APPENDIX 2725-6

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DESIGN CERTIFICATION

Sedimentation Pond SP-006
Collection Ditch CD-4
Diversion D-3

I, Corey J. Sadowsky, a Registered Professional Engineer in the State of Louisiana, do hereby certify that the following design plans and report were prepared by me or under my direct supervision and that the information presented is true and accurate to the best of my knowledge.

Corey J. Sadowsky, PE
Civil Engineer
North American Coal Corporation
Louisiana Registration # 38763

STATE OF LOUISIANA
COREY J. SADOWSKY
License No. 38763
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

9/28/2020

TECHINCAL REPORT

Introduction

Sedimentation pond SP-006 is a temporary impoundment needed for sediment control for the mine area north of Five Forks Road. It is located in an unnamed drainage tributary of Demery Creek where outflow from this pond will ultimately flow. The pond will be constructed by excavating a basin and placing an embankment across the downstream side of the basin.

Storage Capacity Determination

This sedimentation pond has been designed to contain the total runoff from a 10-year/24-hour precipitation event. In order to compute this quantity of runoff, the Soil Conservation Service's runoff curve number method was employed. The physical characteristics of the watershed include:

1. Watershed Area
   The watershed that will be controlled by this structure encompasses 207 acres and is delineated in Exhibit 2725-6.

2. Runoff Curve Number
   The runoff curve number was calculated with the assumption that worst case mining conditions would be encountered. The predominant hydrologic soil group at the mine is 'C'. This watershed has hydrologic soil group composition of 40.0% 'B', 57.2% 'C', and 2.8% 'D'. The composite runoff number for this watershed is 82 which consist of 60% disturbed (CN = 90), 30% grass, non-grazing (CN = 71), and 10% woods (CN = 70). Refer to Appendix 2531-1 and Exhibit 2531-1 for further information on soil conditions.

3. Runoff Volume
   The rainfall amount for a 10-year/24-hour storm event in the vicinity of the structure is 7.5 inches. This equates to a runoff volume of 87.3 acre-feet as shown in the SEDCAD4 10-year/24-hour report.

4. Sediment Volume
   The sediment volume was calculated by multiplying the watershed area by a factor of 0.1 acre-ft/acre. This equates to a sediment volume of 20.7 acre-feet.

5. Total Storage Capacity
   With a runoff volume of 87.3 acre-feet and a sediment volume of 20.7 acre-feet, the total required storage capacity is 108.0 acre-feet. The design storage capacity of the pond at the emergency spillway elevation is 111.6 acre-feet as shown in the SEDCAD4 10-year/24-hour report and Exhibit 2725-6.

Structure Configuration

The impoundment will have an embankment to elevation of 150 feet and approximately 15-20 feet of soil will be excavated from within the basin area. Excess spoil produced from the excavation of the pond basin will be used as embankment construction material or stockpiled within surface water control. The bottom elevation of the pond is variable with the lowest point being 126 feet. The side slopes of the basin and the embankment will be sloped at 3H:1V.

The emergency spillway will be a trapezoidal open channel spillway with a crest elevation of 146 feet. It will be 25 feet wide with 4H:1V side slope and have a crest length of 40 feet. Erosion of the spillway will be controlled with one or more, but not limited to the following: rip-rap, fabriform, gabions, soil cement, concrete, or articulated concrete blocks. The spillway will be capable of safely passing the 25-year/6-hour hydrography peak flow of 316.8 cubic feet per second with 1.50 feet of freeboard. The spillway outlet daylights into the natural drainage pattern. There are no known restrictions downstream of the pond.

The mining pits will eventually abut the east edge of sedimentation pond SP-006. The pond will be reconfigured prior to the encroachment of the pits. Updated pond design plans for sedimentation pond SP-006 will be submitted for approval prior to this happening.

Impoundment Dewatering

The impoundment will be dewatered from the spillway elevation to the permanent pool elevation within 10 days by means of a drawdown pipe and pumping. The drawdown pipe will dewater the pond from the spillway elevation (146.0 feet.) to 141.25 feet. A pump(s) will discharge the remaining water to the permanent pool elevation of 134.70 feet. The drawdown pipe will be HDPE or CMP with a minimum diameter of 18 inches.

Compliance with 30 CFR 77.216

Sedimentation pond SP-006 is classified as a Class A hazard dam in accordance with the criteria in the U.S. Department of Agriculture, Natural Resources Conservation Service Technical Release No. 60, Earth Dams and Reservoirs. The embankment height will be 5 feet, measured from natural ground at the centerline of the embankment to the emergency spillway. Therefore, this pond does not meet the size or other criteria of Title 30, CFR 77.216(a).

Storm Water Pollution Prevention Plan

Sedimentation pond SP-006 is located outside of the currently approved surface water control structures. Appropriate sediment control measures shall be constructed and maintained using best management practices (BMPs) to: 1. Prevent, to the extent possible, additional contributions of sediment to streamflow or to runoff outside the permit area; 2. Minimize erosion to the extent possible. Sediment control measures include practices carried out within and adjacent to the disturbed area and include, but are not limited to: 2a. Disturbing the smallest practicable area at any one time during the mining operation via contemporaneous reclamation; 2b. Stabilizing the backfill material to promote a reduction of runoff; 2c.

Retaining sediment within disturbed areas; 2d. Diverting runoff away from disturbed areas; 2e. Diverting runoff using protected channels or pipes through disturbed areas; 2f. Using straw dikes, riprap, check dams, mulches, vegetative sediment filters, dugout ponds, or other measures that reduce overland flow velocity, reduce runoff volume, or trap sediment; 2g. Treating with chemicals. During construction of the pond, it is anticipated that lignite will be encountered. Any lignite encountered during excavation and stabilization of the pond will be extracted and sold. It will be stockpiled, as approved by the Office, either within the temporary surface water control utilized for the construction activities, or hauled to an area within existing surface water control. Any exposed lignite seams remaining within the construction area will be covered with suitable material to a minimum thickness of four feet.

Collection Ditch CD-4

Collection Ditch CD-4 is a temporary ditch needed to divert surface water to Sedimentation Pond SP-006. This ditch has been designed to safely pass the peak discharge from a 10-year/6-hour precipitation event. In order to compute this discharge, the Soil Conservation Service's runoff curve number method was employed. The physical characteristics of the watershed include:

1. Watershed Area
   The watershed that will be controlled by this structure encompasses 154 acres and is delineated in Exhibit 2725-6.

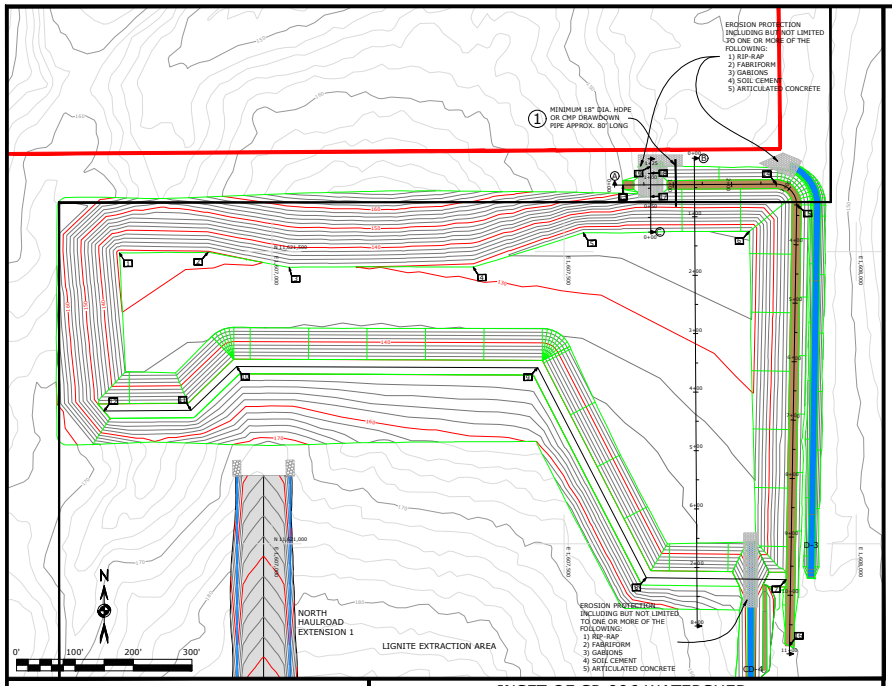
2. Runoff Curve Number
   The runoff curve number was calculated with the assumption that worst case mining conditions would be encountered. The predominant hydrologic soil at the mine is 'C'. This watershed has a similar composition to sedimentation pond SP-006's watershed. The composite runoff number for this watershed is 82 which consist of 60% disturbed (CN = 90), 30% grass, non-grazing (CN = 71), and 10% woods (CN = 70). Refer to Appendix 2531-1 and Exhibit 2531-1 for further information on soil conditions.

3. Peak Discharge
   The rainfall amount for a 10-year/6-hour storm event in the vicinity of the structure is 5.25 inches. This equates to a peak discharge of 303.35 cubic feet per second as shown in the SEDCAD4 10-year/6-hour report.

This ditch, with an approximate length of 750 feet, will be constructed on the south side of Sedimentation Pond SP-006. The ditch will be constructed with a trapezoidal shaped channel having a bottom width of 12 feet with 3(h):1(v) side slopes. The channel will be vegetated upon completion. The included SEDCAD4 report demonstrates that Collection Ditch CD-4 was designed to safely pass the peak discharge from a 10-year/6-hour storm event without excessive velocities while maintaining adequate freeboard. Details for Collection Ditch CD-4 are shown on Exhibit 2725-6.

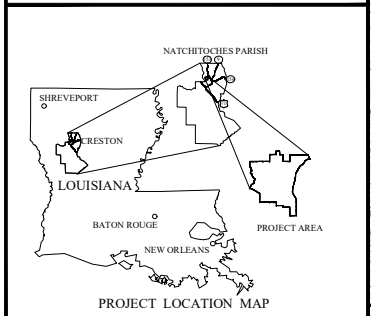
Collection Ditch CD-4 will temporarily form the watershed boundary for Sedimentation Pond SP-006. The erosion control plan will utilize silt fencing, berms, sumps, rip-rap, turf reinforcement matting, check dams, grassy swales, or other best management practices (BMPs) if required to control possible impacts

to areas outside the construction disturbance area. All slopes will be revegetated as soon as practical. These BMPs will be monitored on a regular basis and modified as needed to ensure proper function. Based on the nature of construction, it is not anticipated that there will be any substantial impacts to water quality along this ditch.



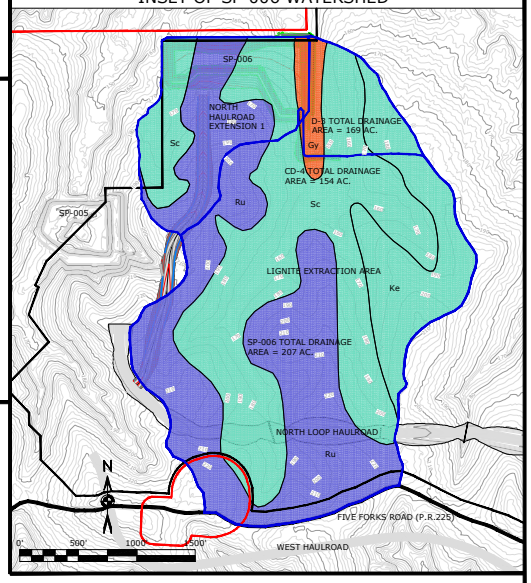
PLAN VIEW SP-006

SCALE: 1" = 100'
INSET SCALE: 1" = 500'
CONTOUR INTERVAL = 2'



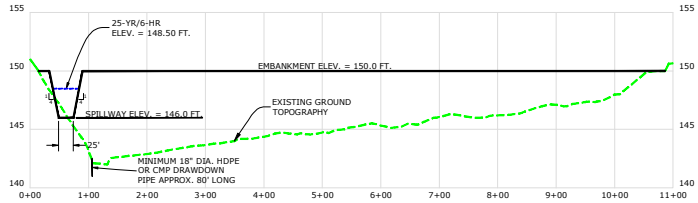
PROJECT LOCATION MAP

INSET OF SP-006 WATERSHED

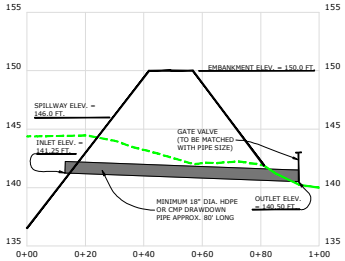


LEGEND

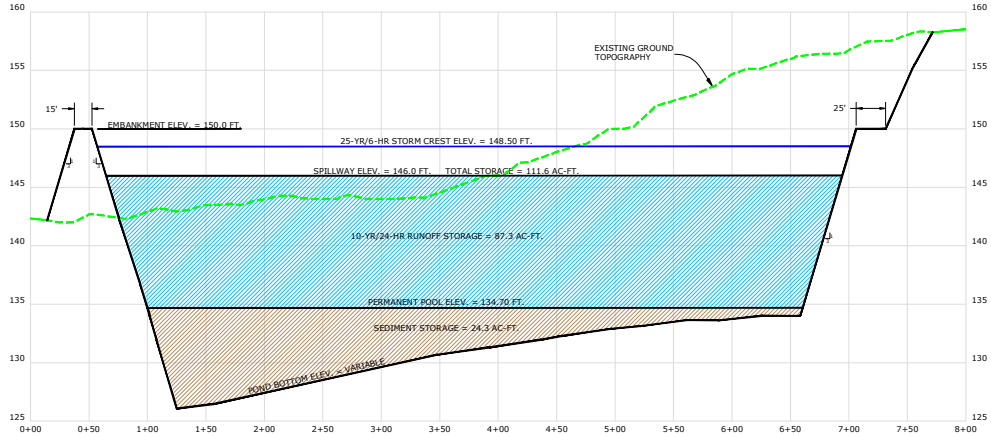
- Permit Boundary
- 2' Topographic Contours
- Public Roads
- Watershed Boundary
- Lignite Extraction Area
- Hydrologic Soil Group 'B'
- Hydrologic Soil Group 'C'
- Hydrologic Soil Group 'D'



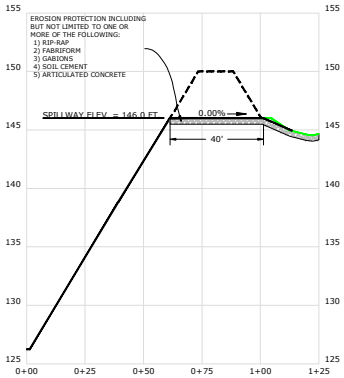
Ⓐ SEDIMENTATION POND SP-006 EMBANKMENT SECTION
HORZ. SCALE: 1"=100'; VERT. SCALE: 1"=5'



① DRAWDOWN PIPE DETAIL
HORZ. SCALE: 1"=20'; VERT. SCALE: 1"=5'



Ⓑ SEDIMENTATION POND SP-006 TYPICAL SECTION
HORZ. SCALE: 1"=50'; VERT. SCALE: 1"=5'



Ⓒ SEDIMENTATION POND SP-006 SPILLAY SECTION
HORZ. SCALE: 1"=25'; VERT. SCALE: 1"=5'

POND COORDINATES

Point #	Northing	Easting	Elevation
Pond Bottom			
1	11,621,497.90	1,606,739.38	128.59
2	11,621,498.82	1,606,891.29	129.56
3	11,621,472.95	1,607,030.07	130.08
4	11,621,473.32	1,607,344.08	129.50
5	11,621,531.99	1,607,532.69	127.34
6	11,621,534.58	1,607,817.04	125.80
Berm			
7	11,620,938.72	1,607,880.04	150.00
8	11,620,941.82	1,607,640.87	150.00
9	11,621,301.44	1,607,455.21	150.00
10	11,621,303.44	1,606,940.06	150.00
11	11,621,228.23	1,606,861.89	150.00
12	11,621,227.08	1,606,712.88	150.00
Embankment			
13	11,621,613.79	1,607,600.84	150.00
14	11,621,615.32	1,607,862.94	150.00
15	11,621,579.74	1,607,898.14	150.00
16	11,620,825.63	1,607,885.63	150.00
Spillway			
17	11,621,594.23	1,607,648.19	146.00
18	11,621,633.59	1,607,647.96	146.00
19	11,621,645.25	1,607,647.92	145.00

NAD 83, UTM Zone 15N
US Survey Feet

Revised Date	By

FIVE FORKS MINE
NATCHITOCHES PARISH, LA
TOWNSHIP 12 NORTH
RANGE 7 WEST

Exhibit 2725-6
Sedimentation Pond SP-006
Design/Construction Drawing

Drawn By: CJS Date: APR 2020
Approved: CJS Date: APR 2020