three previously recorded cultural resources are considered a historic property, pursuant to Section 106 of the NHPA of 1966, as amended.

Archaeological Site 20LE202 is a prehistoric archaeological site of unknown function and unknown cultural period. Archaeological Site 20Le203 is also a prehistoric archaeological site of unknown function, with occupation and/or use dating from the Paleo-Indian, Archaic, and Late Woodland Periods. Both archaeological resources are located outside of the physical APE, but within the indirect (visual) APE. Neither of the two archaeological resources has been evaluated for NRHP eligibility (Lillis-Warwick et al. 2009).

La Plaisance Bay Pike (Site ID#P23945), is an early-nineteenth century road, begun in 1832 and completed in 1835, and extending from La Plaisance Bay along the Lake Erie shoreline near Monroe, in Monroe County, west to the Chicago Road at Cambridge Junction, Lenawee County. The alignment of La Plaisance Bay Pike appears to follow what is now State Route 50; a portion of this alignment extends roughly east to west across the indirect (visual) APE for the South Britton site. La Plaisance Bay Pike was used by early settlers moving into western Michigan. Its NRHP eligibility status is not known; it was listed on the Michigan SRHP in 1965, and the State of Michigan erected a historical marker for La Plaisance Bay Pike at the Tecumseh Community Center on State Route 50 near the Monroe County line in 1966 (MSHDA 2010f).

One historic property is in the general vicinity of the APE for the South Britton site, the Lenawee County Courthouse (Site ID#P23895), a late-nineteenth century courthouse building, which is 12 mi southwest of the APE at the South Britton site, in the town of Adrian, Lenawee County (Detroit Edison 2011a). The Lenawee County Courthouse was constructed in 1885 and represents an example of county courthouses and an important work by its architect, E.O. Fallis of Toledo, Ohio, who designed eight massive courthouses in the Midwest during the 1880s. The Lenawee County Courthouse was listed on the Michigan SRHP in 1974, and the State of Michigan erected a historical marker in front of it in 1981. It was subsequently listed in the NRHP in 1991 (MSHDA 2010g) and is considered a historic property, pursuant to Section 106 of the NHPA. This NRHP-listed property is outside of the indirect (visual) APE for the South Britton site.

No archaeological and/or architectural surveys have been conducted at the alternative site to identify additional cultural resources in the APE and/or to determine or confirm the significance (NRHP eligibility) of the previously identified cultural resources in the APE at the South Britton site. As currently designed, the proposed layout for a new nuclear facility at the South Britton site would not affect any of the previously identified cultural resources within the APE. However, potential water intake and discharge pipelines from Lake Erie have the potential to affect one of the previously identified cultural resources (i.e., La Plaisance Pike along State Route 50) and may result in disturbance or destruction of intact archaeological deposits associated with La Plaisance Pike during preconstruction activities. This portion of State

Route 50 would have to be investigated to determine whether it aligns with the early to mid-nineteenth century La Plaisance Pike, determine the NRHP eligibility of any archaeological or aboveground resources associated with La Plaisance Pike, and determine the effect of potential pipelines on this resource pursuant to 36 CFR Part 800.

In addition, the proposed layout for a new nuclear power facility at the South Britton site includes structures (buildings and cooling towers) and operational activities (condensation plumes) that would be new landscape elements within the APE at the South Britton site, including within viewsheds from the apparent alignment of La Plaisance Pike. The indirect (visual) effect of a new nuclear power facility at the South Britton site on historic and cultural resources in the indirect (visual) APE would have to be evaluated pursuant to 36 CFR Part 800.

Consultation with the Michigan SHPO would be necessary to determine the need for cultural resources investigations (including archaeological and architectural surveys) to identify cultural resources within the APE prior to any onsite ground-disturbing activities, to determine whether any identified cultural resources are eligible for inclusion in the NRHP, to evaluate the potential impacts on cultural resources and/or historic properties, and to determine the effect of a new nuclear power facility at the South Britton site pursuant to Section 106 of the NHPA. As part of this consultation, Detroit Edison would be expected to put measures in place to protect discoveries in the event that cultural resources are found during building or operation of a new plant. If an unanticipated discovery were made during building activities, site personnel would have to notify the Michigan SHPO and consult with them in conducting an assessment of the discovery to determine whether additional work is needed.

The incremental impacts from installation and operation of offsite transmission lines and potential water intake and discharge pipelines to Lake Erie would be minimal if there are no significant alterations (either physical alteration or visual intrusion) of the cultural environment. If these activities result in significant alterations of the cultural environment, then the impacts could be greater. Although building and operating potential water intake and discharge pipelines would be the responsibility of Detroit Edison, building and operation offsite transmission lines would be the responsibility of a transmission company. For impacts greater than small, mitigation may be developed in consultation with the appropriate Federal and State regulatory authorities. Only Federal undertakings would require a Section 106 review.

The APE at the South Britton site does not contain any Indian Reservation land (BIA undated). However, consultation with Federally recognized Indian Tribes in the State of Michigan would be necessary in accordance with Section 106 of the NHPA. In addition, one Federally recognized Indian Tribe located outside the State of Michigan, the Forest County Potawatomi Community of Wisconsin, has indicated an interest in Lenawee County (NPS 2010c). As part of this consultation, the NRC would consult with all 12 Federally recognized Indian Tribes located within the State of Michigan (Michigan Department of Human Services 2001–2009), as identified for the Fermi site, and with the Forest County Potawatomi Community of Wisconsin.

The following cumulative impact analysis for historic and cultural resources considers building and operating a new nuclear power facility at the South Britton site. This analysis also considers other past, present, and reasonably foreseeable future actions that could affect historic and cultural resources, as identified in Table 9-36. The APE for the cumulative impact analysis for historic and cultural resources for the South Britton site consists of the alternative site area and any new transmission line corridors, and a 1-mi buffer area around the site and the corridors.

The South Britton site is predominantly agricultural land, with some small areas of second-growth woodland and two roads (Pocklington Road, east-west, and Downing Highway, north-south). No previous development (e.g., power plants, aboveground transmission lines, pipelines, railroads) has occurred onsite. Agricultural activities such as plowing, disking, and harvesting (whether historic or modern [mid-nineteenth to mid-twentieth century]) and logging or clearing of original forests (prior to the reestablishment of the existing second-growth woodland areas) are likely to have resulted in minimal subsurface disturbance, suggesting that at least some areas at the South Britton site, currently used for agricultural purposes, may have sustained minimal prior ground disturbance.

Additional past actions in the general vicinity of the South Britton site, as identified from Table 9-36, may have also indirectly (visually) affected cultural resources within the visual APE. These past actions would have included construction and operation of the Holcim (US) Inc.-Dundee Portland cement plant, approximately 7 mi east–northeast in Dundee, Michigan, and the Stansley Mineral Resources, STONECO-Meanwell Road Site (Ida Road), and STONECO Inc.-Maybee sand, gravel, topsoil, and/or limestone mines and quarries, located 9 to 15 mi from the South Britton site. However, the locations of these projects would likely be too far to incur cumulative indirect (visual) impacts on historic or cultural resources within the APE at the South Britton site. Because a new nuclear power facility at the South Britton site would be located on undeveloped property, it is likely that the proposed project would result in new significant indirect (visual impacts) on cultural resources that might be identified within the visual APE.

Based on reconnaissance-level information provided by Detroit Edison and identified by the review team and the review team's independent evaluation of this information, the review team concludes that the cumulative impacts on historic and cultural resources from building and operating a new nuclear power facility at the South Britton site would be SMALL. This impact determination is based on available information, which indicates that no known historic properties would be affected (none of the cultural resources identified within the APE at the South Britton site have been evaluated for NRHP eligibility), resulting in an impact determination of SMALL. However, if a new nuclear power facility was to be developed at the South Britton site, then cultural resources investigations within the APE and for any proposed transmission lines and water pipelines might reveal important historic or cultural resources that could be directly or indirectly affected, resulting in greater cumulative impacts.

9.3.6.8 Air Quality

Criteria Pollutants

For a plant with the same capacity as the proposed Fermi 3 plant, the emissions from building and operating a nuclear power plant at the South Britton site are assumed to be comparable to those from Fermi 3, as described in Chapters 4 and 5. The alternative site is located in Lenawee County, 1 mi west of Monroe County. Lenawee County is in the South Central Michigan Intrastate AQCR (40 CFR 81.196), while Monroe County is in Metropolitan Toledo Interstate AQCR (40 CFR 81.43). Lenawee County is in unclassifiable/attainment for all criteria pollutants, except in a maintenance area for 8-hr ozone NAAQS, while Monroe County is designated as a nonattainment area for $PM_{2.5}$ NAAQS and as a maintenance area for 8-hr ozone NAAQS (EPA 2010b). In July 2011, MDEQ submitted a request asking the EPA to redesignate southeast Michigan as being in attainment with the $PM_{2.5}$ NAAQS (MDEQ 2011). In July 2012, the EPA issued a proposed rule designating southeastern Michigan as having attained both the 1997 annual $PM_{2.5}$ NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS, based on 2009–2011 ambient air monitoring data (77 FR 39659, dated July 5, 2012), but the final determination has yet to be made.

In Sections 4.7 and 5.7, the review team concludes that air quality impacts of building and operating a plant at Fermi 3, including those associated with transmission lines and cooling towers, would be SMALL, as long as appropriate measures are taken to mitigate dust during building activities. During operation, cooling towers would be the primary source of $PM_{2.5}$, which accounts for most of total $PM_{2.5}$ emissions of 9.51 tons/yr at Fermi 3. However, these emissions would be relatively small and thus are not anticipated to elevate $PM_{2.5}$ concentrations in a designated nonattainment area. With dust mitigation, the impacts of building and operating a plant at the South Britton site would also be SMALL. Any new industrial projects would either be small or subject to permitting by MDEQ. State permits are issued under regulations approved by the EPA and deemed sufficient to attain and maintain the NAAQS and comply with other Federal requirements under the CAA. Thus, the cumulative air quality impacts of building and operating a plant at the South Britton site would be SMALL.

Greenhouse Gases

The extent and nature of climate change is not sensitive to where GHGs are emitted because the long atmospheric lifetimes of GHGs result in extensive transport and mixing of these gases. Because the emissions of a plant at the South Britton site would be comparable to those of a similar plant at the Fermi site, the discussions of Sections 4.7 and 5.7 for Fermi 3 also apply to building and operating a similar plant at the South Britton site. Thus, the impacts of the plant's GHG emissions on climate change would be SMALL, but the cumulative impacts considering global emissions would be MODERATE. Building and operating a new nuclear unit at the South Britton site would not be a significant contributor to these impacts.

9.3.6.9 Nonradiological Health

The following impact analysis considers nonradiological health impacts from building activities and operations on the public and workers from a new nuclear facility at the South Britton alternative site. The analysis also considers other past, present, and reasonably foreseeable future actions that impact nonradiological health, including other Federal and non-Federal projects and those projects listed in Table 9-36 within the geographic area of interest. The building-related activities that have the potential to affect the health of members of the public and workers include exposure to dust and vehicle exhaust, occupational injuries, noise, and the transport of construction materials and personnel to and from the site. The operations-related activities that have the potential to affect the health of members of the public and workers include exposure to etiological agents, noise, EMFs, and impacts from the transport of workers to and from the site.

Most of the nonradiological impacts of building and operation (e.g., noise, etiological agents, occupational injuries) would be localized and would not have significant impact at offsite locations. However, activities such as vehicle emissions from transport of personnel to and from the site would encompass a larger area. Therefore, for nonradiological health impacts, the geographic area of interest for cumulative impacts analysis includes projects within a 50-mi radius of the South Britton site based on the influence of vehicle and other air emissions sources because neighboring Monroe County is in nonattainment (Section 9.3.6.8). For cumulative impacts associated with transmission lines, the geographical area of interest is the transmission line corridor. These geographical areas are expected to encompass areas where public and worker health could be influenced by the proposed project and associated transmission lines, in combination with any past, present, or reasonably foreseeable future actions.

Building Impacts

Nonradiological health impacts on the construction workers from building a new nuclear facility at the South Britton site would be similar to those from building Fermi 3 at the Fermi site, as evaluated in Section 4.8. They include occupational injuries, noise, odor, vehicle exhaust, and dust. Applicable Federal. State, and local regulations on air quality and noise would be complied with during the plant construction phase. The South Britton site does not have any characteristics that would be expected to lead to fewer or more construction accidents than would be expected for the Fermi site. The site is in a predominantly rural area, and construction impacts on the surrounding populations classified as medium- and low-population areas would likely be minimal. Access routes to the site for construction workers would include State Route 50 and minor local roads. Mitigation may be necessary to ease congestion, thereby improving traffic flow and reducing nonradiological health impacts (i.e., traffic accidents, injuries, and fatalities) during the building period.

Operational Impacts

Nonradiological health impacts on occupational health of workers and members of the public from operation of a new nuclear unit at the South Britton site would be similar to those evaluated in Section 5.8 for the Fermi site. Occupational health impacts on workers (e.g., falls, electric shock, or exposure to other hazards) at the South Britton site would likely be the same as those evaluated for workers at the new unit at the Fermi site. Discharges to the Lake Erie would be controlled by NPDES permits issued by MDEQ (Section 9.3.6.2). The growth of etiological agents would not be significantly encouraged at the South Britton site due to the temperature attenuation in the length of the pipe required for a discharge system. Noise and EMF exposure would be monitored and controlled in accordance with applicable OSHA regulations. Effects of EMFs on human health would be controlled and minimized by conformance with NESC criteria. Nonradiological impacts of traffic during operations would be smaller than the impacts during building. Mitigation measures undertaken during construction to improve traffic flow would also minimize impacts during operation of a new unit.

Cumulative Impacts

Past and present actions within the geographic area of interest that could contribute to cumulative nonradiological health impacts include the energy and mining projects in Table 9-36, as well as vehicle emissions and existing urbanization. Reasonably foreseeable future projects in the geographical area of interest that could contribute to cumulative nonradiological health impacts include construction of the proposed Cleveland-Toledo-Detroit Passenger Rail Line, future transmission line development, and future urbanization.

The review team is also aware of the potential climate changes that could affect human health. A recent compilation of the state of the knowledge in this area (USGCRP 2009) has been considered in the preparation of this EIS. Projected changes in the climate for the region include an increase in average temperatures, increased likelihood of drought in summer, more heavy downpours, and an increase in precipitation, especially in the winter and spring, which may alter the presence of microorganisms and parasites. In view of the water source characteristics, the review team did not identify anything that would alter its conclusion regarding the presence of etiological agents or change in the incidence of waterborne diseases.

Summary of Nonradiological Health Impacts at the South Britton Site

Based on the information provided by Detroit Edison and the review team's independent evaluation, the review team expects that the impacts on nonradiological health from building and operating a new nuclear unit at the South Britton site would be similar to the impacts evaluated for the Fermi site. While there are past, present, and future activities in the geographical area of interest that could affect nonradiological health in ways similar to the construction and operation of a new unit at the South Britton site, those impacts would be

localized and managed through adherence to existing regulatory requirements. Similarly, impacts on public health of a new nuclear unit operating at the South Britton site would be expected to be minimal. The review team concludes, therefore, that the cumulative impacts of building and operating a nuclear unit at South Britton on nonradiological health would be SMALL.

9.3.6.10 Radiological Health

The following impact analysis considers radiological impacts on the public and workers from building activities and operations for one nuclear unit at the South Britton alternative site. The analysis also considers other past, present, and reasonably foreseeable future actions that affect radiological health, including other Federal and non-Federal projects and those projects listed in Table 9-36 within the geographic area of interest. As described in Section 9.3.6, the South Britton site is a greenfield site; there are currently no nuclear facilities. The geographic area of interest is the area within 50-mi radius of the South Britton site. Existing facilities potentially affecting radiological health within this area are Fermi 2 and Davis-Besse. In addition, there are also likely to be medical, industrial, and research facilities within 50 mi of the South Britton site that use radioactive materials.

The radiological impacts of building and operating the proposed ESBWR unit at the South Britton site include doses from direct radiation and liquid and gaseous radioactive effluents. These pathways would result in low doses to people and biota offsite that would be well below regulatory limits. These impacts are expected to be similar to those at the proposed Fermi site.

The radiological impacts of Fermi 2 and Davis-Besse also include doses from direct radiation and liquid and gaseous radioactive effluents. These pathways result in low doses to people and biota offsite that are well below regulatory limits, as demonstrated by the ongoing REMPs conducted around these plants. In addition, the NRC staff concludes that the dose from direct radiation and effluents from medical, industrial, and research facilities that use radioactive materials would be an insignificant contribution to the cumulative impact around the South Britton site. This conclusion is based on data from radiological environmental monitoring programs conducted around currently operating nuclear power plants. Based on the information provided by Detroit Edison and the NRC staff's independent analysis, the NRC staff concludes that the cumulative radiological impacts from building and operating the proposed ESBWR and other existing projects and actions in the geographic area of interest around the South Britton site would be SMALL.

9.3.6.11 Postulated Accidents

The following impact analysis considers radiological impacts from postulated accidents from operations for one nuclear unit at the South Britton alternative site. The analysis also considers other past, present, and reasonably foreseeable future actions that affect radiological health

from postulated accidents, including other Federal and non-Federal projects and those projects listed in Table 9-36 within the geographic area of interest. As described in Section 9.3.6, the South Britton site is a greenfield site, and there are currently no nuclear facilities on the site. The geographic area of interest considers all existing and proposed nuclear power plants that have the potential to increase the probability-weighted consequences (i.e., risks) from a severe accident at any location within 50 mi of the South Britton site. Existing facilities potentially affecting radiological accident risk within this geographic area of interest are Fermi 2 and Davis-Besse 1, because the 50-mi radii for Fermi 2 and Davis-Besse overlap part of the 50-mi radius for the South Britton site. No other reactors have been proposed within the geographic area of interest.

As described in Section 5.11.1, the NRC staff concludes that the environmental consequences of DBAs at the proposed Fermi site would be minimal for an ESBWR. DBAs are addressed specifically to demonstrate that a reactor design is sufficiently robust to meet NRC safety criteria. The ESBWR design is independent of site conditions, and the meteorology of the alternative and the proposed Fermi sites are similar; therefore, the NRC staff concludes that the environmental consequences of DBAs at the site would be SMALL.

Because the meteorology, population distribution, and land use for the South Britton site are expected to be similar to those for the proposed Fermi site, risks from a severe accident for an ESBWR located at the South Britton site would be expected to be similar to those analyzed for the proposed Fermi site. These risks for the proposed Fermi site are presented in Tables 5-34 and 5-35 of this EIS and are well below the mean and median values for current-generation reactors. In addition, as discussed in Section 5.11.2, estimates of average individual early fatality and latent cancer fatality risks are well below the Commission's safety goals (51 FR 30028). For the existing plants within the geographic area of interest (i.e., Fermi 2 and Davis-Besse), the Commission has determined the probability-weighted consequences of severe accidents are small (10 CFR Part 51, Appendix B, Table B-1). Because of the NRC's safety review criteria, it is expected that risks for any new reactors at any other locations within the geographic area of interest for the South Britton site would be well below risks for current-generation reactors and would meet the Commission's safety goals. The severe accident risk due to any particular nuclear power plant gets smaller as the distance from that plant increases. However, the combined risk at any location within 50 mi of the South Britton site would be bounded by the sum of risks for all these operating nuclear power plants and would still be low. On this basis, the NRC staff concludes that the cumulative risks of severe accidents at any location within 50 mi of the South Britton site would be SMALL.

9.3.7 Comparison of the Impacts of the Proposed Action and Alternative Sites

This section summarizes the review team's impact characterizations for cumulative impacts related to locating one new nuclear unit (an ESBWR) at the proposed site or at each alternative site. The four Michigan sites selected for detailed review as part of the alternative sites

environmental analysis included two existing Detroit Edison power plant facilities – the Belle River-St. Clair Energy Facility and the Greenwood Energy Center, both located in St. Clair County – and two greenfield sites in Monroe and Lenawee Counties – the Petersburg and South Britton sites. Comparisons were made between the proposed site and each of the alternatives to determine whether one of the alternative sites is environmentally preferable to the proposed site. The NRC's determination as to whether an alternative site is environmentally preferable to the proposed site for Fermi 3 is independent of the USACE's determination of the LEDPA pursuant to the CWA Section 404(b)(1) Guidelines at 40 CFR Part 230. USACE will conclude its Section 404(b)(1) evaluation of alternatives in its permit decision document.

The need to compare the proposed site with alternative sites arises from the requirement in Section 102(2)(C)(iii) (42 USC 4332) of NEPA that EISs include an analysis of alternatives to the proposed action. The NRC criteria to be employed in assessing whether a proposed site is to be rejected in favor of an alternative site are based on whether the alternative site is "obviously superior" to the site proposed by the applicant (Public Service Co. of New Hampshire 1977). An alternative site is "obviously superior" to the proposed site if it is "clearly and substantially" superior to the proposed site (Rochester Gas and Electric Corp. 1978). The standard of obviously superior "is designed to guarantee that a proposed site will not be rejected in favor of an alternate unless, on the basis of appropriate study, the Commission can be confident that such action is call for" (New England Coalition on Nuclear Pollution 1978).

The "obviously superior" test is appropriate for two reasons. First, the analysis performed by the NRC staff in evaluating alternative sites is necessarily imprecise. Key factors considered in the alternative site analysis, such as population distribution and density, hydrology, air quality, aquatic and terrestrial ecological resources, aesthetics, land use, and socioeconomics, are difficult to quantify in common metrics. Given this difficulty, any evaluation of a particular site must have a wide range of uncertainty. Second, Detroit Edison's proposed site has been analyzed in detail, with the expectation that most adverse environmental impacts associated with the site have been identified. The alternative sites have not undergone a comparable level of detailed study. For these reasons, a proposed site may not be rejected in favor of an alternative site when the alternative site is marginally better than the proposed site, but only when it is obviously superior (Rochester Gas and Electric Corp. 1978). NEPA does not require that a nuclear plant be constructed on the single best site for environmental purposes. Rather, "all that NEPA requires is that alternative sites be considered and that the effects on the environment of building the plant at the alternative sites be carefully studied and factored into the ultimate decision" (New England Coalition on Nuclear Pollution 1978).

The NRC staff's review of alternative sites consists of a two-part sequential test (NRC 2000). The first part of the test determines whether any of the alternative sites are environmentally preferable to the applicant's proposed site. The NRC staff considers whether the applicant has (1) reasonably identified candidate sites, (2) evaluated the likely environmental impacts of

building and operation at these sites, and (3) used a logical means of comparing sites that led to the applicant's selection of the proposed site. Based on NRC's own independent review, the NRC staff then determines whether any of the alternative sites are environmentally preferable to the applicant's proposed site. If the NRC staff determines that one or more alternative sites are environmentally preferable, then it would compare the estimated costs (i.e., environmental, economic, and time) of constructing the proposed plant at the proposed site and at the environmentally preferable site or sites (NRC 2000). The second part of the test determines whether an environmentally preferable alternative site is obviously superior to the proposed site. The NRC staff must determine that (1) one or more important aspects, either singly or in combination, of an environmentally preferable alternative site are obviously superior to the corresponding aspects of the applicant's proposed site and (2) the alternative site does not have offsetting deficiencies in other important areas. An NRC staff conclusion that an alternative site is obviously superior to the applicant's proposed site would normally lead to a recommendation that the application for the license be denied.

Section 9.3.7.1 discusses the process the NRC staff used to compare the alternative sites to the proposed Fermi 3 site. Sections 9.3.7.2 and 9.3.7.3 discuss the environmental impacts of the proposed site in relation to the alternative sites as they relate to "environmentally preferable" and "obviously superior" evaluations, respectively.

9.3.7.1 Comparison of the Proposed Site and Alternative Site Cumulative Impacts

The review team's characterizations of the cumulative environmental impacts of building and operating a new nuclear generating unit at the proposed site (impact levels from Chapter 7) and four alternative sites (from Sections 9.3.3 through 9.3.6) are listed in Table 9-44.

The review team performed reconnaissance-level reviews of each of the four alternative sites and reviewed information provided in Detroit Edison's ER and RAI responses, information from other Federal and State agencies, and information gathered during visits to each alternative site. The review team found that Detroit Edison implemented a reasonable process to select alternative sites and used a logical process to compare the impacts of the proposed site to those at the alternative sites. The following discussion summarizes the staff's independent assessment of the proposed and alternative sites.

The review team's characterizations of the expected cumulative environmental impacts of building and operating a new unit at the Fermi site and alternative sites are summarized by impact category level in Table 9-44. Full explanations for the particular characterizations are provided in Chapter 7 for the proposed Fermi 3 site and in Sections 9.3.3 through 9.3.6 for the four alternative sites. The staff's impact category levels are based on professional judgment, experience, and consideration of controls likely to be imposed under required Federal, State, or local permits that would not be acquired until an application for a COL is under way. These

Table 9-44. Comparison of Cumulative Impacts at the Proposed and Alternative Sites

Resource Category	Fermi	Belle River-St. Clair	Greenwood	Petersburg	South Britton
Land Use	SMALL	SMALL	SMALL	SMALL	SMALL
Water Resources					
Surface Water Use	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Groundwater Use	SMALL	SMALL	SMALL	SMALL	SMALL
Surface Water Quality	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Groundwater Quality	SMALL	SMALL	SMALL	SMALL	SMALL
Ecology					
Terrestrial and Wetland Resources	SMALL to MODERATE (potential for MODERATE limited to eastern fox snake)	MODERATE	MODERATE	MODERATE	MODERATE
Aquatic Resources	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
Socioeconomics					
Physical Impacts	SMALL	SMALL	SMALL	SMALL	SMALL
Demography	SMALL (beneficial)	SMALL	SMALL	SMALL	SMALL
Taxes and Economy	SMALL (region) to LARGE (Monroe County) (beneficial)	SMALL (region) to LARGE (St. Clair County) (beneficial)	SMALL (region) to LARGE (St. Clair County) (beneficial)	SMALL (region) to LARGE (Monroe County) (beneficial)	SMALL (region) to LARGE (Lenawee County) (beneficial)
Traffic	SMALL (region); MODERATE (Monroe County)	SMALL (region) to MODERATE (St. Clair County)	SMALL (region) to MODERATE (St. Clair County)	SMALL (region) to LARGE (Monroe County)	SMALL (region) to LARGE (Lenawee County)
Recreation	SMALL	SMALL	SMALL	SMALL (region) to MODERATE (Monroe County)	SMALL (region) to MODERATE (Monroe and Lenawee Counties)
Housing	SMALL	SMALL	SMALL	SMALL	SMALL

Table 9-44. (contd)

Resource Category	Fermi	Belle River-St. Clair	Greenwood	Petersburg	South Britton
Public Services	SMALL	SMALL	SMALL	SMALL	SMALL
Education	SMALL	SMALL	SMALL	SMALL	SMALL
Environmental Justice	SMALL	SMALL	SMALL	SMALL	SMALL
Historic and Cultural Resources	MODERATE	SMALL	SMALL	SMALL	SMALL
Air Quality	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE
Nonradiological Health	SMALL	SMALL	SMALL	SMALL	SMALL
Radiological Health	SMALL	SMALL	SMALL	SMALL	SMALL
Nonradioactive Waste	SMALL	SMALL	SMALL	SMALL	SMALL
Postulated Accidents	SMALL	SMALL	SMALL	SMALL	SMALL

considerations and assumptions were similarly applied at each of the alternative sites to provide comparisons of impact levels between the proposed site and each alternative site.

9.3.7.2 Environmentally Preferable Sites

Neither the proposed site nor any of the four alternative sites appear to have inherent characteristics that would completely preempt building a nuclear plant at that location. However, as shown in Table 9-44, there are some differences in the review team's projections of impacts among the sites. Comparisons among the proposed site and the four alternatives to identify an environmentally preferable site, or subsequently an obviously superior site, are typically made across all the impact categories. However, in this particular instance, impacts on land use, groundwater use, groundwater quality, physical socioeconomic parameters, environmental justice, radiological health, nonradiological health, nonradioactive waste, and postulated accidents are projected by the review team to be SMALL for all the sites. Consequently, these categories are not discriminators in the exercise of selecting an environmentally preferable or obviously superior site and were not considered further in site comparisons. While impacts on demography are all identified in Table 9-44 as SMALL, the review team has concluded that the impacts at the Fermi site are beneficial, which is not the case for the four alternative sites.

For some impact categories, different levels of impact are simultaneously possible in different portions of each site's ROI, for example, from SMALL to LARGE for traffic. Such variability of impact levels within the affected regions of each site is especially prominent for the two greenfield sites, Petersburg and South Britton. Finally, for those impact categories in which the projected impact is anything greater than SMALL, sites are differentiated on the basis of the expected contribution of a new reactor to cumulative impacts in those categories.

In evaluating the three sites with existing power plants, the review team assumed that current power production activities would continue unchanged and that the necessary expansions of cooling system and transmission infrastructures to increase their capacities are technically feasible. The review team assumed that the existing infrastructure, with modifications, would be used to the greatest extent possible as a way to minimize environmental impacts; however, the review team also concluded that the building of some new infrastructure may also be necessary.

In the comparison of the Fermi and Belle River-St. Clair sites, the impacts are the same except for terrestrial ecology, demography, and historic and cultural resources. Building and operating the new unit would have a SMALL to MODERATE impact on terrestrial ecology at the Fermi site (with the potential for MODERATE impacts limited to the eastern fox snake), but an overall MODERATE terrestrial ecology impact at the Belle River-St. Clair site. Building the new unit at the Fermi site would have a SMALL beneficial impact on demography, as discussed in Chapters 4 and 5, but a SMALL adverse impact at the Belle River-St. Clair site. Regarding

cultural resources, building a new unit at the Fermi site would require dismantling Fermi 1, and the review team concluded that this was a MODERATE impact. The review team noted that the dismantlement would be performed following the stipulations in an agreement that would be set between the Michigan SHPO and Detroit Edison to mitigate the impacts. At the Belle River-St. Clair site, the review team did not identify any cultural resources known to be eligible for listing on the NRHP that would be affected by a new plant. Overall, the review team concludes that the two sites rank closely and therefore concludes that the Belle River-St. Clair site is not environmentally preferable to the Fermi site.

Comparing the Fermi and Greenwood sites, the review team noted that the impacts at the Greenwood site are essentially the same as those at the Belle River-St. Clair site. The comparison to the Fermi site would follow the same lines, and the review team therefore concludes that the Greenwood site is not environmentally preferable to the Fermi site.

In the comparison of the Fermi and Petersburg sites, the impacts are the same except for terrestrial ecology, traffic, recreation, and historic and cultural resources. Building and operating the new unit would have a SMALL to MODERATE impact on terrestrial ecology at the Fermi site (with the potential for MODERATE impacts limited to the eastern fox snake), but an overall MODERATE terrestrial ecology impact at the Petersburg site. Building the new unit at the Fermi site would have a MODERATE impact on traffic and a SMALL impact on recreation, while it would have a LARGE impact on traffic and a MODERATE impact on recreation at the Petersburg site because of the site's rural nature. Regarding cultural resources, building a new unit at the Fermi site would require dismantling Fermi 1, and the review team concluded that this was a MODERATE impact. The review team noted that the dismantlement would be performed following the stipulations in an agreement that would be set between the Michigan SHPO and Detroit Edison to mitigate the impacts. At the Petersburg site, the review team did not identify any cultural resources known to be eligible for listing on the NRHP that would be affected by a new plant. Overall, the review team concludes that the impacts of building and operating a new nuclear plant at the Petersburg site would be greater than the impacts of the same project at the Fermi site. The review team therefore concludes that the Petersburg site is not environmentally preferable to the Fermi site.

In the comparison of the Fermi and South Britton sites, the impacts are the same except for terrestrial ecology, traffic, recreation, and historic and cultural resources. Building and operating the new unit would have a SMALL to MODERATE impact on terrestrial ecology at the Fermi site (with the potential for MODERATE impacts limited to the eastern fox snake), but an overall MODERATE terrestrial ecology impact at the South Britton site. Building the new unit at the Fermi site would have a MODERATE impact on traffic, while the traffic impacts at the South Britton site would be LARGE. Building the new unit at the Fermi site would have a SMALL impact on recreation, but a MODERATE impact at the South Britton site because of its rural nature. Regarding cultural resources, building a new unit at the Fermi site would require dismantling Fermi 1 and the review team concluded that this was a MODERATE impact. The

review team noted that the dismantlement would be performed following the stipulations in an agreement that would be set between the Michigan SHPO and Detroit Edison to mitigate the impacts. At the South Britton site, the review team did not identify any cultural resources known to be eligible for listing on the NRHP that would be affected by a new plant. Overall, the review team concludes that the impacts of building and operating a new nuclear plant at the South Britton site would be greater than the impacts of the same project at the Fermi site. The review team therefore concludes that the South Britton site is not environmentally preferable to the Fermi site.

The review team concludes that despite the observed differences in projected impacts among the sites, none of the alternative sites are environmentally preferable to the Fermi site.

9.3.7.3 Obviously Superior Sites

Because none of the alternative sites are environmentally preferable to the proposed site, none could be obviously superior, and no additional evaluations in that regard are required.

9.4 System Design Alternatives

The review team considered a variety of heat dissipation systems and circulating water system (CIRC) alternatives for Fermi 3. While other heat-dissipation systems and water systems exist, by far the largest and the most likely to dominate the environmental consequences of operation is the CIRC that cools and condenses the steam for the turbine generator. Other water systems, such as the station water system (SWS), are much smaller than the CIRC. As a result, the review team considered only alternative heat dissipation and water treatment systems for the CIRC. The proposed CIRC is a closed cycle system that uses an NDCT for heat dissipation (Detroit Edison 2011a). The proposed system is discussed in detail in Chapter 3.

9.4.1 Heat Dissipation Systems

About two-thirds of the heat from a commercial nuclear reactor is rejected as heat to the environment. The remaining one-third of the reactor-generated heat is converted into electricity. Normal heat-sink cooling systems transfer the rejected heat load into the atmosphere and/or nearby water bodies, primarily as latent heat exchange (evaporating water) or sensible heat exchange (warmer air or water). Different heat dissipation systems rely on different exchange processes. The following sections describe alternative heat dissipation systems considered by the staff for the proposed Fermi 3 reactor.

A closed cycle cooling system using an NDCT was selected by Detroit Edison to provide heat dissipation for Fermi 3. The NDCT induces the flow of ambient air by convection up through the large (600-ft tall and 400-ft diameter) tower and allows an exchange of heat from the cooling

water to the air by a counter-flowing cascade of warm cooling water downward in the lower portion of the cooling tower. As heat transfers from the water to the air in the tower, the air becomes more buoyant and rises. This buoyant circulation induces more air to enter the tower through its open base. A portion of the water evaporates, resulting in the cooling of the remaining portion of the water. To control scale and biological organisms in the recirculating water, a portion of the water in the closed cooling system is periodically discharged as blowdown and replaced with an equal volume of treated water. Likewise, the volume of water lost to evaporation is also replaced to maintain the design volume of water in the system. Lake Erie would be the source of cooling water, including water to replace blowdown and evaporative losses. After treatment, blowdown water would be discharged to Lake Erie under the auspices of an NPDES permit issued by MDEQ. Other impacts of the selected system include the potential for drift, visual impacts from both the NDCT and a condensate plume (during certain weather conditions), and small amounts of wastes resulting from required water treatment.

In its ER, Detroit Edison considered a range of heat dissipation systems, including a once-through cooling system, several alternative closed cycle cooling system configurations, dry cooling systems, and wet/dry hybrid systems (Detroit Edison 2011a). The review team's evaluation of each of these alternative systems appears in the following paragraphs. Each is evaluated on its own merits and, as well, compared to the proposed closed cycle wet natural draft system, when such comparisons are relevant, on matters such as water requirements, water consumption, impacts on water quality and aquatic ecosystems, parasitic loads, noise, atmospheric effects, and visual impacts.

9.4.1.1 Once-Through Cooling

A once-through cooling system would withdraw water from Lake Erie and return virtually the same volume of water to the lake at an elevated temperature. The water intake and discharge structures would be separated to limit recirculation. Lake Erie would be capable of supplying the substantial volumes of water continuously required for a once-through system. The discharge of cooling water back to Lake Erie would require an NPDES permit that would establish thermal limits for the discharging water to prevent or mitigate adverse impacts on aquatic ecosystems. Because there is no evaporative loss associated with exchange of heat with the steam water, there is no consumptive use of water in a once-through system as the water passes through the plant heat exchangers. However, the elevated temperature of the receiving water body would result in induced evaporative loss that decreases the net water supply. A once-through system would withdraw substantially more water from Lake Erie than the proposed system (Detroit Edison estimates 720,000 gpm for a once-through system versus 34,000 gpm for the proposed closed cycle system [Detroit Edison 2011a]). The large intake and discharge flows associated with once-through cooling systems require large intake and discharge structures, result in higher levels of impingement and entrainment, and may result in hydrologic alterations in the source/receiving water bodies. Based on recent changes to

implementation plans to meet Section 316(b) of the CWA, the review team has determined that once-through cooling systems for new nuclear reactors are unlikely to be permitted in the future, except in rare and unique situations. Because once-through systems do not use any sort of cooling tower, have an otherwise low profile, and do not produce a condensate plume, visual impacts are greatly reduced and land requirements are minimized. Noise impacts from pump operation are also expected to be minimal.

The likely locations for both intake and discharge structures for a once-through system would be in a relatively shallow portion of Lake Erie, potentially further exacerbating any adverse impacts of impingement, entrainment, or thermal plumes. For these reasons, in addition to the CWA considerations, the review team concludes that a once-through cooling system is not an environmentally preferable alternative cooling system for Fermi 3.

9.4.1.2 Once-Through System with Helper Tower

A variant of the once-through system involves adding a helper tower between the condenser and the discharge. The helper tower is typically a conventional MDCT. Operators have the ability to divert a portion of the water leaving the condenser to the helper tower, where it can undergo further cooling before being recombined with the rest of the cooling water and discharged to Lake Erie. Such systems are used at some nuclear power plants that are located on bodies of water for which thermal effects are a concern. The advantage of such a system is the enhanced ability to lower the temperature of the discharging water by transferring some of the heat in the water diverted to the helper tower to the atmosphere instead. Such a system may be essential in ensuring that the facility meets the thermal limits of its NPDES discharge permit. However, this option would require slightly more water than the once-through system alone to account for evaporative losses in the helper tower. It also adds complexity to the simple once-through system, adds land requirements, and does nothing to ameliorate the adverse impacts of impingement or entrainment that may be associated with the once-through system. Introduction of the MDCT increases the parasitic load of the plant (due to operation of extra water pumps and air fans) and introduces noise, drift, and visual impacts. Because this system would not result in diminution of impingement or entrainment impacts typically associated with once-through systems, it offers only the incremental advantage of enhanced control of thermal impacts on Lake Erie. For the same reasons that apply to once-through systems, the review team has concluded that a once-through system with a helper tower is not an environmentally preferable alternative cooling system for Fermi 3.

9.4.1.3 Combination Dry and Wet Cooling Tower System

Hybrid systems combine conventional closed cycle wet mechanical or natural draft cooling systems with dry cooling systems. The two cooling systems can be arranged either in parallel or in series. Operators can control the extent of cooling that occurs through adjustments of the operating parameters of each cooling system or, in the case of the parallel arrangement, by

controlling the amount of cooling water diverted to each. During cold weather, heat rejection demands could be met exclusively by the dry system, thus greatly reducing water impacts typically associated with wet cooling, albeit with some performance penalties with respect to power production. Although the hybrid system offers some advantages, it also involves adverse impacts such as added complexity and maintenance requirements, parasitic loads, noise, and visual impacts that are additive between the two systems. Water from Lake Erie would still be required to support the wet system, although evaporative losses could be expected to be smaller than for the proposed system operating alone. Blowdown from the wet cooling system would still be discharged to the lake (albeit in slightly lesser quantities than from a wet cooling system operating alone), and makeup water to replace blowdown and evaporative losses would still be withdrawn from the lake and would need chemical treatment before use. Further, performance of the dry cooling system is dependent on atmospheric conditions with maximum performance occurring during periods of low relative humidity, an unlikely condition in southeastern Michigan during periods of peak summer loads when heat rejection capacity is most needed. Although a hybrid system is technically feasible and adverse impacts on Lake Erie may be incrementally smaller, other impacts such as increased visual impacts, noise, variable performance of the dry system, and parasitic loads counterbalance any advantages. Despite its technical feasibility, the review team does not believe that a hybrid cooling system would offer substantial benefits over the proposed natural draft wet cooling system. The review team concludes that this option is not environmentally preferable to the proposed system.

9.4.1.4 Mechanical Draft Wet Cooling System

The mechanical draft wet cooling system option is closely related to the proposed natural draft cooling system. Heat rejection mechanisms are identical, and water demands and impacts on Lake Erie would be virtually the same. Water requirements and water consumption would be virtually the same as the proposed natural draft cooling system. Blowdown discharges to the lake would still occur under an NPDES permit. Water pumping loads would be about the same, but the fans of the mechanical draft system would increase parasitic loads over the natural draft system. Condensate plumes and drift are still possible with the mechanical draft system, but because it has a much smaller profile, the mechanical draft system offers less visual impact from both the cooling tower and its condensate plume than its natural draft counterpart. However, because the NCDTs supporting Fermi 2 would still be operative, both the proposed natural draft system and the mechanical draft alternative would add only incrementally to the existing visual impacts of the Fermi site. Although their technical feasibility is virtually equivalent to the proposed natural draft wet cooling system, the review team has determined that a mechanical draft wet cooling system is not environmentally preferable to the proposed system.

9.4.1.5 Spray Ponds

Spray pond cooling systems use engineered ponds to cool water and enhance evaporative cooling by spraying water into the atmosphere. In addition to evaporation, heat transfer from

the spray ponds to the atmosphere occurs through blackbody radiation and conduction. Spray pond systems comprise a number of spray nozzles installed on an extensive plumbing system, which may introduce significant maintenance requirements. Operational noise would be minimal and localized. Spray ponds would require a substantial initial charge of water to the system as well as replacement of evaporative losses would still be supplied from the lake. Blowdown from the spraypond to maintain water quality would likely be to Lake Erie. Some drift losses are possible, and in some weather conditions, a ground fog (rather than a condensate plume) may occur. Although system efficiency is somewhat dependent on ambient conditions, it is reasonable to assume that the pond would have sufficient capacity to easily overcome any weather-related deleterious impacts on performance. The parasitic load of a spray pond results primarily from water pumping and is expected to be slightly greater than that of a once-through system, but still smaller than any of the other options considered. It is reasonable to expect that a spray pond would represent the greatest land requirement among all the heat rejection options considered. Although Detroit Edison did not identify a required size, it concluded that the land required for a spray pond of sufficient capacity would likely not be available within the Fermi site's current footprint, especially since much of the fallow land is wetland. Primarily because of the impacts associated with the increased land requirements, the review team concludes that a spray pond cooling system is not environmentally preferable to the proposed natural draft system.

9.4.1.6 Dry Cooling Towers

Dry cooling towers would greatly reduce water-related impacts from cooling system operation, because no water would be consumed by evaporation. However, dry cooling systems require much larger cooling systems, and their efficiency is dependent on ambient conditions of temperature and humidity, with their lowest performance occurring during periods of high dry bulb temperature. Unfortunately, this is a condition that is likely to occur during periods of peak summer demand in southeastern Michigan, when the greatest heat dissipation capacity is required. Dry cooling systems result in the greatest power-producing performance penalties of all the heat dissipation systems evaluated. This loss in generation efficiency translates into increased impacts from the fuel cycle. In addition, a dry cooling system sized to cool the plant under all conditions would be very large, occupying a much larger area than the proposed cooling tower and potentially increasing both land use and terrestrial impacts.

Although the cumulative surface water use impacts identified by the review team in Section 7.2.2 are SMALL to MODERATE, these impacts result primarily from climate change, and the proposed Fermi 3 cooling system is not a significant contributor to those impacts. Using a dry cooling system would not lead to any noticeable reduction in the cumulative impacts on surface water use. The review team determined that construction and operation of dry cooling towers would not be environmentally preferable to the proposed cooling system.

9.4.2 Circulating Water Systems

The review team considered water supply alternatives for both the normal power heat sink (NPHS) cooling system (the proposed natural draft closed cycle cooling system), and the plant service water system (PSWS). The capacity requirements of the intake and discharge systems are defined primarily by the requirements of the proposed heat dissipation system. The maximum design basis for the cooling system is represented by maximum normal power operation during summer months and includes a total makeup water intake to the cooling system of 34,234 gpm, composed of 17,124 gpm to replace drift and evaporation losses and 17,110 gpm NPHS discharges (blowdown from the cooling tower). The total maximum flow of the PSWS is 40,000 gpm (Detroit Edison 2011a).

9.4.2.1 Intake Alternatives

Lake Erie would provide water for plant cooling and industrial applications. Water would be withdrawn from the lake through an intake bay adjacent to the existing intake bay for Fermi 2, between the two rock groins that extend into the lake (see Figure 3-5 of the ER [Detroit Edison 2011a]). The intake system is described in Section 3.2.2.2 of this EIS and in Section 3.4.2.1 of the ER (Detroit Edison 2011a). The intake would supply water to the SWS, which supports all non-safety-related cooling in the plant. The ultimate heat sink for Fermi 3 would be a separate system.

The intake would be equipped with a trash rack to screen out large objects and three dual-flow traveling screens with 3/8-in. mesh arranged side-by-side to further screen out litter from the water before it reaches the SWS pump. Trash collected on the rack and screens would be periodically removed and disposed of. Fish impinged on the intake screens will be returned alive to Lake Erie via a fish return system. After water enters the pump house, it would be treated by using sodium hypochlorite as a biocide/algaecide before it enters the pumps at the location of the biocide injection diffuser. There would be two groups of pumps in the intake bay: three pumps, each equipped to pump at 50 percent capacity for makeup water to the cooling tower basins, and two pumps, each designed to pump (at 100-percent capacity) makeup water to the auxiliary heat sink and fire protection system during shutdown.

In the ER, Detroit Edison considered two alternatives to the proposed intake structure: an offshore intake positioned just above the bottom of the lake and located some unspecified distance from the shore, and an alternative shoreline intake structure located some unspecified distance from the Fermi 2 intake. The review team focused its evaluation of alternative intake designs on these two alternatives.

The offshore alternative could result in adverse impacts during building of the structure, including increased water turbidity and significant disturbance to the lake bottom. Conversely, positive attributes associated with this option include (1) the ability to position the intake at a

location with less abundant aquatic resources and (2) minimization of land use impacts. There would be no measurable differences regarding water use. Nevertheless, the potential for substantial adverse impacts during construction led the review team to conclude that the offshore alternative would not be environmentally preferable.

An alternative shoreline location would disrupt the shoreline to a greater degree than the disruptions anticipated from the necessary modifications to the existing intake. Because the Fermi 2 intake would remain in service, the second separate intake would increase operational impacts from such necessary activities as periodic dredging. Water use from the operation of two separate intakes for Fermi 2 and Fermi 3 would be indistinguishable from impacts expected from the use of a single intake structure. Finally, adequate separation between the intakes and discharges would be required to prevent recirculation of discharged cooling water. The review team concludes that a second separate shoreline intake would not be environmentally preferable to the proposed intake.

9.4.2.2 Discharge Alternatives

The discharge structure proposed for Fermi 3 would be located offshore, adjacent to the intake canal, and extend sufficiently into the lake to prevent recirculation of discharged cooling water. In its ER, Detroit Edison identified one alternative discharge system and one alternative discharge location; the alternative discharge system is a shoreline discharge, while the alternative discharge location is an inland discharge to any of the existing lagoons on the Fermi site. In evaluating these alternatives, the review team considered impacts on aquatic resources, land, and water and the feasibility of securing the necessary permits.

Alternative Discharge System

The proposed offshore discharge system would have a discharge port located on the bottom of the lake bed, sufficiently removed from the intake structure to prevent recirculation of discharged heated cooling water. Construction of such a system would result in temporary land impacts from installation of the discharge piping and staging of equipment to support installation of offshore system elements. However, construction would result in substantial disruption of the lake bed, with concomitant disruptions to the benthic communities in the affected area and a temporary decrease in water quality in the vicinity due to an increase in total suspended solids. Construction of the alternative shoreline discharge system would result in little disruption to the lake bed but greater land impacts, most of which would be permanent. Operational impacts on aquatic organisms from the two systems would depend on the communities existing at the locations selected for each system. It is reasonable to presume that a shoreline discharge point would be selected to avoid sensitive nearshore wetland areas. Even so, water discharged from a shoreline system would have a greater probability of migrating to environmentally sensitive shoreline areas than would the offshore discharge. A shoreline discharge system would be expected to have greater potential for impacts on shoreline wetland areas and on the littoral

zone of the lake, and thus could be expected to have greater overall impact on the aquatic ecosystem than the offshore system. Depending on its location relative to the intake, either discharge system could affect both the temperature and turbidity of water drawn into the intake, which could subsequently affect the cooling efficiency of the heat dissipation system and introduce additional maintenance issues at the intake. The design basis for the offshore discharge system has already considered such impacts, and the location has been determined to be far enough away from the intake that no deleterious effects on intake water would be expected, even through seasonal variations of lake currents. Similar considerations could be made in the selection of a shoreline discharge system location, such that operational impacts on water quality would be essentially the same for either system. Either discharge system would require an NPDES permit. The feasibility of securing the necessary permits is considered to be the same for either system. The review team concludes that an offshore discharge system would result in fewer impacts than a shoreline discharge system.

Alternative Discharge Location

In its comparison of building impacts at alternative discharge locations, Detroit Edison noted that the proposed offshore location is in the same general area as the cooling water intake pipe for the now-decommissioned Fermi 1 reactor, and therefore has been previously disturbed. Conversely, construction impacts would be new if the discharge structure were built in any of the inland lagoons selected for the inland discharge alternative. Land impacts from construction are expected to be essentially the same for either discharge location alternative. Operational impacts, however, could be greater for an inland discharge system. The inland lagoons connect to the lake through a series of engineered culverts, but they are also in hydraulic communication with inland wetland areas. These inland wetland areas may play a significant role for animals that frequent the site. Discharges to the lagoons could result in adverse impacts on the inland wetlands and those terrestrial communities that rely on them. Both thermal and chemical impacts may be more significant on the lagoons than they would be on the lake, given the relatively smaller volumes of water expected to absorb those discharges. Discharge to the lagoons, because of the confined nature of the lagoons and isolation from the Fermi 2 discharge, would increase the probability of occasional heat and cold shock to aquatic organisms. The review team concludes that an offshore discharge location would result in fewer impacts than an inland discharge location.

9.4.2.3 Water Supplies

In Section 5.2.2.1 of this EIS, the review team considers the impacts of using Lake Erie as the proposed source of water to support the operation of Fermi 3 and concludes that the impacts would be SMALL and that no mitigation would be warranted. The review team identified alternative sources for the CIRC that included water reuse, groundwater, and surface water, and evaluated each for its environmental equivalency to Lake Erie as a source of water.

Water Reuse

Sources of water for reuse can come either from the plant itself or from other local water users. Sanitary wastewater treatment plants are the most ubiquitous sources of water for reuse in the vicinity of the Fermi site. Other activities in the vicinity of Fermi that could provide water include industrial activities and quarry dewatering. Although sanitary wastewaters are likely to be available in abundance within the Detroit metropolitan area, such water sources would require substantial additional treatment before becoming available for application in the CIRC or for any other Fermi application. In addition, a significant investment in infrastructure and associated disturbance of terrestrial and aquatic resources would be required to bring this water source to the Fermi site. Industrial wastewaters would also require extensive treatment and substantial investments in infrastructure. Quarry dewatering would produce water that is likely to require lesser amounts of treatment; however, pipeline or alternative transport infrastructure is also lacking, and the constancy of such a source is not guaranteed. The review team therefore concludes that no source of reused water would be environmentally preferable to Lake Erie.

Groundwater

Groundwater hydrology in the vicinity of the Fermi site is described in Section 2.3.1. Comparing the accessibility and availability of groundwater beneath the Fermi site and in the vicinity of the site with the expected demands of Fermi 3's CIRC, the review team concludes that the use of groundwater for cooling would result in greater impacts than using water from Lake Erie.

Surface Water

Surface water hydrology in the vicinity of the Fermi site is described in Section 2.3.1. No other suitable source of surface water exists to support the expected demands for Fermi 3 power plant operations.

9.4.2.4 Water Treatment

As proposed by Detroit Edison, both inflow and effluent water would receive chemical treatment to ensure that they meet plant water needs and effluent water standards. Detroit Edison has identified two alternatives to chemical treatment of cooling water: mechanical treatment and thermal shock. In the mechanical treatment option, periodic mechanical treatment of the cooling tower could be performed to control the accumulation of biological species such as zebra mussels or the accumulation of scale, both of which, in sufficient quantities, could compromise the efficiency of the cooling tower. However, while mechanical cleaning is environmentally preferable to the use of chemicals, the physical design of the cooling tower basin makes mechanical cleaning impractical. Furthermore, during such cleaning, the cooling tower and reactor must be shut down. By comparison, chemical cleaning and biological control can occur continuously while the cooling tower is in operation. (However, for large accumulations of zebra

mussels, shock chlorination is best accomplished through the short-term isolation of the SWS.) Biological control, especially of zebra mussels, could also be accomplished through thermal shock by raising the temperature for a brief period of time. However, artificially raising the temperature of water in the cooling system is counterproductive to the cooling system's purpose, and such elevated temperatures would not be compatible with some cooling system components. Both mechanical cleaning and thermal shock treatment are environmentally preferable to the use of chemicals; however, both alternatives are impractical and would result in the interruption of the cooling tower's function for some period of time. The review team therefore concludes that no viable alternatives to the proposed chemical treatment of water in the cooling tower and the CIRC exist.

9.4.3 Summary

The review team considered alternative systems designs, including six alternative heat-dissipation systems and alternative intake, discharge, and water supply systems and locations. As discussed in previous sections, the staff identified no feasible alternative that would be environmentally preferable to those proposed by Detroit Edison.

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10.0 Conclusions and Recommendations

This chapter provides a discussion of the conclusions reached in earlier parts of this environmental impact statement (EIS), as well as the U.S. Nuclear Regulatory Commission (NRC) staff's recommendations. Section 10.1 summarizes the impacts of the proposed action. Section 10.2 summarizes the proposed project's unavoidable adverse impacts and is accompanied by a table, and Section 10.3 discusses the relationship between the short-term use of resources and long-term productivity of the human environment. Section 10.4 summarizes the irretrievable and irreversible use of resources, and Section 10.5 summarizes the alternatives to the proposed action. Section 10.6 discusses benefits and costs. Section 10.7 includes the NRC staff's recommendation.

On September 18, 2008, the NRC received an application from the Detroit Edison Company (Detroit Edison) for a combined license (COL) for the proposed Enrico Fermi Unit 3 (Fermi 3) to be located on the Enrico Fermi Atomic Power Plant (Fermi) site. The site is located approximately 30 mi southwest of Detroit, Michigan, and 7 mi from the United States–Canada international border. A COL, which is a combined construction permit and operating license, is a Commission approval to build and operate one or more nuclear power facilities. In its application, Detroit Edison specified the economic simplified boiling water reactor (ESBWR) as the proposed reactor design for Fermi 3.

The U.S. Army Corps of Engineers (USACE) is participating as a cooperating agency in preparing this EIS. Detroit Edison will be required to obtain a Department of the Army (DA) permit to discharge dredged material and/or fill and to perform any work and/or place structures in, over, under and/or affecting waters of the United States, including wetlands associated with the Fermi 3 project and, as appropriate, to the USACE scope of analysis. As an initial step in this permitting process, Detroit Edison submitted a permit application (Detroit Edison 2011d) to the USACE on September 9, 2011. The USACE issued a public notice under file number LRE-2008-00443-1-S11 on December 23, 2011 (USACE 2011) to solicit comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of regulated activities associated with the Fermi 3 project. The proposed activities and the comments received during the public comment period are under review and are being considered by the USACE to determine whether to issue, modify, condition, or deny a permit.

Section 102 of the National Environmental Policy Act of 1969, as amended (NEPA; 42 USC 4321 *et seq*.) directs that an EIS is required for major Federal actions that significantly affect the quality of the human environment. Section 102(2)(C) of NEPA requires that an EIS include information on:

- The environmental impact of the proposed action;

- Any adverse environmental effects that cannot be avoided, should the proposal be implemented;
- Alternatives to the proposed action;
- The relationship among local short-term uses of the environment and the maintenance and enhancement of long-term productivity; and
- Any irreversible and irretrievable commitments of resources that would be involved if the proposed action is implemented.

The NRC has set forth regulations for implementing NEPA in Title 10 of the Code of Federal Regulations (CFR) Part 51. In 10 CFR 51.20, the NRC requires preparation of an EIS for issuance of COLs. Subpart C of 10 CFR Part 52 contains the NRC regulations related to COLs.

The proposed actions in the COL and USACE joint permit applications are (1) NRC issuance of a COL for construction and operation of a power reactor at the Fermi site in Monroe County, Michigan, and (2) the USACE issuance of a permit pursuant to Section 404 of the Federal Water Pollution Control Act (also referred to as the Clean Water Act) (33 USC 1251 *et seq*.), and Section 10 of the Rivers and Harbors Appropriation Act (RHAA) of 1899 (33 USC 403 *et seq*.). If issued, the USACE permit would authorize the impact on waters of the United States, including wetlands, from various regulated integral project components associated with the Fermi 3 facility, including access roads, a barge slip, blowdown pipelines, a makeup water pipeline, and cooling water intake structure.

The environmental review described in this EIS was conducted by a review team consisting of NRC staff, its contractors' staff, and staff from the USACE. During the course of preparing this EIS, the staff reviewed the Environmental Report (ER) submitted by Detroit Edison (Detroit Edison 2011a) and supplemental documentation; consulted with Federal, State, Tribal, and local agencies; and followed the guidance set forth in NUREG-1555, *Environmental Standard Review Plans* (NRC 2000) and Staff Memorandum *Addressing Construction and Preconstruction, Greenhouse Gas Issues, General Conformity Determinations, Environmental Justice, Need for Power, Cumulative Impact Analysis, and Cultural/Historical Resources Analysis Issues in Environmental Impact Statements* (NRC 2011). In addition, the NRC considered the public comments related to the environmental report received during the scoping process. These comments are provided in Appendix D of this EIS. The review team also considered public comments on the draft EIS. Those comments and responses are provided in Appendix E of the final EIS.

Included in this EIS are (1) the results of the NRC staff's analyses, which consider and weigh the environmental effects of the proposed action, (2) mitigation measures for reducing or avoiding adverse impacts, (3) the environmental impacts of alternatives to the proposed action, and (4) the NRC staff's recommendation regarding the proposed action based on its environmental review.

The USACE's role as a cooperating agency in the preparation of this EIS is to ensure to the maximum extent practicable that the information presented is adequate to fulfill the requirements of USACE regulations. Section 404(b)(1) of the Clean Water Act, "Guidelines for Specification of Disposal Sites for Dredged or Fill Material" (40 CFR Part 230), contains the substantive environmental criteria used by USACE in evaluating discharges of dredged or fill material into waters of the United States. Although the USACE, as part of the review team, concurs with the designation of impact levels for terrestrial and aquatic resources, insofar as waters of the United States are concerned, the USACE must conduct a quantitative comparison of impacts on waters of the United States as part of the 404(b)(1) evaluation. In addition, USACE's regulations (33 CFR 320.4) direct the USACE to conduct a public interest review (PIR) that requires consideration of a number of factors as part of a balanced evaluation process. USACE's PIR and 404(b)(1) Evaluation will be part of its permit decision document and such factors may not be fully addressed in this EIS. The USACE's independent regulatory permit decision documentation will reference relevant analyses from the EIS and, as necessary, include a supplemental PIR, CWA 404(b)(1) evaluation, evaluation of cumulative impacts, compensatory mitigation plan that is in accordance with 33 CFR Part 332, "Compensatory Mitigation for Losses of Aquatic Resources," and other information and evaluations that may be outside the NRC's scope of analysis and not included in this EIS, but are required by the USACE to support its permit decision.

Mitigation measures were considered for each environmental issue and are discussed in the appropriate sections. During its environmental review, the review team considered planned activities and actions that Detroit Edison indicated it and others would likely take if Detroit Edison receives a COL. In addition, Detroit Edison provided estimates of the environmental impacts resulting from the building and operation of a new nuclear unit on the Fermi site.

10.1 Impacts of the Proposed Action

In a final rule dated October 9, 2007 (72 *Federal Register* [FR] 57416), the Commission limited the definition of "construction" to those activities that fall within its regulatory authority in 10 CFR 51.4. Many of the activities required to build a nuclear power plant are not part of the NRC action to license the plant. Activities associated with building the plant that are not within the purview of the NRC action are grouped under the term "preconstruction." Preconstruction activities include clearing and grading, excavating, erection of support buildings and transmission lines, and other associated activities. Because the preconstruction activities are not part of the NRC action, their impacts are not reviewed as a direct effect of the NRC action. Rather, the impacts of the preconstruction activities are considered in the context of cumulative impacts. Although the preconstruction activities are not part of the NRC action, they support or are requisite to the NRC action. In addition, certain preconstruction activities require permits from the USACE, as well as from other Federal, State, and local agencies.

Chapter 4 of this EIS describes the relative magnitudes of impacts related to preconstruction and construction activities, and a summary of impacts is given in Table 4-22. Impacts associated with operation of the proposed facilities are discussed in Chapter 5 of this EIS and summarized in Table 5-37. Chapter 7 describes the impacts associated with preconstruction and construction activities and operation of Fermi 3 when considered along with the cumulative impacts of other past, present, and reasonably foreseeable future projects in the geographical region around the Fermi site.

10.2 Unavoidable Adverse Environmental Impacts

Section 102(2)(C)(ii) of NEPA requires that an EIS include information on any adverse environmental effects that cannot be avoided if the proposal is implemented. Unavoidable adverse environmental impacts are those potential impacts of the NRC and USACE action that cannot be avoided and for which no practical means of mitigation are available.

10.2.1 Unavoidable Adverse Impacts during Preconstruction and Construction

Chapter 4 discusses in detail the potential impacts from preconstruction and construction of the proposed new Fermi 3 nuclear unit at the Fermi site and presents mitigation and controls intended to lessen the adverse impacts. Table 10-1 presents the unavoidable adverse impacts associated with construction and preconstruction activities to each of the resource areas evaluated in this EIS, as well as the mitigation measures that would reduce the impacts. Those impacts remaining after mitigation is applied (e.g., avoidance and minimization, but not including compensatory mitigation) are identified in Table 10-1 as unavoidable adverse impacts. Unavoidable adverse impacts are the result of both construction and preconstruction activities, unless otherwise noted. The impact determinations in Table 10-1 are for the combined impacts of construction and preconstruction.

The unavoidable adverse impacts are primarily attributable to preconstruction activities due to the initial land disturbance from clearing the land, excavation, filling wetlands and waterways, adding impervious surfaces, and dredging.

The primary unavoidable adverse environmental impacts during building activities would be related to land use and terrestrial habitat loss. Approximately 301 acres (ac) on the Fermi site would be disturbed by the Fermi 3 project. Of that, approximately 197 ac would consist of presently undisturbed habitat, including approximately 34.5 ac of wetlands and approximately 5.2 ac of open water. About 8.3 ac of wetland habitat would be permanently filled. Other wetland impacts would be temporary or involve conversion of one wetland type to another. Temporary wetland impacts related to fill for construction laydown areas would include the temporary loss of wetland functions from the time the wetland is filled until it is rehabilitated.

Table 10-1. Unavoidable Adverse Environmental Impacts from Preconstruction and Construction of Fermi 3

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Land Use	SMALL	Comply with requirements of applicable Federal, State, local permits, and zoning requirements. Implement erosion control measures described in the Fermi 3 SESC Plan.	Onsite: 301 ac Offsite (transmission lines): 1069 ac. Also needs approximately 19 ac to expand Milan Substation.
Water Use	SMALL	None.	Lake Erie water would be used for concrete batch plant operation, temporary fire protection, dust control, and sanitary needs, but needs would be small enough to not require a review under the Great Lakes Compact. Dewatering systems would depress the water table in the general vicinity, but the impacts would be localized and temporary.
Water Quality	SMALL	Implement the construction SESC Plan to limit sedimentation of drainage to Lake Erie. Implement dewatering plan to minimize the amount of water discharged. Develop and implement a PIPP. Comply with requirements of CWA Section 404 permit, Section 402(p) NPDES permit, Section 10 of the RHAA permit, and Michigan Compiled Law Act 451 Parts 303 and 325 permit. Clean Water Act Section 401 Water Quality Certification and CZMA Certification.	Hydrological alterations associated with building on and near the Fermi site would include dredging for the intake and discharge structures, altering the surface topography and hydrology (e.g., site grading, laydown areas, filling of onsite water bodies), and dewatering the excavation in order to construct the nuclear facilities. Offsite alterations would be associated with the proposed new or expanded transmission line corridors where they cross streams and wetlands.

Table 10-1. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Terrestrial and Wetland Resources	SMALL to MODERATE (potential for MODERATE limited to eastern fox snake)	Observe BMPs and obtain appropriate Federal and State permits and certifications prior to preconstruction and construction activities. Comply with requirements of permits for RHAA Section 10, CWA Section 404, and Michigan Compiled Law Act 451 Parts 303 and 325 to minimize and mitigate impacts on aquatic resources, including jurisdictional wetlands. Wetland mitigation would be developed in coordination with MDEQ and USACE (Appendix K). Rehabilitate approximately 23.7 ac of temporarily affected onsite wetlands and restore and conduct offsite mitigation to compensate for wetland function loss. Follow MDNR construction limitation recommendations for bald eagle nests. Transplant American lotus from areas of disturbance. Implement Habitat and Species Conservation Plan to mitigate building impacts on the eastern fox snake. Develop NDCT lighting plan in coordination with FAA and FWS to minimize avian impacts.	Onsite: approximately 197 ac of habitat would be disturbed, including approximately 34.5 ac of wetlands and 5.2 ac of open water. About 8.3 ac of impacted wetlands and 5.2 ac of impacted open water would be permanently filled. For the temporarily filled wetlands, a temporary loss of function would occur from the time wetland is filled until the time the wetland is rehabilitated. Offsite (transmission lines): 1069 ac of habitat would be disturbed. Approximately 19 ac of additional habitat would be used to expand Milan Substation.

Table 10-1. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Aquatic Ecology	SMALL	Implement measures in the SESC permit and NPDES permit. Implement measures in the PIPP. Implement measures outlined in the RHAA Section 10 permit, CWA Section 404 permit, and Michigan Compiled Law Act 451 Part 303 and 325 permit.	Minor impacts on aquatic resources on and near the Fermi site from dredging for the intake and discharge structures, loss of lake bottom habitat due to discharge and intake structures, alterations in onsite surface topography and hydrology, and filling of some onsite water bodies. Minor impacts to offsite aquatic resources from building activities where proposed new or expanded transmission line corridors cross streams and wetlands.
Socioeconomics			
Physical	SMALL	Implement standard noise control measures for construction equipment (silencers). Limit the types of construction activities during nighttime and weekend hours. Notify all affected neighbors of planned activities. Establish a construction noise monitoring program. Control fugitive dust through construction watering. Control vehicle emissions through regularly scheduled maintenance. Add surfacing on local roadways to prevent deterioration from construction vehicles.	None.

Table 10-1. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Socioeconomics (contd)			
Demography	No adverse impact. Impact is beneficial.	None.	None.
Community economics	No adverse impacts. All impacts are beneficial.	None.	None.
Infrastructure and services	SMALL (most impacts) to MODERATE (traffic)	Traffic control and management measures would reduce traffic congestion impacts. These would be developed in conjunction with MDOT, MCRC, and other appropriate agencies.	Increase in local traffic during construction, resulting in increased congestion during the peak construction period.
Environmental Justice	SMALL	None.	None.
Historic and Cultural Resources	MODERATE	Mitigate adverse effects from demolition of recommended NRHP-eligible Fermi 1 according to stipulations in the MOA developed as a result of consultation among the NRC, SHPO, Detroit Edison, and Monroe County Community College. Inadvertent discovery procedures will be in place prior to ground-disturbing activities. ITC*Transmission* would be expected to conform to regulatory requirements pertaining to historic and cultural resources that could be affected by transmission line development.	Demolition of Fermi 1.

Table 10-1. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Air Quality	SMALL	Implement BMPs to reduce vehicle and equipment exhaust emissions and fugitive dust in accordance with all applicable State and Federal permits and regulations.	Vehicle and equipment exhaust emissions and fugitive dust emissions from operation of earthmoving equipment would be sources of air pollution, but impacts would be temporary.
Nonradiological Health	SMALL	Comply with Federal, State, and local regulations governing construction activities and construction vehicle emissions; comply with Federal and local noise-control ordinances; comply with Federal and State occupational safety and health regulations; implement traffic management plan and noise monitoring program.	Temporary public health impacts from exposure to fugitive dust and vehicular emissions, noise, and increased occupational injuries and traffic accidents during the building phase.
Radiological Health	SMALL	Maintain doses to construction workers below NRC public dose limits.	Small dose to construction workers that would be less than NRC public dose limit.
Nonradioactive Wastes	SMALL	Manage hazardous and nonhazardous solid wastes according to county, State, and Federal handling and transportation regulations; implement recycling and BMPs to minimize waste generation.	Minor decrease in capacity of waste treatment and disposal facilities. Minor discharges to outfall and to atmosphere.

(a) BMPs = best management practices; CWA = Clean Water Act; CZMA = Coastal Zone Management Act; FAA = Federal Aviation Administration; FWS = U.S. Fish and Wildlife Service; MCRC = Monroe County Road Commission; MDEQ = Michigan Department of Environmental Quality; MDNR = Michigan Department of Natural Resources; MDOT = Michigan Department of Transportation; MOA = Memorandum of Agreement; NPDES = National Pollutant Discharge Elimination System; NRHP = *National Register of Historic Places*; PIPP = Pollution Incident Prevention Plan; NDCT = natural draft cooling tower; RHAA = Rivers and Harbors Appropriation Act; SESC = Soil Erosion and Sedimentation Control; SHPO = State Historic Preservation Office.

Permanent and temporary impacts resulting from building offsite facilities (transmission lines) could total 1069 ac, plus approximately 19 ac to expand the Milan Substation. Additional areas could be disturbed on a short-term basis as a result of temporary activities and facilities and laydown areas.

As part of USACE regulations, Detroit Edison must demonstrate to the USACE why the proposed project could not be reconfigured or reduced in scope to minimize or avoid adverse impacts on waters of the United States. In order to comply with the U.S. Environmental Protection Agency (EPA) 404(b)(1) Guidelines, proposed aquatic resource fill activities associated with building Fermi 3 would have to demonstrate that no practicable alternative with less damaging impacts is available. Detroit Edison has prepared and submitted to USACE a proposed alternative analysis that identifies the company's proposed Least Environmentally Damaging Practicable Alternative (LEDPA) to satisfy these requirements (Detroit Edison 2011b; see Appendix J of this EIS). In addition to avoiding impacts on wetlands by siting facilities in nonwetland areas to the extent practicable, and minimizing wetland impacts by avoiding wetland fragmentation and maintaining existing hydrology to the extent practicable, Detroit Edison has proposed mitigation that calls for the restoration of wetlands, off-site in the coastal zone of western Lake Erie, to compensate for all but 1.9 ac of the unavoidable wetland losses, including temporal losses due to temporary wetlands impacts at the Fermi site (Appendix K) (Detroit Edison 2012a). Detroit Edison will comply with State and Federal wetland permit conditions with respect to mitigating wetland impacts and restoring wetland habitat to offset the permanent loss of wetlands resulting from building Fermi 3 (Detroit Edison 2011a).

The eastern fox snake (*Pantherophis gloydi*) is State-listed as threatened and occurs on the site in the project area. Detroit Edison has developed a Habitat and Species Conservation Plan (Detroit Edison 2012b) that identifies mitigation of direct impacts from construction and preconstruction on the snake. This plan would mitigate the potential for building-related mortality and would limit the amount of fox snake habitat disturbed during construction and preconstruction.

The impacts from building the proposed Fermi 3 on onsite historic properties would be MODERATE if the Fermi 1 structure was present when Fermi 3 preconstruction activities would begin. The NRC, in consultation with the Michigan State Historic Preservation Office (SHPO), has determined that work associated with the proposed project would have an adverse effect on Fermi 1. The NRC staff consulted with the Michigan SHPO, Detroit Edison, and Monroe County Community College to develop a Memorandum of Agreement (MOA) to resolve the adverse effects on Fermi 1 pursuant to 36 CFR 800.6(c). Measures to mitigate adverse effects on Fermi 1 consist of (1) preparation of recordation documentation for the Fermi 1 structure consistent with the Michigan SHPO's *Documentation Guidelines* and (2) development of a public exhibit on the history of Fermi 1 (NRC 2012a). These mitigation measures are described in greater detail in Section 2.7.4.

10.2.2 Unavoidable Adverse Impacts during Operation

Chapter 5 provides a detailed discussion of the potential impacts from operation of the proposed Fermi 3 at the Fermi site. The unavoidable adverse impacts related to operation are listed and summarized in Table 10-2.

Unavoidable adverse impacts on land use from operation of Fermi 3 would be minimal and associated with the offsite development that is expected to occur to accommodate new workers at the plant. Land use changes would include the conversion of some land in nearby areas to housing and retail development to serve plant workers. Property tax revenue from Fermi 3 could lead to additional growth in Monroe County as a result of infrastructure improvements (e.g., new roads and utility services).

Fermi 3 operations would result in an average consumptive use of approximately 7.6 billion gallons (gal) of Lake Erie water per year. This represents approximately 4.1 percent of the current consumptive use in the Lake Erie basin. Surface water quality impacts could result from stormwater runoff and cooling tower blowdown discharge. These water-related impacts would be mitigated through compliance with the site's National Pollution Discharge Elimination System (NPDES) permit, Michigan Department of Environmental Quality (MDEQ) Large Quantity Water Withdrawal Permit, Clean Water Act (CWA) Section 404 permit, MDEQ Water Quality Standards Certification, and through Detroit Edison's adherence to best management practices (BMPs) and the Stormwater Pollution Prevention Plan (SWPPP). Remaining adverse impacts on water use and water quality during operation would be minimal and limited to increased use of surface water for cooling, potential increases in sedimentation in surface water bodies, and potential surface water and groundwater contamination from inadvertent spills.

Unavoidable adverse impacts on terrestrial ecology resources would include the increased risk of birds and bats colliding with structures; the avoidance of the site by wildlife as a result of noise; the potential vehicle-related mortality of wildlife, including the State-listed eastern fox snake; and the maintenance-related disturbance of habitats within transmission line corridors. The eastern fox snake (*Pantherophis gloydi*) is State-listed as threatened and occurs on the site in the project area. Detroit Edison has developed a Conservation and Monitoring Plan (Detroit Edison 2012c) that identifies mitigation measures to reduce direct impacts on the snake from traffic caused by operation of Fermi 3. Implementation of the plan could reduce impacts to minor levels.

Unavoidable adverse impacts on aquatic ecology resources would include a potential for entrainment, impingement, and thermal loading to Lake Erie. However, the operation of Fermi 3 would not noticeably alter the aquatic resources of the lake. Other impacts from operational

Table 10-2. Unavoidable Adverse Environmental Impacts from Operation of Fermi 3

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Land Use	SMALL	Adhere to applicable zoning regulations of Frenchtown Charter Township as well as Monroe County land use plans. Minimize potential impacts through use of BMPs and compliance with SWPPP requirements. Incorporate drift eliminators into the design of the cooling towers to minimize the potential for salt deposition, especially on nearby agricultural lands.	Permanent commitment of approximately 155 ac onsite, and 1069 ac within the offsite transmission corridor for the operational life of Fermi 3. Approximately 19 ac offsite would be converted for the expanded Milan Substation. Some offsite land use changes are expected to indirectly result from operational activities, including the conversion of some land in surrounding areas to housing and retail developments to serve plant workers.
Water Use	SMALL	Comply with MDEQ Large Quantity Water Withdrawal Permit requirements. Use Best Available Technology to reduce evaporative losses from cooling towers.	Average consumptive use of approximately 7.6 billion gal per year from Lake Erie. No groundwater use or dewatering during operations.
Water Quality	SMALL	Develop and implement the SWPPP to manage stormwater runoff and prevent erosion. Develop and implement a PIPP. Comply with requirements of CWA Section 404 permit, Section 402(p) NPDES permit, RHAA Section 10 permit, and MDEQ Act 451 Part 303 and 325 permit. CWA Section 401 water quality certification and CZMA certification.	Surface water impacts would include thermal, chemical, and radiological wastes and physical changes in Lake Erie resulting from stormwater runoff and effluents discharged by the proposed plant. No unavoidable adverse impacts on groundwater quality are anticipated during operations.

Table 10-2. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Water Quality (contd)		Design cooling water discharge diffuser to minimize the size of the thermal mixing zone, in both lateral and vertical extent. Design the cooling water discharge diffuser to minimize bottom scour and associated turbidity. Riprap may be required to reduce bottom scour. Locate and orient the discharge structure to minimize siltation resulting from turbidity at the diffuser ports. Diffuser design would reduce concentrated silt buildup through discharge points spaced approximately 17 ft apart.	
Terrestrial and Wetland Resources	SMALL to MODERATE (potential for MODERATE limited to eastern fox snake)	Implement Conservation and Monitoring Plan to mitigate operational impacts on the eastern fox snake, including measures to reduce traffic-induced mortality. Implement measures in the SWPPP, PIPP, and permits for RHAA Section 10, CWA Section 404, and MDEQ Act 451 Parts 303 and 325 to minimize and mitigate impacts on aquatic resources, including jurisdictional wetlands. Wetland mitigation would be developed in coordination with MDEQ and USACE (Appendix K).	Onsite: long-term maintenance of approximately 155 ac of developed land. Offsite: maintenance of 1069 ac in the transmission line corridor. Approximately 19 ac would be converted for the expanded Milan Substation. Increased risk of birds and bats colliding with structures; the avoidance of the site by wildlife as a result of noise; the potential vehicle-related mortality of wildlife.

Table 10-2. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Terrestrial and Wetland Resources (contd)		Develop and implement the SWPPP to manage stormwater runoff and prevent erosion. Develop and implement a PIPP. Use drift eliminators to keep solids deposition (assumed as salt) from cooling towers below NUREG-1555 significance level. Develop NDCT lighting plans in consultation with the FAA and FWS to minimize avian impacts. Although not under Detroit Edison's control, ITC*Transmission* would be expected to conform to industry-standard BMPs for transmission ROW maintenance to reduce impacts on terrestrial and wetland systems.	
Aquatic Ecology	SMALL	Implement measures in the SWPPP, PIPP, and permits for RHAA Section 10, CWA Section 404, and MDEQ Act 451 Parts 303 and 325. Use a closed cycle cooling system to reduce impingement and entrainment of aquatic organisms. Maintain a low intake velocity ($\leq$0.5 fps).	Minor effects to aquatic resources in Lake Erie from operation of the cooling system due to thermal discharges, impingement, and entrainment.

Table 10-2. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Aquatic Ecology (contd)		Design intake screens with appropriate mesh size and include a trash rack. Regular washing of the intake screens will minimize impingement mortality. Use a backwash system that would remove impinged organisms from intake screens and return them to the lake alive using a fish return system to Lake Erie outside the intake bay area. If a shutdown of the proposed facility is planned during winter months, reduce the discharge of cooling water gradually in order to reduce the potential for cold shock to aquatic organisms. Design cooling water discharge diffuser to minimize the size of the thermal mixing zone in both lateral and vertical extent. Compliance with NPDES permit effluent limits and use of one Lake Erie outfall for Fermi 3 would minimize chemical impacts. Avoid the use of phosphorus-containing corrosion and scale inhibitors in order to reduce nutrient loading that could contribute to algal blooms. Minimize scouring through the use of riprap around the submerged discharge port, if necessary, and use an upward orientation of discharge ports.	

Table 10-2. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Aquatic Ecology (contd)		Although not under Detroit Edison's control, ITC*Transmission* would be expected to conform to industry-standard BMPs that are protective of aquatic systems for transmission ROW maintenance. Design transmission lines to avoid wetlands or other water bodies to the maximum extent possible. Any unavoidable impacts would be subject to regulatory permit conditions.	
Socioeconomics			
Physical	SMALL	Sound attenuation measures as part of the standard mechanical draft cooling tower should be sufficient to limit the noise impact. Infrequent operation of the mechanical draft cooling towers would further reduce noise impacts. Although most operational noise is expected to be similar to ambient noise levels, employees would be trained and appropriately protected to reduce their risk of noise exposure. Comply with all relevant OSHA regulations during operations of Fermi 3 Implement traffic control and management measures to reduce the potential for traffic-related accident and health impacts.	Small increase in noise levels and traffic. Cooling tower and associated condensate plume would be visible offsite.

Table 10-2. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Demography	No adverse impact. Impact is beneficial.	None.	None.
Community economics	No adverse impacts. All impacts are beneficial.	None.	None.
Infrastructure and services	SMALL (most impacts) to MODERATE (traffic during outages)	Implement roadway improvements either during the construction period or as recommended by MCRC or MDOT following review of the site development plan.	Minor impacts on transportation, recreation, housing, public services, and education associated with population increase offset by increase in tax revenue. Increase in local traffic during operations, resulting in increased congestion, especially during outages.
Environmental Justice	SMALL	None.	None.
Historic and Cultural Resources	SMALL	Inadvertent discovery procedures would be in place to minimize impacts on potential onsite historic resources.	Minor impacts on offsite historical properties associated with visible condensate plume from cooling towers.
Air Quality	SMALL	Comply with Federal, State, and local air permits. Use cooling-tower drift eliminators. Water, reseed, or pave areas used for construction.	Slight increase in certain criteria pollutants and carbon dioxide from plant auxiliary combustion equipment (e.g., diesel generators).
		Treat cooling water prior to discharge to reduce salt released into the atmosphere.	Plumes and drift from cooling towers.
			Minimal impacts on vegetation, soils, electrical equipment, and transmission lines.

Table 10-2. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[(a)]	Unavoidable Adverse Impacts
Nonradiological Health	SMALL	Use of biocides in the cooling system. Comply with OSHA standards for Fermi 3 operational workers. Control vehicle emissions by regularly scheduled maintenance. Use standard sound attenuation measures for mechanical draft cooling towers. These should be sufficient to limit the noise impact. Infrequent operation of the mechanical draft cooling towers would further reduce noise impacts. Monitor the release of nonradiological waste emissions and effluents. Transmission line design would be compliant with Electric Safety Code standards.	Minor increase in noise levels at nearest sensitive receptor. Minor increases in the potential for occupational injuries and traffic accidents.
Radiological Health	SMALL	Maintain doses to members of the public below NRC and EPA standards; maintain worker doses below NRC limits and ALARA; keep doses to biota other than humans well below NCRP and IAEA guidelines.	Small radiation doses (below NRC and EPA standards) to members of the public; ALARA doses to workers; and biota doses well below NCRP and IAEA guidelines.

Table 10-2. (contd)

Resource Area	Adverse Impacts	Actions to Mitigate Impacts[a]	Unavoidable Adverse Impacts
Fuel Cycle (including radioactive waste), Transportation, and Decommissioning	SMALL[b]	Industry-wide changes in technology are reducing fuel cycle impacts. Implement waste-minimization program. Comply with NRC and DOT regulations.	Small impacts from fuel cycle as presented in Table S-3, 10 CFR Part 51. Small impacts from carbon dioxide, radon, and technetium-99. Small radiological doses that are within NRC and DOT regulations from transportation of fuel and radwaste. Small impacts from decommissioning as presented in NUREG-0586 (NRC 2002).
Nonradioactive Waste	SMALL	Manage hazardous and nonhazardous solid wastes according to county and State handling and transportation regulations. Treat sanitary wastewater and discharge it to Monroe Metropolitan Wastewater Treatment Facility for treatment under an existing permit. Implement stormwater management plan. Implement recycling and waste minimization program.	Minor decrease in the capacity of waste treatment and disposal facilities. Minor increases in stormwater runoff, liquid discharges, and air emissions maintained within permit limits.

(a) ALARA = as low as reasonably achievable; BMPs = best management practices; CWA = Clean Water Act; CZMA = Coastal Zone Management Act; DOT = U.S. Department of Transportation; EPA = U.S. Environmental Protection Agency; FAA = Federal Aviation Administration; fps = feet per second; FWS = U.S. Fish and Wildlife Service; IAEA = International Atomic Energy Agency; MCRC = Monroe County Road Commission; MDEQ = Michigan Department of Environmental Quality; MDNR = Michigan Department of Natural Resources; MDOT = Michigan Department of Transportation; MOA = Memorandum of Agreement; NCRP = National Council on Radiation Protection and Measurements; NPDES = National Pollutant Discharge Elimination System; NRHP = *National Register of Historic Places*; PIPP = Pollution Incident Prevention Plan; NDCT = natural draft cooling tower; NRC = U.S. Nuclear Regulatory Commission; OSHA = Occupational Safety and Health Administration; RHAA = Rivers and Harbors Appropriation Act; ROW = right-of-way; SESC = Soil Erosion and Sedimentation Control; SHPO = State Historic Preservation Office; SWPPP = Stormwater Pollution Prevention Plan; USACE = U.S. Army Corps of Engineers.

(b) This conclusion is conditional on the results of the ongoing rulemaking to update the Waste Confidence Decision and Rule (see Section 6.1.6).

activities, such as cooling tower drift, maintenance dredging, and transmission line corridor maintenance, would also be minor.

Although minor impacts on transportation, recreation, housing, public services, and education would be associated with an increase in population related to Fermi 3 operations, these adverse impacts would be offset by an increase in tax revenue. Because the site is located in a predominantly agricultural area, is light industrial site by its nature, and is well masked by vegetation in most directions, its impacts on aesthetics would be minor. Local traffic would increase during operations, resulting in increased congestion, especially during outages. Impacts on local roadways would be mitigated by implementation of roadway improvements either during the construction period or as recommended by the Monroe County Road Commission (MCRC) or Michigan Department of Transportation (MDOT) following review of the site development plan.

The review team found no evidence of unique characteristics or practices among current minority and low-income populations that would make them differentially affected by operational activities. No unusual resource dependencies were identified in the minority and low-income populations in the region.

The cooling tower condensate plume would be visible within the visual setting of 21 architectural resources that have been determined or recommended eligible for listing in the *National Register of Historic Places* (NRHP). The existing visual setting of these properties, which are all located offsite but within the indirect area of potential effect, currently includes existing condensate plumes from the active Fermi 2 power plant facilities on the Fermi property and from the active Monroe County coal-fired power plant to the south along the Lake Erie shoreline. The Fermi 3 cooling tower plume would be consistent with the existing visual settings and views from these 21 architectural resources, and there would be no new significant visual impacts that would affect their NRHP-eligibility determination or recommendations for their eligibility. Finally, Detroit Edison has agreed to follow its unanticipated discovery procedures if historic or cultural resources are discovered during operation activities. USACE would also include an unanticipated discovery procedure requirement as a condition of its permit, if issued, relative to regulated locations and activities associated with the Fermi project.

Unavoidable adverse air quality impacts would be negligible, and pollutants emitted during operations would not be significant. Unavoidable adverse nonradiological health impacts on members of the public from operations – including impacts related to etiological agents, noise, electromagnetic fields (EMFs), occupational health, and transportation of materials and personnel – would be minimal, because Detroit Edison would implement controls and measures in compliance with Federal and State regulations.

Unavoidable adverse nonradiological health impacts would be related to minor increases in noise levels at the nearest sensitive receptor, and minor increases in the potential for occupational injuries and traffic accidents.

Radiological doses to members of the public from operation of proposed Fermi 3 would be below the NRC and EPA standards. Doses to workers from operation of Fermi 3 would also be below NRC limits and maintained as low as reasonably achievable (ALARA). The radiation protection measures designed to maintain doses to members of the public below NRC and EPA standards would also ensure that doses to biota other than humans would be well below National Council on Radiation Protection and Measurements (NCRP) and International Atomic Energy Agency (IAEA) guidelines.

Impacts from the nuclear fuel cycle would be bounded by the impacts in presented in Table S-3 of 10 CFR Part 51, and are therefore small. Impacts from carbon dioxide, radon, and technetium-99 were not addressed in Table S-3; Section 6.1 of this EIS addresses those impacts and concludes that they are small. Radiological doses from transportation of fuel and radiological waste would be within NRC and U.S. Department of Transportation (DOT) regulations, and therefore small. Impacts from decommissioning are addressed in Section 6.3 of this EIS; they are also consistent with the impacts presented in NUREG-0586 (NRC 2002), and are therefore small.

10.3 Relationship between Short-Term Uses and Long-Term Productivity of the Human Environment

Section 102(2)(C)(iv) of NEPA requires that an EIS include information on the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity.

The local use of the human environment by the proposed project can be summarized in terms of the unavoidable adverse environmental impacts of preconstruction, construction, and operations and the irreversible and irretrievable commitments of resources. With the exception of the consumption of depletable resources as a result of building and operating Fermi 3, these uses may be classified as short-term. The principal short-term benefit of the plant is represented by the production of electrical energy; and the economic productivity of the site, when used for this purpose, would be extremely large when compared to the short-term productive use of that portion of the Fermi site that would be developed for Fermi 3. The portion of the Fermi site where Fermi 3 would be built is not currently available for agricultural or industrial uses until Fermi 1 and 2 are decommissioned.

The maximum long-term impact on productivity would result if the plant was not immediately dismantled at the end of its operations and the land occupied by the plant structures was thus

not be available for any other use. However, it is expected that the enhancement of regional productivity that would result from the electrical energy produced by Fermi 3 would lead to a correspondingly large increase in regional long-term productivity that would not be equaled by any other long-term use of the site. In addition, most long-term impacts resulting from land use preemption by plant structures could be eliminated by removing these structures or by converting them to other productive uses. Once Fermi 3 was shut down, it would be decommissioned according to NRC regulations. Once decommissioning was complete and the NRC license was terminated, the site would be available for other uses.

10.4 Irreversible and Irretrievable Commitments of Resources

Section 102(2)(C)(v) of NEPA requires that an EIS include information on any irreversible and irretrievable commitments of resources that would occur if the proposed actions were implemented. The term "irreversible commitments of resources" refers to environmental resources that would be irreparably changed by building and operating Fermi 3 and that could not be restored at some later time to what their state was before the relevant activities occurred. "Irretrievable commitments of resources" refers to materials that would be used for or consumed by Fermi 3 in such a way that they could not, by practical means, be recycled or restored for other uses. The environmental resources and the anticipated impacts on them are discussed in Chapters 4, 5, and 6 of this EIS.

10.4.1 Irreversible Commitments of Resources

Irreversible commitments of environmental resources resulting from the construction, preconstruction, and operation of Fermi 3, in addition to the materials used for the nuclear fuel, are described below.

10.4.1.1 Land Use

Land committed to the disposal of radioactive and nonradioactive wastes is committed to that use and cannot be used for other purposes. The land used for Fermi 3, with the exception of any permanently filled wetlands, is not irreversibly committed because once Fermi 3 ceases operations and the plant is decommissioned in accordance with NRC requirements, the land supporting the facilities could be returned to other industrial or nonindustrial uses. Prime farmland contained within the roughly 64-ac agricultural field in the west-southwest corner of the Fermi site would either be irreversibly converted to developed land or experience surface soil damage during temporary use such that the soil properties responsible for the prime farmland designation would be irreversibly damaged. Most prime farmland within the proposed transmission line corridors would not be lost, as agricultural use remains possible for land traversed by transmission lines.

10.4.1.2 Water Use and Quality

Approximately 7.6 billion gal per year of water from Lake Erie would be lost through consumptive use as evaporative and drift losses from the natural draft cooling tower during operation. Some chemicals, including very low concentrations of radioisotopes, would be released from the facility into the surface water. Because these releases would conform to applicable Federal and State regulations, their impact on public health and the environment would be limited. The review team expects no irreversible commitment of water resources because Fermi 3 releases would be made in accordance with duly issued permits.

10.4.1.3 Terrestrial and Aquatic Resources

Preconstruction and construction activities would permanently convert some portions of terrestrial and aquatic habitats on the Fermi site, which would temporarily adversely affect the abundance and distribution of local terrestrial and aquatic species. Irretrievable commitments of resources include losses of approximately 5.2 ac of open water habitat and approximately 51 ac of currently undeveloped land, including 8.3 ac of wetlands. Approximately 146 ac of habitat (including 23.7 ac of wetlands) would be temporarily disturbed during preconstruction and construction, but these areas would not support new facilities once building was complete. Although considered "temporary impacts," these impacts may persist for a long period of time before forested habitats that are ecologically similar to mature forest in the region could develop through natural successional processes, and temporarily filled wetland habitats could return to pre-project functional levels after site rehabilitation. In addition, vegetation cutting to maintain the new transmission corridor will permanently convert forested wetlands to other wetland types, resulting in a permanent alteration in wetland functions provided by the impacted wetlands.

Dredging and the laying of pipes would temporarily affect benthic habitats in Lake Erie. Most of these areas are expected to recover, although periodic maintenance dredging would interrupt complete recovery near the barge slip. The intake and discharge structures on the lake bottom will result in permanent loss of lake bottom habitat. No irretrievable losses of resources detectable at the population level are expected to result from operations, and any impacts that would result from operations would cease post operations. Building and maintaining transmission line rights-of-way (ROWs) would result in the conversion of about 1069 ac of upland and wetland habitat to maintained early successional habitats (grassland and shrubland). Approximately 19 ac of additional upland habitat would be developed permanently to support an expanded Milan Substation. The ability to recover these habitats once the transmission lines and expanded substation were no longer needed is possible, but could require several decades. The majority of terrestrial and aquatic habitat losses would be due to preconstruction activities.

10.4.1.4 Socioeconomic Resources

The review team expects that no irreversible commitments would be made to socioeconomic resources, since they would be reallocated for other purposes once the plant was decommissioned.

10.4.1.5 Historic and Cultural Resources

Historic and cultural resources could be permanently altered by the preconstruction and construction of Fermi 3 and associated transmission lines. Fermi 1 is considered eligible for listing in the NRHP. Detroit Edison has not determined whether or not to remove Fermi 1 after the facility is decommissioned and its NRC license is terminated. If the Fermi 1 external structure is present when Fermi 3 building activities begin, then demolition of Fermi 1 would be required to construct Fermi 3, and demolition would represent an irreversible commitment of resources. Visual impacts (alteration of the existing landscape) would occur during operations.

10.4.1.6 Air Quality

Dust and other emissions, such as vehicle exhaust, would be released to the air during preconstruction and construction activities. During operations, vehicle exhaust emissions would continue, and other air pollutants and chemicals, including very low concentrations of radioactive gases and particulates, would be released from the facility into the air. Because these releases would conform to applicable Federal and State regulations, their impact on public health and the environment would be limited. The review team expects no irreversible commitment of air resources because all Fermi 3 releases would be in accordance with duly issued permits.

10.4.2 Irretrievable Commitments of Resources

In ER Revision 2 (Detroit Edison 2011a), Detroit Edison estimated the irretrievable commitment of resources for the construction of Fermi 3 as follows:

- 460,000 yd^3 of concrete;
- 46,000 tons of rebar;
- 25,000 tons of structural steel;
- 690,000 ft of piping;
- 220,000 ft of cable tray;
- 1,200,000 ft of conduit;
- 1,400,000 ft of power cable;

- 5,400,000 ft of control wire; and
- 740,000 ft of process and instrument tubing.

The review team expects that the construction materials used and the energy consumed for Fermi 3, while irretrievable, would be of small consequence with respect to the quantities of such resources that are available.

Uranium would be irretrievably committed during operation of Fermi 3. The availability of uranium ore and existing stockpiles of highly enriched uranium in the United States and Russia that could be processed into fuel is sufficient (OECD, NEA, and IAEA 2008), and the irreversible and irretrievable commitment is expected to be negligible.

10.5 Alternatives to the Proposed Action

Alternatives to the proposed action are discussed in Chapter 9 of this EIS. Alternatives considered are the no action alternative, energy production alternatives, system design alternatives, and alternative sites. For the purposes of the USACE's 404(b)(1) alternative evaluation, Detroit Edison's proposed alternative analysis and proposed Least Environmentally Damaging Practicable Alternative (LEDPA), as presented for compliance with the 404(b)(1) Guidelines, are discussed in Appendix J. The no action alternative, described in Section 9.1, refers to a scenario in which the NRC would deny the request for the COL. If no other power plant was built or if no electrical power supply strategy was implemented to take its place, the electrical capacity to be provided by the project would not become available, and the benefits (electricity generation) associated with the proposed action would not occur, so the need for power would not be met.

Alternative energy sources are described in Section 9.2. Alternatives that would not require additional generating capacity are described in Section 9.2.1. Detailed analyses of coal- and natural-gas-fired alternatives are provided in Section 9.2.2. Other energy sources are discussed in Section 9.2.3. A combination of energy alternatives is discussed in Section 9.2.4.

The review team concluded that none of the alternative energy options were both (1) consistent with Detroit Edison's objective of building baseload generation units and (2) environmentally preferable to the proposed action.

Alternative sites are discussed in Section 9.3. The cumulative impacts of building and operating the proposed facilities at the alternative sites are compared to the impacts at the proposed Fermi site in Section 9.3.7. Table 9-44 contains the review team's characterization of cumulative impacts at the proposed and alternative sites. On the basis of this review, the NRC staff concludes that although there are differences in cumulative impacts at the proposed and alternative sites, none of the alternative sites would be environmentally preferable or obviously

superior to the proposed Fermi site. The NRC's determination is independent of the USACE's determination of a Least Environmentally Damaging Practicable Alternative pursuant to Clean Water Act Section 404(b)(1) guidelines. The USACE will conclude this analysis of alternatives in its permit decision document.

Alternative heat dissipation and circulating water system designs are discussed in Section 9.4. The NRC staff concluded that none of the alternatives considered would be environmentally preferable to the proposed system designs.

10.6 Benefit-Cost Balance

NEPA (42 U.S.C. 4321 *et seq*.) requires that all agencies of the Federal Government prepare detailed EISs on proposed major Federal actions that can significantly affect the quality of the human environment. A principal objective of NEPA is to require each Federal agency to consider, in its decision-making process, the environmental impacts of each proposed major action and the available alternative actions. In particular, Section 102 of NEPA requires that all Federal agencies, to the fullest extent possible, identify and develop methods and procedures, in consultation with the Council on Environmental Quality (CEQ) established by Title II of this Act, which will ensure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations. However, neither NEPA nor the CEQ requires the costs and benefits of a proposed action to be quantified in dollars or any other common metric.

This section focuses on the monetized values of only those activities closely related to the building and operation of the proposed Fermi 3. The section does not identify and provide monetary estimates of all potential societal benefits of the proposed project and compare these to a monetized estimate of the potential costs of the proposed project. The review team offers quantified assessments for other benefits and costs that are of sufficient magnitude or importance that their inclusion in this analysis can inform the NRC and USACE decision-making processes. This section compiles and compares the pertinent analytical conclusions reached in earlier chapters of this EIS. It gathers all of the expected impacts from building and operating Fermi 3 and aggregates them into two final categories: the expected environmental costs and the expected benefits to be derived from approval of the proposed action.

Although the analysis in this section is conceptually similar to a purely economic benefit-cost analysis, which determines the net present dollar value of a given project, the intent is to identify potential societal benefits of proposed activities and compare these to their potential internal (i.e., private) and external (i.e., societal) costs. The purpose is to generally inform the COL

process by gathering and reviewing information that demonstrates the likelihood that the benefits of the proposed activities outweigh the aggregate costs.

General issues related to Detroit Edison's financial viability are outside the scope of NRC's EIS process and are thus not considered in this EIS. Issues related to Detroit Edison's financial qualifications will be addressed in the NRC's safety evaluation report. It is not possible to quantify and assign a value to all benefits and costs of the proposed action. This analysis, however, attempts to identify, quantify, and provide monetary values for benefits and costs when reasonable estimates are available.

Section 10.6.1 discusses the benefits associated with the proposed action. Section 10.6.2 discusses the costs associated with the proposed action. A summary of benefits is shown in Table 10-3. In accordance with NRC's guidance in NUREG-1555 (NRC 2000, pages 10.4.2–10.4.4), the internal costs of the proposed project are presented in monetary terms. Internal costs include all of the costs included in a total capital cost assessment: the direct and indirect costs of preconstruction and construction plus the annual costs of operation and maintenance. Section 10.6.3 provides a summary of the impact assessments, bringing previous sections together to establish a general impression of the relative magnitude of the proposed project's costs and benefits.

10.6.1 Benefits

The most obvious benefit from building and operating a power plant is that it would generate power and provide thousands of residential, commercial, and industrial consumers with electricity. The social and economic benefits of maintaining an adequate supply of electricity in any given region could be large, given that reliable electricity supplies are key to economic stability and growth in a region. In addition to nuclear power, however, there are a number of different power generation technology options that could meet the need for electric power, including natural-gas-powered plants, coal-fired generation, and hydroelectric plants. Because the focus of this EIS is the proposed expansion of generating capacity at the Fermi site, this section focuses primarily on the relative benefits of the Fermi option rather than the broader, more generic benefits of electricity supply.

10.6.1.1 Societal Benefits

For the production of electricity to be beneficial to a society, there must be a corresponding demand or "need for power" in the region. Chapter 8 of this EIS defines and discusses the need for power in more detail. From a societal perspective, the power itself is the primary benefit to society because it helps maintain the Nation's standard of living. However, price stability and longevity, energy security, and fuel diversity also are key benefits associated with nuclear power generation relative to the benefits from most other alternative generating technologies. These benefits are described in this section.

Table 10-3. Benefits of Building and Operating Fermi 3

Category of Benefit	Description of Benefit	Impact Assessment
Electricity generated	14 million MWh per year for the 40-year life of the plant.	–
Generating capacity	1605 MW(e).	–
Fuel diversity and energy security	Nuclear power generation provides diversity to Detroit Edison's and the Midwest Independent Transmission System Operator, Inc. (MISO) region's baseload generation inventory.	SMALL
Tax revenues	Sales taxes paid by Detroit Edison for local purchases of about $14 million (in 2008 U.S. dollars) annually over the 40-year life of the unit; and local sales taxes and other taxes paid by in-migrating workers that amount to about $0.25 million divided between Michigan and Ohio locales (see Section 5.4.3.2).	SMALL to MODERATE
	Property taxes paid by Detroit Edison to Monroe County and local governments during construction (about $96.1 million over 10 years) and over the 40-year life of the unit (about $302.9 million per year).	LARGE
Local economy	Increased jobs would benefit the area economically and increase the economic diversity of the region (see Sections 4.4.3.1 and 5.4.3.1).	SMALL to MODERATE
Traffic	Minor upgrades to roads around the Fermi site to mitigate anticipated traffic quality degradation from Fermi 3 worker commutes.	SMALL
Public services and education	Additional tax revenues and philanthropic dollars to the community expected from Detroit Edison corporate donations as well as donations of time and money from its employees (see Sections 4.4.4.4, 4.4.4.5, 5.4.4.4, and 5.4.4.5).	SMALL

Price Stability and Longevity

Because of nuclear power's relatively low and nonvolatile fuel costs (approximately one-half cent per kilowatt-hour [kWh]) and a projected capacity utilization rate of 85 to 93 percent, nuclear energy is a dependable source of electricity that can be provided at relatively stable prices. Because of its low costs, the fuel price elasticity of electricity demand (how the consumer's demand for electricity changes as the price of uranium changes the cost of producing that electricity) is the lowest of all baseload electricity-generating fuels. The price of

uranium fuel is only 3 to 5 percent of the cost of a kWh of nuclear-generated electricity. Doubling the price of uranium increases the cost of electricity by about 7 percent. In contrast, doubling the price of natural gas adds about 70 percent to the price of electricity; and doubling the cost of coal adds about 36 percent to the price of electricity (WNA 2007).

Unlike some other energy sources, nuclear energy is generally not subject to unreliable weather or climate conditions, unpredictable cost fluctuations, or dependence on foreign suppliers. In addition to low fuel prices, the relative lack of volatility in fuel prices when compared to fuel prices for natural gas-fired and oil-fired power plants, along with projected power plant availability rates of 85 to 93 percent, mean that nuclear energy is a dependable source of electricity that can be provided to the consumer at relatively stable prices over a long period of time.

Energy Security and Fuel Diversity

Currently, more than 70 percent of the electricity generated in the United States is generated by using fossil-based technologies. Nuclear power adds diversity and flexibility to the U.S. energy mix, thereby hedging the risk of shortages and price fluctuations that would result from an overdependence on any one power generating system.

A diverse fuel mix helps protect consumers from contingencies, such as fuel shortages or disruptions, price fluctuations, and changes in regulatory practices. Within Detroit Edison's service area, coal provides 57 percent of the electricity generation, natural gas provides 23 percent, oil provides 11 percent, and nuclear power provides 9 percent (Detroit Edison 2011a). The proposed expansion of the Fermi site generating capacity could provide additional nuclear power generating capacity to the generation mix and thus, give the region a hedge against risks of future shortages and price fluctuations associated with alternative generating systems.

10.6.1.2 Regional Benefits

Regional benefits of building and operating Fermi 3 include enhanced tax revenues at the State, county, and local levels; opportunities for increased regional productivity in industry, manufacturing, and other business categories; and improvements in local infrastructure and services derived from the increased tax base provided by the proposed Fermi 3 plant.

Tax Revenue Benefits

Tax revenues would come from various sources during preconstruction, construction, and operation of Fermi 3, including (a) State taxes on worker incomes, (b) State sales taxes on materials and supplies, (c) State sales taxes on worker expenditures, and (d) local property

taxes or payments in lieu of taxes based on the incremental increase in the value of Fermi 3 during construction. The tax structure of the region is discussed in Section 2.5.2.2 of this EIS.

State income tax revenue during the building of Fermi 3 would be approximately $1 million annually ($0.9 million annually for the State of Michigan and approximately $0.12 million annually for the State of Ohio – see Section 4.4.3.2). During operations, about $0.25 million in income taxes would be received: about $0.2 million would be received by the State of Michigan, and $0.03 million would be received by the State of Ohio (see Section 5.4.3.2). The States of Michigan and Ohio and some of the local jurisdictions in Ohio would also receive sales tax revenue on expenditures made by the new workers and on purchases of building materials and supplies in the local area. The review team estimated, on the basis of information provided by Detroit Edison, that the State of Michigan would receive new sales tax revenue of about $8.3 million over the 10-year building period for Fermi 3 and that the State of Ohio would receive about $5.1 million.

Assuming a State sales tax rate in Michigan of 6 percent, an estimated $0.5 million in sales tax revenue would be received by the State of Michigan annually over the 40-year life of the Fermi 3 COL. Assuming a State sales tax rate in Ohio of 5.5 percent, an estimated $0.3 million in sales tax revenue would be received by the State annually from the purchase of materials and supplies for the operation and maintenance of Fermi 3.

A number of local jurisdictions, including Monroe County and Frenchtown Charter Township, would benefit from increased property taxes associated with Fermi 3. In 2009, the assessed value of property owned by Detroit Edison in Monroe County was $821 million (Monroe County Finance Department 2009), which is approximately 13.3 percent of the total county taxable assessed value of slightly more than $6.1 billion. Given that the expected Fermi 3 overnight cost of construction is $6.4 billion, upon completion of the construction of Fermi 3, the total assessed property value in Monroe County would increase by about 100 percent.

In 2009, Detroit Edison paid a millage rate of approximately 47.33 mills, which was dispersed to Frenchtown Charter Township (6.8 mills), Monroe County (including Monroe Intermediate School District, Monroe Community College, and the Monroe Library) (13.23 mills), Jefferson Resort School District (18.5 mills), and the Resort Authority (2.8 mills) (Detroit Edison 2011a). As the assessed value of property would increase each year during the project, so would the taxes paid to Monroe County, Frenchtown Charter Township, and other local jurisdictions. These incremental increases in taxes would have a significant impact on annual property tax revenues in these jurisdictions.

Regional Productivity and Community Impacts

Building of Fermi 3 would require an average workforce of about 1000 workers per year over the 10-year construction period, with a peak building employment of about 2900 workers. The

Fermi 3 workforce would produce, on average, about $50.5 million in income each year over the entire preconstruction and construction period (see Section 4.4.3.1). Stimulus from these new jobs and income would induce a multiplier effect that would create additional indirect jobs in the economic impact area – Monroe, Wayne, and Lucas Counties – producing about 253 new jobs during the building of Fermi 3. Operations would create 900 direct jobs and $57.3 million in income annually and would be maintained throughout the life of the plant (see Section 5.4.3.1). Additional annual indirect jobs and indirect income would be created in the three-county area by the new operational jobs, for a total of 458 indirect jobs during operations. An estimated 1200 to 1500 workers would also be employed at Fermi 3 during scheduled refueling outages, which would occur every 24 months and require outage workers for a period of 30 days, producing an additional $7.9 million in income every 2 years (Detroit Edison 2011a).

10.6.2 Costs

Internal costs to Detroit Edison as well as external costs to the surrounding region and environment would be incurred during the preconstruction, construction, and operation of Fermi 3. Internal costs include the costs to build the power plant (capital costs), as well as operating and maintenance costs and the costs of fuel, waste disposal, and decommissioning. External costs include all costs imposed on the environment and region surrounding the plant and may include the loss of regional productivity, environmental degradation, and loss of wildlife habitat. Internal and external costs of building and operating Fermi 3 are presented in Table 10-4.

10.6.2.1 Internal Costs

The most substantial monetary cost associated with nuclear energy is the cost of capital. Nuclear power plants typically have relatively high capital costs but low fuel costs relative to alternative power generation systems. Because of the high capital costs for nuclear power and because of the relatively long construction period before revenue is returned, servicing the capital costs of a nuclear power plant is the most important factor in determining the economic competitiveness of nuclear energy. Because a power plant does not yield profits during construction, longer construction times can add significantly to the cost of a plant through higher interest expenses on borrowed construction funds.

Preconstruction and Construction Costs

In evaluating monetary costs related to constructing Fermi 3, Detroit Edison reviewed recent published literature, vendor information, internally generated financial information, and internally generated, site-specific information (Detroit Edison 2011a). The cost estimates reviewed were not based on nuclear plant construction experience in the United States, which is more than 20 years old, but rather on construction costs overseas, which are more recent. A phrase commonly used to describe the monetary cost of constructing a nuclear plant is “overnight

Table 10-4. Internal and External Costs of Building and Operating Fermi 3

Benefit-Cost Category	Description (except where noted, costs are in 2008 U.S. dollars)	Impact Assessment[a]
Internal Costs[b]		
Construction cost	$6.4 billion (overnight capital cost).	–
Operating cost	6.7–7.0 cents per kWh (levelized cost of electricity) (MIT 2010).	–
Spent fuel management	0.1 cent/kWh (WNA 2007).[c]	–
Decommissioning	0.1–0.2 cent/kWh (WNA 2007).[d]	–
Material and resources	460,000 yd^3 of concrete 46,000 tons of rebar 25,000 tons of structural steel 690,000 ft of piping 220,000 ft of cable tray 1,200,000 ft of conduit 1,400,000 ft of power cable 5,400,000 ft of control wire 740,000 ft of process and instrument tubing.	–
Tax payments	State income taxes of $0.7 million annually during construction and operation (see Section 5.4.3.2).	SMALL
	Annual sales taxes of $0.3 million during construction and of $0.2 million during operations.	SMALL
	Approximately $14 million per year in local property taxes paid by Detroit Edison over the 40-year life of the COL.	SMALL
Land use	Approximately 155 ac occupied on a long-term basis by the new nuclear reactor and associated infrastructure. An estimated 1069 ac of land for ROWs would need to be acquired and developed for electricity transmission (see Sections 4.1 and 5.1). An additional 19 ac would be developed to expand the Milan Substation.	SMALL
External Costs		
Land use	The onsite and offsite land devoted to the proposed Fermi 3 facilities would not be available for other land uses over the operational life of Fermi 3 (see Sections 4.1 and 5.1).	SMALL

Table 10-4. (contd)

Benefit-Cost Category	Description (except where noted, costs in 2008 U.S. dollars)	Impact Assessment[(a)]
Air quality impacts	Negligible impacts (see Sections 4.2, 5.2, and 9.2). Avoidance of sulfur dioxide, nitrogen oxide, carbon monoxide, carbon dioxide, and particulate emissions.	SMALL
Water-related impacts	Small impact on surface and groundwater use and water quality. Water effluents would be regulated by MDEQ's Environmental Protection Division under an NPDES permit (see Sections 4.2 and 5.2).	SMALL
Ecological impacts	Loss or disturbance of upland, wetland, and aquatic habitat and associated plant and animal species onsite and along the transmission line corridor. Proposed mitigation would offset some impacts. Operational impacts on most species and habitats are expected to be minor.	SMALL to MODERATE (potential for MODERATE limited toeastern fox snake)
Physical impacts on community	Impacts limited primarily to boundaries of the site; potentially moderate offsite traffic impacts (see Sections 4.4.1 and 5.4.1).	SMALL
Housing	Potential short-term housing shortage (possibly driving up housing prices and rental rates) in Monroe County during the 10-year construction period (see Section 4.4.4.3).	SMALL
Traffic	Short-term stress on the local road network because of congestion during construction affecting commuting patterns and potential degradation from vehicles used for construction and operational activities (see Sections 4.4.4.1 and 5.4.4.1).	MODERATE
Public services	Minimal short-term strain on community services in Monroe County during early stages of 10-ear construction period (see Section 4.4.4.4).	SMALL
Recreation	Because the in-migrating workforce for construction and operations would be small relative to the population of the region, there would be little marginal impact on recreation from Fermi 3 (see Sections 4.4.1.4, 4.4.3.4, 5.4.1.4, and 5.4.3.4).	SMALL

Table 10-4. (contd)

Benefit-Cost Category	Description (except where noted, all costs in 2008 U.S. dollars)	Impact Assessment[(a)]
Cultural resources	There would be an adverse effect on a historic property if Fermi 1 was demolished for the Fermi 3 project. Detroit Edison has committed to developing procedures to manage cultural resources in the event of an inadvertent discovery onsite (see Sections 4.6 and 5.6).	MODERATE
Health impacts (nonradiological and radiological)	Impacts of radiological exposures on construction workers would be SMALL. Radiological doses to the public and occupational workers would be monitored and controlled in accordance with regulatory limits (see Sections 4.8, 4.9, 5.8, and 5.9). Nonradiological health impacts on the public and occupational workers would be SMALL; hazards would be monitored and controlled in accordance with regulatory limits (see Sections 4.8 and 5.8).	SMALL
Nonradioactive waste	Permitted site stormwater releases to surface water. Minor, localized, and temporary air emissions from construction equipment and temporary stationary sources. Creation of solid wastes, causing minor consumption of local or regional landfill space, offset by payment of tipping fees for waste disposal. Generation of small amounts of hazardous and mixed wastes leading to minor consumption of regional hazardous waste treatment or disposal capacity, offset by treatment and disposal costs (see Sections 4.10 and 5.10).	SMALL
Radioactive waste	Storage, treatment, and disposal of radioactive low-level waste and spent nuclear fuel. Commitment of near-surface and geological resources for disposal of radioactive waste (see Section 6.1.6).	SMALL[(e)]

(a) Impact assessments are listed for all impacts evaluated in detail as part of this EIS. The details on impact assessments are found in the indicated sections of this EIS.
(b) Internal costs are costs incurred by Fermi to implement proposed construction and operation at the Fermi site. Note that no impact assessments are provided for these private financial impacts.
(c) Based on Yucca Mountain waste maintenance levy (WNA 2007).
(d) Decommissioning costs are included in total operating costs.
(e) This conclusion is conditional on the results of the ongoing rulemaking to update the Waste Confidence Decision and Rule (see Section 6.1.6).

capital cost." Capital costs are those incurred during construction and include engineering, procurement, and construction costs, measured during the period(s) when the actual outlays for equipment, construction, and engineering are expended. Overnight costs assume that the plant is constructed "overnight," with no interest included in the capital cost estimate. Studies of new power plant construction indicate that the estimated construction costs of a nuclear power plant average approximately $4000 per kilowatt (kW) of electrical generating capacity (MIT 2010).

Operation Costs

Operation costs are frequently expressed in terms of the levelized cost of electricity, which is the price per kWh of producing electricity, including the cost needed to cover operating costs and annualized capital costs. Overnight capital costs account for a third of the levelized cost, and interest costs on the overnight costs account for another 25 percent (University of Chicago 2004). A recent Massachusetts Institute of Technology (MIT) study concluded that at an 85 percent capacity factor, electricity generation costs vary between 6.7 and 7.0 cents per kWh, depending on the economic life of the plant (MIT 2010). Estimates include decommissioning but, because of the effect of discounting a cost that would occur as late as 40 years in the future, decommissioning costs have relatively little effect on the levelized cost.

Fuel Costs

From the outset, the basic attraction of nuclear energy has been its low fuel costs when compared to those of coal-, oil-, and gas-fired plants. Uranium, however, has to be processed, enriched, and fabricated into fuel elements, and about half of the cost results from enrichment and fabrication. Allowances must also be made for the management of radioactive spent fuel and the ultimate disposal of this spent fuel or the wastes separated from it. Even with these costs included, the total fuel costs of a nuclear power plant are typically about a third of those for a coal-fired plant and between a quarter and a fifth of those for a natural gas combined-cycle plant (University of Chicago 2004). The International Energy Agency estimated the average fuel cost for a nuclear generating plant to be less than one-half cent per kWh at a 5 percent discount rate.

Waste Disposal

The backend costs of nuclear power contribute a very small share to total cost, both because of the long lifetime of a nuclear reactor and the fact that provisions for waste-related costs can be accumulated over that time. It should also be recognized, however, that radioactive nuclear waste poses unique disposal challenges for long-term management. The United States and other countries have yet to implement final disposition of spent fuel or high-level radioactive waste streams created at various stages of the nuclear fuel cycle. Because these radioactive wastes present some danger to present and future generations, the public and its elected representatives, as well as prospective investors in nuclear power plants, properly expect

continuing and substantial progress toward a solution to the waste-disposal problem. Successful operation of a geological repository would ease, but not solve, the waste-disposal issue for the United States and other countries, if nuclear power expands substantially (MIT 2003).

Decommissioning

In 10 CFR 50.75, the NRC has requirements for licensees to provide a reasonable assurance that funds would be available for the decommissioning process. Because of the effect of discounting a cost that would occur as much as 40 years in the future, decommissioning costs have relatively little effect on the levelized cost of electricity generated by a nuclear power plant (WNA 2007), estimated to be between 0.1 and 0.2 cents per kWh, which is no more than 5 percent of the cost of the electricity produced (WNA 2007).

10.6.2.2 External Costs

External costs are social and/or environmental effects caused by the proposed construction and operation of a new power reactor at the Fermi site. This EIS includes the NRC staff's analysis that weighs the environmental impacts of constructing and operating a new nuclear unit at the Fermi site or at alternative sites and mitigation measures available for reducing or avoiding these adverse impacts. It also includes the review team's recommendation to the Commission regarding the proposed action.

Environmental and Social Costs

Chapter 4 of this EIS describes the impacts on the environment from building Fermi 3 with respect to land use, air quality, water, terrestrial and aquatic ecosystems, socioeconomics, historic and cultural resources, environmental justice, and nonradiological and radiological health effects. It also describes measures and controls to limit adverse impacts during the building of Fermi 3. Chapter 5 examines the impacts associated with the operation of Fermi 3 for an initial 40-year period on these same topic areas, as well as postulated accidents. Applicable measures and controls that would limit the adverse impacts of station operation during the 40-year operating period are considered.

Chapter 6 similarly addresses the environmental impacts from the (1) uranium fuel cycle and solid waste management, (2) transportation of radioactive material, and (3) decommissioning of Fermi 3. Chapter 7 of this EIS places all of the potential impacts of the new unit in the context of all past, present, and reasonably foreseeable future activities in the general area that may have a connection to the region. Chapter 9 includes the review team's assessment of alternative sites, alternative power generation systems, and alternative cooling system designs. In Chapter 10, impacts were also compared to the adverse impacts for the alternative sites. Section 10.2 identifies unavoidable adverse impacts of the proposed action (i.e., impacts after

consideration of proposed mitigation actions), and Section 10.4 identifies irretrievable commitments of resources.

Unlike the situation when electricity is generated from coal and natural gas, the normal operation of a nuclear power plant does not result in significant emissions of criteria air pollutants (e.g., nitrogen oxides or sulfur dioxide), methyl mercury, or greenhouse gases associated with global warming and climate change. Combustion-based power plants are responsible for 36 percent of the carbon dioxide, 64 percent of the sulfur dioxide, 26 percent of the nitrogen oxide, and 13 percent of the mercury emissions from industrial sources in the United States (DOE/EIA 2006). The majority of the electric power industry's emissions are likely from coal-fired plants. Chapter 9 of this EIS analyzes coal- and natural-gas-fired alternatives to the building and operation of Fermi 3. Air emissions from these alternatives and nuclear power are summarized in Chapters 4, 5, and 9.

10.6.3 Summary of Benefits and Costs

Detroit Edison's business decision to pursue expansion of Fermi generating capacity by adding a nuclear reactor is an economic decision, based on private financial factors subject to regulation by the Michigan Public Service Commission. The internal costs to construct additional units appear to be substantial; however, Detroit Edison's decision to pursue this expansion implies that the company has already concluded that the private, or internal, benefits of the proposed facility outweigh the internal costs. Although no specific monetary values could reasonably be assigned to the identified societal benefits, it would appear that the potential societal benefits of the proposed expansion of Fermi generating capacity are substantial. In comparison, the external socioeconomic and environmental costs imposed on the region appear to be relatively small.

As described in Section 8.4, there is increasing baseload demand and decreasing baseload supply in the region of interest. Without additional baseload generating capacity, Detroit Edison's electricity network will fail to maintain an adequate power reserve margin to meet its public service obligations to provide adequate power and will jeopardize the utility's commitment to provide power to other electric service providers within the region. Fermi 3 would help meet the increasing baseload demand in the region by supplying average annual electrical energy generation of about 12,000,000 megawatt-hours (MWh).

As described in this section, the additional direct and indirect creation of jobs would place some temporary burdens on local services and infrastructure, but the additional annual taxes and revenue generated by the new workers would contribute to the local economy and stimulate future growth. By comparison, the external socio-environmental costs imposed on the region appear to be relatively small.

The review team concludes, on the basis of the assessments summarized in this EIS, that the building and operation of the proposed Fermi 3, with mitigation measures identified by the review team, would accrue benefits that most likely would outweigh the economic, environmental, and social costs associated with constructing and operating a new unit at the Fermi site.

10.7 Staff Conclusions and Recommendations

The NRC staff's recommendation to the Commission related to the environmental aspects of the proposed action is that the COL should be issued.[(a)] The staff's evaluation of the safety and emergency preparedness aspects of the proposed action will be addressed in the staff's safety evaluation report that is anticipated to be published in the future.

The staff's recommendation is based on (1) the ER submitted by Detroit Edison (Detroit Edison 2011a); (2) consultation with Federal, State, Tribal, and local agencies; (3) the review team's own independent review; (4) the staff's consideration of public scoping comments; and (5) the assessments summarized in this EIS, including the potential mitigation measures identified in the ER and in the EIS. In addition, in making its recommendation, the staff determined that none of the alternative sites assessed is obviously superior to the Fermi site. The NRC's determination is independent of the USACE's determination of a Least Environmentally Damaging Practicable Alternative pursuant to Clean Water Act Section 404(b)(1) guidelines and its required PIR. The USACE's independent regulatory permit decision documentation will reference relevant analyses from the EIS and, as necessary, include a supplemental PIR; CWA 404(b)(1) evaluation; cumulative impact analysis; compensatory mitigation plan that is in accordance with 33 CFR Part 332, "Compensatory Mitigation for Losses of Aquatic Resources;" and other information and evaluations that may be outside the NRC's scope of analysis and not included in this EIS, but that are required by the USACE to support its permit decision.

10.8 References

10 CFR Part 50. Code of Federal Regulations, Title 10, *Energy*, Part 50, "Domestic Licensing of Production and Utilization Facilities."

10 CFR Part 51. Code of Federal Regulations, Title 10, *Energy*, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

10 CFR Part 52. Code of Federal Regulations, Title 10, *Energy*, Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants."

(a) As directed by the Commission in CLI-12-16 (NRC 2012b), NRC will not issue the COL prior to completion of the ongoing rulemaking to update the Waste Confidence Decision and Rule (see Section 6.1.6).

33 CFR Part 320. Code of Federal Regulations, Title 33, *Navigation and Navigable Waters*, Part 320, "General Regulatory Policies."

33 CFR Part 332. Code of Federal Regulations, Title 33, *Navigation and Navigable Waters*, Part 332, "Compensatory Mitigation for Losses of Aquatic Resources."

36 CFR Part 800. Code of Federal Regulations, Title 36, *Parks, Forests, and Public Property*, Part 800, "Protection of Historic Properties."

40 CFR Part 230. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 230, "Guidelines for Specification of Disposal Sites for Dredged or Fill Material."

72 FR 57416. October 9, 2007. "Limited Work Authorizations for Nuclear Power Plants." *Federal Register*. U.S. Nuclear Regulatory Commission.

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Detroit Edison Company (Detroit Edison). 2011c. *Detroit Edison Fermi 3 Project, U.S. Army Corps of Engineers and Michigan Department of Environmental Quality, Joint Permit Application.* Revision 0, Detroit Michigan. June. Accession No. ML111940490.

Detroit Edison Company (Detroit Edison). 2011d. *Detroit Edison Fermi 3 Project, U.S. Army Corps of Engineers and Michigan Department of Environmental Quality, Joint Permit Application.* Revision 1, Detroit Michigan. August. Accession No. ML112700388.

Detroit Edison Company (Detroit Edison). 2012a. *Fermi 3 Aquatic Resource Mitigation Strategy and Design.* Submitted to MDEQ on August 3, 2012. Accession No. ML122580003.

Detroit Edison Company (Detroit Edison). 2012b. *Detroit Edison Fermi 3 Construction, Habitat and Species Conservation Plan, Eastern Fox Snake (Elaphe gloydi)*. March 2012, Revision 0. Accession No. ML12163A577.

Detroit Edison Company (Detroit Edison). 2012c. *Detroit Edison Fermi 3 Operational Conservation and Monitoring Plan, Eastern Fox Snake (Elaphe gloydi)*. March 2012, Rev. 0. Accession No. ML12188A150.

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U.S. Nuclear Regulatory Commission (NRC). 2011. Staff Memorandum from S. Flanders, DSER Division Director, to B. Clayton, RENV Branch Chief, "Addressing Construction and Preconstruction, Greenhouse Gas Issues, General Conformity Determinations, Environmental Justice, Need for Power, Cumulative Impact Analysis, and Cultural/Historic Resources Analysis Issues in Environmental Impact Statements." March 4, 2011. Accession No. ML110380369.

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Appendix A

Contributors to the Environmental Impact Statement

Appendix A

Contributors to the Environmental Impact Statement

The overall responsibility for the preparation of this environmental impact statement was assigned to the Office of New Reactors, U.S. Nuclear Regulatory Commission (NRC). The U.S. Army Corps of Engineers (USACE) is participating as a cooperating agency. The environmental impact statement was prepared by members of the Office of New Reactors with assistance from other NRC organizations, the USACE, Argonne National Laboratory, Energy Research, Inc., Ecology and Environment, Inc., and Dade Moeller and Associates.

Name	Affiliation	Function or Expertise
	NUCLEAR REGULATORY COMMISSION	
Bruce Olson	Office of New Reactors	Project Manager, Environmental Consequences of Proposed Action
John Fringer	Office of New Reactors	Deputy Project Manager, Cultural Resources, Nonradiological Health and Waste
Tomeka Terry	Office of New Reactors	Project Manager
Barry Zalcman	Office of New Reactors	Senior Staff Oversight, Cumulative Impacts
Jack Cushing	Office of New Reactors	Senior Staff Oversight
Peyton Doub	Office of New Reactors	Land Use, Terrestrial Ecology, Transmission Lines
Daniel Barnhurst	Office of New Reactors	Hydrology, Surface Water
Laurel Bauer	Office of New Reactors	Geology
Michael Masnik	Office of New Reactors	Aquatic Ecology, Transmission Lines
Daniel Mussatti	Office of New Reactors	Socioeconomics, Environmental Justice, Need for Power, Benefit-Cost Balance
Andrew Kugler	Office of New Reactors	Alternative Energies, Alternative Sites
Stacey Imboden	Office of New Reactors	Cumulative Impacts
Seshagiri Tammara	Office of New Reactors	Demography
Charles Hinson	Office of New Reactors	Radiological Health Impacts – Occupational
George Cicotte	Office of New Reactors	Radiological Health Impacts – Effluent
Brad Harvey	Office of New Reactors	Meteorology and Air Quality
Don Palmrose	Office of New Reactors	Radiological Health Impacts, Radioactive Waste Systems, Uranium Fuel Cycle, Accidents
Stan Echols	Office of Nuclear Material Safety and Safeguards	Uranium Fuel Cycle
David Brown	Office of New Reactors	Design Basis Accidents
Michelle Hart	Office of New Reactors	Design Basis Accidents
Edward Fuller	Office of New Reactors	Severe Accidents, Severe Accident Mitigation Alternatives
Jessica Glenny	Office of Nuclear Material Safety and Safeguards	Transportation of Radioactive Materials
James Shepherd	Office of Federal and State Materials and Environmental Management Programs	Decommissioning

Name	Affiliation	Function or Expertise
Steve Giebel	Office of Federal and State Materials and Environmental Management Programs	Decommissioning
US ARMY CORPS OF ENGINEERS		
Colette Luff	Detroit District	Project Manager
ARGONNE NATIONAL LABORATORY[(a)]		
Kirk LaGory		Project Team Leader, Cumulative Impacts, Environmental Consequences of Proposed Action
John Hayse		Deputy Task Leader, Aquatic Ecology
Tim Allison		Land Use, Benefit-Cost Balance
Adrianne Carr		Hydrology – Groundwater
John Quinn		Geology, Hydrology – Surface Water
Sunita Kamboj		Radiological Health, Nonradiological Health, Waste Systems, Decommissioning
Young-Soo Chang		Meteorology, Air Quality
Bruce Biwer		Transportation
Ron Kolpa		Alternatives
Halil Avci		Alternatives
Vic Comello		Technical Editing
Michele Nelson		Graphics and Figures
ENERGY RESEARCH, INC.		
Mohsen Khatib-Rahbar		Project Manager
Roy Karimi		Environmental Lead, Accidents – Severe and Design Basis, Severe Accident Mitigation Alternatives
Mike Zavisca		Severe Accident Mitigation Alternatives, Accidents, Severe and Design Basis
ECOLOGY AND ENVIRONMENT, INC.		
Natasha Snyder		Historic and Cultural Resources
David Weeks		Terrestrial Ecology
Jone Guerin		Demography, Socioeconomics, Environmental Justice
DADE MOELLER & ASSOCIATES, INC.		
David McCormack		Uranium Fuel Cycle

(a) Argonne National Laboratory is operated for the U.S. Department of Energy by UChicago Argonne, LLC.

Appendix B

Organizations Contacted

Appendix B

Organizations Contacted

The following Federal, State, regional, Tribal, and local organizations were contacted during the course of the U.S. Nuclear Regulatory Commission staff's independent review of potential environmental impacts from the construction and operation of a new nuclear unit, Enrico Fermi Unit 3, at the Detroit Edison Company Enrico Fermi Atomic Power Plant site in Monroe County, Michigan:

Advisory Council on Historic Preservation, Washington, D.C.

Bay Mills Indian Community, Brimley, Michigan

American Museum of Nuclear Science and History, Albuquerque, New Mexico

American Nuclear Society, La Grange Park, Illinois

Delaware Nation, Anadarko, Oklahoma

Forest County Potawatomi Community of Wisconsin, Crandon, Wisconsin

Grand Traverse Band of Ottawa and Chippewa Indians, Suttons Bay, Michigan

Great Lakes Fisheries Commission, Lansing, Michigan

Hannahville Indian Community, Wilson, Michigan

Huron Potawatomi, Inc., Fulton, Michigan

International Joint Commission, Great Lakes Water Quality Board, Washington, D.C.

Keweenaw Bay Indian Community, Baraga, Michigan

Lac Vieux Desert Band of Lake Superior Chippewa Indians, Watersmeet, Michigan

Little River Band of Ottawa Indians, Manistee, Michigan

Little Traverse Bay Bands of Odawa Indians, Harbor Springs, Michigan

Match-e-be-nash-she-wish Band of Pottawatomi Indians of Michigan, Dorr, Michigan

Michigan Department of Environmental Quality, Lansing, Michigan

Michigan Department of Natural Resources, Lansing, Michigan

Michigan State Historic Preservation Office, Michigan Historical Center, Department of History, Arts and Libraries, Lansing, Michigan

Michigan Natural Features Inventory, Lansing, Michigan

Monroe County Community College, Monroe, Michigan

Monroe County Historical Commission, Monroe, Michigan

Monroe County Historical Museum, Monroe, Michigan

National Marine Fisheries Service, Northeast Regional Office, Gloucester, Massachusetts

New York State Department of Environmental Conservation, Steam Electric Unit, Bureau of Habitat, Division of Fish, Wildlife, and Marine Resources, Albany, New York

Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Ohio Natural Heritage Data Base, Columbus, Ohio

Ottawa Tribe of Oklahoma, Miami, Oklahoma

Pokagon Band of Potawatomi Indians, Dowagiac, Michigan

Saginaw Chippewa Indian Tribe of Michigan, Mt. Pleasant, Michigan

Sault Ste. Marie Tribe of Chippewa Indians of Michigan, Sault Ste. Marie, Michigan

Shawnee Tribe, Miami, Oklahoma

U.S. Department of the Interior, Office of Environmental Policy and Compliance, Philadelphia, Pennsylvania

U.S. Environmental Protection Agency, Region 5, Chicago, Illinois

U.S. Fish and Wildlife Service, East Lansing Michigan Field Office, East Lansing, Michigan

Wyandotte Nation, Wyandotte, Oklahoma

Appendix C

NRC and USACE Environmental Review Correspondence

Appendix C

NRC and USACE Environmental Review Correspondence

This appendix contains a chronological listing of correspondence between the U.S. Nuclear Regulatory Commission (NRC) or the U.S. Army Corps of Engineers (USACE) and Detroit Edison Company (Detroit Edison), and other correspondence related to the environmental review for a combined license (COL) application for Enrico Fermi Unit 3 (Fermi 3) near Monroe, Michigan. This application was submitted by the Detroit Edison.

All documents, with the exception of those containing proprietary information, are available through the Commission's Public Document Room, at One White Flint North, 11555 Rockville Pike (first floor), Rockville, MD, and are available electronically from the Public Electronic Reading Room found on the Internet at the following Web address: http://www.nrc.gov/reading-rm.html. From this site, the public can gain access to the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents in the component of ADAMS. The ADAMS accession numbers for each document are included below.

September 18, 2008	Letter from Mr. J.M. Davis, Detroit Edison, to NRC transmitting application for Combined License for the Fermi Nuclear Power Plant (Accession No. ML082730763).
October 10, 2008	Letter from Mr. Chandu Patel, NRC, to Mr. Jack M. Davis, DTE, acknowledging receipt of the combined license application for Fermi Nuclear Power Plant, Unit 3 (Accession No. ML082381079).
December 3, 2008	Letter from Mr. G.P. Hatchett, NRC, to Mr. J.M. Davis, Detroit Edison, transmitting Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Related to a Combined License for Fermi Nuclear Power Plant, Unit 3 (Accession No. ML083110329).
December 10, 2008	Letter from Mr. Stephen Lemont, NRC, to Ms. Margo Zieske, Monroe County Libraries, regarding maintenance of reference materials at the Dorsch Library for the environmental review of the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML082560486).

December 23, 2008 Notice of Public Meeting to discuss Environmental Scoping Process for the Fermi Nuclear Power Plant Combined License Application for Unit 3 (Accession No. ML083500473).

December 23, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Craig Czarnecki, Field Supervisor, U.S. Fish and Wildlife Service, regarding request for participation in the environmental scoping process and a list of protected species within the area under evaluation for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083151398).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Ms. Mary Colligan, NOAA National Marine Fisheries Service, Northeast Regional Office, regarding request for participation in the environmental scoping process and a list of protected species within the area under evaluation for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083151403).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Ms. Patricia Jones, Ohio Department of Natural Resources, regarding request for participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083151404).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Kelley Smith, Chairman, Great Lakes Fisheries Commission, regarding request for participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083151400).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Don Klima, Director, Office of Federal Agency Programs, Advisory Council on Historic Preservation, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083151399).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Warren C. Swartz, President, Keweenaw Bay Indian Community, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190398).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to the Honorable Jeffrey D. Parker, President, Bay Mills Indian Community, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190083).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Robert Kewaygoshkum, Chairman, Grand Traverse Band of Ottawa and Chippewa Indians, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190375).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. James Williams, Jr., Chairman, Lac Vieux Desert Band of Lake Superior Chippewa Indians, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190406).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Frank Ettawageshik, Chairman, Little Traverse Bay Bands of Odawa Indians, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190425).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to the Honorable John A. Miller, Chairman, Pokagon Band of Potawatomi Indians, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190442).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Aaron Payment, Chairperson, Sault Ste. Marie Tribe of Chippewa Indians of Michigan, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190489).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Kenneth Meshigaud, Chairman, Hannahville Indian Community, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190379).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Ms. Laura Spurr, Chairperson, Huron Potawatomi, Inc., regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190382).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Fred Cantu, Jr., Chief, Saginaw Chippewa Indian Tribe of Michigan, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190448).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. David K. Sprague, Chairman, Match-e-be-nash-she-wish Band of Pottawatomi Indians of Michigan, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190436).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to The Honorable Larry Romanelli, Little River Band of Ottawa Indians, regarding request for participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083190415).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. James G. Chandler, International Joint Commission, regarding request for participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083151401).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Brian D. Conway, Michigan State Historic Preservation Officer, regarding request for participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083151405).

December 24, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Ms. Leni Wilsmann, Michigan Natural Features Inventory, regarding request for participation in the scoping process and list of State Listed Protected Species for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083151402).

December 31, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Harold G. Frank, Forest County Potawatomi, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083520641).

December 31, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Ms. Anna Miller, U.S. EPA Region 5, regarding request for participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083590143).

December 31, 2008 Letter from Mr. Gregory P. Hatchett, NRC, to Mr. Steven Chester, Director, Michigan Dept. of Environmental Quality, regarding request for participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083590138).

December 31, 2008 Letter from Mr. Gregory P. Hatchett, NRC to Mr. Ron Sparkman, Shawnee Tribe, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083530066).

December 31, 2008 Letter from Mr. Gregory P. Hatchett, NRC to Mr. Edgar L. French, Delaware Nation, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083530050).

December 31, 2008 Letter from Mr. Gregory P. Hatchett, NRC to Ms. Leaford Bearskin, Wyandotte Nation, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083530077).

December 31, 2008 Letter from Mr. Gregory P. Hatchett, NRC to Mr. Charles Todd, Ottawa Tribe of Oklahoma, regarding request for consultation and participation in the scoping process for the environmental review for the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML083530043).

January 21, 2009	Letter from Ms. Mary A. Colligan, NOAA National Marines Fisheries Service Northeast Region, to Mr. Gregory P. Hatchett, NRC, providing information on endangered and threatened species and Essential Fish Habitat within the project area for the Fermi Nuclear Power Plant (Accession No. ML090711069).
January 28, 2009	Letter from Mr. Craig Czarnecki, U.S. Fish and Wildlife Service, to Mr. Gregory P. Hatchett, NRC, providing information on endangered and threatened species within the project area for the Fermi Nuclear Power Plant (Accession No. ML090750973).
February 9, 2009	Letter from Mr. Kenneth Westlake, U.S. Environmental Protection Agency, to Mr. Michael Lesar, NRC, providing comments on the scope of the Fermi Nuclear Power Plant Environmental Impact Statement (Accession No. ML090650467).
March 3, 2009	Letter from Mr. John Konik, U.S. Army Corps of Engineers, to Mr. Scott Flanders, NRC, regarding cooperating status on the Fermi Nuclear Power Plant Environmental Impact Statement (Accession No. ML090850037).
March 3, 2009	Summary of the Public Scoping Meetings Conducted Related to the Combined License Application Review of the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML090291080).
May 12, 2009	Letter from Mr. Stephen Lemont, NRC, to Mr. Peter Smith, DTE Energy, transmitting requests for additional information for the environmental review of the Fermi Nuclear Power Plant, Unit 3 combined license application (Accession No. ML090980159).
June 19, 2009	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML091940218).
July 2, 2009	Scoping Summary Report Related to the Environmental Scoping Process for the Fermi Nuclear Power Plant, Unit 3 Combined License Application Review (Accession No. ML091520145).
July 31, 2009	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML092290662).

August 25, 2009	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML092400535).
August 28, 2009	Trip Report for the Fermi 3 Environmental Site Audit from February 2-6, 2009 (Accession No. ML092390538).
August 28, 2009	Trip Report for the Fermi 3 Alternatives Site Visit from January 12-13, 2009 (Accession No. ML092390543).
September 30, 2009	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML093350028).
October 30, 2009	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML093090165).
November 13, 2009	Letter from Mr. Ryan Whited, NRC, to Mr. Peter Smith, DTE, regarding project manager change for the combined license environmental review for Fermi Nuclear Power Plant, Unit 3 (Accession No. ML093000568).
November 23, 2009	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML093380365).
December 23, 2009	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML093380362).
December 23, 2009	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML093650121).

January 29, 2010	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML100331451).
February 15, 2010	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML100541329).
February 16, 2010	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML100500278).
March 24, 2010	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML100850542).
March 30, 2010	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML100960472).
July 9, 2010	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML ML102000566).
July 26, 2010	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML102180224).
September 1, 2010	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML102510498).

October 29, 2010	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML103120126).
December 2, 2010	Letter from Bruce A. Watson, NRC, to Mr. Brian D. Conway, Michigan State Historic Preservation Officer, initiating Section 106 process for the Fermi Nuclear Power Plant, Unit 1 license termination plan review (Accession No. ML101790096).
December 16, 2010	Letter from Mr. Ryan Whited, NRC, to Mr. Brian D. Conway, Michigan State Historic Preservation Officer, regarding Section 106 process for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML101820302).
January 10, 2011	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting updates to the Fermi 3 combined license application (COLA) reflecting changes to the Fermi site layout (Accession Nos. ML110280350, ML110280351, ML110280352, ML110280353).
February 14, 2011	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting Detroit Edison Company application for a combined license for Fermi 3 update and establishment of the licensing-basis information freeze point for the Fermi 3 COLA (Accession No. ML110600656).
March 4, 2011	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting responses to environmental requests for additional information for the combined license application for the Fermi Nuclear Power Plant, Unit 3 (Accession No. ML110670232).
May 13, 2011	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, Detroit Edison Company responses to NRC transmitting requests for additional information letter related to the environmental review (Accession No. ML11136A278).
June 17, 2011	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, Detroit Edison response to NRC questions related to the environmental review-site selection process (Accession No. ML11171A2960).
June 17, 2011	Letter from Randall D. Westmoreland, Detroit Edison, to Michigan Department of Environmental Quality, transmitting the Joint Permit Application for Detroit Edison, Fermi 3 Nuclear Power Plant (Accession No. ML111940490).

July 7, 2011	Letter from Mr. Peter W. Smith, Detroit Edison, to NRC, transmitting Detroit Edison Company's responses to NRC questions related to the environmental review and supplemental response (Accession No. ML11192A190).
July 15, 2011	Letter from Peter W. Smith, Detroit Edison, to NRC, updates to the Fermi 3 combined license application (COLA) reflecting changes to conform with the Fermi 3 Joint Permit Application (Accession No. ML112000169).
August 11, 2011	Summary of Public Teleconferences with Detroit Edison Company to Discuss Status and Progress of Fermi 3 Combined License Environmental Review (Accession No. ML111870069).
August 22, 2011	Letter from John Fringer, NRC, to Martha MacFarlane Faes, Michigan State Historic Preservation Office, regarding Request for Review of Supplemental Information Related to Section 106 Process for the Fermi Nuclear Power Plant, Unit 3 Combined License Application Review – SHPO #ER06-683 (Accession No. ML112070027).
August 24, 2011	Letter from John Fringer, NRC, to Martha MacFarlane Faes, Michigan State Historic Preservation Office, regarding Draft Memorandum of Agreement Between the U.S. Nuclear Regulatory Commission and the Michigan State Historic Preservation Officer Regarding the Demolition of the Enrico Fermi Atomic Power Plant, Unit 1 Facility Located in Monroe County, Michigan – SHPO #ER06-683 (Accession No. ML112070043).
September 16, 2011	Letter from John Konik, U.S. Army Corps of Engineers, to Bruce Olson, NRC, regarding concurrence in the release of the Fermi 3 Draft EIS for public comment (Accession No. ML112660005).
November 17, 2011	Email from John Fringer, NRC, to Donald Ferencz, regarding notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A340).
November 17, 2011	Email from John Fringer, NRC, to Philip Harrigan, regarding notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A348).

November 17, 2011	Email from John Fringer, NRC, to David Nixon, regarding notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A343).
November 17, 2011	Email from John Fringer, NRC, to Christine Kull, regarding notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A350).
November 17, 2011	Email from John Fringer, NRC, to Mike Hartman, regarding notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A339).
November 17, 2011	Email from John Fringer, NRC, to Laura Scheele, American Nuclear Society, regarding notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A341).
November 17, 2011	Email from John Fringer, NRC, to James Walther, regarding notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A345).
November 17, 2011	Email from Donald Ferencz to John Fringer, NRC, responding to notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A355).
November 17, 2011	Email from David Nixon to John Fringer, NRC, responding to notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A344).
November 18, 2011	Email from Christine Kull to John Fringer, NRC, responding to notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A359).

November 21, 2011	Email from James Walther to John Fringer, NRC, responding to notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A361).
December 1, 2011	Email from Philip Harrigan to John Fringer, NRC, response to notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12129A360).
December 19, 2011	Email from Laura Scheele, American Nuclear Society, to John Fringer, NRC, responding to notification of and request for comments on proposed options to mitigate the adverse impacts of the potential demolition of Fermi 1 (Accession No. ML12143A465).
January 9, 2012	Letter from Lisa Chetnik Treichel, U.S. Department of the Interior, to Bruce Olson, NRC, providing review comments on the Draft Fermi 3 Environmental Impact Statement (Accession No. ML12026A464).
January 10, 2012	Letter from Kenneth Westlake, U.S. Environmental Protection Agency, to Cindy Bladey, NRC, providing review comments on the Draft Fermi 3 Environmental Impact Statement (Accession No. ML12018A211).
March 7, 2012	Letter from Scott C. Flanders, NRC, to Reid Nelson, Advisory Council on Historic Preservation, regarding transmittal of signed Memorandum of Agreement (Accession No. ML120450110).
March 30, 2012	Letter from Anthony H. Hsia, NRC, to Scott Hicks, U.S. Fish and Wildlife Service, regarding submittal of the Biological Assessment for the proposed Enrico Fermi Nuclear Power Plant, Unit 3 (Accession No. ML120260586).
June 8, 2012	Letter from Scott Hicks, U.S. Fish and Wildlife Service, to Anthony H. Hsia, NRC, regarding Endangered Species Act Section 7 consultation for the Fermi 3 Nuclear Power Plant, Monroe County, Michigan (Accession No. ML12178A137).
June 13, 2012	Letter from G. Vinson Hellwig, Michigan Department of Environmental Quality, to Lillian L. Woolley, Detroit Edison Company, regarding a request for a state determination that air emissions from Fermi 3 do not exceed State Implementation Plan emission budgets for southeast Michigan (Accession No. ML12178A156).

June 20, 2012	Letter from Peter W. Smith, Detroit Edison, to NRC, transmitting Detroit Edison Company response to NRC request for additional information letter no. 76 related to the environmental review (Accession No. ML12174A273).
June 21, 2012	Letter from Peter W. Smith, Detroit Edison, to NRC, transmitting Detroit Edison Company supplemental response to NRC request for additional information letter no. 76 related to the environmental review (Accession No. ML12178A449).
June 21, 2012	Letter from Peter W. Smith, Detroit Edison, to NRC, transmitting Detroit Edison Company response to NRC request for additional information letter no. 75 related to air conformity requirements (Accession No. ML12179A185).
October 9, 2012	Letter from John Konik, U.S. Army Corps of Engineers, to Bruce Olson, NRC, regarding concurrence in the release of the Fermi 3 Final EIS (Accession No. ML122840677).

Appendix D

Scoping Comments and Responses

Appendix D

Scoping Comments and Responses

On December 10, 2008, the U.S. Nuclear Regulatory Commission (NRC) published a Notice of Intent to prepare an environmental impact statement (EIS) and conduct a scoping process in the *Federal Register* (FR) (73 FR 75142) with regard to the combined license (COL) application received from Detroit Edison Company (Detroit Edison) for one unit identified as Enrico Fermi Unit 3 (Fermi 3), to be located at its existing Fermi site. The Fermi site is located in eastern Monroe County, Michigan, along the western shore of Lake Erie, approximately 24 mi northeast of Toledo, Ohio, 30 mi southwest of Detroit, Michigan, and 7 mi from the United States-Canada border. This EIS has been prepared in accordance with provisions of the National Environmental Policy Act of 1969, as amended (NEPA), Council on Environmental Quality guidelines, and Title 10 of the Code of Federal Regulations (CFR) Parts 51 and 52. As outlined by NEPA, the NRC initiated the scoping process with the issuance of the *Federal Register* Notice. The NRC invited the applicant; Federal, Tribal, State, and local government agencies; local organizations; and individuals to participate in the scoping process by providing oral comments at the scheduled public meeting and/or submitting written suggestions and comments no later than February 9, 2009.

D.1 Overview of the Scoping Process

The scoping process provides an opportunity for public participants to identify issues to be addressed in the EIS and highlight public concerns and issues. The Notice of Intent identified the following objectives of the scoping process:

- Define the proposed action that is to be the subject of the EIS.
- Determine the scope of the EIS and identify the significant issues to be analyzed in depth.
- Identify and eliminate from detailed study those issues that are peripheral or that are not significant.
- Identify any environmental assessments and other EISs that are being or will be prepared that are related to but not part of the scope of the EIS being considered.
- Identify other environmental review and consultation requirements related to the proposed action.
- Identify parties the NRC must consult with under the National Historic Preservation Act, as set forth in 36 CFR 800.8(c)(1)(i).

- Indicate the relationship between the timing of the preparation of the environmental analyses and the Commission's tentative planning and decision-making schedule.
- Identify any cooperating agencies and, as appropriate, allocate assignments for preparation and schedules for completing the EIS to the NRC and any cooperating agencies.
- Describe how the EIS will be prepared, including any contractor assistance to be used.

Two public scoping meetings were held at the Monroe County Community College's La-Z-Boy Center Meyer Theater in Monroe, Michigan, on Wednesday, January 14, 2009. Approximately 100 people attended the afternoon scoping meeting, and approximately 60 attended the evening session. The scoping meetings began with NRC staff members providing a brief overview of the COL process and the NEPA process. After the NRC's prepared statements, the meeting was open for public comments. Forty afternoon scoping meeting attendees and 25 evening attendees provided either oral comments or written statements that were recorded and transcribed by a certified court reporter. Twenty-five written statements were received during the meeting. In addition to the oral and written statements provided at the public scoping meeting, 26 letters and 51 emails were received during the scoping period.

Transcripts for both the afternoon and evening scoping meetings can be found in the NRC Agency Document Access and Management System (ADAMS), under accession numbers ML090440586 and ML090440588, respectively. The written comments provided at the public meetings can be found in ADAMS under accession numbers ML090440585, ML090480683, and ML090430317. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams/web-based.html (in the Public Electronic Reading Room). (Note: the URL is case-sensitive.) Additional comments received later in letters or emails are also available. A meeting summary memorandum under accession number ML090291080 was issued March 3, 2009.

At the conclusion of the scoping period, the NRC staff reviewed the scoping meeting transcripts and all written material received during the comment period and identified individual comments. These comments were organized according to topic within the proposed EIS or according to the general topic, if outside the scope of the EIS. Once comments were grouped according to subject area, the NRC staff determined the appropriate response for each comment. The staff made a determination on each comment that it was one of the following:

- A comment that was actually a question and introduced no new information.
- A comment that was either related to support of or opposition to combined licensing in general (or specifically the Fermi 3 COL) or that made a general statement about the COL process. In addition, it provided no new information and did not pertain to 10 CFR Part 52.
- A comment about an environmental issue that

  - provided new information that would require evaluation during the review or
  - provided no new information.
- A comment that was outside the scope of the COL, which included, but was not limited to, a comment on the safety of the existing units.

Preparation of the EIS has taken into account the relevant issues raised during the scoping process. The comments received on the draft EIS will be considered in the preparation of the final EIS. The final EIS, along with the NRC staff's Safety Evaluation Report (SER), will provide much of the basis for the NRC's decision on whether to grant the Fermi 3 COL.

The comments related to this environmental review are included in this appendix. They were extracted from the *Fermi Nuclear Power Plant, Unit 3, Combined License Scoping Summary Report* and are provided for the convenience of those interested specifically in the scoping comments applicable to this environmental review. The comments that are outside the scope of the environmental review for the proposed Fermi 3 site are not included here. These include comments related to:

- safety
- emergency preparedness
- NRC oversight for operating plants
- security and terrorism
- support or opposition to the licensing action, licensing process, nuclear power, hearing process, or the existing plant.

More detail regarding the disposition of general or out of scope comments can be found in the Scoping Summary Report. To maintain consistency with the Scoping Summary Report, the comment source ID and comment number along with the name of the commenter used in that report is retained in this appendix.

Table D-1 identifies in alphabetical order the individuals providing comments during the scoping period, their affiliation, if given, and the ADAMS accession number that can be used to locate the correspondence. Although all commenters are listed, the comments presented in this appendix are limited to those within the scope of the environmental review. Table D-2 lists the comment categories in alphabetical order and commenter names and comment numbers for each category. The balance of this appendix presents the comments themselves with NRC staff responses organized by topic category. Table D-3 presents the comment categories in the order to be presented.

Table D-1. Individuals Providing Comments during the Scoping Comment Period

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
–, Richa	Self	Email (ML091020580)	0006
Anderson, Alan	Southern Wayne County Regional Chamber	Meeting Transcript (ML090440586)	0058
Askwith, Annemarie	Self	Email (ML090401003)	0027
B., M. J.	Self	Meeting Transcript (ML090440585)	0082
Baker, Mildred M	Self	Email (ML090401002)	0026
Barnes, Kathryn	Don't Waste Michigan, Sherwood Chapter	Meeting Transcript (ML090480683)	0083
Barnes, Kathryn	Self	Meeting Transcript (ML090440588)	0059
Barnes, Kathryn	Self	Meeting Transcript (ML090480683)	0083
Bell, Mary Faith	Sisters, Servants of IHM	Letter (ML090440092)	0063
Bettega, Gayle	Self	Email (ML090410070)	0047
Biernot, Marilyn	Self	Email (ML090340438)	0020
Bihn, Sandy	Western Lake Erie Association	Meeting Transcript (ML090440585)	0082
Bihn, Sandy	Western Lake Erie Association	Meeting Transcript (ML090440586)	0058
Brown, George	City of Monroe	Meeting Transcript (ML090440586)	0058
Browne, Elizabeth M.	Land and Water Management Division, Michigan Department of Environmental Quality	Letter (ML0906504561)	0079
Campana, Jean Ann	Self	Letter (ML0904402021)	0075
Cappuccilli, Al	Self	Meeting Transcript (ML090440585)	0082
Carey, Corinne	Don't Waste Michigan	Email (ML09120578)	0004
Carroll, Connie	United Way of Monroe County	Meeting Transcript (ML090440586)	0058
Carroll, Connie	United Way of Monroe County	Meeting Transcript (ML090440588)	0059
Colligan, Mary A.	National Marine Fisheries Service, Northeast Region	Letter (ML090711069)	0085
Conner, Mary V.	Self	Email (ML090401007)	0030

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Cumbow, Kay	Citizens for Alternatives to Chemical Contamination	Email (ML090410081)	0051
Cumbow, Kay	Citizens for Alternatives to Chemical Contamination	Meeting Transcript (ML090440586)	0058
Czarnecki, Craig A.	U.S. Fish and Wildlife Service, East Lansing Office	Letter (ML090750973)	0087
D'Amour, James Carl	Self	Email (ML090401016)	0038
Davis, Gary	Self	Letter (ML09040093)	0064
Diederichs, Dorothy	Self	Letter (ML09040094)	0065
Drake, Gerald A.	Self	Email (ML090410097)	0054
Duggan, Marion	Self	Letter (ML0904400870)	0067
Dyson, Ed	Self	Meeting Transcript (ML090440586)	0058
Eddy, Dorothy	Sisters, Servants of the Immaculate Heart of Mary	Letter (ML090440196)	0069
Edwards, Gordon	Canadian Coalition for Nuclear Responsibility,	Email (ML090410071)	0048
Ellison, Jacob	Self	Meeting Transcript (ML090440586)	0058
Englund, Lance	Self	Email (ML090401035)	0041
Farris, Mark	Self	Meeting Transcript (ML090440588)	0059
Fedorowicz, Meg	Self	Email (ML090410092)	0052
Feldpausch, Larry	Self	Meeting Transcript (ML090440586)	0058
Feldpausch, Regina A.	Self	Letter (ML0906504611)	0077
Fischer, Lydia	Self	Meeting Transcript (ML090440586)	0058
Freiburger, Chris	MDNR	Email (ML090401006)	0029
Fulara, Dan	Self	Meeting Transcript (ML090440588)	0059
Green, Frank	Self	Meeting Transcript (ML090440588)	0059
Gruelle, Martha	Wildlife Habitat Council	Meeting Transcript (ML090440585)	0082

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Guthrie, Patricia	Self	Email (ML0904430199)	0055
Hart, Donna	Self	Email (ML090350415)	0021
Henige, Ann	Self	Meeting Transcript (ML090440588)	0059
Henige, Ann	Self	Meeting Transcript (ML090480683)	0083
Henige, Margaret Ann	IHM Sisters	Letter (ML090440091)	0062
Hesson, Gerald	Self	Meeting Transcript (ML090440586)	0058
Holden, Anna	Self	Meeting Transcript (ML090440586)	0058
Hungerman, Marie Gabriel	Self	Email (ML090400999)	0024
Ingels, Mike	Self	Meeting Transcript (ML090440588)	0059
Kamps & Keegan, Kevin and Michael	Self	Meeting Transcript (ML090430317)	0084
Kamps, Kevin	Beyond Nuclear	Email (ML090410076)	0050
Kamps, Kevin	Beyond Nuclear	Letter (ML09028048060)	0057
Kamps, Kevin	Beyond Nuclear	Meeting Transcript (ML090440586)	0058
Kamps, Kevin	Beyond Nuclear	Meeting Transcript (ML090440588)	0059
Karas, Josephine	Self	Letter (ML090440197)	0070
Kaufman, Hedi	Self	Email (ML090401038)	0042
Kaufman, Hedi	Self	Meeting Transcript (ML090480683)	0083
Kaufman, Hedwig	Self	Meeting Transcript (ML090440588)	0059
Kaufman, Hedwig	Self	Meeting Transcript (ML090480683)	0083
Keegan, Michael	Self	Meeting Transcript (ML090440586)	0058
Keegan, Michael	Self	Meeting Transcript (ML090440588)	0059
Keith, Fred	Self	Meeting Transcript (ML090440586)	0058
Lavelline, Joe	Michigan Chapter of the American Nuclear Society	Meeting Transcript (ML090440586)	0058
Lavelline, Joe	Michigan Chapter of the American Nuclear Society	Meeting Transcript (ML090440588)	0059

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Lavelline, Joe	Michigan Chapter of the American Nuclear Society	Meeting Transcript (ML090480683)	0083
Lawson, Ph.D., Charles	International Joint Commission	Email (ML090270697)	0015
Lawson, Ph.D., Charles	International Joint Commission	Letter (ML090440198)	0071
Leonard, Dolores	Self	Email (ML090291092)	0017
Lodge, Terry	Self	Email (ML090410065)	0045
Lodge, Terry	Self	Meeting Transcript (ML090440585)	0082
Lodge, Terry	Self	Meeting Transcript (ML090440586)	0058
Mahoney, Charlie	Four-M Associates-Communications Group	Email (ML090230099)	0010
Mangano, Joseph	Self	Meeting Transcript (ML090430317)	0084
Mantai, Frank	Self	Meeting Transcript (ML090440588)	0059
Mantai, Frank	Self	Meeting Transcript (ML090480683)	0083
Marks, Esq., D.Min, Betram	Self	Email (ML090230107)	0014
May, Ron	DTE Energy	Meeting Transcript (ML090440586)	0058
May, Ron	DTE Energy	Meeting Transcript (ML090440588)	0059
McArdle, Ed	Self	Meeting Transcript (ML090440586)	0058
McGuire, Jim	Area Agency on Aging	Meeting Transcript (ML090440586)	0058
Mechtenberg, Marilynn	I.H.M.	Email (ML090400997)	0023
Mentel, Floreine	Monroe County	Meeting Transcript (ML090440586)	0058
Mentel, Floreine	Monroe County	Meeting Transcript (ML090440588)	0059
Meyer, Richard	Self	Meeting Transcript (ML090440586)	0058
Meyers, Marcie	Self	Meeting Transcript (ML090440588)	0059
Micka, Jeanne	Lotus Garden Club of Monroe	Meeting Transcript (ML090440585)	0082
Micka, Jeanne	Lotus Garden Club of Monroe	Meeting Transcript (ML090440586)	0058

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Micka, Richard	Experiential Tourism Task Group War of 1812 Bicentennial Steering Committee	Meeting Transcript (ML090440585)	0082
Micka, Richard	Experiential Tourism Task Group War of 1812 Bicentennial Steering Committee	Meeting Transcript (ML090440586)	0058
Micka, Richard	Experiential Tourism Task Group War of 1812 Bicentennial Steering Committee	Meeting Transcript (ML090440588)	0059
Miller, Anna	U.S. EPA-Region 5	Email (ML090401019)	0040
Mitchell, Rita	Self	Email (ML090401017)	0039
Morris, Bill	Self	Meeting Transcript (ML090440586)	0058
Morris, Bill	Self	Meeting Transcript (ML090440588)	0059
Morris, William P.	Monroe County Industrial Development Corporation	Meeting Transcript (ML090440585)	0082
Mumaw, Joan	IHM Sisters, Monroe	Meeting Transcript (ML090440588)	0059
Mumaw, Joan	IHM Sisters, Monroe	Meeting Transcript (ML090480683)	0083
Nash, Sarah	Self	Email (ML090401013)	0036
Nett, Ann C.	Self	Email (ML090401011)	0034
Newman, Kent	Self	Email (ML090120581)	0007
Newnan, Hal	Self	Meeting Transcript (ML090440586)	0058
Nixon, Dave	Monroe County Community College	Meeting Transcript (ML090440588)	0059
Nordness, Dorothy	Self	Email (ML090410095)	0053
Oberleiter, Tracy	Monroe County Economic Development Corporation	Meeting Transcript (ML090440585)	0082
Oberleiter, Tracy	Monroe County Economic Development Corporation	Meeting Transcript (ML090440586)	0058

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Oberleiter, Tracy	Monroe County Economic Development Corporation	Meeting Transcript (ML090440588)	0059
Patterson, John	Monroe County Convention & Tourism Bureau	Email (ML090230104)	0012
Petrak, IHM, Genevieve	Sisters, Servants of the Immaculate Heart of Mary	Letter (ML090440088)	0060
Pfeiffer, Jelica B.	Self	Letter (ML0906504661)	0078
Pfeiffer, Jelica B.	Self	Meeting Transcript (ML090440586)	0058
Pitoniak, Gregory	SEMCA	Meeting Transcript (ML090440588)	0059
Pitoniak, Gregory	SEMCA	Meeting Transcript (ML090480683)	0083
Rabaut, Martha	Self	Email (ML090350435)	0022
Richmond, Roberta	Sisters, Servants of the Immaculate Heart of Mary	Letter (ML090440089)	0061
Richters, Karina	City of Windsor	Email (ML090410074)	0049
Ripple, Florence	Self	Letter (ML0906504651)	0076
Ripple, John	Self	Letter (ML090440200)	0073
Rivera, Gloria	Self	Email (ML090291091)	0016
Ryan, Janet	IHM	Letter (ML0906504681)	0081
Rysztak, Robert	Self	Email (ML090401009)	0032
Rysztak, Robert	Self	Email (ML0904021008)	0031
Sanchez, Mira	Self	Email (ML090230106)	0013
Sargent, Lori	Michigan Dept. of Natural Resources	Email (ML090401014)	0037
Sargent, Lori	Michigan Dept. of Natural Resources	Letter (ML090750975)	0086
Schemanksi, Sally	Self	Email (ML090340437)	0019
Schwartz, R.	Self	Email (ML090020433)	0002
Scobie, Randall	Self	Letter (ML090440201)	0074
Seubert, Nancy	IHM Sisters	Meeting Transcript (ML090440586)	0058

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Seubert, Nancy	IHM Sisters	Meeting Transcript (ML090480683)	0083
Shiffler, Nancy L.	Self	Email (ML090401005)	0028
Shumaker, John	Self	Email (ML090401018)	0056
Simonton, Aaron	The Monroe Center for Healthy Aging	Email (ML090120579)	0005
Simpson, Robert	Self	Meeting Transcript (ML090440586)	0058
Smolinski, Myron	Self	Meeting Transcript (ML090440586)	0058
Spencer, Dr. Donald A.	Monroe County Intermediate School District	Meeting Transcript (ML090440585)	0082
Spencer, Dr. Donald A.	Monroe County Intermediate School District	Meeting Transcript (ML090440586)	0058
Stock, Ed & Kim	Self	Email (ML090230105)	0011
Stone, Paula	CASEnergy Coalition	Email (ML090410069)	0046
Sweat, Ron	Plumbers and Pipefitters, Local 671	Meeting Transcript (ML090440585)	0082
Sweat, Ron	Plumbers and Pipefitters, Local 671	Meeting Transcript (ML090440586)	0058
Sweat, Ron	Plumbers and Pipefitters, Local 671	Meeting Transcript (ML090440588)	0059
Tigay, Barry	Oakland Psychological Clinic, P.C.	Email (ML090140205)	0009
Timmer, Marilyn	Self	Letter (ML090440199)	0072
Tinnirello, Nicole	Self	Letter (ML090440086)	0066
Van Ooteghem, Rose Bernadette	Self	Email (ML090401000)	0025
Vaughn, Charlene Dwin	Advisory Council on Historic Preservation	Email (ML090410060)	0044
VItale, Fred	Self	Email (ML090401012)	0035
Walby, Charlotte	Self	Letter (ML090440195)	0068
Walker, Joseph	Self	Email (ML083640037)	0003

Table D-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession #	Correspondence ID
Weber, Margaret	Adrian Dominican Sisters	Meeting Transcript (ML090440585)	0082
Weber, Margaret	Adrian Dominican Sisters	Meeting Transcript (ML090440586)	0058
Westlake, Kenneth A.	Office of Enforcement and Compliance Assistance, U.S. EPA Region 5	Letter (ML0906504671)	0080
White, Greg	Michigan Department of Energy, Labor and Economic Growth	Meeting Transcript (ML090440586)	0058
Wolfe, Joan	Self	Meeting Transcript (ML090440588)	0059
Wolfe, Joan	Self	Meeting Transcript (ML090480683)	0083
Wolfe, Robert	Self	Meeting Transcript (ML090440588)	0059
Worrell, Mark	City of Monroe	Meeting Transcript (ML090440586)	0058
Yascolt, Stas	Self	Meeting Transcript (ML090440586)	0058
Zorn, Dale	Self	Meeting Transcript (ML090440588)	0059

Table D-2. Comment Categories with Associated Commenters and Comment IDs

Comment Category	Commenter (Comment ID)
Accidents-Design Basis	• Meyer, Richard (0058-125) • Ryan, Janet (0081-2)
Accidents-Severe	• Barnes, Kathryn (0059-13) (0083-23) • Cumbow, Kay (0051-4) • Kamps, Kevin (0050-3) (0050-8) (0058-71) • Newnan, Hal (0058-81) • Sanchez, Mira (0013-2) • Timmer, Marilyn (0072-2) • Wolfe, Joan (0059-50) (0083-4)
Alternatives-Energy	• Askwith, Annemarie (0027-2) • Barnes, Kathryn (0059-20) (0083-34) • Bettega, Gayle (0047-7) • Campana, Jean Ann (0075-1) • Conner, Mary V. (0030-2) • Cumbow, Kay (0058-25)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
	• D'Amour, James Carl (0038-1) • Davis, Gary (0064-2) • Edwards, Gordon (0048-9) • Farris, Mark (0059-67) • Henige, Ann (0059-40) (0083-10) • Henige, Margaret Ann (0062-2) • Kamps, Kevin (0050-24) (0050-25) (0059-74) (0059-76) • Karas, Josephine (0070-4) • Keith, Fred (0058-139) • Lodge, Terry (0058-115) • Mantai, Frank (0059-24) • May, Ron (0058-4) (0058-6) (0059-36) • McArdle, Ed (0058-103) • Meyer, Richard (0058-128) • Mitchell, Rita (0039-4) (0039-7) • Nett, Ann C. (0034-4) • Newman, Kent (0007-3) • Newnan, Hal (0058-85) • Pfeiffer, Jelica B. (0058-31) • Rivera, Gloria (0016-4) • Rysztak, Robert (0031-7) (0032-2) • Schwartz, R. (0002-2) • Shiffler, Nancy L. (0028-4) • Simpson, Robert (0058-41) • Sweat, Ron (0058-145) (0059-31) (0082-6) • Tinnirello, Nicole (0066-2) (0066-4) • VItale, Fred (0035-2) • White, Greg (0058-64) • Wolfe, Joan (0059-53) (0083-6) • Wolfe, Robert (0059-57)
Alternatives-Sites	• Bihn, Sandy (0058-56) (0082-25)
Benefit-Cost Balance	• –, Richa (0006-1) • Askwith, Annemarie (0027-3) • B., M. J. (0082-40) • Barnes, Kathryn (0059-19) (0083-33) • Carey, Corinne (0004-8) • Davis, Gary (0064-1) • Drake, Gerald A. (0054-4) • Edwards, Gordon (0048-1) (0048-2) (0048-7) • Englund, Lance (0041-2) • Farris, Mark (0059-66) (0059-69) • Fedorowicz, Meg (0052-1) (0052-3)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
	• Fischer, Lydia (0058-89) • Henige, Margaret Ann (0062-1) • Holden, Anna (0058-98) (0058-102) • Kamps, Kevin (0050-23) (0059-73) • Karas, Josephine (0070-2) • Keegan, Michael (0058-63) • Mahoney, Charlie (0010-5) • Mantai, Frank (0083-36) • McGuire, Jim (0058-136) • Meyer, Richard (0058-130) • Nett, Ann C. (0034-3) • Nordness, Dorothy (0053-5) (0053-6) • Pfeiffer, Jelica B. (0058-30) • Pitoniak, Gregory (0083-21) • Schemanksi, Sally (0019-10) • Seubert, Nancy (0058-18) (0083-35) • Tinnirello, Nicole (0066-1) • Weber, Margaret (0058-69) (0082-35) • Wolfe, Joan (0059-47) (0059-52) (0059-54) (0083-1) (0083-7) • Wolfe, Robert (0059-59) • Yascolt, Stas (0058-32)
Cumulative Impacts	• Askwith, Annemarie (0027-1) • Bihn, Sandy (0058-46) (0058-49) (0058-50) (0058-51) (0058-55) (0058-58) (0082-13) (0082-15) (0082-17) (0082-24) • Carey, Corinne (0004-9) • Freiburger, Chris (0029-6) • Guthrie, Patricia (0055-3) • Kamps, Kevin (0050-12) (0050-14) (0050-19) • Leonard, Dolores (0017-2) • May, Ron (0059-35) • Mumaw, Joan (0059-42) (0083-9) • Newman, Kent (0007-1) (0007-2) • Schemanksi, Sally (0019-6) • Shiffler, Nancy L. (0028-1) (0028-3)
Ecology-Aquatic	• Barnes, Kathryn (0059-16) (0083-31) • Bihn, Sandy (0058-45) (0058-47) (0058-48) (0058-52) (0058-54) (0082-10) (0082-12) (0082-20) (0082-21) (0082-23) • Colligan, Mary A. (0085-1) (0085-2) (0085-3) • Cumbow, Kay (0058-27) • D'Amour, James Carl (0038-2) • Englund, Lance (0041-4) • Freiburger, Chris (0029-1) (0029-3) (0029-4) (0029-5)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
	• Hungerman, Marie Gabriel (0024-1) • Kamps, Kevin (0050-15) (0050-17) (0050-21) • McArdle, Ed (0058-109) • Mitchell, Rita (0039-6) • Schemanksi, Sally (0019-5) • Wolfe, Joan (0059-49) (0083-3)
Ecology-Terrestrial	• Browne, Elizabeth M. (0079-3) (0079-5) • Czarnecki, Craig A. (0087-1) (0087-2) (0087-3) (0087-4) • Freiburger, Chris (0029-8) (0029-9) (0029-11) • Gruelle, Martha (0082-1) • May, Ron (0058-10) • Micka, Jeanne (0058-123) (0082-26) • Micka, Richard (0082-28) • Miller, Anna (0040-2) • Sargent, Lori (0037-1) (0086-1) • Westlake, Kenneth A. (0080-2)
Geology	• Miller, Anna (0040-3) • Westlake, Kenneth A. (0080-3)
Health-Non-Radiological	• Cumbow, Kay (0051-5)
Health-Radiological	• Anderson, Alan (0058-86) • Barnes, Kathryn (0059-12) (0059-18) (0083-22) • Bell, Mary Faith (0063-1) • Bettega, Gayle (0047-5) • Cumbow, Kay (0051-7) (0058-19) (0058-22) (0058-24) • Diederichs, Dorothy (0065-1) • Drake, Gerald A. (0054-3) • Duggan, Marion (0067-1) • Guthrie, Patricia (0055-1) (0055-2) • Kamps, Kevin (0050-6) (0050-7) (0050-9) (0050-11) (0050-13) (0050-16) • Karas, Josephine (0070-3) • Keegan, Michael (0059-64) • Lawson, Ph.D., Charles (0015-2) (0071-2) • Mangano, Joseph (0084-1) • McArdle, Ed (0058-106) • Meyers, Marcie (0059-88) • Mitchell, Rita (0039-2) • Mumaw, Joan (0059-41) (0059-43) (0083-8) (0083-13) (0083-14) • Nash, Sarah (0036-1) • Nett, Ann C. (0034-2) • Petrak, IHM, Genevieve (0060-1)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
	• Pfeiffer, Jelica B. (0058-28) (0058-29) (0078-1) • Ryan, Janet (0081-1) (0081-4) • Rysztak, Robert (0031-5) (0032-3) (0032-4) (0032-5) • Schemanksi, Sally (0019-3) (0019-8) • Simpson, Robert (0058-40) • Walby, Charlotte (0068-1) • Wolfe, Joan (0059-48) (0083-2) • Wolfe, Robert (0059-58) • Yascolt, Stas (0058-34) (0058-35) (0058-36) (0058-37)
Historic and Cultural Resources	• Micka, Richard (0082-29) (0082-32) • Vaughn, Charlene Dwin (0044-1)
Hydrology-Groundwater	• Barnes, Kathryn (0059-17) (0083-32)
Hydrology-Surface Water	• Bihn, Sandy (0058-53) (0082-11) (0082-14) (0082-18) (0082-19) (0082-22) • Browne, Elizabeth M. (0079-2) (0079-4) • Cumbow, Kay (0058-26) • Dyson, Ed (0058-134) • Freiburger, Chris (0029-2) (0029-7) • Holden, Anna (0058-100) • Kamps, Kevin (0050-18) (0050-20) • Kaufman, Hedwig (0083-30) • McArdle, Ed (0058-108) (0058-110) • Rivera, Gloria (0016-3) • Rysztak, Robert (0031-4) • Schemanksi, Sally (0019-4) • Shiffler, Nancy L. (0028-2) • Weber, Margaret (0058-68) (0082-34)
Land Use-Site and Vicinity	• Browne, Elizabeth M. (0079-1) • Ingels, Mike (0059-80) • Micka, Richard (0058-124) (0059-87) (0082-27) (0082-30) (0082-31)
Meteorology and Air Quality	• Edwards, Gordon (0048-3) • Lavelline, Joe (0058-120) • McArdle, Ed (0058-107) • Mitchell, Rita (0039-3)
Need for Power	• Baker, Mildred M (0026-1) • Barnes, Kathryn (0059-14) (0059-15) (0059-22) (0083-24) (0083-25) • Bettega, Gayle (0047-1) (0047-3) (0047-6) • Biernot, Marilyn (0020-1) • Bihn, Sandy (0058-57) (0082-16) • Carey, Corinne (0004-1) (0004-2) (0004-3)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
	• Drake, Gerald A. (0054-1) (0054-6) • Dyson, Ed (0058-133) • Edwards, Gordon (0048-4) (0048-8) (0048-10) • Englund, Lance (0041-1) (0041-5) (0041-7) • Farris, Mark (0059-70) • Fischer, Lydia (0058-90) • Freiburger, Chris (0029-10) • Green, Frank (0059-83) • Holden, Anna (0058-97) • Kamps, Kevin (0050-1) (0050-4) (0050-5) (0059-78) • Karas, Josephine (0070-1) • Kaufman, Hedi (0042-1) (0042-2) (0042-3) (0083-28) • Kaufman, Hedwig (0059-45) • Keegan, Michael (0059-63) • Keith, Fred (0058-138) • Leonard, Dolores (0017-1) (0017-4) • Mahoney, Charlie (0010-3) • Mantai, Frank (0059-25) • May, Ron (0058-5) (0058-8) (0059-34) (0059-39) • McGuire, Jim (0058-135) • Mechtenberg, Marilynn (0023-4) • Mentel, Floreine (0058-13) (0059-5) • Mitchell, Rita (0039-1) • Mumaw, Joan (0083-17) • Nett, Ann C. (0034-1) • Newnan, Hal (0058-80) (0058-83) (0058-84) • Nixon, Dave (0059-72) • Nordness, Dorothy (0053-1) (0053-2) (0053-3) (0053-7) • Pfeiffer, Jelica B. (0078-2) • Pitoniak, Gregory (0083-19) • Rivera, Gloria (0016-1) • Rysztak, Robert (0031-1) (0031-2) (0031-6) (0032-1) (0032-8) • Schemanksi, Sally (0019-1) (0019-11) • Schwartz, R. (0002-1) • Shumaker, John (0056-1) • Simpson, Robert (0058-42) • Timmer, Marilyn (0072-3) (0072-4) • Tinnirello, Nicole (0066-3) • Vltale, Fred (0035-1) • Walker, Joseph (0003-1) • White, Greg (0058-65) • Wolfe, Robert (0059-55) (0059-56) (0059-60) (0059-61) • Worrell, Mark (0058-93) (0058-95) (0058-96)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
	• Yascolt, Stas (0058-39) • Zorn, Dale (0059-3)
Process-ESP-COL	• Browne, Elizabeth M. (0079-6) • Carey, Corinne (0004-4) (0004-5) (0004-10) • Cumbow, Kay (0051-1) (0051-8) (0058-23) • D'Amour, James Carl (0038-4) • Fischer, Lydia (0058-87) • Kamps & Keegan, Kevin and Michael (0084-2) • Kamps, Kevin (0050-22) (0057-2) • Kaufman, Hedi (0083-26) • Keegan, Michael (0058-62) • Leonard, Dolores (0017-3) • Lodge, Terry (0058-117) (0058-118) (0082-37) • May, Ron (0058-3) (0058-7) (0058-9) (0058-11) (0059-38) • McArdle, Ed (0058-105) • Meyer, Richard (0058-132) • Rysztak, Robert (0032-7) • Shiffler, Nancy L. (0028-5) • Spencer, Dr. Donald A. (0058-59) • Stock, Ed & Kim (0011-2)
Process-NEPA	• Askwith, Annemarie (0027-4) • Carey, Corinne (0004-7) • Cumbow, Kay (0051-2) (0051-3) (0058-20) • Fischer, Lydia (0058-88) • Hart, Donna (0021-2) • Kamps, Kevin (0057-1) • Kaufman, Hedi (0083-29) • Keegan, Michael (0058-61) (0059-62) • Lawson, Ph.D., Charles (0015-1) (0071-1) • Lodge, Terry (0045-1) (0045-2) (0045-3) (0045-4) (0058-116) • Miller, Anna (0040-1) (0040-4) • Richters, Karina (0049-1) • Simpson, Robert (0058-43) • Stock, Ed & Kim (0011-1) • Westlake, Kenneth A. (0080-1) (0080-4)
Socioeconomics	• Anderson, Alan (0058-79) • Brown, George (0058-1) (0058-2) • Cappuccilli, Al (0082-38) • Carroll, Connie (0058-44) (0059-82) • Ellison, Jacob (0058-111) (0058-112) • Englund, Lance (0041-6)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
	• Fulara, Dan (0059-71) • Gruelle, Martha (0082-2) • Hesson, Gerald (0058-147) • Ingels, Mike (0059-79) (0059-81) • Kamps, Kevin (0059-75) • Keith, Fred (0058-140) (0058-141) • Lavelline, Joe (0058-119) (0058-121) (0058-122) (0059-84) (0059-85) (0059-86) (0083-11) (0083-12) (0083-15) • Mahoney, Charlie (0010-1) (0010-2) (0010-4) • Marks, Esq., D.Min, Betram (0014-1) (0014-2) • May, Ron (0059-37) • McArdle, Ed (0058-104) • McGuire, Jim (0058-137) • Mentel, Floreine (0058-12) (0058-14) (0058-15) (0058-16) (0058-17) (0059-4) (0059-6) (0059-7) (0059-8) • Meyer, Richard (0058-127) (0058-129) (0058-131) • Morris, Bill (0058-78) (0059-9) (0059-10) (0059-11) • Morris, William P. (0082-36) • Oberleiter, Tracy (0058-76) (0058-77) (0059-26) (0059-27) (0082-39) (0082-42) • Patterson, John (0012-1) • Pitoniak, Gregory (0059-23) (0083-18) (0083-20) • Scobie, Randall (0074-1) • Simonton, Aaron (0005-1) (0005-2) • Smolinski, Myron (0058-113) (0058-114) • Spencer, Dr. Donald A. (0058-60) (0082-8) (0082-9) • Stone, Paula (0046-1) • Sweat, Ron (0058-142) (0058-143) (0058-144) (0058-146) (0059-28) (0059-29) (0059-30) (0059-32) (0059-33) (0082-3) (0082-4) (0082-5) (0082-7) • Tigay, Barry (0009-1) • White, Greg (0058-66) • Worrell, Mark (0058-94) • Zorn, Dale (0059-1) (0059-2)
Transportation	• Mechtenberg, Marilynn (0023-2)
Uranium Fuel Cycle	• Barnes, Kathryn (0059-21) • Bettega, Gayle (0047-2) (0047-4) • Carey, Corinne (0004-6) • Conner, Mary V. (0030-1) • Cumbow, Kay (0051-6) (0058-21) • D'Amour, James Carl (0038-3)

Table D-2. (contd)

Comment Category	Commenter (Comment ID)
	• Drake, Gerald A. (0054-2) (0054-5) • Eddy, Dorothy (0069-1) • Edwards, Gordon (0048-5) (0048-6) • Englund, Lance (0041-3) • Farris, Mark (0059-68) • Fedorowicz, Meg (0052-2) (0052-4) • Feldpausch, Larry (0058-91) (0058-92) • Feldpausch, Regina A. (0077-1) • Hart, Donna (0021-1) • Holden, Anna (0058-99) (0058-101) • Kamps, Kevin (0050-2) (0050-10) (0058-70) (0058-72) (0058-73) (0058-74) (0058-75) (0059-77) • Kaufman, Hedi (0083-27) • Kaufman, Hedwig (0059-44) (0059-46) • Keegan, Michael (0059-65) • Mechtenberg, Marilynn (0023-1) (0023-3) • Meyer, Richard (0058-126) • Mitchell, Rita (0039-5) • Newnan, Hal (0058-82) • Nordness, Dorothy (0053-4) • Rabaut, Martha (0022-1) • Richmond, Roberta (0061-1) • Ripple, Florence (0076-1) • Ripple, John (0073-1) • Rivera, Gloria (0016-2) • Ryan, Janet (0081-3) • Rysztak, Robert (0031-3) (0032-6) • Sanchez, Mira (0013-1) • Schemanksi, Sally (0019-2) (0019-7) (0019-9) • Timmer, Marilyn (0072-1) • Van Ooteghem, Rose Bernadette (0025-1) • Weber, Margaret (0058-67) (0082-33) • Wolfe, Joan (0059-51) (0083-5) • Yascolt, Stas (0058-33) (0058-38)

Table D-3. Comment Categories in Order as Presented in This Report

D.1.1 Comments Concerning Process – ESP – COL
D.1.2 Comments Concerning Process – NEPA
D.1.3 Comments Concerning Land Use – Site and Vicinity
D.1.4 Comments Concerning Meteorology and Air Quality
D.1.5 Comments Concerning Geology
D.1.6 Comments Concerning Hydrology – Surface Water
D.1.7 Comments Concerning Hydrology – Groundwater
D.1.8 Comments Concerning Ecology – Terrestrial
D.1.9 Comments Concerning Ecology – Aquatic
D.1.10 Comments Concerning Socioeconomics
D.1.11 Comments Concerning Historic and Cultural Resources
D.1.12 Comments Concerning Health – Non-Radiological
D.1.13 Comments Concerning Health – Radiological
D.1.14 Comments Concerning Accidents – Design Basis
D.1.15 Comments Concerning Accidents – Severe
D.1.16 Comments Concerning the Uranium Fuel Cycle
D.1.17 Comments Concerning Transportation
D.1.18 Comments Concerning Cumulative Impacts
D.1.19 Comments Concerning the Need for Power
D.1.20 Comments Concerning Alternatives – Energy
D.1.21 Comments Concerning Alternatives – Sites
D.1.22 Comments Concerning Benefit-Cost Balance

D.1.1 Comments Concerning Process – ESP – COL

Comment: Finally, you've heard about the application that we put in. We spent a couple of years on it. It's now going through the process. We're very comfortable with where we are, and we feel that it would be an important step to really search through this application process and ensure that we're on the right track. (**0058-11** [May, Ron])

Comment: You're aware that we filed a combined license application for Fermi 3 in September. You just heard that. And we also think that today's hearing is not only an important milestone for that licensing process, but it also provides us, with you as our neighbors, many of you as our

customers, gives you an opportunity to influence the way we're thinking about this, but also the way your community is shaping up. And we don't take that lightly. We know the NRC is very interested in your comments, but we are as well.

I would also like to make it clear that this is a process for us. So we haven't decided to build a nuclear power plant. We decided to put a license in for that building if eventually we decide to. And, why would we do that? (**0058-3** [May, Ron])

Comment: But it won't take care of the day when the wind doesn't blow or the sun doesn't shine; and what do we want to have that next power be? And we're thinking that we should not avoid looking hard at a nuclear power plant. And there's no good way to do that, in my feeling, and I think our company as well, without actually going through the process. So we really feel comfortable with the fact that we put our application in. We're in the game, but we haven't committed yet to build. (**0058-7** [May, Ron])

Comment: And I would say overall we're looking at a GE plant, not a plant from France. We are looking at a company called Detroit Edison to own and operate this plant. We did not put an application in for loan guarantees, so there's nothing out there currently that would say that we're trying to do something in some sort of way that would obligate future generation, or some of the statements around other taxpayers. (**0059-38** [May, Ron])

Response: *The comments are general in nature and outline Detroit Edison's plans for the project; the comments do not provide new information relating to environmental effects of the proposed action, and will not be evaluated in the EIS.*

Comment: Although no other MDEQ divisions have comments on this project at this time, we recommend that the NRC and DEC maintain communications with the appropriate MDEQ staff throughout the planning, permitting, and development processes. The LWMD will be in contact with those divisions, as well as coordinating with the Michigan Department of Natural Resources (MDNR) on their fisheries and wildlife comments and the U.S. Army Corps of Engineers, as this project progresses. Based on our preliminary review of potential impacts to rare resources on the site, the LWMD may have significant concerns about this project. We recommend that DEC schedule a pre-application meeting with us as soon as possible. The pre-application form can be found under Information at www.michigan.gov/deqwetlands. (**0079-6** [Browne, Elizabeth M.])

Response: *In developing the EIS, the NRC staff will interact with Federal and State agencies, including the Michigan Department of Natural Resources and Environment and others, to obtain information relevant to the environmental review.*

Comment: Where do you follow the standards of the International Joint Commission, by irrefutable Treaty applicable to our precious Great Lakes and Fermi's location on Lake Erie? (**0004-4** [Carey, Corinne])

Response: *In developing the EIS, the NRC staff will interact with Federal and State agencies, as well as the International Joint Commission (IJC), to obtain information relevant to the environmental review. In fact, the NRC staff specifically solicited scoping comments from the IJC, and the IJC provided comments that will be considered as NRC's environmental review proceeds.*

Comment: Where do you respect and include testimony and hearings with the many highly expert scientists and organizations such as NIRS and NEIS and Sierra, etc. etc. etc.? (**0004-5** [Carey, Corinne])

Response: *The NRC staff prepares an EIS in accordance with the requirements of NEPA, 10 CFR Part 52, and 10 CFR Part 51. In its review, the NRC staff focuses on the environmental effects of construction and operation of a new reactor. The staff's review is based on information presented in the COL application Environmental Report (ER) submitted by the applicant and information obtained from independent sources. During the scoping process, interested organizations and the public are invited to participate by submitting comments. The information presented in the applicant's ER is open for comment during the scoping process. If a member of the public is aware of something missing from the ER, or if other information is available that the NRC staff needs to be aware of for its review, the NRC staff is interested in obtaining that information during the scoping process so that it may be considered.*

Comment: Until, and IF ever, NRC processes act in the necessary far more scientific way, you and those processes regarding nuclear uses are to be held highly suspect and rejected for the sake of we, the living, and our grandchildren, and theirs... (**0004-10** [Carey, Corinne])

Comment: I contend it is on these environmental issues alone that the NRC should discontinue further review of DTE Energy's applications for construction of a new facility until these matters are resolved. (**0038-4** [D'Amour, James Carl])

Response: *These comments provide general information in opposition to NRC's COL process and will not be evaluated further. The NRC staff will carefully review the application against its regulations that are intended to protect public health and safety and the environment.*

Comment: Why the rush? Money? Why not wait to see what programs President Obama can implement with wind and solar? Both are probably less expensive, less harm to human and animals alike. There is a thinking these days about renewable energy and energy efficiency. (**0017-3** [Leonard, Dolores])

Comment: Since we can't get rid of the waste of Fermi 1&2, why is Fermi 3 being rushed into as the way to go? (**0032-7** [Rysztak, Robert])

Comment: There are two comment periods right now going on, both on emissions and influence from nuclear power plants. Both of them encompassed the Thanksgiving holiday and the Christmas holiday, and they all come before the Obama administration can be involved in setting those standards. (**0058-23** [Cumbow, Kay])

Response: *As an independent executive agency accountable to Congress, NRC has a timely obligation to initiate the review in response to a COL application as long as the application is considered by the NRC staff to be technically sufficient and complete. Decisions regarding which generation sources and alternatives to deploy are made by the applicant and regulatory bodies such as State energy planning agencies. The alternatives must be technically viable, feasible, and competitive. Alternative actions such as the no-action alternative (energy efficiency and demand-side management), new generation alternatives, purchased electrical power, alternative technologies (including renewable energy such as wind and solar), and the combination of alternatives will be considered in Chapter 9 of the EIS.*

Comment: There are many other critical issues, that need to be addressed and cannot be addressed in this short time period. (**0051-8** [Cumbow, Kay])

Response: *The licensing process for COL applications is specified in 10 CFR Part 52; it will take several years to complete. The process includes a detailed review of an applicant's COL application to determine the environmental effects of construction and operation of a nuclear power facility. After review of the application against the regulations and regulatory guidance, a hearing will be conducted to determine whether it is appropriate to grant the license. Safety issues as well as environmental issues will be evaluated before a decision on an application is reached. As described in the regulations, based on the finding of its review, NRC can deny issuance of a license if it would not meet the regulatory requirements.*

Comment: I just want to really encourage DTE and the NRC to employ a deliberative process that will ensure that Fermi 3, if it is built, is safe and a clean alternative for its users, and I believe that it can be. (**0058-59** [Spencer, Dr. Donald A.])

Response: *This comment provides general information in support of NRC's COL process and will not be evaluated further. NRC will carefully review the application against its regulations that are intended to protect public health and safety and the environment.*

Comment: The procedure is premature because the Nuclear Regulatory Commission has not yet approved the design of the reactor that Detroit Edison said it intends to order. That is the GE-Hitachi Economic Simplified Boiling Water Reactor. The design has been abandoned by several other utilities and isn't yet certified by federal officials. It does not make sense to make comments on a reactor design which does not exist. If in fact design has been abandoned by several other utilities and isn't yet certified by federal officials, which new plant design will be chosen? (**0011-2** [Stock, Ed & Kim])

Comment: The application proposes the use of an Economic Simplified Boiling Water Reactor (ESBWR), a design which is not yet complete and which has not yet been certified by the NRC.

Five other proposed uses of this design around the country have been cancelled, and the Department of Energy has indicated that this design will not receive any of the nuclear loan guarantee funding already approved by Congress.

DTE will inevitably have withdraw this design and resubmit the application, making this current process a waste of time and taxpayer money. (**0028-5** [Shiffler, Nancy L.])

Comment: DTE's proposed Economically Simplified Boiling Water Reactor (ESBWR) design is woefully incomplete, and thus the current NRC licensing proceeding is premature. Hundreds of thorny technical questions have yet to be answered, and no date certain has been established for final NRC certification. The two largest nuclear power utilities in the U.S., Exelon of Chicago and Entergy of New Orleans, have cancelled four ESBWRs due to the design's uncertain status. It is absurd for the concerned public to be asked to comment on the environmental impacts of a proposed reactor design that does not yet exist. This proceeding should be suspended until the ESBWR design is finalized and NRC-certified. (**0050-22** [Kamps, Kevin])

Comment: I ask that the NRC's review of the Environmental Report be suspended until a reactor is chosen that has a finalized design that citizens can actually critique. Simply stated, a reactor is the heart of a reactor project. The ESBWR does not have a finalized design nor is it certified or approved by the NRC. To shut the public out of the scoping process for the EIS for a reactor project before a reactor is chosen is saying that every reactor is alike, with the same risks. This and many of the reactors being chosen today are untried in the real world and the citizens are the guinea pigs, both financially and in the case of safety questions and the long-term protection of the ecosystem, as any serious accident or incident with a nuclear reactor could prove devastating to the Great Lakes and its inhabitants, whose lives are tied intimately to the Great Lakes, for fisheries (a four billion dollar industry), drinking water, recreation, and tourism. (**0051-1** [Cumbow, Kay])

Comment: A compelling reason to grant the 120 day extension to the comment deadline is the fact that the ESBWR design is not yet certified by NRC. In fact, GE-Hitachi has yet to finish the design. There remain hundreds of unresolved technical issues. Thus, it is impossible for us to comment meaningfully on a design that is neither complete nor certified. Some nuclear utilities (Exelon, Entergy), in fact, have cancelled their involvement with the ESBWR design, given its incomplete status. It would be a violation of the public's good will and good faith to rush this Fermi 3 licensing proceeding only to have DTE Energy cancel its pursuit of the ESBWR design -- a not unlikely possibility, given recent developments -- for concerned citizens and environmental organizations would have participated in good faith, only to have their significant