

October 28, 2021

21480650

Paul Cederquist, Environmental and Safety Specialist

Grand Haven Board of Light and Power
1700 Eaton Drive
Grand Haven, Michigan 49417

**NORTHERN CHANNEL ASH INVESTIGATION WORK PLAN
FORMER JB SIMS GENERATING STATION
GRAND HAVEN BOARD OF LIGHT AND POWER
GRAND HAVEN, MICHIGAN**

Dear Mr. Cederquist,

Golder Associates Inc. (Golder) has prepared this work plan for investigating the extent, if any, of ash that may have been deposited in the northern historical outlet channel from the Inactive Units 1 and 2 Impoundment at the former JB Sims Generating Station.

Investigation Goals

The impoundment boundary of the Inactive Units 1&2 Impoundment has been revised based on review of historical aerial photographs (see **Figure 1**). The northern historical outlet channel was identified as an area requiring additional investigation. The northern channel was a former permitted outlet from the impoundment for overflow discharge. The goal of the northern channel investigation is to determine the extent, if any, of ash that may have been deposited in the northern channel.



Figure 1: 1978 Aerial with Northern Channel Area Shown

Boring Locations and Methodology

Golder has proposed performing 15 borings at the locations shown on **Figure 2**. During soil boring advancement, continuous soil samples will be recovered to boring terminus of approximately 15 feet below water surface when drilling over water or 15 feet below ground surface when drilling over land or when ash is no longer observed in the boring. Sediment/soil will be collected using 5-foot long macro-core samplers. Borings will be performed using a fully amphibious vehicle fitted with a Geoprobe 5400 direct push technology (DPT) drill rig. Drill tooling will be decontaminated prior to each boring, if needed. Spud bars will be used to anchor the rig in place while drilling over open water, if needed. Sediment/soil cuttings containing suspected and/or confirmed ash will be collected for proper disposal by GHBLP. Borings performed at ground surface will be backfilled with bentonite and boring performed over standing water will be allowed to naturally cave. Boring locations will be recorded using Global Positioning System (GPS) methods.



Figure 2: Proposed Boring Locations (2016 Aerial)

Ash Identification Process

The identification of ash in soil and sediment samples will be conducted in a tiered approach. Prior to advancing the borings in the northern channel, samples of ash will be collected for field comparison purposes.

Tier 1 – Visual Inspection

Individual boring logs will be prepared by field personnel and will include classification of soil/sediments encountered, samples collected, relative moisture, equipment used, personnel, and other pertinent information. Soils and sediments will be classified by a Golder geologist or engineer in general conformance with the unified soil classification system (ASTM D-2487). Additionally, each recovered core will be visually examined to identify the presence of coal ash based primarily on color and gradation. Suspect materials will be further inspected using a hand lens and will be compared to known ash samples previously collected at the site. Photographic documentation of each of the cores will be collected.

Tier 2 – Sample Evaluation

A minimum of two samples per boring will be collected for further visual evaluation and geotechnical index testing. Suspected ash material samples will be visually inspected using a microscope at 40x magnification to identify the presence of coal ash. Photographic documentation of the microscope evaluation will be collected. Additionally, geotechnical index testing (grain size distribution per ASTM D422 and specific gravity per ASTM D854) will be performed on suspected coal ash material samples to differentiate ash from the native soil materials. Analytical sampling of the soil/sediment will not be performed.

Additional Soil Borings

If ash materials are identified in the field, a limited number of additional borings may be performed to delineate the extent of the coal ash in the northern channel area. Borings will step out from identified ash locations to delineate the coal ash extents. The step out distances may vary based on drill rig accessibility and depth of water/sediment.

Reporting

A summary report will be prepared following the sample collection and evaluation. The letter report will summarize the findings of the evaluation and will include a revised delineation drawing of the northern channel and the Inactive 1&2 Impoundment.

If you have questions or comments about this work plan, please contact the undersigned.

Sincerely,

Golder Associates Inc.



Samuel F. Stafford, PE
Senior Engineer



Tiffany Johnson, PE
Principal

SFS/TDJ

Cc: Blaine Litteral – Golder Associates Inc.