D Area Ash Project

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Acronyms

FFA – Federal Facility Agreement

GCL – Geosynthetic Clay Layer

GDL – Geosynthetic Drainage Layer

IDS – Integrated Drainage System

IWT – Industrial Waste Water Permit

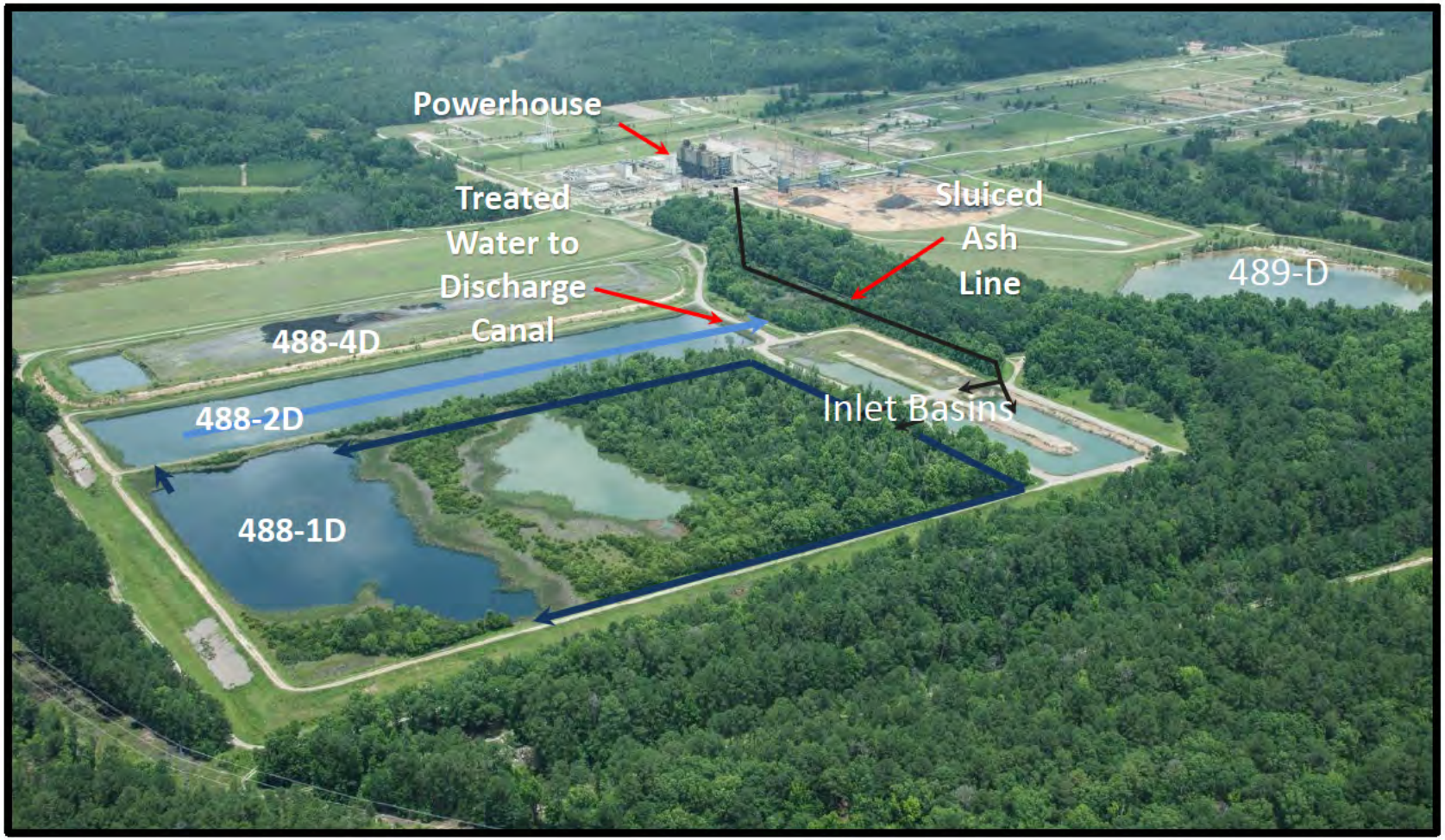
SCDHEC – South Carolina Department of Health & Environmental Control

SW – Solid Waste Landfill Permit

USEPA – United States Environmental Protection Agency – Region 4

D Area Ash Basins & Landfill

Sluiced Ash Flow Pattern



Background

- D Area coal ash contains low levels of coal related contaminants.
- The coal ash in the D Area basins and landfill do pose a human health, and ecological risk. The coal and coal fines in the landfill and 488-1D basin also pose a potential contaminant migration risk to groundwater.
- Recent environmental releases of large quantities of coal ash from private coal fired power plants have heightened the awareness & increased priority to address SR coal ash facilities.
- The end state of the 4 facilities will protect public health and the environment through consolidation of ash and geosynthetic cap installation.

Background

- **D Area Coal Ash Basins (488-2D & -1D) & Coal Ash Landfill (488-4D) supported the operations of the powerhouse (shutdown April 2012):**
  - Ash basins are permitted by state issued Industrial Waste Water and Construction Permit (IWT)
  - Ash landfill is permitted under a state issued Class Two Solid Waste Landfill permit
  - Permits require closure 180 days after powerhouse shutdown
- **D Area Coal Pile Runoff Basin (489-D) partially closed under American Recovery & Reinvestment Act (2011)**
- **In 2011, USEPA and SCDHEC agreed to close the basins & landfill under the Federal Facility Agreement (FFA):**
  - Allows closure to occur over 5 years vs 6 months

D Area Ash Project

- **Closure of the landfill and basins are being implemented through a series of removal actions and early final actions to accommodate the FFA milestone schedule.**

- **D Area Ash Project includes:**
  - Dewatering and Closure of the 488-2D Ash Basin; to remain open as a storm water detention structure
  - Geosynthetic Cap (Composite GCL/GDL Cover System) Installation over the 488-4D Ash Landfill
  - Geosynthetic Cap (Integrated Drainage System) Installation over the east end of the 488-1D Ash Basin. The west end and north and south inlet basins will be graded/sodded for erosion control
  - Closure of the remaining portion of the 489-D Coal Pile Runoff Basin to remain open as a storm water retention structure

D Area Ash Project

- Two Phase Project: Phase I includes the 488-2D Coal Ash Basin and the 488-4D Coal Ash Landfill. Phase II includes the 488-1D Coal Ash Basin and the 489-D Coal Pile Runoff Basin.

- The Phase I contract was awarded to Envirocon on February 5, 2015. Field activities were completed for 488-4D on August 31, 2016 and 488-2D on September 23, 2016.

- The Phase II contract was awarded to Envirocon on March 31, 2016. Completion of field activities for 489-D was completed on June 15, 2017 and for 488-1D is forecast for January 30, 2019.

- Total Project Cost: **$74.2M**

D Area Ash Project

- **FFA Removal Action Start Milestones**
  - September 2014 Removal Action start for 488-4D (10/1/2014 FFA date)
  - October 2014 Removal Action start for 488-2D (10/1/2015 FFA date)
  - September 10, 2015 Removal Action start for Coal Pile Runoff Basin (09/28/2015 FFA date)
  - August 24, 2016 Removal Action start for 488-1D (10/03/2016 FFA date)

D Area Ash Project

D Area Ash Project Material Requirements (current estimates)

- **Fill materials - 324,900 Cubic Yards**
  Fill material to be brought into project site. Includes topsoil and fill material for covers and berms. Assuming 13 cubic yards per load (Tri Axle Dump) of loose materials, this equates to 29,990 truckloads.
- **Material to be Moved and/or Consolidated - 433,000 Cubic Yards**
  Ash/Contaminated Soil to be consolidated and/or moved within the project site. Assuming 13 cubic yards per load (Tri Axle Dump) of loose material this equates to 39,970 truck loads. (Additional ash has been discovered in locations in and around the basin berms).
- **Geosynthetic Material - 41 Acres/1.8 Million Square Feet**
  Includes the geosynthetic clay liner and geosynthetic drainage layer for 488- 4D; Integrated Drainage System (IDS) Geomembrane (MicroDrain® and geotextile liner) for 488-1D.
- **Total Remediated Material - 1.56 Million Cubic Yards**
  When the D Area Ash Project is complete, including both Phase 1 and Phase 2, approximately 1.56 million cubic yards of ash and contaminated soil will have been remediated (protected by a geosynthetic cover).

D Area Ash Project Phase I

Prior to Construction
Dewatering of 488-2D and 488-1D in Progress

D Area Ash Project Phase I

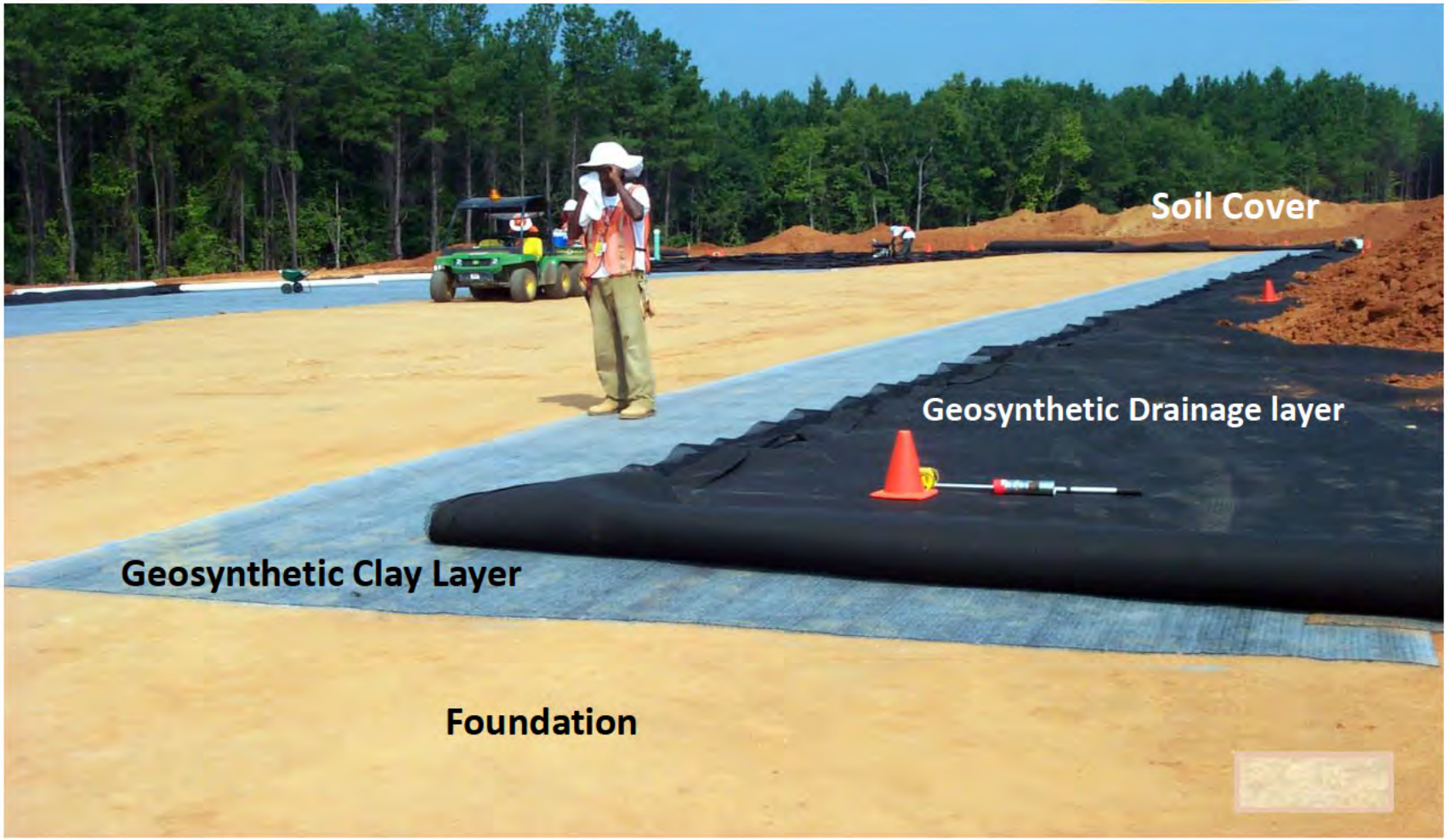
Excavation of Ash from 488-2D and Consolidation into 488-4D

D Area Ash Project Phase I

D Area Ash Project Phase I

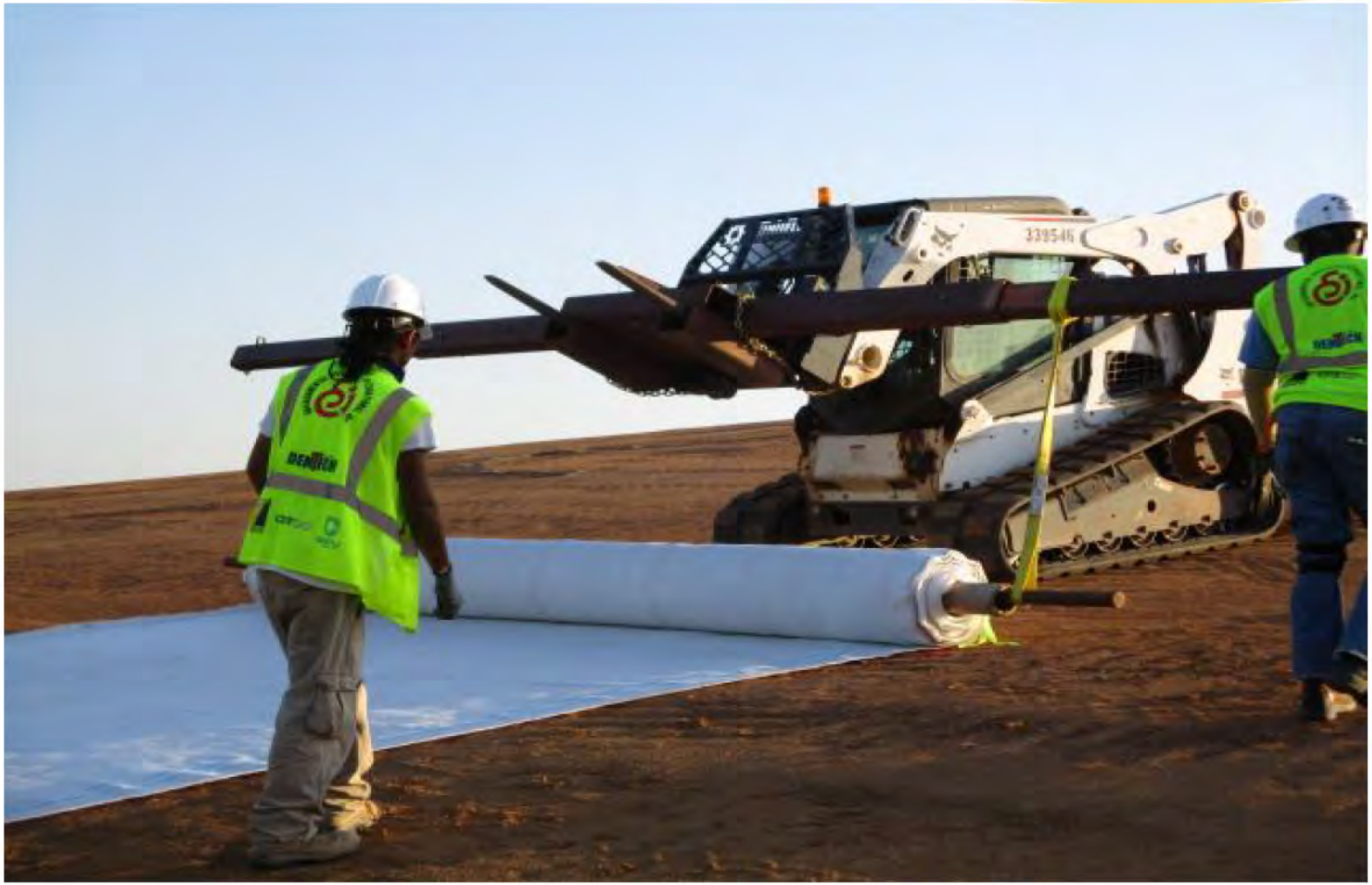
**Installation of Geosynthetics on 488-4D;
Placement of Common Fill in 488-2D**

D Area Ash Project Phase I



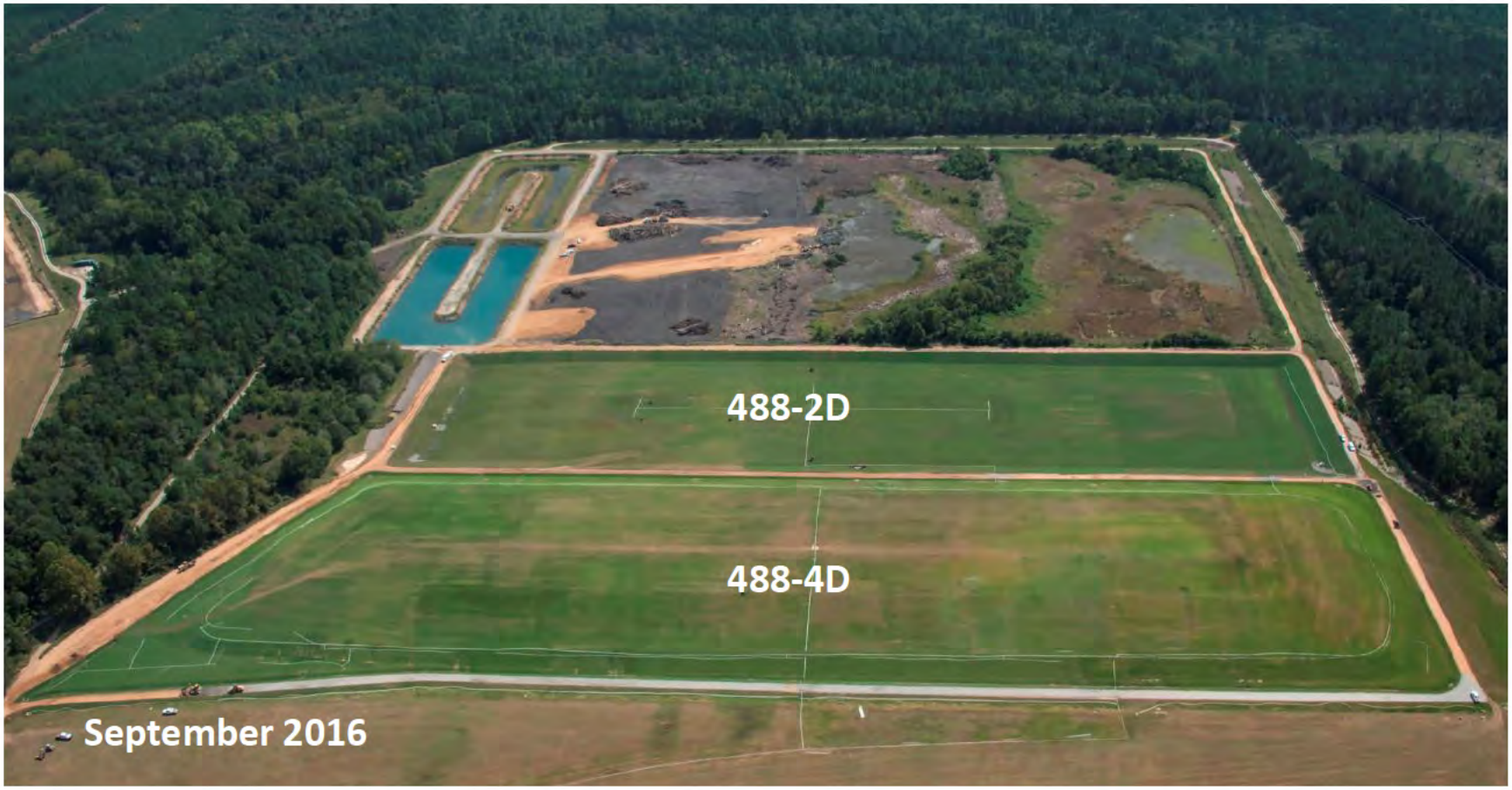
Typical Installation of Geosynthetic Cover Bottom to Top:
Foundation, Geosynthetic Clay Layer and Geosynthetic Drainage layer, Soil Cover

D Area Ash Project Phase I



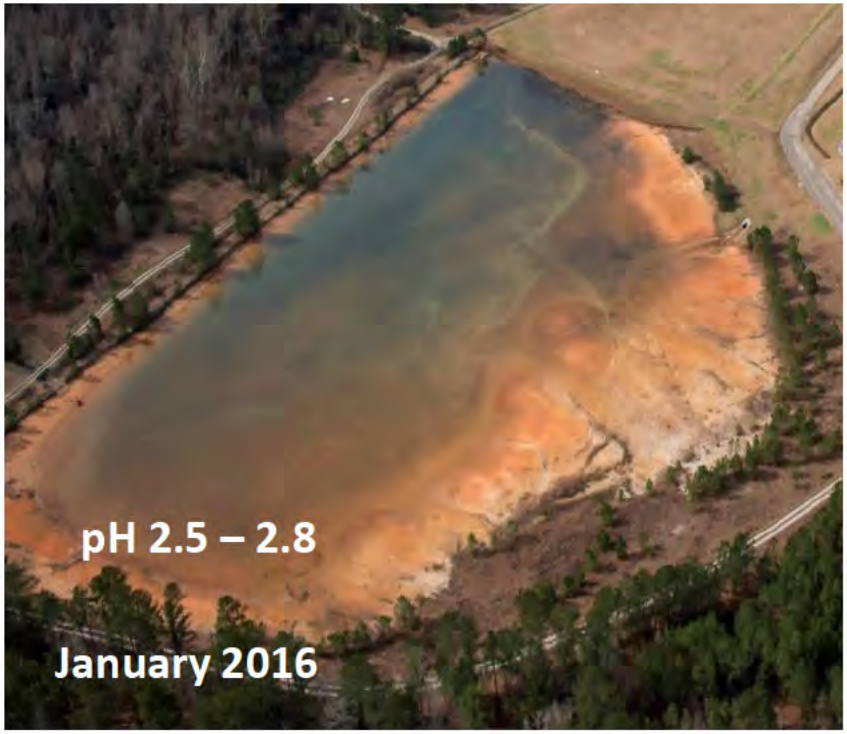
Installation of Geosynthetic (GDL) Layer on 488-4D

D Area Ash Project Phase I Complete



Phase 1: 488-2D and 488-4D Complete

D Area Ash Project Phase II



The 489-D Coal Pile Runoff Basin Collected Rain Water Runoff from the Coal Storage Area

Treatment for pH and Total Suspended Solids before Discharge into D Area Engineered Canal

489-D Coal Pile Runoff Basin

Coal fines and Contaminated Soil were Excavated from 489-D, Sampled to Confirm as Non-hazardous and Placed into the 488-1D

489-D Coal Pile Runoff Basin

489-D Coal Pile Runoff Basin

D Area Ash Project Phase II

The 488-1D Ash Basin
Prior to Clearing and Grubbing of Vegetation

D Area Ash Project Phase II

488-1D Ash Basin
Clearing of Vegetation in Progress

D Area Ash Project Phase II

488-1D Ash Basin

D Area Ash Project Phase II

488-1D Ash Basin

Consolidation of Ash Nearly Complete; South Inlet Basin Excavation Complete

D Area Ash Project Phase II

MicroDrain® Installation

D Area Ash Project Phase II

Geotextile and 20” Soil Layers

Subsurface Drain Pipe Installation

D Area Ash Project

Project Nearing Completion

D Area Ash Project

D Area Borrow Pit
Developed to Supply Fill Material and Topsoil for the Project

Summary

- The D Area Ash Project has made good progress since construction start and is on schedule and within budget.
- The remediation efforts will meet CERCLA and South Carolina State Permit requirements for closure of all four facilities.
- Construction Complete is scheduled for 2019.

Questions?

Coal Pile Runoff Basin
Storm Water Retention Basin