

Proactive by Design

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GZA GeoEnvironmental of NY 300 Pearl Street Suite 700 Buffalo, NY 14202 T: 716-685-2300 F: 716-248-1472 www.gza.com



October 12, 2018 File: 21.0056811.00

Mr. George Streit
george.streit@nrgenergy.com
Huntley Power LLC
3500 River Road
Tonawanda, NY 14150

Re: CCR Landfill 2018 Annual Inspection Report

Huntley Generating Station Tonawanda, New York

Dear Mr. Streit:

GZA GeoEnvironmental of New York (GZA) presents this 2018 Annual Landfill Inspection report to Huntley Power LLC (Huntley) for the existing coal combustion residuals (CCR) landfill units at the Huntley Generating Station landfill located in Tonawanda, New York (Site). This annual inspection is required by the United States Environmental Protection Agencies (USEPA) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule, as presented in the Federal Register Volume 80 No 74 dated April 17, 2015. In accordance with the CCR Rule (40 CFR 257.84), owners/operators of CCR landfill units are required to be inspected on a periodic basis by a qualified professional engineer to ensure the design, construction, operation and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.

Document Review

The required periodic inspections presented in the CCR Rule are intended for open and active landfills and are not required for closed or inactive landfills. As such, the active/open ash waste cells for the Huntley Power Site are identified as upper portions of Cells A and D, and all of Cell C. The remaining landfill cells at the Site are considered inactive (i.e., closed) and are not included with this annual inspection report. The limits of the active cells requiring this annual inspection report are shown on the attached figure prepared by Wendel for the 2017 fill progression survey. An area designated as future Cell B (located between Cells A and C) and Cell E (located south of Cell A) were never constructed.



The Huntley Power landfill is currently permitted (ID#9-1464-00089/000010) with the New York State Department of Environmental Conservation (NYSDEC) to accept residual coal ash waste generated from the Huntley Power facility through January 3, 2023. We note that the Huntley Power plant has ceased electrical generation operations and is in the process of being shut down. A review of the 2017 (most recent) fill progression report for the Cells A, C and D indicates the following information.

Landfill Cell	Waste Received in 2017* (cy)	Current Ash Volume (cy)	Volume Remaining (cy)
А	0	498,994	206,546
С	0	403,137	375,906
D	0	545,792	39,868
Totals for A, C & D	0	1,447,923	622,320

cy = cubic yards

The 2018 weekly landfill inspection forms prepared by Huntley Power Site personnel did not identify any concerns or complaints related to the operation and/or maintenance of the active ash landfill cells.

Site Observations

GZA visited the Huntley CCR Landfill Site on September 12th, 2018 to make observations of the active portions of landfill Cells A, C and D. The following is a summary of our observations made at each active cell.

<u>Cell A</u>: This cell apparently has not received waste ash in several years, evidenced by the type of ash previously observed and the findings reported in the past fill progression surveys including the most recent 2017 survey. The cell A side slopes at the lower elevations were observed with final cover systems in general accordance with its intended design (side slopes not exceeding 33% or 3 Horizontal: 1 Vertical (3H:1V)) and included intermittent benches and rip-rap lined drainage channels at select locations of the cell. However, during our site observations, the upper elevations were generally observed as having recently been regraded (which included the placement and grading of a reported 10,924 tons of coal and 120 tons of bottom ash from the Huntley Plant) and covered with an approximate 6 to 8-inch thick layer of soil for a temporary cover system. Previous areas of side slopes covered with tall grassy vegetation have been removed and replaced by the temporary cover system. In general, although there have been recent modifications to the grades and upper slopes of the Cell A, no deficiencies or structural concerns were observed.

^{*}Wendel survey field verified on 12/07/17 that material has not been placed within the limits of the previous 2016 surveyed Cells C and D.





Cell C: Although this cell has received most of the waste ash in recent years from the Huntley Plant, the recent fill progression survey indicated that no ash waste was placed in 2017. However, during our Site visit the side slopes and upper portions of the waste areas were observed undergoing regrading efforts (similar to those completed in Cell A) that included placement of ash waste from Cell D into portions of Cell C. Facility personnel indicated this recent activity is intended to reshape placed waste ash to suitable grades so that a temporary soil cover system can be placed to secure the cell until plans for final closure are made. The construction of the Cell C, including regrading activities, appears to be in general accordance with intended designs and overall appears to be stable without evidence of structural instability issues (e.g., slumps, cracks, settlement, etc.). The cell side slopes were generally observed as not steeper than 33% (3H:1V). No vegetative growth nor significant erosion rills were observed in this cell due recent grading activities. We note that the 2017 fill progression survey indicates that no ash was placed in this cell during 2017, however, Mr. George Streit of NRG Plant Manager indicated that no waste ash or coal from the plant facility was placed in Cell C during 2018.

Cell D: A review of the most recent fill progression survey indicated that no waste material was placed at Cell D in 2017. During our recent Site, site observations indicated regrading efforts of the upper portions of Cell D were apparent. The facility personnel indicated that recent activities have included regrading of side slopes of Cell D so they do not exceed slopes of 3H:1V. This work is being done so that a temporary soil cover system can be placed over the cell until plans are made for final closure. The regrading activities observed within the cell appears to be in general accordance with intended designs and overall appears to be stable without evidence of structural instability issues (e.g., slumps, cracks, settlement, etc.). Additionally, only the upper portions of the cell and its access road were observed as active and the northern, eastern and southern side slopes were observed with final cover systems, including interim benches and drainage features. The cell side slopes were generally observed to be no steeper than 3H:1V. No significant vegetative growth was observed over the active portions of Cell D, primarily due to recent regrading activities which prevent vegetation from becoming established.

Overall, the work face areas of the active cells appeared to be graded in general accordance with the proposed design configurations and the side slopes and other areas were observed in good condition with no evidence of actual, or potential for, structural instability or erosion or unsafe conditions. Similar to the most recent annual inspection made at the end of 2017, this inspection identified no areas of concern or areas evident of structural instability. Other than the recent grade modifications of the active Cells A, C and D and the temporary cover soil placement on Cell A, no significant changes pertaining to the design, operation and maintenance have been made to the active landfill cells. In general, the ongoing maintenance and grading of the ash waste appear to be in compliance with the cell design and permit requirements.



PROFESSIONAL ENGINEER CERTIFICATION

The undersigned registered professional engineer is familiar with the requirements of §257.84 and has visited and examined the Huntley Station Landfill or has supervised examination of the facilities by appropriately qualified personnel. The undersigned registered professional engineer attests that this Annual Inspection Report has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and meets the requirements of §257.84, and that this Report is adequate for the Huntley Station. This certification was prepared as required by §257.84(b)(2).

Name of Professional Engineer: Daniel J. Troy, P.E.

Company: GZA GEOENVIRONMENTAL OF NEW YORK

Signature:

Date: October 12, 2018 PE Registration State: New York
PE Registration Number: 081139-1

Professional Engineer Seal:

We trust this information satisfies your needs for this project.

Sincerely,

GZA GEOENVIRONMENTAL OF NEW YORK

Daniel J. Troy, P.E.

Senior Project Manager

Bart A. Klettke, P.E.

Principal

Attachments: Figure - 2017 Huntley Fill Progression Survey – General Plan

GENERAL NOTES:

1

CELL

N 1090300

N 1090000

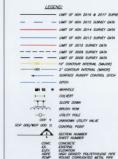
N 1089700

N 1089400

N 1089100

- EXISTING TOPOGRAPHY SHOWN FROM MAPS PREPARED BY STERMS & WHELER, LLC ENVIRONMENTAL ENGINEERS AND SCIENTISTS. PROVIDED BY NRG
- UPDATED TOPOGRAPHY IN CELL C AND D IS BASED ON FIELD SURVEY PERFORMED BY WENDEL IN DECEMBER 2017.
- 3. HORIZONTAL & VERTICAL CONTROL REFERENCED TO SITE DATUM(S) PROVIDED BY NRG.
- WENDEL SURVEY FIELD VERIFIED ON DECEMBER 7, 2017 THAT MATERIAL HAS NOT BEEN FLACED WITHIN THE LIMITS OF THE 2016 SURVEYOF CELL "C" & "D".

CELL	TOTAL THEORETICAL WORKING CAPACITY OF CELLS AT PRESENT DEVELOPMENT STAGE (CUBIC YARDS)	TOTAL ASH VOLUME IN CELL (CUBIC YARDS)	ACTUAL USABLE REMAINING AIRSPACE AFTER DEVELOPMENT OF ADJACENT CELLS (CUBIC YARDS)	ASH RECEIVED IN 2017 (CUBIC YARDS) (SEE NOTE #4)
A	573,849	498,994	206,546	0
C	601,927	403,137	375,906	0
D	585,660	545,792	39,868	0
TOTAL	1,761,436	1,447,923	622,320	0



343,792	39,000	0		CONC. CONCRETE DL. DISTING
1,447,923	622,320	0		GONC COMMETE COMMET
	SITE	CONTROL	DATA	
SURVEY CONTROL POINT	NORTH COORDINATE	EAST COORDINATE	ELEVATION	DESCRIPTION
SCP 100/SCP114	1088546.52	409704.05	606.18	EXISTING PIN & CAP
112 (DESTROYED)	1088104.49	409015.22	605.00	EXISTING SPIKE
TRU 10	1087940 97	409584.73	606.36	EX DISK IN COMO MONUMENT

QUANTITY NOTES:

1088451.60 407538.45 606.01 EX. DISK IN CONC. MONUMENT

- VOLUME CALCULATIONS FOR CELLS A & D WERE CALCULATED USING THE TOP OF PRIMARY LINER AS THE BASE SURFACE.
- ACTUAL USABLE REMAINING AIRSPACE VOLUME IS CALCULATED FROM LIMIT OF SURVEY DATA TO TOP OF FINAL ASH.
- QUANTITY FOR THEORETICAL CAPACITY OF THE CELL HAS TAKEN INTO ACCOUNT THE THEORETICAL ACCESS ROAD FOR EACH CELL. ESTIMATED THEORETICAL ACCESS ROAD QUANTITIES:
- CELL A: 1,100 CUBIC YARDS CELL C: 670 CUBIC YARDS CELL D: 1,277 CUBIC YARDS
- CELL A TOTAL ASH VOLUME IS CALCULATED TO TOP OF COVERED AREAS WHERE APPLICABLE.
- 5. CONTOURS SHOWN WITHIN FINAL COVERED AREAS REPRESENT TOP OF FINAL COVER. TOP OF ASH IS 24" BELOW CONTOURS SHOWN.
- TOTAL THEORETICAL WORKING CAPACITY OF CELL QUANTITIES SHOWN ON THIS PLAN ARE ESTIMATED QUANTITIES TO TOP OF ASH BASED ON THE FOLLOWING ASSUMPTIONS:

CELL A — EASTERLY SLOPE WAS ADJUSTED TO A 2/1 SLOPE. TOP OF ASH FINAL DESIGN GRADE WAS HELD FOR THE NORTHERLY, SOUTHERLY AND WESTERLY SLOPES WITH NO SLOPE ADJUSTMENTS INCORPORATED.

CELL C — WESTERLY SLOPE WAS ADJUSTED TO A 2/1 SLOPE. TOP OF ASH FINAL DESIGN GRADE WAS HELD FOR THE NORTHERLY, SOUTHERLY AND EASTERLY SLOPES WITH NO SLOPE ADJUSTMENTS INCORPOPATED. NOTE: SLOPE BETWEEN CELLS C AND D WAS CALCULATED AS A VERTICAL SLOPE.

CELL D — TOP OF ASH FINAL DESIGN GRADE WAS HELD FOR THE MORTHERLY, SOUTHERLY, WESTERLY AND EASTERLY SLOPES WITH NO SLOPE ADJUSTMENTS INCORPORATED. MOTE: SLOPE BETWEEN CELLS C AND D WAS CALCULATED AS A VERTICAL SLOPE.

N 1088700

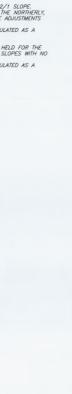
N 1088500

N 1088300

ADJUSTMENTS FOR ACCESS ROADS SEE NOTE 3.

T 188

| N 1000000





3500 RIVER ROAD TONAMANDA, NY 14150

HUNTLEY POWER, LLC ENGINEERING SERVICES

ANNUAL FILL PROGRESSION SURVEY FOR THE HUNTLEY LANDFILL

RECORD DRAWING



endel WD Architecture, Engineering, Surveying and Landscape Architecture P.C.



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NO.	REVISIONS	DATE
DWC TITLE	REPORTS.	Unit.

2017 FILL PROGRESSION SURVEY GENERAL PLAN

HUNTLEY

DATE 1/18/2018

SOLE NOT TO SOLE

DMI. JOR CHK. RNU

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1 of 5