

Comments on Regulatory Guide DG-4015

Section	Page	Comment
General Guidance	6	<p><u>Treatment of Category 1 Issues</u></p> <p>The current Regulatory Guide 4.2 wording associated with treatment of Category 1 issues should not be changed from “list” to “describe” since applicants are not obligated under 10 CFR 51 to provide detailed descriptions unless new and significant information exists. The applicants are already required to identify new information that relates to applicable Category 1 issues and evaluate the significance of such information. If no new information has been identified for a Category 1 issue, there is no need to describe the environmental resources pertinent to the issue because the GEIS already provides adequate information. Including information about environmental resources pertinent to Category 1 issues, other than new and significant information, in ERs would unnecessarily add to the length of ERs and increase the regulatory burden on applicants with no resulting improvement in regulatory efficiency.</p>
A	8	<p><u>General Guidance to Applicants:</u></p> <p>The evaluation of cumulative impacts due to “reasonably foreseeable future actions” should be clarified such that cumulative impact analysis need not include evaluation of:</p> <ol style="list-style-type: none"> 1. Potential alterations due to climate change or global warming – e.g., drought, flooding, or other as yet unpredictable weather related phenomena; or acts of God; (in these cases, the use of the resource during the extended license period by the plant is not the instigator of the stress on the resource, and potential impacts would occur regardless of license renewal). 2. Acts of war or terrorism. 3. Indiscriminate use of a resource – e.g., an assumption of uncontrolled or unregulated use of a resource. Example: a plant with no demonstrable existing impact on an existing resource should not be required to evaluate cumulative impacts under the assumption that future unregulated use of the resource could cause adverse impact to the resource. 4. Resources controlled by local, state, or federal, or tribal resource regulations, where no demonstrable impact to an existing resource exists. 5. Incidences where local, state, federal or tribal regulations do not apply to the resource, for example: <ol style="list-style-type: none"> a. <u>Existing</u> cumulative impacts that do not destabilize the resource require no further cumulative impact evaluation b. No further evaluation of cumulative impacts should be required if there are no known plans to utilize

Section	Page	Comment
		<p>the resource that would cause demonstrable adverse impacts,</p> <p>c. Where NRC denial of a renewed license would have little impact to restore the resource, no further cumulative impact should be required, even if there are existing or known future plans to utilize the resource that are likely to cause demonstrable adverse impacts that would destabilize the resource,</p> <p>6. If there are known future plans to utilize the resource that are likely to cause demonstrable adverse impacts that would destabilize the resource, and the adverse impact is directly or indirectly attributable to local, state, federal or tribal regulation, no further cumulative impact should be required (e.g., EPA 316(b) regulations or similar state or tribal regulations that would require retrofit of cooling towers that causes increased consumption of water from a small river or other water body). In this case, the NEPA evaluation of the agencies' rulemaking should include evaluation of the environmental and health and safety and other impacts on the resource(s) subject to the regulation.</p>
1.0	9	<p><u>Purpose of and Need for Action</u></p> <p>Recommend revising the wording below since the first sentence in the second paragraph appears to contradict the sentence following it.</p> <p>"The purpose and need for the proposed action have no role in the energy planning decisions of State regulators and utility officials as to whether a particular nuclear power plant should continue to operate. From the perspective of the licensee and the State regulatory authority, the purpose of renewing an operating license is to maintain the availability of the nuclear plant to meet system energy requirements beyond the term of the plant's current license as such needs are determined by the appropriate regulatory decision makers."</p>
2.2	10	<p><u>Cooling and Auxiliary Water Systems</u></p> <p>The level of detail (rates of water withdrawal, flow rates, location of water withdrawal, typical water balance or budget, typical temperature changes as water passes through the system, etc) is far more extensive than required in other sections of the general plant information. Given that the use of the cooling water and discharge from the plant are regulated by the state entity responsible for implementation of the Clean Water Act, the level of detail appears wholly disproportionate to the information necessary for the NRC to comply with NEPA. The (newly added) description of the information on Nonradioactive Waste Management is far more consistent with the brief description of major features of the plant described in the first paragraph of Chapter 2.2. The Cooling and Auxiliary Water Systems section should be amended to</p>

* Text from DG 4015 is provided in italicized text with strikethrough to indicate deletions and bold to indicate insertions.

Section	Page	Comment
		<p>read:</p> <p>"Each nuclear power plant is required by the Clean Water Act to have a NPDES permit that governs the licensee's withdrawal of water from the water body and releases to it, including thermal discharges. The EPA authorizes a State regulatory agency to administer the requirements of the Clean Water Act.</p> <p>To assist the NRC staff in its review, the ER should provide a brief description of the major features of describe the cooling and auxiliary water systems in the order that water flows through them, including approach, intake structure, trash racks, screens (including mesh sizes), screen wash, and fish return or collection systems and provide appropriate figures or maps to illustrate the system pathway. This description should include the rates of water withdrawal, the flow rates or volume of the water body from which cooling water is withdrawn, the location of water withdrawal, and intake velocity at the screens. The ER should also describe in detail general any structural or operational measures, such as the schedule of traveling screen operation or planned outages, used to reduce impingement of fish and shellfish. For plants that use cooling towers, this description should include a typical water balance or budget showing rates of water withdrawal, losses to evaporative cooling (for cooling towers), blowdown, effluent, and the like. The ER should also describe typical temperature changes as water passes through the system, as well as temperatures at the outfall, the size of the plume and mixing zone, and National Pollutant Discharge Elimination System (NPDES) or other permit conditions on temperature. The ER should include copies of such permits and supporting documentation in an appendix. This section should also describe chemical additions or other measures used to clean or maintain condensers and other components. The surface water and impingement and entrainment sections of the ER should refer to this section when appropriate to avoid unnecessary duplication of effort."</p>
2.2	11	<p><u>Power Transmission Systems</u> – This section states the following:</p> <p><i>"In the ER, the applicant should list and describe the in-scope transmission lines, including the length of the transmission lines or portions of lines; width of right-of-ways (ROWs); ROW maintenance plans, procedures, or protocols; and pesticides and herbicides used in ROWs, including information on how and when they are released. The ER should also describe the protocol for applying chemicals near streams and wetlands and any procedures in place to protect cultural resources. In addition, the ER should provide a map of all in-scope transmission lines and ROWs."</i></p> <p>The text in this subsection should be expanded to fully explain, consistent with statements in the updated GEIS, what transmission lines are to be considered "in-scope" for purposes of the ER. Specifically, the following text adapted from the GEIS (Sec. 3.1.1; page 3-3, lines 37 to 41) should be added to this</p>

Section	Page	Comment
		<p>subsection of the Regulatory Guide:</p> <p><i>"Only those transmission lines that connect the plant to the switchyard where the electric voltage is stepped up and fed into the regional power distribution system are considered within the scope of the ER. Any other lines that would remain energized regardless of a decision regarding license renewal are considered outside of the scope of the ER."</i></p>
2.4	11	<p><u>Programs and Activities for Managing the Effects of Aging</u></p> <p>Recommend changing the wording as shown to avoid replication of the safety analyses.</p> <p><i>"This section should characterize any changes planned in the plant's operating practices, inspections, maintenance activities, systems, and administrative control procedures during the renewal term designed to manage the effects of aging that will present a new or significant environmental impact. The ER should identify and discuss in detail any specific changes that may lead to environmental impacts that are significantly different than those addressed for the current licensing basis."</i></p>
3	13	<p><u>Affected Environment</u></p> <p>Recommend clarification that multiple maps may be appropriate.</p> <p><i>"Include a map, or maps, of the site showing site boundaries; exclusion area; site structures and facilities; major land uses (with land use classification consistent with the U.S. Geological Survey (USGS) categories); the construction zone for refurbishment, if any; sites for any other planned buildings and structures (both temporary and permanent); and transportation routes adjacent to the site."</i></p>
3	13	<p><u>Affected Environment</u></p> <p>Recommend the mapping requirements be specific to the map radius, incorporating such information as residential areas on a 50-mile radius map will become confusing to the reader. Alternatively, the NRC could retain the existing language in Regulatory Guide 4.2S1 on the maps for the affected environment.</p> <p><i>"Provide maps of the site vicinity within a 50-mile (80-kilometer) radius of the site showing county and local municipality boundaries, airports, major industrial and commercial facilities, roads and highways, railroads, American Indian and/or Bureau of Indian Affairs lands held in trust for American Indians, and Indian tribes' lands, and military reservations. Provide maps of the site vicinity within a 6-mile (10-kilometer) radius county and local municipality boundaries, place names, residential areas, airports, industrial and commercial facilities, roads and highways, railroads, American Indian and/or Bureau of Indian Affairs lands held in trust for American Indians, and Indian tribes' lands, and military reservations."</i></p>

Section	Page	Comment
3.1	14	<p><u>Land Use</u></p> <p>Since <u>population and housing</u> have been re-classified as Category 1 issues in the revised GEIS, discussion related to these issues is not required per 10 CFR 51 or needed in the Environmental Report and should be appropriately deleted.</p> <p>"...The ER should include information on local county comprehensive land use and development plans concerning land use and zoning that are relevant to population and housing growth and control and changes in land use patterns."</p>
3.1	14	<p><u>Visual Resources</u></p> <p>The subsection titled "Visual Resources" should be deleted from Section 3.1. Even though the GEIS designates aesthetic impacts as a Category 1 issue, this subsection in the draft Regulatory Guide instructs applicants to "describe the nuclear plant's visual setting in the environment, including the identity and height of the tallest visible structures and direction and distances from which these plant structures are visible." If no new information has been identified regarding visual resources at a site, there is no need to describe visual resources because the GEIS already provides adequate information.</p>
3.3	15	<p><u>Noise</u></p> <p>Section 3.3, "Noise," should be deleted. Even though the GEIS designates noise impacts as a Category 1 issue, Section 3.3 in the draft Regulatory Guide instructs applicants to "provide information about current or past noise studies and analyses conducted at or near the nuclear plant site," and to "identify the loudest noise-generating facilities and activities and indicate their distance to the nearest site boundary." If no new information has been identified regarding noise at a site, there is no need to describe noise sources because the GEIS already provides adequate information.</p>
3.4	15	<p><u>Geology and Soils</u></p> <p>Section 3.4, "Geology and Soils" should be deleted. Even though the GEIS designates impacts of nuclear plants on geology and soils as a Category 1 issue, Section 3.4 in the draft Regulatory Guide instructs applicants to provide information about site geology and soils in License Renewal ERs. If no new information has been identified regarding geology and soils at a site, there is no need to describe geology or soils because the GEIS already provides adequate information.</p>
3.4	15	<p><u>Geology</u></p> <p>If NRC decides to retain Section 3.4 in the Regulatory Guide, the subsection titled "Geology" should be modified. Seismology is not identified in Table B-1 in 10 CFR Part 51 as a component of any Category 1</p>

Section	Page	Comment
		<p>or 2 issue and is not a resource that is impacted by plant refurbishment and operations during the period of extended operation resulting from license renewal. In addition, the Geology information is contained in the FSAR with the exception of recent seismic events. Recommend the language should be revised as follows:</p> <p><i>Geology</i></p> <p>"The ER should describe, in general, the site geologic setting, including brief definitions of the rock types present, formation names, thicknesses, and general engineering properties. The ER should briefly discuss seismicity, including the seismic history of the site since construction, and identify the safe-shutdown earthquake, along with the largest historic regional earthquake."</p>
3.4	15 & 16	<p><u>Soils</u></p> <p>If NRC decides to retain Section 3.4 in the Regulatory Guide, the subsection titled "Soils" should be modified. Soils information is already identified in the FSAR, with the exception of erosion potential and management practices which is included in Section 3.5, Hydrology. Therefore, this section should be revised as below to avoid replication.</p> <p><i>Soils</i></p> <p>"The ER should describe, in general, the soils at the plant site, including unconsolidated material which may be naturally occurring or consist of fill. Using engineering terminology, soils are also referred to as overburden (i.e., the unconsolidated material overlying bedrock). The ER should describe the soils, along with their relationship to the site geology (e.g., identify whether fill material was brought in from offsite or if onsite excavation material was used). The ER should identify the erosion potential of the site soils and describe best management practices to control erosion and runoff associated with continued plant operations and refurbishment activities. This section should also identify prime farmland soils on or in the vicinity of the plant site"</p>
3.5	16	<p><u>Hydrology</u></p> <p>If "Geology and Soils" is deleted from the Regulatory Guide since it is a Category 1 issue in the revised GEIS, discussion related to this issue will not be available to reference in this section. Therefore, the section should be revised as follows if "Geology and Soils" is removed from the Regulatory Guide:</p> <p>"The ER should describe the site's groundwater hydrology and identify the hydrostratigraphic units underlying the site in reference to the site geology. The discussion should link the previously described site geology with groundwater conditions. The ER should identify the number and location of onsite water supply wells and monitoring wells on an accompanying map. The ER should also describe a dewatering</p>

Section	Page	Comment
		<i>system, if appropriate, and include it on a site map, if practicable."</i>
3.5	16	<p><u>Hydrology - Surface Water</u></p> <p>The following revision is requested:</p> <p><i>"The ER should describe the surface water resources at or near the site, as well as the river and stream flow, lake and reservoir volume, water level measurements, intake and discharge (outfall) specifications and operating parameters, and onsite ponds or other impoundment descriptions. The ER should also include local, State, and Federal permit information for enforcement of water use, NPDES regulated discharges, and storm water runoff controls. The discussion of surface water resources should include surface water quality and both ambient conditions and monitoring results from available site studies, where required by local, State, and Federal permit(s) or enforcement action."</i></p>
3.6	17	<p><u>Ecology</u></p> <p>The section entitled History should be limited to either the plant site specifically or to within a reasonable radius of the site, such as two miles.</p>
3.6	17	<p><u>Ecology: Potentially Affected Water Bodies</u></p> <p>Recommend that "significant" water bodies that intersect or parallel transmission lines be more clearly defined, particularly given the reduced scope for transmission lines. See earlier comment on Section 2.2 recommending that the ER scope for transmission lines be defined as those lines that connect the plant to the switchyard where the electric voltage is stepped up and fed into the regional power distribution system. Any other lines that would remain energized irrespective of a decision regarding license renewal are considered outside of the scope of the ER.</p>
3.6	17	<p><u>Ecology: History</u></p> <p>It is recommended that describing in the ER the ecological environment and wildlife living around the site before European settlement be deleted since the ER should focus on the baseline (current plant operations) instead of assumed conditions that are not relevant to the proposed action.</p>
3.6	18	<p><u>Procedures and Protocols</u> – Delete the last sentence in the subsection titled "Procedures and Protocols:" Currently, the entire subsection reads as follows: <i>"The ER should describe wildlife management plans and best management practices (if applicable), including pesticides and herbicides used and ground-disturbing activities performed routinely to maintain the site. The ER should include such plans and practices."</i> The descriptions of the plans and practices used to manage wildlife should provide sufficient information. An applicant will provide any source document to the NRC at the time the NRC identifies the document as</p>

Section	Page	Comment
		<p>necessary for preparation of the Supplemental EIS. However, unless the NRC determines that copies of specific source documents are needed by the Staff, including source documents in ERs would unnecessarily add to the length of ERs and increase the regulatory burden on applicants with no resulting improvement in regulatory efficiency.</p>
3.6	18	<p><u>Maps</u></p> <p>See previous comment on Section 2.2 and the recommendation for the definition of transmission lines considered in-scope.</p>
3.6	19	<p><u>Threatened, Endangered, and Protected Species and Essential Fish Habitat</u></p> <p><u>Endangered Species Act</u> – The 2nd paragraph of the subsection titled “Endangered Species Act” contains the following text:</p> <p><i>“The applicant should determine if federally listed threatened, endangered, or candidate species, critical habitat, and/or State-listed species and habitat have the potential to occur on the site or in the vicinity of the site, including the area within the applicant’s in-scope transmission line ROWs. For such species, the ER should provide sufficient information on historical occurrences, population size and trends, critical habitat, and potential habitat to aid the NRC in its biological assessment. The ER should discuss any license renewal activities and modifications to plant operation that may affect such species and habitats.”</i></p> <p>The 2nd sentence in the above-quoted paragraph should be modified to read as follows:</p> <p><i>“For such species, If particular species or habitats are identified that may be affected by refurbishment activities or plant operational activities during the extended license term, then for the potentially affected species or habitats, the ER should provide sufficient information on historical occurrences, population size and trends (if available), critical habitat, and potential habitat to aid the NRC in its biological assessment.”</i></p> <p>It should not be necessary for the ER to provide detailed information about every species with potential to occur. Detailed information should be required only for species that may be adversely affected due to license renewal.</p>
3.6	19	<p><u>Threatened, Endangered, and Protected Species and Essential Fish Habitat</u></p> <p>The last paragraph states “...<u>For such species, the ER should provide sufficient information on historical occurrences, population size and trends, critical habitat, and potential habitat to aid the NRC in its biological assessment.</u>” Applicants may find it challenging to discuss at a meaningful level, the population size and trends without performing multi-year surveys. Similarly, it is unlikely that the local Fish and Game</p>

Section	Page	Comment
		agencies will have multi-year survey data available.
3.6	20	<p><u>Threatened, Endangered, and Protected Species and Essential Fish Habitat</u></p> <p><u>Other Acts</u> – The subsection entitled “Other Acts” should be modified to read as follows:</p> <p><i>Several federal laws, including the Marine Mammal Protection Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act, also mandate the protection of certain species. Protected species that have the potential <u>are known</u> to occur on or in the vicinity of the site or associated <u>in-scope</u> transmission line ROWs and may be affected by refurbishment activities or plant operational activities during the extended license term should be discussed in the ER.</i></p> <p>More than 800 North American bird species have been afforded legal protection under the MBTA, including all common songbirds, waterfowl, wading birds, and birds of prey. It should not be necessary for the ER to provide detailed information about every species with potential to occur. Detailed information should be required only for species that are known to occur and that may be adversely affected due to license renewal or refurbishment activities. In addition, consideration of transmission lines should be limited to those determined to be “in-scope” as describe in the GEIS (Sec. 3.1.1; page 3-3, lines 37 to 41).</p>
3.7	20	<p><u>Historic and Cultural Information</u></p> <p>Recommend the following changes in the event that applicants do not possess the requested photos and to clarify that the ER should only provide a discussion of historic and cultural resources present on-site since “identify” could be mistaken to imply showing the resources on a map.</p> <p><i>“...Plat and other historic maps show ownership, acreage, property boundaries, and the location of existing or former historic structures. If available, the ER should provide photos of the plant site before construction, preconstruction (showing land clearing), construction, and post-construction of the current facility...”</i></p> <p><i>The ER should discuss identify historic and cultural resources that are present on the site (especially within the area of potential affect)...”</i></p>
3.7	20	<p><u>Historic and Cultural Resources</u></p> <p>Implementing consultations and conducting investigations at sites that have been extensively disturbed and been operational for 20 years is an unwarranted burden in resources, finances, and time. The section should be changed as follows to reflect the appropriate level of consultation and investigation.</p> <p><i>“If the plant site has not been surveyed for historic and cultural resources, then the applicant should conduct reconnaissance or pedestrian surveys. If cultural or historic resources that are included in, or</i></p>

Section	Page	Comment
		<p><i>eligible for inclusion in, the National Register, are believed present on site, the applicant should initiate informal consultation and conduct investigations to assist in identifying onsite historic and cultural resources with a contractor approved by the State Historic Preservation Officer (SHPO) who meets the Secretary of Interior's standards. In consultation with the SHPO and appropriate American Indian tribes, the applicant should evaluate the significance of the historic and cultural resources and assess any effects continued operation of the plant may have on them through the license renewal period. Additionally, the applicant should identify, evaluate, and describe protection measures for historic and cultural resources through consultation with SHPO. The ER should include a summary of this information, as well as copies of correspondence with the SHPO, tribes, or members of the public the applicant used to assess historic and cultural resources within the area of potential effect."</i></p>
3.8	21	<p><u>Socioeconomics</u> -- Section 3.8, "Socioeconomics," should be deleted. Even though the GEIS designates socioeconomic impacts as a Category 1 issue, Section 3.8 in the draft Regulatory Guide instructs applicants to describe and discuss in the ER specific information concerning residential distribution of nuclear plant employees, recreational facilities located in the vicinity of the plant, and payments of taxes and other contributions to local jurisdictions near the plant. If no new and significant information has been identified regarding socioeconomics at a site, there is no need to describe socioeconomic resources because the GEIS already provides adequate information.</p>
3.8	21	<p><u>Socioeconomics</u></p> <p>If this section is not deleted as proposed, modify the section as follows based on the unavailability of private information:</p> <p><i>"Describe public and private recreational facilities and tourist attractions located in the vicinity of the nuclear plant, including present and projected percentage of utilization where available."</i></p>
3.9	22	<p><u>Electric Shock Hazards</u></p> <p>The subsection titled "Electric Shock Hazards" in Section 3.9 should be moved to the subsection titled "Electric Shock Hazards" in Section 4.9 (page 43) and modified to read as follows:</p> <p><i>"The applicant should determine whether any sites or areas locations within the in-scope transmission line ROWs do not meet current National Electric Safety Code (NESC) clearance standards. In addition, the ER should identify any changes in the operation of in-scope transmission lines or maintenance of in-scope transmission line ROWs. The ER should include maps, photographs, or drawings indicating the locations of all sites that do not meet the NESC clearance standards."</i></p> <p>Consideration of transmission lines should be limited to those determined to be "in-scope" as described in</p>

Section	Page	Comment
		the GEIS (Sec. 3.1.1; page 3-3, lines 37 to 41).
3.10	22	<p><u>Environmental Justice</u></p> <p>The NRC should clarify what is meant by "migrant workers" (plant or agricultural) in the last sentence that states <u>"The ER should also include migrant workers as well as full-time residents and provide geographic information about the location of these populations and communities."</u></p>
4	22	<p><u>General Guidance</u></p> <p>The first 3 sentences in the 2nd paragraph of the subsection titled "General Guidance" in Chapter 4 should be modified to read as follows:</p> <p><i>"Of the remaining 1920 environmental issues, 1819 are Category 2 issues, which require plant-specific analyses. The following sections discuss information that the applicant should include in the ER to assist the NRC staff in evaluating the impacts of these 1819 Category 2 issues. One issue (the chronic effects of electromagnetic fields) is not categorized, and the NRC staff addresses this issue separately in plant-specific supplements to the GEIS without input from applicants."</i></p>
4.1	23	<p><u>"Land Use and Visual Resources"</u> is a Category 1 issue that would be assessed in Chapter 5 of the ER if new and significant information existed. Therefore, it should be removed from the Environmental Consequences of the Proposed Action and Mitigating Actions section.</p>
4.2	23	<p><u>Air Quality</u></p> <p><i>NRC needs to clarify what triggers this assessment and the issue to be assessed. The revised Rule is very clear that refurbishment occurring in or near a nonattainment or maintenance area triggers the assessment and that vehicle emissions is the issue to be assessed. However, this draft regulatory guide appears to go beyond its legal boundary to require an applicant to assess cooling tower emissions regardless of refurbishment even though the GEIS concluded that cooling tower emission impacts would be small even under a worst case scenario.</i></p> <p>Delete the final paragraph in section 4.2 of the DG4015</p>
4.2	23	<p><u>Air Quality</u></p> <p>To avoid confusion, recommend moving the subtitle, Impacts to Air Quality (Nonattainment and Maintenance Areas), to follow the regulatory basis for the discussion:</p> <p>The GEIS reviews the following Category 2 issue, which requires a plant-specific analysis.</p>

Section	Page	Comment
		<p>Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 states the following:</p> <p><i>"Air quality impacts of continued operations and refurbishment activities associated with the license renewal term are expected to be small. However, emissions during these activities could be a cause for concern at locations in or near air quality nonattainment or maintenance areas. The significance of the impact cannot be determined without considering the compliance status of each site and the activities that could occur. These impacts would be short-lived and cease after projects were completed.</i></p> <p>Specifically, 10 CFR 51.53(c)(3)(ii)(F) requires the following:</p> <p><i>If the applicant's plant is located in or near a nonattainment or maintenance area, an assessment of vehicle exhaust emissions anticipated at the time of peak refurbishment work force must be provided in accordance with the Clean Air Act as amended.</i></p> <p>Impacts to Air Quality (Nonattainment and Maintenance Areas) for Refurbishment Activities"</p>
4.2	23	<p><u>Air Quality</u></p> <p>Insert the reference for threshold emission levels (40 CFR 52.853(b)) in the first sentence of the paragraph beginning "The threshold emission levels serve..."</p>
4.2	24	<p><u>Air Quality</u></p> <p>For clarity, reword item 2 under Information and Analysis Content as follows:</p> <p>"Identify the positions locations of nonattainment and maintenance areas relative to the plant..."</p>
4.3	25	<p>"Noise" is a Category 1 issue that would be assessed in Chapter 5 of the ER if new and significant information existed. Therefore, it should be removed from the Environmental Consequences of the Proposed Action and Mitigating Actions section.</p>
4.4	25	<p>"Geology and Soils" is a Category 1 issue that would be assessed in Chapter 5 of the ER if new and significant information existed. Therefore, it should be removed from the Environmental Consequences of the Proposed Action and Mitigating Actions section.</p>
4.5	26	<p><u>Hydrology</u></p> <p>For the "<u>Surface Water Use Conflicts (Plants with Cooling Ponds or Cooling Towers Using Makeup Water from a River with Low Flow)</u>" issue, recommend the following revision since water usage is ultimately dictated by each individual State to be protective of the ecosystem through its water appropriations permit system and the National Pollutant Discharge Elimination System as discussed in the Draft GEIS (pages 3-</p>

Section	Page	Comment
		<p>52 & A-12). Recommend rewording the language as follows:</p> <p><i>"No additional surface water conflict information is needed for (1) plants using once-through cooling systems (2) plants or not specifically exclusively using cooling towers or cooling ponds, (3) or if the plant that takes its makeup water for the cooling towers or cooling ponds from a river with an annual flow greater than 3.15×10^{12} ft³/yr (9×10^{10} m³/yr), or (4) plants whose water usage is ultimately dictated by each individual State through its water appropriations permitting system and/or the National Pollutant Discharge Elimination System permitting program. The ER should explain the method used to determine the annual river flow or reference permits associated with water appropriations, and that no further information is needed with reference to these issues. If the plant does not meet the above conditions, the applicant should provide the information and analysis described below."</i></p>
4.5	27	<p><u>Hydrology</u></p> <p>For the <u>"Groundwater Use Conflicts (Plants with Closed-Cycle Cooling Systems that Withdraw Makeup Water from a River)"</u> issue, it is recommended that the following language be inserted above the "Information and Analysis Content" section for consistency with other Category 2 issues related to a river and associated water conflicts, and to account for plants whose water usage are dictated by the applicable State:</p> <p><i>"No additional groundwater water conflict information is needed for (1) plants that take its makeup water for closed-cycle cooling purposes from a river with an annual flow greater than 3.15×10^{12} ft³/yr (9×10^{10} m³/yr), or plants whose water usage is dictated by each individual State through its water appropriations permitting system and/or the National Pollutant Discharge Elimination System permitting program. The ER should explain the method used to determine the annual river flow or reference permits associated with water appropriations, and that no further information is needed with reference to this issue. If the plant does not meet these conditions; the applicant should provide the information and analysis described below."</i></p>
4.5	27	<p><u>Groundwater Use Conflicts (Plants with Closed-Cycle Cooling Systems That Withdraw Makeup Water from a River)</u></p> <p>In this subsection, recommend the following modifications"</p> <p>Modify the title to read as follows:</p> <p><i>Groundwater Use Conflicts (Plants with Closed-Cycle Cooling Systems That Withdraw Makeup Water from a River with Low Flow)</i></p>

Section	Page	Comment
		<p>Modify the 1st paragraph to read:</p> <p><i>This section applies to plants using cooling towers that withdraw makeup water from a river <u>with low flow</u>.</i></p> <p>Modify the 1st sentence in the 1st paragraph in the subsection titled "Information and Analysis Content" to read:</p> <p><i>If the plant withdraws cooling tower makeup water for a river <u>with low flow</u>, the applicant should provide the following information and analyses to enable the NRC staff to assess the groundwater use conflicts during operation:</i></p>
4.5	28	<p><u>Hydrology</u></p> <p>For the <u>Groundwater Use Conflicts (Plants That Withdraw More Than 100 Gallons per Minute, Including Ranney Wells)</u> issue, it is stated that "The Grand Gulf wells intercept most of their production from infiltration of Mississippi River water through the bottom of the river bed and have little or no impact on surrounding groundwater users and should not be considered further in ERs". Since Grand Gulf is the only plant within the industry to utilize Ranney Wells and Regulatory Guide DG-4015 concludes that the wells have little or no impact, it is recommended that the reference to Ranney Wells be removed from this Category 2 issue, and that the issue be re-named "Groundwater Use Conflicts (Plants That Withdraw More Than 100 Gallons per Minute)".</p>
4.5	28	<p><u>Hydrology</u></p> <p>For the <u>Groundwater Use Conflicts (Plants That Withdraw More Than 100 Gallons per Minute, Including Ranney Wells)</u> issue, recommend the following revision since water withdrawal quantities are ultimately dictated by each State through its groundwater permitting system to be protective of the ecosystem.</p> <p><i>"...If the applicant can provide withdrawal records or other evidence that the plant does not pump more than an annual average of 100 gpm (6 L/s) of groundwater, or if groundwater usage is dictated through a State permitting system, the ER should note this fact, and no additional information need be provided."</i></p>
4.5	29	<p><u>Hydrology</u></p> <p>For the "<u>Groundwater Quality Degradation (Plants with Cooling Ponds at Inland Sites)</u>" issue, it is recommended that applicants be only required to assess the issue if the cooling pond is unlined. This is consistent with NRC's reference to unlined wastewater lagoons identified in 10 CFR 51.53(c)(3)(ii)(O) and would be consistent with the GEIS discussion that no groundwater contamination is anticipated from lined cooling ponds.</p>

Section	Page	Comment
		Under "Information and Analysis Content", modify the first sentence to read: <i>"If the plant uses unlined cooling ponds and is not adjacent to salt marshes..."</i>
4.5	30	<p data-bbox="529 348 661 376"><u>Hydrology</u></p> <p data-bbox="529 393 1837 553">For the "<u>Groundwater and Soil Contamination</u>" issue, the NRC needs to provide clarification regarding the applicability based on the wording below. It is not clear whether the applicant is required to assess the issue when they are using solvents, hydrocarbons, heavy metals, or other chemicals and have unlined wastewater lagoons, or required to assess when they only use solvents, hydrocarbons, heavy metals, or other chemicals.</p> <ul data-bbox="529 574 1858 1197" style="list-style-type: none"> <li data-bbox="529 574 1785 702">• Page 30: <i>This section applies to plants that may have soil or groundwater contamination due to industrial practices involving the use of solvents, hydrocarbons, heavy metals, or other chemicals. Onsite sources may include lined or unlined lagoons, pipe and valve leakages, fuel spills, or other inadvertent incidents.</i> <li data-bbox="529 723 1848 900">• Page 30: Table B-1 states the following: <i>Industrial practices involving the use of solvents, hydrocarbons, heavy metals, or other chemicals and unlined wastewater lagoons have the potential to contaminate site groundwater, soil, and subsoil. Contamination is subject to State- and Environmental Protection Agency (EPA)-regulated cleanup and monitoring programs.</i> <li data-bbox="529 921 1858 1197">• Page 30: Specifically, 10 CFR 51.53(c)(3)(ii)(O) requires the following: <i>If the applicant's plant conducts industrial practices involving the use of solvents, hydrocarbons, heavy metals, or other chemicals and has unlined wastewater lagoons, the applicant shall assess the potential for contamination of site groundwater, soil, and subsoil. The applicant shall provide an assessment of dissolved chemical and suspended sediment discharge to the plant's wastewater lagoons in addition to National Pollutant Discharge Elimination System (NPDES) compliance data collected for submittal to the U.S. Environmental Protection Agency (EPA) or designated State agency. A summary of existing reports describing site groundwater and soil contamination should also be included.</i>
4.5	30	<p data-bbox="529 1214 661 1242"><u>Hydrology</u></p> <p data-bbox="529 1263 1858 1395">For the "<u>Groundwater and Soil Contamination</u>" issue, the "Information and Analysis Content" section needs to specify that information included in the assessment only relates to spills that were reportable to offsite agencies and that are still actively being remediated. If no remediation is occurring, then groundwater and soil are not being impacted and therefore this issue would not be applicable.</p>

Section	Page	Comment
4.5	30	<u>Hydrology</u> For the " <u>Groundwater and Soil Contamination</u> " issue, the NRC needs to clarify the association between the groundwater and soil contamination issue and the NPDES Permit.
4.5	31	<u>Hydrology</u> For the " <u>Radionuclides Released to Groundwater</u> " issue, recommend that the following language be added above the "Information and Analysis Content" section: " <i>If there has not been any inadvertent releases of radioactive liquid into the groundwater that have not been remediated or if monitoring wells have not identified any detectable concentrations above background, the ER should note this fact, and no further information need be provided.</i> "
4.5	31	<u>Hydrology</u> Amend the second sentence under Information and Analysis Content as follows: " <i>... The purpose of the voluntary initiative is to improve a nuclear industry power plant's programs for preventing, detecting, and...</i> "
4.5	31	<u>Hydrology</u> For the " <u>Radionuclides Released to Groundwater</u> " issue, recommend the following change: " <i>Develop a table and accompanying map showing the distribution of radionuclide concentrations across the site (e.g., tritium concentrations in picocuries per liter) for concentrations detected above the ODCM LLD for environmental water samples. A series of maps may be necessary to depict the concentration at depth.</i> "
4.5	31	<u>Hydrology</u> For the " <u>Radionuclides Released to Groundwater</u> " issue, the last bullet on page 31 requires an applicant to include a table and map(s) depicting the distribution of detectable radionuclide concentrations across the site and with depth. NEI 07-07 does not require three-dimensional plume characterization of all detectable radionuclides in groundwater, particularly since the instances of groundwater contamination identified to date have not represented a risk to public health, safety, or the environment. Recommend deleting the last bullet on page 31.
4.6	32 - 40	<u>General</u> – To improve clarity within the section and for consistency with Table B-1 in Appendix B to Subpart A of 10 CFR Part 51, NRC should consider inserting subsections with titles into Section 4.6, as described below:

Section	Page	Comment
		<p>1. Insert a subsection number (4.6.1) into the title of the 1st existing subsection in Section 4.6 (on page 32), as follows:</p> <p><u>4.6.1</u> <i>General Approach for Information and Analysis Content for All Ecological Issues</i></p> <p>2. Insert a subsection number (4.6.2) and a new title before the title of the 2nd existing subsection in Section 4.6 (on page 33), as follows:</p> <p><u>4.6.2</u> <i>Terrestrial Resources</i></p> <p style="padding-left: 40px;"><i>Water Use Conflicts on Terrestrial Resources</i></p> <p style="padding-left: 40px;"><i>This section applies to ...</i></p> <p>3. Insert a subsection number (4.6.3) and a new title before the title of the 4th existing subsection in Section 4.6 (on page 35), as follows:</p> <p><u>4.6.3</u> <i>Aquatic Resources</i></p> <p style="padding-left: 40px;"><i>Impingement and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)</i></p> <p style="padding-left: 40px;"><i>This section applies to ...</i></p> <p>4. Insert a subsection number (4.6.4) into the title of the 7th existing subsection in Section 4.6 (on page 38); as follows:</p> <p><u>4.6.4</u> <i>Threatened, Endangered, and Protected Species and Essential Fish Habitat</i></p> <p><i>Table B-1 states the following: ...</i></p>
4.6	32	<p><u>Ecology</u></p> <p>Recommend the following revision to allow plants that may not have a requirement to conduct studies to utilize studies performed by outside agencies or organizations that can be relevant to the site.</p> <p><i>“Studies and monitoring programs. Briefly summarize any studies or monitoring programs that provide site-specific data or data that may be relevant to the site and explain environmental impacts...”</i></p>
4.6	32	<p><u>Ecology</u></p> <p>Recommend either (1) deleting the language below since studies are typically required to be conducted in</p>

Section	Page	Comment
		<p>accordance with a specific permit due to public or regulatory concerns, and therefore will not be consistent across the industry, or (2) revising the language to account for concerns from the agency having oversight of a particular resource.</p> <p><i>...If data are older than 5 years old, explain why the studies would or would not be relevant for assessing the effects of present and projected future plant operation over the term of license renewal. For example, demonstrate that both the potentially affected resources and the effect of the plant on them have remained and can be expected to remain unchanged over the term of license renewal. OR</i></p> <p><i>...If data are older than 5 years old and regulatory agencies have expressed concern regarding a particular resource, explain why the studies would or would not be relevant for assessing the effects of present and projected future plant operation over the term of license renewal...</i></p>
4.6	33	<p><u>Ecology</u></p> <p>For the <u>"Water Use Conflicts on Terrestrial Resources"</u> issue, recommend the following revision since water usage is dictated by each individual State through its water appropriations permit system and the National Pollutant Discharge Elimination System as discussed in the Draft GEIS (pages 3-52 & A-12) to be protective of the ecosystem.</p> <p><i>"No additional surface water conflict information is needed for (1) plants using once-through cooling systems, (2) plants that do not specifically use cooling towers or cooling ponds, or (3) plants drawing makeup water for the cooling towers or cooling ponds from a river with an annual flow greater than 3.15×10^{12} ft³/yr (9×10^{10} m³/yr), or (4) plants whose water usage is dictated by each individual State through its water appropriations permitting system and/or the National Pollutant Discharge Elimination System permitting program."</i></p>
4.6	33	<p><u>3. Show the Relationships Between Plant Operation and the Resource Attributes</u></p> <p>Delete the line that immediately precedes the subsection titled "Water Use Conflicts on Terrestrial Resources," as follows:</p> <p><i>The GEIS reviews the following Category 2 issues, which require a plant specific analysis:</i></p> <p>The phrase suggested for deletion is confusing because it is not needed if subsection headings are inserted, as was suggested in the preceding comment</p>
4.6	33	<p><u>Water Use Conflicts on Terrestrial Resources</u></p> <p>Modify the 2nd paragraph in the subsection titled "Water Use Conflicts on Terrestrial Resources" to accurately reflect the language in proposed Table B-1 (74 FR 38117 at 38136; published 7/31/2009). The</p>

Section	Page	Comment
		<p>sentence should read as follows:</p> <p><i>Table B-1 notes that the impacts of surface water use on terrestrial resources are anticipated to be small or moderate. The table also notes that "impacts on terrestrial resources in riparian communities affected by water use conflicts could be of moderate significance in some situations."</i></p>
4.6	34	<p><u>Ecology</u></p> <p>For the <u>Impacts of Continued Plant Operations on Terrestrial Ecosystems</u> issue, recommend the following revision since (1) plants can only identify known activities, and (2) areas containing no terrestrial habitat need not be assessed.</p> <p><i>"The applicant should describe any known activities associated with license renewal and continued operations, maintenance, and refurbishment that will disturb terrestrial habitat. If no known area will be disturbed, or if an area to be disturbed contains no terrestrial habitat (i.e., industrial plant areas), the ER should note that fact and no further discussion of the issue is needed..."</i></p>
4.6	34	<p><u>Impacts of Continued Plant Operations on Terrestrial Ecosystems</u></p> <p>The paragraph under the title "Information and Analysis Content" is unclear and should be modified to read as follows:</p> <p><i>"The ER should follow the general approach for information and analysis content for all ecology issues as described at the beginning of this section. In addition, if a license renewal-refurbishment activity will disturb any plant or wildlife habitat, the ER should describe any land the habitat that will be disturbed during transport and delivery of equipment, structures, or components; <u>in material laydown areas; or and in construction areas</u> associated with refurbishment. ..."</i></p>
4.6	35	<p><u>Impingement and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)</u></p> <p>The quoted text from 10 CFR 51.53(c)(3)(ii)(B) does not reflect the proposed changes (74 FR 38117 at 38132; 07/31/2009) and should be modified to account for those changes. In addition, both the proposed regulatory text (in 10 CFR 51.53(c)(3)(ii)(B)) and the text in the Regulatory Guide (6th paragraph in the subsection titled "Impingement and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds); page 35) should be modified to eliminate the requirement to include in the ER copies of supporting documentation for the 316(b) determination. Such documentation, which can be voluminous, would be available to the NRC and could be reviewed by the Staff during the on-site License Renewal Environmental Audit. If this review identifies the need for copies of specific documents, they can be requested by the Staff and provided at that time. It should be adequate to provide summaries of the</p>

Section	Page	Comment
		<p>supporting documentation in the ER.</p> <p>Accordingly, the quoted text from 10 CFR 51.53(c)(3)(ii)(B) should be modified to read as follows:</p> <p><i>"If the applicant's plant utilizes once-through cooling or cooling pond heat dissipation systems, the applicant shall provide a copy of current Clean Water Act 316(b) determinations ... or equivalent State permits and summaries of supporting documentation. If the applicant cannot provide these documents, it shall assess the impact of the proposed action on fish and shellfish resources resulting from heat shock thermal changes and impingement and entrainment."</i></p> <p>Additionally, the text in the Regulatory Guide (6th paragraph in the subsection titled "Impingement and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds); page 35) should be modified to read as follows:</p> <p><i>"If the plant uses a once-through or closed-cycle cooling pond heat dissipation system and the applicant holds a current Clean Water Act Section 316(b) determination, the applicant should provide the NRC with copies of the determination, summaries of supporting documentation, and relevant correspondence with the water quality permitting agency (EPA or permitting State agency). Additionally, the ER should describe any potential mitigation measures and state whether they will be or have been implemented."</i></p>
4.6	36 - 37	<p><u><i>Thermal Impacts on Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)</i></u></p> <p>The quoted text from 10 CFR 51.53(c)(3)(ii)(B) does not reflect the proposed changes (74 FR 38117 at 38132; 07/31/2009) and should be modified as follows to account for those changes and to eliminate the requirement to include in the ER copies of supporting documentation for the 316(b) determination:</p> <p><i>"If the applicant's plant utilizes once-through cooling or cooling pond heat dissipation systems, the applicant shall provide a copy of current Clean Water Act 316(b) determinations and, if necessary, a 316(a) variance in accordance with 40 CFR Part 125, or equivalent State permits and summaries of supporting documentation. If the applicant cannot provide these documents, it shall assess the impact of the proposed action on fish and shellfish resources resulting from heat shock thermal changes."</i></p> <p>The text in the Regulatory Guide (6th paragraph in the subsection titled "Thermal Impacts on Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds); page 37) should also be modified to eliminate the requirement to include in the ER copies of supporting documentation for the 316(b) determination. Such documentation, which can be voluminous, would be available to the NRC and could be reviewed by the Staff during the on-site License Renewal Environmental Audit. If this review identifies the need for copies of specific documents, they can be requested by the Staff and provided at that time. It should be adequate to provide summaries of the supporting documentation in the ER.</p>

Section	Page	Comment
		<p>Accordingly, the Regulatory Guide text should be modified as follows:</p> <p><i>"If the plant uses a once-through or closed-cycle cooling pond heat dissipation system and the applicant holds a current NPDES permit that demonstrates that the plant meets State water temperature standards, or a current Clean Water Act Section 316(a) determination, the applicant should provide the NRC with copies of the determination, NPDES permit, summaries of supporting documentation, and relevant correspondence with the water quality permitting agency (EPA or permitting State agency) to the NRC. Additionally, the applicant should describe any mitigation measures and state whether they will be or have been implemented."</i></p>
4.6	36	<p><u>Ecology</u></p> <p>For the <i>Impingement and Entrainment of Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)</i> issue under the "Information and Analysis Content" section, recommend the following revision to clarify that the discussion is referring to the fish and shellfish population within the entire water body:</p> <p><i>"Estimate the number of fish and shellfish lost to the water body (i.e., percentage loss as compared to entire population of lake, river, etc.) because of impingement and entrainment..."</i></p>
4.6	37	<p><u>Ecology</u></p> <p>For the <i>Thermal Impacts on Aquatic Organisms (Plants with Once-Through Cooling Systems or Cooling Ponds)</i> issue under the "Information and Analysis Content" section, the requirement in the second bullet to estimate, by taxa, the fish and shellfish affected by the thermal plume is speculative, particularly for pelagic species. Recommend deleting that requirement since the same information would be provided in the areal or volumetric estimate:</p> <p><i>"Estimate the number, by taxa, of fish and shellfish affected by and susceptible to the thermal effluent on a daily, monthly, and annual basis. ... Provide areal or volumetric estimates of thermally affected fish and shellfish habitat. Provide full documentation of analytical or modeling techniques to assess effects..."</i></p>
4.6	37	<p><u>Ecology</u></p> <p>Recommend that references to "current NPDES permit" be changed to "valid NPDES Permit" to eliminate any misunderstanding that permits in the renewal process do not represent a current permit. According to 40CFR122, if a timely permit renewal application is submitted 180 days prior to expiration and the permitting agency has not re-issued the permit, then the plant continues to operate under its existing (or current) permit by law. Therefore, the plant would possess a valid NPDES permit.</p>

Section	Page	Comment
4.6	37	<p><u>Ecology</u></p> <p>For the <u>Thermal Impacts on Aquatic Organisms (Plants with Once-Through Cooling or Cooling Ponds)</u> issue under the “Information and Analysis Content” section, recommend the revision below to allow plants that have a valid NPDES permit or 316(a) determination with no associated mitigation measures to streamline the response associated with this issue.</p> <p>“If a plant has a valid NPDES permit or 316(a) determination with no associated mitigation measures, then briefly summarize conditions established by the regulatory agency, the plant’s compliance status with these conditions, and a copy of the NPDES permit or 316(a) determination. No additional information need be provided.”</p>
4.6	38	<p><u>Ecology</u></p> <p>For the <u>Water Use Conflicts on Aquatic Resources</u> issue, recommend the following revision since water usage is ultimately dictated by each individual State through its water appropriations permit system and the National Pollutant Discharge Elimination System as discussed in the Draft GEIS (pages 3-52 & A-12) to be protective of the ecosystem.</p> <p>“No additional surface water conflict information is needed for (1) plants using once-through cooling systems, (2) plants not specifically using cooling towers or cooling ponds, or (3) plants drawing makeup water for the cooling towers or cooling ponds from a river with an annual flow greater than 3.15×10^{12} ft³/year (9×10^{10} m³/year), or (4) plants whose water usage is ultimately dictated by each individual State through its water appropriations permitting system and/or the National Pollutant Discharge Elimination System permitting program.”</p>
4.6	38	<p><u>Water Use Conflicts on Aquatic Resources</u></p> <p>In this subsection, modify the 5th paragraph to read as follows:</p> <p>“No additional surface water conflict information is needed for (1) plants using once-through cooling systems, (2) plants not specifically exclusively using cooling towers or cooling ponds, or (3) plants drawing makeup water for the cooling towers or cooling ponds from a river with an annual flow greater than 3.15×10^{12} ft³/yr (9×10^{10} m³/yr).”</p>
4.6	39	<p><u>Ecology</u></p> <p>For the <u>“Threatened, Endangered, and Protected Species and Essential Fish Habitat”</u> issue, recommend that the following sentence in the “Information and Analysis Content” section for the Endangered Species Act be revised in order to be consistent with the language in 10 CFR 51.53(c)(3)(ii)(E) which specifies only</p>

Section	Page	Comment
		<p><i>"Federal laws":</i></p> <p>"The ER should reference any letters and communications with Federal, State, or local agencies regarding species and their critical habitat listed for protection and include copies of the communications in an appendix."</p>
4.6	40	<p><u><i>Ecology - Threatened, Endangered, and Protected Species and Essential Fish Habitat ... Other Acts ... Information and Analysis Content for Other Acts</i></u></p> <p>Modify the 1st bullet in this subsection to read as follows[:</p> <p><i>Reference any protected species that may be found on or in the vicinity of the site or associated transmission line ROWs that may be affected by plant operations or activities associated with in-scope transmission line ROWs.</i></p> <p>Consideration of transmission lines should be limited to those determined to be "in-scope" as described in the GEIS (Sec. 3.1.1; page 3-3, lines 37 to 41).</p>
4.7	41	<p><u><i>Historic and Cultural Resources</i></u></p> <p>To be consistent with language elsewhere, reword the last sentence of the first bullet under Information and Analysis Content to:</p> <p>"... Such activities would include ground-disturbing activity, increases in traffic, and audie noise and visual intrusions."</p>
4.8	41	<p>"Socioeconomics" is a Category 1 issue that would be assessed in Chapter 5 of the ER if new and significant information existed. Therefore, it should be removed from the Environmental Consequences of the Proposed Action and Mitigating Actions section.</p>
4.9	42	<p><u><i>Human Health</i></u></p> <p>Make the following editorial correction:</p> <p><i>"With regard to the public health effects of microbiological (thermophilic) organisms, Table B-1 states the following:</i></p> <p><i>These organisms are not expected to be a problem at most operating plants except possibly at plants using cooling ponds, lakes, or canals or that discharge to rivers with low flow. Impacts would depend on site-specific characteristics."</i></p>
4.9	42	<p><u><i>Microbiological Hazards to the Public</i></u></p>

Section	Page	Comment
		<p>Modify the 1st sentence in the 3rd paragraph in the subsection titled "Microbiological Hazards to the Public" to read as follows:</p> <p><i>"Nuclear plants that use cooling ponds, lakes, or canals, or discharges into rivers with low flows (i.e., plantsrivers that have an annual average flow rate of less than 3.15×10^{12} ft³/yr (9×10^{10} m³/yr)) have a potential to enhance the concentration of thermophilic microorganisms."</i></p> <p>The suggested change corrects an error of transcription.</p>
4.9	42	<p><u>Human Health</u></p> <p>For the "<i>Microbiological Hazards to the Public</i>" issue, recommend that the following language under the "Information and Analysis Content" section be revised as follows"</p> <p><i>"If the applicant can show that the nuclear plant does not use cooling ponds, lakes, or canals, or does not discharges into a rivers with low flows, or that there are no public health agency concerns regarding this issue, the ER should note this fact. No further information or analysis need be provided..."</i></p>
4.9	43	<p><u>Electric Shock Hazards</u></p> <p>All documents quoted and cited in this section should be modified to limit consideration of transmission lines to those determined to be "in-scope" as described in the GEIS (Sec. 3.1.1; page 3-3, lines 37 to 41). Accordingly, Table B-1 in Appendix B to Subpart A of 10 CFR Part 51 should be modified to read as follows regarding electrical shock potential:</p> <p><i>"Electrical shock potential is of small significance for transmission lines that are operated in adherence with the National Electrical Safety Code (NESC). Without a review of each nuclear plant transmission line conformance with NESC criteria by "in-scope" transmission lines at nuclear plants [as described in the GEIS (Sec. 3.1.1; page 3-3, lines 37 to 41)], it is not possible to determine the significance of the electrical shock potential."</i></p> <p>Similarly, 10 CFR 51.53(c)(3)(ii)(H) should be modified to read as follows [as described in the GEIS (Sec. 3.1.1; page 3-3, lines 37 to 41)]</p> <p><i>"If the applicant's "in-scope" transmission lines that were constructed for the specific purpose of connecting the plant to the transmission system[as described in the GEIS (Sec. 3.1.1; page 3-3, lines 37 to 41)] do not meet the recommendations of the National Electrical Safety Code for preventing electric shock from induced currents, an assessment of the impact of the proposed action on the potential shock hazard from the transmission lines must be provided."</i></p> <p>Also, the scope of the discussion of electric shock potential in Section 4.8.1.1 of the GEIS should be</p>

Section	Page	Comment
		<p>conformed to the description of "in-scope" transmission lines provided in the GEIS Section 3.1.1 (page 3-3, lines 37 to 41).</p> <p>The draft Regulatory Guide, Section 4.9, should be modified in the subsection titled "Electric Shock Hazards" to clarify that applicants for license renewal need only address electric shock potential for "in-scope" transmission lines (as described in the GEIS (Sec. 3.1.1; page 3-3, lines 37 to 41)). In particular, the first sentence in the subsection titled "<i>Information and Analysis Content</i>" should be modified to read as follows:</p> <p><i>If the "in-scope" transmission lines that were built to connect the plant to the transmission system meet current NESC clearance standards, the ER should demonstrate that fact.</i></p>
4.9	43	<p><u>Electric Shock Hazards</u></p> <p>Not all states require conformance with the NESC – California, for example, requires utilities to meet General Order 95. The language in the Regulatory Guide, GEIS, and other license renewal related documents should allow for the use of other state-designated requirements, particularly in terms of modifications to meet NESC standards.</p>
4.10	45	<p><u>Environmental Justice</u></p> <p>For the <u>Environmental Justice</u> issue under "<i>Information and Analysis Content</i>" section, recommend the following changes since: (1) the plant may not be aware of concerns associated with continued plant operations until public meetings, and (2) records associated with subsistence consumption are not always documented by outside agencies (i.e., USFWS).</p> <p><i>"Based on information about minority and low-income populations and communities residing in the immediate vicinity of the plant site presented in Chapter 3 of this regulatory guide, identify potential impacts and any concerns these to populations and communities may from have about the continued operation of the nuclear plant. Also discuss the potential for disproportionately high and adverse human health and environmental impacts.</i></p> <p><i>If information is available, describe any observed subsistence consumption behavior patterns—specifically fish and wildlife consumption—by minority and low-income populations in the vicinity of the plant (see Section 4-4 of the Executive Order 12898). This subsistence consumption behavior could consist of hunting, fishing, and trapping of game animals and any other general food gathering activities (e.g., collecting nuts, berries, and other plant material) conducted by minority and low-income individuals in the vicinity of the plant."</i></p>

Section	Page	Comment
4.10	45	<p><u>Environmental Justice ... Minority and Low-Income Populations</u></p> <p>In the 7th paragraph of the subsection titled "Minority and Low-Income Populations, the NRC's Office of Nuclear Reactor Regulation (NRR) Office Instruction, LIC-203, Revision 2, is cited. This document could not be found on the NRC Web site or in the ADAMS system. Industry requests that NRC make the cited guidance document publicly available. There is a Revision 1 to this document available.</p>
4.11	46	<p><u>Cumulative Impacts</u></p> <p>The 3rd paragraph of Section 4.11 states the following:</p> <p><i>"Cumulative impact is a Category 2 issue and requires a plant-specific analysis. The CEQ defines cumulative impact in 40 CFR 1508.7. Cumulative impact analyses should consider new and continuing activities, such as license renewal, that are conducted, regulated, or approved by a Federal agency. The cumulative impacts analysis takes into account all actions, however minor, since impacts from individual minor actions may be significant when considered collectively over time. The goal of the analysis is to identify potentially significant impacts to improve decisions and move toward more sustainable development."</i></p> <p>Applicants for nuclear plant license renewal should not be expected to analyze cumulative impacts in a manner consistent with the NEPA compliance guidance for Federal agencies published by the Council on Environmental Quality (CEQ). Applicants can assist the NRC in identifying past, present, and reasonably foreseeable future actions that may contribute to cumulative environmental effects in the vicinities of nuclear plants. However, regarding actions over which they have no control, applicants are not in the same position as the NRC for obtaining the information needed for an evaluation of cumulative impacts. This is especially true with respect to information about future actions that the applicant is not involved in when such information may not yet be available to the public. Accordingly, industry suggests that NRC limit the scope of cumulative impacts analyses required in a License Renewal ER to past, present and reasonably foreseeable future actions initiated and controlled by the applicant. If applicants were required to analyze the cumulative impacts of actions outside their control, the resulting analyses would be largely speculative.</p>
4.11	47	<p><u>Cumulative Impacts</u></p> <p>NRC needs to reconcile the reference to Table 4.12-1 of the GEIS since there is no such table in the current or revised GEIS.</p>
4.11	47	<p><u>Cumulative Impacts</u></p> <p>Based on Section 4.8.6 of the Oyster Creek Supplemental Environmental Impact Statement (Supplement</p>

Section	Page	Comment
		<p>28), NRC concluded that overall cumulative impacts ranged from SMALL to MODERATE. MODERATE is defined in 10 CFR 51 as effects that are sufficient to alter noticeably, but not to destabilize, important attributes of the resource. Therefore, the following sentence should be revised since Oyster Creek's overall cumulative impacts did not rise to the level of "significant".</p> <p><i>"...Several recent environmental analyses for license renewal applications have found that overall cumulative impacts in the region of influence of the power plant were significant (e.g., the Oyster Creek plant in New Jersey and the Susquehanna plant in Pennsylvania)."</i></p>
4.13	49	<p>"Uranium Fuel Cycle" is a Category 1 issue that would be assessed in Chapter 5 of the ER if new and significant information existed. Therefore, it should be removed from the Environmental Consequences of the Proposed Action and Mitigating Actions section.</p>
5.0	50	<p><u>Assessment of New and Significant Information</u></p> <p>For the <u>Assessment of New and Significant Information</u> issue, make the following change since an issue could be considered "new" but not "significant".</p> <p><i>"For each impact associated with an issue determined to be significant, describe mitigation measures that were considered and those that could be implemented."</i></p>
6.2	50	<p><u>Mitigation</u></p> <p>The text of Section 6.2, "Mitigation," reads as follows:</p> <p><i>This section should summarize in tabular form any mitigation measures considered for implementation in this ER.</i></p> <p>It is unclear why Section 6.2 needs to include mitigation measures that were considered but rejected in Chapter 4. Consider modifying Section 6.2 to read as follows:</p> <p><i>"This section should summarize in tabular form any mitigation measures considered for implementation identified in this ER that the applicant commits to implement."</i></p>
7.2	53	<p><u>Alternatives for Reducing Adverse Impacts</u></p> <p>Section 7.2 is redundant to discussions throughout Section 4 "Environmental Consequences of the Proposed Action and Mitigating Actions" of the ER and Section 6.2 of Regulatory Guide DG-4015 and should be deleted in its entirety since applicants are already required to consider mitigation alternatives in Section 4 and summarized in Section 6.2 such as cooling or intake modifications for reducing adverse impacts for all Category 2 license renewal issues.</p>

Section	Page	Comment
7.1 & 7.3	54	<u>Energy Alternatives and No-Action Alternative</u> These sections should also reference the discussion of alternative generating sources in Section 2 "Proposed Action and Description of Alternatives".

Comments on
U.S. Nuclear Regulatory Commission Draft Report
Generic Environmental Impact Statement for License Renewal of Nuclear Plants,
Volumes 1 and 2 (NUREG-1437, Revision 1)
(74 FR 38239 – 38240)

INTRODUCTION

Comments suggesting modifications in conclusions presented in the draft updated Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Revision 1 ("draft updated GEIS") are contained in the "General Comments" section of this package. Comments on specific text within the draft updated GEIS are contained in the "Specific Comments" section, which has been further divided into sub-groups titled (1) "Specific Comments Requesting Substantive Changes in the Updated GEIS," (2) "Specific Comments Requesting Clarifications and Corrections," and (3) "Specific Comments Requesting Editorial Changes and Correction of Typographical and Grammatical Errors." Before each General Comment and Specific Comment, a brief explanation or quotation of the draft updated GEIS text to which the comment refers is presented in boldface font.

GENERAL COMMENTS

Cmt. No.	Page No.	Line No.	Comment
1	S-7	GENERAL	<p><u>Air quality impacts of continued operations and refurbishment activities.</u> —</p> <p>Section 4.3 in the draft updated GEIS (p. 4-12 to 4-16) discusses the environmental consequences of both continued operations and refurbishment activities on air quality at nuclear power plants. Continued operations are addressed on pages 4-13 and 4-14, with the following conclusion [emphasis added]:</p> <p style="padding-left: 40px;">Thus, although there is the potential for some air quality impacts to occur as a result of equipment and cooling tower operations, even in the worst-case situation (Hope Creek), the impacts would be considered small, at least in part because licensees would be required to operate within State permit requirements. On the basis of these considerations, the NRC concludes that the impact of continued operations during the license renewal term on air quality would be small for all plants, and would be a Category 1 issue.</p> <p>Refurbishment activities are addressed on pages 4-14 through 4-16, with the following conclusion [emphasis added]:</p> <p style="padding-left: 40px;">In the 1996 GEIS, the NRC concluded that the impacts from plant refurbishment associated with license renewal on air quality could range from small to large, although these impacts were expected to be small for most plants. Air quality impacts resulting from construction vehicle, equipment, and fugitive dust emissions could be small or moderate depending on project and plant-specific details. On the basis of these considerations, the NRC concludes that the impact of refurbishment activities on air quality during the license renewal term would be small for most plants, but could be moderate for plants located in or near air quality nonattainment or maintenance areas, depending on the nature of the planned activity. The impacts would be temporary and cease once projects were completed. Therefore, the impact on air quality from refurbishment activities remains a Category 2 issue.</p> <p>NRC summarized the above-quoted conclusions in the column labeled "Finding" for the entry in the row labeled "Air quality (non-attainment and maintenance areas)" in Table B-1 of Appendix B to the draft updated GEIS (pages B-3 and B-4) as follows:</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Small, moderate, or large impact (Category 2). Air quality impacts of continued operations and refurbishment activities associated with the license renewal term are expected to be small. However, emissions during these activities could be a cause for concern at locations in or near air quality nonattainment or maintenance areas. The significance of the impact cannot be determined without considering the compliance status of each site and the activities that could occur. These impacts would be short-lived and cease after projects were completed.</p> <p>Emissions from testing emergency diesel generators and fire pumps and from routine operations of boilers used for space heating would not be a concern, even for those plants located in or adjacent to nonattainment areas. Although particulate emissions from cooling towers may be a concern for a very limited number of plants located in States that regulate such emissions, the impacts in even these worst-case situations have been small.</p> <p>Given the conclusions quoted above from Section 4.3 in the draft updated GEIS (Volume 1), industry believes that the "Finding" quoted above from Table B-1 of Appendix B to the draft updated GEIS (Volume 2) for the issue labeled "Air quality (non-attainment and maintenance areas)" is incorrect. Accordingly, the finding should be revised and the issue should be categorized as "Category 1" instead of "Category 2" for the reasons discussed in the paragraphs below.</p> <p>On pages 4-13 and 4-14 the draft updated GEIS explains that the impact of continued plant operations during the license renewal term on air quality was not identified as an issue in the 1996 GEIS. Accordingly, the draft updated GEIS provides an evaluation of this impact and concludes that, although there is the potential for some air quality impacts to occur as a result of equipment and cooling tower operations, even in an upper bound situation (Hope Creek), the impacts are small, in no small part because licensees are required to operate within State permit requirements. On the basis of these considerations, the draft updated GEIS concludes that the impact of continued operations during the license renewal term on air quality would be small for all plants.</p> <p>The air emissions impact of refurbishment activities is discussed on pages 4-14 to 4-16 of the draft updated GEIS. This discussion mentions no example of refurbishment activities that</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>could cause large impacts. According to the discussion, emissions from construction equipment and fugitive dust emissions from ground clearing and grading activities would cause small impacts in most cases, but in a few cases (e.g., building demolition, debris removal, and new construction) could cause moderate impacts that would be of concern in geographical areas with poor or marginal air quality. For this reason, the draft updated GEIS concludes that the impact of refurbishment activities on air quality would be a Category 2 issue, although such impacts would be temporary and would cease once a refurbishment project is completed.</p> <p>Table B-1 of Appendix B to the draft updated GEIS (Volume 2) for the issue labeled "Air quality (non-attainment and maintenance areas)" reports the combined impact of continued plant operations and refurbishment activities as "small, moderate, or large," which is not consistent with the conclusions of the analyses presented on pages 4-13 through 4-16, as the two paragraphs above clearly demonstrate. Furthermore, Table B-1 of Appendix B relies on the incorrect impact characterization to categorize the issue labeled "Air quality (non-attainment and maintenance areas)" as "Category 2". The following paragraphs demonstrate that the updated GEIS should be changed to conclude that the combined impact on air quality in non-attainment and maintenance areas of continued plant operations and refurbishment activities is small and that the "Air quality (non-attainment and maintenance areas)" issue is "Category 1."</p> <p>Because the draft updated GEIS already concludes that the impact of continued operations during the license renewal term on air quality would be small for all plants, this discussion focuses on the analysis of air quality impact from refurbishment activities. According to the draft updated GEIS, potential sources of air quality impacts during refurbishment activities are (1) fugitive dust from site excavation and grading and (2) emissions from motorized equipment, construction vehicles, and workers' vehicles. The draft updated GEIS also states that, with application of adequate controls or mitigation measures and best practices, the air quality impacts from these air pollution sources would be small and of relatively short duration. Industry agrees with these statements, which are supported by lessons learned as stated in Section 1.10 of the draft updated GEIS and knowledge gained from refurbishment activities associated with license renewal applications filed since the 1996 GEIS was published. For example, air quality impacts from refurbishment activities at Beaver Valley (Supplement 36), Three Mile Island (Supplement 37) and Indian Point (Supplement 38) (all</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>of which are located in nonattainment counties as shown in Appendix D, Table D.2-2, in the draft updated GEIS (Volume 2)) were determined to be small. These cases present evidence that use of appropriate best management practices (staggered work shifts, construction site and haul road wetting, and carpooling) would adequately mitigate the impact of refurbishment emissions.</p> <p>Furthermore, nuclear power plant licensees must conduct reviews of applicable requirements for new or modified state and local emissions permits prior to initiating refurbishment activities. Construction permits would be obtained where required by applicable regulations and State Implementation Plans (SIPs), which ensure protection of human health and the environment. These permits include conditions and limits, as needed to further mitigate the impact from emissions of concern in geographical areas with poor or marginal air quality. These measures assure that the impact of refurbishment emissions at any nuclear power plant seeking license renewal from the NRC would be small.</p> <p>Since the impact from continued plant operations and the impact from refurbishment activities would both be small for most nuclear power plants and (2) if needed, state and/or local permits would impose conditions to further mitigate the impact from emissions of concern during the short duration of refurbishment activities at particular plants, the NRC should modify the finding for the issue labeled "Air quality (non-attainment and maintenance areas)" in Table B-1 of Appendix B in the draft updated GEIS to read as follows (strikethrough font = deletion; <i>italics font = addition</i>):</p> <p>Small, moderate, or large impact (Category 21). Air quality impacts of refurbishment activities associated with the license renewal term <i>would be short-lived and cease after refurbishment projects have been completed. Such impacts</i> are expected to be small. However, emissions during these activities could be a cause for concern at <i>At</i> locations in or near air quality nonattainment or maintenance areas, <i>the implementation of best management practices and the issuance of new or modified conditions in state and local emissions permits that would further mitigate impacts from refurbishment emissions would assure conformance to the applicable State Implementation Plans. The significance of the impact cannot be determined without considering the compliance status of each site and the activities that could occur. These impacts would be short-lived and cease after projects were completed.</i></p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Emissions from testing emergency diesel generators and fire pumps and from routine operations of boilers used for space heating would not be a concern, even for those plants located in or adjacent to nonattainment areas. Although particulate emissions from cooling towers may be a concern for a very limited number of plants located in States that regulate such emissions, the impacts in even these worst-case situations have been small.</p> <p>The updated GEIS should be changed throughout (e.g., Volume 1: Summary, Chapter 2, and Chapter 4), to reflect this change in Volume 2: Appendix B, Table B-1.</p>
2	S-10	GENERAL	<p>Groundwater and soil contamination. — Finding in Table B-1 of Appendix B in the draft updated GEIS (Volume 2) for the issue labeled “Groundwater and soil contamination” reads as follows:</p> <p>Small or moderate impact (Category 2). Industrial practices involving the use of solvents, hydrocarbons, heavy metals, or other chemicals and unlined wastewater lagoons have the potential to contaminate site groundwater, soil, and subsoil. Contamination is subject to State- and U.S. Environmental Protection Agency regulated cleanup and monitoring programs.</p> <p>Section 4.5.1.2 in the draft updated GEIS (pages 4-45 and 4-46) discusses the environmental consequences of groundwater and soil chemical contamination during continued operations and refurbishment activities at nuclear power plants. This is an issue that was not evaluated in the 1996 GEIS.</p> <p>For the reasons discussed in the following paragraphs, Industry suggests that the “Finding” quoted above from Table B-1 of Appendix B to the draft updated GEIS (Volume 2) for the issue labeled “Groundwater and soil contamination” should be revised and the categorization changed from “Category 2” to “Category 1.”</p> <p>Industry believes that the impacts from releases of contaminants to soil and groundwater can be adequately and appropriately considered through a generic analysis of contaminant releases from safety and non-safety related structures, systems, and components (SSCs) and chemical and waste storage systems. The Resource Conservation and Recovery Act (RCRA), Clean Water Act (CWA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), Toxic Substances Control Act (TSCA), and Comprehensive Environmental</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Response, Compensation, and Liability Act (CERCLA) govern use, storage, disposal, release, and/or cleanup of solvents, hydrocarbons, and other potentially hazardous materials. The federal and State regulations implementing these laws protect groundwater, surface water, human health and the environment by imposing standards for hazardous materials management, including monitoring for spills and releases, reporting of monitoring results, and corrective action. The applicability of these regulatory protections to nuclear plants is independent of whether the nuclear plants are granted license renewals, and releases of hazardous materials will be addressed and remediated when they occur, regardless of whether the NRC grants a renewed operating license. Thus, this impact issue is similar to plant decommissioning, where the NRC has noted that the impacts of decommissioning would occur regardless of license renewal. Appropriate environmental and health and safety reviews would occur under NRC, EPA, and State regulations, as necessary. Furthermore, best management practices would be used to reduce the probability of events that could affect groundwater quality during the current and extended license terms.</p> <p>On the basis of the considerations mentioned above, Industry encourages NRC to change its review conclusion about impacts from the issue of "Groundwater and Soil Contamination" from "small to moderate" to "small," and to reclassify this issue from Category 2 to Category 1 in the updated GEIS, Appendix B, Table B-1. Also, the draft updated GEIS should be changed throughout (i.e., Volumes 1 and 2) to reflect the changes.</p>
3	S-10	GENERAL	<p><u>Radionuclides released to groundwater.</u> — Finding in Table B-1 of Appendix B in the draft updated GEIS (Volume 2) for the issue labeled "Radionuclides released to groundwater" reads as follows:</p> <p>Small or moderate impact (Category 2). Underground system leaks of process water have been discovered in recent years at several plants. Groundwater protection programs have been established at all operating nuclear power plants.</p> <p>The issue of "Radionuclides released to groundwater" was not addressed in the 1996 GEIS, but was added to the draft updated GEIS based on industry events in which an unplanned or unmonitored release of radioactive liquids to the environment has resulted in low but detectable levels of radionuclides in groundwater. In all but one instance, the contamination remained on-site, and all of the events were well below regulatory limits. None of the</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>inadvertent releases presented an impact on public health, safety, or the environment.</p> <p>Industry submits that sufficient data are available to classify the issue of radionuclides released to groundwater as Category 1. This is supported by the following statement from the NRC's Liquid Release Lessons Learned Task Force Final Report issued on Sept. 1, 2006: <i>"Although there have been a number of industry events where radioactive liquid was released to the environment in an unplanned and unmonitored fashion, based on the data available, the task force did not identify any instances where the health of the public was impacted."</i></p> <p>Industry suggests that the issue labeled "Radionuclides released to groundwater" in Table B-1 of Appendix B in the draft updated GEIS (Volume 2) be re-categorized from "Category 2" to "Category 1" and that the above-quoted issue description be changed in Table B-1 of Appendix B in the updated GEIS to read as follows (strike through font = deletion; <i>italics font = addition</i>):</p> <p style="padding-left: 40px;">Small or moderate impact (Category <i>21</i>). Underground system leaks of process water have been discovered in recent years at several plants. Groundwater protection programs have been established at all operating nuclear power plants.</p> <p>Information supporting this suggested change is provided in the paragraphs below.</p> <p>As a result of the industry events, the nuclear industry voluntarily implemented the industry-wide Ground Water Protection Initiative (<i>Industry Ground Water Protection Initiative – Final Guidance Document: NEI 07-07 [Final]</i>, 2007) to ensure timely detection and effective response to situations involving inadvertent radiological releases to groundwater and to enhance licensee communications with their stakeholders about these situations. The early detection of contamination, typically through on-site monitoring wells, allows licensees to take actions as necessary to prevent the off-site migration of licensed radioactive material. This voluntary initiative assists the industry in implementing programs for early detection and allows the industry to effectively mitigate releases once they occur to be protective of drinking water supplies and associated human health. The NRC is in the process of reviewing licensees' implementation of the Industry Ground Water Protection Initiative as part of their radiation protection program oversight (refer to NRC Inspection Manual – Temporary Instruction 2515/173). On-site groundwater monitoring data are reported to the NRC in either the Annual Radioactive Effluent Release or Annual Radiological Environmental Operating</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Reports.</p> <p>Considering the information presented above, it is recommended that the revised GEIS develop a generic impact analysis based on the following:</p> <ul style="list-style-type: none"> • Impacts of radioactive material releases to groundwater can be adequately and appropriately addressed for all nuclear power plants in the updated GEIS by describing the process by which an inadvertent release of radiological material to groundwater is already being dealt with at all nuclear plants through the licensee's implementation of the Industry Ground Water Protection Initiative and ongoing Offsite Dose Calculation Manual updates, Annual Radioactive Effluent Release Reports, Annual Radiological Environmental Operating Reports, and NRC oversight. Licensee implementation programs include periodic reviews of the site's potential vulnerability for an inadvertent leak to occur due to equipment failure or human error, an understanding of the site's hydrology and geology, early detection through ground water monitoring, and reporting of the data to the NRC • For those instances when a release of radioactive material to groundwater does occur at a nuclear power plant, a site-specific assessment is performed in accordance with the plant's groundwater protection program. Such assessments address site-specific conditions, including site-specific contaminants and potential receptors, and necessary actions to prevent off-site migration. Accordingly, the generic impact analysis should acknowledge that, regardless of whether the NRC renews licenses for nuclear power plants, existing regulations and performance standards already ensure that the environmental impacts are assessed in the event of a radioactive material spill or leak to groundwater or soil. Examples of such existing regulations and standards are listed below: <ul style="list-style-type: none"> 1. NEI 07-07 (Industry Groundwater Protection Initiative) guidance document. 2. Revisions to Regulatory Guide 4.1 (Radiological Environmental Monitoring Programs) 3. NRC Inspection Manual – Temporary Instruction 2515/173 4. Revisions to Regulatory Guide 4.21 (Minimization of Contamination and Radioactive Waste Generation: Life-Cycle Planning) 5. Revisions to Regulatory Guide 1.21 (Measuring, Evaluating and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste)

Cmt. No.	Page No.	Line No.	Comment
			<p data-bbox="747 294 1843 351">6. EPRI Report 1016099 "Groundwater Protection Guidelines for Nuclear Power Plants" 2008</p> <p data-bbox="701 393 1850 811">The above-described level of controls now imposed on an unplanned or unmonitored release of radionuclides to the environment from nuclear power plants and the NRC's regulatory oversight justifies a conclusion that impacts from the issue "Radionuclides released to groundwater" would be SMALL, and that the issue designation should be changed from "Category 2" to "Category 1." These changes would be consistent with the NRC's approach of designating other issues that are generically evaluated in the updated GEIS and found to have small impacts as a result of monitoring and regulatory controls as "Category 1." Examples include storage and disposal of low-level radiological waste, spent fuel, high-level waste, and mixed waste, For these issues, the GEIS relies on regulatory controls and permissible levels, which are outlined in regulations and implemented by the nuclear industry through operational monitoring programs, to conclude that impacts associated with each issue would be SMALL for all plants, and hence, that the issues are classified as "Category 1."</p> <p data-bbox="701 849 1766 910">The updated GEIS should be changed throughout (i.e., Volumes 1 and 2) to reflect the above-suggested modification in Table B-1 of Appendix B.</p>
4	S-16	GENERAL	<p data-bbox="701 918 1839 1009">Physical occupational hazards. — Finding in Table B-1 of Appendix B in the draft updated GEIS (Volume 2) for the issue labeled "Physical occupational hazards" reads as follows:</p> <p data-bbox="747 1014 1839 1141">Small impact (Category 1). Occupational safety and health hazards are generic to all types of electrical generating stations, including nuclear power plants, and are of small significance if the workers adhere to safety standards and use protective equipment.</p> <p data-bbox="701 1179 1839 1400">The issue of "Physical occupational hazards" was not addressed in the 1996 GEIS and was not raised in any scoping comment received by the NRC during the public scoping process for the updated GEIS (see draft updated GEIS, Volume 2, Appendix A). Therefore, it is unclear why the NRC has added the issue to the draft updated GEIS. Industry recognizes that NEPA imposes several obligations on federal agencies regarding the scope of an environmental impact statement. However, the NRC and Council on Environmental Quality (CEQ) NEPA regulations and guidance contain no indication that an NRC EIS must address</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>human health hazards, such as physical occupational hazards, that are controlled by the Occupational Safety and Health Act (29 U.S.C. 651 et seq.) as implemented by the Occupational Safety and Health Administration (OSHA) pursuant to the 1988 Memorandum of Understanding between NRC and OSHA regarding worker protection at facilities licensed by the NRC. Hazards of this type are not unique to nuclear power plants. Rather, they occur in all types of industrial and commercial business facilities where they are similarly controlled by the OSHA. Accordingly, Industry submits that evaluating these hazards in the updated GEIS is unnecessary and that requiring nuclear power plant license renewal applicants to conduct reviews of whether new and significant information concerning these hazards exists at their plants would waste resources. For this reason, Industry requests that the issue of "Physical occupational hazards" be deleted from Table B-1 of Appendix B in the updated GEIS (Volume 2). Also, the updated GEIS should be changed throughout (i.e., Volumes 1 and 2) to reflect the deletion.</p>
5	S-16	GENERAL	<p>Electric Shock Hazards. — Finding in Table B-1 of Appendix B in the draft updated GEIS (Volume 2) for the issue labeled "Electric shock hazards" reads as follows: Small, moderate, or large impact (Category 2). Electrical shock potential is of small significance for transmission lines that are operated in adherence with the National Electrical Safety Code (NESC). Without a review of each nuclear plant transmission line conformance with NESC criteria, it is not possible to determine the significance of the electrical shock potential.</p> <p>On page 3-3 in lines 38 and 39, the draft updated GEIS states that "only those transmission lines that connect the plant to the switchyard are considered within the scope of [the draft updated GEIS] review." On page 3-24 in lines 6 to 11, the draft updated GEIS states that "Power-transmission systems associated with nuclear power plants and considered within the scope of this review consist of switching stations (or substations) usually located on the plant site and the transmission lines that connect the plant to those substations. These systems are required to transfer power from the plant to the utility's network of power lines in its service area (the regional electrical distribution grid)." In addition, on page 3-24 the draft updated GEIS states that "in most cases, the transmission lines originating at the power plant substations are no longer owned or managed by the nuclear power plant licensees." Based on these limitations of the scope of impacts from transmission lines to be considered in the updated GEIS, the NRC should modify the above-quoted text in Table B-1 of Appendix B in the draft updated GEIS (Volume 2) for the issue labeled "Electric shock hazards" to read as</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>follows (font = deletion; <i>font = addition</i>):</p> <p>Small, moderate, or large impact (Category 2). Electrical shock potential is of small significance for transmission lines that are operated in adherence with the National Electrical Safety Code (NESC). Without a review of each nuclear plant transmission line conformance with NESC criteria <i>for each transmission line that connects a particular nuclear power plant to the switching station required to transfer power from the plant to the offsite network of power lines</i>, it is not possible to determine the significance of the electrical shock potential <i>for those transmission lines</i>.</p> <p>The draft updated GEIS should be changed throughout (i.e., Volumes 1 and 2) to reflect the above-suggested modification in Table B-1 of Appendix B.</p>
6	S-12 4-91	9 to 14 23 to 31	<p><u>Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds).</u> — Finding in Table B-1 of Appendix B in the draft updated GEIS (Volume 2) for the issue labeled “Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)” reads as follows:</p> <p>Small, moderate, or large impact (Category 2). Most of the effects associated with thermal discharges are localized and are not expected to affect overall stability of populations or resources. The magnitude of impacts, however, would depend on site-specific thermal plume characteristics and the nature of aquatic resources in the area.</p> <p>This issue is a consolidation of five issues that were previously analyzed in the 1996 GEIS. The 1996 GEIS concluded that four of the five issues would have small impacts and be Category 1. The fifth issue, “Heat shock (plants with once-through and cooling-pond heat dissipation systems),” was said to have small, moderate, or large impact, depending on site-specific conditions, and was classified as a Category 2 issue.</p> <p>For the reasons more fully discussed in the paragraphs below, Industry requests that the issue labeled “<u>Thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds)</u>” in Table B-1 of Appendix B in the draft updated GEIS (Volume 2) be re-categorized from “Category 2” to “Category 1” and that the above-quoted issue description be changed in Table B-1 of Appendix B in the draft updated GEIS to read as follows (font = deletion; <i>font = addition</i>):</p> <p>Small, moderate, or large impact (Category 2<i>1</i>). Most of the effects associated with</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>thermal discharges are localized and are not expected to affect overall stability of populations or resources. The magnitude of impacts, however, would depend on site-specific thermal plume characteristics and the nature of aquatic resources in the area. Heat shock effects would be mitigated to assure small impact at all sites through permits issued by state regulators under the Clean Water Act and state laws.</p> <p>Section 4.6.1.2 provides analysis of various factors of potential impacts related to thermal discharges from different cooling systems (pages 4-88 through 4-96). The draft updated GEIS provides analyses on cold shock (for all plants), thermal plume barrier to migrating fish (for all plants), distribution of aquatic organisms (for all plants), premature emergence of aquatic insects (for all plants). The draft updated GEIS concludes in Section 4.6.1.2 on page 4-91 (lines 26 - 30) that the impacts of thermal discharges are a Category 2 issue because the magnitude of the impact would depend on plant-specific characteristics of the cooling system and characteristics of the aquatic resource. Yet, the draft updated GEIS states the lessons learned from more than 30 Environmental Reports, and NRC's Supplemental Environmental Impact Statements for license renewal, show small impacts related to heat shock in all cases. As discussed below and in the draft updated GEIS, these plant-specific characteristics have been evaluated and are managed to assure that thermal impacts from nuclear plants are SMALL.</p> <p>The draft updated GEIS (page 4-88, lines 36-38) cites York et al. (2005)¹ as the basis to assert that the thermal discharges from the San Onofre and Diablo Canyon plants in California have had significant impacts on aquatic habitats. The draft updated GEIS concludes without any plant-specific data or further analysis, that since neither of these plants has requested renewal of their operating licenses as of this date², "...thermal discharges could be a concern ..." (emphasis added) and, ultimately, that there may be plants with specific characteristics that require this issue to be classified as Category 2. In fact, the York et al. study specifically states on page 66 of Appendix A of the report that Southern California Edison (SCE) meets the thermal requirements of its NPDES permits for environmental limits. Consistent with the NRC's conclusion that the impacts attributable to radioactive releases below regulatory limits are small, the fact that SCE is complying with the</p>

¹ Editorial note: the reference in the draft updated GEIS is incorrect. The reference should be: <http://www.energy.ca.gov/2005publications/CEC-700-2005-013/>

² PG&E submitted its license renewal application on November 23, 2009 for Diablo Canyon Power Plant.

Cmt. No.	Page No.	Line No.	Comment
			<p>thermal limits in its NPDES permits impacts supports the draft updated GEIS statement (page 4-88, lines 25-26) that the impacts are SMALL and that thermal discharge on aquatic organisms should be classified as a Category 1 issue.</p> <p>SCE owns and operates the San Onofre Nuclear Generating Station (SONGS) power plant located on the Pacific Coast in northern San Diego County. SONGS consists of two active units, each discharging approximately 1,200 million gallons per day of slightly heated seawater to the Pacific Ocean. The two active units employ once-through cooling water systems, withdrawing cooling water from the Pacific Ocean through each unit's approximately 3200 feet long intake conduit and discharging it to the ocean through separate (unit-specific) discharge conduits that are just beneath the ocean substrate. The Unit 2 discharge conduit is approximately 8400 feet (2500 meters) long in approximately 45 feet (15 meters) depth and the Unit 3 discharge conduit is approximately 6100 feet (1800 meters) long in about 35 feet (12 meters) depth. The last (farthest offshore) 2500 feet (762 meters) of each discharge conduit, is equipped with 63 diffuser ports, evenly spaced at 40 foot intervals, and angled away from the ocean floor to minimize thermal impacts on the marine environment. The diffusers are placed such that sensitive near shore marine habitat, especially intertidal and shallow subtidal habitat, will not be affected by the warm water from the discharge. [SWRCB 1999]³</p> <p>Independent monitoring by the Marine Review Committee under the auspices of the California Coastal Commission and by SCE during start-up of Units 2 and 3 showed the highest temperature detected in the environment to be approximately 4 degrees Fahrenheit above ambient temperatures at 1000 feet from the discharge structure.</p> <p>The Thermal Plan and the SONGS current discharge permits require that the effluent from SONGS Units 2 and 3 may not exceed the receiving water temperature by more than 25°F. In May 1997, the San Diego Regional Water Quality Control Board (SDRWQCB) granted SCE an exception to a 20°F receiving water temperature limitation that would allow discharges from Units 2 and 3 to exceed the receiving water temperature by no more than 25° F. [SWRCB 1999]</p>

³ SWRCB (State Water Resources Control Board) 1999. California State Water Resources Control Board Resolution No. 99 – 028, Approval Of The San Diego Regional Water Quality Control Board's Adoption Of An Exception To The California State Thermal Plan (Thermal Plan) For San Onofre Nuclear Generating Station (SONGS). April 14, 1999

Cmt. No.	Page No.	Line No.	Comment
			<p>In its April 1999 resolution on the request, the (California) State Water Resources Control Board determined that <i>"SCE has provided information which demonstrates that the proposed limitation will protect and maintain balanced indigenous communities in the vicinity of the SONGS discharges based on a number of considerations:</i></p> <ul style="list-style-type: none"> • <i>There is no evidence of adverse impacts caused by the thermal component of the discharge</i> • <i>Effects due to the proposed increase in temperature will be minimal because the discharge structures are designed and placed such that sensitive near shore marine habitat, especially intertidal and shallow subtidal habitat, will not be affected by heat from the discharge. Further, thermal plume modeling of the new discharge conditions as reported in SDRWQCB's Initial Study shows clearly that permit requirements will not be violated as a result of the requested permit modification, and that thermal impacts on the sensitive kelp bed environment will be insignificant."</i> [SWRCB 1999] <p>The Regional Water Quality Control Board, San Diego Region concluded, and continues to conclude, that SCE meets NPDES limits for thermal impacts in the marine environment.</p> <p>As such, there has been no measurable impact due to thermal discharges and the state agency has not required any mitigation measures.</p> <p>The purpose of the Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the Nation's water" as already stated by the NRC on page F-4 (lines 12 – 14) of the Draft Generic Environmental Impact Statement (GEIS). As part of the implementation of the CWA, the EPA established a National Pollutant Discharge Elimination System (NPDES) permitting program as described in 40 CFR Part 122 to ensure that the discharge of pollutants such as chlorine, metals, biocides, and thermal heat are regulated to ensure that the chemical, physical and biological integrity of the Nation's water is maintained. Permit conditions are based on two criteria: The State's water quality standards set minimum standards for the ambient quality of water in surface water bodies, and technological standards, such as "best available technology (BAT)" to create a floor of technology that must be applied to any discharge of a certain industrial type. In regard to thermal heat, effluent limitations are established by the permitting agency based either on</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>state and/or water body specific water quality standards or on limitations that the agency has determined that will assure measures necessary for the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the body of water into which the discharge is made ("balanced indigenous population"). When determining thermal limitations that will be protective of the plant-specific surface waters, CORMIX modeling studies, specific-site information, or other related thermal monitoring studies are used by the permitting agency for discharge specific evaluation.</p> <p>Pursuant to federal regulation, NPDES permits may not allow a discharge that causes or contributes to a violation in water quality standards or that, in the case of a thermal discharge, impairs the balanced indigenous population. It should be noted that permitting agencies evaluate thermal heat discharges associated with all nuclear plant facilities (once-through cooling, closed-cycle cooling and cooling ponds) during the initial permitting cycle and on a five-year renewal basis thereafter. Discharge specific evaluations are developed during each renewal cycle to establish effluent limitations that assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made. For example, Grand Gulf Nuclear Station, a closed-cycle cooling plant, was required to conduct extensive thermal monitoring studies during the operational phase and is currently required to conduct a thermal monitoring study during each permit renewal cycle to ensure that the thermal discharge does not impact the physical, chemical or biological integrity of the Mississippi River.</p> <p>In addition, as stated in Section 1.7.1 of the draft updated GEIS, the NRC properly defers to the EPA or the State for setting effluent and operational parameters in plant-specific NPDES permits to meet water quality standards that have been established to be protective of the aquatic environment and its beneficial uses. Language consistent with this statement also appears in the Environmental Protection Plans for new and existing nuclear plants.</p> <p>Industry submits that the statements in the GEIS that are discussed above along with other GEIS references cited below demonstrate that the NPDES permitting program and oversight from the NPDES permitting agencies ensures that impacts from thermal and other effluents from nuclear plants seeking license renewal will be SMALL and that the issue should be categorized as Category 1.</p>

Cmt. No.	Page No.	Line No.	Comment
			<ul style="list-style-type: none"> • Page 3-132 (Lines 3 - 6): Impacts of chemical discharges to human health are considered to be small if the discharges of chemicals to water bodies are within effluent limitations designed to ensure protection of water quality and if ongoing discharges have not resulted in adverse effects on aquatic biota. • Page 4-35: (Lines 37 - 41): Because of State regulatory involvement, and because regulatory and resource agencies have not found significant problems with outfall monitoring, the impacts from the discharge of chlorine and other biocides and minor spills of sanitary wastes and chemicals during license renewal and refurbishment were considered to be small for all plants and designated as Category 1 issues in the 1996 GEIS. • Page 4-142 (Lines 12 - 13): Discharges of sanitary wastes are regulated by NPDES permit, and discharges that do not violate the permit limits are considered to be of small significance. • Page 4-221 (Lines 18 - 22): For some resource areas (e.g., water and aquatic resources), the contributions of ongoing actions within a region on cumulative impacts are regulated and monitored through a permitting process (e.g., NPDES) under State or Federal authority. In these cases, it may be assumed that cumulative impacts are managed as long as these actions (facilities) are in compliance with their respective permits. • Page A-12 (Lines 36 – 40): The amount of the water discharged by each individual plant and the chemical levels in that water are determined by individual States through the National Pollutant Discharge Elimination System permitting program, not the NRC. The licensee is required by the NRC to operate in compliance with all its permits, therefore minimizing the impacts to the environment. <p>For the four Category 1 issues in the 1996 GEIS — “Cold shock (for all plants),” “Thermal plume barrier to migrating fish (for all plants),” “Distribution of aquatic organisms (for all plants),” and “Premature emergence of aquatic insects (for all plants)” — that have been</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>consolidated with "Heat shock (plants with once-through and cooling pond heat dissipation systems)" in the draft updated GEIS to form the issue of "Thermal impacts on aquatic organisms (plants with once-through and cooling pond heat dissipation systems)", there is inadequate justification in the GEIS to require site-specific analyses in supplemental EISs. These issues should continue to be resolved generically for all plants as Category 1 issues.</p> <p>In conclusion, the NPDES permitting process established under the Clean Water Act requires that the permitting agency issue a permit that assures the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made. Therefore, the issue of thermal impacts on aquatic organisms (plants with once-through cooling systems or cooling ponds) should be classified as Category 1, consistent with the criteria discussed on page S-5 of the Draft updated GEIS:</p> <ul style="list-style-type: none"> • Environmental impacts associated with the thermal issue apply to all plants. • A single significance level (SMALL) can be assigned to the impacts. • Mitigation of adverse impacts associated with the thermal issue, if needed, would be placed in the NPDES Permit and re-evaluated every five years during the permit renewal cycle by the permitting agency. <p>The draft updated GEIS should be changed throughout (i.e., Volumes 1 and 2) to reflect the above-suggested modification in Table B-1 of Appendix B.</p>

SPECIFIC COMMENTS ON DRAFT UPDATED GEIS

Specific Comments Requesting Substantive Changes in the Draft updated GEIS

Cmt. No.	Page No.	Line No.	Comment
<u>Volume 1, Summary</u>			
7	S-6	11 to 17	<p><u>Page S-6, lines 11 to 17:</u> Text in lines 11 to 17 on page S-6 reads as follows: The NRC described the affected environment in terms of the following resource areas and activities: (1) land use and visual resources; (2) meteorology, air quality, and noise; (3) soils, geology, and seismology; (4) hydrology (surface water and groundwater); (5) ecology (terrestrial and aquatic resources; threatened, endangered, and protected species and essential fish habitat); (6) historic and cultural resources; (7) socioeconomics; (8) human health; (9) environmental justice; and (10) waste management and pollution prevention. The affected environments of the operating plant sites represent diverse environmental conditions.</p> <p>The above-quoted paragraph, which appears in lines 11 to 17 on page S-6, indicates that one resource area described as part of the affected environment by the NRC in the draft updated GEIS (item (3)) consists of "soils, geology, and seismology." The NRC is encouraged to delete the reference to seismology in line 13 on page S-6, and in the following other locations throughout the draft updated GEIS.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Page vii, Table of Contents, section 3.4 (delete "Seismology" for the section title) <input type="checkbox"/> Page 1-17, line 22, section 1.11, 3rd paragraph, item (3) (delete the word "seismology") <input type="checkbox"/> Page 3-1, lines 4 to 25, text box containing "Contents of Chapter 3", 2nd bullet, 3rd sub-bullet (delete the word "seismology") <input type="checkbox"/> Page 3-49, line 14, section 3.4, title (delete "Seismology" for the section title) <input type="checkbox"/> Page 3-50, lines 15 to 25 (delete the paragraph in lines 15 to 25) <input type="checkbox"/> Page 4-28, lines 27 to 30 (delete the paragraph in lines 27 to 30)

Cmt. No.	Page No.	Line No.	Comment
			<p>These deletions are appropriate because seismology is not an environmental resource that could be affected by continued nuclear power plant operation and refurbishment activities, or for which environmental mitigation measures, such as avoidance, could be implemented. While the NRC correctly acknowledges that nuclear power plants are constructed according to the seismic specifications in 10 CFR Part 50, Appendix S, the draft updated GEIS does not provide adequate justification for this issue to be considered under NEPA in the context of license renewal. If seismic conditions at a nuclear power plant site are found to have changed since its initial site selection and licensing, then the licensee may need to review the design basis of the plant to ensure that nuclear safety margins are maintained. This review would occur as part of routine plant operation programs under 10 CFR 50. However, this issue should not justify environmental review under NEPA during license renewal for an existing plant. Accordingly, if consideration of seismology is warranted during license renewal, the NRC is encouraged to address the issue as a plant nuclear safety issue, rather than as an environmental issue.</p> <p>If the NRC is concerned about the environmental and human health effects of radioactive material releases that may occur as a result of seismic activity, such effects have already been evaluated, independent of cause, and determined to be SMALL for Category 1 issues related to aquatic organisms, low-level waste management storage, offsite impacts of spent fuel and high-level waste disposal, mixed waste storage and disposal, and the uranium fuel cycle. The NEPA review for all of these issues was documented in the 1996 GEIS.</p>
Volume 1, Chapter 2			
8	2-5	1 to 4	<p><u>Page 2-5, lines 1 to 4:</u> Text in lines 1 to 4 on page 2-5 reads as follows:</p> <p>The NRC has developed regulations and guidance for the decommissioning of nuclear facilities, including nuclear power plants. These regulations are found in Subpart E to 10 CFR Part 20 and the guidance document <i>Consolidated NMSS Decommissioning Guidance</i>, NUREG-1757 (NRC 2002b).</p> <p>Certain aspects of the license termination process for nuclear power plants are governed by 10 CFR 50.82, which is not cited as a reference in lines 1 to 4 on page 2-5. The NRC is encouraged to add this reference to the text in lines 1 to 4 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>The NRC has developed regulations and guidance for the decommissioning of nuclear facilities, including nuclear power plants. These regulations are found in <i>10 CFR 50.82 (Termination of License)</i>, Subpart E to 10 CFR Part 20 (<i>Radiological Criteria for License Termination</i>), and the guidance document <i>Consolidated NMSS Decommissioning Guidance</i>, NUREG-1757 (NRC 2002b).</p>
9	2-5	19 - 24	<p>Page 2-5, lines 19 to 24: Text in lines 19 to 24 on page 2-5 describes the process by which the licensee completes decommissioning and the NRC terminates or amends the license, depending on the intended use of the site.</p> <p>According to 10 CFR 50.82 (a)(3), the licensee may not take more than 60 years to complete decommissioning. Based on this, the NRC is encouraged to change the text in lines 19 and 20 on page 2-5 to read as follows (strikethrough font = deletion; <i>italics font = addition</i>):</p> <p>At the completion of decommissioning, <i>which may take up to 60 years to complete (10 CFR 50.82(a)(3))</i>, the licensee conducts a final status survey to demonstrate compliance with criteria established in the decommissioning plan.</p>
10	2-16	Table 2.1-1, Cumulative Impacts	<p>Page 2-16, Table 2.1-1 (Cumulative Impacts): In the Table 2.1-1 column labeled "Impact," the entry for the "Cumulative Impacts" issue reads as follows: (Category 2). Cumulative impacts of license renewal must be considered on a plant-specific basis. Impacts would depend on regional resource characteristics, the resource-specific impacts of license renewal, and the cumulative significance of other factors affecting the resource.</p> <p>An applicant for license renewal of a nuclear power plant would not have access to all information necessary about other projects (over which the applicant has no control) in the vicinity to support an assessment of cumulative impacts of license renewal. Accordingly, the NRC is encouraged to change the scope described in Table 2.1-1 of the "Cumulative Impacts" issue such that any assessment of cumulative impacts in the license renewal environmental report would be limited to projects that are within the applicant's control (e.g., new nuclear generating units to be owned by the same applicant and placed on or near the site of the unit[s] for which license renewal is being sought).</p>
Volume 1, Chapter 3			

Cmt. No.	Page No.	Line No.	Comment
11	3-58 to 3-59	33 5	<p><u>Page 3-58, line 33 to page 3-59, line 5:</u> Text from line 33 on page 3-58 through line 5 on page 3-59 discusses the effects on vegetation and habitats of placing and maintaining transmission line ROWs in undeveloped areas.</p> <p>In light of the discussion on page 3-24, lines 13 through 25, which indicates that after the GEIS has been updated the scope of assessment in license renewal SEISs will no longer include transmission lines that would remain in place and energized regardless of the decision on license renewal, the NRC is encouraged to consider whether the paragraph addressing transmission line ROWs (on pages 3-58 and 3-59) remains relevant, and the paragraph should be either modified to clarify its relevance or deleted.</p>
12	3-61	29 – 32	<p><u>Page 3-61, lines 29 to 32:</u> Text in lines 29 to 32 on page 3-61 reads as follows: Cooling system intakes can create an impingement hazard for waterfowl, and water demands for cooling can create water-use conflicts with wildlife. At the Nine Mile Point plant in New York, for example, approximately 100 greater scaup (<i>Aythya marila</i>) ducks were impinged at the cooling water intake structure in 2000 (NRC 2006d).</p> <p>A reference or additional information should be provided to support the statement in lines 29 and 30 that “water demands for cooling can create water-use conflicts with wildlife”. The Nine Mile Point example does not suggest a water-use conflict resulting from cooling water demand.</p>
<u>Volume 1, Chapter 4</u>			
13	4-28	27 – 30	<p><u>Page 4-28, lines 27 to 30:</u> Text in lines 27 to 30 on page 4-28 reads as follows: As discussed in Section 3.4, nuclear power plants are constructed according to seismic specifications in 10 CFR Part 50, Appendix S. Spent fuel pools are designed with reinforced concrete, allowing them to remain operable through the largest earthquake that has occurred or is expected to occur in the vicinity of a nuclear power plant.</p> <p>The NRC is encouraged to delete the paragraph in lines 27 to 30 on page 4-28 because it is more precisely an issue for current plant operation and is not directly related to plant refurbishment and operations during the extended term of operation resulting from license</p>

Cmt. No.	Page No.	Line No.	Comment
			renewal. Furthermore, seismology is not a resource that is impacted by such activities.
14	4-68	31 to 36	<p>Page 4-68, lines 31 to 36: Text in lines 31 to 36 on page 4-68 reads as follows: There are no reports of relatively high collision mortality occurring at the transmission lines associated with nuclear power plants in the United States. The length of transmission lines associated with nuclear plants is considerably less than the total 500,000 mi (800,000 km) of transmission lines estimated within the United States (Manville 2005). Therefore, transmission lines associated with nuclear power plants are likely responsible for only a small fraction of total bird collision mortality.</p> <p>On page 3-3 in lines 38 and 39, the draft updated GEIS states that “only those transmission lines that connect the plant to the switchyard are considered within the scope of [the updated GEIS] review.” On page 3-24 in lines 6 to 11, the draft updated GEIS states that “Power-transmission systems associated with nuclear power plants and considered within the scope of this review consist of switching stations (or substations) usually located on the plant site and the transmission lines that connect the plant to those substations. These systems are required to transfer power from the plant to the utility’s network of power lines in its service area (the regional electrical distribution grid).” In addition, on page 3-24 the draft updated GEIS states that “in most cases, the transmission lines originating at the power plant substations are no longer owned or managed by the nuclear power plant licensees.” Based on these limitations of the scope of impacts from transmission lines to be considered in the draft updated GEIS, the NRC is encouraged to modify the text in lines 31 through 36 on page 4-68 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>There are no reports of relatively high collision mortality occurring at the transmission lines associated with nuclear power plants in the United States. The length of transmission lines associated with nuclear plants is considerably less than the total 500,000 mi (800,000 km) of transmission lines estimated within the United States (Manville 2005). <i>This is particularly true considering, as was previously discussed in section 3.1.6.5, that power-transmission systems associated with nuclear power plants and considered within the scope of this review are limited to switching stations (or substations) usually located on the plant site and the transmission lines that connect the plant to those substations.</i> Therefore, <i>the</i> transmission lines associated with</p>

Cmt. No.	Page No.	Line No.	Comment
			nuclear power plants <i>for the purpose of this review</i> are likely responsible for only a small <i>tiny</i> fraction of total bird collision mortality.
15	4-47	33-36	<p>Page 4-47, lines 33-36: Text reads as follows: On the basis of occurrences at several nuclear plants, the impact of radionuclide releases to groundwater quality could be small or moderate, depending on the occurrence and frequency of leaks and the ability to respond to leaks in a timely fashion. The issue is considered a Category 2 issue.</p> <p>The above-quoted statement appears to conflict with the conclusion from the NRC's Liquid Release Lessons Learned Task Force Final Report issued on Sept. 1, 2006: "<i>Although there have been a number of industry events where radioactive liquid was released to the environment in an unplanned and unmonitored fashion, based on the data available, the task force did not identify any instances where the health of the public was impacted.</i>"</p> <p>The NRC is encouraged to revise the potential impact classification of radionuclides released to groundwater to Category 1 and to amend the language on lines 33-35 as follows (strike through font = deletion; <i>italics</i> font = addition): On the basis of occurrences at several nuclear plants, the impact of radionuclide releases to groundwater quality could be <i>is expected to be</i> small or moderate, depending on the occurrence and frequency of <i>given the improved on-site groundwater monitoring for</i> leaks and the <i>enhanced</i> ability to respond to leaks in a timely fashion. <i>The NRC does not consider these inadvertent releases of radionuclides to groundwater to be a health risk to the public or workers.</i> The issue is considered a Category 2 <i>1</i> issue.</p>
16	4-69	14 - 28	<p>Page 4-69, lines 14 to 28: Text in lines 14 to 28 reads as follows: The potential range of impact levels at plants with cooling ponds or cooling towers using makeup water from a small river with low flow applying for license renewal in the future cannot be determined at this time. The NRC concludes that the impact of water use conflicts with riparian communities is a plant-specific Category 2 issue.</p> <p>The above-quoted statement appears to conflict with the following statement on page 4-63</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>(lines 16 – 18) in the draft updated GEIS: <i>On the basis of these considerations, the NRC concludes that the impact of continued operation of the cooling systems on terrestrial resources would be small for all nuclear plants and is considered a Category 1 issue.</i></p> <p>The NRC is encouraged to revise the potential impact classification of water use on terrestrial riparian habitats to Category 1 for the following reasons. The analysis presented in support of the conclusion on page 4-63 classifying the impact of cooling systems (including cooling ponds) on terrestrial resources as Category 1 is appropriate for discussion of impacts on page 4-69. As noted in lines 1 – 4 on page 4-63, restrictions typically exist on water consumption that may require reduction in plant operation which would mitigate impact on riparian and aquatic biota. As noted, impacts would be temporary.</p>
17	4-75 to 4-77	29 37	<p>Page 4-75, line 29 to page 4-77, line 37: Text from page 4-75, line 29 through page 4-77, line 37 contains subsections titled “Honeybees” and “Wildlife and Livestock,” which respectively discuss the effects of EMF on honey bees and on wildlife and livestock located within or very near transmission line rights-of-way.</p> <p>The NRC is encouraged to delete the subsections titled “Honeybees” and “Wildlife and Livestock” because these discussions appear to be inconsistent with statements on pp. 3-3 (lines 35 – 41) and 3-24 (lines 20 – 21) regarding the scope of the GEIS update with respect to transmission lines. Unless NRC is aware of a nuclear power plant site where honeybees, wildlife, and/or livestock are located onsite beneath the transmission lines that run from the turbine generator building to the onsite switching station, these issues do not exist in the context of license renewal. The “Conclusion” subsection on pages 4-77 and 4-78 should also be modified to reflect the deletions.</p>
18	4-78	12 to 15	<p>Page 4-78, lines 12 to 15: Text in lines 12 to 15 on page 4-78 reads as follows: Continued operations of the nuclear power plants during the 20-year license renewal term includes the operation of the cooling system (once-through, cooling ponds, or cooling towers), transmission line ROW maintenance, releases of gaseous and liquid effluents, facility maintenance, and refurbishment-related construction activities.</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>The NRC is encouraged to delete the words “transmission line ROW maintenance” in line 14 on page 4-78 because such words appear to be inconsistent with statements on pp. 3-3 (lines 35 – 41) and 3-24 (lines 20 – 21) regarding the scope of the GEIS update with respect to transmission lines. Unless NRC is aware of a nuclear power plant site where aquatic organisms are located onsite beneath the transmission lines that run from the turbine generator building to the onsite switching station, the issue of transmission line maintenance impacts on aquatic resources does not exist.</p>
19	<p>4-88 to 4-89</p> <p>4-91</p>	<p>32-40</p> <p>16-30</p>	<p><u>Page 4-88, lines 32 to page 4-91, line 2: Text from page 4-88, line 32 through page 4-89, line 2 the NRC is encouraged to modify the text to read as follows</u> (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>In the 1996 GEIS, the NRC determined that for plants with a once-through cooling system or cooling ponds, the effects of thermal discharge on aquatic biota (primarily due to heat shock) was small at many plants. However, because the effects were considered moderate or large at a few nuclear plants, heat shock was considered a Category 2 issue that required a site-specific assessment before license renewal. The potential for thermal discharge effect is considered to be greatest at plants with once-through cooling systems (NRC 1996), primarily because of the higher discharge temperatures and larger thermal plume area.</p> <p>The potential impacts of thermal discharges during the 20-year license renewal term were evaluated by reviewing published site ERs, license renewal SEISs, and the scientific literature. For all of these plants, it was determined that the impacts of thermal discharges during the license renewal term were small. However, according to York et al. (2005), thermal discharges from the Diablo Canyon and San Onofre plants (located along the California coast) have had significant impacts on aquatic habitats. (Both of these plants employ once-through cooling systems and have not yet been reviewed for license renewal.) Thus, <i>While</i> thermal discharges could be a concern during the license renewal term for plants with once-through cooling systems, especially for plants located in areas where restoration efforts are underway to increase fish populations or reestablish migratory fish species or where thermal discharge plumes could encompass otherwise high-quality habitats, <i>no new environmental impacts are anticipated.</i></p> <p>In the 1996 GEIS, the NRC considered the impacts of heat shock on aquatic biota</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>during the license renewal term to be small, moderate, or large at plants with once-through cooling or cooling ponds (i.e., a Category 2 issue), and it considered the impacts of cold shock, interference with fish migration, distribution of aquatic organisms, and premature emergence of aquatic insects to be small for all plants (i.e., Category 1). No new information that would alter these conclusions was identified in the NRC's review of the plant-specific SEISs prepared to date and or in the literature show the impacts to be small.</p> <p><i>Thermal discharges are regulated for each plant under the Clean Water Act. The NRC requires nuclear power plants to operate in compliance with all of its permits, thereby minimizing adverse impacts to the environment and on workers and the public. It is anticipated that all plants will continue to operate in compliance with all applicable permits.</i> On the basis of these considerations, the NRC concludes that the impact of thermal discharges on aquatic organisms at nuclear plants with once-through cooling systems or cooling ponds over the license renewal term <i>would be managed and regulated in accordance with the requirements imposed under the CWA. As a result, thermal impacts on aquatic organisms would be</i> could be small, moderate, or large, and is considered a Category 21 issue. The magnitude of the impact would depend on plant-specific characteristics of the cooling system (including location and type of discharge structure, discharge velocities and volume, and three-dimensional characteristics of the thermal plume) and characteristics of the aquatic resource (including the species present and their physiology, habitat, population distribution, status, management objectives, and life history).</p>
20	4-104 to 4-106	23 3	<p>Page 4-104, line 23 to page 4-106, line 3: Text from page 4-104, line 23 through page 4-106, line 3 contains a subsection titled "Impacts of Transmission Line ROW Maintenance on Aquatic Resources," which discusses the impacts on aquatic resources from transmission line ROW maintenance.</p> <p>The NRC is encouraged to delete the subsection titled "Impacts of Transmission Line ROW Maintenance on Aquatic Resources" located from page 4-104, line 23 through page 4-106, line 3 because the issue of transmission line ROW maintenance impacts on aquatic resources appears to be inconsistent with statements on pp. 3-3 (lines 35 – 41) and 3-24 (lines 20 – 21) regarding the scope of the GEIS update with respect to transmission lines.</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Unless NRC is aware of a nuclear power plant site where aquatic organisms are located onsite beneath the transmission lines that run from the turbine generator building to the onsite switching station, the issue of transmission line maintenance impacts on aquatic resources during the term of a renewed nuclear power plant license does not exist. If this discussion is retained, its scope should be confined to impacts within the transmission line ROWs that run from the turbine generator building to the onsite switching station.</p>
21	4-114	37 - 40	<p>Page 4-114, lines 37 to 40: Text in lines 37 to 40 on page 4-114 reads as follows: Operations – Operational impacts include acid precipitation. EPA estimates acid emission rates from coal-fired power plants could range from: IGCC, 0.004 to 0.30 lb/MWh; subcritical PC 0.018 to 0.088 lb/MWh; supercritical PC, 0.017 to 0.082 lb/MWh; ultra-supercritical PC, 0.015 to 0.074 lb/MWh.</p> <p>The NRC is encouraged to add information to this section indicating that operations at a fossil energy facility would have essentially the same or greater potential impact on ecological resources as operation of a nuclear facility. Furthermore, the above-quoted estimates of acid rain emissions from various types of fossil energy facilities are not themselves impacts. The NRC is encouraged to add a discussion of the impacts of such acid rain emissions.</p>
22	4-117	19 to 22	<p>Page 4-117, lines 19 to 22: Text in lines 19 to 22 on page 4-117 reads as follows: Only one impact issue is evaluated:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Impact of continued operations and refurbishment activities on historic and cultural resources located onsite and in transmission line rights-of-way. <p>The NRC is encouraged to delete the words “and in transmission line rights-of-way” in line 22 on page 4-117. These words appear to be inconsistent with statements on pages 3-3 (lines 35 – 41) and 3-24 (lines 20 – 21) regarding the scope of the GEIS update with respect to transmission lines. According to pages 3-3 (lines 35 – 41) and 3-24 (lines 20 – 21), the evaluation in the draft updated GEIS of impacts of transmission line maintenance on historic or cultural resources should be limited to such resources located onsite beneath the transmission lines that run from the turbine generator building to the onsite switching station.</p>

Cmt. No.	Page No.	Line No.	Comment
23	4-118	16 - 23	<p><u>Page 4-118, lines 16 to 23:</u> Text in lines 16 through 23 on page 4-118 reads as follows:</p> <p><u>Under Section 106 of the NHPA, the NRC must take into account the effect of the undertaking on any historic and cultural resources included or eligible for inclusion in the <i>National Register</i>. Therefore, to assess the impact of continued operations on these resources, all historic and cultural resources that could be affected must be known at the time of license renewal. To achieve this objective, field investigations should be performed on the entire plant site.</u> The eligibility of a historic and cultural resource for listing on the <i>National Register</i> should be determined, and a process for considering these resources should be developed before renewing the license.” [emphasis added]</p> <p>The underlined text in the above-quoted text is not consistent with the Advisory Council on Historic Preservation’s (ACHP) Section 106 Archaeology Guidance (available online at www.achp.gov/archguide). Based on the ACHP guide, it is NOT necessary for the NRC to require field investigations of the “entire plant site,” which frequently includes undeveloped areas on which no refurbishment or operations activities are planned during the period of extended operation. Accordingly, the NRC is encouraged to delete the above-quoted text in lines 16 to 23 on page 4-118.</p>
24	4-119	15 to 17	<p><u>Page 4-119, lines 15 to 17:</u> Text in lines 15 through 17 on page 4-119 reads as follows:</p> <p>For activities connected to license renewal, the resources in the transmission line ROWs must be identified. The means for considering the effects of transmission line maintenance on these resources should be determined before renewal of the license.”</p> <p>Consideration should be given to revising the above-quoted sentences in light of the statements on pp. 3-3 (lines 35 – 41) and 3-24 (lines 20 – 21) regarding the scope of the GEIS update with respect to transmission lines. If a transmission line ROW not owned by the license renewal applicant is at issue, it would be inappropriate for the license renewal schedule to be jeopardized because the ROW owner failed to cooperate in determining a means for considering the effects of transmission line maintenance on cultural and archaeological resources within the ROW.</p>

Cmt. No.	Page No.	Line No.	Comment
25	4-119 to 4-120	40 33	<p><u>Page 4-119, line 40 to page 4-120, line 33:</u> Text from line 40 on page 4-119 to line 33 on page 4-120 discusses the impacts on historic and cultural resources of constructing alternative energy power plants in lieu of renewing the license for a nuclear power plant.</p> <p>The introductory text for Section 4.7.2 on pages 4-119 and 4-120 should explain why impacts on historic and cultural resources are not evaluated for the fossil energy and new nuclear plant alternatives to the proposed action. Also, an explanation should be provided as to why impacts on historic and cultural resources of construction and operation of biomass, solar thermal, and solar photovoltaic power plants are not addressed in Section 4.7.2.1 on page 4-120.</p>
26	4-142	6 to 9	<p><u>Page 4-142, lines 6 to 9:</u> Text in lines 6 to 9 on page 4-142 reads as follows: Major changes in the operation of the cooling system are not expected during the license renewal term, so no change in the effects of biocide discharges on the quality of the receiving water is anticipated. Any such changes would require a separate NEPA review that would include an examination of human health effects.</p> <p>Clarification is needed regarding the above-quoted statement that a separate NEPA review for human health effects would be required if major changes were made in the operation of the cooling system at a nuclear power plant. It is not clear why NRC staff believes that a NEPA review would be necessary for this type of operational change. It should be noted that changes in chemicals, including biocides, used on site that are subsequently discharged to the environment would require modification to the site's NPDES permit. The NPDES permitting process involves a review of the environmental impacts.</p>
27	4-152	16 to 19	<p><u>Page 4-152, lines 4 to 19:</u> Text in lines 16 to 19 on page 4-152 reads as follows: Without a review of the conformance of each nuclear plant's transmission lines with NESC criteria, it is not possible to determine the significance of the electrical shock potential generically; it could be small, moderate, or large. The impact of this hazard is a Category 2 issue.</p> <p>The information provided in lines 4 to 19 on page 4-152 should be expanded to explain the</p>

Cmt. No.	Page No.	Line No.	Comment
			scope of the GEIS update with respect to transmission lines, as presented on pp. 3-3 (lines 35 – 41) and 3-24 (lines 20 – 21).
28	4-220 to 4-227	6 14	<p>Page 4-220, line 6 to page 4-227, line 14: Text from page 4-220, line 6 through page 4-227, line 14 explains the requirement for analysis of cumulative impacts by a federal agency under NEPA, and discusses influences that would affect the magnitude of cumulative impacts for each environmental resource.</p> <p>Industry understands that NEPA requires federal agencies to assess cumulative impacts from their actions in combination with other past, present, and foreseeable future actions. Notwithstanding, an applicant for license renewal of a nuclear power plant would not have access to all information necessary about other projects (over which the applicant has no control) in the vicinity to support an assessment of cumulative impacts of license renewal. Accordingly, the NRC is encouraged to limit the scope described in section 4.13 (Cumulative Impacts) in the draft updated GEIS of the cumulative impacts issue such that any assessment of cumulative impacts in a license renewal environmental report would be limited to projects that are within the applicant's control (e.g., new nuclear generating units to be owned by the same applicant and placed on or near the site of the unit[s] for which license renewal is being sought).</p> <p>Clarification is also needed on the definition of "reasonably foreseeable future actions" related to cumulative impacts. Cumulative impact evaluation should have limits. The discussions on cumulative impact evaluations throughout the draft updated GEIS should clarify that such evaluations need not consider impacts caused by any of the following future events, whether or not they are reasonably foreseeable:</p> <ol style="list-style-type: none"> 1. Potential alterations due to climate change or global warming – e.g., drought, flooding, or other as yet unpredictable weather related phenomena; or acts of God; (in these cases, the use of the resource during the extended license period by the plant is not the instigator of the stress on the resource, and potential impacts would occur regardless of license renewal) 2. acts of war or terrorism, 3. indiscriminate use of a resource – e.g., an assumption of uncontrolled or unregulated use of a resource. Example: a plant with no demonstrable existing impact on an existing resource should not be required to evaluate cumulative

Cmt. No.	Page No.	Line No.	Comment
			<p>impacts under the assumption that future unregulated use of the resource could cause adverse impact to the resource.</p> <ol style="list-style-type: none"> 4. If the resource is controlled by local, state, or federal, or tribal resource regulations, and no demonstrable impact to an existing resource exists, no further cumulative impacts should be required. 5. If local, state, federal or tribal regulations do not apply to the resource: <ol style="list-style-type: none"> a. if the <u>existing</u> cumulative impacts do not destabilize the resource, no further cumulative impact evaluation should be required b. if there are no known plans to utilize the resource that would cause demonstrable adverse impacts that would destabilize the resource, no further evaluation of cumulative impacts should be required c. if there are known future plans to utilize the resource that are likely to cause demonstrable adverse impacts that would destabilize the resource, and NRC denial of a renewed license would have little impact to restore the resource, no further cumulative impact should be required 6. If there are known future plans to utilize the resource that are likely to cause demonstrable adverse impacts that would destabilize the resource, and the adverse impact is directly or indirectly attributable to local, state, federal or tribal regulation, no further cumulative impact should be required (e.g., EPA 316(b) regulations or similar state or tribal regulations that would require retrofit of cooling towers that causes increased consumption of water from a small river or other water body). In this case, the NEPA evaluation of the agencies rulemaking should bear the responsibility for evaluating the environmental and health and safety and other impacts on the resource(s) subject to the regulation.

Specific Comments Requesting Clarifications and Factual Corrections

Cmt. No.	Page No.	Line No.	Comment
<u>Volume 1, Chapter 2</u>			
29	2-1	25 to 38 (Box)	<p>Page 2-1, lines 25 to 38: A box appears having the title “Alternatives to the Proposed Action Considered in the GEIS.” Three bullets appear in the box. The text of the 3rd bullet reads as follows:</p> <ul style="list-style-type: none"> • Offsetting generation capacity using conservation and energy efficiency (demand-side management) or purchased power. <p>To clarify that “Purchased power” is a stand-alone alternative to the proposed action of license renewal, consider modifying the 3rd bullet and adding a 4th bullet as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <ul style="list-style-type: none"> • Offsetting generation capacity using conservation and energy efficiency (demand-side management) or purchased power. • <i>Purchasing sufficient power to replace the capacity supplied by the existing nuclear power plant.</i>
30	2-5	41	<p>Page 2-5, line 41: The draft updated GEIS states that Table 2.1-1 presents a summary of the environmental impacts of the proposed action.</p> <p>Consider adding a reference at the end of the sentence on line 41 indicating that the bases for the impacts summarized in Table 2.1-1 are discussed in section 4.12.1.</p>
31	2-30	20 to 22	<p>Page 2-30, lines 20 to 22: Consider changing the sentence in lines 20 to 22 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>The proposed action and new nuclear energy alternatives all may have low-probability but potentially high-consequence accidents in comparison to the non-nuclear alternatives <i>under certain specific conditions.</i></p>
32	2-33	Table 2.4.3	<p>Page 2-33, Table 2.43, column labeled “Proposed Action: Describes the impacts of postulated accidents associated with the proposed action as follows:</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Postulated accidents associated with continued operations under the license renewal term include design-basis accident and severe accidents. The impacts presented take into consideration the low probability of an accident occurring. Design-basis accidents have a small impact. Severe accidents could have moderate or large consequences.</p> <p>The last sentence in the above-quoted text (i.e., “Severe accidents could have moderate or large consequences”) is not consistent with Table 2.1-1 on page 2-14 (row titled “Severe accidents”), which summarizes the impacts from postulated severe accidents associated with the proposed action as follows:</p> <p>Small impact (Category 2). The probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are small for all plants. However, alternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives.</p> <p>The sentence stating that “Severe accidents could have moderate or large consequences” also is not consistent with the analyses of severe accident impacts as reported on page 4-154 (lines 10 to 12) in the draft updated GEIS and on page E-44 (lines 4 to 6) in Appendix E to the draft updated GEIS.</p> <p>Based on the information provided above, consider modifying the sentence describing the impacts of severe accidents associated with the proposed action in Table 2.4.3 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>Severe accidents could have moderate or large consequences<i>The consequences from severe accidents would be small.</i></p>
33	2-35	Table 2.4-5, (2nd header row)	Page 2-35, Table 2.4-5, (2nd header row): For consistency with text (page 2-28, line 16) and Table 2.4-4 (page 2-34), the heading for the 7 th column should be changed from “Energy Conservation” to “Demand-Side Management”.
<u>Volume 1, Chapter 3</u>			
34	3-3	21 to 23	Page 3-3, lines 21 to 23: Sentence reads as follows:

Cmt. No.	Page No.	Line No.	Comment
			<p>However, five facilities with once-through cooling also have cooling towers that are used to reduce the temperature of the water before it is released to the environment.</p> <p>The above-quoted statement appears to be in error because Appendix C to the draft updated GEIS lists six once-through cooling facilities with cooling towers as follows: Browns Ferry, Monticello, Peach Bottom, Prairie Island, Sequoyah and Vermont Yankee. Consider changing the sentence to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>However, five<i>six</i> facilities with once-through cooling also have cooling towers that are used to reduce the temperature of the water before it is released to the environment.</p>
35	3-6	Table 3.1-1	<p>Page 3-6, Table 3.1-1, Arkansas Nuclear One, Unit 2: The entry in Table 3.1-1, column labeled “Condenser Flow Rate (10³ gpm),” is “16” for Arkansas Nuclear One, Unit 2.</p> <p>Verify that the “Condenser Flow Rate” for Arkansas Nuclear One Unit 2 is 16,000 gpm. According to the ANO Unit 2 license renewal application, the flow rate for makeup water to the cooling tower(s), which is different from and should be much less than the condenser flow rate, is 16,000 gpm.</p>
36	3-13 to 3-15	Table 3.1-2	<p>Pages 3-13 to 3-15, Table 3.1-2 and page 3-16, Figure 3.1-4: Table 3.1-2 lists all U.S. commercial nuclear power plant sites and reports the type of cooling system used at each site. Three schematic diagrams are provided in Figure 3.1-4 to illustrate the types of cooling systems listed in Table 3.1-2.</p> <p>Not all entries in the Table 3.1-2 column labeled “Cooling System” correspond to a schematic in Figure 3.1-4. For example, “closed-cycle cooling pond,” which is the entry in Table 3.1-2 for the “Cooling System” at the South Texas plant, is not depicted on any of the three schematics in Figure 3.1-4. Similarly, no schematic in Figure 3.1-4 shows a cooling system consisting of “natural draft cooling towers and cooling pond,” which is the entry in Table 3.1-2 for the “Cooling System” at the Fermi plant. Furthermore, the distinction between a “closed-cycle cooling pond” and a “once-through cooling pond” is not illustrated in Figure 3.1-4.</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>To address the issues mentioned above, consider changing the "Cooling System" column in Table 3.1-2 by making the entries for plants with cooling ponds more consistent with one another. Alternatively, Figure 3.1-4 could be modified to better illustrate the differences between the following three cooling system types: (1) cooling pond [Braidwood, LaSalle, Wolf Creek]; (2) closed-cycle cooling pond [South Texas]; and (3) once-through (cooling pond) [Clinton, H.B. Robinson, Summer].</p>
37	3-17	30 to 33	<p>Page 3-17, lines 30 to 33: The text indicates that NPDES permits for nuclear power plants limit thermal changes, concentrations of biocides and other chemicals that have been mixed with condenser cooling water, and flow rates of condenser cooling water discharges.</p> <p>To clarify that NPDES permits control pollutants in discharges to surface waters from nuclear power plants, whether they use once-through cooling water systems or closed-cycle cooling water systems with blow down, consider modifying the sentence in lines 30 to 33 on page 3-17 to read as follows (strikethrough font = deletion; <i>italics font = addition</i>):</p> <p><i>Discharges of condenser cooling water (once-through systems) and blow down water (closed-cycle systems) containing Bbiocides and other chemicals used for corrosion control and other water treatment purposes are mixed with the condenser cooling water and discharged from the system, with limits on flow, concentrations, and thermal changes authorized by the States under the appropriate NPDES permits, <i>which establish limits as necessary on flow rate, chemical constituent concentrations, and thermal changes.</i></i></p>
38	3-21	16 to 19	<p>Page 3-21, lines 16 to 19: Sentence reads as follows:</p> <p>All activities related to hazardous wastes – including storage, treatment, shipment, and disposal – are conducted pursuant to permits issued by the EPA or the State, if authorized, per the regulations issued under RCRA (see Section 3.11.2).</p> <p>Because a permit is not necessarily required if hazardous waste is stored on-site for less than 90 days or if the facility is a small quantity generator, consider making the following change in the above-quoted sentence (strikethrough font = deletion; <i>italics font = addition</i>):</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>All activities related to hazardous wastes – including storage, treatment, shipment, and disposal – are conducted pursuant to permits issued by the EPA or the State, if authorized, per the regulations issued <i>by the EPA or the State, if authorized</i>, under RCRA (see Section 3.11.2).</p>
39	3-21	21 to 26	<p>Page 3-21, lines 21 to 26: Sentence reads as follows: There are also some routine or nonroutine releases from power plants that may have hazardous components, including boiler blowdown (continual or periodic purging of impurities from plant boilers), water treatment wastes (sludges and high-saline streams whose residues are disposed of as solid waste and biocides), boiler metal cleaning wastes, floor and yard drains, and stormwater runoff. Principal chemical and biocide waste sources include the following: ...</p> <p>Because releases of wastewaters from nuclear power plants are regulated under NPDES permits, consider changing the above-quoted sentence as follows (strikethrough font = deletion; italics font = addition):</p> <p>There are also some routine or nonroutine releases from power plants that may have hazardous components, including boiler blowdown (continual or periodic purging of impurities from plant boilers), water treatment wastes (sludges and high-saline streams whose residues are disposed of as solid waste and biocides), boiler metal cleaning wastes, floor and yard drains, and stormwater runoff. <i>With the exception of water treatment wastes, these releases would be regulated in accordance with each plant's NPDES permit.</i> Principal chemical and biocide waste sources include the following: ...</p>
40	3-22	13 to 15	<p>Page 3-22, lines 13 to 15: Sentences read as follows: If the treatment plant is offsite, the sanitary waste is collected in underground tanks, tested for radioactivity, and sent offsite periodically. Any releases to surface water from onsite sewage plants are subject to NPDES permit limits.</p> <p>Because some sites send sanitary wastewaters directly to a publicly owned treatment works ("POTW") without first collecting it in tanks, consider changing the above-quoted sentences as follows (strikethrough font = deletion; italics font = addition):</p> <p>If the treatment plant is offsite, the sanitary waste is <i>either</i> collected in <i>septic</i></p>

Cmt. No.	Page No.	Line No.	Comment
			<p><i>underground</i> tanks, tested for radioactivity, and sent offsite periodically, <i>or the sanitary waste may be tested for radioactivity and discharged directly to a POTW.</i> Any <i>effluent</i> releases to surface water from onsite sewage plants are subject to NPDES permit limits.</p>
41	3-23	25 to 27	<p>Page 3-23, lines 25 to 27: Sentence reads as follows: As described in Section 3.11.4, sanitary waste is either treated onsite or collected in underground tanks and then shipped offsite to be treated at a local sewage treatment plant.</p> <p>Because some sites send sanitary wastewaters directly to a publicly owned treatment works ("POTW") without first collecting it in tanks, consider changing the above-quoted sentence as follows (strikethrough font = deletion; <i>italics font = addition</i>): As described in Section 3.11.4, sanitary waste is either treated onsite, or collected in <i>septic underground</i> tanks and then shipped offsite to be treated at a local sewage treatment plant, <i>or discharged directly to a POTW.</i></p>
42	3-35	13 and 14	<p>Page 3-35, lines 13 and 14: Text in lines 13 and 14 on page 3-35 reads as follows: However, special permit conditions may be applicable under various regulatory jurisdictions for facilities located in EPA-designated nonattainment areas.</p> <p>Because the conditions in all permits are intended to ensure that impacts are minimized, consider changing the above-quoted text to read as follows (strikethrough font = deletion; <i>italics font = addition</i>): However, special permit conditions may be applicable under various regulatory jurisdictions for facilities located in EPA-designated nonattainment areas <i>to ensure that impacts to air quality are maintained at minimal levels.</i></p>
43	3-53	22 to 28	<p>Page 3-53, lines 22 to 28: Sentences read as follows: CWA Section 401 requires an applicant for a Federal license to conduct activities that produce discharge into navigable waters to provide the licensing agency with a certification from the State. This certification implies that discharges will comply with CWA requirements (33 USC 1341). If the applicant has not received Section 401 certification, the NRC cannot issue a license, including a renewed license (10 CFR 51.10(c)). NRC recognizes that</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>some states include a 401 certification in the NPDES permit.</p> <p>Make the following changes to the sentences in lines 22 to 28 on page 3-53 to more accurately reflect the 401 Water Quality Certification process and associated issuance (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>CWA Section 401 requires an applicant for a Federal license to conduct activities that <i>may cause a discharge of regulated pollutants produce discharge</i> into navigable waters to provide the licensing agency with a <i>water quality</i> certification from the State. This certification, <i>which typically has no expiration date associated with it</i>, implies that discharges <i>from the project to be licensed</i> will comply with <i>several</i> CWA requirements, <i>as applicable, including that the project will not cause or contribute to a violation of state water quality standards. (33 USC 1341)</i>. If the applicant has not received <i>a</i> Section 401 certification, the NRC cannot issue a license <i>unless the State regulatory agency has waived the requirement. Waiver is automatic if the State does not respond to a certification request within one year (or less, if set by federal regulation. See 33 CFR 336.1(b)(8)(iii) (state waiver occurs after six months for projects awaiting Corps of Engineer permitting); 40 CFR 121.16 (waiver of state certification after "reasonable time" for processing, usually limited to six months). For facilities, seeking including</i> a renewed license (10 CFR 51.10(c)), the NRC <i>assumes that an NPDES Permit issued for the project (which, by law, must satisfy at least the same standards as a separate 401 Certification) implies new or continued certification by the state, unless state-specific regulations specify otherwise. recognizes that some states include a 401 certification in the NPDES permit.</i></p>
44	3-53	32 to 34	<p>Page 3-53, lines 32 to 34: Sentence reads as follows:</p> <p>NPDES permits for nuclear power plants may impose maximum temperature limits for effluents (which may vary by season) and/or a maximum temperature increase above the ambient water temperature (referred to as "delta-T," which also may vary by season).</p> <p>Make the following change because NPDES permits associated with nuclear plants may impose <i>either</i> specific limits <i>or</i> other conditions to control effluent temperature: (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>NPDES permits for nuclear power plants may impose <i>maximum</i> temperature limits</p>

Cmt. No.	Page No.	Line No.	Comment
			<p><i>or other specific conditions</i> for effluents (which may vary by season) and/or a maximum temperature increase above the ambient water temperature (referred to as "delta-T," which also may vary by season).</p>
45	3-53	Clean Water Act Box Area	<p>Page 3-53, box labeled "Clean Water Act": First bullet reads as follows:</p> <ul style="list-style-type: none"> National Pollutant Discharge Elimination System (NPDES) permitting is required for wastewater discharge rate and chemical concentration limits. <p>Make the following changes in the first bullet to better reflect the requirements of the federal Clean Water Act NPDES permitting program, which are not uniformly implemented across all states (strike through font = deletion; <i>italics</i> font = addition): National Pollutant Discharge Elimination System (NPDES) permitting is <i>permits are</i> required for wastewater discharge rate, which impose controls on effluents, including cooling water from electricity generating plants that may include limits on flow rate and chemical concentration <i>s-limits</i>.</p>
46	3-54	7 to 25	<p>Page 3-54, lines 7 to 25: Text describes the Clean Water Act (CWA) controls on impingement and entrainment at cooling water intake structures.</p> <p>The discussion of impingement and entrainment controls on page 3-54, lines 7 to 25, is not obviously related to the CWA thermal effluent controls, although it now appears in the draft updated GEIS Section 3.5.1.2.1 entitled "Thermal Effluents." Consider moving it to a new, separate section entitled "Control of Impingement and Entrainment" and amend the discussion to recognize that impingement and entrainment are regulated under the NPDES permit.</p>
47	3-54	7 to 9	<p>Page 3-54, lines 7 to 9: Sentence reads as follows:</p> <p>Section 316(b) deals with cooling water intakes and ensures that intake structures are designed with the best available technology to minimize impingement and entrainment of aquatic organisms.</p> <p>To increase consistency of the text with the language in the CWA, change the phrase "minimize impingement and entrainment of aquatic organisms" at the end of the quoted sentence to "minimize adverse environmental impact."</p>

Cmt. No.	Page No.	Line No.	Comment
48	3-54	21 to 22	<p><u>Page 3-54, lines 21 and 22:</u> Sentence reads as follows: However, effective July 9, 2007, Phase II was suspended.</p> <p>To improve clarity, consider changing the sentence spanning lines 21 and 22 on page 3-54 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): However, effective July 9, 2007, Phase II was suspended <i>after several of its key provisions were remanded by the Second U.S. Court of Appeals.</i></p>
49	3-54	23	<p><u>Page 3-54, lines 22 and 23:</u> Sentence reads as follows: According to the Clean Water Act, intakes are to be designed by using the best technology available for minimizing any environmental impact.</p> <p>To increase consistency of the text with the language in the CWA, change the phrase "minimizing any environmental impact" at the end of the quoted sentence to "minimizing adverse environmental impact."</p>
50	3-55	28 to 29	<p><u>Page 3-55, lines 28 and 29:</u> Sentence reads as follows: It may be injected at the intake or targeted at various points (such as the condensers) on an intermittent or continuous basis.</p> <p>To more completely reflect plant operations from injection to discharge, consider adding language to the sentence quoted above, as follows (strikethrough font = deletion; <i>italics</i> font = addition): It may be injected at the intake or targeted at various points (such as the condensers) on an intermittent or continuous basis <i>with a dechlorinating agent injected into the effluent prior to its discharge to the environment.</i></p>
51	3-56	22 to 31	<p><u>Page 3-56, lines 22 to 31:</u> First sentence of the paragraph on lines 22 through 31 reads as follows: The quality of groundwater may be affected by water from nuclear power plant cooling ponds that has seeping into the underlying surficial aquifer.</p> <p>All remaining sentences in the paragraph discuss the potential for soil and groundwater contamination from leaks and spills during storage and use at plant sites of hydrocarbon fuels, solvents, and other chemicals.</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Consider deleting or moving the sentence on lines 22 and 23 on page 3-56 to a new, separate paragraph. The new paragraph should discuss the source of concern about groundwater contamination from cooling pond seepage. As written, the paragraph fails to draw any relationship between the discussion of chemical leaks and spills and the potential for contamination from cooling pond seepage.</p>
52	3-56	26 to 31	<p>Page 3-56, lines 26 to 31: Sentences in lines 26 to 31 read as follows: Examples from plant-specific SEISs include leakages or spills of gasoline (with methyl tertiary butyl ether, or MTBE) at fuel tank storage areas, spills of fuel at transfer or filling stations, solvent leakages from storage area drums, spilled or sprayed solvents, and underground line leaks of hydraulic oil or diesel fuel (NRC 2006b, 2007c). These incidents have involved regulatory oversight, with authority falling under State regulations for hydrocarbons and under RCRA for other chemicals.</p> <p>To make the last sentence in lines 26 to 31 on page 3-56 more complete as it relates to the examples provided in the first sentence, consider changing the last sentence to read as follows (strike through font = deletion; <i>italics</i> font = addition): These incidents have involved regulatory oversight, with authority falling under State regulations for hydrocarbons and under RCRA for other chemicals, <i>and offsite aquifers were not affected.</i></p>
53	3-56	33 to 40	<p>Page 3-56, lines 33 to 40: Sentences on lines 33 to 40 read as follows: Radionuclide releases, primarily tritium, to groundwater have become an issue in recent years because of incidents at the Indian Point, Braidwood, Callaway, Dresden, Byron, and Palo Verde plants (NRC 2007d). The NRC (2006c) has examined the issue and noted the leaks are generally not observable because they are underground and because many plants do not have on-site groundwater monitoring wells. Although the plants are not under any specific regulatory requirements to have on-site groundwater monitoring programs, they are required to perform surveys, evaluate, and document the event and the hazard of known spills or leaks of radioactive material. ...</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Because tritium releases are the subject of an ongoing initiative, consider changing the sentences quoted above as follows (strikethrough font = deletion; <i>italics</i> font = addition): Radionuclide releases, primarily tritium, to groundwater have become an issue raised concern <i>have become an issue raised concern</i> in recent years because of incidents at the Indian Point, Braidwood, Callaway, Dresden, Byron, and Palo Verde plants (NRC 2007d). The NRC (2006c) has examined the issue-matter and noted the leaks are generally not observable because they are underground and because many-some plants do not have not been required to have on-site groundwater monitoring wells. Although the plants are not under any specific regulatory requirements to have on-site groundwater monitoring programs, they Even so, NRC licensees are required to perform surveys, evaluate, and document, and report the event and the hazard of known spills or leaks of radioactive material. ...”</p>
54	3-57	1 to 9	<p>Page 3-57, lines 1 to 9: Sentences on lines 1 to 9 read as follows: [Additionally it is important to note that] all plants are required to submit an annual report, which is publically [sic] available, to the NRC which summarizes the types and quantities of radioactive material released into the environment. In response to these groundwater events, the Nuclear Energy Institute (2007a), which represents the nuclear industry, committed to the NRC to have site-specific groundwater protection programs in place at each site by July 31, 2006. These programs cover the assessment of plant systems and components, site hydrogeology, and implementation of groundwater monitoring programs, To monitor the actions of the nuclear industry, the NRC updated its inspection procedure to include this issue as part of its routine radiological inspection at all nuclear power plants.</p> <p>To clarify the text on lines 1 to 9 on page 3-57, consider modifying the paragraph to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): [Additionally it is important to note that] all plants are required to submit an annual report, which is publically available, to the NRC that summarizes the types and quantities of radioactive material released into the environment.</p> <p>[NEW Paragraph]In response to these groundwater events-discoveries of underground radionuclide releases at nuclear power plants, the Nuclear Energy Institute (2007a), which represents the nuclear industry <i>on policy issues</i>, developed the Ground Water</p>

Cmt. No.	Page No.	Line No.	Comment
			<p><i>Protection Initiative. Each plant voluntarily committed to the NRC to have an action plan to develop the site-specific groundwater protection programs in place at each commercial nuclear power plant site by July 31, 2006. These programs cover the assessment of plant systems and components, site hydrogeology, and implementation of groundwater monitoring programs. To monitor the actions of the nuclear industry, the NRC updated its inspection procedure to include this issue as part of its routine radiological inspection at all nuclear power plants.</i></p>
55	3-61	30 to 32	<p>Page 3-60, lines 30 to 32: Text on lines 30 to 32 reads as follows: At the Nine Mile Point plant in New York, for example, approximately 100 greater scaup (<i>Aythya marila</i>) and lesser scaup (<i>Aythya affinis</i>) ducks were impinged at the cooling water intake structure in 2000 (NRC 2006d).</p> <p>To better describe the situation that led to the impingement event at Nine Mile Point, change the text to read as follows (strikethrough font = deletion; italics font = addition): At the Nine Mile Point plant in New York, for example, approximately 100 greater scaup (<i>Aythya marila</i>) and lesser scaup (<i>Aythya affinis</i>) ducks were impinged at the cooling water intake structure in 2000 <i>while feeding on zebra mussels during reverse flow conditions for deicing of the intake structure</i> (NRC 2006d). <i>As a result of this incident, the Nine Mile Point intake structures now undergo annual cleaning to remove zebra mussels (the food source), and reverse flow conditions are scheduled during periods when diving duck feeding is limited</i> (NRC 2006d).</p>
56	3-62	10 to 11	<p>Page 3-62, lines 9 to 11: Text on lines 9 to 11 on page 3-62 reads as follows: The water bodies in the vicinity of the power plants contain a complex assemblage of habitats and species that may be affected by a plant's cooling system and by maintenance of the transmission line ROWs.</p> <p>Because offsite transmission line ROW maintenance will no longer be considered a component of nuclear power plant operations during the license renewal term, unless as indicated on page 3-24 (lines 13 to 25) the transmission line's continued use during the license renewal term would be contingent on license renewal, consider deleting the words "and by maintenance of the transmission line ROWs" on lines 10 and 11.</p>
57	3-69	1 to 2	<p>Page 3-69, lines 1 and 2: Text in the heading for Section 3.6.2.2 on lines 1 and 2 on</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>page 3-69 reads as follows: 3.6.2.2 Overview of the Effects of Existing Nuclear Plant Operations and Transmission Lines on Aquatic Resources</p> <p>Because the text in Section 3.6.2.2 does not mention transmission line effects, delete the words "and Transmission Lines" from the title of Section 3.6.2.2 in lines 1 and 2 on page 3-69.</p>
58	3-72	General	<p>Page 3-73, General: Text in Section 3.6.3 on page 3-72 describes how many species (plants and animals) occurring near nuclear power plants are either listed as threatened or endangered or are candidates for listing.</p> <p>To better clarify the scope of the draft updated GEIS regarding assessment of impacts from operation and maintenance of transmission lines associated with nuclear power plants, consider inserting a new paragraph on page 3-72 that would read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p><i>It should be noted that offsite transmission line ROW maintenance will no longer be considered a component of nuclear power plant operations during the license renewal term, unless (as indicated on page 3-24, lines 13 to 25) a transmission line's continued use during the license renewal term would be contingent on license renewal. For this reason, only the 59 known occurrences of listed species on nuclear power plant sites, and possibly a few additional species along transmission line ROWs of very short length near some plant sites, would be within the affected environment.</i></p>
59	3-73	8 to 13	<p>Page 3-73, lines 8 to 10: Text in lines 8 to 13 on page 3-73 reads as follows: Nuclear plants known to support listed terrestrial species on the site or along transmission line ROWs generally maintain monitoring programs to identify changes in populations or report impacts to the USFWS and State agencies. Factors that could affect listed terrestrial species include construction-related habitat loss, cooling tower drift, operation and maintenance of cooling systems, transmission line ROW maintenance, avian collisions with cooling towers and transmission lines, exposure to radionuclides, and site operations and maintenance.</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>To better clarify the scope of the draft updated GEIS regarding assessment of impacts from operation and maintenance of transmission lines associated with nuclear power plants, as indicated on page 3-24 (lines 13 to 25) in the draft updated GEIS, consider modifying the sentence in lines 8 to 10 on page 3-73 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p><i>The owners of Annuclear</i> plants known to support listed terrestrial species on the site of along transmission line ROWs generally maintain monitoring programs to identify changes in populations or report impacts to the USFWS and State agencies. Factors that could affect listed terrestrial species include construction-related habitat loss, cooling tower drift, operation and maintenance of cooling systems, transmission line ROW maintenance, avian collisions with cooling towers and transmission lines, exposure to radionuclides, and site operations and maintenance.</p>
60	3-73 and 3-74	28 to 40 and 1 to 5	<p>Page 3-73, lines 28 to 40 and Page 3-74, lines 1 to 5: Text in lines 28 to 40 on page 3-73 and lines 1 to 5 on page 3-74 describes the potential effects of transmission line ROW maintenance activities on plant species listed or proposed for listing as threatened or endangered.</p> <p>Consider deleting lines 28 through 40 on page 3-73 and lines 1 to 5 on page 3-74 because, as indicated on page 3-24 (lines 13 to 25) in the draft updated GEIS, transmission line ROW maintenance will no longer be considered a component of nuclear power plant operations during the license renewal term, unless a transmission line's continued use during the license renewal term would be contingent on license renewal. In addition, as written, the text in lines 28 through 40 on page 3-73 and lines 1 to 5 on page 3-74 fails to recognize that the owners of many nuclear power plants no longer own and control off-site transmission line ROWs.</p>
61	3-76	21 to 24	<p>Page 3-76, lines 21 to 24: Text in lines 21 to 24 on page 3-76 reads as follows:</p> <p>To date, EFH assessments have been completed as part of the license renewal process for three nuclear power plants (Pilgrim, Vermont Yankee, and Oyster Creek) and as part of the extended power uprate evaluation for the Hope Creek plant.</p> <p>Because an EFH assessment has also been completed at Brunswick, make the following</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>change to the text in lines 21 to 24 on page 3-76 (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>To date, EFH assessments have been completed as part of the license renewal process for three<i>four</i> nuclear power plants (<i>Brunswick</i>, Pilgrim, Vermont Yankee, and Oyster Creek) and as part of the extended power uprate evaluation for the Hope Creek plant.</p>
62	3-86	20 to 22	<p><u>Page 3-86, lines 20 to 22:</u> Text in lines 20 to 22 on page 3-86 reads as follows: Among the 11 plants located in semi-urban economies shown in Table 3.8.5, none provided 1 percent or more of regional employment, while average plant earnings at most plants (particularly Millstone and Indian Point) were higher than the regional average.</p> <p>Because Table 3.8-5 contains only four plants, modify the sentence in lines 20 through 22 on page 3-86 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): Among the 11 plants <i>listed in Table 3.8-1, the four shown in Table 3.8-5 are</i> located in semi-urban economies shown in Table 3.8-5,. None <i>of these four plants</i> provided 1 percent or more of regional employment, and while average plant earnings at most<i>these</i> plants (particularly Millstone and Indian Point) were higher than the regional average.</p>
63	3-120	31 to 33	<p><u>Page 3-120, lines 31 to 33:</u> Text in lines 31 to 33 on page 3-120 reads as follows: An annual survey (land census) identifies changes in the use of unrestricted areas to provide a basis for modifying the monitoring programs to reflect a new exposure pathway or a different site-specific dose calculation parameter.</p> <p>Because some facilities conduct surveys at frequencies other than annual, consider making the following changes to the text in lines 31 to 33 on page 3-120 (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>An annual <i>A periodic land use</i> survey (land census) identifies changes in the use of unrestricted areas to provide a basis for modifying the monitoring programs to reflect a new exposure pathway or a different site-specific dose calculation parameter.</p>
64	3-121 and 3-122	Table 3.9-14	<p><u>Page 3-121 and 3-122, Table 3.9-14:</u> Four columns in Table 3.9-14 provide annual dose information for selected nuclear plants. The columns are labeled "Total Body,"</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>“Gamma,” “Beta,” and “Critical Organ.”</p> <p>In Table 3.9-14, consider adding an explanatory note, or modifying the column titles, to clarify that the entries in the columns labeled “Gamma” and “Beta” represent “ground-level air dose,” as the sentence in lines 39 through 41 on page 3-120 states.</p>
65	3-126	Table 3.9-18	<p>Page 3-126, Table 3.9-18: In the Table 3.9-18 column labeled “Source of Release,” the entry for the Callaway Plant reads as follows: Vacuum breaker valves on the circulating water blowdown line</p> <p>The NRC is encouraged to change the above-quoted entry for Callaway from “vacuum breaker valves” to “air release valves.”</p>
66	3-126	Table 3.9-18	<p>Page 3-126, Table 3.9-18: In the Table 3.9-18 column labeled “Radionuclides Detected,” the entry for the Callaway Plant reads as follows: Tritium, cobalt-58, cobalt-60, cesium-134, and cesium-137</p> <p>The NRC is encouraged to change the above-quoted entry for Callaway from “tritium, cobalt-58, cobalt-60, cesium-134, and cesium-137” to “tritium.” Tritium was the only radionuclide found outside the monitoring wells in the numerous samples conducted near the well location. The other radionuclides were found in the French drain of the manhole but not found outside the well. Therefore, the mentioned radionuclides other than tritium were not released to the environment.</p>
67	3-128	Table 3.9-19	<p>Page 3-128, Table 3.9-19: Four columns in Table 3.9-19 provide information about doses from inadvertent releases of radioactive liquids at nuclear power plants.</p> <p>To clarify the nature of the dose calculation for Indian Point that is reported in the Table 3.9-19 column labeled “Maximum Water Contamination (pCi/L) at Offsite Locations,” consider changing the entry to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>Approximation made in dose calculations <i>Dose calculated conservatively</i></p>
68	3-130	14 to 16	<p>Page 3-130, lines 14 to 16: The text in lines 14 to 16 on page 3-130 reads as follows: The coefficients used (Table 3.9-20) are the same as those recently published by</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>ICRP in connection with a revision of its recommendations (ICRP 1991).</p> <p>Because the date of the cited reference (1991) is not recent, consider revising the sentence in lines 14 through 16 on page 3-130 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>The coefficients used (Table 3.9-20) are the same as those recently published by ICRP in connection with a revision of its recommendations (ICRP 1991).</p>
69	3-133	19 to 25	<p><u>Page 3-133, lines 19 to 25:</u> The text in lines 19 to 25 on page 3-133 reads as follows: Nuclear power plants are required to submit to the EPA and the State annual reports of the environmental releases of listed toxic chemicals manufactured, processed, or otherwise used above Federally and State-identified threshold quantities. Disposal of essentially all of the hazardous chemicals used at nuclear power plants is regulated by RCRA or NPDES permits. Nuclear power plants are required by the NRC to operate in compliance with all permits, therefore minimizing the impact on the environment, workers, and the public. Therefore, the health impacts from chemicals on workers and the public are considered small.</p> <p>The first sentence in the above-quoted text (lines 19 to 21 on page 3-133) refers to reporting required under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) as implemented by U.S. Environmental Protection Agency regulations (40 CFR 372). The statement is somewhat misleading, however, because many nuclear power plants manufacture, process, or otherwise use such small quantities of toxic chemicals that the threshold quantities for reporting under 40 CFR 372 are not triggered. Also, many nuclear power plants are not required to obtain RCRA permits since they neither dispose of hazardous wastes on site nor store hazardous wastes for longer than RCRA allows without a permit (90 days for large quantity generators or 120 days for other generator types under most conditions). Therefore, the last three sentences in the above quoted text (lines 21 to 25 on page 3-133) are also somewhat misleading. Accordingly, consider changing the text in lines 19 to 25 on page 3-133 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>Nuclear power plants may be are required <i>in some instances</i> to submit to the EPA and the State annual reports of the environmental releases of listed toxic chemicals</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>manufactured, processed, or otherwise used <i>that are</i> above Federally and State- identified threshold quantities, <i>depending on state regulations or other specific circumstances.</i> Disposal of- <i>In addition, management, including treatment, storage, disposal, and release to the environment, of essentially all of the</i> hazardous chemicals used at nuclear power plants is regulated by RCRA, <i>FIFRA, TSCA, or NPDES permits</i> the Clean Water Act. <i>In the case of releases to state and federal waters, the Clean Water Act requires that nuclear power plants obtain NPDES permits, which establish protective release limits and controls as well as monitoring and reporting requirements. RCRA, FIFRA, and TSCA also establish reporting requirements that frequently apply to management of nonradioactive hazardous chemicals at nuclear power plants, and some nuclear power plants may undertake activities that require a RCRA permit.</i> Nuclear power plants are required by the NRC to operate in compliance with all permits <i>applicable environmental laws, regulation, and permits, therefore</i> thereby minimizing the impact on the environment, workers, and the public. Therefore, the health impacts from chemicals on workers and the public are considered small.</p>
70	3-136	17 to 26	<p>Page 3-136, lines 17 to 26: The paragraph in lines 17 to 26 on page 3-136 describes a study published in 2006 that discovered <i>Legionella</i>-like amoebal pathogens to be 16 times more likely to occur in samples from cooling towers located at industrial, hospital, municipal, university, and public building sites that in samples from natural environments such as rivers, creeks, lakes, and ponds. The last sentence in the paragraph states that this discovery “justifies the need for monitoring.”</p> <p>The cooling towers tested during the study described in lines 17 to 26 on page 3-136 were not comparable with those used for condenser cooling at nuclear power stations. Therefore, it is unclear what monitoring at any nuclear power plant might be “justified” by the referenced study. Consider changing the last sentence in the paragraph (lines 25 and 26) to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>According to this study, the probability of infected amoebae occurring in cooling towers is 16 times higher than in natural environments. , which justifies the need for monitoring.</p>
71	3-140	16 to 17	<p>Page 3-140, lines 16 to 18: Text in lines 16 to 18 on page 3-140 reads as follows:</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>For purposes of evaluating the impacts of license renewal, the transmission lines of concern are those lines that currently connect the nuclear plant to the regional electrical distribution grid and that would remain energized only if the plant's operating license was renewed.</p> <p>On page 3-3 in lines 38 and 39, the draft updated GEIS states that "only those transmission lines that connect the plant to the switchyard are considered within the scope of [the updated GEIS] review." On page 3-24 in lines 6 to 11, the draft updated GEIS states "Power-transmission systems associated with nuclear power plants and considered within the scope of this review consist of switching stations (or substations) usually located on the plant site and the transmission lines that connect the plant to those substations. These systems are required to transfer power from the plant to the utility's network of power lines in its service area (the regional electrical distribution grid)." Consistent with the observation on page 3-24 that "in most cases, the transmission lines originating at the power plant substations are no longer owned or managed by the nuclear power plant licensees," consider modifying the sentence in lines 16 through 18 on page 3-140 as follows for consistency with the above-quoted statements regarding the scope of the GEIS update with respect to transmission lines (strike through font = deletion; <i>italics font = addition</i>):</p> <p>For purposes of evaluating the impacts of license renewal, the transmission lines of concern are those lines that <i>(1) would only remain energized if NRC renewed the nuclear plant's operating license and (2) currently connect the nuclear plant to the switchyard where the electric voltage is stepped up and fed into the regional electrical distribution grid</i> and that would remain energized only if the plant's operating license was renewed.</p>
72	3-143	14 to 21	<p>Page 3-143, lines 14 to 21: Text in lines 14 to 21 on page 3-143 reads as follows: With respect to shock safety issues and license renewal, three points must be made. First, in the licensing process for the earlier licensed nuclear plants, the issue of electrical shock safety was not addressed. Second, some plants that received operating licenses with a stated transmission line voltage may have chosen to upgrade the line voltage for reasons of efficiency, possibly without reanalysis of induction effects. Third, since the initial NEPA review for those utilities that evaluated potential shock situations under the provision of the</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>NESC, land use may have changed, resulting in the need for a reevaluation of this issue. Electrical shock potential is minimized for transmission lines that are operated in adherence with the NESC.</p> <p>Consider amending the paragraph quoted above (lines 14 through 21 on page 3-143 of the draft updated GEIS) because the information it presents is not consistent with statements on pp. 3-3 (lines 35 to 41) and 3-24 (lines 20 to 21) in the draft updated GEIS regarding the scope of environmental review for transmission lines during the license renewal process for nuclear power plants.</p>
73	3-150	Table 3.11-1	<p>Page 3-150, Table 3.11-1: Three columns in Table 3.11-1 on page 3-150 provide volume, activity, and number of shipments of the solid low-level radioactive waste shipped offsite from each of ten nuclear power plants during 2006. A fourth column in Table 3.11-1 indicates the number of reactors at each nuclear power plant site. For the Indian Point and San Onofre plants, the number of reactors is given as “3 (Units 1, 2, and 3).” Footnote (b) explains that at both of these sites, Unit 1 is shut down.</p> <p>Because the closed units at Indian Point and San Onofre generated none of the low-level radioactive waste quantities reported in Table 3.11-1, consider changing the entries in the column labeled “Number of Reactors” for both Indian Point and San Onofre from “3 (Units 1, 2, and 3)” to “2 (Units 2 and 3).” Table 3.11-1 appears to be intended to provide information on LLRW disposed of from operating units. The quantity of waste reported for SONGS Units 1, 2, and 3 is the total volume of LLRW from Unit 1 that was undergoing active decommissioning in 2006 and the LLRW from Units 2 and 3 that are operating units. For further clarity, retain footnote (b) explaining that at both sites, Unit 1 is shut down.</p>
74	3-153	Figure 3.11-2	<p>Page 153, Figure 3.11-2: Figure 3.11-2 contains a map showing the locations of Independent Spent Fuel Storage Installations (ISFSIs) that are licensed by the NRC.</p> <p>Consider updating Figure 3.11-2, to show the licensed ISFSIs at the Indian Point, Vermont Yankee, and Limerick nuclear power plant sites.</p>
75	3-154	28 to 29	<p>Page 3-154, lines 28 to 29: Text in lines 28 and 29 on page 3-154 reads as follows: The types of hazardous waste that nuclear power plants generate include waste</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>paints, lab packs, solvents, and lead batteries.</p> <p>Because "batteries" are not hazardous waste if they are reclaimed or managed as universal waste, consider changing the text in lines 28 and 29 on page 3-154 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): The types of hazardous waste that nuclear power plants <i>typically</i> generate include waste paints, lab packs, and solvents, and lead batteries.</p>
76	3-155	21 to 23	<p><u>Page 3-155, lines 21 to 23:</u> Text in lines 21 to 23 on page 3-155 reads as follows: The only disposal facility that is authorized to receive mixed LLW for disposal at present is the EnergySolutions facility discussed under Section 3.11.1.1 on LLW.</p> <p>The validity of the statement in lines 21 to 23 on page 3-155 should be verified before publication of the final updated GEIS because on September 10, 2009, the Texas Commission on Environmental Quality issued a Radioactive Material License for disposal of low-level radioactive waste in a unit to be constructed at the Waste Control Specialists, LLC facility in Andrews County, Texas.</p>
77	3-155	36 to 38	<p><u>Page 3-155, lines 36 to 38:</u> Text in lines 36 to 38 on page 3-155 reads as follows: Some power plants collect their sanitary waste in septic tanks and empty the tanks periodically, shipping the pumped sewage to a local sanitary waste treatment plant.</p> <p>Because some nuclear power plants discharge sanitary waste directly to a POTW, consider changing the text in lines 36 to 38 on page 3-155 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): Some power plants <i>discharge directly to a POTW while others</i> collect their sanitary waste in septic tanks and empty the tanks periodically, shipping the pumped sewage to a local sanitary waste treatment plant.</p>
<u>Volume 1, Chapter 4</u>			
78	4-5	30 and 33	<p><u>Page 4-5, lines 30 and 31:</u> Text in lines 30 and 31 on page 4-5 reads as follows: All operating nuclear power plants will terminate operations and be decommissioned at some point after the end of their operating licenses or after a</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>decision is made to cease operations. License renewal would potentially delay this eventuality for an additional 20 years beyond the current license period.</p> <p>To better clarify the requirement for decommissioning of a nuclear power plant and the effect of license renewal on the timing of decommissioning, consider changing the text in lines 30 and 31 on page 4-5 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p><i>Unless the NRC approves a longer time, each All-operating nuclear power plantsplant will complete decommissioning within 60 years of permanent cessation of operations terminate-operations and be decommissioned at some point after the end of their operating licenses or after a decision is made to cease operations.</i> License renewal would potentially delay this eventuality <i>permanent cessation of operations</i> for 20 years beyond the end of the <i>current license period-term.</i></p>
79	4-6	26 to 40	<p><u>Page 4-6, lines 26 to 40:</u> Text in lines 26 to 29 on page 4-6 reads as follows: Land use impact issues evaluated for the revised GEIS include: (1) the impacts of continued plant operations and refurbishment activities on onsite land use; (2) the impacts of continued plant operations and refurbishment activities on offsite land use; and (3) the impacts of transmission line ROWs on offsite land use.</p> <p>Consistent with item (1) in the above-quoted statement from lines 26 through 29 on page 4-6 of the draft updated GEIS, the impacts of refurbishment activities should be, but is not, discussed in the subsection titled "Impacts on Onsite Land Use," which appears in lines 31 to 40 on page 4-6.</p>
80	4-7	22 to 27	<p><u>Page 4-7, lines 22 to 27:</u> Text in lines 22 to 27 on page 4-7 reads as follows: For plants that have the potential to impact a coastal zone or coastal watershed, as defined by each State participating in the National Coastal Zone Management Program, licensees must certify that the proposed activity is consistent with the State Coastal Zone Management Program. Licensees must coordinate with the State agency that manages the State Coastal Zone Management Program with regard to the compatibility certification process for Federal projects within coastal zones.</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Consider changing the paragraph in lines 22 through 27 on page 4-7 of the draft updated GEIS as follows to better explain how compliance with the Coastal Zone Management Act assures that impacts of license renewal will be small (strickethrough font = deletion; <i>italics</i> font = addition):</p> <p>For plants that have the potential to impact a coastal zone or coastal watershed, as defined by each State participating in the National Coastal Zone Management Program, licensees-applicants for license renewal must certify-submit to the affected State a certification that the proposed activity<i>license renewal, which involves action by a Federal agency</i>, is consistent with the State's Coastal Zone Management Program. Licensees-Applicants also must coordinate with the State agency<i>agencies</i> that manages the State Coastal Zone Management Programs with regard to the compatibility certification process for Federal projects within coastal zones to obtain determinations by the States that the proposed nuclear plant license renewal would be consistent with such programs. Consistency with State Coastal Zone Management Programs assures that land use impacts in State coastal zones will be small.</p>
81	4-7	35 to 41	<p>Page 4-7, lines 33 to 41: Text in lines 35 to 41 on page 4-7 is titled "Impacts of Transmission Line ROWs on Offsite Land Use" and reads as follows:</p> <p>Operational activities during the license renewal term would be similar to those occurring during the current license term and would not affect offsite land use in transmission line ROWs beyond what has already been affected. Certain land use activity in the ROW is usually restricted. Land cover is generally managed through a variety of maintenance procedures so that vegetation growth and building construction do not interfere with power line operation and access. Land use within ROWs are limited to activities that do not endanger power line operation; these include recreation, off-road vehicle use, grazing, agricultural cultivation, ...</p> <p>On page 3-3 in lines 38 and 39, the draft updated GEIS states that "only those transmission lines that connect the plant to the switchyard are considered within the scope of [the updated GEIS] review." On page 3-24 in lines 6 to 11, the draft updated GEIS states that "Power-transmission systems associated with nuclear power plants and considered within the scope of this review consist of switching stations (or substations) usually located on the plant site and the transmission lines that connect the plant to those substations. These</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>systems are required to transfer power from the plant to the utility's network of power lines in its service area (the regional electrical distribution grid)." In addition, on page 3-24 the draft updated GEIS states that "in most cases, the transmission lines originating at the power plant substations are no longer owned or managed by the nuclear power plant licensees." Consider modifying the text in lines 35 through 41 on page 4-7 as follows for consistency with the above-quoted statements regarding the scope of the GEIS update with respect to transmission lines (strike through font = deletion; <i>italics</i> font = addition):</p> <p><i>As was previously discussed in section 3.1.6.5, in most cases, transmission lines originating at the power plant substations are no longer owned or managed by the nuclear power plant licensees. Accordingly, power-transmission systems associated with nuclear power plants and considered within the scope of this review consist of switching stations (or substations) usually located on the plant site and the transmission lines that connect the plant to those substations. These systems are required to transfer power from the plant to the utility's network of power lines in its service area (the regional electrical distribution grid). Operational activities in offsite transmission line ROWs during the license renewal term, if any offsite ROWs fall within this scope of review, would be similar to those occurring during the current license term and would not affect offsite land use in transmission line ROWs beyond what has already been affected. Certain land use activity in the ROW is usually restricted. Land cover is generally managed through a variety of maintenance procedures so that vegetation growth and building construction do not interfere with power line operation and access. Land use within ROWs are limited to activities that do not endanger power line operation; these include recreation, off-road vehicle use, grazing, agricultural cultivation, ...</i></p>
82	4-9; 4-10	16 to 41; 1 to 7	<p>Page 4-9, lines 16 to 41 and Page 4-10, lines 1 to 7: Text in section 4.2.2, "Environmental Consequences of Alternatives to the Proposed Action," is divided into two subsections labeled "Construction" and "Operations."</p> <p>The purpose and scope of the text in Section 4.2.2 is not clear. Consider whether better clarity could be achieved by structuring Sections 4.2.1 (Proposed Action) and 4.2.2 (Alternatives to the Proposed Action) with parallel formats. That is, with numbered subsections labeled consistently in both sections, for example – "4.2.1.1 Land Use" and "4.2.2.1 Land Use"; "4.2.1.2 Visual Resources" and "4.2.2.2 Visual Resources." In</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>subsection 4.2.1.1, land use impacts of the proposed action would be addressed, and in subsection 4.2.2.1, land use impacts of the alternatives could be discussed. If constructional and operational impacts will be presented separately for the proposed action, they should be presented separately for each alternative to the proposed action (or for each category of alternatives—Fossil Energy; New Nuclear; Renewable Energy). At minimum, consider clarifying which alternatives to the proposed action are expected to cause the impacts described by the introductory text in Section 4.2.2 on page 4-9, lines 16 to 41 and page 4-10, lines 1 to 7.</p> <p>Please generalize this comment and also apply it, as appropriate, in the following sections of the draft updated GEIS:</p> <ul style="list-style-type: none"> • 4.3, "Air Quality and Noise" • 4.4, "Geology and Soils" • 4.5, "Hydrology" • 4.6, "Ecology" • 4.7, "Historic and Cultural Resources" • 4.8, "Socioeconomics" • 4.9, "Human Health" • 4.10, "Environmental Justice" • 4.11, "Waste Management and Pollution Prevention"
83	4-10	9 to 14	<p><u>Page 4-10, lines 9 to 14:</u> Text in lines 9 to 14 on page 4-10 is labeled "<i>Construction – ...</i>"</p> <p>Although the text in lines 9 to 14 on page 4-10 of the draft updated GEIS is labeled "<i>Construction – ...</i>", it appears to address both construction and operations impacts. Consider creating a separate paragraph labeled "<i>Operations – ...</i>". Also, consider mentioning coal storage, in addition to coal delivery and waste storage, as an activity that would consume more land at a coal plant than at a gas-fired plant. Finally, consider mentioning the visual effects of coal storage piles as a significant difference between coal-fired and gas-fired plants. This is also a significant difference between coal-fired plants and nuclear plants.</p>
84	4-10	16 to 20	<p><u>Page 4-10, lines 16 to 20:</u> Text in lines 16 to 20 on page 4-10 is labeled "<i>Construction</i>"</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>– ...”</p> <p>Although the text in lines 16 to 20 on page 4-10 of the draft updated GEIS is labeled “Construction – ...”, it appears to address both construction and operations impacts. Consider creating a separate paragraph labeled “Operations – ...”.</p>
85	4-13	25 and 26	<p>Page 4-13, lines 25 and 26: Text in lines 25 and 26 on page 4-13 reads as follows: Emergency diesel generators and fire pumps typically require State or local operating permits.</p> <p>Because emergency diesel generators and fire pumps are typically listed as insignificant activities in permits based on their minimal operational run times, as the draft updated GEIS states in lines 37 to 40 on page 4-13, consider changing the above quoted text in lines 25 and 26 on page 4-13 to read as follows (strike through font = deletion; <i>italics</i> font = addition):</p> <p>Emergency diesel generators and fire pumps <i>are</i> typically <i>listed as insignificant activities in require</i> State or local operating permits <i>as discussed below</i>.</p>
86	4-13	37 and 38	<p>Page 4-13, line 37: Text in lines 37 and 38 on page 4-13 reads as follows: Most, if not all, State air pollution regulations provide exemptions for air pollution sources that are not routinely operated, ...</p> <p>Delete the term “, if not all,” in line 37 on page 4-13 of the draft updated GEIS.</p>
87	4-17	7 to 17	<p>Page 4-17, lines 7 to 17: Text in lines 7 to 17 on page 4-17 reads as follows: Impacts on crop production that may have been caused by transmission line interference with aerial spraying have been reported by one field study of cotton, rice, and soybean fields crossed by a 500-kV line in eastern Arkansas (Parsch and Norman 1986). This study hypothesized that crop yields could be reduced either by electromagnetic fields (EMFs) or by inadequate aerial spraying directly under the power lines. Only cotton yields were found to be reduced; 15 percent less lint was produced under the lines than 150 ft from the lines. The resulting loss of income from cotton was estimated as \$85.25 per year for an 1100-ft (335-m) span of the lines, based on a 15 percent yield reduction and an average lint yield of 480 lb/acre. The field sampling and statistical analyses were extensive;</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>the observed yield reduction appeared to be real rather than a sampling error. However, the study could not determine whether the EMF or line interference with aerial spraying caused the yield reduction.</p> <p>The above-quoted text, which appears in lines 7 to 17 on page 4-17 of the draft updated GEIS, is located within a subsection titled "Air Quality Effects on [sic] Transmission Lines." It is not clear how this text, which describes a study of the effects of aerial crop spraying and/or electromagnetic fields on crop yield under transmission lines, is related to the effects of transmission lines on air quality, which is the topic of the subsection. Consider deleting all text in lines 7 to 17 on page 4-17.</p>
88	4-28	23 to 25	<p><u>Page 4-28, lines 23 to 25:</u> Text in lines 23 to 25 on page 4-28 reads as follows: In addition, the Farmland Protection Policy Act requires Federal Agencies to take into account agency actions affecting the preservation of farmland.</p> <p>Although the above-quoted statement is accurate and the Farmland Protection Policy Act (FPPA) could apply in some circumstances to development of renewable energy resources (as an alternative to the proposed action), the FPPA does not generally apply to private construction, even if such construction is subject to federal permitting and licensing activities (e.g., license renewal of nuclear power plants) (see Farmland Protection Act Fact Sheet at http://www.farmlandinfo.org/documents/29480/FPPA_8-06.pdf and Section 2(c)(4) of the Act). Consider deleting the quoted text in lines 23 to 25 on page 4-28 of the draft updated GEIS.</p>
89	4-28 & 4-29	38 and 39 & 1 to 29	<p><u>Page 4-28, lines 38 and 39 and Page 4-29, lines 1 to 29:</u> Text in lines 38 and 39 on page 4-28 and lines 1 to 29 on page 4-29 contains sections 4.4.2 (Environmental Consequences of Alternatives to the Proposed Action) and 4.4.2.1 (Renewable Alternatives), which address the impacts on geology and soils of alternatives to the proposed action.</p> <p>Consider adding text in Section 4.4.2 on pages 4-28 and 4-29 explaining why impacts on geology and soils from construction and operation of the fossil-fueled alternative and the new nuclear alternative are not discussed.</p>
90	4-30	3 to 7	<p><u>Page 4-30, lines 3 to 7:</u> Text in lines 3 to 7 on page 4-30 read as follows:</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Hydrologic conditions at all nuclear power plants and associated transmission lines have been well established during the current licensing term. However, continued operations and refurbishment activities could have an impact on water resources during the license renewal term. This section describes the potential impact of these activities on surface water and groundwater resources.</p> <p>For completeness, consider changing the last sentence (lines 6 and 7 on page 4-30) in the above-quoted paragraph to read as follows (font = deletion; <i>font = addition</i>):</p> <p>This section describes the potential impact of these <i>proposed</i> activities <i>and alternatives to these proposed activities</i> on surface water and groundwater resources.</p>
91	4-31	17 and 18	<p><u>Page 4-31, lines 17 and 18:</u> Text in lines 17 and 18 on page 4-31, which is one bullet in a list of issues related to impacts on surface water that may occur during the license renewal term, reads as follows:</p> <ul style="list-style-type: none"> • Water use conflicts for plants with cooling ponds or cooling towers using makeup water from a river with low flow (evaluated in the 1996 GEIS) <p>The draft updated GEIS provides no definition for the phrase “river with low flow,” which is used in line 18 on page 4-31. To clarify the meaning of the phrase “river with low flow” throughout the draft updated GEIS, consider providing a definition on page 4-31 of the draft and also in chapter 2 (Table 2.1-1).</p>
92	4-35	33 to 37	<p><u>Page 4-35, lines 33 to 37:</u> Text in lines 33 to 37 on page 4-35 reads as follows:</p> <p>Discharge of cooling water is monitored through individual State NPDES programs. The flow rate and chemical content of the water at discharge outfalls are regulated by State oversight in accordance with the NPDES permit. Wastewater discharge is also covered through NPDES permitting, and it includes biochemical monitoring parameters. Discharge from building drains is also addressed in the NPDES permit.</p> <p>To more accurately describe the NPDES permit program, consider changing the text in lines 33 to 37 on page 4-35 to read as follows (font = deletion; <i>font = addition</i>):</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>Discharges of cooling water <i>and other plant wastewaters are</i> is-monitored through individual State NPDES programs <i>via NPDES permits. The NPDES permit for a nuclear power plant contains requirements that limit the amount of pollutants that may be discharged at permitted outfalls. The permit also typically contains biological monitoring parameters that are primarily associated with the discharge of cooling water. The flow rate and chemical content of the water at discharge outfalls are regulated by State oversight in accordance with the NPDES permit. Wastewater discharge is also covered through NPDES permitting, and it includes biochemical monitoring parameters. Discharge from building drains is also addressed in the NPDES permit.</i></p>
93	4-37	12 and 13	<p>Page 4-37, lines 12 and 13: Text in lines 12 and 13 on page 4-37 reads as follows: Cooling ponds will also require makeup water as a result of naturally occurring evaporation, evaporation of the warm effluent, and possible seepage to groundwater.</p> <p>Because seepage would only be expected to occur in an unlined pond, consider changing the text in lines 12 and 13 on page 4-37 to read as follows (strike through font = deletion; <i>italics font = addition</i>): Cooling ponds will also require makeup water as a result of naturally occurring evaporation, evaporation of the warm effluent, and <i>if the pond is unlined</i>, possible seepage to groundwater.</p>
94	4-37	35 to 40	<p>Page 4-37, lines 35 to 40: Text in lines 35 to 40 on page 4-37 reads as follows: The SEIS for the Wolf Creek plant in Kansas identified a site-specific water use conflict with a small to moderate impact (NRC 2008a). Makeup water for the Wolf Creek cooling lake (Coffee County Lake) is withdrawn from the Neosho River downstream of John Redmond Reservoir. The ecosystem downstream of this reservoir includes an endangered fish species, the Neosho madtom (<i>Noturus placidus</i>), which may be affected by the plant's water use during periods when the lake level is low and makeup water is obtained from the Neosho River.</p> <p>Because the discussion in the subsection containing lines 35 to 40 on page 4-37 of the draft updated GEIS focuses on water use conflicts among municipal, agricultural and industrial users of surface water resources, the above-quoted paragraph does not provide</p>

Cmt. No.	Page No.	Line No.	Comment
			<p>a pertinent example. Rather, it is an example of a water use conflict between a nuclear power plant user and aquatic communities that rely on surface water for their livelihood. Water use conflicts of the latter type are discussed in Section 4.6.1.2 of the draft updated GEIS (page 4-102), and this example is repeated there. Accordingly, consider deleting all of the text in lines 35 to 40 on page 4-37.</p>
95	4-38	5 and 6	<p>Page 4-38, lines 5 and 6: Text in lines 5 and 6 on page 4-38 reads as follows: Availability problems for downstream habitat and users have also been identified as a conflict at the Palo Verde plant in Arizona and may be anticipated at other plants.</p> <p>Based on the recent Palo Verde license renewal application, the above-quoted sentence referring to Palo Verde water use conflicts should be deleted from lines 5 and 6 on page 4-38 because, given the constant rate of use of recycled water by Palo Verde and the projections for increase of treated effluent in the area, water use conflicts with respect to the Gila River are expected to be much less influenced by Palo Verde than by decisions of municipalities to either discharge or reuse portions of their effluent.</p>
96	4-38 & 4-39	23 to 41 & 1 to 5	<p>Page 4-38, lines 23 to 41 and Page 4-39, lines 1 to 5: Text in lines 23 to 41 on page 4-38 and lines 1 to 5 on page 4-39 consists of a subsection titled “Effects of Dredging on Water Quality.”</p> <p>The discussion in the subsection titled “Effects of Dredging on Water Quality” should be modified to acknowledge that the process for obtaining a permit from the U.S. Army Corps of Engineers (USACE) to dredge pursuant to Section 404 of the Clean Water Act includes an environmental review pursuant to NEPA. If the dredging might affect threatened or endangered species or Critical Habitat, as established under the Endangered Species Act, the USACE must consult with the National Marine Fisheries Service and/or the U.S. Fish and Wildlife Service before it makes a permit decision. In issuing any permit under the Section 404 permitting process, the USACE also considers other aquatic impacts, archeological resources, tribal concerns, and the permitting requirements of state and local agencies.</p> <p>This comment should also be applied to other sections in the draft updated GEIS that</p>

Cmt. No.	Page No.	Line No.	Comment
			discuss the effects of dredging on water quality.
97	4-38	27 to 30	<p>Page 4-38, lines 27 to 30: Text in lines 27 to 30 on page 4-38 reads as follows: Whether accomplished by mechanical, suction, or other methods, dredging disturbs sediments in the surface water body and affects surface water quality. In pristine locations, the impact will affect the turbidity of the water column.</p> <p>The intent of the above-quoted statement is to say that in clear water conditions, the turbidity will be more noticeable. But, dredging may affect turbidity in any water. Accordingly, consider changing the text in lines 27 to 30 on page 4-38 to read as follows (strike through font = deletion; <i>italics</i> font = addition): Whether accomplished by mechanical, suction, or other methods, dredging disturbs sediments in the surface water body and affects surface water quality. In pristine locations, <i>The</i> impact will temporarily affect the turbidity of the water column.</p>
98	4-39	31 and 32	<p>Page 4-39, lines 31 and 32: Text in lines 31 and 32 on page 4-39 reads as follows: Operational activities during the license renewal term would be similar to those occurring during the current license term and would not affect groundwater resources.</p> <p>Because several groundwater impact issues have been determined in the draft updated GEIS to be Category 2 issues, which suggests that operational activities do have some effect on groundwater resources, consider revising the sentence in lines 31 and 32 on page 4-39 to read as follows (strike through font = deletion; <i>italics</i> font = addition): Operational activities during the license renewal term would be similar to those occurring during the current license term and would not affect groundwater resources.</p>
99	4-45	33 and 34	<p>Page 4-45, lines 33 and 34: Text in lines 33 and 34 on page 4-45 reads as follows: Furthermore, contaminants present in the soil can act as long-term sources of contamination to underlying groundwater.</p> <p>Because some spills are incidental or minor and are immediately remediated so that no contaminants are remaining in the soil, consider changing the text in lines 33 and 34 on page 4-45 to read as follows (strike through font = deletion; <i>italics</i> font = addition): Furthermore, contaminants present in the soil can act as long-term sources of</p>

Cmt. No.	Page No.	Line No.	Comment
			contamination to underlying groundwater, <i>depending on the severity of the spill.</i>
100	4-45	36 and 37	<p><u>Page 4-45, lines 36 and 37:</u> Text in lines 36 and 37 on page 4-45 reads as follows: Based on previous plant-specific reviews, these types of groundwater and soil contamination problems have occurred at many operating plants.</p> <p>To improve consistency between the contents of previous Supplemental Environmental Impact Statements for Nuclear Plant License Renewal prepared by the NRC and the draft updated GEIS, consider changing the sentence in lines 36 and 37 on page 4-45 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>Based on previous plant-specific reviews, these types of groundwater and soil contamination problems have occurred at <i>some</i> many operating plants.</p>
101	4-47	40 and 41	<p><u>Page 4-47, lines 40 and 41:</u> Text in lines 40 and 41 on page 4-47 reads as follows: Construction - Construction-related impacts on hydrology (land clearing during and impervious pavements) would alter surface drainage patterns and groundwater recharge zones.</p> <p>To better clarify the meaning of the above-quoted sentence, consider changing the text in lines 40 and 41 on page 4-47 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>Construction - Construction-related impacts on hydrology (land clearing during and impervious pavements) would alter surface drainage patterns and groundwater recharge zones.</p>
102	4-47	General	<p><u>Page 4-47, Section 4.5.2 (Environmental Consequences of Alternatives to the Proposed Action):</u></p> <p>Throughout Section 4.5.2, "Environmental Consequences of Alternatives to the Proposed Action," including subsections 4.5.2.1 through 4.5.2.3, potential surface water impacts and potential groundwater impacts should be distinguished. Also, for consistency, it would be helpful if conclusions about potential impacts from construction and potential impacts from operations were presented in each subsection, even if the conclusion consists only of a cross reference to an earlier subsection, or indicates that the technology involves no activities creating a source of impacts to surface water or groundwater.</p>

Cmt. No.	Page No.	Line No.	Comment
103	4-61	19 to 23	<p>Page 4-61, lines 19 to 23: Text in lines 19 to 23 on page 4-61 reads as follows: In the past, the use of copper alloy condenser tubes in the cooling systems at the H.B Robinson plant in South Carolina and Diablo Canyon plant in California resulted in the discharge of copper in the liquid effluent, which was observed to have adverse effects on the morphology and reproduction of resident bluegill populations.</p> <p>Because Diablo Canyon is located on the ocean and bluegill is a freshwater species that would not occur there, consider changing the above quoted text in lines 19 to 23 on page 4-61 to read as follows (strike through font = deletion; <i>italics</i> font = addition): In the past, the use of copper alloy condenser tubes in the cooling systems at the H.B. Robinson plant in South Carolina and Diablo Canyon plant in California resulted in the discharge of copper in the liquid effluent, which <i>at the Robinson plant</i> was observed to have adverse effects on the morphology and reproduction of resident bluegill populations (Harrison 1985).</p>
104	4-83	4 to 9	<p>Page 4-83, lines 4 to 9: Text in lines 4 to 9 on page 4-83 reads as follows: For the Wolf Creek plant in Kansas, the NRC concluded that impingement during continued operation of the plant could have small to moderate impacts at the makeup water screen house during periods when river water levels were low, because fish would have less available habitat to use as a refuge and would likely be exposed to greater pumping frequency and volume removals from the Neosho River (NRC 2008a). During most of the license renewal term, the impacts of impingement would be small (NRC 2007d).</p> <p>Because the above quoted text discusses the Wolf Creek plant in Kansas, it does not make sense to use the Reference "NRC 2007d," which refers to World Wide Web URL http://www.nrc.gov/reactors/new-licensing/col.html, to support the conclusion in lines 8 and 9 on page 4-83. Please verify the validity of the citation.</p>
105	4-114	9 to 34	<p>Page 4-114, lines 9 to 34: Text in lines 9 to 34 on page 4-114 introduces the discussion in section 4.6.2 of the environmental consequences for terrestrial and aquatic ecology of alternatives to license renewal of nuclear power plants. Subsequent subsections 4.6.2.1 and 4.6.2.2 discuss specific impacts of alternatives</p>

Cmt. No.	Page No.	Line No.	Comment																		
			<p>to nuclear plant license renewal that involve fossil energy and renewable energy technologies, respectively.</p> <p>For consistency with other sections in Chapter 4, consider adding introductory text in Section 4.6.2 (lines 9 to 34 on page 4-114) explaining why impacts on terrestrial and aquatic ecology are not evaluated for the new nuclear plant alternative to the proposed action. Alternatively, consider adding a new subsection to address the impacts of a new nuclear plant alternative.</p>																		
106	4-128	3 to 4	<p>Page 4-128, lines 3 and 4: Text in lines 3 and 4 on page 4-128 reads as follows: Operation – The existence of the nuclear power plant could have a negative effect on recreation and tourism.</p> <p>Because, without a supporting reference citation, characterizing the nature of the effects of a nuclear power plant on recreation and tourism is speculative, consider changing the text in lines 3 and 4 on page 4-128 to read as follows (strike through font = deletion; italics font = addition):</p> <p>Operation - The existence of the nuclear power plant could <i>potentially affect</i> have an negative effect on recreation and tourism.</p>																		
107	4-139	Table 4.9.1.1-3	<p>Page 4-139, Table 4.9.1.1-3: Table 4.9.1.1-3 contains information about dose to the maximally exposed individual (MEI) from gaseous and liquid effluent releases during the years 1999 through 2003 for three nuclear power plants that recently replaced steam generators. Included is information for Arkansas Unit 2, except during the year 2000 for which the site’s annual effluent release report was not available.</p> <p>Consider adding the following information from the 2000 Annual Radioactive Effluent Release Report for Arkansas Nuclear One, Units 1 and 2 to Table 4.9.1.1-3 on page 4-139 because the current draft updated GEIS data are inaccurate:</p> <table border="1" data-bbox="743 1247 1877 1385"> <thead> <tr> <th colspan="3" data-bbox="743 1247 1503 1284">Gaseous Effluents</th> <th colspan="3" data-bbox="1503 1247 1877 1284">Liquid Effluents</th> </tr> <tr> <th data-bbox="743 1284 974 1385">Total Body (mrem)</th> <th data-bbox="974 1284 1129 1385">Gamma (mrad)</th> <th data-bbox="1129 1284 1503 1385">Beta (mrad)</th> <th data-bbox="1503 1284 1619 1385">Critical Organ (mrem)</th> <th data-bbox="1619 1284 1734 1385">Total Body (mrem)</th> <th data-bbox="1734 1284 1877 1385">Critical Organ (mrem)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Gaseous Effluents			Liquid Effluents			Total Body (mrem)	Gamma (mrad)	Beta (mrad)	Critical Organ (mrem)	Total Body (mrem)	Critical Organ (mrem)						
Gaseous Effluents			Liquid Effluents																		
Total Body (mrem)	Gamma (mrad)	Beta (mrad)	Critical Organ (mrem)	Total Body (mrem)	Critical Organ (mrem)																

Cmt. No.	Page No.	Line No.	Comment						
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">3.15×10^{-2}</td> <td style="text-align: center;">2.70×10^{-3}</td> <td style="text-align: center;">2.21×10^{-3}</td> <td style="text-align: center;">3.15×10^{-2}</td> <td style="text-align: center;">3.00×10^{-3}</td> <td style="text-align: center;">3.90×10^{-3}</td> </tr> </table>	3.15×10^{-2}	2.70×10^{-3}	2.21×10^{-3}	3.15×10^{-2}	3.00×10^{-3}	3.90×10^{-3}
3.15×10^{-2}	2.70×10^{-3}	2.21×10^{-3}	3.15×10^{-2}	3.00×10^{-3}	3.90×10^{-3}				
108	4-142	32 to 34	<p><u>Page 4-142, lines 32 to 34:</u> Text in lines 32 to 34 on page 4-142 reads as follows: Nuclear power plants are required to submit to the Federal EPA and the State in which they are located annual reports on the environmental releases of listed toxic chemicals manufactured, processed, or otherwise used that are above Federally and State-identified threshold quantities.</p> <p>The above-quoted text (lines 32 to 34 on page 4-142) refers to reporting required under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) as implemented by U.S. Environmental Protection Agency regulations (40 CFR 372). The statement is somewhat misleading, however, because many nuclear power plants manufacture, process, or otherwise use such small quantities of toxic chemicals that the threshold quantities for reporting under 40 CFR 372 are not triggered. Accordingly, consider changing the text in lines 32 to 34 on page 4-142 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>Nuclear power plants may be <i>are</i> required <i>in some instances</i> to submit to the Federal EPA and the State in which they are located annual reports on the environmental releases of listed toxic chemicals manufactured, processed, or otherwise used that are above Federally and State <i>identified</i> threshold quantities, <i>depending on state regulations or other specific circumstances</i>.</p>						
109	4-201	16 to 19	<p><u>Page 4-201, lines 16 to 19:</u> Text in lines 16 to 19 on page 4-201 reads as follows: Potential impingement and entrainment losses of special status fish species could also decrease. Reactor shutdown could also decrease impacts on EFH, although only minimal adverse effects have been identified for the operating plants for which EFH assessments have been prepared (i.e., Pilgrim, Vermont Yankee, and Oyster Creek plants).</p> <p>The above-quoted sentences from lines 16 to 19 on page 4-201 appear to be out of place within the paragraph that spans lines 8 to 24 on page 4-201. Consider moving the above-quoted sentences to the end of the paragraph.</p>						

Cmt. No.	Page No.	Line No.	Comment
			<p>Also, because EFH assessments have been prepared at nuclear power plants other than Pilgrim, Vermont Yankee, and Oyster Creek, consider changing the text in lines 16 to 19 on page 4-201 to read as follows (struckthrough font = deletion; <i>italics</i> font = addition):</p> <p>Potential impingement and entrainment losses of special status fish species could also decrease. Reactor shutdown could also decrease impacts on EFH, although only minimal adverse effects have been identified for the operating plants for which EFH assessments have been prepared (i.e.e.g., Pilgrim, Vermont Yankee, and Oyster Creek plants).</p>
<u>Volume 1, Chapter 7</u>			
110	7-23	10 to 14	<p><u>Page 7-23, lines 10 to 14:</u> Text in lines 10 to 14 on page 7-23 reads as follows:</p> <p>Greenhouse gases: Those gases, such as water vapor, carbon dioxide, nitrous oxide, methane, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride, that are transparent to solar (short-wave) radiation but opaque to long-wave (infrared) radiation, thus preventing long-wave radiant energy from leaving the earth's atmosphere. The net effect is a trapping of absorbed radiation and a tendency to warm the planet's surface.</p> <p>Because the primary focus of discussions of greenhouse gases in the draft updated GEIS is on anthropogenic greenhouse gases and the need to control emissions of such gases to slow global climate change, consider deleting "water vapor," from the list of example greenhouse gases in the "Greenhouse gases" definition. Although water vapor is a naturally occurring greenhouse gas, emission of water vapor from electric power plants and other industrial facilities has not been identified as an environmental concern.</p>
111	7-36	17 and 18	<p><u>Page 7-36, lines 17 and 18:</u> Text in lines 17 and 18 on page 7-36 reads as follows:</p> <p>Reference reactor year (RRY): Refers to one year of operation of a 1000-MW electric capacity nuclear power plant.</p> <p>For consistency with the draft updated GEIS text in lines 30 to 33 on page 4-176, consider changing the definition of Reference reactor year (RRY) in lines 17 and 18 on page 7-36 to read as follows (struckthrough font = deletion; <i>italics</i> font = addition):</p> <p>Refers to one year of operation of a 1000-MW electric capacity nuclear power plant</p>

Cmt. No.	Page No.	Line No.	Comment
			<i>operating at an 80% availability factor to produce about 800 MW-yr (0.8 GW-yr) of electricity.</i>
<u>Volume 2, Appendix D</u>			
112	D-13	18 to 26	<p>Page D-13, lines 18 to 26: Text in lines 18 to 26 on page D-13 describes the contents of the maintenance plan that a State must implement in an area that has been redesignated under the Clean Air Act from “nonattainment” status to “attainment maintenance” status. In lines 24 to 26 on page D-13, the text reads as follows:</p> <p>The NRC will ensure coordination of licensee with the appropriate EPA Regional Office and/or State air quality office before any plants begin major construction or refurbishment activities.</p> <p>To more accurately reflect the interaction among the licensee, the NRC, and the EPA Regional Office in the event that major construction or refurbishment activities are conducted at a nuclear power plant to support license renewal, consider changing the above-quoted statement in lines 24 to 26 on page D-13 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition):</p> <p>The NRC will ensure coordination of <i>assure that the</i> licensee <i>has coordinated</i> with the appropriate EPA Regional Office and/or State air quality office <i>prior to beginning</i> before <i>any plants begin</i> major construction or refurbishment activities <i>in a non-attainment maintenance area.</i></p>

Specific Comments Requesting Editorial, Grammatical and Typographical Corrections (specific comment numbers are not included in this section)

Cmt. No.	Page No.	Line No.	Comment
<u>Volume 1, Front Material</u>			
	xxxii	N/A	Page xxxii, Units of Measure: Correct typographical error by changing “milliard(s) to “millirad(s).”
<u>Volume 1, Summary</u>			
	S-19	36 and 37	<p>Page S-19, lines 36 and 37: Text in lines 36 and 37 on page S-19 reads as follows: License renewal and new nuclear energy alternatives may have low-probability but potentially high-consequence accidents.</p> <p>To better convey the situation surrounding accidents at nuclear power plants, consider changing the text in lines 36 and 37 on page S-19 to read as follows (strike through font = deletion; <i>italics</i> font = addition): <i>Certain accidents associated with License</i> license renewal and new nuclear energy alternatives may have low-probability <i>low probability</i> but potentially high-consequence <i>accidents</i> <i>high consequences</i>.</p>
<u>Volume 1, Chapter 2</u>			
	2-20	16 to 19	Page 2-20, lines 16 to 19: “10 CFR Part 52” is not listed as a reference in Section 2.5 References (pages 2-36 and 2-37).
	2-22	15 and 16	Page 2-22, lines 15 and 16: “Sass and Priest 2002” is not listed as a reference in Section 2.5 References (pages 2-36 and 2-37).
	2-36	6 and 7 and 12 and 13	Page 2-36, lines 6 and 7 and lines 12 and 13: Delete the entries for “10 CFR Part 51” and “40 CFR Part 1508” because the text in Chapter 2 does not cite these regulations as references.
	2-37	10 to 12	Page 2-37, lines 10 to 12: Delete the entry for “NRC 1996” because the text in Chapter 2 does not cite that document as a reference.
<u>Volume 1, Chapter 3</u>			
	3-6	Table 3.1-1	Page 3-6, Table 3.1-1: Based on Table 2-9 in the <i>Generic Environmental Impact Statement</i>

			<i>for License Renewal of Nuclear Power Plants, Supplement 3: Regarding Arkansas Nuclear One, Unit 1 (April 2001), in the Table 3.1-1 column labeled "2000 Population within 50 mi" change the entry for Arkansas Nuclear One, Unit 1 from "267,664" to "274,037".</i>
	3-6	Table 3.1-1	Page 3-6, Table 3.1-1: Based on the 1988 Callaway Plant power uprate, change the entry for Callaway Plant, Unit 1 in the Table 3.1-1 column labeled "Net Capacity [MW(e)]" from "1190" to "1236."
	3-6	Table 3.1-1	Page 3-6, Table 3.1-1: Based on Section 4.1 in the Callaway Plant Unit No. 1 Operating License, change the entry for Callaway Plant, Unit 1 in the Table 3.1-1 column labeled "Total Site Area (acres)" from "5228" to "2767."
	3-6	Table 3.1-1	Page 3-6, Table 3.1-1: Based on the Cooper Nuclear Station license renewal application (ER Section 2.6.1), change the entry for Cooper Nuclear Station, Unit 1 in the Table 3.1-1 column labeled "2000 Population within 50 mi" from "156,157" to "160,211".
	3-6	Table 3.1-1	Page 3-6, Table 3.1-1: Based on the Cooper Nuclear Station license renewal application (ER Section 2.1), change the entry for Cooper Nuclear Station, Unit 1 in the Table 3.1-1 column labeled "Total Site Area (acres)" from "1251" to "1359."
	3-6	Table 3.1-1	Page 3-6, Table 3.1-1: Based on Operating License No. NPR-21 (NRC ADAMS ML022050321), change the entry for Columbia Generating Station in the Table 3.1-1 column labeled "Year Operating License Granted" from "1984" to "1983."
	3-7	Table 3.1-1	Page 3-7, Table 3.1-1: Because the license for the James A. FitzPatrick plant has been renewed (NRC ADAMS ML081010332), change the entry for James A. FitzPatrick in the Table 3.1-1 column labeled "Year License Expires" from "2014" to "2034."
	3-7	Table 3.1-1	Page 3-7, Table 3.1-1: For Davis-Besse Nuclear Power Station: (1) Based on latest quarterly report to NRC, change the entry in the Table 3.1-1 column labeled "Net Capacity [MW(e)]" from "889" to "908"; and (2) Based on UFSAR, Rev. 26, June 2008, change the entry in the Table 3.1-1 column labeled "Total Site Area (acres)" from "733" to "954" (the 733 acres listed is leased to U.S. Govt as a national wildlife refuge).
	3-7	Table 3.1-1	Page 3-7, Table 3.1-1: Based on the renewed license for the James A. FitzPatrick Nuclear Power Plant, change the entry in the Table 3.1-1 column labeled "Net Capacity [MW(e)]" from "852" to "881" (NRC Adams ML081010332).
	3-7	Table 3.1-1	Page 3-7, Table 3.1-1: Because the license for the Shearon Harris Nuclear Power Plant has been renewed (NRC ADAMS ML083520456), change the entry for Shearon Harris Nuclear Power plant in the Table 3.1-1 column labeled "Year License Expires" from "2027" to "2047."
	3-7	Table 3.1-1	Page 3-7, Table 3.1-1: Based on the "Applicant's Environmental Report – Operating License Renewal Stage," change the entry for Hope Creek Generating Station in the Table 3.1-1 column labeled "Total Site Area (acres)" from "740" to "153." The Hope Creek site lies within

			a larger 740-acre parcel owned by PSEG that also contains the adjacent Salem Nuclear Generating Station and undeveloped land.
	3-8	Table 3.1-1	Page 3-8, Table 3.1-1: For Indian Point Unit 3: (1) Based on the Facility Operating License DPR-64 (NRC ADAMS ML003778621), change the entry in the Table 3.1-1 column labeled "Year Operating License Granted" from "1976" to "1975"; and (2) Based on the Facility Operating License DPR-64 (NRC ADAMS ML052720273), change the entry in the Table 3.1-1 column labeled "Year License Expires" from "2016" to "2015."
	3-8	Table 3.1-1	Page 3-8, Table 3.1-1: Based on Section 1.3 in the <i>Draft Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 38: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3</i> (December 2008), in the Table 3.1-1 column labeled "Net Capacity [MW(e)]," change the entry for Indian Point Unit 2 from "1020" to "1078" and the entry for Indian Point Unit 3 from "1025" to "1080."
	3-8	Table 3.1-1	Page 3-8, Table 3.1-1: Based on Section 2.1 in the <i>Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 26: Regarding Monticello Nuclear Generating Plant</i> (August 2006), in the Table 3.1-1 column labeled "Total Site Area (acres)," change the entry for Monticello Nuclear Generating Plant from "1250" to "2150."
	3-9	Table 3.1-1	Page 3-9, Table 3.1-1: Based on Section 2.1 in the <i>Draft Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 39: Regarding Prairie Island Nuclear Generating Plant</i> (October 2009), in the Table 3.1-1 column labeled "Total Site Area (acres)," change the entry for Prairie Island Nuclear Generating Plant from "560" to "578."
	3-9	Table 3.1-1	Page 3-9, Table 3.1-1: Based on Facility Operating License DPR-75, change the entry for Salem Nuclear Generating Station Unit 2 in the Table 3.1-1 column labeled "Year License Expires" from "2021" to "2020" (NRC ADAMS ML011710409).
	3-9	Table 3.1-1	Page 3-9, Table 3.1-1: Based on the "Applicant's Environmental Report – Operating License Renewal Stage," change the entry for Salem Nuclear Generating Station in the Table 3.1-1 column labeled "Total Site Area (acres)" from "700" to "220." The Salem site lies within a larger 740-acre parcel owned by PSEG that also contains the adjacent Hope Creek Generating Station and undeveloped land.
	3-9	Table 3.1-1	Page 3-9, Table 3.1-1: Because the Salem Nuclear Generating Station and the Hope Creek Generating Station are co-located, consider changing the entries in the Table 3.1-1 column labeled "2000 Population within 50 miles" to "6,000,000" for both sites.
	3-9	Table 3.1-1	Page 3-9, Table 3.1-1: Based on Section 3.1.3.1 in "Applicant's Environmental Report – Operating License Renewal Stage," add an entry of "1,100" in the Table 3.1-1 column labeled "Condenser Flow Rate (10 ³ gpm)" for the Salem Nuclear Generating Station Unit 2.

3-10	Table 3.1-1	Page 3-10, Table 3.1-1: Based on the 2008 Annual Radiological Environmental Operating Report and the Annual Radioactive Effluent Release Report for the Yankee Atomic Independent Spent Fuel Storage Installation (NRC ADAMS ML090770152), add "Spent fuel is still onsite." to note (a) regarding Yankee Rowe.
3-10	Table 3.1-1	Page 3-10, Table 3.1-1: Based on Facility Operating License DPR-28 for Vermont Yankee Nuclear Power Station, (1) change the entry in the Table 3.1-1 column labeled "Year Operating License Granted" from "1973" to "1972" (NRC ADAMS ML011620261) and (2) change the entry in the Table 3.1-1 column labeled "Year License Expires" from "2013" to "2012" (NRC ADAMS ML011650078).
3-10	Table 3.1-1	Page 3-10, Table 3.1-1: Based on the renewed licenses for the Vogtle Electric Generating Plant, change the entries in the Table 3.1-1 column labeled "Year License Expires" from "2027" to "2047" for Unit 1 and from "2029" to "2049" for Unit 2 (NRC ADAMS ML090920437).
3-10	Table 3.1-1	Page 3-10, Table 3.1-1: Based on Facility Operating License NPF-38, change the entry in the Table 3.1-1 column labeled "Year License Expires" from "2025" to "2024" for Waterford Steam Electric Station Unit 3 (NRC ADAMS ML053130318).
3-10	Table 3.1-1	Page 3-10, Table 3.1-1: Based on the renewed license for the Wolf Creek Generating Station, change the entry in the Table 3.1-1 column labeled "Year License Expires" from "2025" to "2045" (NRC ADAMS ML083250293).
3-13	Table 3.1-2	Page 3-13, Table 3.1-2: To correct a typographical error, change the entry in the Table 3.1-2 column labeled "Cooling System" from "Natural draft cooling towers" to "Natural draft cooling tower" for the Davis-Besse plant.
3-15	15 to 17	Page 3-15, lines 15 to 17: Text in lines 15 to 17 on page 3-15 reads as follows: Blowdown (water that is periodically rinsed from the cooling system to remove impurities and sediment that may degrade performance) is typically released to a receiving body of surface water next to the plant. Within the parenthetical statement in the above-quoted sentence from lines 15 to 17 on page 3-15, consider changing "rinsed" to "released".
3-18	1	Page 3-18, lines 1 and 2: Text in lines 1 and 2 on page 3-18 reads as follows: [In] closed-cycle cooling, the additional water needed is usually less than 5 percent of that needed for condenser cooling (NRC 1996). In the above-quoted text in lines 1 and 2 on page 3-18, consider replacing the words "the additional water needed" with the words "the volume of water needed for makeup".
3-28	5 to 8	Page 3-28, lines 5 to 8: Text in lines 5 to 8 on page 3-28 reads as follows: During the period from 1960 to 1980, with utility and local government activities

			<p>actively encouraging growth (Metz 1983), commercial, industrial, recreational, and industrial land uses tended to expand in the 10-mi (16-km) radius around nuclear plants at the expense of agriculture.</p> <p>Change the above-quoted text in lines 5 to 8 on page 3-28 to read as follows (font = deletion; <i>font = addition</i>):</p> <p>During the period from 1960 to 1980, with utility and local government activities actively encouraging growth (Metz 1983), commercial, industrial, recreational, and industrial land uses tended to expand in the 10-mi (16-km) radius around nuclear plants at the expense of agriculture.</p>
	3-32	11 to 13	<p>Page 3-23, lines 11 to 13: Text in lines 11 to 13 discusses the probability of tornado strikes.</p> <p>Correct a typographical error in line 13 on page 3-32 as follows (font = deletion; <i>font = addition</i>):</p> <p>The expected value structure strike probabilities were estimated to range from 1.7 chances of a strike in 100,000 tornado events in the Western region to s35.8 chances in 100,000 in the Central region.</p>
	3-32	Table 3.3-1	<p>Page 3-32, Table 3.3-1: The Table 3.3-1 column labeled "Original Fujita Scale (3-s gust) (mph)" contains a typographical error in the row labeled "F5/EF5." To correct the typographical error, change the erroneous entry from "262 to 31" to "262 to 318."</p>
	3-37	Footnote (a)	<p>Page 3-37, Footnote (a): Text in Footnote (a) on page 3-37 reads as follows:</p> <p>Nonattainment area designations are ever-changing and redesignations are expected due to EPA's recent standard revisions for PM10 and PM2.5 (Dec. 17, 2006), 8-hour O₃ (May 27, 2008), and Pb (Oct. 15, 2008). Please refer to the Web at http://www.epa.gov/oaqps/greenbk/index/html for the most updated nonattainment area designations.</p> <p>The Web address provided in Footnote (a) on page 3-37 for accessing the most updated nonattainment area designations, http://www.epa.gov/oaqps/greenbk/index/html, is not operable. Consider replacing it with the updated Web address for accessing The Green Book, which is: http://www.epa.gov/air/oaqps/greenbk/.</p>
	3-60	9	<p>Page 3-60, line 9: "AEC 1974" is not listed as a reference in Section 3.12 References (pages 3-156 to 3-174).</p>
	3-82	Table 3.8-1	<p>Page 3-82, Table 3.8-1: Based on Table 2-7 in the <i>Draft Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 38: Regarding Indian</i></p>

			<i>Point Nuclear Generating Unit Nos. 2 and 3</i> (December 2008), change the entry for Indian Point in the Table 3.8-1 column labeled "Employment" from "1559" to "1255."
3-87	Table 3.8-6		Page 3-87, Table 3.8-6: Based on Table 2-7 in the <i>Draft Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 38: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3</i> (December 2008), change the entry for Indian Point in the Table 3.8-6 column labeled "Employment" and "Direct" from "1355" to "1255."
3-88	Table 3.8-7		Page 3-82, Table 3.8-7: Based on Table 2-7 in the <i>Draft Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 38: Regarding Indian Point Nuclear Generating Unit Nos. 2 and 3</i> (December 2008), change the entry for Indian Point in the Table 3.8-7 column labeled "Employment" and "Direct" from "1559" to "1255."
3-95	26 and 27		Page 3-95, lines 26 and 27: "40 CFR Part 192" and "10 CFR Part 40" are not listed as references in Section 3.12 References (pages 3-156 and 3-157).
3-121	Table 3.9-14		Page 3-121, Table 3.9-14: Based on a review of the Annual Radioactive Effluent Release Reports for Indian Point Unit 2, the 2004 and 2005 entries shown in the Table 3.9-14 columns labeled "Gamma (mrad)," "Beta (mrad)," and "Critical Organ (mrem)" are incorrect. Change these entries as follows: <u>2004</u> --Change "Gamma" from "4.35 x 10 ⁻³ " to "8.71 x 10 ⁻³ ", Change "Beta" from "1.75 x 10 ⁻² " to "3.46 x 10 ⁻² " and Change "Critical Organ" from "6.00 x 10 ⁻³ " to "1.23 x 10 ⁻² ". <u>2005</u> --Change "Gamma" from "9.00 x 10 ⁻⁵ " to "1.76 x 10 ⁻⁴ ", Change "Beta" from "6.00 x 10 ⁻⁴ " to "1.23 x 10 ⁻³ " and Change "Critical Organ" from "6.5 x 10 ⁻⁴ " to "1.26 x 10 ⁻³ ".
3-122	Table 3.9-14		Page 3-122, Table 3.9-14: Based on a review of the Annual Radioactive Effluent Release Reports for Indian Point Unit 2, the 2006 entries shown in the Table 3.9-14 columns labeled "Gamma (mrad)," "Beta (mrad)," and "Critical Organ (mrem)" are incorrect. Change these entries as follows: <u>2006</u> --Change "Gamma" from "2.55x10 ⁻³ " to "5.01 x 10 ⁻³ ", Change "Beta" from "9.00 x 10 ⁻³ " to "1.78 x 10 ⁻² " and Change "Critical Organ" from "6.00 x 10 ⁻³ " to "1.19 x 10 ⁻² ".
3-128	Table 3.9-19		Page 3-128, Table 3.9-19: To correct a typographical error, change the label for the second column in Table 3.9-19 as follows (strikethrough font = deletion; <i>italics</i> font = addition): Maximum Tritium Contamination (pCi/L) Detected Within the <i>within</i> the Site Boundary"
3-151	6 to 7		Page 3-151, lines 6 and 7: Correct a typographical error in line 7 on page 3-151 as follows (strikethrough font = deletion; <i>italics</i> font = addition): Each review consists of a safety review and the preparation of an EA <i>EA</i> environmental review.

3-152	2 to 4	Page 152, lines 2 to 4: Because it is repeated in lines 1 through 3 on page 3-154, delete the paragraph in lines 2 through 4 on page 3-152, which reads as follows: Longer-burnup fuel from which more energy can be obtained before it is taken out of the reactor and declared spent. As a result of using this fuel, less spent fuel is generated from the same amount of energy produced in a reactor.
3-156	39 and 40	Page 3-156, lines 39 and 40: Consider deleting the entry "24 CFR Part 51" from the references list because it is not cited in the text in Section 3.0.
3-159	33	Page 3-159, line 33: Correct an error of transcription by changing the citation in line 33 on page 3-159 to read as follows (font = deletion ; <i>font = addition</i>): Coastal Zone Management Act. of 1972, as amended. <i>16 USC 1451 et seq. at 16 USC 1456.</i>
3-161	39 to 40	Page 3-161, lines 39 and 40: Consider deleting the entry "Harlow 2003" from the references list because it is not cited in the text in Section 3.0.
3-166	20	Page 3-166, line 20: Consider deleting the entry "Nuclear Waste Policy Amendments Act of 1987" from the references list because it is not cited in Section 3.0.
3-173	27 to 28	Page 3-173, lines 27 and 28: Consider deleting the entry "NRC 2007h" from the references list because it is not cited in Section 3.0.
<u>Volume 1, Chapter 4</u>		
4-4	25 to 26	Page 4-4, lines 25 and 26: Correct a typographical error in line 25 on page 4-4 as follows (font = deletion ; <i>font = addition</i>): 2.2 <i>The decision to generate power and the determination of how much power is needed are at the discretion of State, Federal (non-NRC) and utility officials.</i>
4-11	15 to 19	Page 4-11, lines 15 to 19: Text in lines 14 to 19 on page 4-11 reads as follows: Geothermal facilities would be less prominent, typically located in remote areas and may generate a steam plume that is visible from long distances. Visual resources would be affected by wellheads, exposed transfer piping, and power plant structures, and could have a dramatic impact on a remote area. The intermittent creation of steam condensate plumes would be visible from great distances. Because the sentence in lines 15 and 16 and the sentence in lines 18 and 19 on page 4-11 say the same thing, consider revising the above-quoted text to read as follows (font = deletion ; <i>font = addition</i>): <i>Geothermal facilities would be less prominent, typically located in remote areas and may generate a steam plume that is visible from long distances. Visual resources would be affected by wellheads, exposed transfer piping, and power plant structures, and could have</i>

			a dramatic impact on a remote area. The intermittent creation of steam condensate plumes would be visible from great distances.
	4-12	25 to 27	Page 4-12, lines 25 to 27: Text in lines 25 to 27 on page 4-12 reads as follows: Notwithstanding significant changes to the nature and type of industrial activities in the area, these conditions are expected to remain unchanged during the 20-year license renewal term. In line 25 on page 4-12, consider replacing the word “Notwithstanding”, which means “in spite of”, with the words “Assuming no” because if significant changes were to occur in the nature and type of industrial activities in the area, then the expectation of unchanged ambient air quality and noise conditions is unlikely to be realized.
	4-15	29	Page 4-15, line 29: “40 CFR Part 90” is not listed as a reference in Section 4.15 References (page 4-232).
	4-23	Table 4.3.2.1-2	Page 4-23, Table 4.3.2.1-2: Consider adding an explanatory note or revising the formatting in Table 4.3.2.1-2, to indicate that the “Yes” and “No” entries in the “CO ₂ capture” row are headers for all other rows.
	4-23	Table 4.3.2.1-2	Page 4-23, Table 4.3.2.1-2: Consider removing the horizontal line above the “Hg emissions (lb/MWh)” row (last row on page 4-23) in Table 4.3.2.1-2.
	4-24	Table 4.3.2.1-2	Page 4-24, Table 4.3.2.1-2: Correct a typographical error by changing a footnote in Table 4.3.2.1-2 on page 4-24 to read as follows: Source: NETL 20072007a
	4-28	13	Page 4-28, line 13: Change the text in line 13 on page 4-28 by replacing “adding” with “adding”.
	4-28	24	Page 4-28, line 24: “Farmland Protection Policy Act” is not listed as a reference in the Section 4.15 References (page 4-239).
	4-33	15	Page 4-33, line 15: Correct a typographical error in line 15 on page 4-33 by replacing the words “Clavert Cliffs” with “Calvert Cliffs”.
	4-36	29 to 30	Page 4-36, line 29 and 30: Correct a typographical error in lines 29 and 30 on page 4-36 by changing the text to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): Population growth around nuclear power plants has caused increased demand caused increased demand on municipal water systems, including systems that rely on surface water.
	4-37	36	Page 4-37, line 36: Correct a typographical error in line 36 on page 4-37 by replacing the word “Coffee” with “Coffey.”
	4-47	23	Page 4-47, line 23: For consistency with Section 2.15 References, replace the parenthetical “(Nuclear Energy Institute 2007)” in line 23 on page 4-47 with “(NEI 2007)”.

4-51	28 to 32	Page 4-51, lines 28 to 32: Correct a typographical error in lines 28 to 32 on page 4-51 as follows (font = deletion ; <i>font = addition</i>): Continued operations of the nuclear power plants during the 20-year license renewal term are expected to include operation of cooling towers, operation of once-through cooling systems and cooling ponds, management of transmission line ROWs, maintenance of site facilities, releases of gaseous and liquid effluents, and potentially, and refurbishment-related construction activities at some plants .
4-64	3	Page 4-64, line 3: The reference cited in line 3 on page 4-64, "(NRC 2006b)," is associated with the Brunswick plant but the discussion concerns the Palisades plant. Based on the Section 4.15 References, the error on line 3 would be corrected by replacing "(NRC 2006b)" with "(NRC 2006d)".
4-65	16	Page 4-65, line 16: "Migratory Bird Treaty Act" is not listed as a reference in the Section 4.15 References (page 245).
4-69	14 to 15	Page 4-69, lines 14 and 15: Correct a typographical error in lines 14 and 15 on page 4-69 by changing the text to read as follows (font = deletion ; <i>font = addition</i>): In the 1996 GEIS, water use conflicts water use conflicts included ecological impacts on aquatic and riparian communities.
4-69	18	Page 4-69, line 18: Correct a typographical error in line 18 on page 4-69 by replacing the word "Coffee" with the word "Coffey."
4-69	24	Page 4-69, line 24: Correct a typographical error in line 24 on page 4-69 by replacing the term "site-specificcondition" with the term "site-specific condition."
4-84	5	Page 4-84, line 5: The reference cited in line 5 on page 4-84, "(NRC 2003a)," is associated with the Peach Bottom plant but the discussion concerns the St. Lucie plant. Based on the Section 4.15 References, the error on line 5 might be corrected by replacing "(NRC 2003a)" on line 5 with a new citation, "(NRC 2003c)", and adding a new corresponding reference to Section 4.15, <i>Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 11, Regarding St. Lucie, Units 1 & 2 (May 2003)</i> . Alternatively, the reference now listed in Section 4.15 that corresponds to "(NRC 2003a)" (page 4-257) could be changed from " <i>Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 10, Regarding Peach Bottom Atomic Power Station, Units 2 & 3 (January 2003)</i> " to " <i>Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 11, Regarding St. Lucie, Units 1 & 2 (May 2003)</i> ."
4-84	29	Page 4-84, line 29: Change the "(NRC 2005c)" reference to "(NRC 2005d)" since "(NRC 2005c)" is associated with Millstone while "(NRC 2005d)" is applicable to Browns Ferry and the associated discussion concerns Browns Ferry..
4-89	39	Page 4-89, line 39: Correct a typographical error in line 39 on page 4-89 by replacing the

			term “316(b)” with the term “316(a)” because section 316(b) in the Clean Water Act addresses entrainment and impingement while section 316(a) in the Clean Water Act addresses thermal effects.
	4-96	35	Page 4-89, line 35: Change the “(NRC 2005c)” reference to “(NRC 2005d)” because “(NRC 2005c)” is associated with Millstone while “(NRC 2005d)” is applicable to Browns Ferry and the associated discussion concerns Browns Ferry.
	4-102	6	Page 4-102, line 6: Correct a typographical error in line 6 on page 4-102 by modifying the text in line 6 to read as follows (font = deletion ; <i>font = addition</i>): Using Make-Up Water from a River with Low Flow)
	4-102	21 to 25	Page 4-102, lines 21 to 25: The text in lines 21 to 23 on page 4-102 repeats the text in lines 9 to 12 on this same page. Consider revising the text in lines 8 to 25 on page 4-102 to avoid the repetition. Also, correct typographical errors in lines 23 and 24 as follows (font = deletion ; <i>font = addition</i>): Water use conflicts with aquatic resources could occur when water to support these resources is diminished either because of decreased water availability due to droughts; increased demand for agricultural, municipal, or industrial usage; or due to to a combination of such factors. Water use conflicts with biological resources in instream communities is <i>are</i> a concern due to to the duration of license renewal and potentially increasing demands on surface water.
	4-102	27	Page 4-102, line 27: Correct a typographical error in line 27 on page 4-102 by replacing the word “Coffee” with the word “Coffey.”
	4-104	6 to 8	Page 4-104, lines 6 to 8: Correct a typographical error in line 8 on page 4-104 by changing the text in lines 6 to 8 to read as follows (font = deletion ; <i>font = addition</i>): In general, lubricants and fuel would not be expected to enter waterways as long as construction machinery and fuel storage areas and fueling locations were located away from water bodies, and spill prevention and control measures are inplace <i>in place</i> .
	4-109	28 to 34	Page 4-109, lines 28 to 34: Consider revising the wording of text in lines 28 to 34 on page 4-109 because the proposed wording in the draft updated GEIS appears to be fragmented (font = deletion ; <i>font = addition</i>): There are several Federal Acts that provide protection to certain species and habitats. <i>These</i> are treated here as a single issue to include that includes impacts to biological resources such as threatened and endangered species and their critical habitat (issue modified from the 1996 GEIS to include the impacts on both Federally and State-listed species and the impacts of continued operations and refurbishment activities), and essential fish habitats (EFH) protected under the Magnuson-Stevens Act, and mammalian species protected under the Marine Mammal Protection Act.

4-112	29 and 31	<p>Page 4-112, lines 29 and 31: Text in lines 29 and 31 on page 4-112 contains citations to “NRC 2007c.”</p> <p>The citations to “NRC 2007c” in lines 29 and 31 on page 4-112 are incorrect because, in section 4.15 References, the entry corresponding to “NRC 2007c” concerns the Pilgrim Nuclear Power Station whereas the text in lines 29 and 31 on page 4-112 concerns the Oyster Creek Generating Station. The correct entry for Oyster Creek would be “NRC 2007b”. Accordingly, consider changing “(NRC 2007c)” to “(NRC 2007b)” in lines 29 and 31 on page 4-112.</p>
4-112	37 to 39	<p>Page 4-112, lines 37 to 39: Text in lines 37 to 39 on page 4-112 reads as follows: The licensees of the St. Lucie, Oyster Creek, and Brunswick plants have also implemented programs to monitor the intake canals for sea turtles and to capture and release to the wild any sea turtles observed in the intake canals (NRC 2003a, 2007c, 2006e).</p> <p>The citations in line 39 on page 4-112, “(NRC 2003a, 2007c, 2006e),” in the above-quoted text are all incorrect. The reference cited as NRC 2003a concerns the Peach Bottom plant, but the discussion it is intended to support concerns the St. Lucie plant. Based on the Section 4.15 References, the error in line 39 might be corrected by replacing “(NRC 2003a)” in line 39 with a new citation, “(NRC 2003c)”, and adding a new corresponding reference to Section 4.15, <i>Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 11, Regarding St. Lucie, Units 1 & 2 (May 2003)</i>. Alternatively, the reference now listed in Section 4.15 that corresponds to “(NRC 2003a)” (page 4-257) could be changed to read as follows (struck through font = deletion; italics font = addition):</p> <p><i>Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 1011, Regarding Peach Bottom Atomic Power Station, Units 2 & 3 (January St. Lucie, Units 1 & 2 (May 2003)</i></p> <p>In addition, the remaining two references cited in line 39 on page 4-112, NRC 2007c and NRC 2006e, should be changed to “2007b” and “2006b,” respectively, to correspond with the entries in Section 4.15 References for Oyster Creek and New Brunswick (pages 4-259 and 4-258, respectively).</p>
4-112	41	<p>Page 4-112, line 41: Text in line 41 on page 4-112 contains a citation to “NRC 2003a.”</p> <p>The citation in line 41 on page 4-112, “(NRC 2003a),” is incorrect because, in Section 4.15 References, the entry that corresponds to “NRC 2003a” concerns the Peach Bottom plant rather than the St. Lucie plant, which is the plant that is addressed by the text in line 41.</p>

			Based on the Section 4.15 References, the error in line 41 might be corrected by replacing "(NRC 2003a)" in line 41 with a new citation, "(NRC 2003c)", and adding a new corresponding reference to Section 4.15, <i>Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 11, Regarding St. Lucie, Units 1 & 2</i> (May 2003). Alternatively, the reference now listed in Section 4.15 that corresponds to "(NRC 2003a)" (page 4-257) could be changed to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): <i>Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 1011, Regarding Peach Bottom Atomic Power Station, Units 2 & 3</i> (January <i>St. Lucie, Units 1 & 2</i> (May 2003)
	4-114	20	Page 4-114, line 20: Correct a typographical error in line 20 on page 4-114 by replacing the words "greefield sits" with the words "greenfield sites".
	4-117	38 to 40	Page 4-117, lines 38 to 40: Text in lines 38 to 40 on page 4-117 reads as follows: Although it is unlikely that any traditional cultural properties would be known at existing plants, there is the potential for these resources to be present at nuclear power plants. To clarify the sentence in lines 38 to 40 on page 4-117, consider changing the sentence to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): Although it is unlikely that any traditional cultural properties would be known <i>within the developed area</i> at <i>an</i> existing plants <i>nuclear power plant site</i> , there is the potential <i>exists</i> for these resources to be present nuclear power plants .
	4-123	3	Page 4-123, line 3: Correct a typographical error in line 3 on page 4-123 by changing the word "arround" to "around."
	4-150	38	Page 4-150, line 38: Correct a typographical error in line 38 on page 4-150 by changing the word "utility" to the word "facility."
	4-154	10 to 12	Page 4-154, lines 10 to 12: Correct a typographical error in lines 10 to 12 on page 4-154 by changing the text to read as follows, which is consistent with the draft updated GEIS, Appendix E (page E-44, lines 4 to 6) (strikethrough font = deletion; <i>italics</i> font = addition): The net effect of an increase on the order of 500 percent and a decrease on the order of 500 percent to 10,000 percent would be <i>a reduction in</i> than lower estimated impacts.
	4-215	6 and 12	Page 4-215, lines 6 and 12: To eliminate redundancy between the text in line 6 and the text in line 12, delete the text in line 12, which reads as follows: Removal of all surface water intake and discharge structures. The remaining text in line 12 reads as follows: Removal of water intake and discharge structures.
	4-218	18, 19 and 25	Page 4-218, line 25: To eliminate redundancy between the text in lines 18 and 19 and the

			<p>text in line 25, delete the text in lines 18 and 19, which reads as follows: Removal of water intake and discharge structures (if present to support combustion facilities and steam cycles). The remaining text in line 25 reads as follows: <i>Removal of all surface water intake and discharge structures.</i></p>
	4-232	26 to 28	Page 4-232, lines 26 to 28: Consider deleting the entry "10 CFR Part 72" from the references list because it is not cited in the text in Section 4.0.
	4-232	36 to 38	Page 4-232, lines 36 to 38: Consider deleting the entry "40 CFR Part 191" from the references list because it is not cited in the text in Section 4.0.
	4-233	1 to 3	Page 4-233, lines 1 to 3: Consider deleting the entry "40 CFR Part 197" from the references list because it is not cited in the text in Section 4.0.
	4-236	21	Page 4-236, line 21: Consider deleting the entry "Coastal Zone Management Act of 1972 (CZMA), as amended. 16 USC 1451, et seq." from the references list because it is not cited in the text in Section 4.0.
	4-238	33	Page 4-238, line 33: Correct a typographical error in line 33 on page 4-238 by changing "Exelon Generating Company, LLC" to "Exelon Generation Company, LLC".
	4-247	21	Page 4-247, line 1: Correct an error of transcription in line 1 on page 2-247 by changing "National Waste Policy Act" to "Nuclear Waste Policy Act."
	4-255	18 to 20	Page 4-255, lines 18 to 20: Consider deleting the entry "EPA 2005" (Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada) from the references list because it is not cited in the text in Section 4.0.
	4-258	21 to 22	Page 4-258, lines 21 to 22: Consider deleting the entry "NRC 2005e" (Implementation of a Dose Standard After 10,000 Years) from the references list because it is not cited in the Section 4.0.
	4-260	39 to 41	<p>Page 4-260, lines 39 to 41: Text in lines 39 to 41 on page 4-260 reads as follows: Wolf Creek Generating Station (WCGS). 2003. Applicant's Environmental Report; Operating License Renewal Stage. Docket No. 50-482, License No. NPF-42.</p> <p>The above-quoted entry from lines 39 to 41 on page 4-260 is not a correct citation for the Applicant's Environmental Report, Operating License Renewal Stage for the Wolf Creek Generating Station, which was published in 2006. If "WCGS 2003," which is cited in the text of Section 4.0 on page 4-60 in the Table 4.6.1.1-2 column labeled "References," was in fact intended to refer to the Operating License Renewal Stage Environmental Report for Wolf Creek Generating Station, consider replacing the information in lines 39 to 41 on page 4-260 with the following: Wolf Creek Nuclear Operating Corporation (WCNOC). 2006. Applicant's Environmental</p>

			<p>Report – Operating License Renewal Stage, Wolf Creek Generating Station. Docket Number 50-482, Burlington, Kansas. A conforming change should also be made in Table 4.6.1.1-2 on page 4-60.</p>
<u>Volume 1, Chapter 7</u>			
	7-11	29 and 30	<p><u>Page 7-11, lines 29 and 30:</u> Text in lines 29 and 30 on page 7-11 reads as follows: However, five facilities with once-through cooling also have cooling towers.</p> <p>The above-quoted text in lines 29 and 30 on page 7-1 appears to be in error based on Appendix C in volume 2 of the draft updated GEIS. Appendix C indicates that six nuclear power plants have cooling water systems that are of the once-through type with supplemental cooling towers, as follows: Browns Ferry, Monticello, Peach Bottom, Prairie Island, Sequoyah and Vermont Yankee. Consider modifying the text in lines 29 and 30 on page 7-11 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): However, five<i>six</i> facilities with once-through cooling also have cooling towers.</p>
	7-14	40	<p><u>Page 7-14, line 40:</u> Text in line 40 on page 7-14 reads as follows: Diesel generator: An electric generator that runs on diesel fuel.</p> <p>Because the adjectives “electric” and “diesel” seem to contradict each other when used to modify the noun “generator” [one adjective refers to the form of the generator’s fuel while the other refers to the form of the generator’s output), consider changing the definition in line 40 on page 7-14 to read as follows (strikethrough font = deletion; <i>italics</i> font = addition): Diesel generator: An electric generator that runs on diesel fuel.</p>

<u>Volume 2, Appendix B</u>			
B-1	7 and 8	<p><u>Page B-1, line 7:</u> Text in lines 7 and 8 on page B-1 reads as follows: Table B-2 shows those issues in Table B-1 of 10 CFR Part 51 that were eliminated from further consideration in the GEIS revision.</p> <p>Correct a typographical error by changing the words "Table B-2" in line 7 to the words "Table B-1."</p>	
<u>Volume 2, Appendix C</u>			
C-1	10	<p><u>Page C-1, line 10:</u> There are two "EIA (2007)" entries shown in the Appendix C References section (page C-132). Please clarify which of the two applies in line 10 on page C-1.</p>	
C-3	6	<p><u>Page C-3, line 6:</u> Based on the Table 2-9 of the Arkansas Nuclear One SEIS (Supplement 3), change the entry in the row labeled "Population Within an 80-km (50-mi) Radius" from "267,664" to "274,037".</p>	
C-22	12	<p><u>Page C-22, line 12:</u> Based on Operating License No. NPR-21 (NRC ADAMS ML022050321) for the Columbia Generating Station, change the entry in the row labeled "Operating License" from "1984" to "1983."</p>	
C-26	28	<p><u>Page C-26, line 28:</u> Based on the "Applicant's Environmental Report Operating License Renewal Stage Cooper Nuclear Station," (Section 3.2.2.2), change the entry in the row labeled "Discharge Structure" from "At shoreline" to "Canal".</p>	
C-26	32	<p><u>Page C-26, line 32:</u> Based on the "Applicant's Environmental Report Operating License Renewal Stage Cooper Nuclear Station," (Section 2.1), change the entry in the row labeled "Total Area" from "441 ha (1090 ac)" to "550 ha (1359 ac)".</p>	
C-27	1 and 2	<p><u>Page C-27, lines 1 and 2:</u> Based on the "Applicant's Environmental Report Operating License Renewal Stage Cooper Nuclear Station," (Section 2.1), change the entry in the row labeled "Nearby Features" to read as follows (strike through font = deletion; <i>italics font = addition</i>):</p> <p style="padding-left: 40px;">The nearest town is Nemaha-Brownville about 1.6 km (1 mi) <i>S-3.6 km (2.25 mi) NW</i>. A railroad runs just W of the site. Indian Cave State Park is about 13 km (8 mi) SSE.</p>	
C-27	3	<p><u>Page C-27, line 3:</u> Based on the "Applicant's Environmental Report Operating License Renewal Stage Cooper Nuclear Station," (Section 2.6.1), change the entry in the row labeled "Population within an 80-km (50 mi) Radius" from "156,157" to "160,211".</p>	
C-30	15	<p><u>Page C-30, line 15:</u> Based on Amendment 278 to the Davis-Besse Technical Specifications (NRC ADAMS ML081830638), change the entry in the row labeled "Licensed Thermal Power</p>	

			[MW(t)]" from "2772" to "2817."
	C-30	16	Page C-30, line 16: For consistency with the change in licensed thermal power supported by Amendment 278 to the Davis-Besse Technical Specification (NRC ADAMS ML081830638), change the entry in the row labeled "Net Capacity [MW(e)]" from "889" to "908."
	C-44	14	Page C-44, line 14: Based on the renewed license for the James A FitzPatrick Nuclear Power Plant (NRC ADAMS ML081010332), change the entry in the row labeled "License Expiration" from "2017" to "2034".
	C-44	16	Page C-44, line 16: Based on the Section 2.1.2 of the James A. FitzPatrick SEIS (Supplement 31), change the entry in the row labeled "Net Capacity [MW(e)]" from "852" to "881".
	C-50	22	Page C-50, line 22: Because the Grand Gulf Nuclear Station has installed auxiliary mechanical draft cooling towers, change the entry in the row labeled "Type" from "Natural draft cooling towers" to "Natural draft cooling tower and mechanical draft helper towers".
	C-54	6	Page C-54, line 6: As indicated in the NRC List of Power Reactor Units [http://www.nrc.gov/reactors/operating/list-power-reactor-units.html], change the entry in the row labeled "Licensee" from "Public Service Electric and Gas Co." to "PSEG Nuclear, LLC".
	C-54	15	Page C-54, line 15: Based on the extended power uprate granted by Amendment No. 174 to Facility Operating License No. NPF-57 for the Hope Creek Generating Station (NRC ADAMS ML081230581), change the entry in the row labeled "Licensed Thermal Power [MW(t)]" from "3339" to "3840".
	C-54	16	Page C-54, line 16: For consistency with the Hope Creek Generating Station UFSAR, replace the entry containing the text "Net Capacity [MW(e)]: 1061" with the text "Nameplate Capacity [MW(e)]: 1287."
	C-54	32	Page C-54, line 32: Based on the "Applicant's Environmental Report – Operating License Renewal Stage," change the entry in the row labeled "Total Area" from "300 ha (740 ac)" to "62 ha (153 ac)." The Hope Creek site lies within a larger 740-acre parcel owned by PSEG that also contains the adjacent Salem Nuclear Generating Station and undeveloped land.
	C-56	6	Page C-56, line 6: As indicated in the NRC List of Power Reactor Units [http://www.nrc.gov/reactors/operating/list-power-reactor-units.html], change the entry in the row labeled "Licensee" from "Entergy Corporation" to "Entergy Nuclear Operations, Inc."
	C-56	14	Page C-56, line 14: To correct a typographical error, change the entry in the row labeled "License Expiration" and the column labeled "Unit 3" from "2016" to "2015" for the Indian Point Energy Center.
	C-56	14	Page C-56, line 14: Based on "Applicant's Environmental Report Operating License Renewal Stage Indian Point Energy Center" (Section 3.2.1), change the entry in the row labeled "Net Capacity [MW(e)]" from "1020" to "1078" in the column labeled "Unit 2" and from

			"1025" to "1080" in the column labeled "Unit 3".
	C-56	12 to 13	Page C-56, lines 12 and 13: Based on the Facility Operating License DPR-64 (NRC ADAMS ML003778621), change the entry in the row labeled "Operating License" (line 12) and the column labeled "Unit 3" from "1976" to "1975." In addition, change the entry in the row labeled "Commercial Operation" (line 13) and the column labeled "Unit 3" from "1976" to "1975".
	C-68	27	Page C-68, line 27: For consistency with plant documentation for the Monticello Nuclear Generating Plant, change the entry in the row labeled "Intake Structure" from "canal" to "Approach Channel".
	C-78	6	Page C-78, line 6: Based on the NRC List of Power Reactor Units [http://www.nrc.gov/reactors/operating/list-power-reactor-units.html], change the entry in the row labeled "Licensee" from "Entergy Corporation" to "Entergy Nuclear Operations, Inc."
	C-86	6	Page C-86, line 6: Based on the NRC List of Power Reactor Units [http://www.nrc.gov/reactors/operating/list-power-reactor-units.html], change the entry in the row labeled "Licensee" from "Entergy Corporation" to "Entergy Nuclear Operations, Inc." Change "Entergy Corporation" to "Entergy Nuclear Operations, Inc.".
	C-86	16	Page C-86, line 16: Based on "Applicant's Environmental Report Operating License Renewal Stage Pilgrim Nuclear Power Station" (Section 3.2.1), change the entry in the row labeled "Net Capacity [MW(e)]" from "685" to "715".
	C-86	28	Page C-86, line 28: Based on "Applicant's Environmental Report Operating License Renewal Stage Pilgrim Nuclear Power Station" (Section 3.2.2.1), change the entry in the row labeled "Discharge Structure" from "260 m (850 ft)" to "274 m (900 ft)".
	C-86	33	Page C-86, line 33: Based on "Applicant's Environmental Report Operating License Renewal Stage Pilgrim Nuclear Power Station" (Section 2.1), change the entry in the row labeled "Exclusion Distance" from "0.53 km" to "0.55 km".
	C-86	35	Page C-86, line 35: Based on "Applicant's Environmental Report Operating License Renewal Stage Pilgrim Nuclear Power Station" (Section 2.1), change the entry in the row labeled "Nearest City" from "Brockton; 2000 population: 94,304" to "Taunton; 2000 Population: 55,976".
	C-90	28	Page C-90, line 28: Based on <i>Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Prairie Island Nuclear Generating Plant, Units 1 and 2 — Draft Report for Comment (NUREG-1437, Supplement 39)</i> (Section 2.1.6), change the entry in the row labeled "Discharge Structure" from "Discharges to a basin then to towers and/or river" to "Discharges to a basin then to towers and/or <i>canal to river</i> " (strike through font = deletion; <i>italics font = addition</i>).
	C-96	6	Page C-96, line 6: Based on Amendment No. 158 to Facility Operating License No. NPF-47 for the River Bend Station (NRC ADAMS ML073050377), change "Entergy Nuclear" to

			"Entergy Gulf States Louisiana, LLC".
	C-100	14	Page C-100, line 14: Based on Amendment No. 104 to Facility Operating License No. DPR-75 for Salem Nuclear Generating Station (NRC ADAMS ML011710409), change the entry in the row labeled "License Expiration" and the column labeled "Unit 2" from "2021" to "2020".
	C-100	16	Page C-100, line 16: Based on the Salem Generating Station UFSAR, change the entry in the row labeled "Net Capacity [MW(e)]" and the column labeled "Unit 1" from "1174" to "1195." Also, in the same row and the column labeled "Unit 2," change the entry from "1130" to "1196."
	C-100	32	Page C-100, line 32: Based on the "Applicant's Environmental Report – Operating License Renewal Stage" (Section 2.4), change the entry in the row labeled "Total Area" from "280 ha (700 ac)" to "89 ha (220 ac)." The Salem site lies within a larger 740-acre parcel owned by PSEG that also contains the adjacent Hope Creek Generating Station and undeveloped land.
	C-101	1	Page C-101, line 1: Change the entry in the row labeled "Percent Wetland Within 8 km (5 mi)" from "84, mostly estuarine and marine deepwater; estuarine and marine wetland" to "82.4, mostly estuarine and marine deepwater; estuarine and marine wetland".
	C-102	12	Page C-102, line 12: Based on Facility Operating License NPF-15, change the license issued date for San Onofre Unit 3 to 1982
		14	Page C-103 line 14: Change the license expiration date for San Onofre Unit 3 to 2022.
	C-108	14	Page C-108, line 14: Because the license for the Shearon Harris Nuclear Power Plant has been renewed (NRC ADAMS ML083520456), change the entry in the row labeled "License Expiration" from "2027" to "2047."
	C-120	6	Page C-120, line 6: Based on the NRC List of Power Reactor Units [http://www.nrc.gov/reactors/operating/list-power-reactor-units.html], change the entry in the row labeled "Licensee" from "Entergy" to "Entergy Nuclear Operations, Inc."
	C-120	12	Page C-120, line 12: Based on Facility Operating License DPR-28 for Vermont Yankee Nuclear Power Station (NRC ADAMS ML011620261), change the entry in the row labeled "Operating License" from "1973" to "1972."
	C-120	14	Page C-120, line 14: Based on Amendment No. 127 To Facility Operating License No. DPR-28 for Vermont Yankee Nuclear Power Station (NRC ADAMS ML011650078), change the entry in the row labeled "License Expiration" from "2013" to "2012."
	C-124	14	Page C-124, line 14: Based on the renewed licenses for the Vogtle Electric Generating Plant, change the entries in the row labeled "License Expiration" from "2027" to "2047" for Unit 1 and from "2029" to "2049" for Unit 2 (NRC ADAMS ML090920437).
	C-126	6	Page C-126, line 6: Based on Facility Operating License NPF-38 for Waterford Steam Electric Station Unit 3 (NRC Adams ML053130318), change the entry in the row labeled "Licensee" from "Entergy" to "Entergy Louisiana, LLC."

	C-126	14	Page C-126, line 14: Based on Facility Operating License NPF-38 for Waterford Steam Electric Station Unit 3 (NRC Adams ML053130318), change the entry in the row labeled "License Expiration" from "2025" to "2024".
	C-130	14	Page C-130, line 14: Based on the renewed license for the Wolf Creek Generating Station (NRC ADAMS ML083250293), change the entry in the row labeled "License Expiration" from "2025" to "2045."
	C-132	30 to 35	Page C-132, lines 30 to 35: Consider deleting the entries "NRC 1996" (Generic Environmental Impact Statement for License Renewal of Nuclear Plants) and "NRC 2008" (Approved Applications for Power Uprates) from the references list because they are not cited in the text of Appendix C.
	C-132	8 to 14	Page C-132, lines 8 to 14: There are two "EIA (2007)" entries shown in lines 8 to 14 on page C-132. Please clarify which of the two applies in line 10 on page C-1. The reference that does not apply should be deleted because there are no other citations in Appendix C to "EIA 2007."
<u>Volume 2, Appendix E</u>			
	E-41	27	Page E-41, line 27: "10 CFR Part 54" is not listed as a reference in the Section E.6 References (page E-46).
	E-46	11 and 12	Page E-46, lines 11 and 12: Consider deleting the entry "10 CFR Part 71" from the references list because there are no citations to it in Appendix E.
	E-48	8 and 9	Page E-48, lines 8 and 9: Consider deleting the entry "NRC 1990b" (Evaluation of Severe Accident Risks: Surry Unit 1) because there are no citations to it in Appendix E.
	E-49	30 to 33	Page E-49, lines 30 to 33: Consider deleting the entry "NRC 2005b" (Notice of Extension of the Public Comment Period for Scoping Process to Prepare an Environmental Impact Statement for the License Renewal of Nuclear Power Plants) because there are no citations to it in Appendix E.
<u>Volume 2, Appendix F</u>			
	F-19	Table F.6-2	Page F-19, Table F.6-2: Note that 40 CFR 122.26(c) requires NPDES permitting for storm water runoff from storm water discharges associated with both industrial activity (40 CFR 122.26(b)(14)(x)) and small construction activity (40 CFR 122.26(b)(15)(i)). Because refurbishment construction activities fall into both classifications, consider making the following changes in Table F.6-2 on page F-19, column labeled "Relevance and Status" and row labeled "NPDES Permit: Construction Site Storm Water: ..." (strikethrough font = deletion; <i>italics</i> font = addition): Any plant refurbishment involving construction of more than 2 hectares (5 acres) equal to

			<i>or greater than 0.4 hectares (1 acre)</i> of land would require a Storm Water Pollution Prevention Plan and construction site storm water discharge permit.
--	--	--	--