Sludge Sedimentation Basins
Initial Periodic Hazard Potential Classification

Clover Power Station
Clover, Virginia

October 2016

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Initial Periodic Hazard Potential Classification

Clover Power Station
Clover, Virginia

October 2016

Prepared For
Virginia Electric and Power Company

Jonathan Hotstream
Senior Scientist

R. Kent Nilsson, P.E.
Senior Engineer

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Section 1
Background

Virginia Electric and Power Company d/b/a Dominion Virginia Power (Dominion) owns[1] and operates the Clover Power Station. The purpose of this report is to determine the hazard potential classification (Classification) for two existing sludge sedimentation basins and the proposed retrofit of the two basins at the Clover Power Station as required by the United States Environmental Protection Agency's (USEPA) final coal combustion residual (CCR) rule Title 40 Code of Federal Regulations (40 CFR) Parts 257 and 261 Subpart D-"Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments." The requirements for hazard potential classification assessments for existing and new surface impoundments are presented in 40 CFR 257.73 and 40 CFR 257.74. The basins are considered existing surface impoundments according to the federal rule (40 CFR 257.53).

1.1 Existing Conditions

The Clover Power Station is located on the Staunton River in Halifax County, Virginia near the Town of Clover, refer to Figure 1. There are currently two existing basins at the Clover Power Station (North and South), which cover a total area of approximately 3.8 acres (refer to Figure 2). The basins are located outside of the 100 year flood plain (refer to Figure 2).

The basins are located on the eastern side of the station and were constructed in partial cut with an earthen berm constructed on the northeastern perimeter of the north basin. The maximum depth of each basin is approximately nine feet with a bottom elevation of 365.4 feet North American Vertical Datum of 1988 (NAVD88) based on the top of concrete and a top of berm elevation of approximately 373 feet NAVD88. The existing storage capacity for each basin is approximately 10.8 acre feet.

The basins provide storage for a closed loop wastewater system and the basins provide treatment in the form of settling solids. Water levels in the basins are controlled by pumping.

The surrounding ground is approximately level with the basins on the west and south sides. Berms were constructed with the North Basin on the north and east sides. The natural ground beyond the basins slopes down gently to the northeast.

The basins were designed and constructed with engineered fill which was placed and compacted to project specifications. The existing basins were constructed with 30 mil thick

[1] Old Dominion Electric Cooperative owns a 50% undivided interest in the Clover Power Station.

Polyvinyl Chloride geomembrane liner. The geomembrane liner is protected by a one-foot thick sand layer, and roller compacted concrete on the floor and riprap on the sideslopes. TRC is unable to verify that the existing liner meets the requirements of the CCR rule in 40 CFR 257.71. Therefore, the basins are scheduled to be retrofitted with a new liner compliant with the CCR rule, which will be completed by 2018.

The basins have been operating and performing as designed since 1995. The constructed berms have not shown signs of weakening, poor performance, or differential settlement. The stability of the berms was evaluated in the existing configuration and based on the design of the retrofit with resulting factors of safety exceeding design standards. This Classification considers potential berm failures to identify possible downstream impacts. A berm failure is highly unlikely based on the previous performance, the design evaluations, and construction quality assurance activities planned for the future retrofit of the basins.

Section 2
Hazard Potential Evaluation

The basins have a maximum hydraulic height of 9 feet with an estimated maximum combined basin capacity of approximately 22 acre-feet (maximum hydraulic height of 10.5 feet with a capacity of 24 acre-feet after the retrofit). Based on these characteristics, the basins do not meet the definition of a dam or impounding structure according to the Virginia Dam Safety Regulations (Title 4 Virginia Administrative Code 50-20-30).

Due to the site grading, discharge out of the basins due to a potential berm failure would flow directly toward the Staunton River, refer to Figures 1 and 2. The figures contain arrows which reflect the likely flow paths of the water to and from the basins. The flow path directions are based on site topographic survey information in the immediate vicinity of the basins and United States Geologic Survey topographic maps in areas beyond the extent of the site survey. Based on this evaluation, there are no habitable structures currently at risk in the event of a failure.

It is also noted that the property at risk should a failure occur is owned by Dominion (refer to Figure 2). There is in excess of 100 acres of undeveloped property located immediately between the basins and the Staunton River. This area would serve to significantly attenuate any peak discharge before it entered into the river.

Based on this evaluation of the existing basins:

- There is no apparent risk of loss of life associated with a potential failure of the basin berms.
- There will not be interruption or impact to critical infrastructure due to a potential failure of the basin berms.
- Environmental impacts will be limited to property owned and operated by Dominion.

Therefore, the existing and retrofitted sludge sedimentation basins are classified as low hazard.

Section 3
Conclusions

Based upon these evaluations, the existing and retrofitted sludge sedimentation basins at the Clover Power Station are classified as low hazard potential surface impoundments. The Virginia Department of Environmental Quality will be notified once this document has been placed in the operating record and posted to the publically accessible website.

A periodic hazard potential classification assessment must be conducted every 5 years from the completion date of this Classification.

The Classification shall be amended whenever the periodic review period is reached or if changes in site conditions, either intentionally or unintentionally, occur that will change the current Classification.

Section 4
References

National Flood Insurance Program. 2009. Flood Insurance Rate Map: Halifax County Virginia Panel 350 of 625. Map Number 51083C0350D. Effective Date October 16, 2009. Federal Emergency Management Agency. Washington, D.C.

Section 5
Certification

I, the undersigned Virginia Professional Engineer, hereby certify that I am familiar with the technical requirements of 40 CFR 257 Subpart D. I also certify that it is my professional opinion that, to the best of my knowledge, information, and belief, that the information in this demonstration is in accordance with current good and accepted engineering practice(s) and standard(s) and meets the requirements of paragraph (a) in 40 CFR 257.73 and 40 CFR 257.74.

For the purpose of this document, "certify" and "certification" shall be interpreted and construed to be a "statement of professional opinion." The certification is understood and intended to be an expression of my professional opinion as a Virginia Licensed Professional Engineer, based upon knowledge, information, and belief. The statement(s) of professional opinion are not and shall not be interpreted or construed to be a guarantee or a warranty of the analysis herein.

R. Kent Nilsson, P.E.	026477
Printed Name of Professional Engineer	Commonwealth of Virginia License Number
	October 3, 2016
Signature of Professional Engineer	Date

TRC - GIS

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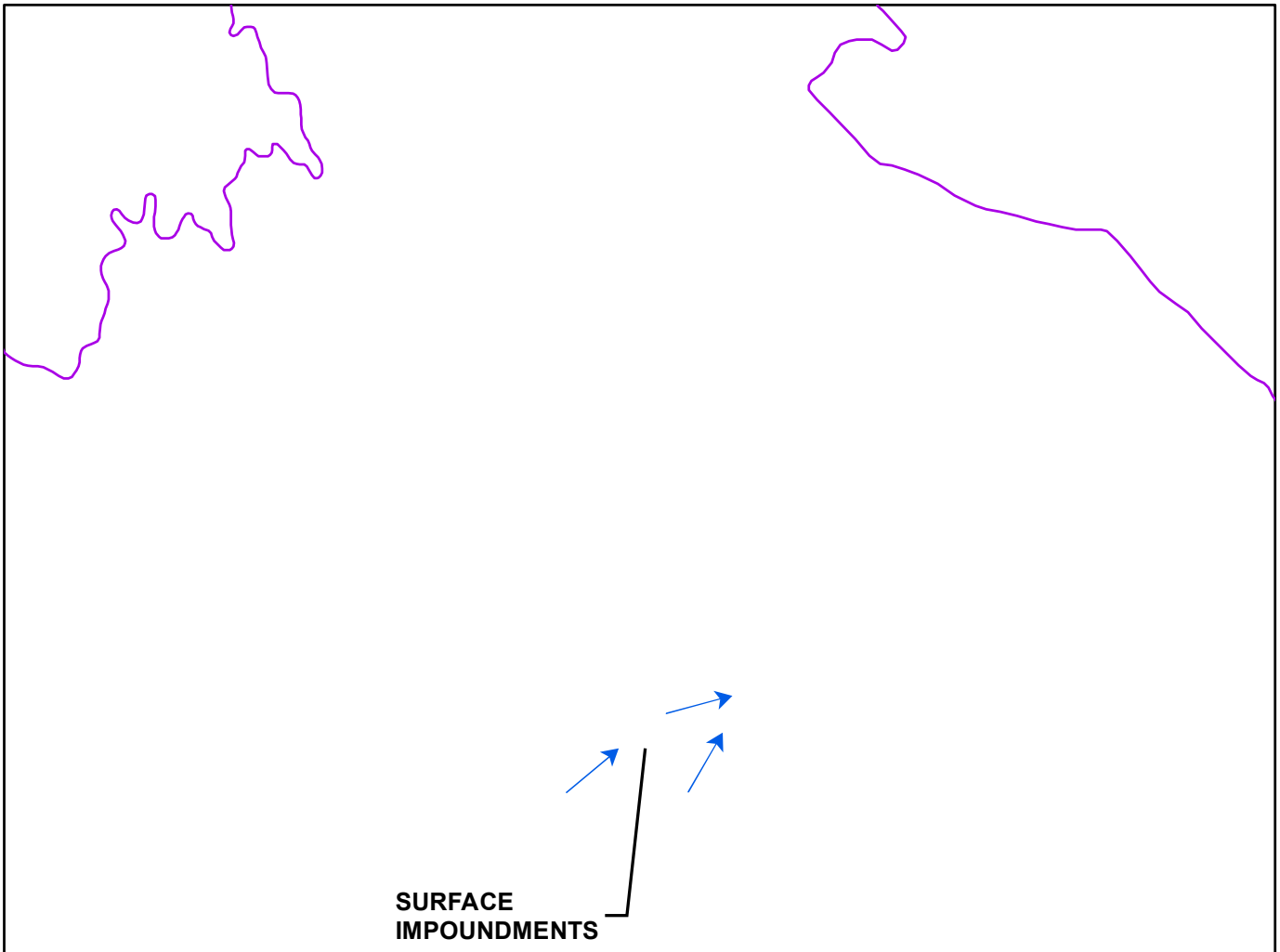


Legend

DIRECTION OF SURFACE WATER FLOW

EXTENTS OF 100-YEAR FLOODPLAIN

VIRGINIA OVERVIEW

-BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES, 1982.
-FLOOD DATA ACQUIRED FROM FEMA NATIONAL FLOOD HAZARD LAYER (NFHL).

N

1 " = 2,000 '
1:24,000

0 2,000 4,000 FEET

E:\Dominion\Clover\VA\2015_232002\232002-006slm.mxd

TRC

Patewood Plaza One, Suite 300
30 Patewood Drive
Greenville, SC 29615
Phone: 864.281.0030

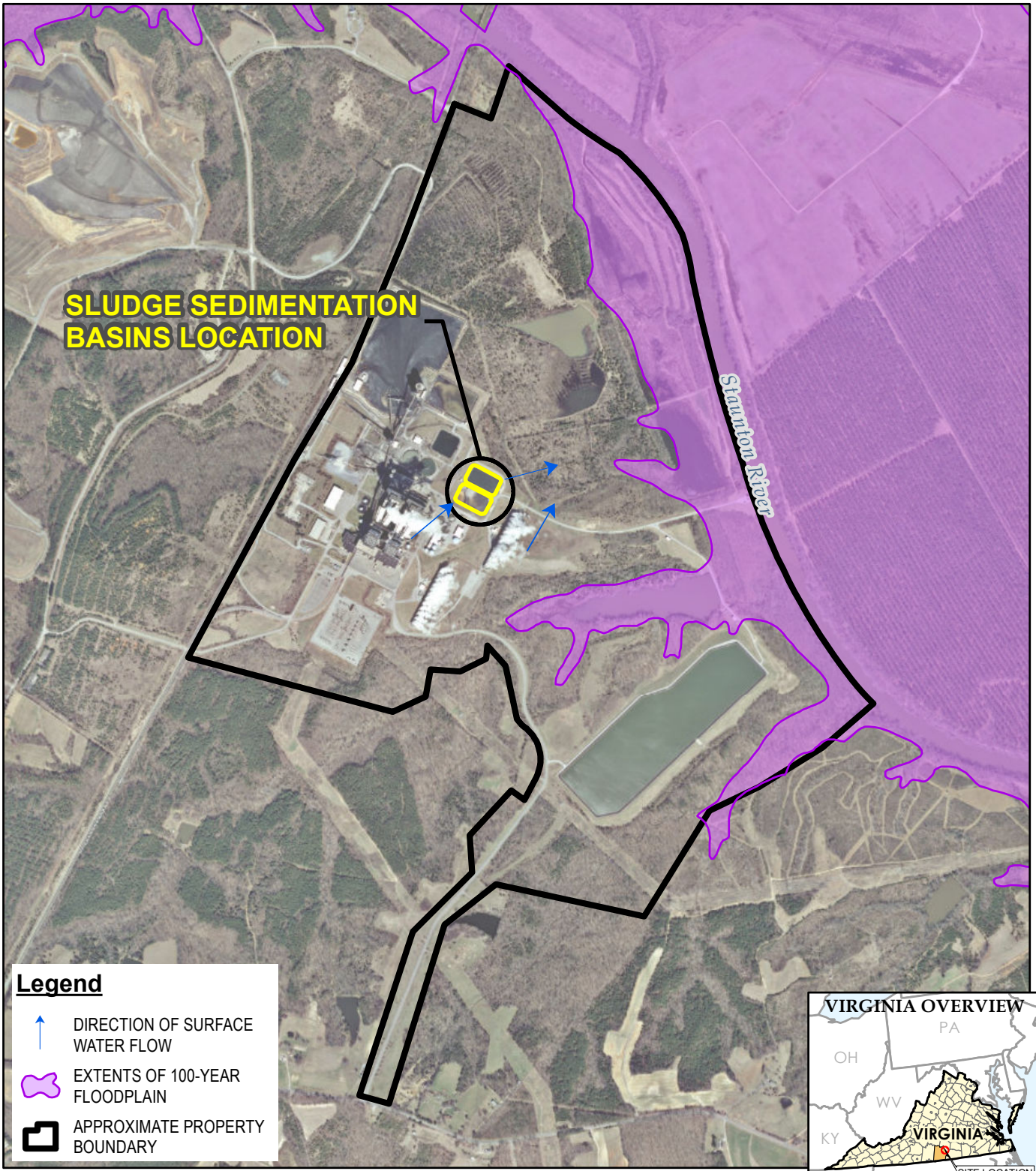
DOMINION RESOURCES SERVICES, INC.
CLOVER POWER STATION
CLOVER, HALIFAX COUNTY, VIRGINIA

INITIAL HAZARD POTENTIAL CLASSIFICATION
SITE LOCATION MAP

DRAWN BY:	R SUEMNICHT
APPROVED BY:	R. K. NILSSON
PROJECT NO:	232002
FILE NO.	232002-006slm.mxd
DATE:	AUGUST 2016

FIGURE 1

TRC - GIS



-BASE MAP FROM COMMONWEALTH OF VIRGINIA ORTHOPHOTOGRAPHY, 2013.
-FLOOD DATA ACQUIRED FROM FEMA NATIONAL FLOOD HAZARD LAYER (NFHL).

N

1 " = 1,500 '
1:18,000

0 1,500 3,000 Feet

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Phone: 864.281.0030

DOMINION RESOURCES SERVICES, INC.
CLOVER POWER STATION
CLOVER, HALIFAX COUNTY, VIRGINIA

INITIAL HAZARD POTENTIAL CLASSIFICATION
SITE OVERVIEW MAP

	R SUEMNICHT
APPROVED BY:	R. K. NILSSON
PROJECT NO:	232002
FILE NO.	232002-007.mxd
DATE:	AUGUST 2016

FIGURE 2

Appendix A
Select Engineering Drawings

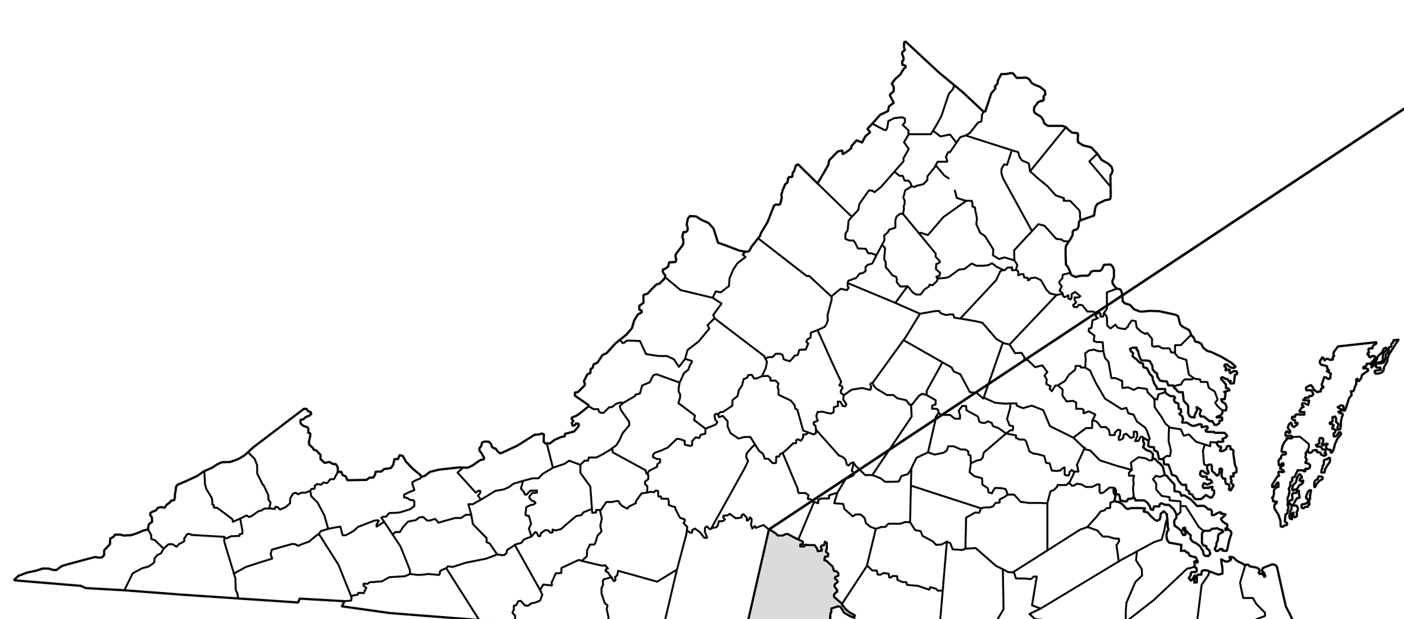
CLOVER POWER STATION

RETROFIT - SLUDGE SEDIMENTATION BASINS
ISSUED FOR BID

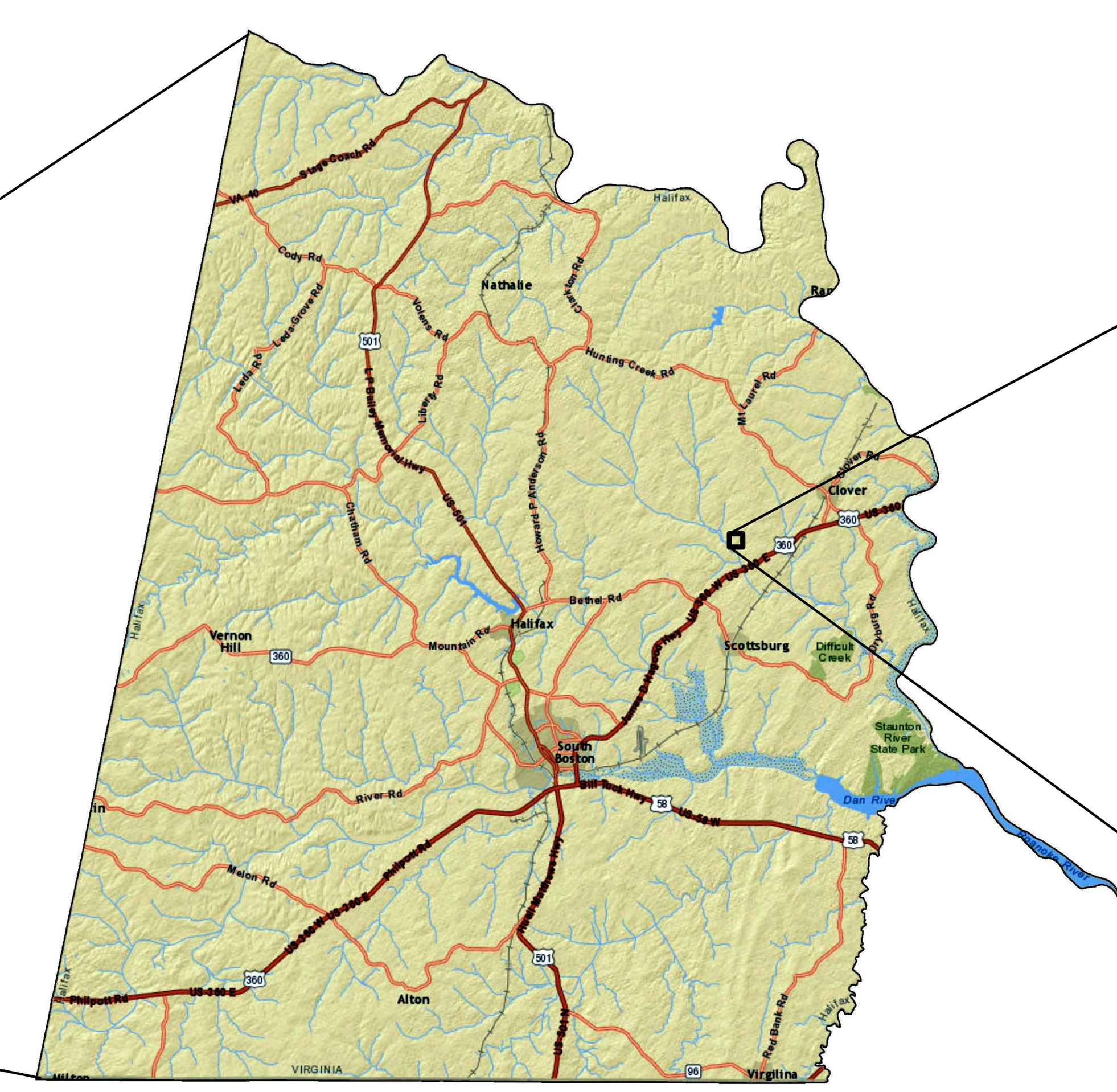
PREPARED FOR: DOMINION RESOURCES SERVICES, INC.
CLOVER POWER STATION
CLOVER, VIRGINIA

PREPARED BY: TRC ENGINEERS, INC.
GREENVILLE, SOUTH CAROLINA

DATE: APRIL 2016



VIRGINIA



HALIFAX COUNTY

SITE LOCATOR
1" = 600'

SHEET INDEX

SHEET NUMBER	SHEET TITLE
66706-15348-CWSG-S3100	TITLE SHEET
66706-15348-CWSG-S3101	GENERAL NOTES - CIVIL, MECHANICAL, STRUCTURAL
66706-15348-CWSG-S3102	GENERAL NOTES - CIVIL, MECHANICAL, STRUCTURAL
66706-15348-CWSG-S3103	CIVIL STANDARD LEGEND
66706-15348-CWSG-S3104	EXISTING CONDITIONS
66706-15348-CWSG-S3105	SUGGESTED CONSTRUCTION SEQUENCE PLAN
66706-15348-CWSG-S3106	EROSION AND SEDIMENT CONTROL PLAN
66706-15348-CWSG-S3107	OVERVIEW NORTH AND SOUTH BASINS
66706-15348-CWSG-M4000	YARD PIPING PROFILES
66706-15348-CWSG-S3108	NORTH BASIN LINER SUBBASE GRADES
66706-15348-CWSG-S3109	NORTH BASIN BASE AND PAVING
66706-15348-CWSG-S3110	NORTH BASIN CROSS SECTIONS
66706-15348-CWSG-S3111	SOUTH BASIN LINER SUBBASE GRADES
66706-15348-CWSG-S3112	SOUTH BASIN BASE AND PAVING
66706-15348-CWSG-S3113	SOUTH BASIN CROSS SECTIONS
66706-15348-CWSG-S3114	CIVIL DETAILS - NORTH AND SOUTH BASINS
66706-15348-CWSG-S3115	CIVIL DETAILS - NORTH AND SOUTH BASINS
66706-15348-CWSG-S3116	CIVIL DETAILS - SOUTH BASIN
66706-15348-CWSG-S3117	CIVIL DETAILS - SOUTH BASIN
66706-15348-CWSG-S3118	CIVIL DETAILS
66706-15348-CWSG-S3119	CIVIL DETAILS - EROSION AND SEDIMENT CONTROL
66706-15348-CWSG-M2647	MECHANICAL P&ID
66706-15348-CWSG-M4001	PUMP STATION PLAN VIEW
66706-15348-CWSG-M4002	PUMP STATION SECTION VIEWS
66706-15348-CWSG-M4003	FLOW SPLIT BOX PLAN AND SECTIONS
66706-15348-CWSG-M4004	TEMPORARY PUMP STATION PLAN
66706-15348-CWSG-M4005	MECHANICAL DETAILS 1
66706-15348-CWSG-M4006	MECHANICAL DETAILS 2
66706-15348-CWSG-S6200	STRUCTURAL - SLUDGE PUMP STATION
66706-15348-CWSG-S6201	STRUCTURAL - SLUDGE PUMP STATION
66706-15348-CWSG-S6202	STRUCTURAL - FLOW SPLIT BOX
66706-15348-CWSG-S6203	STRUCTURAL - TYPICAL SECTIONS AND DETAILS
66706-15348-CWSG-S6204	STRUCTURAL/ARCHITECTURAL - SECTIONS & DETAILS
66706-15348-CWSG-E1001	ELECTRICAL SYMBOLS AND ABBREVIATIONS
66706-15348-CWSG-E1002	ELECTRICAL SITE PLAN - DEMO
66706-15348-CWSG-E1003	ELECTRICAL SITE PLAN - PROPOSED
66706-15348-CWSG-E1004	ELECTRICAL ONELINE
66706-15348-CWSG-E1005	ELECTRICAL DETAILS AND ENLARGED PLANS
66706-15348-CWSG-E1006	ELECTRICAL DETAILS
66706-15348-CWSG-E1007	ELECTRICAL DETAILS AND RACEWAY SCHEDULE
66706-15348-CWSG-E1008	CABLE AND PANEL SCHEDULE

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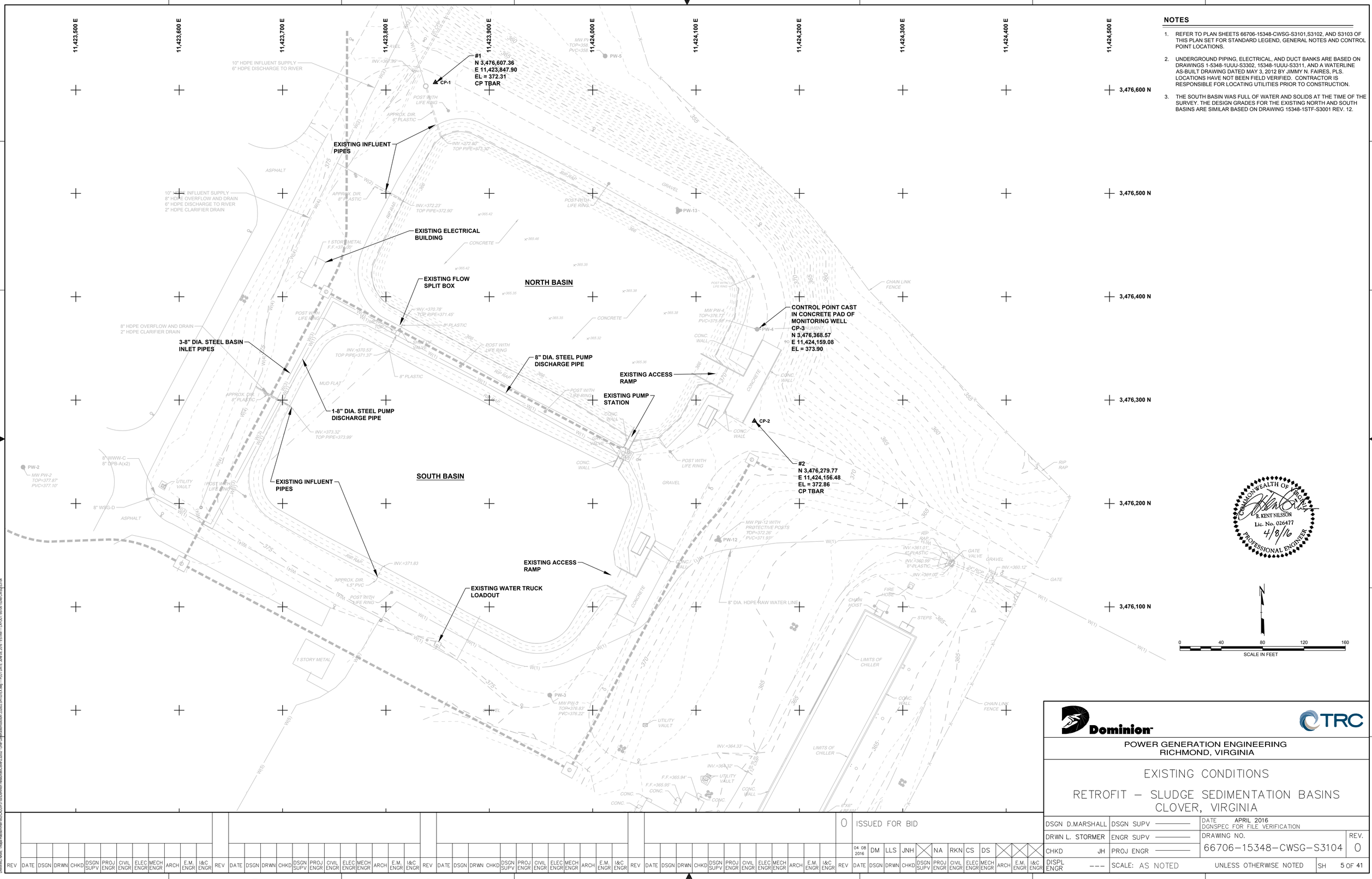


NOTES

1. REFER TO PLAN SHEETS 66706-15348-CWSG-S3101,S3102, AND S3103 OF THIS PLAN SET FOR STANDARD LEGEND, GENERAL NOTES AND CONTROL POINT LOCATIONS.
2. UNDERGROUND PIPING, ELECTRICAL, AND DUCT BANKS ARE BASED ON DRAWINGS 1-5348-1UUU-S3302, 15348-1UUU-S3311, AND A WATERLINE AS-BUILT DRAWING DATED MAY 3, 2012 BY JIMMY N. FAIRES, PLS. LOCATIONS HAVE NOT BEEN FIELD VERIFIED. CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES PRIOR TO CONSTRUCTION.
3. THE SOUTH BASIN WAS FULL OF WATER AND SOLIDS AT THE TIME OF THE SURVEY. THE DESIGN GRADES FOR THE EXISTING NORTH AND SOUTH BASINS ARE SIMILAR BASED ON DRAWING 15348-1STF-S3001 REV. 12.

R. KENT NILSSON
Lic. No. 026477
4/8/16

Dominion

TRC

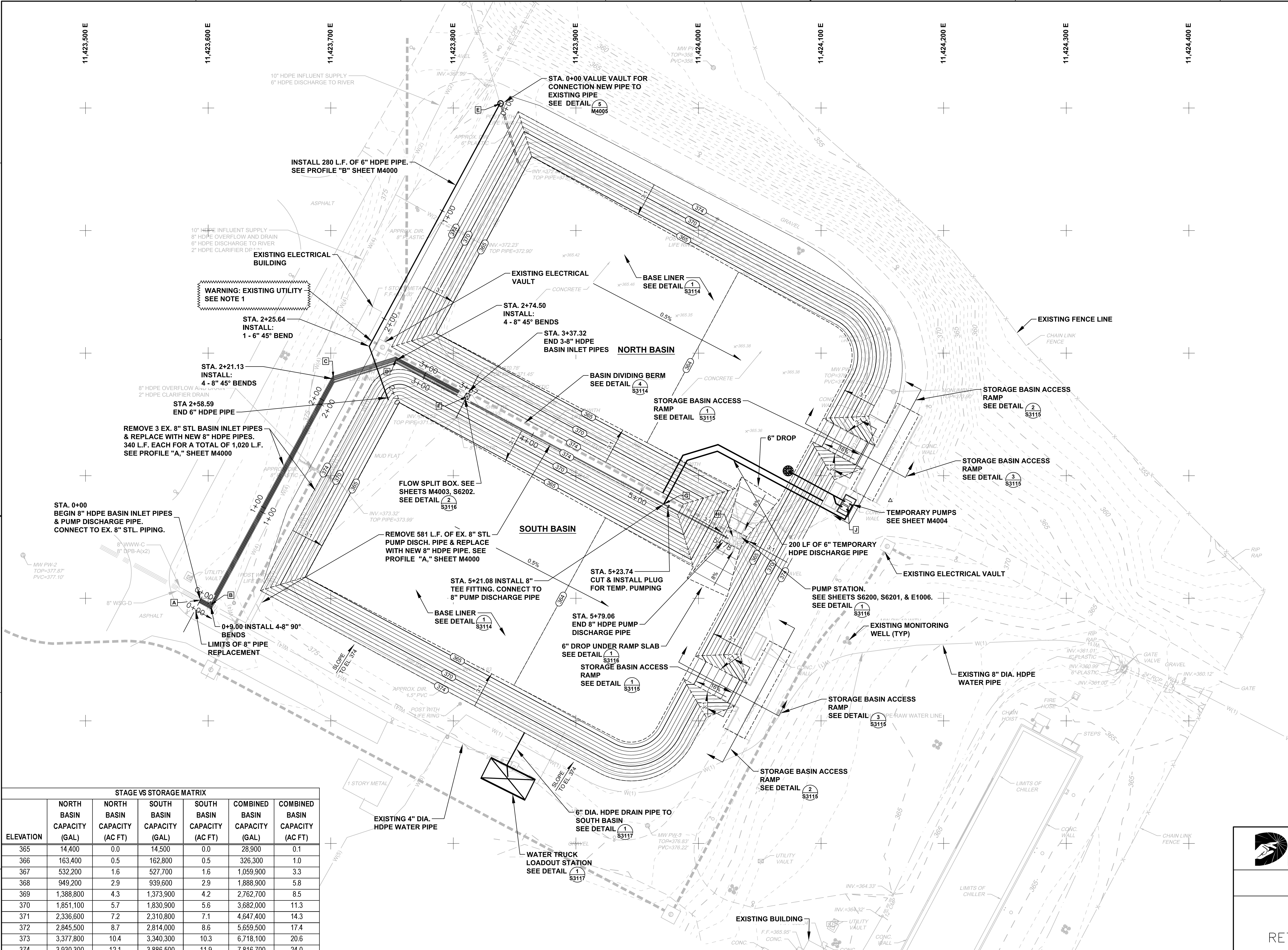
POWER GENERATION ENGINEERING
RICHMOND, VIRGINIA

EXISTING CONDITIONS

RETROFIT – SLUDGE SEDIMENTATION BASINS
CLOVER, VIRGINIA

REV	DATE	DSGN	DRWN	CHKD	DSGN SUPV	PROJ ENGR	CIVIL ENGR	ELEC ENGR	MECH ENGR	ARCH	E.M. ENGR	I&C ENGR
0	ISSUED FOR BID											
	04 08 2016	DM	LLS	JNH	☒	NA	RKN	CS	DS	☒	☒	☒

DSGN D.MARSHALL	DSGN SUPV ———	DATE APRIL 2016 DGNSPEC FOR FILE VERIFICATION
DRWN L. STORMER	ENGR SUPV ———	DRAWING NO. 66706–15348–CWSG–S3104 REV. 0
CHKD JH	PROJ ENGR ———	
DISPL ENGR ---	SCALE: AS NOTED UNLESS OTHERWISE NOTED	SH 5 OF 41



NOTES

1. REFER TO PLAN SHEET S3103 OF THIS PLAN SET FOR STANDARD LEGEND NOTES AND CONTROL POINT LOCATIONS.

[5+00] STATIONING FOR PIPE PROFILES SHOWN ON PLAN SHEET M4000.

ADDITIONAL NOTES

1. BURIED ELECTRICAL DUCT BANK IN DIVIDER BERM AND NORTHWEST OF BASINS. USE CAUTION DURING EXCAVATION.
2. EXACT LOCATION OF TEMPORARY PUMP SYSTEM TO BE CONFIRMED BY OWNER PRIOR TO CONSTRUCTION.
3. HDPE YARD PIPING SHALL BE CLASS DR-17 WITH WORKING PRESSURE RATING OF 125 PSI. PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF AWWA C906 AND ASTM D2239. PIPE SIZE NOTED INDICATES THE INSIDE DIAMETER.
4. PROVIDE THRUST BLOCKING FOR ALL BURIED PIPE BENDS AS DESCRIBED IN DETAIL 9, SHEET M4006.

NAD83 CONSTRUCTION COORDINATES

TAG	OBJECT (CENTERLINE)	NORTHING	EASTING	REFERENCE SHEETS
A	8" PIPE STA. 0+00	3476198.60	11423593.69	M4000
B	8" PIPE STA. 0+09.00 (90° BEND)	3476194.31	11423601.60	M4000
C	8" PIPE STA. 2+21.13 (45° BEND)	3476379.43	11423702.06	M4000
D	8" PIPE STA. 2+74.49 (45° BEND)	3476395.29	11423753.51	M4000
E	6" HDPE VALVE VAULT	3476603.70	11423838.53	M4000, M4005
F	FLOW SPLIT BOX	3476364.65	11423811.46	M4003, S6202
G	TEMPORARY PIPE CONNECTION	3476276.79	11423971.63	M4004
H	PUMP STATION	3476249.01	11424029.00	M4001, M4002, S6200, S6201, E1005
J	TEMPORARY PUMP STATION	3476274.90	11424122.20	M4004

COMMONWEALTH OF VIRGINIA
R. KENT NILSSON
Lic. No. 026477
4/8/16
PROFESSIONAL ENGINEER

STAGE VS STORAGE MATRIX

ELEVATION	NORTH BASIN CAPACITY (GAL)	NORTH BASIN CAPACITY (AC FT)	SOUTH BASIN CAPACITY (GAL)	SOUTH BASIN CAPACITY (AC FT)	COMBINED BASIN CAPACITY (GAL)	COMBINED BASIN CAPACITY (AC FT)
365	14,400	0.0	14,500	0.0	28,900	0.1
366	163,400	0.5	162,800	0.5	326,300	1.0
367	532,200	1.6	527,700	1.6	1,059,900	3.3
368	949,200	2.9	939,600	2.9	1,888,900	5.8
369	1,388,800	4.3	1,373,900	4.2	2,762,700	8.5
370	1,851,100	5.7	1,830,900	5.6	3,682,000	11.3
371	2,336,600	7.2	2,310,800	7.1	4,647,400	14.3
372	2,845,500	8.7	2,814,000	8.6	5,659,500	17.4
373	3,377,800	10.4	3,340,300	10.3	6,718,100	20.6
374	3,930,300	12.1	3,886,500	11.9	7,816,700	24.0

Dominion TRC

POWER GENERATION ENGINEERING
RICHMOND, VIRGINIA

OVERVIEW NORTH AND SOUTH BASINS

RETROFIT – SLUDGE SEDIMENTATION BASINS
CLOVER, VIRGINIA

REV	DATE	DSGN	DRWN	CHKD	DSGN SUPV	PROJ ENGR	CIVIL ENGR	ELEC ENGR	MECH ENGR	ARCH	E.M. ENGR	I&C ENGR
0 ISSUED FOR BID	04 08 2016	DM	LLS	JNH		NA	RKN	CS	DS			

DSGN D.MARSHALL	DSGN SUPV	DATE APRIL 2016 DGNSPEC FOR FILE VERIFICATION
DRWN L. STORMER	ENGR SUPV	DRAWING NO. 66706-15348-CWSG-S3107
CHKD JH	PROJ ENGR	REV. 0
DISPL ENGR ---	SCALE: AS NOTED	UNLESS OTHERWISE NOTED

Appendix B
Flood Insurance Rate Map

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 foot North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Virginia State Plane South zone. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the Commonwealth of Virginia, through the Virginia Geographic Network Division of its Department of Technology Planning (VGIN). These data were produced at scales of 1:2,400 and 1:4,800 from one-foot and two-foot resolution digital orthoimagery flown in Spring 2002.

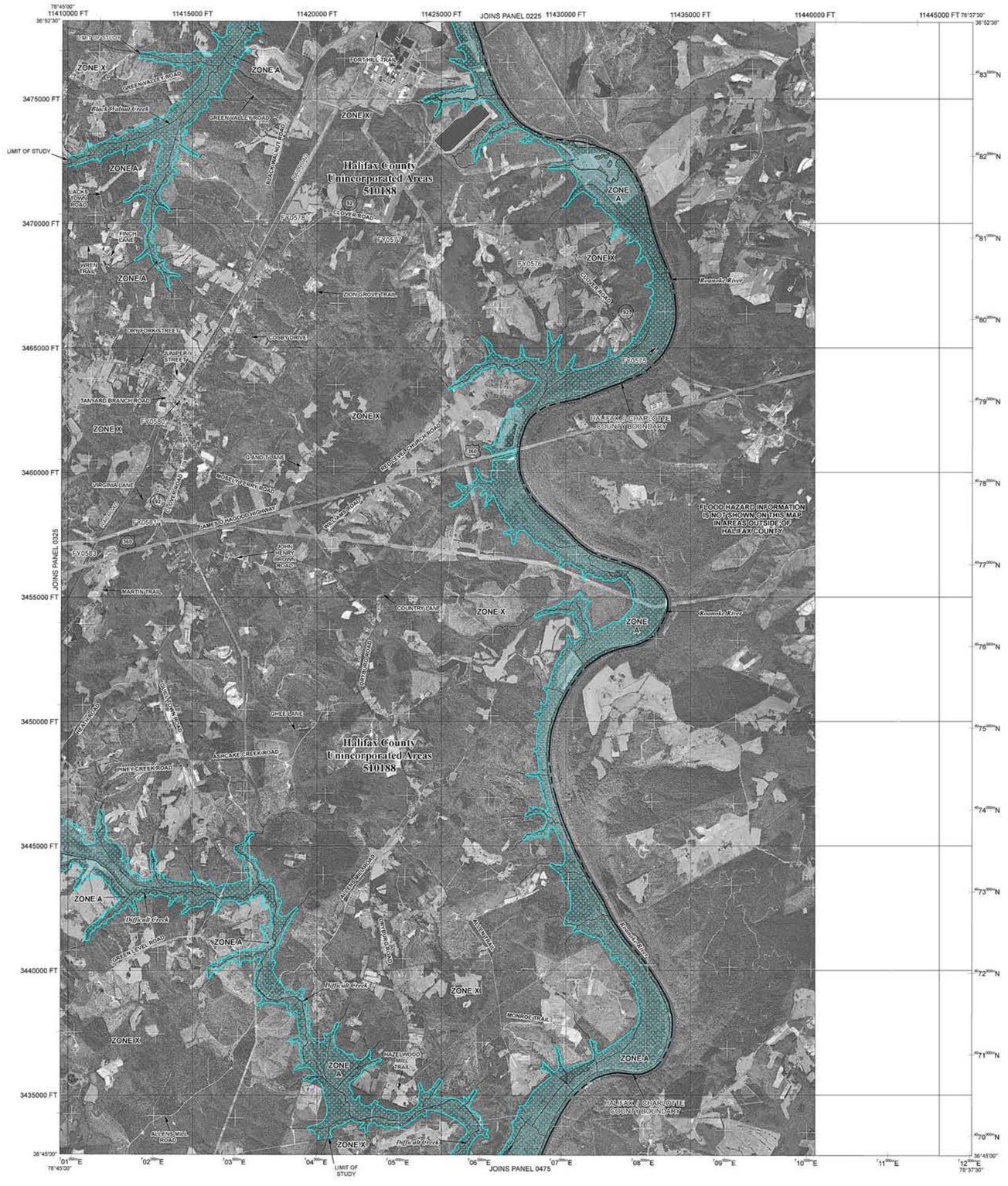
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- (A)—(A) — Cross section line
- (23)---(23) — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 7678000 FT N — 1000-meter Universal Transverse Mercator grid values, zone 17
- 600000 FT — 5000-foot grid ticks: Virginia State Plane coordinate system, South zone (FIPSZONE 4502), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- ●M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
October 16, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0350D

FIRM
FLOOD INSURANCE RATE MAP

HALIFAX COUNTY, VIRGINIA
AND INCORPORATED AREAS

PANEL 350 OF 625
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HALIFAX COUNTY	510188	0350	D

Notice 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
51083C0350D

EFFECTIVE DATE
OCTOBER 16, 2009

Federal Emergency Management Agency