

APPENDIX 10.4
ENVIRONMENTAL RESOURCE PERMIT
ATTACHMENT A.6
DEWATERING PLAN

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DEWATERING PLAN

Levy Progress Energy Florida, Inc. Inglis, Florida

1.0 Purpose and Objectives of the Dewatering Plan

Soil excavation will be conducted at the Intake Structure construction site at Levy Progress Energy Florida located near Inglis, Florida. Canal surface water, local groundwater, and storm water have the potential to impact the excavation activities. It is required that adequate dewatering activities be conducted to remove surface water and groundwater entering the excavation. It is necessary to keep each excavation as dry as possible during sub-grade preparation until the site is backfilled and graded, and all activities are inspected and approved.

Dewatering activities will first require the installation of a cellular sheet pile cofferdam. Dewatering operations can begin once the cofferdams are backfilled with ballast. Initially, the operation of a pump with a floating suction line will be used to pump the water over the cofferdam and into the canal. After which, trash pumps and other devices could be used to depress and maintain the groundwater level at a minimum of 2 feet below the base of the excavations. The area of soil excavation will generally be limited to 1 acre maximum at any one time. The dewatering system will be installed to allow continuous dewatering operations without interfering with other construction activities. Water removed from the dewatering system will not require treatment prior to discharge. If turbidity becomes an issue, then settling tanks/basin may be used.

2.0 Site Conditions Related to Dewatering Activities

Site subsurface materials in the areas to be dewatered are composed of naturally deposited sand and silty sand, and limestone bedrock (located below the natural soils). The natural sands extend from the surface down to the bedrock at an approximate elevation of 41ft below mean sea level. The sheet pile cofferdam will extend down to the bedrock. Excavations will extend down to 15ft below mean sea level.

Groundwater is present in the natural soils and is typically encountered at an elevation of 0ft to 4ft above sea level. Depth to groundwater is variable across the site and is expected to change seasonally and with local precipitation events.

The hydraulic conductivity of the natural soil, based on slug testing (see reference in Dewatering Pump Calculation), is variable and ranges from approximately $3.2\text{E-}4$ cm/sec to approximately $1.0\text{E-}2$ cm/sec with a average value of approximately $3.2\text{E-}3$ cm/sec. On the average, sustainable groundwater flow rates are not expected to exceed 1.7 gallons per minute (gpm).

Groundwater drainage rates from the natural soil will vary, depending on the permeability. Lower permeability materials will take longer to drain than the higher permeability materials. Groundwater recharge to the natural soil appears to be from local precipitation. Storm water run-on to the site would also contribute to recharge.

The area to be excavated is located within the canal. The area of the site is generally sloping toward the canal at a 3H:1V slope. Both surface water runoff (storm water) and groundwater flow is toward the canal.

Site surface water and groundwater will not be contaminated and will not require treatment prior to discharge.

3.0 Dewatering Plan

Excavation dewatering will require the implementation of a number of concurrent activities to control water flow on site. These activities are described below along with additional dewatering system considerations.

Dewatering Pumps

The dewatering system will be installed with sufficient time prior to excavation activities to allow for adequate water drainage from the fill and soil. A 500 gpm pump with floating suction line will be used for the initial dewatering of the site and large storm events. 20 gpm trash pumps will be used for the removal of subsequent groundwater and canal water infiltration.

Excavation Dewatering System Sequencing

Installation of the excavation dewatering system will generally proceed as follows:

- Install 500 gpm pump with floating suction line.
- Operate pump(s) to remove canal water from behind the cofferdam, pumping it back into the canal with a discharge hose. It is anticipated that approximately 1,687,500 gallons of water will be encountered during 12 full days to complete the initial pumping.
- Once the area behind the cofferdam is pumped down to within 2 feet of the canal bottom, a sump 10ft square and 10ft deep, lined with a geo-textile and backfilled with crushed stone will be installed.
- Operate the 20 gpm trash pumps as needed, pumping water back into the canal (note – if turbidity becomes a problem, then settling tanks/basin will be used to clarify the water prior to release).

Excavation Dewatering Flow Rates

<u>Water source</u>	<u>Flow (gpm)*</u>
Storm event (50-yr/24-hr)	195
Cofferdam sheet pile	1.67
Seepage under cofferdam	12.9
Seepage from canal slope	1.70
Total Water Flow	211

* See Dewatering Pump Calculation – DAP 2/28/08

Storm Water Management

Storm water has the potential to flow directly into the excavation and recharge the local soils near, and at a distance from, the excavation area. Site wide storm water runoff will be controlled and directed away from the excavation areas to minimize infiltration. Storm water controls will include:

- Installing run-on control dikes and swales outside areas to be excavated to direct storm water away to from the excavation.
- Managing storm water across and upgradient of the site to minimize recharge to the local groundwater.

Additional Considerations

- Flow rates were based on soil boring data in the general proximity of the excavation.
- The calculated flows were determined based on the assumptions that standing water outside the excavation area is cut off with berms, any water flow from the canal slope is cut off, and that no groundwater flow comes directly from bedrock.
- Underground utilities do not direct water into the excavation areas.