

1 Introduction

The Draft Environmental Justice (EJ) Report is an initial look at the demographics and socioeconomics of a facility's surrounding community area. This includes information within a radius, as determined by the North Carolina Department of Environmental Quality (Department or DEQ), race and ethnicity (decennial census year), poverty status, per capita income, and ability to speak English (most current American Community Survey (ACS) census range), the current North Carolina Department of Commerce county tier, and presence of Native American territory.

The primary goal is to encourage comments and suggestions from the surrounding community, industry, and environmental groups throughout the comment period.

It is important to keep in mind, that based on the data available, the following limitations of this study exist:

- census data is from 2010 and may be outdated;
- the more recent ACS data through 2018 are estimates;
- EPA's EJSCREEN does not provide all of the data categories that were used in this analysis, so the census tract and county data cannot be compared to the radius evaluating the facility boundary;
- census tracts can be large areas that do not identify exact locations of each population;
- some of the census tracts slightly overlap with the two-mile radius; and
- the Department cannot determine which populations are located within that small area of overlap.

The Department has reviewed the demographic and socioeconomic data of the communities surrounding the Duke Energy Roxboro Plant in Semora (Person County) to foster communication during the public engagement process on the activities related to the closure of the coal ash impoundments.

Under the [Consent Order](#) signed in February of 2020, Duke Energy is required to excavate more than 76 million tons of coal ash from open, unlined impoundments at six facilities. Duke Energy submitted its closure plan for the Roxboro Steam Electric Plant on December 31, 2019. The plan details excavation of coal ash from the facility impoundments known as the East and West Ash Basins to the existing lined, onsite landfill. After a thorough review and public comment period, the Department determined on August 17, 2020, the closure plan submitted by Duke Energy for the Roxboro Steam Electric Plant to be protective of public health and the environment.

2 Environmental Justice Evaluation

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (Environmental Protection Agency). This evaluation examines the demographic and environmental conditions in Person County, Census Tract 9202, and the two-mile buffer around the property boundary of the Duke Energy Roxboro Plant. Finally, the demographics for the State of North Carolina are also considered as they compare to both the county and local census tract and radius settings.

The Department has assessed the permit applications and potential impacts on communities surrounding the facility as proposed in the permit application. Accordingly, the EJ Report will include:

- Overview of the applications;
- Study of area demographics [determined by using the EPA Environmental Justice tool (EJSCREEN – <https://ejscreen.epa.gov/mapper/>) and current, available census data (found at: <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>);
- Comparison of local area demographics to both county and statewide census data;
- County health assessment;
- Surrounding sensitive receptors; and
- Local industrial sites (using the NC Community Mapping System (<https://ncdenr.maps.arcgis.com/apps/webappviewer/index.html?id=1eb0fbe2bcfb4cccb3cc212af8a0b8c8>)).

Demographics (including race and ethnicity, poverty status, and per capita incomes) for Person County will be compared to the local (census tract and project radius) level data to identify any disparities surrounding the project area. Using standard environmental justice guidelines from the EPA and National Environmental Policy Act (NEPA) documentation, the following conditions will be flagged as potential communities of concern:

- 10% or more in comparison to the county or state average;
- 50% or more minority; and
- 5% or more in comparison to the county or state average for poverty.

3 Proposed Project

The proposed project to build a lateral expansion of the existing coal ash industrial landfill for coal ash disposal at the Duke Energy Roxboro Steam Electric Plant is consistent with the Coal Ash Impoundment Closure Plan, approved by DEQ on August 17, 2020. For this project, Duke Energy submitted two separate applications to two different DEQ divisions. The following sections outline each draft permit under review within the Division of Waste Management – Solid Waste Section, and the Division of Air Quality.

Division of Waste Management

In accordance with the Dec. 31, 2019, [Settlement Agreement](#) and signed Consent Order between Duke Energy, DEQ, and community and environmental groups, Duke Energy prepared a Closure Plan for the two ash impoundments – called the East Ash Basin (EAB) and the West Ash Basin (WAB) – at the Roxboro Plant. The plan, approved by DEQ on August 17, 2020, detailed closure-by-excavation of the WAB and the EAB for placement of the excavated coal combustion residuals (CCR) into a lateral expansion of the existing onsite CCR Industrial Landfill.

The EAB began operation in 1965 and is approximately 71.3 acres (including the 12.7-acre eastern extension impoundment), contains 3.89 million tons of ash and stopped receiving ash in 1973. The WAB began operation in 1973 and is approximately 225 acres (including the 42-acre southern extension impoundment and two flue-gas desulfurization basins totaling 26.6 acres), contains 12.97 million tons of ash and stopped received wet sluiced ash in 2019.

Table 1. Impoundment Ash Basin Sizes.

Impoundment	Estimated CCR Weight (million tons)	Estimated CCR Volume (million cubic yards)	Estimated Maximum CCR Depth (feet)
East Ash Basin*	3.89	3.24	70
West Ash Basin**	12.97	10.81	80

*Based on a topographic survey in 2014

**Based on topographic survey in 2014, bathymetric survey in Jan 2015, and production data through July 2019

Under the approved Closure Plan, all coal combustion residuals (CCR) except for a portion of the EAB underlying the existing lined landfill (7302-INDUS-1988) will be excavated and placed into the expanded, existing lined landfill (7302-INDUS-2021), located within plant property and partially within the former footprint of the EAB. The landfill will be designed and constructed in accordance with existing state and federal laws and rules. It will be double-lined with geosynthetic material, have a leak detection system and leachate collection system, have environmental monitoring, and be closed with a geosynthetic closure cap.

7302-INDUS-2021 CCR Industrial Landfill Expansion

The CCR Industrial Landfill will: 1) be a lateral expansion of the existing landfill located partially within the former footprint of the EAB, 2) be approximately 80 acres, 3) designed to contain

approximately 18.9 million cubic yards of coal ash, and 4) stand 210 feet tall (from primary liner to top of final closure cap) rising approximately 180 feet above Dunnaway Road.

The Division of Waste Management (DWM) received the Site Suitability Application, Volumes I and II and the Permit to Construction (PTC) Application on November 18, 2020. Following DWM technical comments, a revised PTC Application was submitted on March 1, 2021. Duke Energy received a Notification of Site Suitability on April 26, 2021.

Table 2. Landfill Sizes.

Landfill	Area (acres)	Volume of CCR (cubic yards)	Landfill Height (feet)	Height Above Dunnaway Road (feet)
7302-INDUS-2021 Landfill Expansion	80	18,914,059	210	180
7302-INDUS-1988 Existing Landfill	132	16,328,208	NA	NA
Total	212	35,242,267	210	180



Figure 1. Facility with landfill location.

Division of Air Quality

Duke Energy Progress, LLC is requesting a draft air permit modification to include the ash handling and hauling activities required for the excavation and closure of the coal ash impoundments. Duke Energy proposes to excavate the Roxboro Plant East Ash Basin and West Ash Basin (the Ash Basins), and place the excavated CCR in a lined expansion of the existing CCR Industrial Landfill. The project will result in increased emissions of particulate matter (PM), PM less than 10 micrometers and PM less than 2.5 micrometers in diameter (PM₁₀ and PM_{2.5}, respectively), nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), volatile organic compounds (VOCs), lead, carbon dioxide as carbon dioxide equivalent (CO_{2e}), and air toxics.

Table 3. Project Emissions Increase, Tons Per Year

	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC	CO _{2e}	Lead
Project emissions increase, TPY	20.98	9.62	3.12	1.09E-03	0.66	0.58	0.25	115	4.20E-03

Air dispersion modeling was performed for the following air toxics emissions. The results for each compound fell below the Acceptable Ambient Level (AAL).

Table 4. Potential Emissions

Toxic Compounds	Facility-wide Potential Emission Rates		
	lb/day	lb/yr	Percent of AAL (%)
Arsenic		323	18.44
Beryllium		13.1	1.78
Cadmium		26.7	0.29
Chromium VI	0.29		0.22
Manganese	23.0		0.12
Mercury	0.64		0.18
Nickel	4.55		0.13

4 Geographic Area

The Roxboro Steam Electric Station is owned and operated by Duke Energy Progress, LLC (Duke Energy) and located at 1700 Dunnaway Road in Semora, North Carolina in Person County (Figure 2). The Roxboro Plant began operations in 1966 and is currently in active operation as a four-unit, coal-fired, electric-generating station (2,422-megawatt capacity).

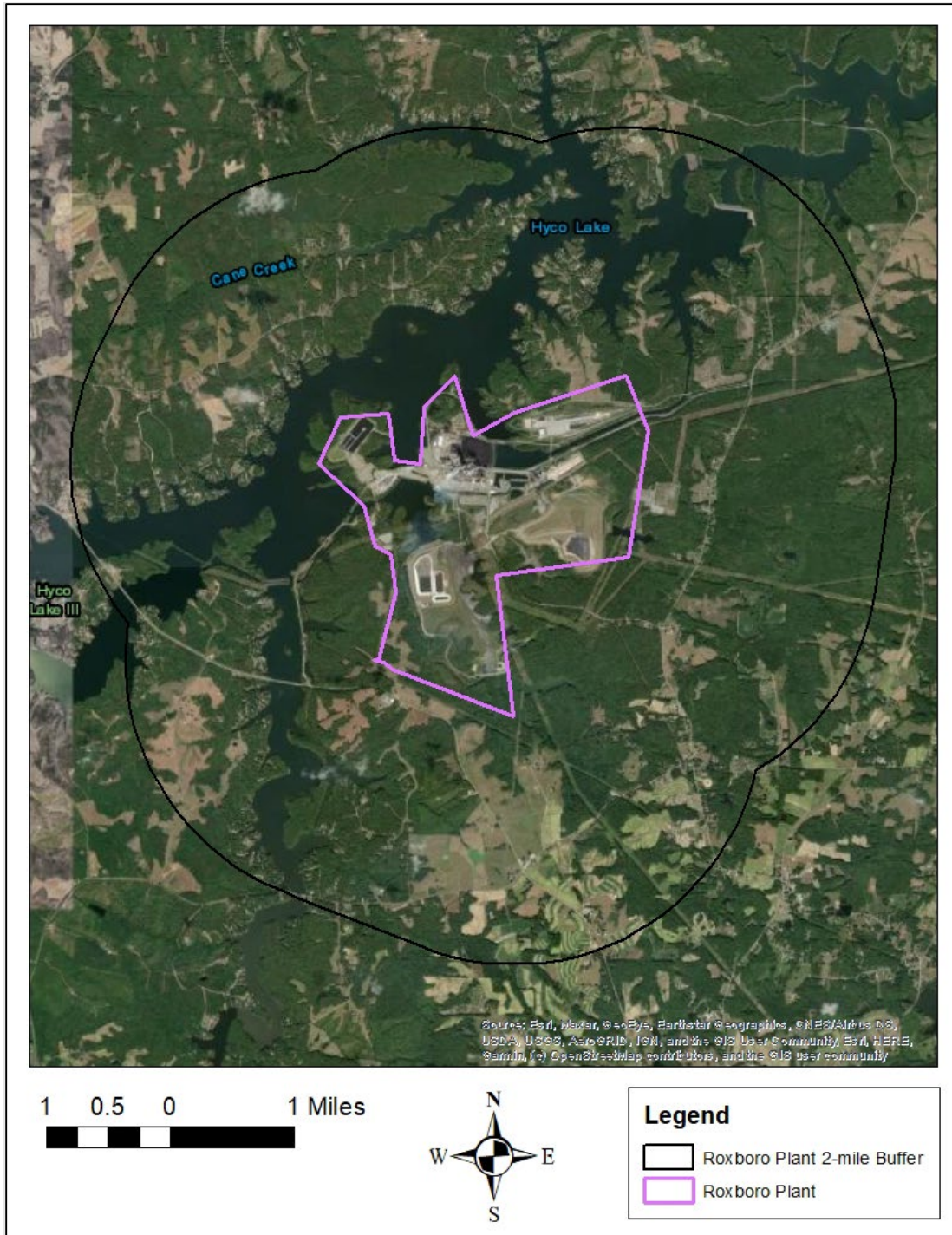


Figure 2. Facility location (Roxboro Plant) with two-mile radius.

Regional Setting

The Roxboro plant is located in Person County. The N.C. Department of Commerce designated Person County as a Tier 2 county for 2021. Tier 1 counties encompass the 40 most distressed counties based on average unemployment rate, median household income, percentage growth in population, and adjusted property tax per capita. Tier 2 counties include the next 40 distressed counties, while Tier 3 are the least distressed counties based on these factors. The two-mile radius used in this analysis remains entirely within Census Tract 9202 (Figure 3). Census tracts are small, relatively permanent statistical subdivisions of a county with a unique numeric code (US Census Bureau). The two-mile buffer does not encompass any land within state designated tribal statistical areas. However, the Commission of Indian Affairs does identify Person County as a county in which the Sappony Tribe resides.

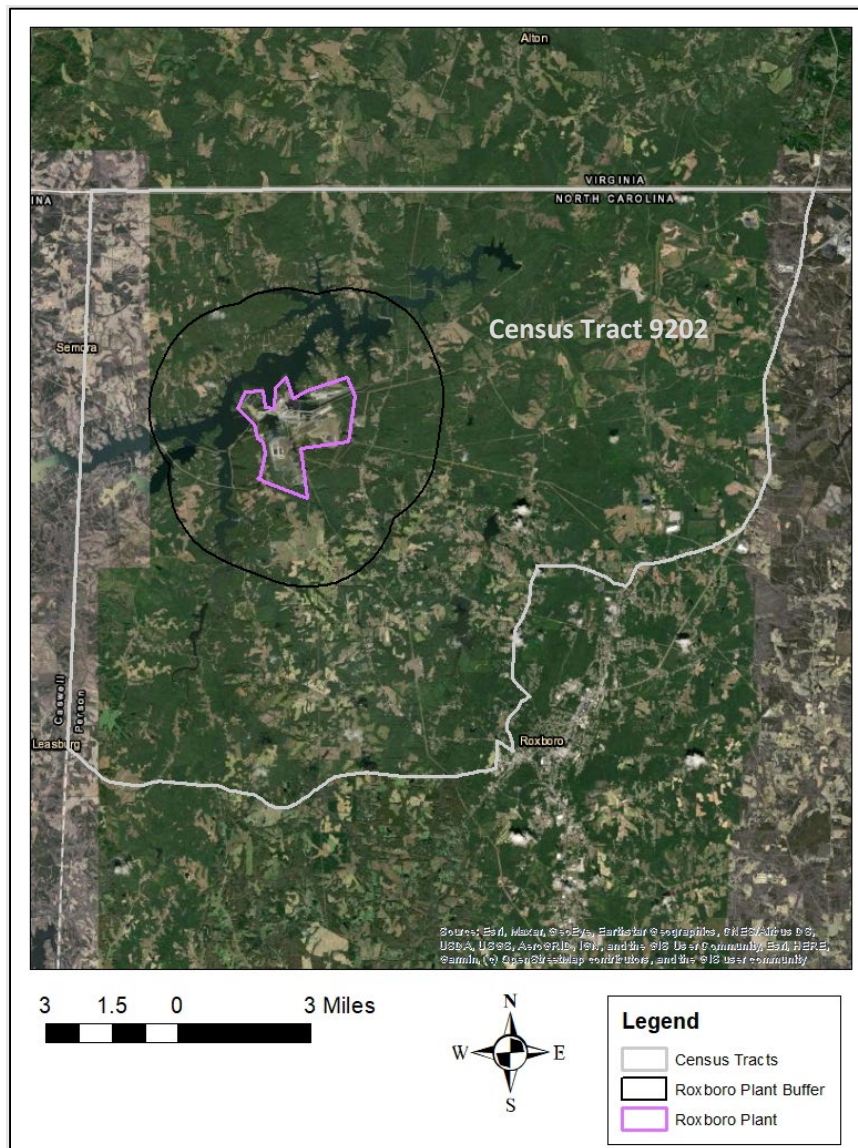


Figure 3. Census tracts surrounding facility location

Table 5. Regional Setting - Race and Ethnicity

Subject	North Carolina		Person County	
	Estimate	Percent	Estimate	Percent
Total:	9,535,483	100.00	39,464	100.00
Not Hispanic or Latino:	8,735,363	91.61	37,871	95.96
White alone	6,223,995	65.27	26,354	66.78
Black or African American alone	2,019,854	21.18	10,599	26.86
American Indian and Alaska Native alone	108,829	1.14	244	0.62
Asian alone	206,579	2.17	115	0.29
Native Hawaiian and Other Pacific Islander alone	5,259	0.06	4	0.01
Some Other Race alone	15,088	0.16	51	0.13
Two or More Races:	155,759	1.63	504	1.28
Hispanic or Latino	800,120	8.39	1,593	4.04

Source: US Census Bureau, 2010 Census
All **bolded and orange cells** indicate a difference that is greater than 10% when compared to the state.

Table 6. Local Setting - Race and Ethnicity

Subject	Census Tract 9202, Person County		2-mile facility buffer	
	Estimate	Percent	Estimate	Percent
Total:	6,749	100.00	1,283	100.0
Not Hispanic or Latino:	6,590	97.64	1,250	97.0
White alone	4,886	72.40	897	70.0
Black or African American alone	1,602	23.74	334	26.0
American Indian and Alaska Native alone	21	0.31	3	0.0
Asian alone	15	0.22	3	0.0
Native Hawaiian and Other Pacific Islander alone	0	0.00	0	0.0
Some Other Race alone	7	0.10	2	0.0
Two or More Races:	59	0.87	12	1.0
Hispanic or Latino	159	2.36	33	3.0

Source: US Census Bureau, 2010 Census
All **bolded and orange cells** indicate a difference that is greater than 10% when compared to the state.
All **bolded and blue cells** indicate a difference that is greater than 10% when compared to the county and state.

Table 7. Poverty Status – Regional Setting

Subject	North Carolina						Person County					
	Total		Below poverty level		Percent below poverty level		Total		Below poverty level		Percent below poverty level	
	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-
Population for whom poverty status is determined	9,881,292	1,522	1,523,949	15,319	15.4%	0.2	38,722	163	6,836	961	17.7%	2.5
AGE												
Under 18 years	2,258,876	1,607	498,013	7,632	22.0%	0.3	8,158	131	2,759	558	33.8%	6.9
18 to 64 years	6,092,009	1,103	884,618	9,282	14.5%	0.2	23,602	98	3,276	516	13.9%	2.2
65 years and over	1,530,407	995	141,318	2,705	9.2%	0.2	6,962	99	801	166	11.5%	2.3
RACE/ETHNICITY												
White	6,829,742	8,193	823,258	11,150	12.1%	0.2	26,395	334	3,628	766	13.7%	2.9
Black or African American	2,096,490	5,812	493,496	8,392	23.5%	0.4	10,359	296	2,559	640	24.7%	6.2
American Indian/ Alaska Native	117,702	1,595	29,577	1,585	25.1%	1.3	193	62	27	40	14.0%	18.2
Asian alone	275,301	1,983	32,712	2,356	11.9%	0.9	168	60	0	26	0.0%	18.7
Native Hawaiian and Other Pacific Islander	6,414	671	1,246	264	19.4%	4.2	1	2	0	26	0.0%	100
Some other race	302,934	7,911	89,305	5,371	29.5%	1.5	720	338	478	317	66.4%	24.4
Two or more races	252,709	6,223	54,355	2,369	21.5%	0.8	886	295	144	112	16.3%	11.9
Hispanic or Latino origin	915,426	901	260,607	5,682	28.5%	0.6	1,634	32	779	266	47.7%	16.1
ALL INDIVIDUALS BELOW												
50 percent of poverty level	663,550	10,829					2,549	818				
125 percent of poverty level	2,034,827	19,447					9,050	1,028				
150 percent of poverty level	2,526,688	21,681					11,131	1,013				
185 percent of poverty level	3,227,889	24,339					13,858	1,069				
200 percent of poverty level	3,513,670	25,035					14,485	1,080				
Source: American Community Survey 5-year Estimates (2014-2018)												
All bolded and orange cells indicate a difference that is greater than 5% when compared to the state.												

Table 8. Poverty Status – Local Setting

Subject	Census Tract 9202, Person County					
	Total		Below poverty level		Percent below poverty level	
	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-	Estimate	Margin of Error +/-
Population for whom poverty status is determined	6,612	439	921	366	13.9%	5.5
AGE						
Under 18 years	1,214	214	215	176	17.7%	14
18 to 64 years	4,142	325	544	211	13.1%	5
65 years and over	1,256	127	162	89	12.9%	7.1
RACE/ETHNICITY						
White	5,198	444	642	348	12.4%	6.6
Black or African American	1,173	283	209	103	17.8%	9.6
American Indian/ Alaska Native	42	39	0	17	0.0%	47.5
Asian alone	0	17	0	17	-	**
Native Hawaiian and Other Pacific Islander	0	17	0	17	-	**
Some other race	82	89	70	84	85.4%	23.6
Two or more races	117	88	0	17	0.0%	25.4
Hispanic or Latino origin	197	116	78	84	39.6%	29
ALL INDIVIDUALS BELOW						
50 percent of poverty level	291	181				
125 percent of poverty level	1,111	392				
150 percent of poverty level	1,368	404				
185 percent of poverty level	1,855	403				
200 percent of poverty level	1,892	409				
Source: American Community Survey 5-year Estimates (2014-2018)						
All bolded and orange cells indicate a difference that is greater than 5% when compared to the state.						
All bolded and blue cells indicate a difference that is greater than 5% when compared to the state and the county.						

5 Limited English Proficiency (LEP)

Per the Safe Harbor Guidelines, should an LEP Group be identified during the permit application process, written translations of vital documents for each eligible LEP language group that constitutes five percent or includes 1,000 members (whichever is less) of the population of persons eligible to be served or likely to be affected or encountered. If there are fewer than 50 persons in a language group that reaches the five percent trigger, then DEQ will not translate vital written materials, but instead will provide written notice in the primary language of the LEP language group of the right to receive competent oral interpretation of those written materials, free of cost. The Safe Harbor Guidelines apply to the translation of written documents only. Safe Harbor Guidelines are per the EPA guidance for LEP persons and implemented by DEQ when deemed appropriate. The population of Spanish-speakers that speak English “less than very well” is less than five percent in the census tract included in the two-mile buffer. If specific language requests are made or additional language information arises during the permitting process, DEQ will revisit the Safe Harbor Guidelines.

Table 9. Limited English Proficiency

Language Spoken at Home	Census Tract 2902		
	Estimate	Margin of Error	Percent
Total:	6,811	+/-519	100
Speak only English	6,407	+/-596	94.1
Spanish or Spanish Creole:	402	+/-303	5.9
Speak English "very well"	107	+/-88	1.6
Speak English less than "very well"	295	+/-229	4.3
Source: American Community Survey 5-year Estimates (2011-2015)			

6 County Health

The University of Wisconsin Population Health Institute, in collaboration with the Robert Wood Johnson Foundation, calculated a County Health Rankings system for all the states in the United States (www.countyhealthrankings.org). This ranking is based on health outcomes (such as lifespan and self-reported health status) and health factors (such as environmental, social and economic conditions). According to this 2021 report, out of all 100 counties in North Carolina (with 1 indicating the healthiest), Person County ranks 53rd in health factors and 73rd in health outcomes.

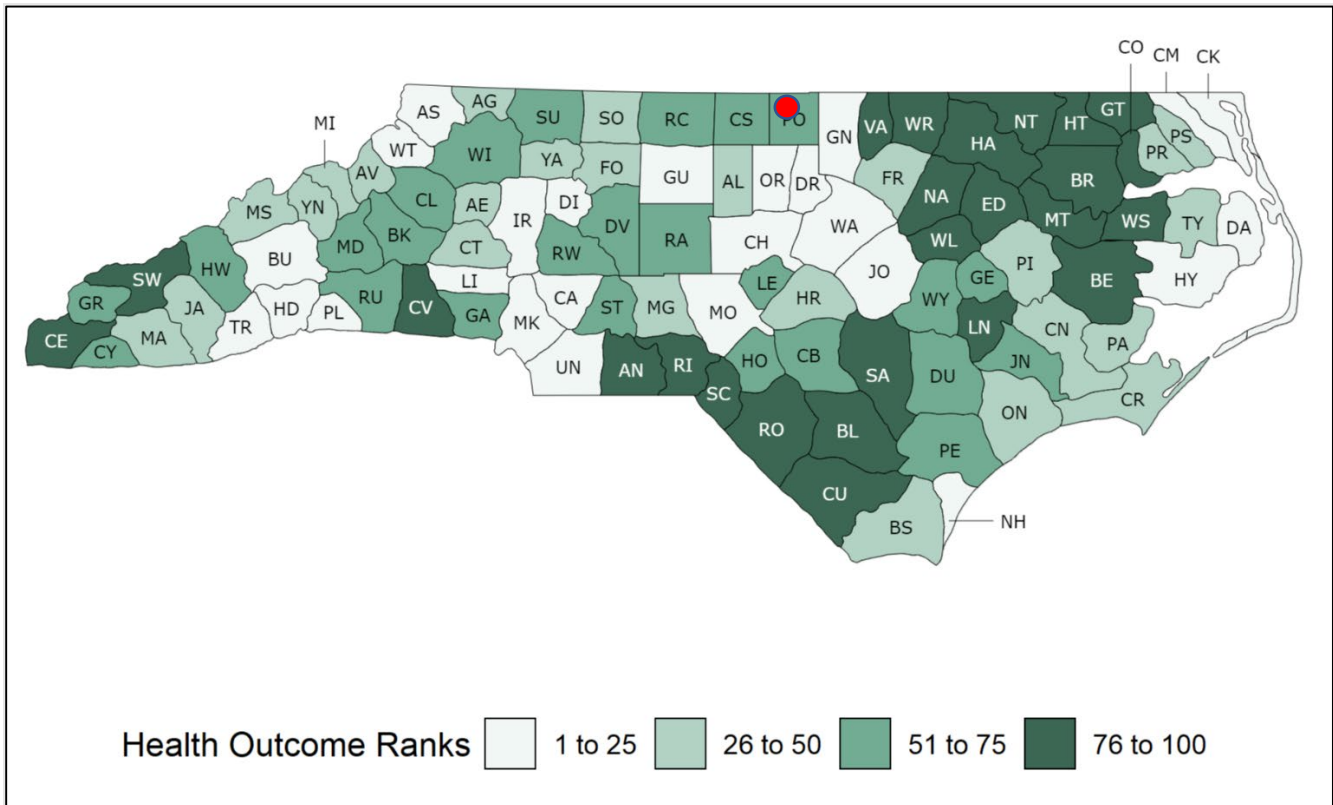


Figure 4. County Health Rankings for Health Factors in North Carolina provided by University of Wisconsin Public Health Institute.

7 Local Sensitive Receptors

The EPA suggests that sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing, and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants. Extra care must be taken when dealing with contaminants and pollutants in close proximity to areas recognized as sensitive receptors. For instance, children and the elderly may have a higher risk of developing asthma from elevated levels of certain air pollutants than a healthy individual aged between 18 and 64.

Within the two-mile project radius from the Duke Energy Roxboro Plant, the following potential sensitive receptors were identified through EJSCREEN and Google Maps:

- Zion Level Missionary Baptist Church,
- Hyco Zion Baptist Church, and
- Concord United Methodist Church.

Additional sensitive receptors may be identified during the permit application process.

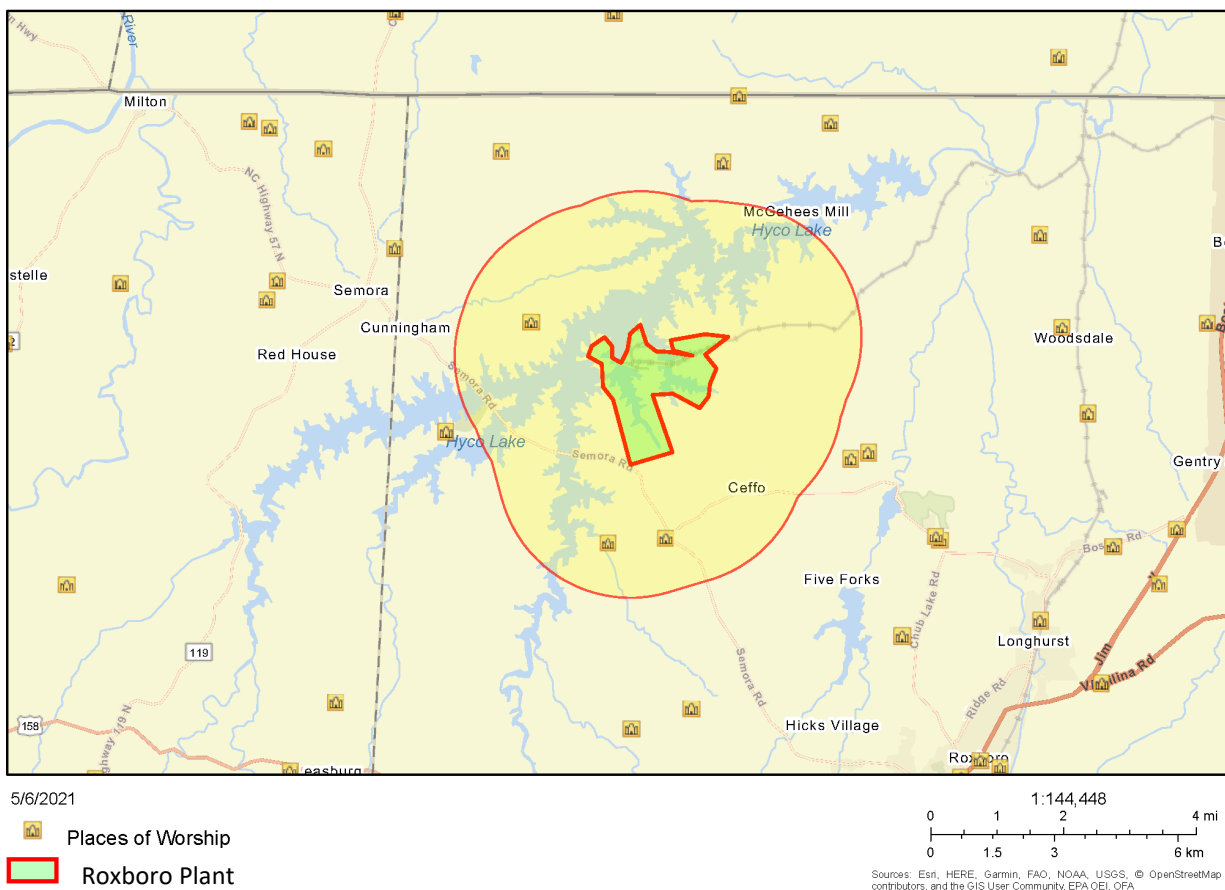


Figure 5. Sensitive receptors surrounding the facility

8 Local Industrial Sites

Within the two-mile buffer of the Roxboro Plant, there are 53 facility permits or incident reports (as of May 6, 2021):

- 2 Air Quality Permit sites –Title V (1 belongs to the Roxboro Plant itself),
- 37 NPDES Wastewater Treatment Permits (35 are single family homes, 30 are expired),
- 4 Coal Ash Structural Fills,
- 2 Permitted Solid Waste Landfills (1 open, 1 closed),
- 1 Hazardous Waste Site,
- 4 Underground Storage Tank Incidents,
- 2 Aboveground Storage Tanks Incidents, and
- 3 Underground Storage Tank Active Facilities.

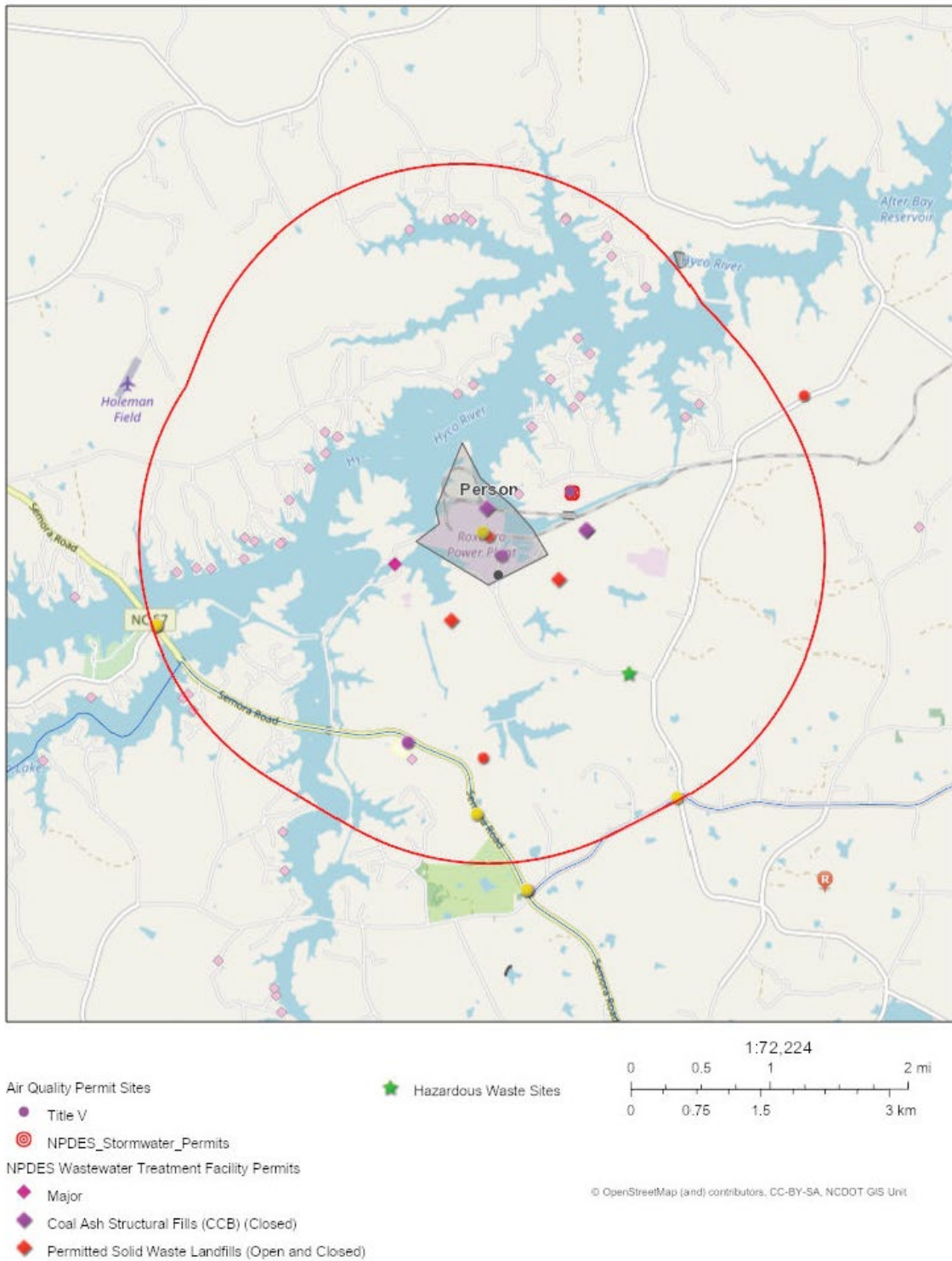


Figure 6. Permitted facilities and incidents with the two-mile radius surrounding Duke Energy's Roxboro Plant.

9. Conclusion

The Draft EJ Report is an initial evaluation of the demographics and socioeconomics of the community area surrounding a proposed facility or permit modification. This includes information within a determined radius by the Department (two miles for this project) on race and ethnicity (decennial census year), poverty, per capita income, and ability to speak English (most current ACS census range), current N.C. Department of Commerce county tier, and presence or absence of American Indian Tribal areas. The Draft EJ Report does not include a reconnaissance of the community. The proposed Roxboro Plant's coal ash landfills are located in an area designated with moderate health factors and outcomes in comparison to other areas of the state.

The surrounding area displays slightly higher percentages of African-American residents as compared to the state and the county. There is also a slightly higher percentage of Poverty for Hispanic or Latino in both Person County and the census tract. No potential LEP language groups were identified as having met the five percent threshold for Safe Harbor Guidelines.

Based on this Draft EJ Report, DEQ will conduct the following outreach:

- 1) Provide initial and ongoing contact with the Sappony Tribe.
- 2) Connect with known community leaders and organizations.
- 3) Review the list of sensitive receptors while considering additional outreach options that may best fit this community's needs.
- 4) Share meeting announcements and comment period reminders through social media.