



CCP Annual Inspection Report

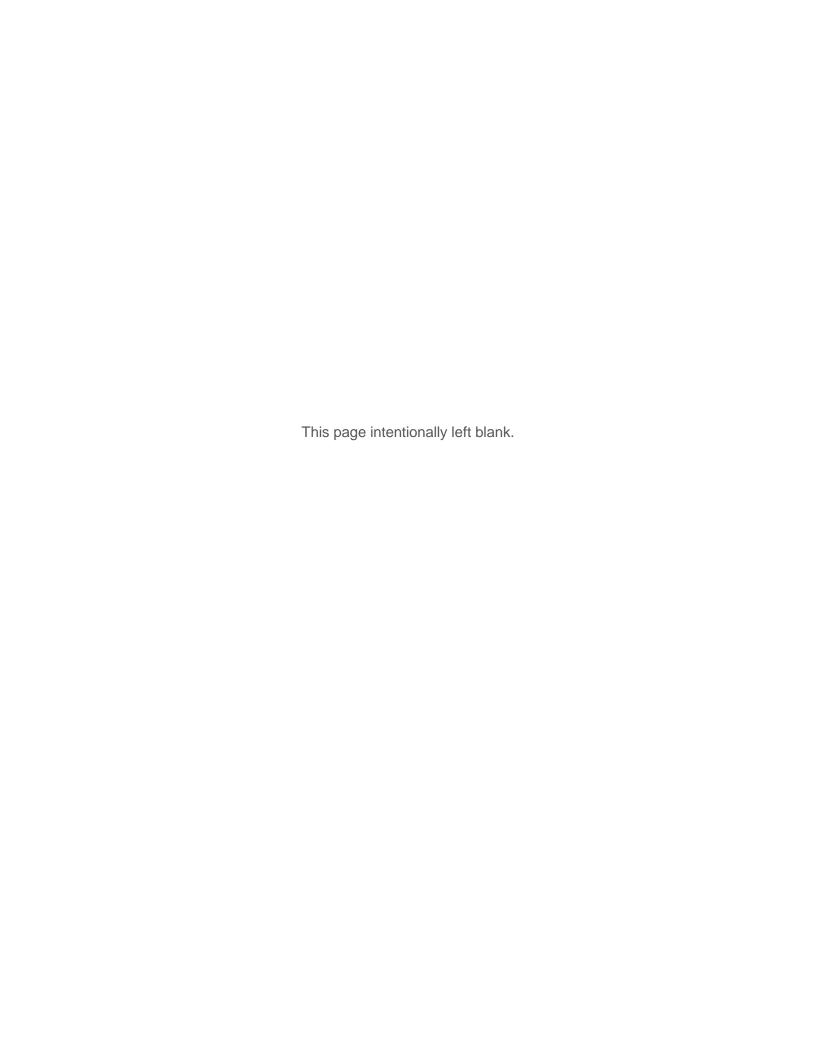
Brickhaven No. 2 Mine Tract A Structural Fill DWM Permit 1910, DEMLR Permit 19-25

Charah, Inc.

Moncure, North Carolina

January 2017





Contents

Introduction	. 1
Inspection Report	. 1
Document Review	. 1
Permit Documents	. 1
Operational Documents	. 2
Visual Site Inspection	. 2
Structural Fill Access	. 3
Leachate Management	. 3
Stormwater Segregation and Erosion Control	. 4
Active CCR Fill Areas	. 4
Structural Fill Stability	. 5
Summary	

Appendices

Appendix A – Drawings

Appendix B – Site Inspection Photographs

FDS



Introduction

This report summarizes the findings for the second annual inspection conducted on January 16, 2017, of the Brickhaven No.2 Mine Tract "A" structural fill located off Moncure-Flatwood Road in Chatham County, North Carolina. The site is owned by Green Meadow, LLC and operated by Charah, Inc. under North Carolina Department of Environmental Quality (NCDEQ) Division of Waste Management (DWM) Structural Fill Permit 1910 issued June 5, 2015, in conjunction with the NCDEQ Division of Energy, Mineral and Land Resources (NCDEMLR) Mining Permit 19-25 also issued June 5, 2015. The Brickhaven No. 2 Mine Tract "A" structural fill project has been permitted and constructed in accordance with the North Carolina Coal Ash Management Act of 2014 (CAMA) and NCDEQ structural fill rules. The structural fill will be developed in six cells. As of the date of this inspection, the areas that have been constructed and granted permits to operate are Cell 1 (Subcells A, B, C and D) and Cell 2 (Subcells B, C and D).

Inspection Report

The goal of this inspection is to ensure the design, construction, operation, and maintenance of the structural fill unit is consistent with recognized good engineering practices and to ensure a detailed level of engineering analysis of operating conditions are evaluated which could lead to recommendations to address design or operating issues that need attention. This inspection includes the following.

- A discussion of the findings and remedies for any issues found in the document review.
- A discussion of the findings and remedies for any issues found in the site inspection.
- Any changes in the geometry of the structure since the previous annual inspection and related documentation submitted to regulators.
- The approximate volume of the coal combustion products (CCP) contained in the unit at the time of the inspection.
- Any appearance of an actual or potential structural weakness of the CCP unit.
- Any existing conditions that are disrupting, or have the potential to disrupt, the operation and safety of the CCP unit.

The inspection report below discusses the document and visual inspection review.

Document Review

HDR reviewed the availability of complete and up to date permit documents as well as Charah's adherence to required recordkeeping. Operating Record documents include the following.

Permit Documents

- NCDEQ structural fill permit and modification(s)
- NCDEQ mine permit and modification(s)
- Erosion control permit and modification(s)
- Erosion control plans
- NPDES permit



- Leachate discharge permit
- Leachate pump and haul permit
- Waterline permit
- NCDEQ inspection reports
- Stormwater pollution prevention plan

Operational Documents

- Operations plan
- Safety reports
- Groundwater reports
- · Leachate collection and discharge records
- Leachate analysis reports
- Site inspection (weekly) reports
- CCP tonnage reports
- CCP source analysis reports
- Compaction test reports
- Topographic surveys
- As-built drawings
- Training records for the qualified person(s) performing the weekly inspections
- Records/receipts for all (liner, leachate, and groundwater) system repairs.
- Incident reports (safety, delivery of non-CCP materials, spills, etc.)
- Documentation of cover placement

Weekly inspections were performed and documented by site personnel regarding operations, safety, maintenance of the groundwater wells, run-on and run-off controls, wind dispersal control systems, liner systems, and leachate collection systems. No deficiencies were identified as a result of the document review, nor did review of the above documents reveal any indications of operation, or safety concerns regarding the CCP structural fill.

The CCP volume contained in the unit as of July 20, 2017, is 2,179,304 cubic yards based on the as-built survey provided by McAdams Company.

Visual Site Inspection

A visual inspection, conducted on January 16, 2017, of the CCP structural fill was performed to identify signs of distress, malfunction, or threats to safety not identified in the document review or weekly inspection records. The weather during the site visit was rainy with temperatures ranging from 43 to 49 degrees Fahrenheit. HDR staff conducted the site inspection traversing on foot from the leachate enclosure located at the southern end of Cell 1 in a counterclockwise direction around the cell. This inspection was limited to the CCP placement area and does not address other site operations including existing stockpiling, excavations, and the rail unloading area. The previous annual inspection was conducted on June 29, 2016 and covered CCP placement in Cell 1, Subcells A, B, C and D. The in-place amount of CCP at that time was 862,254 cubic yards. Since that time, the structural fill has expanded into Cell 2, Subcells B, C



and D and the in-place volume has increased to 2,179,304 cubic yards. Refer to the cross-section drawings in Appendix A to see the changes in the geometry of the structural fill. The site inspection included an evaluation of the following site features.

- 1. Structural fill access
- 2. Leachate management system
- 3. Stormwater segregation and erosion control
- 4. Active CCP fill areas (CCP placement, spreading, and compaction)
- 5. Structural fill visual stability

Structural Fill Access

Facility access by road is controlled by a staffed gate requiring check in and check out of visitors. CCP arrives via railroad and is unloaded onto off-road dump trucks in a lined area and then hauled to the active CCP containment area. Stone access ramps are constructed and maintained to provide access from the unloading area to the lined containment area. Currently the structural fill has two access roads. The day of the inspection the trucks were using the access road beneath the transmission lines to enter Cell 2, subcell D. This access is being used when the CCP is dry enough to compact and place directly into the structural fill. A second access road entering into Cell 1, subcell D located on the north side of the site is used when the CCP material is too wet to compact immediately. This access road leads to a temporary stockpile located in the Cell 2, subcell B and C footprint.

Leachate Management

The leachate management system for the cells includes a series of perforated HDPE pipes within the lined area that drain to a sump in Cell 1with two pumps installed to pump leachate to two onsite storage tanks. Refer to photo 17 to see the leachate enclosure at the sump and storage tanks respectively. The leachate enclosure and tanks exhibited no signs of leakage at the time of the inspection and the leachate collection pipes were in good working order. The leachate tanks contained leachate from a recent storm event and were actively being drained into tanker trucks for transportation to one of the approved disposal locations. Pump 1 was currently off and service had been called. Pump 2 was actively running. The leachate enclosure display showed Pump 2 was pumping 715 gpm which is outside of its pump curve. This suggested that calibration and/or maintenance should be performed on the flow meter. Charah had scheduled a calibration service to be conducted by the end of January. It was confirmed that this service was performed. The display also indicated high levels of leachate in the structural fill as a result of recent storm events. The permit does allow elevated leachate levels temporarily during storm events and active pumping was occurring to draw down the levels. The display showed a total flow of 13,233,044 gallons to date. The system was operating within its pressure range and the transducers were reading within their range.

Operationally Charah manages leachate generation by limiting the area of exposed CCP to rain through the placement of interim cover soils. They also use soil to collect, control and direct leachate runoff from active placement areas as seen on photo 16. In this photo you can see that Charah is pumping from the collection area back to the leachate collection system. Areas



where final CCP grades have been met Charah covers with a minimum 1 foot thick interim soil cover. This soil may be removed prior to final cap installation.

Stormwater Segregation and Erosion Control

Charah manages stormwater generation by the application of interim cover soils were CCP has been placed above the perimeter containment elevations. Additionally, subcells have valves installed in the leachate collection pipes to cordon off areas with no CCP placement so stormwater runoff can be treated as stormwater. At the time of this inspection, all slopes draining outside of the containment were covered with soil as shown in photos 2 through 4. Overall, the areas with interim cover appeared to have adequate soil cover and showed no signs of operational or structural concern. Soils placed on final slopes were seeded to prevent erosion and exhibited a good stand of vegetation that was functioning as intended. No signs of CCP release were observed. Interim cover had been placed on the top of the Cell 1 area where final CCP grades had been reached as shown in photos 5 through 8. This area exhibited no signs of erosion and was scheduled to be seeded soon. Some minor ponding was observed on the top of Cell 1 after the recent rain event which will be corrected prior to the upcoming closure work. No instabilities were observed as a result of the minor ponding. At the time of this inspection, the stormwater runoff was being directed to the mine lake area as shown in photo 1 where Charah was actively treating the ponded water to required discharge turbidity levels.

Active CCP Fill Areas

The site inspection included monitoring of CCP placement, spreading, and compacting in an active portion of the structural fill. Active filling was occurring in Cell 2, subcells B, C and D areas. The day of the inspection CCP material was being brought from the rail unloading area directly into the subcell 2D area. The CCP was being placed in approximately 12-inch lifts and compacted utilizing dozers. No wind-blown CCP was observed during dumping and compacting operations. The lift sides were sloped at generally a 3 horizontal to 1 vertical slope with interim cover placed on compacted exterior and interior slopes. The observed CCP operations appeared to be carried out in a safe and competent manner.

A temporary stockpile was created in the Cell 2, subcell 2B area against Cell 1. This temporary stockpile is used for decanting wet CCP loads and during wet conditions when compacting the material is impossible. The plan of action is to push this material across Cell 2, subcell 2B in 12-inch compacted lifts when the material is dry enough to obtain the required compaction. Preparation work was being performed in the subcell 2B area at the time of inspection in order to begin moving the temporary stockpile materials into place. The temporary stockpile slopes appeared to be placed at their angle of repose. Some sloughing was occurring at the toe of the stockpile. The toe of the stockpile was well within the lined containment area.

The July 20, 2017 as-built survey was provided by McAdams Company and shows the current development of the structural fill. HDR has provided cross-sections in the Appendix showing the changes in geometry between the 2016 and 2017 inspection reports.



Structural Fill Stability

Based on the site inspection, no structural weaknesses were observed in the compacted CCP material. As stated above, the temporary stockpile did exhibit some sloughing since it resides in an uncompacted state. Charah was beginning to move the stockpile into subcell 2B however, in the future, Charah should work to limit the size of any uncompacted stockpiles and must monitored them closely for instabilities so any issues arising can be addressed immediately. There were no signs of exterior or interior erosion rills that could potentially lead to instability.

Summary

On January 16, 2017, HDR staff conducted the second annual CCP inspection for the Brickhaven No. 2 Mine Tract "A" CCP structural fill. The inspection included a file document review and a visual inspection of the structural fill operations. Site staff is performing and maintaining the permit documents and the routine maintenance and monitoring reports as required.

McAdams Company provided a top of CCP material survey dated January 20, 2017. HDR provided cross-sections to represent the changes in geometry between the 2016 and 2017 inspections. The total amount of CCP placed through January 20, 2017 has consumed 2,179,304 cubic yards of permitted airspace.

HDR's review of the means and methods and visual inspection of placement identified no apparent structural weaknesses in the CCP material placed as a part of the permanent structural fill. Some sloughing was observed in the temporary stockpile which was in the process of being moved to the structural fill. The failure of a large temporary stockpile within the lined containment area could have the potential to disrupt the operations and create a safety issue. Therefore, HDR recommends that temporary stockpiles be maintained as small as possible and monitored for signs of structural instability daily. If instability signs are detected they should be addressed immediately.

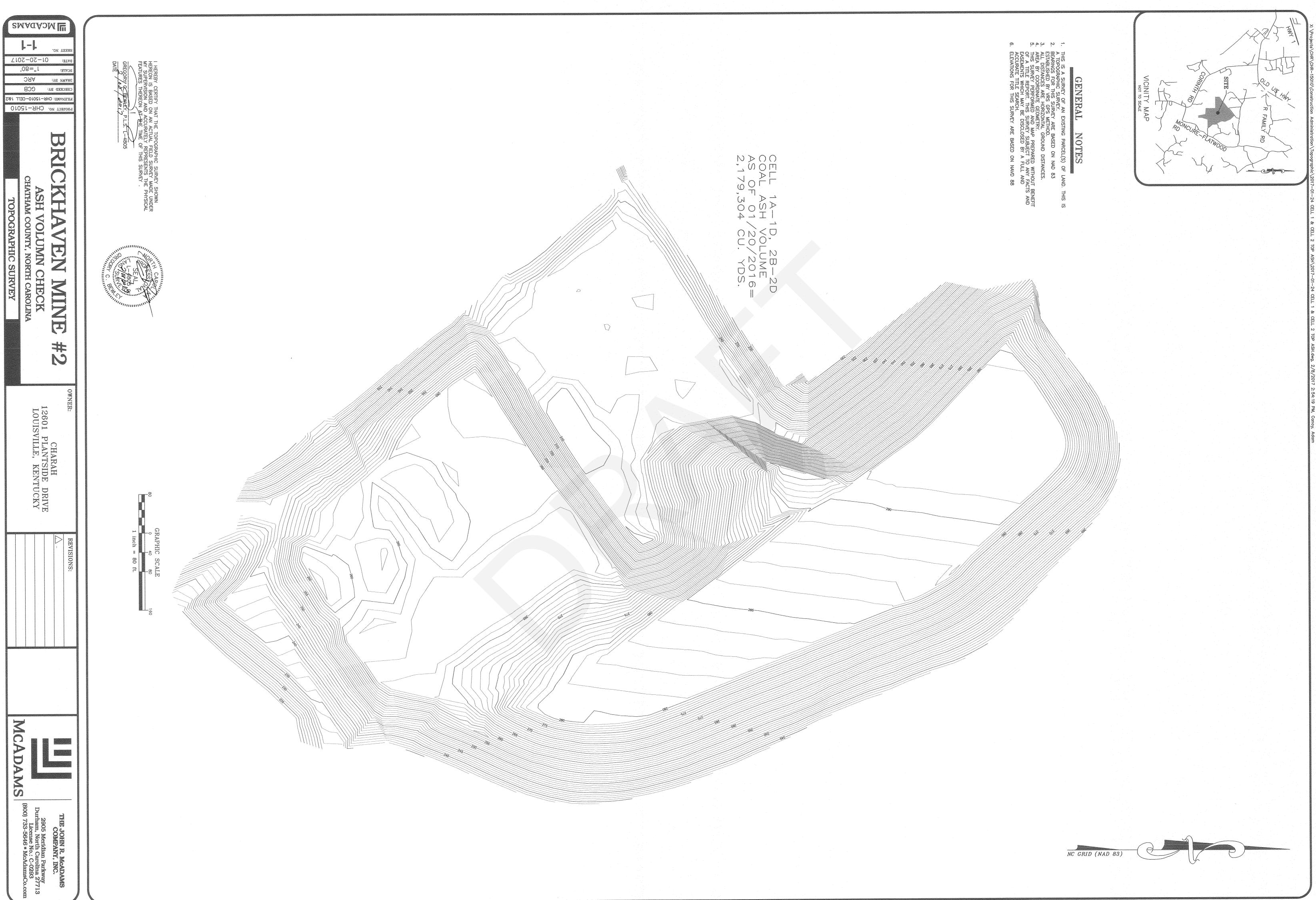
FD3

A

Appendix A – Drawings

- As-built
- Structural Fill Cross-Sections

FDR



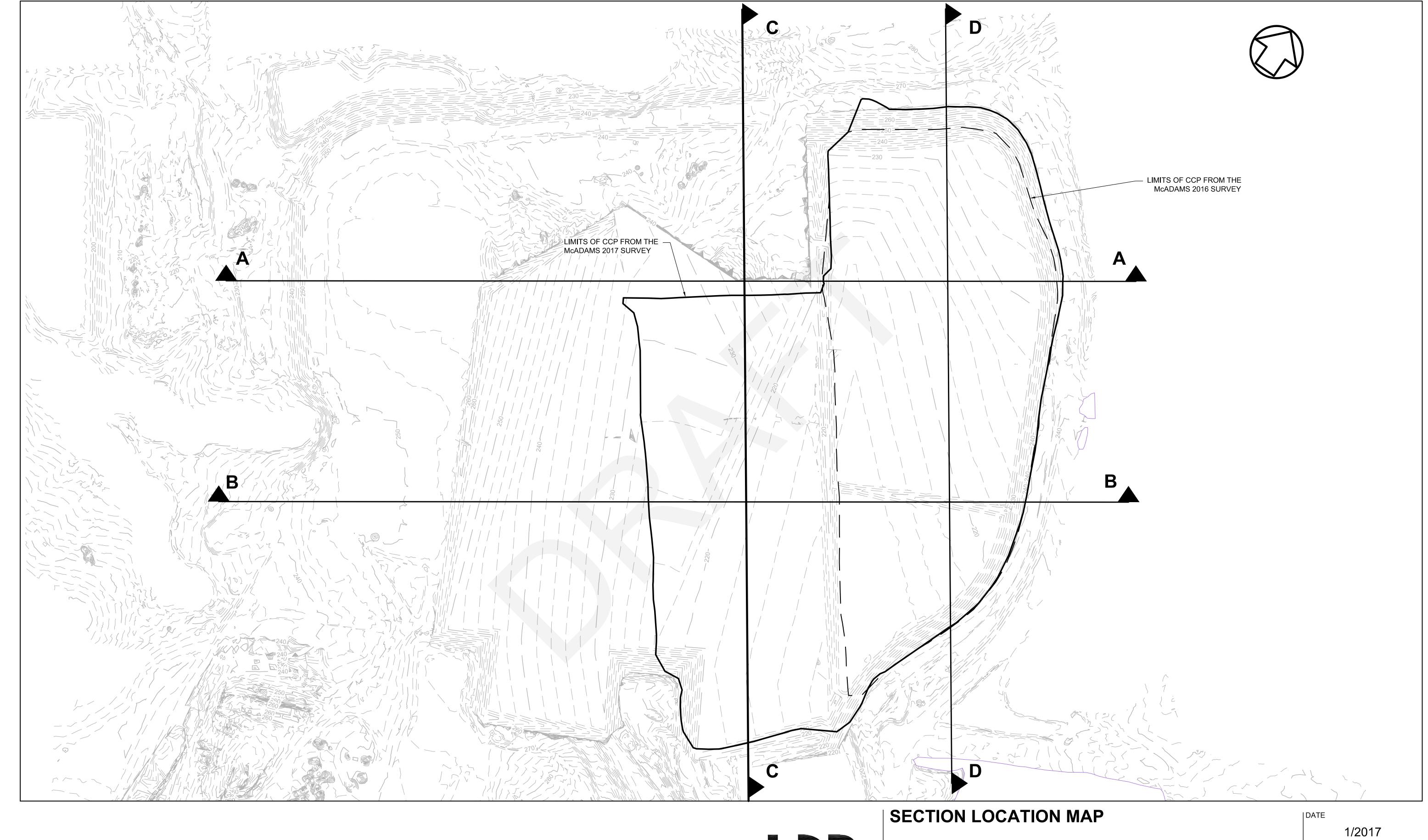
TE: 01-20-2017

DRAWL BY: ARC

DRAWL BY: ARC

CHECKED BA: CCB

LITENVWE: CHK-12010-CEFF 18%5 **БИОТЕСТ ИО. СНК-15010**

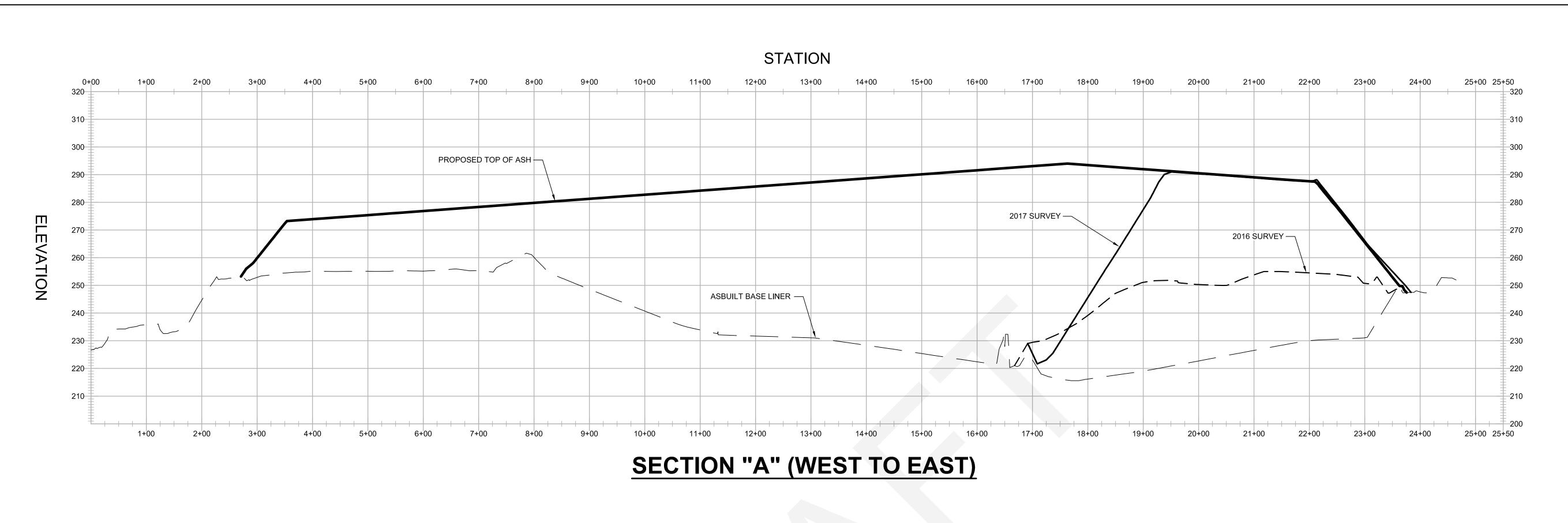


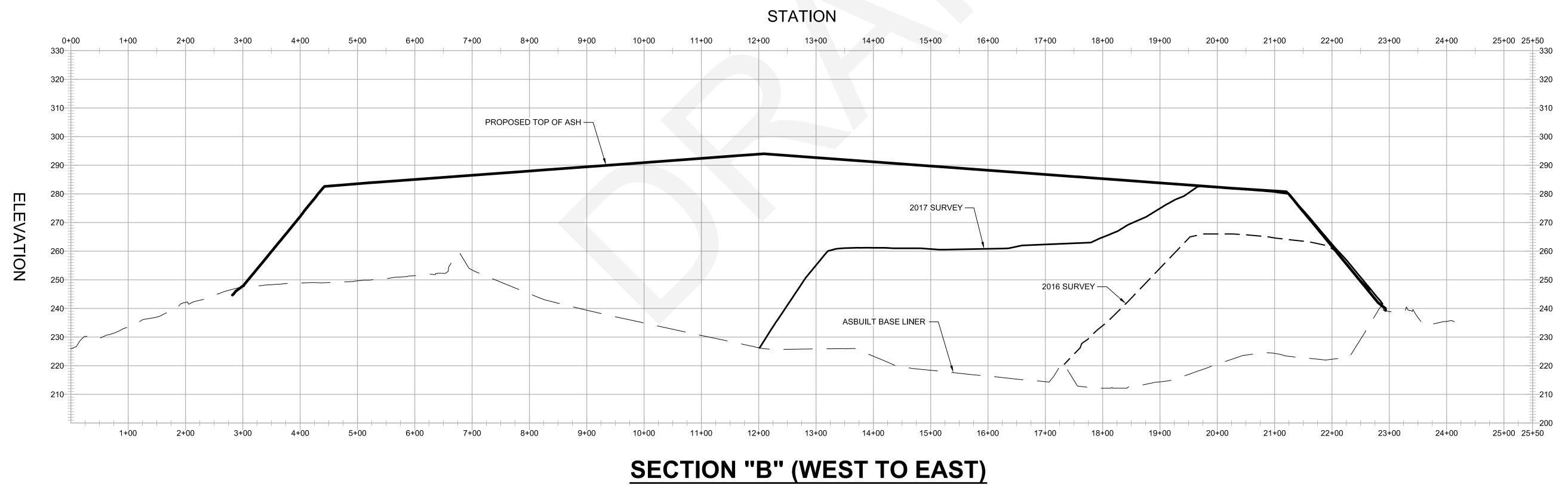
SECTION LOCATION MAP

1/201

MONCURE, NC

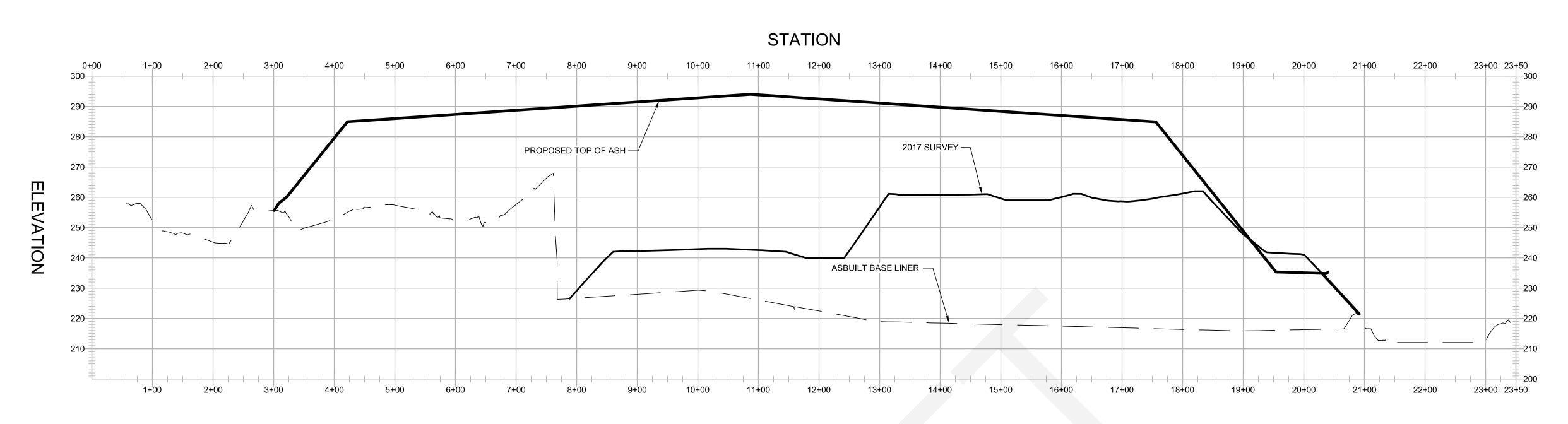
1



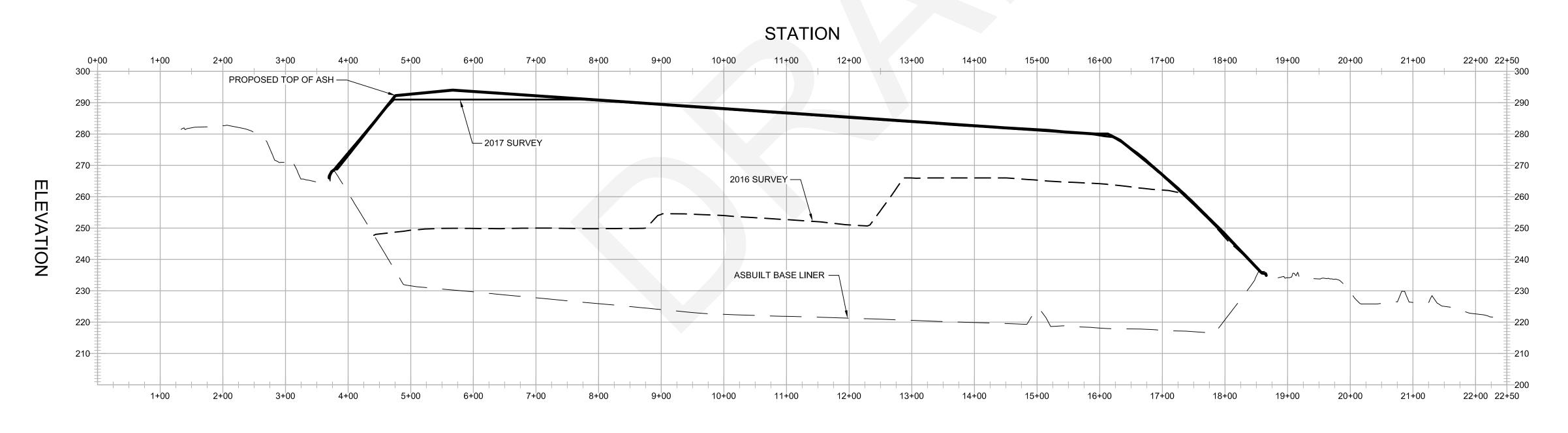




DATE
1/2017
FIGURE
2



SECTION "C" (NORTH TO SOUTH)



SECTION "D" (NORTH TO SOUTH)





В

Appendix B – Site Inspection Photographs

FDR



1. Mine pond collecting stormwater runoff from the cell 1 and 2 areas.



2. Interim cover soil and vegetation along the eastern slope of cell 1.



3. Northern side of cell 1.



4. Slope drain on the northern side of cell 1.





5. Standing on the north end of the top of cell 1 looking east.



6. CCP haul road on top of cell 1 looking south.



7. Interim cover soil and grassed diversion berm for stormwater segregation on top of cell 1.



8. Drainage diversion berm and down drain inlet on top of cell 1 interim cover.



9. Standing on the cell 1 CCP haul road looking across cell 2 to the south.



10. Standing on cell 1 looking west over cell 2, subcell 2A.



11. Standing on cell 1 looking at the temporary CCP stockpile in cell 2, subcell 2B.



12. Looking across cell 2, subcell 2A at the temporary stockpile in subcell 2B.



13. Standing on cell 1 looking west along the cell 2, subcell 2A/B divider berm.



14. CCP placement in cell 2, subcell D facing the southern entrance road.



15. CCP placement in cell 2, subcells C and D.



16. Leachate collection during CCP placement in cell 2, subcell D.



17. Leachate storage tanks.



FDS

HDR Engineering, Inc. of the Carolinas 440 S Church Street, Suite 1000 Charlotte, NC 28202-2075 704.338.6700 NC License F0116

hdrinc.com

© 2017 HDR, Inc., all rights reserved