S-208	-0.40	2.10	2.50	-7.40	7.00	9.50	2.50	7.00	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	423.4	25,404.2	0.94	29.58	42.12	43.00
12	S-209	-0.40	2.10	2.50	-7.20	6.80	9.30	2.50	6.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	415.3	24,919.8	0.92	29.45	42.21	43.00
12	S-210	-0.40	2.00	2.40	-7.10	6.70	9.10	2.40	6.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	411.3	24,676.4	0.91	30.73	44.26	45.00
12	S-211	-0.40	0.90	1.30	-7.00	6.60	7.90	1.30	6.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	407.2	24,432.2	0.90	59.10	87.14	88.00
12	S-212	-0.40	1.00	1.40	-6.90	6.50	7.90	1.40	6.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	403.1	24,187.2	0.89	54.55	80.59	81.00
12	S-213	-0.40	1.10	1.50	-6.80	6.40	7.90	1.50	6.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	399.0	23,941.3	0.88	50.60	74.90	75.00
12	S-214	-0.40	1.20	1.60	-6.70	6.30	7.90	1.60	6.30	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	394.9	23,694.6	0.87	47.14	69.91	70.00
12	S-215	-0.40	1.30	1.70	-7.00	6.60	8.30	1.70	6.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	407.2	24,432.2	0.90	44.48	65.10	66.00
12	S-216	-0.40	1.00	1.40	-7.90	7.50	8.90	1.40	7.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	443.4	26,601.6	0.98	55.51	79.18	80.00
13	S-217	-0.40	0.40	0.80	-7.90	7.50	8.30	0.80	7.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	443.4	26,601.6	0.98	99.37	143.15	144.00
13	S-218	-0.40	0.90	1.30	-7.80	7.40	8.70	1.30	7.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	439.4	26,363.6	0.97	59.92	85.88	86.00
13	S-219	-0.40	1.00	1.40	-7.70	7.30	8.70	1.40	7.30	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	435.4	26,124.9	0.96	55.34	79.46	80.00
13	S-220	-0.40	1.00	1.40	-7.50	7.10	8.50	1.40	7.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	427.4	25,645.2	0.94	55.16	79.74	80.00
13	S-221	-0.40	0.80	1.20	-7.30	6.90	8.10	1.20	6.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	419.4	25,162.4	0.93	64.64	94.43	95.00
13	S-222	-0.40	1.10	1.50	-7.10	6.70	8.20	1.50	6.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	411.3	24,676.4	0.91	50.91	74.51	75.00
13	S-223	-0.40	1.20	1.60	-7.05	6.65	8.25	1.60	6.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	409.2	24,554.4	0.90	47.50	69.51	70.00
13	S-224	-0.40	1.20	1.60	-7.00	6.60	8.20	1.60	6.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	407.2	24,432.2	0.90	47.45	69.57	70.00
13	S-225	-0.40	1.20	1.60	-6.90	6.50	8.10	1.60	6.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	403.1	24,187.2	0.89	47.35	69.68	70.00
13	S-226	-0.40	1.15	1.55	-6.80	6.40	7.95	1.55	6.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	399.0	23,941.3	0.88	48.87	72.26	73.00
13	S-227	-0.40	1.10	1.50	-6.60	6.20	7.70	1.50	6.20	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	390.8	23,447.1	0.86	50.37	75.15	76.00
13	S-228	-0.40	1.30	1.70	-6.40	6.00	7.70	1.70	6.00	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	382.5	22,949.4	0.85	43.86	65.71	66.00
13	S-229	-0.40	1.50	1.90	-6.20	5.80	7.70	1.90	5.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	374.1	22,448.0	0.83	38.71	58.24	59.00
13	S-230	-0.40	1.50	1.90	-6.60	6.20	8.10	1.90	6.20	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	390.8	23,447.1	0.86	39.12	57.91	58.00
13	S-231	-0.40	1.00	1.40	-7.10	6.70	8.10	1.40	6.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	411.3	24,676.4	0.91	54.77	80.30	81.00
13	S-232	-0.40	0.90	1.30	-7.10	6.70	8.00	1.30	6.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	411.3	24,676.4	0.91	59.22	86.98	87.00
13	S-233	-0.40	1.00	1.40	-7.00	6.60	8.00	1.40	6.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	407.2	24,432.2	0.90	54.66	80.44	81.00
13	S-234	-0.40	1.15	1.55	-6.80	6.40	7.95	1.55	6.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	399.0	23,941.3	0.88	48.87	72.26	73.00
13	S-235	-0.40	1.10	1.50	-6.70	6.30	7.80	1.50	6.30	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	394.9	23,694.6	0.87	50.49	75.03	76.00
13	S-236	-0.40	1.15	1.55	-6.75	6.35	7.90	1.55	6.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	397.0	23,818.1	0.88	48.81	72.32	73.00
13	S-237	-0.40	1.20	1.60	-6.80	6.40	8.00	1.60	6.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	399.0	23,941.3	0.88	47.25	69.80	70.00
13	S-238	-0.40	1.25	1.65	-6.85	6.45	8.10	1.65	6.45	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	401.1	24,064.4	0.89	45.77	67.43	68.00
13	S-239	-0.40	1.50	1.90	-6.90	6.50	8.40	1.90	6.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	403.1	24,187.2	0.89	39.40	57.66	58.00
13	S-240	-0.40	1.50	1.90	-6.95	6.55	8.45	1.90	6.55	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	405.2	24,309.8	0.90	39.44	57.62	58.00
13	S-241	-0.40	1.20	1.60	-7.00	6.60	8.20	1.60	6.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	407.2	24,432.2	0.90	47.45	69.57	70.00
14	S-242	-0.40	1.00	1.40	-7.00	6.60	8.00	1.40	6.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	407.2	24,432.2	0.90	54.66	80.44	81.00
14	S-243	-0.40	0.80	1.20	-7.02	6.62	7.82	1.20	6.62	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	408.0	24,481.1	0.90	64.31	94.93	95.00
14	S-244	-0.40	0.60	1.00	-7.04	6.64	7.64	1.00	6.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	408.8	24,530.0	0.90	77.83	115.24	116.00
14	S-245	-0.40	0.50	0.90	-7.05	6.65	7.55	0.90	6.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	409.2	24,554.4	0.90	86.84	128.80	129.00
14	S-246	-0.40	0.40	0.80	-7.07	6.67	7.47	0.80	6.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	410.1	24,603.2	0.91	98.13	145.71	146.00
14	S-247	-0.40	0.60	1.00	-7.08	6.68	7.68	1.00	6.68	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	410.5	24,627.6	0.91	77.89	115.15	116.00
14	S-248	-0.40	0.80	1.20	-7.10	6.70	7.90	1.20	6.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	411.3	24,676.4	0.91	64.41	94.79	95.00

Infiltration Calculations
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation (ft)	Grade[1]	Depth to GW (ft)	Exc. Bottom Elevation (ft)	Drawdown	Exc. Bottom from Surface (ft)	Non Saturated Trench Depth (ft)	Saturated Trench Depth (ft)	Hydraulic Conductivity (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Hydraulic Conductivity (K) (cfs/ft^2-ft head)	Excavation Width (ft)	Excavation Width (m)	Excavation Length (ft)	Excavation Length (m)	Infiltration Flow Rate (gpm)	Total Hourly Pumpage (gallons)	Total Hourly Pumpage (acre-in)	Minimum Trench Length L (ft)	Minimum Trench Length L_2 (ft)	Minimum Trench Length (ft)[2]
14	S-249	-0.40	0.85	1.25	-7.12	6.72	7.97	1.25	6.72	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	412.1	24,725.1	0.91	61.73	90.69	91.00
14	S-250	-0.40	0.85	1.25	-7.13	6.73	7.98	1.25	6.73	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	412.5	24,749.5	0.91	61.74	90.68	91.00
14	S-251	-0.40	0.80	1.20	-7.15	6.75	7.95	1.20	6.75	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	413.3	24,798.2	0.91	64.47	94.70	95.00
14	S-252	-0.40	0.75	1.15	-7.17	6.77	7.92	1.15	6.77	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	414.1	24,846.9	0.92	67.43	99.07	100.00
14	S-253	-0.40	0.75	1.15	-7.18	6.78	7.93	1.15	6.78	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	414.5	24,871.2	0.92	67.44	99.05	100.00
14	S-254	-0.40	0.80	1.20	-7.20	6.80	8.00	1.20	6.80	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	374.6	22,475.6	0.83	58.20	85.33	86.00
15	S-255	-0.40	0.50	0.90	-7.40	7.00	7.90	0.90	7.00	40.70	0.000144	0.000471	8.00	2.44	20.00	6.10	382.2	22,932.7	0.84	78.86	115.41	116.00
15	S-256	-0.40	0.40	0.80	-7.50	7.10	7.90	0.80	7.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	427.4	25,645.2	0.94	98.82	144.36	145.00
15	S-257	-0.40	0.10	0.50	-7.55	7.15	7.65	0.50	7.15	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	429.4	25,765.4	0.95	160.12	234.76	235.00
15	S-258	-0.40	0.00	0.40	-7.60	7.20	7.60	0.40	7.20	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	431.4	25,885.4	0.95	201.08	294.82	295.00
15	S-259	-0.40	**-0.20**	0.20	-7.65	7.25	7.45	0.20	7.25	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	433.4	26,005.2	0.96	405.63	595.84	**0.00**
15	S-260	-0.40	**-0.10**	0.30	-7.70	7.30	7.60	0.30	7.30	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	465.2	27,910.0	1.03	287.93	421.38	**0.00**
15	S-261	-0.40	0.00	0.40	-7.75	7.35	7.75	0.40	7.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	467.3	28,037.9	1.03	215.23	313.85	314.00
15	S-262	-0.40	0.10	0.50	-7.80	7.40	7.90	0.50	7.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	469.4	28,165.6	1.04	171.62	249.37	250.00
15	S-263	-0.40	0.20	0.60	-7.90	7.50	8.10	0.60	7.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	473.7	28,420.5	1.05	142.65	206.18	207.00
15	S-264	-0.40	0.05	0.45	-8.00	7.60	8.05	0.45	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	191.53	276.60	277.00
16	S-265	-0.40	0.00	0.40	-8.00	7.60	8.00	0.40	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	215.88	312.04	313.00
16	S-266	-0.40	0.00	0.40	-8.00	7.60	8.00	0.40	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	215.88	312.04	313.00
16	S-267	-0.40	**-0.10**	0.30	-8.00	7.60	7.90	0.30	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	288.95	418.38	**0.00**
16	S-268	-0.40	**-0.05**	0.35	-7.90	7.50	7.85	0.35	7.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	473.7	28,420.5	1.05	246.91	358.45	**0.00**
16	S-269	-0.40	0.15	0.55	-7.80	7.40	7.95	0.55	7.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	469.4	28,165.6	1.04	155.72	226.06	227.00
16	S-270	-0.40	0.10	0.50	-7.75	7.35	7.85	0.50	7.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	467.3	28,037.9	1.03	171.51	249.65	250.00
16	S-271	-0.40	0.00	0.40	-7.80	7.40	7.80	0.40	7.40	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	469.4	28,165.6	1.04	215.37	313.48	314.00
16	S-272	-0.40	0.00	0.40	-7.83	7.43	7.83	0.40	7.43	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	470.7	28,242.2	1.04	215.45	313.26	314.00
16	S-273	-0.40	0.00	0.40	-7.86	7.46	7.86	0.40	7.46	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	472.0	28,318.6	1.04	215.53	313.05	314.00
16	S-274	-0.40	0.00	0.40	-7.90	7.50	7.90	0.40	7.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	473.7	28,420.5	1.05	215.63	312.76	313.00
16	S-275	-0.40	0.00	0.40	-7.93	7.53	7.93	0.40	7.53	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	474.9	28,496.8	1.05	215.71	312.54	313.00
16	S-276	-0.40	0.00	0.40	-7.96	7.56	7.96	0.40	7.56	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	476.2	28,573.1	1.05	215.78	312.33	313.00
16	S-277	-0.40	0.00	0.40	-8.00	7.60	8.00	0.40	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	215.88	312.04	313.00
16	S-278	-0.40	0.00	0.40	-8.10	7.70	8.10	0.40	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	482.1	28,927.9	1.07	216.12	311.33	312.00
16	S-279	-0.40	0.00	0.40	-8.30	7.90	8.30	0.40	7.90	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	490.5	29,432.4	1.08	216.58	309.93	310.00
16	S-280	-0.40	**-0.30**	0.10	-8.90	8.50	8.60	0.10	8.50	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	515.5	30,928.4	1.14	880.52	1242.49	**0.00**
16	S-281	-0.40	0.00	0.40	-8.85	8.45	8.85	0.40	8.45	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	513.4	30,804.7	1.13	217.66	306.23	307.00
16	S-282	-0.40	0.15	0.55	-8.75	8.35	8.90	0.55	8.35	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	509.3	30,556.8	1.13	157.31	221.49	222.00
16	S-283	-0.40	0.10	0.50	-8.50	8.10	8.60	0.50	8.10	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	498.9	29,933.9	1.10	172.96	245.56	246.00
16	S-284	-0.40	0.00	0.40	-8.20	7.80	8.20	0.40	7.80	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	486.3	29,180.5	1.07	216.36	310.63	311.00
16	S-285	-0.40	0.00	0.40	-8.18	7.78	8.18	0.40	7.78	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	485.5	29,130.1	1.07	216.31	310.77	311.00
16	S-286	-0.40	0.05	0.45	-8.16	7.76	8.21	0.45	7.76	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	484.7	29,079.6	1.07	191.87	275.61	276.00
16	S-287	-0.40	0.05	0.45	-8.14	7.74	8.19	0.45	7.74	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	483.8	29,029.1	1.07	191.83	275.73	276.00
16	S-288	-0.40	0.30	0.70	-8.12	7.72	8.42	0.70	7.72	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	483.0	28,978.5	1.07	122.13	174.94	175.00
16	S-289	-0.40	0.50	0.90	-8.10	7.70	8.60	0.90	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	482.1	28,927.9	1.07	94.25	134.66	135.00
17	S-290	-0.40	0.50	0.90	-8.10	7.70	8.60	0.90	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	482.1	28,927.9	1.07	94.25	134.66	135.00
17	S-291	-0.40	0.20	0.60	-8.10	7.70	8.30	0.60	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	482.1	28,927.9	1.07	142.99	205.29	206.00
17	S-292	-0.40	0.00	0.40	-8.09	7.69	8.09	0.40	7.69	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.7	28,902.6	1.06	216.10	311.40	312.00
17	S-293	-0.40	0.00	0.40	-8.08	7.68	8.08	0.40	7.68	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.3	28,877.3	1.06	216.08	311.47	312.00
17	S-294	-0.40	0.00	0.40	-8.07	7.67	8.07	0.40	7.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.9	28,852.0	1.06	216.05	311.54	312.00
17	S-295	-0.40	0.00	0.40	-8.06	7.66	8.06	0.40	7.66	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.4	28,826.7	1.06	216.03	311.61	312.00
17	S-296	-0.40	0.00	0.40	-8.05	7.65	8.05	0.40	7.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.0	28,801.4	1.06	216.00	311.68	312.00
17	S-297	-0.40	0.00	0.40	-8.04	7.64	8.04	0.40	7.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.6	28,776.0	1.06	215.98	311.75	312.00
17	S-298	-0.40	0.00	0.40	-8.03	7.63	8.03	0.40	7.63	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.2	28,750.7	1.06	215.95	311.83	312.00
17	S-299	-0.40	0.00	0.40	-8.02	7.62	8.02	0.40	7.62	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.8	28,725.3	1.06	215.93	311.90	312.00
17	S-300	-0.40	0.00	0.40	-8.01	7.61	8.01	0.40	7.61	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.3	28,700.0	1.06	215.91	311.97	312.00
17	S-301	-0.40	0.00	0.40	-8.00	7.60	8.00	0.40	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	215.88	312.04	313.00
17	S-302	-0.40	**-0.15**	0.25	-8.00	7.60	7.85	0.25	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	347.42	503.47	**0.00**

Infiltration Calculations
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation (ft)	Grade[1]	Depth to GW (ft)	Exc. Bottom Elevation (ft)	Drawdown	Exc. Bottom from Surface (ft)	Non Saturated Trench Depth (ft)	Saturated Trench Depth (ft)	Hydraulic Conductivity (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Hydraulic Conductivity (K) (cfs/ft^2-ft head)	Excavation Width (ft)	Excavation Width (m)	Excavation Length (ft)	Excavation Length (m)	Infiltration Flow Rate (gpm)	Total Hourly Pumpage (gallons)	Total Hourly Pumpage (acre-in)	Minimum Trench Length L (ft)	Minimum Trench Length L_2 (ft)	Minimum Trench Length (ft)[2]
17	S-303	-0.40	-0.10	0.30	-8.00	7.60	7.90	0.30	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	288.95	418.38	0.00
17	S-304	-0.40	0.00	0.40	-8.00	7.60	8.00	0.40	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	215.88	312.04	313.00
17	S-305	-0.40	0.00	0.40	-8.00	7.60	8.00	0.40	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	215.88	312.04	313.00
17	S-306	-0.40	-0.10	0.30	-8.00	7.60	7.90	0.30	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	288.95	418.38	0.00
17	S-307	-0.40	-0.10	0.30	-8.00	7.60	7.90	0.30	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	288.95	418.38	0.00
17	S-308	-0.40	0.00	0.40	-8.00	7.60	8.00	0.40	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	215.88	312.04	313.00
17	S-309	-0.40	0.20	0.60	-8.00	7.60	8.20	0.60	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	142.82	205.74	206.00
17	S-310	-0.40	0.20	0.60	-8.00	7.60	8.20	0.60	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	142.82	205.74	206.00
17	S-311	-0.40	0.30	0.70	-8.00	7.60	8.30	0.70	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	121.95	175.38	176.00
17	S-312	-0.40	0.30	0.70	-8.00	7.60	8.30	0.70	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	121.95	175.38	176.00
17	S-313	-0.40	0.00	0.40	-8.00	7.60	8.00	0.40	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	215.88	312.04	313.00
17	S-314	-0.40	0.40	0.80	-8.00	7.60	8.40	0.80	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	106.30	152.62	153.00
18	S-315	-0.40	0.30	0.70	-8.00	7.60	8.30	0.70	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	121.95	175.38	176.00
18	S-316	-0.40	0.10	0.50	-8.00	7.60	8.10	0.50	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	172.04	248.25	249.00
18	S-317	-0.40	0.00	0.40	-8.00	7.60	8.00	0.40	7.60	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	477.9	28,674.6	1.06	215.88	312.04	313.00
18	S-318	-0.40	0.00	0.40	-8.01	7.61	8.01	0.40	7.61	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.3	28,700.0	1.06	215.91	311.97	312.00
18	S-319	-0.40	0.00	0.40	-8.01	7.61	8.01	0.40	7.61	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.3	28,700.0	1.06	215.91	311.97	312.00
18	S-320	-0.40	0.00	0.40	-8.01	7.61	8.01	0.40	7.61	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.3	28,700.0	1.06	215.91	311.97	312.00
18	S-321	-0.40	0.00	0.40	-8.01	7.61	8.01	0.40	7.61	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.3	28,700.0	1.06	215.91	311.97	312.00
18	S-322	-0.40	0.00	0.40	-8.01	7.61	8.01	0.40	7.61	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.3	28,700.0	1.06	215.91	311.97	312.00
18	S-323	-0.40	0.10	0.50	-8.02	7.62	8.12	0.50	7.62	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.8	28,725.3	1.06	172.08	248.14	249.00
18	S-324	-0.40	0.30	0.70	-8.02	7.62	8.32	0.70	7.62	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.8	28,725.3	1.06	121.98	175.30	176.00
18	S-325	-0.40	0.60	1.00	-8.02	7.62	8.62	1.00	7.62	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	478.8	28,725.3	1.06	84.42	120.73	121.00
18	S-326	-0.40	0.60	1.00	-8.03	7.63	8.63	1.00	7.63	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.2	28,750.7	1.06	84.43	120.71	121.00
18	S-327	-0.40	0.30	0.70	-8.03	7.63	8.33	0.70	7.63	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.2	28,750.7	1.06	122.00	175.27	176.00
18	S-328	-0.40	-0.10	0.30	-8.03	7.63	7.93	0.30	7.63	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.2	28,750.7	1.06	289.05	418.09	0.00
18	S-329	-0.40	0.00	0.40	-8.03	7.63	8.03	0.40	7.63	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.2	28,750.7	1.06	215.95	311.83	312.00
18	S-330	-0.40	0.30	0.70	-8.03	7.63	8.33	0.70	7.63	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.2	28,750.7	1.06	122.00	175.27	176.00
18	S-331	-0.40	0.10	0.50	-8.04	7.64	8.14	0.50	7.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.6	28,776.0	1.06	172.12	248.03	249.00
18	S-332	-0.40	0.00	0.40	-8.04	7.64	8.04	0.40	7.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.6	28,776.0	1.06	215.98	311.75	312.00
18	S-333	-0.40	0.00	0.40	-8.04	7.64	8.04	0.40	7.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.6	28,776.0	1.06	215.98	311.75	312.00
18	S-334	-0.40	0.00	0.40	-8.04	7.64	8.04	0.40	7.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.6	28,776.0	1.06	215.98	311.75	312.00
18	S-335	-0.40	0.00	0.40	-8.04	7.64	8.04	0.40	7.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.6	28,776.0	1.06	215.98	311.75	312.00
18	S-336	-0.40	0.15	0.55	-8.04	7.64	8.19	0.55	7.64	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	479.6	28,776.0	1.06	156.18	224.86	225.00
18	S-337	-0.40	0.00	0.40	-8.05	7.65	8.05	0.40	7.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.0	28,801.4	1.06	216.00	311.68	312.00
18	S-338	-0.40	-0.30	0.10	-8.05	7.65	7.75	0.10	7.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.0	28,801.4	1.06	874.08	1267.79	0.00
18	S-339	-0.40	-0.30	0.10	-8.05	7.65	7.75	0.10	7.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.0	28,801.4	1.06	874.08	1267.79	0.00
19	S-340	-0.40	-0.30	0.10	-8.05	7.65	7.75	0.10	7.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.0	28,801.4	1.06	874.08	1267.79	0.00
19	S-341	-0.40	0.80	1.20	-8.05	7.65	8.85	1.20	7.65	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.0	28,801.4	1.06	69.86	99.49	100.00
19	S-342	-0.40	0.90	1.30	-8.06	7.66	8.96	1.30	7.66	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.4	28,826.7	1.06	64.25	91.33	92.00
19	S-343	-0.40	0.90	1.30	-8.06	7.66	8.96	1.30	7.66	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.4	28,826.7	1.06	64.25	91.33	92.00
19	S-344	-0.40	0.75	1.15	-8.06	7.66	8.81	1.15	7.66	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.4	28,826.7	1.06	73.04	104.07	105.00
19	S-345	-0.40	0.75	1.15	-8.07	7.67	8.82	1.15	7.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.9	28,852.0	1.06	73.05	104.05	105.00
19	S-346	-0.40	1.50	1.90	-8.07	7.67	9.57	1.90	7.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.9	28,852.0	1.06	43.01	60.57	61.00
19	S-347	-0.40	2.00	2.40	-8.07	7.67	10.07	2.40	7.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.9	28,852.0	1.06	33.45	46.76	47.00
19	S-348	-0.40	1.50	1.90	-8.07	7.67	9.57	1.90	7.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.9	28,852.0	1.06	43.01	60.57	61.00
19	S-349	-0.40	1.00	1.40	-8.07	7.67	9.07	1.40	7.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.9	28,852.0	1.06	59.45	84.35	85.00
19	S-350	-0.40	0.10	0.50	-8.07	7.67	8.17	0.50	7.67	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	480.9	28,852.0	1.06	172.18	247.86	248.00
19	S-351	-0.40	-0.10	0.30	-8.08	7.68	7.98	0.30	7.68	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.3	28,877.3	1.06	289.21	417.60	0.00
19	S-352	-0.40	-0.10	0.30	-8.08	7.68	7.98	0.30	7.68	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.3	28,877.3	1.06	289.21	417.60	0.00
19	S-353	-0.40	-0.10	0.30	-8.08	7.68	7.98	0.30	7.68	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.3	28,877.3	1.06	289.21	417.60	0.00
19	S-354	-0.40	-0.10	0.30	-8.08	7.68	7.98	0.30	7.68	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.3	28,877.3	1.06	289.21	417.60	0.00
19	S-355	-0.40	-0.10	0.30	-8.09	7.69	7.99	0.30	7.69	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.7	28,902.6	1.06	289.24	417.50	0.00
19	S-356	-0.40	-0.10	0.30	-8.09	7.69	7.99	0.30	7.69	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.7	28,902.6	1.06	289.24	417.50	0.00

Infiltration Calculations
FPL CWRC Pipeline - Phase 2, Miami-Dade County, FL

Sheet #	Excavation	GW Elevation (ft)	Grade[1]	Depth to GW (ft)	Exc. Bottom Elevation (ft)	Drawdown	Exc. Bottom from Surface (ft)	Non Saturated Trench Depth (ft)	Saturated Trench Depth (ft)	Hydraulic Conductivity (K) (ft/day)	Hydraulic Conductivity (K) (m/s)	Hydraulic Conductivity (K) (cfs/ft^2-ft head)	Excavation Width (ft)	Excavation Width (m)	Excavation Length (ft)	Excavation Length (m)	Infiltration Flow Rate (gpm)	Total Hourly Pumpage (gallons)	Total Hourly Pumpage (acre-in)	Minimum Trench Length L (ft)	Minimum Trench Length L_2 (ft)	Minimum Trench Length (ft)[2]
19	S-357	-0.40	**-0.10**	0.30	-8.09	7.69	7.99	0.30	7.69	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.7	28,902.6	1.06	289.24	417.50	**0.00**
19	S-358	-0.40	0.00	0.40	-8.09	7.69	8.09	0.40	7.69	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.7	28,902.6	1.06	216.10	311.40	312.00
19	S-359	-0.40	**-0.15**	0.25	-8.09	7.69	7.94	0.25	7.69	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.7	28,902.6	1.06	347.75	502.39	**0.00**
19	S-360	-0.40	**-0.20**	0.20	-8.09	7.69	7.89	0.20	7.69	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	481.7	28,902.6	1.06	435.53	629.74	**0.00**
19	S-361	-0.40	0.00	0.40	-8.10	7.70	8.10	0.40	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	482.1	28,927.9	1.07	216.12	311.33	312.00
19	S-362	-0.40	0.20	0.60	-8.10	7.70	8.30	0.60	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	482.1	28,927.9	1.07	142.99	205.29	206.00
19	S-363	-0.40	0.00	0.40	-8.10	7.70	8.10	0.40	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	482.1	28,927.9	1.07	216.12	311.33	312.00
19	S-364	-0.40	0.00	0.40	-8.10	7.70	8.10	0.40	7.70	40.70	0.000144	0.000471	8.00	2.44	40.00	12.19	482.1	28,927.9	1.07	216.12	311.33	312.00

TABLE NOTES:

[1] **Grade values below 0.0 NAVD are indicated in RED.**

[2] **Trench lengths produced by negative grade are not available for infiltration and are shown in RED.**

The calculations presented are deemed appropriate and in accordance with State of Florida Rules and Regulation as certified by a registered Professional Engineer authorized by Chapter 471, Florida Statutes and defined by the Florida State Board of Professional Engineering.
To the best of my knowledge, all information summarized in this report is true, accurate, complete, and in accordance with applicable State of Florida Rules and Regulations.

Reviewed and Approved by:

Robert L Vinson III
Digitally signed by Robert L Vinson III
Date: 2023.08.15 17:18:28 -05'00'

Robert L. Vinson III, P.E.
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Robert L. Vinson III, Professional Engineer, State of Florida, License No. PE53438

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Sedimentation Analysis
FPL CWRC Pipeline - Phase 2
Miami-Dade County, FL

Particle Settling Analysis Using Stoke's Law

ASTM Soil Classification	Particle Size(s) of Concern			Particle Properties				Particle Settling Velocity	
	microns	mm	Seive Size	Particle Size (mm)	Particle Density (kg/m^3)	Fluid Density (kg/m^3)	Fluid Viscosity (Pa s)	V_p (m/s)	V_p (f/s)
Fine Sand	**75**	0.075	**200**	0.075	2600	1000	0.001	0.00467500	0.015339
Silt	**74**	0.074		0.074	2600	1000	0.001	0.00456300	0.014971
	55	0.055		0.055	2600	1000	0.001	0.00263780	0.008655
	40	0.04		0.04	2600	1000	0.001	0.00139520	0.004578
	25	0.025		0.025	2600	1000	0.001	0.00054500	0.001788
Clay	**5**	0.005		0.005	2600	1000	0.001	0.00002180	0.000072
	1	0.001		0.001	2600	1000	0.001	0.00000087	0.000003

Particle Settling Velocity Calculator:
https://www.meracalculator.com/physics/fluid-mechanics/stokes-law.php

Sedimentation Tank Analysis
Sedimentation Tank Size (gallons): 2 @ 18,000

Pumping Rates (gpm)	Tank Specs				Detention Time (min)	Overflow Velocity (V_0) (fps)	$V_p >= V_0$ (YES = +, NO = -)					
	Capacity (V) (gal)	Width (ft)	Height (ft)	Length (ft)			75 microns	74 microns	55 microns	40 microns	25 microns	5 microns
300	18,000	8.5	9.5	53.0	60	0.001483794	+	+	+	+	+	-
258	18,000	8.5	9.5	53.0	70	0.001276063	+	+	+	+	+	-
250	18,000	8.5	9.5	53.0	72	0.001236495	+	+	+	+	+	-
214	18,000	8.5	9.5	53.0	84	0.00105844	+	+	+	+	+	-
200	18,000	8.5	9.5	53.0	90	0.000989196	+	+	+	+	+	-

where:
Maximum Project Flow Rate = 515 gpm; split 2 ways = 258
Average Project Flow Rate = 427 gpm; split 2 ways = 214

Detention Time = V/Q
Overflow Velocity = $$\frac{Q}{A_s} = \frac{Q\ (gpm)}{W(ft) \times L(ft) \times 7.48 \frac{gal}{ft^3} \times 60 \frac{seg}{min}}$$

The calculations presented are deemed appropriate and in accordance with State of Florida Rules and Regulation as certified by a registered Professional Engineer authorized by Chapter 471, Florida Statutes and defined by the Florida State Board of Professional Engineering. To the best of my knowledge, all information summarized in this report is true, accurate, complete, and in accordance with applicable State of Florida Rules and Regulations.

Reviewed and Approved by:
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Robert L. Vinson III, Professional Engineer, State of Florida, License No. PE53438

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Storage Calculations
FPL CWRC Pipeline, Phase 2
Miami-Dade County, Florida

Average grade is approximately +2.35 ft NAVD.
Average groundwater elevation is approximately -0.4 ft NAVD.
Total head of water table aquifer (H) determined from *United States Geological Survey: Water-Resources Investigations Report 90-4108 Hydrogeology of the Surficial Aquifer System, Dade County, Florida, 1991.*

Empirical Equation (FDOT Drainage Handbook Exfiltration Systems)

$$L_1 = \frac{V}{K(H_2W + 2H_2D_u - D_u^2 + 2H_2D_s) + 0.000139(W)(D_u)}$$

OR

$$L_2 = \frac{V}{K(2H_2D_u - D_u^2 + 2H_2D_s) + 0.000139(W)(D_u)}$$

L_1 = length of trench required (ft)
V = Infiltration volume per 1 hour (acre-inches)
K = hydraulic conductivity (cfs/ft^2 - ft head)
H_2 = effective head (ft)
W = width of trench (ft)
D_u = unsaturated depth of trench (ft)
D_s = saturated depth of trench (ft)

L_2 = length of trench required (ft)
V = Infiltration volume per 1 hour (acre-inches)
K = hydraulic conductivity (cfs/ft^2 - ft head)
H_2 = effective head (ft)
W = width of trench (ft)
D_u = unsaturated depth of trench (ft)
D_s = saturated depth of trench (ft)

When either unsaturated depth of trench is greater than saturated depth or the trench width is less than two times the depth, use L_1.
When either saturated depth of trench is greater than unsaturated depth or trench width is greater than two times the depth, use L_2.
If both equations apply, use the greater of these two lengths.

Infiltration Required

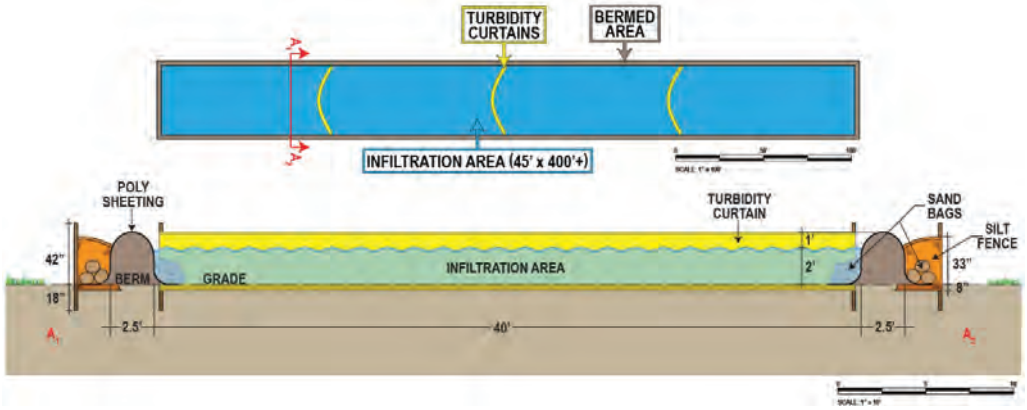
Excavation	D_u (ft)*	D_s (ft)*	W (ft)	Hydraulic Conductivity (m/s)*	Hydraulic Conductivity (cfs/ft^2-ft head)	H_2 (ft)	Maximum Volume (gallons/hr)	Volume (acre-inches)	Length of Trench (L_1) (ft)	Length of Trench (L_2) (ft)	**Total ft^2 Required**
S-279 - S-283	0.39	8.26	8.00	0.000144	0.000471	0.39	30,333	1.117	223	316	**2,524.3**

*Calculated as the average of all 5 sections

Infiltration Available

Basin	W(ft)	L (ft)	**Total ft^2 Available**
1	40	400	**16,000**

AVAILABLE AREA > REQUIRED AREA



The calculations presented are deemed appropriate and in accordance with State of Florida Rules and Regulation as certified by a registered Professional Engineer authorized by Chapter 471, Florida Statutes and defined by the Florida State Board of Professional Engineering. To the best of my knowledge, all information summarized in this report is true, accurate, complete, and in accordance with applicable State of Florida Rules and Regulations.

Note 1: Infiltration loading sized based on maximum inflow of the 5 consecutive sections with highest calculated daily flow x 2 Safety Factor + 1 foot
Note 2: Initial dewatering effluent will be processed through a sedimentation tank and discharged to a FDEP approved discharge well(s) until enough excavated soil is excavated to construct the infiltration basin. The basin will be extended parallel with the trench excavation with the back portion being deconstructed and restored as trenching continues down the excavation pathway.

Reviewed and Approved by:
Robert L Vinson III
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Date: 2023.08.15 18:30:50 -05'00'
Robert L. Vinson III, P.E.
License No. 53438

Robert L. Vinson III, Professional Engineer, State of Florida, License No. PE53438

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BLASCOM ENGINEERING

March 13, 2023

Tierra Consulting Group
1230 SW 6th Street
Pompano Beach, Florida 33069

Attn: Mr. Scott Zednek, P.G.

Re: Geotechnical Data Report
Miami-Dade Clean Water Recovery Center Pipeline
Route between SDWWTP & TP Power Plant, Homestead, FL
Tierra Consulting Project No.: 18374
Blascom Project No.: G23007

Dear Mr. Zednek:

Blascom Engineering, Inc. (Blascom) has completed the geotechnical engineering services for the above referenced project. This geotechnical data report presents the results of the subsurface field exploration and hydraulic conductivity testing. These services were performed in general accordance with our proposal No. PG23009 dated March 7, 2023.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, please contact us.

Sincerely,
Blascom Engineering, Inc.
(Florida Registry No. 30144)

Julio B De Blas:A0141 0D0000017 81E469AB0 00002B90

Digitally signed by Julio B De Blas:A0141 0D0000017 81E469AB0 00002B90
Date: 2023.03.13 19:59:09 -04'00'

JULIO B. DE BLAS LICENSE No 64653 STATE OF FLORIDA PROFESSIONAL ENGINEER

Julio De Blas, P.E.
Senior Engineer
Florida License No. 64653

This item has been digitally signed and sealed by Julio B. de Blas, P.E. on 03/13/2023.

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Cc: Addressee (1-PDF)

MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE, ROUTE BETWEEN SDWWTP & TP POWER PLANT HOMESTEAD, FL	BLASCOM ENGINEERING	*BLASCOM ENGINEERING, INC.* *FL REGISTRY No. 30144* *BLASCOM PROJECT No.: G23007*	***SITE VICINITY MAP & FIELD TEST LOCATION PLAN***	*EXHIBIT No.:* *A-1*

BLASCOM ENGINEERING

TABLE 2: SUMMARY OF CONSTANT HEAD OPEN HOLE TEST (PERCOLATION TEST)

MIAMI-DADE CLEAN WATER RECOVERY CENTER PIPELINE
ROUTE BETWEEN SDWWTP & TP POWER PLANT, HOMESTEAD, FL
BLASCOM PROJECT NO.: G23007
TIERRA CONSULTING PROJECT NO.: 18374

TEST NO.	TEST DATE	DIAMETER, d		DEPTH OF HOLE, D_H (FT.)	DEPTH TO GROUNDWATER LEVEL BELOW GROUND SURFACE (FT.)		WATER HEAD, ΔH (FT.)	SATURATED HOLE DEPTH, D_s (FT.)	AVERAGE FLOW RATE, Q (GPM)	HYDRAULIC CONDUCTIVITY, K (CFS/FT^2-FT. HEAD)
		HOLE (IN.)	PERFORATED CASING (IN.)		PRIOR TO TEST, H_2	DURING TEST, H_I				
EX-1	3/8/2023	6	2	10	1.3	0.0	1.3	8.7	10.3	3.59E-03
EX-2	3/8/2023	6	2	10	1.4	0.0	1.4	8.6	4.0	1.30E-03
EX-3	3/8/2023	6	2	10	2.0	0.0	2.0	8.0	2.0	4.71E-04

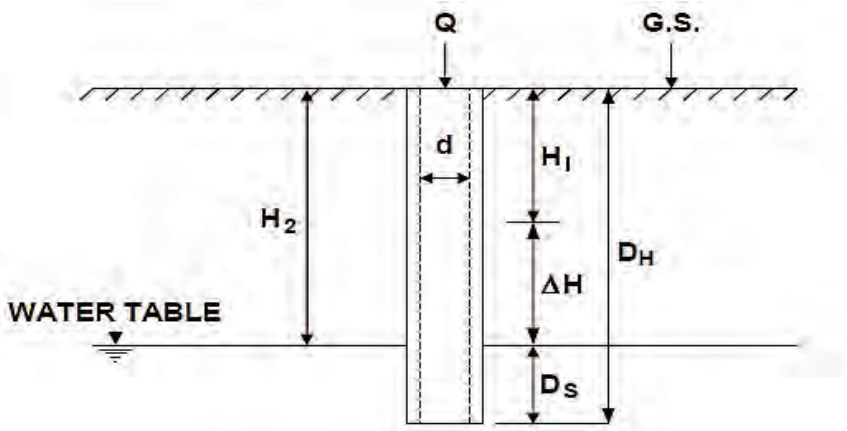
[1] The above hydraulic conductivity value is for a French drain installed to the same depth as the borehole test. The value represents an ultimate value. The designer should decide on the required factor of safety.

[2] The hydraulic conductivity value was calculated based on the South Florida Water Management District's 'Constant Head 'Open Hole' method.

[3] The diameter of the perforated casing of 2 inches was used in the computation of the hydraulic conductivity value.

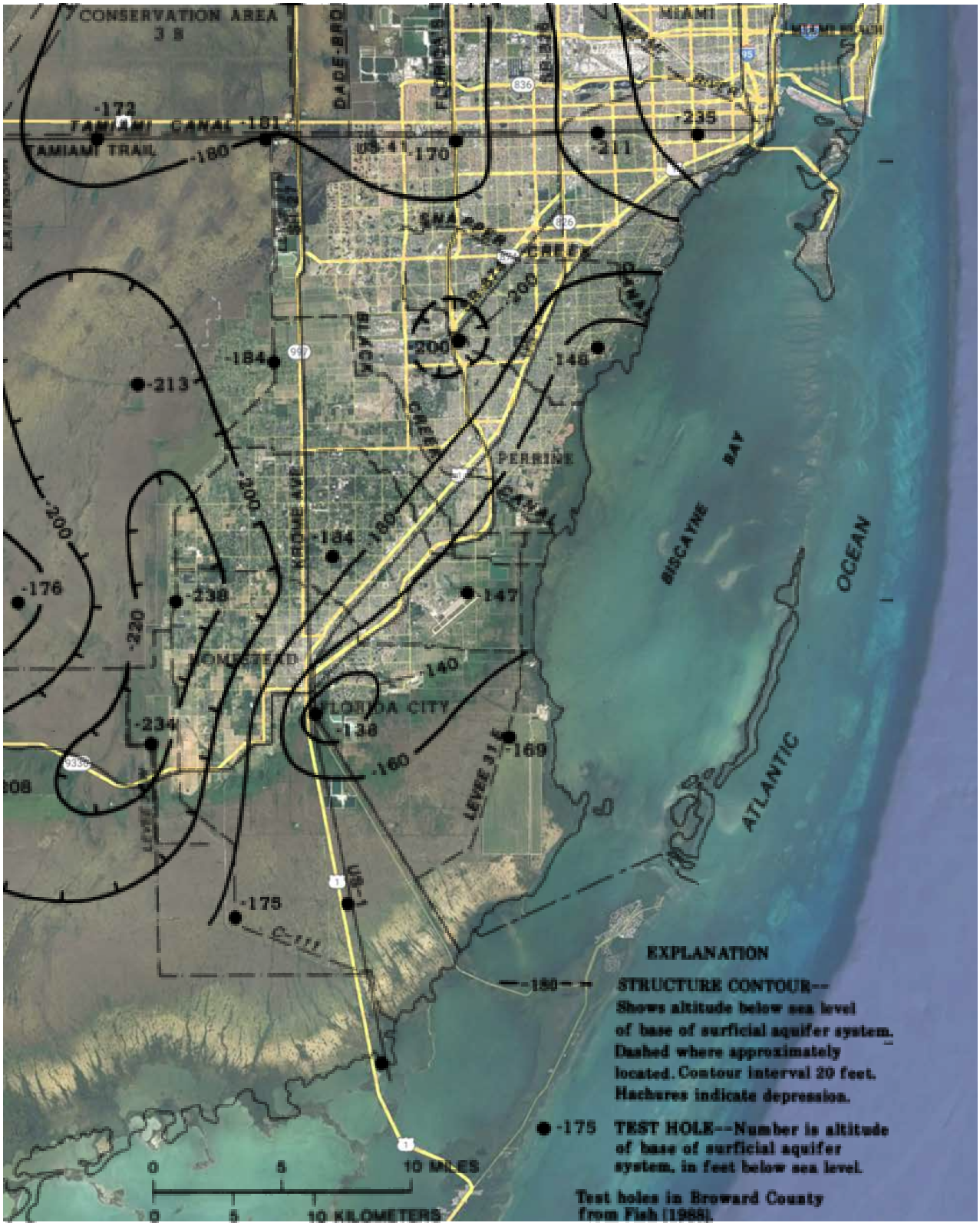
[4] Refer to Exhibit A-2 (Boring Soil Profiles) of the report for subsurface stratification information.

CONSTANT HEAD OPEN-HOLE TEST SCHEMATIC



$$K=\frac{4Q}{\pi d(2\Delta H^2+4\Delta H D_s+\Delta H d)}$$

K = HYDRAULIC CONDUCTIVITY (CFS/FT.² - FT.HEAD)
Q = "STABILIZED" FLOW RATE (CFS)
d = DIAMETER OF TEST HOLE (FEET)
H_2 = DEPTH TO WATER TABLE BEFORE TEST (FEET)
H_I = DEPTH TO WATER TABLE DURING TEST (FEET)
D_S = SATURATED HOLE DEPTH (FEET)
D_H = DEPTH OF HOLE
ΔH = WATER HEAD DURING TEST (FT.HEAD)


CONSERVATION AREA 3 B
MIAMI
TAMIAMI CANAL
TAMIAMI TRAIL
DADE-BRO
FLORIDA TPK
NW 27 AVE
US-41
SNAPPER CREEK
BLACK CREEK
KROME AVE
PERRINE
CANAL
BISCAYNE BAY
OCEAN
ATLANTIC
HOMESTEAD
FLORIDA CITY
LEVEE 31E
US-1
C-111
-172
-181
-180
-170
-235
-211
-184
-213
-200
-148
-176
-238
-147
-220
-140
-234
-138
-169
-160
-175
EXPLANATION
-180 STRUCTURE CONTOUR--Shows altitude below sea level of base of surficial aquifer system. Dashed where approximately located. Contour interval 20 feet. Hachures indicate depression.
-175 TEST HOLE--Number is altitude of base of surficial aquifer system, in feet below sea level.
Test holes in Broward County from Fish (1988).
0 5 10 MILES
0 5 10 KILOMETERS

ATTACHMENT B

SOUTH DADE LANDFILL

FIGURE 1
SITE PLAN

MIAMI-DADE SOLID WASTE MANAGEMENT DEPARTMENT - TECHNICAL SERVICES AND ENVIRONMENTAL AFFAIRS DIVISION

Table 1. Groundwater Monitoring - General Parameters

SITE: *South Dade Landfill* **LABORATORY:** *Pace Analytical*

EVENT: *2nd Semiannual Monitoring 2022* **SAMPLED BY:** *Pace Analytical*

Well	Sampling Date	Turbidity *NTU*	DO *mg/L*	S. Cond. *umhos/cm*	Temp. *Deg. C*	pH *pH units*	Color / Sheen	TDS *mg/L*	NO_3^-- N *mg/L*	Cl^- *mg/L*	$NH3^+$- N *mg/L*
S1(10)	07/20/22	5.45	0.37	762	27.5	7.5	Clear	404	I 0.046	108	1.40
S1(15)	07/20/22	4.91	0.38	761	27.1	7.4	Clear	388	I 0.027	104	1.40
S1(60)	07/20/22	3.90	0.38	10,273	25.9	7.3	Clear	5,940	U 0.025	1,500	0.61
S2(15)	07/20/22	4.91	0.51	656	27.4	7.3	Clear	378	I 0.041	41	1.10
S2(30)	07/20/22	4.51	0.34	1,344	28.0	7.5	Clear	746	U 0.025	288	0.70
S2(60)	07/20/22	10.60	0.20	14,270	26.0	7.1	Clear	8,720	U 0.025	4,250	0.48
S3(15)	07/19/22	4.15	0.73	1,497	30.2	7.1	Clear	836	U 0.025	202	16.00
S3(30)	07/19/22	5.15	0.74	16,560	30.3	6.9	Clear	9,820	U 0.025	5,090	4.50
S3(60)	07/19/22	5.35	0.50	37,016	29.8	6.9	Clear	24,000	U 0.025	13,700	4.20
S4(15)	07/21/22	3.21	0.27	1,419	26.6	7.2	Clear	764	0.054	260	4.90
S4(30)	07/21/22	1.86	0.29	1,738	26.4	7.3	Clear	952	U 0.025	350	7.20
S4(60)	07/21/22	3.70	0.40	39,886	26.1	7.1	Clear	22,500	U 0.025	14,600	1.20
S5(15)	07/18/22	16.40	0.15	1,654	27.4	7.7	Clear	886	U 0.025	364	0.35
S5(30)	07/18/22	3.40	0.51	2,779	25.8	7.8	Clear	1,650	U 0.025	701	0.48
S5(60)	07/18/22	2.86	0.15	42,790	25.7	7.0	Clear	32,800	U 0.025	16,700	0.41
S6(15)	07/20/22	3.95	0.31	896	27.6	7.1	Clear	500	U 0.025	83	2.70
S6(30)	07/20/22	3.51	0.34	1,418	26.2	7.5	Clear	750	U 0.025	296	1.10
S6(60)	07/20/22	4.50	0.32	11,125	26.2	7.2	Clear	6,880	0.800	6,670	0.54
S7(15)	07/21/22	1.90	0.30	752	27.5	7.1	Clear	406	U 0.025	50	6.00
S7(30)	07/21/22	2.15	0.30	967	26.5	7.2	Clear	582	I 0.033	129	13.70
S7(60)	07/21/22	1.84	0.31	4,839	26.7	7.4	Clear	3,810	U 0.025	1,750	0.15
S8(15)	07/21/22	4.71	0.29	858	26.4	7.2	Clear	417	U 0.025	55	24.30
S8(30)	07/21/22	2.06	0.29	2,126	25.9	7.4	Clear	1,150	U 0.025	524	1.50
S8(60)	07/21/22	2.67	0.24	31,169	25.9	7.1	Clear	17,500	I 0.028	11,000	0.08
S9(15)	07/21/22	2.51	0.30	976	26.2	7.3	Clear	519	I 0.039	125	6.40
S9(30)	07/21/22	2.96	0.31	1,146	26.9	7.4	Clear	606	U 0.025	205	1.00
S9(60)	07/21/22	2.06	0.23	36,487	25.6	6.9	Clear	20,800	U 0.025	13,200	0.64
S10(15)	07/21/22	2.61	0.30	1,856	25.8	7.3	Clear	994	I 0.040	380	11.90
S10(30)	07/21/22	2.40	0.31	3,618	25.4	7.3	Clear	2,070	U 0.025	928	9.50
S10(60)	07/21/22	3.10	0.32	46,073	25.4	7.1	Clear	30,600	I 0.028	17,200	0.89
S11(15)	07/21/22	3.62	0.46	1,045	29.9	7.2	Clear	576	U 0.025	123	10.20
S11(30)	07/21/22	2.15	0.50	12,498	29.4	7.1	Clear	11,300	I 0.030	5,830	18.50
S11(60)	07/21/22	2.50	0.21	48,320	28.5	7.0	Clear	28,000	0.061	18,500	0.61
S12(15)	NS										
S12(30)	07/20/22	4.75	0.28	661	26.3	7.5	Clear	356	U 0.025	81	0.14
S12(60)	07/20/22	3.87	0.21	23,357	25.7	7.1	Clear	13,600	U 0.025	7,730	1.00
S13(15)	07/20/22	3.51	0.35	1,881	25.8	7.5	Clear	1,010	U 0.025	425	0.97
S13(30)	07/20/22	3.51	0.35	2,645	25.2	7.5	Clear	1,390	I 0.046	599	1.20
S13(60)	07/20/22	3.72	0.36	42,085	26.1	7.1	Clear	24,000	U 0.025	15,500	1.10
S14(15)	07/20/22	4.51	0.26	1,733	27.2	7.2	Clear	952	U 0.025	350	3.50
S14(30)	07/20/22	4.35	0.24	13,193	26.2	7.1	Clear	7,240	U 0.025	3,820	10.50
S14(60)	07/20/22	4.30	0.24	48,476	25.6	7.0	Clear	31,300	U 0.025	18,600	0.83
S15(15)	07/18/22	2.91	0.28	1,292	27.0	7.3	Clear	712	U 0.025	247	0.91
S15(30)	07/18/22	3.15	0.24	1,706	26.0	7.5	Clear	976	U 0.025	395	0.21
S15(60)	07/18/22	3.15	0.43	46,925	26.1	6.7	Clear	31,100	U 0.025	18,700	0.44
S16(15)	07/18/22	3.51	0.60	964	27.9	7.4	Clear	29	U 0.025	8	U 0.04
S16(30)	07/18/22	3.40	0.28	10,284	26.3	7.2	Clear	6,200	U 0.025	2,980	3.70
S16(60)	07/18/22	3.24	0.10	43,512	26.2	7.1	Clear	30,200	U 0.025	17,300	0.50
S17(15)	07/18/22	3.15	0.24	3,662	30.4	7.0	Clear	1,840	U 0.025	722	58.30
S17(30)	07/18/22	2.10	0.20	18,092	30.7	7.0	Clear	11,000	U 0.025	5,540	11.10
S17(60)	07/18/22	2.06	0.36	44,081	29.6	7.0	Clear	31,400	U 0.025	17,500	1.20
S18R(15)	07/18/22	2.96	0.24	3,552	29.4	7.3	Clear	1,820	U 0.025	740	47.80
S18R(30)	07/17/22	2.50	0.21	9,731	29.5	7.1	Clear	5,940	I 0.031	2,740	0.79
S18R(60)	07/18/22	1.95	0.18	47,566	24.8	7.1	Clear	33,400	I 0.032	18,400	0.90
S19(15)	07/19/22	5.90	0.40	703	27.6	7.3	Clear	15,800	U 0.025	9,290	2.40
S19(30)	07/19/22	4.96	0.39	12,677	27.3	7.1	Clear	7,360	I 0.031	3,790	1.00
S19(60)	07/19/22	5.12	0.37	28,309	23.3	7.1	Clear	18,100	U 0.025	9,700	0.99
S20(15)	07/19/22	3.90	0.29	2,726	26.3	7.1	Clear	1,530	U 0.025	665	2.00
S20(30)	07/19/22	4.76	0.29	11,084	25.8	7.1	Clear	6,500	U 0.025	3,240	0.75
S20(60)	07/19/22	6.30	0.30	22,566	25.6	6.9	Clear	13,600	U 0.025	7,290	0.72
S21(15)	07/19/22	4.60	0.31	719	27.3	7.2	Clear	399	I 0.037	55.0	0.49
S21(30)	07/19/22	3.70	0.30	8,746	28.3	7.3	Clear	4,960	U 0.025	2,510	0.58
S21(60)	07/19/22	3.96	0.31	17,730	26.3	7.0	Clear	10,700	U 0.025	5,630	0.36
PDWS: *as per FAC 62-550.310(1)(a)*						6.5 - 8.5		500	10.0	250	
SDWS: *as per FAC 62-550.320(1)*						SDWS		SDWS	PDWS	SDWS	

NS = Not sampled.

MIAMI-DADE SOLID WASTE MANAGEMENT DEPARTMENT - TECHNICAL SERVICES AND ENVIRONMENTAL AFFAIRS DIVISIOI

Table 2. Groundwater Monitoring - Metals

SITE: *SOUTH DADE LANDFILL*
EVENT: *2nd SEMIANNUAL MONITORING EVENT OF 2022*

LABORATORY: *Pace Analytical Laboratory*
SAMPLED BY: *Pace Analytical Laboratory*

Well	Sb µg/L	As µg/L	Ba µg/L	Be µg/L	Cd µg/L	Cr µg/L	Co µg/L	Cu µg/L	Fe µg/L	Pb µg/L	Hg µg/L	Ni µg/L	Se µg/L	Ag µg/L	Na mg/L	Tl µg/L	Va µg/L	Zn µg/L
S1(10)	U 0.50	U 0.5	11.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	I 31.3	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	61.4	U 0.11	I 1.6	U 11.0
S1(15)	U 0.50	U 0.5	11.2	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	61.0	U 0.11	I 1.8	U 11.0
S1(60)	U 0.50	I 0.5	97.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	563.0	I 7.1	U 0.09	5.3	U 3.9	U 1.0	1,520	U 0.11	I 1.6	U 11.0
S2(15)	U 0.50	1.0	I 9.2	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	I 39.8	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	25.7	U 0.11	I 1.5	U 11.0
S2(30)	U 0.50	1.5	14.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	250.0	U 4.6	U 0.09	I 2.5	U 3.9	U 1.0	146	U 0.11	I 1.4	U 11.0
S2(60)	I 0.56	1.2	89.7	U 0.17	U 0.33	U 1.7	I 1.20	U 2.6	149.0	I 8.2	U 0.09	8.9	U 3.9	U 1.0	2,140	U 0.11	I 5.0	U 11.0
S3(15)	U 0.50	2.1	19.2	U 0.17	U 0.33	5.5	I 1.20	U 2.6	I 37.4	U 4.6	U 0.09	6.9	U 3.9	U 1.0	127	U 0.11	I 5.7	U 11.0
S3(30)	U 0.50	I 0.7	114.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	539.0	I 7.6	U 0.09	7.4	U 3.9	U 1.0	2,940	U 0.11	I 3.2	U 11.0
S3(60)	U 0.50	I 0.7	130.0	U 0.17	U 1.60	I 11.4	U 4.8	U 2.6	1330.0	U 2.2	U 0.09	U 10.5	U 19.5	U 1.0	7,120	U 0.11	U 5.0	U 11.0
S4(15)	U 0.50	I 0.6	15.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	683.0	U 4.6	U 0.09	I 3.1	U 3.9	U 1.0	139	U 0.11	I 4.4	U 11.0
S4(30)	U 0.50	I 0.5	15.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 4.1	U 3.9	U 1.0	187	U 0.11	I 4.6	U 11.0
S4(60)	U 0.50	1.6	104.0	U 0.17	U 0.33	U 1.7	I 1.20	U 2.6	2410.0	10.0	U 0.09	8.3	U 3.9	U 1.0	8,070	U 0.11	I 1.5	U 11.0
S5(15)	U 0.50	2.1	11.7	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	911.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	205	U 0.11	U 1.0	U 11.0
S5(30)	U 0.50	U 0.5	21.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	395	U 0.11	U 1.0	U 11.0
S5(60)	U 0.50	U 0.5	63.2	U 0.85	U 1.60	U 8.5	U 4.80	U 13.0	153.0	I 30.2*	U 0.09	34.6	U 19.5	U 5.0	8,510	U 0.11	I 9.6	U 55.0
S6(15)	U 0.50	1.1	31.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	I 5.0	U 0.09	U 2.1	U 3.9	U 1.0	51.2	U 0.11	I 2.8	U 11.0
S6(30)	U 0.50	U 0.5	15.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	150	U 0.11	I 1.4	U 11.0
S6(60)	U 0.50	I 0.6	97.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	741.0	I 5.5	U 0.09	5.3	U 3.9	U 1.0	1,600	U 0.11	I 1.5	U 11.0
S7(15)	U 0.50	I 0.5	17.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	35.0	U 0.11	U 1.0	U 11.0
S7(30)	U 0.50	3.2	20.2	U 0.17	U 0.33	I 4.4	I 1.10	U 2.6	61.3	U 4.6	U 0.09	5.5	U 3.9	U 1.0	80	U 0.11	I 6.1	U 11.0
S7(60)	U 0.50	7.8	53.2	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	896.0	U 4.6	U 0.09	5.8	U 3.9	U 1.0	1,230	U 0.11	I 1.2	U 11.0
S8(15)	U 0.50	9.9	23.8	U 0.17	U 0.33	7.0	U 0.96	I 3.1	2000.0	U 4.6	U 0.09	I 4.1	U 3.9	U 1.0	44.4	U 0.11	I 3.5	U 11.0
S8(30)	U 0.50	U 0.5	18.5	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	297	U 0.11	I 1.0	U 11.0
S8(60)	U 0.50	1.1	107.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	439.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	5,780	U 0.11	U 1.0	U 11.0
S9(15)	U 0.50	1.0	11.2	U 0.17	U 0.33	I 2.4	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	86.8	U 0.11	I 2.4	U 11.0
S9(30)	U 0.50	U 0.5	11.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 3.4	U 3.9	U 1.0	113	U 0.11	I 2.1	U 11.0
S9(60)	I 0.82	I 0.9	110.0	U 0.17	U 0.33	U 1.7	I 3.10	U 2.6	98.1	10.2	U 0.09	11.5	U 3.9	U 1.0	6,940	I 0.16	I 2.4	U 11.0
S10(15)	U 0.50	1.2	15.6	U 0.17	U 0.33	I 2.4	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 4.8	U 3.9	U 1.0	193	U 0.11	I 6.8	U 11.0
S10(30)	U 0.50	U 0.5	26.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 4.6	U 3.9	U 1.0	537	U 0.11	I 6.0	U 11.0
S10(60)	U 0.50	1.6	86.6	U 0.17	U 0.33	U 1.7	I 1.20	U 2.6	2640.0	I 9.2	U 0.09	7.8	I 4.9	U 1.0	9,050	U 0.11	I 1.4	U 11.0
S11(15)	U 0.50	2.7	26.2	U 0.17	U 0.33	I 3.5	U 0.96	U 2.6	4910.0	U 4.6	U 0.09	I 3.7	U 3.9	U 1.0	79	U 0.11	I 7.8	U 11.0
S11(30)	U 0.50	I 0.6	80.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	401.0	I 5.8	U 0.09	7.7	U 3.9	U 1.0	3,250	U 0.11	11.1	U 11.0
S11(60)	U 0.50	1.6	77.1	U 0.17	U 0.33	U 1.7	I 1.50	U 2.6	2250.0	11.7	U 0.09	8.9	I 9.2	U 1.0	493	U 0.11	I 1.4	U 11.0
S12(15)	NS																	
S12(30)	U 0.50	U 0.5	11.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	I 28.6	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	49.4	U 0.11	I 1.2	U 11.0
S12(60)	U 0.50	I 0.5	121.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	969.0	I 8.0	U 0.09	5.6	U 3.9	U 1.0	3,750	U 0.11	I 1.3	U 11.0
S13(15)	U 0.50	U 0.5	13.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 3.0	U 3.9	U 1.0	258	U 0.11	I 3.4	U 11.0
S13(30)	U 0.50	U 0.5	18.5	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 3.3	U 3.9	U 1.0	374	U 0.11	I 2.9	U 11.0
S13(60)	U 0.50	U 0.5	104.0	U 0.17	U 0.33	U 1.7	I 1.40	U 2.6	3170.0	I 9.9	U 0.09	6.9	I 10.5	U 1.0	8,810	U 0.11	U 5.0	U 11.0
S14(15)	U 0.50	U 0.5	12.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 2.8	U 3.9	U 1.0	181	U 0.11	I 6.6	U 11.0
S14(30)	U 0.50	U 0.5	58.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	I 6.2	U 0.09	5.6	U 3.9	U 1.0	2,050	U 0.11	11.1	U 11.0
S14(60)	U 0.50	1.7	75.7	U 0.17	U 1.60	U 1.7	U 4.80	U 2.6	3090.0	U 0.2	U 0.09	U 10.5	U 19.5	U 1.0	10,800	U 0.11	U 1.0	U 11.0
S15(15)	U 0.50	U 0.5	13.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	144	U 0.11	U 1.0	U 11.0
S15(30)	U 0.50	U 0.5	14.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	227	U 0.11	U 1.0	U 11.0
S15(60)	U 0.50	U 0.5	70.9	U 0.85	U 1.60	U 8.5	U 4.80	U 13.0	297.0	I 28.6*	U 0.09	31.5	U 19.5	U 5.0	9,840	U 0.11	I 6.4	U 55.0
S16(15)	U 0.50	U 0.5	U 0.84	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	2,370	U 0.11	U 1.0	U 11.0
S16(30)	U 0.50	U 0.5	38.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	78.5	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	1,820	U 0.11	I 3.8	U 11.0
S16(60)	U 0.50	1.6	73.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	2320.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	9,220	U 0.11	U 1.0	U 11.0
S17(15)	U 0.50	I 0.9	27.0	U 0.17	U 0.33	8.5	I 2.20	U 2.6	U 25.0	U 4.6	U 0.09	I 3.6	U 3.9	U 1.0	482	U 0.11	28.6	U 11.0
S17(30)	U 0.50	U 0.5	97.3	U 0.17	U 0.33	I 2.1	U 0.96	U 2.6	47.7	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	3,340	U 0.11	I 5.9	U 11.0
S17(60)	U 0.50	I 0.8	92.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	2980.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	9,980	U 0.11	U 1.0	U 11.0
S18R(15)	U 0.50	1.0	24.9	U 0.17	U 0.33	8.4	I 2.60	U 2.6	U 25.0	U 4.6	U 0.09	I 4.4	U 3.9	U 1.0	495	U 0.11	17.5	U 11.0
S18R(30)	U 0.50	U 0.5	64.6	U 0.17	U 0.33	5.3	U 0.96	U 2.6	I 31.9	U 4.6	U 0.09	I 2.3	U 3.9	U 1.0	1,590	U 0.11	10.4	U 11.0
S18R(60)	U 0.50	3.5	I 9.5	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	437.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	35	U 0.11	U 1.0	U 11.0
S19(15)	U 0.50	I 0.5	139.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	420.0	I 7.0	U 0.09	6.9	I 8.6	U 1.0	4,780	U 0.11	I 1.8	104.0
S19(30)	U 0.50	U 0.5	118.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	474.0	I 5.1	U 0.09	6.7	I 5.8	U 1.0	2,110	U 0.11	I 1.8	U 11.0
S19(60)	U 0.50	U 0.5	37.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	5.2	U 3.9	U 1.0	471	U 0.11	I 1.8	U 11.0
S20(15)	U 0.50	U 0.5	26.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 4.2	U 3.9	U 1.0	358.0	U 0.11	I 2.1	U 11.0
S20(30)	U 0.50	U 0.5	99.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1010.0	I 5.5	U 0.09	6.2	U 3.9	U 1.0	1,840	U 0.11	I 1.6	U 11.0
S20(60)	U 0.50	I 0.5	135.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1650.0	I 8.7	U 0.09	7.1	I 7.2	U 1.0	4,010	U 0.11	I 1.6	U 11.0
S21(15)	U 0.50	6.7	I 9.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	670.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	32.4	U 0.11	I 1.3	U 11.0
S21(30)	U 0.50	U 0.5	93.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	499.0	I 4.8	U 0.09	6.8	U 3.9	U 1.0	1,400	U 0.11	I 1.6	U 11.0
S21(60)	U 0.50	I 0.8	148.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1500.0	I 8.8	U 0.09	6.3	I 6.0	U 1.0	2,970	U 0.11	I 1.3	U 11.0
MCLs	6.0 PDWS	10.0 PDWS	2,000 PDWS	4.0 PDWS	5.0 PDWS	100 PDWS	140 GCTL	1,000 SDWS	300 SDWS	15.0 PDWS	2.0 PDWS	100 PDWS	50 PDWS	100 SDWS	160 PDWS	2.0 PDWS	49 GCTL	5,000 SDWS

MIAMI-DADE SOLID WASTE MANAGEMENT DEPARTMENT
TECHNICAL SERVICES AND ENVIRONMENTAL AFFAIRS DIVISION

Table 3. Groundwater Monitoring - Volatile Organic Substances Detected

SITE: ***South Dade Landfill***
EVENT: ***2nd Semiannual Monitoring Event 2022***

Sampled by: *Pace Analytical Laboratory*

DETECTED PARAMETERS ONLY, *µg/L*								
Well	**EPA 8011 & 8260 Parameters**	**Chloroform**	**Acetone**	**Dibromochloro-methane**	**Chlorobenzene**	**1,4 - Dichlorobenzene**	**Toluene**	**Benzene**
S1(10)							0.99 I	
S1(15)							0.76 I	
S1(60)	BDL							
S2(15)	BDL							
S2(30)	BDL							
S2(60)		5.8						
S3(15)								0.33 I
S3(30)	BDL							
S3(60)	BDL							
S4(15)	BDL							
S4(30)					0.37 I			
S4(60)	BDL							
S5(15)	BDL							
S5(30)	BDL							
S5(60)	BDL							
S6(15)	BDL							
S6(30)	BDL							
S6(60)	BDL							
S7(15)	BDL							
S7(30)	BDL							
S7(60)	BDL							
S8(15)							16.4	0.34 I
S8(30)	BDL							
S8(60)	BDL							
S9(15)	BDL							
S9(30)	BDL							
S9(60)		2.9						
S10(15)					0.44 I			
S10(30)	BDL							
S10(60)	BDL							
S11(15)	BDL							
S11(30)	BDL							
S11(60)	BDL							
S12(15)								
S12(30)	BDL							
S12(60)	BDL							
S13(15)	BDL							
S13(30)	BDL							
S13(60)	BDL							
S14(15)	BDL							
S14(30)	BDL							
S14(60)	BDL							
S15(15)	BDL							
S15(30)	BDL							
S15(60)	BDL							
S16(15)			14.2 I					
S16(30)	BDL							
S16(60)	BDL							
S17(15)					1.6	0.52 I		
S17(30)	BDL							
S17(60)	BDL							
S18R(15)	BDL							
S18R(30)	BDL							
S18R(60)	BDL							
S19(15)	BDL							
S19(30)	BDL							
S19(60)	BDL							
S20(15)	BDL							
S20(30)	BDL							
S20(60)	BDL							
S21(15)	BDL							
S21(30)	BDL							
S21(60)	BDL							
MCLs *		70			100		1,000	10,000 (Total Xyl)

** FAC 62-550.310 Drinking Water Standards or 62-777 CTLs (µg/L). BDL = ALL VOC BELOW DETECTION LIMITS.*

MIAMI-DADE SOLID WASTE MANAGEMENT DEPARTMENT - TECHNICAL SERVICES AND ENVIRONMENTAL AFFAIRS DIVISION

Table 1. Groundwater Monitoring - General Parameters

SITE: *South Dade Landfill* **LABORATORY:** *Pace Analytical*

EVENT: *2nd Semiannual Monitoring 2021* **SAMPLED BY:** *Pace Analytical*

Well	Sampling Date	Turbidity *NTU*	DO *mg/L*	S. Cond. *umhos/cm*	Temp. *Deg. C*	pH *pH units*	Color / Sheen	TDS *mg/L*	NO_3^-- N *mg/L*	NO_3^-- N *Resampling*	Cl^- *mg/L*	$NH3^+$- N *mg/L*
S1(10)	07/29/21	1.18	0.08	749	27.5	7.1	Clear	413	U 0.025	N/A	106	0.39
S1(15)	07/29/21	0.79	0.13	787	27.4	7.1	Clear	108	U 0.025	N/A	110	0.36
S1(60)	07/29/21	0.64	0.05	10,615	26.5	7.0	Clear	6,440	U 0.025	N/A	3,160	0.66
S2(15)	07/26/21	0.94	0.27	613	27.7	7.2	Clear	349	U 0.025	N/A	55	0.9
S2(30)	07/26/21	1.52	0.07	2,418	27.1	7.4	Clear	1,320	U 0.025	N/A	630	0.35
S2(60)	07/26/21	0.13	0.23	13,303	26.2	7.1	Clear	7,860	I 0.027	N/A	3,940	0.44
S3(15)	08/15/21	3.25	0.06	2,760	30.2	6.8	Clear	7,560	U 0.025	N/A	615	10.6
S3(30)	08/15/21	4.08	0.04	13,504	30.5	6.8	Clear	1,560	U 0.025	N/A	3,920	4.2
S3(60)	08/15/21	3.95	0.03	38,368	29.6	6.8	Clear	25,400	U 0.025	N/A	13,600	1.2
S4(15)	07/22/21	2.27	0.11	1,787	26.6	7.2	Clear	958	U 0.025	N/A	356	7.5
S4(30)	07/22/21	9.32	0.05	1,550	26.4	7.2	Clear	1,790	U 0.025	N/A	337	11.5
S4(60)	08/13/21	0.57	0.04	39,576	26.2	7.0	Clear	23,800	U 0.025	N/A	15,200	1.3
S5(15)	07/21/21	12.60	1.40	3,250	26.7	7.1	Clear	1,660	0.240	N/A	674	0.29
S5(30)	07/21/21	1.19	0.07	3,968	25.3	7.3	Clear	1,730	U 0.025	N/A	803	0.53
S5(60)	07/21/21	1.16	0.10	50,750	25.4	6.8	Clear	8,350	0.110	N/A	18,100	0.55
S6(15)	07/26/21	1.01	0.19	839	28.1	7.1	Clear	449	U 0.025	N/A	82	2.1
S6(30)	07/27/21	0.56	0.17	1,363	27.4	7.5	Clear	718	U 0.025	N/A	277	1.0
S6(60)	07/27/21	0.36	0.17	11,189	26.9	7.2	Clear	6,500	U 0.025	N/A	3,430	0.62
S7(15)	08/13/21	0.60	0.12	1,101	27.8	6.6	Clear	465	U 0.025	N/A	69	16.6
S7(30)	07/20/21	0.32	0.10	430	26.3	7.2	Clear	373	U 0.025	N/A	85	0.63
S7(60)	07/20/21	0.30	0.05	9,700	26.2	7.2	Clear	6,220	U 0.025	N/A	3,240	0.66
S8(15)	07/20/21	3.90	0.06	552	25.7	7.1	Clear	373	U 0.025	N/A	77	1.90
S8(30)	07/20/21	1.17	0.05	2,049	25.7	7.2	Clear	1,580	U 0.025	N/A	717	0.8
S8(60)	08/12/21	0.49	0.04	33,528	25.6	6.9	Clear	22,500	U 0.025	N/A	11,400	0.78
S9(15)	07/23/21	0.73	0.10	1,172	26.5	7.2	Clear	624	U 0.025	N/A	194	2.8
S9(30)	07/23/21	1.30	0.20	1,183	25.6	7.5	Clear	614	U 0.025	N/A	222	0.60
S9(60)	07/23/21	0.69	0.29	25,374	25.5	7.6	Clear	14,800	0.330	N/A	8,570	0.19
S10(15)	07/22/21	0.91	0.19	1,802	26.4	7.2	Clear	1,260	U 0.025	N/A	501	18.9
S10(30)	07/22/21	0.34	0.06	3,333	26.4	7.2	Clear	2,420	U 0.025	N/A	1,070	15.6
S10(60)	07/22/21	0.51	0.05	48,207	26.3	7.1	Clear	30,800	U 0.025	N/A	17,600	0.96
S11(15)	07/23/21	0.89	0.08	2,013	28.2	7.5	Clear	1,040	U 0.025	N/A	404	11.0
S11(30)	07/23/21	1.33	0.34	9,456	29.2	7.4	Clear	5,260	0.300	N/A	2,660	41.7
S11(60)	07/23/21	3.81	0.40	50,086	28.1	7.4	Clear	30,000	U 0.025	N/A	19,800	0.55
S12(15)	10/11/21	12.50	1.22	1,251	27.1	6.8	Clear	728	U 0.025	N/A	128	2.0
S12(30)	08/12/21	0.25	0.12	595	27.6	6.9	Clear	318	U 0.025	N/A	57	0.07
S12(60)	08/12/21	0.21	0.09	23,363	26.3	7.0	Clear	13,900	U 0.025	N/A	7,620	0.53
S13(15)	07/21/21	0.63	0.11	1,598	25.4	7.0	Clear	950	U 0.025	N/A	391	0.9
S13(30)	07/21/21	0.26	0.06	2,414	25.3	7.2	Clear	1,480	U 0.025	N/A	671	1.5
S13(60)	07/21/21	1.14	0.05	46,748	25.4	7.0	Clear	23,000	I 0.026	N/A	15,600	1.0
S14(15)	07/21/21	1.63	0.09	3,194	26.4	7.2	Clear	1,070	U 0.025	N/A	493	3.9
S14(30)	07/21/21	0.52	0.08	21,092	26.1	7.0	Clear	12,100	U 0.025	N/A	6,910	9.7
S14(60)	08/12/21	0.84	0.05	49,532	26.2	7.0	Clear	34,200	I 0.034	N/A	19,100	0.78
S15(15)	07/21/21	1.96	0.17	1,160	26.3	7.2	Clear	538	U 0.025	N/A	171	0.73
S15(30)	07/21/21	1.25	0.09	1,388	25.7	7.5	Clear	688	U 0.025	N/A	267	0.12
S15(60)	07/21/21	1.09	0.08	53,812	25.6	6.9	Clear	31,400	U 0.025	N/A	19,100	0.51
S16(15)	07/29/21	0.73	0.05	12,983	25.7	6.8	Clear	8,160	U 0.025	N/A	2,170	5.40
S16(30)	07/29/21	28.90	0.11	1,908	26.8	6.9	Clear	1,110	U 0.025	N/A	180	0.14
S16(60)	07/29/21	0.79	0.04	47,229	25.8	6.7	Clear	33,000	U 0.025	N/A	18,500	0.70
S17(15)	07/27/21	7.82	1.19	3,777	29.8	7.0	Clear	1,780	U 0.025	N/A	13	90.0
S17(30)	07/27/21	0.38	0.14	12,693	30.7	7.1	Clear	7,320	U 0.025	N/A	3,730	23.0
S17(60)	07/27/21	3.75	0.13	47,500	29.6	7.0	Clear	30,100	I 0.028	N/A	1,840	0.82
S18R(15)	07/28/21	0.63	1.08	3,808	28.9	7.1	Clear	1,740	U 0.250	N/A	784	61.8
S18R(30)	07/28/21	0.33	1.63	7,484	29.6	7.0	Clear	4,180	U 0.025	N/A	2,050	18.2
S18R(60)	07/28/21	0.37	0.82	46,663	29.0	6.8	Clear	29,600	U 0.025	N/A	18,300	0.81
S19(15)	08/15/21	3.73	0.19	306	26.5	7.0	Clear	193	U 0.025	N/A	13	1.3
S19(30)	08/15/21	1.20	0.06	12,716	26.5	6.9	Clear	7,200	U 0.025	N/A	3,730	1.1
S19(60)	08/15/21	2.03	0.16	2,875	26.7	6.8	Clear	1,460	U 0.025	N/A	668	3.0
S20(15)	08/22/21	0.29	0.19	1,281	26.0	6.8	Clear	672	U 0.025	N/A	226	1.7
S20(30)	08/22/21	0.60	0.09	10,552	25.6	7.0	Clear	5,840	U 0.025	N/A	3,290	0.81
S20(60)	08/22/21	2.91	0.05	18,551	25.7	7.0	Clear	10,900	U 0.025	N/A	3,980	0.69
S21(15)	08/15/21	1.56	0.09	760	28.4	7.1	Clear	427	U 0.025	N/A	70.5	0.55
S21(30)	08/15/21	0.70	0.09	8,722	27.2	7.4	Clear	4,700	I 0.026	N/A	2,660	0.27
S21(60)	08/15/21	0.48	0.45	14,846	26.5	7.4	Clear	7,240	U 0.025	N/A	5,170	0.39
PDWS: *as per FAC 62-550.310(1)(a)*						6.5 - 8.5 SDWS		500 SDWS	10.0 PDWS		250 SDWS	
SDWS: *as per FAC 62-550.320(1)*												

MIAMI-DADE SOLID WASTE MANAGEMENT DEPARTMENT - TECHNICAL SERVICES AND ENVIRONMENTAL AFFAIRS DIVISION

Table 2. Groundwater Monitoring - Metals

SITE: SOUTH DADE LANDFILL

EVENT: 2nd SEMIANNUAL MONITORING EVENT OF 2021

LABORA *Pace Analytical Laboratory*

SAMPLE *Pace Analytical Laboratory*

Well	Sb µg/L	As µg/L	Ba µg/L	Be µg/L	Cd µg/L	Cr µg/L	Co µg/L	Cu µg/L	Fe µg/L	Pb µg/L	Hg µg/L	Ni µg/L	Se µg/L	Ag µg/L	Na mg/L	Tl µg/L	Va µg/L	Zn µg/L
S1(10)	U 0.50	2.8	12.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	142.0	U 4.6	U 0.09	2.2	U 8.5	U 1.0	53.2	U 0.11	1.2	U 11.0
S1(15)	U 0.50	1.5	12.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	98.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	54.7	U 0.11	I 1.4	U 11.0
S1(60)	U 0.50	0.55	98.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	531	U 4.6	U 0.09	4.6	U 8.5	U 1.0	1,460	U 0.11	U 1.0	U 11.0
S2(15)	U 0.50	U 0.5	I 8.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	I 25.3	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	30.9	U 0.11	U 1.0	U 11.0
S2(30)	U 0.50	2.0	22.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	448	U 4.6	U 0.09	I 3.4	U 8.5	U 1.0	292	U 0.11	U 10.0	U 11.0
S2(60)	I 0.71	I 0.98	89.8	U 0.17	U 0.33	U 1.7	U 0.96	I 3.1	109	U 4.6	U 0.09	9.7	U 8.5	U 1.0	1,980	U 0.11	U 100.0	U 11.0
S3(15)	U 0.50	2.6	26.7	U 0.17	U 0.33	I 4.2	U 0.96	U 2.6	I 37.3	U 4.6	U 0.09	7.1	U 3.9	U 1.0	304	U 0.11	I 5.5	U 11.0
S3(30)	U 0.50	I 0.6	94.7	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	389	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	2,190	U 0.11	I 1.5	U 11.0
S3(60)	U 0.50	I 0.6	120.0	U 0.17	U 0.33	U 1.7	I 12.9	U 2.6	773	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	6,790	U 0.11	U 1.0	U 11.0
S4(15)	U 0.50	I 0.8	20.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	513	U 4.6	I 0.10	I 3.6	U 8.5	U 1.0	190	U 0.11	I 5.5	I 18.2
S4(30)	U 0.50	I 0.7	16.4	U 0.17	U 0.33	I 1.8	U 0.96	U 2.6	I 25.3	U 4.6	I 0.10	I 3.5	U 8.5	U 1.0	176	U 0.11	I 5.4	U 11.0
S4(60)	U 0.50	1.6	105.0	U 0.17	U 0.33	U 1.7	I 1.60	U 2.6	2,310	U 4.6	U 0.09	7.0	U 3.9	U 1.0	6,440	U 0.11	I 1.2	U 11.0
S5(15)	U 0.50	U 0.5	19.2	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	169.0	U 4.6	U 0.09	I 3.6	U 8.5	U 1.0	375	U 0.11	I 1.8	U 11.0
S5(30)	U 0.50	U 0.5	21.7	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 3.6	U 8.5	U 1.0	461	U 0.11	I 1.7	U 11.0
S5(60)	U 0.50	I 0.5	76.2	U 0.17	U 0.66	U 3.4	U 0.96	U 5.2	1,240	U 4.6	U 0.09	U 2.1	U 8.5	U 2.0	8,220	U 0.11	I 2.3	U 11.0
S6(15)	U 0.50	U 0.5	29.3	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 2.5	U 8.5	U 1.0	52.5	U 0.11	I 2.8	U 11.0
S6(30)	U 0.50	U 0.5	20.7	U 0.17	1.10	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	152	U 0.11	I 1.2	U 11.0
S6(60)	U 0.50	U 0.5	102.0	U 0.17	2.00	U 1.7	U 0.96	U 2.6	725	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	1,710	U 0.11	I 1.4	U 11.0
S7(15)	U 0.50	U 0.5	24.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	127	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	47.7	U 0.11	I 1.2	U 11.0
S7(30)	U 0.50	1.0	I 9.4	U 0.17	I 0.75	U 1.7	U 0.96	U 2.6	112.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	54	U 0.11	I 1.0	U 11.0
S7(60)	U 0.50	4.9	81.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	721	U 4.6	U 0.09	5.0	U 8.5	U 1.0	1,690	U 0.11	I 1.1	U 11.0
S8(15)	U 0.50	I 0.7	10.0	U 0.17	I 0.42	U 1.7	U 0.96	U 2.6	68	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	47.7	U 0.11	I 1.8	U 11.0
S8(30)	U 0.50	U 0.5	23.1	U 0.17	1.30	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	383	U 0.11	I 1.5	U 11.0
S8(60)	U 0.50	1.9	128.0	U 0.17	2.80	U 1.7	U 0.96	U 2.6	2,500	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	6,490	U 0.11	U 1.0	U 11.0
S9(15)	U 0.50	U 0.5	10.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	114.0	U 0.11	I 1.7	U 11.0
S9(30)	U 1.00	U 1.0	10.4	U 0.17	I 0.63	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	122	U 0.11	I 1.2	U 11.0
S9(60)	U 2.50	U 2.5	115.0	U 0.17	U 0.33	U 1.7	U 1.90	U 2.6	167	U 4.6	U 0.09	U 4.2	U 3.9	U 1.0	7,790	U 0.53	I 3.0	U 11.0
S10(15)	U 0.50	1.0	18.0	U 0.17	U 0.33	I 2.9	U 0.96	U 2.6	U 25.0	U 4.6	I 0.10	I 4.1	U 8.5	U 1.0	276	U 0.11	I 8.0	U 11.0
S10(30)	U 0.50	I 0.5	31.5	U 0.17	U 0.33	I 2.0	U 0.96	U 2.6	U 25.0	U 4.6	I 0.11	I 4.5	U 8.5	U 1.0	783	U 0.11	I 9.4	U 11.0
S10(60)	U 0.50	1.2	90.9	U 0.34	U 0.66	U 3.4	I 3.10	U 5.2	2,460	U 4.6	I 0.09	U 2.1	U 17.0	U 1.0	8,170	U 0.11	U 2.0	U 11.0
S11(15)	U 1.00	U 1.0	17.1	U 0.17	U 1.60	I 2.7	U 0.96	U 2.6	359	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	241	U 0.11	I 6.5	U 11.0
S11(30)	U 1.00	U 1.0	71.3	U 0.17	U 0.33	I 2.8	U 0.96	U 2.6	74	U 4.6	U 0.09	5.7	U 3.9	U 1.0	2,480	U 0.21	12.9	U 11.0
S11(60)	U 0.50	1.5	93.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	2,250	U 4.6	U 0.09	U 2.1	U 8.5	I 2.2	9,950	U 0.11	U 1.0	U 11.0
S12(15)	U 0.50	I 0.6	13.7	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	I 32.9	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	97	U 0.11	I 2.1	U 11.0
S12(30)	U 0.50	U 0.5	10.8	U 0.17	I 0.77	U 1.7	U 0.96	U 2.6	45.4	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	35.0	U 0.11	U 1.0	U 11.0
S12(60)	U 0.50	I 0.6	141.0	U 0.17	2.20	U 1.7	I 1.10	U 2.6	1,000	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	4,640	U 0.11	U 1.0	U 11.0
S13(15)	U 0.50	U 0.5	14.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	230	U 0.11	I 3.1	U 11.0
S13(30)	U 0.50	U 0.5	23.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	61	U 4.6	U 0.09	I 3.8	U 8.5	U 1.0	401	U 0.11	I 2.5	U 11.0
S13(60)	U 0.50	I 0.6	107.0	U 0.17	U 0.33	U 1.7	I 2.30	U 2.6	2,960	U 4.6	U 0.09	6.2	U 8.5	U 1.0	8,550	U 0.11	U 1.0	U 11.0
S14(15)	U 0.50	U 0.5	15.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 3.4	U 8.5	U 1.0	319	U 0.11	I 6.6	U 11.0
S14(30)	U 0.50	U 0.5	93.4	U 0.17	U 0.33	U 1.7	I 1.20	U 2.6	I 28.0	U 4.6	U 0.09	5.5	U 8.5	U 1.0	3,160	U 0.11	10.5	U 11.0
S14(60)	U 0.50	2.1	80.7	U 0.17	U 0.33	U 1.7	U 1.90	U 2.6	3,230	U 4.6	U 0.09	U 4.2	U 3.9	U 1.0	10,500	U 0.11	U 1.0	U 11.0
S15(15)	U 0.50	U 0.5	11.3	U 0.17	I 0.89	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	103	U 0.11	I 1.4	U 11.0
S15(30)	U 0.50	U 0.5	11.2	U 0.17	I 0.87	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	153	U 0.11	I 1.5	U 11.0
S15(60)	U 0.50	U 0.5	76.5	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1,900	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	9,670	U 0.11	U 1.0	U 11.0
S16(15)	U 0.50	U 0.5	46.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	34	U 4.6	U 0.09	5.0	U 42.5	U 1.0	2,170	U 0.11	5.3	U 55.0
S16(30)	U 0.50	U 0.5	13.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	382	U 4.6	U 0.09	3.2	U 8.5	U 1.0	180	U 0.11	1.5	U 11.0
S16(60)	U 0.50	1.2	84.6	U 0.17	U 0.33	U 8.5	U 4.80	U 2.6	2,260	U 4.6	U 0.09	25.2	U 42.5	U 1.0	8,990	U 0.11	U 1.0	U 55.0
S17(15)	U 0.50	I 1.0	24.6	U 0.17	1.90	9.9	I 3.20	U 2.6	U 25.0	U 4.6	U 0.09	I 4.0	U 8.5	U 1.0	462	U 0.11	36.0	U 11.0
S17(30)	U 0.50	I 0.5	75.8	U 0.17	2.40	I 3.2	I 1.30	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	2,110	U 0.11	10.6	U 11.0
S17(60)	U 0.50	1.0	106.0	U 0.17	4.40	U 1.7	U 0.96	U 2.6	3,120	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	9,370	U 0.11	U 1.0	U 11.0
S18R(15)	U 0.50	1.0	21.9	U 0.17	U 0.33	8.0	I 2.80	U 2.6	I 27.7	U 4.6	U 0.09	7.4	U 8.5	U 1.0	446	U 0.11	18.7	U 11.0
S18R(30)	U 0.50	U 0.5	49.7	U 0.17	U 0.33	I 3.8	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	5.7	U 8.5	U 1.0	1,020	U 0.11	I 8.8	U 11.0
S18R(60)	U 0.50	1.2	91.6	U 0.17	U 0.33	U 8.5	U 4.80	U 2.6	3,130	U 4.6	U 0.09	25.1	U 8.5	U 1.0	8,130	U 0.11	U 1.0	U 11.0
S19(15)	U 0.50	U 0.5	12.5	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	744	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	8	U 0.11	U 1.0	672.0
S19(30)	U 0.50	U 0.5	112.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	341	U 4.6	U 0.09	5.5	U 3.9	U 1.0	1,660	U 0.11	I 1.5	U 11.0
S19(60)	U 0.50	U 0.5	32.5	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	I 3.5	U 3.9	U 1.0	302	U 0.11	I 1.4	U 11.0
S20(15)	U 0.50	U 0.5	17.8	U 0.17	1.20	U 1.7	U 0.96	U 2.6	U 25.0	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	126.0	U 0.11	I 1.5	U 11.0
S20(30)	U 0.50	I 0.8	96.2	U 0.17	2.20	U 1.7	U 0.96	U 2.6	878	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	1,490	U 0.11	I 1.2	U 11.0
S20(60)	U 0.50	1.6	137.0	U 0.17	2.60	I 1.8	U 0.96	I 3.4	2,000	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	2,790	U 0.11	I 1.6	U 11.0
S21(15)	U 0.50	9.2	11.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1,040	U 4.6	U 0.09	U 2.1	U 3.9	U 1.0	38.1	U 0.11	I 1.2	U 11.0
S21(30)	U 0.50	I 0.7	96.9	U 0.17	I 0.36	U 1.7	U 0.96	U 2.6	148	U 4.6	U 0.09	I 4.6	U 3.9	U 1.0	1,170	U 0.11	I 1.5	U 11.0
S21(60)	U 0.50	I 0.8	140.0	U 0.17	I 0.36	U 1.7	U 0.96	U 2.6	1,310	U 4.6	U 0.09	I 4.9	U 3.9	U 1.0	2,200	U 0.11	U 1.0	U 11.0
MCLs	6.0 PDWS	10.0 PDWS	2,000 PDWS	4.0 PDWS	5.0 PDWS	100 PDWS	140 GCTL	1,000 SDWS	300 SDWS	15.0 PDWS	2.0 PDWS	100 PDWS	50 PDWS	100 SDWS	160 PDWS	2.0 PDWS	49 GCTL	5,000 SDWS

MIAMI-DADE SOLID WASTE MANAGEMENT DEPARTMENT
TECHNICAL SERVICES AND ENVIRONMENTAL AFFAIRS DIVISION

Table 3. Groundwater Monitoring - Volatile Organic Substances Detected

SITE: *South Dade Landfill*
EVENT: *2nd Semiannual Monitoring Event 2021*

Pace Analytical Laboratory

DETECTED PARAMETERS ONLY, *µg/L*								
Well	**EPA 8011 & 8260 Parameters**	**Chloroform**	**Bromodichloro-methane**	**Dibromochloro-methane**	**Chlorobenzene**	**Bromoform**	**Toluene**	**o-Xylene**
S1(10)	BDL							
S1(15)	BDL							
S1(60)	BDL							
S2(15)	BDL							
S2(30)		0.55 I						
S2(60)		323.0	53.6	40.6		106.0		
S3(15)	BDL							
S3(30)	BDL							
S3(60)	BDL							
S4(15)					I 0.37			
S4(30)					I 0.67			
S4(60)	BDL							
S5(15)	BDL							
S5(30)	BDL							
S5(60)	BDL							
S6(15)	BDL							
S6(30)	BDL							
S6(60)	BDL							
S7(15)	BDL							
S7(30)	BDL							
S7(60)	BDL							
S8(15)	BDL							
S8(30)	BDL							
S8(60)	BDL							
S9(15)	BDL							
S9(30)	BDL							
S9(60)		2.9						
S10(15)					I 0.69			
S10(30)					I 0.67			
S10(60)	BDL							
S11(15)	BDL							
S11(30)	BDL							
S11(60)	BDL							
S12(15)	BDL							
S12(30)	BDL							
S12(60)	BDL							
S13(15)	BDL							
S13(30)	BDL							
S13(60)	BDL							
S14(15)	BDL							
S14(30)	BDL							
S14(60)	BDL							
S15(15)	BDL							
S15(30)	BDL							
S15(60)	BDL							
S16(15)	BDL							
S16(30)	BDL							
S16(60)	BDL							
S17(15)					5.0			
S17(30)	BDL							
S17(60)	BDL							
S18R(15)	BDL							
S18R(30)	BDL							
S18R(60)	BDL							
S19(15)							I 0.37	
S19(30)	BDL							
S19(60)	BDL							
S20(15)	BDL							
S20(30)	BDL							
S20(60)	BDL							
S21(15)	BDL							
S21(30)	BDL							
S21(60)	BDL							
MCLs *		70			100		1,000	10,000 (Total Xyl)

** FAC 62-550.310 Drinking Water Standards or 62-777 CTLs (µg/L). BDL = ALL VOC BELOW DETECTION LIMITS.*

MIAMI-DADE SOLID WASTE MANAGEMENT DEPARTMENT - TECHNICAL SERVICES AND ENVIRONMENTAL AFFAIRS DIVISION

Table 1. Groundwater Monitoring - General Parameters

SITE: *South Dade Landfill* **LABORATORY:** *Pace Analytical*

EVENT: *2nd Semiannual Monitoring 2020* **SAMPLED BY:** *Pace Analytical*

Well	Sampling Date	Turbidity *NTU*	DO *mg/L*	S. Cond. *umhos/cm*	Temp. *Deg. C*	pH *pH units*	Color / Sheen	TDS *mg/L*	NO_3^-- N *mg/L*	NO_3^-- N *Resampling*	Cl^- *mg/L*	$NH3^+$- N *mg/L*
S1(10)	07/27/20	3.06	0.16	515	28.3	7.4	Clear	275	0.620	N/A	35	U 0.035
S1(15)	07/27/20	2.10	0.10	587	28.3	7.4	Clear	304	0.590	N/A	39	U 0.035
S1(60)	07/27/20	1.59	0.07	9,814	26.1	7.7	Clear	5,760	U 0.025	N/A	3,330	0.69
S2(15)	07/30/20	5.42	0.46	687	27.3	7.0	Clear	417	U 0.025	N/A	59	1.8
S2(30)	07/31/20	4.32	0.43	5,100	25.9	7.0	Clear	3,150	U 0.025	N/A	1,550	0.84
S2(60)	07/31/20	5.82	0.44	9,870	26.0	6.6	Clear	6,420	U 0.025	N/A	3,210	0.46
S3(15)	07/31/20	4.67	0.61	1,274	29.8	6.7	Clear	784	U 0.025	N/A	185	3.8
S3(30)	07/31/20	10.60	0.46	11,616	30.5	6.8	Clear	8,120	U 0.025	N/A	4,010	3.3
S3(60)	07/31/20	7.37	0.51	35,320	29.6	6.8	Clear	26,600	U 0.025	N/A	13,400	1.1
S4(15)	07/24/20	4.20	0.57	2,625	27.1	7.1	Clear	956	U 0.025	N/A	371	6.5
S4(30)	07/27/20	3.13	0.57	2,308	27.1	7.1	Clear	1,360	U 0.025	N/A	567	13.9
S4(60)	07/24/20	3.11	0.77	40,720	27.0	7.1	Clear	31,400	U 0.025	N/A	17,300	1.0
S5(15)	07/28/20	7.14	0.09	3,238	27.5	7.5	Clear	1,660	U 0.025	N/A	781	0.30
S5(30)	07/28/20	0.68	0.09	3,725	25.5	7.8	Clear	2,310	U 0.025	N/A	1,200	0.41
S5(60)	07/28/20	0.86	0.03	47,515	26.0	7.9	Clear	31,400	I 0.027	N/A	18,600	0.47
S6(15)	07/31/20	1.69	1.59	931	29.9	7.3	Clear	514	U 0.025	N/A	104	3.5
S6(30)	07/31/20	1.17	0.07	10,704	27.3	7.6	Clear	6,260	U 0.025	N/A	3,120	0.26
S6(60)	10/20/20	0.34	0.09	11,294	26.7	7.1	Clear	6,240	I 0.025	N/A	3,610	0.64
S7(15)	07/24/20	3.76	0.21	813	26.7	7.0	Clear	483	1.1	N/A	21	7.6
S7(30)	07/24/20	1.51	0.14	1,339	26.0	7.5	Clear	776	U 0.025	N/A	290	0.86
S7(60)	07/24/20	1.77	0.09	10,173	25.8	7.3	Clear	5,360	U 0.025	N/A	3,070	0.51
S8(15)	07/27/20	3.56	0.56	727	26.7	7.1	Clear	408	U 0.025	N/A	85	0.88
S8(30)	07/27/20	3.65	0.47	4,890	26.9	7.4	Clear	2,650	U 0.025	N/A	1,310	1.3
S8(60)	07/27/20	6.80	0.38	28,950	26.5	7.2	Clear	19,400	U 0.025	N/A	11,300	0.89
S9(15)	07/24/20	3.87	0.62	950	29.7	7.0	Clear	559	U 0.025	N/A	149	2.3
S9(30)	07/24/20	4.18	0.42	1,574	26.2	7.6	Clear	932	U 0.025	N/A	400	0.53
S9(60)	07/24/20	4.02	0.64	34,075	26.3	7.0	Clear	25,800	I 0.029	N/A	13,900	0.85
S10(15)	07/31/20	0.90	0.17	2,417	26.7	7.2	Clear	1,350	U 0.025	N/A	512	19.4
S10(30)	07/28/20	4.21	0.51	5,506	27.6	7.2	Clear	3,150	U 0.025	N/A	1,530	18.8
S10(60)	07/28/20	3.71	0.57	42,601	27.0	7.1	Clear	32,200	U 0.025	N/A	19,300	0.82
S11(15)	07/28/20	4.16	0.47	1,538	28.7	7.1	Clear	660	U 0.025	N/A	158	7.7
S11(30)	07/28/20	0.67	0.58	19,128	28.8	6.9	Clear	13,100	U 0.025	N/A	7,170	7.3
S11(60)	07/27/20	3.92	0.72	44,657	28.0	6.9	Clear	32,600	U 0.025	N/A	19,700	0.58
S12(15)	07/31/20	9.95	2.34	1,471	29.7	7.2	Clear	818	U 0.025	N/A	162	1.7
S12(30)	07/22/20	1.22	0.18	948	25.3	7.5	Clear	990	U 0.025	N/A	174	0.13
S12(60)	07/22/20	1.53	0.13	21,867	25.3	7.2	Clear	14,100	U 0.025	N/A	7,280	0.53
S13(15)	07/22/20	1.37	0.10	1,636	25.2	7.3	Clear	910	I 0.026	N/A	369	1.5
S13(30)	07/23/20	5.27	0.57	2,330	25.5	7.6	Clear	1,350	U 0.025	N/A	649	1.6
S13(60)	07/23/20	7.95	0.74	39,043	25.6	7.0	Clear	29,400	I 0.026	N/A	16,800	1.2
S14(15)	07/31/20	0.70	0.76	1,922	27.3	7.0	Clear	1,040	U 0.025	N/A	190	2.8
S14(30)	07/31/20	0.68	0.62	22,940	26.2	6.9	Clear	14,800	U 0.025	N/A	7,520	7.2
S14(60)	07/31/20	0.86	0.40	49,571	26.6	7.1	Clear	34,200	U 0.025	N/A	19,000	0.84
S15(15)	07/17/20	3.75	0.63	1,345	27.7	7.6	Clear	812	U 0.025	N/A	286	0.63
S15(30)	07/23/20	5.87	0.51	4,367	26.8	7.2	Clear	2,100	U 0.025	N/A	1,110	0.21
S15(60)	07/23/20	4.65	0.63	44,750	26.2	7.1	Clear	35,300	U 0.025	N/A	19,400	0.52
S16(15)	07/28/20	8.10	0.15	3,077	27.3	8.0	Clear	1,570	U 0.025	N/A	651	U 0.035
S16(30)	07/28/20	0.28	0.06	16,361	26.5	7.7	Clear	8,440	U 0.025	N/A	4,630	5.6
S16(60)	07/28/20	0.46	0.05	49,059	26.3	7.9	Clear	32,600	U 0.025	N/A	18,800	0.74
S17(15)	07/17/20	4.34	0.64	3,861	30.1	7.5	Clear	2,090	U 0.025	N/A	802	71.4
S17(30)	07/17/20	3.78	0.62	16,901	30.1	7.4	Clear	10,700	U 0.025	N/A	5,510	8.8
S17(60)	07/17/20	3.68	0.62	43,931	28.5	7.3	Clear	34,200	U 0.025	N/A	18,800	0.80
S18R(15)	07/30/20	4.52	0.48	2,698	28.7	6.8	Clear	1,650	U 0.025	N/A	561	29.0
S18R(30)	07/30/20	3.72	0.45	13,380	29.2	6.9	Clear	8,600	U 0.025	N/A	4,320	9.3
S18R(60)	07/30/20	5.36	0.57	43,258	28.8	6.8	Clear	31,000	U 0.025	N/A	18,400	0.81
S19(15)	07/30/20	3.42	0.47	2,110	27.4	7.0	Clear	1,180	U 0.025	N/A	531	3.1
S19(30)	07/30/20	3.34	0.62	11,015	26.6	7.1	Clear	5,640	U 0.025	N/A	3,670	1.1
S19(60)	07/30/20	3.72	0.54	25,422	26.3	6.7	Clear	17,800	U 0.025	N/A	9,830	0.98
S20(15)	07/28/20	0.63	0.08	1,004	27.0	8.7	Clear	555	U 0.025	N/A	109	1.3
S20(30)	07/28/20	0.15	0.07	12,291	26.6	6.9	Clear	6,980	U 0.025	N/A	3,700	0.68
S20(60)	07/28/20	0.71	0.03	16,310	25.8	7.0	Clear	10,000	U 0.025	N/A	5,110	0.80
S21(15)	07/28/20	1.79	0.10	771	27.3	6.8	Clear	448	0.083	N/A	58.0	U 0.035
S21(30)	07/28/20	0.40	0.10	8,843	25.7	6.9	Clear	4,840	U 0.025	N/A	2,600	0.64
S21(60)	07/28/20	0.60	0.05	16,511	25.7	6.9	Clear	9,280	U 0.025	N/A	5,220	0.37
PDWS: *as per FAC 62-550.310(1)(a)*						6.5 - 8.5 SDWS		500 SDWS	10.0 PDWS		250 SDWS	
SDWS: *as per FAC 62-550.320(1)*												

MIAMI-DADE SOLID WASTE MANAGEMENT DEPARTMENT - TECHNICAL SERVICES AND ENVIRONMENTAL AFFAIRS DIVISION

Table 2. Groundwater Monitoring - Metals

SITE: SOUTH DADE LANDFILL
EVENT: 2nd SEMIANNUAL MONITORING EVENT OF 2020

LABORA *Pace Analytical Laboratory*
SAMPLE *Pace Analytical Laboratory*

Well	Sb µg/L	As µg/L	Ba µg/L	Be µg/L	Cd µg/L	Cr µg/L	Co µg/L	Cu µg/L	Fe µg/L	Pb µg/L	Hg µg/L	Ni µg/L	Se µg/L	Ag µg/L	Na mg/L	Tl µg/L	Va µg/L	Zn µg/L
S1(10)	I 0.83	1.3	11.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	22.7	U 0.11	I 8.3	U 11.0
S1(15)	I 0.79	1.2	12.0	U 0.17	U 0.33	U 1.7	U 0.96	I 3.0	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	26.2	U 0.11	I 6.6	U 11.0
S1(60)	U 0.50	I 0.6	113.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	620	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	1,760	U 0.11	I 1.0	U 11.0
S2(15)	U 0.50	U 0.5	11.2	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	32.3	U 0.11	U 1.0	U 11.0
S2(30)	U 0.50	1.6	55.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	800	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	869	U 0.11	I 1.8	U 11.0
S2(60)	U 0.50	1.2	74.2	U 0.17	U 0.33	U 1.7	U 0.96	I 4.8	255	U 4.6	U 0.09	I 2.6	U 8.5	U 1.0	1,720	U 0.11	I 1.2	U 11.0
S3(15)	U 0.50	2.5	19.3	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	79.8	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	127	U 0.11	I 2.2	U 11.0
S3(30)	U 0.50	I 0.6	103.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	126	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	2,340	U 0.11	I 1.7	U 11.0
S3(60)	U 0.50	I 1.2	110.0	U 0.17	U 0.33	U 1.7	17.3	U 2.6	7,580	I 5.7	U 0.09	U 2.1	U 8.5	U 1.0	7,580	U 0.11	U 1.0	U 11.0
S4(15)	U 0.50	U 0.5	19.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	84	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	218	U 0.11	I 3.9	U 11.0
S4(30)	U 0.50	I 0.6	24.5	U 0.17	U 0.33	I 1.9	I 1.00	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	320	U 0.11	I 5.4	U 11.0
S4(60)	U 0.50	1.7	121.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	2,670	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	8,900	U 0.11	U 1.0	U 11.0
S5(15)	U 0.50	I 0.6	19.3	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	65.5	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	432	U 0.11	I 1.3	U 11.0
S5(30)	U 0.50	U 0.5	23.5	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	654	U 0.11	I 1.6	U 11.0
S5(60)	U 0.50	I 0.6	78.5	U 0.17	U 0.33	U 1.7	U 0.96	U 5.2	1,040	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	9,120	U 0.11	U 1.0	U 11.0
S6(15)	U 0.50	I 0.7	29.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	71.3	U 0.11	I 1.5	U 11.0
S6(30)	U 0.50	U 0.5	103.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1,910	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	1,940	U 0.11	U 1.0	U 11.0
S6(60)	U 0.50	U 0.5	102.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1,240	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	1,720	U 0.11	U 1.0	U 11.0
S7(15)	1.90	8.3	15.4	U 0.17	U 0.33	U 1.7	I 1.00	I 4.3	137	U 4.6	U 0.09	I 2.1	U 8.5	U 1.0	41.2	U 0.11	I 2.8	U 11.0
S7(30)	U 0.50	U 0.5	17.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	46.8	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	151	U 0.11	I 1.1	U 11.0
S7(60)	U 0.50	4.2	80.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	667	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	1,610	U 0.11	I 1.2	U 11.0
S8(15)	U 0.50	1.8	12.1	U 0.17	U 0.33	I 2.3	U 0.96	I 3.2	394	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	50.7	U 0.11	I 1.7	U 11.0
S8(30)	U 0.50	U 0.5	45.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	I 32.6	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	73.4	U 0.11	I 1.6	U 11.0
S8(60)	U 0.50	1.7	128.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	2,600	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	5,810	U 0.11	U 1.0	U 11.0
S9(15)	U 0.50	U 0.5	10.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	92.0	U 0.11	I 1.1	U 11.0
S9(30)	U 0.50	U 0.5	15.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	199	U 0.11	I 1.1	U 11.0
S9(60)	I 0.60	I 0.8	122.0	U 0.17	U 0.33	U 1.7	I 2.10	U 2.6	41	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	7,310	U 0.11	I 2.1	U 11.0
S10(15)	U 0.50	U 2.5	20.1	U 0.17	U 0.33	I 3.3	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	267	U 0.11	I 7.3	U 11.0
S10(30)	U 0.50	I 0.6	44.1	U 0.17	U 0.33	I 2.5	I 1.50	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	783	U 0.11	I 9.4	U 11.0
S10(60)	U 0.50	1.5	107.0	U 0.17	U 0.33	U 1.7	U 0.96	U 5.2	2,630	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	9,470	U 0.11	U 1.0	U 11.0
S11(15)	U 0.50	I 0.9	16.8	U 0.17	U 0.33	I 1.8	U 0.96	U 2.6	140	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	101	U 0.11	I 5.1	U 11.0
S11(30)	U 0.50	I 0.5	98.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	264	U 4.6	U 0.09	U 2.1	U 8.5	I 1.2	3,830	U 0.11	I 7.9	U 11.0
S11(60)	U 0.50	1.5	93.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	2,250	U 4.6	U 0.09	U 2.1	U 8.5	I 2.2	9,950	U 0.11	U 1.0	U 11.0
S12(15)	U 0.50	4.3	16.3	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	I 28.0	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	129	U 0.11	I 1.8	U 11.0
S12(30)	U 0.50	U 0.5	12.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	60.7	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	83.7	U 0.11	U 1.0	U 11.0
S12(60)	U 0.50	U 0.5	150.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	795	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	3,830	U 0.11	U 1.0	U 11.0
S13(15)	U 0.50	U 0.5	12.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	180	U 0.11	I 1.7	U 11.0
S13(30)	U 0.50	U 0.5	19.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	I 30.2	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	384	U 0.11	I 1.7	U 11.0
S13(60)	U 0.50	I 0.9	104.0	U 0.17	U 0.33	U 1.7	U 0.96	U 5.2	3,210	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	8,200	U 0.11	U 1.0	U 11.0
S14(15)	U 0.50	U 0.5	15.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	205	U 0.11	I 5.4	U 11.0
S14(30)	U 0.50	U 2.5	96.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	I 33.8	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	3,710	U 0.11	I 8.4	U 11.0
S14(60)	U 0.50	U 2.5	75.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	2,600	I 5.4	U 0.09	U 2.1	U 8.5	U 1.0	8,740	U 0.11	U 1.0	U 11.0
S15(15)	U 0.50	U 0.5	13.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	165	U 0.11	U 1.0	U 11.0
S15(30)	U 0.50	I 0.6	29.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	47	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	591	U 0.11	I 1.1	U 11.0
S15(60)	U 0.50	I 0.5	69.2	U 0.17	U 0.33	U 1.7	U 0.96	U 5.2	1,570	U 9.2	U 0.09	U 2.1	U 8.5	U 1.0	10,300	U 0.11	U 1.0	U 11.0
S16(15)	U 0.50	1.3	20.8	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	386	U 0.11	I 2.1	U 11.0
S16(30)	U 0.50	U 0.5	57.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	2,500	U 0.11	I 6.4	U 11.0
S16(60)	U 0.50	1.3	101.0	U 0.17	U 0.33	U 1.7	U 0.96	U 5.2	2,220	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	9,830	U 0.11	U 1.0	U 11.0
S17(15)	U 0.50	I 0.9	25.0	U 0.17	U 0.33	9.1	I 2.90	U 2.6	U 0.25	U 4.6	U 0.09	I 3.0	U 8.5	U 1.0	538	U 0.11	32.3	U 11.0
S17(30)	U 0.50	I 0.6	94.1	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	3,180	U 0.11	I 5.8	U 11.0
S17(60)	U 0.50	1.2	94.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	2,660	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	9,680	U 0.11	U 1.0	U 11.0
S18R(15)	U 0.50	1.1	29.4	U 0.17	U 0.33	I 4.4	U 0.96	U 2.6	43.8	U 4.6	U 0.09	I 2.6	U 8.5	U 1.0	335	U 0.11	10.4	U 11.0
S18R(30)	U 0.50	U 0.5	92.5	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	48.9	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	2,270	U 0.11	I 4.3	U 11.0
S18R(60)	U 0.50	I 1.6	20.2	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	726	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	8,040	U 0.11	U 1.0	U 11.0
S19(15)	U 0.50	U 0.5	30.9	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	97	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	280	U 0.11	I 1.1	U 11.0
S19(30)	U 0.50	U 0.5	110.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	578	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	1,910	U 0.11	I 1.0	U 11.0
S19(60)	U 0.50	U 0.5	118.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1,170	I 6.0	U 0.09	U 2.1	U 8.5	U 1.0	5,300	U 0.11	U 1.0	U 11.0
S20(15)	U 0.50	I 0.6	14.2	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	74.3	U 0.11	I 1.6	U 11.0
S20(30)	U 0.50	1.0	106.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1,020	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	1,760	U 0.11	I 1.0	U 11.0
S20(60)	U 0.50	3.1	118.0	U 0.17	U 0.33	U 1.7	U 0.96	I 3.4	4,230	U 4.6	U 0.09	U 2.1	U 8.5	I 1.0	2,420	U 0.11	I 1.8	U 11.0
S21(15)	2.70	1.8	11.6	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	U 0.25	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	33.6	U 0.11	I 5.0	U 11.0
S21(30)	U 0.50	I 0.7	96.4	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	551	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	1,310	U 0.11	I 1.2	U 11.0
S21(60)	U 0.50	1.0	147.0	U 0.17	U 0.33	U 1.7	U 0.96	U 2.6	1,430	U 4.6	U 0.09	U 2.1	U 8.5	U 1.0	2,500.0	U 0.11	U 1.0	U 11.0
MCLs	6.0 PDWS	10.0 PDWS	2,000 PDWS	4.0 PDWS	5.0 PDWS	100 PDWS		1,000 SDWS	300 SDWS	15.0 PDWS	2.0 PDWS	100 PDWS	50 PDWS	100 SDWS	160 PDWS	2.0 PDWS		5,000 SDWS

MIAMI-DADE SOLID WASTE MANAGEMENT DEPARTMENT

TECHNICAL SERVICES AND ENVIRONMENTAL AFFAIRS DIVISION

Table 3. Groundwater Monitoring - Volatile Organic Substances Detected

SITE: ***South Dade Landfill***

EVENT: ***2nd Semiannual Monitoring Event 2020***

Pace Analytical Laboratory

DETECTED PARAMETERS ONLY, *µg/L*								
Well	**EPA 8011 & 8260 Parameters**	**Chloroform**	**Bromodichloro-methane**	**Dibromochloro-methane**	**Chlorobenzene**	**1,4-Dichlorobenzene**	**Toluene**	**o-Xylene**
S1(10)	BDL							
S1(15)	BDL							
S1(60)	BDL							
S2(15)	BDL							
S2(30)	BDL							
S2(60)		28.3	2.0	2.0 I				
S3(15)	BDL							
S3(30)	BDL							
S3(60)	BDL							
S4(15)	BDL							
S4(30)					0.36 I			
S4(60)	BDL							
S5(15)	BDL							
S5(30)	BDL							
S5(60)	BDL							
S6(15)	BDL							
S6(30)	BDL							
S6(60)	BDL							
S7(15)	BDL							
S7(30)	BDL							
S7(60)	BDL							
S8(15)	BDL							
S8(30)	BDL							
S8(60)	BDL							
S9(15)	BDL							
S9(30)	BDL							
S9(60)	BDL							
S10(15)					I 0.63			
S10(30)					I 0.45			
S10(60)	BDL							
S11(15)	BDL							
S11(30)	BDL							
S11(60)	BDL							
S12(15)	BDL							
S12(30)	BDL							
S12(60)	BDL							
S13(15)	BDL							
S13(30)	BDL							
S13(60)	BDL							
S14(15)	BDL							
S14(30)	BDL							
S14(60)	BDL							
S15(15)	BDL							
S15(30)	BDL							
S15(60)	BDL							
S16(15)	BDL							
S16(30)							I 0.61	I 0.28
S16(60)	BDL							
S17(15)					1.4	I 0.56		
S17(30)	BDL							
S17(60)	BDL							
S18R(15)	BDL							
S18R(30)	BDL							
S18R(60)	BDL							
S19(15)	BDL							
S19(30)	BDL							
S19(60)	BDL							
S20(15)	BDL							
S20(30)	BDL							
S20(60)	BDL							
S21(15)	BDL							
S21(30)	BDL							
S21(60)	BDL							
MCLs *		70			100	600	1,000	10,000 (Total Xyl)

** FAC 62-550.310 Drinking Water Standards or 62-777 CTLs (µg/L). BDL = ALL VOC BELOW DETECTION LIMITS.*

OLD SOUTH
DADE LANDFILL

MIAMI-DADE COUNTY
miamidade.gov

Public Works and Waste Management
2525 NW 62nd Street • Suite 5100
Miami, Florida 33147
T 305-514-6666

111 NW 1st Street • Suite 1610
Miami, Florida 33128
T 305-375-2960

April 3, 2015

Via Federal Express

Amade Dimonnay, MBA
Compliance Assistance Program and Solid Waste Permitting
Florida Department of Environmental Protection
3301 Gun Club Road
MSC 7210-1
West Palm Beach, FL 33406

Re: Old South Dade Landfill Site Rehabilitation Completion Report

Dear Mr. Dimonnay:

Attached please find the Site Rehabilitation Completion Report for the Old South Dade Landfill (OSDL). The report respectfully requests that the FDEP consider our discontinuing groundwater treatment activities and groundwater monitoring at this site. This is based upon results from monitoring records of ammonia nitrogen levels in groundwater as well as upon new criteria regarding remediation activities in sites where ammonia nitrogen in groundwater is the only item of concern.

Please contact me if you have any questions or need additional information.

Sincerely,

German Hernandez, P.G.
Manager, Environmental Affairs
Technical Services and Environmental Compliance Division

Old South Dade Landfill
Site Rehabilitation Completion Report

Location and Site Description

The Old South Dade Landfill (OSDL) is located in southeastern Miami-Dade County, northeast of the City of Homestead, and is adjacent to Biscayne Bay and Biscayne National Park. The OSDL is in Section 28, Township 56S, Range 40E. It occupies approximately 300 acres with the following boundaries: south of SW 248th Street and Goulds Canal, north of theoretical SW 256th Street and the L31E canal, east of the boundary parallel to and approximately 750 feet west of theoretical SW 97th Avenue and west of theoretical SW 90th Avenue. East of the area is a mangrove marsh adjacent to Biscayne Bay. The L-31E canal bisects the site, and SW 97 Avenue bisects the enhanced capped landfill. An underground 24-inch gas transmission line runs parallel to the western right-of-way of Southwest 97th Avenue, south to the Turkey Point Power Plant.

There is on-going wetland vegetation monitoring and management plan to control exotic vegetation at the OSDL in perpetuity. Some native vegetation was planted to restore the wetland at the end of the garbage relocation phase of the Closure Enhancement construction project at the OSDL. Natural recruitment of native vegetation has occurred so supplemental planting has not been necessary..

History

Landfill operations began at the OSDL as early as 1952 and ceased in 1979. Parcels comprising the landfill areas were, in the majority, privately owned. By 1990, the County owned two tracts comprising 10 acres in the southwestern most corner of the facility and by the mid-1990s the County had purchased or was in the process of purchasing the remaining acreage from private hands. Early landfilling proceeded from east to west and continued from the eastern portion until desired elevations were met. Both garbage and trash were accepted, and disposed of in open trenches below the water table, or on the land surface. The solid waste ranged from 6 to 8 feet thick east of SW 97th Avenue, to about 15 feet thick to the west of SW 97th Avenue. The thickest area was believed to be the area of the most recent deposits. Historical total tonnage of garbage and trash disposed of at this site is approximately 900,000 tons. The landfill was closed in accordance with the regulations in effect at the time. After 1979, the site was essentially abandoned and allowed to become overgrown.

Closure Enhancement Activities

The Miami-Dade County Department of Public Works and Waste Management (PWWM) completed the Closure Enhancement construction activities at the OSDL by February 15, 2001. The Closure Enhancement of the OSDL consisted of three major elements for the short-term, medium-term and long-term rehabilitation of this site, including wetland restoration, clearing, and grading the site; relocating waste and the placement of a lime rock cap over the relocated landfill material, and construction of stormwater management, groundwater extraction, treatment, injection, and monitoring systems.

The first activity addressed the short-term goal of solid waste relocation from the eastern parcels of the landfill, the extraction of leachate from those areas and the restoration of wetlands. Solid waste was excavated and relocated in two solid waste cells west of the borrow canal. Leachate from the excavation was pumped out and transported to the County's South District Wastewater Treatment Plant for treatment and disposal. Wetlands species were planted in the areas that had waste excavated from them. The wetlands in the area that had not been disturbed and the wetland plantings underwent exotic plant monitoring, removal and treatment as needed. This management plan is to be conducted in perpetuity to maintain a vigorous wetland area.

Secondly, the medium-term remedial work consisted of an active groundwater extraction and treatment system designed to remove ammonia from groundwater in the area of the western cells. This consisted of five extraction wells that extracted ammonia-contaminated groundwater from underneath the closed landfill cells. The extracted groundwater was piped to a sequencing batch reactor (SBR) plant, where it would be treated to comply with the local regulatory agency's (the Miami Dade County Department of Regulatory and Economic Resources Division of Environmental Resources Management – RER/DERM) groundwater standard for ammonia of 0.5 mg/l for the purpose of reinjection into the aquifer via five gravity wells on the east side of the closed landfill cells.

The SBR system startup was in March 2002, but was taken off-line for major warranty repairs from mid-May 2003 to the beginning of January 2004 due to a failure in its concrete base. The SBR was re-tested during November and December 2003. The plant was put back into routine service in January 2004. From October 4, 2003 to July 31, 2013 the SBR treated approximately 2,887,419,494 gallons of groundwater from underneath the OSD Landfill. From January 2004 through July 2013, 135,275 pounds (over 67 tons) of ammonia were removed from the groundwater at the OSDL.

The SBR was taken out-of–service for tank and system inspection on July 13, 2014. Perforations have been noted in the tank walls. Miscellaneous ancillary items that need refurbishing, repair or replacement have been identified.

Thirdly, the long-term remediation strategy consisted of closure enhancement work with construction of an improved cover over the waste, grading of waste deposits designed

to provide positive drainage, installation of access controls to prevent unauthorized entry and illegal dumping and construction of a new storm water management system. This comprehensive design and enhancement allows the waste deposits to dry out and minimizes the generation of leachate. This engineered system is the long-term strategy for the site's rehabilitation.

Discussion

The only contaminant of concern at this site is ammonia-nitrogen in groundwater. At this time, the analytical results of ammonia nitrogen in groundwater in monitoring well clusters in the perimeter of the facility (OS3, OS4 and OS5) show a continuous decreasing trend or plateau in their downward trend in concentration. Levels are below the cleanup target level (CTL) of 2.8 mg/l, which was considered the rehabilitation completion goal for a number of years, although it is not a state water quality standard as defined under s. 403.803(13), Florida Statutes. Nevertheless, this was described as the goal of the Remedial Action Plan (RAP) prepared for this facility in July of 1998 by Brown & Caldwell, and implemented as described earlier. Surface water bodies in the vicinity have not shown to be and are not expected to be impacted by the groundwater from this facility. See Tables 1 through 5.

The groundwater CTL of 2.8 mg/l was calculated on the basis of a published Minimal Risk Level (MRL) for an ammonia oral reference dose by the Agency for Toxic Substances and Disease Registry. This agency has removed ammonia from its MRL publication, and since there is no longer a toxicological support for the CTL. See Attachment A.

Conclusion

The decrease in ammonia levels throughout the facility, are the result of the implementation of the short-term, medium-term and long-term environmental improvements and remediation activities at the OSDL throughout the years and are believed to have effectively rehabilitated this facility in a manner that it is protective of the environment in accordance with the original goals set in the RAP. Along with the development of new criteria for facilities undergoing remediation activities for ammonia in groundwater cleanup requirements, we believe that the medium-term remediation - the SBR treatment system - has achieved its objective.

We respectfully request that all groundwater pumping, treatment, reinjection and monitoring activities at the OSDL cease at this time. Monitoring and management of the wetland areas, maintenance of the extant final cover and stormwater control structures and site security will be continued and carried out at this facility.

Florida Department of Environmental Protection

SOUTHEAST DISTRICT OFFICE
3301 GUN CLUB ROAD, MSC 7210-1
WEST PALM BEACH, FL 33406
561-681-6600

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Interim Secretary

July 1, 2015

Miami-Dade County
Department of Solid Waste Management
c/o German Hernandez
2525 NW 62nd Street, Suite 5100
Miami, FL 33128

Re: File Name: Old South Dade Landfill Closure Enhancement,
File No.: 13-0138315-007
Modification of File No.: 13-0138315-001

Dear Mr. Hernandez:

Your request to modify this permit has been received and reviewed by Department staff. The modifications includes revisions to specific conditions as listed below.

PROJECT LOCATION
The western boundary of the project site is located approximately 700 feet west of SW 97 Avenue, between SW 248 Street and theoretical SW 256 Street, in Miami, Miami-Dade County, Florida (S28&29, T56S, R40E). The L-31E Canal runs north-south through the project site separating landfill Waste Areas I and II to the east from Areas III and IV to the west. Area I is located just landward of Biscayne Bay Aquatic Preserve (Outstanding Florida Waters), adjacent to Biscayne National Park along the southeast coast of Miami-Dade County. The site lies approximately 12 miles northeast of the city of Homestead and just south of the active South Dade County Solid Waste Disposal Facility.

The above modifications are not expected to adversely affect water quality and will not be contrary to or will be clearly in the public interest provided the following **SPECIFIC CONDITIONS** are amended and added to the permit as issued. Please note that additions are underlined and deletions are stricken:

PROJECT DESCRIPTION
The project involves dredging and filling of wetlands and the construction of a surface water management system to enhance the closure condition of an old dump (known as the Old South Dade landfill closure enhancement) in conjunction with construction of a groundwater treatment system that will be implemented in accordance with a Remedial Action Plan.

SPECIFIC CONDITIONS

~~**Specific Condition 11**:~~

~~**Remedial Action Plan (RAP).** A RAP shall be submitted as proposed in the Enhanced Closure Plan to address groundwater contamination. The RAP shall be prepared in accordance with the Department's guidance document titled "Corrective Actions for Contamination Site Cases". A RAP dated July 1998, and subsequent addendums have been submitted for the site; however, additional work in the form of a pilot test program for the drainage wells must be completed prior to consideration of approval of the RAP. Implementation of the RAP shall not commence until the RAP has been approved by the Department. Once the RAP is approved, implementation of the RAP shall follow the time schedule submitted with the RAP.~~

~~A pilot test program for the drainage wells shall be completed prior to installation or use of the drainage well system for disposal of stormwater or treated groundwater. The pilot test will be implemented as soon as practical, subsequent to issuance of this ERP, so that the pilot test well can be located in its proposed final location, which is within the current wetland jurisdictional boundary. The pilot test shall be used to determine the capacity of the proposed drainage wells and to determine the number of wells required. Based on the results of the pilot test, a sufficient number of drainage wells shall be constructed to dispose of stormwater from the on-site dry retention pond during a 100 year, three day storm event after treatment of 1½ inches of runoff and continuous disposal of treated groundwater. Groundwater modeling will be conducted as part of the pilot test to simulate expected conditions. The modeling will be used as the basis for determining the appropriate number of wells.~~

~~Quarterly RAP status reports shall be submitted to the Department's Southeast District Office, Waste Cleanup Section, in West Palm Beach after implementation and startup of the RAP. The reports will include the following items:~~

- ~~Groundwater contour map depicting the extraction system capture zone~~
- ~~Calculated volume of ammonia removed~~
- ~~Volume of groundwater extracted~~
- ~~Influent and effluent concentration data from site monitoring wells~~
- ~~Groundwater quality data and rainfall data~~
- ~~Treatment system shut down dates, duration, and actions taken to prevent contaminant breakthrough~~

Specific Condition 14; **Class V Disposal Wells.** The construction and operation of the proposed disposal wells shall be implemented in accordance with a Department approved RAP, attached plans (exhibits 19 through 23), and as follows:

a) The wells shall be constructed by Florida licensed driller.
b) The certified well driller shall develop the wells and submit a Certification of Class V Well Construction Completion, DEP Form 62-528.900(4) and a Well Completion

Report, DER Form 17-1.213(2) for each well completed. These forms shall be submitted to the Department within fifteen (15) days after completion of each well.

c) During the period of construction whenever there is an interruption in work on a well, such as overnight shutdown, the well shall be sealed with a tamper resistant cover.

d) The construction of each well shall be such that the casing penetrates a zone containing a minimum of 10,000 mg/l Total Dissolved Solids.

e) After construction of each well, a bar screen seal having a mesh no larger than 1.5 inches will be securely attached to the top of the well, to prevent the introduction of foreign materials.

f) Within fifteen (15) days after each well has been constructed and tested, a one time analysis of the ground water performed by a Florida certified laboratory shall be submitted to the Department. The analysis shall consist of a test for Total Dissolved Solids.

g) In accordance with Rule 62-532.500(3)(a)4. Any well temporarily out of service shall be capped in a watertight manner with a welded cover.

h) A well casing, when installed in a predrilled hole, must be grouted from the bottom of the well casing to the land surface. The depth of grouting and the number of sacks of cement used must be shown on the Well Completion Report.

i) Each Class V, Group 6 well is authorized to be used for disposal of stormwater ~~and treated groundwater only~~. Allowing fluids other than those permitted into the disposal wells will be considered a violation of this permit and shall constitute cause for permit revocation and possible enforcement action for water quality violations.

i) The permittee or designated operator of the Class V drainage system shall at all times properly maintain the system, methods of treatment and control in such a manner that efficient operation of the system is maintained at all times.

j) The permittee or designated operator shall make an inspection on a regular basis to ensure free flow capability through basins, drains and wells. All debris, e.g. leaves, sand, branches and oil, found should be removed and disposed of in a proper manner. The Department must be notified of any repair that requires the replacement or alteration of any part of the system.

k) If for any reason, the owner or operator does not comply, or will be unable to comply, with any condition or limitation specified in this authorization, he or she shall notify the Department.

l) When requested by the Department, the owner shall within a reasonable time furnish any information required by law which is needed to determine compliance with this authorization.

m) In accordance with F.A.C. Rule 62-528.645(1), the owner of the Class V well shall apply for a Plugging and Abandonment Permit, DEP Form 62-528.900(6), when the well is no longer usable for its intended purpose. The application shall include the justification for abandonment and the proposed plugging plan.

~~o) Prior to injection of treated groundwater (leachate) a determination of the background water quality from the injection zone shall be established for the primary and secondary drinking water standards (62-550, FAC) and minimum criteria parameters (62-520 FAC), using water quality samples from each injection well.~~

p) Prior to any injection of treated groundwater, for each injection monitoring well, determine the background water quality from the monitoring zone(s) for primary and secondary drinking water standards (62-550, FAC) and minimum criteria parameters (62-520 FAC).

q) The following data, unless more parameters are warranted by the sampling results, effluent water quality sample (treated groundwater) shall be collected and reported to the Department in Monthly Reports (MRs), no later than the 28th day of the month immediately following the end of the sampling period. The results shall be sent to the Department of Environmental Protection, Underground Injection Control, Southeast District Office, PO Box 13542, West Palm Beach, Florida, 33416.

- Total Dissolved Solids (mg/l)
- Chlorides (mg/l)
- Conductivity (umhos)
- Ammonia (mg/l)
- Nitrate/nitrite (mg/l)

r) A report presenting a summary or trend analysis of any water quality standards or criteria that are exceeded, including elevations of parameters above background levels, shall be included with the analytical results.

A minimum of three (3) well volumes of fluid shall be evacuated from each monitor well prior to sampling for the chemical parameters listed above.

s) All data submissions, including MR's, shall be clearly identified on each page with Facility Name, ID number, date of sampling/recording, operator's name, and telephone number, and type of data shown. The lead plant operator or higher official must sign and date each submittal.

Specific Condition 15: **Water Quality Monitoring Network Construction/Operation and Maintenance.** The water quality monitoring plan for this site is approved pursuant to Chapters 62-520, 62-522, 62-302, and 62-701, Florida Administrative Code (F.A.C.). The locations of the existing and proposed monitoring wells and surface water sampling locations are shown on Exhibit 24 (Figure 9-1).

Ground Water Sample Locations

15a. All new monitoring wells shall be constructed in accordance with Chapter 62-532, F.A.C. All new monitoring wells shall be installed by a Florida certified water well contractor. Well completion reports shall be submitted to the Department within thirty (30) days, upon completion of installation. Well development water discharges shall be followed pursuant to the Department's Standard Operating Procedures for Laboratory Operations and Sample Collection Activities, DEP QA-001/92.

15b. The location of each monitor well in degrees, minutes and seconds of latitude and longitude, the Universal Transverse Mercator coordinates [UTM], and the elevation of the top of the well casing to the nearest 0.01 foot, NGVD, shall be determined

~~by a registered Florida land surveyor within fourteen (14) days of the certified completion of all new wells proposed for this permit, and within sixty (60) days of permit issuance for any existing wells. A drawing illustrating this information, signed and sealed by a certified Florida land surveyor, shall be submitted to the Department within forty five (45) days of each survey.~~

~~15c. All monitor wells shall be clearly identified and maintained in good condition to prevent or minimize sampling interferences, loss of well integrity or vandalism. All monitoring wells shall have well maintained concrete pads and be properly sealed and locked. Monitor wells finished above grade shall be protected by bumper guards and steel risers. Monitor wells finished at or below grade shall have traffic-bearing steel plate cover assemblies.~~

~~15d. The permittee shall maintain reasonable access to all of the monitoring well stations required by this permit. The permittee is responsible for maintaining the integrity of the monitoring well stations and protecting them from destruction or vandalism. Should any of these monitoring well stations be damaged or vandalized in any manner, or destroyed, the permittee shall notify the Department immediately upon discovery. The notification shall include pertinent information as to the cause, and what steps are being taken to replace the monitoring well station and prevent the recurrence of such problems in the future.~~

~~15e. In the event of an emergency and/or discharge to groundwater, the Department shall be notified in person or by telephone within 24 hours of the incident. The 24 hour emergency telephone number for the State's Warning Point, as designated in Chapter 62-150, F.A.C., is 850-413-9911. A written preliminary report describing the incident shall also be submitted to the Department within seventy two (72) hours of the start of the incident. In addition, a final written report shall be sent to the Department within two (2) weeks of the incident. The final report shall contain a complete description of and discuss the cause of the emergency and/or discharge, the anticipated time that the discharge, if any, will continue, the steps that will be taken to evaluate, reduce, eliminate, and prevent recurrence of the event, and all other information deemed necessary by the Department.~~

~~Groundwater Testing and Reporting Requirements.~~

~~15f. Monitoring wells (Em-1, EM-2, EM-3, and EM-4) shall be sampled initially within forty-five (45) days of final certified well completion and development and thereafter semi-annually for those parameters listed in Exhibit 27 of this permit. Existing monitoring wells in clusters OS-2, OS-3, OS-4, and OS-5 and proposed wells in cluster DM-1, DM-2, and DM-3 shall be sampled monthly for ammonia and chloride until the relocation of waste is completed in Areas I and II. After the relocation of the waste in Areas I and II is complete existing monitoring wells in clusters OS-2, OS-3, OS-4, and OS-5 shall be sampled semi-annually for ammonia and chloride unless a more frequent sampling interval is warranted by the sample~~

~~results. Well development prior to sampling events and purge/sampling water discharges shall be followed pursuant to the Department's Standard Operating Procedures for Laboratory Operations and Sample Collection Activities, DEP QA-001/92.~~

~~15g. Groundwater level measurements and elevations for all of the monitoring wells listed in this specific condition shall be recorded and reported in feet NGVD to the nearest 0.01 feet for each reporting period. The analytical results and information outlined in this condition shall be submitted to the Department semi-annually and shall be submitted on DEP Form 62-522.900(2), Exhibit 30. This information may be submitted concurrently with the RAP status report described in special condition 11 above.~~

~~15h. The Department's Southeast District office, Waste Cleanup Section, shall be notified in writing at least fourteen (14) days prior to any well installation or regular sampling event so that the Department, if desired, may observe the drilling, sampling, or collect split samples.~~

~~15i. All groundwater quality parameters and analytical results, sampling and analytical methods, method detection limits, applicable water quality standards, storet codes, TOC elevation, land surface elevations, water level measurements, groundwater elevations, monitoring well identification number, monitoring well name, monitoring well type (background or compliance), sample collection date, sample analysis date, facility name and facility identification number shall be recorded and submitted certified by the permittee to the Department within the time frames required in this condition. A report presenting a summary or trend analysis of any water quality standards or criteria that are exceeded, including elevations of parameters above background levels, shall be included with the analytical results.~~

~~15j. All semi-annual water quality analyses reports shall be submitted with a summary of information, including any anomalous data or events that may affect the data, exceedances of any Department standards or criteria, confirmation sampling events, applicable charts or graphs or any information related to the water quality monitoring well network to the Department at the following address:~~

~~Florida Department of Environmental Protection~~
~~Southeast District Waste Cleanup Section~~
~~P.O. Box 15425~~
~~West Palm Beach, FL 33416-5425~~

~~These reports may be submitted concurrently with the RAP status report described in special condition 11 above.~~

~~Compliance Monitoring Requirements~~

~~15k. Pursuant to Rule 62-701.510(7), F.A.C., if indicator parameters are detected at concentrations significantly above those water quality levels established as background for the site, or which are at levels above the Department's water quality standards or criteria specified in Rule 62-520, F.A.C. in any detection or compliance well, the affected well may be resampled for confirmation purposes within fourteen (14) days after the permittee's receipt of the data. The Department's Waste Cleanup section must be notified seven (7) days prior to any confirmatory resampling event at this site. Should the permittee choose not to resample, the Department will consider the water quality analysis as representative of current ground water conditions at the facility. If the data is confirmed, or the permittee chooses not to resample, the permittee shall notify the Department in writing with fourteen (14) days of this finding. The Department may require additional monitoring wells or samples to be taken if analyses indicate that ground water contamination must be more specifically defined in extent or concentration.~~

Zone of Discharge

15l. The zone of discharge for this site shall be in accordance with the requirements of Rule 62-522.410, F.A.C. and horizontally extend to the property boundary and extend vertically to the first confining layer.

~~**Surface Water Monitoring Requirements**~~

~~15m. Six surface water sampling locations (one from the Goulds canal north of the site, one from the L-31E canal in the vicinity of monitoring well cluster EM-4, one from the surface water body in the vicinity of well cluster OS-5, one each adjacent to monitoring wells DM-1, DM-2 and DM-3) shall be sampled monthly for the field parameters of pH, temperature, and salinity and laboratory analyses for total ammonia (from which the un-ionized ammonia concentration shall be calculated) and shall be reported to the Department monthly. When the waste relocation activities have been completed (Phase II), and all of the proposed monitoring wells required by Special Condition 15 have been installed, the surface water sampling may be discontinued.~~

~~15n. If any surface water analytical results exceed the Department's water quality standards or criteria in Rule 62-302, F.A.C., a confirmatory sample shall be taken within fourteen (14) days of the permittee's receipt of the data. The Department's Southeast District Waste Cleanup section shall be notified seven (7) days prior to any surface water resampling event. Should the permittee choose not to resample, the Department will consider the water quality analysis as representative of current surface water conditions at the facility. If the data is confirmed, or the permittee chooses not to resample, the permittee shall notify the Department in writing within fourteen (14) days of this finding.~~

~~**Quality Assurance and Quality Control Requirements**~~

~~15o. All sampling and analysis activities shall be performed by organizations that have Comprehensive Quality Assurance Plans approved in accordance with Rule 62-160.300(8), F.A.C. All sampling, analysis, recording and reporting activities for groundwater, surface water and leachate shall be in accordance with the Department's quality assurance and quality control requirements described in Chapter 62-160, F.A.C.~~

Since the proposed modifications are not expected to result in any adverse environmental impact or water quality degradation, the permit is hereby modified as requested. By copy of this letter, we are notifying all necessary parties of the modifications.

This letter of approval does not alter the original expiration date and does not change the original General or Specific Conditions (except as modified herein), or monitoring requirements of the permit (except as modified herein). This letter must be attached to the original permit.

NOTICE OF RIGHTS

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because the administrative hearing process is designed to formulate final agency action, the hearing process may result in a modification of the agency action or even denial of the application.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. Pursuant to Rule 28-106.201, F.A.C., a petition for an administrative hearing must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, any email address, any facsimile number, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;

(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and

(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000. Also, a copy of the petition shall be mailed to the applicant at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the applicant must be filed within 21 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 21 days of publication of the notice or within 21 days of receipt of the written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who has asked the Department for notice of agency action may file a petition within 21 days of receipt of such notice, regardless of the date of publication. The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

Extension of Time

Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation

Mediation is not available in this proceeding.

FLAWAC Review

The applicant, or any party within the meaning of Section 373.114(1)(a) or 373.4275, F.S., may also seek appellate review of this order before the Land and Water Adjudicatory Commission under Section 373.114(1) or 373.4275, F.S. Requests for review before the Land and Water Adjudicatory Commission must be filed with the Secretary of the Commission and served on the Department within 20 days from the date when this order is filed with the Clerk of the Department.

Judicial Review

Once this decision becomes final, any party to this action has the right to seek judicial review pursuant to Section 120.68, F.S., by filing a Notice of Appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, M.S. 35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this action is filed with the Clerk of the Department.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

7/1/15
Jason Andreotta Date
Permitting Program Administrator
Southeast District

Copies furnished to:
Irene Arpayoglou, FDEP/SED/ERP/Permitting, Irene.Arpayoglou@dep.state.fl.us
Don Keirn, FDEP Compliance and Assistance; Don.Keirn@dep.state.fl.us
Rosalinda Rodriguez, USACOE- Miami-Dade, Rosalinda.Rodriguez@usace.army.mil
Chrissy Hopps, Miami-Dade County RER, hoppsc@miamidade.gov
Amede Dimonnay, DEP Southeast District, amede.dimonnay@dep.state.fl.us
Paul Wierzbicki, DEP Southeast District paul.wierzbicki@dep.state.fl.us
German Hernandez, germanh@miamidade.gov

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this determination, including all copies, was mailed before the close of business on 7/1/15, to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to 120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Rachel Osborne 7/1/15
Clerk Date

OCULUS: ERP/Permitting Auth./ERP_138315/Permit Final/ERP Modifications-EM/007

MIAMI-DADE COUNTY

DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT

Technical Services and Environmental Affairs Division

OLD SOUTH DADE LANDFILL

First Semiannual Monitoring Report

2014

May 2014

N
SOUTH DADE LANDFILL
SW 97 AVE.
SW 248 ST.
S10 60FT
S10 30FT
S10 15FT
S16 60FT
S16 30FT
S16 15FT
S14 15FT
S14 30FT
S14 60FT
S11 30FT
S11 60FT
S11 15FT
S19 15FT
S19 30FT
S19 60FT
S3 15FT
S3 30FT
S3 60FT
S18 15FT
S18 30FT
S18 60FT
S17 15FT
S17 60FT
S17 30FT
SSW4
SSW5
OS1 15FT
OS1 30FT
OS1 60FT
I1N
I1S
E1
OSDL SBR
DM2 15FT
DM2 30FT
DM2 60FT
DM1 15FT
DM1 30FT
DM1 60FT
I2N
I2S
SP1
DP1
OLD SOUTH DADE LANDFILL
SP2
SP3
E2
OS2 15FT
OS2 30FT
OS2 60FT
I3N
I3S
OS4 15FT
OS4 30FT
OS4 60FT
1006
1007
SP4
SP5
1005
I4N
I4S
DM3 15FT
DM3 30FT
DM3 60FT
SP6
SP7
SP8
DP2
E3
1003
1004
SP9
DP3
E4
I5N
I5S
OS5 15FT
OS5 30FT
OS5 60FT
OS3 15FT
OS3 30FT
OS3 60FT
FIGURE 8

Table 1. GROUNDWATER MONITORING
FIELD PARAMETERS
LABORATORY: PACE
SAMPLED BY: PACE

Old South Dade Landfill
First Semiannual Sampling 2014

Well	Sampling Date	PVC Elev. (Ft)	Level Reading	Water Level	D. O. *mg/l*	pH *S.U.*	S. Cond. *umhos/cm*	Temp. *Deg. C*
HISTORIC WELLS								
OS1(15)	24-Feb-14	3.25	1.35	1.90	0.83	6.89	1,050	26.51
OS1(30)	24-Feb-14	3.17	1.36	1.81	0.81	6.95	3,569	26.81
OS1(60)	24-Feb-14	3.34	1.30	2.04	0.79	7.36	29,566	26.3
OS2(15)	24-Feb-14	6.80	3.03	3.77	0.68	7.23	1,511	26.21
OS2(30)	24-Feb-14	6.96	3.10	3.86	0.85	7.06	4,317	26.9
OS2(60)	24-Feb-14	6.89	3.11	3.78	0.75	7.31	44,582	26.23
OS3(15)	4-Mar-14	4.95	3.03	1.92	0.7	7.36	893	27.49
OS3(30)	4-Mar-14	4.43	2.79	1.64	0.8	7.05	2,459	26.55
OS3(60)	4-Mar-14	4.22	2.51	1.71	0.81	7.21	17,545	26.41
OS4(15)	5-Mar-15	6.08	4.32	1.76	0.81	7.05	1,067	26.85
OS4(30)	5-Mar-15	6.09	4.10	1.99	0.81	7.32	2,675	27.06
OS4(60)	5-Mar-15	6.13	4.17	1.96	0.74	7.04	20,360	26.75
OS5(15)	4-Mar-14	6.21	5.19	1.02	0.7	6.89	992	26.41
OS5(30)	4-Mar-14	5.88	5.07	0.81	0.84	7.15	3,119	26.9
OS5(60)	4-Mar-14	6.13	5.12	3.00	0.74	7.09	20,047	26.19
DOWNGRADIENT MONITORING WELLS								
DM1(15)	12-Mar-14	8.46	6.12	2.34	0.68	7.59	1,415	25.37
DM1(30)	12-Mar-14	8.40	6.52	1.88	0.81	7.59	2,620	25.15
DM1(60)	12-Mar-14	8.59	6.49	2.10	0.71	7.19	45,133	24.93
DM2(15)	5-Mar-14	8.67	7.76	0.91	0.71	7.20	685	26.43
DM2(30)	5-Mar-14	7.84	5.50	2.34	0.74	7.26	3,166	26.92
DM2(60)	5-Mar-14	7.59	5.22	2.37	0.73	7.09	25,342	26.93
DM3(15)	12-Mar-14	8.27	6.85	1.42	0.74	7.21	1,814	25.06
DM3(30)	12-Mar-14	8.38	7.02	1.36	0.8	7.39	9,274	25.58
DM3(60)	12-Mar-14	7.60	7.33	0.27	0.87	7.19	45,270	25.62
EXTRACTION MONITORING WELLS								
EM1	25-Feb-14	11.83	9.13	2.70	0.7	7.04	880	27.05
EM2	25-Feb-14	11.37	9.33	2.04	0.77	7.05	788	26.41
EM3	25-Feb-14	11.63	8.69	2.94	0.71	7.27	820	26.05
EM4	25-Feb-14	18.00	17.28	0.72	0.73	7.15	2,647	26.8
INJECTION MONITORING WELLS								
IM1N	25-Feb-14	7.60	2.95	4.65	0.85	6.87	22,481	26.37
IM1S	25-Feb-14	7.14	3.06	4.08	0.72	6.96	27,231	27.01
IM2N	25-Feb-14	11.27	9.30	1.97	0.67	7.20	20,649	27.09
IM2S	25-Feb-14	11.31	9.27	2.04	0.81	7.16	14,947	27.16
IM3N	25-Feb-14	11.32	9.25	2.07	0.79	6.95	18,672	26.39
IM3S	25-Feb-14	11.70	9.47	2.23	0.8	7.37	11,540	26.66
IM4N	25-Feb-14	12.11	10.02	2.09	0.8	7.15	5,600	26.95
IM4S	25-Feb-14	11.26	9.10	2.16	0.8	7.39	9,404	26.21
IM5N	25-Feb-14	7.88	3.18	4.70	0.76	6.99	9,258	26.07
IM5S	25-Feb-14	8.10	3.12	4.98	0.62	7.04	7,758	26.33
EFFLUENT TANK								
SBR EFF	NR	NR	NR	NR	NR	NR	NR	NR
MCL's						**6.5-8.5 S.U. SDWS**		

NR= No Report
PDWS= Primary Drinking Water Standard
SDWS= Secondary Drinking Water Standard
GCTL= Groundwater Clean-Up Target Level

Table 2. GROUNDWATER MONITORING
GENERAL CHEMISTRY
LABORATORY: PACE
SAMPLED BY: PACE

Old South Dade Landfill
First Semiannual Sampling 2014

Well	Sampling Date	Chloride *mg/l*	NO3-N mg/l	NH3-N *mg/l*	TDS *mg/l*
HISTORIC WELLS					
OS1(15)	24-Feb-14	99	< 0.043	0.82	453
OS1(30)	24-Feb-14	1,850	< 0.86	0.28	4,080
OS1(60)	24-Feb-14	39	< 0.43	0.21	183
OS2(15)	24-Feb-14	99	< 0.43	0.51	336
OS2(30)	24-Feb-14	35	< 0.43	< 0.02	195
OS2(60)	24-Feb-14	39	< 0.43	0.24	173
OS3(15)	4-Mar-14	2,610	< 0.86	0.82	5,320
OS3(30)	4-Mar-14	3,480	< 0.86	0.81	6,860
OS3(60)	4-Mar-14	3,350	< 0.86	0.83	7,680
OS4(15)	5-Mar-15	3,900	< 0.86	2.4	8,000
OS4(30)	5-Mar-15	1,790	< 0.86	17.6	3,570
OS4(60)	5-Mar-15	2,030	< 0.86	13.4	4,380
OS5(15)	4-Mar-14	2,390	< 0.86	0.79	4,640
OS5(30)	4-Mar-14	330	< 0.86	0.85	6,900
OS5(60)	4-Mar-14	3,470	< 0.86	0.84	7,460
DOWNGRADIENT MONITORING WELLS					
DM1(15)	12-Mar-14	315	< 0.22	0.82	980
DM1(30)	12-Mar-14	660	< 0.22	0.34	1,520
DM1(60)	12-Mar-14	15,100	< 0.86	0.39	34,000
DM2(15)	5-Mar-14	3,590	< 0.86	0.71	7,300
DM2(30)	5-Mar-14	1,830	< 0.86	17.9	3,580
DM2(60)	5-Mar-14	1,990	< 0.86	13.5	4,490
DM3(15)	12-Mar-14	303	< 0.22	< 0.040	1,280
DM3(30)	12-Mar-14	2,770	< 0.86	7.300	5,520
DM3(60)	12-Mar-14	15,200	< 0.86	0.670	38,000
EXTRACTION MONITORING WELLS					
EM1	25-Feb-14	5,560	< 0.86	2.30	12,800
EM2	25-Feb-14	1,740	< 0.86	0.06	3,850
EM3	25-Feb-14	1,830	< 0.86	0.067	4,030
EM4	25-Feb-14	51	0.076	< 0.04	307
INJECTION MONITORING WELLS					
IM1N	25-Feb-14	3,810	< 0.86	0.65	9,100
IM1S	25-Feb-14	5,560	< 0.86	2.40	12,900
IM2N	25-Feb-14	4,530	< 0.86	2.70	11,200
IM2S	25-Feb-14	839	< 0.86	< 0.04	2,290
IM3N	25-Feb-14	4,150	< 0.86	1.10	10,800
IM3S	25-Feb-14	812	0.96	< 0.10	2,150
IM4N	25-Feb-14	1,750	< 0.86	0.08	3,800
IM4S	25-Feb-14	2,960	< 0.86	1.10	7,140
IM5N	25-Feb-14	5,740	< 0.86	2.40	14,200
IM5S	25-Feb-14	4,130	< 0.86	2.00	10,200
EFFLUENT TANK					
SBR EFF	NR	NR	NR	NR	NR
MCL's		**250 mg/l GCTL/SDWS**	**10 mg/l GCTL/PDWS**		**500 mg/l GCTL/SDWS**

NR= No Report
PDWS= Primary Drinking Water Standard
SDWS= Secondary Drinking Water Standard
GCTL= Groundwater Clean-Up Target Level

Table 3. GROUNDWATER MONITORING
METALS
LABORATORY: Pace
SAMPLED BY: Pace

Old South Dade Landfill
First Semiannual Sampling 2014

Well	Sampling Date	Sb ug/l	As ug/l	Ba ug/l	Be ug/l	Cd ug/l	Cr ug/l	Co ug/l	Cu ug/l
HISTORIC WELLS									
OS1(15)	24-Feb-14	< 5.0	5.6	14.6	< 0.5	< 0.5	5.1	< 5.0	54.4
OS1(30)	24-Feb-14	< 5.0	< 5.0	64.3	< 0.5	< 0.5	3.5	< 5.0	14.7
OS1(60)	24-Feb-14	< 5.0	< 5.0	< 5.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
OS2(15)	24-Feb-14	< 5.0	5.4	10.1	< 0.5	< 0.5	3.8	< 5.0	51.1
OS2(30)	24-Feb-14	< 5.0	< 5.0	< 5.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
OS2(60)	24-Feb-14	< 5.0	< 5.0	< 5.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
OS3(15)	4-Mar-14	< 5.0	< 5.0	48.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
OS3(30)	4-Mar-14	< 5.0	< 5.0	58.0	< 0.5	< 0.5	< 2.5	< 5.0	2.9
OS3(60)	4-Mar-14	< 5.0	< 5.0	57.2	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
OS4(15)	5-Mar-15	< 5.0	< 5.0	96.2	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
OS4(30)	5-Mar-15	< 5.0	< 5.0	30.6	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
OS4(60)	5-Mar-15	< 5.0	< 5.0	38.8	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
OS5(15)	4-Mar-14	< 5.0	< 5.0	42.9	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
OS5(30)	4-Mar-14	< 5.0	< 5.0	60.4	< 0.5	< 0.5	< 2.5	< 5.0	2.5
OS5(60)	4-Mar-14	< 5.0	< 5.0	61.1	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
DOWNGRADIENT MONITORING WELLS									
DM1(15)	12-Mar-14	< 5.0	< 5.0	15.3	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
DM1(30)	12-Mar-14	< 5.0	< 5.0	22.3	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
DM1(60)	12-Mar-14	< 5.0	< 5.0	79.8	< 0.5	< 0.5	< 12.5	< 5.0	< 2.5
DM2(15)	5-Mar-14	< 5.0	< 5.0	89.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
DM2(30)	5-Mar-14	< 5.0	< 5.0	30.3	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
DM2(60)	5-Mar-14	< 5.0	< 5.0	39.5	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
DM3(15)	12-Mar-14	< 5.0	< 5.0	18.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
DM3(30)	12-Mar-14	< 5.0	< 5.0	44.8	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
DM3(60)	12-Mar-14	< 5.0	< 25*	102.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
EXTRACTION MONITORING									
EM1	25-Feb-14	< 5.0	< 5.0	152.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
EM2	25-Feb-14	< 5.0	< 5.0	50.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
EM3	25-Feb-14	< 5.0	< 5.0	57.2	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
EM4	25-Feb-14	< 5.0	< 5.0	18.8	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
INJECTION MONITORING WELLS									
IM1N	25-Feb-14	< 5.0	< 5.0	100.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
IM1S	25-Feb-14	< 5.0	< 5.0	155.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
IM2N	25-Feb-14	< 5.0	< 5.0	121.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
IM2S	25-Feb-14	< 5.0	< 5.0	46.6	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
IM3N	25-Feb-14	< 5.0	< 5.0	110.0	< 0.5	< 0.5	< 2.5	< 5.0	3.2
IM3S	25-Feb-14	< 5.0	< 5.0	45.4	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
IM4N	25-Feb-14	< 5.0	< 5.0	49.7	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
IM4S	25-Feb-14	< 5.0	< 5.0	104.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
IM5N	25-Feb-14	< 5.0	< 5.0	150.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
IM5S	25-Feb-14	< 5.0	< 5.0	154.0	< 0.5	< 0.5	< 2.5	< 5.0	< 2.5
EFFLUENT TANK									
SBR EFF	NR	NR	NR	NR	NR	NR	NR	NR	NR
MCL's		**6.0 ug/l GCTL/PDWS**	**10.0 ug/l GCTL/PDWS**	**2000 ug/l GCTL/PDWS**	**4.0 ug/l GCTL/PDWS**	**5.0 ug/l GCTL/PDWS**	**100 ug/l GCTL/PDWS**	**140 ug/l GCTL**	**1000 ug/l GCTL/SDWS**

NR= No Report
PDWS= Primary Drinking Water Standard
SDWS= Secondary Drinking Water Standard
GCTL= Groundwater Clean-Up Target Level

Table 3 Cont. **GROUNDWATER MONITORING**
METALS
LABORATORY: Pace
SAMPLED BY: Pace

Old South Dade Landfill
First Semiannual Sampling 2014

Well	Sampling Date	Fe *ug/l*	Pb ug/l	Pb ug/l	Ni ug/l	Se ug/l	Ag *ug/l*	Na *mg/l*	Va *ug/l*	Zn *ug/l*	Tl *ug/l*	Hg *ug/l*
HISTORIC WELLS												
OS1(15)	24-Feb-14	1,620	21.10	< 5.00	< 2.50	< 7.50	< 2.50	48	< 5.00	290.00	< 0.50	< 0.10
OS1(30)	24-Feb-14	1,420	5.50		< 2.50	< 7.50	< 2.50	1020	< 5.00	134.00	< 0.50	< 0.10
OS1(60)	24-Feb-14	30	< 5.00		< 2.50	< 7.50	< 2.50	18	< 5.00	< 10.00	< 0.50	< 0.10
OS2(15)	24-Feb-14	1,460	21.60	< 5.00	< 2.50	< 7.50	< 2.50	47	< 5.00	292.00	< 0.50	< 0.10
OS2(30)	24-Feb-14	1,400	< 5.00		< 2.50	< 7.50	< 2.50	19	< 5.00	37.40	< 0.50	< 0.10
OS2(60)	24-Feb-14	26	< 5.00		< 2.50	< 7.50	< 2.50	20	< 5.00	< 10.00	< 0.50	< 0.10
OS3(15)	4-Mar-14	22	< 5.00		< 2.50	< 7.50	< 2.50	1,620	< 5.00	< 10.00	< 0.50	< 0.10
OS3(30)	4-Mar-14	4,630	< 5.00		< 2.50	< 7.50	< 2.50	2,020	< 5.00	< 10.00	< 0.50	< 0.10
OS3(60)	4-Mar-14	1,780	< 5.00		< 2.50	< 7.50	< 2.50	2,180	< 5.00	< 10.00	< 0.50	< 0.10
OS4(15)	5-Mar-15	1,510	< 5.00		< 2.50	< 7.50	< 2.50	2,420	< 5.00	< 10.00	< 0.50	< 0.10
OS4(30)	5-Mar-15	32	< 5.00		< 2.50	< 7.50	< 2.50	1,020	7.00	< 10.00	< 0.50	< 0.10
OS4(60)	5-Mar-15	< 20	< 5.00		< 2.50	< 7.50	< 2.50	1,260	7.10	< 10.00	< 0.50	< 0.10
OS5(15)	4-Mar-14	60	< 5.00		< 2.50	< 7.50	< 2.50	1,460	< 5.00	< 10.00	< 0.50	< 0.10
OS5(30)	4-Mar-14	2,500	< 5.00		< 2.50	< 7.50	< 2.50	2,170	< 5.00	< 10.00	< 0.50	< 0.10
OS5(60)	4-Mar-14	1,760	< 5.00		< 2.50	< 7.50	< 2.50	2,220	< 5.00	< 10.00	< 0.50	< 0.10
DOWNGRADIENT MONITORING WELLS												
DM1(15)	12-Mar-14	< 20	< 5.00		< 2.50	< 7.50	< 2.50	186	< 5.00	< 10.00	< 0.50	< 0.10
DM1(30)	12-Mar-14	< 20	< 5.00		< 2.50	< 7.50	< 2.50	375	< 5.00	< 10.00	< 0.50	< 0.10
DM1(60)	12-Mar-14	1,200	< 5.00		< 2.50	< 7.50	< 2.50	10,700	< 5.0	< 10.0	< 2.5*	< 0.10
DM2(15)	5-Mar-14	177	< 5.00		< 2.50	< 7.50	< 2.50	2,310	< 5.00	< 10.00	< 0.50	< 0.10
DM2(30)	5-Mar-14	< 20	< 5.00		< 2.50	< 7.50	< 2.50	1,020	7.0	< 10.00	< 0.50	< 0.10
DM2(60)	5-Mar-14	< 20	< 5.00		< 2.50	< 7.50	< 2.50	1,250	7.1	< 10.00	< 0.50	< 0.10
DM3(15)	12-Mar-14	546	< 5.00		< 2.50	< 7.50	< 2.50	189	< 5.00	< 10.00	< 1.0	< 0.10
DM3(30)	12-Mar-14	< 20	< 5.00		< 2.50	< 7.50	< 2.50	1,730	6.3	< 10.00	< 1.0	< 0.10
DM3(60)	12-Mar-14	3,560	< 5.00		< 2.50	< 7.50	< 2.50	10,500	< 5.00	< 10.00	< 2.5*	< 0.10
EXTRACTION MONITORING WELLS												
EM1	25-Feb-14	347	< 5.00		< 2.50	< 7.50	< 2.50	3,250	< 5.00	< 10.00	< 0.50	< 0.10
EM2	25-Feb-14	289	< 5.00		< 2.50	< 7.50	< 2.50	919	< 5.00	< 10.00	< 0.50	< 0.10
EM3	25-Feb-14	1,230	< 5.00		< 2.50	< 7.50	< 2.50	971	< 5.00	< 10.00	< 0.50	< 0.10
EM4	25-Feb-14	153	< 5.00		< 2.50	< 7.50	< 2.50	31	< 5.00	< 10.00	< 0.50	< 0.10
INJECTION MONITORING WELLS												
IM1N	25-Feb-14	922	< 5.00		< 2.50	< 7.50	< 2.50	2,290	< 5.00	< 10.00	< 0.50	< 0.10
IM1S	25-Feb-14	410	< 5.00		< 2.50	< 7.50	< 2.50	3,410	< 5.00	< 10.00	< 0.50	< 0.10
IM2N	25-Feb-14	34	< 5.00		< 2.50	< 7.50	< 2.50	2,770	< 5.00	< 10.00	< 0.50	< 0.10
IM2S	25-Feb-14	338	< 5.00		< 2.50	< 7.50	< 2.50	458	< 5.00	< 10.00	< 0.50	< 0.10
IM3N	25-Feb-14	223	< 5.00		< 2.50	< 7.50	< 2.50	2,850	< 5.00	< 10.00	< 0.50	< 0.10
IM3S	25-Feb-14	149	< 5.00		< 2.50	< 7.50	< 2.50	461	< 5.00	< 10.00	< 0.50	< 0.10
IM4N	25-Feb-14	255	< 5.00		< 2.50	< 7.50	< 2.50	948	< 5.00	< 10.00	< 0.50	< 0.10
IM4S	25-Feb-14	2,230	< 5.00		< 2.50	< 7.50	< 2.50	1,830	< 5.00	< 10.00	< 0.50	< 0.10
IM5N	25-Feb-14	28	< 5.00		< 2.50	< 7.50	< 2.50	3,570	< 5.00	< 10.00	< 0.50	< 0.10
IM5S	25-Feb-14	1,760	< 5.00		< 2.50	< 7.50	< 2.50	2,600	< 5.00	< 10.00	< 0.50	< 0.10
EFFLUENT TANK												
SBR EFF	NR	NR	NR		NR	NR	NR	NR	NR	NR	NR	NR
MCL's		**300 ug/l GCTL/SDWS**	**15 UG/L GCTL/PDWS**	**15 UG/L GCTL/PDWS**	**100 ug/l GCTL/PDWS**	**50 ug/l GCTL/PDWS**	**100 ug/l GCTL/SDWS**	**160 mg/l GCTL/PDWS**	**49 ug/l GCTL**	**5000 ug/l GCTL/SDWS**	**2.0 ug/l GCTL/PDWS**	**2.0 ug/l GCTL/PDWS**

NR= No Report
PDWS= Primary Drinking Water Standard
SDWS= Secondary Drinking Water Standard
GCTL= Groundwater Clean-Up Target Level
* Please see letter from lab

FLORIDA ROCK
& SAND -
CUTLER PIT

CRB
GEOLOGICAL & ENVIRONMENTAL SERVICES, INC.

November 12, 2015

Mr. Wilbur Mayorga, P.E.
Environmental Monitoring & Restoration Division
Miami-Dade County Department
of Regulatory & Economic Resources
701 N.W. 1st Court, 4th Floor
Miami, Florida 33136-3912

Re: CRB Project No. RMC 683-03; Groundwater Monitoring Summary Report for the Eastern Monitoring Wells at the RMC South Florida Facility (SW-1328/File-15456), located at S.W. 264th Street & S.W. 107th Avenue, in Miami-Dade County, Florida

Dear Mr. Mayorga:

CRB Geological & Environmental Services, Inc. (CRB), on behalf of Cemex, is pleased to provide you with this Groundwater Monitoring Report (GMR) for the eastern monitoring wells in accordance with the Miami-Dade County Department of Regulatory and Economic Resources (RER) correspondence dated September 21, 2015. This groundwater monitoring was conducted in furtherance of a No Further Action with Conditions (NFAC) for the Site. Based on the results, compliance in accordance with the RER's January 23, 2015 correspondence has been documented for at least two (2) consecutive sampling events, and CRB recommends preparing a draft institutional controls package for the Site.

A Site Location Map and Site Map with Sampling Locations are provided as Figure 1 and Figure 2, respectively. A copy of the relevant RER correspondences is included in Attachment A.

Groundwater Monitoring

On October 13, 2015, CRB personnel were onsite to collect groundwater samples from monitoring wells MW-11R, MW-12DR, MW-18D, and MW-19D. Prior to sampling, a minimum of three (3) well volumes were purged from each monitoring well using a peristaltic pump, and groundwater sampling was conducted in accordance with DEP SOP-001/01. The groundwater sampling worksheets are included in Attachment B, and the locations of the monitoring wells are shown on Figure 2.

The groundwater samples were preserved on wet ice and transported to Pace Analytical Services, Inc. (Pace) using proper chain of custody protocols to control the transfer of samples. Pace analyzed the groundwater samples for ammonia by EPA Method 350.1.

Results of the laboratory analysis reflected no concentrations above the Groundwater Cleanup Target Level (GCTL) for ammonia in any of the groundwater samples collected in any of the monitoring well locations. A summary of the groundwater analytical results is included in Table 1, and the laboratory analytical reports and chain of custody record are included in Attachment C.

Discussion, Conclusions, & Recommendations

In accordance with the RER's September 21, 2015 correspondence, and to establish compliance with the GCTLs for a minimum of two (2) consecutive sampling events on the eastern property boundary, CRB conducted this groundwater monitoring event. This event consisted of collecting and analyzing groundwater samples from the shallow (MW-11R), twenty-five (25) feet (MW-12DR), forty (40) feet (MW-18D), and sixty (60) feet (MW-19D) zones, which represents all depth intervals in which horizontal delineation was required.

Results of this monitoring did not identify any concentrations of ammonia above the GCTLs in any of the relevant zones. Based on these results, CRB recommends preparing an institutional controls package in furtherance of a NFAC for the Site.

If you have any questions or require additional information, please do not hesitate to contact one of us at (305) 447-9777.

Sincerely,
CRB Geological & Environmental Services, Inc.

Victor Rossinsky, Jr., P.G., Ph.D.
Senior Project Manager

Bradley L. Compton
Project Manager

Attachments

CRB PROJECT NO. RMC 683-03
GROUNDWATER MONITORING SUMMARY REPORT
RMC OF SOUTH FLORIDA FACILITY
S.W. 264TH STREET & S.W. 107TH AVENUE
MIAMI, MIAMI-DADE COUNTY, FLORIDA
FILE-15456/SW-1328

REGISTERED PROFESSIONAL GEOLOGIST CERTIFICATION

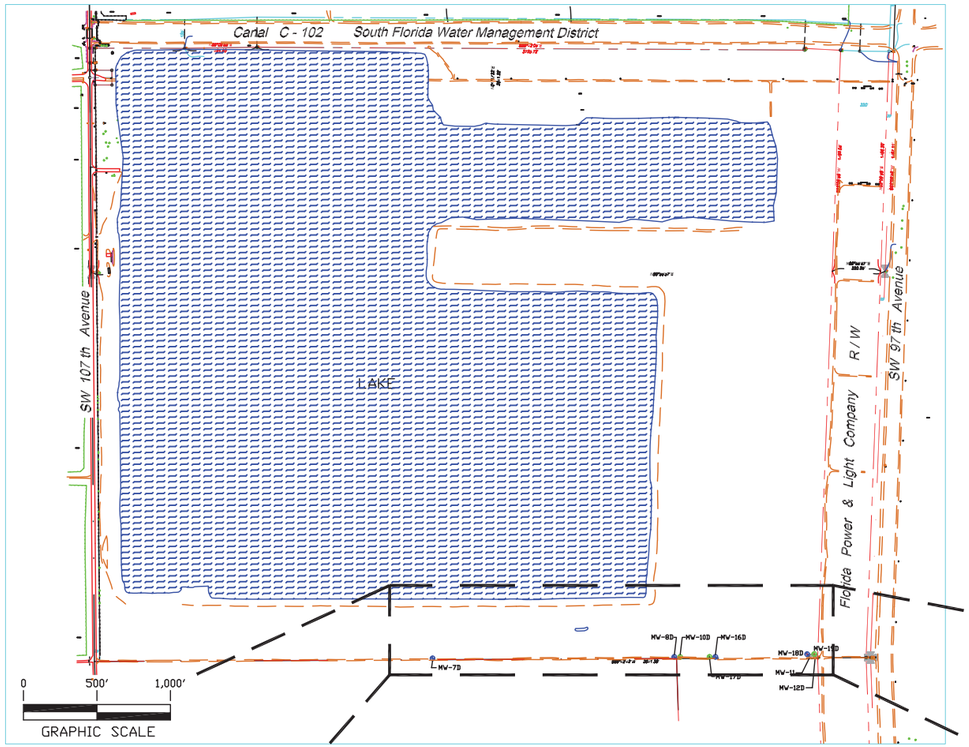
I, Victor Rossinsky, PG#1413, certify that I currently hold an active license in the state of Florida and am competent through education or experience to provide the geological service contained in this report. I further certify that, in my professional judgment, this report meets the requirements of Section 62-780, F.A.C. for Natural Attenuation Monitoring, and was prepared by me or under my responsible charge. Moreover, I certify that CRB Geological & Environmental Services, Inc., holds an active certificate of authorization #GB136 to provide the geological service.

Victor Rossinsky, Ph.D., P.G., Senior Project Manager, Geologist

Florida Professional Geologist License No. 1413

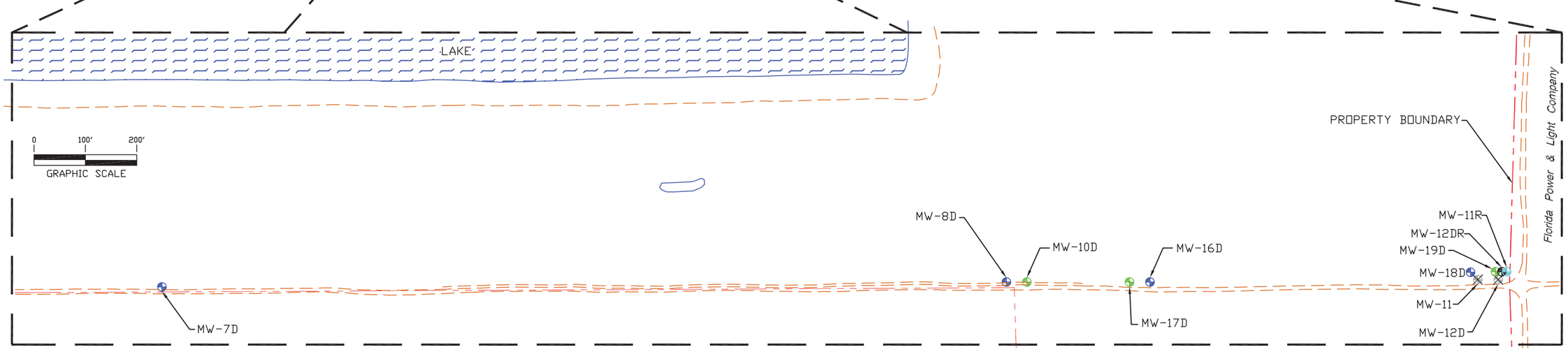
Signature _____

Date 11/12/2015



LEGEND:

MW-11R	MONITORING WELL-SHALOW 12 FEET
MW-12DR	MONITORING WELL-INTERMEDIATE 25 FEET
MW-7D, MW-8D, MW-16D, & MW-18D	MONITORING WELL-DEEP 40 FEET
MW-10D, MW-17D, & MW-19D	MONITORING WELL-DEEP 60 FEET
MW-11 & MW-12D	FORMER MONITORING WELL



CRB
Geological & Environmental Services, Inc.
8744 SW 133rd Street
Miami, Florida 33176
Tel: (305) 447-9777
Fax: (305) 567-2853

TITLE:
SITE MAP WITH MONITORING WELL LOCATIONS
RMC SOUTH FLORIDA, INC. - CUTLER PIT
SW 264th STREET & SW 107th AVENUE
MIAMI-DADE COUNTY, FLORIDA

REV'D DATE:	APR 21, 2015	PROJECT NO. RMC 683-03	FIGURE 2
DRAWN DATE:	MAY 11, 2011	SCALE: AS NOTED	
DRAWN BY:	LA	APPROVED BY: BC	

RMC 683...\03...\CAD\F2- Site Map with Monitoring Well Locations

Table 1 - Summary of Groundwater Laboratory Analytical Results
RMC South Florida, Inc.
Cutler Pit
S.W. 264th Street & S.W. 107th Avenue
Miami, Florida

Sample ID	Date	Ammonia (N)	Lead	Arsenic
MW-1** 15'	7/14/2003	0.45	<0.005	<0.008
	6/8/2004	1.95	NA	NA
	10/20/2004	0.25	<0.0050	<0.010
	2/8/2005	*	*	*
	1/12/2006	*	*	*
	3/7/2006	*	*	*
MW-1R 15'	9/14/2006	0.67	<0.0057	<0.0038
	3/13/2007	0.57	0.0038	<0.0038
	9/11/2007	0.681	<0.0023	<0.0038
	4/11/2008	0.988	<0.0029	<0.0042
	9/15/2008	0.588	<0.0029	<0.0042
	4/14/2009	0.634	0.00509	<0.0046
	9/29/2009	0.943	<0.00310	<0.00460
	4/20/2010	0.389	<0.00310	<0.00460
	9/3/2010	0.834	<0.00310	<0.00460
	2/11/2011	0.410	<0.00470	<0.00450
MW-2D** 25'	7/14/2003	0.2	<0.005	<0.008
	6/8/2004	0.249	NA	NA
MW-3 15'	7/14/2003	**15.4**	<0.005	<0.008
	6/8/2004	**38.9**	NA	NA
	10/20/2004	**8.4**	<0.0050	<0.010
	2/8/2005	**9.3**	<0.0050	<0.010
	1/12/2006	**8.8**	<0.00033	<0.00043
	3/7/2006	<0.0075	<0.0038	<0.0049
	9/14/2006	**5.4**	<0.0057	<0.0038
	3/13/2007	**9.2**	**0.16**	0.0042
	9/11/2007	**7.93**	<0.0023	0.00520
	4/11/2008	**4.80**	<0.0029	0.00459
	9/15/2008	**4.75**	<0.0029	<0.0042
	4/14/2009	**4.57**	0.0064	<0.0090
	9/29/2009	**3.71**	<0.00310	0.00589
	4/20/2010	**2.92**	<0.00310	<0.00460
	9/3/2010	2.19	<0.00310	<0.00460
	2/11/2011	**2.91**	<0.00470	<0.00450
MW-4D 25'	7/14/2003	**17.2**	<0.005	<0.008
	6/8/2004	**74.5**	NA	NA
	4/14/2009	**5.17**	0.00801	<0.0046
MW-5 15'	7/14/2003	**2.84**	<0.005	<0.008
	6/8/2004	**3.19**	NA	NA
	10/20/2004	2.5	<0.0050	<0.010
	2/8/2005	2.4	<0.0050	<0.010
	1/12/2006	**3.2**	<0.00033	0.00046

Table 1 - Summary of Groundwater Laboratory Analytical Results
RMC South Florida, Inc.
Cutler Pit
S.W. 264th Street & S.W. 107th Avenue
Miami, Florida

Sample ID	Date	Ammonia (N)	Lead	Arsenic
MW-5 15' (Con't)	3/7/2006	**3.3**	<0.0043	<0.0049
	9/14/2006	2.5	<0.0057	<0.0038
	3/13/2007	2.1	**0.016**	<0.0038
	9/11/2007	2.72	<0.0023	<0.0038
	4/11/2008	**3.33**	<0.0029	<0.0042
	9/15/2008	**3.13**	<0.0029	<0.0042
	4/14/2009	2.51	0.00713	<0.0046
	9/29/2009	2.07	<0.00310	<0.00460
	4/20/2010	2.15	<0.00310	<0.00460
	9/3/2010	2.07	<0.00310	<0.00460
	2/11/2011	2.04	<0.00470	<0.00450
MW-6D 25'	7/14/2003	**3.66**	<0.005	<0.008
	6/8/2004	**4.07**	NA	NA
	4/14/2009	**4.08**	0.00630	<0.0046
MW-7D 40'	9/11/2003	**7.93**	NA	NA
	6/8/2004	**75**	NA	NA
	4/14/2009	**18.7**	0.00924	<0.0046
	12/8/2011	**13.6**	NA	NA
	3/12/2012	**14.4**	NA	NA
	6/13/2012	**12.7**	NA	NA
	9/13/2012	**13.1**	NA	NA
	12/13/2012	**12.6**	NA	NA
	3/19/2013	**12.1**	NA	NA
	6/25/2013	**10.9**	NA	NA
	9/17/2013	**12.0**	NA	NA
	12/18/2013	**12.6**	NA	NA
	3/81/0214	**11.7**	NA	NA
	6/19/2014	**15.4**	NA	NA
	9/25/2014	**15.2**	NA	NA
	12/30/2014	**13.3**	NA	NA
MW-8D 40'	9/11/2003	**6.52**	NA	NA
	6/8/2004	**18.4**	NA	NA
	4/14/2009	**9.33**	0.00850	<0.0046
	4/20/2010	**5.86**	NA	NA
	9/16/2010	**5.52**	NA	NA
	2/11/2011	**7.05**	NA	NA
	4/7/2011	**9.98**	NA	NA
	12/8/2011	**7.1**	NA	NA
	3/12/2012	**7.4**	NA	NA
	6/13/2012	**6.8**	NA	NA
	9/13/2012	**7.7**	NA	NA
	12/13/2012	**5.3**	NA	NA

Table 1 - Summary of Groundwater Laboratory Analytical Results
RMC South Florida, Inc.
Cutler Pit
S.W. 264th Street & S.W. 107th Avenue
Miami, Florida

Sample ID	Date	Ammonia (N)	Lead	Arsenic
MW-8D 40' (Con't.)	3/19/2013	**5.7**	NA	NA
	6/25/2013	**6.14**	NA	NA
	9/17/2013	**6.4**	NA	NA
	12/18/2013	**5.2**	NA	NA
	3/18/2014	**4.6**	NA	NA
	6/19/2014	**7.1**	NA	NA
	9/25/2014	**7.0**	NA	NA
	12/30/2014	**5.0**	NA	NA
MW-9D 60'	5/27/2004	1.52	NA	NA
	6/8/2004	1.43	NA	NA
MW-10D 60'	5/27/2004	**3.46**	NA	NA
	6/8/2004	**10.7**	NA	NA
	4/20/2010	**8.55**	NA	NA
	9/16/2010	**8.30**	NA	NA
	2/11/2011	**11.4**	NA	NA
	4/7/2011	**12.3**	NA	NA
	12/8/2011	**8.8**	NA	NA
	3/12/2012	**9.1**	NA	NA
	6/13/2012	**8.3**	NA	NA
	9/13/2012	**8.8**	NA	NA
	12/13/2012	**8.4**	NA	NA
	3/19/2013	**7.5**	NA	NA
	6/25/2013	**7.73**	NA	NA
	9/17/2013	**7.6**	NA	NA
	12/18/2013	**8.2**	NA	NA
	3/18/2014	**7.3**	NA	NA
	6/19/2014	**8.9**	NA	NA
	9/25/2014	**8.3**	NA	NA
	12/30/2014	**7.3**	NA	NA
MW-11** 15'	5/27/2004	1.93	NA	NA
	6/9/2004	0.169	NA	NA
MW-11R 15'	4/16/2015	2.3	NA	NA
	6/29/2015	1.9	NA	NA
	10/13/2015	1.9	NA	NA
MW-12D** 25'	5/27/2004	**4.54**	NA	NA
	6/9/2004	1.93	NA	NA
MW-12DR 25'	4/16/2015	2.5	NA	NA
	6/29/2015	2.8	NA	NA
	10/13/2015	2.0	NA	NA
MW-13** 15'	5/27/2004	**3.62**	NA	NA
	6/9/2004	**2.88**	NA	NA

Table 1 - Summary of Groundwater Laboratory Analytical Results
RMC South Florida, Inc.
Cutler Pit
S.W. 264th Street & S.W. 107th Avenue
Miami, Florida

Sample ID	Date	Ammonia (N)	Lead	Arsenic
MW-14D** 25'	5/27/2004	**2.95**	NA	NA
	6/9/2004	2.04	NA	NA
MW-15D 85'	4/8/2011	0.586	NA	NA
MW-16D 40'	4/7/2011	**6.40**	NA	NA
	12/9/2011	**5.4**	NA	NA
	3/13/2012	**5.5**	NA	NA
	6/13/2012	**5.0**	NA	NA
	9/13/2012	**5.0**	NA	NA
	12/13/2012	**4.7**	NA	NA
	3/19/2013	**4.7**	NA	NA
	6/25/2013	**3.69**	NA	NA
	9/17/2013	**3.9**	NA	NA
	12/18/2013	**4.5**	NA	NA
	3/18/2014	**4.3**	NA	NA
	6/19/2014	**6.4**	NA	NA
	9/25/2014	**6.0**	NA	NA
	12/30/2014	**7.1**	NA	NA
MW-17D 60'	4/7/2011	**8.81**	NA	NA
	12/8/2011	**7.5**	NA	NA
	3/12/2012	**8.1**	NA	NA
	6/13/2012	**7.4**	NA	NA
	9/13/2012	**7.8**	NA	NA
	12/13/2012	**7.6**	NA	NA
	3/19/2013	**7.0**	NA	NA
	6/25/2013	**7.09**	NA	NA
	9/17/2013	**7.6**	NA	NA
	12/18/2013	**7.1**	NA	NA
	3/18/2014	**6.7**	NA	NA
	6/19/2014	**8.5**	NA	NA
	9/25/2014	**8.0**	NA	NA
	12/30/2014	**5.2**	NA	NA
MW-18D 40'	6/14/2011	1.82	NA	NA
	12/9/2011	**2.9**	NA	NA
	3/13/2012	2.8	NA	NA
	6/14/2012	**3.0**	NA	NA
	9/14/2012	**3.2**	NA	NA
	12/14/2012	**3.1**	NA	NA
	3/20/2013	2.5	NA	NA
	6/26/2013	1.55	NA	NA
	9/17/2013	0.96	NA	NA
	12/18/2013	**3.30**	NA	NA

Table 1 - Summary of Groundwater Laboratory Analytical Results
RMC South Florida, Inc.
Cutler Pit
S.W. 264th Street & S.W. 107th Avenue
Miami, Florida

Sample ID	Date	Ammonia (N)	Lead	Arsenic
MW-18D 40' (Con't.)	3/18/2014	**3.40**	NA	NA
	6/19/2014	**3.1**	NA	NA
	9/25/2014	**3.1**	NA	NA
	12/30/2014	**2.9**	NA	NA
	6/29/2015	2.1	NA	NA
	10/13/2015	2.3	NA	NA
MW-19D 60'	6/14/2011	2.43	NA	NA
	12/9/2011	2.3	NA	NA
	3/13/2012	2.5	NA	NA
	6/14/2012	2.0	NA	NA
	9/14/2012	2.2	NA	NA
	12/14/2012	1.9	NA	NA
	3/20/2013	2.0	NA	NA
	6/26/2013	1.55	NA	NA
	9/17/2013	1.5	NA	NA
	12/18/2013	1.8	NA	NA
	3/18/2014	1.8	NA	NA
	6/19/2014	**3.2**	NA	NA
	9/25/2014	2.6	NA	NA
	12/30/2014	1.9	NA	NA
	6/29/2015	2.5	NA	NA
	10/13/2015	2.1	NA	NA
Groundwater CTL		2.8	0.015	0.01
Natural Attenuation		28	0.15	0.1

Notes:

All compounds reported as mg/L unless otherwise noted.

Groundwater Cleanup Target Levels (GCTLs) and Natural Attenuation Default Concentrations (NADCs) as provided in Chapter 62-777, F.A.C.

NA - Not Analyzed

* MW-1 was destroyed. Based on consistenly low concentrations of ammonia, CRB requested to limit semi-annual sampling to MW-3 and MW-5.

** Monitoring well has been destroyed.

ENVIRONMENTAL MONITORING AND EVALUATION

SAMPLING REQUEST REPORT

Wetland Area south of RMC Rock Cutler Pit
26301 SW 107 Ave
SW-1328

Sampling Date: April 8, 2016
Report prepared by: Caroline Wright, DERM/EMES

Ambient Conditions: Partly cloudy, warm, humid, hot.

DERM staff, Caroline Wright, Stanley Edouard, and Gwen Burzycki, arrived onsite at approximately 0900 hours to collect a ponded surface water sample from the wetlands area directly south of the RMC Rock Cutler Pit (see map below). The sample point was accessed by using the 272nd street right-of-way. DERM staff walked a few hundred feet into the wetland area to find ponded water. However, the only ponded water with a sufficient volume of water to sample was located in a low point area which paralleled the road. Ponded surface water samples were collected from varies points from the surface of the ponded water to prevent settled sediment mixing. Sampling was performed pursuant to the FDEP Standard Operating Procedures (SOP) for Field Activities (DEP-SOP-001/01) dated March 31, 2008, and revised March 1, 2014. Samples were placed in appropriate lab provided pre-preserved sample containers and immediately placed in an ice-filled cooler. Samples were transported after site departure to DERM Laboratories under chain-of-custody.

GPS point: N 25.50775, W 80.35859

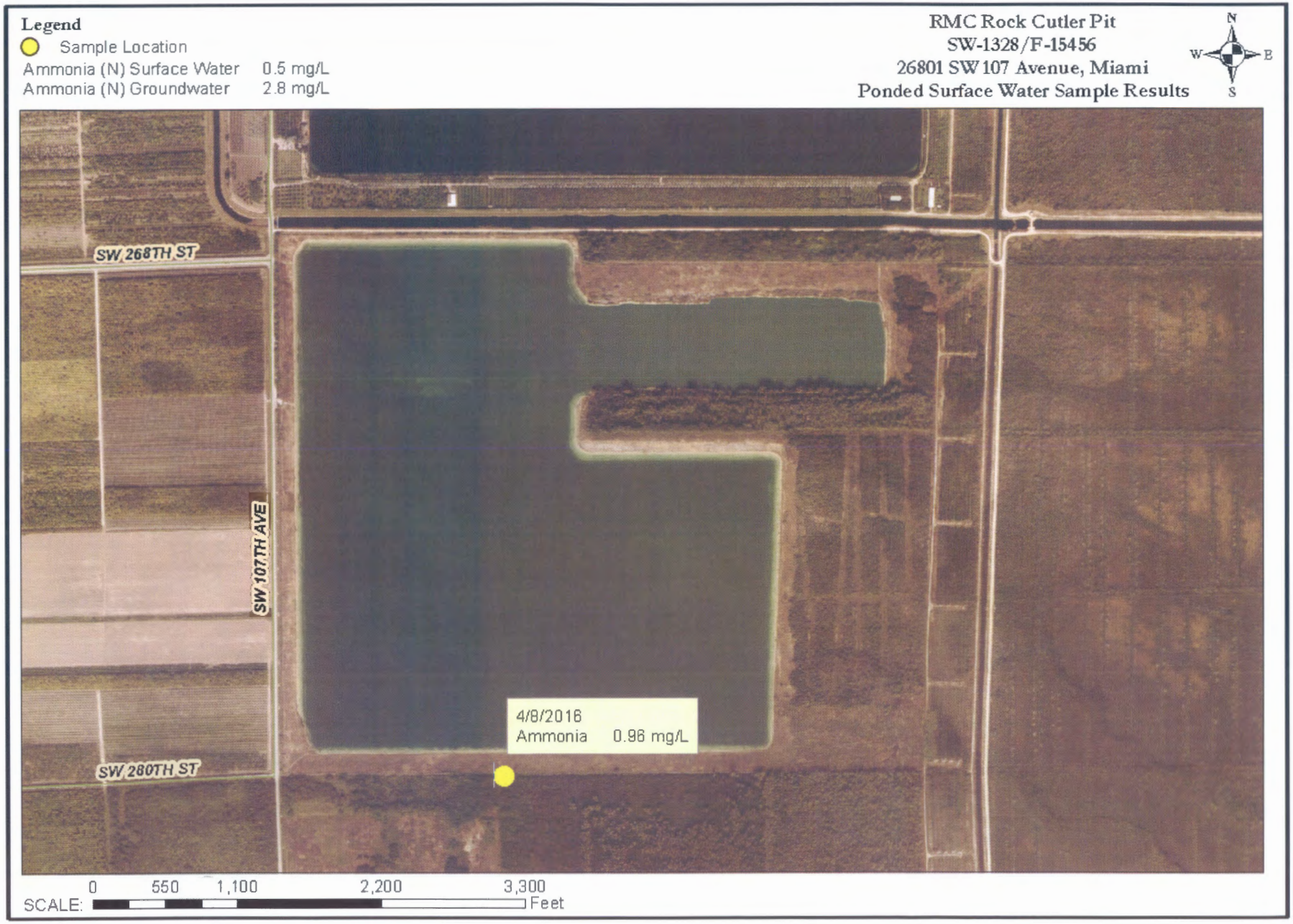
PHOTODOCUMENTAITON:

Figure 1. Ammonia sample collected in pre-preserved bottle

Figure 2. Ponded water collected from various surface locations of the of within the ponded water.

Figure 3. Wetland area facing south.

Figure 4. Low-lying area where ponded surface water was collected.



RMC Cutler Pit (SW-1328) -- DERM Sampling Request
April 8, 2016
CW, SE, GB

MIAMI-DADE COUNTY
Carlos A. Gimenez, Mayor

Department of Regulatory and Economic Resources
Environmental Resources Management
701 NW 1st Court, 4th Floor
Miami, Florida 33136-3912
T 305-372-6700 F 305-372-6982
miamidade.gov

October 12, 2017

Kelly Anderson
RMC Florida Group LTD
1501 Belvedere Road
West Palm Beach, FL 33406

CERTIFIED MAIL NO.7014 1200 0002 0828 8931
RETURN RECEIPT REQUESTED

Devon Coppock
Cemex Cutler Facility
13292 NW 118th Ave.
Miami, FL 33178

CERTIFIED MAIL NO. 7014 1200 0002 0828 8924
RETURN RECEIPT REQUESTED

Re: No Further Action with Conditions (NFAC)-Draft Restrictive Covenant (DRC) submittal dated September 22, 2017 for the Florida Rock and Sand Cutler Pit facility (SW-1328/File-15456) located at, near, or in the vicinity of 26801 SW 107 AVE (Folio No. 30-6032-000-0120 and -0080), Miami-Dade County, Florida.

Dear Messrs. Anderson and Coppock:

The Department of Regulatory and Economic Resources-Division of Environmental Resources Management (DERM) has reviewed the above-referenced document received September 22, 2017 and offers the following comments pertaining to the DRAFT Restrictive Covenant:

1. Please see the attached document for direct edits to the DRC.

2. A draft (unsigned) Opinion of Title shall be included in the next deliverable. A sample Opinion of Title and additional guidance for opinion of tile completion can be found at: http://www.miamidade.gov/environment/library/instructions/risk-based-corrective-action.pdf (see the last guidance document starting on page 130 of the pdf document). Additionally, please note that a joinder must be provided for, and executed by, any person or entity who must join the DRC (for example a mortgage company), as specified in the Opinion of Title.

3. Exhibit B shall include a summary of the contamination assessment (one to two pages), including summary table(s) of analytical results, site map(s) (indicating the north direction, drawn to scale, and including graphical representation of the scale) with property boundaries, institutional control boundaries, sample locations, and sample results. Each page of the summary of contamination assessment shall be labeled "Exhibit B", and each page of figures and tables shall be labeled appropriately (e.g., Exhibit B: Figure 1, Exhibit B: Table 1, etc.). Please be advised that attaching technical reports is not an appropriate method of providing a summary of contamination assessment.

4. No photos may be included in the DRC.

5. Maps, figures, and tables shall be black and white; no color copies will be accepted.

6. Please be advised that additional modifications to those outlined above may be required following review of the covenant and opinion of title for legal sufficiency by the Miami-Dade County Attorney's Office before final approval.

Please see DERM's RBCA Guidance No. 7F, Institutional Control Guidance for Contaminated Sites Regulated by Section 24-44(2), Code of Miami-Dade County (October 3, 2013) at https://www.miamidade.gov/environment/library/instructions/risk-based-corrective-action.pdf for additional guidelines for preparing an institutional control.

Pursuant to the above and to Chapter 24 of the Code of Miami-Dade County, within sixty (60) days of receipt of this letter, submit to this office for review two copies of a revised draft Restrictive Covenant and Opinion of Title that addresses the comments above. A review fee of $250, plus a 7.5% RER surcharge ($18.75), for a total of $268.75, shall be included with the document.

Failure to adhere to the items and timeframes stipulated above may result in enforcement action for this site.

Any person aggrieved by any action or decision of the DERM Director may appeal said action or decision to the Environmental Quality Control Board (EQCB) by filing a written notice of appeal along with submittal of the applicable fee, to the Code Coordination and Public Hearings Section of DERM within fifteen (15) days of the date of the action or decision by DERM.

If you have any questions concerning the above, please contact Caroline Wright (wrighc@miamidade.gov) of the Environmental Monitoring and Evaluation Section at (305) 372-6700.

Sincerely,

Wilbur Mayorga, P.E., Chief
Environmental Monitoring & Restoration Division

cw
ec: Victor Rossinsky, Jr., Ph.D., P.G. – CRB, Inc. (vrossinsky@crbgeo.net)
Francisco Verrire, DERM
John J. McNally, P.E., Esq., P.A., john@mcnallylawpa.com
Gwen Burzycki, Craig Grossenbacher, Michael Spinelli – DERM

MIAMI-DADE COUNTY
Carlos A. Gimenez, Mayor

Department of Regulatory and Economic Resources
Environmental Resources Management
701 NW 1st Court, 6th Floor
Miami, Florida 33136-3912
T 305-372-6902 F 305-372-6630
miamidade.gov

January 26, 2018

Juan Carlos Herrera, President
RMC Florida Group, Ltd., Inc.
1501 Belvedere Road
West Palm Beach, FL 33406

CERTIFIED MAIL NO. 7017 1450 0000 5202 1197
RETURN RECEIPT REQUESTED

Devon Coppock
Cemex
13292 NW 118th Avenue
Miami, FL 33178

CERTIFIED MAIL NO. 7017 1450 0000 5202 1203
RETURN RECEIPT REQUESTED

RE: Draft Restrictive Covenant (DRC) and Opinion of Title for the RMC South Florida facility (SW-1328/F-15456) located at, near, or in the vicinity of SW 264th Street and SW 107th Avenue, Miami, Miami-Dade County, Florida.

Dear Messrs. Herrera and Coppock:

Reference is made to the correspondence dated October 12, 2017, issued by this Department regarding the subject property (copy enclosed). A review of Department records has revealed that the above-referenced DRC and Opinion of Title have not been received.

Based on the above, you are hereby ordered to, within fifteen (15) days of receipt of this correspondence, submit to this Department a DRC and Opinion of Title which shall address those items set forth in the October 12, 2017 letter.

Be advised failure to comply with the above may result in this case being referred to the Office of the County Attorney for further enforcement action.

Any person aggrieved by any action or decision of the DERM Director may appeal said action or decision to the Environmental Quality Control Board by filing a written Notice of Appeal along with submittal of the applicable fee, to the Code Coordination and Public Hearings Section of DERM within fifteen (15) days of the date of the action or decision by DERM.

If you have any questions concerning this matter, please contact me at 305-372-6418.

Sincerely

Francisco Verrire
Code Enforcement Officer

c.c.: John McNally, Esq.
Victor Rossinsky, P.G.
Caroline Wright, DERM

Miami-Dade County DRER
Environmental Resources Management
c/o: Francisco Verrire, Code Enforcement Officer
701 NW 1st Court; 4th Floor
Miami, FL 33136-3912

February 6, 2018

Re: No Further Action with Conditions (NFAC): Cutler Pit – Site Address 26801 SW 107th Avenue, Miami, FL 33032 (Folio No. 30-6032-000-0080 and 30-6032-000-0120)

Dear Mr. Francisco Verrire,

Please accept this letter by CEMEX Construction Materials Florida, LLC (CEMEX) in response to the January 26, 2018 DERM enforcement notification (ATTACHMENT A). CEMEX is requesting a 60-day extension of time to complete the NFAC application process for the subject properties.

Currently CEMEX is utilizing outside legal consul to complete the required draft Opinion of Title. However, there has been unexpected delay in determining the applicable conveyance instrument to evidence the series of transfers that ultimately title the Cutler Pit to CEMEX. Using reasonable judgement, a 60-day time extension will provide CEMEX the ability to resolve these issues.

Thank you in advance for your time and patience in review of the time extension request. Please call me if you have any questions.

Sincerely,

Brandon Blue
Environmental Manager, South Florida – Aggregate Division, CEMEX
Cell: 305-951-1988
Email: BrandonS.Blue@cemex.com

c.c.: Caroline M. Wright, M.S., G.I.T., Hydrogeologist III, DERM

ATTACHMENT C

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

BOB MARTINEZ CENTER
2600 BLAIRSTONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

JENNIFER CARROLL
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

MEMORANDUM

TO: Department Waste Program Administrators
Department Solid Waste Engineers

FROM: Jorge R. Caspary, P.G.
Director, Division of Waste Management

SUBJECT: Monitoring and Evaluation of Ammonia in Ground Water at Solid Waste Management Facilities
SWM-13.10

DATE: December 3, 2012

Ammonia in ground water may be monitored and reported as part of a ground water quality monitoring plan, typically in relation to a Department permitted activity, or as part of corrective action for site rehabilitation under Chapter 62-780, Florida Administrative Code (F.A.C.). Ammonia is typically included as a parameter in the ground water monitoring plans for landfills and other waste management facilities.

While ammonia has often been included as a parameter in ground water monitoring plans, ammonia itself does not have a numeric water quality standard for the protection of ground water under Chapter 62-520, F.A.C. Currently, ammonia is identified in Chapter 62-777, F.A.C, as a, "minimum criteria systemic toxicant," and it has a ground water cleanup target level (CTL) of 2.8 mg/L. This ground water CTL was calculated and adopted based on a previously published Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Level (MRL) for an ammonia oral reference dose (RfD). On June 8, 2012, the Environmental Protection Agency (EPA) issued a draft toxicological review of ammonia in support of summary information on the Integrated Risk Information System (IRIS). At the request of the Department, on June 13, 2012, the Center for Environment and Human Toxicology (Center) at the University of Florida provided comments on the draft toxicological review. A copy of these comments is attached to this memorandum for reference. Based on their review, the Center commented:

> The oral MRL used to calculate groundwater and soil CTLs is no longer supported by ATSDR in its current Toxicological Profile for ammonia, and the EPA in this Toxicological Review has also concluded that current data are inadequate to support oral RfD development. Dropping the oral RfD from Chapter 62-777, F.A.C. would eliminate the groundwater CTL

and could substantially change the soil CTL, which would then be based upon inhalation exposure only.

As a ground water CTL , the ammonia concentration of 2.8 mg/L is not a Department standard as defined under s. 403.803(13), Florida Statutes. While the Department has not adopted an ammonia standard for the protection of ground water under Chapter 62-520, F.A.C., related nitrogen bearing compounds are regulated for protection of ground water quality (e.g., nitrite at 1 mg/L as N, and total nitrate plus nitrite at 10 mg/L as N). Also, Chapter 62-302, F.A.C., does have ammonia and other nitrogen related standards for protection of surface waters (e.g., un-ionized ammonia at 0.02 mg/L as NH_3 and total nitrogen at concentrations to prevent nutrient impacts).

Since ammonia is not regulated as a specific ground water quality standard, ammonia concentrations have been evaluated based on the minimum criteria for ground water adopted under Rule 62-520.400, F.A.C. The minimum criteria for ground water, in part, states that, "All ground water shall at all places and at all times be free from… discharges in concentrations which, alone or in combination with other substances, or components of discharges… are carcinogenic, mutagenic, teratogenic, or toxic to human beings." During technical reviews, the ammonia ground water CTL has been used as guidance for evaluating whether concentrations in ground water exceed the minimum criteria and whether there may be ground water quality concerns.

Since the ATSDR has removed the oral RfD for ammonia from its MRLs publication[1], there is no longer a supported toxicological basis for relying on the ammonia ground water CTL as an indicator of ground water quality, since the CTL was calculated from ATSDR's now withdrawn technical information. The presence of dissolved nitrogen species in ground water, such as nitrate and nitrite, may still be evaluated. Similarly, ammonia in ground water may still be a concern where migration of a plume and ammonia seepage may adversely affect surface waters of the state.

Based on this new information from the ATSDR, EPA, and the review comments from the Center, it is likely the Department will ultimately propose rulemaking to eliminate ammonia as a ground water CTL in Chapter 62-777, F.A.C. EPA's pending technical review of its June 2012 draft will also address whether the inhalation reference concentration (RfC) should be increased which would in turn affect the Department's adopted soil CTL. Thus, once EPA has finalized its review, rulemaking will likely be appropriate to consider changes to the ammonia cleanup target

[1] February 2012, Agency for Toxic Substances and Disease Registry, Minimal Risk Levels; from http://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls_february_2012.pdf; on November 19, 2012.

levels in Chapter 62-777, F.A.C. EPA's final adoption of its June 2012 draft toxicological review of ammonia is not expected until mid 2014, if there are no delays.[2]

Consequently, given the ATSDR's removal of the oral RfD MRL for ammonia, which is not expected to be affected by EPA's pending review, we are now providing the following specific guidelines for monitoring and evaluation of ammonia concentrations in ground water at solid waste management facilities:

1. Department solid waste staff should no longer rely on the ground water CTL as being a suitable toxilogical reference for evaluating the significance of ammonia concentrations in ground water.
2. Department solid waste staff should not enforce ammonia as a minimum criteria contaminant for ground water at permitted or non-permitted solid waste management facilities, unless there are sufficient scientific reasons to believe the ground water is discharging to surface waters and likely to cause a violation of surface water standards for ammonia.
3. For permitted and non-permitted solid waste management facilities where the facilities are being required to conduct evaluations for which ammonia is the only parameter of concern and where the ground water is not expected to discharge to surface waters at concentrations exceeding surface water quality standards, then Department solid waste staff should cease requiring those evaluations and terminate any associated enforcement actions.
4. Where there are ongoing corrective actions at permitted solid waste management facilities for which ammonia is the sole parameter of concern, Department staff should review related nitrogen bearing compounds (e.g., nitrate, etc.) and whether there is a potential for ammonia related surface water impacts when determining whether further corrective action is warranted, or if the associated ground water corrective action should be completed or terminated. While corrective actions solely for ammonia in ground water would no longer be pursued unless needed to prevent surface water quality impacts, Department staff should continue to evaluate whether other nitrogen compounds may be a concern when reviewing existing water quality data.

Sound professional judgment must be used to determine whether ground water from a solid water management facility is discharging to surface waters with ammonia concentrations that exceed the un-ionized ammonia surface water quality standard, or to prevent such exceedances from ground water seepage in the future. Care should be taken to differentiate whether ammonia

[2] IRISTrack Detailed Report, Ammonia Assessment Milestones and Dates; from http://cfpub.epa.gov/ncea/iristrac/index.cfm?fuseaction=viewChemical.showChemical&sw_id=1106; on November 20, 2012.

concentrations detected in waters of the state are associated with a landfill or other waste disposal activity, or whether they may be associated with other contributors of ammonia such as agricultural activities or urban runoff. Ammonia concentrations in soil may still be evaluated based on the soil CTL since the EPA review does not propose eliminating the inhalation RfC. However, the Department's calculated soil CTL may change depending on the outcome of EPA's pending review.

Caveat

This guidance memorandum does not constitute a rule of the Department. It is intended solely as internal guidance to Department staff, and is not intended to create additional requirements for the regulated community or to affect the rights of substantially affected parties to any agency decision. Please do not cite any part of this memorandum as though it were a standard, rule, or requirement.

JRC/JAC/rt

Attachment: As Noted.

UF UNIVERSITY of FLORIDA

Center for Environment & Human Toxicology

PO Box 110885
Gainesville, FL 32611-0885
352-392-2243 Tel
352-392-4707 Fax

February 6, 2020

Wilbur Mayorga, PE
Miami-Dade County Environmental Monitoring & Restoration Division
Department of Regulatory and Economic Resources
701 NW 1st Court, 4th Floor
Miami, FL 33136-3912

Re: Review of the proposed ammonia alternative groundwater cleanup target levels for the skilled nursing facility in Doral, Florida

Dear Mr. Mayorga:

At your request, we have reviewed the proposed ammonia alternative groundwater cleanup target levels (AGCTLs) for the skilled nursing facility in Doral, Florida. The proposed AGCTLs were included in the *Response to DERM Correspondence Dated September 16, 2019, Skilled Nursing Facility Brownfield Site (BF Site ID 3131104003, UT-1866/File-8181), 3635 and 3655 NW 78th Avenue, Doral, Florida 33166.* The AGCTLs were prepared by SCS Engineers and are dated September 20, 2019. The document contains two sets of AGCTLs including health-based and odor-based AGCTLs. We originally calculated temperature- and pH-based AGCTLs for un-ionized ammonia in 2015 using a provisional inhalation reference concentration (RfC) of 0.1 mg/m^3 (see our letter dated September 1, 2015). Since that time, the final IRIS Toxicological Review for ammonia was released and included a recommended RfC of 0.5 mg/m^3. This document includes a table of revised temperature- and pH-based ammonia AGCTLs based on the current recommended RfC of 0.5 mg/m^3.

Based on our review, the revised temperature- and pH-dependent health-based ammonia AGCTLs included in Table 1 of the response were calculated correctly. However, the proposed health-based AGCTLs include a maximum AGCTL of 260,000 μg/L (an acute exposure AGCTL calculated for our September 1, 2015 letter). In a follow-up October 23, 2018 letter, an acute AGCTL of 62,000 μg/L was calculated for Miami-Dade County groundwater. This is based on a showering scenario that would result in the maximum amount of un-ionized ammonia exposure. Briefly, the acute scenario assumes a 10-minute shower using groundwater with a pH of 8.5 that has been heated to 48.9°C. We recommend using the acute AGCTL of 62,000 μg/L for this site. This would result in a maximum temperature- and pH-depended ammonia AGCTL of 62,000 μg/L (see attached Table 1).

The revised temperature- and pH-dependent odor-based ammonia AGCTLs included in Table 2 of the document were originally submitted by SCS in a document dated July 11, 2018 and reviewed by UF in a letter to the Florida Department of Environmental Protection (FDEP)

dated August 2, 2018. The table accurately represents the previously derived odor-based ammonia AGCTLs. It is important to note that updating the RfC for ammonia will have no effect on the odor-based AGCTLs. Therefore, these values have not been revised (see attached Table 2). The taste threshold for ammonia in tap water is 35,000 μg/L (ATSDR, 2004). The origin of this value is the World Health Organization Environmental Health Criteria (EHC) document for ammonia (WHO, 1986). There is no information regarding how this taste threshold was derived. Therefore, it is unclear if the taste threshold is also pH and/or temperature dependent.

The ammonia AGCTLs were intended to be site-specific criteria that would be dependent upon pH and groundwater temperature at the site. For this site, a Miami-Dade background groundwater pH of 7.1 and temperature of 23°C were used to recommend a health-based AGCTL. Due to the large difference in cleanup target values over small changes in pH and, to a lesser extent, temperature, we strongly recommend using site-specific groundwater parameters over county-wide background values to determine ammonia groundwater cleanup target levels.

Please let us know if you have any questions regarding this review.

Sincerely,

Leah D. Stuchal, Ph.D.

Stephen M. Roberts, Ph.D.

References:

ATSDR (2004) *Toxicological Profile for Ammonia.* US Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry.

WHO (World Health Organization) (1986) *Environmental Health Criteria 54. Ammonia*. WHO, Geneva. http://www.inchem.org/documents/ehc/ehc/ehc54.htm

Table 1 – Health-based AGCTLs in μg/L total ammonia for water temperatures between 20-30°C and pH values between 6-8.5

pH	20°C	21°C	22°C	23°C	24°C	25°C	26°C	27°C	28°C	29°C	30°C
6.0	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
6.1	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
6.2	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
6.3	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
6.4	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
6.5	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
6.6	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
6.7	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
6.8	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
6.9	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
7.0	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
7.1	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
7.2	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000
7.3	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	62,000	58,000	54,000
7.4	62,000	62,000	62,000	62,000	62,000	61,000	57,000	53,000	50,000	46,000	43,000
7.5	62,000	62,000	60,000	56,000	52,000	49,000	45,000	42,000	40,000	37,000	35,000
7.6	55,000	52,000	48,000	45,000	42,000	39,000	36,000	34,000	32,000	30,000	28,000
7.7	44,000	41,000	38,000	36,000	33,000	31,000	29,000	27,000	25,000	24,000	22,000
7.8	35,000	33,000	31,000	29,000	27,000	25,000	23,000	22,000	20,000	19,000	18,000
7.9	28,000	26,000	24,000	23,000	21,000	20,000	19,000	17,000	16,000	15,000	14,000
8.0	23,000	21,000	20,000	18,000	17,000	16,000	15,000	14,000	13,000	12,000	12,000
8.1	18,000	17,000	16,000	15,000	14,000	13,000	12,000	11,000	11,000	10,000	9,400
8.2	15,000	14,000	13,000	12,000	11,000	10,000	9,800	9,200	8,600	8,100	7,600
8.3	12,000	11,000	10,000	9,600	9,000	8,400	7,900	7,500	7,000	6,600	6,200
8.4	9,500	8,900	8,300	7,800	7,300	6,900	6,500	6,100	5,700	5,400	5,100
8.5	7,700	7,200	6,800	6,400	6,000	5,600	5,300	5,000	4,700	4,500	4,200

Shaded values are based on the acute exposure AGCTL of 62,000 μg/L; AGCTLs were rounded to two significant figures
AGCTLs were calculated using an f value rounded to 7 significant digits and an un-ionized ammonia concentration of 210 μg/L

Table 2 – Ammonia odor threshold in μg/L total ammonia for water temperatures between 20-30°C and pH values between 6-8.5

pH	20°C	21°C	22°C	23°C	24°C	25°C	26°C	27°C	28°C	29°C	30°C
6.0	3,100,000	2,900,000	2,700,000	2,500,000	2,300,000	2,100,000	2,000,000	1,900,000	1,700,000	1,600,000	1,500,000
6.1	2,400,000	2,300,000	2,100,000	2,000,000	1,800,000	1,700,000	1,600,000	1,500,000	1,400,000	1,300,000	1,200,000
6.2	1,900,000	1,800,000	1,700,000	1,600,000	1,500,000	1,400,000	1,300,000	1,200,000	1,100,000	1,000,000	960,000
6.3	1,500,000	1,400,000	1,300,000	1,200,000	1,200,000	1,100,000	1,000,000	940,000	870,000	820,000	760,000
6.4	1,200,000	1,100,000	1,100,000	990,000	920,000	860,000	800,000	740,000	700,000	650,000	610,000
6.5	970,000	910,000	840,000	780,000	730,000	680,000	630,000	590,000	550,000	520,000	480,000
6.6	770,000	720,000	670,000	620,000	580,000	540,000	500,000	470,000	440,000	410,000	380,000
6.7	620,000	570,000	530,000	500,000	460,000	430,000	400,000	370,000	350,000	330,000	300,000
6.8	490,000	450,000	420,000	390,000	370,000	340,000	320,000	300,000	280,000	260,000	240,000
6.9	390,000	360,000	340,000	310,000	290,000	270,000	250,000	240,000	220,000	210,000	190,000
7.0	310,000	290,000	270,000	250,000	230,000	220,000	200,000	190,000	180,000	160,000	150,000
7.1	250,000	230,000	210,000	200,000	180,000	170,000	160,000	150,000	140,000	130,000	120,000
7.2	200,000	180,000	170,000	160,000	150,000	140,000	130,000	120,000	110,000	100,000	97,000
7.3	160,000	140,000	130,000	130,000	120,000	110,000	100,000	95,000	88,000	83,000	77,000
7.4	120,000	120,000	110,000	100,000	93,000	87,000	81,000	76,000	71,000	66,000	62,000
7.5	99,000	92,000	85,000	80,000	74,000	69,000	65,000	60,000	56,000	53,000	49,000
7.6	79,000	73,000	68,000	63,000	59,000	55,000	51,000	48,000	45,000	42,000	39,000
7.7	63,000	58,000	54,000	51,000	47,000	44,000	41,000	38,000	36,000	34,000	31,000
7.8	50,000	47,000	43,000	40,000	38,000	35,000	33,000	31,000	29,000	27,000	25,000
7.9	40,000	37,000	35,000	32,000	30,000	28,000	26,000	25,000	23,000	22,000	20,000
8.0	32,000	30,000	28,000	26,000	24,000	23,000	21,000	20,000	19,000	17,000	16,000
8.1	26,000	24,000	22,000	21,000	20,000	18,000	17,000	16,000	15,000	14,000	13,000
8.2	21,000	19,000	18,000	17,000	16,000	15,000	14,000	13,000	12,000	11,000	11,000
8.3	17,000	16,000	15,000	14,000	13,000	12,000	11,000	11,000	9,900	9,400	8,800
8.4	13,000	13,000	12,000	11,000	10,000	9,800	9,200	8,700	8,200	7,700	7,300
8.5	11,000	10,000	9,600	9,100	8,500	8,000	7,600	7,100	6,700	6,400	6,000

Ammonia odor thresholds were calculated using an f value rounded to 7 significant digits and rounded to two significant digits

ATTACHMENT D

PRIMERITE™ CT006

6" X 6" AUTOMATIC DRY SELF-PRIMING TRASH PUMP

MWI PUMPS
The Power to Move Water®

APPLICATIONS

Construction Dewatering

Sewage Bypass

Flood Drainage

Mining/Quarries

Municipal

General Industrial

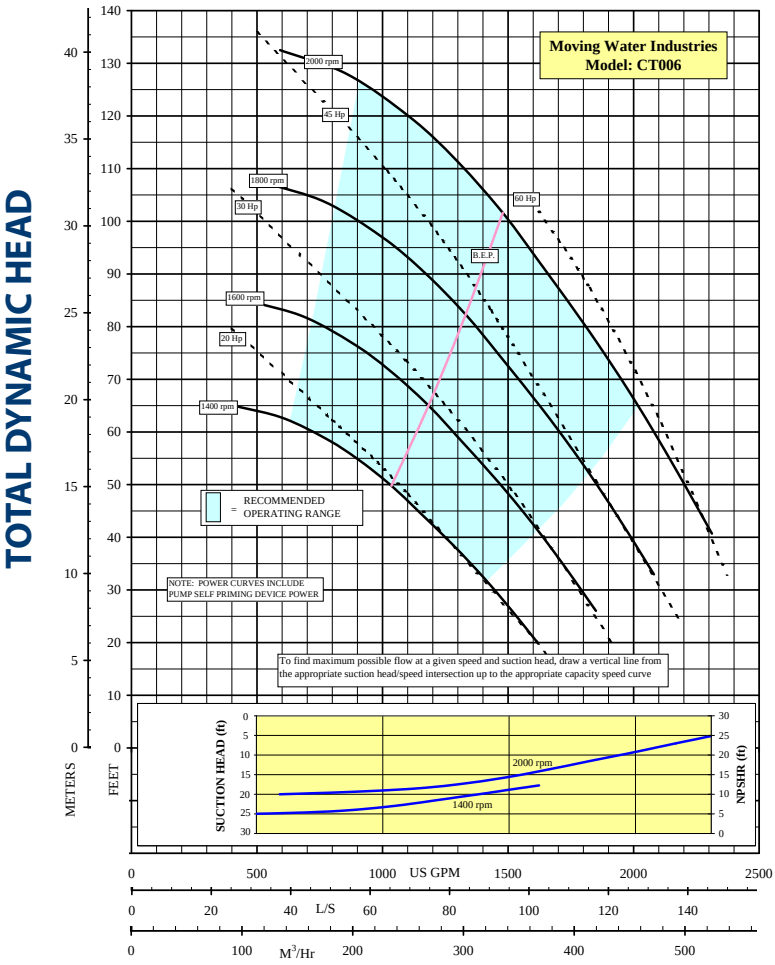
The Primerite™ is the perfect pump for contractors, pump rental companies, mining operators and general industrial or municipal use. The pump's oil-filled bearing box and a mechanical seal in an oil bath enable it to run dry all day long for up to 24 hours, making it the right choice for handling inconsistent flows found in sewage bypass pumping and job site dewatering. This pump is completely self contained in either skid or trailer configurations with integral lifting bail, tie downs and fuel tank.

FEATURES

- Primes and reprimes automatically
- Solids handling up to 3"
- Engine driven compressor
- Vacuum and discharge pressure gauge
- Lockable fuel cap
- Forklift slots (skid models)
- Torsion bar axle
- Integral 78 fuel tank with gauge
- Skid or optional trailer-mounted
- DOT light kit available
- Hydraulic surge brakes standard, electric brakes available
- Front and rear stabilizing jacks
- 3" Lunette ring for pintle hitch – Other options available
- Lifting bail
- Volute drain
- Heavy-duty truck tie downs
- Engines – Caterpillar, Perkins, John Deere and Deutz available
- Flexible flywheel coupling
- 6" ANSI Pattern flanges – Suction and discharge
- Optional float activated, auto start/stop controls
- Manufactured in the USA

QUICK SPECIFICATIONS	
Suction connection	6" 150# ANSI B16.5
Delivery connection	6" 150# ANSI B16.5
Max capacity	2300 USGPM
Max solids handling	3.0"
Max impeller diameter	10.8"
Max head (TDH)	160'
Max operating speed	2000 RPM
Max suction lift	25'
Dimensions	65 x 93 x 132"
Sound levels w/ enclosure	67 dBA at 7M / 23'
Max fuel consumption	At 67 HP; up to 20 hr run time

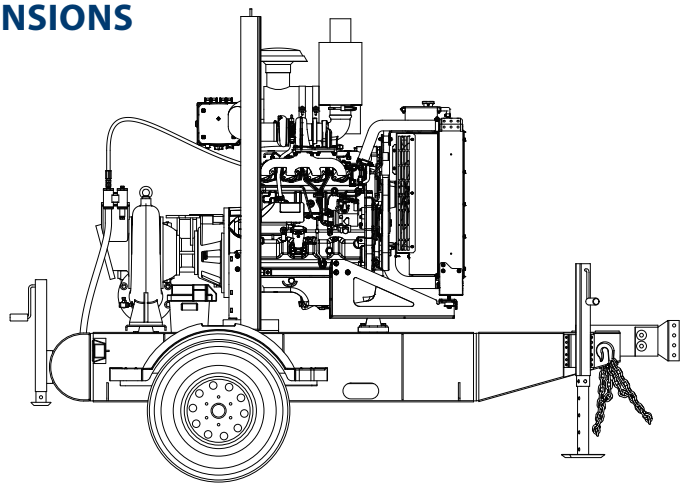
PERFORMANCE CURVE

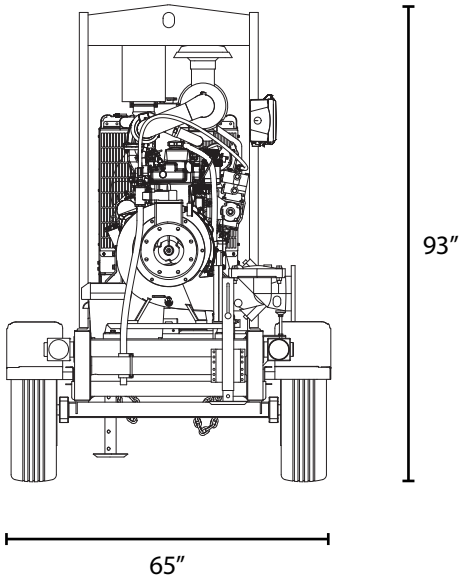


WATER FLOW

MATERIALS & SPECIFICATIONS	
Standard engine	John Deere 4045TF290
Max HP	74 HP
Fuel capacity	78 Gal
Drive type	Flywheel direct drive flexible element
Impeller	CA-40 Corrosion resistant iron/chromium alloy
Volute	Ductile cast iron ASTM A536 grade 70-50-05
Pump shaft	1045 Steel; Stainless steel option
Compressor	Engine-driven, oil lubricated and water cooled
Priming assembly	304 Stainless steel venturi
Control panel	Tach and hour meter, including shutdowns for low oil pressure, high coolant temperature, Plug-N-Play and float-ready
Discharge non-return valve	Val-matic swing flex check valve ASTM A536 grade 65-45-12
Mechanical seal	Stainless steel with silicon carbide faces; Buna elastomers
Weight of trailer mounted unit	3450 lbs (dry)

DIMENSIONS





MWI Pumps Headquarters
33 NW 2nd Street | Deerfield Beach, FL 33441
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Inquiries: 954-426-1500 | Fax: 954-426-8938 | Email: info@mwipumps.com | **mwipumps.com**

18,000 gallon weir tank

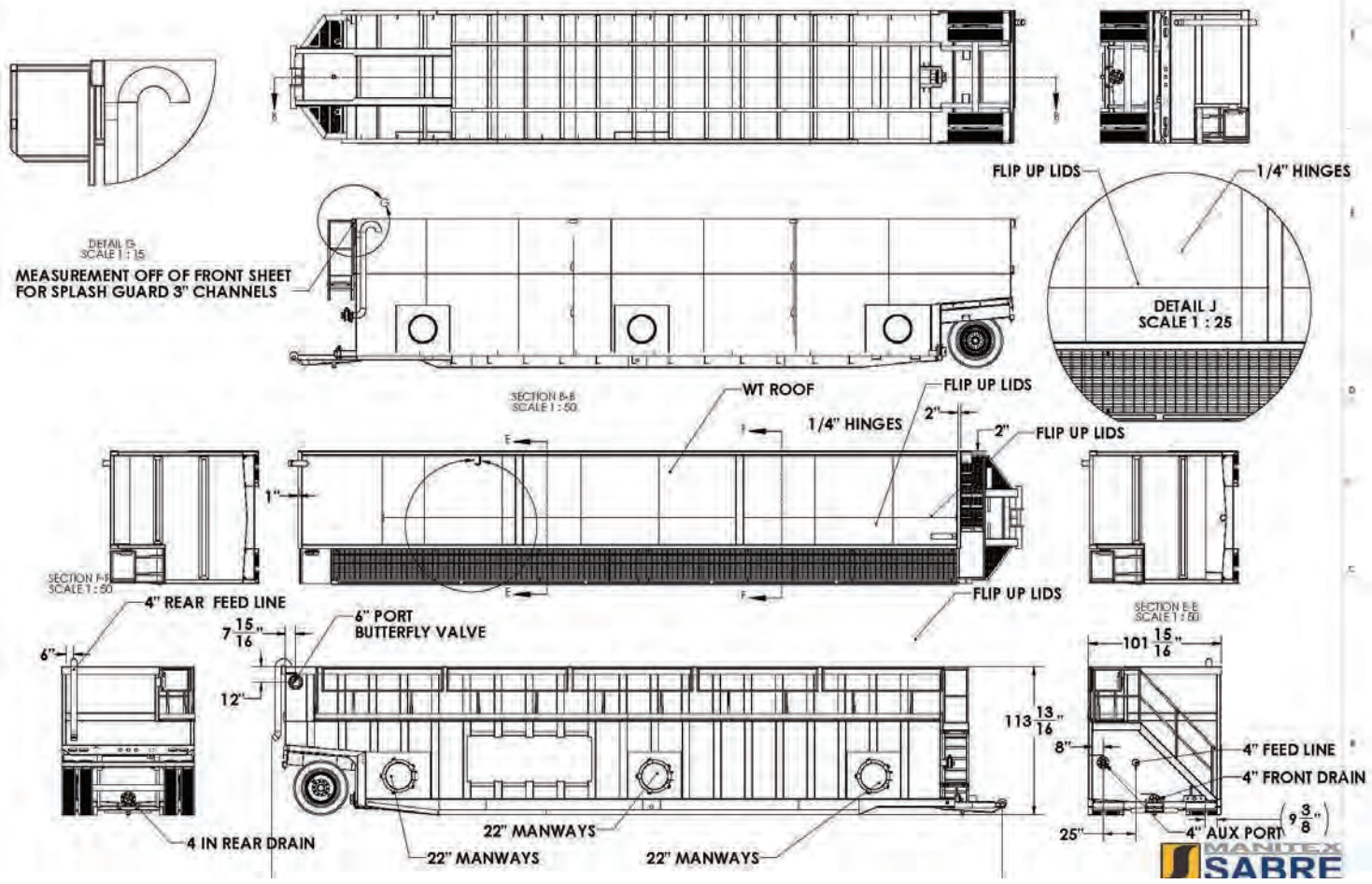
RECON OUTFITTERS
VETERAN OWNED BUSINESS

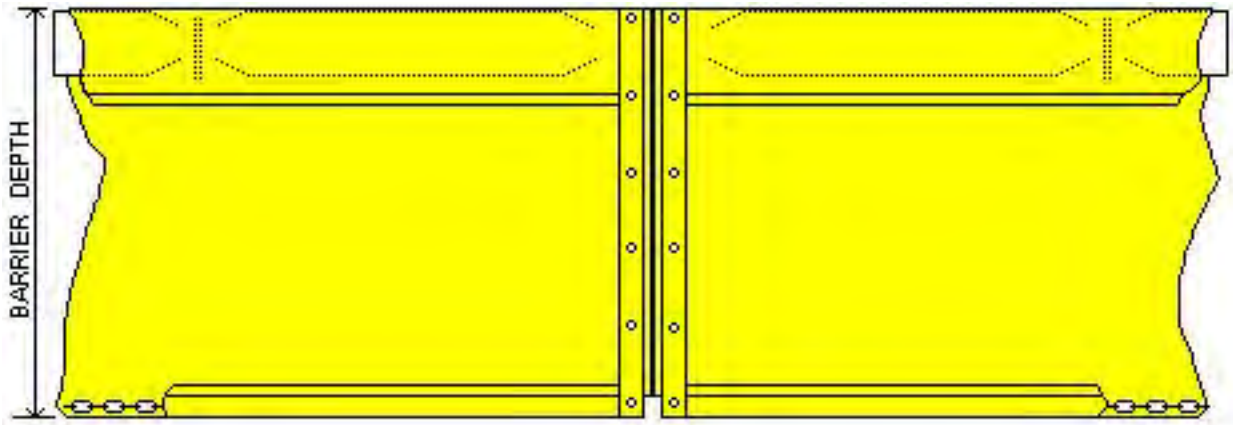
Epoxy lined smooth wall for ease of cleaning

Lockable Flip-top or open top

"RECON Ready" fixed handrails

Sediment removal / oil-water separation
Floc logs to enhance sediment removal
Tank connections allow for manifolding multiple tanks together





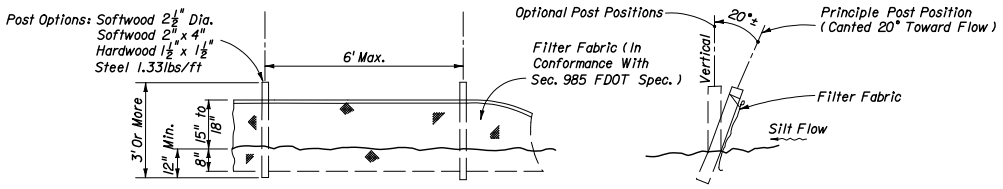
Floating Turbidity Barrier
Type 1.DOT

Specifications

Fabric - 18 oz. nominal vinyl/polyester laminated having the following characteristics:

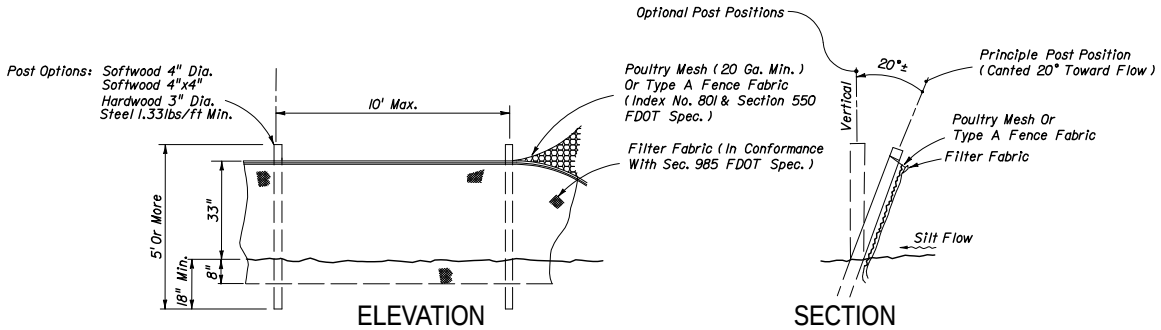
Construction - vinyl laminate on 9X9 1300 x 1300 denier scrim
Weight - 18 oz. per sq. yd. (423 gr./sq. m.)
Adhesion - 15 lb./in. (14daN/5 cm.)
Grab Tensile - 397 x 373 lb./in. (378 x 363 daN/5cm.)
Tongue Tear - 96 x 86 lb. (91 x 82 daN)
Hydrostatic - 385 psi (2674 kPa)

All seams heat sealed
5/8 inch diameter poly rope reinforced vertical edges
#4 brass grommets
1/4 in.(6.35mm) galvanized chain ballast
EPS flotation, 6 in. x 6 in., 15 lb./ft. (220N/m) buoyancy



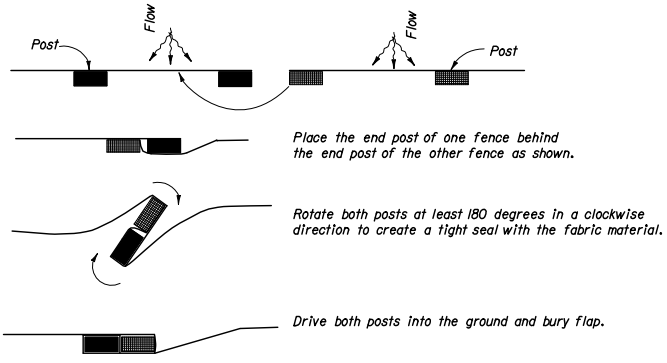
ELEVATION SECTION

TYPE III SILT FENCE



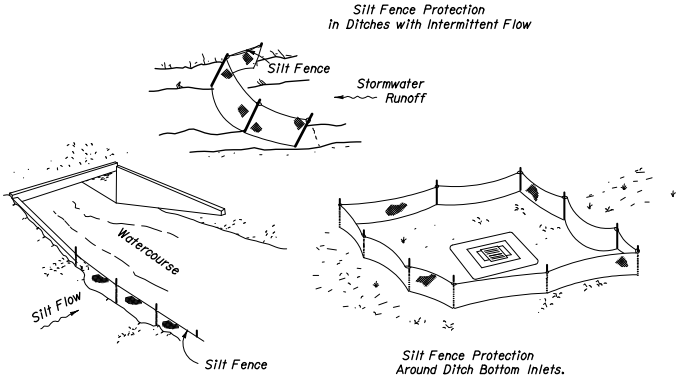
ELEVATION SECTION

TYPE IV SILT FENCE



PLAN VIEW

JOINING TWO SILT FENCES



SILT FENCE APPLICATIONS

NOTES FOR SILT FENCES

1. *Type III Silt Fence to be used at most locations.*
2. *Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested use is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet.*
3. *Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.*
4. *Where used as slope protection, Silt Fence is to be constructed on 0% longitudinal grade to avoid channelizing runoff along the length of the fence.*

TIERRA GROUP™ Assured Geoscience Solutions	PROJECT: FPL CWRC PIPELINE	CLIENT: GIANNETTI CONTRACTING CORP.	
	SEDIMENT CONTROL - SILT FENCE STANDARDS	DATE: 4/17/2023	DRAWN BY: LS

O: (954) 202 9226 E: ADMIN@TIERRACONSULTING.COM WWW.TIERRACONSULTING.COM

ATTACHMENT E

STORMWATER POLLUTION PREVENTION PLAN –

MIAMI-DADE COUNTY SOUTH DISTRICT WASTEWATER TREATMENT PLANT TO FLORIDA POWER & LIGHT CLEAN WATER RECOVERY CENTER 8-MILE RECLAIMED WATER PIPELINE PROJECT

REVISION 1

PREPARED FOR

Overland Contracting, Inc.

JANUARY 2023

SWPPP PREPARATION CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature (Operator and/or Responsible Authority) — Date: June 20, 2023

Gary Krage — Project Manager / AVP

Name (Operator and/or Responsible Authority) — Title

SWPPP CONTRACTOR/SUBCONTRACTOR CERTIFICATION

This SWPPP must clearly identify, for each measure identified within the SWPPP, the contractor(s) or subcontractor(s) that will implement each measure. All contractor(s) and subcontractor(s) identified in the SWPPP must sign the following certification:

"I certify under penalty of law that I understand, and shall comply with, the terms and conditions of the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities and this Stormwater Pollution Prevention Plan prepared thereunder."

Name	Title	Company Name, Address and Phone Number	Date

ACRONYMS & ABBREVIATIONS

Acronym/Abbreviation	Definition
BMP	Best Management Practice
CWRC	Clean Water Recovery Center
DERM	Miami-Dade County Regulatory Economic Resources Department of Environmental Resources Management
FDEP	Florida Department of Environmental Protection
FPL	Florida Power & Light
Generic Permit	*NPDES Generic Permit for Stormwater Discharge from Large and Small Construction Activities*
HDD	Horizontal Directional Drill
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OCI	Overland Contracting, Inc.
Project	Miami-Dade South District Wastewater Treatment Plant to FPL Clean Water Recovery Center Reclaimed Water Pipeline
ROW	Right-of-way
SDS	Safety Data Sheet
SDWWTP	Miami Dade County South District Wastewater Treatment Plant
SFWMD	South Florida Water Management District
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers

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1.0 Introduction

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared to comply with the requirements identified in the Florida Department of Environmental Protection (FDEP) *National Pollutant Discharge Elimination System (NPDES) Generic Permit for Stormwater Discharge from Large and Small Construction Activities (Generic Permit),* effective 02/2015 (Appendix A). The template provided by the FDEP for SWPPP development was used as the foundation of the document.

As per the template:

- *The SWPPP shall be completed prior to the submittal of the Notice of Intent (NOI) (Appendix B) to be covered under the FDEP's Generic Permit for Stormwater Discharge from Large and Small Construction Activities.*

- *The SWPPP shall be amended whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for discharge of pollutants to surface waters of the state or a Municipal Separate Storm Sewer System (MS4). The SWPPP also shall be amended if it proves to be ineffective in significantly reducing pollutants from sources identified in Part V.D.1. of the permit. The SWPPP also shall be amended to indicate any new contractor and/or subcontractor that will implement any measure of the SWPPP. All amendments shall be signed, dated, and kept as attachments to the original SWPPP.*

2.0 Project Information

2.1 Location

Project Name and Location Information:	*Florida Power & Light Company (FPL)* *8-Mile Reclaimed Water Pipeline between the Miami Dade County South District Wastewater Treatment Plant (SDWWTP) and FPL Clean Water Recovery Center (CWRC)* *Start: 8950 SW 232nd St, Miami, FL 33190* *End: Palm Dr, Homestead, FL 33033* *The waterline corridor is approximately eight miles in length and approximately 60 feet wide. From the SDWWTP, the waterline exits south to the South Dade Landfill property underneath the Black Creek (C-1) Canal via trenchless methods. The corridor follows SW 97th Avenue south approximately 0.6 mile to the intersection with SW 248th Street/Coconut Palm Drive, crosses under SW 248th Street/Coconut Palm Drive and Goulds Canal via trenchless methods and continues approximately 0.5 mile along the western perimeter of a closed landfill (Old South Dade Landfill), then south approximately 0.25 mile through an undeveloped parcel to reach the FPL transmission line corridor at SW 261st Street. The waterline continues south within the FPL transmission line corridor approximately 6.3 miles to reach the Unit 5 Site. Along this segment, the corridor crosses the Princeton (C-102), Military, unnamed (SW 312th Street), Mowry (C-103), Homestead (North), and L31E Canals via trenchless methods. The waterline right-of-way will be located primarily within the existing transmission line right-of-way (ROW) and adjacent to existing road rights-of-way.*

A site map must be developed and must contain, at a minimum, the following information:

1. Drainage patterns,
2. Approximate slopes after major grading activities,
3. Areas of soil disturbance,
4. Outline all areas that are not to be disturbed,
5. Location of all major structural and non-structural controls,
6. The location of expected stabilization practices,
7. Wetlands and surface waters, and
8. Locations where stormwater may discharge to a surface water or MS4

The site map depicting the information listed above can be found in Appendix C. Best Management Practices Details are provided in Appendix D.

2.2 Nature of Construction

Describe the nature of the construction activities:

On the behalf of FPL, Overland Contracting Inc. (OCI) and its subconsultant Giannetti, plan to construct a 42-inch, 8-mile-long reclaimed water pipeline between SDWWTP and the FPL CWRC. Giannetti will be responsible for installing, maintaining, and removing (when appropriate) BMPs and overall implementation of this plan. OCI will be responsible for conducting inspections.

The pipeline will be constructed within a 60-foot-wide temporary construction corridor and limited additional workspace for horizontal directional drill (HDD) crossings.

Wetland impacts are permitted through the FDEP and U.S. Army Corps of Engineers (USACE) and include 0.40 acre of permanent impacts to existing jurisdictional dwarf mangrove scrub-shrub wetlands for the placement of clean fill for access manholes, isolation valves, and air release valves and a total of approximately 40.52 acres of temporary impacts to jurisdictional mangrove wetland associated with temporary trench excavation and construction matting and access areas. The approximate distance for trenching is 6.93 miles and HDD for a total of 1.27 miles.

Soil-disturbing activities will include creation of temporary construction entrances, clearing and grubbing, installation of erosion and sediment control measures, topsoil stripping and segregation, open-cut trenching, temporary trench dewatering, pipe installation, and immediate restoration. All waterbodies will be crossed using HDD.

Dewatering Approach
Ground surface elevation at the proposed dewatering site varies with a maximum elevation of +6.0 feet relative to the North American Vertical Datum of 1988 (NAVD). Average groundwater elevation at the dewatering site varies between -0.3 and -0.4 feet NAVD; the maximum bottom elevation of the trenches is -11.2 feet NAVD.

Dewatering fluids will be pumped from the excavation trenches using a self-priming six-inch (6") vacuum pump, or equivalent, to a nominal 40' wide by 400' long, above-grade infiltration basin using soil excavated from the trenches. The basin will be initially constructed adjacent to the trench line but as the trenching proceeds the basin will be constructed over the backfilled trenches to minimize the disturbed area. The footprint of the basin will move forward as the trenching work proceeds.

The basin walls will be covered with polyethylene sheeting to prevent lateral migration and will be further protected by silt fencing to reduce adjacent surface flows. Turbidity curtains will be installed spaced 100'apart. Infiltration trench size requirements, and associated infiltration basin area requirements, derived using the Florida Department of Transportation (FDOT) Drainage Handbook Exfiltration Systems (February 2012).

Trench boxes will be employed during trench excavation and pipe installation work to comply with OSHA requirements. The trench boxes will also reduce potential localized exfiltration from the L-31E Canal adjacent to the trench work. Additionally, positive infiltration via recharge into the subsurface

aquifer from the basin due to elevation head differential will further reduce potential exfiltration from the L-31E Canal.

If necessary, effluent will be pumped from the infiltration basin using a four-inch (4") pump, or equivalent and through an 18,000-gallon sedimentation weir tank prior to discharge into two-foot diameter temporary drainage wells installed in the project area and located to minimize disruption to active trench dewatering. The capacity of temporary drainage wells is 495 gallons per minute per foot of head. Well locations are contingent on underground and overhead utility clearance.

Dewatering assumptions are based on the time to dig, dewater, and install subsurface infrastructure during daylight working hours. Dewatering duration for this portion of the pipeline project is estimated at ten (10) hours per day for one hundred and thirty-eight (138) working days, based on a planned production rate of 200 linear feet per day with a 1.25 Factor of Safety added to account for weather delays, equipment breakdowns, and other unforeseen circumstances.

2.3 Construction Sequence

Describe the intended sequence of major soil disturbing activities:

<u>Pipeline</u>

The general sequence of pipeline construction activities will include the following. Note, the pipeline will be constructed in segments to limit the amount of disturbed ground at any point in time. See dewatering section above for details of segment lengths.

1. Survey the limits of the construction site.
2. Install temporary sediment controls measures and sediment tracking devices, where necessary to prevent sediment from leaving the workspace.
3. Prepare the site for construction activities.
4. Clear and remove any vegetation, where permitted.
5. Strip and stockpile topsoil for reuse.
6. Grade site.
7. String pipe along the ROW.
8. Excavate trench (topsoil segregated from subsoil).
9. Dewater pipeline in segments.
10. Lower the pipe into the trench.
11. Backfill the trench with the excavated spoil material.
12. Re-grade the ROW to pre-construction contours with topsoil to allow pre-construction vegetation community to re-establish.
13. Clean-up and remove excess materials and debris.
14. Complete final site stabilization and remove any remaining temporary erosion and sediment control measures.

Describe the intended sequence of major soil disturbing activities:

2.4 Disturbance Area

Total area of the project area:	Approximately 61 acres
Total area of the site to be disturbed:	Approximately 61 acres

2.5 Soils and Stormwater Quality

Existing data describing the soil or quality of any stormwater discharge from the site:

According to the U.S. Department of Agriculture Soil Conservation Service, Dade County, Florida Soil Survey data, soils mapped within the water pipeline corridor include:

Map unit symbol	***Map unit name***	***Drainage Class***
3	*Shark Valley muck, 0 to 1 percent slopes, frequently flooded*	*Very poorly drained*
6	*Perrine marly silt loam, drained, 0 to 1 percent slopes*	*Very poorly drained*
9	*Udorthents-Water-Urban land complex, 0 to 60 percent slopes*	*Well drained*
15	*Urban land, 0 to 2 percent slopes*	---
16	*Biscayne marly silt loam, drained, 0 to 1 percent slopes*	*Very poorly drained*
31	*Trout Cove marly silt loam, tidal, 0 to 1 percent slopes*	*Very poorly drained*
32	*Keylargo muck, tidal, 0 to 1 percent slopes*	*Very poorly drained*

Surface waters will be sampled at all impacted locations prior to work to establish background levels. Stormwater discharge to offsite sources will be maintained below 29 NTU against background.

2.6 Drainage Areas and Discharge Locations

Estimate the drainage area in size for each discharge point:	*Not applicable for this project scope. No point discharges are proposed.*
Latitude and longitude of each discharge point and identify the receiving water or MS4 for each discharge point:	

Not applicable, no point discharges for construction stormwater are proposed. The construction ROW traverses six drainage basins including:

- *C1-East*
- *Goulds Canal*
- *C-102 East*
- *BD-C103 East*
- *North Canal*
- *DA-4*

Water from construction dewatering activities will be pumped to a secondary trench and then a frac-tank for sediment settling prior to being discharged into a deep injection well, within the construction ROW. See Appendix E for dewatering details including locations of deep injection wells.

3.0 Best Management Practices

Give a detailed description of all controls, Best Management Practices (BMPs) and measures that will be implemented at the construction site for each activity identified in the intended sequence of major soil disturbing activities section. Provide time frames in which the control will be implemented. NOTE: All controls shall be consistent with performance standards for erosion and sediment control and stormwater treatment set forth in s. 62-40.432, F.A.C., the applicable Stormwater or Environmental Resource Permitting requirements of the Department or a Water Management District, and the guidelines contained in the Florida Development Manual: A Guide to Sound Land and Water Management (DEP, 1988) and any subsequent amendments.

3.1 Sediment Erosion Control Measures

Sediment control measures will be installed during construction to prevent runoff-induced migration of sediments. Control measures will include:

- *Silt fence barrier*
- *Soil tracking prevention device*

- *Construction limits will be surveyed and marked by stakes. Highly visible flagging tape will mark the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements.*
- *Prior to initial site preparation, temporary sediment controls, such as silt fencing will be in installed where needed to protect adjacent sensitive resources (e.g., wetlands, waterbodies, etc.).*
- *Throughout all construction phases, erosion/sediment controls will be routinely inspected and maintained according to manufacturer specifications.*
- *Grading will be performed in a manner to minimize interference with existing natural drainage.*
- *During trenching, temporarily excavated soils will be stored in spoil piles within the construction ROW; the piles will be stabilized using sediment barriers, temporary seeding, mulch, or functional equivalents, where necessary.*
- *Trench dewatering (see Dewatering Plan in Appendix E for details of dewatering methods and BMPs).*
- *When backfilling, verify soils are not compacted greater than pre-construction conditions to allow for successful re-vegetation.*
- *As soon as possible after backfilling, grade the construction ROW to restore pre-construction contours and replace topsoil.*
- *Once all construction and restoration activities have been completed, construction ROW will be reseeded or re-stabilized, and temporary sediment controls will remain until vegetation growth has reached 70% cover or pre-construction vegetation coverage.*
- *No pesticides or herbicides will be used within 100 feet of a waterbody except as allowed by the FDEP.*
- *Remove and properly dispose of all construction debris.*

HDD Specific Measures

All waterbody crossings will be performed using HDD. The CWRC HDD Contingency Plan is provided as Appendix F.

Measures to Contain a Release of Drilling Fluid in a Wetland or Waterbody:

- *Install silt fence barrier around HDD entry and exit work.*
- *Have deployable turbidity booms available onsite during waterbody crossings.*
- *Have access to a wetland scientist within a two-hour drive to assess impacts and make recommendations to mitigate impacts if they occur.*
- *A sample of the drilling slurry will be collected and held for future analysis in the event that an analysis is requested by regulatory agencies.*
- *If an inadvertent release of drilling fluid occurs within a wetland, waterbody or sensitive area, appropriate regulatory agencies will be contacted in accordance with applicable regulations and requirements. Drilling fluid pressure will be reduced and operations will be suspended to assess the extent of the release and to implement necessary corrective actions.*
- *Inspection will be initiated to determine the potential movement of released drilling mud within the wetland or waterbody.*
- *The Project's drilling contractor will determine and implement modifications to the drilling technique or composition of drilling fluid (e.g., thickening of mud by increasing bentonite content) as appropriate to minimize or prevent further releases of drilling mud.*
- *The release will be evaluated to determine if containment structures, such as sediment barriers or erosion controls, are warranted and can effectively contain the release. When making this determination, the potential that placement of containment structures will cause additional adverse environmental impacts will also be considered.*
- *If accessible, the Project contractor will clean up and remove all drilling fluid from the site and dispose of it in accordance with the applicable regulations.*
- *Upon completion of the drilling operations, applicable regulatory agencies will be consulted to determine any final cleanup requirements for the inadvertent release.*

Measures to Contain a Release of Drilling Fluid on Land:

- *If a land release is detected, corrective action will be taken to contain and recover the release.*
- *If public health and safety are threatened by an inadvertent release, drilling operations will be shut down until the threat is effectively addressed or eliminated.*
- *The project's drilling contractor will determine and implement modifications to the drilling technique or composition of drilling fluid (e.g., thickening of mud by increasing bentonite content) as appropriate to minimize or prevent further releases of drilling mud.*

3.2 Stabilization Measures

Describe all temporary and permanent stabilization practices. Stabilization practices include temporary seeding, mulching, permanent seeding, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, vegetative preservations, etc.

Disturbed areas that would allow for offsite discharge will be stabilized within 7 days after construction activity has temporarily or permanently ceased, except when construction will resume within 21 days within that area. Stabilization practices may include seeding, mulching, sodding, or hydroseeding. Soil will be tested to determine the appropriate seed mix and application rates. Temporary access facilities (construction parking or staging areas, equipment laydown areas) will be surfaced with aggregate to reduce sediment tracking.

Permanent stabilization measures consist of restoring the construction ROW and other workspaces to preconstruction contours and preconstruction vegetation cover (through seeding in uplands and natural revegetation in wetlands).

3.3 Structural Controls

Describe all structural controls to be implemented to divert stormwater flow from exposed soils and structural practices to store flows, retain sediment on-site or in any other way limit stormwater runoff. These controls include silt fences, earth dikes, diversions, swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, coagulating agents and temporary or permanent sediment basins.

Silt fence barriers will be used as a structural control to prevent violations of water quality or offsite sedimentation, divert flows from exposed soils, store flows, retain sediment on site, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. See Appendix D for Silt Fence Barrier BMP, including installation and maintenance details.

Describe all sediment basins to be implemented for areas that will disturb 10 or more acres at one time. The sediment basins (or an equivalent alternative) should be able to provide 3,600 cubic feet of storage for each acre drained. Temporary sediment basins (or an equivalent alternative) are recommended for drainage areas under 10 acres.

Stormwater basins will not be used. Construction of the pipeline will occur in discrete sections; there will not be 10 acres of disturbed area at any one time.

Describe all permanent stormwater management controls such as, but not limited to, detention or retention systems or vegetated swales that will be installed during the construction process.

Permanent stormwater controls are not proposed.

4.0 Potential Pollutants

Describe in detail controls for the following potential pollutants:	
Waste disposal, this may include construction debris, chemicals, litter, and sanitary wastes:	*The contractor will maintain regulated waste disposal procedures associated with the construction activities. All construction materials and debris will be placed in a dumpster and hauled off-site to a landfill or other regulated disposal site. No materials may be buried on-site.* *<u>Sanitary Waste</u>* *A licensed sanitary waste company will collect all sanitary waste from potable units within the regulated time frame as required by local regulations. Port-o-lets will be placed away from storm sewer systems, storm inlets, surface waters, and wetlands.* *<u>Equipment and Concrete Truck Wash Areas</u>* *Large equipment and concrete trucks will be allowed to discharge wash water in the off-site laydown yard in such a manner that prevents contact with stormwater discharged from the site. A proper lined concrete washout structure will be used to collect concrete wash water. A small, vegetated berm will be constructed to contain other types of equipment wash waters. Materials collected in such areas will be disposed of in an acceptable manner.*
Offsite vehicle tracking from construction entrances/exits:	*The vehicle tracking of sediment will be reduced by installing stabilized construction road aprons. Public roads and construction access roads will be routinely inspected for excess sediment tracking, and if necessary, will be cleaned to remove excess mud, dirt, or rock tracked from the construction site.*
The proper application rates of all fertilizers, herbicides and pesticides used at the construction site:	*In the event fertilizers, herbicides and pesticides are required on the construction side, they will be applied by a State licensed applicator. Fertilizers are only to be applied at the minimum rate recommended by the manufacturer to establish and maintain vegetation.*

The storage, application, generation and migration of all toxic substances:	*No toxic substances are anticipated to be used during construction. If any toxic substances will be used, then they will be stored and handled according to their Safety Data Sheets (SDS). All toxic substance containers will be tightly sealed and properly stored to prevent leaks or spills. Storage will be in a rain protected facility. Unused paints, cleaners, or other toxic substance will be disposed of according to local and/or state regulations, or manufacturer's recommendations. All construction personnel will be instructed regarding the correct procedure for hazardous waste handling and disposal. The Construction Site Manager will be responsible for overall compliance with these procedures.*
Other:	*Test for levels of impairment performed as required by FDEP, DERM and SFWMD requirements. Analytical results shall be reviewed for compliance with these requirements. Copies of the results to be kept with the stormwater management plan.* *Section 4.0 of the SWPPP will be revised in the even that additional potential pollutants are brought to site.*

5.0 Inspections & Maintenance

Provide a detailed description of the maintenance plan for all structural and non-structural controls to assure that they remain in good and effective operating condition.

The inspection and maintenance practices that will be used to maintain erosion and sediment controls at the project area are listed below. The Stormwater Management System Weekly Inspection Form, included as Appendix G of this plan, addresses items for weekly inspection. Documentation will be retained onsite for the duration of the construction project.

- *Sediment controls will be installed at all locations as shown on SWPPP Plans. These control measures will be inspected and maintained in good working condition.*
- *All control measures will be inspected at least once each week and following any storm event of 0.50 inch or greater.*
- *All control measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of report and completed within 7 days.*
- *Captured sediment will be removed from sediment barriers when it has reached one-third the height of the barrier.*
- *Silt fence will be inspected for depth of sediment, tears, to verify the fabric is securely attached to the fence posts, and to see that the fence posts are firmly trenched in the ground.*
- *Sod, temporary and permanent seeding, and plantings will be inspected for bare spots, washouts, and unhealthy growth.*
- *The Construction Site Manager will designate one or more individuals, as needed, to be responsible for inspections, maintenance, repair, and reporting activities. The selected personnel will receive instruction from the Site Manager or qualified designee.*

A signed copy of this Plan and any supporting materials must be maintained at the Project site from the date of project initiation to the date of final stabilization. All records and supporting documents will be compiled in an orderly manner and maintained for a period of three years following final site stabilization.

The generation of reports, as part of the construction process and inspection or amendment procedures, provides accurate records that can be used to evaluate the effectiveness of this Plan, and document compliance with the regulatory requirements. Changes in design or construction of the stormwater management system must be documented and included with the Plan to facilitate Plan review or evaluation

Inspections: Describe the inspection and inspection documentation procedures, as required by Part V.D.4. of the permit. Inspections must occur at least once a week and within 24 hours of the end of a storm event that is 0.50 inches or greater (see attached form).

- *The Environmental Inspector will conduct inspections of BMPs including sediment erosion control measures at least once each week and following any storm event of 0.50 inch or greater.*
- *Inspections will be recorded on inspection log (Appendix G) that will be certified by responsible authority.*
- *Inspection logs will remain onsite through construction for review by FPL or FDEP.*

Identify and describe all sources of non-stormwater discharges as allowed in Part IV.A.3. of the permit. Flows from fire-fighting activities do not have to be listed or described.

It is expected that the following non-stormwater discharges will occur onsite during the construction period:

- *Water pipeline flushings.*
- *Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).*
- *Vehicle and building wash waters (where no detergents have been used).*
- *Water for dust control.*
- *Firefighting waters; fire hydrant flushings.*
- *Vegetation watering; irrigation drainage.*
- *Potable water discharges.*
- *Air conditioning condensate.*

***Waters from hydrostatic testing of new water lines, gas lines, and tank flushings will be discharged to the stormwater detention pond. During these activities the storm water pond level will be monitored to assure there is no overtopping of the pond embankment.*

Appendix A. Florida Generic Permit

Appendix B. Notice of Intent

Appendix C. Site Map

Appendix D. Best Management Practice Details

Appendix E. Dewatering Plan for Giannetti Corporation FPL CWRC Project – Reclaimed Water Pipeline

Note: Submittal #1 included. To be amended as additional submittals are issued.

Appendix F. HDD Contingency Plan

Appendix G. FDEP Inspection Forms

Appendix H. Corrective Actions Log

Appendix I. Training Log

Appendix J. Record of SWPPP Revisions

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STATE OF FLORIDA

DEPARTMENT

OF

ENVIRONMENTAL PROTECTION

Conditions of Certification

Florida Power & Light Company

Turkey Point Clean Energy Center
Units 3 and 4 Nuclear Power Plant
Unit 5 Combined Cycle Plant

PA 03-45G

1/24/2022

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SECTION A: GENERAL CONDITIONS

These General Conditions shall be applicable to all areas of the certified site. Compliance with the General Conditions shall be the joint responsibility of Florida Power & Light Company (FPL) Turkey Point Clean Energy Center Nuclear Plant (Units 3 & 4) and Fossil Fuel Plant (Unit 5). Any violation of a General Condition shall be a violation by FPL.

I. SCOPE

A. Pursuant to the Florida Electrical Power Plant Siting Act (PPSA), Sections 403.501-.518, Florida Statutes (F.S.), and Chapter 62-17, Florida Administrative Code (F.A.C.), this Certification is issued to FPL as owner/operator and Licensee of the Turkey Point Clean Energy Center Units 3-5. The Department recognizes that Nuclear Units 3 & 4 and Fossil Unit 5 are under the control of different divisions of FPL. Unless otherwise specified, FPL shall be responsible for the compliance with the conditions herein. Violation of any conditions specific to Units 3, 4, or 5 shall solely affect the license of the responsible generating units. Subject to the requirements contained in these Conditions of Certification (Conditions), FPL will construct, operate, and maintain a nominal 1,150 megawatt (MW) facility (Unit 5) consisting of four 170 MW natural gas fired combustion turbines with light oil as back-up fuel, four heat recovery steam generators and one 470 MW steam turbine, and one nuclear plant consisting of two nominal 800 MW pressurized water reactors (Units 3 and 4), and Associated facilities as described in the Site Certification Application(s) (SCA). The electric generating units are located on an existing 11,000-acre site at 9700 S.W. 344 Street, Homestead, in Miami-Dade County, Florida. Unit 5 is located on approximately 90 acres and Units 3 & 4 are located on approximately 30 acres of the existing site. The UTM coordinates are: Zone 17, 567.2 km East and 2813.2 km North; Latitude: 25° 26' 09" North and Longitude: 80° 19' 52" West.

B. The certified facility includes but is not limited to the following major associated facilities:

- Unit 5 – Fossil Plant
    - Four combustion turbines
    - Four heat recovery steam generators
    - One steam turbine/electric generator to create four-on-one combined cycle unit
    - Emergency Diesel engines, generator engines, and emergency generators
    - Diesel Fire pump
    - Switchyard/substation
    - Stormwater pond
    - Cooling tower
    - Oil tanks
    - Demineralized water treatment plant
    - Administrative and storage buildings
    - Storage tanks
    - Reclaimed water treatment facility (Clean Water Recovery Center – CWRC)
    - Reclaimed waterline
    - Floridan production wells (PW-1 through PW-4)

- Units 3 & 4 – Nuclear Plant
    - Containment building
        - Two pressurized water reactors
        - Steam generators
        - Reactor coolant pumps
    - Turbine Generator building
    - Auxiliary building
        - Waste management facilities
        - Safety components
    - Fuel handling building
        - Spent fuel storage
        - New fuel storage
    - Administrative and storage buildings
    - Switchyard
    - Demineralized water treatment plant
    - Floridan production wells F-1 through F-7

C. These Conditions, unless specifically amended or modified, are binding upon the Licensee and shall apply to the construction, operation, and maintenance of the certified facility. If a conflict should occur between the design criteria of this certified facility and the Conditions, the Conditions shall prevail unless amended or modified. In any conflict between any of these Conditions, the more specific condition governs.

D. Within 60 days after completion of construction of the electrical power plant as defined by Section 403.503(14), F.S., but excluding off-site linear and non-linear Associated facilities, the Licensee shall provide to the Department in .pdf format: a survey map signed by a professional land surveyor, or acceptable equivalent documentation such as an official legal description, delineating the boundaries of the site as defined by Section 403.503(28), F.S., and an aerial photograph delineating the boundaries of the site. The survey map and aerial photograph shall be labelled as the "Site Delineation Map" and attached hereto as part of Attachment A.

E. The Licensee shall notify the Department of any change to the site boundary depicted in the Site Delineation Map in Attachment A. The notification shall be accompanied by an updated survey map or legal description and aerial photograph delineating the new boundaries of the site for review by the Department. Such changes may constitute a modification and may require additional land use and zoning reviews by the local government. If a modification is required, it will be processed pursuant to Section 403.516, F.S.

F. If both certified and uncertified facilities lie within the boundaries of the site, the Licensee shall also comply with the requirements of this paragraph. Within 60 days after completion of construction of the plant and on-site associated facilities, but excluding off-site linear and non-linear associated facilities, the Licensee shall provide to the Department in .pdf format acceptable documentation identifying the certified and non-certified facilities within the site such as an aerial photograph. Certified facilities identified within the site shall include both the certified electrical power plant's generating and its on-site certified associated facilities (including on-site linear facilities) as defined by Section 403.503(7), F.S. The document shall be

labelled as the "Certified Facilities Identification Map" and attached hereto as part of Attachment A.

G. Within 120 days after completion of construction of any certified off-site non-linear associated facilities, the Licensee shall provide to the Department in .pdf format; a survey map signed by a professional land surveyor, or acceptable equivalent documentation such as an official legal description, delineating the site boundaries for each off-site non-linear associated facility. The survey map or other documents shall be labelled as the "Delineation of the Boundaries of the Certified Off-Site Non-Linear Facilities" and attached hereto as part of Attachment A.

H. Within 180 days after completion of construction of any new off-site linear associated facilities, as defined in Section 403.503(7), F.S., the Licensee shall provide; an aerial photograph or map at a scale of at least 1:400, or acceptable equivalent documentation such as an official legal description or survey map signed by a professional land surveyor, delineating the boundaries of the certified site for the linear associated facilities, following acquisition of all necessary property interests and the corridor narrowing as described in Section 403.503(11), F.S. These documents shall be labelled as the "Delineation of Certified Off-Site Linear Facilities" and attached as part of Attachment A.

I. Following any post-certification approvals that require a change to the boundaries of the certified facilities depicted in the Delineation of Certified Off-Site Linear Facilities in Attachment A, the Licensee shall submit an updated aerial photograph, map, survey map, or legal description.

[Sections 403.511, 403.5113, F.S.; Rules 62-4.160(1), (2), and 62-17.205(2), F.A.C.]

II. APPLICABLE DEPARTMENT RULES

The construction, operation, and maintenance of the certified facility shall be in accordance with all applicable non-procedural provisions of Florida Statutes and Florida Administrative Code, including, but not limited to, the applicable non-procedural portions of the following Department regulations, except to the extent a variance, exception, exemption, or other relief is granted in the final order of certification or in a subsequent modification to the Conditions, or under a federal permit, or as otherwise provided under Chapter 403, F.S.:

Florida Administrative Code:
18-2 (Management of Uplands Vested in the Board of Trustees)
18-14 (Administrative Fines for Damaging State Lands)
18-20 (Florida Aquatic Preserves)
18-21 (Sovereignty Submerged Lands Management)
62-4 (Permits)
62-6 (Standards for Onsite Sewage Treatment And Disposal Systems)
62-17 (Electrical Power Plant Siting)
62-40 (Water Resource Implementation Rule)
62-150 (Hazardous Substance Release Notification)
62-160 (Quality Assurance)
62-204 (Air Pollution Control-General Provisions)
62-210 (Stationary Sources-General Requirements)
62-212 (Stationary Sources-Preconstruction Review)

62-213 (Operation Permits for Major Sources of Air Pollution)
62-256 (Open Burning)
62-296 (Stationary Sources-Emission Standards)
62-297 (Stationary Sources-Emission Monitoring)
62-302 (Surface Water Quality Standards)
62-303 (Identification of Impaired Surface Waters)
62-304 (Total Maximum Daily Loads)
62-330 (Environmental Resource Permitting)
62-340 (Delineation of the Landward Extent of Wetlands and Surface Waters)
62-342 (Mitigation Banks)
62-345 (Uniform Mitigation Assessment Method)
62-520 (Ground Water Classes, Standards, and Exemptions)
62-528 (Underground Injection Control)
62-531 (Water Well Contractor Licensing Requirements)
62-532 (Water Well Permitting and Construction Requirements)
62-550 (Drinking Water Standards, Monitoring, and Reporting)
62-555 (Permitting, Construction, Operation, and Maintenance of Public Water Systems)
62-560 (Requirements for Public Water Systems That Are Out of Compliance)
62-600 (Domestic Wastewater Facilities)
62-604 (Collection Systems and Transmission Facilities)
62-610 (Reuse of Reclaimed Water and Land Application)
62-620 (Wastewater Facilities and Activities Permitting)
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62-650 (Water Quality Based Effluent Limitations)
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62-762 (Aboveground Storage Tank Systems)
62-769 (Abandoned Tank Restoration Program)
62-777 (Contaminant Cleanup Target Levels)
62-780 (Contaminated Site Cleanup Criteria)
62-814 (Electric and Magnetic Fields)

III. REVISIONS TO DEPARTMENT STATUTES AND RULES

A. The Licensee shall comply with rules adopted by the Department subsequent to the issuance of the Certification under the PPSA which prescribe new or stricter criteria, to the extent that the rules are applicable to electrical power plants. Except when a variance, exception,

exemption, or other relief has been granted, subsequently adopted Department rules which prescribe new or stricter criteria shall operate as automatic modifications to this Certification.

B. Upon written notification to the Department, the Licensee may choose to operate the certified electrical power plant in compliance with any rule subsequently adopted by the Department which prescribes criteria more lenient than the criteria required by the terms and conditions in the Certification which are not site-specific.

[Sections 403.511(5)(a) and (b), F.S.; Rule 62-4.160(10), F.A.C.]

IV. DEFINITIONS

Unless otherwise indicated herein, the meaning of terms used herein shall be governed by the applicable definitions contained in Chapters 253, 373, 379, and 403, F.S., and any regulation adopted pursuant thereto. In the event of any dispute over the meaning of a term used in these Conditions which is not defined in such statutes or regulations, such dispute shall be resolved by reference to the most relevant definitions contained in any other state or federal statute or regulation, or in the alternative, by the use of the commonly accepted meaning. As used herein, the following shall apply:

A. "Application" or "SCA" is defined in Section 403.503(6), F.S. For purposes of this license, "Application" shall also include materials submitted for post-certification amendments and petitions for modification to the Conditions of Certification, as well as supplemental applications.

B. "Associated facility" or "associated facilities" as defined by Section 403.503(7), F.S.

C. "Certified facility" or "certified facilities" means the certified electrical power generation facilities and all certified on- or off-site associated facilities and structures identified or described in the Application, in the final order of certification, or in a post-certification amendment or modification.

D. "DEO" means the Florida Department of Economic Opportunity.

E. "DEM" shall mean the Florida Division of Emergency Management.

F. "DEP" or "Department" means the Florida Department of Environmental Protection.

G. "DERM" shall mean the Department of Regulatory and Economic Resources Division of Environmental Resources Management of Miami-Dade County, Florida.

G. "DHR" means the Florida Department of State, Division of Historical Resources.

H. "DOT" means the Florida Department of Transportation.

I. "Emergency conditions" or "Emergency reporting" means urgent circumstances involving potential adverse consequences to human life or property as a result of weather conditions or other calamity.

J. "Feasible" or "Practicable" means reasonably achievable considering a balance of land use impacts, environmental impacts, engineering constraints, and costs.

K. "FWC" means the Florida Fish and Wildlife Conservation Commission.

L. "Licensee" means an applicant that has obtained a certification order for the subject project.

M. "NED, NWD, CD, SED, SWD, SD" shall mean the Northeast, Northwest, Central, Southeast, Southwest, and South DEP district offices, respectively.

N. "NRC" shall mean the United States Nuclear Regulatory Commission

O. "NWF, SR, SJR, SWF, or SFWMD" means the Northwest Florida, Suwannee River, St. Johns River, Southwest Florida, or South Florida Water Management District, respectively.

P. "Post-certification submittal" shall mean a submittal made by the Licensee pursuant to a Condition of certification.

Q. "Right-of-Way" or "ROW" is defined in Section 403.503(27), F.S.

R. "SCA" means the Site certification Application (i.e., the Application(s))

S. "SCO" means the Department's Siting Coordination Office.

T. "Site" is defined in Section 403.503(28), F.S.

U. "State Water Quality Standards" shall mean the numerical and narrative criteria applied to specific water uses or classifications set forth in Chapters 62-302 and 62-520, F.A.C.

V. "Surface Water Management System", "SWMS", or "System" means a stormwater management system, dam, impoundment, reservoir, appurtenant work, or works, or any combination thereof. The terms "surface water management system", "SWMS", or "system" include areas of dredging or filling, as those terms are defined in Sections 373.403(13) and (14), F.S.

W. "WASD" shall mean the Water and Sewer Department of Miami-Dade County, Florida.

X. "Wetlands" shall mean those areas meeting the definition set forth in Section 373.019(27), F.S., as delineated pursuant to Chapter 62-340, F.A.C.

V. FEDERALLY DELEGATED OR APPROVED PERMIT PROGRAMS

Subject to the Conditions set forth herein, this certification shall constitute the sole license of the state and any agency as to the approval of the location of the site and any Associated facility and the construction and operation of the electrical power plant, except for the issuance of Department Licenses required under any federally delegated or approved permit program. This certification is not a waiver of any other Department approval that may be required under federally delegated or approved programs. In the event of a conflict between the certification process and federally required procedures, the applicable federal requirements shall control.

[Sections 403.5055, 403.508(8), and 403.511(1), F.S.]

VI. DESIGN AND PERFORMANCE CRITERIA

Certification, including these conditions, is predicated upon preliminary designs, concepts, and performance criteria described in the SCA or in testimony and exhibits in support of certification. The final engineering design of the certified facilities will be consistent and in

substantial compliance with the preliminary information described in the SCA or as explained at the certification hearing (if any). Conformance to those criteria, unless specifically modified in accordance with Sections 403.516, F.S., and Rule 62-17.211, F.A.C., is binding upon the Licensee in the design, construction, operation, and maintenance of the certified facility.

[Sections 403.511(2)(a), 403.516, F.S.; Rules 62-4.160(2), and 62-17.211, F.A.C.]

VII. NOTIFICATION

A. If, for any reason, the Licensee does not comply with or will be unable to comply with any condition or limitation specified in this License, the Licensee shall provide the DEP District Office with the following information:

1. A description of and cause of noncompliance; and

2. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The Licensee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this certification.

3. All notifications which are made in writing shall additionally be provided to the SCO via email to SCO@dep.state.fl.us.

[Rule 62-4.160(8), F.A.C.]

B. The Licensee shall promptly notify the SCO in writing (email acceptable) of any previously submitted information concerning the certified facility that is later discovered to be inaccurate.

[Rule 62-4.160(15), F.A.C.]

C. Any owner or operator of a facility who has knowledge of any incident reportable to the State Watch Office regarding a certified facility shall notify the State Watch Office at (800) 320-0519 as soon as possible, but not later than 24 hours after discovery of the incident.

D. Any owner or operator of a facility who has knowledge of any reportable pollution release shall submit a Public Notice of Pollution by following the instructions at https://prodenv.dep.state.fl.us/DepPNP/user/pnpRequest, as soon as possible, but not later than 24 hours after discovery of the release.

[Section 403.077, F.S.]

E. Within 60 days after certification of a linear Associated facility the Licensee shall file a notice of the certified route with the Department's clerk (Office of General Counsel) and the clerk of the circuit court for each county through which the corridor will pass.

The notice shall consist of maps or aerial photographs in the scale of 1:24,000 which clearly show the location of the certified route and shall state that the certification of the corridor will result in the acquisition of rights-of-way within the corridor.

[Section 403.5112, F.S.]

VIII. EMERGENCY CONDITION NOTIFICATION AND RESTORATION

If the Licensee is temporarily unable to comply with any of the conditions of the License due to breakdown of equipment or destruction by hazard of fire, wind, or other cause, such as an emergency as defined by Sections 252.34(4), (7), (8), or (10), F.S., the Licensee shall immediately notify the Department. Notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the Licensee from any liability for failure to comply with Department rules. Any exceedances and/or violations recorded during emergency conditions shall be reported as such, but the Department acknowledges that it intends to use its enforcement discretion during this timeframe. This acknowledgement by the Department does not constitute a waiver or variance from any requirements of any federal permit. Relief from any federal agency must be separately sought.

[Rule 62-4.130, F.A.C.]

IX. CONSTRUCTION PRACTICES

A. Local Building Codes

Subject to the conditions set forth herein, this certification constitutes the sole license of the state and any agency as to the approval of the location of the site and any Associated facility and the construction and operation of any certified facility. The Licensee is not required to obtain building permits for certified facilities. However, this certification shall not affect in any way the right of any local government to charge appropriate fees or require that construction of structures used by the electrical power plant that are not an integral part of a generating plant, substation, or control center (such as, office buildings, warehouses, garages, machine shops, and recreational buildings) be in compliance with applicable building construction codes.

[Section 403.511(4), F.S.]

B. Open Burning

Prior to open burning in connection with land clearing, the Licensee shall seek authorization from the Florida Forest Service in accordance with the requirements of Chapters 62-256 and 5I-2, F.A.C.

[Chapters 5I-2 and 62-256, F.A.C.]

C. Vegetation

For areas located in any Florida Department of Transportation (DOT) ROW, Chapter 3.18 of the 2017 Florida DOT *Utility Accommodation Manual* available on the DOT website at https://www.fdot.gov/programmanagement/utilities/default.shtm shall serve as guidelines for best management practices.

D. Existing Underground Utilities

The Licensee must follow all applicable portions of the Underground Facility Damage Prevention and Safety Act, Chapter 556, F.S. The Licensee shall provide the affected local government and the SCO with copies of valid tickets obtained from Sunshine State One

Call of Florida upon request. Tickets shall be available for request until the underground work is completed for the affected area.

[Chapter 556, F.S.]

E. Electric and Magnetic Fields (EMF)

Any transmission lines and electrical substations that are associated facilities shall comply with the applicable requirements of Chapter 62-814, F.A.C.

[Chapter 62-814, F.A.C.]

F. Existing Wells

Any existing wells to be impacted in the path of construction of certified facilities that will no longer be used shall be abandoned by a licensed well contractor. All abandoned wells shall be filled and sealed in accordance with Rule 62-532.500(5), F.A.C., or with the rules of the authorizing agency, or consistent with these Conditions.

[Rules 62-532.400 and 62-532.500(5), F.A.C.]

G. Abandonment of Existing Septic Tanks

Any existing septic tanks that will no longer be used shall be abandoned in accordance with Rule 64E-6.011, F.A.C., unless these Conditions provide otherwise.

[Chapter 64E-6, F.A.C.]

H. Sanitary Wastes

Disposal of sanitary wastes from construction toilet facilities shall be in accordance with applicable regulations of the Department.

[Rule 62-6.0101, F.A.C.]

X. RIGHT OF ENTRY

A. Upon presentation of credentials or other documents as may be required by law, the Licensee shall allow authorized representatives of the Department or other agencies with jurisdiction over a portion of the certified facility, any authorized off-site mitigation/compensation area or Associated facility:

1. At reasonable times, to enter upon the certified facility in order to monitor activities within their respective jurisdictions for purposes of assessing compliance with this certification; or

2. During business hours, to enter the Licensee's premises in which records are required to be kept under this certification; and to have access to and copy any records required to be kept under this certification.

B. When requested by the Department, on its own behalf or on behalf of another agency with regulatory jurisdiction, the Licensee shall within 10 working days, or such longer period as may be mutually agreed upon by the Department and the Licensee, furnish any information required by law, which is needed to determine compliance with the certification.

[Rules 62-4.160(7)(a) and 62-4.160(15), F.A.C.]

XI. DISPUTE RESOLUTION

A. General

If a situation arises in which mutual agreement cannot be reached between the Department and the Licensee, and/or, an agency with substantive regulatory jurisdiction over a matter, the Department may act as a facilitator in an attempt to resolve the issue. If the dispute is not resolved informally in this manner, Licensee may request one or more meetings in which both Licensee and the agency with substantive regulatory jurisdiction over the matter can participate and attempt to resolve the issue informally. If, after such meetings, a mutual agreement cannot be reached between the parties, then the matter shall be referred to the Division of Administrative Hearings (DOAH) for disposition in accordance with the provisions of Chapter 120, F.S. The Licensee or the Department may request DOAH to establish an expedited schedule for processing the dispute. Any filing with DOAH shall state with particularity the specific project and geographic location to which the dispute relates. Work unrelated to the specific project and in areas other than the location to which the dispute relates will not be affected by the dispute.

B. Modifications

If written objections are filed regarding a requested modification, and the objections address only a portion of a requested modification, the Department shall issue a final order approving the portion of the modification to which no objections were filed, unless that portion of the requested modification is substantially related to or necessary to implement the portion to which written objections are filed.

C. Post-certification Submittals

If it is determined, after assessment of a post-certification submittal, that compliance with the Conditions will not be achieved for a particular portion of a submittal, the Department may make a separate assessment of other portions of the submittal, unless those portions of the submittal are substantially related to or necessary to implement that portion for which it has been determined that compliance with the Conditions will not be achieved.

[Section 120.57, F.S.; Rule 62-17.211, F.A.C.]

XII. SEVERABILITY

The provisions of this certification are severable, and if any provision of this certification or the application of any provision of this certification to any circumstance is held invalid, the remainder of the certification or the application of such provision to other circumstances shall not be affected thereby.

XIII. ENFORCEMENT

A. The terms, conditions, requirements, limitations, and restrictions set forth in these Conditions are binding and enforceable pursuant to Sections 403.141, 403.161, 403.514, 403.727, and 403.859 through 403.861, F.S., as applicable. Any noncompliance by the Licensee with these Conditions constitutes a violation of Chapter 403, F.S., and is grounds for enforcement action, which may result in license termination, license revocation, or license revision. The Licensee is placed on notice that the Department may review this certification periodically and may initiate enforcement action for any violation of these Conditions.

B. All records, notes, monitoring data, and other information relating to the construction or operation of the certified facility which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the certified facility and arising under the Florida Statutes or Department rules, subject to the restrictions in Sections 403.111 and 403.73, F.S. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

C. The specific terms of the Fifth Supplemental Agreement and the Revised Plan, referenced in Section B. Condition X. Units 3 & 4 Additional Monitoring of these Conditions of Certification, shall remain enforceable by the SFWMD by the terms of the Fifth Supplemental Agreement.

[Sections 403.121, 403.131, 403.141, 403.151, 403.161, and 403.514, F.S.; Rules 62-4.160(1) and (9), F.A.C.]

XIV. REVOCATION OR SUSPENSION

This certification shall be final unless revised, revoked or suspended pursuant to law. This certification may be suspended or revoked pursuant to Sections 403.512, F.S. This certification is valid only for the specific processes and operations identified in the SCA and approved in the final order of certification or indicated in the testimony and exhibits in support of certification or approved in a subsequent amendment or modification of the certification. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this approval may constitute grounds for revocation and enforcement action by the Department. Any enforcement action, including suspension and revocation, shall only affect the portion(s) of the certified facility that are the cause of such action, and other portions of the certified facility shall remain unaffected by such action.

[Sections 403.512, F.S.; Rule 62-4.160(2), F.A.C.]

XV. REGULATORY COMPLIANCE

As provided in Sections 403.087(7) and 403.722(5), F.S., except as specifically provided in the final order of certification, a subsequent modification or amendment, or these Conditions, the issuance of this License does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This License is not a waiver of or approval of any other Department license or permit that may be required for other aspects of the certified facility that are not addressed in this License. This license does not relieve the Licensee from liability for harm or injury to human health or welfare, animal, or plant life, or public or private property caused by the construction or operation of the certified facility, or from penalties therefore.

[Rules 62-4.160(3) and (5), F.A.C.]

XVI. CIVIL AND CRIMINAL LIABILITY

Except to the extent a variance, exception, exemption, or other relief is granted in a final order of certification, in a subsequent modification to these Conditions, or as otherwise provided under Chapter 403, F.S., this certification does not relieve the Licensee from civil or

criminal penalties for noncompliance with any Condition, applicable rules or regulations of the Department, or any other state statutes or regulations which may apply.

[Sections 403.141, 403.161, and 403.511, F.S.]

XVII. USE OF STATE LANDS

A. Except as specifically provided in the final order of certification or these Conditions, the issuance of this License conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

B. If any portion of the certified facility is located on sovereign submerged lands, state-owned uplands, or within an aquatic preserve, then the Licensee must comply with the applicable portions of Chapters 18-2, 18-20, and 18-21, F.A.C., and Chapters 253 and 258, F.S., except as specifically provided in the final order of certification or these Conditions. If any portion of the certified facility is located on sovereign submerged lands, the Licensee must submit section F of Form 62-330.060(1), *Application for Individual and Conceptual Approval Environmental Resource Permit* (State 404 Program Permit) *and Authorization to Use State-Owned Submerged Lands* to the Department prior to construction. If any portion of the certified facility is located on state-owned uplands, the Licensee must submit an Upland Easement Application to the Department prior to construction.

C. If a portion of the certified facility is located on sovereign submerged lands or state-owned uplands owned by the Board of Trustees of the Internal Improvement Trust Fund, pursuant to Article X, Section 11 of the Florida Constitution, then the proposed activity on such lands requires a proprietary authorization. Under such circumstances, the proposed activity is not exempt from the need to obtain a proprietary authorization. Unless otherwise provided in the final order of certification or these Conditions, the Department has the responsibility to review and take action on requests for proprietary authorization in accordance with Rule 18-2.018 or 18-21.0051, F.A.C.

D. The Licensee is hereby advised that Florida law states: "A person may not commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund under this chapter, until the person has received the required lease, license, easement, or other form of consent authorizing the proposed use." Pursuant to Chapter 18-14, F.A.C., if such work is done without consent, or if a person otherwise damages state land or products of state land, the Board of Trustees may levy administrative fines of up to $10,000 per offense.

E. The terms, conditions, and provisions of any required lease or easement issued by the State shall be met. Any construction activity associated with the certified facility shall not commence on sovereign submerged lands or state-owned uplands, title to which is held by the Board of Trustees of the Internal Improvement Trust Fund, until all required lease or easement documents have been executed.

[Chapters 253 and 258, F.S.; Chapters 18-2, 18-14, 18-21, 62-340, and Rules 62-330.060(1) and 62-4.160(4), F.A.C.]

XVIII. PROCEDURAL RIGHTS

Except as specified in Chapter 403, F.S., or Chapter 62-17, F.A.C., no term or condition of certification shall be interpreted to preclude the post-certification exercise by any party of whatever procedural rights it may have under Chapter 120, F.S., including those related to rule-making proceedings.

[Sections 403.511(5)(c), F.S. and Chapter 62-17, F.A.C.]

XIX. AGENCY ADDRESSES FOR POST-CERTIFICATION SUBMITTALS AND NOTICES

Where a Condition requires post-certification submittals and/or notices to be sent to a specific agency, the following agency addresses shall be used unless the Conditions specify otherwise or unless the Licensee and the Department are notified in writing of an agency's change in address for such submittals and notices:

Florida Department of Environmental Protection
Siting Coordination Office, MS 5500
2600 Blair Stone Road
Tallahassee, Florida 32399-3000
SCO@dep.state.fl.us

Florida Department of Environmental Protection
Southeast District Office
3301 Gun Club Road MSC 7210-1
West Palm Beach, Florida 33406

Florida Department of Economic Opportunity
Bureau of Community Planning and Growth
107 East Madison Street
Tallahassee, Florida 32399-2100

Florida Fish & Wildlife Conservation Commission
Conservation Planning Services
620 South Meridian Street, MS 5B5
Tallahassee, Florida 32399-1600
ConservationPlanningServices@myfwc.com

Florida Department of Transportation
District Administration
605 Suwannee Street
Tallahassee, Florida 32399-0450

Florida Department of Agriculture and Consumer Services
Office of General Counsel
407 South Calhoun Street
Tallahassee, Florida 32399-0800

South Florida Water Management District
Office of General Counsel
3301 Gun Club Road
West Palm Beach, Florida 33406
For ROW submittals: rowpermits@sfwmd.gov

Florida Department of State
Division of Historical Resources
500 South Bronough Street
Tallahassee, Florida 32399-0250

Miami-Dade County
Office of General Counsel
111 NW 1st Street
Miami, Florida 33128

[Section 403.511, F.S.]

XX. PROFESSIONAL CERTIFICATION

To ensure protection of public health, safety, and welfare, any construction, modification, or operation of an installation which may be a source of pollution, or of a public drinking water supply, shall be in accordance with sound professional engineering practices pursuant to Chapter 471, F.S.; and all final geological papers or documents involving the practice of the profession of geology shall be in accordance with sound professional geological practices pursuant to Chapter 492, F.S. Where required by Chapter 471 or 492, F.S., applicable portions of amendment requests, petitions for modifications, post certification submittals, and supporting documents which are submitted to the Department for public record shall be signed and sealed by the professional(s) who prepared or approved them.

[Rule 62-4.050, F.A.C.]

XXI. PROCEDURES FOR POST-CERTIFICATION SUBMITTALS

A. Purpose of Submittals

Conditions which provide for the post-certification submittal of information to DEP or other agencies by the Licensee are for the purpose of facilitating the agencies' monitoring of the effects arising from the location of the certified facility and the construction and maintenance of the certified facility. This monitoring is for DEP to assure, in consultation with other agencies with applicable regulatory jurisdiction, continued compliance with these Conditions, without further agency action. A submittal of information or determination of compliance pursuant to a post-certification submittal under this Condition does not provide a point of entry for a third party.

B. Filings

All post-certification submittals of information by Licensee are to be filed with the agency or office that requires the submittal pursuant to these Conditions. The SCO shall be copied on all post-certification submittals in electronic .pdf format (unless other formats are

requested), via email to SCO@dep.state.fl.us. Each submittal shall clearly identify the Certified facility name, PA#, and the Condition number(s) (i.e. Section X, Condition XX.y.(z)) requiring the submittal. As required by Section 403.5113(2), F.S., each post-certification submittal will be reviewed by each agency with regulatory authority over the matters addressed in the submittal on an expedited and priority basis.

[Section 403.5113, F.S.; Rule 62-17.191(3), F.A.C.]

C. Completeness

DEP shall review each post-certification submittal for completeness. This review may include consultation with the other agency(ies) receiving the post-certification submittal with regulatory jurisdiction over the matter addressed in the submittal. DEP's finding of completeness shall specify the area of the certified facility affected and shall not delay further processing of the post-certification submittal for non-affected areas.

If any portion of a post-certification submittal is found to be incomplete, the Licensee shall be so notified. Failure to issue such a notice within 30 days after filing of the submittal shall constitute a finding of completeness. Subsequent findings of incompleteness, if any, shall address only the newly filed information.

[Rule 62-17.191(1)(c)2., F.A.C.]

D. Interagency Meetings

DEP may conduct an interagency meeting with other agencies that received a post-certification submittal. The purpose of such an interagency meeting shall be for the agencies with regulatory jurisdiction over the matters addressed in the post-certification submittal to discuss whether compliance with these Conditions has been provided. Failure of DEP to conduct an interagency meeting or failure of any agency to attend an interagency meeting shall not be grounds for DEP to withhold a determination of compliance with these Conditions nor to delay the timeframes for review established by these Conditions. At DEP's request, a field inspection shall be conducted with the Licensee and the agency representative in conjunction with the interagency meeting.

E. Determination of Compliance

DEP, or applicable regulatory agency in consultation with DEP, shall give written notification within 90 days, to the Licensee and the other agency(ies) to which the post-certification information was submitted of DEP's determination of whether there is demonstration of compliance with these Conditions. If it is determined that compliance with the Conditions has not been provided, the Licensee shall be notified with particularity of the deficiencies and possible corrective measures suggested. Failure to notify Licensee in writing within 90 days of receipt of a complete post-certification submittal shall constitute a determination of compliance. A post-certification compliance review may be the basis for initiating modifications to the relevant Condition or to other related Conditions.

F. Commencement of Construction

If DEP does not object within the time period specified in paragraph E., above, Licensee may begin construction pursuant to the terms of these Conditions and the subsequently submitted construction details.

G. Revisions to Design Previously Reviewed for Compliance

If revisions to site-specific designs occur after submittal, the Licensee shall submit revised plans prior to construction for review in accordance with the post-certification process specified in this Condition.

[Sections 120.569, 373.413, 373.416, 403.511, F.S.; Rules 62-17.191 and 62-17.205, F.A.C.]

XXII. POST-CERTIFICATION SUBMITTAL REQUIREMENTS SUMMARY

Within 90 days after certification, and within 90 days after any subsequent modification or certification, the Licensee shall provide the SCO a complete summary of those post-certification submittals that are identified in these Conditions when due-dates for the information required of the Licensee have been identified. A summary shall be provided as a separate document for each transmission line, if any. Such submittals shall include, but are not limited to, monitoring reports, management plans, wildlife surveys, etc. The summary shall be provided to the SCO, in a sortable spreadsheet, electronically, in the format shown below or equivalent. For subsequent modifications and certifications, a "Post-Certification Submittal Requirements Summary" shall be required only for new or altered post-certification requirements.

Condition Number	Requirement and Timeframe	Due Date	Name of Agency or Agency Subunit to whom the submittal is required to be provided

[Section 403.5113, F.S.; Rule 62-17.191(3), F.A.C.]

XXIII. POST-CERTIFICATION AMENDMENTS

If, subsequent to certification, the Licensee proposes any material change to the SCA and revisions or amendments thereto, as certified, the Licensee shall submit a written request for amendment and a description of the proposed change to the SCA to the Department. Within 30 days after the receipt of a complete request for an amendment, the Department shall determine whether the proposed change to the SCA requires a modification to the Conditions.

A. If the Department concludes that the change would not require a modification to the Conditions, the Department shall provide written notification of the approval of the proposed amendment to the Licensee, all agencies, and all other parties to the certification.

B. If the Department concludes that the change would require a modification to the Conditions, the Department shall provide written notification to the Licensee that the proposed change to the SCA requires a request for modification pursuant to Section 403.516, F.S.

[Section 403.5113, F.S.]

XXIV. MODIFICATION OF CERTIFICATION

A. Pursuant to Sections 403.516(1)(a), F.S., and Rule 62-17.211, F.A.C., the Siting Board hereby delegates the authority to the Secretary of the Department of Environmental Protection who further delegates to the Siting Office the authority to modify, after notice and receipt of no objection by a party to the certification within 45 days after notice by mail to the party's last address of record, and if no other person whose substantial interests will be affected by the modification objects in writing within 30 days of public notice.

B. The Department may modify Conditions, in accordance with Section 403.516(1)(b), F.S., which are inconsistent with the terms of any subsequent and separately issued DEP permits, permit amendments, permit modifications, or permit renewals under a federally delegated or federally approved permit program. Such modification may be made without further notice if the matter has been previously noticed under the requirements for any federally delegated or approved permit program.

C. The Secretary of the Department may modify any condition of this certification except those pertaining to a change in fuel.

D. The Secretary of the Department may modify any condition of this certification if the Secretary finds that an immediate danger to the public health, safety, or welfare requires the issuance of an immediate final order temporarily modifying these Conditions of Certification. If the Secretary elects to exercise this delegated authority, the Secretary shall prepare an immediate final order that recites with particularity the facts underlying the Secretary's finding of an immediate danger to the public health, safety, or welfare. The immediate final order and the modification to the Conditions of Certification shall be effective only for so long as is necessary to address the immediate danger and shall be applicable or enjoinable from the date rendered.

E. In accordance with Section 403.516(1)(c), F.S., the Licensee may file a petition for modification with the Department, or the Department may initiate the modification upon its own initiative.

F. Any anticipated facility expansions, production increases, or process modifications which may result in new, different or increased discharge or emission of pollutants, change in fuel, or expansion in generating capacity must be reported by submission of an appropriate request for an amendment, modification, or certification.

G. In the event of a prolonged [thirty (30) days or more] equipment malfunction or shutdown of pollution control equipment, the Secretary of the Department may allow facility operation to resume and continue to take place under an immediate final order temporarily modifying these Conditions of Certification, provided that the Licensee demonstrates that such operation will be in compliance with all applicable ambient air quality standards and PSD increments, water quality standards and rules, solid waste rules, domestic wastewater rules and industrial wastewater rules. During such malfunction or shutdown, the operation of the facility shall comply with all other requirements of this certification and all applicable state and federal emission and effluent standards not affected by the malfunction or shutdown.

H. Any anticipated facility change that results in a change to the Site Delineation Map, attached hereto as part of Attachment A, may be considered a modification, and must be accompanied by a map or aerial photograph showing the proposed new boundaries of the site. Within 120 days after completion of construction of the approved facility change, the Licensee shall provide the information required by Section A. General Conditions, Condition I. Scope, paragraphs D, E, F, G, H, or I, as appropriate.

[Section 403.516, F.S.; Rule 62-17.211, F.A.C.]

XXV. COASTAL ZONE CONSISTENCY

Pursuant to Sections 373.428 and 403.511, F.S., certification of the facility constitutes the State's concurrence that the licensed activity or use is consistent with the federally approved program under the Florida Coastal Management Act.

[Sections 373.428, 380.23, and 403.511(7), F.S.]

XXVI. WATER QUALITY CERTIFICATION

Pursuant to the Operating Agreement between the Department, Water Management Districts and U.S. Army Corps of Engineers, a written final order granting 'certification' constitutes certification by the Department that the project activities comply with applicable state water quality standards.

[2012 Operating Agreement, Jacksonville District USACOE, DEP and Water Management Districts, Section II.A.1.(f)]

XXVII. TRANSFER OF CERTIFICATION

A. This certification is transferable in whole or in part, upon Department approval, to an entity determined to be able to comply with these Conditions. A transfer of certification of all or part of the certified facility may be initiated by the Licensee's filing of a Notice of Intent to Transfer Certification with the Department's SCO. The notice of intent shall: identify the intended new certification holder or Licensee; identify the current and the new entity responsible for compliance with the certification; and include a written agreement from the intended new Licensee/Transferee to abide by all Conditions, as well as, applicable laws and regulations. Upon receiving a complete notice of intent, the transfer shall be approved by the Department unless the Department objects to the transfer on the grounds that the new Licensee will be unable to comply with the Conditions, specifies in writing its reasons for its objections, and gives notice and an opportunity to petition for an administrative hearing pursuant to Section 120.57, F.S. Upon approval, the Department will initiate a modification to the Conditions to reflect the change in ownership in accordance with Rule 62-17.211, F.A.C.

B. In the event of the dissolution of the Licensee, the Department may transfer certification to successor entities which are determined to be competent to construct, operate, and maintain the certified facility in accordance with the Conditions and which are proper applicants as defined by the PPSA. Upon determination that such a successor entity complies with the requirements for transfer of certification, the Department will initiate a modification to the Conditions to reflect the change in ownership in accordance with Rule 62-17.211, F.A.C.

[Chapter 120, F.S.; Rule 62-17.211, F.A.C.]

XXVIII. LABORATORIES AND QUALITY ASSURANCE

Chemical, physical, biological, microbiological, and toxicological data collected as a requirement of these Conditions must be reliable and collected and analyzed by scientifically sound procedures. Unless otherwise specified in these Conditions, the Licensee shall adhere to the minimum field and laboratory quality assurance, methodological and reporting requirements of the Department as set forth in Chapter 62-160, F.A.C.

[Chapter 62-160, F.A.C.]

XXIX. ENVIRONMENTAL RESOURCES

A. General

1. Submittals for Construction Activities

a. Prior to the commencement of construction of new facilities and/or new Associated facilities the Licensee shall provide to the DEP SED District for review, all information necessary for a complete *Application for Individual and Conceptual Approval Environmental Resource Permit and Authorization to Use State-Owned Lands* (ERP), DEP Form 62-330.060(1), F.A.C., or other applicable ERP authorization form. A copy of the submittal shall also be provided to the SCO.

This form may: a) be submitted concurrently with a SCA; b) be submitted as part of an amendment request or a petition for modification; or c) be submitted as a post-certification submittal following approval of a Project through certification, modification, or amendment. Such ERP submittals, once received, shall be reviewed in accordance with the non-procedural standards and criteria for issuance of an ERP, including all the provisions related to reduction and elimination of impacts, conditions for issuance, additional conditions for issuance, and mitigation contained in Chapter 62-330, F.A.C., as applicable, unless otherwise stated in these Conditions. While the information is provided for review via submittal of the ERP form, consistent with Section 403.511, F.S., a separate ERP is not required for certified facilities, and therefore, a separate ERP will not be issued.

Those forms submitted as part of a SCA, an amendment, or modification, shall be processed concurrently with the respective SCA, amendment, or modification, in compliance with the applicable PPSA procedures. Those forms submitted as a post-certification submittal (after certification, modification, or amendment and prior to construction) shall be processed in accordance with Section A. General Conditions, Condition XXI., Procedures for Post-Certification Submittals. Post-certification submittal information may be submitted for discrete portions of the certified facilities for a determination of compliance with these Conditions.

No construction shall commence on a project feature, or in a particular segment of a linear facility, until the Department has determined that there is a demonstration of compliance with these Conditions. For post-certification submittal reviews, the Department's determination is governed by Section A, General Conditions, Condition XXI, Procedures for Post-Certification Submittals.

b. Concurrent with submittal of the DEP form required in subparagraph A.1.a., above, the Licensee shall submit, as applicable, a survey of wetland and surface water areas as delineated in accordance with Chapter 62-340, F.A.C., and verified by

appropriate agency staff for Department compliance review. Available DEP-approved wetland and surface water delineations within the boundaries of a certified site or a portion thereof may be used and reproduced for this delineation submittal and verification. Formal DEP-approved wetland and surface water delineations are valid only for a period of five years.

[Section 373.416, F.S.; Chapters 62-330 and 62-340, F.A.C.]

2. Construction, operation, and maintenance of the proposed project (including any access roads and structures constructed within wetlands and other surface waters, and/or Associated facilities) shall satisfy any applicable non-procedural requirements in the Department rules.

[Section 373.414(1)(a), F.S.]

3. Any delineation of the extent of a wetland or other surface water submitted as part of the DEP ERP Application Form required by subparagraph A.1.a., above, including plans or other supporting documentation, shall not be considered binding on the Department unless a specific condition of this certification or a formal wetlands jurisdictional determination under Section 373.421(2), F.S., provides otherwise.

[Sections 373.421, 403.504, F.S.]

B. Surface Water Management Systems

1. Information regarding surface water management systems (SWMS) will be reviewed for consistency with the applicable non-procedural requirements under Part IV of Chapter 373, F.S., following submittal of Form 62-330.060(1), F.A.C., to the DEP District.

2. All construction, operation, and maintenance of the SWMS(s) for the certified facilities shall be as set forth in the plans, specifications, and performance criteria contained in the SCA and other materials presented during the certification proceeding, post-certification submittals, and as otherwise approved. If specific requirements are necessary for construction, operation, and/or maintenance of an approved SWMS, those requirements shall be incorporated into a SWMS Operation and Maintenance Requirements for that system and included in Attachment B (Surface Water Management System Requirements). Any alteration or modification to the SWMS Plan or the SWMS as certified requires prior approval from the Department.

3. To allow for stabilization of all disturbed areas, prior to construction, during construction of the SWMS, and for a period of time after construction of the SWMS, the Licensee shall implement and maintain erosion and sediment control best management practices, such as silt fences, erosion control blankets, mulch, sediment traps, polyacrylamide (PAM), temporary grass seed, permanent sod, and floating turbidity screens to retain sediment on-site and to prevent violations of state water quality standards. These devices shall be installed, used, and maintained at all locations where the possibility exists of transferring suspended solids into the receiving waterbody due to the licensed work, and shall remain in place at all locations until construction in that location is completed and soils are permanently stabilized. All best management practices shall be in accordance with the guidelines and specifications described in the *State of Florida Erosion and Sediment Control Designer and Reviewer Manual* (Florida Department of Transportation and Florida Department of Environmental Protection, by HydroDynamics Incorporated in cooperation with Stormwater Management Academy, June 2007) unless a project-specific erosion and sediment control plan is approved as part of this License. If project-specific Conditions require additional measures during any phase of

construction or operation to prevent erosion or control sediments beyond those specified in the approved erosion and sediment control plan, the Licensee shall implement additional best management practices as necessary, in accordance with the guidelines and specifications in the *State of Florida Erosion and Sediment Control Designer and Reviewer Manual*. The Licensee shall correct any erosion or shoaling that causes adverse impacts to the water resources as soon as feasible. Once project construction is complete in an area, including the re-stabilization of all side slopes, embankments, and other disturbed areas, and before conversion to the operation and maintenance phase of the SWMS, all silt screens and fences, temporary baffles, and other materials that are no longer required for erosion and sediment control shall be removed.

4. The Licensee shall complete construction of all aspects of the SWMS described in the ERP Application Form, submitted as part of a post-certification submittal, amendment, modification, or SCA including water quality treatment features, and discharge control facilities prior to use of the portion of the certified facility being served by the SWMS.

5. At least 48 hours prior to beginning the authorized activities, the Licensee shall submit to the DEP District a fully executed Form 62-330.350(1), "Construction Commencement Notice," (October 1, 2013), (http://www.flrules.org/Gateway/reference.asp?No=Ref-02505), indicating the expected start and completion dates. A copy of this form may be obtained from the Department, as described in subsection 62-330.010(5), F.A.C., and shall be submitted electronically. However, for activities involving more than one acre of construction that also require a NPDES stormwater construction general permit, submittal of the Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities, DEP Form 62-621.300(4)(b), shall also serve as notice of commencement of construction and, in such a case, submittal of Form 62-330.350(1) is not required.

6. Each phase or independent portion of the approved system must be completed in accordance with the submitted DEP ERP Application Form prior to the operation of the portion of the certified facility being served by that portion or phase of the system.

7. Within 30 days, or such other date as agreed to by DEP and the Licensee, after completion of construction of any new portions of the SWMS, the Licensee shall submit to the DEP District, and copy the SCO, a written statement of completion and certification by a registered professional engineer (P.E.), or other appropriate registered professional, as authorized by law, utilizing the required "As-Built Certification and Request for Conversion to Operation Phase" (DEP Form 62-330.310(1), F.A.C.). Additionally, if deviations from the approved drawings are discovered, the As-Built Certification must be accompanied by a copy of the approved drawings with deviations noted.

8. Any substantial deviation from the approved drawings, exhibits, specifications, or Conditions, may constitute grounds for revocation or enforcement action by the Department.

9. The operation phase of any new SWMS approved by the Department shall not become effective until the Licensee has complied with the requirements of the conditions herein, the Department determines the system to be in compliance with the approved plans, and the entity approved by the Department accepts responsibility for operation and maintenance of the system.

10. The DEP District must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in off-site discharge or sediment transport into wetlands or surface waters, a written dewatering plan must be submitted to and approved by the Department prior to the dewatering event.

[Section 373.414, F.S.; Chapters 62-302, 62-330, and Rule 62-4.242, F.A.C.]

C. Wetland and Other Surface Water Impacts

1. All certified facilities shall be constructed in a manner which will eliminate or reduce adverse impacts to on-site and/or adjacent wetlands or other surface waters to the extent practicable or otherwise comply with the Department's substantive criteria for elimination or reduction of such impacts. When impacts to wetlands will occur as a result of a future amendment, modification, or certification, and cannot be practicably eliminated or reduced, the Licensee may propose, and the Department or Board shall consider, mitigation to offset otherwise such impacts under the ERP review process pursuant to subparagraph A.1., above.

2. Proposed mitigation requirements/plans submitted with the DEP ERP Application forms required in subparagraph A.1.a., above, or submitted as part of an amendment, modification, or certification, and that are deemed acceptable by DEP, shall include applicable construction conditions, success criteria, monitoring plans, and remedial actions (if applicable), and shall be incorporated into these Conditions as Attachment C (Wetland Mitigation Requirements/Plans).

[Sections 373.413, 373.414, 373.4145, 403.511, and 403.814(6), F.S.; Chapters 62-312, 62-330, 62-340, 62-342, and 62-345, F.A.C.]

XXX. THIRD PARTY IMPACTS

The Licensee is responsible for maintaining compliance with these Conditions even when third party activities authorized by the Licensee occur in or on the certified site.

[Sections 403.506(1), F.S.]

XXXI. FACILITY OPERATION

The Licensee shall properly operate and maintain the certified facility and systems of treatment and control (and related appurtenances) that are installed and used by the Licensee to achieve compliance with these Conditions, as required by the final order of certification, these Conditions, or a post-certification amendment or modification. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the final order of certification, these Conditions, or a post-certification amendment or modification. Further, the Licensee shall take all reasonable steps to minimize any adverse impact resulting from noncompliance with any limitation specified in this certification, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying event.

[Rule 62-4.160(6), F.A.C.]

XXXII. RECORDS MAINTAINED AT THE FACILITY

A. These Conditions or a copy thereof shall be kept at the site.

B. The Licensee shall hold at the site, or other location designated by these Conditions, records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation required by these Conditions, copies of all reports required by these Conditions, and records of all data used to complete the SCA for this approval. These materials shall be retained at least 3 years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

C. Records of monitoring information shall include:

1. the date, exact place, and time of sampling or measurements;
2. the person responsible for performing the sampling or measurements;
3. the dates analyses were performed;
4. the person responsible for performing the analyses;
5. the analytical techniques or methods used; and
6. the results of such analyses.

[Rules 62-4.160(12) and (14)(b), F.A.C.]

XXXIII. WATER DISCHARGES

A. Except as otherwise authorized by a permit issued by the Department under a federally approved or delegated program or to the extent a variance, exception, exemption or other relief is granted or authorized by these Conditions, the Licensee shall not discharge to surface or ground waters of the State, wastes in concentrations, which, alone or in combinations with other substances or components of discharges (whether thermal or non-thermal), are carcinogenic, mutagenic, or teratogenic to human beings (unless specific criteria are established for such components in Rule 62-520.400, F.A.C.) or are acutely toxic to indigenous species of significance to the aquatic community within surface waters affected by the ground water at the point of contact with surface waters.

B. Except as otherwise authorized by a permit issued by the Department under a federally approved or delegated program or to the extent a variance, exception, exemption, or other relief is granted or authorized by these Conditions, all discharges and activities must be conducted so as to not cause a violation of the water quality standards set forth in Chapters 62-4, 62-302, 62-520, 62-550, and 62-620, F.A.C., including the provisions of Rules 62-4.243, 62-4.244, and 62-4.246, F.A.C., the antidegradation provisions of Rules 62-4.242(1)(a), (1)(b), and 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters set forth in Rules 62-4.242(2) and (3), F.A.C.

C. Except as otherwise authorized by a permit issued by the Department under a federally approved or delegated program or to the extent a variance, exception, exemption, or other relief is granted or authorized by these Conditions, all dewatering discharges must be in compliance with Rule 62-621.300, F.A.C.

[Chapters 62-4, 62-302, 62-520, 62-550, 62-620, and 62-621, F.A.C.]

XXXIV. SOLID AND HAZARDOUS WASTE

A. Solid Waste

The Licensee shall comply with all applicable non-procedural provisions of Chapter 62-701, F.A.C., for any solid waste generated within the certified facility during construction, operation, maintenance, and closure.

[Chapter 62-701, F.A.C.]

B. Hazardous Waste, Used Oil, Petroleum Contact Water, and Spent Mercury

The Licensee shall comply with all applicable non-procedural provisions of Chapter 62-730, F.A.C., for any hazardous waste generated within the certified facility. An EPA identification number must be obtained before beginning hazardous waste activities unless the facility is a Very Small Quantity Generator (VSQG). VSQGs generate no more than 100 kg (220 lbs) of hazardous waste in any month.

The Licensee shall comply with all applicable non-procedural provisions of Chapter 62-710, F.A.C., for any used oil and used oil filters generated within the certified facility.

The Licensee shall comply with all applicable non-procedural provisions of Chapter 62-737, F.A.C., for any spent mercury-containing lamps and devices generated within the certified facility.

The Licensee shall comply with all applicable provisions of Chapter 62-740, F.A.C., for any petroleum contact water located within the certified facility.

[Chapters 62-710, 62-730, 62-737, and 62-740, F.A.C.]

C. Hazardous Substance Release Notification

1. Any owner or operator of a facility who has knowledge of any release of a hazardous substance from a certified facility in a quantity equal to or exceeding the reportable quantity in any 24-hour period shall notify the Department by calling the State Watch Office, (800) 320-0519, as soon as possible, but not later than one working day of discovery of the release.

2. Any owner or operator of a facility who has knowledge of any release of a hazardous substance from a certified facility in a quantity equal to or exceeding the reportable quantity in any 24-hour period shall notify the public by submitting a Public Notice of Pollution, https://prodenv.dep.state.fl.us/DepPNP/user/pnpRequest, as soon as possible, but not later than 24 hours after discovery of the release.

3. Releases of mixtures and solutions are subject to these notification requirements only where a component hazardous substance of the mixture or solution is released in a quantity equal to or greater than its reportable quantity.

4. Notification of the release of a reportable quantity of solid particles of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, or zinc is not required if the mean diameter of the particles released is larger than 100 micrometers (0.004 inches).

[Chapter 62-150, F.A.C.]

D. Contaminated Site Cleanup

The Licensee shall comply with all applicable non-procedural provisions of Chapter 62-780, F.A.C., for any violations of relevant provisions of Chapters 376 or 403, F.S., that result in legal responsibility for site rehabilitation pursuant to those chapters. This responsibility for site rehabilitation does not affect any activity or discharge permitted or exempted pursuant to Chapters 376 or 403, F.S., or rules promulgated pursuant to Chapters 376 or 403, F.S.

[Chapter 62-780, F.A.C.]

XXXVI. STORAGE TANK SYSTEMS

Registration, construction, installation, operation, maintenance, repair, closure, and disposal of storage tank systems within a certified site that store regulated substances shall be in accordance with Chapters 62-761 and 62-762, F.A.C., in order to minimize the occurrence and environmental risks of releases and discharges. Mineral acid storage tank systems are subject only to Rule 62-762.891, F.A.C. Compression vessels and aboveground hazardous substance storage tank systems with individual capacities greater than 110 gallons are only subject to Rule 62-762.401, F.A.C.

A. Incident Notification Requirements.

Notification of any condition or situation indicating that a release or discharge of a regulated substance may have occurred from a storage tank system or system component shall be made to the County in writing or electronic format on either Form 62-761.900 (6) or Form 62-762.901(6), whichever is applicable, Incident Notification Form (INF), within 72 hours of discovery or before the close of the County's next business day. However, an INF is not required to be submitted if, within 72 hours or discovery, the investigation of the incident confirms that a discharge did not occur.

B. Discharge Reporting Requirements

Notification of the discovery of a discharge of a regulated substance shall be made to the County in writing or electronic format on either Form 62-761.900(1) or Form 62-762.901(1), whichever is applicable, Discharge Report Form (DRF) within 24 hours of the discovery or before the close of the County's next business day, unless the discovery is a non-petroleum, de minimis discharge referenced in Rule 62-780.550, F.A.C.; the discharge was previously reported to the appropriate County or the Department on a DRF; or the discovery is a petroleum or petroleum product de minimis discharge referenced in Rule 62-780.560(1), F.A.C. A de minimis discharge is exempt from the notification requirements as long as discharge is removed and properly treated or properly disposed, or otherwise remediated pursuant to the applicable provisions of Chapter 62-780, F.A.C.

C. Discharge Cleanup

If a discharge of a regulated substance occurs at the certified facility, actions shall be taken immediately to contain, remove, and abate the discharge under all applicable Department rules. The Licensee is advised that other federal, state, or local requirements may apply to these activities. If the contamination present is subject to the provisions of Chapter 62-780, F.A.C., corrective action, including free product recovery, shall be performed in accordance with that Chapter.

D. Out of Service and Closure Requirements

Storage tank systems shall be taken out-of-service and/or closed as necessary in accordance with Rules 62-761.800, 62-762.801, and 62-762.802, F.A.C., as applicable.

[Chapters 62-761, 62-762, and 62-780, F.A.C.]