

3. KENTUCKY PIONEER IGCC DEMONSTRATION PROJECT DESCRIPTION AND ALTERNATIVES

3.1 Kentucky Pioneer IGCC Demonstration Project Facility

The Kentucky Pioneer Integrated Gasification Combined Cycle (IGCC) Demonstration Project facility would be located in Clark County, Kentucky (Figure 3.1-1) on a 121-hectare (300-acre) site within the 1,263-hectare (3,120-acre) J.K. Smith Site, owned by East Kentucky Power Cooperative (EKPC) (Figure 3.1-2). The project site is 34 kilometers (21 miles) southeast of the city of Lexington, 13 kilometers (8 miles) southeast of the city of Winchester, and 1.6 kilometers (1 mile) west of the community of Trapp, Kentucky.

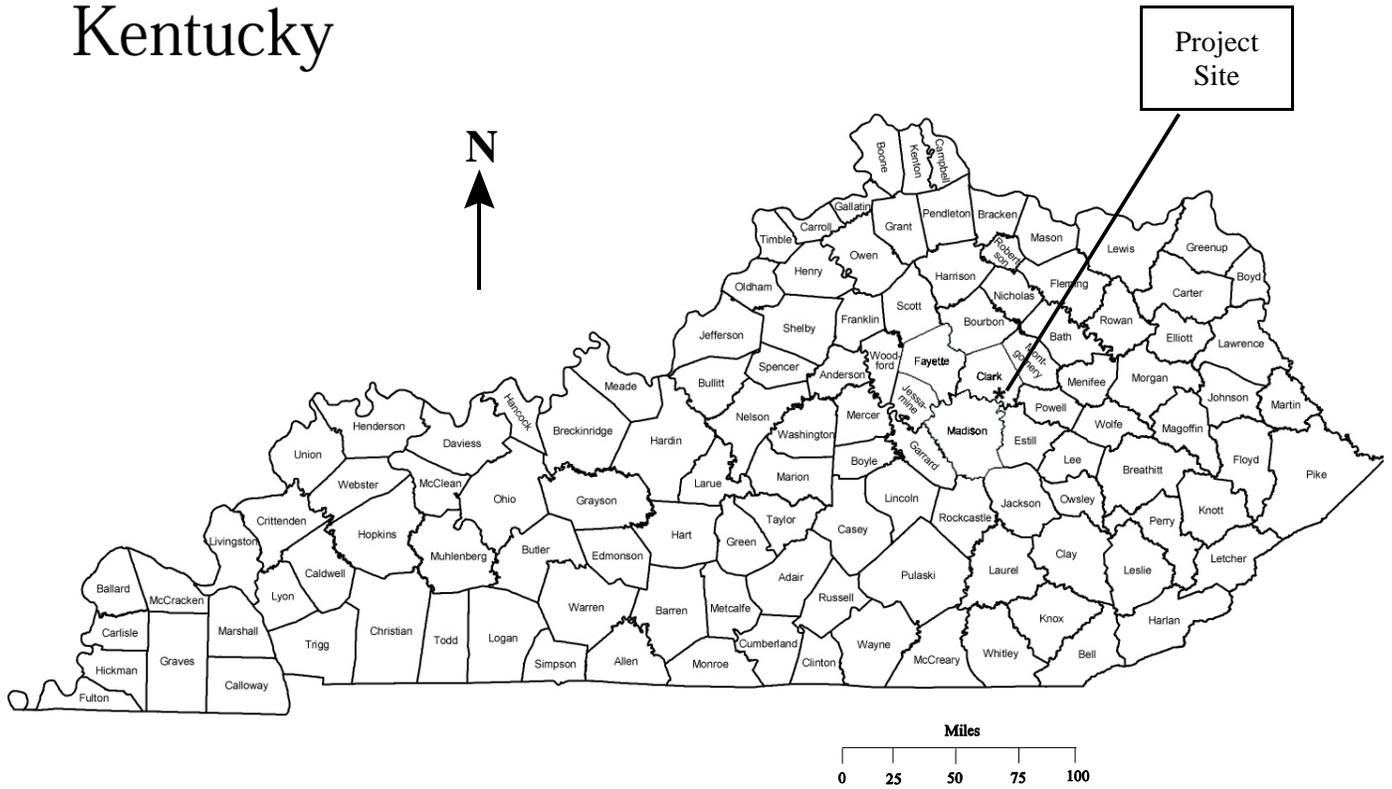
The 121-hectare (300-acre) project site was previously disturbed by preliminary construction activities in the mid-1980s when EKPC began construction of the J.K. Smith coal-fired power station. EKPC had completed preliminary grading, primary foundations, fire protection piping, and rail spur access infrastructure installation before the project was canceled in the early 1990s when the projected demand for electricity in the area failed to materialize. The Kentucky Pioneer IGCC Demonstration Project would be built on the portion of the site that was previously cleared and graded. Figures 3.1-3 to 3.1-6 illustrate the current site conditions.

The site is reached by Kentucky Highway 89 and accessed through a gated perimeter fence and access road. The access road is approximately 1.6 kilometers (1 mile) long from Kentucky Highway 89 to the project site. Plant access by rail, which crosses the eastern side of the station, would be from a freight rail line owned by CSX Transportation, Inc. (Figure 3.1-7). An existing railroad loop about 5 kilometers (3.1 miles) long will be utilized for raw material delivery and product transportation around the 121-hectare (300-acre) project site (Figure 3.1-8).

To support the project, EKPC would construct a new 138-kilovolt (kV) electric transmission line. The proposed route for the line would extend northeasterly from the project site to the Spencer Road Terminal in Montgomery County, Kentucky, where it will interconnect with the existing local power grid. Figure 3.1-9 shows the location of the Spencer Road Terminal with respect to the proposed project site. This transmission line would provide additional capacity adequate to accommodate the addition of the Kentucky Pioneer IGCC Demonstration Project and is consistent with the master plan for transmission outlets required for existing and future generation at EKPC's J.K. Smith Site. However, the resulting margin of transmission capacity of the Kentucky Pioneer IGCC Demonstration Project plus the existing and planned EKPC combustion turbines (CTs) is small, thus triggering the need for future expansion of the local power grid. The impacts of potential future expansion of the grid are addressed in Section 5.14, Cumulative Impacts.

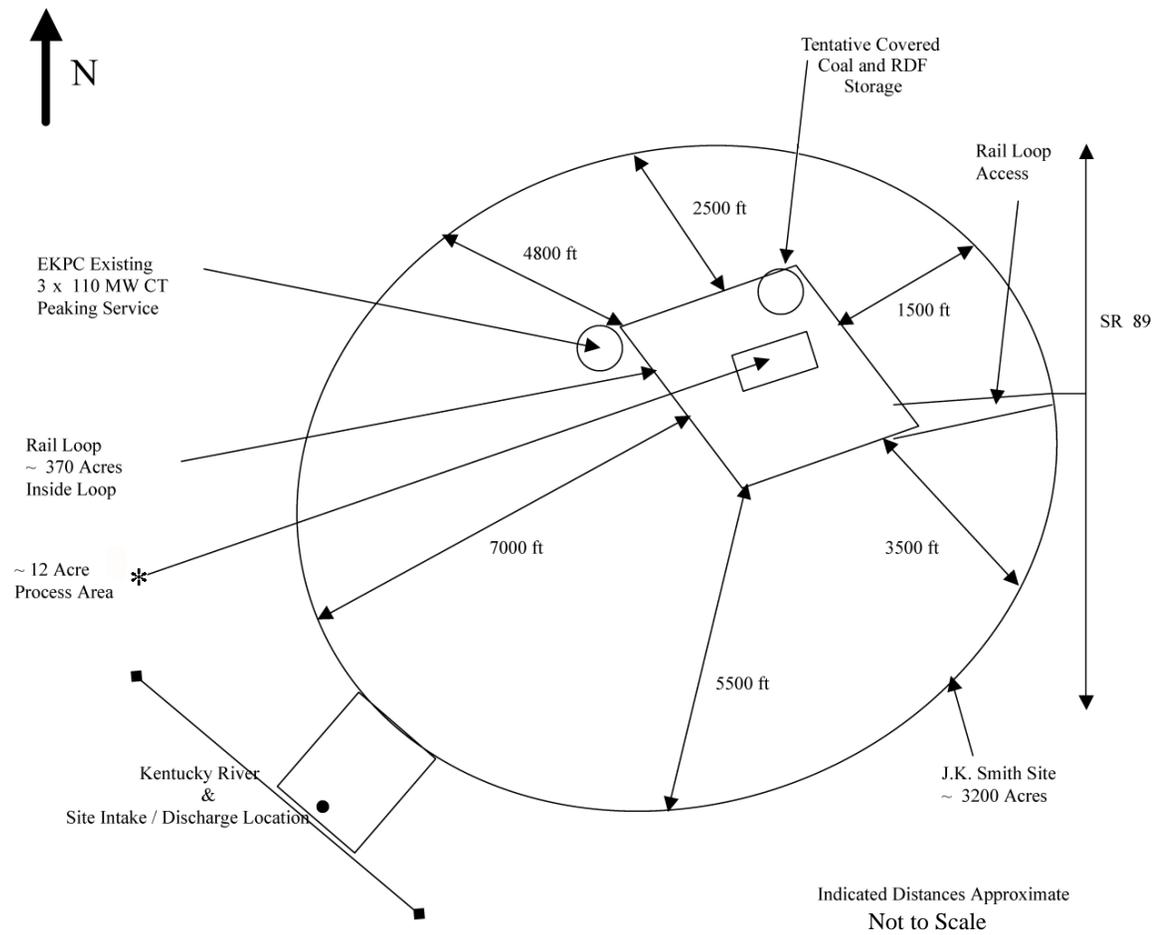
The proposed new transmission line would be approximately 27 kilometers (17 miles) in length; however, the exact route for the line has yet to be determined. For this environmental impact statement (EIS), it is assumed the transmission line would be constructed in a similar fashion as other 138-kV electric transmission lines built by EKPC in the project area. The line would require a 30 to 45 meter (100 to 150 foot) wide right-of-way. The electrical conductors would be supported by double wood and/or steel, single and/or double pole structures. The average height of the support structures would be approximately 24 meters (80 feet) aboveground and the average span between structures would be 122 to 305 meters (400 to 1,000 feet), depending upon the terrain (Figure 3.1-10).

Kentucky



Source: KY 2001.

Figure 3.1-1. Project Site Location within Kentucky



Source: KPE 2001.

* See Figure 3.1.1-2 for Conceptual Facility Layout located in the Process Area

Figure 3.1-2. Kentucky Pioneer IGCC Demonstration Project Facility Location at J.K. Smith Site



Source: EKPC 2000b.

Figure 3.1-3. Current Site Conditions at the Kentucky Pioneer IGCC Demonstration Project Site, Looking South on Existing Water Tank



Source: EKPC 2000b.

Figure 3.1-4. Current Site Conditions at the Kentucky Pioneer IGCC Demonstration Project Site, from Existing Water Tank Looking North to the Rail Spur



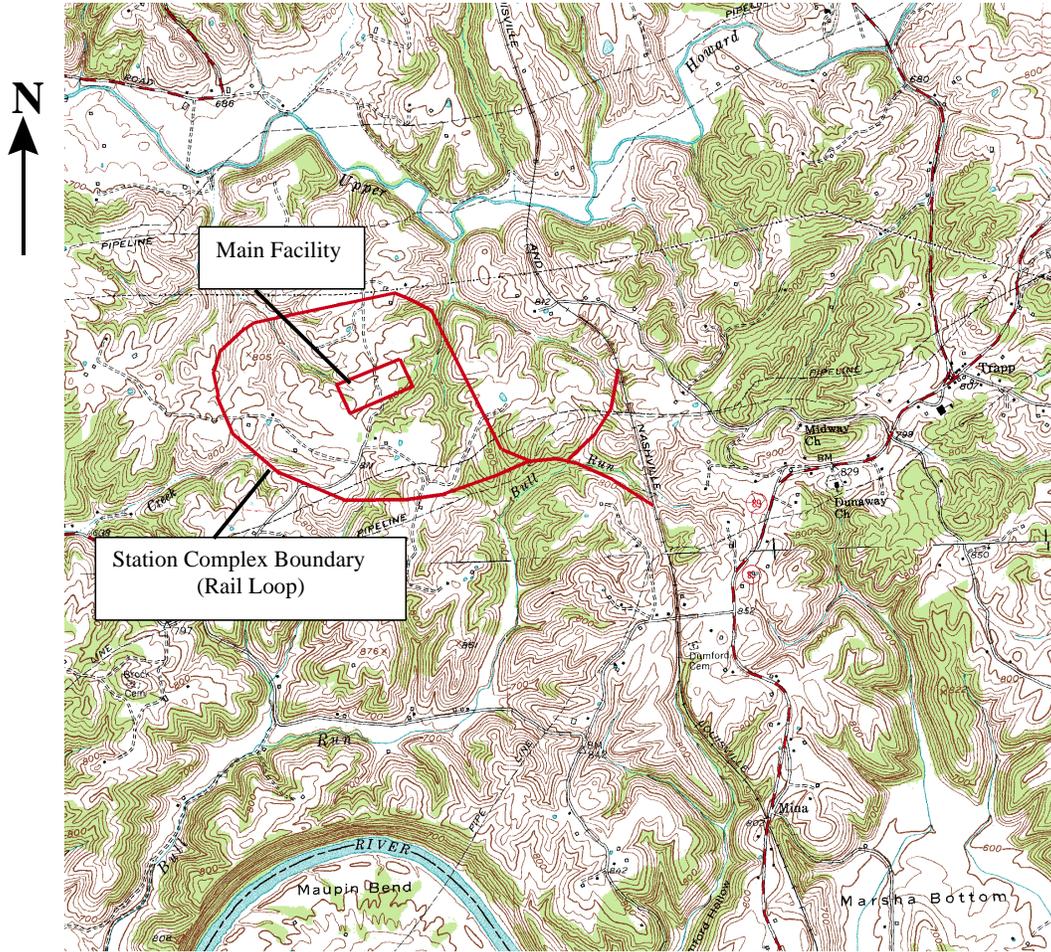
Source: EKPC 2000b.

Figure 3.1-5. Current Site Conditions at the Kentucky Pioneer IGCC Demonstration Project Site, from Existing Water Tank Looking East/Southeast



Source: EKPC 2000b.

Figure 3.1-6. Current Site Conditions at the Kentucky Pioneer IGCC Demonstration Project Site, from Existing Water Tank Looking South/Southwest with Administrative Buildings in the Background



Source: EIV 2000.

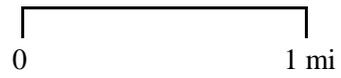


Figure 3.1-7. Topographic Map of the Project Site

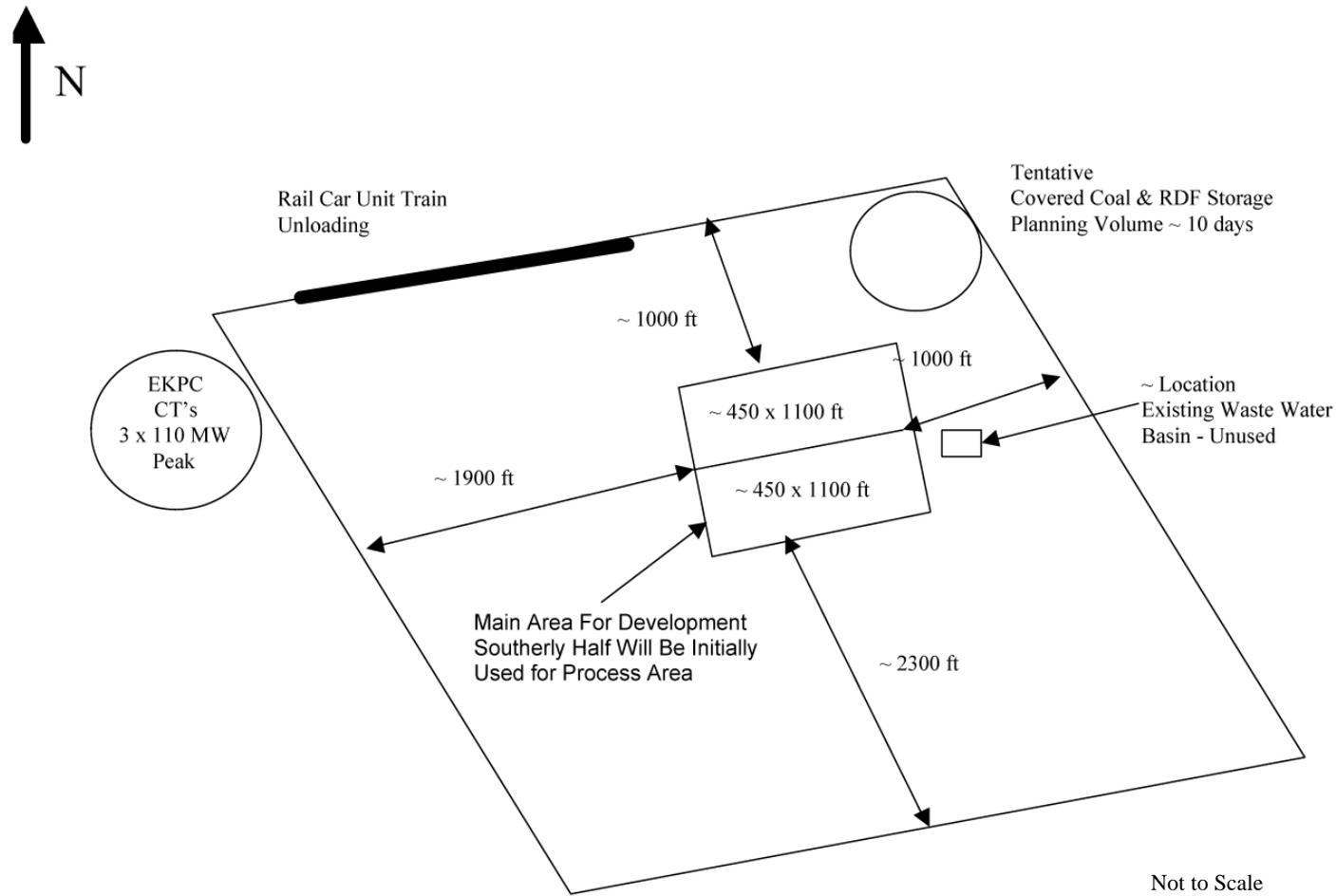


Figure 3.1-8. Generalized Rail Loop Layout for Kentucky Pioneer IGCC Demonstration Project Facility

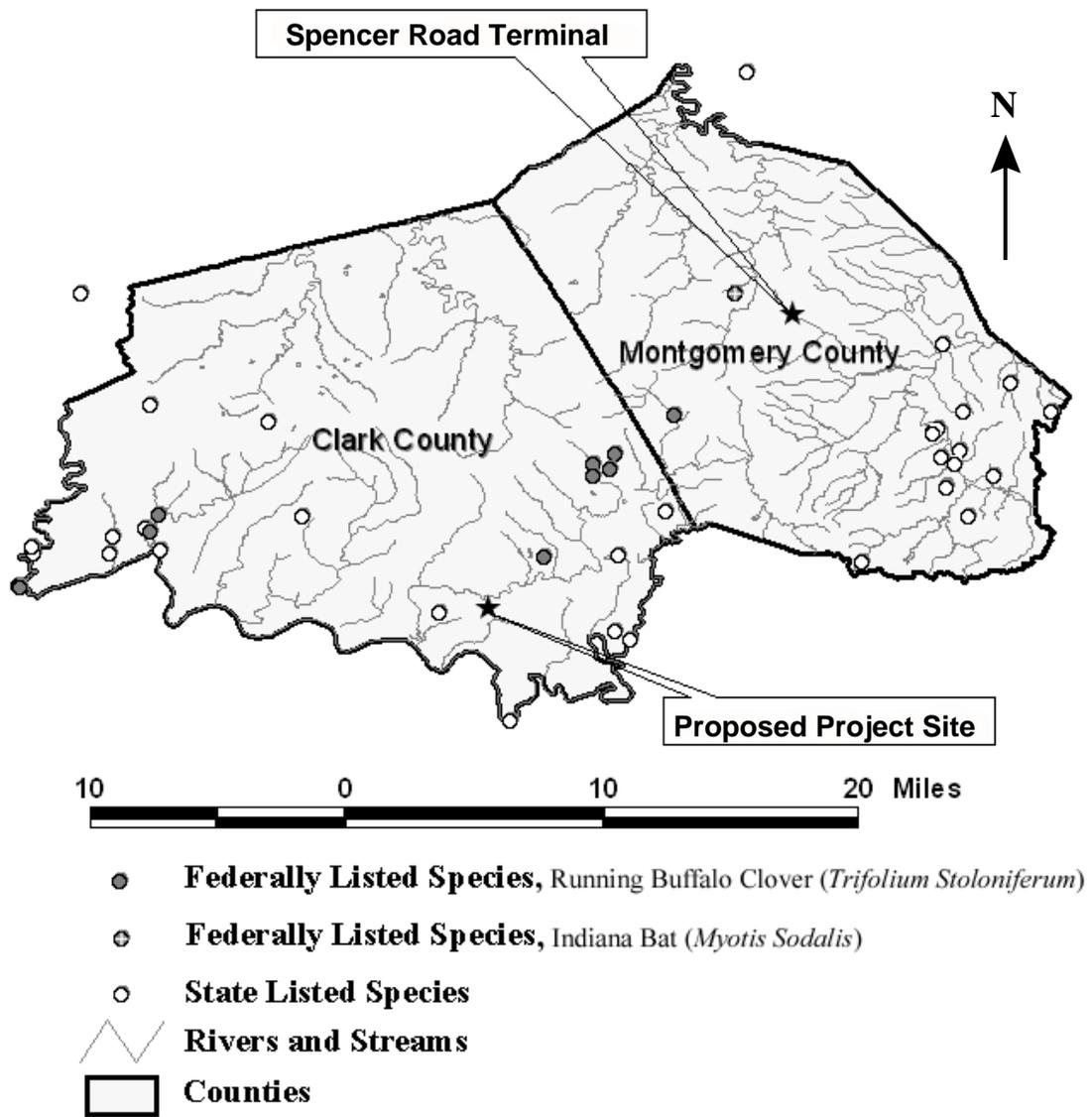


Figure 3.1-9. Spencer Road Terminal and Sensitive Areas in Clark and Montgomery Counties