3.0 EXISTING ENVIRONMENT

This section profiles the environmental resources in the vicinity of the proposed power plant site at Elkhart, Illinois. The resources discussed include relevant physical, biological, social, and economic conditions that could be affected by implementation of the proposed action or the no-action alternative. Each resource is described sufficiently to provide the necessary background and context for assessing the potential impacts, which are presented in Section 4.0.

3.1 SITE DESCRIPTION AND AESTHETICS

The proposed plant would be located on a graded, nearly level, grassy field accessed by a paved road. The surrounding terrain is primarily flat to rolling. The principal topographic feature in the vicinity is Elkhart Hill, the highest point in Logan County. This feature is located slightly over 1 mile northwest of the site and has a maximum elevation of about 200 ft above site grade (Figure 2.1.2). Because the proposed plant site is adjacent to Turris Coal Company's underground coal mine and surface coal processing operations (Figure 2.1.4), the viewing landscape includes industrial buildings, coal storage silos with 257 ft height, coal piles, coal conveyors, and waste disposal ponds surrounded by earthen berms. Electric transmission lines and towers traverse the mine property. Although several instances of mine subsidence have been detected at the surface of the mine property, no mining has occurred beneath the plant site. Other land use in the rural area surrounding the site is mainly agricultural. No scenic vistas or aesthetic landscapes are present in the area.

3.2 ATMOSPHERIC CONDITIONS

3.2.1 Climate

Illinois has a continental climate characterized by warm, humid summers and moderately cold winters (Gale Research Company 1985; 1996). Summer temperatures reach 90°F or above on an average of 30 days per year, as measured at Capital Airport in Springfield, about 17 miles southwest of the proposed plant site. The all-time maximum temperature of 112°F was recorded in July 1954. Winter temperatures drop to 0°F or below on an average of 10 days per year. The all-time minimum temperature of -22°F was recorded in February 1963.

The majority of the region's precipitation is supplied by air moving northward from the Gulf of Mexico. As recorded at Capital Airport, annual precipitation averages about 35 in., and precipitation is most abundant from March through September. Precipitation during the autumn, winter, and early spring tends to fall uniformly over large areas, while late spring and summer rainfall occurs primarily as brief showers affecting relatively small areas. As is typical of continental climates, precipitation can be highly variable. The driest year of record was 1953, with only 24.0 in. of precipitation, while the wettest year was 1990, with 52.7 in. of precipitation. The driest summer (June to August of 1988) yielded only 3.9 in. of rainfall, while the wettest summer (1981) had 24.9 in. of rainfall. During intervals as short as one month, extreme minima can approach zero – for example, only a trace of precipitation was recorded at Capital Airport in September 1979. The maximum monthly precipitation of 10.8 in. was recorded in July 1981.

On average, forty (40) of the 50 days per year with thunderstorms occur during the spring and summer. Hail occurs on an average of less than once per year. The maximum 24 hour precipitation of 6.12 in. occurred in December 1982. On average, snowfall amounts of 1 in. or more occur 8 days per year. The maximum 24 hour snowfall of 11 in. was recorded in December 1973. Moderate to heavy ice storms occur about once every 4 or 5 years. Heavy fog occurs about 17 days per year.

The *wind rose* in Figure 3.2.1 shows that the prevailing wind at Capital Airport is from the south and the mean wind speed is about 11 mph. The period of record (1987-1991) for the wind rose was selected to coincide with the period of record used in the air dispersion modeling (Section 4.2.2.1), as determined to be representative of local meteorological conditions based on reviews by the IEPA. The wind speed and the mixing height (the height above ground to which appreciable vertical atmospheric mixing occurs) are important factors influencing atmospheric dispersion of pollutants. If mixing height and wind speed are both very low, atmospheric dispersion of pollutants is limited and the meteorological potential for air pollution is high. Such conditions are infrequent in central Illinois – according to Holzworth (1972), less than two days per year have a high meteorological potential for air pollution.

3.2.2 Air Quality

National Ambient Air Quality Standards (NAAQS) (Table 3.2.1) exist for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), carbon monoxide (CO), lead (Pb), and particulate matter less than or equal to 10 μm in aerodynamic diameter (PM_{10}) and less than or equal to 2.5 μm in aerodynamic diameter ($PM_{2.5}$). The pollutants covered by the NAAQS are called criteria pollutants because the criteria for their regulation must be published, reviewed, and updated periodically to reflect the latest scientific knowledge (Clean Air Act, Section 108). On July 18, 1997, EPA promulgated an 8 hour O_3 NAAQS to replace the 1 hour standard (62 *FR* 38856) and added the NAAQS for $PM_{2.5}$ (62 *FR* 38652). These standards have survived court challenges (U.S. Supreme Court 2001), but plans for their implementation, which would require collection of ambient air monitoring data for 3 years to determine compliance, were delayed.

The NAAQS (40 CFR Part 50(e)) are expressed as concentrations of pollutants in the ambient air (i.e., in the outdoor air to which the general public has access). Primary NAAQS define levels of air quality that the U.S. Environmental Protection Agency (EPA) deems necessary, with an adequate margin of safety, to protect human health. Secondary NAAQS are similarly designated to protect human welfare by safeguarding environmental resources (such as soils, water, plants, and animals) and manufactured materials. Primary and secondary standards are currently the same for all pollutants and averaging periods, except for 3 hour SO_2 averages, which have a secondary standard only, and CO, which has only a primary standard. States may modify the NAAQS to establish more stringent standards, or states may set standards for additional pollutants. Illinois has adopted the NAAQS as the state standards (Illinois Administrative Code, Title 35, Part 243).

Air quality in the Elkhart area is good, as evidenced by the fact that the Elkhart region is in attainment with the NAAQS. Measured ambient concentrations of the criteria air pollutants are compared with the NAAQS in Table 3.2.1 for locations nearest to Elkhart (with the exception that Decatur is used instead of Springfield for SO_2 because the ambient air monitor at Springfield measures the downwind air quality resulting from emissions of a nearby power plant, which would not be representative of the Elkhart area). The table indicates that the concentrations of all criteria pollutants, with the exception of ozone, are less than 55% of their respective standards, and the concentration of ozone is less than 85% of its standard.

Table 3.2.1. Existing air quality for the Elkhart area, as measured at Springfield, Decatur, and East St. Louis during 1997–2001

Pollutant[a]	Location of monitor	Year	Averaging period	Concentration (µg/m³)	NAAQS (µg/m³)[b]	Percentage of standard
SO_2	Decatur	1999	3-hour	165[c]	1300	13
		1999	24-hour	71[c]	365	19
		2000	Annual	13[d]	80	16
NO_2	East St. Louis	2001	Annual	36[d]	100	36
CO	Springfield	1998	1-hour	7,360[c]	40,000	18
		1999	8-hour	2,760[c]	10,000	28
Pb	Decatur	1997	Calendar quarter	0.03[d]	1.5	2
PM_{10}	Springfield	2000	24-hour	81[e]	150	54
		2000	Annual	26[d]	50	52
$PM_{2.5}$		*f*	24-hour	*f*	65[f]	*f*
		f	Annual	*f*	15[f]	*f*
O_3	Springfield	2001	1-hour	196[g]	235[g]	83
		f	8-hour	*f*	157[f]	*f*

[a] Chemical symbols for the pollutants are as follows: SO_2, sulfur dioxide; NO_2, nitrogen dioxide; CO, carbon monoxide; Pb lead; O_3, ozone. PM_{10} and $PM_{2.5}$ refer, respectively, to particulate matter less than 10 or 2.5 µm in diameter.
[b] National Ambient Air Quality Standards (NAAQS) in micrograms per cubic meter (µg/m³).
[c] In accordance with the standard, the highest value for each year has been excluded and the highest of the remaining concentrations is used.
[d] In accordance with the standard, the maximum annual (or quarterly, for lead) concentration is used.
[e] The highest 24-hour average of PM_{10} in the 5-year period is used to ensure that the value given does not underestimate the 99th percentile (averaged over 3 years of data) that is to be compared with the standard.
[f] Standards for $PM_{2.5}$ and an 8-hour standard for O_3 have recently been established (*FR* 62:138 Friday, July 18, 1997). These standards apply to 3-year averages; data for comparison with these standards are not yet available.
[g] This standard is 0.12 parts per million (ppm), or 235 µg/m³ [40 CFR 50(9)]; three days with exceedances are allowed over a 3-year period. EPA conventionally has interpreted an exceedance as a concentration of 0.13 ppm or greater, after rounding to two places (*FR* 60:44 Tuesday, March 7, 1995, page 12464; *FR* 62:139 Monday, July 21, 1997, page 38928). A concentration of 0.11 ppm (216 µg/m³) was measured on one day during 1999 and one day during 2001; concentrations of 0.10 ppm (196 µg/m³) were measured on several days during 1998-2001.

In addition to the NAAQS, which provide an upper bound on allowable pollutant concentrations, national standards have been established to preserve air quality in areas that are more pristine than required by the NAAQS (40 CFR 51.166). These Prevention of Significant Deterioration (PSD) standards differ from the NAAQS in that the NAAQS specify maximum allowable concentrations of pollutants, while PSD requirements provide maximum allowable increases in concentrations of pollutants for areas already in compliance with the NAAQS. PSD standards are therefore expressed as allowable increments in the atmospheric concentrations of specific pollutants. PSD increments are particularly relevant when a major proposed action involving a new source or a major modification to an existing source may degrade air quality without exceeding the NAAQS. PSD increments have been established for SO_2, NO_2, and PM_{10}. One set of allowable increments exists for Class II areas, which cover most of the United States, and a much more stringent set of increments exists for Class I areas, which include many national parks and monuments, wilderness areas, and other areas, as specified in 40 CFR 51.166(e). Mingo Wilderness Area, which is located about 210 miles south-southwest of Elkhart, is the nearest PSD Class I area.

Other pollutants (e.g., benzene, beryllium, and mercury) are present in the ambient air of the Elkhart area in varying amounts, which depend on the magnitudes and characteristics of their emission sources, the distance from each source, and the residence time of each pollutant in the atmosphere. Many of these pollutants are difficult to measure because they are present only in extremely small concentrations. Measurements of existing ambient air concentrations for many hazardous pollutants are, at best, very sporadic. These pollutants are regulated at the source of emissions by the National Emissions Standards for Hazardous Air Pollutants (40 CFR 61; 40 CFR 63).

3.3 SURFACE WATER RESOURCES

3.3.1 Hydrology

The proposed site is located within the Sangamon River watershed (DMC 1991; TCC 1996; USGS 1969, 1980a, 1980b, and 1982). The Sangamon River and its tributaries drain the central part of the state of Illinois above Springfield and below Congerville (northwest of Bloomington) into the Illinois River (Figure 3.3.1), which in turn flows into the Mississippi River. Lake Fork Creek flows near the proposed site and empties into Salt Creek, which then discharges into the Sangamon River.

The proposed site is located approximately 1.5 miles west of Lake Fork Creek (Figure 3.3.2). Runoff from the site is conveyed to Lake Fork Creek by an unnamed northeasterly flowing tributary. A channelized drainage ditch is located adjacent to the proposed site and conveys runoff from the site into the Lake Fork Creek watershed. The figure depicts the approximate location of an existing collection pipe on the southeast corner of the Turris Mine property. This pipe provides the discharge from the existing field tile drain system.

The headwaters of Lake Fork Creek lie east of Cornland (Figure 3.3.1) and consist of Hunter Slough and the North and South Forks of Lake Fork Creek (USGS 1969 and 1980b). No lakes or reservoirs regulate the flow of Lake Fork Creek, which discharges into Salt Creek downstream from the proposed power plant site at a confluence just south of Railsplitter State Park (Figure 3.3.2). Partial regulation of water flow in Salt Creek is provided by Clinton Lake, which is located east of Lincoln and east-northeast of the proposed power plant site (Figure 3.3.1).

The annual mean flow in Lake Fork Creek, as measured at the U.S. Geological Survey's gauging station for the Creek at Cornland, IL, approximately 5 to 6 stream miles upstream from the site, measured 168 ft^3/s (about 75,400 gpm) for the period of record from water year 1948 to 1995 (Wicker, LaTour, and Maurer 1996). Five tributaries feed Lake Fork Creek between the gauging station and the proposed plant site; thus, water flow near the proposed plant site would be greater than the recorded water flows near Cornland. The highest annual mean flow was about 167,000 gpm, and the lowest annual mean flow was about 4,000 gpm. The instantaneous peak flow of 4 million gpm was recorded on April 12, 1979, and the instantaneous low flow of 135 gpm occurred on September 16, 1988. The flow exceeded 7 ft^3/s (about 3,140 gpm) at least 90% of the time. A peak flow of 13 million gpm was estimated for the flood of May 1943, which is the extreme outside of the 1948 to 1995 period of record (Wicker, LaTour, and Maurer 1996).

3.3.2 Water Quality and Use

Water supply in Logan County is obtained primarily from groundwater (LaTour and Ackermann 1990). The volume of groundwater withdrawn for use is approximately ten times greater than the volume of surface water consumption. Surface water use seldom exceeds 694 gpm (1 MM gpd), while groundwater withdrawals range from 694 gpm to 6,944 gpm (1 to 10 MM gpd).

Water for the Turris Mine is obtained from three wells that pump groundwater – one potable water well and two nonpotable *process water* wells (Section 3.4.3). The groundwater supply for process water is supplemented with storm water runoff collected from mine property. The storm water runoff is contained by collection ponds and then routed into the process water distribution system. The potable water well provides groundwater using a separate distribution system for drinking and sanitation.

Wastewaters from the Turris Mine are discharged into the wastewater treatment system for the coal mining/preparation complex and then recirculated by the process water distribution system for continual use (Beittel and Darguzas 1996). Sanitary wastes associated with mining are treated in the existing dual-cell aerated lagoon at the Turris Mine.

Turris Coal Company attempts to retain all water on the mine property for use in coal processing, and water discharges from the site occur only during substantial rainfall events that cannot be controlled with the mine's pumping system. Monitoring records support a conclusion that discharges from water collection ponds on mine property are rare events that occur only a few days per year for most ponds. Any discharge from the ponds is regulated under a National Pollutant Discharge Elimination System (NPDES) permit. Discharges from the ponds are received by an unnamed tributary of Lake Fork Creek. Figure 3.3.3 depicts the layout of the freshwater pond, sediment ponds, and the slurry pond disposal area (the slurry impoundment), which are all south of Township Road 600N, on Turris Coal Company property.

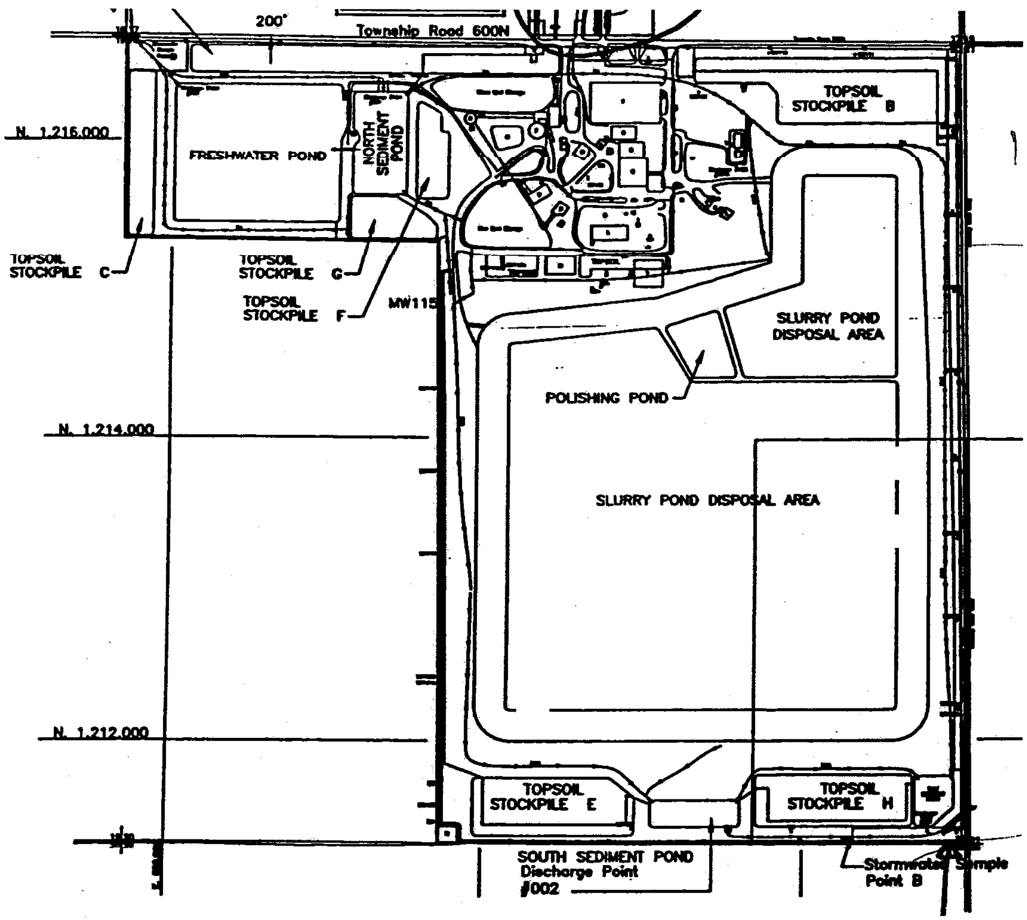

Figure 3.3.3. Layout of existing ponds on Turris Coal Company property

The NPDES permit (No. IL0061956) issued by the Illinois Environmental Protection Agency (IEPA) describes the discharge limitations under which the Turris Coal Company is allowed to discharge to off-site surface waters from operations at the Turris Mine (IEPA 1995). The current permit was issued on October 6, 2000, and covers ten different outfalls to surface waters. Storm water runoff from the preparation plant and refuse disposal areas is directed to the north, south, and east sedimentation ponds with outfalls numbered 001, 002, and 003, respectively. Outfall 001A discharges from the settling pond used by the sewage treatment facility into the north sedimentation pond (with outfall 001). Outfall 006 is for storm water runoff from the freshwater pond. Outfalls 004 and 005 were permitted for a train loadout facility that was not built, about 2 miles west of the Turris Mine, and are classified as alkaline mine drainages. Outfalls 007 and 008 were permitted for a coal combustion waste disposal facility north and east of the truck loadout area; that waste disposal facility has not been built. Outfall 009 is located at the sediment pond at the Williamsville Portal Facility.

Outfalls 001, 002, 003, and 006 are classified as alkaline mine drainages, and outfall 001A is classified as a sanitary discharge. Outfalls 001 (which receives the discharge from 001A), 002, 003, and 006 discharge into unnamed tributaries of Lake Fork Creek, while outfalls 004 and 005 discharge into unnamed tributaries of Wolf Creek.

Monitoring requirements in the NPDES permit state that the outfalls should be sampled three times monthly and analyzed for total suspended solids, settleable solids, iron, pH, alkalinity/acidity, sulfates, chlorides, and manganese. The permit specifies monthly average and daily maximum concentration limits that are not to be exceeded. If limits are exceeded, Turris Coal Company is required to file a report of noncompliance. Based on quarterly NPDES monitoring reports, four instances of noncompliance occurred from January 1993 to May 1997. The maximum daily pH criterion of 9.0 was exceeded in April 1994 at outfalls 001 and 003, and the maximum daily chloride criterion of 1,000 mg/L was exceeded in October 1996 and March 1997 at outfall 006.

3.4 GEOLOGY AND GROUNDWATER

3.4.1 Local Geology

The Turris Mine is located at an elevation of about 585 ft above mean sea level and is situated above the main channel of the Middletown bedrock valley, which is a tributary to the buried Mahomet Valley (Rapps 1989). This bedrock valley is filled with approximately 180 to 200 ft of *unconsolidated sediment* (Quaternary deposits) laid down by glaciers that advanced and retreated during the Pleistocene Epoch. The following Quaternary deposits (Figure 3.4.1) have been identified, in descending order from the ground surface (Rapps 1989; 1993):

- Peoria *Loess* (or weathered *glacial drift*) – loessial (windblown) deposits of Wisconsinan Age, consisting primarily of silt with some clay and sand, with a thickness of about 15 to 20 ft;

- Sangamon Soil – consisting of the organic-rich Robein silt, the weathered Roxana Silt, and the Berry Clay *Member*, developed during the Sangamon inter-glacial period between the Wisconsinan and Illinoian glaciations and ranging in thickness from 0 to 8 ft;
- Teneriffe Silt/Hagarstown Member – glacial-*fluvial* or glacial-*lacustrine* deposits of Illinoian Age, consisting primarily of sandy silt with interbeds of sand, clay, and gravel, with an average thickness of about 35 ft;
- Pearl *Formation* – glacial *outwash* deposits of Illinoian Age, comprising hard, well-sorted, fine- to medium-grained sand with some gravel, ranging in thickness from 4 to 20 ft;
- Vandalia *Till* – gray, hard, silty clay with some sand and pebbles of Illinoian Age, ranging in thickness from 0 to 50 ft;
- Kansan outwash – sand and gravel glacial outwash deposits of Kansan Age, ranging in thickness from 0 to 75 ft;
- Undifferentiated Kansan drift – silts and clays up to 100 ft thick found 150 to 200 ft below ground surface; and
- Mahomet Sand – sand and silt that fill the deepest portions of the buried bedrock valley.

Bedrock found immediately beneath the Quaternary deposits consists of upper Pennsylvanian shales, sandstones, limestones, and coals of the Modesto and Carbondale formations (Willman et al. 1967), including the currently mined bituminous coal, which is about 300 ft below the ground surface. Minor subsidence has occurred in some areas located above mined-out portions of the coal seam.

Coal extracted from the Turris Mine occurs in a relatively flat, 4.5 ft to 6.0 ft thick seam at a depth of 250 to 300 ft. The coal is extracted using room-and-pillar mining methods from panels (or blocks) with a size of approximately 4,000 ft by 800 ft. Each panel is mined by removing coal from parallel 20-ft wide cuts, while retaining pillars of unmined coal varying in thickness from 55 ft to 100 ft. Coal pillars at the edges of mined areas underlying land in the vicinity of the proposed plant site typically have 75 ft thickness. Coal recovery generally varies from 35% to 45%. Larger coal barrier pillars with widths of 180 ft to 200 ft are retained between adjoining blocks of mined coal.

Areas of coal beneath the land surface in the vicinity of the site proposed for the power plant were mined in 1983-1984 and 1990 (Chugh 2001). Figure 3.4.2 depicts the anticipated relationship between the proposed site for the power plant, with currently anticipated locations for the steam turbine and exhaust stack, and the underlying schematic of mined-out areas, coal pillars, and barrier pillars.

Surface topography above the mine is flat to gently rolling, with a relief of about 20 ft. Glacial material above the coal seam beneath the project site has a thickness of about 220-230 ft. Rock overburden, consisting primarily of shales, limestones, and sandstones, above the coal has a thickness of 50-70 ft, thus providing an average overburden thickness of about 280-290 ft at the project site.

The roof stratum immediately above the coal consists of a weak, thin band of shale with a thickness of 1-8 ft (average 3 ft). Overlying the shale is a limestone bed with a compressive strength of 15,000 psi. The coal is associated with a thick (4-6 ft), weak (200-500 psi compressive strength) claystone floor stratum, which is sensitive to water, based on swelling strain and clay mineral composition. Mined-out areas are thus susceptible to floor heave, deformation, and failure, which can result over time in surface subsidence. Historical information for the Illinois Coal Basin indicates that 1-2 ft of surface subsidence may occur due to floor deformations over areas mined using room-and-pillar methods.

Since mine-out by 1990 of the coal underling the vicinity of the proposed site, no subsidence incidences have been reported in the area of the proposed power plant.

3.4.2 Hydrogeology

Groundwater supplies in Logan County are obtained from unconsolidated sand and gravel *aquifers* developed in glacial drift. Yields from groundwater wells commonly range from 10 to 1,000 gpm but may exceed 3,000 gpm (USGS 1985).

Figure 3.4.1 provides a generalized *hydrogeologic* cross-section showing the aquifers and *aquitards* beneath the Turris Mine site. Two principal aquifers exist: the Pearl Formation and the Mahomet Sand. Under portions of the site, the Pearl Formation and the Kansan Outwash can be considered distinct aquifers because of separation by the Vandalia Till, which is an aquitard. However, under a major part of the site, these features comprise a single aquifer because the Vandalia Till is absent. The municipal water supply for the town of Elkhart is obtained from the Pearl aquifer, while the Turris Mine obtains potable water supply from the Kansan outwash.

In addition to the Pearl Formation and Mahomet Sand aquifers, sand and gravel *lenses* exist in the Hagarstown formation, which also contains groundwater; however, these sand and gravel lenses do not yield sufficient water for residential or agricultural use. *Perched groundwater*, which occurs as a shallow water table near the ground surface in wet weather, is also found in the weathered drift above the relatively impermeable, clayey Sangamon Soil.

Groundwater in the Hagarstown, Pearl, and Mahomet Sand formations appears to be confined, with the confining beds being the weathered drift, the Sangamon Soil, the Teneriffe Silt, the Vandalia Till (where present), and the undifferentiated Kansan Drift. As is typical of glacial drift aquifers, the aquifers at the site appear to be recharged locally by downward vertical leakage through these confining beds, as evidenced by the downward vertical *hydraulic gradients* measured at the site (Rapps 1989; 1993). However, vertical *hydraulic conductivities* in the confining units are much lower than horizontal hydraulic conductivities in the aquifers. Therefore, the bulk of groundwater flow should occur horizontally in the aquifers rather than downward through the confining units.

The Pearl Formation and Kansan Outwash aquifers could conceivably receive infiltration of surface water through the streambed of Lake Fork Creek. The baseline of the water-stage recorder (or gauge) on Lake Fork Creek near Cornland, Illinois, is located at 555 ft above sea level (Wicker, LaTour, and Maurer 1996), which is indicative of the elevation of the streambed and would be the elevation recorded if no flow occurred in the creek. The top of the Pearl Formation is located at an estimated elevation of 555 ft above sea level (Figure 3.4.1). Hence, Lake Fork Creek may be incised to a sufficient depth that hydraulic communication has been established with the underlying confined Pearl Formation and Kansan Outwash aquifers. However, the existence of appreciable infiltration from Lake Fork Creek into the aquifers has not been demonstrated. Aquifer tests conducted as part of the groundwater study for the proposed plant indicate that no interaction exists between Lake Fork Creek and the underlying aquifer.

Figures 3.4.3 and 3.4.4 provide contour maps of the *piezometric surfaces* and groundwater flow directions in the Hagarstown/Teneriffe and Pearl Formations, respectively, based on groundwater level measurements from May 17, 1993, in monitoring wells around the *slurry* impoundment at the Turris Mine. A groundwater "mound" in the Teneriffe/Hagarstown formations trends from southwest to northeast under the slurry impoundment. Groundwater in the Teneriffe/Hagarstown formations appears to flow outward from this mound toward the southeast and northwest. Based on information contained in boring logs around the impoundment, a ridge composed of sands, silts, clays, and gravels of the Hagarstown formation appears to trend from southwest to northeast, corresponding to the groundwater mound. The vertical component of flow between the Teneriffe/Hagarstown and Pearl Formations is a maximum along this Hagarstown ridge and diminishes as a function of distance from the ridge. The groundwater flow pattern in the Pearl Formation appears to be a subdued replica of the flow pattern in the Teneriffe/Hagarstown formation (Rapps 1993).

The Mahomet Sand aquifer, with a thickness ranging from 0 to 30 ft (Rapps 1989), exists beneath the Turris Mine site. *Transmissivity* of the Mahomet Sand ranges from 4,200 to 700,000 gpd/ft. *Permeability* ranges from 250 to 70,000 gpd/ft^2 (Stephenson 1967; Visocky and Schicht 1969). In contrast, the Pearl Formation has a transmissivity of 120 to 200,000 gpd/ft and a permeability of 30 to 4,100 gpd/ft^2. The Mahomet Sand aquifer has been shown to be hydrologically isolated from the overlying Pearl Formation and Kansan Outwash, as evidenced by the integrity of the Kansan Drift in the site area (Rapp 1989).

A testing program was performed at the Turris Mine property to assess the capability of the aquifers in the vicinity of the mine to provide a sufficient quantity of water for the proposed power plant. Eleven sampling holes were drilled in the plant site area; sieve analysis was performed on the formation samples to determine the appropriate well screens; and pumping tests were conducted to estimate yields. The locations of the sampling holes (TH1-01 through TH11-01) are shown on Figure 3.4.5. The screenings focused on subsurface areas containing the thickest sand and gravel deposits. The results of the testing suggested that the development of three wells (TH1-01, TH5-01, and TH9-01) would provide a long-term sustainable yield of approximately 1,250 gpm (Farnsworth 2001).

3.4.3 Groundwater Quality and Use

Water in the sand and gravel aquifers of Illinois is generally good quality and suitable for most uses. Dissolved solids concentrations range from 360 to 750 mg/L; hardness ranges from about 250 to 510 mg/L as calcium carbonate; and the median concentration of sulfate is about 50 mg/L. Iron concentrations are extremely variable, generally ranging from 50 to 4,000 :g/L (USGS 1988).

Figure 3.4.6 depicts locations of the groundwater supply and monitoring wells being used to assess groundwater quality at the Turris Mine site in relation to the slurry impoundment at the combustion ash disposal area. Average concentrations of selected chemicals identified in quarterly groundwater samples that were collected in 1996 are summarized in Table 3.4.1. Characterization data on water samples from all wells, with the exception of well M8 near the eastern side of the impoundment, indicate that groundwater quality is generally good and has not been adversely affected by mining operations at the Turris Mine site, including the slurry impoundment activities. Dissolved solids, chloride, sulfate, calcium, and magnesium concentrations in well M8, which monitors the Pearl Formation, are higher than the concentrations measured in other on-site wells. None of the other monitoring wells located east of the impoundment, in close proximity to well M8, showed signs of contamination. Well M8 could have intersected a contaminant *plume* seeping from the impoundment into the Pearl Formation, or the annulus around the well casing could have acted as a conduit for seepage due to improper seals. The data from 1996 for well M8 were abnormally high; characterization data from subsequent years have not noted similarly high concentrations.

Groundwater consumption in Logan County ranges from 1 to 10 MM gpd and exceeds surface water consumption by a factor of ten (Section 3.3.2). Groundwater use during 1996 at the Turris Mine was about 33 million gallons, averaging about 90,000 gpd (S. Fowler, Turris Coal Company, personal communication to A. H. Curtis, ORNL, Feb. 21, 1997). All groundwater was obtained from three wells: one potable water well (M11) and two process water wells (the Pole Barn and Exhaust Shaft wells). Groundwater withdrawal by surrounding private and municipal wells was estimated to be approximately 50,000 gpd in 1980 (Harza 1980), and the current withdrawal rate is estimated to be approximately 72,500 gpd.

Figure 3.4.7 shows the locations of all known groundwater supply wells and monitoring wells in the area, including the potable water supply well for the village of Elkhart, based on records from the Illinois State Water Survey's Private Well Database and Public-Industrial-Commercial Database (ISWS 1997a,b). The Elkhart supply well is also part of the monitoring well network at the site; the Elkhart well is designated as M12 on Figures 3.4.5, 3.4.6, and 3.4.7 and in Table 3.4.1.

As part of aquifer testing for the proposed power plant, the water quality of three wells recommended for development as water supply wells for the proposed project was analyzed (Farnsworth 2001). The results are presented in Table 3.4.2.

3.4.4 Soils

Soils at the site proposed for the power plant belong to the Ipava-Sable-Tama association, comprising the Ipava silt *loam*, the Sable silty clay loam, and the Tama silt loam. The Ipava series consists of somewhat poorly drained, nearly level soils on uplands; Sable soils are poorly drained, nearly level soils found mainly on uplands; and Tama soils are well drained, nearly level to strongly sloping soils. These soils developed under grasses in loess (i.e., windblown glacial deposits) more than 60 in. thick, are high in organic matter, and are well-suited for agriculture (Hudelson 1974). The soils have a high erosion hazard (Bergstrom, Piskin, and Follmer 1976), especially on steeper slopes.

3.4.5 Seismic Activity

The proposed site is located in Seismic Zone 1 (SZ1) of the Uniform Building Code (UBC) (ICBO 1994). *Peak ground accelerations* (PGAs) with a 500 year return period range from 0.05 to 0.10 g in SZ1. The UBC recommends a design basis PGA of 0.075 g for ordinary public buildings in SZ1.

No faults are known to exist in the vicinity of the proposed site. Historically, the largest earthquake to occur within 120 miles of the site took place on July 18, 1909, between Havana and Petersburg, Illinois, about 35 miles west-northwest of the site (Stover, Reagor, and Algermissen 1979). The earthquake had a modified Mercalli intensity of VII (estimated magnitude 5.5 to 6.1 on the Richter scale), causing minor damage to structures in Petersburg, Illinois; Davenport, Iowa; and Hannibal, Missouri (Coffman, von Hake, and Stover 1982). Perhaps the greatest potential seismic hazard to the area would come from a recurrence of earthquakes of the type that occurred in 1811-1812 in the active New Madrid seismic zone. Three earthquakes, all of modified Mercalli intensity XII, took place on December 16, 1811, January 23, 1812, and February 7, 1812 (Coffman, von Hake, and Stover 1982). According to Nuttli (1973), the recurrence of an earthquake of this intensity in the New Madrid area would result in intensities between VI and VII in the vicinity of the proposed site, possibly causing minor damage to buildings and other structures in the area.

3.5 SOLID WASTE

The Turris Mine site is a permitted location for disposal of coal combustion wastes from off-site users. Approximately 135,000 tons per year of coal combustion wastes are received for disposal in the 265 acre slurry impoundment. The IEPA and Logan County have the primary regulatory authority for waste management (i.e., disposal) at the site, while the U.S. EPA has regulatory oversight authority.

3.6 ECOLOGICAL RESOURCES

3.6.1 Terrestrial Ecosystems

Other than the Turris Mine's operations, the primary land use in the immediate vicinity of the proposed site (roughly a 2 mile radius, which would include all areas proposed for water supply wells) is agricultural. A typical square mile of land near the site consists of roughly 1 to 2% wooded areas (primarily along fence rows), cultivated fields, and 1 to 3 small farmsteads. Elkhart Hill, a small (about 0.4 square mile) woodland located about 1 mile northwest of the site, is a state-listed natural area. Elkhart Hill is categorized as a *mesic* upland forest and contains an uncommon assemblage of upland plants because of unusual geology and groundwater supply in the area that keeps the woodland more moist than most upland forests (J. Wilker, Illinois DNR, personal communication to M. Bevelhimer, ORNL, Feb. 18, 1997).

Typical wildlife found in the immediate vicinity of the proposed site includes both game and non-game species (B. Cunningham, Illinois DNR, personal communication to M. Bevelhimer, ORNL, Feb. 5, 1997). Game species include white-tailed deer, ringnecked pheasant, quail, rabbits, and squirrels. Non-game species include opossum, raccoons, skunks, rodents, owls, hawks, and small birds (e.g., sparrows, starlings, and robins). Except for birds and small mammals (e.g., rodents and shrews), wildlife population densities on the site are relatively low. Populations of larger animals are probably higher in areas surrounding the mine, particularly near wooded areas and along streams. The wildlife habitat surrounding the mine property undergoes appreciable seasonal perturbations when crops are harvested and fields are cultivated. Ideal wildlife habitat for most species is not abundant in the area and populations would likely be much greater in less disturbed grasslands and forests. No threatened or endangered species are known to exist in the project area (Section 3.6.3). In summary, the site does not support any particularly unusual or unique vegetation or wildlife, although populations of game species do exist in the surrounding area.

3.6.2 Aquatic Ecosystems

Ponds on the Turris Mine's property were constructed for use in the treatment of wastes from the coal mining operations and for collection of runoff, which is recycled for use in on-site operations. The largest pond on the site (Figure 3.3.3; slurry pond) receives slurry from the coal processing operation and provides little, if any, habitat for plant or animal species. The second largest pond (freshwater pond), located on the northwest corner of the property, stores runoff that is used in coal processing operations; this pond may be used occasionally by waterfowl and other wildlife. During the rare events in which water is discharged from the ponds (Section 3.3.2), the discharge is received by an unnamed tributary of Lake Fork Creek, which is unlikely to provide any aquatic habitat of significance. Lake Fork Creek is a typical Midwestern warm water stream and contains species that are representative of such systems (i.e., primarily various sunfish and minnow species).

3.6.3 Threatened and Endangered Species

The U.S. Fish and Wildlife Service (FWS) lists two mammals, three birds, one fish, six clams, one snail, two insects, and nine plants as threatened or endangered species in Illinois (FWS 1997). Neither any of these species nor any candidate species are known to exist in areas potentially affected by the proposed power plant. The FWS indicated (Appendix A) that the endangered Indiana bat could potentially occur throughout the State of Illinois. Habitat requirements for the Indiana bat consist of caves, abandoned mines, or forest areas providing at least 15% cover. The areas potentially affected by the power plant project, including the plant site, retention pond, and well field, do not provide habitat that would support the Indiana bat. One plant species (the ear-leafed foxglove, *Tomanthera auriculata*) is the only state-listed threatened or endangered species in Logan County but is not found in the vicinity of the site (J. Wilker, Illinois DNR, personal communication to M. Bevelhimer, ORNL, Feb. 18, 1997).

As required under Section 7 of the Endangered Species Act of 1973 (Public Law 93–205, as amended), DOE consulted with the FWS to ensure that the proposed plant would not adversely affect Federally listed endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. Appendix A documents the results of consultation with the FWS.

3.6.4 Biodiversity

The biodiversity of an ecosystem or community is defined by the variety or richness of the natural biotic environment (e.g., the number of habitat types or species). The entire Turris Mine property has been disturbed by human activities (i.e., agricultural and mining operations), and the numbers of plant and animal species present at the site proposed for the plant are quite low relative to natural grasslands and forests typical of this region. The biodiversity within a 5 mile radius of the site is somewhat higher but, as a result of extensive agricultural practices, is still far below that found in less disturbed areas.

3.7 CULTURAL RESOURCES

A Phase I cultural resources survey, which comprises an archaeological reconnaissance survey to locate, identify, and record all archaeological resources within the area (IHPA 1998), identified no properties eligible for inclusion on the *National Register of Historic Places*. Nine *National Register* sites are listed in Logan County (NPS 1997), with the closest one to the plant site (the Mount Pulaski Courthouse) being more than 8 miles away. The Phase I cultural resources survey also showed that only a portion of the site is undisturbed and that the site does not contain any archaeological resources. The survey concluded that no further investigations appeared to be warranted.

As required under Section 106 of the National Historic Preservation Act (Public Law 89–665, as amended), DOE consulted with the Illinois Historic Preservation Agency to ensure compliance with the act. Appendix B documents the results of the consultation.

3.8 FLOODPLAINS AND WETLANDS

The proposed plant site, with an approximate elevation of 585 ft (Beittel and Darguzas 1996), is located in an upland area that has been determined to be outside of the 500 year *floodplain*

(FEMA 1988a) and therefore outside the 100 year floodplain. A flood of record resulted from a series of intense storms centered over the State of Illinois between May 6 and 24, 1943 (Zuehls and Wendland 1991). Many gauging stations in the Kaskaskia, Embarras, Sangamon, Vermilion[1], and lower Illinois River basins recorded streamflows in May 1943 that are the maxima of record. Recurrence interval estimates for the 1943 central Illinois flood, including Lake Fork Creek, range from 50 to more than 100 years.

The May 1943 flood on Lake Fork Creek near Cornland reached a stage of 23.4 ft (Wicker, LaTour, and Mauer 1996), corresponding to an elevation of 578.5 ft. The instantaneous peak stage and water surface elevations measured in the 1948 to 1995 period of record were 23.1 ft and 578.2 ft, respectively, both of which occurred on April 12, 1979.

The extreme northwestern corner of the permit area occupied by the Turris Mine lies within a special flood hazard area that would be inundated by a 100 year flood. No base flood elevations have been determined for that area.

Aerial photographs of the area around the proposed plant site and information from a groundwater survey conducted through a grant with the Illinois Department of Commerce and Community Affairs (Farnsworth Group 2001) indicate that no *wetland* areas exist within 1 mile of the site, except for the ponds on the Turris Mine property (which have little or no ecological significance). Consultation with the U.S. Army Corps of Engineers confirmed that no jurisdictional wetlands exist at the site.

3.9 SOCIOECONOMICS

The potential impact area for the proposed power plant consists of Elkhart, Illinois, (the closest town to the site) and Logan County, in which Elkhart and the proposed site are located. This section focuses on those socioeconomic resources that could be affected by the proposed plant – population, employment and income, housing, and selected public services.

3.9.1 Population

Table 3.9.1 presents the 2000 census counts for areas of potential impact and data illustrating changes in the number of residents since 1980. The town of Elkhart had a population of 443 in 2000, a 6.7% decrease since 1990. Logan County, with a population of 31,183 in 2000, has grown by 1.3% since 1990 but has slightly fewer residents than in 1980. The city of Lincoln, which is about 10 miles from the plant site, accounts for about half the county's residents, but its population has declined slightly since 1990.

[1]Tributary to the Wabash River – a tributary to the Illinois River has the same name.

Table 3.9.1. Population change over time in the impact area of the proposed power plant

Location	1980 population	1990 population	Percent change 1980–1990	2000 population	Percent change 1990–2000
Logan County	31,802	30,798	-3.2	31,183	1.3
Elkhart	—	475	—	443	-6.7
Lincoln	16,327	15,418	-5.6	15,369	-0.3
Illinois	11,427,409	11,430,602	0.03	12,419,293	8.7

Sources: U.S. Census Bureau 1980, 1997a, 1997b, and 2000.

3.9.2 Employment and Income

In the year 2000, the total civilian labor force residing in Logan County was reported as 14,167, of which 13,656 were identified as being employed and 511 unemployed. The unemployment rate of 3.6% in Logan County was less than the 4.4% rate for the State of Illinois (Illinois Department of Employment Security 2001). The latest available data for the village of Elkhart are from 1990, at which time a civilian labor force of 251 and an unemployment rate of only 2.4% were reported (U.S. Census Bureau 1994).

Table 3.9.2 lists the breakdown of employment by economic sector for those workers employed in Logan County in 1997, the latest year for which complete data are available. As shown, the greatest numbers of jobs were in services (37.3%), retail trade (18.0%), manufacturing (10.8%), agriculture (10.4%), and government (9.1%).

In 1998, average per capita income in Logan County was $19,358, which was 65% of the state average of $29,853 and 71% of the national average of $27,203 (U.S. Bureau of Economic Analysis 1998). In 1989, the latest year for which data are available, Elkhart had an average per capita income of $12,096 (U.S. Census Bureau 1990).

Table 3.9.2. Employment by economic sector for Logan County, Illinois

Economic sector	Number of workers	Percent of total workers
Agriculture	1,439	10.4
Mining	225	1.6
Construction	183	1.3
Manufacturing	1,490	10.8
Transportation and public utilities	523	3.8
Wholesale trade	507	3.7
Retail trade	2,481	18.0
Finance, insurance and real estate	549	4.0
Services	5,139	37.3
Government	1,248	9.1
Total	13,784	100.0

Source: T. Hamrick, Illinois Department of Commerce and Community Affairs, personal communication to M. Schweitzer, ORNL, July 16, 1997.

3.9.3 Housing

Table 3.9.3 presents housing information in the area of potential impact of the proposed plant. The number of occupied housing units in Logan County increased from 11,033 in 1990 to 11,113 in 2000, while vacant units increased from 605 to 759. The rental vacancy rate, which increased from 4.0% to 6.0%, was considerably higher than the homeowner vacancy rate (1.6% in 1990 and 1.9% in 2000). In Elkhart, only 11 vacant units existed. The homeowner vacancy rate in Elkhart decreased from 3.4% in 1990 to 0.6% in 2000, while the rental vacancies increased from 0.0% to 6.3%.

Table 3.9.3. Housing data for Logan County and Elkhart, Illinois

	Logan County		Elkhart	
	1990	2000	1990	2000
Total number of housing units	11,638	11,872	192	194
Number of occupied housing units	11,033	11,113	179	183
Units occupied by owner (%)	67.8	71.3	78.8	83.6
Units occupied by renter (%)	32.2	28.7	21.2	16.4
Number of vacant housing units	605	759	13	11
Homeowner vacancy rate (%)	1.6	1.9	3.4	0.6
Rental vacancy rate (%)	4.0	6.0	0.0	6.3
Median value owner-occupied unit ($)	48,700	75,700	48,500	68,300
Median rent ($)	223	455	228	478

Source: U.S. Census Bureau 1990, 2000.

3.9.4 Public Services

Three municipalities in Logan County have centralized water and sewer systems (Atlanta, Lincoln, and Mount Pulaski) and ten towns have centralized water systems (Beason, Broadwell, Chestnut, Elkhart, Emden, Hartsburg, Latham, Middletown, New Holland, and San Jose). In areas of the county that are not served by centralized systems, water is obtained from individual wells (typically between 30 and 100 ft deep) and waste water disposal is achieved using individual septic systems. The county health department periodically inspects existing septic systems and neighboring wells and may require the use of aeration tanks if percolation is not adequate (R. Menzies, Director, Logan County Regional Planning Commission, personal communication to M. Schweitzer, ORNL, April 19, 2001).

Information about Logan County's seven public school districts is provided in Table 3.9.4. Students from the Atlanta area, although residents of Logan County, attend schools that are in the Olympia School District in neighboring McLean County. In addition to the public schools, five parochial schools are operated in the county, with three serving kindergarten through 8th grade and two serving kindergarten through 12th grade. Also, Lincoln College and Lincoln Christian College are located in the county, as is a branch of Heartland Community College (S. Blane, Regional Office of Education, personal communication to M. Schweitzer, ORNL, July 17, 1997).

Table 3.9.4. Public school districts in Logan County, Illinois

School district	Grades served	Number of schools
Chester–East Lincoln District 61	K–8	1
Hartsburg–Emden District 21	K–12	2
Lincoln Community High School District 404	9–12	1
Lincoln Elementary School District 27	K–8	6
Mount Pulaski District 23	K–12	3
New Holland Middletown District 88	K–8	2
West Lincoln–Broadwell Elementary District 92	K–8	1

Source: S. Blane, Regional Office of Education, personal communication to M. Schweitzer, ORNL, July 17, 1997.

3.10 HUMAN HEALTH AND SAFETY

The existing health and safety environment in the vicinity of the proposed plant is substantially defined by operations at the adjacent Turris Mine. Turris Coal Company, which operates the Turris Mine, maintains an occupational injury index that is below the national average. The Turris Mine has been recognized by the Illinois Coal Association and the Illinois Department of Natural Resources for mining operations with the lowest reportable accident frequency rate per employee-hours worked.

3.11 NOISE

The noise environment in the immediate vicinity of the proposed plant is dominated by operation of the Turris Mine and transportation of coal from the facility. A few residences are located about 4,000 ft from the coal mine boundaries, and these homes experience the relatively quiet noise environment of a rural setting. Vehicular traffic provides the majority of noise for these residences. Noise levels have not been measured, but they are anticipated to be in the range of 35-45 dB(A) in the Day-Night Level metric (FICON 1992).

3.12 TRAFFIC

The proposed plant site, which is located about 3 miles southeast of Interstate 55, would be accessed via Township Road 600N, a two lane blacktop road that runs east-west. Township Road 600N is a heavy duty road that was constructed by the Turris Coal Company in 1982 to handle mine-related traffic, mostly heavy trucks. The road is 24 ft wide and has shoulders (R. Fox, Logan County Highway Engineer, personal communication to M. Schweitzer, ORNL, July 17, 1997). In 1998, the Turris Coal Company repaved Township Road 600N between the mine entrance and Old Route 66, which is adjacent to I-55.

Very little traffic that is not related to mine activities uses Township Road 600N. At present, a maximum of 800 daily trips on Township Road 600N are made by coal-carrying trucks; this truck traffic is spread over a 24 hour period, with approximately two-thirds of the traffic occurring during daytime hours. In addition to the truck traffic, approximately 30 mine employees use the road daily. Worker traffic is spread over three shifts, with roughly half of the employees working the day shift. Routine deliveries to the mine necessitate an additional traffic load of approximately 25 vehicles per day. A traffic light is installed on Township Road 600N at the entrance to the mine property to provide a red blinker for vehicles leaving the mine and a yellow blinker for road traffic (W. Schultz, Manager of Surface Engineering, Turris Coal Company, personal communication to M. Schweitzer, ORNL, April 12, 2001). When a much larger workforce (approximately 240 employees) used Township Road 600N to access the site daily, no congestion was reported at the mine entrance, even during shift changes (S. Fowler, former Manager of Engineering, Turris Coal Company, personal communication to M. Schweitzer, ORNL, July 17, 1997).

On infrequent occasions (roughly twice a month), empty coal trucks arriving at the Turris property to be loaded cannot gain immediate access to the site, due to the presence of other trucks, and must wait on the shoulder of Township Road 600N – usually on the south side. Typically, no more than six trucks are involved, and the waiting period lasts roughly 30 minutes to one hour. This situation does not interfere with the flow of traffic on Township Road 600N (W. Schultz, Manager of Surface Engineering, Turris Coal Company, personal communication to M. Schweitzer, ORNL, April 12, 2001).

3.13 LAND USE

The proposed plant would be located on the Turris Mine property, which occupies a land area of approximately 750 acres and is located about 2 miles southeast of the town of Elkhart in Elkhart Township, Logan County, Illinois (Beittel and Darguzas 1996). The Turris Coal Company has a permit that allows coal mining, coal preparation, and disposal of coal combustion wastes on the property, and 480 acres have been developed and committed to a variety of land uses, including buildings, roads, parking lots, coal storage piles and silos, a truck loading terminal, coal conveyors, and waste disposal ponds. The remaining 270 acres are either leased for crop production or unused, partially covered with weedy vegetation in disturbed areas, and interspersed with some small scattered brush and shrubs.

The agricultural area surrounding the Turris Mine is used primarily for corn and soybean production. A few single family dwellings and light industries related to agricultural production exist in the area. Small woodlands are situated in lowland areas along drainageways, while upland areas are primarily used to grow crops and graze livestock.

Surface operations of underground coal mines are exempt from prime farmland designation. The Farmland Protection Policy Act of 1981 (7 USC 4201 et seq.; 7 CFR 658) states that the designation *prime farmland* does not include land already (i.e., before 1981) in or committed to urban development. Because construction of the Turris Mine began on October 1, 1980 (HEI 1998), the decision to allocate agricultural land for the mining of coal was made prior to the legislation. Approximately 270 acres of the property owned by Turris Coal Company are leased to local farmers for agricultural use.

Corn Belt Energy Corporation has worked with Logan County, the City of Lincoln, and the Elkhart Village Board, to secure approval for an enterprise zone for the Corn Belt Project, which would include the Turris Mine. Both the Mayor of Elkhart and the Logan County Planning and Zoning Commission have cooperated on site plan approval for the enterprise zone.

Elkhart Hill is a prominent local landmark located approximately 1 mile northwest of the proposed project site. Elkhart Hill is densely wooded, provides habitat for deer, is a residential area, and is the location of Elkhart cemetery. Railsplitter State Park is located about 8 miles the north of the plant site (USGS 1980a).

3.14 ENVIRONMENTAL JUSTICE

Executive Order 12898, issued in February 1994, requires that Federal agencies consider environmental justice in their programs, policies, and actions. Environmental justice is defined as the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies (EPA 1995a).

A potential for environmental justice impacts would exist if the percentage of minorities or low-income households in close proximity to a project that produces adverse environmental effects substantially exceeds county or state averages. Table 3.14.1 presents ethnicity data from the 2000 U.S. Census for residents of Elkhart, Logan County, and the State of Illinois. The table clearly shows that the percentage of minorities in Elkhart – the town closest to the proposed plant site – is much lower than the county or state averages. In addition, the percentage of Elkhart's residents living below the poverty level (6.7%) is appreciably less than that for the residents of Logan County (11.6%) and Illinois (11.3%) (U.S. Census Bureau 1994 and 1999b).

Table 3.14.1. Comparative ethnicity, by percentage of population, for environmental justice screening purposes

Ethnicity	Elkhart	Logan County	Illinois
Black or African American	0.5	6.6	15.1
Hispanic	0	1.6	12.3
Asian	0.2	0.5	3.4
American Indian and Alaska Native	0	0.2	0.2
Some Other Race	0	0.4	5.8
Two or More Races	0	0.6	1.9

Source: U.S. Census Bureau 2000.