RECEPTOR SURVEY

FOR

W.H. WEATHERSPOON POWER PLANT
491 POWER PLANT ROAD
LUMBERTON, NORTH CAROLINA 28358
NPDES PERMIT #NC0005363

PREPARED FOR

DUKE ENERGY PROGRESS, INC.
RALEIGH, NORTH CAROLINA

SUBMITTED: OCTOBER 2014

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1.0 INTRODUCTION

Duke Energy Progress, Inc. (Duke Energy) owns and operates the W.H. Weatherspoon Power Plant (Weatherspoon Plant) site. The Weatherspoon Plant is located at 491 Power Plant Road, Lumberton, North Carolina. The property encompasses approximately 985 acres, including the 65-acre ash basin. The property includes the cooling pond, located to the south of the plant operations area. The property borders the Lumber River to the southwest as shown on **Figure 1**.

The Weatherspoon Plant began commercial operation in 1949, with additions in the 1950s and 1970s, and consisted of three coal-fired units to produce power. As of October 2011, all of the coal-fired units were retired. Coal ash is no longer produced at the site. Ash generated from the coal combustion has been stored on-site in an ash basin. The ash basin is shown on **Figure 1**.

Discharge from the ash basin is permitted by the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Resources (DWR) under the National Pollution Discharge Elimination System (NPDES) Permit NC0005363.

SynTerra has completed a receptor survey to identify water supply wells, public water supplies, surface water bodies, and wellhead protection areas (if present) within a 0.5 mile radius of the Weatherspoon Plant ash basin compliance boundary (**Figure 1**). The compliance boundary for groundwater quality in relation to the ash basin is defined in accordance with 15A NCAC 02L .0107(a) as being established at either 500 feet from the waste boundary or at the property boundary, whichever is closer to the source.

The survey scope and findings are presented in the following sections.

2.0 BACKGROUND

2.1 Plant and Ash Basin Area Description

The Weatherspoon Plant generated electricity via the three coal-fired generating units between 1949 and 2011. In 2011, the coal-fired units were retired from operation and are in the process of being decommissioned.

Between approximately 1949 and 1955, ash was sluiced to a low area that was eventually encompassed by the ash basin. The ash basin, as it currently exists, was constructed in phases, using a combination of excavation and earthen dike construction techniques, between 1955 and 1979.

Although the basin is a single unit, several internal divisions constructed over the operational years have facilitated basin management and maintenance.

The ash basin is permitted under National Pollutant Discharge Elimination System (NPDES) Permit NC0005363 as a wastewater treatment unit. Permitted waste streams included (1) ash sluice water (bottom and fly ash), (2) chemical and metal cleaning waste materials, (3) storm water runoff, and (4) various low-volume wastes.

2.2 Description of Surrounding Properties

Properties located within a 0.5 mile radius of the Weatherspoon Plant compliance boundary are located in Robeson County, North Carolina. The properties uses include residential, commercial, industrial, and agricultural. The Lumber River flows south through the southwestern portion of the Plant property.

Figure 1 depicts the properties surrounding the Weatherspoon Plant.

3.0 RECEPTOR SURVEY ACTIVITIES

3.1 NCDENR Records Review

SynTerra reviewed the NCDENR Department of Environmental Health (DEH) Public Water Supply Section's (PWSS) Public Water Supply Water Sources Geographic Information System (GIS) point data set (pwsws.shp) and the Water Distribution Map Service (WDMS) data set obtained from the NC OneMap GeoSpatial Portal (http://data.nconemap.com/geoportal/catalog/main/home.page) to identify public water supply sources and water supply lines within a 0.5 mile radius of the Weatherspoon Plant compliance boundary.

According to the NC OneMap website, the Public Water Supply Water Sources point data was current through November 18, 2009, and that it is the most current GIS data set of public water supply locations available from North Carolina state agencies. The GIS point data for the public water supply wells includes, but is not limited to, information such as public water supply (PWS) system identification numbers, ownership information, PWS source type, well depth, and well yield. The WDMS data set contains information on municipal water lines and other appurtenances.

On June 24, 2014, SynTerra reviewed the NCDENR DWR Source Water Assessment Program (SWAP) online database for public water supply sources to identify wells located within a 0.5 mile radius of the compliance boundary; to confirm the location of wells included in the Public Water Supply Water Sources GIS point data set, and to identify any wellhead protection areas located within a 0.5 mile radius of the compliance boundary. The NCDENR SWAP database provides detailed assessments of all public drinking water intakes and wellhead protection areas in North Carolina. The website address is: (http://swap.ncwater.org/website/swap/viewer.htm).

3.2 Robeson County GIS

Information obtained from the Robeson County GIS system show fire hydrants located along Old Whiteville Road and Beulah Church Road. These locations are shown on **Figure 1**.

3.3 Environmental Data Resources, Inc. Records Review

A review of public database information provided by Environmental Data Resources, Inc. (EDR) was also conducted. The public water well information has been incorporated in the summary table (**Table 1**) and on **Figure 1**. A copy of the EDR report is included as **Appendix A**.

3.4 USGS Hydrography Review

SynTerra reviewed the United States Geological Survey (USGS) National Hydrography Dataset (NHD) obtained from the USGS National Map Viewer (http://viewer.nationalmap.gov/viewer/) to identify surface waters within a 0.5 mile radius of the compliance boundary. Hydrography data obtained from the USGS NHD is included on **Figure 1**.

3.5 SynTerra Field Survey

During February and March, 2014, SynTerra personnel conducted a vehicular survey along public roads located within 0.5 mile radius of the compliance boundary. Observations on property use, apparent proximity to available municipal water lines and structures that may represent potential water supply wells were noted.

3.6 Previous Water Supply Well Survey Information

A receptor survey was conducted by S&ME in February and May 2012. During that survey, S&ME contacted City of Lumberton and Robeson County personnel regarding municipal water present within the Plant vicinity. The results of the S&ME Survey have been incorporated into the findings of this report.

4.0 FINDINGS

4.1 NCDENR Records

No public water supply wells were identified in the Public Water Supply Water Sources GIS point data set (obtained from NC OneMap GeoSpatial Portal) or on the NCDENR SWAP online database within a 0.5 mile radius of the compliance boundary, with the exception of the two supply wells, DEP #1 and #2, located on the Plant property.

No wellhead protection areas were identified on the NCDENR SWAP online database within a 0.5 mile radius of the compliance boundary, with the exception of the two supply wells, DEP #1 and #2, located on the Plant property.

According to the Water Distribution Map Service (WDMS) data set obtained from the NC OneMap GeoSpatial Portal, municipal water supply lines are located along Old Whiteville Road and Beulah Church Road east and southeast of the Plant, as well as along a portion of Power Plant Road and South Roberts Ave north of the Plant.

4.2 Environmental Data Resources, Inc. Records

The EDR report did not identify any municipal water supply wells or off-site private water supply wells located within 0.5 mile radius of the compliance boundary. The only water supply wells identified in the EDR report are the two on-site supply wells (DEP #1 and #2). According to the EDR report, both wells are approximately 200 feet deep and screened within the Black Creek Formation. Both are located west of the ash basin compliance boundary. A copy of the EDR Report is provided in **Appendix A**.

4.3 USGS Hydrography Review

An approximate 8,600 foot long section of the Lumber River is located within the western portion of the survey radius (**Figure 1**). The Lumber River flows south.

In addition to the Lumber River and the cooling pond for the Plant, several small surface water features, including Jacob Swamp to the southeast, are present within the 0.5 mile radius of the compliance boundary. Jacob Swamp is fed by a number of tributaries to the northeast and flows southwest along the southeastern side of the cooling pond until it joins the Lumber River.

4.4 SynTerra Field Survey

SynTerra conducted a visual reconnaissance of the survey area by driving public roadways and noting properties that appeared to be developed or occupied. Much of the area is serviced by municipal water. Water valves and fire hydrants were observed along Old Whiteville Road and Beulah Church Road. No structures resembling water

supply wells or well houses were noted during the visual reconnaissance. Properties within 0.5 mile radius of the compliance boundary that appeared to be developed and in-use (occupied) with no apparent municipal water supply were assumed to have private water supply wells (PRW). These properties are noted on **Figure 1.**

4.5 S&ME Receptor Survey

According to the S&ME survey, the City of Lumberton's potable water sources include eight deep groundwater wells and the Lumber River. The locations for each of the source wells and surface water intake are greater than 1 mile from the Plant, and therefore beyond the 0.5 mile radius of the compliance boundary. The Robeson County municipal water supply wells are located approximately 4 miles from the Plant.

The City of Lumberton has a water distribution line along South Roberts Avenue to the Lumber River. The City also maintains a water line that runs east along Old Whiteville Road to the Southern States facility. Beyond the Southern States facility, Robeson County maintains the water line to the County line.

The County water system also provides service along Beulah Church Road. Portions of Old Whiteville Road and Beulah Church Road are within the 0.5-mile radius of the receptor survey.

The S&ME survey reported seven possible residential water supply wells located within 0.5 mile radius of the compliance boundary. These locations were identified by S&ME as potentially having a water supply well based on the property having a structure that may be occupied and not having a municipal water account.

- Four potential well locations (Well ID # PRW-1 through PRW- 4) are located along Taylor Drive, approximately 2,200 feet north-northeast of the compliance boundary. Taylor Drive is clearly marked as a private road, therefore SynTerra did not trespass to visually confirm the possible existence of these wells. The County GIS information does not indicate fire hydrants along Taylor Drive. Aerial photography indicates likely residences at locations #1, 3 and 4. However, the structure referenced as possible well location PRW-2, does not appear to be maintained or may not be a residence. County GIS information also indicates no improvement value for this parcel. Therefore, the PRW-2 well location is characterized as possible rather than suspected.

- A potential well location (Well ID PRW-5) is located on Old Whiteville Road, approximately 1,500 feet northeast of the compliance boundary. A fire hydrant is located near the property. The location is noted as a potential well due to the

S&ME report indicating no public water account information. A possible well structure was not observed during the drive-by survey. The residence was not well maintained and may not be occupied.

- A suspected well (Well ID PRW-6) may be located at the end of Havalih Drive, approximately 1,750 feet east of the compliance boundary. Havalih Drive is marked as a private road. SynTerra did not trespass to visually confirm the possible existence of the well. The County GIS information does not show a fire hydrant on Havalih Drive. Aerial photography indicates a likely residence at this location.

- A possible well (Well ID PRW-7) may be located off of Beulah Church Road, approximately 1,800 feet southeast of the compliance boundary. The location is noted as a possible well due to the S&ME report indicating no public water account information. The location was not observed during the drive-by survey due to the distance from the public road. The structure visible on the aerial photograph at this location is smaller than a typical residence and may be a small barn or shed.

4.6 Summary of Receptor Survey Findings

A summary of the receptor survey is discussed below. The suspected water supply well locations shown on **Figure 1** are based upon field observations, S&ME, EDR, and NCDENR information. The suspected well locations are numbered on the map to cross-reference information provided in **Table 1**. The table summarizes property location and owner information where a water supply well may be present based upon drive-by observations, S&ME or EDR information.

- No wellhead protection areas were identified within a 0.5 mile radius of the compliance boundary, with the exception of the two supply wells, DEP #1 and #2, which are located on the Plant property;

- Approximately seven (7) possible private water supply wells are assumed to be located within 0.5 mile radius of the compliance boundary;

- A number of surface water features and wetlands are present within the 0.5 mile radius of the compliance boundary, including Jacob Swamp. The surface water features flow toward the Lumber River;

- An approximate 8,600 foot long section of the Lumber River is located within the western portion of the survey radius. The Lumber River flows southeast.

FIGURE

LEGEND

- PRW-1 — ASSUMED PRIVATE WATER SUPPLY WELL
- HALF MILE SURVEY BOUNDARY
- DUKE ENERGY PROGRESS WEATHERSPOON PLANT
- 500 ft COMPLIANCE BOUNDARY
- WASTE BOUNDARY
- W — ROBESON COUNTY WATERLINE (APPROXIMATE)
- FIRE HYDRANT LOCATION (APPROXIMATE)
- FLOW DIRECTION
- DEP 1 — DUKE ENERGY PROGRESS PRODUCTION WELL (APPROXIMATE)

SOURCES:

1. 2010 HIGH RESOLUTION AERIAL PHOTOGRAPHS AND 1997 WATER LINES OBTAINED FROM NC ONE MAP AT *http://data.nconemap.com/geoportal/catalog/raster/download.page*
2. 2014 AERIAL PHOTOGRAPH WAS OBTAINED FROM WSP FLOWN ON APRIL 17, 2014.
3. FIRE HYDRANT LOCATIONS BASED ON INFORMATION OBTAINED FROM ROBESON COUNTY GIS WEB SITE AT *http://co.robeson.nc.us/departments-p-z/tax/robeson-county-gis/*
4. DRAWING HAS BEEN SET WITH A PROJECTION OF NORTH CAROLINA STATE PLANE COORDINATE SYSTEM FIPS 3200 (NAD 83).

GRAPHIC SCALE

400 0 150 400 800

(IN FEET)

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DRAWN BY:	S. ARLEDGE	DATE:	2014-10-07
CHECKED BY:	C. SUTTELL	DATE:	2014-10-07
PROJECT MANAGER:	KATHY WEBB		
LAYOUT NAME:	FIG 1 (RECEPTOR SURVEY)		

DUKE ENERGY PROGRESS

WEATHERSPOON POWER PLANT
491 POWER PLANT RD
LUMBERTON, NORTH CAROLINA

FIGURE 1
RECEPTOR SURVEY MAP

TABLE

TABLE 1
PUBLIC AND PRIVATE WATER SUPPLY WELLS
WITHIN 0.5 MILE RADIUS OF ASH BASIN COMPLIANCE BOUNDARY
W.H. WEATHERSPOON POWER PLANT
DUKE ENERGY PROGRESS, INC., LUMBERTON, NORTH CAROLINA

WELL ID	PARCEL ID NUMBER	PROPERTY ADDRESS (Well Location)	FIELD DESCRIPTION / NOTES
PRW-1	30099953800	343 TAYLOR DR	Private road, well suspected due to likely residence and no public water account reported.
PWR-2	31009148100	343 TAYLOR DR	Private road, well possible due to possible residence, no public water account reported. County website indicates no improvement value.
PRW-3	31009632994	485 TAYLOR DR	Private road, well suspected due to likely residence and no public water account reported.
PRW-4	31009405400	485 TAYLOR DR	Private road, well suspected due to likely residence and no public water account reported.
PRW-5	31007987800	1960 OLD WHITEVILLE RD	House observed near fire hydrant. No reported water account. Well structure not observed during windshield survey. Residence may not be occupied.
PRW-6	31025490000	193 HAVALIH DR	Private road, well suspected due to likely residence and no public water account reported.
PRW-7	31013474600	611 BEULAH CHURCH RD	Structure suspected is located too far from the public road to make visual observations. No public water account reported.

Notes:

Well ID refers to location of possible well shown on the Receptor Survey Map.
PIN #, address information were obtained from the Robeson County North Carolina website
Public water account information from S&ME TABLE 1. Receptor Survey Summary.
The Field Description/Notes column is a brief summary of SynTerra field observations or other relevant information

APPENDIX A

EDR REPORT

Duke Energy - Weatherspoon
491 Power Plant Rd.
Lumberton, NC 28358

Inquiry Number: 3887612.1s
March 21, 2014

The EDR GeoCheck® Report

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Physical Setting Source Records Searched ---- **A-13**

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

GEOCHECK® - PHYSICAL SETTING SOURCE REPORT

TARGET PROPERTY ADDRESS

DUKE ENERGY - WEATHERSPOON
491 POWER PLANT RD.
LUMBERTON, NC 28358

TARGET PROPERTY COORDINATES

Latitude (North):	34.5914 - 34° 35' 29.04''
Longitude (West):	78.9703 - 78° 58' 13.08''
Universal Tranverse Mercator:	Zone 17
UTM X (Meters):	686147.7
UTM Y (Meters):	3829408.5
Elevation:	140 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34078-E8 SOUTHEAST LUMBERTON, NC
Most Recent Revision:	1997

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

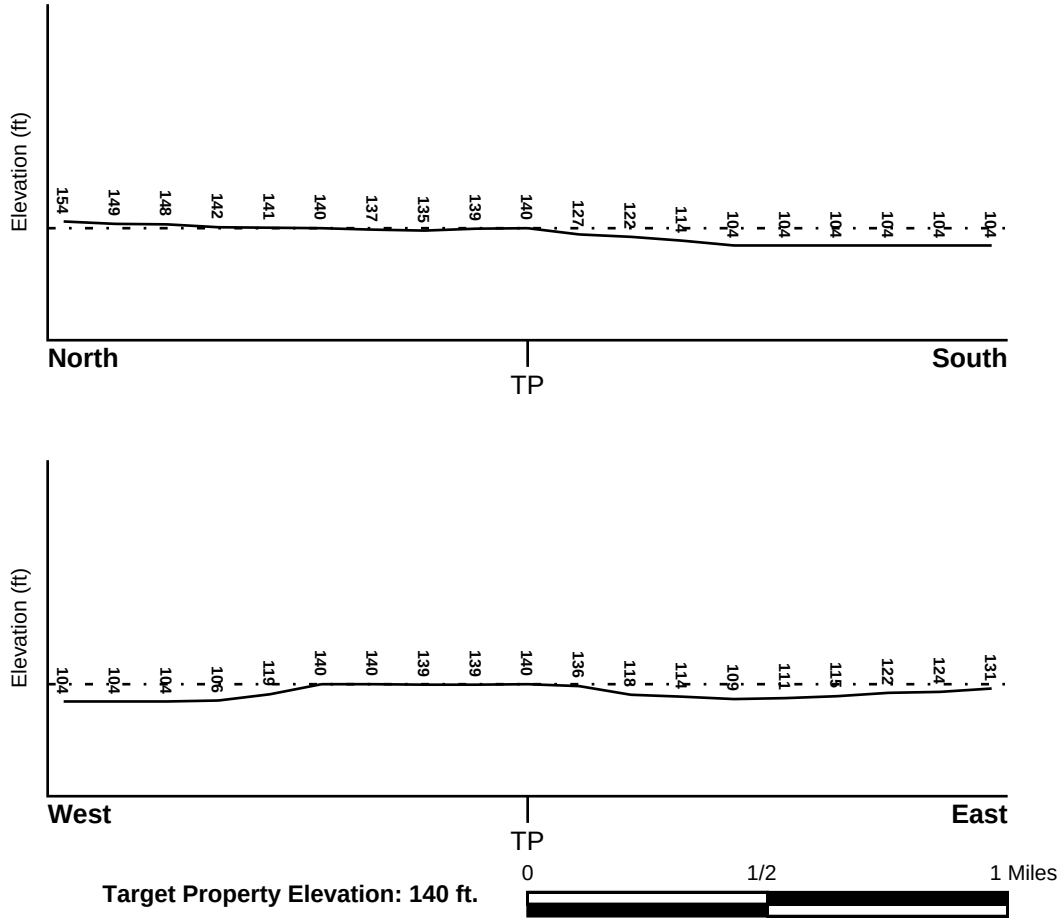
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 140 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
ROBESON, NC	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 37155C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
SOUTHEAST LUMBERTON	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Mesozoic
System:	Cretaceous
Series:	Washita Group
Code:	lK3 *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	NORFOLK
Soil Surface Texture:	loamy sand
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel:	MODERATE
Depth to Bedrock Min:	> 60 inches
Depth to Bedrock Max:	> 60 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	14 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 20.00 Min: 6.00	Max: 6.00 Min: 3.60
2	14 inches	38 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 2.00 Min: 0.60	Max: 5.50 Min: 3.60
3	38 inches	70 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 2.00 Min: 0.60	Max: 5.50 Min: 3.60
4	70 inches	99 inches	variable	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: sandy loam
loam
mucky - loam

Surficial Soil Types: sandy loam
loam
mucky - loam

Shallow Soil Types: fine sandy loam
sandy clay loam
clay loam

Deeper Soil Types: sandy clay loam
stratified
sandy clay

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	1.000
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000882617	1/4 - 1/2 Mile SW
B4	USGS40000882623	1/4 - 1/2 Mile WSW
B5	USGS40000882622	1/4 - 1/2 Mile WSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

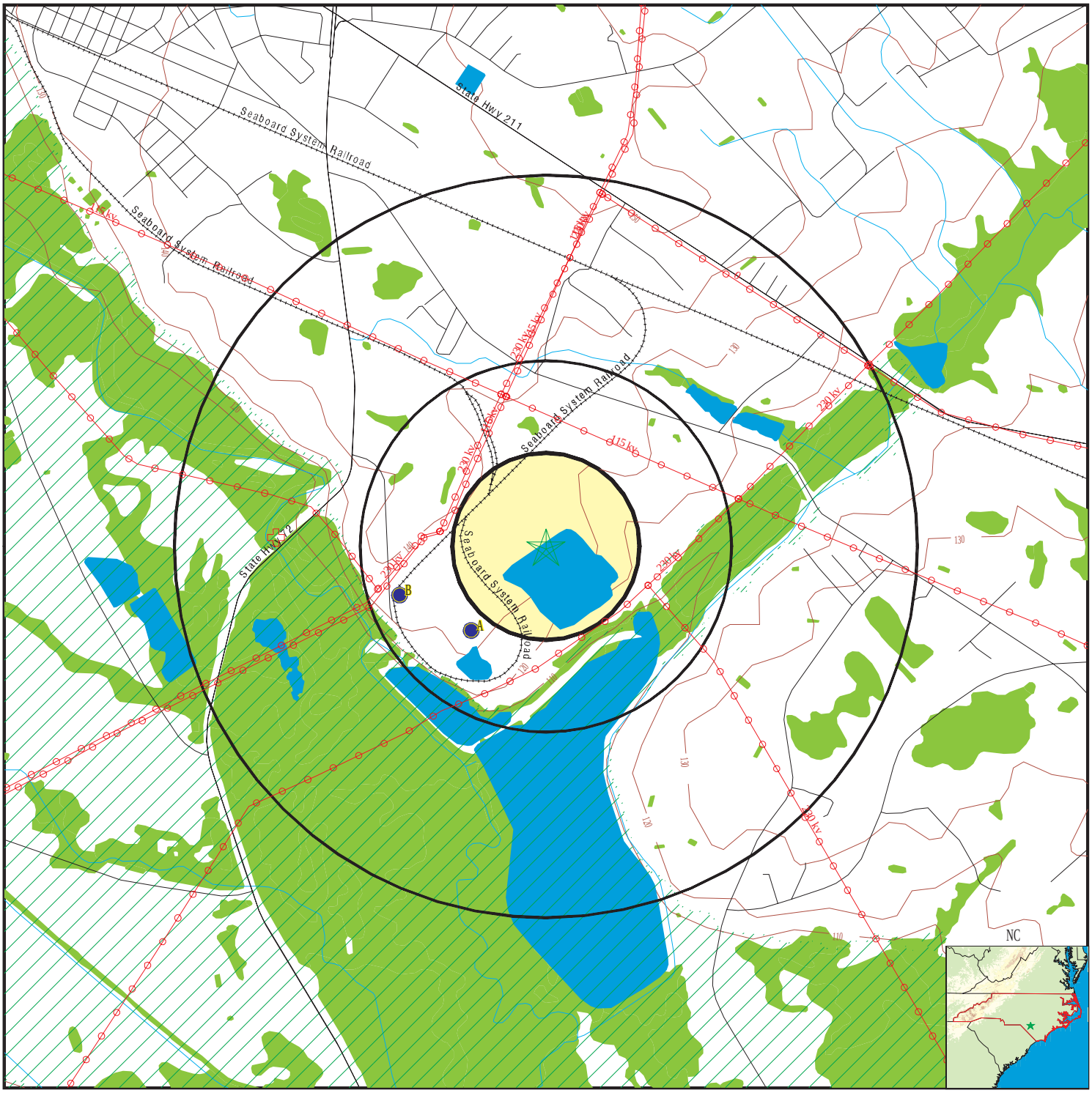
MAP ID	WELL ID	LOCATION FROM TP
A2	NC2000000000639	1/4 - 1/2 Mile SW
B3	NC2000000000640	1/4 - 1/2 Mile WSW

OTHER STATE DATABASE INFORMATION

NORTH CAROLINA NATURAL HERITAGE ELEMENT OCCURRENCES

ID	Class
NC50016878	Plants

PHYSICAL SETTING SOURCE MAP - 3887612.1s



- County Boundary
- Major Roads
- Contour Lines
- Power transmission lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

0 1/4 1/2 1 Miles

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Wildlife Areas
- Natural Areas
- Rare & Endangered Species

N

SITE NAME:	Duke Energy - Weatherspoon	CLIENT:	SynTerra
ADDRESS:	491 Power Plant Rd. Lumberton NC 28358	CONTACT:	Richard Jacobs
		INQUIRY #:	3887612.1s
LAT/LONG:	34.5914 / 78.9703	DATE:	March 21, 2014 11:15 am

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
SW
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000882617**

Org. Identifier:	USGS-NC		
Formal name:	USGS North Carolina Water Science Center		
Monloc Identifier:	USGS-343517078582701		
Monloc name:	RB-226 CP&L LUMBERTON #1		
Monloc type:	Well		
Monloc desc:	USED IN 1992 SCP STUDY (REFER TO REMARKS C185)		
Huc code:	03040203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.5882207
Longitude:	-78.9739188	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	132
Vert measure units:	feet	Vertacc measure val:	2.5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Northern Atlantic Coastal Plain aquifer system		
Formation type:	Black Creek Aquifer		
Aquifer type:	Confined single aquifer		
Construction date:	Not Reported	Welldepth:	220
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1992-10-22	64.50	

A2
SW
1/4 - 1/2 Mile
Lower

NC WELLS **NC2000000000639**

Pwsidentif:	NC0378733
System nam:	CP&L-WEATHERSPOON PLANT
Pws type:	NTNC
County:	ROBESON
City:	LUMBERTON
Primary so:	GW
Water type:	GW
Facility n:	WELL #1
Facility a:	W01
Latitude m:	34.58802
Longitude :	-78.973727
Availavili:	A
Well depth:	220
Well dep 1:	FT
Owner name:	CAROLINA POWER AND LIGHT CO_378733
Site id:	NC2000000000639

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

B3
WSW | **NC WELLS** | **NC2000000000640**
1/4 - 1/2 Mile
Lower

Pwsidentif:	NC0378733
System nam:	CP&L-WEATHERSPOON PLANT
Pws type:	NTNC
County:	ROBESON
City:	LUMBERTON
Primary so:	GW
Water type:	GW
Facility n:	WELL #2
Facility a:	W02
Latitude m:	34.58929
Longitude :	-78.977115
Availavili:	A
Well depth:	193
Well dep 1:	FT
Owner name:	CAROLINA POWER AND LIGHT CO_378733
Site id:	NC2000000000640

B4
WSW | **FED USGS** | **USGS40000882623**
1/4 - 1/2 Mile
Lower

Org. Identifier:	USGS-NC		
Formal name:	USGS North Carolina Water Science Center		
Monloc Identifier:	USGS-343522078583902		
Monloc name:	RB-228 CP&L LUMBRTN-1992		
Monloc type:	Well		
Monloc desc:	USED IN 1992 SCP STUDY (REFER TO REMARK IN C185)		
Huc code:	03040203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.5896095
Longitude:	-78.9772523	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	137
Vert measure units:	feet	Vertacc measure val:	2.5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Northern Atlantic Coastal Plain aquifer system		
Formation type:	Black Creek Aquifer		
Aquifer type:	Confined single aquifer		
Construction date:	Not Reported	Welldepth:	200
Welldepth units:	ft	Wellholedepth:	200
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1992-10-22	82.3	

Note: A nearby site that taps the same aquifer was being pumped.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

B5
WSW **FED USGS** **USGS40000882622**
1/4 - 1/2 Mile
Lower

Org. Identifier:	USGS-NC		
Formal name:	USGS North Carolina Water Science Center		
Monloc Identifier:	USGS-343522078583901		
Monloc name:	RB-227 CP&L LUMBERTON #2		
Monloc type:	Well		
Monloc desc:	WELL TO BE REPLACED W/ NEARBY WELL (DRILLED 4/92)		
Huc code:	03040203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	34.5896095
Longitude:	-78.9772523	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	137
Vert measure units:	feet	Vertacc measure val:	2.5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Northern Atlantic Coastal Plain aquifer system		
Formation type:	Black Creek Aquifer		
Aquifer type:	Confined single aquifer		
Construction date:	Not Reported	Welldepth:	193
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

NC_NHEO NC50016878

GIS ID:	12558
Classification by Type:	Plants
Occurrence Status:	Historic, no evidence of destruction

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: NC Radon

Radon Test Results

Num Results	Avg pCi/L	Min pCi/L	Max pCi/L
1	0.30	0.3	0.3

Federal EPA Radon Zone for ROBESON County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 28358

Number of sites tested: 6

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.350 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Department of Environment & Natural Resources
Telephone: 919-733-2090

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

North Carolina Public Water Supply Wells
Source: Department of Environmental Health
Telephone: 919-715-3243

OTHER STATE DATABASE INFORMATION

NC Natural Areas: Significant Natural Heritage Areas
Source: Center for Geographic Information and Analysis
Telephone: 919-733-2090
A polygon converage identifying sites (terrestrial or aquatic that have particular biodiversity significance. A site's significance may be due to the presenceof rare species, rare or hight quality natural communities, or other important ecological features.

NC Game Lands: Wildlife Resources Commission Game Lands
Source: Center for Geographic Information and Analysis
Telephone: 919-733-2090
All publicly owned game lands managed by the North Carolina Wildlife Resources Commission and as listed in Hunting and Fishing Maps.

NC Natural Heritage Sites: Natural Heritage Element Occurrence Sites
Source: Center for Geographic Information and Analysis
Telephone: 919-733-2090
A point coverage identifying locations of rare and endangered species, occurrences of exemplary or unique natural ecosystems (terrestrial or aquatic), and special animal habitats (e.g., colonial waterbird nesting sites).

RADON

State Database: NC Radon
Source: Department of Environment & Natural Resources
Telephone: 919-733-4984
Radon Statistical and Non Statiscal Data

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

STREET AND ADDRESS INFORMATION