



George T. Hamrick
Senior Vice President,
Coal Combustion Products

400 South Tryon Street, ST06A
Charlotte, NC 28202

Phone 980-373-8113
Email: george.hamrick@duke-energy.com

December 8, 2016

VIA ELECTRONIC MAIL

Marilyn Thomas PE
Kentucky Department of Environmental Protection
Dam Safety Division
200 Fair Oaks Drive
Frankfort, KY 40601

RE: East Bend Ash Basin Stream Construction Permit Application
East Bend Station
Boone County, Kentucky
State ID: KYDW 1215

Dear Ms. Thomas:

This letter is written to follow up the electronic submittal of the Application for Permit to Construct Across or Along a Stream and/or Water Quality Certification for the East Bend Station Ash Basin. Attached please find the original signed permit application and the certified affidavits for public notice.

We appreciate the prompt attention that your office has given this matter and look forward to continuing to work with you to complete the East Bend Ash Basin Construction Permit Modification. We are available at your convenience to discuss any questions.

Duke Energy looks forward to your review and approval of the attached permit package.

If you have any questions, comments or need additional information please contact Adam Deller Adam.Deller@duke-energy.com phone: 513-287-1239 or Jim Thorp Jim.Thorp@duke-energy.com phone 317-838-1798.

Respectfully submitted,

George T. Hamrick
Senior Vice President

Attachments: 1) East Bend Ash Basin Dam Construction Permit Modification Report
 (September 29, 2016)
 2) Signed Permit Application
 3) Public Notice Affidavits

Duke Energy cc: Adam Deller, Jim Thorp, Tammy Jett, Tim Thiemann, Skip Steele,
 Jake Keegan, Dale Smith, Randy Hart

AMEC cc: James Studer

**COMMONWEALTH OF KENTUCKY
ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER**

**APPLICATION FOR PERMIT TO CONSTRUCT ACROSS OR ALONG A STREAM
AND / OR WATER QUALITY CERTIFICATION**

Chapter 151 of the Kentucky Revised Statutes requires approval from the Division of Water prior to any construction or other activity in or along a stream that could in any way obstruct flood flows or adversely impact water quality. *If the project involves work in a stream, such as bank stabilization, dredging or relocation, a 401 Water Quality Certification (WQC) from the Division of Water will be required.* This completed form will be forwarded to the Water Quality Branch for WQC processing. The project may not start until all necessary approvals are received from the KDOW. For questions concerning the WQC process, contact the WQC section at 502/564-3410.

If the project will disturb more than 1 acre of soil, A Notice of Intent for Storm Water Discharges will also be required. Forms can be obtained at <http://water.ky.gov/permitting/pages/generalpermits.aspx>

1. **OWNER:** Gary Cook (Owner), Adam Deller (Point of Contact) Duke Energy
Give name of person(s), company, governmental unit, or other owner of proposed project.
MAILING ADDRESS: 6293 Beaver Road, Union, KY 41091

TELEPHONE #: (513) 287-1239 **EMAIL:** Gary.Cook@duke-energy.com or Adam.Deller@duke-energy.com

2. **AGENT:** Gil M. Haines (Amec Foster Wheeler)
Give name of person(s) submitting application, if other than owner.
ADDRESS: 1075 Big Shanty Road, Kennesaw, GA 30144

TELEPHONE #: (770) 421-3400 **EMAIL:** gil.haines@amecfw.com

3. **ENGINEER:** James L. Studer, PE (Amec Foster Wheeler) **P.E. NUMBER:** 20495
Contact Division of Water if waiver can be granted.
TELEPHONE #: (770) 421-3400 **EMAIL:** jim.studer@amecfw.com

4. **DESCRIPTION OF CONSTRUCTION:** See Attached
List the items to be constructed in the floodplain

5. **COUNTY:** Boone **NEAREST COMMUNITY:** Union, KY

6. **USGS QUAD NAME** Rising Sun **LATITUDE/LONGITUDE:** 38.9019 N / 84.8411 W

7. **STREAM NAME:** Ohio River (approx. River Mile 511.5) **WATERSHED SIZE (in acres):** approx. 76,580 sq mi

8. **LINEAR FEET OF STREAM IMPACTED:** No impact to the stream (3,400 linear feet construction at the fringe of the Ohio River
100-year flood plain above the 100-year flood elevation)

9. **DIRECTIONS TO SITE:** 6293 Beaver Road, Union, KY 41091
See Attached Maps

10. IS ANY PORTION OF THE REQUESTED PROJECT NOW COMPLETE? Yes No If yes, identify the completed portion on the drawings you submit and indicate the date activity was completed. DATE: _____
11. ESTIMATED BEGIN CONSTRUCTION DATE: January 2018
12. ESTIMATED END CONSTRUCTION DATE: January 2021
13. HAS A PERMIT BEEN RECEIVED FROM THE US ARMY, CORPS of ENGINEERS? Yes No If yes, attach a copy of that permit.
14. THE APPLICANT *MUST* ADDRESS PUBLIC NOTICE:

- (a) PUBLIC NOTICE HAS BEEN GIVEN FOR THIS PROPOSAL BY THE FOLLOWING MEANS:
 Public notice in newspaper having greatest circulation in area (provide newspaper clipping or affidavit)
 Adjacent property owner(s) affidavits (Contact Division of Water for requirements.)
- (b) I REQUEST WAIVER OF PUBLIC NOTICE BECAUSE:

 Contact Division of Water for requirements.

15. I HAVE CONTACTED THE FOLLOWING CITY OR COUNTY OFFICIALS CONCERNING THIS PROJECT:
Local floodplain administrator, Boone County - Mark Martin (P.O. Box 960 Burlington, KY 41005 PH: 859-334-2218)
 Give name and title of person(s) contacted and provide copy of any approval city or county may have issued.

16. LIST OF ATTACHMENTS: _____
 List plans, profiles, or other drawings and data submitted. Attach a copy of a 7.5 minute USGS topographic map clearly showing the project location.

Figure 1: Topographic Map

Figure 2: Site Location Map

Figure 3: Floodplain Map

Design Drawings for Retention Basin

17. I, _____ (owners Initials) CERTIFY THAT THE OWNER OWNS OR HAS EASEMENT RIGHTS ON ALL PROPERTY ON WHICH THIS PROJECT WILL BE LOCATED OR ON WHICH RELATED CONSTRUCTION WILL OCCUR (for dams, this includes the area that would be impounded during the design flood).

18. REMARKS: _____
This application is being submitted concurrently to KDEP Division of Water and the Boone County Floodplain Manager.

I hereby request approval for construction across or along a stream as described in this application and any accompanying documents. To the best of my knowledge, all the information provided is true and correct.

SIGNATURE: _____

Owner or Agent sign here. (If signed by Agent, a Power of Attorney should be attached.)

DATE: 11-9-16

SIGNATURE OF LOCAL FLOODPLAIN COORDINATOR: _____

Permit application will be returned to applicant if not properly endorsed by the local floodplain coordinator.

DATE: 11-9-16

SUBMIT APPLICATION AND ATTACHMENTS TO:

Floodplain Management Section
 Division of Water
 300 Sower Boulevard
 Frankfort, KY 40601



**The
Community
Press**

Because community matters.



**The
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Advertiser:

AMEC FOSTER WHEELER

921 EASTWIND DRIVE, SUITE 129

WESTERVILLE OH 43081

AFFIDAVIT OF PUBLICATION

Newspaper: CIN-CR KY Boone Enq Bundle

STATE OF OHIO

RE: Order #:0001718565

Account #:6144409923AMEC
Total Cost of Ad: \$48.60

Last Run Date :11/17/2016

Darin Sawyer

Of the The Enquirer, a newspaper printed in Cincinnati, Ohio and published in Cincinnati, in said County and State, and of general circulation in said county, and as to the Kentucky Enquirer published in Ft. Mitchell, Kenton County, Kentucky, who being duly sworn, depose and saith that the advertisement of which the annexed is a true copy, has been published in the said newspaper times, once in each issue as follows:

11/10/16, 11/17/16

Subscribed and sworn to me this 29th day of November 2016

Kimberly J. Zimmerman
NOTARY PUBLIC



Kimberly J. Zimmerman
Notary Public, State of Ohio
My Commission Expires
November 7, 2017

___ Community Press

___ Community Recorder

___ Cincinnati.Com

PUBLIC NOTICE
Notice is hereby given that Gary Cook (Owner), Adam Deller (Point of Contact) on behalf of Duke Energy's East Bend Generating Station - 6293 Beaver Road, Union, KY 41091, has filed an application with the Kentucky Energy and Environment Cabinet to excavate the coal combustion residual (CCR) materials in the East Bend Generating Station Ash Basin to repurpose the Ash Basin as a retention basin to provide site water storage and treatment. East Bend Generating Station is located on the east banks of the Ohio River near River Mile 511.5. The property is located at 6293 Beaver Road, Union, KY, 9.3 miles south west of Union, Kentucky. Proposed construction activities will take place at the fringe of the flood plain of the Ohio River above the 100-year flood elevation. Any comments or objections concerning this application shall be directed to: Kentucky Division of Water, Surface Water Permit Branch, Flood Plain Management Section, 300 Sower Boulevard, 3rd Floor, Frankfort, Kentucky 40601. Phone: (502) 564-3410. 507BCR, Nov10,17,16#1718565



**The
Community
Press**

Because community matters.



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Advertiser:

AMEC FOSTER WHEELER

921 EASTWIND DRIVE, SUITE 129
 WESTERVILLE OH 43081

AFFIDAVIT OF PUBLICATION

Newspaper: CIN-CR KY Kenton Enq Bundle

STATE OF OHIO

RE: Order #:0001718582

Account #:6144408923AMEC
 Total Cost of Ad: \$81.00

Last Run Date :11/17/2016

Dawn Sawyer

Of the The Enquirer, a newspaper printed in Cincinnati, Ohio and published in Cincinnati, in said County and State, and of general circulation in said county, and as to the Kentucky Enquirer published in Ft. Mitchell, Kenton County, Kentucky, who being duly sworn, depose and saith that the advertisement of which the annexed is a true copy, has been published in the said newspaper times, once in each issue as follows:

11/10/16, 11/17/16

Subscribed and sworn to me this 29th day of November 2016

Dawn Smith

NOTARY PUBLIC

- Community Press
- Community Recorder
- Cincinnati.Com



Dawn Smith
 Notary Public, State of Ohio
 My Commission Expires
 April 11, 2021

Attachment 1: Description of Construction

Duke Energy is proposing to excavate the coal combustion residual (CCR) materials in the East Bend Station Ash Basin and use the structure as a retention basin as part of the site-wide water management strategy. East Bend Station is located on the east banks of the Ohio River near River Mile 511.5 (Figures 1 and 2).

The existing Ash Basin will be repurposed as a retention basin to provide site water storage and treatment necessary for the larger site-wide water management strategy. Following the permitting and approval by Kentucky Department for Environmental Protection (KDEP), the former Ash Basin will be regraded to the proposed design grades and an intermediate dike constructed. The new retention basin will consist of West and East Basins separated by the intermediate dike. The proposed retention basin will be lined with a composite liner system including a geosynthetic clay liner (GCL) and an HDPE double-sided textured geomembrane. The design drawings for the proposed retention basin are attached to this permit application. As part of repurposing efforts; the dam crest will be lowered approximately 14 feet; existing 2 horizontal: 1 vertical (2H:1V) slopes of the embankments will be reduced to 3H:1V; and an intermediate dike will be installed to create two interconnected basin units (East and West Basins).

The project will be completed in two phases. Phase 1 will consist of removing CCR material from the west side of the existing Ash Basin. During the CCR removal a sheet pile wall will be constructed to separate the west and east. A peninsula will be constructed on the south side of the pond so that the sheet pile wall will not penetrate the core of the existing dike. Once the sheet pile wall is in place, existing water in the west side will be pumped into the east side and remaining CCR material will be removed from the west side of the pond. An intermediate dike will then be constructed in the cleaned portion of the new west basin to permanently separate the two new basins. The west side dike will also be lowered in this phase from the existing elevation of 520 feet to a new top of dike elevation of 505 feet. Once all CCR material has been removed, the pond bottom will also be regraded to aid in the installation of the liner system. Any storm water that will accumulate in the West Basin will be pumped over the temporary divider dike into the existing east side of the Ash Basin, where the current outfall is located.

Phase 2 will repurpose the east side of the basin similar to the west side, with one minor difference. Since the intermediate dike will already be installed there is no need to install sheet pile wall for this phase. The east side will be dewatered and pumped into the West Basin. The West Basin water levels will be kept much lower in order to prevent flows from entering the newly installed concrete weir structure connecting the two basins. The CCR will be removed, pond bottom regraded, dike lowered to 505 feet and side slopes adjusted to 3H:1V slopes similar to the West Basin. The existing emergency spillway will be modified (lowered to invert elevation 503 feet) to accommodate the lower dike elevation.

The project site is located between Cross Sections E and F within the Ohio River FEMA hydraulic model as shown on Flood Insurance Panel (FIRM) Map #21015C0190C with effective date of June 4, 2007 (Figure 3). The 100-year flood elevation at the project site is 481 feet (NAVD). Construction will be within the fringe of the Ohio River 100-year flood plain. New crest elevation (505 ft) and emergency spillway elevation (503 feet) are both higher than the 100-year flood elevation.

The proposed construction is not expected to impact the Ohio River floodplain because the proposed construction is located outside the floodway of the Ohio River.

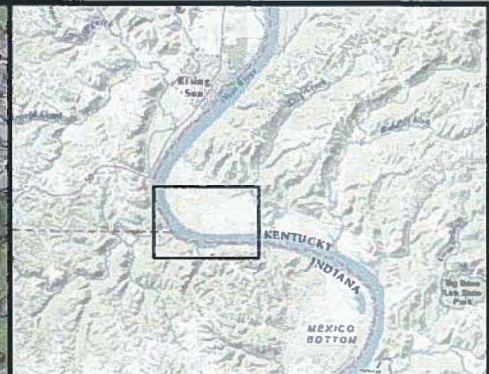
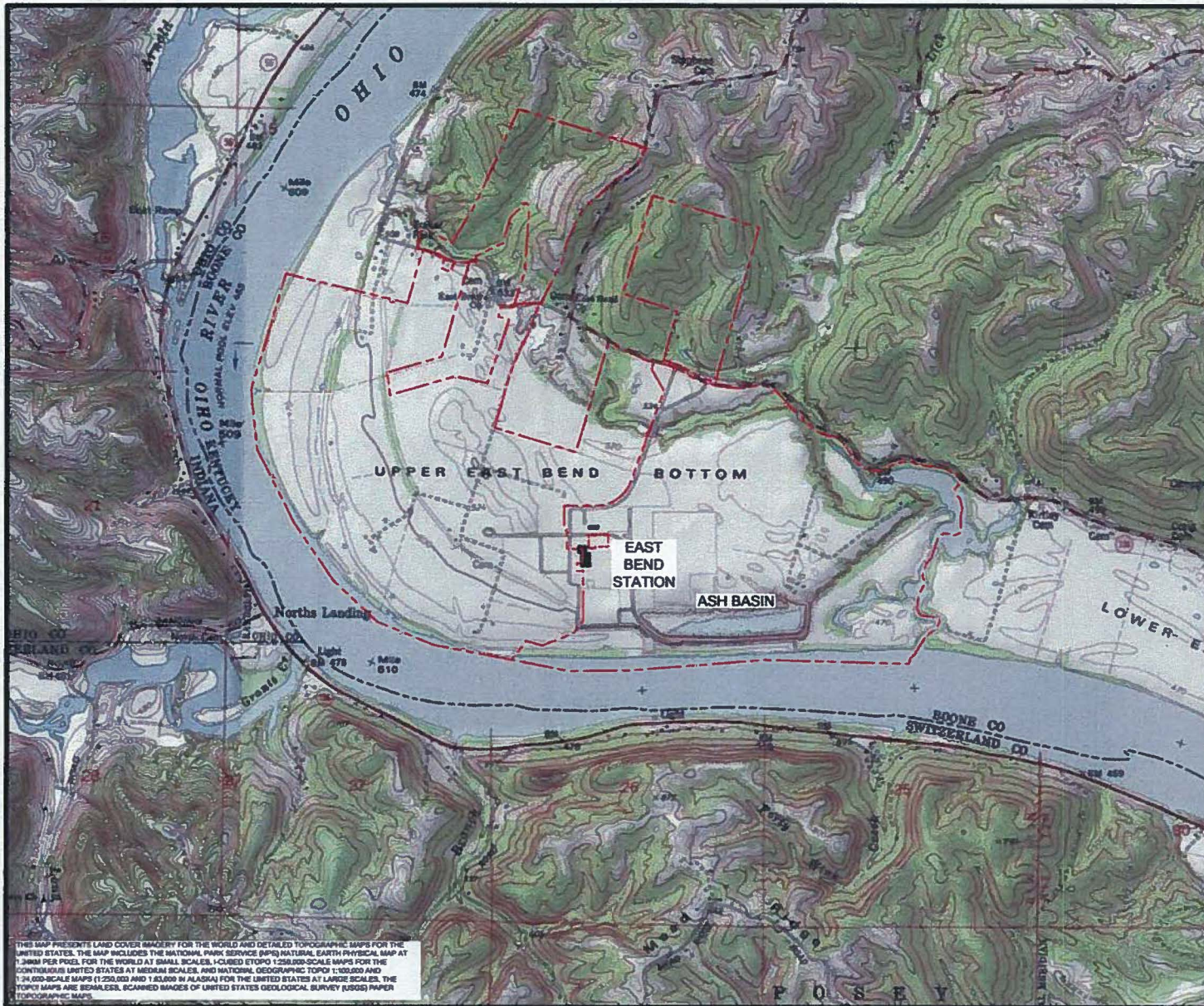
Attached:

Figure 1: Topographic Map

Figure 2: Site Location Map

Figure 3: Floodplain Map

Design Drawings for Retention Basin



LEGEND

--- APPROXIMATE DUKE ENERGY PROPERTY BOUNDARY



TITLE
TOPOGRAPHIC MAP
DUKE ENERGY
EAST BEND STATION ASH BASIN CLOSURE
BOONE COUNTY, KENTUCKY

FOR
EAST BEND STATION

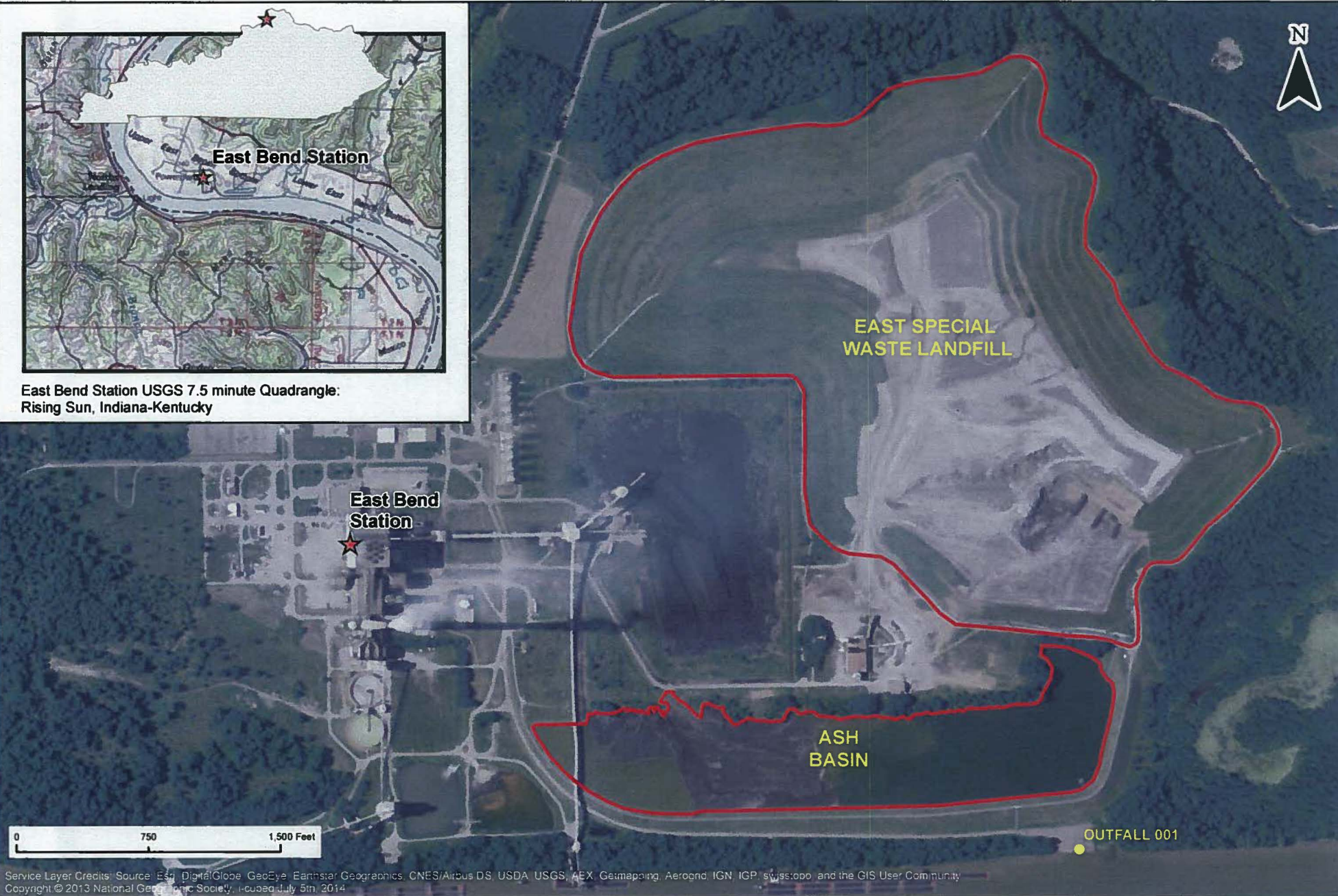
	SCALE: AS SHOWN	DES: JA
	DWG TYPE: CAD	DFTR: JA
	JOB NO: 78100345	CHRD: GH
	DATE: 7/27/2016	ENGR: GH

FILENAME: FIG_1-TOPOGRAPHIC MAP.dwg		
DWG SIZE	DRAWING NO.	REVISION
ANSI D 22"x34"	FIGURE 1	0

THIS MAP PRESENTS LAND COVER IMAGERY FOR THE WORLD AND DETAILED TOPOGRAPHIC MAPS FOR THE UNITED STATES. THE MAP INCLUDES THE NATIONAL PARKS SERVICE (NPS) NATURAL EARTH PHYSICAL MAP AT 1.3MM PER PIXEL FOR THE WORLD AT SMALL SCALES, 1-CUBED ETOPO 1:250,000-SCALE MAPS FOR THE CONTIGUOUS UNITED STATES AT MEDIUM SCALES, AND NATIONAL GEOGRAPHIC TOPO 1:100,000 AND 1:50,000-SCALE MAPS (1:250,000 AND 1:15,000 IN ALASKA) FOR THE UNITED STATES AT LARGE SCALES. THE TOPO MAPS ARE SEAMLESS, SCANNED IMAGES OF UNITED STATES GEOLOGICAL SURVEY (USGS) PAPER TOPOGRAPHIC MAPS.



East Bend Station USGS 7.5 minute Quadrangle:
Rising Sun, Indiana-Kentucky



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community
Copyright © 2013 National Geographic Society. Updated July 5th, 2014



LEGEND

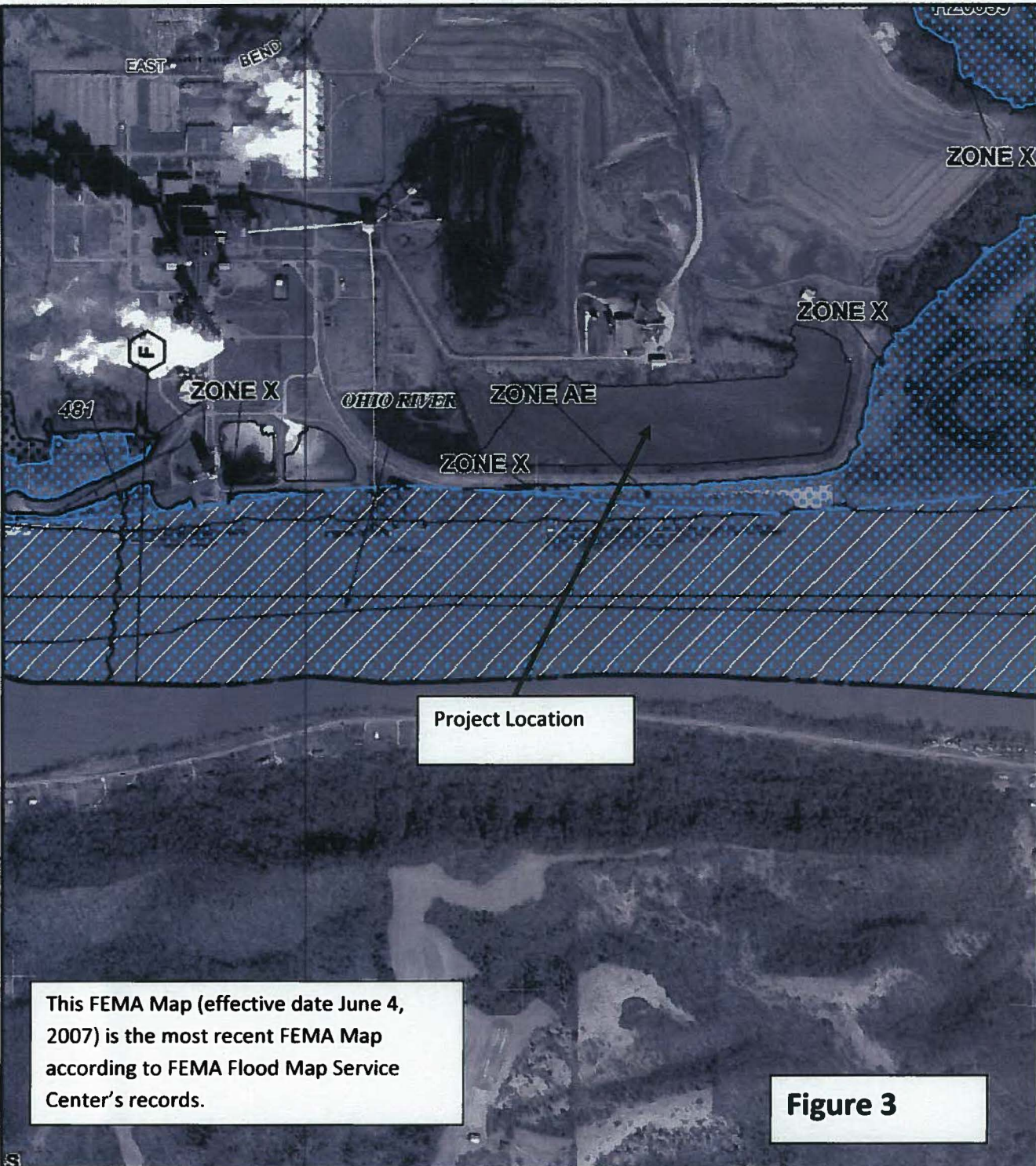
- OUTFALL
- ★ EAST BEND STATION
- APPROXIMATE CCR FACILITY BOUNDARY

NOTE: THIS FIGURE IS FOR REFERENCE ONLY.

**EAST BEND ASH BASIN CLOSURE PLAN
SITE LOCATION AND FACILITIES MAP
EAST BEND STATION
BOONE COUNTY, KENTUCKY**



PROJECT NO: 7810-15-0345 FIGURE NO:



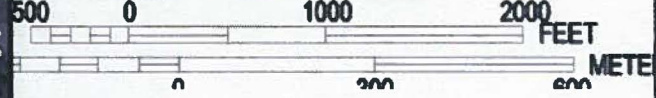
Project Location

This FEMA Map (effective date June 4, 2007) is the most recent FEMA Map according to FEMA Flood Map Service Center's records.

Figure 3



MAP SCALE 1" = 1000'



PANEL 0190C

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM
FLOOD INSURANCE RATE MAP
BOONE COUNTY,
KENTUCKY
AND INCORPORATED AREAS**

PANEL 190 OF 325
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOONE COUNTY	210013	0190	C

Notes to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



**MAP NUMBER
21015C0190C
EFFECTIVE DATE
JUNE 4, 2007**

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



East Bend Station Unit 2 Boone County, Kentucky

2016

88669

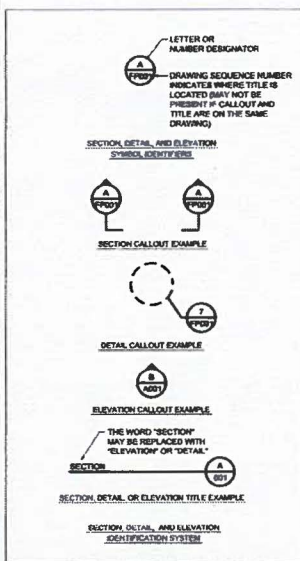
Contract Drawings

GENERAL DRAWINGS

DWG. NO.	TITLE
ES200-CVL-0020	COVER-INDEX
ES200-CVL-0001	LEGEND ABBREVIATIONS, VICINITY MAP & GENERAL NOTES

CIVIL DRAWINGS

DWG. NO.	TITLE
ES200-CVL-0002	EXISTING CONDITIONS
ES200-CVL-0003	EROSION CONTROL PLAN
ES200-CVL-0008	SITE PLAN - TEMPORARY (1)
ES200-CVL-0001	OVERALL GRADING PLAN - TEMPORARY (1)
ES200-CVL-0008	GRADING SECTIONS - SHEET 1 - TEMPORARY (1)
ES200-CVL-0008	GRADING SECTIONS - SHEET 2 - TEMPORARY (1)
ES200-CVL-0009	SITE PLAN - TEMPORARY (2)
ES200-CVL-0001	OVERALL GRADING PLAN - TEMPORARY (2)
ES200-CVL-0008	GRADING SECTIONS - SHEET 1 - TEMPORARY (2)
ES200-CVL-0008	GRADING SECTIONS - SHEET 2 - TEMPORARY (2)
ES200-CVL-0009	SITE PLAN - FUTURE
ES200-CVL-0001	OVERALL GRADING PLAN - FUTURE
ES200-CVL-0008	GRADING SECTIONS - SHEET 1 - FUTURE
ES200-CVL-0008	GRADING SECTIONS - SHEET 2 - FUTURE
ES200-CVL-0003	EROSION CONTROL DETAILS
ES200-CVL-0001	LINE DETAILS
ES200-CVL-0002	CIVIL DETAILS - SHEET 1



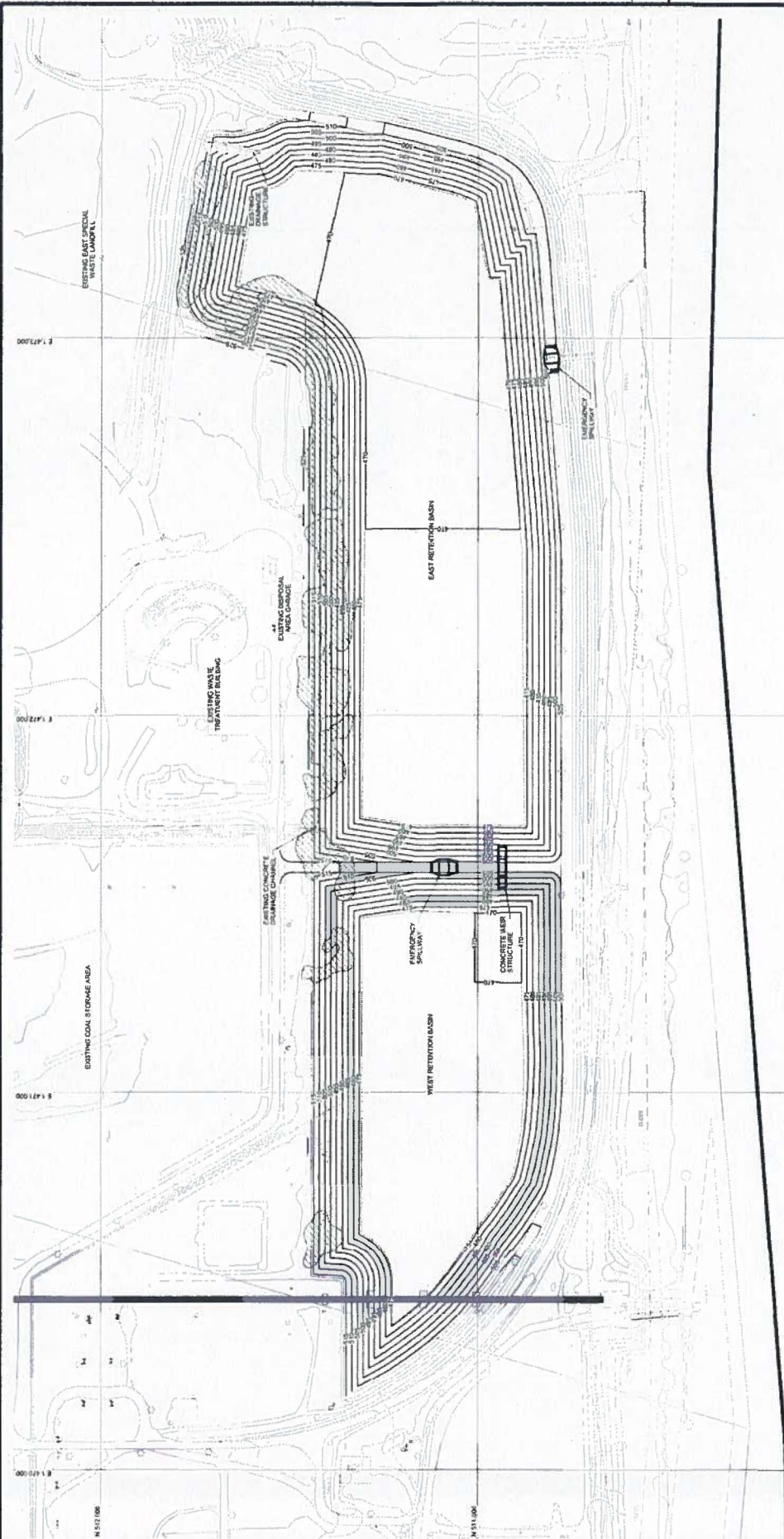
PRELIMINARY - NOT FOR CONSTRUCTION

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B	08/23/16	MM/AM	RND	ISSUED FOR OWNER REVIEW
C	08/23/16	MM/AM	RND	ISSUED FOR PERMITTING

BURNS MEDONNELL
9423 IRVING PARKWAY
KANSAS CITY, MO 64114
816-333-0600

Water Redirection Program
ISSUED FOR PERMITTING
Retention Basin

Cover-Index



EROSION AND SEDIMENT CONTROL MEASURES

BEST MANAGEMENT PRACTICES

1. CONSTRUCTION ACTIVITIES SHALL BE SCHEDULED TO AVOID THE PERIODS OF POLLUTION RISK FROM THE CONSTRUCTION ACTIVITIES. BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED TO PREVENT EROSION, SEDIMENTATION, AND SLOPE FAILURE TO THE EXTENT PRACTICABLE.
2. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION. BEST MANAGEMENT PRACTICES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT CONSTRUCTION AND RESTORATION CONTROL MEASURES SHALL BE MAINTAINED.
3. TEMPORARY EROSION CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR WHO SHALL USE APPROPRIATE BEST MANAGEMENT PRACTICES TO CONTROL EROSION AND SEDIMENTATION. BEST MANAGEMENT PRACTICES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION AND RESTORATION.
4. CONTRACTOR SHALL PLACE BEST MANAGEMENT PRACTICES PRIOR TO BEGINNING WORK. THE DEVICES SHALL BE PLACED DOWN-SLOPE OF THE EROSION CONTROL MEASURES. BEST MANAGEMENT PRACTICES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION AND RESTORATION. THE CONTRACTOR SHALL MAINTAIN THE EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION AND RESTORATION.
5. ALL STORM DRAIN INLETS SHALL BE PROTECTED BY APPROPRIATE BARRIERS DURING CONSTRUCTION. UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGE TO THE WETLANDS HAVE BEEN STABILIZED.

WATER REDIRECTION PROGRAM
RETENTION BASIN CONSTRUCTION
EROSION CONTROL PLAN
EAST BEIRD STATION UNIT 2

DUKE ENERGY

PROJECT NO. EBS00-CV-0603

DATE: 08/14/14

SCALE: AS SHOWN

BY: [Signature]

CHECKED: [Signature]

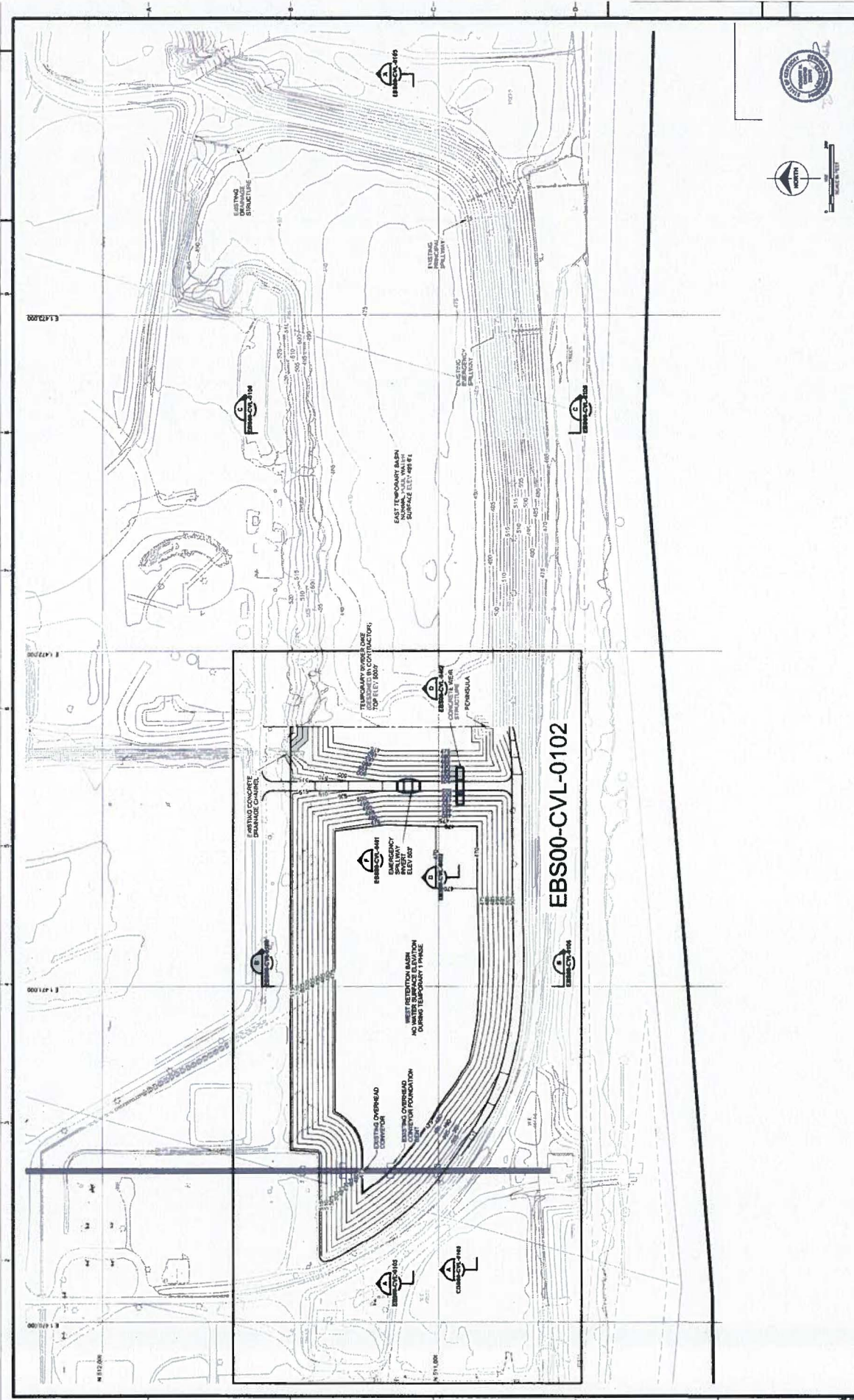
APPROVED: [Signature]

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS & MCDONNELL

1600 WARD PARKWAY
 FARGO, ND 58103
 PHONE: 701.785.1234
 FAX: 701.785.1234

NO.	DATE	BY	DESCRIPTION
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EBS00-CVL-0102

WATER REDIRECTION PROGRAM
RETENTION BASIN CONSTRUCTION
OVERALL GRADING PLAN (TEMP 1)
EAST BEND STATION UNIT 2

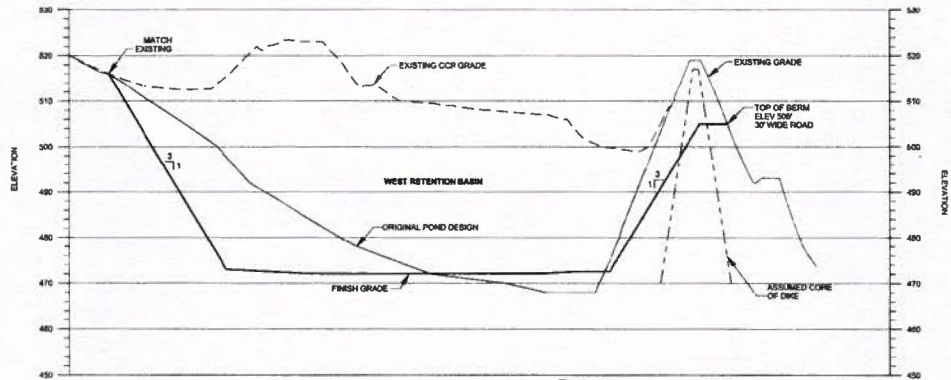
DUKE ENERGY

DATE: 11/15/11
 DRAWN BY: J. HARRIS
 CHECKED BY: J. HARRIS
 PROJECT NO: EBS00-CVL-0102

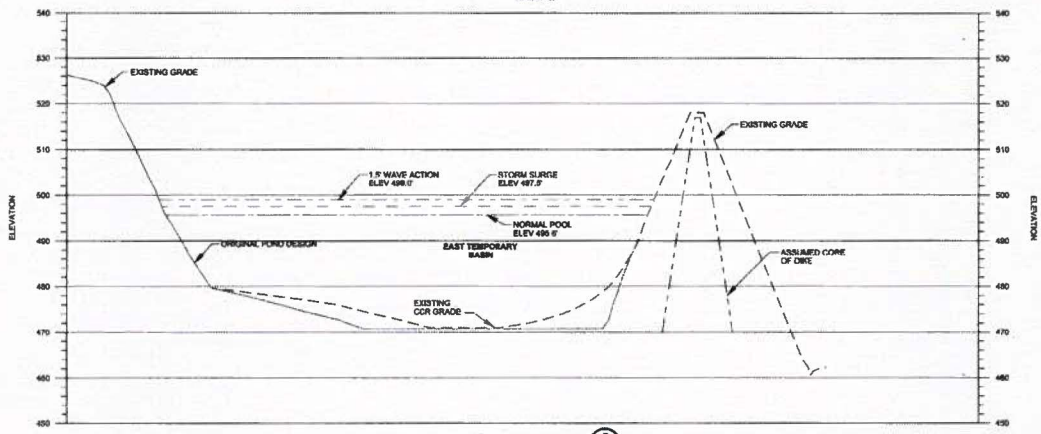
PRELIMINARY - NOT FOR CONSTRUCTION

BURNS & MCDONNELL
 800 WARD PARKWAY
 KANSAS CITY, MO 64114
 PERM LICENSE NO. 43

no.	date	by	description
F	11/15/11	J. HARRIS	SELECT FOR FORMATTING
A	11/15/11	J. HARRIS	SELECT FOR REVIEW
B	12/01/11	J. HARRIS	SELECT FOR REVIEW
C	12/05/11	J. HARRIS	SELECT FOR REVIEW
D	12/15/11	J. HARRIS	SELECT FOR REVIEW
E	11/21/11	J. HARRIS	SELECT FOR OWNER REVIEW



SECTION **EB500-CVL-0101**
 HORIZ: 1" = 20' SCALE IN FEET
 VERT: 1" = 10' SCALE IN FEET



SECTION **EB500-CVL-0101**
 HORIZ: 1" = 20' SCALE IN FEET
 VERT: 1" = 10' SCALE IN FEET



PRELIMINARY - NOT FOR CONSTRUCTION

BURNS & MCDONNELL
 1840 WARD PARKWAY
 KANSAS CITY, MO 64114
 816-333-9400
 FIRM LICENSE NO. 43

WATER REDIRECTION PROGRAM
 RETENTION BASIN CONSTRUCTION
 GRADING SECTIONS - SHEET 2 (TEMP 1)
 EAST BEND STATION UNIT 2

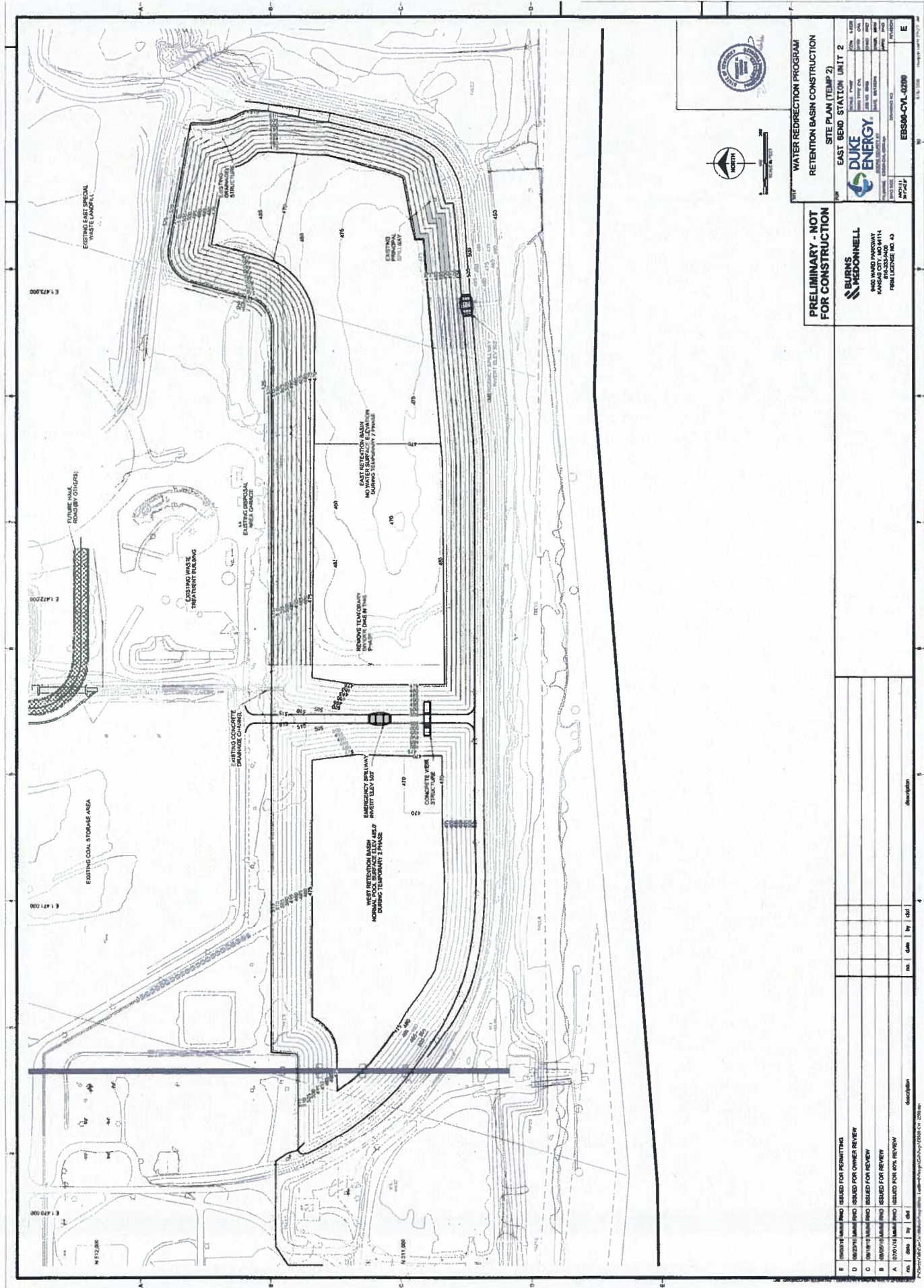
SCALE: AS SHOWN
 DATE: 08/10/16
 DRAWN BY: JMM
 CHECKED BY: JMM
 APPROVED BY: JMM

PROJECT: EBS00-CVL-0100
 SHEET NO: 10
 DATE: 8/10/2016

DUKE ENERGY

PROJECT NO: EBS00-CVL-0100
 SHEET NO: 10
 DATE: 8/10/2016

no.	date	by	chkd	description	no.	date	by	chkd	description
E	08/23/16	JMM	RNO	ISSUED FOR OWNER REVIEW					
D	08/19/16	JMM	RNO	ISSUED FOR REVIEW					
C	08/05/16	JMM	RNO	ISSUED FOR REVIEW					
B	07/07/16	JMM	RNO	ISSUED FOR 80% REVIEW					
A	08/10/16	JMM	RNO	ISSUED FOR 30% REVIEW	F	08/08/16	JMM	RNO	ISSUED FOR PERMITTING



WATER REDIRECTION PROGRAM
RETENTION BASIN CONSTRUCTION
SITE PLAN (TEMP 2)
EAST BEND STATION UNIT 2

DUKE ENERGY

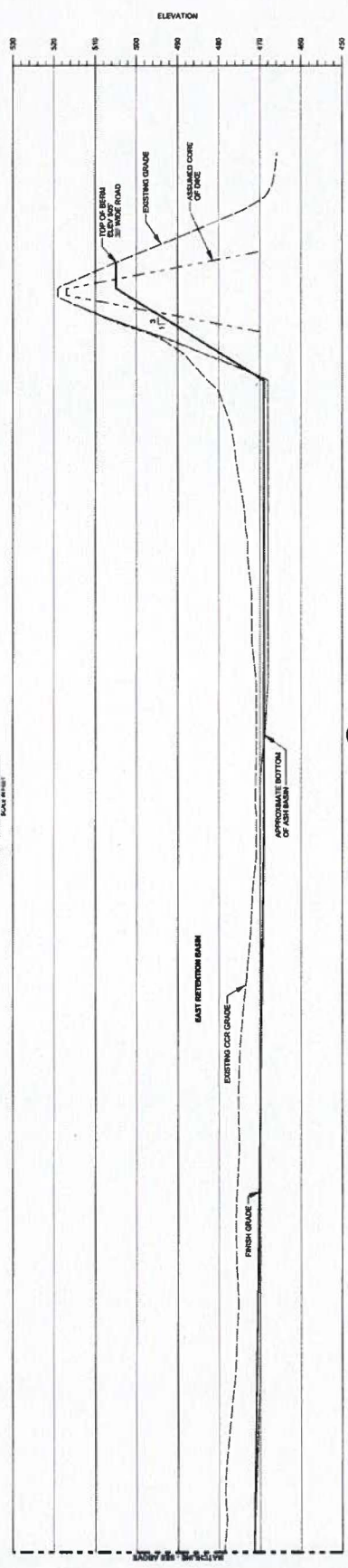
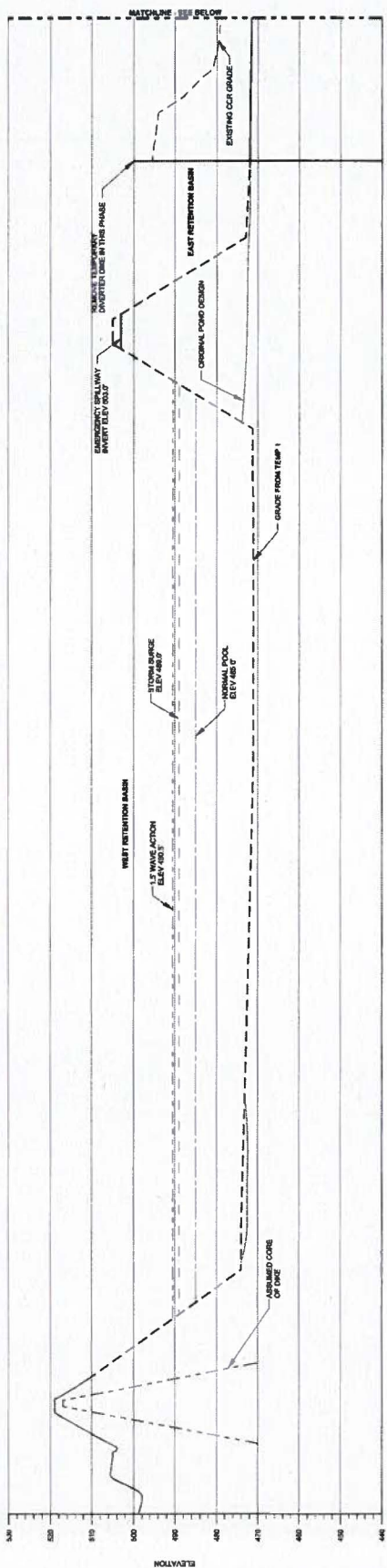
PROJECT NO.	ESB00-CV-0000
DATE	11/11/11
DESIGNER	BRUNN MEDONNELL
CHECKER	BRUNN MEDONNELL
APPROVER	BRUNN MEDONNELL
REVISIONS	

PRELIMINARY - NOT FOR CONSTRUCTION

BRUNN MEDONNELL
4400 WARD PARKWAY
RANDOLPH COUNTY, NC 28134
PHONE LICENSE NO. 43

no.	date	by	description
E	11/11/11	BRUNN MEDONNELL	ISSUED FOR PERMITTING
D	10/23/11	BRUNN MEDONNELL	ISSUED FOR OWNER REVIEW
C	10/19/11	BRUNN MEDONNELL	ISSUED FOR REVIEW
B	10/05/11	BRUNN MEDONNELL	ISSUED FOR REVIEW
A	07/27/11	BRUNN MEDONNELL	ISSUED FOR OWNER REVIEW

PROJECT NO. ESB00-CV-0000, DRAWING NO. ESB00-CV-0000-01, SHEET NO. 1 OF 1



WATER REDIRECTION PROGRAM
RETENTION BASIN CONSTRUCTION
GRADING SECTIONS - SHEET 1 (TEMP 2)
EAST BEND STATION UNIT 2

BURNS & MCDONNELL
3900 WARD PARKWAY
BOULDER, CO 80504
REGISTERED PROFESSIONAL ENGINEER
FIRM LICENSE NO. 13

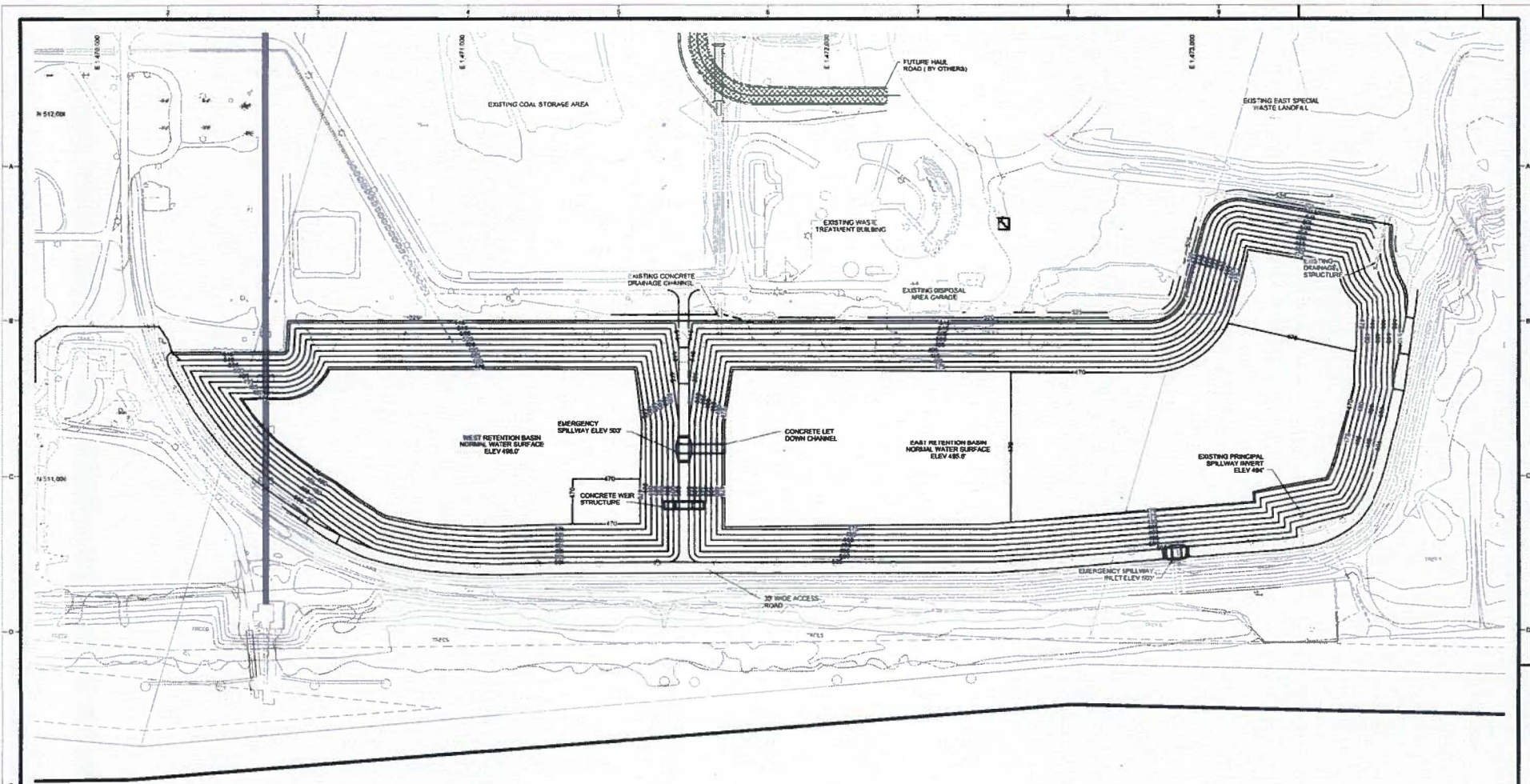
DUKE ENERGY

NO.	DATE	BY	DESCRIPTION
1			ISSUED

PROJECT NO: EBS00-CVI-0005

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	BY	DESCRIPTION
E	10/15/13	MMH/PHO	ISSUED FOR OWNER REVIEW
D	09/18/13	MMH/PHO	ISSUED FOR REVIEW
C	09/10/13	MMH/PHO	ISSUED FOR REVIEW
B	07/25/13	MMH/PHO	ISSUED FOR OWNER REVIEW
A	06/18/13	MMH/PHO	ISSUED FOR OWNER REVIEW
F	06/07/13	MMH/PHO	ISSUED FOR PERMITTING



PRELIMINARY - NOT FOR CONSTRUCTION

BURNS & MCDONNELL
 8400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816.333.8600
 FRM LICENSE NO 43

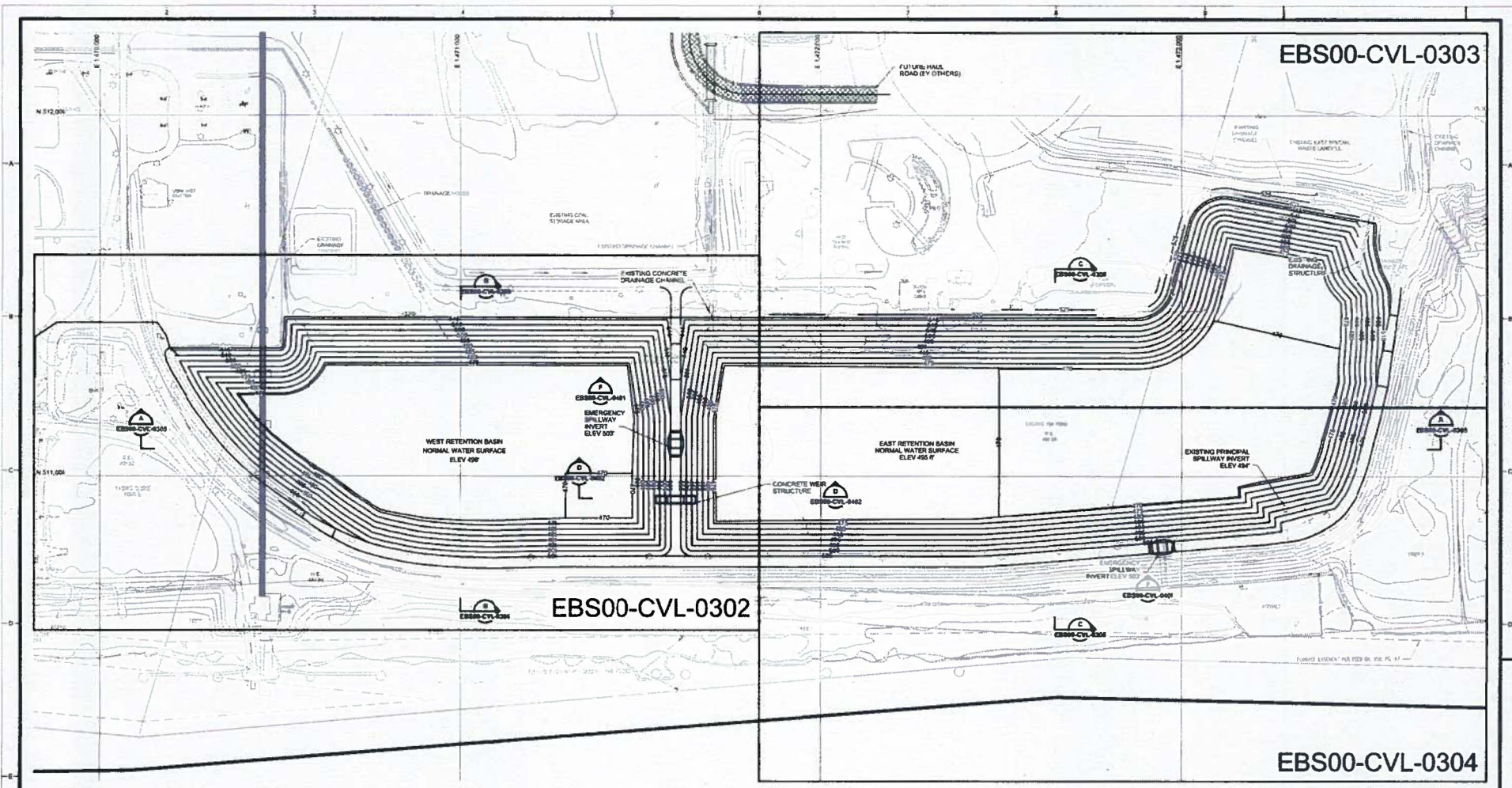
**WATER REDIRECTION PROGRAM
 RETENTION BASIN CONSTRUCTION
 SITE PLAN (FUTURE)
 EAST BEND STATION UNIT 2**

DUKE ENERGY
 800.368.5222
 800.368.5222
 800.368.5222
 800.368.5222

PROJECT NO: EBS00-CVL-0300
 SHEET NO: E

no.	date	by	description
E	03/06/18	MMAL/RNO	ISSUED FOR PERMITTING
D	08/27/16	MMAL/RNO	ISSUED FOR OWNER REVIEW
C	08/18/16	MMAL/RNO	ISSUED FOR REVIEW
B	08/05/16	MMAL/RNO	ISSUED FOR REVIEW
A	07/01/16	MMAL/RNO	ISSUED FOR 80% REVIEW

Plot Date: 03/06/18 10:00:00 AM



EBS00-CVL-0303

EBS00-CVL-0302

EBS00-CVL-0304



PRELIMINARY - NOT FOR CONSTRUCTION

WATER REDIRECTION PROGRAM
RETENTION BASIN CONSTRUCTION
OVERALL GRADING PLAN (FUTURE)
EAST BEND STATION UNIT 2

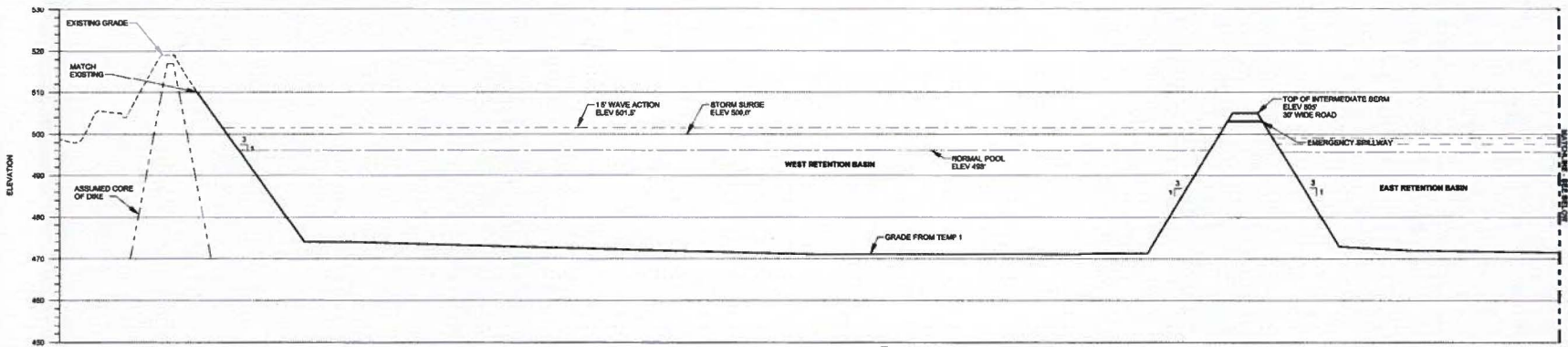
BURNS & MCDONNELL
3400 WARD PARKWAY
KANSAS CITY, MO 64114
816.333.9400
PROF. LICENSE NO. 43

DUKE ENERGY
DESIGNED BY: [Signature]
DATE: 08/15/18

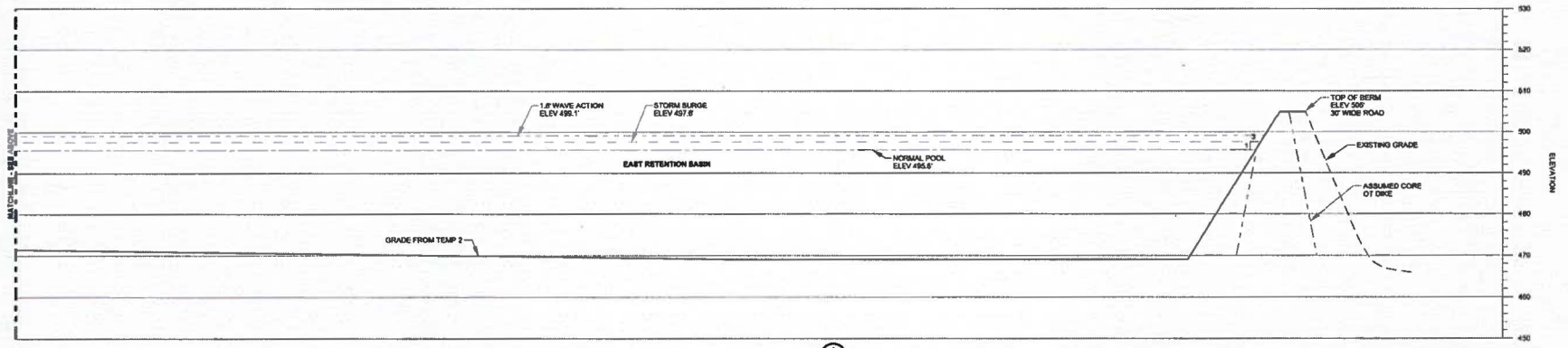
SCALE: 1"=20'	CN: 4-8183
DATE: 08/15/18	DATE: 08/15/18
DATE: 08/15/18	DATE: 08/15/18
DATE: 08/15/18	DATE: 08/15/18

PROJECT NO: EBS00-CVL-0301
SHEET NO: 10
REVISED: F

no.	date	by	description
E	08/23/18	MMB	RND ISSUED FOR OWNER REVIEW
D	08/18/18	MMB	RND ISSUED FOR REVIEW
C	08/05/18	MMB	RND ISSUED FOR REVIEW
B	07/01/18	MMB	RND ISSUED FOR 90% REVIEW
A	06/15/18	MMB	RND ISSUED FOR 30% REVIEW
F	08/08/18	MMB	RND ISSUED FOR PERMITTING



SECTION A-A
 EBS00-CVL-0301
 HORIZ: 1" = 50'
 SCALE: HORIZONTAL
 VERT: 1" = 10'
 SCALE: VERTICAL



SECTION B-B
 EBS00-CVL-0301
 HORIZ: 1" = 50'
 SCALE: HORIZONTAL
 VERT: 1" = 10'
 SCALE: VERTICAL



PRELIMINARY - NOT FOR CONSTRUCTION

BURNS & MCDONNELL
 9400 WARD PARKWAY
 KANSAS CITY, MO 64114
 816.333.9400
 FIRM LICENSE NO. 43

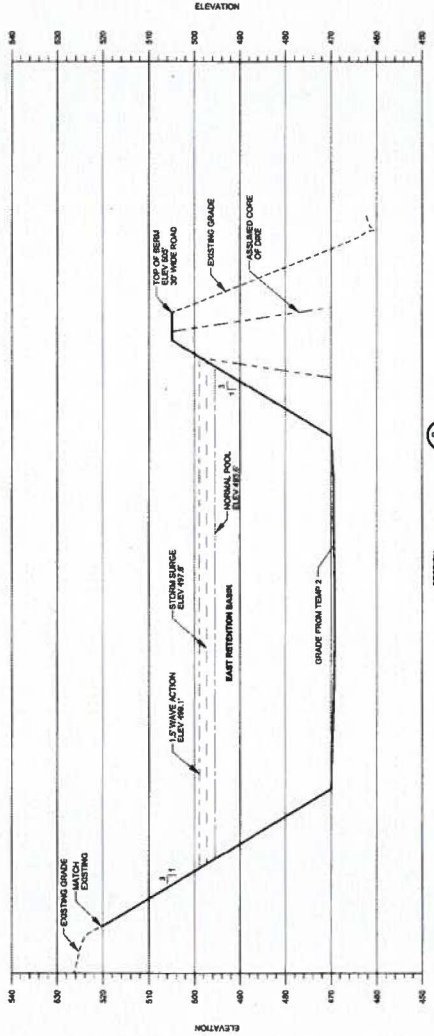
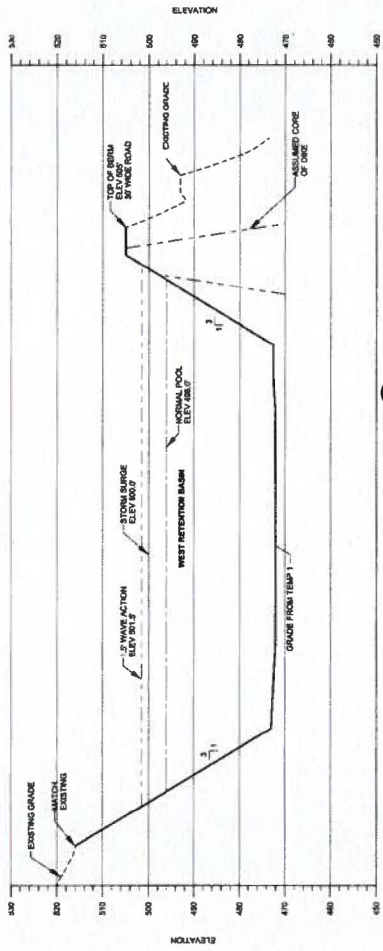
DUKE ENERGY

WATER REDIRECTION PROGRAM
RETENTION BASIN CONSTRUCTION
GRADING SECTIONS - SHEET 1 (FUTURE)
EAST BEND STATION UNIT 2

SCALE: AS-SHOWN	DATE: 08/13/14
DWG. TYPE: CIVIL	SHEET: 001
PROJECT NO.: 10000	DATE: 08/13/14
DESIGNED BY: [Name]	CHECKED BY: [Name]
APPROVED BY: [Name]	DATE: 08/13/14

EBS00-CVL-0305

no.	date	by	description
E	08/29/14	MAM	RNO ISSUED FOR OWNER REVIEW
D	08/19/14	MAM	RNO ISSUED FOR REVIEW
C	08/05/14	MAM	RNO ISSUED FOR REVIEW
B	07/01/14	MAM	RNO ISSUED FOR 80% REVIEW
A	06/10/14	MAM	RNO ISSUED FOR 30% REVIEW
F	09/08/14	MAM	RNO ISSUED FOR PERMITTING



WATER REDIRECTION PROGRAM
 RETENTION BASIN CONSTRUCTION
 GRADING SECTIONS - SHEET 2 (FUTURE)
 EAST BEND STATION UNIT 2

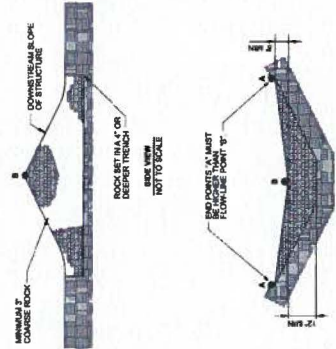
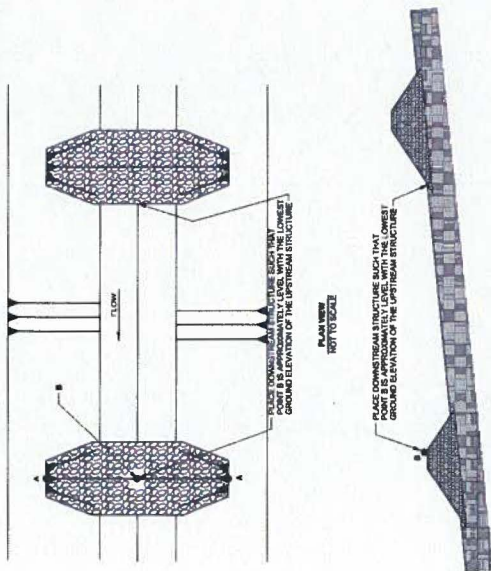
DUKE ENERGY

DATE: 08/14/14
 DRAWN BY: JMS
 CHECKED BY: JMS
 PROJECT NO: EBS00-CVL-0006

PRELIMINARY - NOT FOR CONSTRUCTION

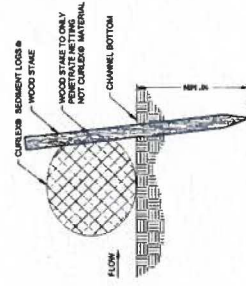
BURNS & MCDONNELL
 8400 WARD PARKWAY
 NANNETT, NC 27154
 PRM LICENSE NO. 43

NO.	DATE	BY	DESCRIPTION
E	08/27/14	JMS/RNO	ISSUED FOR OWNER REVIEW
D	08/19/14	JMS/RNO	ISSUED FOR REVIEW
C	08/07/14	JMS/RNO	ISSUED FOR REVIEW
B	07/01/14	JMS/RNO	ISSUED FOR BOW REVIEW
A	06/19/14	JMS/RNO	ISSUED FOR 20% REVIEW



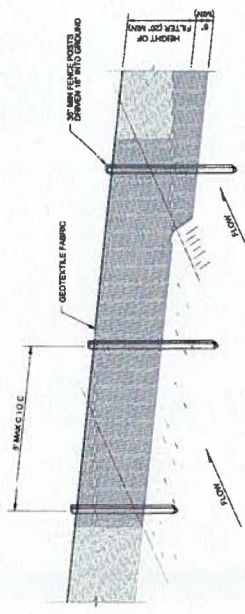
ROCK SIZE (IN)	DOWNSTREAM FACE OF E STRUCTURE	DOWNSTREAM FACE OF E STRUCTURE	DOWNSTREAM FACE OF E STRUCTURE	DOWNSTREAM FACE OF E STRUCTURE	DOWNSTREAM FACE OF E STRUCTURE
3	25%	20%	15%	10%	5%
6	30%	25%	20%	15%	10%
12	35%	30%	25%	20%	15%
18	40%	35%	30%	25%	20%
24	45%	40%	35%	30%	25%
30	50%	45%	40%	35%	30%
36	55%	50%	45%	40%	35%
42	60%	55%	50%	45%	40%

ROCK CHECK DAM IN DITCH
NOT TO SCALE

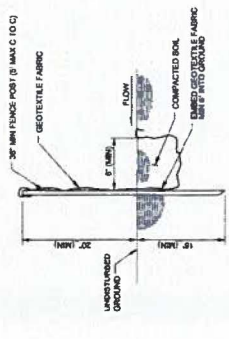


- NOTES:
1. 1/4" X 1/4" X 3/4" WOODEN STAKES ARE RECOMMENDED FOR 6", 8", AND 12" SEDIMENT LOSS.
 2. ANGLE STAKES UPSTREAM.
 3. EXTEND SEDIMENT LOSS UP THE SIDE SLOPES TO THE EXPECTED HIGH WATER LEVEL OR 7 FEET VERTICAL, WHICHEVER IS GREATER.

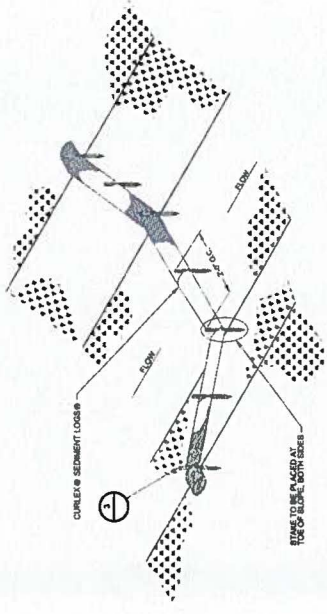
DETAIL
STAKE DETAILS AND TRENCH
NOT TO SCALE



- CONSTRUCTION NOTES FOR FABRICATED SALT FENCE:
1. GEOTEXTILE FABRIC TO BE FASTENED REGULARLY TO FENCE POSTS WITH STAPLES.
 2. OTHER THE 3" SPACING OF GEOTEXTILE FABRIC TO BE FOLDED.
 3. MATERIAL REQUIRED FOR SALT FENCE TO BE APPROVED EQUAL.



DETAIL
SALT FENCE TRENCH INSTALLATION METHOD
NOT TO SCALE



DETAIL
SALT FENCE TRENCH INSTALLATION METHOD
NOT TO SCALE

NO.	DATE	BY	CHKD.	DESCRIPTION
E	08/01/15	MM/AM/NO	ISSUED FOR PERMITTING	
D	08/01/15	MM/AM/NO	ISSUED FOR OWNER REVIEW	
C	08/01/15	MM/AM/NO	ISSUED FOR REVIEW	
B	08/01/15	MM/AM/NO	ISSUED FOR REVIEW	
A	07/01/15	MM/AM/NO	ISSUED FOR REVIEW	

WATER REDIRECTION PROGRAM
RETENTION BASIN CONSTRUCTION
EROSION CONTROL DETAILS
EAST BEND STATION UNIT 2

DUKE ENERGY

BURNS & MCDONNELL
8400 WARD PARKWAY
ANN ARBOR, MI 48106
PRM LICENSE NO. 43

PROJECT NO. E8580-CVL-0400

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