**Document Type:** EA-Administrative Record
**Index Field:** Environmental Assessment
**Project Name:** Sugar Camp Viking District #2
**Project Number:** 2018-25

# SUGAR CAMP COAL MINE EXPANSION
# VIKING DISTRICT #2

# SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

**Franklin and Hamilton Counties, Illinois**

**Prepared by:**
TENNESSEE VALLEY AUTHORITY
Knoxville, Tennessee

May 2019

For further information, contact:
Matthew Higdon
NEPA Compliance
Tennessee Valley Authority
Knoxville, TN
Phone: 865-632-8051
E-mail: mshigdon@tva.gov

This page intentionally left blank

# Table of Contents

# List of Figures and Tables

# Symbols, Acronyms, Abbreviations and Glossary of Terms

| | |
|---|---|
| **ARMPS** | Analysis of Retreat Mining Pillar Stability |
| **CEQ** | Council on Environmental Quality |
| **CMM** | Coal Mine Methane |
| **EA** | Environmental Assessment |
| **ENCA** | Ewing-Northern Coal Acquisition |
| **EO** | Executive Order |
| **GHG** | Greenhouse Gas |
| **GHGRP** | Greenhouse Gas Reporting Program |
| **GWP** | Global Warming Potential |
| **IAC** | Illinois Administrative Code |
| **IDNR** | Illinois Department of Natural Resources |
| **ISGS** | Illinois State Geological Survey |
| **LRD** | Land Reclamation District |
| **MT** | Metric Ton |
| **$MTCO_2e$** | Metric Ton of Carbon Dioxide Equivalent |
| **MMBtu** | Million British Thermal Units |
| **NAAQS** | National Ambient Air Quality Standards |
| **NEPA** | National Environmental Policy Act |
| **OMM** | Office of Mine and Minerals (IDNR) |
| **Project Area** | The 2019 Expansion Area (155 acres) within Viking District #3 |
| **SBR** | Significant Boundary Revision |
| **SCC** | Social Cost of Carbon |
| **SMCRA** | Surface Mining Control and Reclamation Act of 1977 |
| **TVA** | Tennessee Valley Authority |
| **UCM Application** | Underground Coal Mine Application for surface coal mining and reclamation operations permit- underground operations |
| **USEPA** | U.S. Environmental Protection Agency |

# CHAPTER 1 – PURPOSE AND NEED FOR ACTION

Sugar Camp Energy, LLC (Sugar Camp) proposes to expand mining operations of Tennessee Valley Authority (TVA)-owned coal reserves in Franklin County, Illinois. The expansion area within Viking District #3 is approximately 155 acres, hereafter referred to as the "project area" (Figure 1-1). This mine expansion is subject to review and approval by the State of Illinois, which has regulatory authority delegated by the U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement. Sugar Camp mining operations would be carried out in compliance with Code of Federal Regulations Part 913-Illinois (62 IAC 1700-1850), which specifies a comprehensive set of environmental protection measures for the control of adverse ecological impacts resultant from coal mining. This part contains rules applicable only within Illinois that have been adopted under the Surface Mining Control and Reclamation Act (SMCRA) of 1977.

Sugar Camp received a Surface Coal Mining and Reclamation Operations Permit – Underground Operations – from the Illinois Department of Natural Resources (IDNR), Office of Mines and Minerals (OMM), Land Reclamation Division (LRD), for the project area as part of Revision #6 to Underground Coal Mine (UCM) Permit No. 382 for Sugar Camp Mine No. 1.

TVA owns only the coal reserves beneath the project area and executed a coal lease agreement in July 2002 which allows Sugar Camp to mine the reserves. The purpose of the agreement is to facilitate the recovery of TVA-owned coal reserves in an environmentally sound manner. Under the terms of the agreement, Sugar Camp may not commence mining of TVA-owned coal reserves under a mining plan or any revision until completion of all environmental reviews required for compliance with applicable laws and regulations have been finalized. The proposed action is for TVA to approve the mining by Sugar Camp of the coal underlying 85 acres of the 155-acre project area (Figure 1-1). Under the proposal, coal would be mined using a conventional room and pillar technique. Mining would occur in 2019 over an estimated 5-month period.

In November 2018, TVA approved the 2,255-acre expansion of Sugar Camp Mine No. 1 into Viking District #2 after completing an environmental assessment (EA; TVA 2018) of the proposed action. In fulfillment of its responsibilities under the National Environmental Policy Act (NEPA), TVA has prepared this supplement EA (SEA) to the 2018 EA to address the proposed expansion of the mine into the adjacent Viking District #3 area.

## 1.1 Background

TVA is a federal corporation and instrumentality of the United States government, created in 1933 by an act of Congress to foster the social and economic well-being of the residents of the Tennessee Valley region. As part of its diversified energy strategy, TVA completed a series of land and coal mineral acquisitions from the 1960s through the mid-1980s that resulted in the ownership of two large coal reserve blocks in the southern Illinois section of the Illinois Basin coal region.

In 1964, TVA acquired 6,452 acres of coal reserves located northeast of Thompsonville in Franklin County (the Franklin County Reserves) as a potential long-term fuel supply for its coal-fired power plants. In 1977, TVA acquired 6,547 acres of coal reserves near Dahlgren in Hamilton and Jefferson counties (known as the Eads Reserves). In 1975 and 1984, TVA acquired 51,960 acres of coal reserves between Ina, Benton, and McLeansboro in Franklin,

Hamilton and Jefferson counties (the Ewing-Northern or Ewing-Northern Coal Acquisition [ENCA] Reserves). TVA owns coal reserves underlying 64,959 acres of land containing approximately 1.35 billion tons of the Illinois Springfield (No. 5) and Herrin (No. 6) coal seams. TVA generally leases its mineral rights to private coal mining companies and receives royalties based on the amount of coal recovered under such lease agreements. Under the proposed action, Sugar Camp would mine portions of the ENCA reserves.

## 1.2 Decision to Be Made

The decision to be made is whether to approve the mining and removal of TVA-owned coal by Sugar Camp based on the proposed mining plan for Sugar Camp Mine No. 1. The activities associated with the mining plan include conventional room and pillar mining under 85 acres of Viking District #3 (Figure 2-1) within the 155-acre project area.

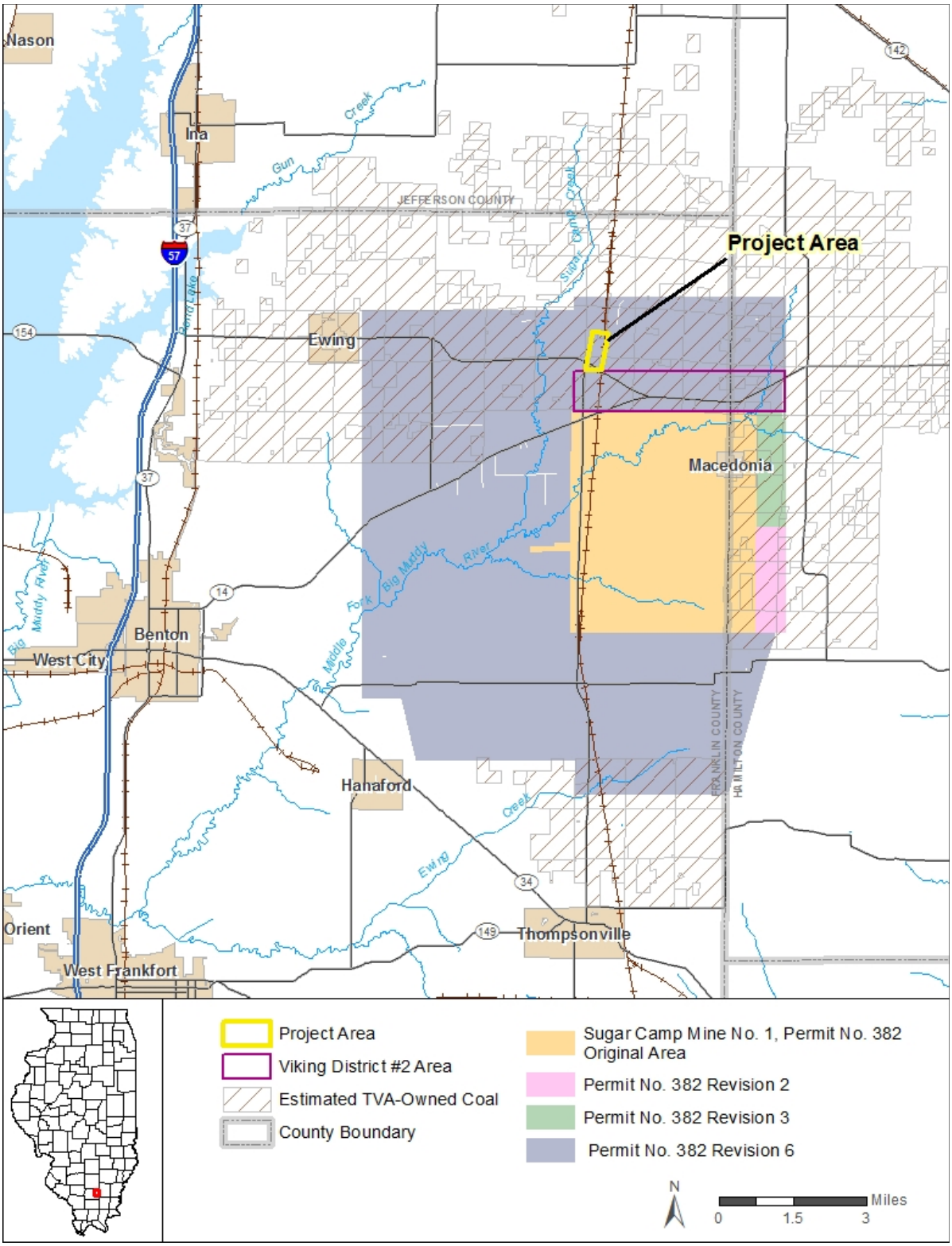


**Figure 1-1 Project Location Map**

## 1.3 Related Environmental Reviews and Documentation

In 2008, Sugar Camp obtained a permit from the State of Illinois for underground longwall mining operations under approximately 12,103 acres in Franklin and Hamilton counties (IDNR 2008). Since then, Sugar Camp has received multiple permits to expand underground longwall mining operations for Sugar Camp Mine No. 1. TVA prepared an EA in 2011 and a SEA in 2013 to document the potential effects of Sugar Camp's proposed mining of TVA-owned coal underneath portions of Sugar Camp Mine No. 1 (TVA 2011, 2013).

In November 2017, Sugar Camp obtained approval from the State of Illinois to expand Sugar Camp Mine No. 1 by 37,791.9 acres (approved as Significant Permit Revision #6 to Permit No. 382) (IDNR 2017). As noted above, TVA completed an EA in November 2018 to document the potential effects of Sugar Camp's proposed mining of TVA-owned coal underneath Viking District #2 within the Sugar Camp Mine No. 1 area. Due to unexpected delays in the mining of coal from the Viking District #2 area, Sugar Camp requested approval for underground mining of the contiguous Viking District #3 area within Sugar Camp Mine No. 1. The proposed mining within Viking District #3 would not involve any surface disturbance due to room and pillar methodology and because the infrastructure already in place for mining Viking District #2 would be used. Further, the mining reserves in Viking District #3 are contiguous to the reserves in Viking District #2. TVA is reviewing underground mine operations for Viking District #3 by supplementing the earlier 2018 EA for mining within Viking District #2. TVA plans to prepare an environmental impact statement to consider the environmental impacts of mining the remaining portion of TVA coal within the 37,791.9-acre mine expansion.

Information from the 2018 Viking District #2 EA, the UCM application for Sugar Camp Mine No. 1 Revision #6, and data provided by Sugar Camp has been utilized to prepare this SEA.

## 1.4 Public Notice, Necessary Permits and Consultation

On March 26, 2019, TVA issued the draft SEA for public review and comment by posting it on TVA's public website. Notices were also published on March 27, 2019, in four area newspapers: the Benton News (Benton, IL), the Harrisburg Register (Harrisburg, IL), the Marion Republican (Marion, IL), and the Southern Illinoisan (Mt. Vernon, IL). During the comment period, TVA received one comment letter, submitted by the Sierra Club Illinois Chapter. TVA considered these comments when completing the final SEA and has responded to substantive comments in Appendix A. Based on the Sierra Club's input, TVA revised the SEA to provide additional information about Sugar Camp's subsidence analysis (see section 2.2.2.), about potential impacts to groundwater (see section 3.1.4), and to address cumulative impacts associated with water resources (see section 3.3).

TVA would not be required to secure any permits to undertake the proposed action. All appropriate permits for the proposed action would be obtained by Sugar Camp. As described above, Sugar Camp received a permit from IDNR-OMM to conduct underground mining operations in Viking District #3. The proposed action within the project area includes conventional, room and pillar coal mining where surface features, resources, and activities would be undisturbed. As a result, permits and/or consultation for surface impacts are not required.

# CHAPTER 2 - ALTERNATIVES

## 2.1 Description of Alternatives

Two alternatives will be evaluated, the No Action Alternative and the Action Alternative. The alternatives are described below.

### 2.1.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not approve the mining plan for the 155-acre project area (85-acre underground mining area). Without TVA's approval to mine its reserves, Sugar Camp would not mine coal within the project area.

### 2.2.2 Alternative B – Action Alternative

Under the Action Alternative, TVA would approve the mining plan as submitted by Sugar Camp. Sugar Camp proposes to mine underground coal under 85 acres of the 155-acre project area by conventional room and pillar mining methods. The coal extraction under the Action Alternative would occur over an estimated 5-month period in 2019 and would produce approximately 132,515 tons of processed coal. The extracted coal would be processed at the preparation plant facility located outside of the project area and previously approved by IDNR separate from any TVA-owned coal activities. No new coal processing or refuse facilities are proposed.

Part IV of the UCM Application describes Sugar Camp's Operations Plan, including a section regarding unplanned subsidence. Room and pillar mining involves the extraction of coal in a grid-like pattern in which portions of the coal seam are left intact to support the roof of the mine. The series of parallel areas in which coal is extracted are called "entries." Room and pillar mining would be completed under approximately 85 acres of land to develop main entries for the longwall portions of Viking District #3. The entryways provide access for workers, ventilation, and mining equipment. Room and pillar equipment includes continuous miners, shuttlecars, conveyor belts, and roofbolters. The coal would be transported by conveyor from the project area to the existing coal preparation plant.

No subsidence (the planned sinking of surface related to extraction of coal) is anticipated in the project area since the percent coal extraction is small; however, in order to receive a permit from IDNR, the applicant must describe how mine stability is maximized to prevent unplanned subsidence. Sugar Camp used the Analysis of Retreat Mining Pillar Stability (ARMPS) program to calculate the stability factor by using the loads applied to and the load bearing capacities of coal pillars. The ARMPS program was developed by NIOSH (National Institute for Occupational Health and Safety), formerly the US Bureau of Mines. The model uses an empirical method with an extensive amount of case histories incorporated for calibration. It is the industry standard for pillar design. The recommended stability factor is 1.5 (Mark 2019).

For Viking District #3, six main entries would be on 145 x 120-foot centers with a 20-foot maximum entry and cross cut width. For other areas to be conventionally mined, entry and cross cut spacing would be 100 feet by 100 feet, with entry and crosscut width of 20 foot maximum. The referenced dimensions for conventional mining are based on site-specific strength values for coal pillars and floor for an adequate factor of safety for roof stability and to prevent unplanned subsidence. Plate testing would be conducted in conventional room and pillar sections within the first 1,000 feet of entering the area. Should any changes in mine stability or conditions be encountered, a more detailed study of floor, roof and pillars

would be performed at that time. Per Sugar Camp, the ARMPS Version 6 pillar stability model for the project area provides a Stability Factor of 3.46. The calculation is based on the mine plan of 6 entries with crosscuts and entry centers of 145' x 120' with 1000 ft. of cover. The extraction ratio is 29.11%. As stated in the UCM Application, "the subsidence control plan…will serve to avoid damage to any surface features to assure compliance with 62 Ill. Adm. Code 1817.121(d)." If unplanned subsidence were to occur during the mining period and prior to bond release, Sugar Camp would mitigate or remedy any subsidence related material damages. Further information can be found in the 2018 EA.

According to Sugar Camp's proposal, 13 room and pillar sections would be mined, with equipment entering the area from Viking District #2. Mining in this area was previously approved by TVA in November 2018 after completing an EA. This analysis in the SEA supplements the earlier analysis in the 2018 EA. Figure 2-1 outlines the location of the underground workings in the mine plan for the portion of Viking District #3 that would be mined in 2019.

## 2.2 Comparison of Alternatives

Under the No Action Alternative, TVA would not approve the mining of TVA-owned coal reserves located under the project area. Lacking TVA approval for this mining, Sugar Camp would not be able to extract the coal. While no environmental effects related to mining would be anticipated within the project area, the potential loss of mining jobs would impact the local economy.

TVA's preferred alternative is the Action Alternative. Under the Action Alternative, TVA-owned coal within the project area would be mined. Because of the use of the room and pillar technique, no subsidence is proposed. As a result, no effects to surface features and resources would occur. Effects on other resources would not be significant. Economic impacts associated with employment during the short term mining of the project area would be beneficial. Impacts to these resources would be no greater than what was previously described in the 2018 EA.

TVA has evaluated the Action Alternative and has determined that several resources would not be affected due to the nature of the proposed action (i.e., conventional room and pillar coal mining within the 155-acre project area) because no surface disturbance would occur from mining operations. These resources are floodplains, water supply, surface water, wetlands, terrestrial wildlife, vegetation, aquatic communities, natural areas, transportation, utilities, cultural resources, noise levels, recreation, wild and scenic rivers, the landscape viewshed, and navigation.

The proposed action could affect the following resources, which are considered further in this SEA: geology and soils, groundwater, air quality, greenhouse gases, socioeconomic conditions, and environmental justice. Table 2-1 lists potential impacts associated with the Action Alternative.

**Table 2-1 Summary of Potential Impacts for the Action Alternative**

| Resource Area | Potential Impacts |
|---|---|
| Geology and Soils | Subsurface geology would be marginally altered by removing coal within the project area. With use of the conventional room and pillar extraction methods, subsidence is not proposed. With no subsidence, prime farmland or farmland of statewide importance would not be impacted. |
| Groundwater | Groundwater availability in the project area is unlikely to be impacted because no subsidence is proposed. An increase in flow may occur in the coal seam but no major aquifers are recorded and the presence of minor aquifers is limited due to the geology in the area. Potential minor aquifers are located several hundred feet above the coal seam. Further, no wells have been identified within the project area. No impacts to the cistern in the project area are anticipated. |
| Air Quality | Minor amounts of criteria pollutant emissions would be generated in the vicinity of the project area from vehicles and equipment during operation of the mine. The direct and indirect emissions of each criteria pollutant and mercury as a result of coal mining and the downstream combustion of the extracted coal is estimated to be between 0.00003% and 0.14% of the total US emissions of those pollutants in 2014. |
| Greenhouse Gases | Methane would be released from the coal seam in the project area. Other greenhouse gases, primarily carbon dioxide ($CO_2$) emissions, would be released as a result of downstream combustion of the mined coal and minor $CO_2$ releases as a result of operation of fuel burning mobile equipment; new direct emissions of methane are estimated to be 17,227 metric tons of carbon dioxide equivalent ($MTCO_2e$). Indirect emissions of $CO_2$ and other greenhouse gases as a result of downstream combustion of the extracted coal are estimated to be 310,643 $MTCO_2e$. |
| Socioeconomic Conditions | Existing jobs would be maintained for operation of the mine during the estimated 5-month period. No permanent or negative impacts would occur. |


**Figure 2-1 Location of Underground Operations for Viking District #3**

# CHAPTER 3 – AFFECTED ENVIRONMENT AND ANTICIPATED IMPACTS

The affected environment and the subsequent anticipated impacts of implementing the No Action Alternative and the Action Alternative are described below. Under the No Action Alternative, TVA would not approve the mine plan and Sugar Camp would not be allowed to extract coal from TVA-owned coal reserves within the 155-acre project area.

Under the Action Alternative, TVA would approve Sugar Camp's mining plan and Sugar Camp would mine the TVA coal reserves within the project area. Potential impacts are discussed below.

## 3.1 Impacts Evaluated

### 3.1.1 Geology and Soils – Affected Environment

The project area is located in the southern portion of the Illinois Basin coalfield. The Herrin No. 6 coal seam, which is proposed to be mined, lies from 650 feet to more than 900 feet below ground. The Herrin No. 6 coal seam is part of the Carbondale formation, which is of Middle Pennsylvanian age (300 to 318 million years old). Claystone, sandy shale, and limestone lie under the coal seam. The Pennsylvania System and several layers of shale and limestone (e.g., Anvil Shale, Brereton Limestone, Anna Shale, and Energy Shale) lie above the Herrin No. 6 coal seam. Unconsolidated glacial drift (rocks deposited by glaciers) lies above the Pennsylvania System.

Aquifers contained within these geologic formations are limited in size because high percentages of clay and porous sand and gravel beds do not create optimal conditions for retaining water. There are no recorded major aquifers in the project area. The Pennsylvanian sandstones and limestones may be considered as minor aquifers with low permeability and porosity and are highly mineralized. Yields are low in the range of one to ten gallons per minute (HMG 2018). Use of these resources would be minimal due to depth from the surface and the requirement for deep wells. Additional details regarding aquifers are provided in the groundwater discussion.

A total of ten soil units are mapped within the project area, including silt loams, silty clay loams and clay loams. A portion of the soils within the project area are designated as prime farmland. The term "prime farmland" is a designation assigned by the U.S. Department of Agriculture (USDA) defining land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for such uses. Similarly, farmland of statewide importance is land other than prime farmland or unique farmland that is also highly productive. Based on soils data obtained from the USDA Geospatial Data Gateway, approximately 59 acres (38%) is designated as prime farmland and 71 acres (46%) as farmland of statewide importance within the 155-acres project area. Figure 2-1 illustrates the prime farmland and farmland of statewide importance within the project area.

The Federal Farmland Protection Policy Act (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. The Act is intended to assure that federal programs are administered, to the extent practicable, in a manner that is compatible with State and local government, and private programs and policies to protect farmland. The FPPA does not authorize the

Federal Government to regulate the use of private or non-federal land or in any way affect the property rights of owners. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land. Surface mining, where restoration to pre-mining agricultural use is planned, is not subject to FPPA (USDA 2018).

### 3.1.2 Geology and Soils – Anticipated Impacts

***No Action Alternative***

Under the No Action Alternative, TVA would not approve Sugar Camp's mining plan. Therefore, no effects would occur from subsidence and the subsurface geology would not be altered.

***Action Alternative***

Under the Action Alternative, TVA would approve Sugar Camp's mining plan and coal would be mined by conventional room and pillar methods within the project area. Aside from removal of coal in the Herrin No. 6 seam, the extraction process would not significantly change the subsurface geology and other geologic strata. Subsidence is not expected with room and pillar mining, and as result, direct and indirect impacts would not be significant to the area geology, prime farmland or farmland of statewide importance.

### 3.1.3 Groundwater – Affected Environment

The project area is located in the glaciated upland area of northeastern Franklin County. It is situated at the headwaters of the major drainage systems of the region. In this area, no specific geologic unit has been identified as a major surficial aquifer. According to Illinois State Geological Survey (ISGS) Circular 212, Groundwater Geology in Southern Illinois, the thickest unconsolidated material in Franklin County is in Big Muddy River Valley, west of the project area. The glacial deposits are generally thin and are not water yielding throughout Franklin County. Minor scattered sand and gravel surficial aquifers with potential surficial sources exist in the Middle Fork Big Muddy River Valley and its larger tributaries, such as Sugar Camp Creek, Ewing Creek, Akin Creek and Jordan Creek. Surficial aquifers produce some low-yield water supplies. Most area residents reported that the wells provide only supplementary supplies and that they are connected to public water supplies (HMG 2018).

Pennsylvanian sandstones in the northern and southeastern portions of Franklin County and western portion of Hamilton County can usually provide sufficient water for individual domestic supplies. Yields from wells completed in these formations are usually less than 10 gallons per minute, with yields less than 5 gallons per minute common. The low permeability of the Pennsylvanian System rocks cause the water in the deeper formations to be highly mineralized. Therefore, some deeper bedrock aquifers may contain water of unsatisfactory quality without treatment and are generally not developed. Recharge to these bedrock aquifers is primarily from precipitation which percolates into and through the overlying unconsolidated materials. Recharge primarily takes place at outcrop areas for the various bedrock units. Based on well questionnaire responses, no wells have been identified within the 155-acre project area. The nearest identified wells are approximately 0.25 miles and 0.32 miles outside the project area (Figure 2-1). One cistern was identified in the project area.

### 3.1.4 Groundwater – Anticipated Impacts

***No Action Alternative***

Under the No Action Alternative, TVA would not approve Sugar Camp's mining plan and no effects on groundwater would occur.

***Action Alternative***

Under the Action Alternative, TVA would approve Sugar Camp's mining plan, and coal would be mined by conventional room and pillar methods within the project area. It is possible that increased inflow to the extraction areas may occur. Impacts to water bearing geologic strata are not anticipated, as subsidence is not anticipated, limited groundwater resources are present, and potential water bearing strata are located several hundred feet above the coal seam. No major aquifers are recorded and minor surficial aquifers are limited. No impacts to drinking water will occur as no wells are present in the project area. The cistern in the project area will not be impacted since subsidence is not anticipated and extraction would occur much deeper than the cistern.

### 3.1.5 Air Quality – Affected Environment

As required by the Clean Air Act and its amendments, the U.S. Environmental Protection Agency (EPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) for six principal air pollutants, which are called "criteria" pollutants. These include carbon monoxide (CO), nitrogen dioxide ($NO_2$), ozone ($O_3$), particulate matter (including inhalable particulate matter [particulate matter with an aerodynamic diameter below 10 micrometers (µm), or $PM_{10}$] and fine inhalable particulate matter [particulate matter with an aerodynamic diameter below 2.5 µm, or $PM_{2.5}$]), sulfur dioxide ($SO_2$), and lead (Pb). Primary standards set limits to protect public health, including the health of sensitive populations, such as asthmatics, children, and the elderly. The secondary standards are set to protect against effects on public welfare, including damage to structures, crops, and ecosystems. The primary and secondary NAAQS are provided in Table 3-1.

**Table 3-1 National Ambient Air Quality Standards**

| Pollutant | Primary / Secondary | Averaging Time | Level | Form |
|---|---|---|---|---|
| Carbon Monoxide (CO) | primary | 8 hours | 9 ppm | Not to be exceeded more than once per year |
| | | 1 hour | 35 ppm | |
| Lead (Pb) | primary and secondary | Rolling 3 month average | 0.15 µg/m$^3$ [1] | Not to be exceeded |
| Nitrogen Dioxide ($NO_2$) | primary | 1 hour | 100 ppb | 98th percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | primary and secondary | Annual | 53 ppb [2] | Annual Mean |
| Ozone ($O_3$) | primary and secondary | 8 hours | 0.070 ppm [3] | Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years |
| Particulate Matter ($PM_{2.5}$) | primary | Annual | 12.0 µg/m$^3$ | annual mean, averaged over 3 years |
| | secondary | Annual | 15.0 µg/m$^3$ | annual mean, averaged over 3 years |
| | primary and secondary | 24-hours | 35 µg/m$^3$ | 98th percentile, averaged over 3 years |
| Particulate Matter ($PM_{10}$) | primary and secondary | 24-hours | 150 µg/m$^3$ | Not to be exceeded more than once per year on average over 3 years |
| Sulfur Dioxide ($SO_2$) | primary | 1-hour | 75 ppb [4] | 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | secondary | 3-hours | 0.5 ppm | Not to be exceeded more than once per year |

Source: USEPA 2019a at https://www.epa.gov/criteria-air-pollutants/naaqs-table.

1 In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m$^3$ as a calendar quarter average) also remain in effect.

2 The level of the annual $NO_2$ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

3 Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) $O_3$ standards additionally remain in effect in some areas. Revocation of the previous (2008) $O_3$ standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

4 The previous $SO_2$ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous $SO_2$ standards or is not meeting the requirements of a SIP call under the previous $SO_2$ standards (40 CFR 50.4(3)), A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

The Clean Air Act requires EPA to determine whether an area is in attainment (regions where a given pollutant's concentration is at or below the established NAAQS) or nonattainment (regions where a given pollutant's concentration is above the established NAAQS). These designations are based on air quality data collected from monitors located in urban and rural settings as well as other information such as modeling. Franklin and Hamilton Counties are currently designated as in attainment for all NAAQS (USEPA 2019a).

### 3.1.6 Air Quality – Anticipated Impacts

***No Action Alternative***

Under the No Action Alternative, TVA would not approve Sugar Camp's mining plan expansion. Therefore, no effects would occur from underground operations in the proposed project area. No change to the indirect air emissions is expected to result from the No Action Alternative.

***Action Alternative***

Under the Action Alternative, TVA would approve Sugar Camp's mining plan expansion, and coal would be mined by conventional room and pillar methods within the project area.

Direct impacts to air quality from mining of the underground coal would be limited; however, several indirect impacts to air quality could occur. Under the Action Alternative, the potential downstream consumers of this coal would burn that coal for energy generation or other industrial purposes resulting in indirect emissions of criteria and hazardous air pollutants (HAP), as defined and regulated by EPA. Transportation and handling of the coal to and by the end users will also generate emissions of air pollutants. These emissions from transportation and handling are expected to be minor compared to the indirect emissions resulting from combustion of the coal and so are not further evaluated.

During the period 2014 through 2017, between 50% and 80% of the coal produced by the mine has been shipped to a number of power plants in the United States including facilities located in Alabama, Florida, Georgia, Indiana, Kentucky, Mississippi, and Ohio, with the remainder delivered to various global commodities firms (USEIA 2019). However, the mined coal could be used by any of these facilities, other domestic facilities, or any international power plant. Therefore, to analyze potential indirect emissions, a range was developed for the indirect emissions to account for the variety of boiler and control equipment configurations in which the mined coal may be combusted. This range has a lower bound based on combustion of the coal in a modern, highly controlled facility and an upper bound based on combustion of the coal in a boiler equipped with minimal control equipment.

The range of indirect criteria and select HAP (i.e., mercury, HCl and HF) emissions resulting from the downstream combustion of the 132,515 tons of coal extracted from the project area are quantified in Table 3-2.

**Table 3-2 Indirect Air Pollutant Emissions**

| Pollutant | Proposed Action Indirect Emissions Range (ton) | Viking Area #2 Indirect Emissions Range (tpy) | 2014 National Emissions Inventory (tpy) |
|---|---|---|---|
| $NO_x$ | 116 - 2,186 | 5,323 – 100,650 | 12,595,526 |
| CO | 264 – 1,193 | 12,166 – 54,900 | 65,646,029 |
| $PM_{10}$ | 30 – 1,236 | 1,369 – 56,902 | 18,197,553 |
| $PM_{2.5}$ | 30 – 907 | 1,369 – 41,758 | 5,391,936 |
| VOC | 5.6 – 86 | 259 – 3,965 | 16,912,756 |
| $SO_2$ | 165 – 6,722 | 7,604 – 309,453 | 4,675,008 |
| HCl | 4.0 – 80 | 183 – 3,660 | Not reported |
| HF | 0.7 – 10 | 30 – 458 | Not reported |
| Mercury | 0.003 – 0.03 | 0.1 – 1.2 | 52 |

Source: USEPA 2019b

Table 3-2 also provides the corresponding emission level of these pollutants at the national level (where available) for 2014 (the most recent year for which information is available). Comparing the direct and indirect emissions of these pollutants from the Action Alternative to the corresponding emissions of the same pollutants at the national level provides a reasonable proxy for assessing potential downstream air quality impacts at a regional or larger scale. The direct and indirect emissions of each criteria pollutant and mercury as a result of coal mining and the downstream combustion of the extracted coal is estimated to be between 0.00003% and 0.14% of the total US emissions of those pollutants in 2014.

Similar comparisons are provided in Table 3-2 for the burning of the 6.1 million tons of coal from the mining of Viking Area #2 previously assessed in the 2018 EA. The downstream burning of this coal would be subject to applicable regulations under the Clean Air Act and corresponding state statutes addressing air quality, including the New Source Performance Standards, Mercury and Air Toxics Standards, and standards developed under respective State Implementation Plans (SIPs) to achieve and maintain the NAAQS.

Another indirect impact is the operation of vehicles and equipment at the surface associated with the underground mining process. While temporary increases in criteria pollutant emissions would occur, air quality standards would be maintained by controlling fugitive dust generated by surface disturbance. These emissions would be insignificant with the implementation of best management practices (e.g., wetting the roads and/or using dust control chemicals before use of access/haul roads during prolonged dry weather conditions to reduce fugitive dust emissions). The operation of underground mining equipment could also contribute minor (as compared to the total emissions in the area) amounts of pollutant emissions. In order to maintain safe levels of pollutants within the mine workings, safety regulations require the use of filters on diesel-powered mining equipment to minimize diesel

exhaust emissions on most underground diesel machinery. Other equipment is electrically powered and does not contribute directly to emission levels.

### 3.1.7 Greenhouse Gases – Affected Environment

Greenhouse gases are chemical compounds in the atmosphere that absorb a portion of the outgoing longwave radiation and reflect it back to the surface, thus affecting the Earth's energy balance. GHG emissions are converted to a carbon dioxide equivalent ($CO_2e$) basis using a GHG-specific multiplier called the global warming potential (GWP). The GWP for a particular greenhouse gas is the estimated ratio of surface warming caused by one unit mass of the greenhouse gas to that of one unit mass of carbon dioxide ($CO_2$) over a specified time period, typically 100 years. Methane ($CH_4$) is a greenhouse gas that has both man-made and natural sources and an estimated GWP of 28 to 36 (USEPA 2017). One source of methane is coalification (the formation of coal in the earth). After the methane is formed, much of it remains within coal seams until the coal encasing the methane is fractured and exposed. Coal mining releases this methane, referred to as coal mine methane (CMM) as opposed to the methane that remains in the seam, referred to as coal bed methane (CBM) (USEPA 2018a). Although the methane contained in coal is formed naturally, the CMM is considered a man-made source because the methane would have remained within the coal seam if it had not been exposed by mining. While CMM is a large source of man-made methane emissions in the United States, EPA estimates that emissions decreased by 40 percent between 1990 and 2015 (USEPA 2018a).

In April 2009, EPA implemented a greenhouse gas reporting program (GHGRP) applicable to large GHG emission sources. The goal of the rule is to collect accurate and comprehensive emissions data to inform policy makers, and to potentially assist in developing a cap and trade system. The GHGRP became effective on December 29, 2009, and applies to certain specifically listed source types; any facility in a listed source category whose greenhouse gas emissions exceed 25,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year, and certain listed fuel suppliers. The GHGRP applies to underground coal mines that liberate more than 36,500,000 actual cubic feet of methane per year. If a facility's emissions are greater than this threshold in calendar year 2010 or beyond, then it must begin monitoring, recording and reporting the GHG emissions annually beginning January 1, 2011. In 2014 the emissions reported by over 8,000 facilities under the GHGRP accounted for approximately 50 percent of total U.S. GHG emissions (USEPA 2018b). The existing Sugar Camp Energy LLC mine site is currently subject to the GHGRP.

### 3.1.8 Greenhouse Gases – Anticipated Impacts

***No Action Alternative***

Under the No Action Alternative, TVA would not approve Sugar Camp's mining plan expansion. Therefore, no GHG emissions would occur from underground operations in the proposed project area or from transportation or combustion of the coal. However, it is important to note that GHG emissions would not be a net reduction equivalent to the total emissions from the proposed mine expansion.

Under the No Action Alternative, the energy that would have been produced by the Sugar Camp mined coal would most likely be replaced by alternate energy sources (including coal from other production areas). While the production and consumption of those replacement energy sources would have associated GHG emissions, the emissions from the replacement sources of energy are unknown because they would not be under TVA's control. For the purposes of analysis, TVA assumes that the No Action Alternative could result in actions to be taken by Sugar Camp and other entities, ranging from complete

replacement of the coal mined from the project area to no replacement. TVA anticipates, then, that GHG emissions would be the same or less under the No Action Alternative than under the proposed Action Alternative because, typically, coal combustion is more carbon intensive per unit energy than other forms of fossil fuels (EPA 2018f).

***Action Alternative***

Under the Action Alternative, TVA would approve Sugar Camp's mining plan expansion, and coal would be mined by conventional room and pillar methods within the project area.

This would result in impacts due to coal extraction and transportation of the coal to end users, as well as from the eventual combustion of the extracted coal. The following emissions analysis provides an estimate of GHG emissions as (1) a percentage of GHG emissions reported through the GHGRP; (2) a percentage of total U.S. GHG emissions; and (3) a percentage of total global GHG emissions. This proportionate estimate of GHG emissions serves as a reasonable proxy for assessing potential climate change impacts. The current state of climate science does not allow for specific linkage between particular GHG emissions and particular climate impacts. The use of the information currently available (i.e., use of the emissions analysis described below as a proxy for climate impacts) is consistent with 40 CFR § 1502.22(b) of the Council on Environmental Quality's (CEQ) NEPA regulations. While GHG emissions from the proposed mine expansion and the downstream combustion of coal extracted from that expansion would have some impact on climate, the pro-rata effect cannot be determined with precision. Even so, the SEA includes other information (i.e., emissions analysis at national and global level) that can credibly be calculated to serve as a reasonable proxy of the proposed project's contribution to climate change.

TVA also considered use of the social cost of carbon (SCC) metric in the assessment of climate change impacts on downstream GHG emissions resulting from combustion of coal. However, after due consideration, TVA believes that the SCC metric is not an appropriate measure or proxy of project-level climate change impacts and their significance under NEPA. The SCC metric is not appropriate or informative because (1) the lack of consensus on the appropriate discount rate leads to significant variation in outputs, rendering those outputs unreliable and meaningless; (2) the SCC tool does not measure the actual incremental impacts of a project on the environment; and (3) there are no established criteria identifying the monetized values considered significant for NEPA purposes. In comparison, the GHG emissions analysis provided below is a far more reliable proxy.

*Direct Emissions – Mining Operations*

In 2016, the GHGRP information submitted by Sugar Camp Energy, LLC reported emissions of 1,498,326.4 metric tons $CO_2e$ ($MTCO_2e$) (USEPA 2018c) and separately reported total coal production of 11.4 million short tons (tons) of coal (FELP 2018). Based on this information, the CMM emitted to the atmosphere by existing mine operations is estimated as 0.13 $MTCO_2e$/ton coal produced. The projected coal production under the Action Alternative would be approximately 132,515 tons. Thus, as shown in Table 3-3, the total CMM emitted from mining operations under the Action Alternative is estimated to be 17,227 $MTCO_2e$. These CMM emissions are unavoidable when mining underground coal.

The operation of mining equipment (direct emissions) and transportation (indirect emissions) of the coal would also generate GHG emissions. The GHG emissions associated with these operations are anticipated to be negligible compared to the CMM and coal combustion emissions.

*Indirect Emissions – Coal Combustion*

Assuming that all of the coal extracted from the mine is combusted downstream, the associated GHG emissions were calculated using emission factors and GWP values for bituminous coal, as provided in the GHGRP rule at 40 Code of Federal Regulations (CFR) Part 98. The total indirect GHG emissions from downstream combustion of coal is estimated to be 310,643 $MTCO_2e$.

*Total GHG Emissions*

Table 3-3 summarizes the maximum projected annual GHG emissions associated with the Action Alternative.

**Table 3-3 Action Alternative GHG Emissions**

| | | | | |
|---|---|---|---|---|
| | | Maximum Annual Coal Production | 132,515 | tons per year |
| | | Bituminous Coal Heat Content: | 24.93 | MMBtu/ton [a] |
| | | | 3,303,599 | MMBtu/yr |
| GHG | GWP [b] | Emission Factor [c] | Emissions (MT/yr) | Emissions ($MTCO_2e$/yr) |
| Direct Emissions - Mining Operations | | | | |
| $CH_4$ | 25 | 0.13 MTCO2e/ton coal | | 17,227 |
| Indirect Emissions - Combustion | | | | |
| $CO_2$ | 1 | 93.28 lb/MMBtu | 308,160 | 308,160 |
| $CH_4$ | 25 | 1.1E-02 lb/MMBtu | 36 | 908 |
| $N_2O$ | 298 | 1.6E-03 lb/MMBtu | 5 | 1,575 |
| $CO_2e$ | | | | 310,643 |
| Total $CO_2e$ (Direct + Indirect) | | | | 327,870 |

[a] 40 CFR Part 98, Table C-1, reflecting the update effective January 1, 2014.

[b] 40 CFR Part 98, Table A-1, reflecting the update effective January 1, 2014.

[c] 40 CFR Part 98, Tables C-1 and C-2, reflecting the update effective January 1, 2014.

The projected direct annual CMM emissions associated with the Action Alternative (i.e., mining operations under the coal reserves in Viking District #3) represent approximately 0.0006% of the 2.99 billion $MTCO_2e$ of methane emissions reported through the GHGRP (USEPA 2018d) for 2016 and 0.0003% of the estimated 6.51 billion $MTCO_2e$ of total U.S. GHG emissions (USEPA 2018e) for 2016. The total (i.e., direct and indirect) emissions from Viking District #3 represent approximately 0.005% of the total US GHG emissions for 2016 and 0.0007% of the estimated 49.18 billion $MTCO_2e$ of total global GHG emissions for 2016 (Olivier et al. 2017).

The projected direct annual CMM emissions associated with the mining operations for the coal reserves in Viking District #2 (assessed in the 2018 EA) represent approximately 0.03% of the 2.99 billion MT $CO_2e$ of methane emissions reported through the GHGRP (USEPA 2018d) for 2016 and 0.01% of the estimated 6.51 billion $MTCO_2e$ of total US GHG

emissions (USEPA 2018e) for 2016. The total (i.e., direct and indirect) emissions from Viking District #2 represent approximately 0.23% of the total US GHG emissions for 2016 and 0.03% of the estimated 49.18 billion $MTCO_2e$ of total global GHG emissions (Olivier et al. 2017). For Viking Districts #2 and #3 taken together, the total (i.e., direct and indirect) emissions represent approximately 0.24% of the total US GHG emissions for 2016 and 0.03% of the estimated 49.18 billion $MTCO_2e$ of total global GHG emissions for 2016 (Olivier et al. 2017).

### 3.1.9 Socioeconomic Conditions and Environmental Justice – Affected Environment

As described in TVA's 2018 Viking District #2 EA, southern Illinois, including the project area counties, has traditionally had a large coal mining industry because of the rich mineral resources within the Illinois Coal Basin. The proposed mining would occur in the northeast corner of Franklin County. U.S. Census Bureau information about the county has been summarized in Table 3-4 (US Census Bureau 2019). The most recent 10-year census data (2010) was utilized. Intermittent estimates conducted after the formal 2010 census are available but the base year of 2010 was used for analysis.

**Table 3-4 Demographics Data for Franklin County**

| Category | Franklin | State of Illinois | United States |
|---|---|---|---|
| 2010 Census population | 39,561 | 12,830,632 | 308,745,538 |
| Median household income, 2012-2016 (in 2016 dollars) | $39,507 | $59,196 | $55,322 |
| Percent minorities (2010 Census data) | 2.8% | 22.9% | 23.4% |
| Percent persons below poverty level, 2012-2016 | 21.5% | 13.0% | 12.7% |

As shown in the table, in comparison to state and national levels, Franklin County has a relatively low per capita income level in between 2012- 2016. County minority levels are well below the state and national levels and the poverty level are higher than both the state and national levels. In 2017, the Sugar Camp mine in Hamilton County employed 428 individuals (USEIA 2019). Total employment in Hamilton County in 2016 was 6,377 (US Census Bureau 2019). In the State of Illinois in 2017, there were 16 underground mines employing 3,135 individuals; the total employment in the state was over 5.5 million (USEIA 2018; US Census Bureau 2019).

### 3.1.10 Socioeconomic Conditions and Environmental Justice – Anticipated Impacts

***No Action Alternative***

Under the No Action Alternative, TVA would not approve Sugar Camp's mine expansion. Operation of the coal mine requires hundreds of workers. The No Action Alternative would threaten existing employment of mine workers at Sugar Camp Mine No. 1 over a 5-month period of time. Use of resources in the vicinity of the project area may decline during this time.

***Action Alternative***

Under the Action Alternative, TVA would approve Sugar Camp's mining plan. Existing jobs would be maintained during an estimated 5-month period that the Viking District #3 coal is mined. Approval of additional mining would secure the jobs of workers already hired by

Sugar Camp to support current mining for an extended 5-month period and workers would continue use of resources in the vicinity of the project area.

The proposal would not disproportionately affect low-income or minority populations. The project area has a very small, widely dispersed population. Franklin County has a larger percentage of people living under the poverty level than the state average but smaller minority populations than the state average. Income levels in the county are lower than the state average, which is typical for rural, mining areas.

## 3.2 Cumulative Impacts

Environmental effects would occur as a result of Sugar Camp's mining of approximately 85 acres of underground coal reserves owned by TVA within the 155-acre project area. The Action Alternative would not result in surface disturbance, as the project area would be conventionally mined via room and pillar methods. The likelihood of unplanned subsidence and measures to minimize that risk are discussed in Section 2.2.2. Potential effects due to underground disturbance were reviewed for geology and soils, groundwater, air quality, socioeconomics and environmental justice.

Past, present and IDNR-approved future mining for Sugar Camp Mine No. 1 encompasses approximately 50,510 acres. Additional mines in the southern Illinois region are present as well. The impacts of past and present actions are reflected in the background (affected) environment. As analyzed in previous EAs, Sugar Camp was approved by TVA to mine within approximately 6,000 acres of TVA-owned coal reserves in Hamilton and Franklin counties, Illinois. Some of this mining is complete; however, mining in Viking District #2 is expected to continue through 2022. Thus, any additional environmental effects from mining the remaining coal in Viking District #2 would constitute cumulative effects. Among the actions considered in assessing the cumulative impacts, TVA took into account the reasonably foreseeable future mining actions on the 37,792 acres of Sugar Camp Mine No. 1 for which approval was provided by the State of Illinois (i.e., Revision #6 area). Under the Revision #6 mine plan, operation of the mine is proposed through 2045.

The coal extracted in the 155-acre project area would be transferred by conveyor to the existing coal preparation plant outside of the project area. The development of this plant was previously permitted by the IDNR for production of non-TVA coal and therefore was not a federal action subject to NEPA. The TVA-owned coal mined in the project area that would be transferred to and processed at the existing facility would result in only a nominal cumulative increase in impacts associated with operation of the facility.

The plant would continue to operate regardless of whether the TVA coal from this project area is extracted, because Sugar Camp Mine No. 1 also extracts non-TVA coal and will continue to do so. Currently, there are mining operations occurring in two areas of the greater Mine No. 1 area. There are currently operations in Viking District #2 and in areas to the south and southeast of Sugar Camp's main portal facility. Viking District #2 primarily includes TVA-owned coal reserves and will be mined into 2023. Current mining in areas south and southeast of the main portal facility includes extraction of coal reserves that TVA owns (previously permitted) as well as reserves not owned by TVA. In these areas to the south and southeast, after June 2019, all of the coal reserves mined will be non-TVA reserves for the foreseeable future.

Potential impacts due to the operation of the preparation plant and the mine portal facility include water quality and quantity impacts. Cumulative impacts to water resources

associated with the mining of TVA-owned coal would be a minor increase given the entire mine's present and foreseeable operations. In 2019, Sugar Camp would produce approximately 1.2 million tons of processed coal from Viking District #2 and approximately 132,515 tons of processed coal from Viking District #3 (see section 2.2.2 of the SEA). This represents approximately 8.6% and 0.9%, respectively, of the coal that Sugar Camp estimates to be produced at Sugar Camp Mine No. 1 in 2019 (approximately 14,090,404 tons of coal), which is a minor incremental cumulative impact. This percentage is even smaller when production of other mines in the region are considered.

As discussed in the 2018 EA, most impacts that occur due to underground mining are temporary due to mitigation measures required by IDNR and carried out by Sugar Camp. Cumulative effects on geology, soils, groundwater, and environmental justice impacts from mining activities in the project area would be minimal in comparison to previously permitted actions and are not discussed further. Beneficial cumulative impacts on regional socioeconomics would likely result from the employment of workers and the associated purchase of goods and services, many from local sources. Mine operation in the project area is expected over a five-month period.

Direct annual emissions of methane from the entire Sugar Camp Mine No. 1 Revision #6 area would represent at most approximately 0.06% of the methane emissions reported through the GHGRP (USEPA 2018d) for 2016 and approximately 0.03% of the estimated total U.S GHG emissions (USEPA 2018e) for 2016. The total (i.e., direct and indirect) emissions from the Revision #6 area represent approximately 0.5% of the total US GHG emissions for 2016 and 0.07% of the estimated 49.18 billion $MTCO_2e$ of total global GHG emissions (Olivier, et al 2017). These estimated emissions are based on the UCM application for the entire Revision #6 area, which states that annual coal production would be 14 million tons per year at optimum capacity. The effects of climate change on the proposed action are addressed in Section 4.1.2.2 of the 2018 EA.

The air quality impacts due to non-GHG emissions as a result of mining coal from the project area and the downstream combustion of that extracted coal are described in Section 3.1.6. In the absence of knowledge as to where this coal would be combusted, the emissions analysis serves as a reasonable proxy of the air quality impacts, with the recognition that this downstream combustion would be subject to applicable regulations developed under the Clean Air Act and parallel state statutes. As to the cumulative impact of these emissions when added to the future impact of combustion of coal extracted from other areas within the 37,792-acre Revision #6 area, the SIPs prepared by the respective states where this coal is combusted would ensure that the cumulative impacts are maintained below the NAAQS.

Potential impacts associated with water resources fall under the regulatory authority of other agencies. Direct discharges to Waters of the State are subject to approval from IEPA as part of the National Pollutant Discharge Elimination System program. An anti-degradation assessment has been completed for the discharge from Sugar Camp Mine No. 1 (IEPA 2016). Additional information is included in the UCM Application review of cumulative impacts to surface water and groundwater. The use of water to support Sugar Camp Mine No. 1 operations (covering approximately 37,792 acres) from Rend Lake has been approved by the U.S. Army Corps of Engineers. The Army Corps completed an environmental review of this water use and issued a Finding of No Significant Impact in 2011 (USACE 2011). The amount of water used or discharged in order to facilitate preparation of the coal from the project area (155 acres) would be small compared to the

corresponding amount of water used or discharged to prepare coal from the entire Sugar Camp Mine No. 1 area. Accordingly, any cumulative impact associated with the proposal on water use and water quality would be proportionately small when compared to the full mine operation.

Irreversible and irretrievable commitments of resources are addressed in Section 4.13 of the 2018 EA. These analyses are incorporated herein by reference.

## 3.3 Identification of Mitigation Measures

Sugar Camp mining operations would be carried out in compliance with 30 Code of Federal Regulations Part 913 - Illinois, which specifies a comprehensive set of environmental protection measures for the control of adverse ecological impacts resultant from coal mining. This part contains rules applicable within Illinois that have been adopted under SMCRA. Included in the rules are considerations for air, water, acid and toxic materials, soils, landform, vegetation, etc., in both spatial and temporal capacities. As such, general protective measures for all environmental values are inherent within the regulatory program. The expanse of mining and mining-related disturbances would be limited to that acreage necessary for conducting mining operations in compliance with the applicable land reclamation regulatory requirements. Disturbances to sites not required for mining or mining-related activities would be held to a minimum.

Sugar Camp must also comply with 62 Illinois Administrative Code (IAC) 1700-1850, which addresses how IDNR-OMM administers coal exploration, surface coal mining and reclamation. IDNR-OMM requires Sugar Camp to implement best management practices and mitigation to compensate for potential adverse environmental impacts throughout the project area as conditions of their mine permit. IDNR requires Sugar Camp to submit quarterly progress reports detailing mining, monitoring, and mitigation activities as a permit condition. Further, TVA requires that Sugar Camp adhere to the coal lease agreement requirements. While Viking District #3 does not involve any surface disturbance, TVA's approval of the mining plan for Viking District #2 requires Sugar Camp to adhere to the requirement in the Memorandum of Agreement under Section 106 of the National Historic Preservation Act to mitigate impacts to historic properties. TVA can verify Sugar Camp's adherence to this requirement by obtaining copies of quarterly progress reports.

The UCM application requires detailed restoration plans for surface effects and any subsided areas. Sugar Camp is required to provide and implement a reclamation plan in accordance with 62 IAC 1817.62. Because no surface impacts or subsidence would occur, it is unlikely that reclamation activities would occur within the 155-acre project area. TVA's November 2018 FONSI provides more information regarding Sugar Camp's obligations to reclaim surface areas affected by mining operations.

# CHAPTER 4 – LIST OF PREPARERS

**Melissa Breyer**

| | |
|---|---|
| Position: | Contract NEPA Specialist (HDR Inc.) |
| Education: | M.S., Environmental Science; B.S., Fisheries and Wildlife |
| Experience: | 2 years in environmental science, including environmental permitting, biological surveys and habitat assessments, wetland delineations, environmental assessments, and stormwater prevention plan development and inspection |
| Involvement: | NEPA Compliance and Document Preparation |

**Kirk Dunbar**

| | |
|---|---|
| Position: | Contract NEPA Specialist (HDR Inc.) |
| Education: | B.S., Aeronautical/Astronautical (Aerospace) Engineering |
| Experience: | 29 years in air quality analysis, stationary source permitting, air dispersion modeling, and regulatory interpretation |
| Involvement: | NEPA Compliance and Document Preparation |

**Matthew Higdon**

| | |
|---|---|
| Position: | NEPA Specialist |
| Education: | M.S., Environmental Planning; B.A., History |
| Experience: | 16 years in NEPA and natural resource planning and management |
| Involvement: | Project Lead, NEPA Compliance and Document Preparation |

**Ryan Keith**

| | |
|---|---|
| Position: | Contract NEPA Specialist (HDR Inc.) |
| Education: | B.S. Environmental Biology |
| Experience: | 10 years in environmental science and natural resources, including Phase I and II environmental site assessments; wetland delineation and permitting, watershed planning studies; NEPA analyses; analysis of surface and groundwater resources, GIS and statistics, hydrographic surveys and sedimentation studies; aquatic vegetation and habitat assessments |
| Involvement: | NEPA Compliance and Document Preparation |

**Charles Nicholson**

| | |
|---|---|
| Position: | Contract NEPA Specialist (HDR Inc.) |
| Education: | Ph.D., Ecology and Evolutionary Biology;<br>M.S., Wildlife Management;<br>B.S., Wildlife and Fisheries Science |
| Experience: | 23 years in NEPA compliance, 17 years in wildlife and endangered species management |
| Involvement: | NEPA Compliance and Document Preparation |

**Meghan Oh**

| | |
|---|---|
| Position: | Contract NEPA Specialist (HDR Inc.) |
| Education: | M.S. and B.S., Chemistry |
| Experience: | 14 years in environmental science, including environmental site assessments, wetland delineations and environmental permitting, watershed planning, analysis of water resources |
| Involvement: | NEPA Compliance and Document Preparation |

**Tracy P. Stanton**

| | |
|---|---|
| Position: | Specialist, Continuous Emission Monitoring Systems |
| Education: | B.Ch.E., Chemical Engineering |
| Experience: | 15 years in air regulatory compliance programs |
| Involvement: | Air Quality, Greenhouse Gas Emissions |

# CHAPTER 5 – LITERATURE CITED

Booth, C.J. and E.D. Spande. 1992. “Potentiometric and Aquifer Property Changes Above Subsiding Longwall Mine Planes, Illinois Basin Coalfield.” *Groundwater*, 30(3): 362-368.

Foresight Energy LP (FELP). Form 10-K Annual Report. Retrieved from https://seekingalpha.com/filing/3925358. July 2018.

HMG. 2018. Application for NEPA Boundary Review. Sugar Camp Mine, Franklin and Hamilton County, Illinois. May 2018. Note: Information in this document was extracted or revised from the Significant Permit Revision 6 for Permit 382 Application submitted by Sugar Camp to IDNR-OMM in 2017.

IDNR. 2008. Results of Review, Permanent Program Permit Application No. 382 Sugar Camp Energy LLC, Sugar Camp No. 1 Mine.

IDNR. 2017. Results of Review, Permanent Program Significant Revision Application No. 6 to Permit No. 382 Sugar Camp Energy LLC, Sugar Camp Mine No. 1. Retrieved from https://www.dnr.illinois.gov/mines/LRD/PendingApplication/P382v6findings.pdf. May 2019.

IEPA. 2016. Public Notice No. 7183c. Retrieved from https://external.epa.illinois.gov/WebSiteApi/api/PublicNotices/GetDocument/827. April 2019.

Illinois State Geological Survey (ISGS). 1956. Circular 212, Groundwater Geology in Southern Illinois.

Mark, Christopher, and Zach Agioutantis. 2019. “Analysis of Coal Pillar Stability (ACPS): A New Generation of Pillar Design Software”. *International Journal of Mining Science and Technology 29*, no. 1 (January 2019). Retrieved from https://www.sciencedirect.com/science/article/pii/S2095268618306487. May 2019.

Owili-Eger, A.S.C. 1983. “Geohydrologic and Hydrogeochemical Impact of Longwall Coal Mining on Local Aquifers.” *Society of Mining Engineers and the American Institute of Mining, Metallurgical, and Petroleum Engineers* Preprint No. 83-376:16.

Olivier, J.G.J, Schure, K.M., and Peters, J.A.H.W. December 2017. “Trends in Global $CO_2$ and Total Greenhouse Gas Emissions – 2017 Report.” PBL Netherlands Environmental Assessment Agency.

TVA. 2011. Approval of Illinois Coal Lease Mine Plan – Sugar Camp Mine No. 1. Environmental Assessment. Knoxville, Tennessee.

TVA. 2013. Supplemental EA (SEA) Approval of Illinois Coal Lease Mine Plan – Sugar Camp Mine No. 1. Environmental Assessment. Knoxville, Tennessee. Retrieved from https://www.tva.com/Environment/Environmental-Stewardship/Environmental-Reviews/Mine-Plan-Approval-for-Illinois-Coal-Mineral-Rights-Lease-Sugar-Camp-

Mine-No-1. May 2019.

TVA. 2018. Sugar Camp Coal Mine Expansion – Viking District #2 – Environmental Assessment. Retrieved from https://www.tva.com/Environment/Environmental-Stewardship/Environmental-Reviews/Mine-Plan-Approval-for-Illinois-Coal-Mineral-Rights-Lease-Sugar-Camp-Mine-No-1. May 2019.

United States Army Corps of Engineers. 2011. Finding of No Significant Impact: Pump Station and Water Line, South Marcum Recreation Area, Rend Lake, Franklin County, Illinois. St. Louis, Missouri.

United States Census Bureau. 2019. Franklin County, Illinois. State and County QuickFacts. Retrieved from https://www.census.gov/quickfacts/fact/table/US/PST045217. March 2019.

United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2014. Web Soil Survey. Retrieved from http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

USDA, NRCS. 2018. Farmland Protection Policy Act. Retrieved from https://www.nrcs.usda.gov/wps/portal/nrcs/detail/?cid=nrcs143_008275. May 2019.

United States Energy Information Administration (USEIA). 2018. Annual Coal Report 2017, Table 21. Retrieved from https://www.eia.gov/coal/annual/pdf/table21.pdf. March 2019.

USEIA. 2019. Coal Data Browser, Mc#1 Mine. Retrieved from https://www.eia.gov/coal/data/browser/#/mine/1103189/?freq=A&pin=. March 2019.

United States Environmental Protection Agency (USEPA). 2017. Understanding Global Warming Potentials. Retrieved from https://www.epa.gov/ghgemissions/understanding-global-warming-potentials. May 2019.

USEPA. 2018a. Coalbed Methane Outreach Program. Retrieved from https://www.epa.gov/cmop/frequent-questions. July 2018.

USEPA. 2018b. Greenhouse Gas Reporting Program (GHGRP). Retrieved from https://www.epa.gov/ghgreporting/greenhouse-gas-reporting-program-and-us-inventory-greenhouse-gas-emissions-and-sinks. July 2018.

USEPA. 2018c. Greenhouse Gas Summary Report for 2016. Retrieved from https://ghgdata.epa.gov/ghgp/service/html/2016?id=1010263&et=undefined. July 2018.

USEPA. 2018d. GHGRP. Retrieved from https://www.epa.gov/ghgreporting/ghgrp-reported-data. July 2018.

USEPA. 2018e. GHGRP. Retrieved from https://www.epa.gov/sites/production/files/2018-01/documents/2018_complete_report.pdf. July 2018.

USEPA. 2018f. Sources of Greenhouse Gas Emissions. Retrieved from https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#electricity. August 2018.

USEPA. 2019a. Current Nonattainment Counties for All Criteria Pollutants. Retrieved from https://www3.epa.gov/airquality/greenbook/ancl.html. February 2019.

USEPA. 2019b. Air Emissions Inventories - 2014. Retrieved from https://www.epa.gov/air-emissions-inventories. March 2019.

University of Kentucky. 2006. Estimating Tons of Coal on a Property. Retrieved from http://www.uky.edu/KGS/coal/estimatingTons.htm.

# APPENDIX A – TVA RESPONSES TO PUBLIC COMMENTS

On March 26, 2019, TVA issued the draft Supplemental EA for public review and comment. TVA received one comment letter submitted by the Sierra Club (Illinois Chapter, Chicago Office). The comments and TVA's responses are provided below.

| # | Public Comment | TVA Response |
|---|---|---|
| 1 | We request that the TVA not approve the proposal, based on the lack of complete information regarding adverse impacts of this project and the substantive lack of full consideration of clear harm that will result if TVA approves this project. | Comment noted. See responses below. |
| 2 | … the fact that a room and pillar mine is proposed does not guarantee that there will not be damage to water quality and other elements of the human environment. | Comment noted. See responses below. |
| 3 | …while in this case the No Action alternative should be adopted, if the mine is to go forward in any form, more alternatives should be considered than the No Action alternative and doing exactly what the applicant wishes. | Comment noted. In the SEA, TVA considered the proposal of Sugar Camp consistent with the plan approved by the State of Illinois (Significant Revision 6 of Permit 182), in addition to the No Action alternative (i.e., not approving the proposal). As indicated in the SEA, TVA found that the proposal would not result in significant environmental impacts and did not identify any unresolved conflicts concerning uses of available resources that necessitate considering additional alternatives [40 CFR 1501.2]. Therefore, TVA did not consider reviewing other alternatives. TVA considers the current environmental mitigation and monitoring requirements sufficient to address the potential minor impacts associated with the mining of Viking District #3. |
| 4 | The repeated history of violations and non-compliance on record for the Sugar Camp Mine clearly shows this mine has consistently failed to remove coal in an environmentally sound manner as evidenced by its repeated quarters in non-compliance with basic permit levels, including 125 state and federal violations from 2015 to 2018. … The SEA should consider the environmental impacts of the water pollution | TVA is aware of the instances of violations and non-compliance at the Sugar Camp Mine No. 1. The State of Illinois Department of Natural Resources (Office of Mines and Minerals) works closely with the Illinois Environmental Protection Agency (Mine Pollution Control Unit) to address environmental matters concerning mine operations, to ensure permit requirements are met, and to control pollution from |

| | | |
|---|---|---|
| | being caused by the mine and that will be caused if this expansion is allowed. Given the fact that the applicant has been discharging chloride at high concentrations (higher even than its current permit allows), the SEA should also consider the evidence regarding chloride toxicity and other effects on the environmental. Much information regarding the environmental impacts of chloride pollution is contained in the record of IPCB 18-32.3 | mining activities. It is these entities that have jurisdiction over mining permitting and ongoing environmental compliance in the State of Illinois. Notably, the 85-acre underground area proposed for mining would not be subject to any surface disturbance and there would be no direct discharges (through point or area sources) into surface waters from this area. As discussed in Section 3.2, any cumulative impact on water quality as a result of the mining of the TVA-owned coal would be proportionately small as compared to the impact of full mine operation under the NPDES permit.<br><br>When considering their approval for this mine plan in 2017, the State of Illinois Division of Natural Resources reviewed Sugar Camp's previous violations and determined that violations (prior to November 2017) had been adequately addressed or were being corrected to the satisfaction of the agency. (IDNR 2017). The IDNR will continue to provide oversight and monitoring of Sugar Camp activities and, if necessary, will take appropriate enforcement actions to remedy any future violations. Sugar Camp has taken action to address instances of past violations, including those that occurred after November 2017. Sugar Camp must adhere to the IDNR requirements to ensure compliance and that future instances would be avoided. TVA believes that the oversight provided by IDNR is adequate to prevent significant water quality impacts. |
| 5 | Further, particularly given the history of violations at this facility, the SEA should consider alternatives for monitoring and contract penalties to assuring future compliance with sound environmental practices and the law. | As discussed in the SEA, Sugar Camp's operations within the Viking District #3 project area would be subject to substantive requirements under federal and state laws to address potential impacts to the environment, including impacts on water quality. These requirements are specified in the permit conditions established by the IDNR in its November 2017 approval of the mine operations. |

| | | |
|---|---|---|
| | | In addition, the lease agreement with TVA under which Sugar Camp proposes to mine coal in Viking District #3 specifies that the lessee shall obtain all required permits and comply with all applicable local, state, and federal laws and regulations. Sugar Camp continues to work with the State of Illinois to ensure compliance with applicable laws and regulations and to meet the requirements of the permit. The commenter did not identify specific alternatives or monitoring steps that could be implemented to assure compliance, and TVA has not identified the need to apply additional monitoring requirements to the proposal. |
| 6 | Additional pollution loading of the Big Muddy River must also be considered. The Williamson Energy Pond Creek No. 1 Mine, located near Johnston City, Williamson County, but also with shadow area in Franklin County, has proposed a 12.5-mile pipeline to pump contaminated mine water for direct discharge into the Big Muddy River. This proposal is for 2,700,000 gallons per day up to 3,500,000 gallons per day of high chloride and sulfate contaminated water. The cumulative impacts of mine discharges to the Big Muddy River and its tributaries must be fully reviewed before any new permits allowing mine contaminated water to these Waters of the State are approved. | The area of coal reserves to be mined (85 acres) is very small in relation to Sugar Camp Mine No. 1 operations, most of which do not involve TVA coal reserves. This area would not be subject to any surface disturbance and there would be no direct discharges (through point or area sources) into surface waters from that area. Under the proposal, Sugar Camp would produce approximately 132,515 tons of processed coal in 2019 (see section 2.2.2 of the SEA). This represents approximately 0.9% of the coal that Sugar Camp estimates to be produced at Sugar Camp Mine No. 1 in 2019 (approximately 14,090,404 tons of processed coal), which is a minor incremental cumulative impact. Furthermore, this percentage is even smaller when other regional mines are considered.<br><br>Not only would the associated discharge for operations in Viking District #3 be very small in comparison to discharges associated with full operation of the plant, the proposed action would be fully implemented during a relatively short period of time in mid-2019.<br><br>Furthermore, direct discharges to Waters of the State are subject to approval from IEPA as part of the National |

| | | |
|---|---|---|
| | | Pollutant Discharge Elimination System program. An anti-degradation assessment has been completed for the discharge from Sugar Camp Mine No. 1 (IEPA, 2016). |
| 7 | Room and pillar mining can subside, causing burdensome costs to the public and governmental entities. No consideration is given in the SEA to the propensity for eventual subsidence of room and pillar mining or the fact the mining company often avoids all responsibility for the environmental and financial damage done by subsidence due to the extended time it can take for such subsidence to manifest itself. … Coal mine subsidence insurance is mandatory in Franklin County, where this Sugar Camp Mine expansion is located, as well as other near-by counties. Thirty four counties in Illinois require mine subsidence insurance because of the known risks and existing and potential mine subsidence. As the brochure states, most experts agree that mines will eventually experience some degree of collapse, but currently there is no way to know when or exactly where mine subsidence will occur. Subsidence can cause costly drainage and erosion problems for fields as well as significant damages to buildings. | As stated in Chapter 2.2.2 of the SEA, no subsidence is planned to occur in the project area. It is difficult to analyze possible effects of unplanned actions; however, TVA and IDNR have reviewed steps taken by the applicant to minimize the risk of unplanned subsidence. TVA has updated Chapter 2.2.2 of the SEA to provide additional supporting information.<br><br>Sugar Camp would be responsible for ensuring that site-specific strength values for coal pillars, floor and subfloor allow for an adequate factor of roof stability to prevent unplanned subsidence. The recommended stability factor is 1.5 and the stability factor for the project area was calculated at 3.46 by the company, well above the recommended value.<br><br>Two occupied homes and one additional structure currently exist on surface lands overlying the 85-acre mining area, as indicated in Figure 2-1 of the SEA. If unplanned subsidence occurs during mining operations and prior to bond release, Sugar Camp would, to the extent compatible with the rights of the surface owner, restore and rehabilitate all structures. |
| 8 | The SEA should consider eventual subsidence and potential societal harm and public and private costs that will be incurred. While hopefully the required insurance can be used to compensate for some of the costs of subsidence, the insurance will not cover much damage to the environment that subsidence will cause. The SEA should also consider the applicant's specific plans to determine whether the risk of subsidence has been minimized. Alternatives, including mining less coal than the applicant proposes to create more support, should be considered as | As discussed in the previous response, TVA considers the potential for subsidence to be minimal based on industry-accepted calculations provided by Sugar Camp. TVA did not consider the alternative of mining less coal (to reduce the potential for subsidence) because the calculated stability factor is more than adequate for a design that prevents unplanned subsidence. |

| | | |
|---|---|---|
| | well as alternatives for bonding or other requirements that will assure that the environment and the public will not bear the cost of any eventual need for groundwater remediation or other work needed including mitigation for all water pollution and other environmental damage. See, Union Neighbors United v. Jewell, 831 F.3d 564 (D.C. Cir. 2016). | |
| 9 | Demand on area water resources have not been considered. The Sugar Camp Mine obtains water from Rend Lake. Concerns for demands on Rend Lake Water and impacts from extended drought have not been taken into consideration. … The Sugar Camp Mine can use up to 4.3 million gallons per day of Rend Lake water. No consideration is given to the additional water use the proposed SEP will require. | TVA has updated the cumulative impact section of the SEA to note the incremental use of surface water needed to conduct the proposed operations. TVA notes that the project area is very small in relation to Sugar Camp Mine No. 1 operations, most of which do not involve TVA coal reserves. Under the proposal, Sugar Camp would produce approximately 132,515 tons of coal in 2019 (see section 2.2.2 of the SEA). This represents approximately 0.9% of the coal that Sugar Camp estimates to be produced at Sugar Camp Mine No. 1 in 2019 (approximately 14,090,404 tons of coal), which is a minor incremental cumulative impact.<br><br>TVA did not address the potential water demand impacts that may occur in the event of an extended drought. Not only would the amount of water needed for operations in Viking District #3 be very small, the proposed action would be fully implemented in a relatively short period of time in mid-2019. Thus, it is very unlikely that the proposal would result in a long-term water shortage. |
| 10 | Based on the unjustified and unjustifiable assumption of the SEA that a room and pillar mine will never affect groundwater or surface water, the SEA proposes no specific mitigation. TVA, however, should take a hard look at the likelihood of such impacts and consider steps needed for mitigation of them. While not required under NEPA to consider a “worst case scenario,” TVA is certainly required | TVA’s assessment determined that such impacts are very unlikely, as discussed in responses above and the information provided below.<br><br>The project area is situated in a headwaters area. It is possible that ephemeral streams and drainage ditches are present but no intermittent or perennial streams are present |

| | | |
|---|---|---|
| | to consider the potential for environmental effects that have actually occurred such as mine subsidence. | within the project area. One small farm pond is partially located in the project area.<br><br>No major aquifers are recorded in the project area. As stated in Chapter 3.1.1 of the SEA, potential minor surficial aquifers contained within the geologic formations in this area are limited in size because high percentages of clay and porous sand and gravel beds do not create optimal conditions for retaining water.<br><br>Analysis of the potential impacts to groundwater is included in the 2018 EA prepared by TVA, which this document supplements. In Chapter 4.2.1.2 of the 2018 EA, TVA states that "conventional room and pillar development mining practices in the Herrin No. 6 seam generate a nominal quantity of groundwater inflow into the mine." TVA has revised the groundwater section of the SEA to provide more detailed information.<br><br>TVA notes, however, that the permit issued to Sugar Camp (Significant Revision 6 to Permit #182) requires that the company address impacts on surface and groundwater from operations. Such requirements would apply to the Viking District #3 project area. |
| 11 | Global climate change with rising overall planetary temperatures, increased ocean warming and acidification, rapid melting of polar ice caps, rising sea levels, and clear evidence of more severe weather events must be taken into consideration as part of the SEA review. Blanket approvals of coal mine permits can no longer be considered to foster the social and economic well-being of residents, of the TVA or the nation. The true costs of coal are paid by the public and all levels of government. Coal mining privatizes the profits and has shifted the costs of air and water pollution, | In the SEA, TVA acknowledges that the proposal would result in greenhouse gas emissions and provides analysis in Chapter 3.1.8 to address the potential impacts.<br><br>When preparing this SEA, TVA also considered how to address the potential social costs associated with the proposed action. As stated on page 15 of the SEA, TVA considered using the social cost of carbon (SCC) metric in the assessment of the impact of downstream GHG emissions resulting from combustion of coal. However, after due |

| | | |
|---|---|---|
| | land damages, and public health harm to the citizens of the U.S. for decades. The public is paying the costs of coal via taxes and other governmental payments through emergency relief for severe storm impacts, flooding, public infrastructure damages, farm and crop damages, major forest fires, and a wide-range of other disasters. The public has paid the costs of coal air pollution via increased cases of asthma and health problems caused by the burning of coal and added air pollution and involuntary personal health pollution impacts. Groundwater at nearly all coal-fired power plants in Illinois has been polluted by coal ash ponds and is not potable, creating liabilities for future generations and future public health risks and costs from the lack of adequate containment and management of coal combustion waste residues, which continues. Calculations have been made that the annual cost to the public from pollution impacts and other damages from coal are from over one third to a half trillion dollars annually. | consideration, TVA believes that the SCC metric is not an appropriate measure or proxy of project-level climate change impacts and their significance under NEPA. The SCC metric is not appropriate or informative because (1) the lack of consensus on the appropriate discount rate leads to significant variation in outputs, rendering those outputs unreliable and meaningless; (2) the SCC tool does not measure the actual incremental impacts of a project on the environment; and (3) there are no established criteria identifying the monetized values considered significant for NEPA purposes. In comparison, the GHG emissions analysis provided in Section 3.1.8 of the SEA is a more reliable proxy. |
| 12 | The TVA is aiding and abetting the abuse of coal rights contracts signed many decades ago. Property owners who sold their coal rights to the Tennessee Valley Authority were dealing with a governmental agency, for whom coal would be used for the provision of energy for the public under the TVA. Many of these coal rights allow advantages for surface property takings which have been used by existing coal companies to pressure local land owners. Since the TVA has allowed for-profit coal companies to obtain extensive coal rights with these old coal contracts, some of which contain extraordinary surface rights provisions from an entirely different era and circumstances, the tables are turned on the public. For-profit coal companies get the advantages of very low-priced coal contracts that were originally sold to and owned by a governmental entity. Local property owners bear the psychological, physical, and | Comment noted. TVA notes that the proposed action would not require surface property takings, as there would be no new surface disturbance with the action.<br><br>TVA's coal rights in southern Illinois were purchased from both individuals and large coal companies. Where TVA purchased coal rights from individual owners within the project area, these owners had joined together in an association to collectively market and negotiate the sale of their coal rights. The coal rights were purchased with power funds for the benefit of the TVA power system. TVA does not conduct coal mining operations itself, but leases the rights to mining companies to obtain value for the coal assets entrusted to the federal government. |

| | | |
|---|---|---|
| | emotional harm of living with concerns for what will happen to their property or they are driven to the point of selling out to the coal companies. The for-profit coal companies make the additional profit from the TVA leases. The Sugar Camp Mine is thought to have 7.2 billion tons of TVA coal leases. This current permit is not needed to allow this company to continue. | |
| 13 | The current existing TVA SEA is arbitrary and capricious, completely ignoring and failing to take into any adequate consideration the full impacts of this mining permit expansion. The TVA fails to fully review key areas with which the mine impacts are a clear and present danger. The TVA should not approve the mining and removal of coal as proposed by Sugar Camp based on the proposed Mining Plan for Sugar Camp Mine No. 1 because it will add adverse impacts to all categories under TVA jurisdiction for review. | Comment noted. See previous response. |