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DOE/EIS-0138
Volume II B, 2 of 3
Numbers 0701.01-1278.62

FINAL
ENVIRONMENTAL IMPACT STATEMENT

SUPERCONDUCTING SUPER COLLIDER

Volume II
Comment/Response Document
B. Response



December 1988

U.S. Department of Energy

UNITED STATES
DEPARTMENT OF ENERGY
WASHINGTON, D.C. 20545
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Washington D.C. 20585

0701.01

See Comment Response 13.02 regarding data used in the EIS. The DOE believes that the data contained in the EIS is sufficient to support a decision to select a site for the SSC (Volume I, Cover Sheet). See Comment Responses 880.04 and 1126.05 for discussions of land acquisition, State responsibilities, and the value placed on public comment. Socioeconomic issues are addressed in Volume IV, Appendices 5 and 14. A quality of life/social well-being discussion concerning the Rougemont area is provided in Volume IV, Appendix 14, Section 14.1.3.5.E.2 (see Comment Response 1513.100). Until the DOE agrees to a final placement of the ring and other areas, the exact acreage, parcels, and ownership cannot be precisely determined. The numbers used in the EIS represent a reasonably accurate picture of conditions likely to occur if the site were selected for the SSC and as such are adequate for the EIS. Volume IV, Appendix 4 provides a more detailed discussion of the State's plan.

0702.01

The comment concurs with the EIS discussion of impacts on local public services in the North Carolina Region of Influence (EIS Volume IV, Appendix 14, Section 14.1.3.5.C). Relevant text indicates that additional classroom space would likely be needed in Durham County if the SSC were located at the proposed North Carolina site. Projected increases in public school enrollments attributable to the project were assumed to comprise that portion of the projected population between the ages of 5 and 17. Because SSC-related population changes were allocated to Durham City and the remainder of the county (Volume IV, Appendix 14, Section 14.1.3.5.B, Table 14.1.3.5-6), but not to smaller areas such as school districts, enrollment impacts on individual schools were not projected. Moreover, note that although northern Durham County lies closer to the proposed SSC site, Table 14.1.3.5-6 indicates that Durham City is expected to experience the greatest impacts on population and school enrollment.

If SSC-related activities significantly affect the cost of doing business in the region--by increasing wages, and costs of materials and supplies--then it is possible that established firms would leave the area or that outside firms seeking new locations would not choose the Durham area. Since the economic activity directly associated with the SSC would represent less than one percent of the region's total economic activity, however, it is unlikely to raise these costs significantly (EIS, Volume IV, Appendix 14, Section 14.1.3.5.A).

0702.02

Information on protected species in the vicinity of the North Carolina site was provided by the USFWS in their response to inquiries from the DOE and by the State of North Carolina. The DOE has attempted to confirm all such information by research of the literature and by limited

field surveys. In addition, Volume IV, Appendix 11 of the EIS has been revised with additional information that has been made available since the Draft EIS was prepared.

0702.03

Information concerning drought conditions has been considered in revised assessments in the EIS of surface water supply conditions at the North Carolina site.

The Little River Reservoir completed in early 1988 roughly doubles the safe yield of the City of Durham's water supply and should bring some relief to the water shortage experienced in the past in the proposed site area. The new reservoir has been included in the revised water supply assessment in the EIS (see Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G). The assessment indicates that water requirements for the SSC project and additional off-site domestic use can be met by existing reservoirs in the project vicinity which have adequate excess capacities. The safe reservoir yields used in the evaluation were estimated for 20-yr drought conditions, i.e., a drought with an average recurrence interval of 20 years. The safe yields for a more severe drought would be less, but such yield data are not currently available. The drought in the last few years may be more severe than a 20-yr drought. Furthermore, a drought may last more than one year. More detailed study on water supply reliability incorporating information from the recent drought years will be conducted and documented in a Supplemental EIS if the North Carolina site is selected for the SSC.

The DOE is committed to construct and operate the SSC in compliance with applicable statutes, regulations, and ordinances, including Durham County's watershed ordinance (see Volume I, Chapter 6 and Volume IV, Appendix 5, Section 5.5.10).

0702.04

It is DOE policy to comply with all applicable regulations and standards. Disclosure of isotopes used in the experiments, if any, would be routine in environmental monitoring reports and scientific reports resulting from the work.

The radionuclides produced in the SSC were fully identified in the following pages of EIS Volume IV, Appendix 10, Section 10.1.2.3 A.1.e, A.2.a and A.3 and Section 10.1.3.1 B.1, C and D.2.

0702.05

Because the SSC is still in the conceptual design phase, procedures have not yet been established which address in detail the issue of hazardous waste collection, handling, temporary storage, and disposal at the proposed collider facility. Therefore, it is not possible to evaluate these procedures in this EIS. The Supplemental EIS will analyze the hazardous waste options for the selected site.

07010750335882

The DOE intends to model the SSC program after the successful hazardous waste program now in place at Fermilab. It is anticipated that the SSC, like Fermilab, will seek an EPA TSD permit to allow interim storage of hazardous wastes onsite for periods greater than 90 days prior to shipment for offsite disposal. This would likely require the construction of a small facility to package and store the wastes that would meet EPA requirements for protection against releases to the environment. Thus, the small quantities of hazardous wastes that will be generated at various locations in the SSC complex will be brought to the storage facility to await shipment to RCRA-permitted disposal sites. The DOE will stress waste minimization in SSC operations and intends to comply with all applicable Federal (RCRA) and State regulations regarding hazardous wastes.

0702.06

The EIS Volume IV, Appendix 3 is a summary of a detailed decommissioning assessment (see EIS Volume IV, Appendix 3, References). This report gives much of the detail asked for in this comment. Other items, like monitoring and alternative for decommissioning, would be evaluated in detail in NEPA documentation prepared prior to a decision on decommissioning. See also Comment Response 497.24.

0702.07

See Comment Response 1126.05.

0703.01

Use of chromium and other heavy metals as water treatment chemicals has been greatly reduced in recent history mainly because of toxicity problems. Fermilab has adopted a policy of not using chromium products in cooling tower operations. Because of the similarity between operations of the SSC and those at Fermilab, a similar policy would be applicable to the SSC. See also Comment Response 703.04.

0703.02

In the past, chromium and other heavy metals were components of corrosion and algae inhibitors that were added to cooling water. This practice will not be used.

Different disposal methods are available for cooling tower blowdown water depending on site-specific conditions, such as climate and the composition of the water. The State of North Carolina proposal does not recommend a specific disposal method. Since climatic conditions are not favorable for evaporation ponds at the North Carolina site, various treatment processes for removing the salts from the blowdown water are suggested in the EIS. Regardless of the method of treatment, the final products will be salts in solid form and dilute liquid effluents. The salts, including any heavy metals contained in the original water

source, would be disposed of in approved landfills. The treated liquid effluents would be discharged to surface water bodies or groundwater recharge ponds according to regulatory requirements.

See also EIS Volume IV, Appendix 10, Section 10.3.3.3 and Comment Responses 703.01, 703.03, and 703.04.

0703.03

EIS Volume IV, Appendix 10, Section 10.3.3.3 has been revised to address the discontinuance of the use of chromium for water treatment purposes in cooling towers at Fermilab, and the applicability of this experience to SSC.

0703.04

Since the SSC is still in the conceptual design phase, some of the auxiliary systems which support the collider have yet to be designed. This is the case with any cooling towers, blowdown from which may need water treatment at the SSC. Therefore, data on what specific chemicals might be used in the cooling tower systems have not been developed for evaluation in the EIS, although there are many which could be used without causing significant air pollution effects. Any impacts from the release of materials from the cooling towers would be addressed in detail as part of the Supplemental EIS.

The use of any pesticides in the cooling towers would be subject to environmental review by the DOE prior to use and would comply with applicable State and Federal regulations.

0703.05

The use and disposal of hazardous/toxic materials during operations of the SSC are addressed in EIS Appendix 10, Section 10.1.3.2 and Appendix 12, Section 12.3.2.1. As noted in Section 10.1.3.2.B.2, a number of hazardous materials is likely to be used in the various shops and facilities which will support the operations of the collider machine. However, the exact nature and quantities of chemicals which might be used is only speculative at this time since the support facilities and their specific operations have yet to be designed. Examples of the types of materials that could be involved are given in Section 10.1.3.2.B.2 based on an inventory of materials currently in use at Fermilab.

All operations at the SSC involving hazardous/toxic materials will be conducted in conformance with Federal, State, and local regulations, including the community right-to-know laws. See Chapter 6, Section 6.2.8. of the EIS. This information will become available when the design and operational details of the SSC become more firm. At that time, the Supplemental EIS will address the potential impacts of hazardous material in greater detail.

0703.06

The issue of hazardous/toxic materials used during the construction of the SSC is addressed in detail in EIS Volume IV, Appendix 10, Section 10.1.3.2 and Appendix 12, Section 12.3.2; fuel combustion by-products are included in the analysis. The complete details of SSC construction methods are not yet available and the types and quantities of hazardous/toxic materials that could be used have not been identified. However, the conceptual design information indicates that the probable use of hazardous/toxic materials would be no greater than any commercial construction project (i.e., very small amounts of solvents and cleaners used intermittently) and would in no way present a public health hazard. The Supplemental EIS will address the potential impacts of hazardous material in greater detail.

See Comment Response 703.05 for a discussion of hazardous materials use during SSC operations.

0703.07

The air quality assessment (EIS Volume IV, Appendix 8) specifically addresses primary emissions (construction and operations of SSC and SSC-driven facilities) and secondary emissions (emissions from commute traffic of workers travelling to work at the SSC). Emissions associated with project-driven population and industrial growth will not be significant. Increases in emissions of pollutants covered by National Emission Standards for Hazardous Air Pollutants (NESHAP) from residential fuel combustion, utility power generation, and commercial support facilities will be roughly proportional to the project-driven population growth in the socioeconomic Region of Influence (ROI). Population growth in the ROI is discussed in Volume IV, Appendix 14, and indicates for North Carolina less than a one percent increase. An increase in the population at this level will not produce a significant increase in emissions of NESHAP pollutants. For the same reason, emissions associated with project-driven population and industrial growth will not be significant. As required by NEPA guidelines (40 CFR 1500), the air quality assessment has identified all activities with potentially significant environmental consequences.

0704.01

EIS Volume I, Chapter 2 contains a copy of the referenced petition, see Comment Response 1126.05.

0705.01

The majority of the residents in the region of the SSC site would be at distances of several hundred feet or more from road construction. At any specific residence location, the activity would occur only during normal daytime working hours (DEIS Volume I, Chapter 5, Section 5.1.4). The noisiest phases of road construction (e.g., clearing, grubbing, and

earthwork; Volume IV, Appendix 9, Section 9.1.3.1.B.4), which include the use of dozers, scrapers, and haul trucks, typically would be completed within approximately a one-month period in the location of a specific homesite along the route. This road construction activity would be similar to normal highway construction and maintenance activity. The actual noise levels that would be produced at nearby homesites are discussed in Volume I, Chapter 5, Section 5.1.4.

0705.02

The choice of the term "human receptors" was made originally to distinguish persons from noise-sensitive wildlife. The human receptors maps for the seven BQL sites presented in Volume I, Chapter 5 were compiled from information provided by the States, from USGS 7-1/2 minute quadrangles, and from observations recorded by the DOE and its contractors during site visits. These maps are intended only to demonstrate the general population distribution within 1 mi of the SSC surface facility construction locations. A revised noise impacts analysis is described at the summary level in Volume I, Chapter 5, Section 5.1.4, and in detail in Volume IV, Appendix 9, and indicates, at the North Carolina site, that 136 people live in areas near E and F sites that will have a day-night average sound level of between 70 and 75 dBA during the peak of construction; 705 people live in areas that will have a day-night average sound level of between 60 and 70 dBA during the peak construction, and 60 people live in areas with a day-night average sound level of between 55 and 60 dBA during operations.

0705.03

EIS Volume I, Chapter 5, Section 5.1.4 addresses noise associated with spoils hauling. During the construction phase, spoils hauling trucks would be operating during normal daytime working hours only. Spoils hauling operations could peak (for about a 2-month period) at a maximum of 288 truckloads per day of excavated materials, when six tunnel boring machines (TBM's) would operate simultaneously (EIS Volume IV, Appendix 10). All spoils hauling activity would be completed within a total period not exceeding 3 years.

Tables 9-2 and 9-3 of Volume IV, Appendix 9 show the estimated difference between average daytime and nighttime operational noise levels at 1,000 ft from service and intermediate areas. This represents an 18 percent lower subjective magnitude (loudness), on average, at night. The DOE will consider the use of mitigation techniques for these areas in addition to those listed in the EIS (Volume IV, Appendix 9 and Volume I, Chapter 3, Section 3.6), including specification of manufacturer-quieted machines.

0705.04

The Noise Control Act of 1972 requires that the DOE comply with any State or local environmental noise-limit regulations applicable during construction and operations. However, there are no legally applicable State or local environmental noise controls existing at this time for

the proposed North Carolina SSC site. Various mitigation techniques would be considered by the DOE for specific noise-sensitive locations for service areas. (EIS Volume IV, Appendix 9, Sections 9.1.3.1.C.1 and 9.1.3.7.B.2.a).

Hearing loss (permanent threshold shift) occurs only when persons are exposed to noise levels well above 75 dBA continuously for 8 hours or more, 5 days per week. Based on the analysis in EIS Volume IV, Appendix 9, none of the residential locations would be subjected to these conditions.

0705.05

The DOE will require the SSC to comply with any applicable noise standards for worker safety. The SSC will also comply with any legally applicable community noise regulations. The Durham County Research Triangle Park Facilities ordinance discussed is not legally applicable to the SSC, because none of the SSC facilities will be located in Research Triangle Park. The DOE will consider all applicable Federal, State, and local regulations during site-specific detail design of SSC facilities that could produce audible noise offsite. See EIS Volume I, Chapter 6, Sections 6.1 and 6.2.9 and Volume IV, Appendix 9.

0706.01

Comment noted.

0706.02

The differential effects of the project on different subgroups of the population are discussed in EIS Volume I, Chapter 5, Section 5.1.8. Within the environmental impact statement process, the popularity (or unpopularity) of a facility does not affect the objective analysis of impacts. See Comment Response 1126.05.

0706.03

See Comment Responses 1126.05 and 706.02.

0706.04

Comment noted.

0707.01

See Comment Responses 777.01 and 791.02, first paragraphs.

0707.02

See of Comment Response 777.01, second paragraph.

0707.03

Anticipated SSC-related impacts on traffic in North Carolina are discussed in Volume I, Chapter 5 and Volume IV, Appendix 14, Section 14.2.1.E. Impacts on public education, in turn, are discussed for the North Carolina Region of Influence (ROI) and for the primary impact counties of Durham, Granville, and Person in Volume I, Chapter 5 and Volume IV, Appendix 14, Section 14.1.3.5.C. Although additional traffic and demand for public education are anticipated as a result of the project, the increases in both of these areas of concern should not require extensive mitigation efforts.

SSC-related population impacts, their relationship to ROI employment and work force, and the impacts on housing demand expected to accompany this influx of people, are addressed in Volume I, Chapter 5 and Volume IV, Appendix 14, Section 14.1.3.5.B.

0707.04

EIS Volume I, Chapter 3, Section 3.7.11 presents data on the amount of prime and important farmland acreage estimated to be permanently removed from agricultural production as a result of SSC project construction in the fee simple areas. The regional agent for the U.S. estimates 4,374 acres of prime farmland and 2,265 acres of important farmland in the project area. This would mean that 630 acres of prime farmland and 325 acres of important farmland would be permanently removed from production by the project. This indicates the highest out of the seven states proposed for the SSC.

This acreage represents less than one percent of North Carolina's prime and important farmland inventory based on information provided by the Department of Agriculture Soil Conservation Service. See also Volume I, Chapter 4, Section 4.8.6 and Volume IV, Appendix 13 for more information on farmland, and Volume IV, Appendix 14 for more information on the effects of the SSC on employment and businesses.

0707.05

Comment Response 777.01 addresses aspects of SSC-related in-migration, employment increases, and housing demand in the North Carolina Region of Influence (ROI). Although locating the SSC in North Carolina would require that the Federal Government acquire land some with homes, currently owned by private individuals, it is also anticipated to generate employment in the region. As noted in the aforementioned response, many of these jobs are anticipated to be filled by current residents of the ROI.

0708.01

Comment noted.

0708.02

Data provided by the State of North Carolina were reviewed and used in preparation of the EIS. Specific studies of threatened and endangered species were completed to augment this and other published data (see Volume I, Chapter 4, Section 4.7 and Volume IV, Appendix 11, Section 11.3.5). If North Carolina is selected as the site, detailed site-specific studies would be conducted, and the results would be presented in the Supplemental EIS.

0708.03

Water requirements for the SSC and additional off-site domestic use can be met by existing reservoirs in the project vicinity, which have adequate excess capacities as discussed in revised EIS Volume I, Chapter 5, Sections 5.1.2.4 and 5.2.3, and Volume IV, Appendix 7, Section 7.1.3.5.G. The safe reservoir yields used in the evaluation were estimated for 20-year drought conditions, i.e., a drought with an average recurrence interval of 20 years. The safe yields for a more severe drought would be less, but such yield data are not currently available. This will be addressed in the Supplemental EIS if the North Carolina site is selected. See also revised Volume I, Tables 1-1, 3-3, and 3-7, Section 3.7.3, and Comment Responses 716.05, 1331.04, 1331.05.

0708.04

The EIS addresses specific stream resources in Volume IV, Appendix 11. Information provided during a post-EIS stream survey has been incorporated in the EIS. The dwarf wedge mussel, a C-2 species proposed for listing, was found in the Tar River near Highway 58 in the center of the ring. Other State-listed species were found in the Tar River, Mayo Creek, South Flat River, and downstream Flat River.

The present alignment of the proposed North Carolina site is not in the upstream portions of the South Flat River, and access roads to the planned surface facilities do not cross the stream. Construction of an access road in the campus area will affect the floodplain of the Flat River downstream of the confluence with the North Flat River. Crossings of the North Flat River and the Tar River by the ring will be underground. It is anticipated that runoff will be controlled to minimize water quality impacts.

If the North Carolina site is selected for the SSC, more detailed surveys would be conducted to determine the status of any listed or proposed species and to evaluate potential impacts of SSC development. Results of the surveys would be used in the final planning and design phases to avoid or mitigate adverse effects and would be reported in the Supplemental EIS.

0708.05

The selection method uses the best information currently available. If the North Carolina site is selected additional study will be accomplished in the Supplemental EIS. The DOE policy, as noted in EIS Volume I, Chapter 6, requires its operations to be in compliance with applicable environmental statutes, regulations, and standards. DOE Order 5480.18 reinforces this policy and establishes responsibilities for its implementation.

0708.06

Information on terrestrial wildlife in North Carolina is available in a number of sections of the EIS and includes possible impacts on species in the event of siting the SSC there. References include Volume I, Chapter 4, Section 4.7.6 and Volume I, Chapter 5 Sections 5.1.5.1.B.5 and 5.1.5.4.E; Volume IV, Appendix 11, Section 11.3.5.4; Volume IV, Appendix 5, Sections 5.5.9.2.B and 5.5.9.4. Additional information provided in the comment is reflected in the EIS (see Volume I, Chapter 5, Section 5.1.5.4.E and Volume IV, Appendix 11, Section 11.3.5.4).

0708.07

See Comment Response 734.01.

0708.08

Comments given to the DOE during scoping were used in the preparation of the EIS. Socioeconomic and water resources issues were the most commented upon at all sites.

See Comment Response 13.02 regarding the information used to develop the EIS.

Potential impacts on the quality of life in North Carolina are discussed in Volume IV, Appendix 14, Section 14.1.3.5.E.

0708.09

The text of Volume IV, Appendix 5, Section 5.5.2.1. has been corrected in the Errata to include a description and statement as to the significance of the State water quality designations for streams.

0709.01

See Comment Response 710.01.

0709.02

The EIS fiscal impact analysis incorporates the cost of the projected requirement for an additional 154 full-time equivalent public service personnel in Durham County because of the SSC, as well as capital infrastructure costs to local jurisdictions. Although net fiscal impacts in

Durham County due to the SSC are projected to be negative during the first three years of construction, positive fiscal impacts are projected thereafter throughout the remaining life of the project (see Volume IV, Appendix 14, Table 14.1.3.5-15).

Because the fiscal analysis was conducted at the county level by combining all jurisdictions for each primary impact county examined, information on costs to each government unit within a given county currently is not available. Once a site for the SSC is selected, the Supplemental EIS could consider fiscal impacts at the sub-county level (see the Foreword in Volume I).

0709.03

The Durham County critical watershed ordinance (1985) is discussed in EIS Volume IV, Appendix 5, Section 5.5.10.1.F. Should North Carolina be the selected site, the study currently being conducted would be considered in preparing the Supplemental EIS.

See Comment Response 384.02.

0709.04

The referenced letter from Durham County was received by the DOE and was considered in developing the EIS.

A Supplemental EIS will be prepared addressing in greater detail the impact of constructing and operating the SSC at the selected site.

0710.01

The information contained in the comment is noted. Specific information on parcels of land would not affect the analysis of environmental impacts included in this siting EIS. The DOE solicitation for site proposals specified that the proposer was to furnish the land required for the SSC (EIS Volume II, Chapter 1, Section 1.1 and the Invitation for Site Proposals, Section 1.1). At this stage of project development, with final collider ring placement and facility design yet to be decided, the exact acreages, parcels, and ownership cannot be precisely determined for any of the site alternatives. The DOE believes that this EIS does represent a reasonably accurate projection of regional and community level impacts sufficient to support the purpose of this EIS, which is to select a site for the SSC. This EIS provides an adequate basis for comparing the potential environmental impacts of siting the SSC at the seven site alternatives. The information provided by the comment would not change the EIS siting conclusions. However, before a decision to construct and operate the SSC, impacts and mitigations will be identified and addressed in the Supplemental EIS for the selected site.

0710.02

See Comment Response 710.01.

070107503358811

0710.03

See Comment Responses 710.01 and 880.04.

0710.04

See Comment Response 710.01.

0711.01

See Comment Response 710.01.

0711.02

See Comment Responses 772.03 and 13.02.

0712.01

See Comment Response 710.01.

0713.01

Comment noted.

0713.02

See Comment Response 1390.07.

0713.03

The tunnel boring machines (TBMs) use oil and grease to lubricate the machinery. Normally about 2 gal/d grease and 6 qts of oil are used per week. The spent oil is collected and disposed of separately. The TBMs could leak oil if they are not maintained properly. The leaked oil could mix with groundwater infiltrated into the tunnel. If not consumed by machinery some grease could leak, spill, and mix with the excavated material.

The State of North Carolina has proposed that during construction, the collider ring tunnel be kept dry by pumping groundwater to surface facilities at each shaft location. The surface facilities would include a sedimentation pond and a skimmer boom for oil and grease removal.

0713.04

Noise and vibration (blasting) impacts of constructing and operating the SSC are addressed in EIS Volume I, Chapter 5, Section 5.1.4, and in Volume IV, Appendix 9, Section 9.2.3.5 for North Carolina.

0713.05

The State of North Carolina has proposed to construct a number of new roads and road upgradings, including new roads to most SSC facilities

that will minimize impact on existing and new secondary roads. Some existing roads may require strengthening to carry the construction traffic. Analysis of the major roads is presented in Volume IV, Appendix 14. Additional information on other impacted roads will be included in the Supplemental EIS for the selected site.

0713.06

Anticipated changes in Granville County population associated with the SSC for the years 1989-2000 are presented in EIS Volume IV, Appendix 14, Table 14.1.3.5-6. Roughly 900 persons are expected to reside in this county in both the peak construction year (1992) and the first year of full operations (2000) as a result of the SSC.

Granville County was included as a primary impact county within the North Carolina Region of Influence. Thus impacts associated with the influx of SSC-related population were considered in the EIS for this particular county, including impacts to economic activity, public services, public finance, and housing (see Volume IV, Appendix 14, Section 14.1.3.5).

0713.07

Unemployment in Granville County was considered through 1987, when the annual rate was 5.4 percent (see EIS Volume IV, Appendix 5, Table 5.5.11-1). Vacancy rates recorded during the 1980 census were examined for several communities within the North Carolina primary impact counties including the community of Oxford in Granville County (Volume IV, Appendix 5, Section 5.5.11.1.B). Vacancy rates for other communities within Granville County, such as Butner and Creedmore, were not considered. However, low county-wide vacancy rates for owner and renter units recorded during the 1980 U.S. census were noted in both baseline and impact examinations (see Volume IV, Appendix 5, Section 5.5.11.1.B and Volume IV, Appendix 14, Section 14.1.3.5.B, respectively). Based upon these historically low vacancy rates, coupled with the relatively small amount of housing constructed in this county between 1980 and 1987, the EIS concluded that SSC-related housing impacts could not be absorbed easily by Granville County.

0713.08

The issue of escalating rents and other prices was included in the EIS as part of the discussion on the impacts on the quality of life. Due to the low vacancies in the regional housing market in North Carolina, it is likely that the increased population would have a substantial impact on housing demand and rental housing units (Volume IV, Appendix 14, Section 14.1.3.5.B).

0713.09

Development of the SSC at the proposed North Carolina site would likely cause population growth, which in turn would result in an increase in

demand for local public services. The additional public service personnel necessary to accommodate this anticipated growth in demand and maintain current levels of service were projected for Durham, Granville, and Person Counties, and for the North Carolina Region of Influence as a whole. The potential impacts to police and fire protection, health care, public education, and total local government employment are presented in Volume IV, Appendix 14, Section 14.1.3.5.C.

0713.10

A discussion of the impacts on residents of the North Carolina Region of Influence associated with relocation and loss of private land is presented in EIS Volume IV, Appendix 14, Section 14.1.3.5.E. Of the 14,437 acres of private land that would be required in North Carolina to site the SSC, 6,817 acres would be fee simple and 7,620 acres would be stratified fee. The loss to each of the North Carolina primary impact counties' tax bases due to the transfer of land ownership is discussed in Volume IV, Appendix 14, Section 14.1.3.5.D.

0713.11

The scenic and visual resource impacts have been addressed in Volume IV, Appendix 16. The existing visual character of several areas would be significantly impacted; the adverse effects may not be fully mitigated. However, some areas can be mitigated in a way that creates an insignificant impact. Impacts on quality of life are discussed in Volume IV, Appendix 14.

0713.12

SSC-related impacts to the quality of life are examined for the North Carolina Region of Influence (ROI) and for select communities and areas within the ROI (see Volume IV, Appendix 14, Section 14.1.3.5.E). Economic impacts resulting from the SSC, in turn, are assessed for the ROI and for the primary impact counties of Durham, Granville, and Person (see Volume IV, Appendix 14, Section 14.1.3.5.A).

Growth in Granville County indeed is anticipated, and this growth would be accompanied by certain impacts on the county's quality of life and economy. However, the maximum population impact anticipated for Granville County is only slightly greater than 2 percent beyond the projected total without the SSC. Moreover, careful planning strategies can help to minimize the impacts often associated with growth related to such projects. See also Comment Response 1259.02.

0714.01

See Comment Response 784.02.

0714.02

See Comment Response 784.03.

070107503358814

0715.01

Detailed information, data, equations, and assumptions regarding air pollutant emissions are provided in EIS Volume IV, Appendix 8. Volume I, Chapter 5 also presents the impacts described in detail in the appendix.

The National Emissions Data System (NEDS) reference year does indeed correspond to the date of publication and not necessarily the date of the data; however it does represent the most up-to-date data available from the EPA.

0715.02

All significant SSC-related pollutant emissions were considered in estimating the projected air quality impacts. The pollutant source contributions to air quality degradation referenced in the comment, such as residential space heating and consumer support services, would be insignificant. Any increases in SO_2 or NO_x emissions resulting from SSC electric power demand should be accommodated by emission limits already set in existing State Implementation Plans or Prevention of Significant Deterioration construction permits. The SSC-related mobile source emissions from commute traffic population growth were computed and used to estimate SSC-related air quality impact. For further information, see the EIS Volume IV, Appendix 8.

0715.03

The SSC-related air pollution emissions discussed in the DEIS have been reformatted to combine commute traffic emissions with the other emission types. This reformatting affects the air quality portion of EIS Volume I, Chapter 3, Table 3-7 and the "Comparison of Emissions to Existing..." (Volume I, Chapter 5, Tables 5.1.3-1 and 5.1.3-2) and Volume IV, Appendix 8; Tables 8-11, 8-19, 8-27, 8-35, 8-43, 8-51, and 8-59.

The estimated SSC-related emissions of ozone precursors (volatile organic compounds (VOCs), nitrogen oxides (NOx)) and carbon monoxide (CO) in North Carolina are, in fact, insignificant when compared to the existing host county-wide emissions of these pollutants. For example, the projected SSC-related emissions of hydrocarbons (only a portion of which are VOCs), NOx, and CO during construction are 0.41 percent, 0.58 percent, and 1.33 percent, respectively, of the corresponding existing emissions of Durham, Granville, and Person Counties (when using the reformatted tables). All of these emissions occur only during construction and most of them are from mobile sources. During operations, these increments are projected to be less than 0.5 percent of existing levels. Therefore, SSC-related ozone precursor emissions should have little, if any, impact on the future ozone and/or CO attainment status in Durham and Granville Counties.

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0715.04

National ambient air quality standards (NAAQS) and all applicable State ambient air quality standards (AAQS) will be complied with during both construction and operations of the SSC. As stated in EIS Volume I, Chapter 6, "It is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards."

The EIS has been modified in Volume IV, Appendix 8 and in Volume I, Chapter 5 to include for all states more efficient mitigations on TSP and PM_{10} emissions during construction. Specifically, the use of chemical soil stabilization is proposed instead of twice daily watering for control of general site activity emissions. This significantly reduces the generation of fugitive dust emissions, hence the resulting ambient air impact for these pollutants.

Additional air quality analysis will be performed after site selection and included in the Supplemental EIS. The availability of more definite design and construction planning information at that time will allow that analysis to be more detailed and contain more specific mitigation commitments.

Compliance with the AAQS will be addressed during the DOE consultation with the host state air pollution regulatory agency during any required permit applications reviews.

The SSC-related emissions of CO, NOx, and HC hydrocarbons during operations are almost entirely (greater than 95 percent) due to off-site commute traffic. The emissions resulting from this traffic constitute a fraction of a percent of the exiting traffic contributions of these pollutant emissions. Ozone/carbon monoxide nonattainment is a complex and pervasive nationwide problem requiring an air quality management strategy.

0715.05

The emissions inventories included in EIS Volume I, Chapter 3, Table 3-7 and detailed in Volume IV, Appendix 8, Table 8-36 include all commute traffic emissions for the 3,000 on-site SSC workers for both the construction and operation phases. In each state, the relative percent increase is low. The emissions from secondary growth associated with the SSC will be small in comparison to primary emissions, and therefore very small compared to existing conditions.

Volume I, Chapter 4, Section 4.4.1 of the EIS shows North Carolina equal to Arizona and second to Tennessee with respect to high air pollution potential.

0716.01

The sources of cooling water are Lake Butner for the campus and injector complex and near cluster half of the ring, and Mayo Reservoir for the

far cluster half of the ring. The assessment of impact on Durham's water supply takes into account completion of Durham's new water supply. See revised Tables 1-1 and 3-7, and revised text in EIS Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G.

0716.02

See Comment Response 716.06.

0716.03

The EIS analyses are based on the assumption that 100 percent of the 53-mi collider ring in North Carolina will be excavated by means of tunnel boring machines. (See Volume I, Chapter 3, Section 3.4.5 and Chapter 4, Section 4.1.4; Volume IV, Appendix 1, Section 1.2.5.1.) With regard to the injector, the EIS analyses are based on the assumption that excavation of the facilities will be performed by the cut-and-cover method for all sites. Consequences of this simplification are considered negligible for the purposes of this EIS, but it is nevertheless recognized that it may be possible to build parts of the injector, such as the high energy booster, by excavating with tunnel boring machines at the North Carolina site, and perhaps also at one or more of the other sites. The following pertains to the excavation of the experimental halls for this site, the geotechnical information provided by the State was verified by site visits and drill core inspection by the DOE. Indications are that a maximum of unweathered rock above the roof of the halls was 29 ft for K1 and 14 ft for K6. This does not appear to be sufficient for structural support of the roof system for halls with clear spans of approximately 80 ft. Therefore, the more conservative cut-and-cover construction method was assumed for these two halls for purposes of this EIS.

0716.04

See Comment Response 716.08.

0716.05

"Lake Michie" has been changed to "Mayo Reservoir" in all appropriate plac
evaluation of water supply in the proposed North Carolina site vicinity. For details, see revised Tables 1-1, and 3-7, and revised text in Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G.

See Comment Responses 1331.05 and 1052.04.

0716.06

The State of North Carolina originally proposed that wastewater could be pumped from the southwest quadrant to Durham's Eno River wastewater treatment plant and that the plant be expanded.

The alternative NC proposal is the following:

Wastewater from area K3: Treatment in a stabilization lagoon with storage, followed by land application through spray irrigation.

Wastewater from areas K4 and K5: Same as option for K3 as well as a second option of septic tank system treatment, followed by a subsurface absorption field.

Wastewater from area K6: Same as options K3, K4, and K5 are available as well as the possibility of package plant treatment, followed by surface discharge into a nearby stream.

The cooling tower blowdown (300 gpm) could be treated of by using vacuum compression brine concentrator or by side stream softening. The method of cooling tower blowdown treatment would be selected after the site selection and would be addressed further in the Supplemental EIS and during the detail design phase. Surface discharge of untreated cooling tower blowdown would not be acceptable to the regulatory agencies.

These changes are included in the Errata to EIS Volume IV, Appendix 10, Section 10.3.3.1.

0716.07

The life cycle cost model which was developed for the SSC Conceptual Design Report (March 1986, Report Number SSC-SR.2020) was based upon cut-and-cover construction for the complete injector system for sites A, B, and C. A reevaluation of specific injector facilities was not done for the EIS. It was assumed for the EIS (Volume I, Chapter 5, Section 5.1.1.1) that all sites would use a similar cut-and-cover scheme for the injector. In addition, while different costs would surely have resulted if the estimates were based upon tunneling for injector construction, the amount of difference, when compared to the total construction cost, would have been too small to justify the expense of developing new cost models for the injector. Only the shafts, main ring tunnel, and experimental halls were estimated on the basis of varying types of construction selected to meet actual site conditions.

The geotechnical information provided by the State of North Carolina was verified by site visits and drill core inspections by EIS preparers whose expertise is geotechnical sciences. Indications are that a maximum of unweathered rock above the roof of the halls in 29 ft for K1 and 14 ft for K6. This does not appear to be sufficient for structural support of the roof system for halls with clear spans of approximately 80 ft. Therefore, the more conservative cut-and-cover construction method was used for the EIS (Volume I, Chapter 5, Section 5.1.1.1) and the life cycle cost estimates for these two halls.

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Should North Carolina be selected and detailed engineering design of the SSC proceeds, final decisions of injector and interaction hall placement, depth, and method of construction will be made on the basis of thorough geotechnical studies, as well as further environmental and cost considerations.

0716.08

The State of North Carolina has proposed to dispose the excavated materials at 17 different disposal sites, or to sell or donate excavated materials to local producers of aggregate. These alternatives are discussed in EIS Volume IV, Appendix 10, Section 10.2.3.

0717.01

See Comment Responses 13.02 and 710.01.

0717.02

The public hearing process is only one method for public participation in the NEPA process. The DOE believes that ample opportunity was provided at the hearing in North Carolina for public speakers. In addition, a 45-day comment period was provided for written comments. Both written and oral comments were given equal weight in preparation of the EIS.

0717.03

EIS Volume I, Chapter 6, Section 6.1 states that it is the DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with applicable environmental statutes, regulations, and standards. Section 6.2 lists major Federal environmental requirements including those administered by the U.S. Environmental Protection Agency (EPA). For detailed discussions of SSC compliance with clean water and air regulations, see EIS Volume IV, Appendices 7 and 8, respectively. See also Comment Response 1278.

See Comment Responses 13.01 and 13.02 for a discussion of the role of the scoping process in preparing the EIS and the data bases used.

0717.04

The DOE is sensitive to public involvement and participation in the NEPA process. This is discussed further in Comment Response 1126.05.

0717.05

The Task Force, during its site visit, did review the area using maps furnished by CATCH-North Carolina. As a result of this review, the EIS has been revised and now uses an estimate of 180 relocations. Also see Comment Responses 13.02 and 710.01.

0717.06

Comments noted.

0718.01

Comments noted.

0719.01

The environmental consequences of the SSC and the proposed mitigative measures have been addressed in the EIS. Volume I, Chapter 5 includes a comprehensive evaluation of impacts on water resources (see Section 5.1.2). Additionally, detailed water resources assessments for each site alternative are provided in Volume IV, Appendix 7.

The water resources assessment for North Carolina concludes that impacts on surface water quality would be negligible, except for possible significant construction-related increases in sedimentation along Knap of Reeds Creek near the campus and injector areas (see Volume IV, Appendix 7, Section 7.1.3.5).

The Durham County Critical Watershed Ordinance of May 28, 1985 is discussed in Volume IV, Appendix 5, Section 5.5.10.1.F. However, it has not yet been established if the SSC could be constructed in compliance with this ordinance. Such a determination would require a level of investigation beyond the scope of this EIS. It is assumed, for the purposes of site selection, that all potential impacts would be mitigable to acceptable levels. In this regard, the question of compliance with the Durham County ordinance would not affect the site selection process.

It should be recognized that the DOE is committed to construct and operate the SSC in compliance with applicable Federal, State, and local statutes and regulations. If the North Carolina site is selected, additional, more detailed site assessments would be conducted for the Supplemental EIS. Modifications to the conceptual design or to proposed mitigative measures will be implemented, as necessary, to conform with the site-specific conditions and criteria of the selected location (see Volume I, Chapter 3). Additionally, a regulatory compliance plan will be prepared by the DOE for the selected site prior to construction.

With regard to the specific issue of above-ground storage tanks, it is likely that the restrictions are defined for protection of surface waters from spills of liquid chemicals. The above-ground storage tanks proposed for the service areas would hold cryogenics such as liquified helium and nitrogen. Any leaks or spills would volatilize into the atmosphere and would have no impacts on site surface water or groundwaters.

0719.02

It is necessary to point out that the J sites are currently planned as vacant areas to be held in reserve for the construction of access shafts for as yet undefined, potential underground facilities. Moreover, the exact placement of the entire collider ring and all associated facilities will remain subject to adjustments until final approval of the SSC design at the selected site.

0719.03

The campus area (A area) for the SSC is approximately 350 acres. Detailed estimates prepared for the EIS indicate that 197 acres within the defined campus area will be disturbed during construction; this is approximately 56 percent of the area. Permanently disturbed area within the campus is estimated to be 97 acres; this is approximately 28 percent of the area. Even if all of the permanently disturbed area were impervious, which is not likely, the area would be within the standards for a sewage treatment plant indicated in the comment.

0719.04

See Comment Response 719.01, first and second paragraphs.

0719.05

See Comment Response 719.01, first and second paragraphs.

0720.01

The number of wells estimated by the State to be within the SSC footprint in North Carolina was not reported accurately in the DEIS. The State had provided well records which document 112 wells within 1 mi of the ring centerline and had also noted that wells have only been required to be registered since 1959 and since that time perhaps only half or less of the wells drilled have been actually registered. Given the potential for unregistered wells and commenters' input, it is assumed that in excess of 300 water wells may exist within the SSC footprint. However, only a small number of these may be directly affected by the project and required to be closed. The State estimated, based on field surveys, that only about 9 wells (the number reported in the DEIS) would be directly affected and required to be closed because of the SSC. See Comment Response 1390.07 for clarification of criteria to assess number of wells closed and revisions to EIS.

Assessments in the EIS indicate that rock strata and groundwater disruption from tunnel and shaft construction will be minimal. See EIS Volume IV, Appendix 7, Section 7.2.3.5. Dewatering use will be minimized and tunneling by tunnel boring machine is non-disruptive. Localized impacts may occur in the vicinity of shafts which will be excavated by drill and blast techniques.

0720.02

Closure or other detrimental effects may occur to a limited number of individual water wells at the North Carolina site due to SSC construction or operations. Each of the individual proposer groups, including the State of North Carolina, has indicated that they will provide an alternative water supply to any well owner so affected.

Potential impacts to groundwater quality and wells due to SSC construction and operations are discussed in EIS Volume IV, Appendix 7, Section 7.2.8.5.

0720.03

The potential impacts of the construction of the collider tunnel at the proposed North Carolina site on groundwater flow and quality are described in EIS Volume IV, Appendix 7, Section 7.2.3.5. Additional relevant information is contained in Volume IV, Appendix 10, Section 10.2.3.5, Section 10.3.3.1., Subsection E, and Section 10.3.3.2, Subsection E. All information used in the EIS has been checked and verified by the DOE.

Impacts to water quality from SSC construction and operations are addressed in Comment Response 018.03.

Impacts to water levels and water flows during SSC construction will be temporary and would be minimized by selection of appropriate techniques (such as using slurry walls for water control rather than dewatering excavations by pumping).

0720.04

See Comment Response 710.01.

0721.01

The maps in EIS Volume I, Chapter 5 are intended only to demonstrate the general distribution of people and their locations relative to the SSC surface facility locations. The maps were used in the DEIS to identify E and F areas having the potential to cause high annoyance from noise. Revised results of the site comparison, as presented in the FEIS (see Errata and Revisions EIS Volume I, Chapter 5 and Volume IV, Appendix 9), do not depend on the accuracy of these maps, but rather on information obtained from aerial photographs.

A revised analysis is presented in the FEIS showing the numbers of people in the areas of possible noise impact (see Volume I, Chapter 5, Table 5.1.4-10). The numbers have been determined by analysis of aerial photographs furnished by the State with its proposal and have been used in estimating the magnitude of expected noise impact associated with each construction and operations noise source. The results for each

State are summarized in the Errata and Revisions to EIS, Volume I, Chapter 5 and Volume IV, Appendix 9. For North Carolina, during construction an estimated 136 people would be exposed to highly annoying outdoor noise levels and an estimated 705 to somewhat annoying levels. During operations of the SSC an estimated 60 people would be exposed to somewhat annoying outdoor noise levels.

0721.02

The locations of the roads are not critical to the siting of the SSC. Vibration measurement data supplied by the State of North Carolina shows no vibrations of sufficient level to rule out the site. See Comment Response 0013.02.

0721.03

In DEIS Appendix 5, Section 5.5.5.4, vibration sources in the vicinity of the site are discussed. Figure 5.5.5-2 shows the two railroads discussed in your comment. Data submitted by the North Carolina proposing organization indicates that the collider can be sited in compliance with the vibration criteria for the SSC.

0721.04

See Comment Responses 13.02, 710.01, and 721.01.

0722.01

Comment noted. It is true that much of the land within areas A, B, and C is designated as prime farmland. However, of the 4,374 acres within the boundaries of these areas, 459 acres would be temporarily disturbed during construction, and 630 acres would be permanently removed from production. During final design, consideration will be given to avoid placement of SSC areas in sensitive lands, including prime farmland. There will be adverse impacts to prime farmlands and landowners in the campus and injector areas. Should North Carolina be selected for the SSC, the Supplemental EIS would assess the impacts of prime farmlands.

0723.01

Input data for the economic impact analysis are derived from cost estimates where "an evaluation has been made as to what is to be acquired on a national basis and what is available locally" (Volume IV, Appendix 2, page 6). Only those items deemed locally available in the North Carolina Region of Influence are included in the economic impact analysis for that State.

Comment Response 791.02 addresses the topic of direct and secondary ("spin-off") jobs which would be generated as a result of constructing the SSC in North Carolina (see also Volume IV, Appendix 14, Section 14.1.3.5.A).

0723.02

See Comment Response 777.01.

0723.03

The EIS analysis indicates that the State Government would receive additional revenue during the construction and operations of the SSC. Local governments in the three primary impact counties were projected to have a cumulative net fiscal benefit during construction and operations of the facility, except for a net fiscal deficit during the first 3 years of construction. However, the projected deficits in these three counties do not total more than $15 million.

The public finance analysis accounts for projected increases in public infrastructure and services. Additional details on the assessment of SSC-related impacts on both State and local government finances are presented in Volume IV, Appendix 14, Section 14.1.3.5.D.

0723.04

See Comment Responses 791.02 and 1513.14.

0724.01

See Comment Response 1548.133.

0725.01

See Comment Response 1548.137.

0725.02

The State of North Carolina originally proposed to pump sewage from the far cluster to the Durham Eno Treatment Plant.

Post-site visit information provided by the State of North Carolina in response to questions from the DOE is included in EIS Volume IV, Appendix 10, Section 10.3.3.1.

Wastewater from area K4 and K5: Treatment in stabilization lagoon with storage followed by land application through spray irrigation, as well as a second option of septic tank system treatment followed by a subsurface absorption field.

These changes are included in the Errata to EIS Volume IV, Appendix 10, Section 10.3.3.1.

0725.03

See Comment Response 1272.02.

0726.01

These observations are consistent with what appears in EIS Volume IV, Appendix 6.

0727.01

It is the DOE's policy to comply with applicable statutes, regulations, and ordinances, including Durham County's critical watershed ordinance (see EIS Volume I, Chapter 6 and Volume IV, Appendix 5, Section 5.5.10). The objectives and regulations under the watershed ordinance, described in the above section of Appendix 5, would be strictly adhered to in the design and operations of the SSC if the North Carolina site is selected. Current construction and waste disposal technology is capable of protecting the watersheds and water resources such that no significant impacts would be anticipated. More detailed study would be included in the Supplemental EIS if North Carolina is the selected site.

0727.02

The Little River Reservoir completed in early 1988 roughly doubles the safe yield of City of Durham's water supply, and should bring some relief to the water shortage experienced in the past in the proposed site area. The new reservoir has been included in the revised water supply assessment in EIS Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G. The assessment indicates that water requirements for the SSC project and additional off-site domestic use can be met by existing reservoirs in the project vicinity, which have adequate excess capacities. The safe reservoir yields used in the evaluation were estimated for 20-year drought conditions, i.e., a drought with an average recurrence interval of 20 years. The safe yields for a more severe drought would be less, but such yield data are not currently available. More detailed study will be conducted and documented in the Supplemental EIS if the North Carolina site is selected for the SSC.

0728.01

Although the State of North Carolina may have proposed to construct the tunnel without a concrete liner, the EIS recognizes the need for lining portions of the tunnel, where necessary, to assure the safe construction and operations of the SSC, and thus, the health and safety of the workers and the public. Therefore, at any site, tunnel sections could be lined with shotcrete, reinforced concrete, or precast concrete segments (Volume I, Chapter 3, Section 3.1.1.2). For the proposed North Carolina site, the use of grouting techniques for controlling groundwater infiltration into the tunnel is mentioned in EIS, Volume IV, Appendix 7, Sections 7.2.3.5.A.1 and 7.2.3.5.B.1.

The concern is raised that if there were to be a beam loss, significant contamination of groundwater could occur at the North Carolina site because the tunnel might be unshielded at the point of beam loss and the

geological features of the site could increase the extent of contamination. This concern is addressed in the EIS, and it was predicted that significant levels of contamination would not occur for the following reasons.

A loss of beam is a highly unlikely event and has never occurred at Fermilab in its superconducting magnet system. There will be multiple redundant controls to assure that such an event does not occur, for the sake of public and worker health and for the purpose of protecting the very expensive equipment to be used at the SSC.

In the event that the protection system failed and beam loss occurred, the estimated radiation dose in a nearby well (50 m from source) at the North Carolina site would be 0.50 mrem/yr as compared to the EPA drinking water standard of 4 mrem/yr (EIS, Volume IV, Appendix 12, Section 12.2.3.1.C.1). This conclusion was derived using a numerical model to analyze the off-site, groundwater migration of the primary radionuclides produced during a beam loss. A comprehensive description of this analysis is provided in EIS Volume IV, Appendix 12, Section 12.2.3.1.C. No credit for shielding from a tunnel liner was considered in the model, thus, the radiation dose in the hypothetical well resulting from a beam loss in an unshielded tunnel would be below the EPA limit.

The aquifer parameters used in the model (EIS, Volume IV, Appendix 12, Table 12.2.3-4) are representative of the dominant hydrologic conditions most likely encountered in the region. The hydraulic conductivity value of 0.189 m/day was derived from a series of Packer Test results prepared by Law Engineering Testing Company, Raleigh, North Carolina (Job No. J47287-2460, 1987). The Packer test is a down-hole field testing method that accounts for the effects of fractures encountered. The value for effective porosity of 3 percent was derived from the report Groundwater Supply Potential and Procedure for Well-site Selection, Upper Cape Fear River Basin North Carolina Department of Natural Resources and Community Development, 1983. The report suggests that the secondary porosity of fractured bedrock of the North Carolina Piedmont is 1 percent to 3 percent. By definition, secondary porosity accounts for the effects of fractures.

0728.02

The potential for a beam loss is assessed in EIS Volume IV, Appendix 12, Section 12.4.1.1. A sensor system is employed to protect the magnets and ensure that prior to any beam loss, the beam is directed into the beam absorbers. The potential for a beam loss which would release radiation into the environment is very low.

Regarding the number of wells in close proximity to the proposed SSC ring alignment in North Carolina, see Comment Response 1390.07.

0728.03

The total airborne release of radioactivity from the antiproton target hall at Fermilab during the first five months of 1987 was 54 Ci.

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Antiprotons are produced in this area by focusing protons onto a target, and secondary particles from this interaction activate air molecules, thus resulting in releases of radioactive gas. The antiprotons produced are collided with protons in the Tevatron at Fermilab. The SSC will be a proton-proton collider. No antiproton generation target will be used, and the amount of radioactivity produced and released from the SSC is projected to be lower than that which occurs at Fermilab. The projected releases from the SSC are explained in detail in EIS Volume IV, Appendix 10, Section 10.1.3.1.D.

An environmental monitoring program will be developed for the SSC. The program will be designed to monitor onsite and offsite radiation levels to ensure that exposures to workers and releases to the environment meet applicable requirements and are As Low As Reasonably Achievable (ALARA). The DOE is committed to the ALARA concept at its operating facilities.

0728.04

A typographical error occurred in DEIS Volume IV, Appendix 12, Table 12.2.3-6, p. 34 under North Carolina for Na-22. The annual dose equivalent for continuous intake (mrem) should be 0.48 and not 0.048 as indicated. No change is required for the number under "Total". The table has been corrected as Errata.

0729.01

Comment noted.

0729.02

The EIS analysis estimated local government capital improvement expenditures based on projected SSC-related population growth in each primary impact county, including Durham County. Data collected from more than 3,200 municipalities and 4,000 school districts in the U.S. indicate a relationship between population growth rates and spending for capital improvements by local government jurisdictions. This information was used as the basis for the EIS capital improvement projections (see EIS Volume IV, Appendix 14).

Although the 1981 study analyzed growth effects related to new military facilities in various locations, the impacts from spending for construction and operations of other Federal facilities (such as the SSC) are expected to be similar since the study compares spending by local governments in response to overall growth rates in local communities. The EIS estimates of capital facilities requirements only consider the costs to provide the infrastructure to accommodate the SSC-related growth; the present situation of reported overcrowding in schools in northern Durham County is an existing condition which would be present with or without SSC siting in the region.

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0729.03

See Comment Response 709.02 regarding population-related growth expenditures. This would include additional public sector employees needed to service growth caused by the SSC.

0729.04

The EIS contains analyses of public finances for the North Carolina Region of Influence, and for the three primary impact counties (Durham, Granville, and Person Counties) anticipated to experience the greatest impacts due to the SSC (Volume IV, Appendix 14, Section 14.3.5.D). The aim of these analyses was to assess overall impacts on public finances--in North Carolina as well as the remaining six sites being considered as locations for the facility. More detailed analyses of SSC-related local fiscal impacts will be prepared for jurisdictions in the region of the site ultimately selected for the facility and presented in the Supplemental EIS (see Volume I, Foreword).

0729.05

Comments noted.

0730.01

During field observations, the deciduous forest around the Red Mountain subdivision appeared to be sufficiently dense and extensive to provide screening during winter. Even with that assumed screening, the visual impact was assessed as having the potential to be significant. After the final site is selected, visual impacts will be addressed in greater detail in the Supplemental EIS.

There is no Federal requirement or authorization to provide mitigation for economic impacts that might result from the proximity of the SSC. Questions concerning the proposer's authority to mitigate should be directed to the appropriate State agency (See EIS Volume IV, Appendix 4, Section 4.3.2).

0730.02

The probable site for area E8 is bordered on three sides by forest and is seen only from State Route 1139 and one home directly across that road from the site. While the view from the one home would be visually impacted, as long as the forested buffer remains, the overall impact would be negligible. See EIS Volume IV, Appendix 16, Section 16.2 for an understanding of the technical approach, assumptions, and criteria used in the analyses. See also Comment Response 223.06.

0730.03

The assessment that F7 would have no visual impact was based on the assumption that the densely forested border along the road could and

would be undisturbed and that the clearing along the right-of-way for the access road would be held to a minimum. Should the forested buffer be removed, then there would be a significant visual impact.

A more detailed assessment for visual impacts will be conducted for the Supplemental EIS if North Carolina is the selected site.

See Volume IV, Appendix 16, Section 16.2 for an understanding of the technical approach, assumptions, and criteria used in the analyses.

0730.04

If the North Carolina SSC site is selected and if Webb's Chapel is located in a potential impact area, consideration will be given to its historical significance by applying eligibility criteria for listing on the National Register. Properties possessing demonstrated local historical or architectural significance can be listed on the National Register. If Webb's Chapel is eligible for the National Register, mitigation measures would be developed to reduce adverse cultural impacts. If it is not eligible, the response given to Comment 880.04 would apply.

If the North Carolina SSC site is selected, the Supplemental EIS would address this and other cultural resource issues. Future cultural resource procedures would be developed in accordance with a Memorandum of Agreement between the DOE, the Advisory Council on Historic Preservation, and the North Carolina State Historic Preservation Officer (SHPO).

0730.05

The observations concerning visual impacts due to F4 are consistent with the visual impact analyses in EIS Volume IV, Appendix 16, Section 16.3.5.3. Regarding compensation, see Comment Response 658.06.

In terms of impacts to community, see the discussion on quality of life in the EIS Volume I, Section 5.1.8; see also Comment Response 1002.01.

0730.06

There will be adverse visual impact from construction activities at the E4 site. However, these impacts would be insignificant due to their short-term duration. Hence, the site was classified as having a negligible scenic impact.

A permanent, light-industry-like building will remain after the construction period. Since this is of similar size as nearby structures, no appreciable visual attention is expected. See EIS Volume IV, Appendix 16 Section 16.3.5.3.F.

During final design and placement of this structure, consideration will be given to placement in areas of least visual impact.

There is no Federal requirement or authorization to provide mitigation for economic impacts that might result from the proximity of the SSC. Questions concerning the proposer's authority to mitigate should be directed to the appropriate State agency (see EIS Volume IV, Appendix 4, Section 4.3.2).

0730.07

Based on field observations, facility F3 would be 1,200 ft south of U.S. Highway 158 in a rural residential area, not a housing subdivision. As noted in EIS Volume IV, Appendix 16, Section 16.3.5.3, siting is critical. The proposed site is in a thick grove of trees; a small shift to the east would place the facility in a highly visible field. It was assumed that the proposed siting would be the final site and that the abutting woods would not be destroyed. If the siting changes or if the woods are destroyed, the visual impact would be considerable. The Supplemental EIS would address the impacts associated with final site design and location at the selected site. See also Comment Response 223.06.

0730.08

See Comment Responses 713.12, 880.04 and 1513.100.

0731.01

Spin-off technology benefits from the SSC are expected, but cannot be projected with certainty at this time. See EIS Volume I, Chapter 1, Section 1.1.

See Comment Response 520.06.

0732.01

The locations of county boundaries have been corrected in the revision of EIS Volume I and the Errata of Volume IV, Appendix 5 for the following figures so that the campus and future expansion areas will not be shown partially in Person County:

Volume I, Chapter 3, Figure 3-15.

Volume IV, Appendix 5, North Carolina, cover page; Figure 5.5.4-1, Figure 5.5.5-2, Figure 5.5.8-1, Figure 5.5.8-2, and Figure 5.5.11-3.

In addition, the location of the SSC ring has been revised on the cover page for Volume IV, Appendix 5.

See also Comment Response 229.01.

0732.02

See Comment Response 710.01.

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0732.03

See Comment Response 1390.07.

0732.04

See Comment Response 1513.64 concerning the Norfolk & Western Railroad line.

See Comment Response 1513.03 concerning U.S. Route 501.

The North Carolina site maps such as Volume I, Chapter 3, Figure 3-16 in the EIS, which have a scale of about 4 mi/inch, do show the name Rougemont; however, the two letters "on" in the word Rougemont are covered by the J1 area designation. Regional maps such as Volume I, Chapter 3, Figure 3-15 do not show the name Rougemont because they emphasize larger towns and cities.

0732.05

The proposed expansion of the Durham-Eno River wastewater treatment plant is indeed only pending, not currently undergoing expansion as indicated in Volume IV, Appendix 5, Table 5.5.8-1 and accompanying text. These changes are included in the Errata to EIS Volume IV, Appendix 5, Section 5.5.8.1. See Comment Response 1017.02.

0732.06

The discussion of climatic conditions at the site alternatives, as presented in EIS Volume I, Chapter 4, Section 4.3, and in Volume IV, Appendix 5, serves to provide a quantitative and qualitative basis to assessments which consider climatic inputs. Since the project will in no way impact the climate, discussions of climatic data are limited to only that information necessary to adequately characterize impacts of the project on other parts of the environment. Drought discussions, as requested by the ISP, were considered in the site selection process.

0732.07

This EIS addresses long-range and historical transmission and generation capabilities needed to support the SSC. Short-term events, such as unexpected high temperatures, droughts, and storms that may cause short-term excess demands or outages, have little effect on a particular utility's ability to supply power to a facility of this size over a long period. The planning and management capabilities of the utility based on load projections and planned generation and transmission facilities are addressed in the EIS Volume IV, Appendix 14, Section 14.2.2.3.

At existing U.S. accelerator facilities, such as Fermilab and SLAC, negotiations have taken place with local utility companies to accommodate brownout conditions. In addition, during peak load periods, these laboratories often schedule shut-down periods for maintenance and upgrades of the accelerator and detector equipment. Similar arrangements

would be made in the case of the SSC. The SSC, like existing accelerators, will be designed with redundant fail-safe systems to respond instantaneously to power failures so that equipment will not be damaged, and there will be no hazards to personnel when such failures which are considered inevitable, occur.

0732.08

See Comment Response 1548.133.

0732.09

Impacts on local residents are considered throughout the EIS. For example, local residents are considered throughout the quality of life discussion in Volume I, Chapter 5, Section 5.1.8.5, and in Volume IV, Appendix 14, Section 14.1.3.5.E.

0732.10

"Growth" in the North Carolina Region of Influence without the SSC is discussed in the EIS in terms of both employment and population (Volume I, Chapter 5, Section 5.1.8). Between 1988 and 2000, ROI employment is projected to increase at an average annual rate of 1.3 percent without the SSC (Volume IV, Appendix 5, Section 5.5.11.1.A). ROI population without the SSC is projected by decade from 1990 to 2030. Regional population is anticipated to grow throughout this period, though at gradually lessening annual rates of increase -- the 1.2 percent projected between 1980 and 1990 dropping to 0.7 percent between 2020 and 2030 (Volume IV, Appendix 5, Table 5.5.11-2).

0732.11

There is a discussion of sociological impacts in the EIS. Variables in the EIS that are generally considered in a social impact assessment include demographic variables (such as population size, composition, mortality, birth rate, and in-migration), housing variables (such as number, vacancy rate, and demand), public service variables (such as number of students and service employment to population ratios) and quality of life (focusing on the distribution of effects). These sociological variables are typical of variables generally included in environmental impact assessments. Volume I, Chapter 5, Sections 5.1.8.2 to 5.1.8.5 summarize the social impacts of the SSC. Detailed analyses are provided in Volume IV, Appendix 14, Section 14.1.3.5.

0732.12

See Comment Response 1126.05.

0733.01

The proposed locations of new electric power lines to be constructed for the SSC at the proposed North Carolina site are indicated in EIS Volume IV, Appendix 1, Section 1.2.5.10. As currently planned, there

will be two new sections of 230-kV line constructed (2.1 and 1.9 mi long). There also will be two new 12-kV lines constructed to provide power to pumping operations for the SSC water supply.

0733.02

Over the past several years, research has been conducted to examine the possible health effects associated with human exposure to electromagnetic fields that are produced by power lines and some electrical appliances. Some of the studies have suggested a link between exposure and health outcomes such as childhood cancer, occupational cancers, or occupationally related reproductive effects. There have also been studies which have not demonstrated any such relationships. Furthermore, some of the studies that have suggested possible effects have had weaknesses that limit the validity of the results. Thus, a combination of the lack of consistent findings among the studies, the absence of a dose-response relationship, and the lack of a biological explanation for the way in which electromagnetic fields can produce a health effect, has made many scientists doubtful at this time that there is a causal relationship between exposure to electromagnetic fields and various alleged chronic effects.

However, concern that the transmission and distribution power lines could pose a health hazard is appropriate, and additional research is needed before any conclusion can be reached. Studies are currently underway by the government and private firms to better understand the possible hazards of electromagnetic fields. In addition, several states are considering new regulations on the placement of power lines. The placement of power lines will be done in compliance with applicable regulations. See EIS Volume I, Chapter 6 for the DOE's policy regarding compliance with environmental regulations.

0733.03

See Comment Response 733.01.

0734.01

The potential for relocating Camp Butner is dependent on site selection and the DOE determining the final design configuration of the SSC. The decision to include part of Camp Butner in the North Carolina's proposal was the responsibility of the State. Contingent upon final design, the DOE is not aware of any safety or programmatic reasons why Camp Butner would need to be relocated if the North Carolina site is selected.

Should North Carolina be selected as the site and if Camp Butner were to be affected, the resulting impacts and proposed mitigations would be part of the Supplemental EIS to be prepared prior to a decision to construct or operate the SSC.

The proposed total acreage required for the North Carolina SSC site is 15,897 acres (see Volume I, Chapter 3, Section 3.4). The EIS also notes that the number of affected land parcels and ownerships may vary by as

much as 10 percent in North Carolina (Volume I, Chapter 3, Section 3.4). The additional 11,000 acres of land required for possible relocation of training facilities for the North Carolina National Guard was not included in the 15,897 acres given in the EIS. Should North Carolina be the selected site, this issue would be addressed in a detailed Supplemental EIS.

0735.01

See Comment Response 710.01. Public finance analyses are provided in Volume IV, Appendix 14, Section 14.1.3.5.D. Land use planning analyses are provided in Volume IV, Appendix 13, Section 13.1. The reference to acreages is consistent with Volume I, Chapter 3, Table 3-5; Volume I, Chapter 4, Table 4-2; and Volume IV, Appendix 4.

0736.01

Comment noted.

0737.01

A more detailed discussion of the North Carolina site topography is given in Volume IV, Appendix 5, Section 5.5.1.1. The site region is part of a piedmont upland--a broad plain fronting the Appalachian Mountains that slopes very gently toward the Atlantic coast. This upland plain is not flat; rather it is a rolling surface with broad hills and swells that are 50 to 100 ft high. Additionally, the upland surface has been cut by the rivers that drain the region. Thus, the total relief noted is made up of three components:

(1) The regional slope of the upland toward the coast
(2) The local topography of the upland rolls and swells
(3) The relief due to river incision that occurs only at the major rivers.

Of these three, the local topography of the upland rolls and swells (characteristic of the site) is the most important to the SSC project, since it will influence factors such as energy efficiency in traveling from place to place, the need to grade the land surface to accommodate buildings, and the ability to "hide" buildings behind hills so that they do not change the panoramic landscape. All of the sites have been described using this general approach.

0737.02

Comments noted. The DOE requested a list of all affected landowners from each BQL state. A letter was then sent to each affected landowner regarding the purpose and location of scoping meetings, the issuance of the DEIS, and the public hearings. See also Comment Response 880.04.

0738.01

Seismologists have found that regions that have large earthquakes tend to have a recurring history of numerous small-to-moderate earthquakes. They also noted that regions with large earthquakes frequently contain faults that have broken the ground surface in the recent geologic past (i.e., the last 10,000 years). Consequently, when seismologists undertake to estimate the earthquake potential of a region, they consider three questions:

(1) Has the region had a history of large earthquakes or numerous small to moderate earthquakes?

(2) Does the region contain faults that have ruptured the ground surface in the recent geologic past or other evidence of ongoing mountain-building processes?

(3) Do surrounding regions have any of the above characteristics, thereby indicating a potential that a large earthquake could occur there which would shake the region being studied?

Several eminent seismologists have asked these questions with respect to the Southeast in general (see Volume IV, Appendix 5, Section 5.5.1.5 for a more complete discussion and several scientific references) and have found that the region within which the North Carolina site is situated has had a history of relatively infrequent, quite small earthquakes and no indication of geologically recent fault offsets. Four surrounding regions, on the other hand, have histories of more frequent earthquakes, including some that were quite large. The 1886 Charleston, South Carolina, earthquake was in one of these surrounding regions, which has a history of repeated, frequent earthquakes. The large earthquakes are not isolated events -- they occur in places that have a history of more frequent, larger earthquakes. Conversely, if a region does not have a history of more frequent, larger earthquakes, it has a very low potential that a very large earthquake will occur there; this is the situation for the North Carolina site. In fact the greatest earthquake that might occur at the site would probably come from a large earthquake in one of the surrounding regions and would be much diminished before it reached the site. The Durham Morning Herald is correct in pointing out that there are some large-earthquake-prone zones in the eastern United States (the SSC site is not in one of them) and that the general level of earthquake preparedness in the East is low.

0739.01

Comment noted.

0739.02

According to Mr. John Dorney, Engineering Supervisor, Special Projects Unit, Water Quality Planning Branch, Division of Environmental Management, Department of Natural Resources and Community Development, Raleigh, North Carolina, the capacity of Durham-Eno River wastewater

plant is 2.0 million gal/d. The actual maximum flowrate, at present, is 1.8 million gal/d. The plant has 0.2 million gal/d excess capacity available (October 13, 1988). The SSC would need 0.15 million gal/d capacity.

According to Mr. Dorney, the proposed expansion of the Eno River Wastewater treatment plant to 10 million gal/d is pending subject to the Federal EIS which is now being prepared.

In addition, Butner Wastewater Treatment Plant has an excess capacity of approximately 1.1 million gal/d as noted in Volume IV, Appendix 5, Table 5.5.8-1 of EIS. The excess capacity would be sufficient to serve a population of about 11,000 people.

The State of North Carolina originally proposed that wastewater be pumped from the southwest quadrant to the Durham-Eno River Wastewater Treatment Plant and that the plant be expanded.

Post-site visit information provided by the State of North Carolina in response to questions from the DOE is as follows (please refer to Section 10.3.3-1 E2): Wastewater from area K3 will be handled by treatment in a stabilization lagoon with storage, followed by land application through spray irrigation.

Wastewater from areas K4 and K5: Same as option for K3, but with septic tank system treatment followed by a subsurface absorption field.

Wastewater from area K6: Same as options for K3, K4, and K5, but with the possibility of package plant treatment followed by surface discharge into a nearby stream.

These changes are included in the Errata to EIS Volume IV, Appendix 10, Section 10.3.3.1.

0739.03

Comment noted.

0740.01

Comment noted.

0740.02

The discussion on traffic presented in Volume IV, Appendix 14, Section 14.2.1.3.E.1.b confirms that the traffic on North Carolina Highway 501 is heavy in places and that the traffic on this highway and other roads in the vicinity of SSC will increase during construction and operations.

0740.03

Comment noted.

070107503358836

0740.04

The new roads and upgrading of existing roads have been proposed by the State to reduce the SSC traffic on the existing roads. Traffic analysis of the roads is discussed in EIS Volume IV, Appendix 14, Section 14.2.1.3 E.

0740.05

It is possible that some vehicles will not follow the recommended routes. The SSC Project would be able to specify the truck routes for hauling of construction equipment and materials.

0740.06

Construction scheduling, detours, flagmen and construction of bypass roads have been proposed in EIS Volume I, Chapter 3, Section 3.6, to mitigate traffic disruption during road construction. These are expected to reduce traffic delays in most circumstances.

0740.07

The EIS suggests in Volume IV, Appendix 14, Section 14.2.1.3.E.1.b that public transportation and ride-sharing programs could be implemented as possible mitigations. Any such program could be developed and offered to the SSC construction and/or operations employees to reduce the traffic. A review will be provided in the Supplemental EIS.

0740.08

Disruption of the existing traffic patterns, discussed in Volume IV, Appendix 14, and Volume I, Chapter 5, Section 5.1.8 of the EIS, refers to the impacts of proposed new roads. Construction of new highways and intersections will change the current traffic patterns. New patterns will be established which may improve traffic flow in some cases while disrupting it in other cases.

Volume I, Chapter 5, Section 5.1.6 of the EIS shows the projected maximum increase in the number of injuries/injury accidents and the number of fatalities/fatal accidents at each of the seven site alternatives as a result of SSC construction traffic. The number of fatal accidents at the proposed North Carolina site due to SSC truck traffic is projected to be 0.08/yr. Accidents resulting in property damage only are not included in the analysis.

0741.01

It is DOE policy to avoid wetlands to the maximum extent practicable. The potential adverse effects on wetlands at the various alternative sites will be considered in selecting a site for the SSC. Detailed plans to mitigate any anticipated wetland impacts at the selected site would be developed in consultation with the U.S. Army Corps of Engineers

(or delegated State authority) and analyzed in detail in the Supplemental EIS. It should be noted that North Carolina is not the only site with wetlands in the campus, injector, and expansion areas (A, B, and C). Wetlands are located in the B and C areas of all sites except Arizona and in the A area of all states except Arizona and Colorado. All applicable wetland sections have been revised to clarify this (see Volume I, Section 5.1.5.4 and Volume IV, Appendix 11, Section 11.3).

0741.02

Comment noted.

0742.01

The number of wells estimated by the State of North Carolina to be within the SSC footprint was not reported accurately in the DEIS. The State had provided well records which document 112 wells within one mile of the ring centerline and had also noted that wells have only been required to be registered since 1959. Since that time, perhaps only half or less of the wells drilled have been actually registered. Given the potential for unregistered wells and commenters' input, it is assumed that in excess of 300 water wells may exist within the SSC footprint.

However, only a small number of these wells may be directly affected by the project and required to be closed. The State estimates, based on field surveys, that only about nine wells, the number reported in the DEIS, would be directly affected and required to be closed because of the SSC. See Comment Response 1390.07 for clarification of criteria to assess number of wells closed and revisions to the EIS.

0742.02

The DOE believes the EIS adequately assesses the potential impacts of the proposed action which is to select a site for the SSC. See Comment Response 13.02. The DOE will prepare a Supplemental EIS which will assess in more detail the potential impacts of constructing and operating the SSC at the selected site.

0743.01

The Invitation for Site Proposals (ISP), Appendix A, Section A3, states: "the total cost, including the research and development (R&D) in support of construction, the cost of detectors, and other preoperating costs for the facility, is about $4.4 billion (FY 1988 dollars). This cost estimate is considered accurate to within about 10%."

As stated in EIS Volume I, Chapter 3, although considerable interest in such possibilities (collaboration and cost sharing for the SSC) has been expressed by other nations, they are unwilling to make a firm commitment until the U.S. itself makes a firm commitment for construction of the SSC. It should be further noted that traditionally international collaborations have taken place at high energy physics laboratories such as

CERN, Fermilab, SLAC, and DESY, wherein the host laboratory does not charge for use of the accelerator. Recently, in international collaboration, the cost of detector construction has often been shared among the collaborating countries, and this practice would presumably continue for detectors at the SSC. The DOE is actively pursuing international collaboration and cost sharing in connection with the SSC itself. For purposes of the DEIS, it was assumed that all costs would be borne by the U.S., except for those costs proposed by the State proposers which would be borne by the State.

0744.01

Relocation does have the potential to be a major life event for elderly people. The further the distance one moves from one's social network the greater the impact of the move. An individual's social networks include institutions to which they are attached. In addition to this it should be pointed out that the elderly may be differentially affected by the relocation of social institutions with which they are attached. As noted in the EIS Volume IV Appendix 14, "To the extent that institutions are relocated or disturbed in this region, as may be the case for one or two area churches and at least one cemetery, special subgroup impacts are a concern. Social ties to such institutions often are not flexible, and emotional distress may accompany these special impacts." Thus, the elderly may also be adversely impacted by having to move or by having institutions to which they are attached relocated. To the extent that relocations occur nearby, the impacts should be minimized.

See Comment Responses 19.01 and 710.01.

0745.01

Comment noted.

0745.02

Mayo Reservoir rather than Lake Michie is proposed to supply water to the far cluster area of the SSC. The Little River Reservoir completed in early 1988 roughly doubles the safe yield of City of Durham's water supply. These changes have been included in the revised water supply assessment in EIS Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G. The assessment indicates that water requirement for the SSC project and additional off-site domestic use can be met by existing reservoirs in the project vicinity, which have adequate excess capacities for anticipated SSC operation period. The safe reservoir yields used in the evaluation were estimated for 20-yr drought conditions, i.e., a drought with an average recurrence interval of 20 years. The safe yields for a more severe drought would be less, but such yield data are not currently available. Water demand due to population increase beyond year 2000 has not been evaluated but will be addressed in a Supplemental EIS if the North Carolina site is selected for the SSC.

See also revised Volume I, Tables 1-1, 3-3, and 3-7, and Sections 3.7.3 and 5.2.3.

0746.01

The number of wells estimated by the State to occur within the SSC footprint in North Carolina was not reported accurately in the DEIS. The State had provided well records which document 112 wells within 1 mi of the ring centerline and had also noted that wells have only been required to be registered since 1959 and since that time perhaps only half or less of the wells drilled have been actually registered. Given the potential for unregistered wells and commenters input, it is assumed that in excess of 300 water wells may exist within the SSC footprint. However, only a small number of these may be directly affected by the project and required to be closed. The State estimates, based on field surveys, that only about 9 wells (the number reported in the DEIS) would be directly affected and required to be closed because of the SSC. See Comment Response 1390.07 for clarification of criteria to assess number of wells closed and revisions to EIS.

As noted in the comment and in EIS Volume IV, Appendix 7, Section 7.2.3.5, the State has indicated that it will replace any water supply lost due to SSC siting or construction. This is also a Federal policy, and during construction, the contractors would also be responsible for any physical damage to near-site wells.

0746.02

An analysis of SSC-related impacts on Granville County public finance is presented in EIS Volume IV, Appendix 14, Section 14.1.3.5.D. The net fiscal impacts on the county are projected to be negative during the first three years of construction, and positive thereafter (see Volume IV, Appendix 14, Table 14.1.3.5-16). These estimates accounted for projected increases in Granville County public infrastructure and services.

0747.01

Comment noted.

0747.02

See Comment Responses 799.02 and 799.03.

0748.01

Comment noted.

0748.02

The DOE has no authority to establish special compensation funds or claims procedures for damages caused by SSC activities. Compensation for damages would be in accordance with existing law.

070107503358840

0748.03

Comments noted.

0748.04

The actions of the State or its agents are not the responsibility of the DOE. The office of the Honorable James G. Martin, Governor of the State of North Carolina, Manager of the State's SSC Task Force, should be contacted.

0748.05

The DOE has no authority to establish special compensation funds or claims procedures for damages caused by SSC activities.

0749.01

Comment noted.

0749.02

Questions concerning the data management of the proposer should be directed to the appropriate State agency. Members of the DOE Site Task Force and persons responsible for preparation of the EIS have spent considerable time at each site gathering additional data and confirming available data. See Comment Response 13.02.

0749.03

The discussion of climatic conditions presented in EIS Volume I, Chapter 4, Section 4.3 and in Volume IV, Appendix 5 is sufficient to establish the baseline of parameters necessary for input for other resource assessments. Climatic conditions are not a category in which the project will impact an environmental condition; rather, climate is an environmental condition with potential to impact the project. Providing climatic detail in the level suggested would not lend to the understanding of the impact of the climate on project siting, and the level of detail is not required by resource assessments which utilize climatic conditions as inputs. The references cited in Appendix 5 were the source of the characterization of North Carolina as having an even annual distribution of rainfall, which is certainly borne out by the tabulation provided as Table 5.5.3-2. The text in EIS Volume IV, Appendix 5, Section 5.5.3.3 has been corrected in the Errata.

0749.04

EIS Volume IV, Appendix 5, Section 5.5.2.1, Table 5.5.2-1 presents minimum daily flows for four gaging stations in the project vicinity, ranging from 0.01 to 1.19 ft^3/s. As shown in the table, Knap of Reeds Creek, the feeder stream for Lake Butner, near Butner has an average

flow of 52.5 ft^3/s and a minimum daily flow of 1.19 ft^3/s. If the North Carolina site is selected, more detailed analysis of low flows and its impacts on water supplies will be included in the Supplemental EIS.

The estimated future increase in water use for Durham City is expected to be handled by Lake Michie and the recently completed Little River Reservoir (EIS Volume IV, Appendix 5, Section 5.5.2 and Appendix 7, Section 7.1.3.5).

See also Comment Response 1272.02.

0749.05

The expected water use of the SSC from Lake Butner would be about 23 percent of its available excess annual supply. Since the demand would be well within the lake's capacity, it is not considered to be a insignificant impact. In general, water requirements for the SSC project and additional off-site domestic use can be met by existing reservoirs in the project vicinity, which have adequate excess capacities, as discussed in revised Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G.

See Errata to Volume IV, Appendix 5, Section 5.5.2.1.C. See also revised Tables 1-1, 3-3, and 3-7 and Sections 3.7.3 and 5.2.3 in Volume I. For sources of revisions, see Comment Response 708.03.

0749.06

Comment noted.

0750.01

See Comment Responses 13.02 and 880.02.

0750.02

See Comment Response 880.04.

0750.03

Land acquisition is the responsibility of the proposer; see Comment Response 880.04. Regarding mitigation of relocation impacts, see Comment Response 658.06.

0751.01

The DOE has solicited public comment prior to and following preparation of the DEIS. The DOE has given careful review to each comment submitted and testimony received both in the work of the Site Task Force and in the preparation of the FEIS. The reader is referred to both this volume (Volume II, Comment Response Document) and the resulting changes in the FEIS as evidence of the DOE's commitment to include public input in the SSC siting process. Also see Comment Response 1126.05.

It is recognized that the EIS for the SSC is a large document. The DEIS was large because seven site alternatives were considered. NEPA requires the DOE to consider alternatives to the SSC, including no action. These are discussed in Volume I, Chapter 3, Sections 3.2 and 3.3.

These observations on the technical nature of the DEIS are correct. The DOE has endeavored to minimize the technical terms used, especially in Volume I, while preparing a technically adequate analysis. See the revised Glossary in Volume I and the revised text of Volume I. In the preparation of the FEIS, the DOE has taken note of this critique and attempted to simplify where possible and provide definitions as appropriate.

0752.01

Comment paragraphs 1 and 2: This EIS addresses long-range and historical transmission and generation capabilities. Short-term events such as unexpectedly high temperatures, droughts, and storms which may cause short-term excess demands or outages have little effect on a particular utility's ability to supply power to a facility of this size over a long period. The planning and management capabilities of the utility based on load projections and planned generation and transmission facilities are addressed in Volume IV, Appendix 14, Section 14.2.2.3 E.1. Statements made in Volume IV, Appendix 14, Section 14.2.2.3 E.1.a of the DEIS compare the current resource plans with the addition of over 200 MW of electrical load. This comparison does not reflect the utilities' plans (including the SSC load), but only indicates the need for modification of those plans.

Comment paragraph 3: Volume IV, Appendix 14, Section 14.2.2.3 E.1.a.3 identifies CP&L's total generating resources as 10,092 MW. Volume IV, Appendix 5, Section 5.5.11.2 B.1.d identifies the CP&L system capability as approximately 9,600 MW. The difference between the two values is that the lower value refers to CP&L system capacity in 1987, while the higher value refers to total available resources (including purchases) in 1988. Volume IV, Appendix 5, Section 5.5.11.2 B.1.d has been corrected in the Errata to duplicate the capability value noted in Volume IV, Appendix 14, Section 14.2.2.3 E.1.a.3. See response to comment paragraphs 1 and 2 above concerning CP&L's plans for additional generating capacity.

Comment paragraph 4: The 19,437 MW value cited in Volume IV, Appendix 14, Section 14.2.2.3 E.1.a.3 includes 1,000 MW for Bad Creek Pumped Storage Facility, 1,100 MW of refurbished coal-fired generation, 1,650 MW of new combustion turbine generating capacity, and the full capacity of the two Catawba units, of which Duke owns 25 percent and currently purchases most of the remaining output.

Comment paragraph 5: The total North Carolina excess reserves under the current resource plan fall short by a small amount of meeting the additional SSC load. The actions identified are those that CP&L and Duke plan for meeting any additional load requirements. Duke Power Company has mothballed some units. The statement contained in the EIS concerning mothballed units refers to the joint capabilities of CP&L and Duke to meet the needs of the SSC.

0752.02

EIS Volume I, Chapter 4, Section 4.9.2.2 and Table 4-30 summarize information on the existing electric power utilities and their capabilities. EIS Volume IV, Appendix 5, Section 5.5.11.2.B.1 provides more detailed information on this subject.

EIS Volume I, Chapter 5, Section 5.1.8.7 summarizes information on impacts to electric power utilities, and EIS Volume IV, Appendix 14, Section 14.2.2.3.E.1 provides more detailed information on impacts.

0752.03

The number shown in the EIS Volume I, Chapter 1, Table 1-1 for miles of new power line to SSC substations is indeed "4." However, the comment does not quote Volume I, Chapter 3, p. 3-24 correctly, because the phrase "undisturbed area of timber production..." is not being used. The estimate of 4 mi of new lines is based on material submitted by North Carolina, describing one possible scenario of power supply for the SSC. North Carolina alluded to a variety of potential power supply scenarios rather than proposing one. One specific alternative was selected for EIS analysis purposes by the DOE. This data is an estimate based on what might be required by the SSC project. Regarding other matters raised in this comment, please note the following: It is Table 3-3 that incorrectly identified Lake Michie as the water source for the far cluster, not Table 3-4. This error has been corrected. The 15,897-acre amount listed in Table 3-5 was provided in the land acquisition plan of the proposer and does not include acreages for utility easements outside of the areas that must be deeded to the DOE.

0753.01

The DOE is committed to operating the SSC in compliance with applicable statutes and regulations. The EIS Volume I, Chapter 6 summarizes such requirements. A Regulatory Compliance Plan will be prepared by the DOE for the selected site prior to construction.

0753.02

See Comment Response 627.01.

0753.03

Comments noted.

0753.04

Comments noted.

0753.05

Comments noted.

0754.01

See Comment Responses 710.01 and 880.04.

0754.02

The number and density of domestic wells in North Carolina is quite high as noted in the comment. The number of wells estimated by the state to be within the SSC footprint in North Carolina was not reported accurately in the DEIS. The state had provided well records which document 112 wells within 1 mi of the ring centerline and had also noted that wells have only been required to be registered since 1959 and since that time perhaps only half or less of the wells drilled have been actually registered. Given the potential for unregistered wells and commenters input, it is assumed that in excess of 300 water wells may exist within the SSC footprint. However, only a small number of these may be directly affected by the project and required to be closed. The state estimates, based on field surveys, that only about 9 wells (the number reported in the DEIS) would be directly affected and required to be closed because of the SSC. See Comment Response 1390.07 for clarification of criteria to assess number of wells closed and revisions to EIS.

0754.03

See Comment Response 749.03.

0754.04

Comment noted.

0754.05

See Comment Responses 13.02 and 710.01.

The DOE has determined that its proposed siting, construction and operation of the SSC is a "major Federal action having a potentially

significant effect on the quality of the human environment." This means that the DOE was obligated to prepare an EIS regardless of whether the states prepared any similar assessment. Information supplied by the proposer was only one source of information used in the EIS. Data for the assessments included those which were publicly available from State agencies, peer-reviewed journals, university reports, and other referenceable works.

0754 06

The wastewater generated at the SSC facilities will be treated and discharged in compliance with proper NPDES permits and all applicable regulations. Enforcement and contingency plans will be produced for the selected site. As discussed in EIS Volume I, Chapter 6, Section 6.1, "it is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards." The DOE's commitment to national environmental protection goals is discussed in Volume I, Chapter 6, Section 6.3.

0754.07

Regarding verification of data received from the State, see Comment Response 13.02.

0755.01

The SSC is designed solely for the purpose of conducting fundamental research in high energy particle physics. While no other uses of the SSC, such as medical research, have been contemplated by the DOE, there may be future medical applications or benefits from the research results of the SSC, as there has been with other accelerator research developments (see Volume I, Chapter 2). Radionuclide production for any use is not a function of the SSC.

0755.02

The SSC is a high energy research machine and not an isotope production facility. At this time there are no plans or designs for using the SSC for producing radioisotopes for medical or other purposes, and there are no plans or designs for using the SSC for medical treatment. However, whether or not the SSC is sited at Fermilab, there are plans to continue using the Fermilab Linac for medical treatment. While the DOE is not familiar with the one-page sheet of the "potential medical benefits of the collider," the EIS Volume I, Chapter 2 describes the results of accelerator technology discoveries and their impacts on medical diagnosis and treatment. For example, the Positron Electron Topography (PET) scans and magnetic resonance imaging, as well as certain medical (accelerator) produced isotopes, are but a few products of high energy/physics research.

0755.03

See Comment Response 755.01.

0756.01

No response required.

0757.01

Durham, Granville, and Person Counties is the Region of Influence (ROI) used as a farmland inventory when comparing the prime and important farmland permanently converted by the SSC project. See Comment Response 707.04 for information on prime farmland acreage estimates. See Comment Response 1513.25 for a discussion of land acquisition concerns.

0758.01

See Comment Response 1514.05.

0758.02

The cited statement from EIS Volume I, Section 5.3.2 refers to growth in the North Carolina Region of Influence as a whole and not specifically to northern Durham County. As outlined in more detail in Volume IV, Appendix 5, Section 5.5.11.1.B, the North Carolina Region of Influence is projected to grow at an annual rate of 1.2 percent throughout the 1980's, slowing to 1.1 percent in the 1990's. The reported overcrowding of public schools in northern Durham County is an existing condition that would affect county residents with or without development of the SSC in North Carolina.

0758.03

The current rapid growth being experienced by Durham City and County has been noted in the EIS in the discussion of the affected environments at the site alternatives in Volume IV, Appendix 5, Section 5.5.11.

0759.01

The SSC will be constructed and operated using the most recent technology (see EIS Volume I, Chapter 2). The alternative of delaying the construction of this project is assessed in EIS Volume I, Chapter 3, Section 3.2.4.3.

0760.01

Comment noted.

0761.01

Comments noted.

0762.01

See Comment Response 880.04. See EIS Volume IV, Appendix 14, Section 14.1.3.5 for recognition of the impacts on affected individuals of the relocation of the referenced cemetery. When a site has been selected, the site-specific design will determine the exact location of the ring and its surface facilities. Attempts will be made to avoid or minimize impacts to features such as cemeteries. For the selected site, a Supplemental EIS will be prepared to evaluate specific impacts in more detail.

0763.01

The qualitative evaluations in the EIS are considered adequate for comparing the candidate sites, and -- after consideration of the comments on the EIS -- to provide the basis for site selection. More detailed, quantitative analyses of water quality would be performed for the selected site in order to better define site-specific impacts of the SSC. The results of these investigations will be published as part of the Supplemental EIS.

0763.02

The potential environmental impacts of constructing and operating an SSC at the proposed North Carolina site were evaluated by the DOE on the basis of information provided by the State, supplemented by additional information available to the DOE, and documented in the EIS. This information is sufficient for comparing and evaluating the candidate sites. More detailed evaluation of potential impacts and specific mitigative measures, including the water quality issues, will be made for the selected site and will be documented in a Supplemental EIS that will be provided to the public for review and comment prior to commencement of any SSC construction.

0764.01

There is a misunderstanding. The schedule of normal annual operation given in Volume IV, Appendix 1, p. 36 shows that 110 days are for "machine and detector maintenance and modification." This time will be used to prepare the machine and detectors for the next set of experiments. This preparation is a necessary part of the experimental program. Routine maintenance repairs will also be conducted during this period.

0765.01

See Comment Response 1390.07.

0765.02

See Comment Response 13.02.

0765.03

The data provided have been considered, along with other data sources, in revising the estimate of the number of wells within the SSC footprint at the North Carolina site. See Comment Responses 720.01 and 1390.07.

0766.01

No response required.

0767.01

See Comment Response 13.02. The proposed North Carolina site met the qualifications criteria and was forwarded by the DOE (along with the other qualified sites) to the NAS/NAE for a detailed evaluation. As a result of the evaluation, the NAS/NAE provided to the DOE a recommended list of the best qualified sites which included the proposed North Carolina site. The DOE subsequently accepted the NAS/NAE recommendation and announced the best qualified list of sites. See EIS Volume III, Chapters 1 and 2.

0768.01

Comments noted.

0769.01

Comment noted.

0769.02

In response to the comment, the Final EIS has been revised to include an expanded and updated discussion of the no-action alternative (see Volume I, Chapter 3, Section 3.3) and Programmatic Alternatives, including the potential use of other facilities (see Volume I, Chapter 3, Section 3.2.4.1).

The recent Congressional Budget Office (CBO) report, "Risks and Benefits of Building the Superconducting Super Collider," proposed to evaluate the DOE's total project cost estimate of $4.4 billion in two ways: by an examination of large-scale component costs (called "technical analysis" in the report) and by comparison with other recent DOE accelerator projects. The component cost examination essentially confirms the Department's cost estimate. The lower bound derived by CBO for the SSC costs is within the Department's stated uncertainty (10 percent) of costs for the project, while the upper bound is only 6 percent higher than the Department's upper estimates.

The second procedure used by CBO is simplistic: the mean of the average cost overruns for the four most recent accelerator projects is applied as a contingency to the SSC. Two of these projects came it at cost; by CBO's numbers, one increased about 60 percent, while the fourth more

than doubled its initial estimate. Thus, the "average" increase predicted by the CBO for the SSC comes to a rather large factor of 46 percent.

However, the three machines built previous to the four selected all came in at or below cost. The choice to exclude these devices from the calculation is arbitrary and unexplained. More importantly, two of these three, Fermi National Accelerator Laboratory (Fermilab) and Stanford Linear Accelerator Center (SLAC), probably provide the best analogies to the SSC, since they were also built from the ground up. Like the SSC, SLAC and Fermilab use previously tested methods, and achieved increases in scale over then-existing machines comparable to SSC's increase over Fermilab. They are the best analogies available.

Two other points in the cost analysis are worth mentioning.

First, there are no hidden costs for detectors or further detector development, as the report suggests. The project contains an excellent complement of detectors for the currently planned operations. Later, as physics results are followed up and new experimental ideas considered, new detectors may be proposed. The additional detector costs cited by the report are not requirements of the basic project, but rather a long-term list of possible future detector candidates developed by the Central Design Group.

Second, the Department's estimates do not include offsetting costs from non-Federal sources such as foreign or state contributions. The language of the report (page xii) suggests that $1.8 billion from non-Federal sources will be necessary to meet the Department's cost estimate, which is not true. Any such contributions will lower the Federal cost.

The comment mentions that the cost of building the SSC could be $9 billion. The factors entering the $9 billion figure are not known and can only be explained by adding inflation and many years of operating cost to the original construction cost.

The construction and operations of a frontier research device such as the SSC is benefitting the nation in three major ways.

1. The scientific discoveries made possible by the SSC are indeed the base from which future generations will develop their technologies. As a consequence of experimental research discoveries, new explanations and theories, such as quantum mechanics, are developed and become part of the arsenal of tools for technological evolutions. It has been estimated that the discovery of the proton, the electron, and the neutron are responsible for one-third of the GNP today.

2. The stringent requirements of some SSC components will enhance the manufacturing base of the industries involved. Areas of likely further improvements include vacuum welding, precision machining,

superconducting cable manufacturing, tubing fabrication, and assembly techniques. Supporting foreign facilities enhances their manufacturing capabilities.

3. High energy physics has consistently attracted some of the best minds in our country. As a result, many of the recent Nobel prizes have been awarded again to high energy physicists (e.g., 1988, Lederman, Schwartz, and Steinberger). This striving for excellence has a direct impact on our higher education as well as inspiration to our youth and our nation throughout the spectrum of disciplines.

Implementing the no-action alternative warrants further discussion here. In the CBO report, potential alternatives to building the SSC are discussed at great length. The report suggests two options: America could join the European Center for Nuclear Research (CERN) to build a large hadron collider (LHC), or it could build an electron-positron linear collider.

There are good reasons to pursue R&D on an electron-positron linear collider because electron-positron collisions are very effective in particle physics due to their point-like structure. The technology and the cost of an electron collider competing with the SSC cannot be evaluated for at least another 5-10 years. Hence, a cost and risk comparison at this time lacks the scientific technological basis.

There are serious studies under way at CERN to also utilize their 26 km tunnel under construction for the Large Electron Project (LEP) to include a future hadron collider (LHC). LEP is scheduled to start operation in summer of 1989 at an energy level of 0.1 TeV. The next priority for CERN is the upgrade of LEP to double its energy.

It is important to recognize that even under optimistic assumptions, less than one half the energy can be reached with a hadron collider LHC in the LEP tunnel. Also, in order to utilize the LEP tunnel a very ingenuous but difficult magnet design has been proposed.

1. The magnetic strength has to be pushed beyond the state of the art; more than one and one half times the SSC guidefield is under discussion.

2. To conserve space in the already utilized tunnel, the two typical magnets of the SSC with one aperture each have to be merged into a single magnet with two apertures.

To date a couple of short models of this two in one magnet exist, but none have reached desired performance, hence possibly requiring many years of R&D.

Furthermore, the LEP electron-positron and the LHC hadron program cannot operate simultaneously. In the hypothetical LHC there are two interaction regions projected (vs 4 for SSC) which severely limits availability of research opportunities.

07510800335889

Because of the commitments of CERN to LEP and LEP upgrade, the LHC could not be on a comparable time scale with the SSC unless very substantial additional resources are available from elsewhere, including the United States. Total costs for LHC are uncertain because of the early stage of magnet development.

Therefore, in summary, the CBO report explains that the LHC is not an approved project, is technically riskier to build, would not be as scientifically capable as the SSC, and would leave America without a premiere high energy physics facility, letting Europe receive all the training and economic benefits associated with such facilities.

The report's discussion of alternatives concludes by stating that "...the SSC would be the most scientifically capable machine."

0769.03

As indicated in the EIS, the SSC may generate small amounts of mixed wastes (less than 0.1 yd^3/yr), but the goal is to generate none of these wastes (see EIS Volume IV, Section 10.1.3.1). If mixed wastes are generated on occasion, they will be managed, temporarily stored, and disposed in accordance with DOE Orders 5820.1 and 5480.2 and RCRA requirements. For more information about mixed wastes, see Comment Response 524.06.

Systems will be implemented to capture whatever small amounts of water that leak into the tunnel. This water will be retained and monitored for radioactivity. If not contaminated, the water will be discarded as wastewater. If any radioactivity is found in the water, it will be disposed of as low-level radioactive waste (LLRW) (see EIS Volume IV, Appendix 12, Section 12.2.3).

Some SSC equipment, components, and other materials can be expected to become activated as a result of normal operations. The volume of LLRW has been estimated at 8,000 ft^3 (see EIS Volume IV, Section 10.1.3.1, Table 10.1.3-15). A limited access and secured storage area for activated equipment and components awaiting disposal or reuse will be identified during final design of the SSC. Fermilab has a storage area where activated components are stored until disposed or reused. There are no plans to permanently store or dispose mixed or low-level radiological wastes at the SSC.

0769.04

The comment raises a concern about the environmental monitoring to be used to detect adverse effects of the SSC. Reviews of the anticipated operations of the SSC have already been conducted; because of the experiences of Fermilab and CERN, there is considerable confidence in understanding the types of hazards that could exist at the new accelerator. Two types of hazards could exist: chemical and physical (radiological).

The chemicals to be used at the SSC may include solvents, cleaning or etching solutions, etc., and have been used in other industrial and laboratory settings. Monitoring will be conducted in accordance with DOE orders as required for the implementation of industrial hygiene, medical surveillance, and other programs and as required by environmental regulations to prevent releases of substances to air, water, and soil.

An environmental monitoring program for radiological hazards will be established prior to operations of the SSC. This program will be designed to detect, track, and assess impacts from any radiation or radioactive material released from the facilities. Environmental monitoring is capable of detecting levels lower than those that can be easily detected in-vitro in humans. Also, because the dose from external radiation falls off rapidly with distance, the use of passive monitoring devices such as TLDs (thermo-luminiscent dosimeters) continuously positioned at the site boundary will give a much more conservative number than individual off-site monitorings which are at a greater distance and not continuously present. A problem with individual off-site monitoring is that very low levels of external radiation are masked by such factors as the increased radiation inside a residence from brick and concrete. The average annual dose equivalent to the exposed population from building products is 7 mrem (National Council on Radiation Protection and Measurements, NCRP Report 93, Ionizing Radiation Exposure of the Population of the United States, Bethesda, MD, 1987).

The environmental monitoring program envisioned for the SSC will be able to detect radiation/radioactivity prior to impacts on the general public. The exposure to the general public from SSC operations is projected to be very small and masked by natural background. Therefore the SSC environmental monitoring program will utilize continuous monitoring of the site boundary and the points of release, such as a stack, and on-site and off-site samples as is currently done at the Fermilab. The specific procedures for continuous monitoring at above-ground locations will be determined before the Management and Operations (M&O) contractor is permitted to initiate experiments with the collider. Prior to commissioning of the SSC, there will be a mandatory Operational Readiness Review (ORR). One of the topics to be addressed at the Review will be the plans for radiation monitoring in residential areas near the SSC. As indicated in Volume IV, Appendix 10, Section 10.1.2.3, it is anticipated that there will be environmental monitoring of muons. Among the techniques to be employed for measuring radiation are high-pressure ionization chambers or large volume, ambient-pressure ionization chambers, thermoluminescent dosimeters, and the use of mobile muon telescopes.

Both on-site and off-site environmental monitoring for radiological hazards is currently conducted at Fermilab. These data are available to the public in the annual environmental monitoring reports published by Fermilab as required by DOE Order 5484.1. These reports do contain information regarding off-site environmental monitoring results based on analyses of the following samples: surface water, soil, and vegetation

(Baker, S., Site Environmental Report for Calendar Year 1987, FERMILAB 88/40, Fermi National Accelerator Laboratory, Batavia, Illinois, May 1988).

The comment also expresses another concern about the radiation exposures that may occur from muons and the extent to which features of the earth or the slope of the tunnels have been considered in the health assessments. These factors have been considered. The EIS addresses the potential for exposure at the ground surface in Volume I, Chapter 5, Section 5.1.6.2 and in Volume IV, Appendix 12, Section 12.2.1.1, in which radiation doses were estimated for the maximum annual radiation exposure to an individual under the worst conceivable conditions under normal operations. Exposures range from 0.008 to 7.0 mrem/yr at the proposed sites. This level of exposure was attributed to muons, if the person were located continuously underground on the same plane as the tunnel. Such an occurrence is extremely unlikely, but this approach was taken for assessing exposure as a worst-case situation. A check has been made of the topography in the interaction regions and beam absorber areas to determine whether there might be topographical depressions that would bring the surface below tunnel depth, and it was found that there are none (Volume I, Chapter 5, Section 5.1.6.2). The DOE has determined that an individual could not reach tunnel depth without digging or excavating to that depth. As shown in Volume I, Chapter 5, Table 5.1.6-1, calculated exposures to the maximally exposed individual on the ground surface at any of the proposed sites would be no more than 0.004 mrem/yr under normal operations. This level would be attributed to airborne exposure to activation products during the venting of the tunnel and would require continuous exposure at that location for a year (Volume I, Chapter 5, Table 5.6.1-2). This level is a small fraction (less than 1/1000th) of the natural background radiation levels and is well within the current DOE guideline of 100 mrem/yr (Volume I, Chapter 6, Section 6.3.2), which is applicable to a maximally exposed individual that could be affected by DOE activities.

0769.05

Comments noted.

0770.01

Comments noted.

0771.01

Comment noted.

0771.02

The environmental consequences of the SSC and the proposed mitigative measures have been addressed in the EIS. Volume I, Chapter 5 includes an evaluation of four types of impacts on water resources: runoff and

erosion, floodplains and flood risk, water quality, and water use. Additionally, detailed water resources assessments for each site alternative are provided in Volume IV, Appendix 7.

While the proposed SSC in North Carolina does cross several drainages, most of it would be constructed underground using tunneling methods that would have no direct impacts on surface features. However, construction of the injector and booster tunnel complex would involve about 6.5 mi of cut-and-fill-operations which cross Knap of Reeds Creek three times and tributaries four times. Each crossing would require some form of temporary channel diversion. By employing the proper protection measures, the residual impacts from these drainage modifications should be negligible. No other facilities around the ring should require drainage pattern modification during construction. See Volume IV, Appendix 7, Section 7.1.3.5.

Surface disturbances from construction (SSC facilities, roadways, utilities, etc.) could cause measurable increases in surface erosion and sediment transport to limited reaches of the affected channels. However, standard mitigative practices (sediment basin and trap systems) would be effective in reducing these impacts to negligible levels. See Volume IV, Appendix 7, Section 7.1.3.5.

Impacts from spoils disposal sites include potential for erosion and sediment transport offsite. These impacts would only be noticed along short reaches of channel immediately downstream from disposal piles, and would be short term, lasting only until vegetation could stabilize the surfaces. No potential for leaching of deleterious materials from spoils has been identified in North Carolina. Spoils may be sold or given to local aggregate producers, in which case the potential impacts from on-site disposal would be significantly reduced or eliminated (see Volume IV, Appendix 7, Section 7.1.3.5).

Wastewater generated by the SSC will be routed to existing wastewater treatment facilities which currently have adequate available capacity or plan expansions to meet additional requirements. Any additions to, or increases in, treated wastewater discharges must be authorized through the National Pollutant Discharge Elimination System (NPDES) permitting system.

EIS Volume I, Chapter 3, Section 3.6 contains a summary of mitigative measures to which the DOE is committed or plans to develop at the appropriate stage of project design.

0771.03

The SSC project will not use four times the amount of water which all of Durham City and Durham county would use in 1996, as claimed in this comment. SSC water needs, which have been refined since the publication of the EIS, are listed in Volume IV, Appendix 7. Table 7-1 lists the on-site water needs as an average for all candidate sites, and Table 7-6

lists the off-site water needs resulting from projected SSC-caused population increases specifically for the vicinity of the proposed North Carolina site. During the seven years of SSC construction, the on-site water needs will average about 30 gal/min (50 acre-ft/yr) while the off-site water needs by the estimated population increase will average about 855 gal/min (1,430 acre-ft/yr). During SSC operations, the on-site water needs will average about 1,350 gal/min (2,175 acre-ft/yr), while the off-site water needs will average about 865 gal/min (1,395 acre-ft/yr); thus, the combined on-site and off-site water needs for the proposed North Carolina site will average about 2,215 gal/min (3,570 acre-ft/yr) during SSC operations.

The EIS identifies the known water use in the vicinity of the proposed North Carolina SSC site in Volume IV, Appendix 5, Sections 5.5.2.1 and 5.5.2.2. The proposed water supply for the SSC project is Lake Butner for the campus and injector complex and near cluster half of the ring, and Mayo Reservoir for the far cluster half of the ring. Lake Butner has a current safe yield of about 10,000 acre-ft/yr and an available excess of 8,400 acre-ft/yr. Mayo Reservoir has a current safe yield of over 22,000 acre-ft/yr, and an available excess of 5,600 acre-ft/yr. Known Durham residential surface water use is listed in Table 5.5.2-4 and totals about 21,750 acre-ft/yr and is expected to grow to 44,750 acre-ft/yr. The estimated increase in water use for Durham City is expected to be handled by Lake Michie and the recently completed Little River reservoir.

Thus, the projected water needs of the SSC during operation would be 16.5 percent of current Durham City surface water use, and 8.0 percent of projected water use. The average annual water needs of the SSC during the construction period would be 6.6 percent of current Durham City water use, and 3.2 percent of projected water use in Durham City. These water use figures as percentages of the entire county's water use would be much smaller.

For the assessment of potential SSC water use impacts, see the EIS Volume IV, Appendix 7, Sections 7.1.3.5 and 7.2.3.5.

0771.04

Impacts from highways that were proposed by North Carolina which would provide access to the SSC are addressed in a number of locations in the EIS. Impacts on floodplains and surface water drainage courses are addressed in EIS Volume I, Chapter 5, Section 5.1.2.2.E and Volume IV, Appendix 7, Section 7.1.3.5.C. Impacts on wetlands are addressed in EIS Volume I, Chapter 5, Section 5.1.5.E and Volume IV, Appendix 11, Section 11.3.5.3.A. Impacts on existing traffic patterns and the potential for inducing growth are addressed in EIS Volume I, Chapter 5, Section 5.1.8.6.A and Volume IV, Appendix 14, Section 14.2.1.3.E.

It is stated in the EIS (Volume I, Chapter 5, Section 5.1.9.1.A and Volume IV, Appendix 5, Section 5.5.12.1) that although intensive surveys have not been completed, it is likely that previously unrecorded cultural resource sites would be identified.

As noted in Volume I of the EIS, the DOE recognizes that a more detailed review will be required under NEPA prior to a final decision on the construction and operation of the proposed SSC at the selected site. This more detailed review will be provided in the supplement to the EIS. Mitigation strategies will also be described in greater detail in the Supplemental EIS.

0771.05

Secondary and cumulative environmental effects of the SSC project are specifically addressed in each technical area to which they apply in the EIS. In addition, Volume I, Chapter 3, Section 3.5 summarizes cumulative impacts by resource area impacted. Effects of the SSC on water quality and water supplies are specifically addressed in Volume I, Chapter 5, Section 5.1.2. For example, water supply, especially surface water supply, would be slightly impacted. Water quality would be impacted only if sedimentation occurred during construction. Mitigation measures would be implemented to minimize the probability of sedimentation (see Volume I, Chapter 3, Section 3.6).

0772.01

Comment noted.

0772.02

See Comment Response 13.02 concerning the use of data in the EIS.

See Comment Response 1513.03 concerning U.S. Route 501 and the railroad that generally follow the alignment of the collider ring.

The natural gas pipeline crosses the site from the northwest to the southeast passing through the northeast corner of area B as shown in EIS Volume IV, Appendix 1, Figure 1.2.5-4.

0772.03

See Comment Responses 710.01 and 1390.07, third paragraph.

0772.04

The DOE believes that this EIS has been prepared in a manner consistent with Council on Environmental Quality regulations and DOE guidelines, and is adequate to support a site selection decision.

075108003358815

0772.05

The economic analysis presented in the EIS was performed independently, and did not incorporate results from studies conducted by the State of North Carolina (cited in comment). At this stage in the environmental analysis process, a standardized approach, applied equally to all potential sites is the most fair and objective methodology. The economic analysis presented in the EIS is conducted as an integral part of the larger socioeconomic study of anticipated impacts due to the SSC, which employed numerous calculations (e.g., population projections, anticipated in-migration) unique to the EIS itself. The EIS analysis of the public finance impacts of the SSC on the State of North Carolina, and the primary impact counties of Durham, Granville, and Person, are presented in Volume IV, Appendix 14, Section 14.1.3.5.D. Maximum annual increased revenue for the state would peak in 1992 at $15.2 million (during the peak construction year), and would level off at $8.4 million by 2000 (during full operation). Net cumulative fiscal impacts for local jurisdictions in the three primary impact counties would be negative during the first three years of construction, and positive thereafter.

0772.06

Comment noted.

0773.01

Comment noted.

0773.02

Comment noted.

0773.03

Potential impacts of the SSC project on surface water quality may result from surface erosion, channel erosion, pollutant washoff, dewatering the tunnel, and increased wastewater treatment plant effluent. EIS Volume IV, Appendix 7, Section 7.1.3.5.F presents an assessment of the potential impacts and mitigative measures. Potential impacts on groundwater may result from surface and subsurface construction, disposal of wastewater from tunnel and shaft dewatering, and leaching of spoils. EIS Volume IV, Appendix 7, Sections 7.2.3.5.A.4 and 7.2.3.5.B.2 assess the potential impact on groundwater quality and present possible mitigative measures (see also Volume I, Chapter 3, Section 3.6 concerning mitigation).

Radiation impacts associated with SSC operations are addressed in EIS Volume IV, Appendix 12, Sections 12.3 and 12.4. All of these factors have been considered in the selection of the site. EIS Volume III describes the site selection process.

0773.04

See Comment Response 1278.11.

0773.05

The DOE agrees that maintaining high standards for air and water quality are important. Construction and operations of the SSC will be done in such a way that all air and water quality standards are met. Impacts to air quality have been assessed in EIS Volume IV, Appendix 8, and impacts to water resources in Volume IV, Appendix 7, Sections 7.1.3.5 and 7.2.3.5.

0773.06

Comment noted.

0773.07

See Comment Response 773.03.

0773.08

The SSC could have some detrimental impacts on some individuals while benefitting directly those that work on the project. Also, certain subgroups may be affected more negatively while others may benefit to a greater extent. Typically, individuals displaced by a project and those on fixed incomes suffer greater impacts than other subgroups.

Information on the numbers of new jobs directly related to the construc tion and operations of the SSC as well as the number of secondary jobs created by the expenditures of earnings by the direct workers plus project-related purchases of goods and services are discussed in EIS Volume IV, Appendix 14, Section 14.1.3.5.A.

0773.09

Comment noted.

0774.01

Comment noted.

0775.01

Comments noted.

0777.01

The comment cites that some jobs at Fermilab have base pay of $6 - $7 per hour and many technical jobs there pay about $25,000 annually. However, the average earnings (in 1988 dollars) per direct SSC job in

the North Carolina Region of Influence (ROI) were estimated at $40,525 between 1989 and 1996 and $31,741 in the year 2000. The comment also cites that there are no "spin off industries" created at Fermilab. Within the context of the EIS economic analysis, true "spin off industries" (industries based upon technological advances made at the facility) are not considered. However, it does estimate secondary economic impacts, based on the most recent input-output multipliers for the North Carolina ROI (EIS Volume IV, Appendix 14, Section 14.1.3.5.A). These multipliers reflect the interaction between existing industries within the region.

With regard to the likelihood that existing ROI residents would not obtain jobs created by the SSC facility, although it is true that some of the SSC construction and operation jobs require skills that would preclude local residents from obtaining the work, only those jobs that could be obtained by local residents were included in the EIS socio-economic assessment. Of these, it is expected that slightly less than half (4,600) actually would be filled by local residents during the peak construction year in 1992, as well as during the first year of full operation (2,900 jobs) in 2000 (EIS Volume IV, Appendix 14, Section 14.1.3.5.A). Moreover, in-migration into the North Carolina ROI is not projected to be relatively high due to the absence of workers with necessary skills -- as noted in the comment -- but due to low unemployment rates in the area coupled with the presence of a relatively small existing labor force.

The commenter's assertion that the North Carolina ROI would have the greatest amount of in-migration (as indicated by the greatest housing requirements) of the seven site alternatives is correct for the construction period. However, the Tennessee site alternative was projected to experience slightly greater in-migration during operation (see EIS Volume I, Chapter 5, Table 5.1.8.2).

Anticipated SSC-related housing impacts in the North Carolina ROI, and the primary impact counties of Durham, Granville, and Person, are presented in EIS Volume IV, Appendix 14, Section 14.1.3.5.B. Increased housing demand in Durham County would produce a noticeable impact. SSC-related traffic impacts in the North Carolina ROI, including Durham County, are discussed in EIS Volume IV, Appendix 14, Section 14.2.1.3.E in terms of current and expected future (SSC) levels of service. As the traffic analysis indicates, few of the roads examined currently have an unacceptable level of service rating ("D" or below), and impacts due to the SSC would be relatively slight in terms of decreasing these ratings further.

0777.02

Employment opportunities are discussed in EIS Volume IV, Appendix 14, Section 14.1.3.5.A. Prime farmland acreages have been updated since the publication of the DEIS. See Comment Response 707.04.

0777.03

SSC-related employment impacts, including both direct and indirect/ induced jobs, would peak at about 0.9 percent of projected baseline employment in the region. That is nine-tenths of one percent, not nine percent as stated in the comment. This is discussed in the EIS Volume I, Chapter 5, Section 5.1.8. However, it is true that the SSC-related impact on North Carolina employment is greater than that projected for the other six proposed locations of the facility.

0777.04

SSC jobs will be produced for only some people directly affected by the project. The SSC will affect some people negatively while benefitting directly those that work on the project and those that gain secondary employment from the project. Typically, as large projects start up, unemployment goes down while labor force participation rates go up. Relocation services are also provided to assist businesses and to mitigate impacts on local area employment (see Volume IV, Appendix 14).

0778.01

Comment noted.

0780.01

The EIS analyses are based on the assumption that 100 percent of the 53-mi collider ring in North Carolina will be excavated by means of tunnel boring machines. This is reflected in statements in numerous locations in the EIS, including Volume I, Chapter 3, Section 3.4.5; Volume I, Chapter 4, Section 4.1.4; and Volume IV, Appendix 1, Section 1.2.5.1; etc.

With regard to excavation of the experimental halls and of the injector facilities, see Comment Response 716.07.

0780.02

The statement that only three states will use underground construction in incorrect. All seven states plan to use underground construction techniques (including TBM construction of the tunnels) with some combination of the cut and cover method, depending on the state. EIS Volume IV, Appendix 6, Section 6.3.

The North Carolina site has two underground interaction halls and two cut and cover halls. The Michigan site also has two halls by each technique. The Tennessee site has all four halls located in underground caverns.

0781.01

Geology and tunneling, regional resources, environment, setting, regional conditions, and utilities (including existing and projected water supplies and sewage treatment capacities) were considered during proposal evaluation leading to the Best Qualified List and will be considered in site selection. See EIS Volume III, Chapter 1, Section 1.1.

0782.01

Comment noted.

0783.01

Comment noted.

0783.02

See Comment Response 715.01.

0783.03

See Comment Response 715.02 and 715.03.

The estimated SSC-related emissions of ozone precursors (volatile organic compounds (VOCs) and nitrogen oxides (NO_X)), and carbon monoxide (CO) in North Carolina are in fact insignificant when compared to the existing host countywide emissions of these pollutants. For example, the projected SSC-related emissions of hydrocarbons (only a portion of which are VOCs), NO_X and CO during construction are 0.41 percent, 0.58 percent and 1.33 percent respectively of the corresponding existing emissions of Durham, Granville and Person Counties (using the reformatted tables). All of these emissions occur only during construction and most of them are from mobile sources. During operation these increments are projected to be less than 0.5 percent of existing levels. Therefore, SSC-related ozone precursor emissions should have little, if any, impact on the ozone and/or CO attainment status in Durham and Granville Counties.

0783.04

The EIS shows the NO_X impact referenced; the resulting air quality is still within the AAQS. TSP and PM_{10} emissions have been reduced. The referenced operations emissions are correct. Please see Comment Response 715.04 for a discussion of these last two points.

0783.05

See Comment Response 715.05.

0784.01

Comment noted.

0784.02

Until the DOE agrees to a final design of the SSC, the exact location, site, and configuration of service area cooling towers and other SSC facilities will not be known. The conceptual service area design used in the EIS represents a reasonably accurate picture of conditions likely to occur if the site is selected for the SSC (see EIS Volume IV, Appendix 16, Section 16.2.1). Visual impacts of service areas and other SSC facilities will be addressed in more detail for the selected site in the Supplemental EIS after additional design work is completed.

During final design, mitigation measures such as retention of forested buffer areas would be among those that should be considered. At that time, the retention of trees could be required. Should trees presently screening facility sites from view be removed, there could be potentially significant visual impacts, depending on the specific sites affected.

Planting large trees through the use of a tree spade has been done successfully in North Carolina, according to Phillip J. Hinton, Architectural Section Engineer for the North Carolina Department of Transportation. Trees large enough to conceal an E site facility during and after construction could readily be planted using a tree spade. Even the larger service areas during and after construction might be screened from close-in views, because the closer the observer is, the smaller the trees needed to block views. For example, a hedge six feet tall a few feet away would screen a two-story building if the building were set back sufficiently from the viewer.

0784.03

No above-ground facilities for the buried beam zone access areas, J1 through J6, have been identified at this time. Therefore, no visual impacts are anticipated.

There are three structures related to each beam absorber (L1 and L2). The first two consist of a cooling tower and a small one-story building, which is a service building for the abort kicker magnet system and the rf acceleration system. The third is another cooling tower. Their location is described in the EIS Volume IV, Appendix 1, Figure 1.1-4. The first two are located together directly over the intersection of the beam extraction line and the collider ring. (The two for the other absorbers are located directly over the intersection of the other beam extraction line and the collider ring.) This puts them approximately 6,000 ft from their respective beam absorbers and rather close to the high energy booster, which is in the injector complex. The third structure (cooling tower) is located very near each beam absorber. The description of beam absorbers in Volume IV, Appendix 11, Section 16.3 has been corrected in the Errata accordingly.

075108003358821

Due to the proximity of the injector complex and because the service buildings and all of the cooling towers would be small, these buildings and towers would be relatively unnoticeable. They would not be expected to visually impact their surroundings. Also, these towers and buildings would be sited in fee simple lands. Here, residents would be relocated and sensitivity would be low.

Other facilities that would be sited in fee simple areas, such as those in campus area A and the near and far clusters, are not addressed, as residents in these areas would be relocated.

0784.04

The number of water wells in North Carolina that may have to be closed due to construction and operation of the SSC was not consistently presented in the DEIS. The State estimates that only nine wells within the SSC footprint will be directly affected and required to be abandoned because of the project. It is correct that a significantly greater number of wells exist within the SSC footprint but are at a sufficient or safe distance from planned SSC facilities. See Comment Response 1390.07.

0785.01

Water supply and sewage treatment issues related to SSC construction and operations at the North Carolina site are addressed briefly in EIS Volume I, Chapter 5, Section 5.1.2 and additionally in Volume IV, Appendix 7, Section 7.1.3.5 (water supply) and Appendix 10, Section 10.3.3.1 (sewage).

0786.01

Should North Carolina be selected, the impacts of construction on watersheds will be assessed in more detail in the Supplemental EIS.

0786.02

See Comment Response 708.03.

0786.03

The actual mileages for roadwork at the North Carolina site have been estimated in the EIS as 39 mi of new roads and 10 mi of road upgrading. The State has proposed this roadwork at no expense to the DOE.

0786.04

Capabilities of utilities that would be affected if the North Carolina site were selected are addressed in EIS Volume I, Chapter 4, Section 4.9.2.2, Table 4-30, and Volume IV, Appendix 14, Section 14.2.2.3.E.1 Also see Comment Response 732.07.

0786.05

Utilization of existing sewage treatment plants in Durham and other municipalities is only one of the alternatives considered in the EIS. If treatment capacities of existing plants are not adequate to support the SSC, package treatment plants could be installed. Further detailed discussion of available alternatives is presented in Volume IV, Appendix 7, Section 7.1.3.5.F.

0786.06

Comments noted.

0788.01

The completion of Little River Reservoir is addressed in the assessment of water supply for the proposed North Carolina SSC project area. See revised Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G.

See also revised EIS Volume I, Tables 1-1, 3-3, and 3-7 and Sections 3.7.3 and 5.2.3; Volume IV, Appendix 5, Section 5.5.2.1.C corrections in the Errata.

For this EIS, it is assumed that cut-and-cover methods will be used for the injector at each of the seven sites. At the selected site, based on site conditions and detailed field studies, the construction method may be modified. This will be analyzed in the Supplemental EIS prepared for the selected site.

0788.02

The EIS Volume I, Chapter 5, Section 5.1.7.2 and Volume IV, Appendix 13, Section 13.2.4 substantiate the commenter's observation that the SSC project will result in less prime farmland conversion than the annual average loss of farmland caused by other development.

Noise and scenic and visual impact assessments are provided in Volume IV, Appendices 9 and 16, respectively. Mitigation measures are recommended as part of each assessment.

Spoils disposal are addressed in Volume IV, Appendix 10, Section 10.2.3.5. In it, North Carolina proposed to either dispose of the material at a variety of locations or sell or donate the excavated materials to local producers of aggregate.

Volume IV, Appendix 13, Section 13.1.3.5 address land use impacts. In it, Table 13-5 lists impacts according to major facility type. Certain SSC facilities would indeed produce major degrees of difference in land use/zoning. In addition, SSC project development is likely to be a

major source of growth at the northern fringes of Durham and the attendant Research Triangle Park area (see Volume IV, Appendix 13, Section 13.1.4.E).

The scale of the SSC project is larger than several Durham area mixed use planned developments. For example, the State proposer group planned to acquire 15,897 acres for the SSC project. This is more than three times larger than the 5,172-acre Treyburn project and roughly 2.5 times larger than the 6,200-acre Research Triangle Park. Nevertheless, SSC impacts will be different and probably less than either of the other two projects, given the more dispersed nature of the project. See Volume I Chapter 5, Section 5.4 for a discussion of the project's unavoidable adverse impacts.

Air quality impacts of the SSC are discussed in Volume I, Chapter 5, Section 5.1.3 and in Volume IV, Appendix 8. Also, Volume I, Chapter 6, Section 6.2.5 acknowledges the DOE commitment to comply with the Clean Air Act.

Regional resources such as the universities, hospitals, and the Research Triangle Park were considered during the proposal evaluation leading to the Best Qualified List. See also Comment Response 816.01.

0789.01

Comment noted.

0789.02

See Comment Response 1259.02.

0789.03

See Comment Response 1259.02.

0789.04

The proposed site for the SSC in North Carolina was chosen by the State of North Carolina in response to DOE's Invitation for Site Proposals. The DOE requested information and data necessary for a site selection consistent with the requirements of the ISP.

Questions concerning the selection process for the North Carolina site and/or information available on site alternatives considered for the SSC in North Carolina should be directed to the appropriate State agency.

Impacts of relocations are addressed in Volume I, Chapter 5, Section 5.1.8 of the EIS.

0789.05

Comments noted.

0791.01

Comment noted.

0791.02

Spin-off technologies cannot be guaranteed from any new basic research program. However, based on results of particle physics thus far (see Volume I, Chapter 2), it is likely that beneficial spin-offs will result.

Discussion of the economic effects of the SSC, including annual estimates of project-related increases in employment, earnings, and sales demand, is presented in Volume IV, Appendix 14, Section 14.1.3.5.A. With regard to SSC-related costs which would affect North Carolina, impacts on public finances for the three primary impact counties, as well as the ROI, are discussed in Volume IV, Appendix 14, Section 14.1.3.5.D.

0791.03

Analysis of alternative use of State public funds should be directed to the State of North Carolina. See Comment Response 520.06.

0792.01

The EIS was prepared by the DOE to address all seven site alternatives, including the proposed site in North Carolina. The EIS identifies and analyzes potential environmental impacts of constructing and operating the SSC at site alternatives and suggests possibilities for mitigation of adverse impacts (see Volume I, Chapter 3, Section 3.6). It is true that the SSC would be a scientific research project.

0793.01

Previous road proposals made by State and local governments were considered in this EIS to the extent that they were included in the proposal. It may be true that the State did include roads in the proposal which were not previously on State and local transportation plans specifically to met the requirements of the ISP.

The road alignments proposed by North Carolina are general layouts. Final design will be done after the SSC site is selected. Specific parcels affected would be identified during final site design.

In regard to the comment about land acquisition, see Comment Response 710.01.

The comment quotes an incorrect road mileage number from the DEIS. In Volume I, Chapter 5, Section 5.1.2, where the length of four- to six-lane roadways in North Carolina is listed, the correct number has been changed to read 25.3 mi.

0794.01

Various sources of information were used for the DEIS in addition to the State proposal. According to the information available to the DOE, water well depths ranging from 67 to 500 ft. were reported in DEIS Volume IV, Appendix 5, Section 5.2.2.2. The FEIS is revised to incorporate the range of well depths reported in this comment. See Comment Responses 1505.02 and 1513.182 with respect to groundwater use and impacts, including impacts to nearby water wells. The potential groundwater impacts at the proposed North Carolina site are described in Volume IV, Appendix 7, Section 7.2.3.5.

0795.01

Comment noted.

0796.01

In North Carolina's SSC proposal, the market value of private real property that would be acquired by the State and transferred to Federal ownership was estimated at $22.8 million. In Volume I, Chapter 5, Section 5.1.8 the EIS used estimates from each of the proposals, where available, to project the loss of property tax revenue to local jurisdictions.

Even if the figures provided by North Carolina do not accurately reflect market values and represent instead estimates of the assessed value (as the comment contends), the estimates of property tax losses presented in the EIS would not be affected. In Volume IV, Appendix 14, the EIS uses an assessed-to-market value ratio of 100 percent; in effect this means that the State's estimate is equivalent to the tax base, which is precisely the commenter's contention. If the actual market value of property is greater than the value used in the EIS, and the assessed-to-market value ratio is less than 100 percent, the amount that the State must pay to acquire would be affected, but the amount of tax revenue that is lost by local governments in Durham County would not be affected. Regardless of the market value of property, it is the assessed value that represents the tax base.

0796.02

See Comment Response 13.02.

0797.01

Comment noted.

0797.02

See Comment Response 1331.06.

0797.03

The reference to the miles of new roads required for the SSC at this site is correct. The details of the proposed road improvement plan are described in Volume IV, Appendix 1, Section 1.2.5.8.

0797.04

See Comment Response 773.03.

0797.05

Comment noted.

0797.06

See Comment Response 1510.05.

0797.07

Comment noted.

0797.08

See Comment Response 1331.06.

0798.01

The DOE does not anticipate the use of restrictive easements on property where a stratified fee estate exists. The "rights and privileges" of affected residents under a stratified fee estate are discussed in Volume IV, Appendix 4, Section 4.2.1.2.

There is no general Federal authority to mitigate land value impacts resulting from the proximity of the SSC facility. Questions concerning the proposer's authority to mitigate such impacts should be directed to the appropriate State agency (see EIS Volume IV, Appendix 4, Section 4.3.2).

0798.02

See Comment Response 710.01.

0798.03

Comments concerning Fermilab development are noted. See Comment Responses 312.05 and 710.01. The DOE believes it has allowed adequate time for negotiating for lands required. The selected state has responsibility for lands acquisition. North Carolina has certified that they have the authority to satisfy the requirements of the ISP. The State of North Carolina is responsible for the management of the proposal process.

Questions about strategies and commitments of the proposer should be directed to the appropriate State agency. See Comment Response 1126.05.

0799.01

Comment noted.

0799.02

The population distributions that emphasize Durham County, referred to in the comment, do not include workers currently living within the North Carolina Region of Influence (ROI). Only in-migrants from outside the region are considered in the EIS with regard to the distribution of population impacts associated with the SSC (as reported in Volume IV, Appendix 14, Table 14.1.3.5-6). The resulting distribution of these in-migrants, in turn, is used to examine impacts to housing, public services, and public finance.

Estimates regarding the residences of workers already living in the ROI are used solely to estimate the distribution of positive fiscal impacts associated with earnings derived from SSC jobs. The basis for making these estimates is discussed in the EIS Volume I, Chapter 5, Section 5.1.8. If these estimates are too large for Durham County and too small for Wake County, then less revenue would accrue to Durham County and more would accrue to Wake County. As these revenues largely would derive from sales tax gains, and considering the tendency for commuters to shop and eat nearby their workplaces, the methodology used in the EIS is reasonable.

0799.03

Conclusions in the EIS do not depend on the redistribution of workers already residing in the North Carolina Region of Influence (ROI), but consider instead only those workers migrating into the region from elsewhere (see Comment Response 799.02). Allocation of SSC-related population impacts employed a model that generates the most likely distribution of people given various key characteristics of the region--including current populations of various places in the ROI and travel times from these places to the proposed SSC site (see Volume IV, Appendix 14, Section 14.1.2.3.B). The distribution of workers relocating from outside the ROI may be very different from the distribution of existing workers in the region.

0800.01

Comment noted.

0800.02

"Lake Michie" has been changed to "Mayo Reservoir." See Comment Response 716.05.

0800.03

See Comment Response 708.03.

0800.04

The suggestion that sewage be disposed of using land application is consistent with the information provided in EIS Volume IV, Appendix 10, Section 10.3.3.1.

The suggestion that effluent from the sewage treatment plant be used as cooling water will be considered for inclusion in the Supplemental EIS for the selected site.

0800.05

The geotechnical information provided by the States (see EIS Volume IV, Appendix 5) was verified to the extent practical by site visits and drill core inspection by the DOE. Indications are that the maximum of unweathered rock above the roof for interaction points and experimental areas K1 and K6 are 29 ft and 14 ft, respectively. This does not appear to be sufficient for structural support of the roof system for experimental halls designed with clear spans of approximately 80 ft. Therefore, the more conservative cut-and-cover construction method was used for the EIS and the LCC estimates for these two facilities.

0800.06

The excavated material could either be disposed of at 17 different locations or could be sold or discounted to local producers of aggregate or some combination of these dispositions. Please refer to EIS Volume IV, Appendix 10, Section 10.2.3.5.A for details.

0801.01

Comment noted.

0801.02

See Comment Response 716.07.

0802.01

The DOE agrees that use of underground tunnels, as proposed for the collider ring in North Carolina (see EIS Volume I, Chapter 3) would result in less surface disturbance than would a cut-and-cover technique.

0803.01

Comments noted.

0804.01

Comment noted.

0804.02

The data and assumptions employed and the calculated radiological effects from a beam loss accident are provided in Volume IV, Appendix 12, Section 12.4.1.1. The analysis was conservative; it did not assume a safety shield of any type, and the calculated maximum dose in groundwater at 150 ft from the tunnel was well within established standards.

0804.03

For North Carolina, the calculated impact of a hypothetical beam loss on groundwater at 50 m from the tunnel is among the highest of the seven sites (Volume IV, Appendix 12, Sections 12.2 and 12.4). This is due to the relatively high hydraulic conductivity and low effective porosity of tunnel rock in North Carolina. Hydraulic conductivity data was based on packer test results from SSC site evaluation studies performed at the direction of the State. It should be noted that even in North Carolina, the resultant radioactivity in a well 50 m from the beam loss would be well below maximum permissible levels. Also, the likelihood of a beam loss is considered extremely small based on experience with operating particle accelerators. Effective porosity estimates were based on data in reports by the North Carolina Department of Natural Resources and Community Development from 1983.

0804.04

Volume IV, Appendix 12, Section 12.4.1.1 has been corrected to reflect that a dose equivalent of 0.50 mrem is 12.5 percent of 4 mrem.

0804.05

Commissioning of the SSC will be done initially with very low-intensity beams. The beam tracking and diagnostic systems are designed to detect any erratic beam behavior and to eject the beam out of the machine and into the beam absorber. This is to prevent any part of the beam from striking the beam tube wall and subsequently the superconducting magnets. Because of the low intensity of the test beams and the machine controls, external radioactivation during commissioning would be many orders of magnitude less than full beam loss. The consequences of a full beam loss at three times the design intensity are addressed in EIS Volume IV, Appendix 12, Section 12.4.1.1.

0804.06

The number of wells estimated by the State to be within the SSC footprint in North Carolina was not reported accurately in the DEIS. The State had provided well records which document 112 wells within 1 mi of the ring centerline and had also noted that wells have only been required to be registered since 1959 and since that time perhaps only half or less of the wells drilled have been actually registered. Given the potential for unregistered wells and commenters' input, it is assumed that in excess of 300 water wells may exist within the SSC footprint. However, only a small number of these may be directly affected by the project and required to be closed. The State estimates, based on ffield surveys, that only about 9 wells (the number reported in the DEIS) would be directly affected, and required to be closed because of the SSC. See Comment Response 1390.07 for clarification of criteria to assess number of wells closed and revisions to EIS.

0804.07

See Comment Response 728.03.

0806.01

Comments noted.

0807.01

Comment noted.

0808.01

See Comment Response 1276.01.

0809.01

Commer t noted.

0809.02

See EIS Volume I, Chapter 2 and Volume I, Chapter 3, Section 3.1.2 for discussions of purpose and need for the project and site selection criteria, respectively.

0809.03

The Soil Conservation Service identified 4,002 acres of prime farmland and 2,658 acres of important farmland in the SSC fee simple area. From these inventories, an estimated 341 acres of prime and important farmland would be permanently converted by the SSC at the proposed Michigan site. See Volume I, Chapter 3, Section 3.7.11, Chapter 4, Section 4.8.6, Chapter 5, Section 5.1.7.2, Section 5.2.11, and the Errata to Volume IV, Appendix 13. Socioeconomic project effects can be found in Volume IV, Appendix 14.

0809.04

The wetlands assessment presented in the EIS has been revised (see EIS Volume I, Chapter 5, Section 5.1.5.4 and Volume IV, Appendix 11, Section 11.3.4.3). A conservative estimate of wetlands to be impacted by construction of proposed collider surface facilities is now placed at 190 acres. However, this estimate is based on the amount of wetlands impacted if no mitigation practices were implemented. To reduce wetland impacts, mitigation plans would be developed (including wetlands avoidance) once a site has been selected. The objective of these mitigation plans would be no net loss of wetland habitats.

0809.05

Comments noted.

0810.01

Comment noted.

0810.02

The sentence of interest in Volume I, Chapter 4, Section 4.6.1.1 reads in its entirety: " Water provides a major mechanism for the transport of radionuclides in the environment as well as pathways for exposure through drinking and (to a lesser extent) submersion."

The sentence "This should not be a significant amount of radionuclides." is added by the commenter, and does not appear in the cited paragraph. It is apparently taken out of context from some other part of the EIS, and no further response can be provided.

A more detailed discussion of this can be found in Volume IV, Appendices 10 and 12.

0810.03

The EIS indicates that there is a very limited potential that SSC tunnel construction or operation will affect wells at distances less than a few hundreds of feet from the tunnel. To assure safety, it is likely that a 150-ft radius around the tunnel will be established within which no wells, existing or new, will be allowed. A 1,000-ft restricted zone for construction activities is anticipated as quoted in the comment. This zone is established to provide control, however, and site-specific conditions would likely dictate whether an existing well that became unusable through normal events (e.g. casing or pump failure) or that becomes unusable because of SSC construction or operations could be replaced. If it could not be replaced because of SSC project restrictions, proposers have in general indicated that an alternative well or water supply will be provided where a water supply need still exists. The manner in which an alternative supply of water is to be provided is at the discretion of the States and has not been finalized at this time. This matter will be addressed in detail in the Supplemental EIS for the selected site.

0810.04

Most of the radioactive products from the tunnel are short-lived radionuclides. For example, carbon-11, which is the most abundant radionuclide, has a half-life of 20.5 minutes. The radiological characteristics of these radionuclides have been summarized in Table 10.1.2-4 of Volume IV, Appendix 10 and in Table 12.2.3-3 of Volume IV, Appendix 12. These short-lived radionuclides will decay within a relatively short period of time. Because of their short half-life they soon disappear; they do not accumulate to any appreciable degree in water, soil, or air. Because their concentrations in air are low, they do not pose any immediate health impact during release. The projected dose equivalent to the maximally exposed individual of the general public at the proposed Michigan site from air activation products was 0.003 mrem (Volume IV, Appendix 12, Table 12.3.1-10). This is 0.00084 percent of the dose equivalent from naturally occurring background radiation. As far as impacts from normal SSC operations, it will be safe to eat vegetables from the garden, drink the water, or breathe the air.

As discussed in Volume I, Chapter 3, the projected impacts from radiation produced by the SSC on the total population are small compared to existing background. The radiation dose to humans from external exposure, inhalation, or ingestion is expressed in terms of dose equivalent -- a quantity used for radiation protection purposes that expresses the biological effect in humans from any type of radiation. The projected dose equivalent to the maximally exposed individual at the surface in Michigan from SSC operations is 0.004 mrem per year. This should be compared to the estimated dose equivalent from background radiation of 359 mrem/year (Volume I, Chapter 5, Table 5.1.6-1). The limit set by the DOE for the exposure to individuals of the public to radiation as a consequence of routine DOE activities and actions is an annual effective dose equivalent equal to 100 mrem (Volume I, Chapter 6, Section 6.3.2). The SSC is projected to operate well below this exposure limit.

08010850335884

0810.05

Previous studies have been made of the environmental radiation shielding for the SSC and include a general description of the sources of radiation (EIS Volume IV, Appendix 10). Review of this existing data will emphasize the benign nature of the SSC. For example, the Fermilab site is open to the general public. Like Fermilab, working portions of the SSC accelerator will be restricted to employees and other authorized personnel, but the site above-ground will be safe for visitors.

Although the SSC is an experimental facility, it is possible to project the environmental safety and health implications based on existing performance data. In fact, the radiation dose to humans can be calculated with reasonable confidence (see EIS Volume IV, Appendix 12, Section 12.2.1.1). A large number of accelerators have been constructed and successfully operated for high energy physics experiments. Some of the more recent colliders are as complex in the number and variety of their subsystems as the SSC. Two of the most relevant examples are the accelerators at Fermilab and CERN. It is important to note that the cumulative amount of radiation for SSC would be less than that experienced at Fermilab or CERN because of the longer average cycle time of the SSC, which results in a much lower number of protons being accelerated per day (Volume IV, Appendix 10). Activation levels and dose rates for the SSC are qualitatively and quantitatively similar to those at existing large accelerator facilities.

0811.01

The proposed site for the SSC in Michigan was chosen by the State of Michigan in response to the DOE's Invitation for Site Proposals. This invitation requested that DOE be provided with the information necessary to evaluate the site (see EIS Volume III, Chapter 1, Invitation for Site Proposals).

The environmental consequences of the SSC project, including the factors of ecology, water, air, and noise, are summarized in EIS Volume I, Chapter 5. Environmental consequences and mitigation measures for noise and vibration impacts are presented in Volume I, Chapter 5, Section 5.1.4.

See Comment Response 12.05 for a discussion on "boomtown" effects.

0812.01

Potential effects from radiation produced by the SSC have been carefully studied and can be predicted with reasonable confidence. The environmental safety and health implications of radiation resulting from SSC operations are summarized in EIS Volume I, Chapter 5, and are discussed at length in Volume IV, Appendices 10 and 12.

08010850335885

Negligible effects on surface water and groundwater quality are anticipated from SSC construction and operation. Water quality effects are summarized in EIS Volume IV, Appendix 7, Sections 7.1.3.7 and 7.2.3.7. Limited toxic and hazardous materials will be used on site and spill response and cleanup procedures will be in place to minimize effects of any accidental releases. No hazardous materials will be disposed of on site.

The SSC will be sited, designed, constructed, and operated in strict conformance with applicable Federal, State, and local environmental safety and health protection criteria, regulations, and standards to assure adequate protection of both the SSC work force and general public.

Noise and vibration (blasting) impacts of the project are addressed at the summary level in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.4, and at the detail level in Volume IV, Appendix 9. Mitigations which have the potential to greatly reduce noise and blasting impacts are also discussed in the text cited above.

0812.02

The EIS analyzes the purpose and need for the SSC and the no-action alternative. Alternative use of public funds is outside the scope of this EIS. Also see Comment Response 520.06.

0812.03

Comment noted.

0813.01

Comment noted.

0813.02

At the Michigan site the beam ejection point is 130 ft (density of 2.4 g/cm^3) below the surface. Therefore, the total annual dose equivalent from direct radiation (hadrons and muons) at the surface would be immeasurably small (less than 0.001 mrem/yr). The annual hadron dose equivalent at the surface above the beam absorber for a depth of 130 ft is much less than 0.001 mrem/yr (Volume IV, Appendix 10, Table 10.1.3-3) since the dose equivalent from hadron at the surface for a depth of 46 ft (density of 2.24 g/cm^3) is less than 0.001 mrem/yr (Volume IV, Appendix 10, Figure 10.1.2-4). The muons are at approximately the beam depth of 130 ft.

The annual muon dose equivalent at the depth of the beam plane as determined at the boundary of the controlled zone downstream from the beam absorber is 0.9 mrem (Volume IV, Appendix 10, Table 10.1.3-5).

Overall radiation exposure to stratified fee residents is expected to be less than 0.001 mrem/yr, an immeasurable amount. It is negligible when one considers that the average individual receives about 360 mrem annually from background radiation (Volume IV, Appendix 12, Section 12.2.1.1.A and Table 12.2.1-1) and this exposure is less than 0.0001 percent of the DOE exposure limit of 100 mrem/yr.

Also, see Comment Response 312.08.

See Comment Response 871.01 for a discussion of financial impacts of the SSC.

0813.03

The only vibrations felt at the surface during construction of the tunnel would be those associated with excavation of the rock by blasting. The amount of ground vibrations would be controlled to prevent damage to any nearby structures. These controlled vibration levels would, however, still be felt by people in the vicinity of the construction activity. A more complete treatment of blasting vibration assessment is found in EIS Volume IV, Appendix 9, Section 9.2. The use of a tunnel boring machine would not cause vibrations that would be felt at the surface by people.

0813.04

Comments noted.

0813.05

Comment noted.

0813.06

The EIS has been revised to include a re-estimation of wetlands (see EIS Volume I, Chapter 5, Section 5.1.5.4, and Volume IV, Appendix 11, Section 11.3.4.3). Wetland assessments are now based on the amount of wetland that could be disturbed in areas where surface construction would take place (areas A, B, C, E, F, J, and K).

0813.07

See Comment Response 880.04.

0814.01

Comment noted.

0815.01

Comments noted.

08010850335887

0816.01

Regional resources such as housing, medical services, educational institutions (including availability of professional staff, academic resources, computer networks, and graduate student research availability), accessibility to major airports and other transportation, and the availability of a skilled labor pool were considered during proposal evaluation leading to the Best Qualified List and will be considered in the site selection decision (see EIS Volume III, Chapter 1, Section 1.1 and Chapter 3.) To the extent relevant to the analysis of socioeconomic impacts of the SSC, these data are included in Volume I, Chapter 5, Section 5.1.8 and Volume IV, Appendix 14.

0817.01

See Comment Response 1390.17.

0818.01

See Comment Response 1002.01.

0818.02

Comment noted.

0819.01

It is DOE policy that all facilities for which it is responsible are accessible to handicapped persons. Exceptions are made only when specified work activities require controlled areas. The DOE does not have any authority to mandate State housing policies.

0819.02

Comment noted.

0819.03

See Comment Response 819.01.

0819.04

Comment noted.

0819.05

See Comment Response 819.01.

0819.06

Comment noted.

0820.01

Comments noted.

0820.02

The environmental safety and health implications of SSC-associated radiation are summarized in EIS Volume I, Chapter 5, Sections 5.1.6.2, 5.1.6.3, and 5.2.5 and are discussed in more detail in Volume IV, Appendix 10, Section 10.1 and Volume IV, Appendix 12, Sections 12.2.1.1, 12.2.3.1, 12.3.1, and 12.4.1. Estimates of the amounts of radiation/radioactive materials that may be released from SSC operations are based on experience from other accelerators such as Fermilab and CERN. The radiation dose to humans from external exposure, inhalation, or ingestion to specified quantities of radionuclides can be calculated with reasonable confidence. Volume I, Chapter 5, Table 5.1.6-1 indicates that the maximally exposed individual at the Texas site would not experience a dose equivalent of more than 0.002 mrem/yr during construction or operations. This exposure level is less than 1/1000 of the existing background level in Texas. Volume IV, Appendix 12 identifies the human health impacts that are projected to result from the SSC project. The expected impacts are negligible and deaths from SSC-associated radiation would not be anticipated.

0820.03

The DOE's primary approach to prevent contamination of groundwater by radiation, hazardous or toxic wastes is to design the SSC facilities and operations so that contamination does not occur. One example of this approach is that there will be no permanent disposal of radiological or hazardous waste at the SSC (EIS Volume IV, Appendix 10, Sections 10.1.3.1 and 10.1.3.2). The agency has a commitment to protecting the environment as indicated in DOE Order 5480.1B which states that it is DOE policy to comply with Federal, State and local regulations and codes regarding management and disposal of wastes (EIS Volume I, Chapter 6). These environmental protection requirements have been considered in preparing the EIS and will be taken into account again when the final design of the SSC is developed. Thus, DOE plans to prevent contamination from ever entering groundwater, but as a precaution an environmental monitoring program will be established, similar to the one at Fermilab (Fermilab 88/40 1104.110 UC-41, Site Environmental Report for Calendar Year 1987, May 1987, Samuel I. Baker), to confirm that releases of radiation or toxic substances are being controlled and not posing a hazard to the public or the environment.

0820.04

The same methods for ensuring that groundwater does not become contaminated with hazardous materials will ensure that lakes, rivers, creeks, and cattle ponds are kept free of hazardous wastes generated by the SSC

project. Sources of hazardous and toxic materials are addressed in EIS Volume IV, Appendix 10, and the impacts of hazardous and toxic materials are addressed in Volume IV, Appendix 12. See Volume IV, Appendix 7, Section 7.2.3.7. See Comment Response 820.03.

0820.05

See Comment Response 520.06. In April 1987, the DOE issued the Invitation for Site Proposals (ISP) which requested from interested parties proposals for locating the SSC. The need for the SSC is discussed in EIS Volume I, Chapter 2. The ISP-defined criteria for site selection are included in EIS Volume III, Chapter 1.

0820.06

Regarding wastewater treatment plants, see Comment Response 35.04. Reference to the "Red Oak Regional Wastewater Treatment Plant" has been removed from EIS.

According to the U.S. Department of Commerce's County Business Patterns (File 2, Ellis County, Texas, 1984, prepared by the Bureau of the Census), one Ellis County manufacturer operating in the category of blast furnaces and steel mills, Chaparell Steel, employed between 500 and 1,000 workers in 1984. This firm thus employed approximately ten percent of all manufacturing workers in the county that year. The presence of this firm was accounted for in the economic analysis presented in EIS Volume I, Chapter 5, and Volume IV, Appendix 14, Section 14.1.3.7.A. No iron ore mining was reported in the county.

0820.07

Comment noted.

0821.01

Comment noted.

0821.02

See Comment Response 880.04.

0821.03

Comment noted.

0821.04

Land acquisition is the responsibility of the proposer. Questions concerning land acquisition strategies and commitments should be directed to the appropriate State agency. Should the Illinois site be selected as the SSC site, such issues would be considered appropriate for inclusion in the Supplemental EIS. See Comment Response 880.04.

080108503358810

0821.05

See Comment Response 821.04.

0821.06

See Comment Response 821.05.

0821.07

See Comment Response 1020.05.

0821.08

See Comment Response 821.04.

0822.01

Comments noted.

0823.01

Comment noted.

0823.02

Comment noted.

0823.03

Comment noted.

0824.01

Comment noted.

0824.02

Comment noted.

0825.01

Comment noted.

C825.02

Comment noted.

0826.01

The DOE would mitigate adverse impacts of the SSC project to the greatest extent practicable. The discussion of mitigation has been expanded in the EIS. See Volume I, Chapter 3, Section 3.6.

080108503358811

0828.01

Comment noted.

0828.02

See Comment Response 13.02 and 710.01.

0828.03

The EIS reflects the fact that the proposed Arizona location has no wetlands. See also Comment Response 974.01.

0828.04

Present and future development of private land near the SSC project has been addressed in Volume I, Chapter 2 and in Volume IV, Appendix 5, Section 5.1.10.2.B.1. Privately held land in the project area is limited primarily to the near cluster area, including the campus and injector sites, but development is related mostly to ranching activities. Little development in the area is anticipated. Applications for Special Use Permits for two oil refineries at Mobile have been approved by Maricopa County. Applications for building permits have not been submitted by the proponents of either project. Also, an application for a Special Use Permit for a waste facility 1 mi north of Mobile has been approved. Other than these particular projects, there are no projects in the SSC project vicinity that are in stages of planning. Whether or not these projects are completed is independent of the SSC project.

0828.05

If Arizona is the selected SSC site, additional site uses such as those described in the comment could be considered during final site design.

As noted in Volume I of the EIS, the DOE recognized that a more detailed review will be required under NEPA prior to a final decision on the construction and operations of the proposed SSC at the selected site. Additional site uses could be provided in the Supplemental EIS.

0828.06

Comment noted.

0829.01

Comment noted.

0829.02

Visitation data for the Northern Maricopa Mountains, Southern Maricopa Mountains, and Butterfield Stage Memorial Wilderness Study Areas (WSAs) are listed in Table 3-4, "Existing and Projected Visitor Use", p.66, Lower Gila South Final Wilderness Environmental Impact Statement;

080108503358812

Phoenix District Office, USDOI, Bureau of Land Management, 1987. Motorized and nonmotorized recreation use total 1,500, 2,000, and 300 visitor days annually for the North Maricopa Mountains, Butterfield Stage Memorial, and South Maricopa Mountains WSAs, respectively. Use of these areas is expected to nearly double over the next 25 years. The first two WSAs are considered by the BLM to be prime use areas for a local ORV organization, with vehicle ways into the Northern Maricopa Mountains showing signs of continuous use (p.76). In general, both the Northern and Southern Maricopa Mountains are rated by the BLM as outstanding in primitive recreation opportunities (pp.76-78).

A review of the Phoenix District Office inventories for the proposed collider ring area indicates that the BLM has rated public sensitivity over visual impacts as high for the lands around the southern arc, half the northern arc, and half of the far cluster. The BLM ratings are similar to those ascribed using the approach outlined in EIS Volume IV, Appendix 16.

One of several premises of the methodology used in the visual and scenic resource assessment (EIS Volume IV, Appendix 16, Section 16.2) is that man-made structures, if noticeable, are by definition intrusive in a predominately natural appearing landscape (USDA Forest Service, National Forest Landscape Management, Volume 2, Chapter 1, USDA Agriculture Handbook No. 462, Washington, D.C. 1974; and, USDOI-Bureau of Land Management, USDOI Manual 8411, Upland Visual Resource Inventory and Evaluation, Washington, D.C. 1978). WSA classification for much of the SSC site serves to heighten public expectations that the site is largely pristine; in this context, man-made structures are especially inconsistent.

0830.01

As noted in EIS Volume I, Chapter 1, Section 1.6, DOE recognized that a detailed review will be required under NEPA before a final decision on the construction and operation of the proposed SSC at the selected site. This more detailed review will be provided in a Supplemental EIS. Mitigation strategies will also be described in greater detail in the Supplemental EIS.

0830.02

EIS Volume IV, Appendix 7, Section 7.1.3.1.C states that "... there will be no impacts to or encroachments on floodplains," for the proposed Arizona site.

0830.03

Comment noted.

0830.04

Comment noted.

080108503358813

0830.05

Soils with distinctive shrink-swell potential provide two types of engineering challenges, both of which are readily dealt with in normal construction practice. First, where such soils occur at the ground surface, they can cause foundations and surface buildings to shift. Second, shrink-swell soils may be encountered in a deep excavation or shaft. In this instance it is important to maintain the natural moisture content of the soil; it should not be allowed to dry out, which could cause the soil to shrink. This could result in undesirable stress on the excavation. Because engineering practices are available for soils with pronounced shrink-swell potential, they are not expected to represent any danger to the project.

0830.06

The Texas site does have two separate aquifer systems, a shallow alluvial aquifer system restricted mostly to stream channel and terrace deposits, and a deep confined sandstone aquifer system. The aquifers at the Texas and Arizona sites are described in the EIS Volume IV, Appendix 5, Sections 5.1.2.2 (Arizona) and 5.7.2.2 (Texas).

0830.07

Mitigations are required at any site in order to minimize risks of degraded environmental quality. Types of mitigations differ depending on site-specific characteristics, see EIS Volume I Chapter 3, Section 3.6. See also EIS Volume III, Chapters 2 and 3 for a discussion of site selection criteria and process.

0830.08

See Comment Response 1486.03, first paragraph.

0831.01

Comments noted.

0832.01

Comment noted.

0833.01

Comments noted.

0833.02

See Comment Response 658.129.

0833.03

The sentence "The Department of Environmental Quality has strongly recommended that an on-site landfill be provided (Scheidis 1988)" has been deleted and the sentence "The Department of Environmental Quality has suggested that an on-site municipal solid waste landfill would be possible to permit and is an available option" is included (see the Errata and Revisions to EIS Volume IV, Appendix 10, Section 10.3.3.2.A.)

0833.04

From the perspective of evaluating potential hazards, benefits such as limiting risk to the environment and the public health by minimizing transportation (by having a hazardous waste disposal facility close by) are acknowledged as noted in EIS Volume I, Section 10.1.3.2. In the Supplemental EIS, hazardous waste disposal alternatives will be evaluated for the selected site.

0833.05

Comment noted.

0834.01

Comment noted.

0834.02

See Comment Response 2.01. Several modifications have been made to the DEIS to clarify the results of field study in Arizona. Modifications have been made to EIS Volume I, Table 3-7; Volume I, Section 5.1.9.1; Volume IV, Appendix 5, Section 5.1.12.1.C; and Volume IV, Appendix 15, Section 15.1.3.1.A.

0834.03

Comment noted. See Comment Response 834.02.

0834.04

See Comment Response 2.01. Intensive cultural resource surveys have been completed within much of the proposed Arizona site. Details of this discussion are found in EIS Volume IV, Appendix 15, Section 15.1.3 and 15.2.3 addressing cultural and paleontological resources, respectively. Table 3-7 in Volume I has been revised. Ten historic sites are located in the Arizona site based on surveys to date. Volume I, Chapter 5, Section 5.1.9.1 has been revised to clarify the results of field studies to date.

0834.05

The document described in this comment has been cited in EIS Volume IV, Appendix 15, Section 15.1.3.1.B, and in the referenced sections of Volume IV, Appendices 5 and 15.

0835.01

Comment noted.

0836.01

Comment noted.

0837.01

Comment noted.

0837.02

This EIS assesses and compares the environmental impacts of the proposed construction and operations of the SSC at the site alternatives.

0838.01

The observations concerning the scenic quality, undisturbed nature, and recreational value of the Arizona SSC site are noted and consistent with EIS Volume IV, Appendix 5, Section 5.1.10.2. That section describes the wilderness qualities of the three Wilderness Study Areas in the SSC site vicinity.

0839.01

The comment is consistent with information contained in EIS Volume I, Chapter 3, Tables 3-5 and 3-6.

0839.02

Comment noted.

0839.03

EIS Volume I, Chapter 4, Table 4-23 presents an inventory of the prime and important farmland acreages reported by the U.S. Department of Agriculture/Soils Conservation Service at each of the proposed sites. The revised table states that the fee simple area of the proposed North Carolina SSC site has a larger affected acreage of prime farmland than the other sites assessed.

0839.04

Volume IV, Appendix 4, Table 4-2 of the EIS lists the number of businesses likely to be relocated if the SSC were constructed at the various proposed locations. As required by the Uniform Relocation and Real Property Acquisition Policies Act (42 USC 4601 et. seq.), the State is obligated to equitably reimburse any affected party whose property is required for the project.

0839.05

See Comment Responses 1279.115 regarding aquifer overdraft conditions and 19.03 concerning tunnel inflows. These conditions are addressed in EIS Volume IV, Appendix 7, Section 7.2.3.3 and Appendix 10, Section 10.2.3.3.

0839.06

See Comment Response 1369.09.

0839.07

See Comment Response 1007.04.

0839.08

It is assumed that the commenter's statement refers to Volume I, Chapter 4, rather than Appendix 4. The purpose of Volume I, Chapter 4, Section 4.2.1.2, Table 4-2 is to summarize characteristics of existing surface water resources in the vicinity of each of the site alternatives. The material presented is descriptive and is not directly related to impacts or necessarily to the potential for SSC-related impacts to surface water to occur.

0839.09

A field survey performed in 1987 by state personnel indicated about 1,500 wells within 0.25 mi of the proposed ring alignment in Illinois. Available records suggested about 320 wells within the 1,000 ft corridor and campus areas. It is realized that this number is approximate and is increasing. The purpose in the EIS was only to make a comparison of the relative density of wells in the vicinity of the proposed ring alignments and this was achieved. However, the number of wells that may be lost due to siting and constructing the SSC in Illinois was not reported accurately in the DEIS. See Comment Response 979.02 for clarification of criteria used to assess the number of wells closed or affected and consequent revision to the EIS.

0839.10

See Comment Response 710.01.

0839.11

The Illinois parcel maps A-3C, A-3D, A-3E, A-3F, A-3G, A-3K, and A-3L not containing the locations of sites E8, E9, F8, F9, L2, J1, J2, J3, and J4 are revised and included in the Errata for EIS Volume IV, Appendix 4. See Comment Response 710.01 for a discussion on land acquisition.

0839.12

Comments noted.

0840.01

Electric power for the SSC is discussed in EIS Volume IV, Appendix 1, Section 1.2.6.10. The 161-kV line running to Substation No. 1 in the near cluster would be constructed largely within the right-of-way of a new 500-kV transmission line planned for construction independent of the SSC. Near the J3 site, the 161-kV line would turn away from the 500 kV lie, running southeast and parallel to the northeastern SSC project boundary. Up to where the 160 kV line departs from the 500 kV line right-of-way, there would be no visual impact attributed to the smaller line, in light of the planned occurrence of the 500 kV lines there. Hence, the relevant SSC impact would be the visual effect of the 9.3-mi stretch of 160 kV line from its junction with the 500 kV line to Substation No. 1. This stretch would cross two roads near J6 and be within view from a subdivision under construction. There are no indications of moderate or high sensitivity for views from the roads crossed. As of the time the visual resources were analyzed, sensitivity for the subdivision was low, given that there were no homes completed and occupied at that time. Visual impacts were not evaluated in this EIS unless there were current evidence that sensitivity was moderate to high.

Power for the far cluster would be supplied via a new 161-kV transmission line running parallel to existing 500-kV transmission lines. Visual impacts attributed to the SSC power lines would not occur until the new lines diverge from the existing lines to serve Substation No. 2. However, from the point of divergence to the substation, no sensitive views would be affected.

The visual impact of stockpiles of spoils has been addressed in EIS Volume IV, Appendix 16, Section 16.3.6.3. Each disposal site would be close to a surface facility. In one case, the vicinity of F8, spoils disposal is expected to cause significant visual impacts.

The anticipated water use at the Tennessee site related to the SSC is summarized in Volume IV, Appendix 7, Section 7.1, Tables 7-1 and 7-7. The total on-site or direct water use is estimated to be 1,775 acre-ft/yr. Off-site or indirect water use at the Tennessee site is estimated to range from 270 to 1,630 acre-ft/yr during construction and from

1,070 to 1,420 acre-ft/yr during operations. It is expected that SSC water use would be considerably smaller than the water use requirements of a city with a population of 30,000. Natural and depletable resource requirements of the project are estimated in Volume I, Chapter 5, Section 5.6.

0840.02

SSC construction and operations would be carried out such that impacts on the quality of streams and rivers due to runoff and project activities are minimized. With implementation of proposed impact mitigations for the Tennessee site, the unavoidable adverse impacts would be insignificant. A summary of potential impacts and proposed mitigation measures are presented in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.2.1. Comprehensive assessments of potential impacts and mitigations are presented in Volume IV, Appendix 7, Sections 7.1.2.2.F, 7.1.3.6.D, and 7.1.3.6.F.

The potential cancer risks from operations of the SSC are addressed in the EIS. Tables 12.3.1-34 and 12.3.1-35 in Volume IV, Appendix 12 present the estimated fatal cancer risks to the general population and to an individual from airborne releases of radiation from the two key areas of the SSC, the interaction region and the service facilities. The methods for estimating risks are based on certain assumptions, such as that the population near the SSC has demographic characteristics and mortality experiences similar to the U.S. For the Tennessee site, the annual fatal cancer risk for a selected, maximally exposed individual is 0.0865 deaths per year per 100,000, and for the collective population there could be 0.230 deaths per year per 100,000. The normal cancer death rate is 351 deaths per year per 100,000 with a life-time risk of 180 deaths per 1,000 (American Cancer Society, Cancer Facts and Figures-1988). The individual and collective population risks from exposure to radon progeny (Volume IV, Appendix 12, Tables 12.3.1-32 and 12.3.1-33) released from the ground through SSC facilities and for exposures through drinking water are similarly low as those for other releases. These estimates indicate that negligible cancer risks will be present. Also, these risks are within bounds that have been considered acceptable by government agencies and the public in other programs and projects in the U.S.

In the history of the operation of the Fermilab, which is a high energy accelerator, no accelerator-produced radionuclides have ever been detected in the creeks and rivers (Baker, S., Site Environmental Report for Calendar Year 1987, FERMILAB 88/40, Fermi National Accelerator Laboratory, Batavia, Illinois, May 1988).

0840.03

Comments noted.

0840.04

Comment noted.

080108503358819

0841.01

Comments noted.

0841.02

The comment addresses National priorities and is discussed in Comment Response 520.06. The SSC funding must go through the Congressional budget process, as must any other Federal project.

0841.03

As noted in EIS Volume I, Chapter 3, Section 3.5, different collections of impacts are anticipated in each of the states with sites on the BQL (see also Volume I, Chapter 1, Section 1.4).

0842.01

Scenic and visual impacts were addressed in Volume IV, Appendix 16, Section 16.3.3.3. All E and F sites that would affect moderately to highly sensitive public views were considered. See Volume IV, Appendix 16, Section 16.2.3.2. Also see Comment Responses 842.03 and 859.04.

0842.02

See Comment Response 710.01.

0842.03

Volume IV, Appendix 13, Section 13.1.33 addressed land use issues concerning siting F8 in the proposed location, including the relationship of project facilities, their associated land use/zoning designation, and the existing land use/zoning designation for the affected area. The F8 site and vicinity are zoned E3 (see Table 13-3), which includes single-family residences on 2- to 4-acre parcels as well as those on 1.25-acre parcels, churches, public and private parks, playgrounds, and other uses as noted. Facility F8 would be classed as medium industrial, which would be a wholesale change in land use/zoning character.

The EIS addresses scenic and visual impacts at the Illinois site in Volume IV, Appendix 16, Section 16.3.3.3. The approach to the analysis and assumptions made is presented in Section 16.2. Only views that, by the criteria presented, were deemed moderately to highly sensitive were evaluated (see Section 16.2.3.2). Farmsteads or groupings of fewer than four residences were considered to be low in sensitivity. Also, where a facility is within view of homesites in a subdivision under construction, sensitivity also is considered to be low. It is assumed that people buying homes in those areas have done so, or will do so, with the knowledge that an SSC facility may be built nearby. In either case, people choosing to live in such subdivisions are assumed not to be moderately or highly sensitive to the visual character of the SSC structures, otherwise they would have purchased a home elsewhere (see Volume IV, Appendix 5, Section 5.3.13).

The Illinois State proposal was made public in January, 1988. Since then, a number of homes in the Red Gate subdivision have been built or are under construction; however, only two appeared to be occupied as of October 14, 1988. Growth of this subdivision has been rapid, but it is assumed that it has occurred with the full knowledge that a facility of the SSC project might be built in the vicinity and in view. The incongruity of F8 with the zoning for the site has been discussed. Also, the facility would be greatly out of character visually with the subdivision. However, sensitivity at the time public disclosure of project siting was made was low by the criteria stated.

Regarding the planned churches, the potentially affected views are currently low in sensitivity because the subject sites for the churches are vacant. The comment indicates that there is full knowledge of the proposed siting for F8. The circumstance appears identical to that for a subdivision in stages of planning; the decision to build would suggest acceptance of the visual impact, otherwise the churches would not be built on the subject parcels. However, from a land use standpoint, facility F8 would be a major incongruity, as noted, in the proposed site.

As the comment correctly notes, Randall Road serves a considerable volume of traffic. By the criteria for sensitivity applied (Volume IV, Appendix 16, Section 16.2.3.2, views from that road at locations close to an established subdivision south of F8 are considered moderately sensitive: the highway secondarily serves as access to highly sensitive areas (area subdivisions).

Similarly, views from Red Gate Road east of Randall Road would be moderately sensitive. That road secondarily serves as access to an established subdivision immediately to the south reached by Longview Road and Myles Road. It also serves secondarily as access to the Red Gate Ridge subdivision from the south.

The part of Red Gate Road west of Randall Road passes by Bakers Acres, a developing subdivision with two occupied homes as of October 14, 1988 (low sensitivity). Views from this stretch of road would be considered low in sensitivity.

Based on the foregoing, the public views of importance relative to facility F8 are those from the subdivision south of Red Gate road served by Longview Road and Myles Road, those from Red Gate Road east of Randall Road, and those from Randall Road south of F8 near Red Gate Road.

Due to heavy vegetation and structures, F8 could not be seen from the referenced subdivision or from most of Red Gate Road east of Randall Road. From the Red Gate Road/Randall Road intersection for 100 ft to the east on Red Gate Road, F8 would be visible at a distance of about 0.25 mi. At this distance, F8 would not be overlooked and would attract some attention. However, the facility would probably be subordinate to features closer at hand, such as the farm structures in the immediate foreground. Also, the direction of travel favors views to the east or

west, not those to the north (in the direction of F8). The impact is expected to be a Visual Modification Class 2 (see Volume IV, Appendix 16, Section 16.2.1.3). For moderately sensitive views, the impact would be negligible (see Volume IV, Appendix 16, Section 16.2, Table 16-1).

From Randall Road traveling north from Red Gate Road, facility F8 would be in view and would progressively dominate attention as one approached it. It would appear out of place, not being consistent with the scattered residential developments in the general vicinity. The visual impact would be VM Class 3 to 4, depending on proximity to F8. This impact on a moderately sensitive view would be considered significant.

The impacts noted would be important to the residents in the immediate area and, therefore, are judged to be local in scope.

Changes to the DEIS have been made to reflect the above conclusions. The assessment of the visual impacts of F8 have been added to Volume IV, Appendix 16; Section 16.3.3.3; Volume IV, Appendix 5, Section 5.3.13.3; Volume I, Chapter 5, Section 5.1.10.3.C; and Volume I, Chapter 5, Table 5.1.10-1. These changes will also be reflected in the FEIS in the corresponding sections.

See Comment Response 1148.04 for a discussion concerning noise impacts on the planned churches.

0843.01

The National Trails Act was considered in the DEIS. Volume IV, Appendix 5, Sections 5.3.10.1.E and 5.3.10.2.A discussed the Illinois Prairie Path as a regional recreational resource and its status as a recreation trail in the National Trail System.

0843.02

Two branches of the Illinois Prairie Path cross the SSC collider ring near Interstate I-88 about one mile north of Intermediate Access Facility E-1. Another branch of the Illinois Prairie Path crosses the ring about four miles north of the center of the Fermilab ring. For this segment, the nearest SSC facility is J-3, located about 1/4 mile north of the path. A third branch of the Illinois Prairie Patch enters the site vicinity from the north, with the nearest SSC facility being J-4 about one mile southwest of the path.

The DEIS, Volume I, Chapter 5, Section 5.1.5.4.C deals with commercially and recreationally or culturally important ecological species. As such, the listing of primary recreational uses in the Illinois project area relates to those where ecological resources are critical. The Illinois Prairie Path is discussed in Volume IV, Appendix 5, Section 5.3.10.1.E.

0843.03

The EIS addresses the potential for radiation exposure at the ground surface in Volume I, Chapter 5, Section 5.1.6.2, and in Volume IV, Appendix 12, Section 12.2.1.1., in which radiation doses were estimated for the maximum annual radiation exposure to an individual. As shown in EIS Volume I, Chapter 5, any calculated exposures to the maximally exposed individual on the ground surface would be no more than 0.004 mrem/yr under normal operations. This level would be attributed to airborne exposure to activation products during the venting of the tunnel and would require continuous exposure at the location for a year. This level is a small fraction (less than 1/1000th) of the natural background radiation levels in Illinois and is well within the EPA limit of 25 mrem/yr (excluding radon and radon progeny) for radiation exposures from the air pathway.

0843.04

Impacts on views from the Illinois Prairie Path were considered in the Scenic and Visual Resources Assessment (See EIS Volume IV, Appendix 16, Section 16.3.3.2).

0843.05

EIS Volume I, Chapter 6, Section 6.2 has been revised to include The National Trails System Act of 1968.

EIS Volume IV, Appendix 4, Section 4.2 states that in fee simple areas, in general, it is intended that easements and rights-of-way would remain intact. It is presumed that this would be the case for the Illinois Prairie Path, given its co-location on an existing transmission line right-of-way.

0844.01

Economic and housing characteristics were included in the EIS for the Illinois Region of Influence, and for the primary impact counties of DuPage, Kane, and Kendall (see EIS Volume IV, Appendix 5, Sections 5.3.11.1.A and 5.3.11.1.B), but were not discussed at the level of individual communities.

0845.01

Comments noted.

0846.01

Comment noted.

0846.02

The EIS addresses impacts on worker health and safety in Volume IV, Appendix 12. However, this discussion is based only on the conceptual design of the SSC, which does not include details on operating procedures or the health and safety program that is yet to be developed. As stated in the EIS in Volume I, Chapter 3, Section 3.6.2, the DOE is committed to occupational health and safety and will institute all appropriate safety procedures. A health and safety officer will be designated for the SSC facility and will require the necessary safety training for employees. He will also enforce compliance with all site regulations, standards, and procedures regarding worker safety.

As indicated in EIS Volume IV, Appendix 12, Section 12.2.3 and in Volume I, Chapter 5, Section 5.1.6, additional safety reviews and hazards analyses of the proposed SSC project will be carried out through the formal process of Safety Analysis Reviews (SAR) as the SSC design and operational details become more firm. The SAR's for construction and for the operational phase of the SSC will address the specific regulations and standards with which the DOE will comply. A general discussion of regulations that will be followed for the SSC project is presented in Volume I, Chapter 6 of the EIS. It includes the DOE orders that govern health and safety at DOE facilities.

0846.03

Vibrations and noise associated with blasting during construction would be monitored and controlled in accordance with the procedures outlined in Volume IV, Appendix 9, Section 9.2.2.1.

0346.04

Should Illinois be selected as the SSC site and the use of the Fox River Stone quarry be proposed, the Department of Energy would cooperate fully with the Department of Mines and Minerals to ensure that environmental harm is minimized (see Volume I, Chapter 6, Section 6.1).

0846.05

Comment noted.

0847.01

See Comment Response 929.01.

0848.01

It is DOE policy that Fermilab will continue to operate even if Illinois is not selected as the site for the SSC.

0849.01

If the DOE selects the Illinois site, the existing Tevatron accelerator at Fermilab, with appropriate modifications, would serve as the injector for the SSC. This does imply a downtime for making any necessary modifications to the existing system and for connecting that system to the SSC boosters. The downtime for Tevatron modifications for SSC injection purposes is not well defined at this time, but is believed to be considerably less than one year. For the reasons pointed out in the comment and in the DEIS, if the Tevatron accelerator becomes the injector, the SSC designers would need to optimize the construction program to minimize the down-time of the experimental program at Fermilab. After the SSC is completed, and operating normally, it will require the injection system for less than one hour each day. Thus, depending upon physics interest and funding availability, an experimental program using the present Fermilab system could continue after the SSC is itself in operation.

0849.02

See Comment Response 1276.01.

0849.03

The Illinois proposal, including the changes referred to in the comment, is consistent with the requirements of the ISP, Appendix B (EIS Volume III).

The changes in the proposal would result in a very small increase in the overall cost of the project. This increase is so insignificant that a precise cost increase was not calculated for EIS Volume IV, Appendix 2.

See also Comment Responses 360.01 and 1276.01.

0850.01

The SSC costs for the Illinois site are discussed in Comment Response 1276.01. The use of the Fermilab facility is considered within these cost analyses. The evaluation of available regional resources was included in the methodology for site selection discussed in Volume III. Regional resources was one of six technical criteria used in the site selection methodology. It includes the accessibility to the site of a major airport and the adequacy of community resources such as educational and research activities.

The required infrastructure improvements needed for the SSC are described in Volume IV, Appendix 14.

0851.01

The labor force available within the Illinois Region of Influence (ROI) is larger than that associated with any of the other proposed SSC site ROI's (see Volume IV, Appendix 5, "Economic Activity, Labor Force, and Income" sections for each proposed site).

The quotation concerning anticipated socioeconomic impacts on Kane and DuPage counties is accurate (Volume IV, Appendix 14, Section 14.1.3.3). However, the statement regarding SSC-related construction jobs is incorrect. Roughly 10,500 jobs are anticipated to result from the SSC during the peak construction year (1992), but these include both direct (construction and operation) jobs as well as secondary jobs; only 2,678 construction jobs are anticipated during that year (Volume IV, Appendix 14, Section 14.1.3.3.A).

Anticipated public finance impacts of the SSC are discussed in Volume IV, Appendix 14, Section 14.1.3.3.D. Cumulative net fiscal impacts on local jurisdictions in the each of the primary impact counties of DuPage, Kane, and Kendall would be negative during the first three years, and positive thereafter.

0852.01

The existing infrastructure and support staff at Fermilab were considered in preparing the EIS. This consideration resulted in a reduction of less than 1 percent in SSC operating personnel. This small reduction is primarily a result of the continued operation of Fermilab.

See Comment Response 1003.04, first paragraph.

See Comment Response 904.01, first paragraph.

0852.02

Comments noted.

0852.03

The method employed in the EIS to estimate direct and secondary jobs resulting from the SSC, including those anticipated in the Illinois Region of Influence (ROI), is discussed in Volume IV, Appendix 14, Section 14.1.2.2.B.1. Direct employment impacts were based on current engineering and design estimates of the number and types of personnel required during construction and operations of the SSC at each site. Spending in the region by the direct construction and operation workers, and spending for direct project purchases, in turn would create additional jobs and additional spending. The methodology for estimating the number of secondary jobs in the EIS included the use of RIMS input-output multipliers for the Illinois ROI. Empirical tests conducted by the U.S. Bureau of Economic Analysis indicate that estimates of the secondary

effects of final demand changes based on extensive surveys and RIMS multipliers have produced results of similar magnitude (U.S. Department of Commerce, Bureau of Economic Analysis, 1986, "Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II)"; see also U.S. Department of Commerce, Bureau of Economic Analysis, 1981, "Regional Input-Output Modeling System (RIMS II): Estimation, Evaluation, and Application of a Disaggregated Regional Impact Model").

The examination of SSC-related impacts on regional employment thus took deliberate steps to produce estimates that were as accurate as possible. The numbers of direct and secondary jobs anticipated are presented in Volume IV, Appendix 14, Tables 14.1.3.3-1 and 14.1.3.3-2. Results of the economic impact analysis presented in the EIS do not support a conclusion of net loss in income accruing to the Fox Valley or to the State of Illinois. See also Comment Response 1381.08.

Regarding potential impact to water supplies in the vicinity of the proposed site, see Comment Responses 533.03 and 7.03.

The impacts to wetlands have been evaluated in the EIS. See Comment Response 958.04.

Regarding impacts on views from residences, visual impacts have been addressed in Volume IV, Appendix 16, Section 16.3.3.3 and in Volume I, Chapter 5, Section 5.1.10. A number of potentially significant visual impacts have been identified, all relative to views from residential areas.

0852.04

With regard to the question of the state's compensation strategies, see Comment Response 880.04.

The analysis presented in EIS Volume IV, Appendix 14, Section 14.1.3.3.A does not support the commenter's contention that SSC-generated economic benefits would be limited to the "over-educated." See Comment Response 958.02 for a summary of direct and secondary economic effects of the project.

More detailed review of the impacts of SSC development, including mitigation measures, will be provided in the Supplemental EIS.

0853.01

It is true that sedge meadows are very rare in the area of the proposed Illinois site. The sedge meadow wetlands southwest of E8 is not likely to be impacted from siltation due to construction of E8 because of its distance from the site (approximately 500 ft). Similarly it is unlikely that this sedge meadow wetlands would be affected by any necessary widening or use of Danker Road, which is approximately 1000 ft from the subject wetlands. If the Illinois site is selected, plans to mitigate wetlands impacts would be developed after consultation with the U.S. Army Corps of Engineers. See EIS Volume I, Chapter 3, Section 3.6.3.

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0853.02

The U.S. Environmental Protection Agency (EPA) promulgated the National Interim Primary Drinking Water Regulations (Federal Register 41 (132), 28404-28409) in July 1976, which included control measures for natural and man-made radioactivity. The regulations establish as the permitted limit of radium contamination, a combined concentration of 5 pCi/l of radium-226 and radium-228, and set the maximum level for gross alpha-particle activity, excluding uranium and radon, at 15 pCi/l. These maximum contaminant levels (MCL) are applicable for "community" water supplies only.

Studies conducted in Illinois indicate that the potable groundwater supplied by the Cambrian-Ordovician aquifer system to a large portion of the northern part of the state, exceeds the EPA MCL of 5 pCi/l for total radium. The principal aquifers in this area are the sandstones.

The health impacts from radiation during SSC operation have been assessed in Volume IV, Appendices 10 and 12. There are no measurable adverse impacts from cumulative effects of exposure to radium in drinking water and exposure to radiation from SSC operations. The dose equivalent to the population at large from SSC operations is primarily through the air pathway and is less than 0.001 percent of that from background radiation in the region of the proposed Illinois site.

Tables 4-8 and 4-9 (Volume I, Chapter 4) gave statistics pertaining to radon levels present in living spaces and in basements in the regions of the proposed sites. Information was based primarily on the data collected by the University of Pittsburgh Radon Project and its successor, The Radon Project, up to August 1987. Detailed data is presented in Volume IV, Appendix 5, Table 5.3.6-1. This data includes 434 living space measurements and 322 basement measurements in DuPage County, and 13 living space measurements and 7 basement measurements in Kendall County. In addition to this data, 31 first-floor measurements and 134 basement measurements in DuPage County, two first-floor measurements and 26 basement measurements in Kendall County, and 12 first-floor measurements and 59 basement measurements in Kane County, and 13 living space measurements and seven basement measurements in Kendall County were summarized from a publication prepared by Mr. Gilkeson who cited Mr. John Cooper's data. The average basement radon level in three counties is 4.1 pCi/l, which is slightly above the EPA "recommended action level" of 4 pCi/l.

0854.01

Comments noted.

0854.02

Volume I, Chapter 4, Table 4-23 is an inventory of the prime and important farmland acreages reported by the U.S. Department of Agriculture/ Soils Conservation Service at each of the proposed sites. The revised

table states that the fee simple area of the proposed North Carolina SSC site has the largest acreage of prime farmland. See also Comment Response 1149.03.

0855.01

Comments noted.

0856.01

The reference to Table 4-2 of EIS Volume IV, Appendix 4, is correct. The EIS does not estimate specific numbers of individuals affected (see Comment Response 710.01 regarding the number of parcels affected). The ISP does not require proposers to provide numbers of individuals, only acreages, parcels, residential and business classifications (see EIS Volume III). The EIS does not include numbers of people in the relocation classifications. The State of Illinois proposal did adjust the location of some facilities from the conceptual design.

The prime farm land impacts are described in EIS Volume IV, Appendix 13, Table 13-10. The EIS confirms that 19 facility locations would remove cultivated land from production. See Comment Response 880.04.

0856.02

EIS Volume IV, Appendix 16, Section 16.3.3.4, Inconsistencies with Laws, Plans, Policies, and Regulations, assesses scenic and visual resource impacts in different light than Section 16.3.3.3. Whether a visual impact is significant by other criteria (see Volume IV, Appendix 16, Table 16-1, p. 5), an adverse visual impact that is inconsistent with laws, plans, policies, and regulations has the potential for being significant. In the case of Illinois, no laws, regulations, and the like specifically address visual impacts. Therefore, visual impacts would not be considered significant by the criterion of "inconsistency." In Arizona, the BLM does have specific management objectives and policies with which the predicted visual impacts there would not be consistent.

Even in the absence of laws, policies, or the like protecting scenic and visual resources in affected areas of Illinois, scenic and visual resource impacts have been given full consideration in Section 16.3.3.3. In fact, there are several impacts with the potential for significance. Measures to mitigate these impacts to an acceptable level have also been described in that section as well as in Volume I, Chapter 3, Section 3.6.3.

0856.03

See Comment Response 1175.04 for a discussion of potential measures to mitigate traffic impacts to children.

0856.04

EIS is based on information submitted by the states and on publicly available information. Publicly available information includes Federal, State, regional, and local agency reports and publications and published university research project reports and theses. Comments given to the DOE during scoping meetings were used to establish priorities for assessment in the preparation of the DEIS. All information submitted to the DOE following the scoping meetings was reviewed by technical staff and used as appropriate in the preparation of the DEIS. Every attempt was made to use as up-to-date information as could be provided and verified as being accurate. Where errors or omissions were detected, they have been corrected in the FEIS (see revised Volume I, Volume IV, Appendices 7, 8, and 11, and the Errata sections for the remaining appendices). Where more current information has been identified since the publication of the DEIS which enhance or alter the assessments, they have been included in the revisions or errata. This included the consideration of comments provided to the DOE in letters and in the public hearings on the DEIS. The information in the DEIS and FEIS, including the assessments of potential impacts, may not necessarily agree with information and assessments provided in the state proposals and supporting documents since the DOE considered additional information as mentioned above.

For details on projected water resources impacts at the proposed Illinois site, see Volume IV, Appendix 7, Sections 7.1.3.3 and 7.2.3.3. For details on wastewater disposal, see Volume IV, Sections 10.2.3.3 (excavation dewatering), 10.3.3.1.C (sanitary sewage), and 10.3.3.3.C (industrial wastewater). See also Comment Responses 533.03 (groundwater supply impacts), 1381.11 (groundwater quality impacts), 979.02 (number of potentially affected wells), and 1133.02 (compensation to affected well owners).

0856.05

It is true that the SSC would require that land be taken out of agricultural production. This is addressed in the discussion of conversion of prime and important farmlands in EIS Volume IV, Appendix 13, Section 13.2.

Agricultural production and its economic importance was considered in the socioeconomic analysis (see EIS Volume I, Chapter 5, Sections 5.8.1. and 5.8.2.) and in the ecological resources assessment details (see Volume IV, Appendix 11).

The availability of water for the Illinois region of influence is discussed in EIS Volume IV, Appendix 7, Section 7.2.3.3.

0856.06

As stated in EIS Volume I, Chapter 5, Section 5.1.8 and Volume IV, Appendix 14, Section 14.1.3.3.D, the Illinois State government would incur costs for site and infrastructure improvements, and for the purchase of private land that would be transferred to Federal ownership. If these costs were indeed financed through long-term bonds, the State likely would be obligated to make payments on the principal amount borrowed. Also there would be a long-term increase in both direct and indirect State tax revenues from project spending and additional spending by SSC construction and operations workers. These additional revenues would help to offset some of the expenditures that the State would incur. Appropriate state agencies should be contacted for details regarding proposed funding of these improvements and land acquisition.

Private land would be removed from the property tax base in the primary impact counties of DuPage, Kendall, and Kane in Illinois, reducing the amount of revenue for local jurisdictions. The EIS analysis indicates that although there would be a long-term property tax revenue loss to local jurisdictions, there would also be a long-term increase in both direct and indirect tax revenue from project spending and additional spending by SSC construction and operation workers (see EIS Volume IV, Appendix 14, Section 14.1.3.3).

As noted in the comment, the EIS indicates that during both the construction and operation periods, direct and secondary economic effects, including additional jobs, would be created in the primary impact counties. During construction, the direct jobs would include workers who are working for private construction firms that have contracts with both the State and Federal Governments. The exact distribution of jobs created by State versus Federal contracts does not affect the magnitude of socioeconomic impacts to any of the seven Regions of Influence (ROI's). During operation, professional and technical people would be employed, as well as clerical and other support personnel. Spending in the region by construction and operations workers and spending for direct project purchases would create additional jobs and spending. The secondary jobs created would include jobs in all sectors of the economy, but would be concentrated in services, trade, transportation, communication, public utilities, and manufacturing. The methodology for estimating the number of secondary jobs in the EIS included the use of RIMS, which is a computerized system of models for input-output analysis. Empirical tests indicate that estimates of the secondary effects of final demand changes based on extensive surveys and RIMS multipliers have produced results of similar magnitude (U.S. Department of Commerce, Bureau of Economic Analysis, 1986, "Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II)"; see also U.S. Department of Commerce, Bureau of Economic Analysis, 1981, "Regional Input-Output Modeling System (RIMS II): Estimation, Evaluation, and Application of a Disaggregated Regional Impact Model"). Additional discussion of the methodology used to estimate economic effects is presented in EIS Volume IV, Appendix 14, Section 14.1.2 2.

0856.07

The State of Illinois has not proposed any methods of industrial non-hazardous wastewater treatment. When a site is selected for the SSC, a Supplemental EIS will address waste issues in greater detail for the selected site.

0856.08

Comment noted.

0856.09

Comments noted.

0856.10

See EIS Volume III, Chapter 2 which discusses the requirements the proposers had to meet in fulfilling the requirements of the Invitation for Site Proposals (ISP). State strategies and commitments of State resources are the responsibility of the State. Questions concerning such strategies and commitments should be directed to the appropriate State agency.

0856.11

The EIS assumes the continuation of Fermilab operations. The DOE has not decided the disposition of Fermilab property after the termination of activity. The DOE does not anticipate the need for any property beyond that specified in EIS Volume III, Chapter 1, Section 1.1.

0857.01

See Comment Responses 710.01 and 880.04.

0857.02

Scenic and visual impact assessments are provided in EIS Volume IV, Appendix 16, Section 16.3.3. Impacts have been identified and mitigation measures recommended, regardless of the status of scenic and visual laws, plans, policies, or regulations. Volume I, Chapter 3, Section 3.6.3 cites possible mitigations to further reduce adverse impacts. If the Illinois site is the selected site, a site-specific Supplemental EIS will be prepared to address these concerns and evaluate those mitigation measures that are planned for implementation.

0857.03

See Comment Response 1175.04.

0857.04

A discussion of climate and meteorology is provided in EIS Volume IV, Appendix 8.

A discussion of secondary growth is discussed in EIS Volume IV, Appendix 13, Section 13.1.3.3.

The Soil Conservation Service identified 3,076 acres of prime farmland and 212 acres of important farmland in the Illinois SSC site fee simple area on the U.S. Department of Agriculture Farmland Conversion Impact Rating Form AD-1006 submitted to the DOE. From these inventories, an estimated 197 acres of prime and important farmland would be permanently converted by the project. See EIS Volume I, Chapter 3, Section 3.7.11; Chapter 4, Section 4.8.6; Chapter 5, Sections 5.1.7.2 and 5.2.11; and Volume IV, Appendix 13.

0857.05

See Comment Response 856.06.

0858.01

The DOE is not aware of any violation of human rights by the DOE or Fermilab in connection with the proposed SSC project. The DOE intends that all activities related to the project be conducted in accordance with all legal requirements.

0858.02

Most of the significant impacts identified at the seven site alternatives can be mitigated. The relative benefits and costs (including potential mitigations) were discussed in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.8. The Site Task Force used all these data as well as information gathered on their site visits to evaluate the relative merits of the sites for constructing and operating the SSC.

0859.01

People in the area surrounding the SSC will not be subjected to significant increased levels of radiation. For example, the projected dose is less additional dose than a person would get on a transcontinental jet flight. The dose for a transcontinental flight is approximately 2.5 mrem (National Council of Radiation Protection. Natural Background Radiation in the United States. Report No. 45. Washington, D.C: NCRP, 1975). Each chest X-ray gives a person about 25 mrem of additional exposure. Finally, each person living in the Chicago area receives about 150 to 200 mrem of exposure per year from natural sources alone (cosmic radiation, radon, naturally radioactive materials in rocks, soil

and concrete, etc.--this does not include chest X-rays, jet flights, etc.). With this perspective, it can be seen that the additional radiation exposure to the public due to the presence of the SSC, which will be approximately 0.004 mrem/yr, will be small.

As stated in EIS Volume IV, Appendix 3, "Decommissioning Plan," the main sources of residual radioactivity at the time of decommissioning, namely the beam absorbers, will be completely removed and disposed of as low-level radioactive waste. All accelerator components not salvaged for use elsewhere could be left in place in the sealed tunnels. It should be recognized, however, that final decisions on Decommissioning will not be made for at least 25-30 years. Prior to the need for a decision on decommissioning, the DOE would conduct additional NEPA review.

Leon Lederman's reference to a Desertron was made a number of years ago when it was speculated that the next generation accelerator after the Fermilab Tevatron would have to have energies of hundreds or thousands of TeV and would be so large that the only place it would conceivably fit would be the desert. The SSC is rated at 20 TeV.

0859.02

Based on available information, most of the significant adverse impacts identified at the seven site alternatives can be mitigated. The relative benefits and costs (including potential mitigations) were discussed in EIS Volume I, Chapter 5, Section 5.8. The DOE's Site Task Force used all these data as well as information gathered on site visits to evaluate the relative merits of the sites for constructing and operating the SSC.

0859.03

The plot of residences, schools, and residential concentrations (subdivisions) shown as Figure 9-20 in Volume IV, Appendix 9 was compiled from information gathered by the DOE and its contractors from U.S.G.S. 7 1/2 minute quad sheets, and by observations made and photographs taken during site visits, and are intended only to demonstrate the general population distribution around SSC surface construction locations. In Volume IV, Appendix 9, Section 9.1.3.5, F4 is identified as one of the surface construction locations with the potential to cause high annoyance to people living within 2,000 ft of the center of the site. Analysis summarized in Volume IV, Appendix 9, Table 9-11 shows the number of people in the vicinity of each F site who will experience sound levels in specified ranges during construction and operation of the SSC. During construction the average day-night sound level of the area surrounding F4 is expected to be in the range of 40 to 50 dBA, based on the criteria contained in **Guidelines for Noise Impact Analysis** (U.S. EPA, Office of Noise Abatement and Control, Oct 1981). The analysis presented in Volume IV, Appendix 9, Section 9.1.3.2 discusses both of these cases.

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0859.04

The DOE is obligated to consider visual impacts caused by SSC facilities. However, visual impacts depend on whether people are likely to be present to view the structure. Therefore, no visual impact assessment was completed for project facilities where there were no indications of public concern (low sensitivity). (See Volume IV, Appendix 16, Section 16.2.3.2 for criteria used to assess sensitivity and Table 16-1.) Where there are fewer than four residences affected and/or lands are predominately agricultural, sensitivity was considered to be low. This situation prevails for facilities E5, E6, F3, F5, and F6.

Where a project facility would be sited in an area of light industrial structures or commercial buildings, sensitivity was considered to be low; and the facility was considered to be compatible with the surroundings and not to cause a visual impact. This was the case for E10.

Where a facility is within view of home sites in a subdivision under construction, sensitivity also is considered to be low. It is assumed that people buying homes in those areas will be doing so after the proposed SSC facilities have been built, or with the knowledge that such facilities will be built nearby. In either case, people choosing to live in such subdivisions are assumed not to be moderately or highly sensitive to the visual character of the SSC structures, otherwise they would have purchased a home elsewhere (see Volume IV, Appendix 5, Section 5.3.13). This circumstance was judged to prevail for facilities F1 and F8 (visual impact of F8 is also addressed in Comment Response 842.03).

Facility E4, was not considered to be an industrial complex, inasmuch as it would consist of only one building, similar to a small, one-story warehouse. For the visual impact to be considered as a VM Class 4, the small building would have to demand attention, being the focus of available views from the cemetery and forming a lasting impression. This would not be the case with or without the fence-row plantings. There are several more memorable features in the landscape in the vicinity, including the transmission towers noted in the EIS.

Concerning views from Baseline and Mighell Roads, they are considered to be low in sensitivity. They serve secondarily as access to the cemetery, views which are treated as being moderately sensitive.

0859.05

The assumption of 35 mph is for the average, not the peak, vehicle speed over the distance traveled to the disposal site. Since a great deal of stop-and-start driving is anticipated for the large trucks, the 35 mph assumption has credence.

Additional information which affects the analysis of air emissions from vehicle traffic has been included in Volume I, Chapter 5 and Volume IV, Appendix 8.

0859.06

Comment noted.

0860.01

DOE Orders 5480.1B, 5480.4 and 5483.1A provide requirements for radiation protection, occupational safety, fire protection, industrial hygiene, and transportation. A discussion of the type of fires that could occur in the tunnel is given in EIS Volume IV, Appendix 12, p. 101. A detailed fire protection system would be designed as part of final engineering processes which would occur after site selection.

The DOE will provide all fire protection for the site. Additional land will not be needed for fire departments in the far service cluster. Each of the 11 service areas will have their own fire protection systems. Fire trucks and other centralized equipment will be located in the emergency service buildings located at both the near and far cluster areas.

0860.02

The procedures followed to ensure the accuracy of data contained in the EIS are addressed in Comment Response 13.02.

0860.03

Homes that are acquired in fee simple will be owned by the State of Illinois or the DOE. Decisions about their use and/or disposition have not been made at this time. See also Comment Responses 7.03 and 1229.02.

The Invitation for Site Proposals for the SSC, issued by the DOE in April 1987, did not specify a requirement for any particular type of rail track to any particular location of the SSC. Obviously, a proposing State would have to demonstrate that the proposed site has adequate accessibility or propose a specific plan to achieve it. What constitutes adequate accessibility is at the present early stage of the project somewhat open to subjective interpretation but can nevertheless be estimated on the basis of common sense and good engineering practice. The State of Illinois concluded that the proposed 0.8-mi-long track east of Big Rock is necessary but that the optionally proposed 4.8-mi-long track to Kaneville is not. The DEIS analyses did not include the assumption that the latter track will be constructed.

0860.04

The costs for construction of the SSC were based upon the facilities as defined in the Conceptual Design Report and as adapted to the sites described in the site proposals. The costs for decommissioning were based upon the plan developed by the Argonne National Laboratory (see EIS Volume IV, Appendix 3).

All cost estimates were made in Fiscal Year 1988 (FY 88) dollars. This means the costs are calculated as if all construction and decommissioning activities took place between October 1987 and September 1988. The DOE does not believe the cost estimated is understated, based on the present scope of the project. The actual costs for these activities would vary depending upon the actual years during which they occur, and the actual inflation rate for costs between FY 88 and those years as well as revisions to the scope of work which could take place during final design.

0860.05

The summary in Volume IV, Appendix 3 is brief. However, the section is a condensation of a detailed document prepared by Argonne National Laboratory (see first reference at the end of Appendix 3). The estimate of one year to decommission the SSC is reasonable. It is much shorter than the time to construct for several reasons. First, it always takes less time to raze a facility than to construct it. Second, not all of the SSC facilities and buildings will be demolished; most will be left in place for other uses, e.g., light industrial facilities or schools. The greatest construction time constraint is tunnel boring and below-ground facility installation. The tunnel would be sealed upon decommissioning but not necessarily refilled. Also see Comment Response 522.10.

0860.06

Air quality in the Chicago metropolitan area, as well as in other site alternative metropolitan areas, has shown violations of ambient air quality standards, as discussed in Volume IV, Appendix 5, Section 5.3.4.2. The SSC-related emissions of CO, NOx, and VOCs during operations are almost entirely (greater than 95%) due to off-site commute traffic. The emissions resulting from this traffic constitute a fraction of a percent of the existing traffic contributions of these pollutant emissions in all of the BQL metropolitan areas. Ozone/carbon monoxide nonattainment is a complex and pervasive nationwide problem requiring an air quality management strategy that is national in scope. A major component of future control strategy options will most likely incorporate some form of additional mobile source controls (i.e. vapor recovery systems, traffic volume reduction incentives, tighter vehicle emission standards).

0860.07

It has been determined through direct discussions with school administrators that the schools mentioned in the comment are located as follows:

> Kaneland High School, Jr. High and Elementary School are located in the northeast corner of the intersection of Keslinger (E-W0) and Meredith (N-S) west of Route 47. The distance to E6 is 4400 feet, and to F6, 2.15 miles. The contribution of construction activity to the day-night noise level will be 53 dBA.

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Thompson Junior High School is located 1 block north of Route 34, approximately 1/2 mi west of Montgomery. The distance to E2 is 1.7 mi and to F2, 8,300 ft. Combined with the existing day-night level, the value will be 52 dBA.

Big Rock Grade School is located on the north side of Route 30, east of Davis Road, across the highway from the Chicago, Burlington & Quincy Railroad tracks. The distance to F4 is 13,000 ft. No increase in the value of the day-night sound level (L_{dn}) is expected as a result of construction activity or operations of the facility. The nearest spoils haulage road is approximately 1 mi to the east. At this distance the trucks will be audible to people who are outdoors on the school campus, but the effect on the average sound level will be negligible.

St. Charles School is located on the collider ring approximately 1 mi southeast of E9 between Dunham Road and Kirk Road. At this distance the construction and operations of the E9 facility are not expected to cause any increase in the day-night noise level. Spoils haulage trucks, if routed along the extension of Kirk Road 1,500 ft east of the school, will increase the hourly average sound level, (L_{eq}) from an estimated 50 dBA to 51 dBA, an increase greater than the accuracy of the data available for the computation.

Waubonsie Valley High School is located in the northeast corner of the intersection of Route 34 and Eola Road in DuPage County. The School is 2.3 mi from E2, 4,800 ft from J1, and is within the boundary of the near cluster (G). The nearest identifiable construction point is J1. The contribution of construction at J1 is expected to contribute 48 dB to the hourly equivalent sound level at the school. Assuming that the present value of L_{eq} is 50 dBA, the increase will be on the order of 2 dB. Noise impact from operation of the facility will be limited by the facility's compliance with the Illinois State Noise Code which specifies that the sound reaching the school boundary is not to exceed 51 dB. Mitigation measures will be considered as necessary to limit the noise impact to the school. Spoils haulage, if the route includes Route 34 or Eola Road, will impact the school. The extent of the impact will be determined largely by the amount of traffic presently using Route 34 and the incremental increase in traffic introduced by spoil haulage.

0860.08

The SSC is not a radioactive waste facility; therefore, no comparison between the SSC and existing DOE waste sites is possible. The impacts of disposition of hazardous and radioactive wastes generated by the SSC are discussed in EIS Volume I, Chapter 4, Section 4.2.2 and Chapter 5, Sections 5.2.6 and 5.1.6, as well as in Volume IV, Appendices 18 and 12. Both the construction and operations of the SSC will require Federal and State permits, as was discussed in the EIS (see Volume I, Chapter 6).

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0861.01

See Comment Response 865.02.

0861.02

See Comment Response 880.04.

0861.03

The acquisition of land is, as stated in the Invitation for Site Proposals, the responsibility of the State.

0861.04

Comment noted.

0861.05

EIS Volume I, Chapter 5, Section 5.8 summarizes the benefits and costs of the proposed project. These assessments were developed independent from States proposals.

0861.06

The analysis of public finance presented in the EIS suggests a peak of net revenue for the State of Illinois at $10.9 million in 1992; throughout facility operation, beginning in the year 2000, net revenue for the State would be about $6.0 million (values are in 1988 dollars; see Volume I, Chapter 5, Section 5.1.8 and Volume IV, Appendix 14, Table 14.1.3.3-14).

Total project cost for the SSC is expected to exceed $4 billion. See EIS Volume III and Volume IV, Appendix 2). The construction costs are estimated at $3.2 billion. The major financial burden of developing the SSC will be borne by the Federal Government, not the State of Illinois. The State will incur costs for infrastructure improvements, totaling roughly $35 million, as well as costs from purchasing private land which would be transferred to Federal ownership (Volume IV, Appendix 14). Appropriate state agencies should be contacted for details regarding proposed funding of these improvements and land acquisition.

0861.07

Comment noted.

0861.08

Public participation in the project has been sought through established NEPA procedures. Meetings with the public included the scoping meetings and the hearings on the DEIS. The Secretary did meet with all proposers.

While it is correct that this did not permit opposing viewpoints to be expressed to the Secretary in person, the Secretary will take into account the EIS, which does include opposing viewpoints, in arriving at his decision.

0861.09

Comments noted.

0861.10

EIS Volume I, Chapter 6 discusses the regulatory requirements that the DOE or its contractor must meet in siting, constructing, and operating the SSC. The design for environmental monitoring will be part of the operating and maintenance procedures established by the management and operations (M&O) contractor. These procedures will be reviewed prior to startup as part of a DOE Operational Readiness Review.

0861.11

It is the DOE policy that Fermilab would continue to operate if the SSC were located elsewhere. About 3,450 jobs would be directly involved with SSC construction during the peak year, and another 7,044 jobs would result indirectly from project and worker spending in the Illinois region of influence during that period. During SSC operations, more than 3,230 workers would be employed directly by the SSC, and nearly 3,800 indirect jobs would result in the region. Annual estimates of these employment impacts are presented in EIS Volume IV, Appendix 14, Section 14.1.3.3.A.

It is likely that there would be a restriction on water supply wells only within approximately 150 ft of the SSC tunnel. An increase in regional groundwater overdraft is anticipated as a result of project water supply requirements, but effects on individual wells would likely be limited. See Volume IV, Appendix 7, Section 7.2.3.3 for a discussion of potential groundwater use and groundwater quality impacts associated with the SSC project at the Illinois site.

See also Comment Response 880.04.

0861.12

The effects of the SSC project on surface and groundwater supply are discussed in the EIS Volume I, Chapter 5, Section 5.1.2.4 and in more detail in Volume IV, Appendix 7, Sections 7.1.3.3 and 7.2.3.3. The increased runoff due to the SSC project would be mitigated by retention basins and other techniques, as discussed in the EIS Volume I, Chapter 3, Section 3.6, Chapter 5, Section 5.1.2.1 and Volume IV, Appendix 7, Section 7.1.2.2.A.2.

0861.13

Radiological impacts associated with the SSC are summarized in the EIS, Volume I, Chapter 5 and are discussed at length in Volume IV, Appendices 10 to 12.

An objective evaluation of the radiological effects related to SSC activities requires that the relative impacts be considered in perspective. Because the projected exposures to radiation from the SSC operations are relatively low in comparison to existing standards, a comparison to background was appropriate. Operations of the SSC in Illinois were projected to result in a dose equivalent of 0.004 mrem/yr to the maximally exposed member of the general public. This is less than 0.001 percent of the dose equivalent of 401 mrem that an average individual would receive from background radiation (DEIS, Volume I, Chapter 5, Table 5.1.6-1). It is 0.16 percent of the dose equivalent of 2.5 mrem that a passenger would receive from cosmic radiation during a five hour transcontinental airplane flight (National Council of Radiation Protection, Report No. 45. Natural Background Radiation in the United States, Washington, D.C., 1975). Another point of comparison can be offered by the variation in background levels among the SSC site alternatives. Average annual dose equivalents from background radiation at the seven proposed sites range from 311 mrem/yr to 451 mrem/yr (EIS Volume I, Chapter 5, Table 5.1.6-1). Thus, even without the SSC, an individual could receive an increase in radiation exposure of 140 mrem/yr simply by traveling from one state to another.

An environmental monitoring program will be established by the DOE prior to operations of the SSC. This program will be designed to detect, track, and assess impacts from any radiation or radioactive materials released from the facilities. Environmental monitoring is capable of detecting levels lower than those that can be detected invitro in human beings. It can also detect radiation/radioactivity prior to its impacts on the general public (Volume 4, Appendix 12, Section 12.2.1.1).

0862.01

Sites on the Best Qualified List (BQL), including the Illinois site, comprise those locations which would permit the highest level of research productivity and overall effectiveness of the SSC facility at a reasonable cost of construction and operation, and with minimum adverse impacts on the environmental impacts. The main purpose of the EIS is to define and examine the potential environmental impacts. Part of the background provided in the document is a description of the population of the Illinois Region of Influence (see EIS Volume IV, Appendix 5, Section 5.3.11.1.B). The evaluation of SSC-related impacts, including those resulting from additional traffic (Volume IV, Appendix 14, Section 14.2.1.3) and blasting (Volume IV, Appendix 9, Section 9.2.3.3) during the construction period, considers effects on this regional population.

0862.02

Potential effects on wells and groundwater quality at the proposed Illinois site are discussed in EIS Volume IV, Appendix 7, Section 7.2.3.3. In summary, a negligible effect on groundwater quality is anticipated. Regarding affected wells, see Comment Response 979.02.

0862.03

Comment noted.

0863.01

Materials (spoils) excavated from the F4 site would only be stored for a short time on-site. On-site storage of spoils, although temporary, will include safeguards to prevent any runoff from the spoils. This may include berming or diking of the temporary spoils piles. These practices will minimize effects on Welsh Creek and should not harm the fish or their food sources. Following the temporary on-site storage, the spoils will be hauled to a permanent quarry disposal site (see Volume IV, Appendix 10, Section 10.2.3.3).

0863.02

The nearest SSC facility to central Big Rock (schoolyard) is approximately 1.7 mi. The only routine noise source at this location, after construction, would be a relatively quiet tunnel exhaust fan which would be inaudible beyond the site boundary. The only other operational SSC facility in the region would be a service area facility; its noise emission would not be heard at any location throughout central Big Rock (see EIS Volume IV, Appendix 9).

Construction noise emissions from these two locations would also be inaudible in central Big Rock except under extremely rare meteorological conditions in which case the noise of earthmoving machines might be faintly heard outdoors in central Big Rock. Even then, this sound would be inaudible inside a residence or schoolroom, even with the windows open. Consequently, interference with studies or any other activities is not expected. A railroad siding would be constructed along the right-of-way of the Chicago, Burlington & Quincy Railroad; approximately 1 mi east of Big Rock. This activity would result in noise emission from a few dozer and scraper machines and would occur for a period not exceeding about two months.

Spoils from the site would be hauled to a quarry (No. 3) located approximately 3 mi southeast of central Big Rock. The F4 site spoils would also be hauled to Quarry No. 3. The closest approach to central Big Rock of these hauling activities would be greater than 1 mi. Spoils hauling would be completed in less than 3 years (see Volume IV, Appendix 10).

The term "human receptors" is not used in the Final EIS.

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0863.03

SSC-related population impacts in Illinois would likely cause growth in public school enrollments. Projected SSC-related enrollment increases in the Illinois Region of Influence, and in DuPage, Kane, and Kendall Counties, are presented in Volume IV, Appendix 14, Section 14.1.3.3.C, and Tables 14.1.3.3-10, 14.1.3.3-11, 14.1.3.3-12, and 14.1.3.3-13, respectively. In order to maintain current levels of public educational and instructional service and to minimize effects of classroom crowding, more instructors, education support staff, and an increased number of classrooms may be required in affected school districts.

0863.04

It is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with the letter and spirit of applicable environmental and traffic safety statutes, regulations and standards.

0864.01

Until more detailed design of the SSC has been completed, it cannot be said that the existing Fermilab machine will or will not need any major alterations or improvements. If major work would be required on the existing complex, the only shutdown time necessary would be that for breaking into the structures and installing beam-transfer lines. Some of the latter could be done during scheduled maintenance periods. It will take a total of one to two years to connect Fermilab to the SSC collider ring. However, Fermilab's accelerator complex will only need to be shut down for about a total of six months during this time, so the connection period will have an insignificant effect on its role in world physics research. This is because Fermilab doesn't have to be down all of this time, but just at certain critical steps during the connection period. It will operate normally the rest of the time.

Illinois has recommended adaptations to ring facilities and these would necessitate some additional tunneling, angled shafts, etc. These adaptations are responsive to Appendix B of the ISP which requires the proposer to recommend an SSC alignment consistent with site characteristics. However, these changes are relatively minor and would have an insignificant effect on the time and cost to construct the SSC. The EIS analysis does not indicate that the Illinois site is the most difficult and costly of the seven sites (see EIS Volume IV, Appendix 2).

0865.01

The observations concerning land use are consistent with the analyses presented in Volume IV, Appendix 13, Section 13.1. Issues concerning opportunity costs can be addressed by evaluating the socioeconomic impacts estimated for Illinois (Volume I, Chapter 5, Section 5.1.8) versus that of the no-action alternative (Volume I, Chapter 5, Section 3.3). See Comment Response 1192.02.

0865.02

By attending public hearings in each of the states on the Best Qualified List for the SSC, representatives of the DOE have been made aware of the local attitudes, feelings, problems, and social disruption that would occur to individuals, property owners, and communities. The state, region of influence, counties and individual communities were considered in the analysis for various impacts. Impacts on quality of life were discussed for each state in the EIS.

Public participation is a vital element in the review of the DEIS and is a legal requirement of the EIS process.

0866.01

See Comment Responses 710.01, 1126.05, and 1504.01.

0867.01

See Comment Response 880.04. The term "human receptor" was used in the EIS noise analysis to indicate people, institutions, or dwellings. The FEIS, Volume IV, Appendix 9 has been modified to reflect more specifically the groups of people potentially impacted by increases in noise levels.

The Indiana bat was studied because it is listed as an endangered species by the U.S. Fish and Wildlife Service and protected by law.

0867.02

The statement regarding concern about flooding noted in the comment is included in the EIS (Volume IV, Appendix 5, Section 5.3.2.1).

The Illinois groundwater data were presented in Volume I, Chapter 4, Table 4-13. Available data indicate that violations of the radium standard occur in the Piedmont and Coastal Plain providences in Georgia, South Carolina, North Carolina, and New Jersey and in a northcentral area consisting of parts of Wisconsin, Missouri, Illinois, Minnesota, and Iowa. However, a cautious approach with regard to the restriction of radium in potable water supplies has been taken by the State. Maintaining safe radium levels may be accomplished by treating radium containing water. Water quality standards will apply for any community water supply.

0867.03

Public services provided by local governments were analyzed based on a "Level of Service" indicator. This is simply the ratio of government jobs in a particular sector to the total regional population. This concept is not without flaws and does not denote a numerical ranking or quality rating of the level of service provided. Varying degrees of private sector or out-of-region service provisions, differing levels of mechanization by government agencies, varying levels of crime and health

problems, etc., can distort the significance of the level of service as an indication of the actual level or quality of service provided. The measure is useful, however, as an indicator of the level of impact by which regional population changes would effect the need for local services (see EIS Volume IV, Appendix 14, Section 14.1.2).

0867.04

Comment noted.

0867.05

Comment noted.

0867.06

The DOE approach to supplementing data provided by the proposing states is outlined in Comment Response 19.01.

The maps in Volume I Chapter 5 of the EIS are intended only to demonstrate the general distribution of people and their locations relative to the SSC surface facility locations. These were used in DEIS to identify E and F areas having the potential to cause high annoyance from noise. The final results of the site comparison, as presented in the revised Volume IV, Appendix 9, do not depend on the accuracy of these maps, but rather on information obtained from aerial photographs.

The distribution of residences and schools for the seven SSC sites was compiled from current USGS 7-1/2 minute quadrangle sheets and from observations recorded by the DOE during site visits. This information was augmented by results of analysis of aerial photographs to quantitatively determine population distribution in the vicinity of each SSC site. Where applicable, current information from school administrators was obtained to complete the location and population information. The locations of 5 schools which were omitted from the Illinois sections of DEIS are described in the Comment Response 860.07, and in EIS Volume IV Appendix 9.

The Supplemental EIS for the selected site will address the population numbers and distribution at a level of detail which will identify each residence, school and other institutional structure, its location relative to the SSC facilities, and the number of people associated with it The Supplemental EIS will also address planned but uncompleted land development as it affects impact mitigation requirements.

0868.01

See Comment Response 1217.01.

0868.02

See Comment Response 710.01, 1126.05, and 1369.09.

0869.01

The FEIS has been revised to indicate that a measurable impact on the already existing regional overdraft of the deep aquifers and on the shallow aquifers would result from the combined on-site and off-site water needs of the project. The FEIS also recognizes plans by communities to the east of the site to import Lake Michigan water, and the potential for increased use of local surface waters. For a more complete discussion of these impacts and potential mitigation, see FEIS Volume IV, Appendix 7, Section 7.2.3.3. See also Comment Response 533.03.

0869.02

See Comment Response 13.02 regarding data compilation and management for the EIS.

The groundwater overdraft impact of SSC project operations at the Illinois site is characterized in the EIS as a measurable long-term impact for which there is no totally effective mitigation (EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 7, Section 7.2.3.3.B.1). This is not suggestive of an "insignificant" impact but rather indicates an impact that will be measured or observed in the area's groundwater system over and beyond the duration of the project and will likely require some adjustments in local water use patterns (see definition of measurable impact in EIS Volume IV, Appendix 7, Section 7.2.2.1). The impact is not deemed significant for the arguable rationale that the incremental overdraft related to the SSC project is a small portion of the existing condition. However, the measurable impact remains, and it is not considered insignificant by the DOE.

See Comment Response 1504.01 for a discussion of the site selection process.

0870.01

All potentially significant adverse scenic and visual resource impacts at the Illinois site would be due to SSC facilities being in the view of residential areas. However, it may be possible to mitigate the visual impacts acceptably over time (see EIS Volume I, Chapter 3, Section 3.6.3 and Volume IV, Appendix 16, Section 16.3.3.3). Also, see Volume I, Chapter 5, Table 5.1.10-1 for a comparison of the seven sites regarding visual impacts. Additional details about visual impacts and related mitigation strategies will be provided in the Supplemental EIS.

0870.02

It is true that regional groundwater overdraft conditions exist for both the shallow and the deeper aquifers at the Illinois site. These conditions would exist regardless of whether the SSC is sited in Illinois. See the additional information on groundwater and surface water in Volume IV, Appendix 7, Section 7.2.3.3 and Comment Response 1279.115 regarding more reliance on surface water sources (e.g., Fox River and Lake Michigan).

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0870.03

The SSC will incrementally affect the water supply problems at the proposed Illinois site. Impacts on individual wells will depend on their location relative to the site and the SSC water supply wells. Groundwater impacts and potential mitigation are assessed in FEIS Volume IV, Appendix 7, Section 7.2.3.3. See also Comment Response 533.03.

0870.04

The U.S. Environmental Protection Agency promulgated the National Interim Primary Drinking Water Regulations (Federal Register 41 (132), 28404-28409) in July, 1976, which included standards for natural and man-made radioactivity in drinking water. The regulations establish as the permitted limit of radium contamination a combined concentration of 5 pCi/l of radium-226 and radium-228, and set the maximum level for gross alpha-particle activity, excluding uranium and radon, at 15 pCi/liter. These maximum contaminant levels (MCL) are applicable for "community" water supplies only. A number of factors, including health, cost, occurrence, and practicality, were considered when these maximum contaminant levels (MCL) were devised. Available data indicate that there are two specific geologic regions where over 75 percent of the known violations of the radium standard occur: the Piedmont and Coastal Plain providences in Georgia, South Carolina, North Carolina, and New Jersey and a northcentral area consisting of parts of Wisconsin, Missouri, Illinois, Minnesota, and Iowa.

The Illinois groundwater data in Volume I, Chapter 4 were collected by the State of Illinois in the region of the proposed SSC site. In those wells tested in the regions of the proposed site, the gross alpha activity ranged from less than the lower level of detectability to 4.6 pCi/l with an average of 1.2 pCi/l. Studies of Illinois indicate that the potable groundwater supplied by the Cambrian-Ordovician aquifer system to a large portion of the northern part of the State exceeds the U.S. EPA MCL of 5 pCi/l for total radium. The principal aquifers in this area are the sandstones. They include the St. Peter, the Ironton-Galesville, part of the Eau Clair Formation, and the Mt. Simon Sandstones (Gilkeson, R.H., et al. "Hydrogeological and Geochemical Studies of Selected Natural Radioisotopes and Barium in Groundwater in Illinois", University of Illinois at Urbana-Champaign, Water Resources Center Report UILU-WRC-83-0180, May, 1983). Existing data on the relationship between cancer risk and exposure to low levels of radium in drinking water are scarce and inconclusive. However, a cautious approach with regard to the restriction of radium in potable water supplies has been taken by the State. Reduction of radium in water may be accomplished by treating contaminated water. Lime softening, ion exchange, reverse osmosis and dilution with low radium surface water have been demonstrated to be effective methods for reducing radium levels. The treatment of elevated levels of radium in water has been achieved in Illinois at the Herscher and Lynwood ion exchange plants and the Peru and Elgin lime softening plants (Remi Beth Langum, "Radium in Drinking Water" IDNS Internal Report, First Draft, May, 1986).

085109003358822

Naturally elevated radium levels do occur in groundwater to the east of the proposed SSC site in Illinois. The incremental impact of the SSC on radioactivity in the environment, including groundwater, and the resulting potential radiation exposures of the public are estimated to be very small for the proposed Illinois site. The health impacts from radiation during SSC operations have been assessed in Volume IV, Appendices 10 and 12. SSC operations will not increase the amount of radium in drinking water to dangerous levels, even considering the long-term cumulative effects of exposure to radium as such low levels. The dose equivalent from SSC operations is primarily through the air pathway and is less than 0.001 percent of that from background radiation.

0870.05

The observations concerning land use patterns are consistent with the analyses presented in EIS Volume I, Chapter 4, Section 4.8.7 and Volume IV, Appendix 13, Section 13.1.3.3.

Recent population increases in the Illinois Region of Influence are discussed in Comment Response 973.01, especially in the first two paragraphs.

The potential impacts of the SSC on local property values in Illinois are addressed in the first paragraph of Comment Response 1047.02.

Volume I, Chapter 3, Section 3.3 presents no-action scenarios. A comparison of these scenarios with project development scenarios as provided in Appendix 13 measures lost opportunity costs. Impacts associated with not implementing the SSC are addressed in Volume I, Chapter 5, Section 5.3.1.

0870.06

The Fermilab will have to be shut down to connect it to the SSC collider ring. Connection is planned to require from one to two years. However, Fermilab's accelerator complex is expected to remain productive for all but about six months of this time, so the connection period will have an insignificant effect on its role in world physics research. This is because Fermilab doesn't have to be down all of this time but just at certain critical steps during the connection period. The rest of the time it can operate normally. Also see Comment Response 1219.03.

0871.01

See Comment Response 880.04.

0871.02

Comment noted.

0871.03

See Comment Response 1020.05.

085109003358823

0871.04

See Comment Response 1279.357.

0871.05

The statement under Infrastructure Assessment (see Utilities, EIS Volume IV, Appendix 14, Section 14.2.2.2.C, Paragraph 8), "For utilities serving the proposed sites, planning reserve margins range from 15 to 28 percent" is true. The Volume IV, Appendix 14, Table 14.2.2-3 reference is to a 14.2 percent reserve margin that would be available under Commonwealth Edison's current resource plan (which excludes the projected SSC load) if the SSC load were to be added. It is expected that if the SSC were sited in Illinois, Commonwealth Edison would modify its resource plan to maintain at least the required reserves. The comparison of the current resource plan (which does not include the SSC load) with loads including the SSC provides a measure of the degree to which resource plans must be modified to accommodate the SSC load. The reference to reserves of 3,083 MW, or 14.2 percent in the year 2004 does not reflect Commonwealth Edison's plans if the SSC or any equivalent load were to be sited in their service territory and does not indicate that insufficient reserves would be available (see Volume IV, Appendix 1, Section 1.2.3.10).

0871.06

The DOE disagrees and believes that a sufficient analysis of the direct, indirect, short- and long-term effects of the SSC sufficient to support a site selection decision were provided by the EIS. The DOE has also committed to a Supplemental EIS for the selected site. The Supplemental EIS will be based on more detailed design information and will address additional options available to the Department of mitigate environmental impacts.

0871.07

EIS Volume IV, Appendix 14, Section 14.2.2.3.C.1.c addresses concerns regarding the acid rain issue. The mechanism for electric power generation and its source composition (gas, coal, nuclear, etc.) at the affected utility is outside the scope of this EIS. EIS Volume IV, Appendix 14, Section 14.2.2.2.C addresses the flexibility in planning that each utility must maintain in order to meet the dynamic demands placed on their systems. The cumulative effects of the SSC project on resources and energy production are discussed in EIS Volume I, Chapter 3, Section 3.6.

0872.01

See Comment Responses 1368.01 and 1368.02.

0873.01

Comments noted.

085109003358824

0873.02

As stated in the DOE Invitation for Site Proposals for the SSC (April 1987), Chapter 3, the goal in evaluating sites for the SSC is to select a site that will permit the highest level of research productivity and overall effectiveness of the SSC facility at a reasonable cost of construction and operations and with minimal adverse impact on the environment. The Secretary of Energy will select a site using technical evaluation criteria and cost considerations. In order of relative importance, the technical evaluation criteria are geology and tunneling, regional resources, environment, setting, regional conditions, and utilities.

0874.01

The EIS assesses this impact of relocation regardless of the nature of the resident. Individuals who live in a mobile home park that may be displaced still incur impacts. Under the Federal relocation and acquisition laws (Public Law 91-646 and 10 CFR 39), benefit services are provided for relocation for rental property residents. Proposers are responsible for acquisition and relocation services (see EIS Volume IV, Appendix 4, Section 4.4.1) and for complying with the cited Federal acquisition laws.

0874.02

Part of this comment appears to result from misinterpreting the meaning of the term "water table." For unconfined aquifers, the water table represents the elevation (that is, the surface, not the entire volume) in the ground below which soils and rocks are saturated with water. The EIS is correct in stating that the tunnel at the proposed Illinois site will be entirely below the water table; this means that the tunnel will be entirely in the saturated zone. Producing water wells always penetrate below the water table, that is, into the saturated zone, since insufficient water is available in the unsaturated soils and rocks above the water table. Constructing tunnels below the water table, that is in saturated rocks, involves standard engineering practice which has been demonstrated successfully in all parts of the world (e.g., highway and railway tunnels through mountains and under rivers, estuaries, bays and lakes). See Comment Response 19.03 with respect to the control of water infiltration into the SSC tunnel.

0874.03

The problem with wells running dry described in the comment relates to the shallow aquifer system. The water supply for the SSC is currently planned to come from the deep "sandstone" aquifer. Because the two aquifers lack any significant connection, pumping for SSC water use will not affect shallow wells.

The statements regarding tunnel inflows in EIS Volume IV, Appendix 10 are the maximum expected from untreated rock. Most of the tunnel at the Illinois site will be in essentially impermeable rock. Inflows will be

from discrete fractures which can be easily isolated and sealed by grouting or lining. A significant amount of tunnel "dewatering" is not expected.

See also Comment Response 1279.115 for general discussion of overdraft conditions.

0874.04

The EIS has been revised to reflect the use of additional fugitive dust control which greatly reduces the modeled TSP concentrations (see Comment Response 1278.11). The new information in EIS Volume I, Chapter 5, Table 5.1.3-3 indicates that Illinois would now rank second highest for TSP-24 hour average and tied for second lowest for TSP-annual geometric mean. This EIS makes no attempt to calculate a person-exposure value for air quality impacts.

0875.01

EIS Volume I, Chapter 3, Table 3-5 is in error and has been corrected to reflect a change in footnote "g" from "50%" to "50." See Comment Response 307.04.

0875.02

See Comment Response 710.01 and 880.04. Only areas designated to be acquired in fee simple will create relocations. Many areas of the tunnel will be affected by stratified fee only. See also Comment Response 266.03.

0875.03

See Comment Responses 307.04 and 880.04.

0875.04

A clarification to the EIS data has been submitted by the Illinois proposer group. The standard SSC template was adjusted, with the concurrence of the DOE, so that all of injector area B and future expansion area C acreage requirements can be satisfied fully by using Fermilab property. As a result, there are no land acquisition requirements necessary for these two areas. See Comment Response 1279.159 regarding changes in the EIS text.

0875.05

Comment noted.

0876.01

There are seven prairie remnants in the 16 township area surrounding the proposed tunnel alignment in Illinois which contain examples of the original vegetation in northern Illinois (See Volume IV, Appendix 11, Section 3.3.1). The proposed location of the SSC project would avoid direct impacts to prairie remnants, and since modifications to the existing Fermilab facility on concentrated in other areas, only minor impacts are expected to occur to the restored 675 acre prairie on the Fermilab property. Incremental additions of the SSC project to regional impacts on prairie remnants would be limited to secondary impacts due to increased population growth.

0876.02

See Comment Response 1292.05.

0876.03

See Comment Response 1292.05

0876.04

See Comment Response 854.02.

0876.05

Comment noted.

0876.06

The assessment of wells potentially lost or closed due to SSC siting and construction at the site alternatives in Volume IV, Appendix 7, Section 7.2.3 does not support a conclusion that more wells will be lost in Illinois than at all other sites combined. The number of wells that may be lost due to siting the SSC in Illinois was not reported accurately in the DEIS. State records indicate 320 wells within the SSC footprint; however, based on field surveys, the State estimates that only 6 to 31 wells may be directly affected and required to be closed because of the project. See Comment Response 979.02 for clarification of criteria to assess the number of wells closed or affected and revisions to the EIS.

0876.07

See Comment Response 1369.09.

0876.08

Comment noted.

0876.09

See Comment Response 1279.115.

085109003358827

0876.10

While the ring crosses the Fox River and other streams, it does so at depths of 280 to 360 ft. Construction of the ring tunnel under the streams will have negligible surface disturbance, hence negligible sedimentation impacts on the stream.

Construction of SSC surface facilities may have impacts on streams. While the Illinois site has the largest river, i.e., the Fox River, among the seven site alternatives overlying the tunnel alignment, it has not been determined that more streams cross above the alignment than at any other site. The impact of siltation and pollution on larger streams such as the Fox River is not necessarily larger; it is likely to be less severe because of the availability of larger flow to transport sediment and pollutants. However, with implementation of proper mitigative measures, it is anticipated that there will be minimal surface water quality impacts from the SSC projects (see EIS Volume IV, Appendix 7, Section 7.1.3.3). All SSC project activities will comply with applicable environmental regulations, and the impact on the streams will be minimized (see EIS Volume I, Chapter 6).

0876.11

The presence of methane gas in Illinois is analyzed in Volume IV, Appendix 5, Section 5.3.1.5 of the EIS. See also Comment Response 1007.01.

0876.12

See Comment Responses 1237.02 and 1279.357.

0876.13

See Comment Response 1007.02.

0876.14

See Comment Responses 1217.01, 1237.02 and 1279.357.

0876.15

See Comment Response 1369.09.

0876.16

The comment is correct that the proposed Illinois site is the only site among the seven sites where elevated radium levels have been reported in the groundwater supplies.

The Illinois groundwater data in Volume I, Chapter 4 were collected by the State of Illinois in the region of proposed SSC site. In those wells tested in the regions of the proposed site, the gross alpha activity ranged from less than the lower level of detectability to 4.6 pCi/l

with an average of 1.2 pCi/l. Studies of Illinois indicate that the potable groundwater supplied by the Cambrian-Ordovician aquifer system to a large portion of the northern part of the State exceeds the U.S. EPA MCL of 5 pCi/l for total radium. The principal aquifers in this area are the sandstones. They include the St. Peter, the Ironton-Galesville, part of the Eau Clair formation, and the Mt. Simon Sandstones (Gilkeson, R.H., et al. "Hydrogeological and Geochemical Studies of Selected Natural Radioisotopes and Barium in Groundwater in Illinois", University of Illinois at Urbana-Champaign, Water Resources Center Report UILU-WRC-83-0180, May, 1983). Existing data on the relationship between cancer risk and exposure to low levels of radium in drinking water are scarce and inconclusive. However, a cautious approach with regard to the restriction of radium in potable water supplies has been taken by the State. Reduction of radium in water may be accomplished by treating contaminated water. Lime softening, ion exchange, reverse osmosis and dilution with low radium surface water have been demonstrated to be effective methods for reducing radium levels. The treatment of elevated levels of radium in water has been achieved in Illinois at the Herscher and Lynwood ion exchange plants and the Peru and Elgin lime softening plants (Remi Beth Langum, "Radium in Drinking Water" IDNS Internal Report, First Draft, May 1986).

Naturally elevated radium levels do occur in groundwater to the east of the proposed SSC site in Illinois. The incremental impact of the SSC on radioactivity in the environment, including groundwater, and the resulting potential radiation exposures of the public are estimated to be very small for the proposed Illinois site. The health impacts from radiation during SSC operations have been assessed in Volume IV, Appendices 10 and 12. There are no measurable adverse impacts from cumulative effects of exposure to radium in drinking water and exposure to radiation from SSC operations. The dose equivalent from SSC operations is primarily through the air pathway and is less than 0.001 percent of that from background radiation.

The U.S. Environmental Protection Agency promulgated the National Interim Primary Drinking Water Regulations (Federal Register 41 (132), 28404-28409) in July, 1976, which include standards for natural and man-made radioactivity in drinking water. The regulations establish as the permitted limit of radium contamination a combined concentration of 5 pCi/l of radium-226 and radium-228 and set the maximum level for gross alpha-particle activity, excluding uranium and radon, at 15 pCi/l. These maximum contaminant levels are applicable for "community" water supplies only. A number of factors, including health, cost occurrence, and practicality, were considered when these maximum contaminant levels were devised.

0876.17

Variable water quality conditions are displayed at all of the sites, as presented in individual site chapters in Volume IV, Appendix 5, Sections 5.1.2, 5.2.2, 5.3.2, 5.4.2, 5.5.2, 5.6.2, and 5.7.2. A summary of the data is in Volume I, Chapter 4, Table 4-2. Water Quality data at all

alternative sites where data are available show violation of water quality standards for one or more parameters. Site ranking in terms of water quality has not been determined.

0876.18

See Comment Responses 1007.03 and 1007.04.

0876.19

See Comment Response 1007.12.

0876.20

See Comment Response 1007.11.

0875.21

See Comment Response 1293.03.

0876.22

See Comment Response 1312.01.

0876.23

See Comment Response 1007.13.

0876.24

See Comment Response 1007.14.

0876.25

See Comment Response 41.02.

0876.26

The State of Illinois originally proposed 46 quarries as disposal sites as part of their proposal (September 1987). They have since revised their plans and have proposed the use of four quarries as disposal sites. However, more sites are available for use if the need warrants use of more than the primary four that are currently designated.

As a worst-case scenario there could be as many 144 truckloads delivering excavated material to Quarry 1 assuming three tunnel boring machines (TBMs) operated simultaneously.

Mitigative measures would be considered during the construction and planning stage to avoid or minimize the impacts of these trucks (EIS Volume I, Chapter 3, Section 3.6.3). Such measures would include

planning TBM operations in different quadrants to reduce traffic jams on the roads and at the quarries. The impacts would be addressed in greater detail in the Supplemental EIS after the site is selected.

0876.27

Surface water and shallow groundwater systems at the Illinois site and at all other sites are interconnected as noted in the comment. This is a common hydrologic situation and planned mitigations will be coordinated to ensure that impacts to both surface water and groundwater are minimized. See also Comment Responses 18.03 and 1369.05.

0876.28

Any additional time required to complete construction during the inclement weather in Illinois can be compensated for by dividing the work to be done into smaller packages and having the work done concurrently. In this way, the project can be completed in Illinois within the same overall time as all of the other sites.

0876.29

The mitigations to reduce the effects of blasting vibration and noise are discussed in EIS Volume IV, Appendix 9, Section 9.2. The increased costs associated with the techniques described to reduce vibrations and noise to acceptable levels (blasting delays or timing devices and vibration/noise monitoring programs) for the Illinois site are insignificant and were not calculated for the EIS.

0876.30

See Comment Response 1126.05.

0876.31

The observations concerning land use patterns are consistent with the analyses presented in EIS Volume I, Chapter 4, Section 4.8.7 and Volume IV, Appendix 5, Section 5.3.10 and Appendix 13, Section 13.1.3.3. Volume I, Chapter 3, Section 3.3 presents no-action scenarios.

A comparison of these scenarios with project development scenarios as provided in Volume IV, Appendix 13 provides an estimate of lost opportunity costs.

0876.32

See Comment Response 1486.03.

0877.01

See Comment Response 1146.04.

0877.02

Guidelines for Noise Impact Analysis (U.S. EPA, Office of Noise Abatement and Control, Oct 1981) contains a detailed discussion on the impact of population density on background day-night average sound level (L_{dn}). It concludes, as noted in Volume IV, Appendix 9, that L_{dn} increases with increasing population density. Therefore, in the absence of dominating industrial sound sources, areas with a higher population density normally will have a higher background sound level than areas with a lower population density. Since it is the difference between background sound levels and the sound levels produced by the project that determine the noise impacts, sound levels produced by the SSC would be less annoying in areas with higher background sound levels than in areas with lower background sound levels, all other factors being equal. Volume IV, Appendix 9, Section 9.1.3.2 contains a discussion on how far noise from SSC project activities will be noticeable from the location of the activity. Distances for which the noise will be audible are reduced, but not eliminated, for the higher background.

With respect to blast overpressures and ground-transmitted vibrations from blasting, it is noted in Appendix 9 that Illinois has the largest number of structures within 600 ft of blast locations. The DOE has committed to a program of blast control and monitoring (described in Section 9.2.3.3) in order to minimize the potential for structure damage to houses and other buildings. Limiting observed ground-transmitted vibrations at structures to a peak particle velocity of 2.0 inches/s and airblast overpressures to 131 dBL, as discussed in Section 9.2.2, will preclude the possibility of damage to houses, although the blasting will certainly be noticeable.

0877.03

The presence St. Charles High School and all other schools were not ignored in the health impact analyses in EIS Volume IV, Appendix 12. See Comment Response 1139.01. A revision has been made to Volume IV, Appendix 4 to include St. Charles High School.

0877.04

Comments noted.

0878.01

Kaneland School is approximately 4,000 ft from the nearest surface construction (E6). Noise levels at the school emanating from the surface operations supporting the tunnel boring machine would be expected to average less than 45 dBA at that distance, which should not be discernible. St. Charles High School and the Norris Recreation Center are located approximately 4,000 ft from the nearest surface construction location, intermediate access area E9. Noise levels from E9 during the peak of construction are expected to have a day-night average sound level of 45 dBA at that distance, which is not expected to annoy a significant percentage of people.

085109003358832

0878.02

The human high annoyance measure, which is a function of the day-night average sound level, incorporates the impact of the combination of pre-project background sound and sound associated with project activities. SSC project activities alone will result in a smaller number of highly annoyed people when there is a higher existing background sound level. The cumulative impacts of the project are therefore reduced in situations where conditions outside the project, such as residential development and expansion of noise-producing facilities, are raising ambient levels. Note also that the long-range impacts of this project (during operations) are expected to result in sound levels above 55 dBA (which is the EPA-recommended outdoor limit for developed land) for the land located within 450 ft of the service area property line, as discussed in DEIS Appendix 9, Section 9.1.3.2.

Table 9-2 of Appendix 9 addresses construction noise. The Federal Highway Administration criteria of 67 dBA is not applicable to construction noise, as noted in Appendix 9. However, construction activities at E and F areas in support of the tunnel boring machines are expected to highly annoy approximately 25 percent of those within 630 ft of the center of an E or F site, and 9 percent of those between 630 and 2,000 ft of the center of an E or F site. It is anticipated that the DOE will address noise abatement measures during detail design and construction planning to minimize high annoyance to residents impacted by construction and operations noise. The Supplemental EIS for the selected site will describe the mitigation plan.

0878.03

Comment noted.

0878.04

See Comment Response 710.01.

0878.05

Since the DuPage County Airport is not a noise-sensitive area, but rather a source of noise, its presence in Volume IV, Appendix 9, Figure 9-20, is not appropriate. The purpose of the sensitive human noise receptor location plots such as Figure 9-20 is to indicate the general distribution of people around the surface facilities of the SSC, and also to assist in identifying the facilities that have the potential to cause high annoyance to people located close to project facilities.

The location of the DuPage County Airport is shown in Figure 5.3.11-3 in the transportation section of Volume IV, Appendix 5, Section 5.3.11.2.

0879.01

Regarding the number of wells potentially closed at the SSC site in Illinois, see Comment Response 979.02. The existence of the St. Charles municipal supply well is now noted in the EIS Volume IV, Appendix 7, Section 7.2.3.3.

EIS Volume IV, Appendix 7, Section 7.2.3.3 does state that the closure of wells would be a measurable beneficial impact to the groundwater system, which is true. While mentioned, this fact was not used to reduce the assessed level of impact of well closures which were identified as measurable and significant as suggested by the comment.

0879.02

Comment noted.

0880.01

The purpose of this EIS is to provide a full and fair discussion of significant environmental impacts in order to inform the public and decision makers of the reasonable alternatives that could avoid or minimize adverse environmental impact or enhance the quality of the human environment.

0880.02

The industrial water need of 2,200 gal/min for the SSC operations listed in EIS Volume I, Chapter 5, Table 5.6-1 reflects an occasional peak cooling water use. This table has been revised and now lists an average industrial water need of 1,780 acre-ft/yr or 1,100 gal/min. With the average potable water need of 400 acre-ft/yr or 250 gal/min, the average total water need for SSC operations is 2,180 acre-ft/yr or 1,350 gal/min. In addition, the SSC-induced population increase would require an average of about 605 acre-ft/yr or 375 gal/min. The total on-site and off-site SSC-related water need will thus be 2,785 acre-ft/yr or 1,725 gal/min. This would represent about 2.5 million gal/d. Assuming an average U.S. domestic water need of 100 to 120 gal/d this quantity would be equivalent to the water supply for about 21,000 to 25,000 people. Thus the comment is correct that a significant volume of water would be needed by the project.

For comparison, the total groundwater withdrawals for 1986 in Kane and DuPage Counties were estimated at 38,000 and 110,000 acre-ft, respectively. Thus, the SSC operational water need represents about 2 percent of the combined 1986 groundwater withdrawal of these two counties. Based on the considerations explained above, the EIS is correct in stating that measurable long-term regional impacts on existing groundwater aquifers will occur as a result of the SSC, but these impacts are small in comparison to the effects of already existing groundwater use. The potential of using surface water sources, including the Fox River and Lake Michigan, are pointed out in EIS Volume I, Chapter 3, Section 3.6.3. No credit is given, however, in the impact assessments for the

import of Lake Michigan water since such plans by community water systems are not yet sufficiently firm. See Volume IV, Appendix 5, section 5.3.2.2 for a description of the current groundwater conditions at the proposed Illinois site, and Appendix 7, Section 7.2.3.3 for projected groundwater impacts. See Comment Response 1133.02 with respect to mitigation for potentially impacted individual well owners.

C880.03

See Comment Response 1324.01.

0880.04

Land acquisition is the responsibility of the proposer (see EIS Volume IV, Appendix 4, Section 4.4.1). Proposers have all agreed to comply, as a minimum standard, to the Federal acquisition laws and regulations, the "Uniform Relocation Assistance and Real Property Acquisition Policies Ac of 1970," P.L. 91 - 646 and "Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs" (10 CFR 1039, 51 FR 7000). Questions concerning the proposers' SSC land acquisition strategies and commitments should be directed to the appropriate State agency (see EIS Volume IV, Appendix 4, Section 4.3.2.).

0881.01

The possible occurrence of "drift gas" (basically naturally-occurring methane) at the proposed Illinois site is addressed in EIS Volume IV, Appendix 5, Section 5.3.1.5. Although the presence of gas has been noted in several wells near the northwestern portion of the site, 19 test borings that were made in 1988 for the SSC Illinois proposal did not encounter any gas. The potential presence of the gas during SSC construction is recognized as a safety hazard and is addressed in EIS Volume IV, Appendix 12, Section 12.3.3.

DOE will implement construction procedures that meet both MSHA and OSHA requirements (see EIS Volume IV Section 12.3.3). Because the SSC is in the conceptual design stage, details of construction techniques that will be used, such as the numbers and locations of vent shafts for worker safety, will not be developed until further site-specific design of the SSC is completed. These details will be addressed in the Supplemental EIS prepared for the selected SSC site.

0882.01

At the peak of construction approximately 2,000 direct SSC jobs would probably be filled by workers residing in Kane County. Approximately 300 secondary jobs would be created. During the operation phase the long-term impact would be almost 2,000 jobs. Over $70 million in direct sales at the peak of construction and almost $50 million in a year in sales during operation can be attributed to additional consumer demand (see EIS Volume IV, Appendix 14, Section 14.3.3.3.A).

A population impact of more than 3,550 persons is projected for 1992, decreasing to less than 3,400 persons by the year 2000. The demographic impact for Kane County would require an additional 975 housing units in 1992, and 800 units by the year 2000. The steadily growing housing industry in Kane County should enable the absorption of this impact (see Volume IV, Appendix 14, Section 14.1.3.3.B).

The attraction of in-migrating population to the established communities of Aurora, Batavia, and Geneva would create moderate to high impacts to local public services and facilities. However, the established network of public services would provide an adequate base from which employment and facilities could expand to meet current growth and potential SSC-related demand (Volume IV, Appendix 14, Section 14.1.3.3.C).

The cumulative net fiscal impact to all local government jurisdictions in Kane County would be negative during the first three years of project activity but would be positive thereafter (EIS Volume IV, Appendix 14, Section 14.1.3.3.D).

SSC-related effects on the quality of life in local communities will depend upon the communities' ability to plan and finance needed facilities and services. Careful planning can minimize many negative conditions associated with rapid growth.

See Comment Response 1279.178 for a discussion of prime and important farmland impacts.

See Comment Response 1229.02 for a discussion of effects on land values.

C882.02

The scenic and visual impacts of the SSC are assessed in EIS Volume IV, Appendix 16, Section 16.3.3.3 in some detail. General public views from travel routes and common use areas were considered at all levels of importance: local, regional, national. In Illinois, the impacts of potential significance would occur relative to views from residential areas. Such impacts, by their nature, are of local importance (important at the neighborhood or community level) and do not affect a scenic or visual resource of regional or national concern. The observation is correct; the scenic and visual impacts assessed would be considered a local problem.

0882.03

See Comment Response 880.04.

0882.04

Comments noted.

0883.01

Comment noted.

085109003358836

0884.01

Comments noted.

0885.01

See Comment Response 1276.01

0886.01

Comments noted.

0887.01

Comment noted.

0888.01

Comments noted.

0889.01

Comments noted.

0889.02

Comment noted.

0890.01

Comment noted.

0891.01

Comments noted.

0892.01

Comments noted.

0893.01

Comments noted.

0894.01

Comments noted.

0895.01

See Comment Responses 856.06 and 1276.01.

0896.01

Comments noted.

0897.01

See Comment Response 1276.01.

0898.01

Comments noted.

0899.01

Comments noted.

0900.01

Comments noted.

0901.01

Comments noted.

0902.01

Comments noted.

0903.01

Comments noted.

0904.01

In a report entitled "SSC Site Evaluations" prepared by the DOE's SSC Site Task Force, dated November 1988, the following statement is made about potential cost savings from the use of the Tevatron facility.

"There are special cost savings considerations which would result if the SSC is sited at Fermilab because of the presence of the Tevatron which meets many of the injector requirements of the SSC. The DOE estimates a saving on injector construction in the range of $240 to $312 million and a saving on site and infrastructure, campus, and other construction of $22 million (1988 dollars). The range of injector cost savings results from the presently unresolved technical issue of whether the Fermilab 150-GeV main ring (which would be the MEB for the SSC) needs to be replaced. An operating cost savings in the range of $223 to $699 million (1988 dollars) is also projects for such items as personnel, power, materials, supplies, and improvements. A range of operating cost savings is given because of the great uncertainty in projecting the lifetime for a viable and productive Tevatron program after SSC comes into operation. This analysis assumed a 5- to 15-year operating lifetime for the Tevatron. It is estimated that locating the SSC at Fermilab would result in cost savings in the range of $495 million to $1.033 billion (1988 dollars)."

0905.01

Comments noted.

0906.01

Comments noted.

0907.01

See Comment Response 1276.01.

0908.01

Comment noted.

0909.01

The site selection process considered all centers of higher education in the areas of the seven site alternatives (see Volume III, Chapter 1, and ISP criterion of regional resources).

The DOE has stated its intent to continue operations of Fermilab regardless of the SSC siting decision.

See Comment Responses 816.01 and 1276.01.

0910.01

This information is consistent with the EIS Volume I, Chapter 4, Section 4.9.2.2 and Volume IV, Appendix 5, Section 5.3.11.2.B.1 and Volume IV, Appendix 14, Section 14.2.2.3.C.1.

0911.01

Comments noted.

0911.02

Discussions of potential impacts on wetlands and threatened or endangered species have been revised, and are summarized in Volume I, Chapter 5 and discussed in detail in Volume IV, Appendix 11.

0911.03

Comment noted.

0912.01

The EIS has been revised to include a reevaluation of wetlands. This wetland assessment is based on field surveys conducted by the DOE at the site, U.S. Fish and Wildlife Service National Wetland Inventory maps, and aerial photographs. Only wetlands that are located in areas where surface construction activities would occur (areas A, B, C, E, F, J, K) are considered in the revised wetland assessment. See EIS Volume I, Chapter 5, Section 5.1.5.4 and Appendix 11, Section 11.3.3.3. The acreage values presented in the EIS differ from those of the commenter, primarily because potential impacts from construction within Fermilab are added. Other reasons for discrepancies are discussed in Volume IV, Appendix 11, Section 11.2.2.

Should Illinois be selected as the site for the SSC, additional investigations will be conducted regarding specificity in siting relative to natural resources at the proposed site. The results of these analyses and other mitigation measures will be analyzed in the site-specific Supplemental EIS.

09010950330882

0913.01

Comments noted.

0914.01

See Comment Response 1279.357.

0914.02

No marshes are shown around Big Rock on the U.S.G.S. 7.5-ft quadrangle topographic maps. Presumably the marshes referenced in the letter are in the low floodplain of Big Rock Creek and may extend a short distance up Welch Creek (the floodplain deposits are shown in Figure 5.3.1-4 of Volume IV, Appendix 5 of the EIS as Cahokia Alluvium). The working area and access road to site F4 are situated on higher ground well away from these deposits, so that the presence of quicksand should not be a concern. Should Illinois be selected as the site for the SSC, a site-specific Supplemental EIS, including detailed geotechnical research, would be conducted to determine final placement of the SSC-structures.

0914.03

The potential health impacts of the radiation releases of the SSC have been addressed in EIS Volume I, Chapter 5, Section 5.1.6 and Volume IV, Appendix 12. The DOE's concern about limiting radiation exposure to workers and the public is specified in DOE Order 5480.1B (EIS Volume I, Chapter 6, Section 6.3.2). The DOE is committed to operate its facilities and keep the radiation exposure to levels that are as low as reasonably achievable (ALARA). The exposure limits and standards used by the DOE and other regulatory agencies are based on the hypotheses of linear response and not threshold models. These standards are established to maximize the protection to people and environment.

0914.04

A field survey in 1987 by State personnel indicated about 1,500 wells within 0.25 mi of the proposed ring alignment in Illinois. Available records indicated about 320 wells within the 1,000 ft corridor and campus areas. It is acknowledged that this number is dynamic and is increasing; however, the purpose in this EIS was only to show an approximate comparison of the number of wells within the SSC footprint. This purpose was achieved in that Illinois was shown to have a high relative density of wells.

0914.05

Well records and the results of a field survey indicating about 1,500 wells within 0.25 mi of the proposed SSC ring alignment at the Illinois site were provided by the State. The number of wells that may be lost due to siting the SSC in Illinois was not reported accurately in the DEIS and has been revised. See Comment Response 0979.02.

0914.06

Comments noted.

0915.01

Comments noted.

0915.02

Recent surveys conducted by the staff confirmed most of the findings of the Illinois Natural History Survey. One area, at the proposed J2 site, had potential habitat for the Indiana bat. Other areas were noted and would be investigated as ancillary facilities, such as access roads or power lines not identified in current project plans, were established after site selection. Volume IV, Appendix 11, has been updated with the results of the survey. See also Comment Response 958.04.

0915.03

Comments noted.

0916.01

Comment noted.

0916.02

Impacts to electric utilities are addressed in Volume IV, Appendix 14, Section 14.2.2.3.C.1. Commonwealth Edison is not planning any new generating stations for the next several years. However, during operations, the combined SSC loads and secondary loads would reduce Commonwealth Edison's reserve margin below its 15 percent objective. Two miles of new power transmission lines will be needed to provide power to the SSC during operation.

The quoted paragraph in the EIS Volume IV, Appendix 14, Section 14.2.2.3.C.1.c has been deleted in the Errata and Revisions to Appendix 14. The paragraph incorrectly infers that the SSC load would replace the Fermilab load. Fermilab would be used as the injector for the SSC approximately one hour per day. During the remaining hours, Fermilab would be available for other research. Thus, the Fermilab and SSC loads would be additive. The total load would be the current Fermilab load plus the "non-injector" SSC load.

0916.03

The comment is consistent with what appears in EIS Volume IV, Appendix 14, Section 14.2.2.3.C.2.b.

0916.04

The comment is consistent with what appears in EIS Volume IV, Appendix 14, Section 14.2.2.3.C.3.a.

0916.05

Comment noted.

0917.01

See Comment Responses 852.01 and 904.01.

0918.01

EIS Volume IV, Appendix 5, Section 5.3.6.2 contains a detailed discussion about the man-made radiation sources in northern Illinois. The specific location of commercial power reactors was stated. The reactors are located at five generating stations within 50 mi of the proposed SSC site. The stations and their relative location to the site are:

- Dresden Nuclear Power Station, 25 mi south
- LaSalle County Nuclear Power Station, 37 mi southwest
- Braidwood Nuclear Power Station, 32 mi south-southeast
- Zion Nuclear Power Station, 45 mi north-northeast
- Bryon Nuclear Power Station, 45 mi northwest

Of the more than 600 facilities in northeastern Illinois that are licensed to use and possess radioactive materials, only two facilities, i.e., the Kerr-McGee plant and Fermilab, potentially contribute to background radiation levels. The other licensed facilities do not release radioactive materials that contribute to the radiation background at the proposed site.

A thorough summary of the West Chicago Kerr-McGee chemical processing plant was given in Volume IV, Appendix 5. The Kerr-McGee plant is located approximately 1 mi northeast of the proposed site. Over the years, precipitation-induced runoff has transported wastes into a nearby storm sewer and drainage ditch. The wastes were then carried into Kress Creek, where they have been deposited at numerous locations downstream from the storm sewer outfall. A foot-by-foot survey along Kress Creek and the DuPage River (Frigeri, N. A., et al., Thorium Residuals in West Chicago, Illinois, NUREG/CR-0413, prepared by Argonne National Laboratory for the U.S. Nuclear Regulatory Commission, Sept. 1978) found that dose rates along the banks range from background to 150 μR/h at 1 m above ground. At least 80 percent of the total activity along both these waterways is deposited in the first third of the distance along Kress Creek. The three major areas of thorium residual activity from the Kerr-McGee facility are contained within security fences. Under present conditions there are no areas that exceed the Federal limits set forth in Title 10 CFR part 20. The total population dose from all sources is estimated to be less than 30 person-rem/year

(Frame, P. W., Comprehensive Radiological Survey of Kress Creek, West Chicago, Illinois, prepared by Oak Ridge Associated Universities for the U.S. Nuclear Regulatory Commission, 1983).

In 1986, the maximum potential radiation dose to an individual at the Fermilab site boundary was 0.0007 mrem/yr, a comparatively low dose considering that the average individual receives about 300 mrem/yr from natural background (Volume IV, Appendix 12, Table 12.2.1-1). The DOE has done extensive research in all of the issues brought up in the comment. There are no measurable cumulative impacts from radiation on the construction and operations of SSC at the proposed site in Illinois.

With regard to the J6 site encroachment on Kress Creek, it is stated in Volume I, Chapter 5 that potential impacts on upstream flooding resulting from a floodplain encroachment could be avoided by relocating the facility outside the floodplain if such design flexibility is available (EIS Volume I, Chapter 3, Section 3.6). It should be noted that the proposed layout of the SSC is based on a generic conceptual design provided in the Invitation for Site Proposal (DOE/ER-0315). The locations, dimensions, and layouts for facilities and areas will be re-evaluated after a site is selected. Modifications to the conceptual design or to proposed mitigations may be implemented, as necessary, to conform with the site-specific conditions and criteria of the final chosen SSC location (Volume IV, Appendix 12).

0918.02

The Federal acquisition and relocation standards required of the proposer do provide for assistance in the relocation of businesses. Until the DOE accepts the final placement of the collider ring and other associated areas, exact parcels and ownerships cannot be precisely determined (see EIS Volume IV, Appendix 4, Section 4.4). Also see Comment Response 880.04.

0919.01

See Comment Responses 856.06 and 1276.01. The wetland assessment presented in the EIS has been revised to include a reevaluation on wetlands location, type and quality (see Volume I, Section 5.1.5.4, and Volume IV, Appendix 11, Section 11.3.3.3). Impacts were assessed for those wetlands within areas that would be disturbed by surface construction activities (areas A, B, C, E, F, and K). If Illinois is the selected site, the location of surface facilities will be determined and, where possible, will be sited to avoid wetlands, thus greatly reducing the impacts to wetlands.

0920.01

See Comment Responses 1468.02, 1468.03, 1468.04, 1468.06, 1468.07, 1468.08, and 1468.10.

0921.01

Comments noted.

0921.02

EIS Volume I, Chapter 6 identifies the Federal regulatory requirements that would be observed for constructing and operating the SSC. It also lists the States with candidate SSC sites to whom the Federal authority for implementing specific requirements has been delegated. An example is the National Pollutant Discharge Elimination System (NPDES). The DOE will comply with the applicable Federal requirements, the State implementation programs, and other applicable State regulations and permits.

0921.03

The comment is consistent with the DOE's responsibilities under the Clean Water Act, as described in the EIS Volume I, Chapter 6, Section 6.2.1. A text addition has been made to the text to clarify this.

0921.04

The need for local air permits during SSC operation was acknowledged in EIS Volume IV, Appendix 8, Section 8.3.1.2.C. It is the DOE's policy to assure its operating contractors comply with applicable statutory requirements affecting Federal facilities. State and local regulations will be addressed as part of the mandatory DOE compliance program that will be monitored through regularly scheduled health and safety appraisals conducted by the DOE contractors and audited by the DOE personnel. Prior to startup, the DOE requires its operation and maintenance contractors to submit to an operational readiness review during/or at which proposed environmental monitoring plans are submitted for review. All applicable environmental and safety operating permits required to assure the health and safety of the public and the site work force will be reviewed for regulatory thoroughness and adequacy. State and local permits will be addressed and discussed, as appropriate, after consultation with state and/or local permitting officials. These permits will be included, if required, in the site-wide environmental compliance plan. A more detailed discussion on applicable air permits required will be made after site selection and discussed in the Supplemental EIS.

0921.05

Comment noted.

0922.01

Comment noted.

09010950330887

0922.02

The EIS does not project "the birth of a high technology corridor in the neighborhood of the SSC" (quotation is from the comment). Indirect and induced economic effects of the SSC are estimated in the EIS for the entire region of influence (Volume IV, Appendix 14, Section 14.1.3.3.A).

0922.03

This comment presents part of a critical evaluation of an economic analysis conducted by the Illinois Department of Energy and Natural Resources. The State of Illinois study was not used in the analysis conducted in the EIS. The EIS economic analysis was conducted as an integral part of the larger socioeconomic study of anticipated impacts due to the SSC, which employed numerous calculations (e.g., population projections, anticipated in-migration) unique to the EIS itself.

0922.04

Employment multipliers, such as those discussed in the comment, were not employed in the EIS to estimate secondary (both indirect and induced) effects of the SSC. Economic impact analyses performed by the Illinois Department of Energy and Natural Resources also did not rely on such employment multipliers (Treyz, G.I., Ehrlich, D.J., and Depillis, M.S. The Illinois Seven Area Forecasting and Simulation and Conjoined 490 Sector Input-Output Model. Amherst, Mass: Regional Economic Models, Inc., n.d). Input-output (IO) approaches were used in both cases. IO approaches focus on sales multipliers, taking as input the direct sales expected to occur in a region from project purchases and worker spending and resulting in estimates of total sales in each of a number of industrial sectors in the region. Knowledge of average sales (output) produced by workers in the various industrial sectors is then applied to estimate the number of jobs likely to result from these total sales. The IO methods used for the EIS analysis are described more fully in Volume IV, Appendix 14, Section 14.1.3.2.A.

0922.05

Employmert multipliers were not used in the EIS analysis (see Comment Response 922.04).

0922.06

See Comment Response 852.01.

0922.07

Use of a single employment multiplier, such as the 1.5 value cited in the comment, is considered to be an oversimplified approach to the problem of estimating indirect and induced economic effects of the SSC (see Comment Response 922.04).

0922.08

See Comment Response 993.01.

0922.09

The DOE believes the economic analysis in the EIS is adequate to select a site for the SSC. See Volume IV, Appendix 14, Section 1. The Supplemental EIS will be prepared for the selected site based on more detailed design of the SSC and additional environmental impact analyses. See Comment Response 278.08.

0922.10

See Comment Response 856.06.

0922.11

The discussions concerning land use patterns are consistent with the analysis presented in EIS Volume I, Chapter 4, Section 4.8.7 and Section 4.9; Volume IV, Appendix 5, Section 5.3.10 and Section 5.3.11; and Appendix 13, Section 13.1.3.3. Volume I, Chapter 3, Section 3.3 presents the no-action alternative. A comparison of these alternatives with the proposed action as provided in Appendix 13 measures lost opportunity costs. The relationship of short-term uses to long-term productivity is presented in EIS Volume I, Chapter 5, Section 5.5. Many of the short-term uses of the land and regional resources committed to construct and operate the SSC are reversible in the long term. A preliminary evaluation of decommissioning is provided in Appendix 3.

0922.12

See Comment Response 1201.04.

0922.13

The commenter erroneously concludes that increased taxes and loss of jobs necessarily would result due to spending by the Illinois State government for infrastructure improvements for roads, utilities, and other capital investment. The commenter's rationale apparently continues that increased taxes would result in decreased investment by the private sector and that the decreased private sector investment would have a larger secondary effect than the secondary effect of the increased investment by the public sector.

The EIS analysis does not conclude that State taxes would necessarily increase. In fact, depending on the method of financing and the terms of State bonds issued to finance infrastructure improvements, it is possible that additional expenditures by the State would be completely offset by tax revenue from the increased SSC-related spending. Therefore, the commenter's presumption of a tax increase is not specifically valid.

To illustrate this point, consider the following example (but also note, since many of the variables in the example are uncertain and subject to some debate, this type of analysis was not carried forth for any of the proposed sites in the EIS).

According to State sources, the assessed value of the real property which would be purchased by the State to be transferred to Federal ownership is $11.2 million. The assessed-to-market value ratio in Illinois is 33.3 percent, so the market value of this property would be approximately $33.6 million. Infrastructure improvements specifically required for SSC development have been estimated at $35 million (see Volume IV, Appendix 14, Section 14.1.3.3.D.1). If the State finances this $68.6 million over 20 years at a 7.75 percent interest rate, annual debt service would be $6.9 million. Assuming this debt service begins in 1989, it would be fully retired in 2008.

The net revenue impact is shown in Volume IV, Appendix 14, Table 14.1.3.3-14. The year 2000 revenue impact represents the annual revenue impact for the entire operations period. By combining the estimated annual debt service with the net revenue calculations from the EIS, the net State impact can be estimated, as shown in the accompanying table. The table indicates a net positive impact of $54.1 million. The present value of this stream of revenues and expenditures is $4.6 million using a 10 percent mid-year discount rate. The stream remains positive up to a very large discount rate of 18.25 percent.

Actual debt service payments may be higher or lower, financed over a longer or shorter time period, at different rates of return, and begin in different years subsequent to 1989; it is exactly for these reasons that the EIS does not attempt to make any assumptions such as those presented in the example to estimate the present value of impacts to the seven State governments involved. There are so many unpredictable variables involved over such a long period of time that it is impossible to make a reasonable projection. But one thing that is evident from the example is that it is not a foregone conclusion that the State of Illinois (or any of the other states) would need to raise taxes to finance SSC-related expenditures. Therefore, it is not a foregone conclusion that any jobs would be "lost" as a consequence of presuming that State taxes would increase.

Year	Net Revenue	Debt Service	Net Impact	Mid-year Discount Rate: Disc. Factor	Pres. Value @ 10%	Disc. Factor	Pres. Value @ 18.25%
1989	$1.4	($6.9)	($5.5)	0.9535	($5.2)	0.9196	($5.1)
1990	5.0	(6.9)	(1.9)	0.8668	(1.6)	0.7777	(1.5)
1991	9.9	(6.9)	3.0	0.7880	2.4	0.6577	2.0
1992	10.9	(6.9)	4.1	0.7164	2.9	0.5562	2.3
1993	9.8	(6.9)	3.0	0.6512	1.9	0.4703	1.4
1994	10.0	(6.9)	3.1	0.5920	1.8	0.3977	1.2
1995	7.7	(6.9)	0.9	0.5382	0.5	0.3364	0.3
1996	7.2	(6.9)	0.4	0.4893	0.2	0.2844	0.1
1997	4.3	(6.9)	(2.6)	0.4448	(1.1)	0.2405	(0.6)
1998	5.2	(6.9)	(1.6)	0.4044	(0.7)	0.2034	(0.3)
1999	5.8	(6.9)	(1.1)	0.3676	(0.4)	0.1720	(0.2)
2000	6.0	(6.9)	(0.9)	0.3342	(0.3)	0.1455	(0.1)
2001	6.0	(6.9)	(0.9)	0.3038	(0.3)	0.1230	(0.1)
2002	6.0	(6.9)	(0.9)	0.2762	(0.2)	0.1040	(0.1)
2003	6.0	(6.9)	(0.9)	0.2511	(0.2)	0.0880	(0.1)
2004	6.0	(6.9)	(0.9)	0.2283	(0.2)	0.0744	(0.1)
2005	6.0	(6.9)	(0.9)	0.2075	(0.2)	0.0629	(0.1)
2006	6.0	(6.9)	(0.9)	0.1886	(0.2)	0.0532	(0.0)
2007	6.0	(6.9)	(0.9)	0.1715	(0.1)	0.0450	(0.0)
2008	6.0	(6.9)	(0.9)	0.1559	(0.1)	0.0381	(0.0)
2009	6.0	0.0	6.0	0.1417	0.9	0.0322	0.2
2010	6.0	0.0	6.0	0.1288	0.8	0.0272	0.2
2011	6.0	0.0	6.0	0.1171	0.7	0.0230	0.1
2012	6.0	0.0	6.0	0.1065	0.6	0.0195	0.1
2013	6.0	0.0	6.0	0.0968	0.6	0.0165	0.1
2014	6.0	0.0	6.0	0.0880	0.5	0.0139	0.1
2015	6.0	0.0	6.0	0.0800	0.5	0.0118	0.1
2016	6.0	0.0	6.0	0.0727	0.4	0.0100	0.1
2017	6.0	0.0	6.0	0.0661	0.4	0.0084	0.1
2018	6.0	0.0	6.0	0.0601	0.4	0.0071	0.0
Total	$191.3	($137.2)	$54.1	Present Value	$4.6		($0.0)

* This example is based on assumptions for numerous variables; different assumptions would likely lead to different outcomes.

Sources/Assumptions:

Net Revenue	From ETS Volume IV, Appendix 14, Table 14.1.3.3-14.
Debt Service	Assumes $68.6 million in state bonds financed at 7.75 percent over 20 years, beginning in 1989.
Mid-year Discount Rate	Discount factor calculation: $1/(1+r)^{(t-0.5)}$; method in accordance with procedures for discounting applied by the U.S. Office of Management and Budget.

090109503308811

0922.14

See Comment Response 922.13.

0922.15

See Comment Response 1276.01 for information regarding the Department of Energy's independent analysis of the Fermilab cost adjustment to reflect savings that would be realized by using the Fermilab as the SSC injector.

0922.16

See Comment Responses 922.02, 922.04, 922.09, 922.15 and 922.21.

0922.17

Information presented by the commenter suggests that the State of Illinois has guaranteed a sum of $568.7 million for SSC-related land acquisition and infrastructure improvements. According to State sources, the assessed value of the real property which would be purchased by the State to be transferred to Federal ownership is $11.2 million. The assessed-to-market value ratio in Illinois is 33.3 percent, so the market value of this property would be approximately $33.6 million. Infrastructure improvements specifically required for SSC development have been estimated at $35 million (see Volume IV, Appendix 14, Section 14.1.3.3.D.1). Clearly, costs related to the sealed incentive could not be accounted for in preparing this EIS before a site is selected.

The analysis of the cumulative local government fiscal effects to jurisdictions in DuPage, Kane, and Kendall Counties from SSC construction and operations is presented in Volume IV, Appendix 14, Section 14.1.3.3.D. Private land would be removed from the property tax base in each of the three counties, reducing the amount of revenue for local jurisdictions. The EIS analysis indicates that although there would be a long-term property tax revenue loss to each county's jurisdictions, there would also be a long-term increase in both direct and indirect tax revenue from project spending and additional spending by SSC construction and operation workers. As a result, although local jurisdictions are anticipated to experience deficits during the first three years of construction activity in DuPage and Kane Counties and during the first year of construction activity in Kendall County, positive fiscal effects in subsequent years is expected to offset these losses.

See also Comment Response 922.13.

0922.18

See Comment Responses 275.03 and 798.01.

0922.19

The anticipated effects of SSC construction and operations on the ecological resources at the Illinois site are addressed in EIS Volume IV, Appendix 11, Section 11.3.3.

Anticipated effects of SSC construction and operations on the scenic and visual resources of the Illinois site are addressed in EIS Volume IV, Appendix 16, Section 16.3.3.

0922.20

The commenter refers to SSC-related State government fiscal effects as estimated by the State of Illinois. The results of the EIS analysis differ somewhat from the State's analysis. Details of the EIS assessment are presented in Volume IV, Appendix 14, Sections 14.1.2.3.D and 14.1.3.3.D. When summing expenditures over time, as was apparently done in Table 3 of the comment, it is advisable to discount future sums to obtain an estimate in present value terms.

0922.21

The purpose of the EIS is to provide a full and fair discussion of the significant environmental impacts potentially resulting from siting, constructing, operating and decommissioning the SSC. The no-action alternative is also discussed. See Comment Response 520.06.

0922.22

See Commert Response 922.21.

0922.23

This comment summarizes the numerous points raised in the paper. Please refer to the preceding point-by-point responses.

0923.01

See Comment Response 1276.01.

0923.02

The comment correctly reflects the number of miles of new roads and for new power transmission lines estimated to be required for the SSC at the Illinois site, as described in the EIS.

0923.03

See Commert Response 816.01. The presence of Fermilab has been considered throughout the EIS in evaluating impacts at the Illinois site. Utilities are discussed in EIS Volume I, Chapter 5, Sections 5.1.8 and 5.2.12, and Volume IV, Appendix 14.

9010950330881̄3

0924.01

See Comment Response 1276.01.

0925.01

The proposed Illinois site is located close to the Chicago Metropolitan area and thus enjoys well-established transportation and utility systems and extensive housing, educational and cultural amenities. Transportation and utility systems are discussed in EIS Volume IV, Appendix 5, Section 5.3.11.2 A and B. Housing, educational and cultural amenities are discussed in EIS Volume IV, Appendix 5, Section 5.3.11.1 B and C.

0926.01

See Comment Response 1276.01 and 816.01.

0927.01

The current staff at Fermilab are committed to ongoing research projects. A management and operating contractor staff to oversee design, construction and operation of the SSC is currently being selected by DOE.

The savings associated using the existing facilities at Fermilab were addressed in Volume IV, Appendix 2, Section 2.4.2.2.

See also Comment Response 1276.01.

0928.01

The DOE has made an independent analysis of the Fermilab cost adjustment to reflect savings that would be realized by using the Fermilab as the SSC injector. See Comment Responses 904.01 and 1276.01.

0929.01

The comment regarding stable geologic conditions is consistent with EIS Volume IV, Appendix 5, Section 5.3.

The comment regarding Illinois' position in leadership for tunnel construction was not specifically addressed in the EIS. However, it is indirectly reflected in the regional cost indices used in EIS Volume IV, Appendix 2.

The comment regarding the cost adjustments for using the existing facilities at Fermilab were addressed in Volume IV, Appendix 2, Section 2.4.2.2. See Comment Response 1276.01.

The comment regarding the offerings of the Greater Chicago area is consistent with the provisions of the ISP and was recognized by the Illinois site being selected in the BQL as described in EIS Volume I,

Chapter 3, Section 3.1.2.

The comment regarding Fermilab's use as a contribution to the project is consistent with EIS Volume I, Chapter 3, Section 3.4.3 and Volume IV, Appendix 2, Section 2.4.2.2.

0930.01

See Comment Responses 816.01, 861.06 and 1276.01.

0931.01

The existence and operations of Fermilab in Illinois is acknowledged in Volume I, Chapter 3, Section 3.4.3 of the EIS. The socioeconomics analysis is discussed in Volume I, Chapter 5, Section 5.1.8. The cost of infrastructure development, needed to meet the requirements of the ISP are considered as part of the socioeconomic analysis.

0932.01

Comments noted.

0933.01

Comments noted.

0934.01

The geological characteristics of the Illinois site as they relate to constructability of the SSC are discussed in EIS Volume IV, Appendix 5, Section 5.3.1. These and other factors (including cost considerations) were evaluated in selecting the SSC site (see Volume I, Chapter 3, and Volume III). See also Comment Response 1276.01 as it relates to cost savings associated with the use of Fermilab.

0935.01

See Comment Response 1276.01 for a discussion of the cost-savings by locating the SSC at the Illinois site.

The EIS (Volume III, Chapter 1) indicates that cost considerations were one of the factors evaluated by the NAS/NAE committee for recommendation of the selected sites.

0936.01

Comments noted.

0937.01

Comment noted.

090109503308815

0938.01

Data on recent population growth in DuPage County, as discussed in EIS Volume IV, Appendix 5, Section 5.3.11.1.B, indicates that county population has increased substantially since 1970. The remainder of the comment is noted.

0939.01

Comment noted.

0940.01

See Comment Response 816.01.

0941.01

Financial consideration is not the only determinant in the selection process.

Discussion of technical evaluation criteria may be found in EIS Volume III, Section 2.1.3.

See Comment Response 1276.01 about the analysis of the Fermilab cost adjustment to reflect savings by constructing the SSC at the proposed Illinois site.

0942.01

See Comment Response 1276.01 regarding the DOE analysis of the Fermilab cost adjustment to reflect savings that would be realized by using Fermilab as the SSC injector. Comments concerning construction expertise, reduced operating costs by combining the operations of two accelerator labs, academic resources, quality of life, and community support have been noted.

0943.01

Regarding the cost savings attributed to the use of the Fermilab facility, see Comment Response 1276.01. The DOE believes that sufficient staff would be available for both the SSC and the Fermilab facility.

0944.01

The geological aspects of the Illinois site are presented in EIS Volume I, Chapter 4, Section 4.1, and Volume IV, Appendix 6.

0945.01

See Comment Response 1276.01.

0946.01

See Comment Response 1276.01.

0947.01

See Comment Response 904.01.

0947.02

See Comment Response 1276.01.

0948.01

Comments noted.

0948.02

These observations are consistent with those in EIS Volume IV, Appendix 5, Sections 5.3.1 and 5.3.2. The data sources described in the comment were included among the data used to prepare the EIS.

0949.01

This information on the lithology and structural geology of the Illinois site is consistent with EIS Volume IV, Appendix 5, Sections 5.3.1.2 and 5.3.1.3.

0949.02

This information on regional dip, local undulations and faulting of the bedrock at the Illinois site is consistent with the discussion of the geologic structure in EIS Volume IV, Appendix 5, Section 5.3.1.3.

0949.03

Data on the geologic structure of the Illinois site are summarized in EIS Volume IV, Appendix 5, Section 5.3.1.3; the structure is illustrated in accompanying Figure 5.3.1-5. Geologic data are adequately available for all BQL sites to support preparation of this EIS and the decision on site selection.

0950.01

Comment noted.

0950.02

The tunnels in Illinois and Tennessee are in dolomite and limestone, respectively, both good quality rock requiring very little intermittent support. Thus, each site will have the 12-ft diameter tunnels which, as explained below, will generate more spoils than the smaller tunnels at

sites with rock of lesser quality.

At the conceptual design level, tunnels have been designed as requiring the following two kinds of support:

- Intermittent: requiring occasional rockbolts and shotcrete or, less frequently, requiring steel ribs and lagging followed by cast-in-place concrete lining.

- Systematic: requiring precast concrete segmental lining.

For tunnel materials requiring intermittent support, the initial bored diameter was set at 12 ft. This resulted in the minimum finished inside diameter of 10 ft in those areas that needed a 1-ft-thick cast-in-place lining.

For tunnel materials requiring systematic support, the initial bored diameter was set at 11 ft. This resulted in the minimum finished inside diameter of 10 ft in those areas that needed 6-inch-thick precast lining.

Thus, tunnels requiring intermittent support are bored at an initial diameter of 12 ft and generate more tunnel spoils than tunnels requiring systematic support that are bored at an initial diameter of 11 ft.

0951.01

The DOE has evaluated the information provided in the comment and finds that it is consistent with discussions in the FEIS. It is acknowledged that a variety of alternatives may become available to reduce SSC dependency on overdrafted aquifers; however, given current water supply plans, impacts to water sources will exist and must be discussed. See Comment Response 1279.115 for a discussion of the regional overdraft situation.

0951.02

This information is consistent with material presented in EIS Volume IV, Appendix 10.

0952.01

Comments noted.

0952.02

See Comments Response 19.01.

0952.03

See Comment Response 19.01.

0952.04

Table 2-1 of EIS Volume III, Chapter 2 summarizes the most noteworthy characteristics cited by the NAS/NAE in recommending sites as best qualified. This list was included in Volume III as a historical record of the NAS/NAE conclusions and was not intended to be an exhaustive list of favorable conditions at each of the best qualified sites. The DOE accepted the seven best qualified sites and they appear in the EIS as the seven site alternatives. Further, more detailed evaluations have been conducted by the DOE Site Task Force. This evaluation included an examination of the geology, groundwater, industrial and labor base, and environmental impacts of the Illinois site. The conclusions of the Site Task Force have been included in Chapter 3 of Volume III.

0952.05

Comments noted.

0953.01

The scientists at Fermilab would be of benefit to the SSC because they have operations experience at the Linac, Low Energy Booster, Medium Energy Booster, or the High Energy Booster. However, the experimental physicists and many of the accelerator designers will be drawn from throughout the high energy physics community.

The comment regarding the adequacy of electrical capacity has been noted.

The DOE plans to continue the operation of Fermilab in the event the SSC is sited elsewhere.

0954.01

See Comment Response 1174.01.

0954.02

Apart from page 5.1.10-12 of Volume I, Chapter 5 of the DEIS, the visual impact of facility F2 is discussed in Volume IV, Appendix 16, p. 25. There are no indications that the developers of the Planned Unit Development sited near F2 are not going to build out the project if the Illinois site for the SSC is selected. It is possible that part or all of F2 would be screened by the new homes from views from the existing subdivision. However, the possibility that F2 would be in full view should the development be built is addressed in the referenced sections. This would be the case if F2 is sited between the new development and the existing homes, and is equivalent to there being no new homes built. The impact would be potentially long-term and significant, views being dominated by the occurrence of large industrial structures in the immediate foreground. Mitigative measures are described in EIS Volume IV, Appendix 16, Section 16.3.3.3.C. They would become effective over an indeterminate period, depending on the factors noted.

Noise levels produced during construction and operations at service (F) areas are discussed at the summary level in EIS Volume I, Chapter 3, Section 3.6.3 and in Volume I, Chapter 5, Section 5.1.4, and in detail in Volume IV, Appendix 9. Noise levels during the peak of construction are modeled to reach a day-night average sound level of 70 dBA 660 ft from the center of the site, and 60 dBA within 2,000 ft of the center of the site. Volume IV, Appendix 9, presents an analysis which indicates that currently, there are 43 houses in the region which is expected to have a day-night average sound level greater than 70 dBA during the peak of construction. Analysis also indicates there are currently 458 houses in the region which is expected to have a day-night average sound level of between 60 and 70 dBA during the peak of construction. During operations, the day-night average sound level is expected to reach 55 dBA 450 ft from the service area property line. The analysis presented in Appendix 9 indicates that currently, there are no houses within 450 ft from the F2 property line.

0954.03

Comment noted.

0955.01

Comment noted.

0955.02

See Comment Response 880.04.

The necessary estates in real property were proposed to be acquired by negotiated agreement; only in the event of failure to reach agreement with a property owner would the property be acquired through the use of eminent domain proceedings. See EIS Volume IV, Appendix 4, Section 4.3.1.

See also Comment Response 275.03.

0955.03

The proposed Illinois SSC site is located 2 mi from the I-90 and I-88 interstate Highway system, 22 mi from Chicago's O'Hare Airport, 6 mi from the local DuPage Airport, and 0 (zero) mi from the closest railroad spur (Volume I, Chapter 4, Section 4.9.2).

Should a site other than Illinois be selected for the SSC, the existing Fermilab will continue to be used for high energy research and development (Volume I, Chapter 3, Section 3.3).

0955.04

Comment noted.

0956.01

Comments noted.

0956.02

Comment noted.

0956.03

Comment noted.

0957.01

Comment noted.

0958.01

See Comment Response 1126.05.

The DOE conducted public scoping meetings for the DEIS. Public nearings on the DEIS were held at each site alternative. The DOE will prepare a Supplemental EIS for the selected site and provide an opportunity for further public involvement.

See Comment Response 1504.01 for a discussion of the site selection process.

0958.02

It is expected that the 59 businesses cited in the comment would be relocated, not lost. These businesses would probably relocate nearby, so that associated jobs also would remain in the region.

The EIS indicates that direct and secondary economic effects would be generated by the SSC, during both construction and operations. Although some of these jobs are expected to be temporary construction jobs, others would involve other sectors of the economy and be more permanent. During facility construction, the direct jobs resulting from the SSC would employ workers with specific trade skills as well as general laborers. During operations, professional and technical personnel would be employed, as well as clerical and other support personnel. Spending in the Illinois Region of Influence by these direct workers and spending for direct project purchases would create still more jobs and more spending. The secondary jobs created would include jobs in all sectors of the economy, with concentrations in services, trade, transportation, communication, public utilities, and manufacturing.

Further discussion of the economic effects of the SSC, including annual estimates of project-related increases in employment, is presented in Volume IV, Appendix 14, Section 14.1.3.3.A.

0958.03

See Comment Response 997.01.

0958.04

The wetlands assessment presented in the EIS has been revised based on a reevaluation of wetlands location, type, and quality (see EIS Volume I, Chapter 5, Section 5.1.5.3 and Volume IV, Appendix 11, Section 11.3.3.3). A conservative estimate of the amount of wetlands to be affected by construction of the surface facilities and operations of the SSC at the Illinois proposed site is now placed at approximately 199 acres based on SSC facilities that would be immediately developed. Once a site is selected and final design is approached, plans to mitigate wetlands impacts will be developed in consultation with the U.S. Army Corps of Engineers as required by Section 404 of the Clean Water Act and analyzed in a supplement to the EIS. See EIS Volume I, Chapter 3, Section 3.6.3.

0958.05

After the final SSC site is selected, cultural resource surveys would be completed to identify prehistoric and historic archaeological sites and historic structures subject to potential impacts due to project construction and operations (see Volume IV, Appendix 15, p. 1). Evaluations of

the inventoried resources would identify those eligible for listing on the National Register of Historic Places. In accordance with a Memorandum of Agreement (MOA) between the DOE and the State Historic Preservation Officer (SHPO), measures would be developed so appropriately mitigate impacts, as necessary, to significant cultural resources. Among the range of mitigation alternatives, efforts would be made to avoid impacts or to otherwise reduce adverse effects to the locational integrity of significant historic structures (see EIS Volume I, Chapter 3, Section 3.6.3). A more detailed review of these procedures will be provided in the Supplemental EIS. Mitigation strategies will also be described in greater detail in the Supplemental EIS.

0958.06

The EIS documents in excess of 320 wells within the SSC footprint at the Illinois site. However, the State estimates that only from 6 to 31 wells may be directly affected and required to be closed due to the project. Potential water quality and water level or groundwater use impacts are assessed in EIS Volume I, Chapter 5, Section 5.1.2 and Volume IV, Appendix 7, Sections 7.1.3.3 and 7.2.3.3. Safety assessments for the proposed SSC facility are discussed in EIS Volume IV, Appendix 12, Sections 12.3 and 12.4.

0959.01

Real property which is located in stratified fee areas will have no surface disruption. Where disruption does occur during construction the DOE and/or its contractors will be responsible for compensation if appropriate. It is DOE's policy to minimize disruption. See Volume IV Appendix 4, Section 4.2.1 for a description of the estates required for the SSC.

See also Comment Responses 710.01 and 880.04.

0959.02

The cost estimates for the SSC are included in Volume IV, Appendix 2. This cost estimate was prepared based on a conceptual design for the SSC. The Fermilab facility is considered in the cost estimates of the proposed SSC in Illinois. Federal procurement regulations require an open and competitive process for the purchase of goods and services. Most of the components for the SSC (e.g., magnets, cryogenics, etc) will be bid and manufactured on a national basis.

0960.01

Comment noted.

0960.02

See Comment Response 1020.05.

0960.03

See Comment Responses 233.06 and 880.04.

0960.04

Management of the State of Illinois proposal and strategies and commitments made by the State to meet the requirements of the ISP are the responsibility of the State. Questions about such strategies and commitments should be directed to the appropriate State agency. See Comment Responses 1513.21 and 658.06.

0960.05

See Comment Response 880.04.

0960.06

See Comment Responses 223.06 and 880.04.

0961.01

See Comment Response 710.01.

0961.02

Comment Response 880.04 addresses land acquisition and the means used to develop descriptions of the land acquisition challenge associated with each proposed SSC site. Comment Response 873.02, in turn, addresses issues concerning the selection of potential sites for the SSC. As noted in the latter Comment Response, a number of topics will be considered in making a final site selection. Limiting the adverse impacts on the environment (including the socioeconomic environment) and construction-related considerations are among these topics (see also EIS Volume III, Chapters 2 and 3).

0961.03

See Comment Response 871.01. In addition, it is incorrect to assume that as places of employment are relocated, jobs are necessarily lost. This and other relocation issues will be analyzed in greater detail as part of the Supplemental EIS when the SSC site has been selected and the final placement of the ring is ascertained. See Comment Response 1381.08.

0961.04

Land acquisition and the attendant relocation process is a State proposer responsibility. At this stage of development, with final collider using placement and facility design yet to be decided, the exact acreages, parcels and ownerships cannot yet be precisely determined to the extent possible at this time. Volume I, Chapter 3, Section 3.3

presents no-action scenarios. A comparison of these scenarios with project development scenarios as provided in Volume IV, Appendix 13 measures lost opportunity costs.

0962.01

See Comment Response 1204.04.

0962.02

Jericho Cemetery is located north of intermediate access area E4, outside of the fee simple area. There will be no direct or indirect impacts on the cemetery.

0962.03

Comment noted.

0963.01

Costs to taxpayers are discussed in EIS Volume I, Chapter 5, Section 5.1.8. All known costs are considered. Those costs to the State which are financial incentives cannot, by law, be considered in the DOE siting evaluation and therefore are necessarily excluded from the EIS (Dominici Amendment).

0964.01

The DOE's approach to supplementing data provided by the proposing states is outlined in the Comment Response 19.01.

The distribution of residences and schools for the seven SSC sites was compiled from USGS 7-1/2 minute quadrangle sheets and from observations recorded by the DOE during site visits. This information was augmented by results of analysis of aerial photographs to quantitatively determine population distribution in the vicinity of each SSC site. Where applicable, current information from school administrators was obtained to complete the location and population information. The locations of five schools which were omitted from the Illinois sections of DEIS are described in Comment Response 860.07.

The maps in EIS Volume I, Chapter 5 are intended only to demonstrate the general distribution of people and their locations relative to the SSC surface facility locations. The final results of the site comparison, as presented in revised EIS Volume IV, Appendix 9 do not depend on the accuracy of these maps.

For the noise impact analysis, Volume IV, Appendix 9 presents the population data in a format which shows the number of people experiencing noise levels which the US EPA shows will result in at least 5 percent, and up to 25 percent or more, of the people in the affected area being highly annoyed by the noise (EIS Volume I, Chapter 5, Table 5.1.4-2).

While this level of accuracy is adequate for comparing the sites on the basis of noise impact, it may not be adequate for analysis of the impact of other environmental stressors or for land acquisition analysis.

The Supplemental EIS for the selected site will address the population numbers and distribution at a level of detail which will identify each residence, school and other institutional structure, its location relative to the SSC facilities, and the number of people associated with each. The Supplemental EIS will also address planned but uncompleted land development as it affects impact mitigation requirements.

The accident rates stated in EIS Volume I, Chapter 5, Section 5.1.6.3.C, are based on statewide average statistics and the projected number and length of truck trips during construction. Accident rates for specific routes may be different. Mitigations for SSC traffic impacts including those to school children are addressed in Comment Response 1175.04. Also see EIS Volume I, Chapter 3, Section 3.6.3.

0964.02

The nonattainment designation for ozone concentrations at the proposed Illinois SSC site is based on the air pollutant concentrations throughout the entire Chicago Air Quality Control Region (AQCR). While DuPage, Kane, and Kendall Counties are within the Chicago AQCR, it is the high concentrations in the heavily-urbanized portions of the Chicago AQCR, such as Cook County, which determine the designation of nonattainment.

As is shown in Volume I, Chapter 4, Table 4-6 of DEIS, the 1986 measurements of carbon monoxide at Cicero and of ozone at Elgin are within the National Ambient Air Quality Standards (NAAQS). These are cities whose air quality is representative of the area in which the SSC would be built. The identified nonattainment status for carbon monoxide in Volume I, Chapter 4 and Volume IV, Appendices 5 and 8 is in error and has been corrected.

Projected increases in the emissions of carbon monoxide, hydrocarbons and nitrogen oxides, the latter two which are precursors of ozone, are listed in Volume IV, Appendix 8, Table 8-27. For both the construction and the operations phases of the SSC the emissions of these pollutants are small in comparison to current emissions in DuPage, Kane and Kendall Counties. When compared to emissions of carbon monoxide, hydrocarbons and nitrogen oxides throughout the seven-county Chicago AQCR, the SSC emissions would have an even smaller impact.

The construction plans for the SSC, as set forth in the EIS, assumed that several procedures would be followed to reduce emissions of dust, dirt, and debris from haul trucks traveling on or near the SSC construction area. As listed in EIS Volume IV, Appendix 8, Table 8-3 these procedures include maintenance of the roads, watering of the roads, and covering of each truck load with a tarpaulin over the truck bed. To

satisfy the plan in the EIS, the SSC construction contractor would be required to implement these or equivalent measures for reducing the fugitive dust emissions from haul trucks.

0964.03

The SSC will be sited, designed, constructed, and operated in strict conformance with applicable Federal, State, and local environmental safety and health protection criteria, regulations, and standards to assure adequate protection of both the SSC workforce and general public. The conservative shielding requirements for SSC components are designed to prevent significant radiological emissions to the environment. Potential effects from radiation produced by the SSC have been carefully studied and can be predicted with reasonable confidence. The environmental safety and health implications of radioactivation resulting from SSC operations are summarized in EIS Volume I, Chapter 5, and are discussed at length in Volume IV, Appendices 10 and 12

Comparison of the maximum projected radiation doses resulting from SSC activities with the Federal regulatory guidelines and estimated doses received from background sources shall serve to illustrate the benign nature of the SSC. During operation of the SSC, the event representing the worst-case scenario would be an accidental loss of beam. The radiological impacts from a beam loss are discussed in Volume IV, Appendix 12, Section 12.4.1. At the Illinois site, the maximum radiation dose to an individual at the land surface above the point of beam loss is projected to be less than 0.001 mrem/yr, a comparatively small dose considering that the DOE limit is 100 mrem/yr and the estimated dose to an individual from natural sources is about 300 mrem/yr. The above considerations would apply equally to other potential receptors near the SSC, such as soil, crops and surface water supplies. Potential radiological impacts to groundwater supplies have been considered as well and are addressed in Volume I, Chapter 5 and Volume IV, Appendix 12. At the Illinois site, the calculated annual dose equivalents in a nearby well (50 m from source) resulting from an accidental loss of beam would be 0.044 mrem/yr, well below the 4 mrem/yr DOE guideline for drinking water.

Potential impacts from the electromagnetic fields generated during operation of the SSC are addressed in Volume IV, Appendix 10, Section 10.1.3.2. The superconducting magnets used in the SSC will be designed with iron yokes that considerably reduce the strength of the magnetic field beyond the vacuum beam tube. At the tunnel wall, the strength of the SSC-induced field will be about the same as that of the earth's magnetic field, and will decrease with distance from the tunnel reaching negligible levels at the land surface. Consequently, no impacts to the general public are expected to result from SSC-generated magnetic fields.

There is no potential for explosion of superconducting magnets in the accelerator tunnel under any foreseeable circumstances. Should a quench occur, failure of the quench protection systems would result in an increase in temperature of the superconductor that could damage, or at worst, melt the superconducting cable.

09511000335889

Impacts from various construction activities are discussed in Volume I, Chapter 5. Construction of the SSC will involve conventional methods and, as such, standard construction practices and techniques will be employed to minimize impacts to the environment and the general public.

0964.04

One of the activities that was undertaken in the course of preparing the EIS was to systematically determine the ways in which the public could possibly be exposed to hazards from the SSC. Even though the facility will be able to conduct experiments at higher energy levels than other similar laboratories, the experiences at these other labs can be used to predict with considerable confidence the possible hazards of the SSC and methods to reduce or eliminate the risk of any harmful effects. Similar approaches to recognizing and dealing with new technologies and possible hazards are taken in other areas of technology that may be more familiar to us. For example, production of a new commercial high speed jet may involve hazards because of high speeds and altitudes, but the experiences with existing airplanes gives us confidence that new planes can also be developed safely.

EIS Volume I, Chapter 5, Section 5.1.6 presented the hazards that could result from normal operations or an accident at the SSC. The analyses took into account populations residing above the SSC facilities. An important conclusion of the EIS is that there will be no dangers under normal operations or upset conditions, regardless of population size, that will pose a health hazard to the public.

0965.01

Comments noted.

0965.02

Dust and other air pollution is discussed in EIS Volume I, Chapter 5, Section 5.1.3. and in Volume IV, Appendix 8. See Comment Response 1278.11 for discussion of dust.

Noise generated by construction at E and F areas is expected to result in high human annoyance for approximately 25 percent of those persons who live within 630 ft of construction activity, or for approximately 9 percent of those living within 2,000 ft of construction activity.

During the operations phase, air pollutant emissions from the SSC, which will be primarily due to space heating and solvent handling operations, are expected to be far below the NAAQS. Noise emitted by operations at service areas is expected to highly annoy less than 5 percent of those persons living within 700 ft of the center of the service area.

0965.03

Private land would be removed from the property tax base in DuPage County, Illinois, reducing the amount of revenue for local jurisdictions. The EIS analysis indicates although there would be a long-term property tax revenue loss to local jurisdictions, there would also be a long-term increase in both direct and indirect tax revenue from project spending and additional spending by SSC construction and operations workers. Although during the first three years DuPage County would experience a net fiscal deficit, public finance impacts would be positive thereafter (see Volume IV, Appendix 14, Table 14.1.3.3-15).

The EIS does indicate that during both the construction and operations periods, direct and secondary economic effects would occur in DuPage County -- including the creation of additional jobs. During construction, the direct jobs would employ workers with specific trade skills, as well as general laborers. During operations, professional and technical people would be employed, as well as clerical and other support personnel. Spending in the region by these direct workers, coupled with spending for direct project purchases, would create additional jobs and additional spending. The secondary jobs created would include jobs in all sectors of the economy, but would be concentrated in services, trade, transportation, communication, public utilities, and manufacturing. Additional discussion of these economic effects is presented in Volume IV, Appendix 14, Section 14.1.3.3.A.

Relocation of a person's residence, regardless of that person's age, is bound to have a socio-psychological impact. To the extent that relocations occur, steps should be taken to minimize their impacts. The EIS has not discussed mitigation measures for relocations because the proposer state has the responsibility to acquire the land for the SSC facility. Thus, questions regarding the proposer's authority and plans to mitigate relocations should be directed to the appropriate Illinois State agency. It should be noted, however, that all of the proposers have stated that they will as a minimum comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646) -- as discussed in the first paragraph of Comment Response 1229.02.

0966.01

Volume IV, Appendix 15 of the EIS describes known (identified) cultural resources within and surrounding the proposed SSC sites based upon data provided by the states. These data are based upon varying levels of archival and field research. Study intensity of the proposed SSC sites ranges from records reviews only to reconnaissance surveys, to sample surveys, to intensive surveys of large portions of identified potential impact areas. Archaeological surveys have not been performed in Colorado, Michigan, North Carolina, Tennessee and Texas; extensive archaeological surveys have been completed in Illinois and Arizona, although portions of these SSC sites remain to be completed. Historic building surveys have been completed in Michigan, Illinois, Tennessee

and Arizona. Potential impacts due to ancillary activities and construction beyond the SSC footprint at all sites are generally not addressed.

Predictive models pertaining to cultural resources can only indicate the likely locations and approximate frequencies of archaeological sites and historic standing structures, but certainly do not define the precise locations, configurations or conditions of individual resources.

At the selected SSC site, the Supplemental EIS would include intensive field inventories of the project areas subject to impacts to cultural resources. In Illinois, archaeological surveys of several potential impact areas of the collider ring would be completed, as well as the surveys of yet-to-be identified ancillary activity and construction areas. Evaluations of the identified cultural resources would follow to determine which sites are significant, i.e., eligible for listing on the National Register of Historic Places. As prescribed in a Memorandum of Agreement (MOA) between the DOE and the State Historic Preservation Officer (SHPO), mitigation measures would be developed, where necessary, to mitigate impacts to significant resources. (See EIS Volume I, Chapter 6, Section 6.3.6.)

0966.02

See Comment Response 18.04.

0967.01

Regional vibration sources are discussed in EIS Volume IV, Appendix 5, and in Volume I, Chapter 4. Regional vibrations are not considered to be an environmental impact issue (in that the SSC project will not modify or affect existing vibration conditions) but rather a condition of the environment which should be considered as part of the site selection. Vibration monitoring reported by the Illinois site proposer does not indicate that existing vibration conditions exceed the tolerances required for the SSC, and would not be expected to impact the operation of the SSC.

0967.02

The concern about off-site contamination of groundwater as a result of a beam loss has been addressed in the EIS (see Volume I, Chapter 5; Volume IV, Appendix 10; and Volume IV, Appendix 12). In Illinois, the transport of radionuclides by groundwater from the point of beam loss to a well 50 m away would take approximately 5 years for the sodium-22 to reach its maximum value at the well and approximately 8 years for tritium. An individual using this well for normal daily consumption of water, when the concentration of the radionuclides is at its maximum, would in a year's time receive a dose equivalent of 0.0044 mrem (see EIS Volume IV, Appendix 12).

A beam loss accident would not endanger the life of a member of the general public. EIS Volume IV, Appendices 10 and 12 address the radiological consequence of a loss of beam accident. The maximum exposure to a member of the general public would require an individual to be at the depth of the tunnel and would still result in an exposure less than the yearly exposure to natural background radiation (see Volume I, Chapter 5). In the tunnel at the point of beam loss the radiation is intense enough to endanger life. That is one reason that no one is allowed in the tunnel when the beam is on.

0968.01

Illinois proposes to use some local government land; however, the exact acreages were not cited in the proposal. The Illinois proposal indicated the following local agency would be involved: School District No. 204 which owns the Waubonsie Community High School, school district offices, and some vacant land that would be required in area I, buffer area and buried beam zone, in stratified fee estate (EIS Volume IV, Appendix 4, Section 4.4.3). Data on which parcels of land would be affected by the SSC project was the responsibility of, and provided by, the proposer States. These data were not verified independently. However, a detailed and verified inventory of the location of affected parcels of land associated with the SSC project will be provided in the Supplemental EIS. Questions concerning the proposer's land acquisition policies and commitments should be directed to the appropriate State agency.

At the surface above the tunnel there will be no radiation from the collisions of protons. Even under the worst possible accident conditions -- a full beam loss -- there would be no measurable radiation at the surface in Illinois. See Volume IV, Appendices 10 and 12 for assessments of radiation doses in the area.

0968.02

See Comment Response 964.04.

0969.01

Comments noted.

0970.01

Comment noted.

0971.01

SSC-related effects on tne quality of life in local communities will depend on the specific settlement patterns of SSC-related workers and on the ability of the local communities to respond to the growth effects. The capacity of communities to adapt to growth varies with the ability of the community to plan and finance needed facilities and services and

by their past experience with development. Social disruption will vary depending on the rate of population growth that the community experiences. Many negative conditions associated with rapid growth can be minimized through careful planning.

It is generally true that estimates of impacts have been overestimated in the past -- a typical conservative approach taken in EIS's. Conservative assumptions are used in the analysis of impacts in order not to underestimate potential problems. Conservative assumptions were used to predict impacts at all sites.

The issue of community disruption was included in the analysis of impacts in both a quantitative and a qualitative manner. Public services and public finance impacts are both included in the analysis in regard to disruption, as is a discussion on the quality of life and social well-being (see EIS Volume IV, Appendix 14, Section 14.1.3.3). Discussion of impacts to school systems is found in Appendix 14, Section 14.1.3.3.C, Public Services. Because of the size of the Region of Influence and the extensive development, Illinois is the least likely of all the sites to experience extreme rapid growth. An analysis of fiscal impacts of the project in Illinois shows that tax revenue will be adequate to meet the increased demand for services after the peak construction year. In addition, the DOE is aware of the rapid growth occurring around the Illinois site and has revisited the area in response to comments on the EIS. By attending public hearings, representatives of the DOE have been made aware of the local concerns, problems, and attitudes towards the expected social disruption that may occur to individuals, property owners, and communities.

The goal in evaluating sites for the SSC is to select a site that will permit the highest level of research productivity and overall effectiveness of the SSC facility at a reasonable cost of construction and operations and with minimal adverse impact on the environment. After the final site is selected, additional studies and mitigation strategies could be developed during final project design (and incorporated into the Supplemental EIS) to reduce the anticipated adverse impacts of the SSC project.

0972.01

The water supply for SSC construction and operations will be provided by wells into the deep aquifer system unconnected to the shallow aquifer has experienced the significant local overdraft described in the comment. While SSC indirect water use due to population increases in the area may impact the local overdraft, any new in-migrants to the Campton area would be bound by the same water restrictions currently being considered.

See also Comment Response 1279.115 for a general discussion of the regional overdraft situation.

095110003358814

0972.02

See Comment Responses 13.02 and 710.01.

0973.01

The current population of the Region of Influence (ROI) associated with each of the seven proposed SSC locations was traced through 1985, the date of the most recent final U.S. Bureau of the Census population estimates for U.S. counties available at the time of document preparation (April-May, 1988). Beyond 1985, population projections were employed. The data cited in the comment on populations of select counties in the Illinois ROI represent provisional 1987 estimates recently (September 1988) released by the Bureau. These provisional estimates are based on 1986 migration data and will not be made final for another several months. Although the accuracy of the 1987 estimates is open to challenge due to their provisional nature, the notion that several counties within the Illinois ROI experienced more rapid population growth between 1986 and 1987 than was documented between 1980 and 1985 is very likely.

For purposes of assessing SSC-related population change in each ROI, the DEIS compared regional population without the project (see Volume IV, Appendix 5, Section 5.3.11.1.B) to regional population with the project (see Volume IV, Appendix 14, Section 14.1.3.3.B). Project-related population growth itself was not directly evaluated in terms of an impact per se, but rather as the cause of impacts in other areas of concern, such as public services and housing. However, the nature of SSC-related population change was described in terms of relative population growth in each ROI, and in the primary impact counties within an ROI, to provide an indication of likely effects in areas of concern directly impacted.

With regard to SSC-related population change, effects on a rapidly growing area thus can be viewed from two different perspectives. Effects can be viewed as exacerbating a situation already made difficult due to rapid growth without the project (the view conveyed by the comment), or effects can be viewed as occurring in an area which currently is adapting to growth. Therefore, SSC-related population increases will cause a smaller relative change than if the area were not growing, and should ultimately be absorbed more readily due to the region's recent experience in accommodating additional inhabitants.

0973.02

See Comment Response 1171.02.

0973.03

The comment is generally consistent with EIS Volume IV, Appendix 14, Section 14.2.1.3.C. Traffic from the campus is estimated to be 1,250 vehicles per day during construction and 1,500 vehicles per day during

operation. Some of the roads in the proposed Illinois site area are operating at or close to their capacities. The capacities of these roads are expected to be exceeded with the addition of the SSC traffic.

0973.04

Accident statistics used in the traffic accident analysis in Volume I, Chapter 5, Section 5.1.6.3 were obtained from the Illinois Department of Transportation at the time the analysis was performed and were not provided to the DOE in the Illinois proposal. To allow for equivalent comparison among the site alternatives, a commonly expressed accident rate was used (the statewide injury or fatal accident rate). Regional accident rates for each of the proposed sites were not found.

Without data indicating the total number of vehicle miles traveled in Kane County in 1987, it is not possible to determine from the data given in the comment whether the injury/fatality rates for Kane County are different from the statewide average rates used in the EIS analysis (see Volume IV, Section 5, Table 5.1.6-4). In addition, 90 percent of the proposed Illinois site would not be located in Kane County. The SSC campus area, and therefore a large fraction of the increased vehicle traffic, would be located in DuPage County.

Possible mitigations for the potential truck traffic problems resulting from the construction of the SSC might be to choose routes with the least impact on the community, to regulate deliveries and construction activities so that they occur at off-peak traffic periods, and to install additional traffic lights at particularly hazardous locations. See EIS Volume I, Chapter 3, Section 3.6.3. This information will appear in the Supplemental EIS.

0974.01

In accordance with EPA guidelines (40 CFR Part 230), in order to obtain a permit for the discharge of dredge and fill material into the navigable waters of the United States for the SSC, the DOE must demonstrate that no practicable alternative is available that would have less adverse impacts on the aquatic ecosystem and which would not have other significant adverse environmental consequences. Where a discharge is proposed for a wetland site, practicable alternatives are "presumed to be available" and "presumed to have less adverse impacts on the aquatic ecosystem unless clearly demonstrated otherwise" Section 230.10 (a)(3). Sections 230.10 (c) and (d) further require that the U.S. Army Corps of Engineers not permit any discharge that would contribute to significant degradation of the nations wetlands and that any adverse impacts be mitigated through practicable means (see EIS Volume I, Chapter 3, Section 3.6). An alternative is considered practicable if it is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 CFR Part 230.10 (a)(2).

The Second Circuit in Bersani vs. Robichaud (850 F 2d 36, 1988) did not hold that the above mentioned guidelines require that DOE choose the site with least impact on wetlands. The court validated EPA's interpretation of its guidelines that the appropriate time to determine when practicable alternatives exists is at the time of market entry (i.e., site selection for the SSC) and not at the time of permit application.

These requirements for a 404 permit are consistent with DOE obligations under Executive Order 11990 and DOE's regulations for compliance with floodplain/wetlands environmental review requirements (10 CFR Part 1022). The wetlands assessment provided in the EIS has been revised to include a reevaluation of wetlands location, type, and quality (see Volume I, Chapter 5, Section 5.1.5.4 and Volume IV, Appendix 11, Section 11.3) and the potential effects of the proposed SSC on wetlands at each site alternative together with possible means to mitigate these effects. The potential adverse effects on wetlands at the various site alternatives will be considered in selecting a site for the SSC. Detailed plans to mitigate to the extent practicable any anticipated wetland impacts at the selected site would be developed in consultation with the U.S. Army Corps of Engineers (or delegated state authority) and analyzed in detail in the Supplemental EIS.

0975.01

The DOE agrees that the comment on the number of homes to be relocated is consistent with the information provided in EIS Volume I, Chapter 3.

The effects of the SSC on the human environment and the quality of life are discussed in EIS Volume I, Chapter 5, Section 5.1.8 and in EIS Volume IV, Appendix 14. By attending public hearings in the States on the best qualified list for the SSC, representatives of the DOE have been made aware of the social disruption that will occur to individuals. The smallest unit of analysis in the EIS, however, is the community.

The goal in evaluating sites for the SSC is to select a site that will permit the highest level of research productivity and overall effectiveness of the SSC facility at a reasonable cost of construction and operations and with minimal adverse impact on the environment.

0975.02

The EIS recognizes that Kaneville could experience large impacts as a result of SSC development (see Volume IV, Appendix 13, Section 13.1.3.3). Kaneville is considered part of Kane County in the socioeconomic impact analyses presented in Volume IV, Appendix 14, Section 14.1.3.3.

0976.01

Comment noted.

Comment noted.

0976.03

See Comment Response 1126.05.

0976.04

See Comment Responses 7.03 and 1279.115.

0976.05

SSC-related effects on the quality of life in local communities and the social well-being of particular groups within those communities will depend upon the ability of the local communities to respond to the growth effects (see Volume IV, Appendix 14). The capacity of communities to adapt to growth varies with the ability of the community to plan and finance needed facilities and services and by their past experience with development. Social disruption will vary depending on the rate of growth that the community experiences. Many negative conditions associated with growth can be minimized through careful planning.

The impact of the SSC on groundwater supplies in Illinois would be measurable and long-term but of limited local effect because of the wide areal distribution of the increased groundwater use. See Volume IV, Appendix 7. The major aquifers are already overdrafted, and the project-related water use would be a small and very distributed increment to the existing condition. Plans and schedules for local municipalities switching wholly or partially to surface water sources are not definitive and have not been assumed to be an effective mitigation for the groundwater impacts in the EIS. It is assumed that importation of Lake Michigan water or systems to utilize local surface water will be developed by the State and/or local water agencies. (See EIS Volume I Chapter 3, Section 3.6.3.)

The comment regarding shafts every two miles is slightly inconsistent with the ISP, Appendix I. The actual distance is closer to two and one-half miles.

The comment regarding 190 semi-tractor trailer loads of spoils daily is inconsistent with EIS Volume IV, Appendix 10, Section 10.2.3.3.A.1 which states that 144 truckloads per day will be required to transport the spoils.

0976.06

See Comment Response 880.04. The comments address topics (credibility of State officials) that are not the responsibility of the DOE.

095110003358818

0976.07

If by the term "growing geometrically" the comment means that the population of Kane County is growing at increasing rates, then the EIS would concur for the years considered. As noted in Volume IV, Appendix 5, Section 5.3.11.1.B, Kane County population grew at an average annual rate of 1.0 percent between 1970 and 1980 (from 251,000 to 278,000 persons), and at a rate of 1.4 percent between 1980 and 1985 (from 278,000 to 299,000). The estimates for 1985 were the most recent considered in the EIS, as they were the most recent final estimates for U.S. counties prepared by the U.S. Bureau of the Census. However, provisional estimates of 1987 county populations, recently released (September 1988) by the Census Bureau, suggest that annual population growth in Kane County continued to increase to 2.6 percent between 1985 and 1987 (from 299,000 to 314,000). See also Comment Response 13.02.

0976.08

The EIS analyzes the potential environment impacts of siting the SSC at each of the seven sites. The comments regarding resulting groundwater depletion, blasting, growing population densities, and little financial rewards do not make the Illinois site an unreasonable alternative. The process that the DOE intended to follow to fully comply with the National Environmental Policy Act was made part of the record with publication of the Advanced Notice of Intent (May 1987) and the Notice of Intent to prepare an EIS (June 1988).

Health and safety impacts of siting the SSC in Illinois are addressed in EIS Volume IV, Appendix 12 and are not substantially different at the other six sites compared to Illinois.

0977.01

Comment noted.

0977.02

See Comment Response 880.04.

0977.03

Comments noted.

0978.01

Floodplain maps for areas that could potentially be encroached by SSC facilities have been added to the EIS for four other sites (Colorado, Michigan, North Carolina, and Tennessee). Additional potential encroachment areas for the Texas site have been identified. For details please refer to Volume I, Chapter 5, Section 5.1.2.2, and Volume IV, Appendix 7, Sections 7.1.3.2.C, 7.1.3.4.C, 7.1.3.5.C, 7.1.3.6.C, and 7.1.3.7.C.

Discussion of floodplain impact by facilities F5 and J3 at the Illinois site has been revised in Volume I, Chapter 5, Section 5.1.2.2 and Volume IV, Appendix 7, Sections 7.1.3.3.B and 7.1.3.3.C. Potential floodplain impact of facilities K4 and J6 and possible mitigations will be further studied, as indicated in the EIS sections cited above and in Volume I, Chapter 3, Section 3.6.3, if the Illinois site is selected.

0979.01

The comment is consistent with the information presented in DEIS Volume I, Table 1-1. Based on additional information provided in the body of this comment as well as others, the DOE has revised information in the EIS to reflect more accurately some information expected at the Illinois site.

0979.02

To ensure safety, a 150 ft radius around the tunnel will be established within which no water wells, existing or new, will be allowed. A 1,000 ft wide restricted zone along the tunnel (500 ft on each side) is anticipated. However, this zone is established for control, and wells within it would not be required to be closed. Replacement of wells within this zone may be limited due to the vibrations from drilling. This would likely be dictated by site-specific conditions or timing of the drilling and is not excluded. Existing wells on fee simple land for the project would likely have to be abandoned, but this is not certain in all cases.

State records of water wells were available for the EIS, but in most cases it was indicated by the states that the records were not up to date. Limited field survey information was available, and therefore it was assumed that the well data were not detailed enough to develop an accurate count of the wells that fell within the specific total restriction areas identified above. Given these limitations, the intent of the presentation was only to identify the approximate number of wells within the footprint of the SSC and provide a general comparison of the relative density of water wells near the individual state sites. The number of wells which might be hydrologically impacted by SSC activities (water level declines or possible water quality changes) also cannot be accurately estimated with the available well records and the lack of final siting and design information. Both of these issues (well closures due to land acquisition and proximity to facilities and wells hydrologically impacted) will be addressed in detail in the Supplemental EIS to be prepared for the selected site.

See revised EIS sections as follow: Volume I, Chapter 1, Table 1-1; Volume I, Chapter 3, Table 3-7; Volume I, Chapter 5, Section 5.4 and Table 5.6-4; and Volume IV, Appendix 7, Sections 7.2.3.1.A.6 through 7.2.3.7.A.6. The Figures showing the location of wells have been deleted from the EIS.

095110003358820

To reflect the lack of completeness in well records, the Illinois discussion (EIS Volume IV, Appendix 7, Section 7.2.3.3) now indicates that approximately 1,500 wells occur within 0.25 mi of the ring alignment while more than 320 wells (one or two potentially being municipal supply wells) are believed to be located within the SSC footprint. The State estimates, based on criteria in the second paragraph above, that only 6 to 31 wells may be directly affected and required to be abandoned by the project. If the Illinois site is selected, detailed field surveys will be performed to accurately determine the number and location of all existing water wells within the footprint and the number that would be required to be abandoned.

0979.03

The results of the field survey, approximately 1,500 wells within 0.25 mi of the proposed ring alignment, are reported in EIS Volume IV, Appendix 7, Section 7.2.3.3.

0979.04

See Comment Response 979.02.

0979.05

The number of wells that may be lost due to siting the SSC in Illinois was not reported accurately in the DEIS. State records indicate 320 wells within the SSC footprint, however, based on field surveys the State estimates that only 6 to 31 wells may be directly affected and required to be closed because of the project. See Comment Response 979.02 for clarification of criteria to assess the number of wells closed or affected and revisions to the EIS.

0980.01

Comment noted.

0980.02

The traffic analysis presented in Volume IV, Appendix 14, Tables 14.2.1-5 and 14.2.1-6 was based on a generalized approach. However, the approach was modified for the Illinois analysis to account for the difference between the urban highways on the east side of the ring and the rural highways on the west side. The existing traffic data present a distance weighted average traffic volume during a peak hour. Traffic at any point on the road could be higher or lower. However, the distance-weighted average level of service was considered to be indicative of travel along a long stretch of road that may contain localized congestion. The low level of service of some roads, such as Routes 64 and 34, reflects this distance-weighted average, which was influenced by localized congestion. Information on the ride-sharing program and the region's transportation facilities is included in Volume IV, Appendix 5, Section 5.3.11.2.

0980.03

See Comment Response 1277.01.

0981.01

No cost benefit analysis has been performed for the SSC and therefore is not available for inclusion in EIS. Life-cycle costs are part of the Site Selection Task Force Report. See EIS Volume III, Chapter 3.

0981.02

See Comment Response 1276.01.

0981.03

A contingency for completeness and quality of the geotechnical data was not included because of the obvious difficulty of assessing how such a contingency would be varied fairly from site to site.

The need for contingencies was recognized when the Conceptual Design Report was written. At that time contingencies were to account for:

- Lack of specificity in the CDG requirements
- The highly preliminary nature of the conceptual design
- Ambiguities in the scope of the project
- Uncertainties associated with non-site-specific conditions

These non-site-specific contingencies were applied equally to all of the proposed sites as a percentage of the underground construction costs. The same contingencies were retained for the EIS estimates of the Best Qualified List sites because none of the above factors has changed sufficiently to warrant a more precise calculation of site-specific contingencies. See EIS Volume IV, Appendix 2, Section 2.4.2.

0981.04

A comparison of costs at the seven sites is included in the SSC Site Task Force Report which is reprinted in its entirety in EIS Volume III.

0982.01

Comment noted.

0982.02

Information on the distribution and status of both Federally and state listed threatened, endangered, and candidate species identified in the State of Illinois SSC Proposal which was provided, in part, by the

Illinois National History Survey, was used in preparation of the DEIS. Specific populations of these species were identified in the DEIS when such populations were indicated as possible being within or near the site area. Field surveys have been conducted at the Illinois site and incorporated in the FEIS. Further studies will be conducted at the selected site. Results of these surveys would be discussed in the Supplemental EIS. If protected species are observed, the DOE would consult with the U.S. Fish and Wildlife Service and State of Illinois Department of Conservation/Natural History Survey to ensure protection of the species and avoidance of valuable natural areas. See also Comment Response 1292.05.

0983.01

See Comment Response 1204.02 for a discussion of the amount of prime farmlands that would be taken out of production by the SSC project.

EIS Volume IV, Appendix 14, Section 14.1.3.3.B discusses population growth in the Illinois Region of Influence.

EIS Volume IV, Appendix 4, Section 4.4.3 discusses the state proposers' land acquisition plans.

EIS Volume IV, Appendix 5b, Section 5.3.10.1.F discusses future planned land uses, including the Kane County comprehensive land use plan 1982/2000. This document expresses the County's desire to contain growth in existing populated areas and, thus, preserve the County's agricultural character.

EIS Volume IV, Appendix 13, Section 13.1.3.3.C evaluates SSC development implications at the project level. Section 13.1.4.C discusses cumulative impacts at the regional level.

See Comment Response 384.02 for a discussion of the DOE policy on the need for and value of establishing intergovernmental relationships.

0983.02

See Comment Response 275.04.

0983.03

Mitigative measures are summarized in EIS Volume 1, Chapter 3, Section 3.6. Final mitigation planning would be done at the time of final design and the preparation of the Supplemental EIS for the selected site.

0983.04

Mitigations are summarized in EIS Volume I, Chapter 3, Section 3.6. After the site is selected, a site-specific Supplemental EIS will address these issues.

0983.05

There is no plan to utilize farmland or other surface areas to dispose of spoils in Illinois (EIS Volume IV, Appendix 5B, Section 5.3). The State has proposed disposal of spoils in four quarries near the ring. These quarries have a combined capacity of 14 million yd^3 and, thus, can easily handle the 3 million yd^3 from the SSC. The quarries could sell the SSC spoils by blending it with their normal product.

0983.06

A Supplemental EIS will be prepared for the selected site. Issues related to impacts on local agricultural resources, including farming operations would be considered as appropriate.

0984.01

The EIS has been revised to incorporate reestimated data available on wetlands (see Volume I, Chapter 5, Section 5.1.5.4 and Volume IV, Appendix 11, Sections 11.3.3.3 and 11.3.7.3).

0984.02

See Comment Response 979.02.

0984.03

See Comment Response 307.04.

0984.04

The figures cited in the comment are for the projected worst-case increase in the number of injury accidents per year due to truck traffic during construction of the SSC, as stated in EIS Volume I, Chapter 5, Table 5.1.6.4.

0984.05

Volume I, Chapter 4, Table 4-16 indicates that there are 64 State-protected species in the Illinois site region and 11 State-protected species in the Texas site region.

0984.06

The quoted numbers are reflected in Table 4-17 in Volume I, Chapter 4.

0984.07

The numbers of existing point source discharges with NPDES permits for the SSC site alternatives are correct as listed in EIS Volume I, Chapter 4, Section 4.2.1.2.

0984.08

The numbers of potential point-source discharges resulting from the SSC that may require NPDES permits are listed in Volume I, Chapter 6, Section 6.2.1, Table 6-1 for the site alternatives.

0984.09

The observation is consistent with the assessment presented in EIS Volume I, Chapter 4, Section 4.5.1, without mitigative measures that will be addressed in detail in a supplement to the EIS for the selected site. Those measures will meet the regulatory requirements described in Volume I, Chapter 6. Also see Volume I, Chapter 3, Section 3.6 and Comment Response 1458.06.

0984.10

Comment noted.

0985.01

The mission and functions of the DuPage County Planning Commission are noted. Comments regarding Fermilab's contributions to high energy physics and record of accomplishments are noted. In regard to the cost savings that would be realized by using the Fermilab as the SSC injector, the DOE estimates savings in the range of $495 million to $1.037 billion. See Comment Response 1276.01.

0985.02

The cost benefits from using the existing facilities at the Fermilab Tevatron were estimated by DOE and have been considered as stated in EIS Volume IV, Appendix 2, Section 2.4 and were factored into the average site costs shown in Appendix 2, Section 2.4.

0985.03

See Comment Response 816.01.

0985.04

Comments noted.

0985.05

Comments noted.

0985.06

Comments noted.

0986.01

See Comment Response 816.01.

0986.02

The analysis of transportation impacts in the EIS is based on the projection of existing conditions, transportation improvements committed in the proposal and the projection of direct SSC impacts. RTA routes do not directly serve Fermilab at the present time. Therefore, RTA Services were not projected to receive negligible impacts.

EIS Volume IV, Appendix 14, Section 14.2.1.3.C.1.b acknowledges that carpools, vanpools, and buses will be needed during construction and operations. The comments on RTA's current services, its capabilities to meet future needs, and its resolution to provide service to the SSC are noted.

0987.01

Although extensive study has been completed to date at the Illinois SSC site (EIS Volume IV, Appendix 15, Section 5.3), potential site-specific impacts to cultural resources have not yet been evaluated. Similarly, determinations of significance, that is, National Register of Historic Places eligibility, of known resources have not yet been completed. It is likely, however, that potential impacts to significant resources can be reduced by the application of appropriate mitigation measures as determined through consultation with the SHPO, DOE, and, if necessary, the Advisory Council on Historic Preservation. See EIS Volume I, Chapter 3, Section 3.6.

0987.02

If the DOE selects Illinois as the site, cultural resource surveys of the previously defined potential impact areas would be completed. Additional surveys would be needed of yet-to-be-defined ancillary and construction areas involving potential ground disturbances or building removal. Evaluations would be completed of recorded archaeological and historic sites in order to identify cultural resources within the project area that are eligible for listing on the National Register. Cultural resource procedures would be completed in accordance with a Memorandum of Agreement (MOA) between the DOE, the SHPO, and, if necessary, the Advisory Council on Historic Preservation. Mitigation measures will be developed to appropriately mitigate impacts to significant cultural resources (see EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 15). A more detailed review will be provided in the Supplemental EIS. Mitigation strategies will also be described in greater detail in the Supplemental EIS.

0987.03

See Comment Response 987.02.

0987.04

See Comment Responses 1279.63, 1279.64, 1279.65, and 1279.65.

0987.05

Comment noted.

0988.01

See Comment Response 915.02.

0988.02

The information provided is consistent with data furnished by the Illinois Department of Conservation and is found in the revision to EIS Volume I, Chapters 4 and 5, and Volume IV, Appendix 11.

0988.03

This material does not substantially contribute to the EIS. None of the counties listed are counties in which the proposed Illinois site would be located.

0988.04

See Comment Response 988.02.

0989.01

The relationship of drainage tile systems to SSC surface facilities is not precisely known at this time. During the design phase, these relationships would be established and any mitigation needed would be addressed. (EIS Volume I, Chapter 3, Section 3.6.)

0990.01

Comment noted.

0991.01

Comment noted.

0991.02

EIS Volume IV, Appendix 3 is a brief summary of a detailed decommissioning assessment prepared by Argonne National Laboratory (see reference 1 at the end of Appendix 3). This referenced report gives much of the detail asked for in this comment. It should be remembered, however, that this is an assessment of one method of decommissioning. The actual method used in the final decommissioning plan (as outlined) will be

based on the knowledge gained from construction and operations of the SSC and may differ from the Argonne report substantively. This could include different ways of blocking access, different levels of decontamination, etc.

Prior to the end of SSC operations, when the decision has been made to decommission it, a detailed decommissioning plan will be prepared. Decommissioning the SSC will be assessed under NEPA. This decommissioning plan will be very detailed, specifying the exact method of decommissioning, monitoring methods, etc.

The final disposition of the occupied "sites" (facilities) is covered in as much detail as possible. This is because it is not possible at this time to predict exactly what parts of the facility will be useful, e.g., for medical research or educational purposes, at the time of decommissioning.

0991.03

See Comment Response 991.02.

0991.04

The only radioactivity remaining at the site after removal of radioactive equipment and material will be very low levels in the tunnel walls. The tunnel and access shafts will be well sealed to prevent access by the public. There would not be any further radioactivation once operations have ceased, and tunnels will not be ventilated. Therefore, there will not be any pathway for exposure of the public near the access shafts. The access shafts themselves will not become radioactive during operations. Monitoring is expected to continue for some time after the facility is decommissioned to verify that there are no unacceptable exposures. Because of these factors, there is no reason to preclude locating access shafts in or near residential areas.

Refer to EIS Volume IV, Appendix 3 for further information on decommissioning.

0991.05

The EIS does not consider the environmental consequences of decommissioning. However, a further NEPA review will be performed in the future before any DOE decisions are made regarding decommissioning.

It is the DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with all applicable environmental statues, regulations, and standards.

0991.06

See Comment Response 991.02.

0992.01

The conceptual design of fire protection services (that would be provided at the SSC site itself) is described in Volume IV, Appendix 1, Section 1.1.2.1.B.5. In addition, the discussion of public services in the portion of the EIS dealing with Environmental Consequences and Mitigative Measures (Volume I, Chapter 5, Section 5.1.8.3) explains that the DOE Management and Operating contractor, who would oversee and operate the project's fire protection services, would also work with local public agencies to coordinate services and provide emergency planning for the SSC facilities and host community.

0992.02

A discussion of the types of hazardous/toxic materials that may be used at the SSC support facilities is presented in EIS Volume IV, Appendix 10, Section 10.1.3.2.B. Since the various shops and operations that will support operations of the collider have yet to be designed, information on specific chemicals and quantities is not available. A more detailed assessment will be provided in the Supplemental EIS.

0992.03

The Superfund Amendments and Reauthorization Act (SARA), which contains amendments to CERCLA Title III - Emergency Planning and Community Right to Know (Section 303) specifies various federal, state, and local agencies which must be provided information about hazardous and toxic chemicals on site. The DOE management and operations contractors for the SSC will be required to comply with these regulations and provide information about hazardous or toxic materials on site.

0992.04

The DEIS was prepared on a conceptual design of the SSC. After a site has been selected, detailed final engineering design will commence. During detailed final design, the hazardous chemical storage area will be designed to meet both Occupational Health and Safety Act (OSHA) and Resource Conservation and Recovery Act of 1976 (RCRA) standards. Acknowledgement of the Department's responsibility and intent to comply with all applicable laws and regulations, including RCRA for management of hazardous waste was provided in Volume I, Chapter 6 of the DEIS.

0992.05

The proposed methods of sewage and wastewater disposal as indicated in the Illinois SSC proposal are discussed in EIS Volume IV, Appendix 10, Section 10.3.3.C. Table 10.3.3-3 in this section indicates that a treatment method for remote areas of the SSC (those not connected to a sanitary sewer system) was not proposed. The EIS indicates in this

section that sewage at these remote locations could be disposed using septic tanks and leach fields. No statement was made concerning oil/water separators or chemical disposal in association with the use of septic systems, because they are not relevant to septic systems.

The EIS only discusses the possible use of oil/water separation in conjunction with the proposed site in North Carolina. There, a dewatering operation may be required during tunnel construction to treat infiltrating water. If the water being pumped out becomes contaminated with oil, then an oil/water separator may be appropriate.

0992.06

Liquid hydrogen will be used as a hydrogen ion or proton source. The amount stored will be extremely small. A container about the size of a large thermos bottle (about 32 to 48 fluid ounces) will store enough liquid hydrogen for a year's operations of the SSC. The details of this very small storage container will be specified during final detailed design.

0992.07

It is anticipated that a limited number of existing wells may be adversely affected or have to be abandoned because of the project (see Volume IV, Appendix 7, Section 7.2.3.3.A.6). A site-specific evaluation of the effect of aquifer drawdown on existing wells and impact mitigations will be made for the selected SSC site and will be documented in a Supplemental EIS for the selected site which will be provided to the public for review and comment prior to commencement of any SSC construction. Also see EIS Volume I, Chapter 3, Section 3.6. Pumping tests will be conducted if additional data are needed.

0992.08

The wastewater treatment and disposal system referred to (EIS Volume IV, Appendix 1, Section 1.1.2) addresses floor drains in various SSC facilities. There is no connection between the wastewaters that will flow into these drains and laboratory waste chemicals or equipment fluids, which will be collected and disposed of according to hazardous materials handling procedures.

0992.09

The remote areas would only be used occasionally by a few people (this can be compared with a remote farmhouse). Septic tanks and leach fields are accepted methods for sewage treatment at remote locations. After the site is selected, the suitability of septic tanks or other acceptable disposal method would be further evaluated during final design.

0992.10

In terms of waste disposal plans, it was assumed that any SSC low-level radioactive waste would be disposed of at DOE's Hanford facility at Richland, Washington (see EIS Volume IV, Appendix 10).

Disposal of wastes at a State or regional NRC-licensed low-level waste disposal site will be considered by the DOE. A decision in favor of regional disposal site(s) will depend upon: (1) willingness of the state to accept the waste, (2) the availability of adequate regional compact disposal capacity (in accordance with the Low-Level Radioactive Waste Policy Amendments Act of 1985, public law 99-240), and (3) whether the regional disposal facility represents a cost savings to the DOE. These factors will be carefully and thoroughly considered upon the selection of the SSC site.

0993.01

Economic impacts of the SSC in Illinois are presented in EIS Volume IV, Appendix 14, Section 14.1.3.3.A. The first paragraph of Comment Response 852.03 discusses the methodology used to estimate direct and secondary employment impacts to the Illinois Region of Influence (ROI) as a result of the SSC, and in particular the accuracy of the multipliers employed.

Input data for the economic impact analysis are derived from the cost estimates discussed in Volume IV, Appendix 2 which states that "an evaluation has been made as to what is to be acquired on a national basis and what is available locally" (Section 2.4.1). Only those items and labor deemed locally available were included in the economic impact analysis. The EIS also indicates that of the 10,495 jobs available to workers within the Illinois ROI during the peak year of construction, approximately 31 percent are expected to go to in-migrants to the ROI (although some of these in-migrants may come from parts of Illinois outside the ROI; see Volume IV, Appendix 14, Table 14.1.3.3-2). During the first year of full operation, approximately 34 percent of the 7,030 jobs available to workers within the ROI are expected to be filled by in-migrants to the ROI.

0993.02

Indicators related to basic human needs such as income, housing, and public safety are discussed in Volume IV, Appendix 14, Sections 14.1.3.A, (Economic Activity, Labor Force, and Income), B (Demographics and Housing) and C (Public Services). The EIS addresses these issues in a summary fashion in Volume I, Chapter 5, Section 5.1.8.5.

0993.03

The DOE has conducted numerous public hearings in each of the states on the Best Qualified List for the SSC (see EIS Volume III, Chapter 1). By attending these public hearings, representatives of the DOE have been

made aware of the problems and social disruption that will occur to individuals. Although the representatives from the DOE are aware of these individual feelings about relocation, the smallest unit of analysis in the EIS is the community, followed by analyses made at county, regional, and state levels. All comments, individual or an organized collective expression, are fully assessed and are taken into consideration in the EIS process.

0994.01

Twenty trillion electron volts (20 TeV) is not power but a measure of the energy of each of the protons in the proton beams circling through the collider ring.

The magnetic field from the superconducting magnets will be very strong. However, this field will be highly attenuated by the natural shielding of the iron in the magnets. Because magnetic field falls off rapidly as a function of distance, there will be no measurable magnetic field effects from the SSC at grade level and above. Therefore, the SSC will cause no EMI and there will be no EMP (electromagnetic pulse) generated Because the SSC controls depend critically on electronics and computers, any generation of stray electric fields by any component must be avoided or thoroughly shielded, and thus cannot influence electronics in the area or the radar at the DuPage County Airport. All of this is corro borated by the experience at Fermilab, and is discussed more generally in Volume IV, Appendix 10.

0994.02

The superconducting magnets that will be used in the SSC will produce magnetic fields surrounding the proton beam tubes that will help keep the tiny streams of circulating protons exactly on their precise paths through the evacuated beam tubes. Iron yokes around the magnets will considerably reduce the magnetic field strength outside the beam tubes when the collider is in operation. The fields produced by the magnets will not affect the public because the strength of the SSC-induced magnetic fields at the tunnel wall will be about the same as the earth's magnetic field (see Volume IV, Appendix 10, Section 10.1.3.2).

There is no known means by which static electricity could be generated within the SSC tunnel during operation. In addition, there would be no likely impact from any static electricity that could be present on the magnetic fields generated for SSC operation.

There are no electrical impulses that will be produced by the SSC and therefore no such impulses that could escape the tunnel (see Volume I, Chapter 5, Section 5.1.6.2 for a discussion of the health impacts of the collider operation).

See Comment Response 733.02 for a discussion of the potential hazards from power transmission lines. There would be no relationship between a

magnetic field from the SSC and an electromagnetic field from an overhead power line since no measurable magnetic fields from the SSC magnets would exist at ground level.

0995.01

The information submitted was considered as appropriate. The bulk of the data used in preparation of the EIS was supplied in the State proposal and supplemental data, plus data available in publicly available sources. See Comment Response 013.02.

0996.01

Although the SSC is an experimental facility, the radiological aspects of the SSC are well understood. This is based on experience at other accelerators and studies of cosmic rays, some of which have energies higher than the SSC will produce. Therefore, because the radiological impact has been analyzed extensively, it can be predicted with reasonable confidence that the SSC will be operated safely. The environmental safety and health implications of SSC are summarized in Volume I, Chapter 5, Section 5.1.6. See Comment Response 810.05 for further discussion.

0996.02

See Comment Response 810.05.

0997.01

For the purpose of this EIS, permanently converted land is defined as land covered by project structures. The U.S. Soil Conservation Service identified 3,076 acres of prime farmland and 212 acres of important farmland in the SSC fee simple area. From these inventories, an estimated 197 acres of prime and important farmland would be permanently converted by the SSC surface facilities at the proposed Illinois site. See the revised Volume I, Chapter 3, Section 3.7.11; Chapter 4, Section 4.8.6; Chapter 5, Section 5.1.7.2 and Section 5.2.11; and the Errata for Volume IV, Appendix 13. Also see Comment Response 275.04 for a discussion of the DOE policy to competitively outlease areas where appropriate. Such a measure could be useful for leasing areas for farming, such as the case at Fermilab where tracts are leased for farming operations.

0997.02

See Volume IV, Appendix 14, Section 4.2.1. for a discussion of the concept of stratified fee and planned applications. The DOE designed the land requirements for the SSC to minimize the impacts and disruption to the site area. See Comment Responses 266.03, 312.05, and 381.04.

0997.03

Should Illinois be selected as the site for the SSC, the issues raised regarding the proposed highway interchange would be considered in further detail in a Supplemental EIS. The comment notes in connection with Volume I, Chapter 5, Section 5.1.7, Table 5.1.7-1 of the EIS that the communities of Elburn, Kaneville, and Big Rock are in the area described. Therefore the categorization of the area as mixed/suburban zoning is not inaccurate. The comment also agrees that the pressure from suburbanization already occurring in Kane County is being resisted yet the comment objects to the statement in Volume I, Chapter 5, Section 5.3 and Section 5.3.2.3 which restates the same point, that is "the agricultural productivity trends in the area are declining and may continue as a result of pressure from urbanization."

0997.04

The EIS data are sufficient for a siting decision which is the decision the EIS was prepared to evaluate. A Supplemental EIS will be done for the selected site prior to a decision to construct or operate the SSC (see Volume I, Introduction and Foreword). A discussion of regulatory compliance is provided in Volume I, Chapter 6.

0998.01

The location of specific SSC facilities cannot be precisely determined until the DOE agrees to a final placement of the collider ring and the associated areas. The information presented does, however, represent a reasonable picture of conditions likely to occur at a selected site. The proposed "E" area is 200 ft x 200 ft. See Comment Responses 307.04 and 880.04.

0998.02

The visual impact of facility E9 has been addressed in EIS Volume IV, Appendix 16, Section 16.3.3.3.J. The views of the residents in the immediate vicinity could be significantly adversely impacted. It may be possible to screen the facility from view, in time, depending on final siting. The most effective mitigative measures will be considered in detail during final design and assessed in the Supplemental EIS.

The other facilities noted in the comment are service areas. Where they would affect moderately to highly sensitive views, the impacts have been addressed in Section 16.3.3. See also Comment Response 859.04.

0998.03

See Comment Response 880.04. Land costs are the responsibility of the proposers and will be determined as part of the appraisal process conducted by the successful State.

0998.04

See Comment Responses 710.01 and 1390.07, third paragraph.

0998.05

Comment noted.

0999.01

The numbers used in the EIS represent a reasonably accurate picture of conditions likely to occur if the Illinois site is selected for the SSC, and are adequate for the site selection decision. Once a site has been selected and additional site-specific detailed design information has been developed, exact locations of facilities with respect to specific properties will be determined. This information would be made available for public comment in the Supplemental EIS for the selected site.

0999.02

See Comment Response 979.02 regarding the number of wells that may have to be closed due to siting and construction of the SSC in Illinois. The criteria for closure includes the potential for radiologic contamination.

Detailed monitoring plans have not been prepared for this EIS. Monitoring plans, which will include monitoring of selected wells in the SSC project vicinity, will be described in a Supplemental EIS prepared for the selected site. The State of Illinois has indicated that water supply sources that are lost due to the SSC will be replaced.

0999.03

See Comment Responses 1369.09 and 1102.03.

0999.04

See Comment Response 964.02.

0999.05

Comment noted.

1000.01

Volume IV, Appendix 2, Section 2.4.2.2 makes note of the special adjustments for the Illinois site that took into account the existing facilities at Fermilab and the resultant cost savings.

1000.02

The comment on the available utilities and transportation services is confirmed in EIS Volume IV, Appendix 5, Section 5.3.11.2.

1000.03

The estimates of acreage disturbed during SSC operations and construction have been revised (EIS Volume I, Chapter 3, Table 3-2). The total acreage that would be disturbed in Illinois if the State is selected is 494 acres. Approximately 227 acres of that area would be permanently disturbed by buildings and support facilities. The perimeter of areas A, B, and C in Illinois comprises the existing Fermilab. These areas include approximately 1,000 acres of agricultural land and 940 acres of natural systems, which include wetlands and lands not in agriculture, and approximately 690 acres with other land uses (Volume I, Chapter 4). Construction activities at Fermilab (the equivalent of areas A, B, and C at other States) will require 192 acres of land, 87 of which will be permanently disturbed with buildings and support facilities. The major difference in acreage between Illinois and the other States is that the Fermilab injector construction (area B) requires only minimal additional acreage.

An estimated 197 acres of prime and important farmland would be permanently converted in Illinois. This is the lowest estimate, with the exception of Arizona, since the U.S. Soil Conservation Service reported no prime or important farmland in the proposed Arizona fee simple project area.

1000.04

The comments are consistent with data presented in EIS Volume I, Chapter 5, Section 5.1.8. See also Comment Response 1276.01.

1000.05

See Comment Response 1001.01.

1001.01

See Comment Responses 18.03 and 1259.04.

Alleviation of potential water shortages in the western part of the proposed collider ring may not be economically feasible through the import of water from Lake Michigan, as discussed in Comment Response 533.03. Nevertheless, greater reliance on surface water sources by the communities in the eastern part of the proposed collider ring would reduce their effect on the groundwater overdraft. This in turn would reduce potential regional groundwater impacts by the SSC-induced population growth settling in the eastern vicinity of the SSC project.

Wells within a short distance of the collider tunnel which could pose a hazard to tunnel construction, or which could be affected by SSC operations may have to be abandoned. The State has indicated that an alternative water supply or compensation will be provided to well owners so affected. See also Comment Response 1133.02.

For a discussion of methane as a hazard in Illinois, see Comment Response 1007.01.

1001.02

Traffic estimates for the roads significantly affected by SSC are given in EIS Volume IV, Appendix 14, Section 14.2.1.3.C. These estimates are for the peak hour in a peak year during construction and operations. Routes for the trucks will be selected during construction planning to minimize the traffic in the areas of the highest risk of accidents (Volume I, Chapter 3, Section 3.6.3). Other options to be considered include the use of highways rather than local roads, strengthening less-congested roads to distribute the traffic on more roads, restricting the truck traffic during certain hours, and improved traffic controls.

1002.01

Sites on the BQL, including the Illinois site, comprise those locations which would permit the highest level of research productivity and overall effectiveness of the SSC facility at a reasonable cost of construction and operations, and with minimal adverse impacts on the environment. The Secretary of Energy will identify the selected site using technical evaluation criteria and cost considerations. In order of relative importance, the technical evaluation includes concerns with geology and tunneling, regional resources, environment, setting, regional conditions, and utilities (see EIS Volume III, Chapters 2 and 3; also Chapter 3 of the ISP).

SSC-related effects on the quality of life in local communities in Illinois will depend upon the ability of these communities to plan and finance needed facilities and services. Specific effects on the area's visual characteristics (on the "beauty" of the area) and on the pace of life (on the "tranquility" of the region) will largely depend upon the

specific pattern of settlement by the SSC-related population. Careful planning, with the goal of preserving certain key regional qualities, could minimize many of the negative conditions associated with rapid growth.

1003.01

See Comment Response 1276.01.

1003.02

A summary of the number of land parcels and acreages potentially impacted by the SSC can be found in EIS Volume I, Chapter 3. A description of the land acquisition plan is detailed in Volume IV, Appendix 4.

The land that would be permanently disturbed at the Illinois site is approximately 227 acres. This is further discussed in Volume I, Chapter 3.

Potential impacts on the environment and natural resources from the proposed SSC were evaluated after reviews of information provided by the States and open literature publications, and contact with appropriate local, State, and Federal officials and other technical experts. Unless otherwise noted, all information provided by the proposers was verified by independent sources prior to use in the EIS. Information obtained from the scoping meetings was also reviewed and used as appropriate in the preparation of the EIS.

Unavoidable adverse environmental effects that could occur from the siting of the SSC in Illinois are summarized in Volume I, Chapter 5. These are detailed in the individual appendices of Volume IV.

1003.03

Accelerators have an excellent safety record, similar to light industry.

1003.04

The DOE has stated that it intends to continue operating the Fermilab regardless of the SSC siting. The EIS socioeconomic analysis proceeded under the assumption that Fermilab would continue in operation regardless of the SSC location.

Estimates of changing economic activity and public finance associated with SSC siting in Illinois are presented in Volume IV, Appendix 14, Sections 14.1.3.3.A and 14.1.3.3.D, respectively. In general, the numbers included in the comment disagree with those presented in the EIS. It is difficult to make strict comparisons, however, because the comment appears to combine monetary amounts for different years which are reported by individual year in the EIS -- and which must be discounted before combining. Such problems in comparison are encountered in both

the "real disposable income," which is assumed to represent "total earnings" reported in Volume IV, Appendix 14, Table 14.1.3.3-2, and "state tax revenues," reported in Volume IV, Appendix 14, Table 14.1.3.3-14. Annual direct and indirect jobs resulting from the SSC are presented in 14.1.3.3-2, and for most years are greater than the numbers listed in the comment.

1003.05

Comments noted.

1004.01

Where the SSC ranks in the priorities of the State of Illinois is a state issue and is not the responsibility of the DOE. The comparison of impacts of the SSC on the seven site alternatives is given in Volume I, Chapter 3, Section 3.4. The use of the SSC facilities after decommissioning has not been determined. Volume IV, Appendix 3 demonstrates that it is feasible to decommission the SSC and gives an order-of-magnitude estimate of costs.

The educational quality of the region is also important to the DOE. It was considered in the regional resource criterion of the ISP as the second most important in site selection. See Volume I, Chapter 5, Section 5.8 and Volume IV, Appendix 14, Section 14.1 for a detailed discussion of public service and socioeconomic impacts of the SSC.

1004.02

Information concerning major environmental impacts of SSC sitings are contained in EIS Volume I, Chapter 1, Table 1-1. In the DEIS, Michigan had the largest number of wetlands located in fee simple areas, followed by Illinois. For ambient TSP concentrations (peak during construction), Illinois had the highest value, followed by Texas and Tennessee. For number of wells lost, Tennessee made the highest total, followed by Illinois. No figures for prime farmland were listed in Table 1-1. For miles of new road required, Arizona had the most followed by Colorado. For relocations, Texas was listed with the highest total, followed by Michigan. A substantially revised version of this table appears in the FEIS.

1004.03

See Comment Response 991.02.

1004.04

Comment noted.

1005.01

Comment noted.

1006.01

Comment noted.

1006.02

Comment noted.

1006.03

Comment noted.

1006.04

It is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards (see Volume I, Chapter 6). Although any large project such as the SSC has a potential for environmental disruptions, mitigations would be implemented to minimize these impacts. Anticipated environmental impacts and potential mitigations are summarized in EIS Volume I, Chapter 3, Section 3.6 and Volume I, Chapter 5.

1006.05

The average annual low-level radioactive waste shipped to the disposal site from Fermilab between 1983 and 1986 was reported to be 6.6 curies (EIS Volume IV, Appendix 10, p. 37). It is estimated that the annual low-level radioactive waste (LLRW) generated by the SSC would be, at most, 10 Ci based on Fermilab experience. The LLRW increment is about 50 percent based on the aforementioned volumes.

1007.01

Several factors about the site geology and the planned construction approach will help minimize the hazards due to methane gas. First, methane gas has been encountered in the site region only in the soil units (termed drift or till) that overlie the bedrock--it has not been found in the bedrock and, hence, is not expected to be a problem in the collider tunnel, experimental halls, or other underground excavations that will be located deep in the bedrock. Second, where methane occurs in the drift, it always occurs in association with one distinctive silt layer, named the Robein Silt; organic matter trapped in the Robein Silt appears to be the source of the methane. The Robein Silt, which occurs in only a portion of the site area, is readily recognized in borings, so it will be possible to tell, from borings made before the excavation begins, whether there is a chance of encountering methane "drift gas." Third, the only excavations that will pass through the drift, and hence the only excavations that might encounter drift gas, are the shafts that provide access to the collider tunnels and halls. Confirmatory borings will be made at the locations of all the shafts before they are excavated, so any pockets of gas at the shaft locations will be noticed during the boring operations. Finally, if a pocket of drift gas is

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encountered at any of the excavations, the pockets are generally of quite small volume and can be vented off in a matter of days. As the shafts are dug, the air will be monitored for hazardous gases; in the deeper excavations, monitoring of ventilation systems will also help detect and prevent the buildup of any gas.

1007.02

The Illinois site and five other proposed sites have some of the SSC surface facilities located in or adjacent to floodplains, as described in EIS Volume I, Chapter 5, Section 5.1.2.2 and Volume IV, Appendix 7, Sections 7.1.3.2.C (Colorado), 7.1.3.3.C (Illinois), 7.1.3.4.C (Michigan), 7.1.3.5.C (North Carolina), 7.1.3.6.C (Tennessee), and 7.1.3.7.C (Texas). The only site where no facilities would be in a defined floodplain is Arizona, although the Arizona site could experience sheet flooding. Any facility located in a floodplain could be subject to flood damage. If one of the six sites having floodplains is selected, the surface facilities at such site would be relocated outside the floodplain if practicable. Other impact mitigations are discussed in the cited sections. The EIS has been modified to include for each site a discussion and figures showing all SSC facilities that may encroach upon a defined 100-yr floodplain. Potential floodplain encroachment will be addressed in the Supplemental EIS for the selected site.

1007.03

Air quality data for all the criteria air pollutants are presented in EIS Volume I, Chapter 4, Table 4-6 and Volume IV, Appendix 5, Table 5.3.4-3. Criteria pollutants are those for which the EPA has set ambient standards. The data used in Table 4-6 were selected from the measurements made by air pollution monitors operating in the vicinity of the proposed SSC sites. The measurements listed in Table 4-6 are average concentrations from the region around the proposed SSC site during a recent year. For the Illinois SSC site, the recent year was 1986 and the highest readings were observed at different monitors--West Chicago for particulates; Elgin for sulfur dioxide, ozone, and lead; Cicero for carbon monoxide; and Lemont for nitrogen dioxide.

The air quality of an area can be judged by considering the concentrations of all six of these pollutants. Of the seven proposed sites, the Illinois site had the highest concentrations for only one pollutant/one averaging time--the 24-hour concentration of sulfur dioxide. This concentration of 168 $\mu g/m^3$ was below the National Ambient Air Quality Standard (NAAQS) of 365 $\mu g/m$. As shown in Table 4-6, several of the sites, but not Illinois, did exceed the NAAQS for carbon monoxide.

Thus, Kane County, Kendall County, and DuPage County in Illinois would not be rated as having the worst air quality of the seven sites.

1007.04

The DEIS incorrectly identified the Illinois site as being nonattainment for both carbon monoxide and ozone. In fact, it is only nonattainment for ozone, as are the proposed Michigan and Tennessee sites. The statement in Volume I, Chapter 4, Section 4.4.2 has been corrected in the EIS.

1007.05

See Comment Response 1278.11.

1007.06

EIS Volume IV, Appendix 9, Section 9.1.3.5, (also see Errata and Revisions) discusses mitigation methods, such as partial earth berms in appropriate locations and commercially available quieted construction equipment, which have the potential to bring the service area into compliance with the Illinois Noise code. Also see EIS Volume I, Chapter 3, Section 3.6.3.

The DOE is committed to use whatever mitigation techniques are required to bring the SSC facility into compliance with Illinois law.

1007.07

See Comment Response 867.03.

1007.08

See Comment Response 1312.01.

1007.09

This comment makes a valid point regarding the potential effect of winter weather on construction schedules. The schedule for the SSC, as used for the EIS analyses, is based on a conceptual, which means very preliminary, design of the facility for an assumed site. This schedule does not represent the absolute minimum duration of tunnel construction because it contains a certain amount of flexibility. As stated in Volume IV, Appendix 1, Section 1.1.4.1, start dates and durations of specific construction activities will vary somewhat depending on the conditions at the particular site and funding. Schedule difficulties at any particular site could be mitigated by various measures, for example, increasing the number of tunneling contracts so that a greater number of tunneling operations could go on at the same time. See EIS Volume I, Chapter 3, Section 3.6.

As indicated in EIS Volume III, Chapter 1, Section 1.1, the presence of sources of hazardous/toxic materials will be considered in selecting the SSC location to the extent that these sources could adversely affect the siting, construction, or operations of the SSC.

1007.10

Comment noted.

1007.11

While the Chicago area is certainly highly developed and industrialized, only two industrial sources of hazardous/toxic materials exist within the SSC footprint at the proposed Illinois site (see EIS Volume I, Chapter 4, Table 4-15). One of these sources is the existing Fermilab accelerator facility, which would become integrated into the SSC facility should the Illinois site be selected as the location of the SSC. The other source is AT&T.

As indicated in EIS Volume III, Chapter 1, Section 1.1, the presence of sources of hazardous/toxic materials will be considered in selecting the SSC location to the extent that these sources could adversely affect the siting, construction, or operations of the SSC.

1007.12

Background radiation at all seven sites was discussed in Volume I, Chapter 4, Section 4.6.1 of the EIS, with specific SSC impacts noted in Volume I, Chapter 5, Section 5.2.5.

The impacts to the background radiation at the Illinois proposed site from the operations of Fermilab and past operations of the Kerr-McGee chemical processing plant are addressed in EIS Volume IV, Appendix 5, Section 5.3.6.2. The total potential radiation dose to the general off-site population from Fermilab activities in 1987 was 5.3 person-rem (Baker, S., Site Environmental Report for Calendar Year 1987, FERMILAB 88/40, Fermi National Accelerator Laboratory, Batavia, Illinois, May 1988) as compared to the projected 360,000 person-rem per year from background radiation (EIS Volume I, Chapter 5, Table 5.1.6-2). The Kerr-McGee chemical processing plant has been torn down and plans are being made to dispose of the wastes. It is estimated that the annual low-level radioactive waste generated by the SSC will be at most 10 Ci based on Fermilab experience.

1007.13

A description of man-made radiation sources in the vicinity of the proposed Illinois SSC site is provided in EIS Volume IV, Appendix 5, Section 5.3.6.2. Of the more than 600 facilities in northeastern Illinois that are licensed to use and possess radioactive materials, two facilities contribute to a very slight degree to background radiation levels. They are the Fermilab, which is proposed as the high energy booster (HEB) for the SSC, and the Kerr-McGee Chemical Corporation chemical processing plant, which is currently shut down.

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In 1986, the maximum potential radiation dose to an individual at the Fermilab site boundary was 0.0007 mrem/yr, a comparatively low dose considering that the average individual receives about 300 mrem/yr from natural background radiation (EIS Volume IV, Appendix 12, Table 12.2.1-1).

1007.14

This observation is correct and is made in EIS Volume IV, Appendix 9, Section 9.1.3.5, and in Volume I, Chapter 5, Section 5.1.4 in the EIS.

1007.15

The observations concerning land use patterns are consistent with the analyses presented in EIS Volume I, Chapter 4, Section 4.8.7 and Volume IV, Appendix 5b, Section 5.3.10 and Appendix 13, Section 13.1.3.3. Volume I, Chapter 3, Section 3.3 presents no-action scenarios. A comparison of these scenarios with project development scenarios as provided in Appendix 13 measures lost opportunity costs.

1008.01

It is the policy of the DOE that Fermilab will continue to operate if the SSC were to be located in another area (see EIS Volume I, Section 3.3).

1009.01

See Comment Response 876.31. A life-cycle cost analysis was performed and is provided in EIS Volume IV, Appendix 2.

1009.02

See Comment Response 865.02.

1010.01

Information concerning the number of wells likely to be affected directly by SSC operations has been updated in EIS Volume IV, Appendix 7, Section 7.2.3.3. Specific characteristics of the different aquifer units are described in Volume IV, Appendix 5, Section 5.3.2.2.

Wells within a short distance of the collider tunnel which could pose a hazard to tunnel construction (especially deep wells), or which could be affected by SSC operations may have to be abandoned. The State has indicated that an alternative water supply or compensation will be provided to well owners so affected. See also Comment Response 1133.02.

1010.02

The effects of the project on groundwater supplies and quality at the proposed Illinois site are assessed in Volume IV, Appendix 7, Section 7.2.3.3. Adverse effects on groundwater quality are expected to be negligible. Effects of blasting and related vibrations in wells, including the flow through crevices and potential cloudiness, were not assessed since reliable predictive methods are not available. No loss of water supply is expected as a result of groundwater infiltration into the tunnel since infiltration can be controlled by grouting and other inflow controls. Due to the groundwater gradients, flow will be into rather than out of the tunnel; thus, groundwater contamination from tunnel construction is expected to be negligible. Radiological effects on groundwater during normal SSC operations will be extremely small, and even in the unlikely event of a beam loss accident, the resulting radiation in groundwater wells will be small and within regulatory standards (see also Volume I, Chapter 5, Sections 5.1.6.2 and 5.1.6.3). A few wells may have to be abandoned, however, because of their proximity to the tunnel and other SSC facilities. Specific wells that may be impacted or may have to be abandoned cannot be identified until a final SSC design has been developed. These evaluations will be included in the Supplemental EIS for the selected site.

See also Comment Responses 7.03 (well abandonment), 19.03 (tunnel infiltration and control), 533.03 (groundwater supply impacts), 870.04 (radiation impacts), and 1133.02 (compensation to impacted well owners), 1381.11 (groundwater quality impacts).

1011.01

Comment noted.

1012.01

The comment on the transportation services, the proposed improvements, and discussion of the future highway improvements in the SSC site area is noted. Discussion of the available services and the current level of service on roads in the SSC area is presented in EIS Volume IV, Appendix 5, Section 5.3.11. Discussion of the proposed road improvements and impacts to the level of service on roads in the SSC area is presented in Volume IV, Appendix 14, Section 14.2.1. Some of the roads and highways in the SSC area currently experience some congestion and the future traffic generated by the SSC will exacerbate that congestion. The road improvements discussed in the Illinois site proposal may alleviate some of this congestion. Additional road improvements such as those referred to in the comment could further alleviate some of the congestion. If Illinois is chosen for the SSC, this issue will be discussed in greater detail in the Supplemental EIS.

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1013.01

EIS Volume I, Chapter 4, and Table 4-4 provide a summary of conditions existing and expected without the SSC. Chapter 5, on the other hand, summarizes the expected impacts with the SSC. Table 4-4 has been revised in the FEIS to state that the use of Lake Michigan water is only planned by some communities east of the site.

Although the import of Lake Michigan water may be considered by only some communities in DuPage County, any reduction in the reliance on groundwater sources in DuPage County would benefit the entire region, including Kane County, due to the regional nature of the aquifers. This would reduce the impact of the SSC on groundwater sources since part of the SSC on-site water needs would be furnished by existing DuPage community water systems and since part of the SSC-induced population growth would occur in DuPage County. Thus a beneficial effect on the overdraft of the deep aquifers east of the site would also benefit the western portion of the project, although to a lesser extent. See EIS Volume IV, Appendix 7, Sections 7.1.3.3 and 7.2.3.3 on surface water and groundwater use impacts. Also see Comment Response 533.03.

1013.02

The EIS recognizes that a groundwater overdraft exists in the region of the proposed Illinois SSC site. This factor will be considered among other factors in selecting the SSC site. See also Comment Responses 533.03 and 1279.115.

1013.03

U.S. Bureau of the Census population statistics for Kane, Kendall, and DuPage Counties for 1970, 1980 and 1985 (Census estimates) are given in Volume IV, Appendix 5, Section 5.3.11.1.B.2. Although nine counties may be affected by the construction and operations of the SSC, these three counties are considered the primary impact counties. The population statistics indicate that Kane County had the lowest population growth rate of these three counties from 1970 to 1980. Projections indicate that these growth rates (which are independent of the SSC) will slow down slightly from now until the year 2000, the first year of full SSC operation. The greatest increases in population as a result of the SSC are projected to occur in Kane County, in terms both of the number of people and the percentage of the current population (see Volume IV, Appendix 14, Section 14.1.3.3.B, and Tables 14.1.3.3-6 to -9). Nevertheless, the projected SSC-induced population growth in Kane County, about 3,400 by the year 2000, would be only about one percent of the total county population. Thus the conclusion of the EIS that the incremental effect of the SSC would be small is correct compared to other factors. See also Comment Responses 1013.01, 1013.02, and 1143.01, which address similar concerns with respect to the correctness of the EIS, including SSC effects on the groundwater overdraft.

1014.01

The EIS analysis of potential local public service impacts in the North Carolina Region of Influence, and in Durham, Granville, and Person Counties (see Volume IV, Appendix 14, Section 14.1.3.5.C), indicates that current volunteer fire fighting forces would need to be augmented through either expansion or establishment of permanently staffed (paid) fire departments/substations to meet potential site-specific and country-wide demand. The section cited above, which includes the passage "Basic facilities required by the project would include... a permanently staffed fire station... presently existing in Durham County," is not meant to suggest that current fire protection services in Durham County can adequately cover the anticipated increase in demand as they currently exist. Instead, it states that public services might need "addition of baseline employment and expansion of existing facilities" to meet this increased demand.

Once completed, the SSC installation would not rely exclusively on local public fire departments for protection. The conceptual design of the SSC accounts for internal fire protection services, as described in Volume IV, Appendix 1, Section 1.1.2.1.B.5. For increased protection, the Environmental Consequences and Mitigative Measures text (Volume I, Chapter 5, Section 5.1.8.3) explains that the DOE Management and Operating contractor, who would oversee and operate the project's fire protection services, would also work with local public agencies to coordinate services. This coordination would include emergency planning for the SSC facilities and host community as is currently the case at Fermilab in Illinois.

The comment correctly reflects the conceptual engineering assumptions regarding the water storage tank for fire protection at the campus, as stated in the DEIS. The final design and the Supplemental EIS for the facilities at the selected site will provide fire protection measures in full compliance with all applicable national and local codes as presented in Volume I, Chapter 6.

1016.01

Prime farmland impacts resulting from construction of the SSC are addressed in Comment Response 707.04. The acreage impacted by SSC construction is expected to be less than one percent of North Carolina's prime and important farmland inventory. Prime farmland impacts resulting from road construction are expected to be less than the impacts caused by SSC construction.

The construction of the new access highways are expected to have a long-term direct impact on existing traffic patterns as addressed in EIS Volume IV, Appendix 14, Section 14.2.1.3. These roads could require farmers to alter normal access patterns from field to field. Potential mitigation could include construction of underpasses for farm access. EIS Volume IV, Appendix 14, Section 14.2.1.3 has been corrected in the Errata to address potential farm access impacts. Also see EIS Volume I, Chapter 3, Section 3.

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1016.02

The Final EIS (see Volume I, Chapter 5, Section 5.4) refers to 630 acres of prime and 325 acres of important farmlands (as well as 258 acres of wetlands) which would be lost in North Carolina due to SSC construction. Should North Carolina be the selected site, detailed analyses regarding impacts to tobacco allotments would be undertaken in the Supplemental EIS. Since land acquisition is the responsibility of the State (see EIS Volume IV, Appendix 4, Section 4.4.1), the issues of compensation for lost farmland and tobacco allotments would have to be addressed by the State of North Carolina, not the DOE.

1016.03

Comment noted.

1017.01

The major new roads proposed by the State of North Carolina will not be completed by 1992 and will not be available to serve the peak construction traffic. Construction traffic will have to use existing roads in the proposed site area including State Routes 1112, 1121, 1141, 1317, 1471, 1536, and 1721. Analyses of impacts to traffic on these routes indicate that State Route 1112 in Butner will experience the worst impact with a decrease in level of service from "B" to "E". The analyses of impacts to existing roads during construction should be included in EIS Volume IV, Appendix 14, Section 14.2.1.3.

The major new roads proposed by the State of North Carolina are expected to be available for operations. The State will be responsible for securing necessary approvals from state and local agencies prior to construction of the proposed roads.

1017.02

According to Mr. John Dorney, Engineering Supervisor, Special Projects Unit, the capacity of Durham-Eno River wastewater plant is 2.0 million gal/d. The actual maximum flowrate at present is 1.8 million gal/d. The plant has 0.2 million gal/d excess capacity available (October 13, 1988) The SSC would need 0.15 mgd capacity.

In addition, Butner Wastewater Treatment Plant has an excess capacity of approximately 1.1 million gal/d as noted in Volume IV, Appendix 5, Table 5.5.8-1.

1017.03

Impacts to the quality of water resources resulting from construction and operations of the SSC are discussed in EIS Volume I, Chapter 5, Section 5.1.2.3, and are covered in detail for each proposed site alternative in Volume IV, Appendix 7. The current scope and depth of

these assessments provide the necessary information to allow for comparative evaluation of the impacts on the various site alternatives. Following final site selection, further studies will be conducted to refine the impact analysis with respect to final site-specific design. The more detailed review will be provided in the Supplemental EIS.

1017.04

See Comment Response 707.04.

1017.05

There will be an additional 200 MW load on the electric utilities systems in the area of the SSC project.

Additional generating capacity will be required to meet the demands of the SSC. The generating capacity required will be some fraction of the 200 MW load, e.g., in 1996 the additional generating capacity requirement will be 13 MW. This information is given in EIS Volume IV, Appendix 14, Section 14.2.2.3.E. The anticipated cost impact explained in general terms, is given in EIS Volume IV, Appendix 14, Section 14.2.2.2.C.

1017.06

The document cited in the comment was not included with the extensive documentation pertaining to cultural resources provided by the State of North Carolina as of March 31, 1988. Documentation for the nomination of the city of Durham multiple resource area (1985) was utilized to prepare the historic background sections of the EIS. Also reviewed was a document entitled "Historic and Architectural Resources of the Tar-Neuse River Basin, Durham County Inventory" (cited in Volume IV, Appendix 15 references as State of North Carolina 1988). If the DOE selects the North Carolina SSC site, the document cited in the comment would be reviewed as part of the Supplemental EIS preparation.

1017.07

Comment noted.

1018.01

Comment noted.

1019.01

Comments noted.

1020.01

Comment noted.

1020.02

This EIS addresses long-range and historical electrical transmission and generation capabilities. Short-term events such as unexpectedly high temperatures, draughts, and storms, which may cause short-term excess demands or outages, have little effect on a particular utility's ability to supply power to a facility of this size over a long period. The planning and management capabilities of the utility, based on load projections and planned generation and transmission facilities, are addressed in EIS Volume IV, Appendix 14, Section 14.2.2.3 C.1.

1020.03

See Comment Response 1047.02, first paragraph.

1020.04

Construction jobs on projects like the SSC do not last the life of the construction phase of the project. Although the peak construction work force would be approximately 3,500 in Illinois, the same 3,500 people would not keep the jobs during the construction period. Workers would be hired for specific periods of time to do specific tasks related to the construction of the project. Some workers may only be on the project for a few months, while others may be on the project for a few years. There would not be the buildup of a large, long-term labor force dependent on SSC construction that the comment seems to indicate. There will be a gradual phase down of construction activities, and it is expected that the construction workers will find other jobs in the metropolitan area or in other parts of the country. For more details on environmental impacts of construction and mitigative measures, see EIS Volume I, Chapter 3.

1020.05

Estimates of the fiscal impact to local jurisdictions in DuPage, Kendall, and Kane Counties in Illinois are presented in EIS Volume IV, Appendix 14, Section 14.1.3.3.D. These estimates indicate that although local jurisdictions would experience shortfalls during the first few years of construction of the SSC, a net fiscal benefit would accrue in following years.

1020.06

The term "air quality" in the air pollution control profession is a descriptive term used to describe the relative quality of the outdoor air that we all breathe. In an industrial society such as ours, certain levels of air pollution are unavoidable. Environmental regulations, which are discussed in EIS Volume IV, Appendix 8, Sections 8.1 and 8.2, provide a means to control the level of pollution allowed for release to the environment by industry. It is the state, local, and Federal government's responsibility to ensure that these pollution levels do not

exceed pollution standards designed to protect public health and welfare. The National Ambient Air Quality Standards (NAAQS) were developed with consideration for the health of those segments of the population that are especially sensitive to ambient air quality, such as persons with asthma. The SSC is required to meet these environmental protection provisions.

1020.07

Comment noted.

1020.08

As noted in EIS Volume IV, Appendix 14, Section 14.2.2.3.C, sufficient reserve capacity exists within the Commonwealth Edison system to support the SSC activities until the year 1996. From this point forward, some alterations to the generation capabilities in relation to the load and load projections may need to be made in order to meet the reserve capacity requirements of 15 percent. There is sufficient time to plan for additional generating capacity and to reevaluate load projections prior to the 1997 time frame. Service impacts (degradation) to Commonwealth Edison customers are not anticipated due to the addition of the SSC project load to the Commonwealth Edison system.

1020.09

The proposed water supply for all direct SSC water requirements in Illinois is groundwater (EIS Volume IV, Appendix 7). Current use of surface water from the Fox River for the Fermilab industrial water system is expected to continue during SSC operation (EIS Volume IV, Appendix 7). References in the DEIS with regard to Illinois creeks were made for the purpose of characterizing the surface water features of the Illinois site and assessing the potential impacts of the SSC. The fact that these small tributaries have low, often unrecoverable flows has been recognized and is mentioned in the DEIS, Volume IV, Appendix 5, Illinois, p. 30.

1020.10

The earthquake potential and earthquake history of the Illinois site is discussed in EIS Volume IV, Appendix 5, Section 5.3.1.5. The site area is characterized by infrequent small to moderate-sized earthquakes with only minor potential to damage structures. Also see Comment Response 1020.11.

1020.11

See Comment Response 1020.10 regarding the potential for damaging earthquakes at the Illinois site. While the small to moderate-sized earthquakes that do occur infrequently in the region occasionally cause minor damage to homes and older structures, the potential for significant

damage to a major structure that has been designed to withstand seismic movement is exceedingly small. The SSC will be designed and built to withstand reasonably expectable earthquake vibrations.

1020.12

Several factors mitigate the risk of a hazardous tunnel cave-in at the Illinois SSC site: (1) the tunnel rock is very strong (see EIS Volume IV, Appendix 5, Section 5.3.1.4), (2) the small circular tunnel opening is structurally stable, and (3) even if a small-diameter opening at the depth of the Illinois collider tunnel were to collapse, the collapse would not extend upward to the surface.

Nonetheless, if there would be a potential for cave-ins to occur after the operating phase is complete, backfilling of the collider tunnel, would be considered as a part of the decommissioning process (see Volume IV, Appendix 3). See Comment Response 216.05.

1020.13

As discussed in EIS Volume IV, Appendix 2, Section 2.4.2.2, the SSC must have an injection system in order to operate. If sited at the Fermilab, the existing facilities there would serve as the injection system. If sited elsewhere, an injection system specific to the SSC would be built.

1020.14

The machinery referred to will be in the service areas and will include compressors, pumps, refrigeration equipment, and electric power supplies such as would be found at any industrial facility. During final design, measures will be taken, where appropriate, to conceal or reduce the visual impact of the service areas and the intermediate access areas. EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 16, Section 16.3.3.3 gives several possible measures. Television reception and the provision of electricity should not be affected.

Steps will be taken (such as noise barriers) to mitigate noise impacts. See EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 9.

1020.15

Comments noted.

1020.16

Traffic analysis for the major impacted roads is presented in Volume IV, Appendix 14, Section 14.2.1.3.C. Impact of air pollution is presented in Volume IV, Appendix 8, Section 8.4.3. Mitigations will be addressed in the Supplemental EIS for the selected site. (Also see EIS Volume I, Chapter 3, Section 3.6.)

1020.17

Comment noted.

1021.01

Comment noted.

1021.02

See Comment Response 973.01.

1021.03

See Comment Response 1369.09.

1021.04

The effects of the project on water supply, groundwater quality, and private wells is assessed in EIS Volume IV, Appendix 7, Section 7.2.3.3. See also Comment Responses 7.03 (number of affected wells), 533.03 (groundwater supply impacts), 870.04 (radiological impacts), 1133.02 (compensation for affected well owners) and 1381.11 (groundwater quality impacts).

1021.05

The fiscal impacts to local governments from the development of the SSC are presented in Volume IV, Appendix 14, Section 14.1.3.3 of the EIS. The cumulative net fiscal impact to all governmental jurisdictions in DuPage, Kane, and Kendall Counties would be negative during the first few years of project development, but would be positive thereafter. Those areas designated for stratified fee would not be removed from the tax rolls.

1021.06

Equipment operating procedures are addressed by requirements set forth in the OSHA regulations. Administration and enforcement of the Federal Occupational Safety and Health Act occur at the State level. Safety, both in design and in operations, is part of the design detail.

Although the mitigation requirements for compliance with OSHA noise standards are generally more stringent than those for community noise, some of the mitigation methods such as enclosure and use of quieted versions of machinery presented in the Errata and Revisions for EIS Volume I, Chapter 5 and Volume IV, Appendix 9 are appropriate for meeting OSHA requirements as well as for meeting community noise standards.

The DOE and its contractors are committed to compliance with all OSHA standards, including those for noise exposure.

1021.07

Wetlands in the proposed Illinois project area do contribute to the purification of water entering the Fox River. For this, and other reasons, it is the policy of DOE to avoid and mitigate impacts to wetlands to the full extent practicable. See Comment Response 1292.05.

1021.08

During construction of access shafts and service areas there is potential for occurrence of noise and vibration at levels which could be annoying to people who are near the construction activities. As indicated in Volume IV, Appendix 9, of the DEIS, very noisy activities, such as jackhammer use and spoils hauling will be limited to 12 hours per day to avoid nighttime hours. Cut-and-cover construction will be limited to 16 hours per day for the same reason. At any of the locations near human habitation construction activities are expected to last less than two years. (EIS Volume I, Chapter 3, Section 3.6.)

Noise barriers and other control techniques are available for the mitigation of identified noise impacts. These are discussed in EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 9, Section 9.1.3. The decision to use such techniques would be a part of the final design and would be analyzed in the Supplemental EIS.

1022.01

Comment noted.

1022.02

The EIS recognizes that a localized groundwater overdraft condition exists in the Michigan site vicinity and that this condition will be incrementally affected by the SSC water use. A measurable and long-term impact to groundwater is projected. Boring of the tunnel will have limited effect on local groundwater resources as extensive dewatering is not planned. For further discussion of these matters see EIS Volume IV, Appendix 7, Section 7.2.3.4.

1022.03

The shielding requirements were established in the ISP and have remained constant since its issue in April 1987. If some portion of the main ring is to be constructed where the primary shield would be above the existing surface of the ground, an earth berm will be constructed to create the necessary primary shield.

The land areas shown in Appendix I of the ISP have been used as a target the various states could use in preparing their proposals. The precise location of these land areas will be fixed during final design for the selected site. The overall width of the collider arc regions is 1,000 ft. This provides flexibility for making minor adjustments in the design of the collider ring and for fixing the final collider ring tunnel location (see Volume IV, Appendix 10, Section 10.1.2.3.A.1).

Wells will be entirely restricted from all fee simple estates. Activities within the restricted zones of the stratified fee area, defined in Figure B-1 of the ISP, will be prohibited, unless specifically authorized, for example, for existing wells or other penetrations.

1022.04

See Comment Response 352.01. SSC low-level radioactive waste (LLRW) will be disposed in nondispersible solid form (Volume IV, Appendix 10, Section 10.1.2.3.A.4.c and Appendix 12, Section 12.2.3.1.D.2). The management and waste acceptance criteria of SSC LLRW will be in accordance with DOE Order 5820.2A, Radioactive Waste Management, 9/26/88.

1022.05

SSC-related effects on the quality of life in rural areas and local communities will depend upon the ability of the local communities to respond to growth. Many negative conditions associated with growth can be minimized through careful planning. (See the EIS Volume I, Chapter 5.) If Michigan is chosen, mitigation measures could be considered at the time of detailed design to reduce the annoyance to residents living near ventilation and access areas (see EIS Volume I, Chapter 3, Section 3.6). Such measures will be evaluated and presented as part of the Supplemental EIS.

1022.06

Comment noted.

1022.07

See Comment Response 880.04.

1023.01

Comments noted.

1024.01

See Comment Response 307.04.

1024.02

See Comment Response 13.02.

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1024.03

The location of the ring in Michigan was determined by the State's proposal group. Until the DOE establishes the final placement of the collider ring and associated areas as part of the site-specific detailed engineering design process, the exact location including acreages, parcels, and ownership cannot be precisely determined. Nevertheless, the location of the F7 site given in Volume IV, Appendix 5, Section 5.4.10.2, p. 101 was in error and is corrected in the Errata to Appendix 5. The location described in Volume IV, Appendix 1, Section 1.2, p. 40 is correct.

1024.04

With regard to impacts on wetlands and associated fish and wildlife, see Comment Response 10.03.

The placement of the project, as envisioned, would result in some wildlife and vegetation losses through both conversion of habitat to developed areas and encroachment (i.e., nearness of humans).

Limitations on groundwater availability resulting from the project would be very localized and limited (see Comment Response 312.04, first paragraph).

Impacts from spoils hauling are discussed in Volume 1, Chapter 5, Section 5.1.4.1.B.1.e. It has been proposed by the State of Michigan that spoils would be hauled to several abandoned quarries. Little wetlands habitat exists in these quarries and most are severely degraded. Disposal would eliminate the wetlands and any game or fish present.

Also, see EIS Volume I, Chapter 3, Section 3.6 for a summary discussion of mitigations.

Impacts of noise and blasting on wildlife are discussed at the summary level in EIS Volume I, Chapter 5, Section 5.1.5, and at the detail level in Volume IV, Appendix 11, Section 11.3.4.3. Neither construction nor operations noise is expected to impact species located at the Waterloo State Recreation Area and Haehnle Sanctuary.

1024.05

See Comment Responses 278.02 and 810.03.

1024.06

See Comment Response 345.05.

1024.07

See Comment Response 345.05.

1024.08

EIS Volume I, Chapter 3, Section 3.6 describes the measures by which the DOE will mitigate noise impacts. The DOE's commitment will be a function of the site selected, final facility location and design, and consultations with Federal, State, and local agencies. It is anticipated that noise control measures will be addressed and included in the course of detailed facility design and construction planning and evaluated in the Supplemental EIS. The final mitigation plan will include procedures for monitoring sound levels for compliance with the plan.

See Comment Response 1007.006 for the DOE commitment to compliance with the Illinois Noise Control legislation.

1024.09

Comments noted.

1025.01

See Comment Response 401.01.

1025.02

Comment Response 35.02 addresses fiscal impacts on the Texas Region of Influence and Ellis County.

Most of the cost of developing the SSC, estimated to exceed $4 billion, would be borne by the Federal Government. The State of Texas would be responsible for costs of site and infrastructure improvements, estimated at $25.7 million (see EIS Volume IV, Appendix 14, Section 14.1.3.7.D.1). Texas would also be responsible for the costs of purchasing private property for the SSC project, which in turn would be transferred to Federal ownership.

1025.03

Crime rates resulting from the SSC are not expected to differ from those associated with population growth rates. See Comment Response 456.03.

1025.04

The SSC project is described in the EIS Volume I, Section 1.2. This EIS addresses that project.

1025.05

See Comment Response 420.02.

1025.06

The DOE believes that the public hearings on the SSC EIS are an important part of an overall public participation process. Planning for the hearings focused on ample notice, access, and a strong commitment to fairness, recognizing the variety of opinions that exist concerning siting the SSC. It should be noted that the public hearings on the EIS were not required by law but were made part of DOE's commitment to full and fair public participation. See Comment Response 1126.05.

1026.01

See Comment Response 973.01.

1026.02

In addition to information gained during the DOE site visits of the Illinois site referenced in the comment, the DOE used recent aerial photography, helicopter flyovers, and additional visits to evaluate current site conditions. See also Comment Responses 7.02 and 19.01.

1026.03

Comment noted.

1027.01

Comments noted.

1027.02

See Comment Responses 533.03 (water supply) and 18.03 (water quality).

1028.01

Comment noted.

1029.01

Comment noted.

1030.01

See Comment Response 497.12 regarding research-priority decision making. The sentence cited on Volume I, Chapters 1, and 2 should read: "Looking backward in time, one sees that research in subatomic physics over the last eight years was essential to the development of technology..." This has been corrected in the EIS.

The typographical omission cited in Chapter 2 has also been corrected in the EIS.

Since this is such an important project, and it was also important that the SSC be sited in a receptive State, the DOE exercised the leadership to set up a site-selection method giving States the prerogative to decide on the many relevant issues concerning the SSC. This does not compromise the siting but actually enhances it due to each interested State's participation, contribution, and intimate knowledge of their own State. Twenty-five of the fifty States submitted proposals (see EIS Volume I, Chapter 1, Table 1-1). Details of the site selection process are found in Volume III.

Estimated cost of decommissioning is given in Volume I, Appendix 3 of the EIS. The plan for disposing of hazardous and solid waste is also discussed in Volume IV, Appendix 3, Sections 3.2.7.1 and 3.2.7.3.

Prior to the end of SSC operations, when the decision has been made to decommission it, a detailed decommissioning plan will be prepared. Disposition of any hazardous or low-level radioactive waste would be addressed in that plan, and NEPA procedures would be followed.

1030.03

The air quality impact assessment methodology did include the estimation of the SSC-related impact on the PM_{10} NAAQS. All of the fuel combustion particulate emissions were assumed to be in the PM_{10} fraction. About half of the fugitive dust emissions were computed to be in a size fraction less than 10 microns (AP-42 Emission Factors). The Industrial Source Complex model's predictions of SSC-related PM_{10} impacts for the Texas site were 48 and 4 μ/m^3 for 24-hour and annual averaging times, respectively (Volume IV, Appendix 8, Table 8-57). PM_{10} background data was not available at the time of DEIS publication nor was sufficient information to convert TSP background into PM_{10}.

1030.04

Cultural resource surveys have not yet been performed at the proposed Texas SSC site. If this site is selected, surveys would be undertaken to identify prehistoric and historic archaeological sites and historic structures that could be impacted by project construction and operations. Evaluations of these resources would be completed to identify those that were significant, i.e., eligible for listing on the National Register of Historic Places. In accordance with a Memorandum of Agreement (MOA) between the DOE and the Texas State Historic Preservation Officer (SHPO), mitigation measures would be developed to appropriately mitigate impacts to significant cultural resources. (See EIS Volume I, Chapter 3, Section 3.6.)

100110503358823

1030.05

The on-site water needs for SSC operations are based on realistic estimates based on experience at similar facilities. The potential for recycling and reuse of both the sanitary and industrial effluents would be considered, as described in EIS Volume IV, Appendix 10, Section 10.3.

An average of 120 gallons per day (gal/d) per person was assumed for potable and sanitary water needs, based on U.S. water-use statistics. This results in an average of 250 gallons per minute (gal/min) for an estimated staff of about 3,000. Of this amount, about half (60 gal/d per person or 125 gal/min) would become sanitary effluent. This effluent can be treated for recycling and reuse.

Industrial water is needed primarily for cooling purposes, utilizing evaporative cooling towers. The 2,200 gal/min quoted in the comment would be the estimated peak industrial water need. The average industrial water need would be about 1,100 gal/min. Of this amount, about 950 gal/min would be lost through evaporation in the cooling towers, and the remaining 150 gal/min would become cooling tower blowdown. This blowdown water would be briny, due to the concentrating effect of the evaporative process on the naturally occurring dissolved salts in the water. Different disposal methods for the blowdown water would be considered, depending on site-specific conditions. These include evaporation ponds and various forms of treatment. If treated, the blowdown water could potentially be recycled for reuse.

Thus the total potentially recyclable water would average about 275 gal/min (i.e., 125 gal/min sanitary effluent and 150 gal/min cooling tower blowdown). The total consumptive water use would average about 1,075 gal/min (125 gal/min of potable and sanitary water plus the evaporation of about 950 gal/min of industrial water) or about 1,548,000 gal/d.

All values above are averages for all site alternatives; some deviations would occur at specific sites due to site differences, such as climate and the chemical composition of the water.

Energy conservation options will be evaluated during final design of the project. These options will encompass both the electrical systems and the gas systems. Typically, the electrical systems evaluated are lighting, motorized equipment, and power distribution and transformation equipment. Under the gas system, typical evaluations are performed on burner equipment and energy alternatives. The energy usage values used in the EIS have been calculated using equipment typically used in this type of facility.

1030.06

A review of the DOE's plan for and commitment to mitigation of environmental impacts is presented in Volume I, Chapter 3, Section 3.6. Detailed planning of environmental mitigations must await the final design process for the selected site. The mitigations will be further discussed in the Supplemental EIS.

1030.07

The new NAAQS for particulate matter (PM_{10}) was promulgated in July 1987. The air quality impact assessment methodology included both PM_{10} and total suspended particulates (TSP). Although the rulemaking action concurrently dropped the NAAQS for TSP, state SIPs for TSP will be in effect until the states submit plans for PM_{10} attainment and the Prevention of Significant Deterioration (PSD). TSP increment will be in effect until EPA promulgates a PM_{10} increment.

Pollutant increases due to gas consumption directly by the SSC are included in the operations emission estimates in Volume IV, Appendix 8, Section 8.4.7.2.A.1. Pollutant emissions resulting from the generation of electric power for use by the SSC will be addressed in the Supplemental EIS.

The SSC-related emissions of carbon monoxide (CO), nitrous oxide compounds (NOx), and volatile organic compounds (VOC) during operations are almost entirely (greater than 95 percent) due to off-site commute traffic. The emissions resulting from this traffic constitute a fraction of a percent of the existing traffic contributions of these pollutant emissions. Ozone/carbon monoxide nonattainment is a complex and pervasive nation-wide problem requiring an air quality management strategy that is national in scope.

1030.08

There are no known oil or gas wells within the footprint of the Texas SSC site. Water wells that may need to be abandoned and plugged are discussed in EIS Volume IV, Appendix 7, Section 7.2.3.7. There appear to be very few water wells in the site footprint.

1030.09

Current data on the faults indicate that they are not likely to move and that they will not create any serious problems during construction; any other faults found during site characterization or construction will probably be similar or smaller and will represent even less of a potential risk. Consequently, the state of knowledge appears adequate for this EIS and the selection of a site for the SSC.

As noted in EIS Volume I, the DOE recognized that a more detailed site-specific review will be required under NEPA prior to a final decision on the construction and operations of the proposed SSC. This more detailed review will be provided in the Supplemental EIS.

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1030.10

At least two alternatives were available for organizing the EIS: a state-by-state approach and a topic-by-topic approach. The DOE selected the topic-by-topic approach because it assured a comparable treatment of alternatives. Volume I, Chapter 3 of EIS summarizes and compares the impacts of constructing and operating the SSC on a state-by-state basis. In addition, a summary of significant comments is presented on a state-by-state basis in Volume II of EIS.

1030.11

Discharges from any treatment plants built specifically for the SSC will comply with Federal and local regulations. As discussed in Volume IV, Appendix 7, Section 7.1.3.7 of the EIS, discharges would be regulated by NPDES permit. Appropriate wastewater treatment strategies will be designed for the selected site, in contact with appropriate State agencies. Detailed assessments of resulting water quality impacts will be addressed in the site-specific EIS prepared for the selected site.

1030.12

A recent report by the Terradex Corporation entitled "Indoor Radon Measurements in the United States" (revised March 17, 1988) lists the geometric mean value for radon in 529 homes in Texas as 0.64 pCi/l with an average of 0.98 pCi/l. Although this report did not analyze the data by county, it represents a larger number of homes sampled than the Cohen report (see Volume IV, Appendix 5, Table 5.7.6-1) and therefore should be more representative of Ellis County. Indoor radon measurements were not used quantitatively in any of the assessments in this EIS, and a revision to the EIS has not been made.

1030.13

EIS Volume I, Chapter 5, Section 5.1.1 focuses on the potential impacts of the project on the environment, rather than vice versa. Potential impacts of seismicity on the SSC site in Texas are discussed in Volume IV, Appendix 5, Section 5.7.1.5; basically, the Texas site is in one of the least seismically active portions of the country. Ambient seismic vibrations (normal background "noise" from microearthquakes) should not interfere with the operations of the project, and if sited in Texas there is very little risk that project facilities will be damaged by a severe earthquake.

1030.14

The DOE will coordinate mitigation measures with Federal, State, and local regulatory agencies after the SSC site is selected. These regulatory agencies will suggest the best management practices to reduce erosional impacts, and through the permitting process, may require that the

final SSC design incorporate mandatory mitigation practices. See EIS Volume I, Chapter 3, Section 3.6 for a summary discussion of mitigation. This process will be outlined in the Supplemental EIS for the selected site.

Assessment of floodplain encroachment at all sites (EIS Volume IV, Appendix 7, Section 7.1.3) used a 25 percent encroachment as an indicator of measurable floodplain impact. The percentage cited is not an environmental standard, but is more a screening value to establish the level of analysis or concern. It should not be assumed that only percentages greater than 25 percent are environmentally significant. In many cases, a reduction of floodplain width greater than 25 percent may not create major nor environmentally significant flooding impacts. Conversely, at some locations, encroachments of less than 25 percent could create both major upstream flooding and/or environmentally significant impacts. The site-specific design will assess the hydraulic impacts of any floodplain encroachment of SSC facilities. On-site field work, computer model studies, and more detailed flood histories will be done to assess the impacts to upstream resources.

Assessment of floodplain encroachments by SSC facilities in Texas is provided in EIS Volume IV, Appendix 7, Section 7.1.3.7. Final design will be analyzed in the Supplemental EIS to determine the extent and intensity of any impacts. Secondary local/regional developmental impacts related to the SSC construction and operations will likely be regulated by regional and local regulatory agencies and their policies. The same policies and regulations which will apply to the SSC will also apply to independent developers. Projected population and housing impacts at the Texas site are discussed in Volume IV, Appendix I3. Details of secondary development will only be established following site selection and final design and will be described in the Supplemental EIS.

1030.I5

Volume I of the EIS was intended to provide a summary of site descriptions and environmental impacts for all candidate sites. Details for specific sites, including the proposed Texas site, are given in the Appendices of Volume IV. The potential effects of the project on surface and groundwater quality, including shallow groundwater, are addressed in Volume IV, Appendix 7, Sections 7.1.3.7 and 7.2.3.7. The planned management of SSC wastes that could have an effect on surface and groundwater quality is addressed in Volume IV, Appendix I0, Section 10.2.3.7, and Sections 10.3.3.1.G through 10.3.3.3.G. The statement that the incremental effects on the existing groundwater overdraft will be measurable, but small, was based on the planned small amount of groundwater to be used by the SSC. Most of the planned SSC water use would be from surface sources; in the future, greater reliance on surface water supplies is planned by local water districts (see Comment Responses 34.02, 228.04 and 401.01).

Radiological contamination of surface and groundwater was not analyzed for the proposed Texas site since most of the tunnel would be above the groundwater table. As indicated by analyses for the other candidate sites, however, radiological contamination of surface and groundwater considering both routine operations and potential accidents would be negligible and lower than applicable regulatory standards. See Volume IV, Appendix 12, Section 12.2.3.1, Table 12.2.3-5 and Table 12.2.3-6; Section 12.3.1.1.c; and Section 12.4.1.1.

The proposed collider tunnel alignment passes about 150 ft below the bottom of Lake Bardwell (see Volume IV, Appendix 5, Figure 5.7.1-4). Along this tunnel section, the rock formation consists of Taylor Marl from the lake bed to more than 100 ft below the proposed tunnel elevation. The Taylor Marl consists of shales and sandstones that have very low hydraulic permeability, ranging from 10^{-8} to 10^{-9} cm/s (see Volume IV, Appendix 5, Section 5.7.2.2). For this reason, no productive groundwaters are known to exist in this rock formation. Consequently, little water infiltration into the tunnel is expected in this section. Nevertheless, geotechnical investigations would be conducted prior to any tunnel construction to assure the safety of tunnel construction and operations and to prevent impacts on lake and groundwater levels.

If the Texas site is selected, the DOE would cooperate with State and Federal agencies responsible for water quality monitoring and water conservation practices. Recycling of SSC wastewater was not considered in the EIS, but is a possibility that could be included in the final SSC design (see Comment Response 1030.05). Additional data would be collected prior to any construction to establish adequate baseline data for assessing actual future impacts of the SSC construction and operations in order to provide the basis for modifying mitigative measures if needed. See EIS Volume I, Chapter 3, Section 3.6.

The purpose of the EIS is to compare the site alternatives in order to select the site for the SSC. This can be done on the basis of currently available information. Additional information would be collected and additional analyses would be performed for the selected site to address citizen concerns in more detail than necessary for the site comparison. These additional data and analyses will be documented in a Supplemental EIS for the selected site.

1030.16

Air pollutant emissions from motor vehicles used in commuting to and from the SSC site during construction and operations of the SSC have been included in the inventory predictions presented in EIS Volume IV, Appendix 8, Tables 8-56, 8-58, and 8-59. Emissions from secondary sources, i.e., those commercial and light industrial activities as well as motor vehicle commuting that will be generated to support the SSC and its employees, have not been estimated in the EIS. These secondary sources have not been specifically considered because their contribution is predicted to be small in comparison with current emissions, and because there will be an increase in the number of secondary sources in Ellis County regardless of whether or not the SSC is built there.

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It is shown in Table 8-59 that principal emissions (carbon monoxide, hydrocarbons, and nitrogen oxides) from the sources related to commuting and other off-site activities are small in relation to existing emissions in the area. These are emissions from additional primary sources. Emissions from additional secondary sources would be even less.

As noted in Volume I, Chapter 5, Sections 5.2.12.7, and 5.3.2.7, there are other projects planned for Ellis County; thus, the county will continue to experience rapid residential, commercial, and industrial development. This development will be supported by the same secondary commercial institutions and light industry that would support the SSC and its employees. Consequently, the increase in air pollutant emissions from the secondary sources supporting the SSC is not directly proportional to the increased population brought in by the SSC, but is somewhat less. Furthermore, the capability of a community to absorb the SSC without having to mount a major effort for expansion of its support services was one of the criteria used in choosing the sites for the SSC's Best Qualified List.

In light of the relatively small quantities of the emissions from additional commuting vehicles and the interrelationship between additional secondary sources which support both SSC and non-SSC activities, no modeling of air pollutant concentrations produced by the additional secondary sources was performed (Volume IV, Appendix 8, Section 8.3.4).

1030.17

The estimated number of people in the areas of possible noise impact has been determined by analysis of aerial photographs. The numbers have been used in estimating the magnitude of expected noise impact associated with each construction and operation noise source. The results for the Texas site are summarized as follows:

During construction the number of people exposed to outdoor noise levels greater than 70 dBA (L_{dn}), i.e., those who are within 630 ft of the center of an E or F area, is estimated to be 25. During this period, the number of people experiencing levels between 60 dBA and 70 dBA (L_{dn}) is estimated to be 314.

During operation of the SSC the number of people experiencing outdoor noise levels in the range of 55 dBA to 60 dBA (L_{dn}) is estimated to be 19.

The criterion for noise impact, i.e., percentile of people annoyed and degree of annoyance, was selected to provide a common basis for comparing the proposed sites (Volume I, Chapter 5, Table 5.1.4-2). Descriptions of possible mitigation measures are given at a level commensurate with site comparison.

There is not expected to be any significant impacts of noise on wildlife at the Texas site.

The Supplemental EIS will describe site-specific mitigation measures which can be implemented to reduce the extent of noise generation by, and propagation from, construction activities and operation of SSC facilities. Implementation of these measures will limit the number of people who will be annoyed by noise. Possible measures are described in EIS Volume I, Chapter 3, Section 3.6.3 and Volume IV, Appendix 9, Section 9.1.3.1.C 1.

Impacts from blasting and resulting vibration are discussed in Volume I, Chapter 5, Section 5.1.4.2, which also discusses airblast overpressure. A monitoring and mitigation plan is summarized in EIS Volume I, Chapter 3, Section 3.6 and outlined in Volume I, Chapter 5, Section 5.1.4.2.A.1.

1030.18

Should Texas be selected for the SSC, specific siting options for individual facilities will be studied in detail. At that time the need for mitigation can be more fully explored. Some of those studies will determine the flexibility of placement of SSC facilities into less sensitive habitats. Results of those considerations will be contained in the site-specific Supplemental EIS.

Mitigation for habitat losses, which could range from best management construction practices, restoration, or habitat acquisition for those facilities which cannot be relocated, would be accomplished in cooperation with Federal and State environmental agencies.

See EIS Volume I, Chapter 3, Section 3.6.

1030.19

See Comment Response 1467.04. The DOE believes the data is adequate for the proposed action of this EIS, which is to select a site for the SSC. Following the site selection decision and prior to a decision to construct and operate the SSC project, the DOE will prepare a more detailed supplemental EIS, where issues such as those raised in this comment will be addressed.

1030.20

Several indirect impacts of locating the SSC at the proposed Texas site are discussed in quantitative terms in EIS Volume IV, Appendix 14, Section 14.1.3.7. These include secondary employment, secondary effects on earnings, and secondary effects on population. The topics considered within the socioeconomic analysis include secondary (or indirect) effects within the total impacts projected. However, it should be noted that in some cases the indirect impacts are not presented as a separate item but are included within the cumulative totals such as in the case with secondary tax benefits.

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Community disruption is also examined in the EIS in both quantitative and qualitative terms. Impacts to public services and public finance are included (Volume IV, Appendix 14, Sections 14.1.3.7.C and 14.1.3.7.D), as are impacts to quality of life and social well being (Volume IV, Section 14.1.3.7.E). Among those who are most affected are suburban and rural residents whose land is required for the project and farm operators.

SSC-related population impacts are examined in the EIS for the entire Texas Region of Influence and for Ellis County (Volume IV, Appendix 14, Section 14.1.3.7.B). Changes are discussed in both absolute and relative terms. The latter compares project-related population impacts to the population of an area as a whole without the project to provide an appreciation of the degree of population change an area would experience -- and not to provide an inaccurate, minimized picture of these changes.

1030.21

Volume I, Chapter 4, Section 4.11.2 is a summary of the visual character and sensitivity of the seven site alternatives. Volume IV, Appendix 5, Section 5.7.13.3.B provides more information about the recreational resources in Texas that would be affected. Of concern are the views of facility F6 from Lake Bardwell, which appears to be a regionally important recreation resource. The visual impacts are summarized in Volume I, Chapter 5, Section 5.1.10.3.G and are discussed in greater detail in Volume IV, Appendix 16, Section 16.3.7. Industrial-like facilities are not visually compatible with recreation areas and F6 would appear distracting. There would be the potential for significant visual impacts. The mitigations suggested for consideration include berming around the facility and planting trees of a large initial size to hasten the screening effect (EIS Volume I, Chapter 3, Section 3.6). The visual impacts would be expected to endure for more than five years. Other design guidelines, as suggested relative to F3, could be applied to F6. If Texas is chosen as the selected site, more specific mitigation planning concerning scenic and visual impacts will be evaluated in the Supplemental EIS.

1031.01

Comment noted.

1031.02

Comment Responses 4.03 and 564.11 address aspects of prior growth experienced in Morgan County in general, and Fort Morgan and Brush in particular. Regardless of the reasons for relatively little housing construction in Morgan County between 1980 and 1987, the fact remains that an annual average of less than 60 units was constructed in the county during these years (also see Comment Responses 562.06 and 578.07).

1031.03

See Comment Response 1068.71.

1031.04

See Comment Response 574.04 and the second paragraph of Comment Response 578.07.

1032.01

Comment noted.

1032.02

Comment noted.

1032.03

See Comment Response 710.01.

1032.04

See Comment Response 1126.05. The DOE attempted to notify all potentially affected landowners at all seven proposed sites prior to issuance of the DEIS (see Volume III, Chapter 2).

1032.05

See Comment Response 865.02.

1032.06

Comment noted.

1033.01

Comment noted.

1033.02

The DOE is committed to construct and operate the SSC in compliance with applicable statutes and regulations (EIS Volume I, Chapter 6). A regulatory compliance plan will be prepared by the DOE for the selected site prior to construction.

The proposed layout of the SSC is based on a generic conceptual design provided in the Invitation for Site Proposals (DOE/ER-0315). The locations, dimensions and layouts for facilities and areas will be reevaluated after a site is selected. Modifications to the conceptual design, or to the proposed mitigations, may be implemented, as necessary, to conform with the site-specific conditions and criteria of the site selected for the SSC (see EIS Volume I, Chapter 3, Section 3.6).

100110503358832

1033.03

If the proposed Texas site is selected for the SSC, the DOE will work closely with SCS, the Texas National Research Laboratory Commission and affected parties on suitable alternative locations for floodwater retarding structures where necessary.

1034.01

Comment noted.

1035.01

Comment noted.

1035.02

Comment noted.

1035.03

If Tennessee is selected as the SSC site, site-specific studies would be completed to aid in minimizing potential adverse environmental impacts. These efforts will be reported in the Supplemental EIS for the selected site.

1035.04

The environmental consequences and proposed mitigative measures related to the construction and operations of the SSC are summarized in EIS Volume I, Chapter 3 and Chapter 5. Detailed water resources assessments for the proposed Tennessee site are provided in Volume IV, Appendix 7, Sections 7.1.3.6 (surface water) and 7.2.3.6 (groundwater), and a detailed air quality assessment is presented in Volume IV, Appendix 8, Section 8.4.6.

1035.05

Good construction management practices will be followed wherever the SSC is sited. See EIS Volume IV, Appendix 1. See Volume I, Chapter 6 for the DOE's policy concerning State laws and regulations.

1035.06

Comments noted.

1035.07

A surface water quality assessment for the proposed Tennessee site is presented in EIS Volume IV, Appendix 7, Section 7.1.3.6.F. The disposition of spoils at the site and construction of associated catchment basins are discussed in Volume IV, Appendix 10, Section 10.2.3.6.

100110503358833

Impacts to public water supplies in Tennessee are discussed in Volume IV, Appendix 7, Section 7.1.3.6.G. Well closures at the Tennessee site and corresponding plans for restoration of removed water supplies are addressed in Appendix 7, Section 7.2.3.6.A.6.

1035.08

Comments noted.

1036.01

EIS Volume I, Chapters 3, 4, and 5 and Volume IV, Appendix 11 have been revised regarding impacts on the desert tortoise and suggested mitigative measures. See also Comment Response 1036.09.

Information provided to the DOE by the USFWS (see Volume IV, Appendix 11, Attachment A), continues to designate the desert tortoise a candidate species (Category 2). Recommendations for changing the species to threatened or endangered status have not yet resulted in such a listing. However, the DOE will continue to consider input on the desert tortoise if the proposed Arizona site is selected. If the Arizona site is selected and the species is redesignated as threatened or endangered, the DOE will conduct detailed field surveys and enter into consultation with the USFWS under Section 7 of the Endangered Species Act.

1036.02

Corrections to the references for Section 5.1.9 of EIS Volume IV, Appendix 5 are included in the Errata for Appendix 5. All citations used in the text are included.

1036.03

The areas of desert tortoise habitat identified in the EIS Volume IV, Appendix 5, Figure 5.1.9-2 are correctly identified as areas of Arizona Upland scrub association in Figure 5.1.9-3. These areas include the mountain areas within and adjacent to the ring.

1036.04

The measured density of desert tortoises has been corrected to 57 tortoises per mi^2 in the Errata to EIS Volume IV, Appendix 5.

1036.05

Additional habitat for the desert tortoise may be present in the vicinity of the proposed SSC site. If the Arizona site is selected, detailed studies of the desert tortoise, in consultation with the U.S. Fish and Wildlife Service, would be conducted to locate and delineate populations and to evaluate the effects on the species that may result from site development. Based on this information, final plans could be

formulated to avoid or mitigate any adverse impacts. (EIS Volume I, Chapter 3, Section 3.6.) Results of this work will be addressed in the Supplemental EIS if Arizona is the selected site for the SSC.

1036.06

EIS Volume IV, Appendix 11, Section 11.3.1.2 has been revised to better explain the natural history of the desert tortoise relative to breeding requirements. These changes included the locations of nests and age at sexual maturity. The "mountain tortoise" referenced to in the comment is a population of desert tortoises occurring in mountain habitats.

1036.07

Mitigative measures for wildlife at the Arizona site are discussed in EIS Volume 1, Chapter 3, Section 3.6.3 and Chapter 5, Section 5.1.5.2.

1036.08

See Comment Response 1036.04.

1036.09

EIS Volume IV, Appendix 11, Section 11.3.1.2 has been revised to eliminate the reference to the BLM mitigation procedures. Additional mitigation measures have been summarized in EIS Volume I, Chapter 3, Section 3.6 and incorporated in Volume I, Chapter 5, Section 5.1.5.B.1 and Volume IV, Appendix 11 and will be developed in detail for the Supplemental EIS if the Arizona site is selected.

1036.10

BLM provided information to the DOE stating that these plots have been established to evaluate the effects of grazing on populations of the tortoise. The BLM is considering permanent long-term plots that may be used to determine additional information such as that suggested by the commenter.

Additional statements with regard to the importance of the Maricopa Mountain population of desert tortoises have been incorporated into the EIS Volume I, Chapter 5, Section 5.1.5.2.A and Volume IV, Appendix 11.

1036.11

EIS Volume IV, Appendix 11 and Volume I, Chapter 5, Section 5.2 have been revised to address specifically impacts of ancillary facilities related to SSC construction and operations, including facilities bringing water, electricity, and transportation to the site and peripheral areas.

1036.12

EIS Appendix 11, Section 11.3.1.2 has been revised to indicate that construction noises and vibrations may potentially result in loss of hearing in reptiles and that construction disturbances may draw reptiles from their burrows and result in mortality due to desiccation and heat stress.

If the Arizona site is selected for further investigation, additional research and field study would be conducted to determine the effects of project development on sensitive species like the desert tortoise. Resultant information would be used as input in the planning and design phases to develop and implement adequate mitigative measures. Also see EIS Volume I, Chapter 3, Section 3.6.

1036.13

Revised mitigative measures identified in EIS Volume IV, Appendix 11 include construction of barriers to control movement in dangerous areas and construction of safe corridors around hazards to protect the desert tortoise. The use of fencing in tortoise habitat would be evaluated further during final site design to meet these considerations. Also, see EIS Volume I, Chapter 3, Section 3.6.

1036.14

See Comment Response 1036.09.

1036.15

Information provided by the commenter has been used to revise the mitigation of impacts to the desert tortoise in EIS Volume 1, Chapter 5, Section 5.1.5.2.A and Volume IV, Appendix II, Section 11.2.3.1.2. High activity periods of March-May and July-October were identified as times to avoid high density tortoise habitat.

1036.16

See Comment Response 1036.09.

1036.17

See Comment Response 1036.09.

1036.18

See Comment Response 1036.09.

1036.19

Mitigative measures suggested by the commenter, including compensation for habitat lost, have been considered in the revision of the EIS. Based on information provided by this and other commenters concerning tortoise biology distribution and habitat requirements, revised impact mitigation has been provided in EIS Volume I, Chapter 5, Section 5.1.5.B.1 and Volume IV, Appendix 11, Section 11.3.1.2. The actual means of habitat compensation would be developed in consultation with the appropriate Federal and State wildlife agencies and reported in the Supplemental EIS if the proposed Arizona site is selected.

1036.20

Because the desert tortoise is a candidate species for listing under the Endangered Species Act of 1973, as amended, the DOE will consider the species and its habitat in plans for site development in the event the proposed Arizona site is selected. Included in this consideration will be consultation with the U.S. Fish and Wildlife Service (USFWS) regarding the magnitude and duration of potential impacts to the species, as well as appropriate mitigative measures (see EIS Volume I, Chapter 3, Section 3.6). Compensation for habitat lost would be evaluated along with other potential methods. If required, the DOE will coordinate habitat compensation with the regional offices of the USFWS and the Bureau of Land Management. These and other detailed mitigation measures will be addressed in the Supplemental EIS.

1036.21

Comment noted.

1037.01

Comment noted.

1038.01

Comment noted.

1039.01

Project-related impacts as a result of locating the SSC at the proposed Texas site are examined for the Texas Region of Influence and for Ellis County. These impacts are not examined for Waxahachie in particular, although many of the changes anticipated to occur in Ellis County should approximate those anticipated in Waxahachie itself (see EIS Volume IV, Appendix 14, Section 14.1.3.7).

Socioeconomic impacts are expected to result as a direct or indirect consequence of project-related growth in population. Most of the population increase anticipated for Ellis County is expected to occur in Waxahachie: an additional 2,149 persons are expected to reside in

Waxahachie at the peak of SSC construction (in 1992), decreasing to 1,865 persons by the first year of full operations (in 2000, see EIS Volume IV, Appendix 14, Section 14.1.3.7.B). These increases are roughly 10 to 12 percent beyond the current population of the community and would generate impacts on public services, public finance, and traffic. However, all of these impacts will not necessarily be negative. Economic development would accompany such growth, including increased employment (both directly and indirectly related to the project), higher salaries, and a growing tax base. Moreover, once a site is chosen for the SSC, specific steps would be taken to mitigate any adverse impacts expected to accompany the project.

1039.02

See Comment Response 35.02.

1039.03

Impacts to existing roads and highways during construction of SSC access roads are addressed in EIS Volume IV, Appendix 14, Section 14.2.1.3.

As stated in EIS Volume IV, Appendix 14, Section 14.2.1.3 G.1.c, the population in Ellis County is expected to increase by approximately 3 percent during construction and 2 percent during operations. This population increase may require the construction of new developments and new roads. This may impact some additional existing roads.

1039.04

Population growth may cause social disruption in communities due to impacts on public services such as police, fire departments and social service agencies. The magnitude of the impact is, however, difficult to predict. To some extent, a rise in the crime rate is a direct result of the increase in the community size.

1039.05

See Comment Response 392.03.

1039.06

EIS Volume IV, Appendix 9, Section 9.2.2.1.C.1 states that blasting will be regulated to prevent damage.

1039.07

See Comment Response 880.04.

1039.08

The observation regarding the need to relocate the community of Boz is correct according to the State proposal. The acreage of permanently removed farmlands is listed in EIS Volume I, Chapter 5, Section 5.1.7.2. The relocations that may be required are the responsibility of the proposing states (see EIS Volume IV, Appendix 4, Section 4.3.2.7).

1039.09

Comment noted.

1039.10

See Comment Responses 228.04 and 1467.03.

1039.11

Comment noted.

1040.01

Comment noted.

1041.01

Comments noted.

1041.02

Comments noted.

1041.03

See Comment Response 440.02.

1041.04

Comments noted. These criteria were applied during the site selection process and were summarized in EIS Volume III, Chapter 1.

1041.05

Comments noted.

1041.06

Comments noted.

1042.01

Comment noted.

1043.01

Comments noted.

1043.02

Comment noted. The text in EIS Volume IV, Appendix 5, Section 5.5.10.1.D has been amended in the Errata to incorporate the information provided.

1043.03

Comment noted. EIS Volume IV, Appendix 5, Section 5.5.10.1.D has been corrected in the Errata to include the information provided.

1043.04

Comment noted. EIS Volume IV, Appendix 5, Section 5.5.10.1.D has been corrected in the Errata to include the information provided.

1043.05

EIS Volume IV, Appendix 5, Section 5.5.10.1.F has been amended to incorporate the information provided.

1043.06

EIS Volume IV, Appendix 5, Section 5.5.10.1.D has been corrected in the Errata to incorporate the information provided. See Comment Response 1043.02.

1043.07

The sentence referenced has been corrected in the Errata as suggested for EIS Volume IV, Appendix 5, Section 5.5.10.2.B.1.

1043.08

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.1.b has been corrected in the Errata as suggested.

1043.09

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.1.d.2 has been amended as suggested.

1043.10

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.1.d.2 has been amended as suggested.

1043.11

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.1.d.2 has been amended as suggested.

1043.12

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.1.d.2 has been amended as suggested.

1043.13

EIS Volume IV, Appendix 5, Section 5.5.10.2 has been amended.

1043.14

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.1.e has been amended.

1043.15

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.2.a has been corrected in the Errata as suggested.

1043.16

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.2.a has been corrected in the Errata as suggested.

1043.17

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.2.a has been corrected in the Errata as suggested.

1043.18

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.2.a has been corrected in the Errata as suggested.

1043.19

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.2.a has been corrected in the Errata as suggested.

1043.20

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.2.a has been corrected in the Errata as suggested.

1043.21

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.3.a has been corrected in the Errata as suggested.

100110503358841

1043.22

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.3.a has been corrected in the Errata as suggested.

1043.23

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.3.a has been corrected in the Errata as suggested.

1043.24

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.3.a has been corrected in the Errata as suggested.

1043.25

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.3.a has been corrected in the Errata as suggested.

1043.26

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.4.a has been corrected in the Errata as suggested.

1043.27

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.4.a has been corrected in the Errata as suggested.

1043.28

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.4.a has been corrected in the Errata as suggested.

1043.29

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.4.a has been corrected in the Errata as suggested.

1043.30

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.4.a has been corrected in the Errata as suggested.

1043.31

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.4.a has been corrected in the Errata as suggested.

1043.32

EIS Volume IV, Appendix 5, Section 5.5.10.2.B.4.a has been corrected in the Errata as suggested.

1043.33

Comments noted.

1043.34

The text in EIS Volume IV, Appendix 5, Section 5.5.2.1 has been corrected in the Errata based on your comment.

1043.35

The comment is correct. According to Administrative Code 15 NCAC 2B.0200 - Classification and Water Quality Standards applicable to surface waters of North Carolina (State of North Carolina Department of Natural Resources and Community Development, Division of Environmental Management, 1988), quantitative standards for ambient turbidity do not exist. Accordingly, EIS Volume I, Chapter 5, Table 5.5.2-3 and Section 5.5.2.1.B have been revised.

1043.36

The water quality data presented in Table 5.5.2-3 of EIS Volume IV, Appendix 5 was derived from the U.S. Environmental Protection Agency STORET Data Base, Stations J1210000, 00100000, N4515000, N4600000, J1070000, and J1090000. The mathematical procedure mentioned in this comment is statistically unbiased and does not necessarily make lead and mercury measurements exceed water quality standards.

1043.37

The State of North Carolina provided supplementary information in response to inquiries from the DOE in August 1988. The details of this information include the use of land application systems (septic field or spray irrigation). The supplementary information is included in the EIS (see EIS Volume IV, Appendix 10, Section 10.3.3.1 E.1). Volume IV, Appendix 7, Section 7.1.3.5.F has been revised to reflect the above change.

1043.38

EIS Volume IV, Appendix 7, Section 7.1.3.5 has been revised in response to your comment.

1043.39

See Comment Response 428.15.

1043.40

Because the air quality assessment did not use five years of meteorological data, the highest model-predicted concentration was used along with the highest measured background concentration. This adds conservatism to the worst-case analysis. All sites were treated equally in this respect (see EIS Volume IV, Appendix 8).

1043.41

See Comment Response 428.15.

1043.42

The EIS has been changed in Volume I, Chapter 5, Section 5.1.3.2, in Volume IV, Appendix 5, Section 5.5.4.2, and in Volume IV, Appendix 8, Table 8-41 to acknowledge the 150 $\mu g/m^3$ 24-hr primary TSP standard in North Carolina.

1043.43

The Errata to EIS Volume IV, Appendix 5 (North Carolina) contain a revised Table 5.5.4-4 and Figure 5.5.4-1 reflecting the latest emissions point source information.

1043.44

The DOE agrees with this comment. The air quality data for North Carolina (at the Durham site, 1985) contained in EIS Volume IV, Appendix 8, Table 8-41 is not representative of expected background concentrations in the vicinity of the proposed North Carolina SSC site. This table has been revised accordingly.

1043.45

See Comment Response 1548.63.

1043.46

This statement is consistent with the EIS. See Volume I, Chapter 3, Table 3.2 for an estimation of the total acreage required for spoils disposal and wastewater evaporation ponds.

1043.47

Discussions regarding disturbed habitats at the North Carolina site resulting from ancillary facilities, including pipelines, transmission lines, and roads, are presented in Volume IV, Appendix 11, Section 11.3.5.4.A. The actual amount of disturbed habitat resulting from these facilities would vary and cannot be estimated more accurately until a final design is developed.

1043.48

The DOE estimates that 53 wetlands totaling 151 acres occur in areas associated with surface facilities at the proposed site in North Carolina (see revised EIS Volume I, Chapter 5, Section 5.1.5.3, and Volume IV, Appendix 11, Section 11.3.5.3). Of this total, 64.9 acres are comprised of palustrine forest wetlands. Construction of SSC surface facilities in North Carolina could affect 44.4 acres of wetlands (Volume IV, Appendix 11, Table 11.3.5.3-1), including 16.2 acres of palustrine forested acres.

An additional 840 acres of land could be impacted from construction of access roads and gas and water pipelines. Overall wetland acreage and the acreage of palustrine forested wetlands included in this total have not been determined. More detailed information concerning wetlands in this total, as well as potential impacts associated with the construction of ancillary facilities (and future sites such as area C and the J sites), and the mitigation measures to minimize these impacts will be discussed in the site-specific Supplemental EIS.

1043.49

The discussion of disturbed areas in the EIS has been revised. In North Carolina, it is estimated that 1,107 acres would be permanently disturbed by project buildings and support facilities, and an additional 807 acres would be disturbed by project construction (EIS Volume I, Chapter 3, Table 3-2). These figures assume that the injector facility will be constructed by cut-and-cover method. For a discussion of the disturbed areas in North Carolina, please refer to Volume IV, Appendix 11, Section 11.3.5. Should North Carolina be selected for the SSC, an extensive study on the plans for the injector facility and its method of construction will be conducted for the final design. A more detailed estimate of anticipated disturbed acreage will be developed in the Supplemental EIS for the selected site.

1043.50

If North Carolina is selected as the SSC project site, decisions regarding the salvage potential of cut timber will have to be made through contractual negotiations for the construction phase. As noted in EIS Volume I, the DOE recognized that a more detailed site-specific review will be required under NEPA prior to a final decision on the construction and operations of the proposed SSC. This more detailed review will be provided in the Supplemental EIS.

1043.51

The DOE contractor would be instructed to minimize, to the extent possible, damage to trees which are outside the immediate construction zone. (EIS Volume I, Chapter 3, Section 3.6.) This could be done by marking or flagging trees outside the construction area and instructing construction workers to avoid damage to the marked trees.

100110503358845

1043.52

Comment noted.

1043.53

The comment correctly notes the figures stated in the EIS, Volume I, Chapter 3, Section 3.4, Table 3-5.

1043.54

There should be no change or disruption to surface land use in stratified fee areas. With the exception of land surface that would be required for facilities and support uses, the DOE would expect to maintain natural conditions to the extent practical.

1043.55

The DOE is committed to working with all affected State agencies to develop the Regulatory Compliance Plan for the SSC. Provisions for minimizing impacts on forest resources would be included in the plan.

1043.56

Comments noted.

1043.57

Volume I, Chapter 5 of the EIS includes discussions of secondary impacts, including the effects of erosion, water quality changes, and habitat destruction of wildlife, in a manner consistent with the site selection purpose of the document. Should North Carolina be selected as the proposed site for the SSC, the EIS Supplement would include further analyses of secondary impacts that depend on site-specific project design.

1043.58

See Comment Response 734.01.

1043.59

EIS Volume I, Chapter 3, Section 3.7.10 and information supporting the accompanying table have been revised in the Errata to include a discussion of cumulative impacts associated with land use in North Carolina. Volume IV, Appendix 13, Section 13.1 presents an assessment of SSC site-related land use changes, and an evaluation of development implications at the project level. This includes a discussion of development implications in the Butner area. Volume IV, Appendix 13, Section 13.1.3.5 presents a development scenario that addresses secondary growth-including impacts to the region surrounding the North Carolina SSC site. Volume IV, Appendix 13, Section 13.1.4 presents a discussion of the cumulative impacts of the project in a larger Region of Influence.

100110503358846

EIS Volume IV, Appendix 5, Section 5.5.10.1.F discussed both Durham and Person Counties' future land use plans, which contain provisions to protect natural areas as part of their growth management polices. (See Comment Response 384.02 for a discussion of the DOE policy on the need for and value of establishing intergovernmental relationships.)

1043.60

EIS Volume I, Chapter 4, Table 4-16 has been revised.

1043.61

The information that harperella has been designated a proposed endangered species has been clarified in Volume IV, Appendix 11, Section 11.3.5.2 and Volume I, Chapter 4, Section 4.7.4 of the EIS.

1043.62

EIS Volume I, Chapter 4, Section 4.7.4 has been revised, as suggested.

1043.63

See Comment Response 1043.62.

1043.64

See Comment Response 1043.62.

1043.65

See Comment Response 1043.62.

1043.66

See Comment Response 1043.62.

1043.67

EIS Volume I, Chapter 4, Section 4.7 has been revised to incorporate these changes.

1043.68

Statements in EIS Volume I, Chapter 4 referring to the population status of the Roanoke bass have been corrected to indicate that the species occurs in other areas besides the headwaters of streams in the proposed North Carolina site.

1043.69

See Comment Response 1043.78.

1043.70

The revised table in EIS Volume I, Chapter 5, Section 5.1.7.2 lists the estimated total prime and important farmland permanently removed from production by the SSC project. The Soil Conservation Service estimates 4,374 acres of prime farmland and 2,265 acres of important farmland in the project area. This would mean that 630 acres of prime farmland and 325 acres of important farmland would be permanently removed from production. See also revised Volume I, Chapter 4, Section 4.8.6 and the Errata to Volume IV, Appendix 13 for more information on prime farmland.

1043.71

EIS Volume I, Chapter 5, Section 5.6-8 has been revised to show natural and depletable resource use for the seven site alternatives. Table 5.6-4 summarizes the comparisons.

1043.72

EIS Volume IV, Appendix 5, Section 5.5.9.5.A has been corrected in the Errata to indicate that population data is available from the North Carolina Natural Heritage Program.

1043.73

See Comment Response 1043.72.

1043.74

See Comment Response 1043.72.

1043.75

See Comment Response 1043.72.

1043.76

EIS Volume IV, Appendix 5, Table 5.5.9-3 has been corrected in the Errata for Appendix 5.

1043.77

The omission is noted, and Hinton (1988) has been included in the reference list in EIS Volume IV, Appendix 5 and Volume IV, Appendix 16.

1043.78

The map discussed in the comment has been corrected to show Mayo Reservoir. The map appears in EIS Volume IV, Appendix 5, Section 5.5.2.1, Volume IV, Appendix 7, Section 7.1.3.5, and Volume I, Chapter 5, Section 5.1.2.2.

100110503358848

1043.79

References in EIS Volume IV, Appendix 11 to the ancient floater have been changed to the dwarf wedge mussel.

1043.80

Water requirements for the SSC project and additional off-site domestic use can be met by existing reservoirs in the project vicinity, which have adequate excess capacities, as discussed in the revised EIS (Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G). The project would not use large fractions of excess capacities of any reservoir proposed for supplying the project facilities.

As excess reservoir capacities would not be used, no serious impacts to aquatic species related to water withdrawals would be anticipated. If North Carolina is selected as the site, this subject would be addressed in greater detail in the Supplemental EIS.

Also, see EIS Volume I, Tables 1-1, 3-3, and 3-7, and Sections 3.7.3 and 5.2.3; and Volume IV, Appendix 5, Section 5.5.2.1.C.

1043.81

The wetlands assessment presented in the EIS has been revised to include a reevaluation of wetlands location, type and quality (see EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.5.3, and Volume IV, Appendix 11, Section 11.3.5.3). The DOE believes that the surveys and research performed and the information on species diversity accumulated to date is adequate.

More detailed studies, including evaluations of species diversity, would be conducted for the selected site and would be presented in the Supplemental EIS for the selected SSC site.

1043.82

EIS Volume I, Chapter 1, Table 1-1 indicates that, since there are no known Federally threatened or endangered species in the vicinity of the proposed North Carolina site, construction of the facility would not result in a loss of preferred habitat for such species.

1043.83

See Comment Response 754.06 and EIS Volume I, Chapter 6, Section 6.2.1.

1043.84

The wastewater generated by the SSC project will be treated and discharged in compliance with specific NPDES permits and other applicable regulations (EIS Volume I, Chapter 6). The DOE will work with designated State agencies to assure that treated and discharged wastewater will not threaten sensitive plant and animal communities.

100110503358849

1043.85

Comment noted.

1043.86

Disposal site activities are described in the EIS Volume IV, Appendix 10, Section 10.2.3.5. This section discusses the disposal methods for the excavated materials, locations of the sites, and mitigative measures. In North Carolina approximately 315 acres of total land will be utilized at 17 disposed sites. Mitigative measures which will reduce the long-term impact on wildlife include preservation and replacement of topsoil, followed by revegetation. These mitigation strategies will be described in greater detail in the Supplemental EIS. (Also, see EIS Volume I, Chapter 3, Section 3.6.)

1043.87

Please refer to Volume IV, Appendix 10, Section 10.2.3.5. The second paragraph from the bottom reads, "At each disposal site, the topsoil would be removed and stockpiled on the site and later used to cover the excavated earth material from the SSC site and serve as a root bed for revegetation. Grading of the spoils pile and revegetation will prevent erosion." Standard construction methods preventing erosion to streams would be implemented.

1043.88

Methods for controlling water inflow into the tunnel are discussed in Comment Response 1513.53. By reducing the inflow to achievable low rates, it will be possible to avoid local lowering of the water table, and thereby avoid impacts on streams and biota.

1043.89

The U.S. Fish and Wildlife Service has indicated that there is no habitat for Federally listed species in the North Carolina project area. The EIS lists several candidate species, as well as state-protected species, that may utilize habitats in the vicinity of the proposed North Carolina site. Preliminary surveys have been conducted, and the results have been summarized in EIS Volume IV, Appendix 11. In the event the North Carolina site is the selected site, more detailed surveys of all habitats that may be affected by project activities would be conducted. The surveys would confirm the presence or absence of protected species and evaluate potentially adverse effects. This information would be used during the planning and design phases to develop mitigative measures (EIS Volume I, Chapter 3, Section 3.6). The DOE would also consult with the USFWS and State agencies on planned mitigation.

1043.90

EIS Volume I, Chapter 3, Table 3-2 indicates that 807 acres would be temporarily disturbed and 1,107 acres would be permanently disturbed if the SSC were constructed at the North Carolina site. Potential impacts on sensitive species and habitats would depend on final design considerations for and placement of specific facilities and would be evaluated prior to the construction phases. These issues are addressed in EIS Volume I, Chapter 3, Section 3.6, and Volume IV, Appendix 11, Sections 11.3.5.1 and 11.3.5.3.C. Surveys for protected species would be initiated if North Carolina is selected for further investigation. If such species are present and could be affected by the SSC, formal consultation with the U.S. Fish and Wildlife Service and with State agencies regarding sensitive species and habitats would take place in compliance with Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543). A biological assessment would be prepared to plan mitigation measures in order to avoid or reduce adverse impacts. A review of these measures will be included in the Supplemental EIS.

1043.91

See Comment Response 1548.78.

1043.92

See Comment Response 1043.89.

1043.93

The Soil Conservation Service estimated that 955 acres of prime and important farmland would be permanently converted if the SSC were sited in North Carolina. EIS Volume I, Chapter 3, Section 3.7.11 states that this acreage represents less than 1 percent of the State inventory, and that it is well below the average lost each year to development. For more information on prime and important farmland, see EIS Volume I, Chapter 4, Section 4.8.6; Chapter 5, Section 5.1.7.2; and Volume IV, Appendix 13.

Conversion of farmland means that farmland will be put to other uses, including return to native vegetation. This would result in longer-term carbon dioxide fixation than with agricultural crops. This longer-term storage of carbon dioxide would tend to decrease rather than increase the greenhouse effect. Therefore no mitigation such as suggested in the comment to offset the greenhouse effect is required.

1043.94

EIS Volume I, Chapter 5, Sections 5.1.5 and 5.2 discuss the impacts of the proposed action and ancillary facilities, including roads and transmission lines, on sensitive wetlands habitats and aquatic fauna associated with the three drainage basins in the proposed North Carolina site area. Included are discussions of best engineering measures used

to control and mitigate construction impacts. The DOE has committed, in Volume I, Chapter 3, Section 3.6, to avoid construction in wetlands and other sensitive areas to the extent practicable. As suggested by commenter, a potentially effective measure of protecting aquatic resources in the site area would be to purchase and protect additional such habitats to compensate for those adversely affected.

Should the North Carolina site be selected for the SSC, all sensitive habitats potentially affected by project development would be surveyed and evaluated for adverse impacts. At that time, the proposed mitigation measures would be reevaluated and revised to be site- and activity-specific. It is expected that State wildlife and fisheries personnel would have a role in reviewing and modifying, as necessary, any construction and mitigation plans to protect valuable aquatic resources. The results would be reported in a Supplemental EIS. During site preparation, engineering control and mitigation measures would be monitored for effectiveness and modified to be more effective or to avoid secondary impacts.

1043.95

EIS Volumes I and IV of the DEIS incorrectly state or imply that regional exceedances of the carbon monoxide (CO) National Ambient Air Quality Standards (NAAQS) will result from SSC-related emissions. The analysis in the EIS shows that with the application of appropriate mitigation all standards are met. The impact of SSC-related CO emissions (e.g., vehicular site and highway traffic) would be relatively small in comparison to the existing source impacts and extend over a large area. Background CO concentrations in areas impacted by SSC-related emissions are expected to be well below NAAQS. The CO due to vehicle miles travelled during both construction and operations have been added to CO emissions from other SSC-related activities and compared to the existing CO inventory for the host counties in EIS Volume IV, Appendix 8, Table 8-43. Carbon monoxide increases will be 1.33 percent during construction and 0.45 percent during operations. Hydrocarbon emission increases (as a precursor to ozone) will be 0.41 percent during construction and 0.10 percent during operations. These increases are not significant.

1043.96

The two sentences to which the commenter refers are not in contradiction. The statement regarding the edge effect refers to microhabitat border areas. The statement on the absence of major transition zones refers to transitions between larger physiographic provinces.

EIS Volume IV, Appendix 5, Section 5.5.9.6.C has been corrected in the Errata to state the following, "The headwaters of the three streams are underlain by basalt rocks in a region generally underlain by granite formations. The underlying rock affects stream chemistry and supports flora and fauna different from adjacent areas."

100110503358852

1043.97

See Comment Response 1043.100.

1043.98

The appropriate corrections as suggested by the comment are reflected in the EIS and text modified accordingly in EIS Volume I, Chapter 4, Section 4.7.6; Volume I, Chapter 5, Section 5.1.5.4.E; and Volume IV, Appendix 11, Section 11.3.5.4.

1043.99

It is appropriate to compare states based on the numbers of State-listed threatened or endangered species thought to be present in the SSC site area. While differences in listing are in part a reflection of the history of law-making in each state, these species are important indicators of sensitive, rare, or diminishing habitats which could be impacted by SSC construction and operations. Volume I, Chapter 4, Section 4.7.4.2 has been revised to include the sentence, "These differences are due to the content of individual state laws, as well as differences in numbers of rare species."

1043.100

Results of the State of North Carolina's post-DEIS survey of creeks and rivers for listed and proposed species of freshwater mussels in the proposed SSC site area have been summarized in Final EIS Volume IV, Appendix 11, Section 11.3.5.2. The assessment of potential impacts to these and other threatened and endangered species has been revised as a result of this survey (Volume I, Chapter 5, Section 5.1.5.2.E).

1043.101

See Comment Response 1043.100.

1043.102

See Comment Response 1043.100.

1043.103

These comments are consistent with EIS Volume I, Chapter 5 and Volume IV, Appendix 11. See Comment Response 1043.100.

1043.104

If North Carolina is the selected site, the State's wildlife management agencies would have an active role in approving mitigation measures that would protect aquatic species from project-related impacts.

A Supplemental EIS will be prepared for the selected site to examine the affected resources and their relation to the facility layout in much greater detail.

1043.105

Sedimentation information for the North Flat River was not available for preparing this EIS. However, the impact of soil erosion and stream sedimentation caused by the SSC project would be mitigated by minimization of disturbed areas, rapid revegetation, and well-maintained sediment basins. With implementation of proper mitigative measures, the impacts are expected to range from negligible to measurable but would generally be short-term and insignificant. Detailed discussion of impact mitigations are presented in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.2.1 and Volume IV, Appendix 7, Section 7.1.2.2.D.2.

See also Comment Response 1043.100.

1043.106

See Comment Response 1043.100.

1043.107

See Comment Response 1043.100.

1043.108

See Comment Response 1043.100.

1043.109

In the period following preparation of the DEIS, the DOE initiated preliminary field surveys of the mussel populations of the rivers in the vicinity of the proposed North Carolina site. Results of these surveys were incorporated in the Final EIS. See EIS Volume IV, Appendix II, Section 11.3.5.2 and Volume I, Chapter 5 Section 5.1.5.2.E.

In the event the proposed North Carolina site is selected, more detailed site-specific surveys for protected species would be conducted. If the dwarf wedge mussel or any other species afforded legal protection are observed in areas likely to be affected by construction activities, appropriate mitigation would be evaluated and incorporated in the design. The tunnel ring itself is all underground and would pass under streams and rivers without impact. Surface and tunnel access facilities in all probability can be relocated during final design to avoid floodplains in close proximity to the streams. Where this adjustment is not practical, best engineering practices would be used to limit or reduce stream sedimentation, siltation, or chemical contamination.

1043.110

See Comment Response 1043.100.

1043.111

The "S" signifies a special status species; the key on Table 4-18 (Volume I, Chapter 4) has been corrected accordingly.

1043.112

Although there is no evidence that additional natural areas of concern for animal species are present in the proposed North Carolina SSC site area, there is the potential that they exist. If the North Carolina site is selected, additional surveys of ecological resources of the site area would be conducted and discussed in a Supplemental EIS. If sensitive natural areas are located, project design and site development will be modified to avoid such areas as much as practicable.

1043.113

The last sentence of Volume I, Chapter 4, Section 4.7.3.5 (formerly 4.7.5.5) has been modified as suggested by the commenter.

1043.114

While faunal associations can be predicted with considerable confidence based on the occurrence of specific habitat types, cultural resources do not occur with the same predictability. Therefore, in the absence of detailed surveys, animal populations can be projected with more certainty than can cultural resources.

1043.115

See Comment Response 1043.86.

1043.116

EIS Volume I, Chapter 5, Section 5.1.2.1 has been changed in response to the comment.

1043.117

Should North Carolina be selected as the site for the SSC, State wildlife personal would be contacted to assist in developing any roadway construction mitigation plans to protect valuable aquatic resources (EIS Volume I, Chapter 3, Section 3.6).

1043.118

See Comment Response 1043.109.

100110503358855

1043.119

Although exact information on specific water uses and delivery sites may not be available, an estimate of excess reservoir capacity can be made based on total water use and available volume. What is important is whether the excess capacity is sufficient to meet both direct and indirect demands of SSC construction and operations. If so, no impacts would be expected.

Additional data on water use have been collected and added to EIS Volume IV, Appendix 5, Section 5.5.2.1.C. The Little River Reservoir completed in early 1988 roughly doubles the safe yield of Durham's water supply. This new information has been included in the revised water supply assessment in the EIS (Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.2.3.5.G). The assessment indicates that water requirement for the SSC project and additional off-site domestic use can be met by existing reservoirs in the project vicinity, which have adequate excess capacities. The safe reservoir yields used in the evaluation were estimated for 20-yr drought conditions, i.e., a drought with an average recurrence interval of 20 years. The safe yields for a more severe drought would be less, but such yield data are not currently available.

1043.120

It is anticipated that the proposed North Carolina SSC water use would not affect reservoir minimum downstream release requirements. Water requirements for the SSC project and additional off-site domestic use can be met by existing reservoirs in the project vicinity, which have adequate excess capacities, as discussed in revised EIS Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G.

See also revised Tables 1-1, 3-3, and 3-7 and Sections 3.7.3 and 5.2.3 in Volume I; and Volume IV, Appendix 5, Section 5.5.2.1.C.

1043.121

The carbon monoxide (CO) due to vehicle miles traveled during both construction and operations have been added to CO emissions from other SSC-related activities and compared to the existing CO inventory for the host counties in EIS Volume IV, Appendix 8, Table 8-43. Carbon monoxide increases will be 1.33 percent during construction and 0.45 percent during operations.

1043.122

See Comment Response 1548.107.

1043.123

Best construction practices are comprised of many mitigation practices that have been developed for highway construction projects. See EIS Volume I, Chapter 3, Section 3.6 for a discussion of general mitigation measures that may be employed for this project. If North Carolina is selected as the site for the SSC, detailed mitigation plans specific to the Flat River slopes would need to be developed.

Once a site is selected for the SSC, a site-specific Supplemental EIS will be prepared that will focus in much greater detail on the affected resources and how the project would interact with them. Proposed mitigations would be developed in greater detail than is required for this site selection EIS.

1043.124

The text in the EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.5.2.E has been revised to properly show the known status of threatened and endangered species in the vicinity of the site. Should the North Carolina site be selected for the SSC, additional surveys and mitigative measure planning would be incorporated into the detailed Supplemental EIS.

1043.125

The paragraph in question in EIS Volume I, Chapter 5, Section 5.1.5.4.E.1.a has been changed to indicate that conversion of this habitat would be a long-term impact of the project.

1043.126

SSC impact on North Carolina fishery habitat is discussed in EIS Volume I, Section 5.1.5.B.5, and Volume IV, Appendix 11, Section 11.3.5. The commenter is correct in implying that siltation from road construction could adversely affect fisheries in the area. These impacts would be reduced by implementation of measures to control siltation. Possible mitigation measures are discussed in EIS Volume I, Chapter 3, Section 3.6 and Volume I, Section 5.1.2.1. Specific control measures would be addressed in the Supplemental EIS should the North Carolina site be selected.

1043.127

The second and third paragraphs of Comment Response 777.01 address aspects of anticipated in-migration to the North Carolina Region of Influence. Water resources and air quality impacts of this in-migration are presented in EIS Volume IV, Appendices 7, Section 7.1.3.5 and Appendix 8, Section 8.4.5, respectively.

1043.128

The actual locations that would be used for spoils disposal have yet to be precisely identified in North Carolina. The statement made in the spoils section of EIS Volume I, Chapter 5, Section 5.1.10.3 referred to visual impacts only.

The sentence has been clarified. Volume IV, Appendix 10, Table 10.2.3-7 indicates that all of the proposed disposal sites are 300-1,000 ft from wetlands. Standard construction practices would be employed to reduce runoff and erosion impacts from these sites. Potential mitigation measures to reduce off-site sedimentation are discussed in Volume I, Chapter 5, Section 5.1.2.1. Site-specific mitigation would be developed during the final design process should North Carolina be selected and would be addressed in a Supplemental EIS for the site.

1043.129

The statement is adequate for this site-selection EIS. If North Carolina is the selected site, a more detailed examination will be completed prior to preparation of a Supplemental EIS.

1043.130

The text has been changed in the Errata section of EIS Volume IV, Appendix 5 to indicate that little vegetation occurs in flowing waters, but animal life is diverse and abundant. These rivers are inhabited by many mollusk species, with four species, rare in North Carolina, present in the rivers and larger creeks. The area is, in fact, an important refuge for a large percentage of North Carolina's freshwater mussel species.

If North Carolina is the selected site for the SSC, additional studies would be conducted to investigate potentially impacted species. The results of these studies would be incorporated in the site-specific Supplemental EIS.

1043.131

The special concern species listed by the commenter, Villosa delumbis, Lampsilis cariosa, Lampsilis radiata, and Noturus furiosus, have been added to EIS Volume I, Chapter 4, Table 4-17. These species were identified as present in the site area by a recent survey conducted by the State of North Carolina. Results of this survey were used to revise EIS Volume IV, Appendix 11, Section 11.3.5.2, and the assessment of potential impacts to these and other threatened and endangered species has been revised in EIS Volume I, Chapter 5, Section 5.1.5.2.E.

1043.132

Siltation from project construction could adversely affect aquatic resources in the vicinity of the construction if mitigation measures are not employed. Impacts could include loss of fish spawning and nursery areas as well as reduction of the numbers or kinds of invertebrates.

However, the impact of soil erosion and sediment transport caused by the SSC project will be mitigated by minimizing disturbed areas and by providing rapid revegetation and well-maintained sediment basins. As stated in EIS Volume IV, Appendix 7, Section 7.1.3.5.D, except for a short reach of Knap of Reeds Creek, any residual impact will be short term and limited to the construction period only. Detailed discussions of impact mitigations are presented in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.2.1 and Volume IV, Appendix 7, Section 7.1.2.2.D.2.

1043.133

The pollution sources cited are potential sources that might impact surface water quality. However, the impacts can be significantly reduced by mitigative measures discussed in EIS Volume I, Chapter 3, Section 3.6; Volume I, Chapter 5, Section 5.1.2.3; and Volume IV, Appendix 7, Sections 7.1.2.2 and 7.1.3.5.F.

1043.134

Effluent discharged to receiving waters will be subject to the conditions of a NPDES permit. Permit conditions may specify concentration limits for pollutant discharges, monitoring requirements, and remedial responses expected for effluent exceedances. The permit conditions may be tailored for specific ecological conditions of the receiving waters and the downstream mixing zone. See EIS Volume IV, Appendix 7 for discussion of potential effluent treatments and Volume I, Chapter 6 for related Federal regulations regarding effluent discharge.

1043.135

There is sufficient information available on sensitive, unique, or unusual species in North Carolina to compare the effects of SSC project development with the other proposed sites. If the North Carolina site is selected, additional surveys of threatened and endangered species and the distribution of their habitats at the proposed site will be conducted.

1044.01

Comment noted.

1044.02

Comment noted.

100110503358859

1044.03

Comment noted.

1045.01

Comment noted.

1046.01

SSC-related population impacts were projected for the Michigan Region of Influence (ROI), and for Ingham, Jackson, Livingston, and Washtenaw Counties within the ROI (see EIS Volume IV, Appendix 14, Section 14.1.3.4.B). Population impacts were allocated to select subcounty areas, but not to the community of Mason.

As noted in the EIS, Ingham County (the county containing Mason) is anticipated to experience the greatest absolute increases in population with an impact of roughly 3,100 persons during the peak construction year in 1992, and 2,450 persons by the first year of full operation in the year 2000. Most of these impacts are anticipated to occur in Stockbridge and the Lansing metropolitan area; approximately 38 percent of the SSC-related population impact, in turn, is allocated to the remainder of Ingham County (EIS Volume IV, Appendix 14, Table 14.1.3.4-5). Although population increase in Mason was not examined separately, due to its proximity to the proposed SSC site, Mason would likely receive much of this remaining 38 percent, which is expected to comprise more than 1,150 persons in 1992.

Because specific population impacts on Mason were not projected in the EIS, the likelihood of developing problems associated with larger populations (so-called "urban area problems") is uncertain. It should be noted in general that many negative conditions accompanying growth can be minimized through careful planning. If the Michigan site is chosen for the SSC, mitigation measures could be considered to help accommodate projected growth in local communities and to limit associated negative impacts.

1046.02

See Comment Response 1022.05.

1046.03

Regarding groundwater use and localized groundwater overdraft in relation to the SSC project at the proposed Michigan site, see Comment Response 312.04, first paragraph.

1046.04

The majority of the residents in the region of the SSC site would be at distances of several hundred feet or more from road construction. At any specific residence location, the activity would occur only during normal daytime working hours. The noisiest phases of road construction (clearing, grubbing, and earthwork), which include the use of dozers, scrapers, and haul trucks, typically would be completed within approximately a 1-month period in the location of a specific homesite along the route. This road construction activity would be no different in character than any normal highway construction and maintenance activity.

During the tunnel-boring phases, spoils hauling trucks would be operating only during normal daytime working hours. Spoils hauling operations could peak (for only about a 2-month period) at a maximum of 288 truckloads per day of excavated materials, when six tunnel boring machines (TBM's) would operate simultaneously. All spoils hauling activity would be completed within a total period not exceeding 3 years. See EIS Volume IV, Appendix 9. See the second paragraph of the Response Comment 381.13 for a summary of construction noise impacts.

1046.05

See Comment Response 733.05, paragraph 1.

1046.06

Local economic and population growth resulting from the SSC and related development may exert a positive influence or could tend to depress land values in the area, depending on the local housing market situation and the residents' perceptions and attitudes. Whether land value effects will prove to be permanent or transitory may depend on the stability of these housing market conditions, perceptions, and attitudes over time. Careful planning can minimize many negative conditions associated with growth that may also contribute to the perceptions of land value (see EIS Volume IV, Appendix 14).

The cumulative net fiscal impact to all local government jurisdictions in Michigan would be negative during the first 2 to 3 years of project activity but would be positive thereafter. Annual net revenue gains during full operations would be derived from indirect tax revenue. This would come from taxes on purchases made by SSC workers and their families, income and property taxes paid by those workers, and various other sources of revenue (see Volume IV, Appendix 14).

Visual impacts and possible mitigations are discussed in EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 16. Specific mitigations will be addressed in the detailed design of the SSC and included in the Supplemental EIS for the selected site.

1046.07

Comment noted.

100110503358861

There would be unavoidable impacts to wildlife during the construction and operations of the SSC because of loss of habitat and human encroachment. However, the amount of fee simple land on which development and public access will be controlled can provide areas where wildlife can exist in an otherwise continually developing area. This is further discussed in EIS Volume IV, Appendix 11

1046.08

Comment noted.

1046.09

The Cady Centennial Farm is situated adjacent to the proposed Michigan SSC site. Construction of intermediate access E6 would occur within 1/4 mi of this residence (see EIS Volume IV, Appendix 15, Section 15.1.3.4.A.5). If Michigan is selected, mitigation measures will be taken in accordance with the State Historic Preservation Officer to see that efforts are made to avoid any direct impacts to historic structures.

1046.10

Research in the past has shown, in general, that those who stand to benefit from a project are more in favor of the project than those who do not stand to benefit. In-depth interviewing around the Michigan site (Stoffle et al. 1988 EIS Volume IV, Appendix 14, Section 14.1.3.4.E) tested the hypothesis that those having to sell their land to the State for the project would be more opposed to the project than those that would only have to sell stratified fee (subsurface rights). Table 4-3 of that report showed both groups neutral on the question, "Given the sacrifices and gains you may experience during the project, how do you feel about the proposed SSC project?" (no statistical test of differences on means was presented). This should be compared to data collected in a different fashion by the same researchers. This data showed more general support for the project has increased from 1987 to 1988 from 62 percent to 72 percent. This tends to support the idea that those that may lose land are not as supportive as those that are not adversely affected by the project. Support also varies by source of income and types of people.

The above cited research indicates general economic concerns focusing on property values, economic impact on household spending and income, economic impact on crop and livestock farm income, and economic impact on homes and farms.

1046.11

Comment noted.

1047.01

Comment noted.

100110503358862

1047.02

SSC-related effects on land values in the local communities will depend upon the individuals perceptions and attitudes. Local economic and population growth resulting from the SSC related development may exert a positive influence or could tend to depress land values in the area depending on the local housing market situation and the residents' perceptions and attitudes. Whether land value effects will provide to be permanent or transitory may depend in large measure on the stability of these conditions, perceptions, and attitudes over time. Careful planning can minimize many negative conditions associated with growth that may also contribute to the perceptions of land value.

It is probable that there will be a restriction only on water supply wells within approximately 150 ft of the SSC tunnel. No effects on groundwater quality or on groundwater levels are anticipated at the distance of your well from the tunnel. An increase in the regional groundwater overdraft is anticipated as a result of project water supply requirements but effects on individual wells will likely be limited. See EIS Volume IV, Appendix 7, Section 7.2.3.3 for discussion of groundwater use and groundwater quality impacts associated with the SSC project at the Illinois site.

1047.03

See Comment Responses 873.02 and 1047.02.

1047.04

Comment noted.

1048.01

Comment noted.

1049.01

Comments noted.

1049.02

Comment noted.

1050.01

Comment noted.

1050.02

Comment noted. The EIS discusses geologic hazards at the Tennessee site in Volume I, Chapter 4, Section 4.1.5. It states that surface geotechnical conditions that could be hazardous to construction if not properly handled, occur in small portions of the Tennessee site (karst features, landslide-prone slopes).

1050.03

Comment noted.

1050.04

Comment noted.

1051.01

Comment noted.

1051.02

Regarding the potential effects of SSC water use at the Michigan site, see EIS Volume IV, Appendix 7, Section 7.2.3.4 and Comment Response 312.04, first paragraph. Estimated direct and indirect (off-site domestic) water use requirements for the SSC at the proposed Michigan site are detailed in Volume IV, Appendix 7, Section 7.1.3.4, Tables 7-1 and 7-5.

1051.03

See Comment Response 284.02.

1051.04

Comment noted.

1052.01

See Comment Response 1043.78.

1052.02

EIS Volume IV, Appendix 5, Table 5.5.2-4 has been corrected in the Errata.

1052.03

EIS Volume IV, Appendix 7, Section 7.1.3.5 has been modified in the EIS.

1052.04

The recently completed Little River Reservoir, with a safe yield of about 24,000 acre-ft/yr, is now included in the discussion of Durham's water supply. Little River Reservoir and Lake Michie provide Durham with a combined safe yield of 47,500 acre-ft/yr and an available excess of about 21,700 acre-ft/yr (EIS Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5).

1052.05

See Comment Response 1052.04.

1052.06

See revised text in EIS Volume I, Chapter 5, Section 5.1.2.4.

1052.07

EIS Volume I, Chapter 3, Section 3.4.5 and Table 3-3 have been revised based on your comment.

1053.01

See Comment Response 4.04.

1053.02

Comment noted.

1054.01

Comments noted.

1055.01

All of the State proposers agree to comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, and the DOE relocation rules. These statutes and rules set minimum standards of assistance and compensation.

The necessary estates in real property were proposed to be acquired by negotiated agreement; only in the event of failure to reach agreement with a property owner would the property be acquired through the use of eminent domain proceedings. See EIS Volume IV, Appendix 4, Section 4.3.1.

1056.01

Comment noted.

1056.02

Comment noted.

1057.01

Comment noted.

1057.02

See Comment Response 979.02.

1057.03

See Comment Response 721.01. In addition, analysis in EIS Volume I, Chapter 5, Section 5.1.4, and Volume IV, Appendix 9, quantifies the number of residences and other sensitive noise receptors within highly

affected regions near E and F areas. This analysis utilized recent aerial photos and presents a more accurate distribution count than the figures presented in the DEIS.

1057.04

See Comment Response 1133.02.

1057.05

See Comment Response 1146.04.

1057.06

Due to its proximity, the retention pond for F2 service area is likely to discharge to Waubonsie Creek. Any discharge would be tested and treated, if necessary, to meet applicable NPDES permit requirements before discharge to Waubonsie Creek.

1058.01

Comments noted.

1058.02

See Comment Response 873.02.

1058.03

Comment noted.

1058.04

The observation is consistent with EIS Volume IV, Appendix 5, Section 5.4.10, Table 5.4.10-1. Facility F8 would be sited in White Oak Township in an area zoned agricultural-residential. The permitted uses for areas zoned as such do not include the proposed land use. It has been anticipated by the DOE that the SSC project may trigger zoning changes (see Volume IV, Appendix 13, Section 13.1.1); however, any regulatory adjustments to be made are the responsibility of the affected planning agency, in this case the White Oak Township.

1058.05

Property located along the ring in Section D is planned to be acquired in stratified fee (Volume IV, Appendix 4, 4.2.1). Service area F8 is anticipated to be approximately 500 ft x 500 ft, an area of about 5.7 acres. This area will be acquired in fee simple. Also, see Comment Response 880.04. The value attendant to potential oil production will be part of the property appraisal process. Also, see Comment Response 798.01.

1058.06

Data used in preparation of the EIS did not include generic pollution ranking or rating of states. Control of pollutants and their impacts are discussed in the EIS Volume I, Chapters 3 and 5, and Volume IV, Appendices 7-10 and 12.

1058.07

Comments noted.

1059.01

Comment noted.

1059.02

The information provided is a contribution to the land use database.

1059.03

This observation is consistent with EIS Volume IV, Appendix 14.

1059.04

Comment noted.

1060.01

Comment noted.

1060.02

EIS Volume IV, Appendix 13, Section 13.1.3.3 addresses land use issues. Table 13-3, found in that section, indicates that there is a minor degree of difference between land uses permitted in light-industrial zoned areas and those allowed in areas zoned for planned unit development/farming district. However, this finding does not suggest that E8 is compatible with the surrounding residential developments.

1060.03

The floodplain of Ferson Creek near parcels 64 and 72 would not be encroached by proposed SSC surface facilities and, therefore, is not specifically addressed in the EIS. Floodplain impact assessment is presented in EIS Volume I, Chapter 5, Section 5.1.2.2 and in Volume IV, Appendix 7, Section 7.1.3.3.C.

1060.04

The comment quotes potentially significant visual impacts associated with E8, as identified in EIS Volume IV, Appendix 16, Section 16.3.3.3.

Mitigation measures to reduce such long-term impacts were suggested in the same section and in Volume I, Chapter 3, Section 3.6.

Impacts on the quality of life during construction related to blasting, digging, hauling, and so on could be mitigated through measures discussed in Volume I, Chapter 3, Section 3.6.3. These measures include: limiting the charge weight, limiting blasting hours, and using blast mats; limiting spoils hauls to 12 h/d; inspecting trucks and construction equipment for noise and emission controls; and creating berms to act as noise screens. Site-specific mitigation means will be identified and assessed in the Supplemental EIS after the final site is selected.

See also Comment Response 1002.01.

1060.05

Comment noted.

1061.01

See revised text. Footnote "g" incorrectly stated "50%" when it should have read "50". This has been corrected in the Final EIS.

1061.02

Comment noted.

1061.03

See Comment Response 710.01.

1061.04

Comment noted.

1062.01

Comments noted. See EIS Volume I, Chapter 4 for a discussion of the affected environment, and Chapter 5 for a discussion of environmental consequences in each of the areas listed in the comment:

zoning - 5.1.7, 5.1.8, and 5.2.10
land resources - 5.1.7 and 5.2.10
taxes - 5.1.8 and 5.2.12
wells, water, and water tables - 5.1.2 and 5.2.3
radiation - 5.1.6 and 5.2.5
noise - 5.1.4 and 5.2.6
pollution - 5.1.3 and 5.2.4

1063.01

The commenter is correct in noting that the impact of a project is never fully known until after its construction. An environmental impact analysis for a proposed project is a best-efforts projection and is not a representation that impacts are known with absolute certainty. For the State of Michigan, the EIS states that a total of 205 acres of prime farmland would be permanently converted (see EIS Volume I, Chapter 5, Section 5.1.7).

1064.01

The DOE recognizes that the SSC may cause both positive and negative effects to individual landowners. Typically individuals displaced by a project and those living on fixed incomes may suffer greater impacts than other subgroups. The impacts to the quality of life for various subgroups in the study area are addressed in EIS Volume I, Chapter 5, Section 5.1.8.5. The responsibility for land acquisition lies with the proposer state, see Comment Response 710.01.

1064.02

See Comment Response 1064.01.

1065.01

Comments noted.

1066.01

The possibility of radio frequency (RF) interference with the very long baseline array (VLBA) does need careful consideration. Additional studies would need to be conducted as detailed SSC design proceeded, and if it appeared that RF interference were a problem, there are possible solutions, for example, additional RF shielding could be provided around the klystrons. This issue would be addressed in the Supplemental EIS.

1067.01

Comment noted.

1067.02

Comment noted.

1068.01

Comments noted.

1068.02

Comments noted.

1068.03

The EIS states that although "boom" conditions may occur in local communities due to the SSC, problems associated with "bust" conditions probably would not occur (see Volume IV, Appendix 14, Section 14.1.3.2.E). As noted in Comment Response 4.03, this area has not recently experienced growth of the magnitude or duration anticipated to accompany the SSC. Impacts on Fort Morgan and Brush, most notably concerning increased demand on housing and public services, are thus anticipated, requiring focused efforts to provide adequate mitigation (see Volume IV, Appendix 14, Sections 14.1.3.2.B and 14.1.3.2.C).

1068.04

The net fiscal impact to jurisdictions in Morgan County was projected to be positive throughout SSC construction and operations. Additional detail concerning the public finance analysis results is presented in Volume IV, Appendix 14, Section 14.1.3.2.D.

The type of administrative experience cited in the comment is very specific and was not considered in determining fiscal impacts to local jurisdictions. Therefore, to the extent that this experience would reduce local expenditures, the net revenue values are under-estimated. The DOE would not, however, expect this savings to significantly affect net revenue estimates.

1068.05

The recent completion and approval of the Morgan County Comprehensive Plan, and the apparent compatibility between this plan and the SSC, is acknowledged. The capability of Morgan County, in conjunction with Adams and Washington Counties, to rezone the SSC site should aid direct and indirect development associated with the project. The strategy outlined in the comment for the management of secondary and induced growth associated with the project should also help to promote desirable growth patterns. If Colorado is selected for the SSC, appropriate parts of the plan would be included in the Supplemental EIS.

1068.06

Although the EIS states that local communities close to the proposed Colorado SSC site (e.g., Fort Morgan) could support growth associated with development of the facility (see Volume IV, Appendix 5, Section 5.2.11.1.C), it is not intended to imply that the local school districts could accommodate SSC-generated student enrollment without expansion of facilities or staff. Presently the four school districts may have the physical capacity to accommodate the projected increase in enrollment caused by development of the SSC. However, these districts would still need to increase their instructional and support staff to maintain the educational level of service currently enjoyed by the students (Volume IV, Appendix 14, Section 14.1.3.2.C.)

1068.07

The peak year of Pawnee Power Plant I construction required slightly more than half the number of workers anticipated during the peak year (1992) of SSC construction. Moreover, SSC construction will occur over a longer time period than did Pawnee Power Plant I, and the operations of the SSC will require roughly 25 times the number of personnel required by the Pawnee Power Plant. The comments focus upon the "initial housing needs from the SSC" draws attention to the minimal housing impacts of the project -- impacts somewhat comparable to those experienced during Pawnee I construction. However, when one considers the periods of more serious SSC housing impacts, equating the Pawnee Power Plant I experience with the SSC seems unreasonable.

Because of the relatively small number of year-round housing units in Morgan County (roughly 8,900 in 1980), the traditionally low to moderate vacancy rates in the area, and a local construction industry which averaged less than 60 housing units per year between 1980 and 1987, focused efforts would be required to meet SSC-related increases in housing demand (Volume IV, Appendix 14, Section 14.1.3.2.B). Increasing the production of local housing contractors and the modular home plant beyond levels currently experienced and taking advantage of platted lots would constitute such efforts.

1068.08

See Comment Response 526.01.

1068.09

Availability of the major roads, including upgrading of Highway 20, is discussed in EIS Volume IV, Appendix 14, Section 14.2.1. The information on the access roads is noted.

1068.10

EIS Volume IV, Appendix 5, Section 5.2.11.2 has been corrected in the Errata.

1068.11

See Comment Response 577.02, paragraphs 1, 5, and 6.

1068.12

The projected population impacts to Morgan County in the peak year of SSC construction would exceed 16 percent of the projected baseline population in the County (see EIS Volume IV, Appendix 14, Section 14.1.3.2.B). Most of these new residents would seek housing and demand services in the Fort Morgan-Brush area. Past local experience with rapid growth is acknowledged, but much of this experience has dealt with

growth of less magnitude and duration than that anticipated to accompany the SSC (see Comment Response 4.03). Although this past experience may prove useful in dealing with SSC-related growth, the likelihood of pressures on local housing and services must not be overlooked.

The confidence and commitment of various organizations within Morgan County to help mitigate SSC-related impacts are acknowledged; if the proposed Colorado site is selected for the SSC, such mitigations will be addressed in the Supplemental EIS.

1068.13

The EIS points out that SSC-related population increases may lead to noteworthy impacts on public services, housing, and quality of life in the Fort Morgan-Brush area. The EIS text does not deliberately create negative impressions. What the comment refers to as a "qualification" would more accurately be labeled a conclusion of the EIS regarding the long-term consequences of these impacts. Volume IV, Appendix 14, Section 14.1.3.2.E states this conclusion: Adverse social impacts should be temporary, and conditions are likely to become improved in the long run over what they would be without the SSC.

1068.14

SSC-related population impacts are distributed according to a state-of-the-art spatial allocation model, as described in EIS Volume IV, Appendix 14, Section 14.1.2.3.B. Northeastern metropolitan area development is taken into account in the allocation, as is the existence of Colorado's proposed highway linking the SSC to this area at Brighton. The Denver metropolitan area (including western Adams and Arapahoe Counties, Boulder County, Denver County, and Jefferson County) is projected to receive 51 percent of the peak year population impacts and 49 percent of the year 2000 population impacts (see Volume IV, Appendix 14, Table 14.1.3.2-6), which is in line with the commenter's estimate.

The assistance of developers from the metropolitan Denver area in meeting SSC-related housing impacts in Morgan County would help to absorb the projected increased demand in this area.

1068.15

EIS Volume I is a summary of the more detailed information contained in Appendices 1-16. Volume III describes the methodology for site selection; however, the only reference to data for the seven SSC sites in the Best Qualified List (BQL) is in Table 2-1 which is a summary of the cited favorable conditions for siting the SSC at each BQL site.

The EIS was based on State-submitted information and publicly available information. Publicly available information includes Federal, State, regional, and local agency reports and publications, and published university research project reports and theses. Comments given to the DOE during scoping were used to establish priorities for assessment in

the preparation of the EIS. All information submitted to the DOE following the scoping meetings was reviewed by the technical staff and used as appropriate in preparation of the EIS. Every attempt was made to use the most current information that could be provided and verified as being accurate. When substantive errors have been detected in the EIS, they have been corrected in the final EIS (see Errata sections for Appendices 1-16 and revised Volume I). In cases where more current data are available to assist in responding to a comment, these have been incorporated in either responses to comments or revisions to the text of the EIS.

1068.16

The status of the bald eagle at Barr Lake and the potential presence of the black-footed ferret in the region is addressed in detail in EIS Volume IV, Appendix 11. Volume I, Chapter 3, Table 3-7 indicates that potential habitat for these species (whether they are actually present or not) would be lost or disturbed. Table 3-7 has been revised to be consistent with information in Volume I, Chapters 4 and 5 and Volume IV, Appendix 11.

1068.17

The commenter's implication that Colorado was "singled out" as expected to experience [noteworthy] impacts on local housing as a result of the SSC is inaccurate. As indicated in the EIS Volume IV, Appendix 14, a number of other primary impact counties examined for other sites are expected to require focused efforts to absorb SSC-related increases in housing demand: Jackson and Washtenaw Counties, Michigan; Durham, Granville, and Person Counties, North Carolina; and Bedford and Marshall Counties, Tennessee.

The spatial allocation of population impacts is addressed in the first portion of Comment Response 4.04 (see also Volume IV, Appendix 14, Section 14.1.2.3.B).

With regard to the validity of equating the impacts resulting from Pawnee Power Plant construction and operations with those anticipated to accompany the SSC, see Comment Response 4.03.

1068.18

See Comment Response 577.02, paragraphs 1 through 4.

1068.19

See Comment Response 577.02, paragraph 1.

1068.20

EIS Volume IV, Appendix 13, Section 13.1.4 presents the cumulative land use impacts for the seven site alternatives. Major projects will occur

in the Denver metropolitan region, but little to no land use impacts to the SSC are expected to occur there. Apart from construction of the Pawnee Generating Station Unit II and the Narrows Dam northeast of Fort Morgan, no major projects have the potential to affect land uses in the project vicinity. In the vicinity, SSC project development, even without the Pawnee Generating Station Unit II project and Narrows Dam, will cause major changes in land use. This is especially true of the campus and injector areas. The statement is not meant to imply that such a major change is either good or bad, only that it is a distinct change from existing use. The impacts will be direct due to construction and operations of project facilities, and indirect due to in-migration and the development of housing and supporting infrastructure. Should the Narrows Dam and Pawnee Generating Station projects occur in the late 1990s the already significant land use changes due to the SSC will probably be somewhat more extensive as additional housing and infrastructure needs are met.

The section referenced in the comment is EIS Volume I, Chapter 3, Section 3.7.10. This section was to have summarized the cumulative impacts described in EIS Volume IV, Appendix 13, Section 13.1.4.C. That section has been corrected in the Errata to the EIS to better characterize the cumulative impacts for the seven sites.

1068.21

The Soil Conservation Service has estimated that zero acres of prime farmland and 4,198 acres of important farmland are located in the SSC fee simple area. From this inventory, an estimated 819 acres would be permanently converted at the proposed Colorado site. The definition used by the Soil Conservation Service are determined by Federal regulations (see EIS Volume IV, Appendix 13, Section 13.2 for additional information).

1068.22

Federal criteria for prime farmland designation are cited in EIS Volume IV, Appendix 13, Section 13.2.2.1.A. See Comment Response 1068.21.

1068.23

The EIS presents a brief description of nearby general aviation fields in Volume IV, Appendix 5, Section 5.2.11. The information includes data on the Fort Morgan Municipal Airport.

1068.24

The Colorado Water Conservation Board Flood Control & Flood Plain Management Section recommended the use of the 100-yr flood maps prepared by URS Corporation (1988). These maps cover the whole SSC surface foot-

print. Floodplain encroachment studies of the Colorado site and several other sites have been added to EIS Volume IV, Appendix 7 and Volume I, Chapter 5. See Comment Response 1007.02.

There is one FEMA Flood Hazard Boundary Map and a few preliminary Flood Insurance Rate Map available for Morgan County. The Floodplain Insurance Rate maps that cover portions of Beaver Creek, Buck Creek, and Shears Draw. The text in EIS Volume IV, Appendix 7, Section 7.1.3.2; Volume I, Chapter 5, Section 5.1.2.2; Volume I, Chapter 4, Section 4.2.1.1; and in Volume I, Chapter 4, Section 4.2.1.1, Table 4-2 have been revised in response to this comment.

1068.25

Statements made in EIS Volume I, Chapter 5, Section 5.1.5.2 and Volume IV, Appendix 11 concerning impacts to the whooping crane refer only to effects that may occur in the event SSC project water needs result in altered flows in the South Platte River.

1068.26

Colorado, along with Michigan, North Carolina, Tennessee, Texas, Arizona, and Illinois, are discussed briefly in the fourth paragraph of the referenced section. The evaluation of development implications is addressed in more detail in EIS Volume IV, Appendix 13, Section 13.1.3.2.C.

1068.27

The concepts of Level of Service (LOS) and disruption of traffic patterns are independent of each other. LOS refers to the quantity of traffic occurring or projected to occur on existing or proposed highways as a function of the capacities of the highways. Disruption of traffic patterns refers to changes in the existing highway network that cause people to change their normal travel habits. Disruption can occur due to the blocking of existing highways and/or the construction of new highways that induce people to change their habits.

A disruption of traffic patterns would occur in Colorado during the construction of the east-west access highway. Existing north-south roads would be cut so that travelers would have to detour to cross the highway. In addition, the new highway could possibly induce east-west traffic to use the highway instead of existing roads.

No disruption of traffic patterns would be expected to occur in Illinois because mostly existing highways and roads would be used to provide access to the SSC. Existing roads probably would not be cut and major new roads probably would not be built. This issue is discussed in EIS Volume I, Chapter 5, Section 5.1.8.6.

1068.28

The EIS Volume I, Chapter 5, Table 5.1.10-1 has been corrected to note that there are no scenic or visual impacts at the Colorado site.

1068.29

Volume I, Chapter 5, Section 5.2.7 states that Barr Lake is used by migrating waterbirds, including the whooping crane. The lake supports a breeding pair of bald eagles, not whooping cranes.

1068.30

The chemical quality of municipal water supply for Fort Morgan is good. Descriptions of groundwater quality in EIS Volume IV, Appendix 5, Section 5.2.2.2.B for the Colorado site states that groundwater occurs in the shallow alluvial aquifers along stream channels within the proposed SSC site. These groundwaters show a variation in total dissolved solids and typically have moderate to high hardness.

1068.31

A description of the Fort Morgan water supply is provided in EIS Volume IV, Appendix 5, Section 5.2.2.2. An assessment of use of the system for SSC water supply is provided in Volume IV, Appendix 7, Sections 7.1.3.2 and 7.2.3.2.

Although the EIS does not specifically discuss well upgrades, control systems, and hydrants, the general comment that the water system is in condition adequate to handle present and future uses is consistent with EIS Volume IV, Appendix 7, Section 7.2.3.2.A.5.

1068.32

This information on Fort Morgan's water supply planning is noted. A description of the Fort Morgan water supply is provided in EIS Volume IV, Appendix 5, Section 5.2.2.2. An assessment of use of the system for SSC water supply is provided in Volume IV, Appendix 7, Sections 7.1.3.2 and 7.2.3.2.

1068.33

The statement agrees with the information provided in EIS Volume IV, Appendix 5, Table 5.2.8-1.

1068.34

This information is consistent with EIS Volume IV, Appendix 10.

1068.35

The details of the existing Morgan County landfill are shown in EIS Volume IV, Appendix 5, Table 5.2.8-2. Section 5.2.8.2 of Appendix 5 indicates that the Morgan County landfill has a remaining life of 25-50 years based on the current rate of fill

1068.36

See Comment Response 1068.35.

1068.37

See Comment Response 564.11.

1068.38

See Comment Response 564.12.

1068.39

This information is consistent with transportation systems as addressed in EIS Volume IV, Appendix 5, Section 5.2.11.2.A.

1068.40

The information on streets in Fort Morgan is noted.

1068.41

See Comment Response 578.07, second paragraph.

1068.42

See Comment Response 4.03.

1068.43

Comments noted. The EIS notes that the Colorado site, which includes the City of Fort Morgan, will remain a dryland farming dominated economy without the SSC (see EIS Volume I, Chapter 5, Section 5.3.2). Recent high unemployment in the vicinity of the Colorado site due to a lull in the local economy is also noted in the EIS in Volume I, Chapter 5, Section 5.1.8.

1068.44

Comment noted.

1068.45

The EIS analysis supports the contention that many of the SSC construction and operations phase workers would choose to reside in the nearby communities of Morgan County (see Volume IV, Appendix 14, Section 14.1.3.2.B). Additionally, the population allocation model projects that about half of population growth attributable to the SSC would likely occur in the Denver metropolitan area.

1068.46

Brush and Fort Morgan would probably be the first choice of residence for many of the in-migrating workers and their families, if the proposed Colorado site is selected for the SSC. These communities are likely to experience some rapid growth; however, adverse socioeconomic impacts would be temporary, and conditions are likely to become improved in the long run over what might occur without the SSC, through careful planning. See EIS Volume IV, Appendix 14.

1068.47

Comments noted.

1068.48

Comments noted.

1068.49

See Comment Response 557.04

1068.50

In the EIS Volume IV, Appendix 11 has been revised to include recent surveys conducted by the DOE, USFWS, and Colorado Division of Wildlife investigating the presence of prairie dog towns in the vicinity of the proposed Colorado site. Although it is unlikely that black-footed ferrets are present in the region, in the event the Colorado site is selected as the SSC site, additional detailed surveys of the habitat would be conducted to confirm the presence or absence of the species. A more detailed review would then be included in the Supplemental EIS. Mitigation strategies, should they be needed, would be provided in greater detail in the Supplemental EIS.

1068.51

Although the State of Colorado had indicated that water from the South Platte River will not be needed for the SSC, it is the DOE's understanding that there remain several alternatives for maintaining the flow of the river should groundwater be removed from South Platte River aquifers.

However, the assessment of potential impacts on protected species considered impacts associated with the effects of altered flows on the South Platte River. This issue has been addressed in EIS Volume IV, Appendix 11, Section 11.3.2.2.

According to the consultation letter from the U.S. Fish and Wildlife Service (see Volume IV, Appendix 11, Attachment A), any depletions of water from the South Platte River would need to be evaluated with respect to the listed species habitat along the Platte River in Nebraska between Lexington and Shelton, which is designated critical habitat for the whooping crane. The unlisted sandhill crane also may be affected. Water taken directly from the South Platte and its connecting water table for purposes of the SSC and consequent water depletion would be considered a potential primary impact.

1068.52

As noted in EIS Volume IV, Appendix 14, Section 15.1.3.2, after final selection of the SSC site, intensive cultural resources field studies will be undertaken to identify historic and prehistoric archaeological sites, including Native American burial sites. If necessary, further consultation will be made with appropriate Native American representatives.

See Comment Response 570.01.

1068.53

EIS Volume IV, Appendix 15, Section 15.1.3.2.A.5 should have referred to Table 15-3 instead of Table 15-4. This error has been corrected in the FEIS.

1068.54

See Comment Response 577.02 regarding the availability of aggregate in the Denver region. Pierre Shale spoils are not mineralogically suitable for manufacturing cement (cement is principally lime whereas shale is principally clay) or for use as aggregate in high-strength concrete products.

1068.55

Comments noted.

1068.56

Comments noted.

1068.57

Public services considered in the "general education" category are an aggregate of all services related to primary, secondary, and higher

education provided at the local level, expressed in full-time equivalent (FTE) employment per 1,000 population, (see EIS Volume IV, Appendix 14, Section 14.1.3.2.C, Table 14.1.3.2-10). Attributes which traditionally are considered the most important variables characterizing the provision of educational services--namely, student enrollments and instructional personnel--were collected at the county level for each State, examined from the departments of education in those states.

Public school enrollments and increased teacher demand attributable to the SSC are presented in Volume IV, Appendix 14, Section 14.1.3.2.C for the Colorado Region of Influence, and for Adams, Morgan and Washington Counties. These statistics are presented in a series of tables beneath the heading "general education" as they are considered educational service indicators, a subfield of "general education" which still includes FTE employment in higher education. Higher education provided by local governments is not treated specifically, because it is an elective option not mandated by law.

1068.58

The cited passage refers in particular to public services in Fort Morgan and Brush. The first paragraph of Comment Response 562.05 discusses the description of baseline public services associated with the proposed Colorado SSC site, and the analysis of impacts to these services.

1068.59

See Comment Response 1068.06.

1068.60

Comment noted.

1068.61

Comments noted.

1068.62

See Comment Response 574.04.

1068.63

Comment noted.

1068.64

Comment noted.

1068.65

This information on the town of Log Lane Village's water supply situation is noted. Potential SSC-related water use in Log Lane Village is included in the projections of indirect water use for Morgan County shown in Table 7-3 of EIS Volume IV, Appendix 7, Section 7.1.3.2. Potential impacts from indirect project water use are assessed in Volume IV, Appendix 7, Section 7.2.3.2.

1068.66

Please refer to EIS Volume IV, Appendix 5, Section 5.2.8.1, Table 5.2.8-1. Log Lane Village is mentioned in the Table. The comment that the existing sewage treatment plant can handle additional sewage from about 100 to 150 households is noted.

1068.67

Comment noted.

1068.68

Comment noted.

1068.69

Comments noted.

1068.70

See Comment Response 1031.02.

1068.71

The proposed expansion of the Pawnee Power Plant was noted in EIS Volume IV, Appendix 14, Section 14.1.3.8.B. The assessment considers socio-economic impacts such as housing, public services, and public finances. These were assessed at the regional level. At this level, critical resources were considered to be adequate for specific expansion. However, impacts to specific local areas such as Fort Morgan and Brush were not assessed. At the local level, adverse impacts in some of the small communities close to the site could be exacerbated by the cumulative impacts of other projects.

As noted by commenter, Fort Morgan and Brush are not expected to suffer electricity shortages, regardless of SSC development due to current excess generating capacity.

1068.72

See Comment Response 574.04.

1068.73

Comment noted.

1068.74

See second paragraph of Comment Response 578.07.

1068.75

See Comment Response 587.02, first two paragraphs, and Comment Responses 4.03, 526.01, 526.06, 562.05 and 578.07.

1069.01

The cost estimates used for the impact analysis of the EIS are discussed in EIS Volume IV, Appendix 2. It is DOE's position that Fermilab will continue to operate if the SSC were to be located elsewhere. See EIS Volume I, Chapter 3, Section 3.3.

1070.01

Regarding the comment's reference to a negative economic impact to the City of Naperville if the SSC is not sited in Illinois, see Comment Response 1176.01. Housing availability is described for the Illinois Region of Influence, and for the primary impact counties of DuPage, Kane, and Kendall (Volume IV, Appendix 5, Section 5.3.11.1.B), but are not examined at the level of individual communities. Housing in DuPage County (which contains Naperville) should be adequate to meet SSC-related population impacts (Volume IV, Appendix 14, Section 14.1.3.3.B).

1071.01

Comments noted.

1072.01

The potential of encountering naturally occurring gas at the Illinois site during tunnelling operations is addressed in EIS Volume IV, Appendix 5, Section 5.3.1.5. See also Comment Response 1220.03.

1072.02

Although local jurisdictions in Kane County are anticipated to experience fiscal deficits during the first 3 years of construction activity, positive fiscal effects in subsequent years are expected to offset these losses. The EIS analysis of the revenue effects for the Illinois State government from SSC construction and operations, and the cumulative fiscal effects to local government jurisdictions in Kane County, are presented in EIS Volume IV, Appendix 14, Section 14.1.3.3.D.

1072.03

See Comment Response 533.03.

1072.04

See Comment Responses 19.03 and 1237.02.

1072.05

The Initiation for Site Proposals (ISP) outlined certain qualification requirements and evaluation criteria. After a review of the ISP requirements, some states may have concluded that the resources of their possible sites would not be competitive and elected not to submit a proposal.

1072.06

Approximately $115 million in Congressional funding has been provided since 1984 for research and development for the SSC project. (DOE press release and fact sheet dated November 10, 1988.)

1072.07

SSC-related impacts on public services in Kane County are discussed in Volume IV, Appendix 14, Section 14.1.3.3.C. Comment Response 533.05 discusses SSC-related impacts on public finance in the Illinois Region of Influence, specifically in the context of local effects and schools.

1072.08

The EIS analysis of impacts to public services in Kane County is discussed in Volume IV, Appendix 14, Section 14.1.3.3.C.2. Additional personnel would be required in the county public education system to meet increased SSC-related demands.

Fiscal impacts to Kane County as a result of the SSC are discussed in Volume IV, Appendix 14, Section 14.1.3.3.D.3. Cumulative net fiscal impacts to all local government jurisdictions in the county would be negative during the first three years of construction, but positive thereafter throughout the life of the facility.

1072.09

Potential impacts on local public services, including local school systems, in Kane County are summarized in Volume IV, Appendix 14, Section 14.1.3.3.C.2. These estimates indicate that expansion in employment in police and fire protection, public education, health and welfare, and other government services would be required to meet demand attributable to in-migration while maintaining current levels of service. The actual amount and distribution of this expansion would determine the quality and availability of services to county residents.

1072.10

During the peak year of SSC construction, the EIS estimates that almost 1,000 jobs would be available in the construction craft (or building trades) industry in the Illinois Region of Influence (ROI) (see Volume IV, Appendix 14, Section 14.1.3.3), which is roughly 28 percent of the total direct jobs anticipated in the region as a result of the project. The number of construction jobs was not estimated at the county level, but assuming the same proportion would hold for individual counties suggests a total of approximately 550 such jobs in Kane County in 1992. In 1987 roughly 9,475 persons were unemployed in Kane County. Moreover, national unemployment data suggest that the rate of unemployment among construction workers typically is about twice the rate among all other workers (U.S. Department of Commerce, Bureau of Economic Analysis, 1988, "Survey of Current Business," p. S-10).

It is not anticipated that the work force for SSC construction would come exclusively from the ranks of unemployed county residents or, for that matter, even exclusively from the Illinois ROI, as 30 to 34 percent of the total direct and indirect work force is expected to in-migrate from outside the region. However, it seems reasonable to assume that many of the 550 craft workers would be available among the nearly 9,500 unemployed workers in Kane County.

Finally, it should be noted that whereas the employment of some SSC-related construction workers will be temporary, many will be working on the project for a number of years and, consequently, spending a portion of their earnings in Kane County.

1072.11

Regarding land acquisition, see Comment Response 880.04. The EIS analysis of SSC-related effects on revenue for the Illinois State government, and the cumulative local government fiscal effects on jurisdictions in Kane County from facility construction and operations, are presented in Volume IV, Appendix 14, Section 14.1.3.3.D. Private land would be removed from the property tax base in Kane County, Illinois, thereby reducing the amount of revenue for local jurisdictions. However, the EIS analysis indicates that there would also be a long-term increase in both direct and indirect tax revenue from project spending and additional spending by SSC construction and operations workers. As a result, although local jurisdictions in Kane County are anticipated to experience deficits during the first three years of construction activity, positive fiscal effects in subsequent years are expected to offset these losses.

1072.12

Comment noted.

1072.13

Federal lands meeting ISP criteria were considered. As described in the EIS Volume III, Chapter 1, there were two sites proposed for the SSC that were partially or totally on lands managed by the DOE (Idaho National Engineering Laboratory and Fermi National Accelerator in Illinois). The Illinois site is among the seven site alternatives assessed in the EIS. Approximately 60 percent of the proposed Arizona site is also Federal land managed by BLM (see Volume I, Chapter 5, Section 5.1.9).

Volume IV, Appendix 1 provides data on the construction methods proposed for each of the seven sites. The Illinois site is proposed to be exclusively tunnelled; the majority of the Arizona site is also proposed as a tunnelling site. These decisions are based on geologic considerations.

Concerns regarding priorities in the Federal appropriations process are considered to be outside the scope of the EIS.

1072.14

Comment noted. See Comment Response 1220.03.

1072.15

Hydrologic conditions, depth to water and depth to each of the major aquifer systems at the proposed Illinois SSC site are described in EIS Volume IV, Appendix 5, Section 5.3.2.2. All of the aquifers, including the surficial glacial deposits and the shallow bedrock aquifer are very productive locally. However, in certain locations these units may not be present or may for some number of reasons not be productive. Under these conditions a domestic well may have to tap the deeper Cambrian - Ordovician or deep sandstone aquifer which may be several hundred feet deep.

1073.01

It is DOE policy that Fermilab would continue to operate if the SSC were sited elsewhere (see EIS Volume I, Chapter 3, Section 3.3).

1073.02

See Comment Response 1003.04, first paragraph.

1073.03

See Comment Response 1003.04, first paragraph.

1074.01

The cost estimates used in the preparation of the EIS are discussed in EIS Volume IV, Appendix 2.

1075.01

Comments noted.

1076.01

It is the policy of the DOE that Fermilab will continue to operate if the SSC were to be located elsewhere (see EIS Volume I, Chapter 3, Section 3.3).

1077.01

The issues addressed in the comments are discussed in the socioeconomic impact analysis in the EIS Volume I, Chapter 5, Section 5.1.8 and Volume IV, Appendix 14, Section 14.1.3.3. See also Comment Response 1229.02.

1078.01

Comment noted.

1078.02

Comments noted.

1078.03

See Comment Response 1002.01.

1078.04

Comment noted.

1079.01

Any material submitted to the DOE regarding cultural and paleobiological sites in Illinois has been included in the impact analysis for the EIS. Volume IV, Appendix 15 specifically addresses the resources and the impacts. Volume I, Chapter 4, Sections 4.10 and Volume I, Chapter 5, Section 5.1.9 also addresses the resource area.

1079.02

This comment reflects the ongoing efforts by the Illinois State Museum to identify and document cultural resources potentially impacted by the project. Quantities of the resources identified vary slightly from those stated in the EIS due to these continuing efforts while the DEIS

was in preparation. However, no modifications were made in the EIS as the numbers of cultural resource sites identified (see Volume I, Chapter 5) are adequate for basing a siting decision.

1079.03

See Comment Response 1079.02.

1079.04

These observations are consistent with those in EIS Volume IV, Appendix 15. If Illinois is the selected site, a more detailed review will be provided in the Supplemental EIS.

1079.05

See EIS Volume I, Chapter 4, Section 4.10 and Chapter 5, Section 5.1.9, and Volume IV, Appendix 15 for discussion of cultural and historical resources.

1079.06

The comments are correct. This is discussed in Volume IV, Appendix 15. Section 15.2.3. If the DOE selects the Illinois SSC site, further field inspections prior to construction would be needed to evaluate further the potential impacts to paleontological resources. These evaluations would be addressed in the Supplemental EIS.

The mitigation strategies will also be described in greater detail in the Supplemental EIS.

1079.07

See EIS Volume I, Chapter 4, Section 4.10 and Chapter 5, Section 5.1.9 and Volume IV, Appendix 15 for discussion of cultural and historical resources.

1080.01

Comments noted.

1080.02

The DOE reviewed the referenced study in the process of preparing the final EIS and in the site selection process (see Volume III, Chapter 3). The single campus alternative is considered a modification of the State's proposal. The design of a single cluster has been identified in Volume I, Chapter 3, Section 3.4.3 as a mitigation.

1080.03

Comment noted.

105111003358824

1081.01

Comments noted.

1082.01

Comment noted.

1082.02

The EIS discusses quality of life impacts that the SSC may have on enhancement of school programs due to active participation of SSC scientists (Volume I, Chapter 5, Section 5.1.8.5).

1083.01

Comment noted.

1083.02

See Comment Response 1003.04, first paragraph.

1083.03

Comments noted.

1084.01

Comments noted.

1084.02

Comment noted.

1084.03

Comments noted.

1085.01

Comment noted.

1085.02

National priorities for Federal expenditures are established by Congress and the President. See Comment Response 278.08.

1085.03

Strategies and commitments made by proposers are not the responsibility of the DOE. ISP requirements are summarized in EIS Volume III,

Chapter 1. Cost of proposals are not recoverable from the DOE (see the ISP and EIS Volume III, Chapter 1). Questions about proposal development should be directed to appropriate State agencies.

Anticipated impacts on local public education in Kane County as a result of the SSC are presented in the EIS Volume IV, Appendix 14, Section 14.1.3.3.C.2; increased enrollments are expected and additional staffing will be required. The fiscal effects of the SSC on local government jurisdictions in Kane County are presented in Volume IV, Appendix 14, Section 14.1.3.3.D.3; cumulative net fiscal impacts of the project to local jurisdictions are anticipated to be negative during the first three years and positive thereafter.

1085.04

As discussed in EIS Volume IV, Appendix 5, Section 5.3.8.2., there are five existing landfills in the Illinois Region of Influence with remaining capacities of 12 to 25 yrs. The SSC would use one or more of these services.

1085.05

Traffic analysis is presented in EIS Volume IV, Appendix 14, Section 14.2.1.3.C. The DOE agrees that current traffic use is operating at capacity. Mitigation measures have been discussed in this Section. A more detailed review will be provided in the Supplemental EIS.

1085.06

Comment noted.

1085.07

In EIS Volume I, Chapter 2, Section 2.2.2, it is noted that the chairman of the DOE scientific advisory group, High Energy Physics Advisory Panel, has commented that the SSC "would be the forefront high energy facility of the world and is essential for a strong and creative U.S. high energy physics program into the next century." See also EIS Volume I, Chapter 2, Purpose and Need for Action.

1085.08

Comments noted.

1086.01

Possible fugitive dust control methods are mentioned in EIS Volume I, Chapter 5, Section 5.1.3.2. Volume IV, Appendix 8 has been revised to show that fugitive dust emissions will be controlled to acceptable levels.

1086.02

EIS Volume IV, Appendix 5, Section 5.3.4.2 discusses ozone background data and compliance status at the Illinois site. The EPA has designated the Illinois site area as nonattainment for ozone.

1086.03

See Comment Response 1007.04.

1087.01

Comment noted.

1087.02

The draft EIS public finance analysis for Kendall County contained an error, which has since been corrected (see Comment Response 41.02). The population figures employed in the final EIS, and the reasons for employing these figures, are discussed in Comment Response 41.06.

1087.03

The impacts of the SSC upon Kendall County are discussed in EIS Volume IV, Appendix 14, Section 14.1.3.3, Table 14.1.3.3-5. The data in the Tables do not allow a direct comparison of those figures cited in the comment. See Comment Response 41.02.

1088.01

Comment noted.

1088.02

Comment noted.

1088.03

Comment noted.

1088.04

Comment noted.

1088.05

Comment noted.

1088.06

Comment noted.

1089.01

Comments noted.

1089.02

EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 16, Section 16.3.3.3 presents the scenic and visual resources assessments and mitigation measures. The description of mitigation measures that can be evaluated during final project design include architectural solutions. During that design phase it is expected that some adjustments in siting may be possible, depending on technical considerations. Therefore, facility-by-facility mitigation measures must be determined during that phase. The steps outlined in the comment for exploring alternative ways to mitigate the industrial character of the facilities are noted. Also noted is the suggestion that the facilities can be treated architecturally to appear residential in character or to simulate agricultural structures.

1090.01

The DOE is aware that there already are certain Federal lands, facilities, and other resources that are located at Fermilab which would be available for use on SSC. We believe that the EIS gives appropriate consideration to those factors. See EIS Volume I, Chapter 3, Section 3.4.3 and Volume IV, Appendix 1, Section 1.2.3.

1090.02

See Comment Response 1276.01.

1090.03

This EIS is based on State proposals alternatives prepared in response to the Invitation for Site Proposals and the conceptual design for the SSC.

The DOE would consider a single campus design to the Illinois site plan if submitted by the State as a modification to the Illinois proposal.

Alternative design plans will be considered in the Supplemental EIS for the selected site.

1091.01

Comment noted.

1091.02

See Comment Response 1047.02.

1091.03

Comments noted.

1091.04

Private land would be removed from the property tax base in the Oswego Township, Kendall County, Illinois, reducing the amount of revenue for local jurisdictions. The EIS analysis indicates that although there would be a long-term property tax revenue loss to Kendall County jurisdictions, there would also be a long-term increase in both direct and indirect tax revenue from project spending and from additional spending by SSC construction and operations workers. Ultimately, fiscal impacts on Kendall County are anticipated to produce no change, or slight positive effects (as corrected in Comment Response 41.02; the public finance analysis is presented in Volume IV, Appendix 14, Section 14.1.3.3.D).

The EIS did not specifically estimate the property tax loss to individual jurisdictions below the county level, such as Oswego Township.

As noted in Comment Response 1047.02, the effects of the SSC on land values in local communities are at present unknown; a prediction of decreased property values thus may be premature.

1091.05

The observation that the SSC buildings would appear to be out of place in any residential area is generally consistent with the analyses in EIS Volume IV, Appendices 13 and 16. In Volume IV, Appendix 13, Table 13-3, the associated land use/zoning designation for intermediate access areas, interaction points, and experimental areas is light industrial. For service areas, the associated zoning is medium industrial. In areas zoned single-family residential, the degree of inconsistency with the SSC facilities noted is minor for intermediate access areas, interaction points, and experimental areas, but major for service areas.

In EIS Volume IV, Appendix 16, Section 16.3.3.1, it is stated that: "Residential land uses are not visually compatible with the proposed project because of the obvious functional and structural contrasts between project features and residences." An exception occurs, as noted in Volume I, Chapter 5, Section 5.1.10.3. Rural residential areas are often characterized with out-buildings, sheds, and small warehouse-like structures similar to the intermediate access areas in scale and configuration.

The specific impact of service areas on residential housing values is a secondary impact of the SSC (see EIS Volume I, Chapter 5, Section 5.2).

1091.06

The statement referred to by the comment is located in EIS Volume I, Chapter 1, Section 1.4 and is quoted correctly. The public finance analysis, which incorporated anticipated improvements in infrastructure required by the SSC, indicates that fiscal impacts on Kendall County are expected to produce no change or slight positive effects (see EIS Volume I, Chapter 5, Section 5.1.8). Note that anticipated increases in sewer requirements were incorporated in the public finance analysis. See also Comment Response 41.02.

1091.07

The public finance analysis for Kendall County indicates that slight positive fiscal impacts would occur to jurisdictions in the county (see the Errata for EIS Volume IV, Appendix 14, Section 14.1.3.3.D). The last three factors mentioned are discussed in Comment Response 1091.06.

1091.08

Estimates of traffic on Illinois Route 34 and other major roads are presented in EIS Volume IV, Appendix 14, Section 14.2.1.3.C. As stated in this section of the EIS, the traffic would operate beyond capacity; however, during construction planning mitigations will be considered to remedy this situation (see EIS Volume IV, Appendix 14, Section 14.2.1.3.C.1.b.2). A more detailed discussion of mitigation strategies will be included in the Supplemental EIS.

1091.09

The potential impacts on public school enrollments arising from SSC development were determined at the county level in Illinois from baseline educational service levels and projected school-age population increases (see EIS Volume IV, Appendix 14, Section 14.1.3.3.C.). These enrollment increases, anticipated to be 36 students in 1992 and 40 students in 2000, are presented with other educational and public service impacts for Kendall County in Volume IV, Appendix 14, Table 14.1.3.3-13.

Cumulative fiscal effects on local jurisdictions in Kendall County as a result of the SSC were misstated in the EIS and are discussed in corrected form in Comment Response 41.02. The fiscal analysis accounted for additional requirements in public service infrastructure and personnel. The fiscal impacts are anticipated to have no net effect, or produce slight net benefits, during the life of the project.

1091.10

Wastewater generated by the proposed Illinois SSC construction and operations would not be handled by the treatment plant of Aurora Sanitary District. Wastewater increase results from in-migration induced by the SSC project would be distributed among sewage facilities throughout the

project area, including that of Aurora, and would represent only a minor increase at each facility. Wastewater and wastewater requirements related to the SSC are discussed in Volume IV, Appendix 10, Section 10.3.3. The impact assessment for wastewater at the Illinois site is included in Volume IV, Appendix 7, Section 7.1.3.3.

1091.11

As stated in the EIS, the Illinois Region of Influence (ROI) grew slowly over the past two decades, and it is expected to grow at a slow pace, relative to growth throughout the rest of the United States (see EIS Volume IV, Appendix 5, Section 5.3.11.1). Other major projects anticipated to occur in the ROI during the next decade are discussed in Volume IV, Appendix 14, Section 14.1.3.3.

The no-action alternative (see EIS Volume I, Chapter 3, Section 3.3) describes continued light industrial and suburban development for the ROI at the Illinois site.

1091.12

Comment noted.

1093.01

Comment noted.

1093.02

The DOE acknowledges that future changes in water supplies may alleviate the current burden on the aquifer systems in northeastern Illinois. It is also acknowledged that a variety of alternative water resources may be made available to reduce SSC dependency on overdrafted aquifers. However, given current water supply plans, and a recognition that the SSC will depend on groundwater sources for at least some time, the EIS must state that impacts will occur. See also Comment Response 1279.115.

1094.01

Comment noted.

1094.02

These observations are consistent with those in EIS Volume IV, Appendix 15.

1094.03

Comment noted.

1094.04

Comment noted.

1095.01

Comment noted.

1095.02

The comment and suggestions for reducing the impact of truck traffic generated due to the transportation of excavated materials are noted. The maximum number of the trucks trips is estimated to be 480 per day with ten tunnel boring machines (TBM's) operating. It is likely that an average of about six TBM's would operate simultaneously, producing about 288 truck loads per day. All TBM's need not operate in the same area, thus distributing traffic among the four proposed quarries. A temporary storage of about 3,000 yd^3 (72-hour operation) would be available near each shaft (EIS Volume IV, Appendix 10, Section 10.2.3) so that the spoils need not be hauled as soon as produced. Truck routes and hours of operation will be developed during the construction planning stage.

In addition, the impacts of spoils truck traffic and measures to mitigate these impacts will be addressed in greater detail in the Supplemental EIS for the selected site. The public will be given the opportunity to review and comment on the draft Supplemental EIS in the same manner as this EIS.

Routing truck traffic away from the areas of highest risk of accidents is proposed as a possible mitigation (EIS Volume I, Chapter 3, Section 3.6.3). In addition, EIS Volume I, Chapter 3, Section 3.6.3 and Chapter 5, Section 5.1.8.6.A have been revised and Volume IV, Appendix 14, Section 14.2.I.3.C.1.b has been corrected in the Errata to incorporate mitigations recommended in the comment. These available options, along with strengthening some local roads and providing traffic control services, could minimize traffic impacts.

1095.03

The State of Illinois has proposed four quarries for the disposal of excavated material. The comment on the potential for increasing the disposal sites from four to seventeen is noted (see Comment Response 1199.02).

The removal of excavated material through remotely located shafts by transferring tunneled material through already-bored segments of the ring is not feasible because of post-tunneling activities, which would be occurring there.

1095.04

See Comment Response 1012.01.

105111003358832

1095.05

Comment noted.

1096.01

Comments noted.

1096.02

See Comment Response 986.02.

1096.03

Comment noted.

1097.01

In the analysis of the socioeconomic effects of SSC construction and operations in the Illinois Region of Influence presented in the EIS (Volume IV, Appendix 14, Section 14.1.3.3.A) indicates that a peak of almost 10,500 direct and secondary jobs would be created by the project. However, these jobs would be created in all major sectors of the economy (see the second paragraph of Comment Response 958.02). Changes in net revenues for the Illinois State government, and in the cumulative local government fiscal effects to jurisdictions in the primary impact counties of DuPage, Kane, and Kendall, are presented in Volume IV, Appendix 14, Section 14.1.3.3.D.

1097.02

The cost estimates used in the impact analysis for the EIS are discussed in EIS Volume IV, Appendix 2.

1097.03

Comment noted.

1097.04

The reference to underground easements is not totally correct. Please see Comment Response 312.05 for definition of stratified fee.

1097.05

Comment noted.

1097.06

Comment noted.

1097.07

In the EIS, the impacts identified under the no-action alternative (see Volume I, Chapter 3, Section 3.3) would apply to Illinois if the SSC were sited in another state.

1097.08

Comment noted.

1098.01

Comment noted.

1098.02

Observations regarding growth trends are consistent with the analyses presented in EIS Volume IV, Appendix 5, Section 5.3.10.1. See Comment Response 275.04 for a discussion of the DOE policy on lease-back arrangements. If lease-back is achieved, the project would serve as a means by which farmland is preserved.

1098.03

Comment noted.

1098.04

See Comment Response 983.04.

1098.05

The State's present proposal identifies disposal at existing quarry sites only (see EIS Volume IV, Appendix 10, Section 10.2.3.3). After the proposal material was submitted to the DOE additional quarry owners who are willing to accept the spoils have been identified. It appears unlikely that any productive farmland will be required for spoils disposal.

1098.06

Comment noted.

1098.07

See Comment Response 1279.18. Also see EIS Volume IV, Appendix 5, Section 5.3.10.3 Errata.

1098.08

Comment noted.

105111003358834

1099.01

Comment noted.

1099.02

The observation that land acquisition costs were outside the scope of the EIS is only partially correct. Since it is a state rather than a federal responsibility, the cost of land was specifically excluded from the cost estimates included in the EIS (see EIS Volume IV, Appendix 2, Section 2.4.1

However, some costs to the states have been considered in the cost estimation process (see EIS Volume IV, Appendix 2, Section 2.2.2.3).

1099.03

A cost breakdown in the EIS by state was considered unnecessary because cost was not a site selection decision factor. As identified in EIS Volume IV, Appendix 2, Section 2.4.3, the construction phase cost only varied from -4 percent to +5 percent from the average cost of the seven sites. Since the accuracy of the cost estimate is within $\pm$ 10 percent, it was felt that variances of -4 percent to +5 percent were not significant (see Volume III). See also EIS Volume IV, Appendix 3, Section 2.1.3 on methodology for site selection.

1099.04

See Comment Response 991.02. The final detailed decommissioning plan mentioned here will address the detail asked for in this comment.

1099.05

EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 16, Section 16.3.3.3 assesses the visual impacts of SSC facilities and mitigation measures that should be considered during detailed project design. Among the measures to be evaluated are berms and plantings. Measures would not be considered fully effective until the facilities would be totally screened from view. The success of screening would depend on viewing angles; elevation relative to the project; distance; and type, density, and rate of growth of the selected plants. The amount and type of landscaping cannot be determined until final siting has occurred. These issues will be addressed in the Supplemental EIS for the selected site.

1099.06

It is true that application of the model used for the other sites, based on average travel times for each region's metropolitan area commuters, would result in more widespread population impact estimates for the Illinois region. Average travel times for most Chicago metropolitan area workers exceed those for Fermilab workers; however, the average

Chicago area commuter encounters heavier traffic congestion. Evidence such as the residential distribution of Fermilab employees usually is sought to verify the accuracy of population allocation models, but such evidence normally is not readily available in a given region. The information on residential distribution of Fermilab employees reflects not only the average distance travelled by a sizable group of workers in western DuPage County, but also the desirability and availability of residential opportunities within the region from the perspective of workers in western DuPage County. The main purpose of the allocation procedure is to estimate the distribution of residential choices made by in-migrant workers. Since many Fermilab employees are relatively new in-migrants to the area, it is reasonable to assume a similar pattern for SSC in-migration (see EIS Volume IV, Appendix 14).

1099.07

The analysis of public services is not sensitive to growth rates. Potential impacts to public service employment were estimated using a ratio defined as public employment per 1,000 population. The analysis of public services contained in the EIS was based upon these ratios as of 1982, which establish basic levels of service, and not upon absolute population size. Because of this the conclusions are not affected by recent population growth.

1099.08

See Comment Responses 13.02 and 1126.05.

1099.09

Comment noted.

1100.01

Comments noted.

1100.02

There is a potential for construction-related impacts to field tile drains in the southwest quadrant of the SSC ring at the proposed Illinois site. The exact nature and magnitude of any impacts cannot be addressed before developing a site-specific design. However, general approaches that can be considered to avoid or mitigate impacts to tile drain systems. Areas of subsurface disturbance at the site of an interaction hall or an access shaft will be considerably less than the total land area shown. It may be possible simply to avoid a drain line by minor shifts in the location of a shaft or excavation. Alternatively, it may be possible to relocate the drain line. Alternative field drainage can be provided if a specific drain line must be blocked by construction, and simple reorientation is not feasible.

For tile drains lying beneath selected road or rail spurs, drainage continuity can be ensured by installing reinforced conduits along the tile drain line.

The Illinois General Assembly has authorized the creation of the SSC Construction Insurance Fund to ensure payment to property owners for the full value of actual damage caused by construction of the SSC. The EIS has been revised to include discussion of potential impacts to tile drain systems in EIS Volume 1, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.2.1 and Volume IV, Appendix 7, Section 7.1.3.3.

1100.03

See Comment Response 1100.02.

1100.04

A number of possible mitigation measures have been identified to date (EIS Volume I, Chapter 3, Section 3.6). Following selection of a site for the SSC, the DOE will prepare a Supplemental EIS to address in more detail the impacts of constructing and operating the SSC at the selected site. The alternatives for mitigating those impacts will also be considered in detail at that time, including any which the State of Illinois has proposed.

1101.01

Comment noted.

1101.02

See Comment Response 991.02.

1101.03

See Comment Response 1276.01.

1101.04

Comment noted.

1101.05

Comment noted.

1101.06

Comment noted.

1102.01

Refer to EIS Volume IV, Appendix 4, pp. A-3A to A-31Y for enlarged parcel maps and also see Comment Response 999.01.

1102.02

Determination of the number of water wells that will be lost as a result of siting the SSC is based on the location of the collider ring. No significant radiological impacts to groundwater are expected from SSC operations. The potential for SSC-related contamination of groundwater supplies is discussed in EIS Volume I, Chapter 5, Section 5.1.6 and Volume IV, Appendices 10 and 12.

To ensure that the public is well protected after the SSC is built, safety personnel at the SSC would establish and maintain radiation monitoring programs in accordance with applicable health and safety criteria (see EIS Volume I, Chapter 3, Section 3.6 and Chapter 6, Section 6.3.2). Typically, these programs include routine analysis of surface and groundwater samples, as well as samples of air and soil. The results from the monitoring programs shall serve to provide warning of potential radiological impacts and allow for timely implementation of appropriate mitigative measures to ensure protection of the public. See also Comment Response 658.06.

1102.03

The DOE is confident that the SSC can be safely built and operated without harmful exposures to radiation in a community that is experiencing growth and development. EIS Volume I, Chapter 3, Section 3.6.1, which was cited in the commenter's letter, does not imply that radiation exposures will increase and pose a hazard to the public. This section of the EIS indicates that the SSC will be designed in such a way that exposures to radiation will be minimized. The EIS has also considered the socioeconomic impacts on communities near the proposed area for the SSC, and this analysis took into account current trends at the site (see Volume I, Chapter 4, Section 4.9.1) and potential impacts (Volume I, Chapter 5, Sections 5.1.8 and 5.2.12).

The EIS identified the locations of the quarries to be used at the Illinois site where excavated materials would be placed (see Volume V, Appendix 10, Section 10.2.3.3 and Figure 10.2.3-5). Potential radiation exposures to the public during construction, which would arise from radon releases from excavated materials, was also considered in the EIS (see Volume I, Chapter 5, Table 5.1.6-1). This table indicates that a maximally exposed individual could experience a dose equivalent of 0.002 mrem/yr from all exposure pathways (including radon and its progeny) during construction. This level of exposure is less than 1/1000 of background radiation levels in Illinois (401 mrem/yr) and well below the DOE guideline of 100 mrem/yr. (Volume I, Chapter 6, Section 6.3.2).

1102.04

See Comment Response 1007.04.

The SSC-related emissions of CO, NO_x and VOCs during operations are almost entirely (greater than 95 percent) due to off-site commuter traffic. The emissions resulting from this traffic constitute a fraction of a percent of the existing traffic contributions of these pollutant emissions.

1102.05

The DOE published its "Invitation for Site Proposals for the Superconducting Super Collider (SSC)" in April of 1987. Proposals were accepted from that date through September 2, 1987. Also see Comment Response 871.01.

1102.06

Comment noted.

1103.01

The final configuration of the SSC including surface facilities not be determined until the final design phase at the selected site. The proposals represent site adaptations of the conceptual design, and this EIS

is based on these adaptations. The Supplemental EIS will include more detailed analysis of the selected site and its specific design alternatives.

1103.02

See Comment Responses 18.03 (groundwater quality impacts), 533.03 (groundwater quantity impacts), and 870.04 (groundwater radiological impacts).

1103.03

See Comment Responses 13.02 and 710.01.

1103.04

Comment noted.

1103.05

It is recognized that land acquisitions would have impacts which differ from those which can be monetarily compensated. The proposing State is responsible for land acquisition. See Comment Response 880.04.

1103.06

Comment noted.

1104.01

There will be minor inflow into the tunnel after the construction phase (see Comment Response 1279.141). Every effort will be made to reuse and/or reinject this groundwater, thereby avoiding simply storing it in ponds or discharging it to surface drainages. The incident at Fermilab noted in the comment is discussed in Comment Response 1104.04.

1104.02

The water infiltrating the tunnel may include existing radioactive constituents, principally radium-226 (Ra-226) and radium-228 (Ra-228), which occur naturally in the groundwater. In deep wells in the vicinity of the proposed Illinois SSC site, where both of these elements were measured, their combined concentrations ranged from 6 pCi/l to 25.3 pCi/l; the latter includes the highest individual concentrations, namely 15.2 pCi/l of Ra-226 and 10.1 pCi/l of Ra-228. Where only one or the other was measured, concentrations as low as 0.4 pCi/l of Ra-226 and 2.1 pCi/l of Ra-226 were reported. These wells obtain water from the Cambrian-Ordovician bedrock, which underlies the upper bedrock where the tunnel would be constructed. The radium concentrations in the groundwaters surrounding the tunnel are expected to be lower. These deep groundwaters are currently being used for drinking water supplies, including community water systems. With suitable treatment (technology is

available) or mixing with shallow groundwaters, the concentrations can be reduced below the current U.S. Environmental Protection Agency (EPA) interim drinking water standard of 5 pCi/l for Ra-226 plus Ra-228. This is being accomplished by many community water supplies in Illinois.

The principal radioactivity potentially being added by the SSC to groundwaters are sodium-22 (Na-22) and tritium (H-3). At a well 150 ft from the tunnel, the maximum concentration in the groundwater could be 8.1 pCi/ml of Na-22 and 121 pCi/ml of H-3, in the case of a highly unlikely worst-case accident (i.e., beam loss). Since the water entering a well would be diluted by groundwater not affected by the accident, the water pumped from the well would have a maximum of 0.0051 pCi/ml of Na-22 and 0.076 pCi/ml of H-3. The EPA drinking water standards based on drinking a quart per day for one year, are 0.5 pCi/ml for Na-22 and 20 pCi/ml for H-3.

The radioactivity in the sump water inside the underground facilities during SSC operations was not determined. The groundwater directly adjacent to the tunnel for the worst-case accident would have concentrations of 116 pCi/ml of Na-22 and 438 pCi/ml of H-3. Since this accident would affect only a small volume of groundwater (very near the location of the beam loss), the sump water concentrations, being diluted by unaffected groundwaters, would be much less. Nevertheless, the sump water will be monitored for radioactivity and contaminants, and special treatment, where necessary, will be used in its disposal.

The radioactivity, being added to the groundwater during normal SSC operations, although non-zero, would be much less than from a beam loss even when factored over the life of the SSC. Thus the radiological effects of the SSC on groundwater accessible to wells and on the sump water in the underground facilities will be well below allowable levels permitted by standards.

The small volume of water infiltrating the excavations, including the tunnel, during the SSC operational period will be combined with the cooling water blowdown water or sanitary effluents for treatment before final disposal to surface waters, seepage ponds, or leach fields. Any water which has been in an active beam area, and therefore has the potential for radioactivation, will be monitored and treated accordingly. Radioactive liquid waste will be treated and solidified prior to disposal at an approved low-level radioactive waste facility. The radiological impacts of the SSC on groundwater are discussed in Volume I, Chapter 5, Section 5.1.6 and in Volume IV, Appendix 12, Sections 12.3.1.1 and 12.4.1.1. See also Comment Responses 870.04 and 1200.04.
1104.03

See Comment Response 1104.04

1104.04

The geology of the sites are suitable for the SSC. The loss of magnets during the early days at Fermilab was not the result of geology of the

site. The cause was moisture in the form of humidity from air being used to ventilate the tunnel. The Fermilab tunnels were not heated, but the tunnel, being below the surface, was considerably warmer than the ambient surface temperature during the winter months. When the cold magnets were initially installed, moisture from the tunnel air condensed on them. Where the coil insulation was not perfect, shorts developed which required the affected magnets to be replaced.

1104.05

See Comment Response 1279.141.

1104.06

EIS Volume IV, Appendix 7, Section 7.2.2.2.A notes the possible need for sump pumps to control groundwater flow into the SSC tunnel during normal operation. It also suggests the use of grouting or lining for tunnels, and slurry walls or freezing for shafts as control techniques that do not rely on modifying water levels.

The impact of such problems was estimated on a preliminary basis using data sources related to SSC siting studies. Should the Illinois site be selected as the SSC site, a Supplemental EIS will be prepared that addresses this concern in more detail and suggests appropriate mitigation measures. (See EIS Volume I, Chapter 3, Section 3.6.)

1105.01

SSC support structures will not be located in floodplains if at all possible. When it is necessary for a structure to encroach a floodplain, several mitigative measures are available. One potential mitigation would be relocating, at project design stage, surface structures in flood fringe rather than in floodway (structures located in a flood fringe typically do not significantly raise upstream flood elevation). Other potential mitigations include elevating the structures, diverting the stream, and improving the channel to reduce flood stage (see EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 7).

1105.02

The closest creek to the boneyard, which is a shielded storage area for activated equipment/shielding and not a disposal or dump site, is Kress Creek, and it is located 1,500 ft away. The radioactivity in the equipment and shielding blocks is contained within the material and is not a source of contamination to Kress Creek. The direct radiation from the equipment is shielded to maintain exposures as low as reasonably achievable (ALARA). In the operating history of Fermilab, no accelerator-produced radionuclides have been detected in the water from the creeks or rivers near the laboratory.

1105.03

A typical service area is depicted in EIS Volume I, Chapter 3, Figure 3-5. A portion of the service area (less than an acre) will be taken up by liquid nitrogen, liquid helium, and helium gas storage tanks. Both nitrogen and helium are nontoxic, nonflammable materials that are natural components of air. The potential impacts on the public from the storage of these materials at the service areas are discussed in EIS Volume IV, Appendix 12, Section 12.4.2. Each service area also includes access shafts to the collider tunnel and ventilation ducts for the air circulation system. No gases will be released from these shafts or ducts.

Noise produced by the service area during the operations phase is discussed in Volume I, Chapter 5, Section 5.1.4, and in detail in EIS Volume IV, Appendix 9. The sound produced by activities at the service area is expected to reach an outside day-night average sound level of 55 dBA at 450 ft away from the property line. As noted in Volume IV, Appendix 9, 55 dBA is the EPA-recommended maximum outside day-night average sound level for residential areas. Sound at this level would not be disturbing at the new grade school.

1105.04

See Comment Response 223.03.

1105.05

Comment noted.

1105.06

The intersection of Burr and Balcum Roads is situated approximately 0.75 mi south of the collider arc ring and approximately 1.5 mi west of service area F-8, well away from areas identified in EIS Volume IV, Appendix 9 as being impacted by noise. Should the Illinois site be selected, an analysis of future land uses would be considered as part of the Supplemental EIS.

1106.01

See Comment Response 734.01.

1106.02

Comment noted.

1106.03

See Comment Response 709.02.

1106.04

See Comment Response 1548.133.

1106.05

See Comment Responses 1106.10 and 1272.02.

1106.06

Utilization of existing sewage treatment plants in Durham and other municipalities is only one of the alternatives considered in the EIS. If treatment capacity of existing plants is not adequate to support the SSC, package treatment plants could be installed. Further detailed discussion of available alternatives is presented in Volume IV, Appendix 7, Section 7.1.3.5.F. If the city of Durham's treatment plant is to be used, an agreement with the city would be required.

Water requirement for the far cluster will be obtained from Mayo Reservoir owned by Carolina Power and Light Company, rather than Lake Michie. See revised Table 3-3 in Volume I, Chapter 3.

1106.07

See Comment Response 1548.137.

1106.08

Comment noted.

1106.09

Comments noted. See Comment Responses 1106.10 and 1272.02.

1106.10

With the current proposed position of the SSC, facilities E2 (intermediate access) near elevation 470 ft and J2 (abort/external beam access) near elevation 400 ft are located near the Flat River. These encroachments are discussed in EIS Volume I, Chapter 5, Section 5.1.2 and Volume IV, Appendix 7, Section 7.1.3.5. There are proposed access roads connecting E2 and J2 and other SSC surface facilities.

Transportation issues are discussed in Volume IV, Appendix 14, Section 14.2.1.3.E. Figure 14.2.1-6 shows the current proposed position of access roads. Detailed road designs and locations will be described in the Supplemental EIS prepared for the selected site. See also Comment Response 1272.02.

1106.11

The SSC will need an average of about 1,100 gal/min of industrial water, mostly for cooling purposes. Of this amount, an average of about 800 gal/min will be lost through evaporation from the cooling towers, leaving an average of about 300 gal/min blowdown water which could be recycled after treatment (i.e., removal of the dissolved salts). Thus the dissolved salts in the blowdown water are concentrated roughly by a factor of 3 to 4 rather than 20 as suggested in the comment. Slight differences from these averages are expected at specific sites, depending on climatic conditions and the chemical composition of the water supply. These details will be considered in the final design of the SSC. See Comment Response 703.02 with respect to the potential treatment of the blowdown water at the proposed North Carolina site and the DOE's intention not to use heavy metals in cooling water conditioners. See also Volume IV, Appendix 10, Section 10.3.3.3.E with respect to cooling tower blowdown treatment and disposal. Water quality data for surface waters in the vicinity of the proposed North Carolina site are summarized in Table 5.5.2-3 of Volume IV, Appendix 5, Section 5.5.2.1.

1106.12

The use of the SSC tunnel as a water supply conduit would depend on the degree of need and economics at the time of the proposed use. It is inappropriate to predict the outcome at this time. The DOE would examine alternative uses of the tunnel at the time the decommissioning decision is made. A NEPA review would be conducted for all feasible alternatives.

1106.13

Comment noted regarding the restriction the SSC would place on the City of Durham's planned impoundment on the Flat River. Some portion of the proposed SSC site would be inundated if nearby segments of the Flat River are impounded. That may include project area J2 which is along the Flat River at an approximate elevation of 400 ft. At this time it is difficult to determine the exact extent of inundation because the SSC and proposed dams are all in the proposal or planning stage. However, it is likely that the construction of the SSC in this present location would preclude Durham's future intention of impounding the Flat River.

This impact is added to the EIS in response to the comment (EIS Volume IV, Appendix 7, Section 7.1.3.5.G and Volume I, Chapter 5, Section 5.1.2.4).

1106.14

The maps provided with the comment have been used as an aid in reassessing the potential impacts of the SSC on future expansion of the Durham water supply system. See Comment Responses 1106.10 and 1272.02.

1108.01

It is DOE policy that Fermilab will continue to operate if the SSC were to be placed in another location (EIS Volume I, Chapter 3, Section 3.3).

1109.01

Comments noted.

1109.02

See Comment Responses 979.02 and 1279.115.

1109.03

Comment noted.

1110.01

The passage is excerpted from Volume I, Chapter 5, Section 5.1.10.C in the DEIS but is quoted incorrectly. The subject of the passage is the visual impact of facility F7 on views from the residential subdivisions in the immediate area, as well as those from Empire Road. These views are considered to be highly and moderately sensitive, respectively, and the impacts to be potentially significant.

1110.02

Comment noted.

1110.03

Comment noted.

1110.04

See Comment Response 1279.115.

1110.05

See Comment Response 877.01.

1110.06

See Comment Response 880.04.

1110.07

See Comment Response 846.03.

1110.08

Comment noted.

1111.01

Comments noted.

1111.02

The observations made are correct for only those portions of western DuPage nearest the northern edge of the near cluster area. See Comment Response 973.01 for a discussion of population growth in northeastern Illinois. See Comment Response 710.01 regarding land acquisition plans.

1111.03

See Comment Response 979.02.

1111.04

See Comment Response 1021.05.

1111.05

The Federal Noise Control Act of 1972 (amended by the Quiet Communities Act of 1978) requires the DOE to comply with all state and local regulations concerning environmental noise limits. The noise limits set by the State of Illinois Rules and Regulations, Title 35, Subtitle H (Noise) that would protect communities adjacent to SSC operating locations are discussed in EIS Volume IV, Appendix 9, Section 9.1.3.5.B.2. The Federal Occupational Safety and Health Administration (OSHA) regulations protect employees from unsafe working conditions, e.g., hearing damage, and are not applicable to community environmental noise limitation. Hearing loss (permanent threshold shift) occurs when persons are exposed to noise levels well above 75 dBA essentially continuously for 8 hours or more, 5 days per week. The DOE is committed to utilizing whatever mitigation technologies would be necessary to ensure compliance with Illinois law. (EIS Volume I, Chapter 3, Section 3.6.)

1111.06

See Comment Response 1292.05.

1111.07

As stated in EIS Volume IV, Appendix 11, Section 11.3.3.2, the endangered bald eagle and peregrine falcon are migrant species rarely present in the region. These species are principally associated with large bodies of water. Peregrines in particular may forage over wetlands if there are plentiful waterfowl and shorebirds. The generally accepted

reasons for these species' decline and subsequent listing as endangered include habitat loss disturbance, illegal shooting, and pesticide contamination.

Although the SSC would result in the loss of habitat (approximately 300 acres), including some wetland acreage, direct impacts to these species are considered minimal. The State of Illinois does not have a law to protect or regulate the use of natural habitats or wetlands. However, the DOE will comply with Section 404 of the Clean Water Act, Executive Order and DOE's regulations regarding wetlands protection (10 CFR1022).

1111.08

The evaluation in EIS Volume I, Chapter 3, Section 3.5 identifies construction-related impacts to the local area and its residents. The majority of the residents in the region of the SSC site would be at distances of several hundred ft or more from road construction. The noisiest phases of road construction (clearing, grubbing, and earthwork) which include the use of dozers, scrapers, and haul trucks typically would be completed within approximately a 1-month period at the location of a specific homesite along the route. This road construction activity would be no different in character than any normal highway construction and maintenance activity (see EIS Volume IV, Appendices 1 and 9).

There would be no cut-and-cover collider ring tunnel construction at the Illinois SSC site. During the tunnel-boring phases, spoils hauling trucks would operate only during normal daytime working hours. Spoils hauling operations could peak (for only about a 2-mo period) at a maximum of 288 truckloads per day of excavated materials, when six tunnel boring machines would operate simultaneously. All spoils hauling activity would be completed within a total period not exceeding 3 years (see EIS Volume IV, Appendix 1).

1111.09

Comment noted.

1113.01

See Comment Response 1276.01.

1113.02

The visual impacts of Facility E9 are addressed in EIS Volume IV, Appendix 16, Section 16.3.3.3. Due to the close proximity of the proposed site for the facility to Country Club Road and the residences along it, the visual impact would be significant. The other facilities mentioned in the comment are service areas. The visual impact of these is noted where moderately to highly sensitive views would be affected. See EIS Volume IV, Appendix 16, Section 16.2.3.2 for criteria for sensitivity. See also Comment Response 859.04, which addresses the question of why certain of these and other facilities were not mentioned in the scenic and visual resources assessments.

110111503358811

Noise produced during construction and operations at service areas are addressed in Volume I, Chapter 5, Section 5.1.4 and in Volume IV, Appendix 9. Analysis presented in Appendix 9 indicates that noise produced by the service area during operations will reach a day-night average sound level of 55 dBA within 450 ft away from the service area property line. Currently, approximately 45 people live in areas that will have a day-night average sound level of between 55 and 60 dBA because of service area operations. It is anticipated that the DOE will consider during detail design mitigations to minimize the sound impact of service area operations in areas where residences are located. (EIS Volume I, Chapter 3, Section 3.6.)

1113.03

See Comment Response 1276.01

1113.04

See Comment Response 710.01.

1113.05

Comment noted.

1113.06

Comment noted.

1114.01

Comment noted.

1114.02

See Comment Response 979.02.

1114.03

Results presented in Volume IV, Appendix 14 from the survey report by the Center for Governmental Studies Public Opinion Laboratory were based on telephone interviews with a random sample of 600 residents of the Illinois study area taken in the last week of March and first week of April 1987. A sample of 600 individuals would be expected to be accurate to within plus or minus 4 percent based on a total group size up to 100 times the sample.

1114.04

The EIS summarizes the conclusions of the report in the comment (Center for Governmental Studies, "An Overview of Citizen Reactions to the Proposed Superconducting Super Collider in Illinois", April 1987) pertaining to concerns over adverse effects of the SSC (EIS Volume IV

Appendix 14, Section 14.1.3.3). The EIS also lists results of letter tabulations received in Illinois as part of the scoping process conducted in February 1987 (EIS Volume IV, Appendix 5, Section 5.3.10.2).

1114.05

SSC-related effects on the quality of life in local communities and the social well-being of particular groups within those communities will depend upon the settlement patterns of SSC-related workers and their families and upon the ability of local communities to respond to the growth effects. The capacity of communities to adapt to growth varies according to the ability of the community to plan and finance needed facilities and services and by their past experience with development. Social disruption will vary depending on the rate of population growth that the community experiences. While one cannot predict at an individual level what kind of people will settle in a community, experience related to Fermilab does indicate that in-migrating operations personnel and their families collectively have had a positive influence in their new communities. The issues of quality of life and social well-being are addressed in the EIS in Volume I, Chapter 5, Section 5.1.8.5.

1114.06

Comment noted.

1115.01

Both short- and long-term impacts on the quality of life along the Fox River would occur if the SSC would be built at the proposed Illinois site.

Short-term impacts on surface and groundwater quality will occur as a result of SSC construction and operations activities, but these will be held to negligible levels through various control techniques (see Comment Response 18.03). Impacts on shallow water tables will be negligible during both construction and operations, but effects on the regional overdraft of the deep aquifers are expected during SSC operations (see Comment Response 533.03). For more details on the proposed Illinois site, see EIS Volume IV, Appendix 7, Sections 7.1.3.3 and 7.2.3.3 for projected water resources impacts, and Volume IV, Appendix 10, Sections 10.2.3.3.C, 10.3.3.1, 10.3.3.2, and 10.3.3.3 for waste management plans. Radiological impacts of the project are expected to be negligible (see Comment Response 870.04 and EIS Volume I, Chapter 5, Section 5.1.6.2.A). Also, see Volume I, Chapter 3, Section 3.6.

There would be a temporary disturbance of the peaceful environment due to noise and traffic during the construction of nearby service roads, tunnel sections, and collider service and access facilities. See Volume IV, Appendix 9, Sections 9.1.3.1, 9.1.3.2, and 9.1.3.5. Increased noise and traffic at nearby SSC areas and roads would be small during the SSC operations. See Volume I, Chapter 3, Section 3.6.

Although the tunnel would cross the Fox River at two locations, the excavation would be entirely by underground tunnel boring techniques, without any visible effects on the Fox River itself. Permanent visual impacts would result from structures at nearby service and access facilities. See Volume IV, Appendix 16, Sections 16.3 (paragraphs on sector service areas and intermediate access facilities) and 16.3.3. See Volume I, Chapter 3, Section 3.6.

A general change in quality of life could occur as a result of SSC-induced population growth, although this would be small in comparison to the effects of expected general population and economic growth. See Volume IV, Appendix 14, Section 14.1.3.3.

1115.02

The proposed site for the SSC in Illinois was chosen by the State of Illinois. The DOE established requirements for the SSC facility including the topography and geology of the proposed site, the availability of land, and necessary utilities, and the physical and socioeconomic environment of the site (see EIS Volume III, Chapter 1, Section 1.1.).

Hunting, fishing, environmental education, and bird watching are not expected to be negatively impacted by construction of the SSC at the Illinois site. A significant portion of the facility, that is, the tunnel, will be below ground. The EIS identifies river crossings of the tunnel, but these crossings will be deep underground, particularly in Illinois. The Fermilab currently serves as a nature preserve and the SSC areas may also provide open space, bird habitat, and animal/prairie refuges.

1115.03

A comparison of impacts at the seven site alternatives is given in Volume I, Chapter 3, Section 3.4. All sites analyzed meet the site selection criteria; the site selection process was conducted in a manner described in Volume III, Chapter 1.

1116.01

Comment noted.

1116.02

Comment noted.

1116.03

Costs of construction at the proposed site is one of the criteria involved in the selection process. Because of the limitations in the accuracy of the life-cycle cost estimates and the relatively narrow range of those estimates, costs are not considered to be a strong discriminator among the sites.

110111503358814

1116.04

Comment noted.

1116.05

See Comment Responses 275.03 and 880.04.

1116.06

As stated in the EIS, the employment base of the Illinois Region of Influence (ROI) grew slowly between 1969 and 1984 relative to rest of the United States (see Volume IV, Appendix 5, Section 5.3.11.1). More recently, there has been evidence of an increased level of economic growth in the region. This evidence includes decreasing unemployment rates at the same time as the number of workers in the labor force was increasing. For example, the ROI labor force grew by 2.7 percent between 1984 and 1985 while the region recorded a drop in unemployment rates from 10.6 percent in 1982 to 6.5 percent in 1987. DuPage County's labor force grew by 17.3 percent between 1984 and 1985 while the county unemployment rate dropped from 8.2 percent in 1983 to 4.1 percent in 1987. Kane County's labor force grew by 4.8 percent between 1983 and 1984 and by 2.3 percent between 1985 and 1986 while the unemployment rate dropped from 12.3 percent in 1982 to 6.1 percent in 1987. Kendall County's labor force grew by 3.6 percent between 1984 and 1985 while the county unemployment rate dropped from 11.4 percent in 1982 to 5.5 percent in 1987.

As discussed in Volume IV, Appendix 14, Section 14.1.3.3.A, increased economic activity in the Illinois ROI would accompany the SSC's construction and operations in Illinois--beyond the level of economic activity and growth currently found in the region without the SSC.

1116.07

The EIS recognizes the existing groundwater overdraft in the region of the proposed Illinois SSC site and the plans of some communities for future reliance on surface water sources including Lake Michigan and the Fox River. Strict controls are planned during both the construction and operations of the SSC that would minimize impacts on both surface and groundwater quality. The DOE plans to monitor effects of SSC construction and operations on water quality and supply, including water tables, and to implement remedial actions if necessary. More detailed plans than those described in the EIS will be included in a site-specific Supplemental EIS. See also Comment Responses 533.03 (water supply), 18.03 (groundwater quality), and 870.04 (radiological effects on groundwater).

1116.08

EIS Volume IV, Appendix 16, Section 16.3.3.3 evaluates the scenic and visual impacts of the project and mitigation measures which should be

considered during final design. See also Volume I, Chapter 3, Section 3.6. Among those to be considered are architectural treatment to reduce the industrial appearance of the structures and making them less obtrusive.

1116.09

The comment is correct in noting that the construction traffic and associated noise will not occur continuously at any specific homesite for 7 to 8 years. A construction schedule indicating the duration of detailed construction activities is given in Figure 1.1-13 of the EIS (Volume IV, Appendix 1).

1117.01

Comment noted.

1117.02

Comment noted.

1117.03

Impacts to water levels and water quality which may result from SSC construction and operations are discussed in EIS Volume IV, Appendix 7, Sections 7.2.2 and 7.2.3.3.

Impacts on specific wells have not been assessed, but would be evaluated following the development of the final SSC design for the selected site. See Comment Responses 18.03 (groundwater quality), 533.03 (groundwater supply) and 1133.02 (potential compensation for impacted well owners).

1117.04

See Comment Response 1117.03 regarding the potential impact on water table.

The potential for SSC-related radiological contamination of groundwater supplies is discussed in the EIS in Volume I, Chapter 5, Section 5.1.6; Volume IV, Appendix 10, Section 10.1.3; and Volume IV, Appendix 12, Sections 12.3.1 and 12.4.1. The material contained therein can be summarized as follows: Among the secondary particles produced when the collider beam strikes a material, sodium-22 (Na-22) and tritium (H-3) have half-lives sufficiently long to merit consideration of the possible consequences. Accordingly, the potential of off-site migration via a groundwater pathway was considered and the impacts evaluated. Migration of Na-22 and H-3 in groundwater has been numerically modelled for the accidental loss of beam for each affected SSC site alternative. A comprehensive description of this analysis is provided in the EIS, Volume IV, Appendix 12, Section 12.2.3.1.C. The annual dose equivalents derived from the model for the Illinois site indicate that the radionuclide concentration in a nearby well (50 m from the source) which is used

for normal daily consumption of water for an entire year would be 0.044 mrem/yr (EIS, Volume IV, Appendix 12, Table 12.2.3-6). This level greatly overestimates that which could be expected under normal operating conditions and is considerably less than the EPA public drinking water standard of 4 mrem/yr (40 CFR 141). See EIS Volume IV, Appendix 12, Section 12.2.3.1.

1117.05

Comment noted.

1118.01

Comment noted.

1118.02

The comment with respect to the potential contamination of the aquifer in the Newark Valley is noted. Solid nonradioactive wastes generated by the SSC would be disposed at two existing landfills, the Settlers Hill landfill and the Winnetka municipal landfill. The incremental effects of the SSC would be negligible. See EIS Volume IV, Appendix 5, Section 5.3.8.2; Appendix 7, Section 7.2.3.3.A.4; and Appendix 10, Section 10.3.3.2.C.

An average of about 1,100 gal/min of cooling water will be needed, of which an average of about 800 gal/min will be lost through evaporation from the cooling towers, leaving an average of about 300 gal/min blowdown water which could be recycled after treatment (i.e., removal of the dissolved salts). See also EIS Volume IV, Appendix 10, Section 10.3.3.3.C.

Fermilab is using Fox River and local surface drainage water for cooling water and groundwater for potable water. Groundwater is proposed to be the principal source of water for all SSC on-site needs and the associated population growth. The potential use of surface water sources, including Lake Michigan and the Fox River, was recognized in the EIS. No credit was given this possibility, however, since plans by local communities were not sufficiently firm for consideration during the expected life of the project. Nevertheless, some of the water currently being used by Fermilab could eventually become available for the SSC operations. This would reduce the incremental water needs at the proposed Illinois site. See also Volume IV, Appendix 5, Section 5.3.2.1 and 5.3.2.2.C; and Volume IV, Appendix 7, Section 7.1.3.3.G, and Section 7.2.3.3.A.1 and B.1.

1118.03

Comment noted.

1119.01

Comments noted.

1120.01

Comment noted.

1121.01

See Comment Response 1013.01.

1121.02

See Comment Response 1013.01.

1121.03

See Comment Response 1279.115.

1121.04

See Comment Response 1279.115.

1121.05

The land use observations are consistent with the analyses presented in EIS Volume I, Chapter 5, Section 5.1.10 and Volume IV, Appendix 13, Section 13.1. See Comment Response 1369.09. Noise impacts are discussed in summary fashion in Volume I, Chapter 5, Section 5.1.4 and in more detail in Volume IV, Appendix 9.

1121.06

Comment noted.

1122.01

See Comment Response 853.01.

1122.02

The Illinois groundwater data presented in EIS Volume I, Chapter 4, Table 4-13 were collected by the State of Illinois in the region of proposed SSC site. The health impacts from radiation during SSC operation have been assessed in Appendices 10 and 12 of Volume IV. There are no measurable adverse impacts from cumulative effects of exposure to radium in drinking water and exposure to radiation from SSC operations. The dose equivalent to the population at large from SSC operations is primarily through the air pathway and is less than 0.001 percent of that from background radiation.

1122.03

Tables 4-8 and 4-9 in Volume I, Chapter 4 gave statistics pertaining to radon levels present in living spaces and in basements in the regions of the proposed sites. Information was based primarily on the data collected by the University of Pittsburgh Radon Project and its successor, The Radon Project, up to August 1987. Detailed data were presented in Volume IV, Appendix 5, Table 5.3.6-1.

1122.04

See Comment Response 1122.03.

1123.01

See Comment Response 710.01.

1123.02

EIS Volume IV, Appendix 1, Section 1.2.3.4 describes the correct proposed placement of Intermediate Access Area E8. EIS Volume IV, Appendix 5, Section 5.3.10.2.4 has been revised accordingly. Also see Comment Response 710.01.

1123.03

See Comment Response 710.01.

1123.04

Comment noted.

1123.05

The observation is correct. The site for E8 would be along Denker Road from 500 to 700 ft north of the entrance to the subdivision, and not directly across from that entrance as stated in EIS Volume I, Chapter 5, Section 5.1.10. The conclusion concerning the visual impact of E8 drawn from the EIS in this section is consistent with the impact expected for E8 if sited as proposed. The facility would be fully in view and about 0.2 mi from the new homes being built. The text of the EIS has been revised and corrected in the Errata to reflect the correct location. The affected sections are Volume I, Chapter 5, Section 5.1.10.3.C, and Volume IV, Appendix 16, Section 16.3.3.3.I, respectively.

1123.06

Comment noted.

1123.07

Comments noted.

1124.01

See Comment Response 816.01.

1124.02

The comment as stated reflects the road improvement plan described in the EIS Volume IV, Appendix 5, Section 5.3.11.2.A.1. That plan, in turn, was based on the proposal made by the State of Illinois.

1124.03

The comment on the highway improvement program for the site is noted. Also see Comment Response 1012.01.

1124.04

The comments on the region's transportation facilities and improvement plans are noted. Also see Comment Response 1012.01.

1125.01

Comment noted.

1126.01

Comment noted.

1126.02

Pertinent information which was not in the draft is presented in the Errata and Revisions for EIS Volume I, Chapter 5 and Volume IV, Appendix 9.

The distribution of residences and schools for the seven SSC sites was compiled from current USGS 7-1/2 minute quadrangle sheets and from observations recorded by the DOE during site visits. This information was augmented by results of analysis of aerial photographs to quantitatively determine population distribution in the vicinity of each SSC site. Where applicable, current information from school administrators was obtained to complete the location and population information. Pertinent new information is presented in the Errata and Revisions for EIS Volume I, Chapter 5.

The Supplemental EIS for the selected site will address the populations numbers and distribution at a level of detail which will identify each residence, school, and other institutional structure, its location relative to the SSC facilities, and the number of people associated with it. The supplement will also address planned but uncompleted land development as it affects impact mitigation requirements.

1126.03

See Comment Response 1126.02.

1126.04

See Comment Responses 307.04 and 880.04.

1126.05

The DOE has made site visits and conducted public hearings near all of the BQL sites. The DOE is aware of the existence of a variety of opinions concerning the potential of siting the SSC in any of the identified areas.

Public participation is a vital element in the review of any EIS. The DOE goal for accuracy and comprehensiveness requires the active involvement of the public. In particular, those citizens in the immediate area of a potential siting of a major facility can contribute significantly to the understanding of that area's environment.

All forms of public expression are valuable and essential in complying with the requirements of NEPA. All comments, individual or an organized collective expression, were assessed in the preparation of the Final EIS.

1126.06

The recent growth experienced in counties west of Chicago, including DuPage and Kane Counties, is addressed explicitly in the EIS (Volume IV, Appendix 5, Section 5.3.11.1.B). Anticipated future growth of these counties is used as a foundation upon which to project SSC-related population impacts (Volume IV, Appendix 14, Section 14.1.3.3.B). The projected SSC-related population growth, in turn, is used throughout the EIS to evaluate impacts of the project.

1126.07

Comment noted.

1127.01

Regarding wetland impacts, see Comment Response 958.04.

Regarding population figures at the Illinois site, see Comment Response 1369.09.

Regarding impacts to wells at the Illinois site, see Comment Response 979.02.

Regarding relocations, see Comment Response 880.04.

Local building codes are the responsibility of State and local governments; the DOE has no control over local building codes.

Regarding SSC-related effects on the quality of life, see Comment Response 1002.01.

1128.01

Comments noted.

1128.02

The DOE will comply with all applicable provisions of the Clean Water Act and Safe Drinking Water Act and all applicable State and local regulations implementing their delegated authority. See EIS Volume I, Chapter 6.

1128.03

The DOE will comply with all applicable provisions of the Clean Air Act and any applicable state air pollution control rules and regulations as put forth in their approved State Implementation Plan. See EIS Volume I, Chapter 6, Sections 6.1 and 6.2.5.

1128.04

As indicated in Volume I, Chapter 6, it is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with applicable environmental statutes, regulations, and standards. For a review of the Federal environmental requirements that may be applicable to the SSC project, refer to Volume I, Chapter 6.

1128.05

See Comment Response 275.03.

1128.06

Comment noted.

1128.07

Comment noted.

1129.01

Comment noted.

1129.02

See Comment Response 1195.06.

110111503358822

It is not the purpose of the EIS to mask or misrepresent potential SSC health effects or environmental safety and health considerations, but rather to present facts as known and to identify mitigative measures that could potentially offset negative or adverse impacts. In this regard, the impacts of operating the SSC under both normal and hypothetical accident scenarios were assessed in terms of radiation exposures to the SSC work force and the general public. The data presented in Volume IV, Appendix 12 were intended to assess radiological impacts and present them in terms of standards established by the Federal Government for protection of radiation workers and the general public so that the reader might draw their own conclusions.

Where applicable, the Federal government does consider the factor of risk versus benefit in the establishment of health protection standards. It was in this context that the data in the tables in Volume IV, Appendix 12 were presented, to contrast measured, calculated, or projected exposures with applicable standards. It should be noted, however, that even under the reasonably foreseeable accident conditions, exposures to the work force and general public are projected to be below established guidelines or standards for exposures to radiation (for more detail on the risks and confidence with which DOE can project exposures to radiation, see Comment Response 810.05).

While accidental beam loss represents the worst reasonably foreseeable accident for SSC operations, a highly sophisticated monitoring system is incorporated into the design of the SSC to protect against damage to accelerator components and prevent radiation releases that would result from loss of beam. In the event that the protection system failed, extensive earth shielding surrounding the accelerator tunnel would serve to protect the public from radiation exposure. At the Illinois site, the maximum direct radiation dose to an individual at the land surface resulting from loss of beam is projected to be less than 0.001 mrem/yr (Volume IV, Appendix 12), a comparatively small dose considering that the DOE limit is 100 mrem/yr and the estimated dose to an individual from natural radiation is about 300 mrem/yr (Volume IV, Appendix 12, Table 12.2.1-1). The above considerations would apply equally to other potential receptors near the SSC, such as soil, plants, and wildlife. Potential radiological impacts on groundwater have also been considered and are discussed in the EIS (Volume I, Chapter 5; Volume IV, Appendix 12). At the Illinois site , the calculated annual dose equivalents in a nearby well (50 meters from the source) resulting from accidental loss of beam would be 0.044 mrem/yr (Volume IV, Appendix 12, Table 12.2.3-6), well below the U.S. Environmental Protection Agency 4mrem/yr guideline for drinking water. Data pertaining to the nonradiological health and safety aspects of the SSC are discussed in Volume I, Chapter 5; Volume IV, Appendix 10; and EIS Volume IV, Appendix 12.

The quantity of tables was presented to show the degree to which this issue has been examined, and the minimal health and safety impacts. It should be noted that while radiation was not the overriding issue for which the general public has expressed concerns (DOE's analysis of the total comment file reveals that socioeconomic and infrastructure issues

were discussed more frequently), the DOE has examined this issue in detail. Volume IV , Appendix 12, Tables 12.3.1-22, 12.3.1-23, and 12.3.1-33 address the impacts of the low-level radiation exposures, including cancer risks for Illinois. Other candidate state sites can also be found in this section.

In terms of factoring Dr. H.J. Mueller's findings that there is absolutely no safe dosage of ionizing radiation, this has been done by DOE and is reflected in the radiation protection standards for radiation workers and the general public. It has always been DOE's and its predecessor agencies' practice to conduct its operations and maintain exposures in a manner that would be as low as reasonably achievable (ALARA), regardless of the permissible level prescribed by the criteria, guideline, or standard. This is discussed in Volume IV, Appendix 12, Section B, "Risk From Low-Level Exposure to Radiation," where the recommendations of the National Academy of Sciences Committee on the Biological Effects of Ionizing Radiation (BEIR) were considered when establishing standards. Radiation protection practices have generally presumed low-dose responses based upon extrapolation from high-dose effects. However, some research has indicated evidence of mechanisms which might, under certain circumstances, imply a threshold for radiation effects (Journal of the Health Physics Society, Health Physics, Volume 52, No. 5, pp. 521-525, May 1987).

1129.03

See Comment Response 979.02.

1129.04

The health and safety impacts of the SSC project, including conceivable accidents, are discussed in Volume IV, Appendix 12 of the EIS and summarized in Volume I, Chapter 5, Section 5.1.6.

1129.05

Comment noted.

1130.01

The EIS notes that of the three primary counties (DuPage, Kane, and Kendall) in the proposed Illinois SSC region of influence, the population growth rate of Kendall County increased the fastest during the period 1970-1980 (see EIS Volume IV, Appendix 5, Section 5.3.11). The following are average annual growth rates stated in the above section for 1970-1980:

Kendall County	+3.5%
DuPage County	+3.0%
Kane County	+1.0%

During the period 1980-1985 the following average annual growth rates are reported for the three primary counties (Volume IV, Appendix 5, Section 5.3.11):

DuPage County	+1.4%
Kane County	+1.4%
Kendall County	-0.1%

1130.02

See Comment Response 880.04.

1130.03

The EIS (see Volume I, Chapter 5, Section 5.2.12 and Volume IV, Appendix 14) contains a discussion of individual state costs, which were included in the total project costs used as the basis of the socioeconomic analysis. The Illinois Department of Energy and Natural Resources should be contacted for specific cost information relative to the Illinois proposal.

1130.04

See Comment Response 979.02.

1130.05

The State of Illinois has proposed to design service area facilities to appear similar to farm structures, and intermediate access areas to resemble houses. Should the Illinois site be selected, such measures, along with a number of others, would be evaluated in the Supplemental EIS and addressed in final project design.

Mitigation methods proposed for utilization during construction are discussed in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.4 and Volume IV, Appendix 9. Control measures assumed in the development of the construction scenario, and described in the revised EIS include scheduling which limits certain support activities of the continuous tunneling work (such as jackhammering and spoils loading and hauling) to 12 daytime hours per day. Additional measures described in Appendix 9 include the use of partial earth berms in strategic locations, and the use of commercially available quieted construction machinery.

Although none of these measures alone may have the potential to silence the construction activities, used together in appropriate ways they can substantially reduce the noise impact on nearby areas.

Should Illinois be selected as the site for the SSC, such measures, along with a number of others would be evaluated in detail in the Supplemental EIS. The construction plan for the selected site will include identification of structures within the potential area of

influence of construction noise. Through the use of computerized noise propagation models, appropriate combinations of available mitigation measures will be selected in such a way as to limit the number of people who will be annoyed by noise during construction.

1130.06

These observations are consistent with those which appear in the EIS Volume I, Chapter 5, Section 5.1.4.

1130.07

To enhance the analysis presented in the DEIS, the number of people in the areas of possible noise impact has been determined by analysis of aerial photographs furnished by the State with its proposal. The numbers have been used in estimating the magnitude of expected noise impact associated with each construction and operations noise source. The results for Illinois are summarized as follows. During construction, an estimated 454 people would be exposed to highly annoying outdoor noise levels and an estimated 1,236 to somewhat annoying levels.

During operations of the SSC, an estimated 45 people would be exposed to annoying outdoor noise levels (See Errata and Revisions for EIS Volume I, Chapter 5, and Volume IV, Appendix 9).

Because the sound level associated with each source falls off rapidly as the distance from the source increases, the number of people highly annoyed by the sounds of SSC construction and operations will not be the same as the population of the region. Therefore, the DOE does not believe that tens of thousands of people would be highly annoyed by noise levels from the SSC.

1130.08

See Comment Responses 18.04 and 1332.04.

1130.09

The figure of 290 truckloads per day in EIS Volume IV, Appendix 10, Section 10.2.3.3.A.1 has been changed to 144 truckloads per day in the Errata. Mitigations to be considered include the use of highways instead of local roads wherever possible, direction of traffic away from the residential areas and schools, use of traffic controls and speed limits, and strengthening of roads (EIS Volume I, Chapter 3, Section 3.6). The capacities of roads will be evaluated during construction planning. The transportation and disposal of spoils and the routing of other construction traffic will be investigated in greater detail in the Supplemental EIS for the selected site.

1130.10

The impact analysis in the EIS does not support the contention that Illinois is unsuited for construction of the SSC (see Volume I, Chapter 5). The site selection process by which Illinois was selected as one of the seven sites on the BQL is discussed in Volume I, Chapter 3, Section 3.1.2 of the EIS.

1131.01

Comment noted.

1131.02

See Comment Response 880.04.

1131.03

As cited in Volume I, Chapter 4, Section 4.9.1 of the EIS, Illinois has the largest potentially impacted population (but not specifically landowners) in the region of the proposed SSC of any of the BQL sites. The EIS provides a more detailed analysis of the potentially affected population and environment in Illinois in Volume IV, Appendix 5, Section 5.3 (socioeconomics and infrastructure were discussed in Section 5.3.11).

1132.01

See Comment Responses 13.02, 307.04, 772.03, and 880.04.

1133.01

Wetlands impacts are discussed in EIS Volume I, Chapter 5, Section 5.1.5; socioeconomics in Chapter 5, Section 5.1.8.1; and water supply in Chapter 5, Section 5.1.2.

1133.02

It is anticipated that a limited number of existing private wells in Illinois may be adversely affected or have to be abandoned because of the project. The State had indicated that an alternative water supply or compensation will be provided by the State to affected well owners if a continuing need for water exists; however, the manner in which compensation of an alternative supply of water will be provided has not been finalized. Such inquiries should be addressed to the appropriate state authority. There is no Federal requirement or authorization to provide mitigation or compensation for indirect impacts such as water level drawdowns affecting local wells. Such socioeconomic impacts and water resource impacts would be analyzed in detail in the Supplemental EIS to be prepared before a decision is made to construct at the selected site.

1133.03

See Comment Response 1133.02.

110111503358827

1133.04

Impacts to wells are described under water resources in EIS Volume IV, Appendix 7; noise and blasting are discussed in Volume IV, Appendix 9; land use is discussed in Volume IV, Appendix 13; socioeconomics and infrastructure assessments are addressed in Volume IV, Appendix 14.

1135.01

See Comment Response 962.02.

1135.02

See Comment Response 1135.04.

1135.03

See Comment Response 962.02.

1135.04

Vibrations and noise associated with blasting during construction will be monitored and controlled in accordance with the provisions of Volume IV, Appendix 9, Sections 9.2.2.1.C.1 and 9.2.2.1.C.2. The explosives will be set off with microsecond delays between groups of explosives to minimize the vibrations in the surrounding ground. These "charge-weight-per-delays" will be sized to keep the amount of vibration at the closest structure to below 2.0 in/s peak particle velocity, the amount which is generally accepted as safe for poor plaster. The monuments and vaults of cemeteries are constructed of more substantial materials and will not be effected by this level of vibration.

1135.05

The DOE required proposers to identify facilities requiring relocation, specifically cemeteries. See also Comment Response 772.03. Mitigation of problems resulting from any potential relocation is the responsibility of the proposer.

1135.06

SSC-related employment in the Illinois Region of Influence--both direct and secondary jobs--would not necessarily be limited to construction, and would not necessarily be temporary (see the second paragraph of Comment Response 958.02). Also, see EIS Volume IV, Appendix 3 which discusses plans for the SSC after it is no longer in operation.

1136.01

Please refer to EIS Volume I, Chapter 5, Section 5.1 and Volume IV, Appendix 11, Section 11.3 for a discussion of ecological impacts.

110111503358828

1136.02

While the DOE has not conducted specific population density studies over the entire study area, DOE representatives have toured the area, used the most currently available census data and aerial photographs in conducting the environmental impact assessment. The DOE is aware of the rapid growth occurring around the proposed site. While the EIS acknowledges recent growth, the change since January 1986 is not critical to the analysis in the EIS.

Also see Comment Response 865.02.

Concerns regarding priorities in Federal fun are addressed in Comment Response 278.01. State and local spending priorities are not the responsibility of the DOE.

Unavoidable adverse impacts are addressed in Volume I, Chapter 5, Section 5.4.

The SSC will not use radium in any form.

1136.03

The DOE will construct and operate the SSC in a manner consistent with all applicable State and Federal laws and regulations (see EIS, Volume I, Chapter 6).

1137.01

The purpose of an environmental impact statement is to ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. As required by the Council on Environmental Quality (CEQ), the National Environmental Policy Act (NEPA) for the preparation of environmental impact statements requires Federal agencies to explore and objectively evaluate all reasonable alternatives for major Federal actions affecting the quality of the human environment. (See EIS Volume I, Chapter 6.) The preferred site was announced by the Secretary of Energy in November, 1988 (EIS Volume III, Chapter 3). The final site selected will be published in the Record of Decision expected to be issued in January, 1989. The CEQ regulations also require Federal agencies to consider options available to mitigate the potential environmental impacts of the State proposals (EIS Volume I, Chapter 3, Section 3.6). In most cases, as pointed out by the commenter, mitigation options are available to reduce environmental impacts.

1137.02

See Comment Response 710.01.

1137.03

Comment noted.

1137.04

Comment noted.

1139.01

The maps in EIS Volume I, Chapter 5 were intended to show the locations of people experiencing noise from the construction and operations of the EIS. Comment Response 964.01 discusses the way in which this information, with additional data, was used.

A check has been made of general topography in the areas where beam absorbers would be at the proposed sites to see if there might be topographical depressions that would bring the surface below tunnel depth. There appears to be no area at any of the proposed sites where it would be possible to reach tunnel depth without digging or excavating to that depth (see Volume I, Chapter 5, Section 5.1.6.2.A.1).

Overall radiation exposure to stratified fee residents is expected to be less than 0.001 mrem/yr, an immeasurable amount. It is insignificant when one considers that the average individual receives about 360 mrem annually from background radiation (see Volume IV, Appendix 12, Section 12.2.1.1.A and Table 12.2.1-1).

1139.02

"Human receptor" is a term meant to denote individuals at various distances from a noise source, receiving the noise. In the EIS, residences, schools, churches, etc., were identified to give a more realistic evaluation of noise impacts near service areas and other SSC facilities.

1139.03

EIS Volume IV, Appendix 5, Section 5.3.2.1.A states, "Local citizens are concerned about the flood problem and they have recommended a no-growth policy for the City of Aurora and Kane County until the problem is solved."

1139.04

The city of West Chicago has been placed on the Illinois EPA's restricted list because of dissolved radium concentrations exceed drinking water standards in the municipal water supply wells. See Comment Response 1200.04, which addresses a similar concern.

1139.05

The EIS analysis of public service impacts used the most recent employment and population data available from a Federal survey of local government sources and state education agencies to formulate projections which maintained current service ratios between employment and population. This methodology facilitates the comparison of impacts between sites, and utilizes data which are consistent among the sites. However, as defined in the EIS these ratios does not denote a numerical ranking or quality rating of services provided. What the measures do provide are useful indicators of the impact on local services of population and enrollment changes.

Therefore, simple comparison between Illinois public service and student/teacher ratios and those ratios from other regions cannot lead to conclusions regarding the quality of services being compared. In any case, the State of Illinois does not maintain the least desirable school and social service ratios as the comment states. Inspection of the text and accompanying tables of EIS Volume IV, Appendix 5, Sections 5.2.11.1.C; Volume IV, Appendix 5, Sections 5.3.11.1.C and 5.4.11.1.C; and Volume IV, Appendix 5, Sections 5.5.11.1.C, 5.6.11.1.C, and 5.7.11.1.C show that, with the exception of health care, public service ratios for the State of Illinois and the Illinois Region of Influence are equivalent or superior to all other regions considered.

1139.06

Traffic delays at the Chicago O'Hare Airport are discussed in Volume IV, Appendix 5, Section 5.3.11.2.

1139.07

Comment noted.

1140.01

Comment noted.

1140.02

The number of wells potentially lost due to siting and constructing the SSC in Illinois was not accurately presented in the DEIS. State records indicate 320 wells within the SSC footprint; however, based on field surveys and statistical analyses, the state estimates that only 6 to 31 wells may be directly affected and required to be closed because of the project. See Comment Response 979.02 for clarification of criteria to assess the number of wells closed and revisions to the EIS.

As noted in the comment, the state has indicated it will provide a replacement well or an alternative water supply source to owners of affected wells. This would be a much smaller financial burden than assumed in the comment given the limited number of wells potentially affected.

110111503358831

1140.03

Presumably the terms "access sites" and "pumping sites" used in this comment refer to the intermediate access areas (E) and to the service areas (F), respectively. The reference in this comment to an increase in size for these facilities is unclear, since there was no such increase. The required acreages for these sites are 0.9 and 5.7 acres, respectively. These numbers are shown in the Invitation for Site Proposals for the SSC, and again in EIS Volume IV, Appendix 4, Table 4-1 of this EIS. The Illinois Site Proposal, in Table 6-2 of Volume 6, shows 6 acres for the six E-site areas which are not surrounded by fee simple estate land, or 1 acre per site. This same table shows 34 acres for the six F-site areas which are not surrounded by fee simple estate land, or approximately 5.7 acres per site. See also Comment Response 710.01.

1140.04

See Comment Response 958.04.

1140.05

It is outside the scope of this EIS to consider construction periods of different duration from those provided by the EIS in Volume I, Chapter 3, Section 3.1.4 and Volume IV, Appendix 1, Section 1.1.4.2. The proposing states have agreed to the land acquisition schedule shown in Volume IV, Appendix 4.

1141.01

Comment noted.

1141.02

See Comment Responses 856.06 and 861.06. Regarding SSC-related effects on the quality of life, see Comment Response 1002.01.

1141.03

Wetland impacts are evaluated in EIS Volume I, Section 5.1.5.3 and Volume IV, Appendix 11, Section 11.3.3.3. Should Illinois be selected, continued emphasis for management, avoidance, and/or mitigation of impacts to wetlands will continue through preparation of the Supplement to the EIS and the final design and construction process.

1141.04

The effects of construction on wetlands would be minimized by placement of facilities and by using standard erosion control techniques. In addition, dewatering of wetlands would be minimized by employing slurry walls or freezing techniques where appropriate. If Illinois is the selected site, permits would be required and plans to mitigate wetland impacts would be developed in consultation with appropriate agencies,

such as the U.S. Army Corps of Engineers, as required by Section 404 of the Clean Water Act.

1141.05

See Comment Response 958.04.

1141.06

The wetlands assessment has been revised based on a post-DEIS wetlands survey conducted by the DOE. Potential wetland impacts and mitigative measures are discussed in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.5.3 and Volume IV, Appendix 11, Section 11.3.

The proposed locations of J3, J6, F5, and K4 encroach upon 100-year floodplains. The encroachments and mitigative measures are discussed in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.2.2 and Volume IV, Appendix 7, Section 7.1.3.3.

1141.07

Comment noted.

1142.01

See Comment Response 1237.02.

1142.02

See Comment Response 1279.141.

1142.03

The long-term water inflow rate can be reduced by pressure grouting to as low as an average of 0.5 gal/min 100 feet (see Comment Response 1279.141), or about 2,300 acre-feet/yr (equal to 6 percent of the Kane County annual water use) for the entire tunnel (note that some portions of the tunnel may have no inflow). At this rate, the water drained from the tunnel would fulfill the need for cooling water, therefore mitigating the need for additional groundwater withdrawal. After use for cooling, the water can be treated (if necessary), and permitted for reinjection into the groundwater system, thereby minimizing the impacts on the existing groundwater use in the area.

1142.04

See Comment Response 1279.141.

1142.05

Only minor water leakage is expected into the tunnel during SSC operations, since leaking rock sections would have been grouted or otherwise lined during tunnel construction. This is necessary not only to minimize impacts on nearby water tables but also to assure the safety of SSC operations (also see Comment Response 19.03). The technology for groundwater infiltration control into tunnels is well established. Throughout the world, much larger tunnels have been constructed through saturated rocks, including under surface water bodies, and are being used safely and with minimum water infiltration. Impacts of varying degrees on water supplies are projected for all candidate sites. These will be considered, among other factors, in selecting the site

1143.01

The year 1983 given in a footnote to Table 7-4 of Volume IV, Appendix 7, is the publication date of the reference which was used for estimating per capita water use; it was not the basis for the population figures. The population figures for the impacted counties were obtained from U.S. Bureau of Census data for 1970 and 1980, and from U.S. Bureau of Census final estimates for 1985 (published in 1987 and 1988). Projections for future years were based on U.S. Bureau of Census projections for the entire State of Illinois. These projections were then allocated to individual counties based on data from the Illinois Department of Commerce and Community Affairs.

The projections in Table 7-4 represent the incremental water needed by the estimated population increase induced by the SSC if it is built at the proposed Illinois site. Table 7-4 does not list the total water use by the total population. Although the projections of SSC-induced population growth consider the availability of local labor versus the need for in-migration, they are not very sensitive to small errors in the total population.

The projected SSC-induced population growth represents only about one percent of the total population which is projected to exist in Kane County in the years 1992 and 2000 if the SSC would not be built at the proposed Illinois site (see Volume IV, Appendix 14, Section 14.1.3.3.B, Tables 14.1.3.3-6 to -9). The EIS recognizes that population and water use impacts would occur; for the reasons described in the referenced EIS sections and summarized above; however, this impact will be small in comparison to the impacts of population and economic growth caused by other factors. See also Comment Response 1013.02.

1143.02

Refer to Comment Response 1146.05.

1143.03

The figure of 290 truckloads per day in EIS Volume IV, Appendix 10, Section 10.2.3.3.A.1. has been changed to 144 truckloads per day in the Errata.

If Illinois site is selected, capacities of the quarries and access roads to accommodate the traffic will be evaluated in more detail during the construction planning, to minimize delays to the proposed SSC and to minimize the impact to the quarries and the local roads. This information will be addressed in the Supplemental EIS for the selected site. The tunnel machines could be operated in different areas to distribute the traffic among the four quarries.

1143.04

Disposal of spoils in quarries should not cause stream siltation because the spoils would be contained.

Potential impacts on groundwater may result from leaching of spoils. EIS Volume I, Chapter 3, Section 3.6 and Volume IV, Appendix 7, Sections 7.2.3.3.A.4 and 7.2.3.3.B.2 assess the potential impact on groundwater quality and present possible mitigative measures. The assessment indicates that with proper mitigative measures, impacts to groundwater quality from spoils disposal can be minimized.

1143.05

The State of Illinois originally proposed 46 quarries as disposal sites as part of their proposal (September 1987). Recent submittals proposed the use of four quarries as disposal sites. The EIS is based on the later submittal (Volume IV, Appendix 10, Section 10.2.3.3.A).

1144.01

See Comment Response 973.01.

1144.02

See Comment Response 1171.02.

1144.03

See Comment Response 973.04.

1145.01

Comment noted.

1145.02

Only negligible effects on nearby groundwater supplies are expected as as result of the tunneling, since inflows will be low and controlled through grouting and similar techniques. Also, the tunnel is in a highly impermeable formation while water wells are generally in the more permeable aquifers above or below the tunnel horizon. See Comment Responses 19.03 (tunnel infiltration and control) and I133.02 (compensation to affected well owners).

1145.03

Comments noted.

1146.01

Comment noted.

1146.02

See Comment Response 875.04.

1146.03

See Comment Responses 710.01 and 880.04

1146.04

The maps in EIS Volume I, Chapter 5 are intended only to demonstrate the general distribution of people and their locations relative to the SSC surface facility locations. These were used in the DEIS to identify E and F areas having the potential to cause high annoyance from noise. The final results of the site comparison, as presented in the EIS (see the Errata and Revisions for EIS Volume I, Chapter 5, and Volume IV, Appendix 9), do not depend on the accuracy of these maps, but rather on information obtained from aerial photographs.

An analysis is presented in the Final EIS showing the numbers of people in the areas of possible noise impact (see EIS Volume I, Chapter 5, Table 5.1.4-10). The numbers have been determined by analysis of aerial photographs furnished by the State with its proposal and have been used in estimating the magnitude of expected noise impact associated with each construction and operations noise source. The results for each state are summarized in the Errata and Revisions to EIS Volume I, Chapter 5, and Volume IV, Appendix 9. For Illinois, during construction an estimated 454 people would be exposed to highly annoying outdoor noise levels and an estimated 1,236 to somewhat annoying levels. During operations of the SSC an estimated 45 people would be exposed to somewhat annoying outdoor noise levels.

1146.05

There could be as many as 144 truckloads delivering excavated material to quarry 1. This is the worst-case scenario if three tunnel boring machines (TBM) operate simultaneously and if all the excavated material were to be taken to quarry 1.

Volume IV, Appendix 10, Section 10.2.3 was amended to read, "About 288 truckloads per day would be required for a maximum of six TBM contractors operating simultaneously." If Illinois is chosen as the selected site, mitigation strategies would be included in the Supplemental EIS.

Volume IV, Appendix 10, Section 10.2.3.3.A.1 was amended to read, "The maximum number of truckloads on a given day to quarry 1 could be 144, assuming three TBMs (for shafts E7, F7, E8, F8, E9 and F9) would be operating simultaneously. The remaining 144 truckloads could go either to quarry 2, 3, or 4." If Illinois is chosen as the selected site, mitigation would be included in the Supplemental EIS.

1146.06

Comments noted.

1147.01

Comment noted.

1147.02

See Comment Response 979.02.

1147.03

The EIS addresses the significance of development, farmlands, and protected species in Illinois relative to the other sites.

The urban condition of parts of the proposed Illinois site were considered in several portions of the EIS. Volume I, Chapter 4, Sections 4.4, 4.5, 4.8, and 4.9 discuss the specifics of the proposed site as it pertains to air quality, noise and vibration, land resources, and socioeconomics and infrastructure, all of which are impacted by the degree of urbanization.

Fertile soil cover is addressed in Volume I, Chapter 5, Sections 5.2.11 and 5.2.12, where land use and prime, unique and important farmlands are discussed. Volume I, Chapter 5, Table 5.2-1 indicates that if the project were sited in Illinois, the portion of prime, unique and important farmlands converted would be 0.00031149.03
ant of the existing inventory.

Threatened and endangered species likely to be present in the site area are addressed in Volume IV, Appendix 11, Section 11.3.3.2. Volume I, Table 4.7 addresses the Federally-listed or candidate threatened and endangered species potentially at the Illinois site, while Table 4-18 illustrates the Illinois State-listed threatened and endangered species in DuPage, Kane, and Kendall Counties. While with the list of potential species is relatively extensive for Illinois, the lack of appropriate habitat in the site area suggests that the probability of most of the listed species being present on the site is very low (see Volume I, Chapter 4, Table 4-17). See Volume I, Chapter 3, Table 3-7 for a comparison of the impacts between sites.

See also Comment Response 857.04.

1147.04

The EIS socioeconomic analysis incorporated the most recently available data on annual averages of employment by place of work (number of jobs), employment by place of residence (number of workers), and unemployment (number of workers seeking jobs). Data on employment by place of work were available from the U.S. Department of Commerce, Bureau of Economic Analysis (BEA) for each county from 1969 through 1984. Employment by place of residence and unemployment rates were available by county from each State's employment or economic security division in the form of time series; the initial year of these time series varied between States (different series began in 1969, 1970, 1974 and 1980; the Illinois time series began in 1974), but all continued through 1987. Volume IV, Appendix 5, Section 5.3.11.1.A discusses employment by place of residence and unemployment data from 1974 through 1986; the 1987 data were received subsequently and incorporated into the socioeconomic assessment. Although the BEA data used in this study typically are updated annually, such revisions were not released in 1987. Updated data were released in 1988 for employment by place of work through 1986, but were not released in time to be incorporated into the EIS analysis. Employment by place of residence and unemployment data used in the EIS were the most recent available average annual data.

The demographic data employed in the baseline description for each Region of Influence (ROI) and each primary impact county within an ROI included final 1985 population estimates prepared for U.S. counties by the U.S. Bureau of the Census. These final estimates were the most recent available at the time of document preparation, with data for several of the States examined having to be acquired from the Census Bureau in prepublication form (through April 1988). Provisional 1986 population estimates were available at the time of document preparation, but were not used as they are not as reliable as the final estimates. The 1985 population estimates for the Illinois ROI and primary impact counties are discussed in the text of Volume IV, Appendix 5, Section 5.3.11.1.B.

1147.05

The excavated material is crushed rock and earth. The excavated material would be stored temporarily at the construction site and would then be transported in covered trucks to the designated quarry sites. Mitigation measures will be taken to reduce the potential impacts to the environment from temporary storage of this material. See EIS Volume IV, Appendix 10, Section 10.2.3.3.A for more details.

1147.06

See Comment Response 873.02.

1147.07

Comment noted.

1148.01

Scenic and visual impacts are addressed in EIS Volume IV, Appendix 16, Section 16.3.3.3. All E and F sites that would affect moderately to highly sensitive public views and were considered (Volume IV, Appendix 16, Section 16.2.3.2). Also see Comment Responses 842.03 and 859.04.

1148.02

See Comment Responses 710.01 and 880.04.

1148.03

See Comment Response 842.03.

1148.04

The referenced churches could be located as close to the F8 facility as 1500 ft. As stated in EIS Volume IV, Appendix 9, Section 9.1.3.1.B, the daytime hourly average sound level at the exterior of the churches is expected to be on the order of 60 dBA during construction. This is as much as 15 dBA higher than the present level. With the church windows closed the attenuation of sound from outdoors to indoors could be as much as 15 dBA. This would result in an indoor level of 45 dB, which provides a speech communication level that is considered in the excellent to satisfactory range for normal voices at distances up to 32 ft.

During SSC operations, the sound contribution of equipment operating at area F8 should produce an hourly equivalent sound level (L_{eq}) of between 50 "to" 55 dBA. Given the same conditions for sound control stated above, the sound level inside church would be acceptable.

However, should the acoustical design of the church buildings be marginal, or the windows be open, an increase of as much as 10 dB increase over the discussion above could be expected in the interior

sound level during SSC construction and operations. The result could be interior sound levels of 55 dBA for the construction phase and 45 to 50 dBA for the operations phase. These background levels could be marginal for hearing a raised voice in a large auditorium unless some electronic augmentation, i.e., a PA system, were used.

Present hourly L_{eq} in the vicinity of the proposed churches is on the order of 50 dB, and the proximity to major airports could produce short-term noise levels much higher than those attributable to the SSC.

Noise mitigation measures that could be employed by the DOE include below-grade installation of the facilities or construction of a vegetated earth berm to shield the facility both acoustically and visually from the community. (EIS Volume I, Chapter 3, Section 3.6.)

1148.05

Comment noted.

1149.01

As proposed by Illinois, in EIS Volume IV, Appendix 5, Section 5.3.10, the SSC would be predominantly constructed in Kane County. Consequently, land acquisition for the SSC would be greater for Kane County than for neighboring DuPage or Kendall Counties.

As noted in Volume I of the EIS, the DOE recognized that a more detailed site-specific review will be required under NEPA prior to a final decision on the construction and operations of the proposed SSC. If Illinois is chosen as the site of the SSC, this more detailed review will be provided in the Supplemental EIS. Mitigation strategies will also be described in greater detail in the Supplemental EIS.

1149.02

The referenced dimensions of the near cluster area are consistent with SSC land requirements as specified in the EIS. The impact of this land acquisition is expected to be no more than that for the other types of linear right-of-way, such as two parallel 500-kV transmission lines as a result, the SSC is not seen as a development that will bisect the township.

Private land would be removed from the property tax base in Kaneville Township, Illinois, reducing the amount of revenue for local jurisdictions. The EIS analysis indicates that although there would be a long-term property tax revenue loss to Kane County jurisdictions, there would also be a long-term increase in both direct and indirect tax revenue from project spending and from additional spending by SSC construction and operations workers. The results of this analysis suggest that net fiscal impacts on Kane County will be negative during the first three years of the project and positive thereafter (see Volume IV, Appendix 14, Table 14.1.2.2-6).

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The EIS did not specifically estimate the property tax loss to Kaneville Township government jurisdiction(s). The long-term direct and indirect tax increase was estimated at approximately $2,000 annually (rounded to $0.0 million in Volume IV, Appendix 14, Table 14.1.3.3.16). Further details of the public finance analysis for the proposed siting of the SSC in Illinois are presented in Volume IV, Appendix 14, Section 14.1.3.3.D.

1149.03

See Comment Responses 997.01 and 1002.01, second paragraph.

1149.04

The concern about the possible hazard to the public from the SSC magnets (magnetic fields) is addressed in Comment Response 497.16.

Excavation of the SSC tunnel will be done using tunnel boring machines and not by excavation from the ground level. Therefore, little material from the surface will be able to penetrate to the tunnel depths from rain during the excavation period. The concentrations of surface contaminants such as salts and unburned hydrocarbons from vehicle exhaust are of such a small magnitude that they would have little effect on the tunnel even if they could penetrate to that depth.

NEPA requires that Federal agencies proposing major Federal actions which may significantly impact the human environment analyze the impacts of these proposed actions in an environmental impact statement. The DOE has carried out that obligation in the EIS. Comments have been solicited from relevant State and Federal regulatory agencies.

1149.05

The 20-ft-thick concrete doors in the experimental areas of the SSC have been designed to provide radiation shielding between the interaction region, where the beams collide, and the adjacent assembly hall, where experimental components are assembled and tested. This shielding would be required to allow access to the assembly halls during operation of the accelerator and would be adequate to protect SSC personnel from radiation exposure in the event of an accidental loss of beam.

An accidental loss of beam represents the worst reasonably foreseeable accident for SSC operations. The impacts to the public associated with a beam loss are discussed in EIS Volume IV, Appendix 12, Section 12.4.1. The shielding provided within the experimental area will be sufficient to protect SSC personnel immediately adjacent to the beam tunnel. The additional earth shielding above the experimental area -- which amounts to a minimum of 350 ft at the proposed Illinois site (EIS Volume IV, Appendix 10, Table 10.1.3-1) will serve to reduce the radiation exposure to the public to negligible levels. At the Illinois site, the maximum direct radiation dose to an individual at the surface as a result of a

beam loss is projected to be less than 0.001 mrem/yr (EIS Volume IV, Appendix 12, Table 12.4.1-2). It is important to note that the average individual receives an annual average dose of 300 mrem/yr of natural radiation.

1149.06

Comment noted.

1149.07

See Comment Response 873.02.

1151.01

Comment noted.

1151.02

See Comment Response 839.03.

1151.03

See Comment Responses 13.01 and 710.01.

1151.04

The comment is consistent with data presented in Volume IV, Appendix 4.

1151.05

See Comment Response 880.04.

1151.06

See Comment Response 854.17.

1151.07

See Comment Response 1369.09.

Continuous noise and vibration (blasting) mitigations, which are discussed in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.4, and Volume IV, Appendix 9 are dependent not on the number of people living close to a tunneling or blasting site but on whether a sensitive area (houses, etc.) is located within a certain distance from the E or F area. For example, it is anticipated that the same blasting mitigations would be utilized whether there were 1 or 20 houses within the 600-ft sphere of influence.

The impact of applying the mitigations assumed in the development of the continuous noise and blasting scenarios on the construction schedule can be assumed to be within the current level of accuracy. The cost of the mitigations is likely to be dependent on the number of E or F areas at which persisting high annoyance is expected. The cost of noise mitigations has not been identified to be outside the level of uncertainty associated with the current project funding estimate. The DOE's commitment to specific mitigations would be a function of the final site selected and would be considered during final design and detailed construction planning and would be discussed in the Supplemental EIS.

1151.08

See Comment Response 873.02.

1152.01

The EIS discusses potential visual impacts of the SSC in Illinois in Volume I, Chapter 5, Section 5.1.10 and Volume IV, Appendix 16, Section 16.3.3. Noise impacts were considered in Volume I, Chapter 5, Section 5.1.4 and Volume IV, Appendix 9, Section 9.1.3. Illinois, of all the site alternatives, does have the greatest population which may be affected by construction and operation of the SSC (see Volume I, Chapter 4, Section 4.9.1). However, as noted in the above referenced sections of the EIS, mitigation measures will be implemented to decrease potential noise and visual impacts to the affected population.

The EIS discusses potential visual impacts of the SSC in Illinois in Volume I, Chapter 5, Section 5.1.10 and Volume IV, Appendix 16, Section 16.3.3. Noise impacts were considered in Volume I, Chapter 5, Section 5.1.4 and Volume IV, Appendix 9, Section 9.1.3. Illinois, of all site alternatives, does have the greatest population which may be affected by construction and operation of the SSC (see EIS Volume I, Chapter 4, Section 4.9.1.). However, as noted in the above referenced sections of the EIS, mitigation measures will be implemented to decrease potential noise and visual impacts to the affected population.

1152.02

See Comment Response 1152.01.

1152.03

See Comment Response 1122.02 for a description of radium levels in water in Illinois.

The cumulative health impact from the other facilities has been addressed for Illinois in EIS Volume IV, Appendix 5. Based on the environmental monitoring results conducted and compiled by the Illinois Department of Nuclear Safety, the ten commercial nuclear power reactors (operating under normal conditions) which exist within 50 mi of the proposed site do not release radioactive materials that contribute to the existing natural background at the proposed site (Illinois Proposal). For this reason, the contribution and operations of the SSC will not create any significant cumulative impact with regard to the insignificant releases from these nuclear facilities.

1152.04

The potential releases of radiation and radionuclides from the SSC were considered in the EIS. The exposure levels that could result from the SSC operations in Illinois were estimated to be 0.004 mrem/yr (Volume I, Chapter 5, Tables 5.1.6-1). This incremental increase in exposure is less than 1/1000 of the background levels of approximately 401 mrem/yr that currently exists in Illinois from natural sources. Thus, the SSC will not contribute in any significant way to the radiation levels already present at the Illinois site. See Comment Response 1007.13.

The comment that the SSC will contribute to or worsen conditions in Illinois related to existing hazardous and toxic material sources is noted. Any waste generated by the SSC will be managed and disposed in accordance with Federal, State and local regulations (EIS Volume I, Chapter 6). There are no plans to permanently store any hazardous or toxic waste at the SSC.

Another concern is raised about the potential for an accident and the possible consequences if there are toxic and hazardous material sources near the SSC. Operations at the SSC were evaluated in the EIS for potential impacts from an accident (Volume I, Chapter 5, Section 5.1.6.3). The evaluation considered radiation releases, hazardous and toxic materials releases, and human health and safety. Other than traffic accidents involving trucks that could occur during construction of the SSC, none of these assessments indicated any possibility of an SSC accident causing an off-site impact on residential or non-residential areas in which a hazardous material or waste might be temporarily located.

1152.05

See Comment Responses 1007.03, 1007.04, and 1278.11.

1152.06

Scenic and visual resource impacts have been addressed in EIS Volume IV, Appendix 16, Section 16.3.3.3. The incompatibility of residential areas and SSC facilities has been described. In a number of cases the visual impact has been assessed to be significant. Mitigation measures that may be considered during final project design have also been provided (see EIS Volume I, Chapter 3, Section 3.6).

1153.01

See Comment Response 1153.02.

1153.02

The quote in the comment occurs in EIS Volume I, Chapter 5, Section 5.1.10.3 in the introductory paragraph. That paragraph summarizes the nature of visual impacts expected at the seven site alternatives. Two distinctly different types of facilities are described. One is a sector service area, also referred to as an F site. The other is an intermediate access facility, called an E site. These are described relative to visua impacts in Volume IV, Appendix 16, Section 16.3 of the EIS. The F site facilities are complex and large, including two large, two-story buildings; a tank farm; cooling towers; and parking. The E site facilities are limited, being one small, one-story warehouse-like building; an air cooler; security fencing; and parking for several vehicles. Regarding standards for evaluation, please refer to Volume IV, Appendix 16, Section 16.2 for an understanding of the technical approach and methodology, and criteria and assumptions for these conclusions.

The question of subjectivity and consistency of conditions prevailing during field visits is addressed in Comment Response 1172.04.

1153.03

See Comment Response 1172.05 regarding the visual impacts, and Comment Response 1369.09 regarding the population around the Illinois site.

1153.04

There are four North Carolina sites, not three, for which mitigation measures would not prove effective. The conditions for these four sites are sharply different from those in Illinois for which mitigation measures may reduce impacts to a level of insignificance. The four North Carolina sites are described in EIS Volume IV, Appendix 16, Sections 16.3.5.3.A, 16.3.5.3.B, 16.3.5.3.E, and 16.3.5.3.F. The visual impacts of facility F1 may not be concealed because it is located on the side of a mountain, which renders it more visible from points below it and opposite it. Facility F9 would be in the midst of a subdivision, while F4 would straddle a road serving several rural residences and would abut some of those homes. In both cases, the proximity is such that no screening could occur. Facility F5, sited as proposed, would displace a chapel, which is an historic structure. If moved to a new location, the chapel would be separated from its historical context and the visual consequence could not be remedied. (See also EIS Volume I, Chapter 3, Section 3.6.)

1153.05

Comment noted.

1154.01

Comment noted.

1154.02

Comment noted.

1154.03

It is true that Illinois has proposed changes to ring facilities and that these changes would necessitate some additional tunneling, angled shafts, etc. However, these changes are relatively minor and would have an insignificant effect on the time and cost to construct the SSC. The EIS does not support the contention that the Illinois site is the most difficult and costly of the seven sites. The DOE is not responsible for strategies used by the State of Illinois to meet the requirements of the ISP. The DOE believes that the EIS accurately reflects the impacts associated with the Illinois proposal.

1154.04

The cost estimate for tunneling was based upon the material included in the Illinois proposal and was used in the socioeconomic analysis. All tunneling in this analysis was to be funded by the DOE.

The extra depth of shafts in Illinois is compensated for by the excellent quality rock at the lower depth, which results in lower tunneling and experimental hall costs.

The amount of changes or lack thereof to the E, F, and J areas has an insignificant effect on the total construction cost or the construction schedule.

1155.01

See Comment Response 1275.02.

1155.02

See Comment Response 1292.05.

1155.03

The assessment of wells potentially lost or closed due to SSC siting and construction at the site alternatives in EIS Volume IV, Appendix 7, Section 7.2.3 does not support a conclusion that more wells will be lost in Illinois than at all other sites combined. The number of wells that may be lost due to siting the SSC in Illinois was not reported accurately in the DEIS. State records indicate 320 wells within the SSC footprint, however, based on field surveys, the State estimates that only 6 to 31 wells may be directly affected and required to be closed because of the project. See Comment Response 979.02 for clarification of criteria to assess the number of wells closed or affected and consequent revisions to the EIS.

1155.04

See Comment Response 1369.09.

1155.05

EIS Volume I, Chapter 5, Section 5.1.4 presents the results of analysis that indicates that (for Illinois), currently, 454 people live in areas that will have a day-night average sound level of greater than 70 dBA during the peak of construction, 1,246 people live in areas that will have a day-night average sound level between 60 and 70 dBA during the peak of construction, and 45 people live in areas which will have a day-night average sound level between 55 and 60 dBA during operations.

The effects of the SSC on the human environment and the quality of life are discussed in EIS Volume I, Chapter 5, Section 5.1.8 and in EIS Volume IV, Appendix 14, Section 14.1.3.3.E. From site visits and public hearings in all the seven site alternatives, the DOE is aware the existence of a variety of opinions concerning the potential of siting the SSC in any of the identified areas.

1155.06

See Comment Response 1369.09.

1155.07

The U.S. Soil Conservation Service identified 3,076 acres of prime farmland and 212 acres of important farmland in the SSC fee simple area on the U.S. Department of Agriculture Farmland Conversion Impact Rating Form AD-1006 submitted to the DOE. From these inventories, an estimated 197 acres of prime and important farmland would be permanently converted by the SSC project surface facilities. This is less than 1 percent of the regional inventory and is less than the average acreage lost each year to development. This amount is not the highest of the seven sites (see EIS Volume I, Chapter 3, Table 3-7). See Volume I, Chapter 3, Section 3.7.11; Volume I, Chapter 4, Section 4.8.6; Volume I, Chapter 5, Sections 5.1.7.2 and 5.2.11; and the Errata and Revisions to Volume IV, Appendix 13 for a full discussion of the topic.

1155.08

See Comment Response 1279.115.

1155.09

See Comment Response 1007.01.

1155.10

See Comment Responses 1007.02 and 1275.11.

1155.11

See Comment Response 1146.04.

1155.12

See Comment Response 1275.15.

1155.13

EIS Volume IV, Appendix 9, as revised, presents the results of a detailed study of the population that is potentially impacted by continuous construction noise and episodic events (blasting). The analysis indicates that these impacts will be felt by residences located within 630 ft of an E or F shaft area. In Illinois, 43 residences are located within that proximity of the F shaft area. Comparable numbers for the other six site alternatives are in the range of 0 and 2 for Arizona and Colorado, to 52 for North Carolina. Texas has 9 and Tennessee and Michigan have 21 and 22, residences located within 630 ft of the F shaft area. The DOE is committed to performing preconstruction inspections, blast peak-particle velocity monitoring, and charge-weight-per-delay adjustment to prevent structural damage to residences or other buildings

potentially impacted by blasting. People living in these houses during blasting will certainly be aware of the activity, but should not suffer material damage.

1155.14

The potential for contamination of surface waters and near-surface groundwaters as a result of the project exists to varying degrees at all of the proposed sites. The potential impacts noted in this comment are addressed in EIS Volume IV, Appendix 7, Sections 7.1.3.3 and 7.2.3.3, Volume IV, Appendix 12, Sections 12.3.1.1 and 12.4.1.1, and will be considered among other factors in site selection.

1155.15

See Comment Responses 1007.04 and 1278.11.

1155.16

The selection of the SSC site requires consideration of many factors, including water and people. The purpose of the EIS is to provide the basis for a comparative evaluation of all relevant environmental factors. The site-selection procedure is discussed in EIS Volume III.

1156.01

Comment noted.

1156.02

See Comment Responses 1223.03 and 1276.01.

1156.03

Regarding SSC-related effects on the quality of life, see Comment Response 1002.01, second paragraph.

Regarding the number of wells that would be affected at the Illinois site, see Comment Response 979.02.

National priorities for budget expenditures are established by Congress and the President. See Comment Response 278.08.

1157.01

See Comment Responses 1162.01 and 1276.01.

1157.02

The DOE has stated that it intends to continue operating the Fermilab regardless of the SSC siting. The EIS socioeconomic analysis proceeded under the assumption that Fermilab would continue in operation regardless of the SSC location.

Estimates of changing economic activity and public finance associated with SSC siting in Illinois are presented in Volume IV, Appendix 14, Sections 14.1.3.3.A and 14.1.3.3.D, respectively. In general, the numbers included in the comment disagree with those presented in the EIS.

1157.03

The status of Fermilab will not be negatively impacted by the proposed SSC. As noted in the EIS (Volume I, Chapter 2), DOE considers Fermilab and the Stanford Linear Accelerator to be the workhorses of high energy physics for the next decade.

Fermilab will continue to operate in its current mode regardless of whether or not Illinois is chosen as the site for the SSC (see EIS Volume I, Chapter 3, Section 3.3).

1158.01

Comment noted.

1159.01

Comments noted.

1160.01

Comment noted.

1160.02

Comment noted.

1161.01

It is acknowledged that the general Illinois site vicinity is a growth area and that 1983 data may not accurately reflect current and projected water use. Those data were provided by the State and are adequate for the purposes of this EIS as they do project rapid growth. If Illinois is the selected site, the most current population and water use data and projections will be used in preparation of the Supplemental EIS.

1161.02

As a worst-case scenario there could be as many as 144 truckloads delivering excavated material to Quarry 1 assuming 3 Tunnel Boring Machines (TBMs) operated simultaneously.

Mitigative measures would be considered during the planning and construction stage to avoid or minimize the impacts of transporting this material, such as planning TBM operation in different quadrants to reduce traffic jams on the roads and at the quarries (EIS Volume I, Chapter 3, Section 3.6.3). The impacts will be addressed in greater

detail in the Supplemental EIS which will be prepared prior to construction. The public will have the opportunity to review and comment on the draft Supplemental EIS.

Also, please refer to Comment Response 1146.05.

1161.03

Placing the rock spoils in existing quarries, no matter how many or how few, does not cause siltation in streams or contamination of groundwater. The spoils, and their handling, are similar to ongoing quarry operations at these sites. Most quarries have internal drainage, so silt will be held inside the quarry; if the quarry does drain externally, simple siltation ponds to hold rainwater runoff will trap the silt. The rock spoils do not contain minerals that could result in significant amounts of deleterious leachate when rainwater drains through them, so they will not contribute contaminants to the groundwater.

1161.04

See Comment Response 1279.69.

1162.01

The reference in the comment to 7,000 construction jobs should be clarified. The EIS estimates indicate that approximately 10,500 direct and secondary jobs would be created during the peak year of the construction phase in the Illinois Region of Influence (ROI) (Volume IV, Appendix 14, Section 14.1.3.3.A). Approximately 1,000 of these jobs would be direct construction crafts jobs. There would also be additional direct construction, technical (e.g., designers, drafters, and installation technicians) construction management, and construction-related clerical jobs available to workers in the ROI.

Over 7,000 of the 10,500 jobs would be secondary jobs created in the regional economy from project spending for materials and services, and spending of direct workers earnings for goods and services. The majority of the secondary jobs would be created in the services, trade, and manufacturing sectors of the economy, and some secondary jobs would also be created in the construction industry. Project purchases would peak at $111.3 million in 1992. Consumer demand by direct SSC workers would peak at $120.1 million in 1992, as they spend part of their $164.8 million in earnings.

During the first year of operations, the EIS estimates that approximately 7,000 direct and secondary "permanent" jobs would be created in the Illinois ROI. Approximately 3,200 of these jobs would be direct professional, technical, scientific, and clerical jobs available to workers in the ROI. About 3,800 of the 7,000 jobs would be secondary jobs in the services, trade, manufacturing, and other sectors of the economy. Annual project purchases would be $64.6 million beginning in

the year 2000. Consumer demand by direct SSC workers would be $82.2 million beginning in the year 2000, as they spend part of their $112.9 million in earnings.

1162.02

The increase to the tax base referred to in the comment was implicitly included in the cumulative local government financial impact analysis for all jurisdictions within the primary impact counties of DuPage, Kendall, and Kane in Illinois. The methodology for the public finance assessment is presented in the EIS in Volume IV, Appendix 14, Section 14.1.2.3.D, and the results for the Illinois primary impact counties are presented in Volume IV, Appendix 14, Section 14.1.3.3.D. These estimates indicate that although local jurisdictions would experience a negative fiscal impact during the first few years of construction of the SSC, a positive fiscal impact would occur thereafter.

1162.03

The DOE has stated that it would continue to operate Fermilab if the SSC site is located elsewhere.

1163.01

See the first paragraph in Comment Response 1003.04. See also Comment Response 1276.01.

1164.01

Comment noted.

1164.02

Comment noted.

1164.03

Comment noted.

1165.01

Comment noted.

1166.01

Comment noted.

1167.01

Comments noted.

1167.02

Comment noted.

1167.03

Comment noted.

1167.04

Comment noted.

1167.05

Comment noted.

1168.01

Both Kaneland Schools and St. Charles High School are discussed in EIS Volume IV, Appendix 9. The closest construction point to Kaneland Schools would be E6, located 4,400 ft away. The closest surface construction point to St. Charles High School would be E9, approximately 1 mi to the northwest. Neither construction nor operations in the tunnel away from service and intermediate access areas would be apparent.

1168.02

See Comment Responses 497.16 and 733.02 for a discussion of magnetic fields and health considerations, respectively.

1169.01

Comment noted.

1169.02

Comment noted.

1169.03

Quality of life impacts of the SSC, particularly for homeowners who may be relocated, are addressed in EIS Volume I, Chapter 5, Section 5.8.4.

1169.04

The SSC is expected to have a negligible effect on the current growth being experienced in Kane County (see EIS Volume IV, Appendix 14, Section 14.1.3.3). From 1980 to 1985, the population of Kane County is estimated to have grown at an annual rate of 1.4 percent, from 278,000 in 1980 to nearly 300,000 in 1985. With the projected SSC-related impact, the population of Kane County is projected to be 329,500 by 1992, an average annual rate of growth of 1.4 percent from 1985 to 1992. Future growth in the population of Kane County is also expected to reflect the continued evolution of Chicago suburbs.

1169.05

Comments noted.

1170.01

Comment noted.

1170.02

The educational level of the working-age population within each Region of Influence (ROI) was considered in the estimating process for in-migration, in conjunction with the overall size of the labor force and unemployment rates in each ROI. The working-age population of the Illinois ROI had a high level of education relative to the six other SSC candidate site locations, possibly reflecting the concentration of a large scientific population within the Illinois ROI. In-migration to the Illinois ROI is discussed in EIS Volume IV, Appendix 14, Section 14.1.3.3.A. See also Comment Response 904.01.

1170.03

The generation and transmission capabilities of the Commonwealth Edison Company for electric energy is given in EIS Volume IV, Appendix 5, Section 5.3.11.2.B.1 and Volume IV, Appendix 14, Section 14.2.2.3.C.1.

1170.04

See Comment Response 1003.04, first paragraph.

1171.01

See Comment Response 973.01.

1171.02

The comment on traffic conditions is noted. Please note the following clarifications.

The traffic data for the major roads are presented in EIS Volume IV, Appendix 14, Tables 14.2.1-5 and 14.2.1-6. As shown in the first table, Route 34 will experience a level of service (LOS) F during a peak hour in the peak construction year of 1992. This worst condition is presented as the "lowest LOS on impacted 2-lane roads" in Volume 1, Chapter 5, Section 5.1.8. Thus, LOS F applies to only Route 34, not all the roads. Similarly, LOS F in Section 5.1.8 refers to three roads in Table 14.2.1-6 during operating year 2000.

In Section 5.1.8, the item "Disruption to existing traffic patterns" has no relation to the "lowest LOS" discussed above. In Illinois, the SSC traffic will join the existing traffic and follow the established traffic patterns. In some States where new highways and freeways will be constructed, the existing traffic patterns will be disrupted and new patterns will develop.

1171.03

An analysis of the roads, level of service (LOS), and projected LOS is presented in EIS Volume IV, Appendix 14, Tables 14.2.1-5 and 14.2.1-6. These tables show that all of the existing roads in the analysis currently have volumes below their capacities. The projected peak hour volumes with the SSC do fall above the capacity in one case, US Route 34 from State Route 59 to State Route 31 for the projected construction traffic in 1992; and in three cases, State Route 64 from Kirk Road to Randall Road, US Route 34 from State Route 59 to State Route 31, and State Route 59 from I-88 to State Route 56 for the projected operations traffic in 2000. The State of Illinois will have to analyze actual peak volumes on these roads in the future and act accordingly.

1171.04

See Comment Response 973.04.

1172.01

See Comment Responses 13.02 and 1137.01.

1172.02

See Comment Response 1153.02 and Comment Response 1172.04.

1172.03

The approach used in assessing impacts on scenic and visual resources is presented in EIS Volume IV, Appendix 16, Section 16.2. The objective of the analyses was to provide a basis for comparing the visual impacts of the seven alternative sites. Consistency has been maintained by applying the same approach, criteria, and assumptions to the analyses at each of the seven sites.

1172.04

To provide seasonal consistency, visual assessments for the seven candidate sites were conducted during the last week of April and the first week of May, 1988. Six of the seven sites were observed on sunny to partly sunny days. One site was observed on an overcast day with intermittent rain. For the following reason, overcast skies and light rain were not factors adversely affecting the analyses.

Due to one or more of the factors of topography, vegetative cover, and structures, views for all but the Arizona site are limited. The SSC facilities would be seen in the immediate foreground in nearly all cases. If they were not visible at the distance, they would not be seen at all. Cloudy weather and intermittent rain did not deter an analysis of visibility at that range. Only under the most adverse weather conditions, i.e., blinding snowstorms, would the degree of visibility not be amenable to analysis.

See Comment Response 1172.03.

1172.05

EIS Volume IV, Appendix 16, Section 16.3.3.3 assesses the impacts on the scenic and visual resources and their significance. All of the facilities noted in the comment except facility F8 are addressed in the EIS. The visual impact of facility F8 is addressed in Comment Response 859.04; the text of the EIS has been corrected in the Errata as noted in that response. Each of the facilities noted in the comment potentially would cause significant visual impacts; most would probably be long-term. Mitigative measures, which should be considered during final project design, are described (EIS Volume I, Chapter 3, Section 3.6). It is understood that if they are not, or if they are considered but proven infeasible and alternative measures are not successfully applied, the impacts noted would remain significant indefinitely.

Regarding the population around the Illinois site, see Comment Response 1369.09.

1172.06

The EIS is based on information provided by the States, and on publicly available information. The EIS and the comments provided by the public were used in the selection of the site. The DOE believes that the data submitted and the analyses of impacts presented in the EIS are adequate to support the decision to site the SSC at one of the seven site alternatives. See EIS Volume I, Chapter 3, Section 3.1.2, and Volume III for more details on the site selection methodology.

1172.07

Comment noted.

1173.01

The impacts noted by the commenter have been summarized in EIS Volume I, Chapter 1, Table 1-1. More detailed information augmenting the Volume I overview of potential environmental consequences was provided in Appendices 5-16 by resource affected. As noted in Section 1.4, if the SSC is built, the DOE feels that although certain negative environmental impacts would occur the SSC would also have beneficial impacts at all site alternatives.

In addition, the DOE recognizes that a more detailed site-specific review will be required under NEPA prior to a final decision on the construction and operations of the proposed SSC. If Illinois is selected for the SSC, this more detailed review of potential impacts will be provided in the Supplemental EIS. Mitigation strategies to minimize the environmental impacts will also be described in greater detail in the Supplemental EIS.

1173.02

The DOE does not agree that depth and water inflow make this site the most difficult to tunnel. Experience in the region with the comparably-sized TARP Project indicates that long tunnels, shafts, and underground chambers can be constructed quite successfully in these rocks. Additionally, the initial rate of inflow (5,200 gal/min/100 ft--an exceedingly conservative estimate) is not indicative of water-handling requirements, since occasional locally high inflows will be quickly reduced by pressure grouting (see Comment Response 1279.357).

1173.03

The observations regarding groundwater overdraft and interconnection between the glacial aquifer and the upper bedrock aquifer are consistent with the data used to prepare the EIS (See EIS Volume IV, Appendix 5, Section 5.3.2.2). See also Comment Responses 18.03, 533.03, and 1275.12.

1173.04

The radium content of groundwater in Illinois is addressed in EIS Volume IV, Appendix 5 and Volume I, Chapter 4, Section 4.6.1.1.

The health impacts from radiation during SSC of the EIS operations have been assessed in Volume IV, Appendices 10 and 12. There are no measurable adverse impacts from cumulative effects of exposure to radium in drinking water and exposure to radiation from SSC operations. The dose equivalent to the general public at large from SSC operations is primarily through the air pathway and is less than 0.001 percent of that from background radiation.

1173.05

Comment noted.

1174.01

See Comment Response 1276.01.

1174.02

See Comment Response 954.02.

1175.01

Comments noted.

1175.02

The EIS analysis indicates that although there would be a long-term property tax revenue loss to Kane County jurisdictions due to private land removed from property tax base in Kaneland School District, there would also be a long-term increase in both direct and indirect tax revenues from project spending and spending by SSC construction and operations workers. The EIS did not specifically estimate the property tax loss to Kaneland School District. The public finance analysis for Kane County jurisdictions collectively is presented in the EIS Volume IV, Appendix 14, Section 14.1.3.3.D. More detailed analyses of SSC-related local fiscal impacts will be prepared for jurisdictions in the region of the selected site and presented in the Supplemental EIS (see EIS Volume I, Foreword).

1175.03

Proposed road construction and improvements affecting the SSC site are discussed in EIS Volume IV, Appendix 14, Section 14.2.1.3.C. These would include widening and resurfacing a portion of Dauberman Road. Traffic analysis for Dauberman/Meredith Road is presented in EIS Volume IV, Appendix 14, Tables 14.2.1-5 and 14.2.1-6. Traffic analysis,

i.e. effects on existing traffic patterns, including school buses-student transportation, will be addressed in the Supplemental EIS for the selected site.

Also see Comment Response 1175.04 for a discussion of measures to mitigate potential traffic impacts to school children.

1175.04

The concern about the safety of students is noted. Efforts to mitigate the traffic impacts during the construction planning will consider child safety by rerouting construction traffic to avoid the general public traffic routes and to avoid school areas. The estimates of trucks and hours of operation (see EIS Volume IV, Appendix 10, Section 10.2.3) present the maximum operating condition. The impact on traffic (see Volume IV, Appendix 14, Section 14.2.1.3.C) is presented for the significantly affected major roads. The impacts of spoils truck and other traffic will be addressed in greater detail in the Supplemental EIS for the selected site. (See EIS Volume I, Chapter 3, Section 3.6.)

Several mitigations will be considered during the construction planning stage to avoid or minimize impacts of spoils disposal trucks. Some of these are: the use of State highways instead of local roads; direction of traffic away from residential areas and schools; use of traffic controls and speed limits; and development of off-peak-oriented disposal schedules.

It will be possible to control truck speeds with the assistance of the local and State law enforcement agencies. Please see the comments from Illinois Department of Transportation (No. 1095 by Keith Sherman).

1175.05

See Comment Response 307.02.

1175.06

See Comment Response 1259.02.

1175.07

With regard to water supply, it is likely that there would only be a restriction on water supply wells within approximately 150 ft of the SSC tunnel. An increase in the regional groundwater overdraft is anticipated as a result of project water supply requirements. During construction, impacts to nearby water wells would be minimal due to the limited amount of pumping that would be required at any individual well to meet construction water requirement. However, the greater pumpage required during operations may result in water level declines in nearby wells of sufficient magnitude to locally reduce groundwater availability or modify water use patterns. Mitigations of these impacts range from

oroviding alternative water supply sources to impacted users (replacement wells, deeper wells, hook-ups to municipal supplies) to using surface water from the Fox River as a source of industrial and cooling water for the SSC. Individual water supplies will be protected by one or more of the mitigation approaches described in EIS Volume IV, Appendix 7. Additional detail on anticipated impacts on groundwater use and groundwater quality are presented in EIS Volume IV, Appendix 7, Section 7.2.3.3.

Private land would be removed from the property tax base in Kane County, reducing the amount of revenue for local jurisdictions. The EIS analysis indicates that although there would be a long-term property tax revenue loss to county jurisdictions, there would also be a long-term increase in both direct and indirect tax revenue from project spending, and from additional spending by SSC construction and operations workers.

The results of this analysis suggest that net fiscal impacts on Kane County would be negative during the first 3 years of the project, and positive thereafter (Volume IV, Appendix 14, Section 14.1.3.3.D).

1175.08

Comment noted.

1176.01

Job estimates cited in the comment for SSC construction and operations agree with estimates in EIS Volume IV, Appendix 14, Section 14.1.3.3.A. The EIS assumes, consistent with the current DOE position, that Fermilab would not close if the SSC were sited in a State other than Illinois.

1177.01

Comment noted.

1177.02

Comment noted.

1177.03

Comment noted. Also see Comment Response 880.04.

1177.04

See Comment Response 1276.01.

1178.01

During the peak year of SSC construction, the EIS estimates that approximately 1,200 direct technical jobs would be available to local workers. The city of Naperville is located in DuPage and Will Counties, Illinois. Although city-level unemployment figures are not readily

available from government agencies that collect such statistics, county-level data indicate these two counties had average annual unemployment levels of approximately 17,000 and 14,000 workers, respectively, in 1987. The Illinois Region of Influence (ROI), in turn, had an annual average of more than 250,000 unemployed workers in 1987.

It is not anticipated that the SSC direct technical work force would come exclusively from the ranks of the unemployed--or, for that matter, even exclusively from the Illinois ROI, as 30 to 34 percent of the total direct and indirect work force is expected to in-migrate from outside the region. However, it seems that at least 1,200 technicians would be available among the 250,000 unemployed workers in the ROI. According to the Illinois Department of Labor, Bureau of Employment Security, technicians make up approximately 3.1 percent of total occupational work-force in the "SSC region" as they define it; note that 3.1 percent of 250,000 unemployed is equivalent to 7,750 workers (EIS Volume IV, Appendix 14, Section 14.1.3.3).

1178.02

Comment noted.

1178.03

Comment noted.

1178.04

See Comment Response 1126.05.

1178.05

See Comment Response 875.01.

1178.06

The DOE has stated that it intends to continue operating the Fermilab regardless of the SSC siting. The EIS socioeconomic analysis proceeded under the assumption that Fermilab would continue in operation regardless of the SSC location--which agrees with the comment. Although the Illinois Region of Influence (ROI) saw its population increase relatively slowly between 1980 and 1985 (see Volume IV, Appendix 5, Section 5.3.11.B), recent evidence suggests a surge in population growth over the past year (see Comment Response 973.01).

Unemployment in the Illinois ROI was 6.5 percent in 1987 (roughly 250,000 persons), which would cause one to question the claim that there are more jobs in the region than people to fill them.

1178.07

The EIS listed a SSC construction water need of 108 million gal or 332 acre-ft (see Volume I, Chapter 5, Table 5.6-2). This table has been revised slightly for the FEIS, namely to 111.5 million gal or 343 acre-ft. See also Comment Response 533.03.

1178.08

See Comment Response 1155.07

1178.09

National Ambient Air Quality Standards (NAAQS) and all applicable State ambient air quality standards (AAQS) will be complied with during both construction and operations of the SSC. As stated in EIS Volume I, Chapter 6, "It is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards."

Fugitive dust emissions during any construction is a common concern. The EIS has been revised in Volume IV, Appendix 8 and in the summary to Volume I, Chapter 5, Section 5.1.3 to include for all states more efficient mitigations of TSP and PM_{10} emissions during construction. Specifically, the use of chemical soil stabilization is proposed instead of twice daily watering for control of general site activity emissions. This significantly reduces the generation of proposed fugitive dust emissions, hence the resulting ambient air impacts for these pollutants.

Additional air quality analysis will be performed after site selection and will be included in the Supplemental EIS. The availability of more definite design and construction planning information at that time will allow that analysis to be more detailed and contain more specific mitigation commitments.

Compliance with the AAQS will be addressed by the host state when its air pollution regulatory agency reviews any required permit applications.

The carbon monoxide and ozone nonattainment problems in Chicago Air Quality Control Region (AQCR) are consequences of the heavy urban motor vehicle traffic in the Chicago area. As shown in EIS Volume I, Chapter 4, Table 4-6, the 1986 concentrations of ozone and carbon monoxide outside the Chicago urban area were within the NAAQS. The emissions of carbon monoxide, hydrocarbons, and nitrogen oxides from construction, operations, and the commuter traffic associated with the SSC would be under examination for their possible contribution to the carbon monoxide and ozone nonattainment status of the Chicago AQCR. As shown in Volume IV, Appendix 8, Table 8-27 of the EIS, the maximum percentage increase in emissions of any of these pollutants in Illinois is predicted to be 1.15 percent of the current emissions (409 tons of nitrogen oxides per year during construction of the SSC compared to 35,610 tons per year now

being emitted). During operations, the nitrogen oxide emissions will drop to 36 tons per year (one tenth of one percent of the existing emissions).

1178.10

Population considerations were made for each county in each site area. See EIS Volume IV, Appendix 14, Section 14.1.2.3.B.2.

1179.01

Comment noted.

1179.02

In reference to the psychological impacts of the SSC, the DOE agrees that relocation has the potential for being a major life event for people. The further the distance one moves from one's social networks, the greater the impacts of the move. To the extent that those relocated can relocate nearby, the impacts should be minimized. Comment Response 1230.03 and EIS Volume I, Chapter 5, Section 5.1.8.5 addresses psychological impacts.

The EIS has not indicated mitigation measures for relocations, because the proposing State has the responsibility to acquire the land for the SSC facility. For real property not acquired in fee simple, there is no Federal requirement or authorization to provide mitigation. Questions concerning the proposer's authority to mitigate should be directed to the appropriate State agency.

1179.03

The occupational and public health impacts of the SSC project are discussed in EIS Volume IV, Appendix 12, and are summarized in Volume I, Chapter 5, Section 5.1.6.

Although local jurisdictions in Kane County are anticipated to experience fiscal deficits during the first three years of construction activity, positive fiscal effects in subsequent years are expected to offset these losses. The EIS analysis of SSC-related revenue impacts on the Illinois State government, and the cumulative local government fiscal impacts on jurisdictions in Kane County, is presented in Volume IV, Appendix 14, Section 14.1.3.3.D. of the EIS.

The effects of the SSC on property values in local communities are at present unknown; a prediction of decreased property values thus may be premature.

1179.04

Comment noted.

1180.01

Comment noted.

1180.02

As is noted in EIS Volume IV, Appendix 10 there will be one pond at F3, of approximately 2 acres size, which will be adequate for water handling in that area (see Comment Response 1217.01). While leakage into the tunnel in this area may initially be significant fracture-grouting will soon reduce inflow to low rates (see Comment Response 1279.357). With care and conventional underground construction practices, the inflow can be reduced to the point that it provides only enough water to supply the SSC cooling water requirements (leakage in the 5-mile stretch from E3 to E4 at this rate would equal only about 5 percent of St. Charles' daily water use rate). If necessary, the cooling water can be treated after use and permitted for reinjection into the groundwater, thereby reducing the loss of groundwater (see Comment Response 1279.141).

1180.03

See Comment Response 1279.141 with regard to water inflow into the tunnel. As is noted in that response, long-term flow into the tunnel could be reduced to the level that it equals the project's need for cooling water, thereby mitigating the need for additional groundwater withdrawal. After being used for cooling, the water can be treated (if necessary) and permitted for reinjection into the groundwater system, thereby minimizing the project's incremental contribution to the existing overdraft situation.

1180.04

See Comment Response 533.03.

1180.05

See Comment Response 1369.09.

1181.01

The impacts of the SSC on water supplies are summarized in EIS Volume I, Chapter 5, Sections 5.1.2. and 5.2.3, and described in more detail for the proposed Illinois site in Volume IV, Appendix 7, Sections 7.1.3.3 and 7.2.3.3. See also Comment Response 533.03.

1181.02

Inflow into the tunnel can be reduced by repeated grouting to much lower rates than are noted in the comment (see Comment Response 1279.141). If necessary, inflow can be reduced to a rate that will just fulfill the cooling-water requirement. After being used for cooling, the water could be treated (if necessary), permitted, and reinjected into the groundwater system.

115112003358822

1181.03

See Comment Response 1275.15.

1181.04

See Comment Response 1279.115.

1182.01

The electric power, natural gas, and telecommunications information presented in the comment is generally consistent with utility discussions in EIS Volume I, Chapter 3, Section 3.4 and Volume IV, Appendix 14, Section 14.2.2.3. Because of the presence of Fermilab, many utilities are already in place at the Illinois site in the vicinity of the campus area. If the Illinois site is selected, the feasibility of using existing utilities will be evaluated in the Supplemental EIS. The other sites will generally require the installation of new utilities in the campus area.

1182.02

Comment noted. As noted in Volume IV, Appendix 2 of the EIS, construction phase and annual operating cost estimates of the SSC conceptual design were made for the seven Best Qualified List (BQL) sites, including Illinois.

1183.01

Comment noted.

1183.02

Should Illinois be selected as the site for the SSC, the Supplemental EIS would address the final placement of the SSC facilities. Illinois placed the western arc of the SSC on the western edge of Kaneville. The portions of the facility involved are service area F5, and experimental area K5. Some acquisition of private land would be required (see Volume IV, Appendix 4, Section 4.4.3), and changes in land use are anticipated for those areas on an immediately adjacent to the ring (Volume IV, Appendix 13, Section 13.1.3.3). However, a relatively small portion of Kaneville would be affected by the project, and it is not anticipated that this community would be destroyed. The activities conducted in the far cluster area of the SSC are not incompatible with a rural setting. Residents who are displaced by the SSC will be able to relocate in the immediate vicinity if they so desire.

Impacts on water sources as a result of locating the SSC at the proposed Illinois site are discussed in Comment Responses 1117.03 and 18.03.

1183.03

Comment noted.

115112003358823

1183.04

During the proposed seven-year construction phase of the project, mitigative measures will be taken to lessen the disruption to the surrounding areas. Also, a more detailed review of the mitigation process will be provided in the Supplemental EIS for the selected site.

1183.05

See Comment Response 1279.141 with regard to water inflow into the collider tunnel. In regard to surface water usage, the discussion in EIS Volume IV, Appendix 7, Section 7.2.3.3.A.1 explains that the water supply source for the SSC project will come from groundwater; surface water is considered to be only an alternative or backup supply.

1183.06

Comment noted.

1183.07

As stated in the EIS, there would be costs incurred by the State government for site and infrastructure improvements, and for the purchase of private land that would be transferred to Federal ownership (Volume IV, Appendix 14, Section 14.1.3.3.D). If these costs were financed through long-term bonds, the State would be obligated to make interest payments on the principal amount borrowed.

1184.01

Regarding the number of wells which may have to be closed at the Illinois site due to the siting or construction of the SSC, see Comment Response 979.02. The individual wells which may be so impacted cannot be identified pending detailed field surveys. These surveys will be performed if Illinois is the selected site.

Regarding replacement of wells or water supply sources, see Comment Response 1381.04.

1184.02

The DOE did not perform field work, including taking core samples, in connection with the proposed Illinois SSC site. The origin of the blasting noise that was heard cannot be determined at this time.

Vibrations and noise associated with blasting during construction will be monitored and controlled in accordance with the provisions of Volume IV, Appendix 9, Sections 9.2.2.1.C.1 and 9.2.2.1.C.2 of the EIS. The charges (charge-weight-per-delay) will be sized to keep the amount of vibration at the closest structure to below 2.0 inches-per-second peak particle velocity, the amount which is generally accepted as safe for poor plaster.

The EIS Volume I, Chapter 5, Section 5.1.4.2.A.1 states that the duration of blasting activities at any location because of SSC construction is expected to range from 3 to 6 months.

1184.03

See Comment Response 307.04.

1184.04

Hazardous and solid waste disposal are addressed in EIS Volume IV, Appendix 12. The disposal of radioactive wastes is addressed in Comment Response 276.03.

Disposal practices for radioactive mixed waste are described in Comment Response 524.06.

Hazardous and solid wastes will be disposed of in accordance with applicable Federal, State, and local standards, utilizing permitted disposal facilities (EIS Volume I, Chapter 6, Section 6.2.6).

1184.05

See Comment Response 992.10.

1184.06

The EIS analysis indicates during the peak year of SSC construction, the housing requirement within the nine-county Illinois Region of Influence (ROI) would be increased by approximately 2,700. The majority of this housing demand is projected to be in the primary impact counties of DuPage, Kendall, and Kane. Local governments in these primary impact counties would experience a cumulative net fiscal benefit throughout construction and operations of the facility, except for a net fiscal deficit during the first 3 years of construction in DuPage and Kane Counties. The analysis indicates that millions of dollars in capital improvements, including expenditures for new school facilities, would be made by local jurisdictions during the first 4 years of SSC construction, but direct and indirect tax revenues are anticipated to overcome these outlays in all but the first few years of construction (see EIS Volume IV, Appendix 14, Section 14.1.3.3.D).

1184.07

The comment is consistent with the EIS determination. Specifically, in Volume IV, Appendix 14, Section 14.1.3.3.E, the EIS states "Relocation surfaced as a primary concern; 219 relocations are expected, including 160 residences and 59 business."

1185.01

Comments noted.

1186.01

Comments noted.

1187.01

Comments noted. It is the policy of the DOE that Fermilab will continue to operate if the SSC is placed in another location. (See EIS Volume I, Chapter 3, Section 3.3).

1188.01

Comments noted.

1189.01

Comments noted.

1190.01

Comment noted.

1190.02

Comment noted.

1190.03

EIS Volume I, Chapter 6 discusses Federal statutes, permits, licenses, and other entitlements that may be applicable to construction and operations of the SSC. It is the DOE's policy to assure that operating contractors comply with applicable statutory requirements affecting Federal facilities. State and local regulations will be addressed as part of the mandatory DOE compliance program that will be monitored through regularly scheduled health and safety appraisals conducted by the DOE contractors and audited by the DOE personnel. Before startup, the DOE requires operations and maintenance contractors to submit to an operational readiness review (ORR) during which proposed environmental monitoring plans are submitted for review. All applicable environmental and safety operating permits required to assure the health and safety of the public and the site work force will be reviewed for regulatory thoroughness and adequacy. State and local permits will be discussed, as appropriate, and included if required in the site-wide environmental compliance plan. More specific information of environmental monitoring will be included in the Supplemental EIS for the selected site.

1190.04

EIS Volume I, Chapter 6 outlines the DOE's intent to comply with all applicable Federal and State environmental regulations. The second paragraph of Section 6.1 states "It is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with applicable environmental statutes, regulations, and standards." This will include any applicable Illinois environmental regulations.

1190.05

See Comment Responses 275.03 and 880.04.

1190.06

See Comment Response 974.01.

1190.07

Additional wetlands surveys were conducted after the publication of the DEIS, and revisions have been incorporated in EIS Volume I, Chapter 5, Section 5.1.5.3 and Volume IV, Appendix 11, Section 11.3. The DOE will comply with all applicable Federal, State, and local regulations, including Section 404 of the Clean Water Act. For a summary of the applicable Federal regulations, see Volume I, Chapter 6. See also Comment Response 974.01 with respect to the applicability of the Bersani vs Robichand case to the SSC site selection process. The SSC site selection process is described in EIS Volume III.

1190.08

Comment noted.

1191.01

See Comment Response 709.01. Concerns about State and local financing of public education are not the responsibility of the DOE. ISP requirements affecting State proposals to site the SSC are summarized in the EIS, Volume III, Chapter 1. Secondary impacts are discussed in the EIS in Volume I, Chapter 5, Section 5.2

1191.02

Comment noted.

1192.01

See Comment Responses 710.01 and 1369.09.

1192.02

See Comment Response 922.11.

1192.03

See Comment Response 1259.02.

1192.04

See Comment Response 865.02.

1192.05

See Comment Response 1126.05.

1193.01

See Comment Response 1369.09.

1194.01

Comment noted.

1194.02

Land acquisition and relocation services are the responsibility of the proposed States (see EIS Volume IV, Appendix 4, Section 4.4.1). The States have agreed to comply as a minimum standard to the Federal Acquisition Laws (91-646 and 10 CFR 1039, 51 FR 7000). Questions concerning the proposer's SSC land acquisition strategies and commitments should be directed to the appropriate State agency (see Volume IV, Appendix 4, Section 4.3.2).

1195.01

See Comment Response 979.02.

1195.02

Comment noted.

1195.03

EIS Volume I, Chapter 4, Section 4.2.3 has been corrected to indicate that a significant increase in groundwater use is projected in the vicinity of the Illinois site as a result of projected population growth. This was recognized in Table 5.3.2-6 of Volume IV, Appendix 5, Section 5.3.2.2 of the DEIS, but incorrectly summarized in Volume I. For Kane County, this table projects an increase from 38,300 acre-ft of pumpage in 1986 to 41,100 acre-ft in 2000 (7 percent more than in 1985) and 49,600 acre-ft in 2025 (about 30 percent more than in 1985).

The population of Kane County was projected to grow from 300,000 in 1985 to 351,000 in 2000 (a 17 percent increase). The 1985 figure is the final U.S. Bureau of Census estimate. The 2000 figure is based on U.S. Bureau of Census projections for the State as a whole, adjusted by county, based on Illinois Department of Commerce and Community Affairs data (see Volume IV, Appendix 5, Section 5.3.11.1.B.2, and Appendix 14, Section 14.1.3.3.B., Table 14.1.3.3-8). A population projection for 2025 was not made for the EIS, since the maximum SSC-induced impacts would be reached by 1992 (the projected year of peak construction) and 2000 (the projected first year of full operations).

See also Comment Response 1279.115.

1195.04

See Comment Response 307.04.

1195.05

See Comment Response 1369.09.

1195.06

One of the activities undertaken in the course of preparing the EIS was to systematically determine the ways in which the public could possibly be exposed to radiological releases from the SSC. Even though the facility will be able to conduct experiments at higher energy levels than other similar laboratories, the experiences at these other labs can be used to predict with considerable confidence the possible hazards of the SSC and methods to reduce or eliminate the risk of any harmful effects. Approaches to recognizing and dealing with new technologies and possible hazards is a common approach taken in other areas of technology.

The EIS (see Volume I, Chapter 5, Section 5.1.6) presented the radiological exposures that could result from normal operations or an accident at the SSC. The analysis took into account persons residing above the SSC facilities and would be applicable to children in schools. The accident scenario that was considered was the worst possible event that could happen, which is a loss of beam. Such an event is highly unlikely and no full loss of beam has occurred at the Superconducting magnet (Tevatron) at Fermilab. Even under these upset conditions, it was found that there would be no unacceptable health risks to the public residing near the SSC (see Volume I, Chapter 5, Section 5.1.6.3).

1195.07

See Comment Response 1229.02.

1195.08

See Comment Responses 880.04 and 1250.02.

1195.09

Comment noted.

1196.01

The comments are consistent with Table 3.7.

1196.02

The potential impacts on local public school enrollment and instructional personnel, as cited in the comment from Table 3-7, are presented and explained in greater detail in EIS Volume IV, Appendix 14, Section 14.1.3.3.C. The enrollment increase of 2,004 students and staff increase of 99 instructors noted in the comment are projections for the nine-county Illinois Region of Influence, not projections solely for the Fox Valley.

The cumulative local government fiscal effects to jurisdictions in the primary impact counties of DuPage, Kane, and Kendall are also presented in detail in the EIS Volume IV, Appendix 14, Section 14.1.3.3.D. Local governments in these counties would be expected to experience a cumulative net fiscal benefit throughout construction and operations of the facility, except for a net fiscal deficit during the first three years of construction in DuPage and Kane Counties.

1196.03

The potential impacts of the SSC project on education at the Illinois site are discussed in EIS Volume IV Appendix 14, Section 14.1.3.3. Table 4-27 presents government employment per 1000 population - this refers to total regional population, not student population.

1196.04

EIS Volume I, Chapter 3, Table 3-7 is intended to quantify the number of acres receiving an increase in background day-night average sound level of greater than 10 dBA during construction. This number of acres is calculated to be less for Michigan and Illinois because the background was assessed to be higher at these two sites than at the other five. Volume I, Chapter 5, Section 5.1.4, and Volume IV, Appendix 9, as corrected in the revised version, present an analysis of the number of people currently living in areas expected to have an outdoor day-night average sound level of greater than 60 dBA during construction. This analysis indicates, for the Illinois site, that 454 people currently live in areas that will have an outside day-night average sound level of greater than 70 dBA during the peak of construction at an E or F area, and 1,246 people currently live in areas which will have an outside day-night average sound level of between 60 and 70 dBA during the peak of construction at an E or F area.

1196.05

Losses for local jurisdictions are expected during the early years of construction of the SSC in nearly all of the primary impact counties at the seven SSC site alternatives (see EIS Volume I, Chapter 5, Table 5.1.8-8). The EIS methodology used to conduct this analysis correlates increased capital infrastructure expenses with increased growth rates based on information published in the 1981 report of the President's Economic Adjustment Committee (see Volume IV, Appendix 14, Section 14.1.2).

Local jurisdictions near the Arizona site are anticipated to experience relatively large expenditures due to the large number of in-migrants expected there, and because the region is projected to continue to grow fairly rapidly under baseline conditions. In contrast, the primary impact counties surrounding the Illinois site are expected to receive a moderate level of in-migrants in comparison to the other six sites (see Volume I, Chapter 5, Table 5.1.8-4). Local jurisdictions in DuPage and Kane Counties would incur expenses to accommodate this growth during the first 3 years of construction; local jurisdictions in Kendall County are

expected to incur only a small level of in-migration and would not incur any major losses. Contrary to what was reported in the DEIS, the three primary impact counties would incur a cumulative fiscal loss of $6.1 million--not the $6.5 million loss that was erroneously reported (Volume I, Chapter 3, Table 3-7). In the following years, each of the three primary impact counties in Illinois are projected to receive a net fiscal benefit from SSC construction and operations. Additional detail regarding the fiscal impact analysis is provided in Volume IV, Appendix 14, Section 14.1.3.3.D.

1196.06

See Comment Response 41.02.

1196.07

Comment noted.

1196.08

Comment noted.

1197.01

Demand on public services in Kane County attributable to the SSC would not necessarily be transient or short-lived (see Volume IV, Appendix 14, Section 14.1.3.3.C). With regard to public education in particular, the EIS projects an increase in Kane County school enrollments of 732 students in 1992, the peak year of construction. Additionally, an increased enrollment of 825 students in County schools is projected from the year 2000 (the first year of full SSC operation) onward throughout the life of the facility. These projections suggest that demand initiated by families of the more transient construction workforce would be sustained by the families of the more permanent operations workforce.

As a result of locating the SSC at the proposed Illinois site, increases in Kane County public services, including public education, would be required to maintain levels of service experienced without the facility (see Volume IV, Appendix 14, Table 14.1.3.3-12).

1197.02

Magnetic fields generated by the SSC are discussed Volume IV, Appendix 10, Section 10.1.3.2. Since no magnetic fields will be detectable at ground level when the SSC is in operation, there were no potential impacts to be addressed later in the EIS. The intensity of the magnetic field from the SSC's superconducting magnets at the outside surface of the SSC tunnel wall (well below surface) will be about the same as the earth's own natural magnetic field (that each of us experiences every day).

1197.03

See Comment Response 1175.04.

1197.04

Comments noted. The phrase "human receptors" has been changed to indicate residences, hospitals, etc., which would be in areas of increased noise levels.

1198.01

The magnets that were damaged at Fermilab during its early days of operation were conventional magnets, not the superconducting magnets that will be used in the SSC. While several hundred of the early Fermilab magnets had to be replaced, there was no explosion or fire involved, and consequently no danger to workers or the public. See also Comment Response 1404.04.

Superconducting magnets pose a different set of safety concerns. There are cryogenic fluids, pressure vessels, very high electrical currents, and large amounts of stored energy associated with the magnets. However, there will be essentially no flammable material in the collider tunnel (fiberglass is not flammable) and no real potential for an explosion. The superconducting magnets now in use at Fermilab are very similar in design to those in prototype form for the SSC. During five years of use at Fermilab, there has never been a superconducting magnet explosion. A disaster such as that suggested in the comment is not considered to be technically possible. For information on other accident scenarios, see EIS Volume IV, Appendix 12, Section 12.4.

1198.02

Accidents including the worst reasonably foreseeable radiological accident (the loss of a full beam) are addressed in Volume IV, Appendix 12, Section 12.4 and summarized in Volume I, Chapter 5, Section 5.1.6.3 of the EIS. The radiological exposure from a loss of a full beam to the maximally exposed individual is less than the annual exposure to background radiation.

1199.01

Comment noted.

1199.02

The EIS is correct in the number of spoils disposal sites proposed in Illinois. The State of Illinois originally proposed 46 quarries as disposal sites as part of their proposal (September 1987). They have since revised their plans and have proposed the use of four quarries as disposal sites. However, more sites are available for use if the need warrants use of more than the four that are currently designated.

1199.03

The EIS considers the four quarries selected by the State of Illinois in Volume IV, Appendix 10. Additional disposal sites, if proposed by the State, as well as several options to reduce the impacts of the truck traffic, would be considered during construction planning and would be addressed further in the Supplemental EIS for the selected site. Responsibility for road repairs is the responsibility of the state or county that has jurisdiction.

1199.04

The highway maintenance program of the State of Illinois is not the responsibility of the DOE. Road requirement for the SSC are discussed in EIS Volume I, Chapter 3, Table 3-4.

Spin-off technologies cannot be guaranteed from any new research program. However, based on results of particle physics thus far (see EIS Volume I, Chapter 2), it is highly likely that beneficial spin-off will result.

Locating the SSC on the proposed Illinois site is anticipated to have a number of direct and secondary economic impacts on the associated Region of Influence, as discussed in the second paragraph of Comment Response 958.02.

1199.05

The intention of the proposed construction and operations of the SSC is to provide a scientific instrument for the advanced study of the fundamental nature of matter in terms of sub-atomic particles, not to generate industrial development. Nevertheless, accelerator technology has led to the emergence of entire new industries, including areas in medical diagnosis and treatment, Positron Electron Tomography scans and magnetic resonance imaging, nuclear medicine, and superconducting magnets (see EIS Volume I, Chapter 2, Sections 2.1 and 2.2).

1199.06

In Volume I, Chapter 5, Section 5.1.6.2.A.1., the tunnel depth below the surface at the Illinois site should read 335-610 ft. This has been revised in the text.

1199.07

See Comment Responses 1126.05 and 1146.03.

1200.01

Comment noted.

115112003358834

1200.02

The referenced quotation occurs in EIS Volume IV, Appendix 16, Section 16.3.3.1. In a number of cases, the incompatibility of residential areas and SSC facilities, coupled with the sensitivity of public views affected, would be such that the adverse visual impacts would be considered significant. The visual resource impacts for each of the seven sites are shown in EIS Volume I, Chapter 5.1.10.1, Table 5.1.10-1 for comparison.

1200.03

The EIS recognizes that a groundwater overdraft exists in the region of the proposed Illinois SSC site. This factor has been considered among other factors in selecting the site (see EIS Volume III for a description of the site selection process). The wells in the Deer Run Subdivision, which went dry, were drilled in the shallow aquifer system. The water supply for the SSC is currently planned to come from the deep "sandstone" aquifer. Because the two aquifers lack any significant interconnection, pumping for SSC water use will not affect shallow wells. See also Comment Response 1279.115 for discussion of aquifer overdraft conditions.

1200.04

Radium occurs in groundwater as a result of the natural decay of uranium and thorium, which occur in trace amounts in various types of rocks. This is a common problem with certain water systems obtaining their water from deep aquifers in the region of the proposed Illinois SSC site. Additional studies would be needed to determine if increased pumping of deep aquifers as a result of the project would increase the radium levels in the water supply. These studies may be conducted if the Illinois site is selected. However, even for increased radium levels in groundwater supplies, suitable treatment technology exists to reduce the radium concentrations to safe levels as required by drinking water-standards. Radium reduction through various means (e.g., by water softening) has been accomplished already by several communities in this region.

1200.05

Recent population increases in the Illinois Region of Influence are discussed in Comment Response 973.01, especially in the first two paragraphs. The potential impacts of the SSC on local property values in Illinois are addressed in the first paragraph of Comment Response 1047.02. The acquisition of land for the facility is the responsibility of the proposer, as discussed in Comment Response 880.04.

The subject of opportunity costs was not addressed in the EIS because specific data necessary for such an analysis will not be available until a site is selected, and final site-specific design and engineering details are developed (see Comment Response 922.11).

115112003358835

1200.06

With regard to retrofitting the Fermilab facility, see Comment Response 864.01.

Details of the EIS fiscal analysis of SSC-related impacts on the Illinois Region of Influence and the primary impact counties of DuPage, Kane, and Kendall are presented in Volume IV, Appendix 14, Section 14.1.3.3.D. However, the crux of this comment concerns the possible diversion of existing funds in the State of Illinois to support SSC financing, which is not addressed in the EIS. More detailed analysis of such impacts to Illinois State funds could be undertaken as part of a supplement to this EIS should the Illinois site be selected (see the Forward to Volume I).

1200.07

Comment noted.

1201.01

The purpose of constructing the SSC facility is to build an important research facility. Additional jobs would be created beyond those produced by regional growth as a byproduct of the project. For the Illinois Region of Influence, and the primary impact counties of DuPage, Kane, and Kendall, the anticipated increases in employment are presented in Volume IV, Appendix 14, Section 14.1.3.3.A.

1201.02

See Comment Response 876.31.

1201.03

See Comment Responses 1381.08 and 922.11.

1201.04

The DuPage County Airport is currently expected to be located in an area where the majority of the facility would be affected by stratified fee estate while approximately 2.5 acres would be taken in fee simple estate (EIS Volume IV, Appendix 4, Section 4.4.3.2.C). See Volume IV, Appendix 4, Section 4.2.1, for a discussion of the estates for land acquisition. In areas affected by the taking of stratified fee, the DOE does not anticipate the use of any restrictive easements on surface activities. Some use of land acquired in fee simple estate may be allowed, but requests would be handled on a case-by-case basis.

Until the detailed SSC design is completed and the final location of the collider ring and placement of associated facilities are set, it is impractical to identify impacts on a parcel-by-parcel basis. Prior to construction and operations of the SSC, the DOE will prepare a Supplemental EIS to address in more detail the impacts at the selected site and the alternatives for mitigating these impacts.

1201.05

The general policy is to competitively outlease areas where the DOE determines it is appropriate to allow lease-hold use of property. This policy is constrained by general safety and programmatic requirements of the SSC facility operations. In fee simple areas, outleasing does not imply that the previous owner would necessarily be the lessee; it is a competitive process. In stratified fee area the DOE does not anticipate any restriction on surface use by the owner.

1201.06

See Comment Responses 1369.09 and 880.04. Regarding lost opportunity costs, see Comment Response 922.11.

1202.01

Overdraft is defined as the amount of water by which the present and projected use exceeds the groundwater supply. See also Comment Response 1279.115.

1202.02

In Illinois, the increase in traffic deaths was calculated to be 0.1/yr (see EIS Volume I, Chapter 3, Table 3-7). Traffic analysis is presented in Volume IV, Appendix 14, Section 14.2.1.3.C. Mitigations will be considered during construction planning to minimize the impact of SSC traffic and trucks on the safety of the residents.

These mitigations will be addressed in greater detail in the Supplemental EIS for the selected site.

1202.03

All operators of construction vehicles would be trained to properly operate the equipment under inclement conditions as necessary. Any impacts of site climate on schedule will be accounted for during detailed construction planning.

1202.04

See Comment Response 1135.04.

1202.05

The details of excavated material disposal are discussed in Section EIS Volume IV, Appendix 10, Section 10.2.3.3.

The State of Illinois has proposed four quarries for the disposal of excavated material. These quarries would stockpile the excavated material and gradually blend them with their own produced material and sell the combined product. The quarries are shown in Volume IV, Appendix 10, Figure 10.2.3-5.

The excavated material would be stored for a short period at the construction site and then would be hauled away to the four quarries in covered trucks.

1202.06

The potential impacts to public education arising from SSC development were determined from baseline educational service levels and projected school-age population increases (see EIS Volume IV, Appendix 14, Section 14.1.3.3.C.). These impacts were assessed for the nine-county Illinois Region of Influence, and for the primary impact counties of DuPage, Kane, and Kendall; they were not assessed at the sub-county level.

SSC-related impacts to public education were based on the changes in facilities and personnel necessary to maintain current levels of service while meeting the increased demand attributable to families migrating into the area as a result of the SSC. Projected enrollment and employment increases in Kane County public education that are attributable to SSC development are presented in Volume IV, Appendix 14, Table 14.1.3.3-12.

1202.07

See Comment Response 1369.09.

1203.01

Comment noted.

1203.02

See Comment Response 1135.04.

1203.03

Various methods are available for minimizing groundwater infiltration into underground excavations.

- o Ground freezing, a 100-yr old technique, where a refrigerant (usually a chilled brine) is circulated through pipes set in boreholes that have been drilled in a ring pattern around the excavation site. A thick ice wall develops in the water-bearing material which prevents inflows as the shaft or hole is being dug.

- o Slurry walls, a more recent technique, where a series of narrow trenches are dug around the excavation site, using drilling mud to prevent collapse of the trench walls. Grout (cement) is pumped into each trench, displacing the mud, and hardens to form a section of an eventually impermeable wall behind which excavation can proceed.

- o Grouting, where grout is injected under pressure into holes drilled around an excavation site. The grout fills the pore spaces in the water-bearing soil or rock and hardens, creating a relatively impermeable zone within which excavation can proceed.

- o Dewatering, where water is pumped continually from one or more holes around an excavation site, locally lowering the water table and water pressure. Excavation can then proceed without significant inflows.

The exact methods used for SSC shaft construction would depend on site conditions and variations at each excavation. Where water supply wells are in close proximity to shaft excavation sites, techniques such as slurry wall construction or ground freezing can be used to avoid impacts to water levels. Shaft sinking in more remote areas, away from wells, may utilize less expensive water control techniques, such as dewatering. In any case, water control measures during shaft sinking are of limited duration (up to a few weeks), lasting only until a final, impermeable shaft liner is put in place.

See also Comment Responses 19.03 (infiltration control for excavations) and 1133.02 (potential compensation to impacted well owners).

1203.04

The strengths of the roads to support the construction traffic would be considered during the construction planning. Some roads may require strengthening. The responsibility for the future maintenance of roads is the responsibility of the state or county that has jurisdiction.

1203.05

Comment noted.

1204.01

Comment noted.

1204.02

The Soil Conservation Service identified 3,076 acres of prime farmland and 212 acres of important farmland in the SSC fee simple area on the U.S. Department of Agriculture Farmland Conversion Impact Rating Form AD-1006 submitted to the DOE. From these inventories, an estimated 197 acres of prime and important farmland would be permanently converted by the SSC project. This is less than the average lost each year to development. See revised Volume I, Chapter 3, Section 3.7.11; Chapter 4, Section 4.8.6; Chapter 5, Section 5.1.7.2; Section 5.2.11, and Volume IV, Appendix 13. For more information on taxes, see Volume I, Chapter 5, Section 5.1.8, and Volume IV, Appendix 14.

1204.03

Comment noted.

1204.04

The State of Illinois has proposed four quarries for the disposal of excavated material. These quarries would stockpile the excavated material and gradually blend them with their own produced material and sell the combined product (see EIS Volume IV, Appendix 10, Section 10.2.3.3 and Figure 10.2.3-5 for details).

The disposal of radiological waste is addressed in Volume IV, Appendix 10, Section 10.1.3.1.D.3 and Section 10.1.3.1.E. The disposal of hazardous/toxic materials is addressed in Volume IV, Appendix 10, Section 10.1.3.2.B.3.

1204.05

There would be economic effects due to the construction and operations of the SSC facility throughout the Illinois Region of Influence, but these effects would be concentrated in the three primary impact counties of DuPage, Kane, and Kendall. Economic effects would be felt in the form of additional direct and indirect jobs, earnings, and sales (see the second paragraph of Comment Response 958.02), as well as State and local tax revenues and expenditures (see EIS Volume IV, Appendix 14, Section 14.1.3.3.D).

Comparisons of SSC-related impacts on the seven site alternatives being considered, including economic and fiscal impacts, are presented in Volume I, Chapter 3, Section 3.5, Table 3-7.

1205.01

EIS Volume I, Chapter 2 contains a statement of the purpose and need for the project.

1205.02

Low-level radioactive waste (LLRW) from Fermilab is currently collected, processed, and stored at the Fermilab Boneyard area. This LLRW is not permanently stored on-site for decay but only stored until enough waste is collected to make a truckload shipment to the DOE's Richland LLRW disposal facility. For more details see Comment Response 229.06. Fermilab does not dispose of its LLRW on-site. It does not operate a "radioactive dump."

Fermilab stores valuable components and shielding for reuse. They presently have approximately 16,000 ft^3 of shielding blocks and components. In this regard, they have accepted components and shielding from other accelerators for reuse. Part 61 of Title 10 of the Code of Federal Regulations LLRW disposal and is not applicable to this EIS.

Disposal practices for radioactive mixed waste are described in Comment Response 524.06.

The radiation level at the nearest site boundary due to materials at the boneyard was 2.5 mrem/yr for 1987. This is equivalent to 1/5th of the dose from one cross-country trip by plane.

1205.03

See Comment Response 992.10. The amount of radioactivity generated per year at an accelerator is directly proportional to the product of energy

and number of particles accelerated to that energy. Although the Fermilab accelerator energy is lower than that of the SSC, the number of particles accelerated per year is much higher than the SSC. In addition, Fermilab estimates that about half of the low-level waste generated there is a direct result of their fixed-target experimental physics program, and current plans for SSC do not include fixed-target experimental physics programs. The total amount of radioactivity produced (see EIS Volume IV, Appendix 10, Section 10.1.3.1.D.3.a.2) is actually expected to be lower at the SSC than at Fermilab.

1205.04

The Illinois proposal does not include those areas of the template footprint identified as B and C which extend beyond the existing Fermilab property. The EIS maps are in error.

1205.05

Comment noted.

1206.01

For a discussion of the number of people impacted by the SSC, refer to Comment Response 1369.09. Regarding SSC-related effects on the quality of life in local communities, refer to Comment Response 1107.04.

1206.02

See Comment Response 1047.02.

1206.03

See Comment Response 1184.02.

1206.04

There is no potential for explosion of the superconducting magnets in the SSC under any foreseeable circumstances. One hypothetical accident that could result in damage to the magnets is known as a quench (EIS Volume IV, Appendix I, Section 1.1.3). A quench occurs when one part of the superconducting magnet system starts to heat up. If current isn't quickly reduced to the magnet, the temperature will rise high enough to damage or destroy the magnets. Should a quench occur, failure of the quench protection systems would result in an increase in temperature of the superconductor that could, at worst, melt the superconducting cable.

The single worst reasonably unforeseeable event associated with SSC operations that would result in inadvertent releases of radiation would be loss of the accelerator beam. The radiological impacts from a beam loss are discussed in Volume IV, Appendix 12, Section 12.4.1. A highly sophisticated monitoring system is incorporated in the design of the SSC

to protect against damage to accelerator components and prevent radiation releases that would result from loss of beam. In the event that the protection system failed, the extensive earth shielding surrounding the accelerator tunnel would serve to protect the public from radiation exposure. At the Illinois site, the maximum direct radiation dose to an individual at the land surface resulting from loss of beam is projected to be less than 0.001 mrem/yr, a comparatively small dose considering that the DOE limit is 100 mrem/yr and the estimated dose to an individual from natural radiation is about 300 mrem/yr (Volume IV, Appendix 12, Table 12.2.1-1). The above considerations would apply equally to other potential receptors near the SSC, such as soil, plants, wildlife, surface water supplies, etc. Potential radiological impacts to groundwater supplies have been considered as well and are discussed in Volume I, Chapter 5; and Volume IV, Appendix 12. At the Illinois site, the calculated annual dose equivalents in a nearby well (50 m from the source) resulting from accidental loss of beam would be 0.044 mrem/yr (Volume IV, Appendix 12, Table 12.2.3-6), well below the 4 mrem/yr guideline for drinking water.

Visual impacts and possible mitigation are discussed in Volume IV, Appendix 16. A Supplemental EIS will be prepared for the selected site which will address these in considerably greater detail.

1206.05

The EIS recognizes that environmental impacts of various types and degrees will occur at all candidate SSC sites. It also clearly demonstrates that the SSC does not constitute a danger in terms of public health and safety. Minor effects on the existing regional groundwater overdraft as a result of the project are expected at the Illinois site. Water pollution will be held to negligible levels with appropriate construction and waste-treatment technology. See also Comment Responses 533.03 (groundwater supply), 18.03 (groundwater quality), and 1133.02 (impacts on individual wells).

1206.06

Disposal of spoils is discussed in EIS Volume IV, Appendix 10, Section 10.2.3. The impact of SSC on the traffic is discussed in Volume IV, Appendix 14, Section 14.2.1.3.C.

1206.07

See Comment Response 810.05.

1206.08

Purchase of land for the SSC is the responsibility of the proposer, in this case the State of Illinois. See Comment Response 880.04.

The EIS analysis of fiscal impacts resulting from the location of the SSC at the proposed Illinois site suggests that the State of Illinois

would receive an additional $10.9 million in revenues during the peak construction year of 1992; these revenues would decrease to $6.0 million in the first year of operations in the year 2000, and continue at this level thereafter. In the case of individual primary impact counties of DuPage, Kane, and Kendall, cumulative net fiscal impacts are anticipated to be negative during the first few years of construction, but positive thereafter (see Volume IV, Appendix 14, Section 14.1.3.3.D).

1206.09

In accordance with DOE Orders, such as 5480.1B, the DOE is committed to operating the SSC in a safe manner. Potential health and safety impacts from radiation and chemical hazards to workers and the public have been considered in the EIS (Chapter 5, Section 5.1.6). Regarding the concern about radon, this substance is not a product of the SSC, but rather it is a decay product of naturally occurring elements, uranium-238 and thorium-232. Radon will be present in the ground in Illinois regardless of whether the SSC is sited there or not. Radioactive airborne emissions from the SSC, such as radon and its progeny, are not likely to pose a hazard and will be monitored to assure that levels are maintained as low as reasonably achievable (ALARA).

1207.01

A discussion of major roads and a traffic analysis are presented in EIS Volume 14, Appendix 14, Section 14.2.1.3.C.

1207.02

Climate and meteorology for the SSC site are discussed in EIS Volume IV, Appendix 5, Section 5.3.3. Harsh winter conditions could exacerbate traffic impacts addressed in Volume IV, Appendix 14, Section 14.2.1.3.C.1.b.

1207.03

It is the DOE's intention to evaluate mitigations in the third group of measures noted in this comment. At this time, they represent a list of possible mitigations which will be considered further for the selected site, but are not among the first two groups of priorities. These mitigations cannot be fully assessed until the final project design is developed. Whether all of these mitigations apply to the SSC project will depend on the selected, final location and design of the facilities, and final design-phase consultations with Federal, State and local agencies (EIS Volume I, Chapter 3, Section 3.6). A more detailed analysis will be provided in the Supplemental EIS for the selected site.

1207.04

Comment noted.

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1207.05

Present information on the Indiana bat suggests that the species would occur only rarely in the region containing the proposed Illinois site. The last known documentation of the species was from Cook County in 1928. However, to update the EIS, the DOE recently conducted reconnaissance surveys of the Illinois site vicinity to locate potential summer foraging, roosting, and nesting habitat for the Indiana bat. Results of the survey, which appear in Volume IV, Appendix 11, Section 11.3.3.2, indicate that there were very few areas containing appropriate habitat. These areas included suitable habitat at J6 and in the vicinity of areas B, E8, and E9. Current SSC development plans call for avoidance of areas, such as riparian forests, that could be attractive to Indiana bats. Should Illinois be selected as the site for the SSC, additional studies would be conducted on the Indiana bat as part of the consultation with the USFWS under the Endangered Species Act.

1207.06

The EIS does not describe potential for the ground to sink at the Illinois site. The ground will not sink as a result of underground construction (see Comment Response 1020.12), hence there will not be consequent habitat changes due to flooding of dry ground. Wetlands habitats at the Illinois site are described in EIS Volume IV, Appendix 5, Section 5.3.11.

1207.07

A detailed study will be performed for the selected site to identify situations that require additional mitigative action. A Supplemental EIS will be developed to address these issues.

See Comment Response 846.03 for the location of a discussion of blasting noise in the EIS. Also see Comment Response 1332.03.

1207.08

The comment concerns whether the proposed SSC project would result in water quality contamination that may adversely affect protected birds such as the bald eagle and peregrine falcon. The principle reasons for the decline of these birds included destruction of habitat, disturbance of nest sites, illegal shooting, and environmental pollution. This last cause resulted in eggshell thinning in these birds through biomagnification of pesticides like DDT, its metabolite DDE, and other chlorinated hydrocarbons. At this time, many of the offending pesticides have been banned in favor of biodegradable pesticides. The DOE would use only EPA-approved pesticides and would comply with all applicable guidelines for safe storage and use of these chemicals.

1207.09

Groundwater infiltration and surface water drainage into excavations will be controlled, and the small amount of water entering the excavations will be pumped into retention basins for groundwater recharge or discharge to surface streams. The rock formations at the proposed Illinois site are not prone to subsidence, even under groundwater overdraft conditions. Thus, no flooding of farmers' fields, drying out of marshes and wetlands, or related habitat changes would occur from water inflow into excavations including the tunnel, from the disposal of the dewatering wastes, or from pumping of groundwater for the project. See also EIS Volume IV, Appendix 7, Section 7.2.3.3 and Comment Response 19.03.

1208.01

The mitigations described in the EIS Volume IV, Appendix 16 are measures commonly used to screen objectionable features from view or to reduce the level of visual incompatibility with the established character of the surroundings. It was indicated that these measures can be evaluated during final project design. If those suggested for consideration would prove inadequate during final analysis, others that are more effective could be selected. Reference in the comment to inconsistencies is taken to mean visual inconsistencies between SSC facilities and their surroundings. These have been addressed where there are indications that public sensitivity over visual impacts would be moderate to high (see Volume IV, Appendix 16, Section 16.2.3.2).

Criteria for significance are presented in Volume IV, Appendix 16, Table 16-1. In general, visual impacts were considered to be significant if there would be a perceptible reduction of scenic/visual quality for more than one year, as seen from moderately to highly sensitive viewing positions.

The observations about the incompatibility of SSC project features and residential areas, agricultural lands, and natural-appearing landscapes is consistent with the text of Volume IV, Appendix 16. An exception occurs in some rural and agricultural lands. The warehouse-like appearance of intermediate access facilities (E sites) is, in some areas, similar to structures in the vicinity (utility sheds, small warehouses, and the like). This exception has been described in Volume IV, Appendix 16.

1208.02

The introouctory paragraphs of Section 16.3 of Appendix 16, Volume IV of the EIS discuss the focus of the visual impact analyses and rationale for that focus. The magnitude of construction-related visual impacts has been treated as being at least commensurate with the visual impacts caused by the related surface facilities being built. Construction impacts were assumed to last for less than two years at any one of the

individual construction areas, but they could still be considered significant. Refer to Table 5.1.10-1, Chapter 5, Volume I. In that table, the visual impacts noted are attributed to construction activities as well as project operations.

1208.03

Noise produced by spoils haul trucks is addressed in the EIS Volume IV, Appendix 9, Section 9.1.3.1.B. An average of approximately eight trucks per hour will use a road fed by one E or F area tunnel boring machine surface support operation. Spoils hauling at this rate is expected to last ten months. Mitigations identified in Volume IV, Appendix 9, Section 9.1.3 that have the potential to reduce this impact include enforcing current truck muffler laws, specifying haul routes that avoid residential areas, and maintaining roads to reduce surface roughness. Actual control measures will be decided during final design for the selected site and analyzed in the Supplemental EIS.

Volume IV, Appendix 1 does not indicate that any project-directed conversion of two-lane roads to four-lane highways will occur in the St. Charles area. Ground-transmitted vibrations and overpressures generated by blasting are covered in Volume IV, Appendix 9, Section 9.2.

1208.04

See Comment Response 1126.05. Volume IV, Appendix 16 is a scenic and visual resource assessment that discusses sensitive viewing locations as part of its analyses. This is different from public attitudes about the project.

1208.05

Volume I, Chapter 7 of the EIS lists the preparers and reviewers of the document. The technical lead on Appendix 16, Volume IV (Scenic and Visual Resources Assessments) was Lawrence C. Headley. Mr. Headley's educational qualifications are listed where his name is first listed as a contributor (to Appendix 5). His highest degree is a Masters Degree in Landscape Architecture, the terminal degree in the field. He has 9 years of experience in scenic and visual resource assessments, environmental planning and analysis, and site design. The quality control technician, administrative assistant, and secretary referenced in the comment were contributors to the EIS support, as indicated in the paragraph following the reference to Mr. Headley.

1208.06

Comment noted.

1209.01

See Comment Responses 972.01 and 1279.115.

120112503358811

1209.02

See Comment Responses 972.01 and 1279.115.

1209.03

Comment noted.

1210.01

See Comment Response 710.01.

1210.02

Reparation for loss of farms, homes, and businesses is the responsibility of the State. See Comment Response 880.04.

1210.03

Comment noted.

1211.01

Comments noted. Potential impacts of the SSC on human health are discussed in the EIS in Volume I, Chapter 5, Section 5.1.6.

1211.02

EIS Volume IV, Appendix 12 of the EIS presents the assessment of public health impacts from the SSC. The potential impacts to the public from radiological and hazardous materials are also summarized in Volume I, Chapter 5, Section 5.1.6. In the referenced portions of the EIS, it is shown that no radiation from the SSC would reach the surface on top of the ring in Illinois, even under the worst conceivable accident conditions.

1211.03

The EIS thoroughly discusses the impacts of the SSC, including those noted in the comment, of construction in Illinois. The impacts to the environment are discussed in Volume I, Chapter 5 and in Volume IV, Appendices 5, 7, and 11.

1211.04

Further details regarding the types and amounts of radiological and other hazardous emissions may be found in EIS Volume IV, Appendix 10 (Source Terms) and in Appendix 12 (Health Impacts). These potential impacts are summarized in Volume I, Chapter 5, Section 5.1.6.

Reparation for loss of farm land is the responsibility of the State. See Comment Response 880.04.

1211.05

Comments noted.

1212.01

Because of its distance from the SSC, the Lilly Lake School is not expected to experience blasting impact. For this reason it is not discussed in the EIS.

1213.01

Comments noted.

1213.02

Since the specific lake of concern was not identified in the comment, it is not possible for the DOE to respond by addressing specific impacts which might occur as a result of the construction and operation of the SSC. In general, however, and based on the analysis contained in the EIS, construction and operations of the SSC would not be expected to have an effect on water levels in any of the surface water features at or near the site proposed by the State of Illinois.

Most wells in the site vicinity would not be affected by the SSC. Nevertheless, some wells on or near the project may have to be abandoned or may be affected otherwise by the construction and operations of the SSC. The State has indicated that it plans to compensate or provide alternate supplies to private well owners if they should need such assistance.

1213.03

Comment Response 1047.02 addresses the topic of changing property values due to the SSC. Traffic impacts on certain transportation links in Illinois during both construction and operations of the SSC are discussed in EIS Volume IV, Appendix 14, Section 14.2.1.3.C.; note that this analysis considers impacts on public roads only, not private roads. Impacts on Illinois ecology as a result of the SSC are discussed in Volume IV, Appendix 11, Section 11.3.3. In general, trees are not anticipated to suffer harmful effects due to the SSC and its impact on the local environment.

1214.01

See Comment Responses 1235.02 and 1275.11.

1214.02

See Comment Response 1292.05.

1214.03

Analyses of potential impacts to surface water sources and wetlands as described in Volume I, Chapter 5, Sections 5.1.2, 5.1.5, and 5.2.7, were developed considering the proximity of SSC facilities to the potentially impacted area.

The wetlands in the vicinity of E8 are not likely to be affected by construction of E8 because of their distance from the site (approximately 500 ft or more). Similarly it is unlikely that the wetlands in the vicinity of Denker Road would be affected by any necessary widening or use of the road, which is approximately 1000 ft from the subject wetlands. If Illinois is the selected site, plans to mitigate wetlands impacts would be developed after consultation with the U.S. Army Corps of Engineers and other appropriate agencies. Also see Comment Response 1279.318.

1214.04

See Comment Response 974.01.

1214.05

Comment noted.

1214.06

Comment noted.

1215.01

Comment noted.

1215.02

Volume IV, Appendices 5 and 14, provides the socioeconomic baseline and impact analyses associated with the project, respectively. It is projected that 3,290 workers would be needed to construct the SSC in Illinois (see Volume IV, Appendix 5, Section 5.1.8, Table 5.1.3-4). This translates into a projected SSC-related population of 9,890 in the Illinois Region of Influence (ROI). The ROI is a multicounty area including DuPage, Kane, Kendall, Will, DeKalb, Boone, McHenry, Lake, and Cook Counties. This area basically includes the Chicago metropolitan area. Although the total project-related population is large, it is spread out over many counties, thus lessening the impacts to any one county.

The basic contention that there would be increased social service needs is correct and is considered under the analysis of public services (see Volume IV, Appendix 14, Section 14.1.3.3, Table 14.1.3.3-10). It is estimated that 20 additional employees would be needed in the area of health and welfare to meet the increased demand related to the SSC project. An analysis of fiscal impacts of the project in Illinois shows that tax revenues would be adequate to meet the increased service demand after the peak construction year (see Volume IV, Appendix 14, Section 14.1.3.3, Tables 14.1.3.3-14 through 16).

1215.03

Water availability and water quality conditions at the Illinois site are described in Volume IV, Appendix 5, Sections 5.3.2.1 and 5.3.2.2.

1215.04

A project of this size will result in some long-term habitat disturbance and wildlife displacement. However, many of the temporary disturbances that will result from construction of the SSC will be mitigated, and some species of wildlife may return to preconstruction population levels. Possible mitigations are discussed in EIS Volume IV, Appendix 11. Certain sensitive and threatened or endangered species will receive special attention and planning for mitigation during the preparation of a site-specific Supplemental EIS, once a selected site is identified. Although some habitat will be lost, additional wildlife protection may be afforded within the SSC fee simple areas that are not impacted by facility construction.

1215.05

Comment noted.

1216.01

Comment noted. A discussion of the resources at the Fermi National Accelerator Laboratory in Batavia, Illinois can be found in EIS Volume I, Chapter 4, Section 4.8.5.

1217.01

The retention/siltation ponds will be large enough to handle the flow of water into the tunnel and will allow time for fine particles to settle out of the water. Water-handling requirements for tunnel excavation in the area of E3 to E4 are discussed in Comment Response 1279.357. As indicated in that response, the largest water-handling capacity that would be needed at any shaft location includes 100 gal/min of initial-rate inflow (i.e., inflow from a conservatively large 200-ft-long segment of tunnel that has not yet been pressure-grouted) plus up to 600 gal/min from a chance encounter with an unusually water-transmissive fractured zone. This net surge of 700 gal/min might conservatively be

expected to last for no longer than several days before the fractured zone is effectively plugged by pressure-grouting or some other technique. The resulting volume of water can be handled by the planned retention/siltation ponds. That is, the ponds, as described in Volume IV, Appendix 10, will be large enough to hold the higher initial inflows (before the tunnel is grouted) plus have adequate surge capacity to handle still greater volumes from a chance encounter with a very water-conductive shear zone. During the high inflow period, the pond will receive approximately 3 acre-ft per day. A 2-acre, 7-ft-deep pond will thus hold more than the required volume of water. Settling time in the pond is about 6 hours for the silt-sized fraction. If smaller particles are a problem, they can be removed with flocculators. Volume IV, Appendix 7, Section 7.1.3.3 and Appendix 10, Section 10.2.3.3 have been revised to reflect this.

1218.01

Comments noted.

1219.01

All proposed SSC site alternatives (including the Illinois site) have been evaluated using the same process.

1219.02

Comment noted.

1219.03

Conversion of Fermilab for use with the SSC would not impair its effectiveness beyond the period of conversion, and could extend its useful life afterward for 25 years.

The SSC under normal operating conditions would require the use of the existing Fermilab accelerator as the injection system for less than one hour each day. The accelerator could be used for other experiments run simultaneously with SSC operations if there were interest in the physics of such experiments and funding were available for such experiments.

1219.04

All data used in the EIS were publicly available information furnished by State agencies, the EPA, and other Federal agencies, peer-review journals, and university reports and thesis materials. Where data were furnished by the proposing organization, these were verified as well as possible from another source.

1219.05

The DOE has solicited proposals for a Management and Operating contractor to manage the research and development, construction, and operations

of the SSC. An award is expected to be made in early 1989. If the Illinois site is selected, the DOE would assure that an appropriate level of resources is made available for both the needs of the SSC and ongoing Fermilab projects.

1219.06

Comment noted.

1220.01

Faults in the site and region are discussed in Volume IV, Appendix 5, Section 5.3.1.3. They are not expected to cause earthquakes or impact the construction or operations of the SSC because they are not active. Changes in land use are analyzed in EIS Volume IV, Appendix 13, Section 13.1.3.3.

1220.02

The issue of encountering naturally-occurring gas at the proposed Illinois SSC site is discussed in Volume IV, Appendix 5, Section 5.3.1.5 (Affected Environment) and in Volume IV, Appendix 12, Section 12.3.3 (Health Impacts). No gas was encountered in 19 borings made for the SSC project, although occurrences of "drift-gas" (methane, nitrogen, carbon dioxide) have been observed in the till at a number of Illinois wells.

1220.03

As noted in EIS Volume IV, Appendix 5, Section 5.3.1.5, the possibility of encountering naturally by occurring (methane) gas during shaft sinking operations at the Illinois site is recognized by the DOE. However, pockets of gas in the proposed SSC area appear to be confined to relatively small locations (see Comment Response 1007.01), as demonstrated by the fact that 19 borings were made near the SSC tunnel alignment without encountering any gas.

It is recognized that methane gas accumulations can result in explosions that can harm workers during underground construction projects. It is not an accepted conclusion that large construction projects such as the SSC will result in deaths and injuries to workers involved. The safety precautions that will be used to protect workers against the hazards associated with encountering pockets of naturally occurring gas during shaft construction operations are discussed in EIS Volume IV, Appendix 12, Section 12.3.3. These include monitoring to detect accumulations of gas and training of workers to take special precautions when working in gas-suspect areas.

In addition, should the Illinois site be selected for construction of the SSC facility, it is likely that the DOE would perform further investigation of the site geology at the shaft locations to determine the presence of gas pockets.

120112503358817

1220.04

Comment noted. An analysis of traffic is presented in Volume IV, Appendix 14, Section 14.2.1.3.C. The number of trucks for transportation of spoils is presented in Volume IV, Appendix 10, Section 10.2.3. Mitigations will be evaluated in greater detail during construction planning to minimize the impact of SSC-related traffic. These mitigations will be addressed in the Supplemental EIS for the selected site.

1220.05

Faults are discussed in EIS Volume IV, Appendix 5, Section 5.3.1.3. They are not expected to impact the construction or operations of the SSC, and they do not represent earthquake hazards. Changes in land use/zoning designations are analyzed in Volume IV, Appendix 13, Section 13.1.3.3. Areas that will undergo changes directly related to SSC development are cited in Volume IV, Appendix 13, Table 13-3. The downtown portion of St. Charles will remain largely unaffected by the SSC project, given the suburbanized nature of the eastern portion of the SSC project area. Impacts to commercial areas will be diffused, thereby reducing any one community's impacts to low or negligible levels.

1222.01

See Comment Responses 7.03 and 1133.03.

1223.01

See Comment Response 1502.16.

1223.02

See Comment Response 860.04.

Overhead costs and contingency allocations were considered for project cost estimates and life cycle cost estimates. Exact figures are not provided. See EIS Volume IV, Appendix 2, Section 2.4.I.

1223.03

See EIS Volume I, Chapter 2 for a discussion of the purpose and need for the SSC. See also Comment Response 278.08.

1223.04

Comment noted.

1224.01

Comments noted.

1225.01

Comment noted.

1225.02

All comments received during the review period of the DEIS are made a part of the administrative record. These contain many comments which either support or oppose the project, but which do not directly relate to the EIS. However, they are useful as an expression of public interest in the project.

1225.03

As stated in Volume IV, Appendix 14, Section 14.1.3.3.D, the Illinois State government would incur costs for site and infrastructure improvements, and for the purchase of private land that would be transferred to Federal ownership. If these costs were indeed financed through long-term bonds, the State likely would be obligated to make payments on the principal amount borrowed. However, there would also be a long-term increase in both direct and indirect State tax revenue from project spending and additional spending by SSC construction and operation workers. These additional revenues would help offset some of the expenditures that the State would incur. Also see Comment Response 873.02.

1225.04

Comment noted.

1226.01

Comments noted.

1227.01

Transcripts of public hearings printed in this EIS (see Volume IIA) are certified copies of hearing testimony. Transcripts are taken verbatim by a court reporter all cannot be changed. The oral comment referenced is addressed in Comment Response 839.01.

Regarding specific numbers of land parcels presented in the DEIS, see Comment Response 710.01.

1228.01

Comment noted.

1229.01

The DOE's health protection criteria are designed with ample conservatism and contingencies to provide adequate protection of the general public living over the SSC.

The National Council on Radiation Protection and Measurements (an independent group of scientific experts) monitors risk levels and draws on the latest research to formulate recommended radiation exposure limits. This group of scientists takes into account the sensitivity of pregnant women, infants and children in establishing their guidelines. The Environmental Protection Agency (U.S. EPA) sets basic radiation exposure limits based on the National Council's recommendations, to be followed by all Federal agencies. The DOE, in turn, sets radiation protection standards for high energy accelerators, like the SSC, that are operated on its behalf.

Accordingly, the SSC is being designed to keep exposures to the general public as low as reasonably achievable (ALARA). As shown in Volume I, Chapter 5, Table 5.1.6-1, any calculated exposures to the maximally exposed individual on the ground surface would be no more than 0.004 mrem/yr under normal operations. This level would be attributed to airborne exposure to activation products during the venting of the tunnel and would require continuous exposure at the location for one year (see Volume I, Chapter 5, Table 5.6.1-1). This level is a small fraction (less than 1/1000th) of the natural background radiation levels in Illinois and is well within the EPA limit of 25 mrem/yr (excluding radon and radon progeny) for radiation exposure from the air pathway.

1229.02

The DOE will endeavor to mitigate impacts such as those listed. As a minimum, proposers were required to comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646). The Federal act sets minimum standards of assistance and compensation for relocation advisory and financial assistance for individuals, businesses, or farm operations that must be relocated as a result of the public acquisition of real property and basic standards and requirements for appraisal and acquisition to be followed in acquiring real property.

For those real property owners whose land or a portion of their land is not acquired in fee simple, as in the case of the SSC stratified fee beneath the land surface, there is no Federal requirement or authorization to provide mitigation. Local economic and population growth resulting from SSC-related development may exert a positive influence or could tend to depress land values in the area of the SSC facility depending on the local real estate market situation and peoples' perceptions and attitudes. Whether land value effects will prove to be permanent or transitory may depend in large measure on the stability of

these conditions and perceptions over time. Careful planning can minimize many negative conditions associated with growth that may also contribute to the perceptions of land value. For a discussion of the environmental safety and health implications of the SSC see Comment Response 810.05.

Questions concerning the proposer's authority to mitigate should be directed
to the appropriate State agency.

1229.03

See Comment Response 1002.01.

1229.04

Comments noted.

1230.01

Comment noted.

1230.02

The DOE shares the concern regarding health and safety impacts. These have been analyzed for the SSC and are addressed in Volume IV, Appendix 10 (hazardous source terms) and Appendix 12 (health impacts).

1230.03

It is the DOE's position that claims of stress and other psychological impacts stemming from the perception of the risk associated with the SSC need not be considered under the National Environmental Policy Act (see Metropolitan Edison company vs PANE, 460 US 763 (1983)). See also Comment Response 1179.02.

1230.04

Comment noted.

1230.05

Comment noted.

1231.01

Comment noted.

1231.02

Comment noted.

1231.03

The EIS examines the economic activity for the Illinois Region of Influence (ROI) and for the primary impact counties of DuPage, Kane, and Kendall (see Volume IV, Appendix 5, Section 5.3.11.1.A), but does not examine economic activity for individual communities. However, evidence of the purported "boom" in the Naperville economy noted in the comment is indirectly provided in the form of decreasing unemployment since 1983 in the two counties which contain this community -- DuPage and Will. The DuPage County labor force also grew between 1983 and 1987.

During the peak year of SSC construction, it is estimated that almost 1,000 jobs would be available to local workers in the construction craft (or building trade) industry, not only in Naperville but throughout the ROI (see Volume IV, Appendix 14, Section 14.1.3.3.A). Unemployment data indicate that in 1987 there was an 11.5 percent unemployment rate in the construction industry (approximately 15,000 unemployed construction workers) within the Chicago Primary Metropolitan Statistical Area (comprising six of the eight counties in the ROI -- Cook, DuPage, Kane, Lake, McHenry, and Will Counties). Although it is not anticipated that SSC direct construction workforce would come exclusively from the ranks of the unemployed (or even exclusively from the Illinois ROI -- 30 to 34 percent of the total direct and indirect workforce is expected to in-migrate from outside the region), it seems reasonable to assume that at least 1,000 crafts workers would be available among the more than 15,000 unemployed workers in the ROI. These statistics indicate that thousands of unemployed construction workers would remain available to work on other projects within the ROI, with or without SSC development in Illinois.

1231.04

EIS Volume IV, Appendix 5, Section 5.3.10.1.F presents a discussion of planned land uses. In it the Kane County Comprehensive Land Use Plan 1982/1200 is cited, wherein it is noted that the plan influences the County's desire to contain growth, thereby preserving the county's agricultural character. Nevertheless, the SSC project near cluster area development will likely spawn commercial and/or industrial development as discussed in Volume IV, Appendix 13, Section 13.1.3.3. How this development is managed is the responsibility of the local planning agency, the Kane County Development Department. See also Comment Response 1229.02.

See Comment Response 1047.02.

1231.05

See Comment Response 873.02.

1231.06

Comment noted.

120112503358822

1232.01

See Comment Response 874.01.

1232.02

See Comment Response 874.02 with respect to the concern about tunnel construction below the water table, and Comment Response 19.03 with respect to control of groundwater infiltration into the tunnel. The disposal of the excavated rock and of the dewatering wastes is described in the Errata to EIS Volume IV, Appendix 10, Section 10.2.3.3, and the potential impacts of the proposed disposal methods on surface and groundwater quality are described in EIS Volume IV, Appendix 7, Sections 7.1.3.3.F.1 and 7.2.3.3.A.4. If the proposed Illinois site is selected as the site, additional analysis based on more design information, will be evaluated in a Supplemental EIS. Sufficient retention pond capacity and sediment removal methods will be included to minimize impacts of the dewatering wastes on surface and groundwater quality.

1232.03

While the proposed SSC ring in Illinois crosses the Fox River twice, it does so at depths ranging from 280 to 360 ft. Construction of the ring tunnel under the river will have negligible surface disturbance, hence negligible siltation impacts.

Construction of SSC surface facilities may have impacts on streams. Soil erosion and sedimentation in surface water (streams, lakes, and wetlands) will be mitigated by minimization of disturbed areas, rapid revegetation, and well-maintained sediment basins. With implementation of proper mitigative measures, the impacts are expected to be minor and to occur over a relatively short period of time. Detailed discussion of possible mitigations is presented in Volume I, Chapter 5, Section 5.1.2.1; Volume IV, Appendix 7, Section 7.1.2.2.D.2; and Volume IV, Appendix 11, Section 11.3.3.3, and summarized in Volume I, Chapter 3, Section 3.6).

The commenter is correct, the Illinois site has the largest river, i.e., the Fox River, overlying the tunnel alignment, among the seven site alternatives.

1233.01

See Comment Response 1276.01.

1234.01

Comment noted.

1235.01

Please refer to EIS Volume IV, Appendix 10, Section 10.2.3.3. Four quarries have been proposed by the State as disposal sites for the excavated materials. As proposed, these quarries would stockpile the excavated material, and/or gradually blend it with their own produced material, and sell the combined product.

This proposed spoils disposal method is used in the EIS to present a reasonable scenario for the evaluation of environmental impact. Neither the feasibility nor the economics of the proposed spoils disposal method have been studied in detail. Technical feasibility and spoils marketability studies would be performed for the selected site during detail design and described in the Supplemental EIS.

1235.02

Although the current proposed location of facility J6 covers the entire width of Kress Creek floodplain, several mitigative measures, such as moving the facility along the line tangent to the ring, are available to minimize the impact on the flooding problem. EIS Volume I, Chapter 3, Section 3.6; Chapter 5, Section 5.1.2.2; and Volume IV, Appendix 7, Section 7.1.3.3.C have been revised to discuss such possible mitigations.

1236.01

Comment noted.

1237.01

Comment noted.

1237.02

Water-handling requirements for tunnel excavation in the area of E3 to E4 are discussed in Comment Response 1279.357. As indicated in that response, the largest water-handling capacity that would be needed at any shaft location includes 100 gal/min of initial-rate inflow (i.e., inflow from a conservatively large 200 foot-long segment of tunnel that has not yet been pressure-grouted) plus up to 600 gal/min from a chance encounter with an unusually water-transmissive fractured zone. This new surge of 700 gal/min might conservatively be expected to last for no longer than several days before the fractured zone is effectively plugged by pressure-grouting or some other technique. The resulting volume of water can be handled by the planned siltation ponds. Volume IV, Appendix 7, Section 7.1.3.3, and Appendix 10, Section 10.2.3.3 have been revised to reflect this.

1237.03

See Comment Response 1279.141.

1237.04

See Comment Response 1279.141.

1237.05

See Comment Response 1279.141.

1237.06

See Comment Response 1047.02.

1237.07

The difference between the proposers' estimate of water inflow and the EIS estimate is explainable in terms of what each represents. The proposers presented an average inflow rate, with a note indicating larger, local flows might be encountered. The EIS presents the range of expectable inflows; the low end of the range is lower than the proposers' average and the high end of the range is higher than the average. The two estimates are not at odds with one another. See Comment Response 1279.141 with regard to the rate of inflow.

1237.08

The EIS has addressed the water supply issue for the proposed Illinois site vicinity, including the Fox Valley. It recognizes that a small incremental effect on the existing regional groundwater overdraft will occur as a result of the project and that individual private well owners may be affected. Also see Comment Responses 533.03 and 1133.02.

1237.09

Comment noted.

1238.01

See Comment Response 1279.141.

1239.01

See Comment Response 1279.357.

1239.02

See Comment Response 914.02.

1239.03

The potential health impacts of the radiation releases of the SSC have been addressed in EIS Volume I, Chapter 5, Section 5.1.6. The dose equivalent exposure level predicted for normal operations, if the SSC were located in Illinois, is 0.004 mrem/yr, which is primarily from airborne radioactivity. This amount of radiation will not impact the health or well being of the public and is less than 1/1000 of background levels of 401 mrem/yr for this state. The anticipated exposures are also well below the U.S. EPA limit of 25 mrem/yr for an individual via the air pathway (excluding radon and radon progeny) potentially affected by DOE activities (EIS Volume I, Chapter 6, Section 6.3.2).

The DOE's concern about limiting radiation exposures to workers and the public is expressed in DOE Order 5480.1B (EIS Volume I, Chapter 6, Section 6.3.2). The DOE is committed to the principle of maintaining radiation exposures to levels that are as low as reasonably achievable (ALARA).

1239.04

See Comment Response 979.02.

1239.05

See Comment Response 307.04 and 312.10.

1240.01

See Comment Responses 1162.01 and 1276.01.

1241.01

See Comment Responses 710.01 and 979.02.

1241.02

See Comment Response 13.02.

1241.03

See Comment Response 880.04. Mitigation alternatives are discussed in EIS Volume I, Chapter 3, Section 3.6. More detailed mitigation plans would be developed for the selected site.

1241.04

See Comment Responses 710.01 and 880.04.

1241.05

Comment noted.

1242.01

The DOE has considered alternatives to building the SSC. These are found in EIS Volume I, Chapter 3, Sections 3.2 and 3.3. The schedule for construction and operations of the SSC will depend on Congressional funding.

1242.02

Comment noted.

1242.03

Unacceptable environmental impacts from siting, constructing, operating, and decommissioning the SSC were considered in the criteria of the ISP for selection of the Best Qualified List. Reasonable mitigation measures were also taken into consideration. Methodology for site selection is presented in Volume III of the EIS.

The DOE recognized that there could be an impact from the loss of property due to construction of the SSC project. See EIS Volume I, Chapter 5, Section 5.1.8.5. One key affected societal group discussed included suburban and rural residents whose property would be required for the SSC. The DOE noted that regions affected by the SSC with potentially the highest number of relocations would also be in areas in which replacement accommodations would be most available. Compensation policies for relocated residences were discussed in Volume IV, Appendix 4 of the EIS.

It has been anticipated by the DOE that the SSC project may trigger zoning changes (see Volume IV, Appendix 13, Section 13.1.1); however, any regulating adjustments to be made are appropriately considered to be the responsibility of the affected planning agency.

For a discussion of water well impacts, please see Comment Response 7.03.

1242.04

Comment noted.

1242.05

Comment noted.

1243.01

Comment noted.

1244.01

In EIS Volume IV, Appendix 15, "Spain Ranch" should be "Thomas Spain Farm." These remarks correspond with the findings presented in the EIS and with the identified need for further field study to identify and evaluate prehistoric and historic archaeological sites potentially impacted by the project, if the proposed Tennessee site is selected for the SSC.

1244.02

This comment generally corresponds with the proposed mitigation measures described in the EIS pertaining to potential impacts to cultural resources. Additionally, these activities will be examined in detail as part of the Supplemental EIS.

1244.03

As noted in EIS Volume IV, Appendix 15, the potential historical significance to the Thomas Spain Farm pertains only to the remains of the slave cabins and the cotton gin building.

The ten cemeteries in the proposed Tennessee SSC site area (as listed in Volume IV, Appendix 15, Section 15.1.3.6.A.5) are located outside direct impact areas with the exception of the Isaac Miller Cemetery. This cemetery is located within the proposed buried beam zone access area J1. The DOE, in conjunction with the Tennessee SHPO, will consider the historical significance of this site by applying National Register criteria (Fielder, Prouty, and Spires 1988, p. 28) if the proposed Tennessee site is selected for the SSC.

1245.01

Potential impacts to surface water and mitigation measures at the Illinois site are discussed in Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.2, and Volume IV, Appendix 7, Section 7.1.3.3.

1245.02

Comment noted.

1245.03

The EIS concurs with the comment's claim that the Illinois Region of Influence is a heavily populated area (see EIS Volume IV, Appendix 5, Section 5.3.11.B). Comment Response 973.01 discusses aspects of the population impact analysis, as well as the recent population growth experienced in the region.

1246.01

The Soil Conservation Service estimates 3,076 acres of prime farmland and 212 acres of important farmland in the fee simple project area. An estimated 197 acres of this prime and important farmland would be permanently converted if the SSC project were sited in Illinois. See Comment Response 880.04.

1247.01

The DOE has made an independent analysis of the Fermilab cost adjustment to reflect savings that would be realized by using the Fermilab as the SSC injector (see EIS Volume III, Chapter 3 and Volume IV, Appendix 2, Section 2.4.2.2). Other credits considered for the Illinois site include reduced construction costs for utility systems and campus facilities, and reduced operational expenses due to cost sharing with ongoing, funded Fermilab research programs. To develop this adjustment, the DOE considered all available data, such as the site proposal, Conceptual Design Report, and DOE Fermilab experience. The items mentioned in this comment have been considered in the analysis.

1248.01

Predicted environmental impacts assessed at the regional level are discussed in EIS Volume I, Chapter 5, and as suggested in the comment are considered to be minimal. Mitigation measures that may be incorporated in the final site design are summarized in EIS Volume I, Chapter 3, Section 3.1.6 in detail, where applicable, for each resource affected.

1249.01

Blasting vibration and noise were discussed in EIS Volume IV, Appendix 9, Section 9.2. A home 2,000 ft away from the source of blasting will receive negligible amounts of vibration and noise.

Dust generated by construction activities and possible mitigations are analyzed in EIS Volume I, Chapter 5 and Volume IV, Appendix 8, Section 8.4.3.

Construction traffic impacts and possible mitigations are analyzed in EIS Volume I, Chapter 5, Section 5.1.8.6 and Volume IV, Appendix 14, Section 14.2.1.3.

Water supply impacts and mitigations are analyzed in EIS Volume I, Chapter 5, Section 5.1.2 and Volume IV, Appendix 7, Sections 7.1.3.3 and 7.2.3.3.

1250.01

Comment noted.

1250.02

The DOE has designed the requirements of land acquisition to impose the minimum disruption and taking of land as is possible to accomplish the goals of the SSC project. See EIS Volume IV, Appendix 4, Section 4.2, for a discussion of the strategies to accomplish this policy.

1250.03

Comment noted.

1251.01

For a response to the observations regarding the appearance of tank farms, see Comment Response 1153.02. There is no inconsistency, nor are double standards being applied. The subject of the introductory material from which the quote is taken is the comparative impacts of sector service areas and intermediate access facilities, two very different kinds of facilities (See EIS Volume IV, Appendix 5, Section 5.1.10.3).

The question of whether field observers can objectively arrive at conclusions (second paragraph of this comment) is addressed in Comment Response 1172.03. Regarding consistency of conditions under which the candidate sites were observed (third paragraph of this comment), see Comment Response 1172.04.

The relationship of mitigation measures suggested for evaluation during final project design and determination of impact significance (fourth paragraph of this comment), is addressed in Comment Response 1172.05. A more detailed review will be provided in the Supplemental EIS.

The question concerning seemingly similar situations in North Carolina and Illinois, yet different conclusions regarding mitigation (fourth paragraph of this comment) is addressed in Comment Response 1153.04. There are, in fact, four North Carolina sites, not three, for which mitigation measures would probably not prove effective. The conditions for these four sites are sharply different, as noted in Volume IV, Appendix 16, Sections 16.3.5.3.A, 16.3.5.3.B, 16.3.5.3.E, and 16.3.5.3.F.

1251.02

See Comment Response 13.02, 873.02, and 1126.05.

The DOE believes the data is adequate for the proposed action of this EIS, which is to select a site for the SSC. The DOE believes the conclusions represent a reasonably accurate picture of impacts which would occur at each site and is satisfied that the analysis has been equitable for this EIS. The DOE recognizes the need for further analysis of potential impacts in the form of a Supplemental EIS prior to a decision to construct and operate the SSC. Prior to such a decision the DOE is planning a Supplemental EIS which will be site-specific and address impacts and mitigations in more detail.

1252.01

Occurrences of "drift gas" (naturally occurring gas associated with the glacial drift found in northeaster Illinois) have been noted in several wells near the northeastern portion of the proposed SSC site and in a few wells near the southern portion of the site (see Volume IV, Appendix 5, Section 5.1.3.5. of the EIS). However, no gas was found when 19 borings were made for the Illinois SSC proposal. The possibility of encountering "drift gas" during the SSC tunnel construction is small and should not significantly slow the construction progress. The

potential presence of the gas is recognized as a safety hazard and is addressed in Volume IV, Appendix 12, Section 12.3.3.

1252.02

See Comment Response 1007.02.

1252.03

See Comment Response 1007.03.

1252.04

See Comment Response 1007.04.

1252.05

See Comment Response 1278.11.

1252.06

The Federal Noise Control Act of 1972 (amended by the Quiet Communities Act of 1978) requires the DOE to comply with all State and local regulations concerning environmental noise limits. The noise limits set by the State of Illinois Rules and Regulations, Title 35, Subtitle H (Noise) that would protect communities adjacent to SSC operating locations, are discussed in EIS Volume IV, Appendix 9, Section 9.1.3.5.B.2. If the Illinois site is selected, the DOE would be committed to utilizing whatever mitigation technologies would be necessary to ensure compliance with this Illinois law. Control measures that have the potential to bring the service area into compliance are discussed in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.4, and include perimeter berming and site rearrangement. More detailed mitigation requirements would be identified and assessed in the Supplemental EIS.

1252.07

See Comment Response 1293.03.

1252.08

Comment noted. Estimates and analysis of the traffic conditions are discussed in Volume IV, Appendix 14, Section 14.2.1.3.C. A comparison of traffic impacts is presented in Volume I, Chapter 5, Table 5.1.8-9. Mitigations will be addressed in the Supplemental EIS for the selected site.

1252.09

See Comment Response 1276.01.

If required, the construction effort can be divided into smaller work units and worked concurrently to eliminate time delays due to weather.

1252.10

As noted in the EIS Volume I, Chapter 3, Section 3.4, Illinois would need to acquire the most parcels of any of the seven BQL sites. The proposed project schedule (EIS Volume IV, Appendix 1, Section 1.1.4) would require Illinois to provide access agreements to DOE by January, 1989 to allow performance of preconstruction activities, including geotechnical verification and resource assessments. Furthermore, the actual construction schedule is predicated on the land acquisition sequence from March, 1990 to January, 1991 agreed to by the proposing states. Failure of the state to meet the land acquisition schedule would most probably result in construction delays. Also see Comment Response 880.04.

1252.11

See Comment Response 1007.11.

1252.12

See Comment Response 1007.12.

1252.13

See Comment Response 1007.13.

1252.14

Although the Illinois site has the highest background noise level, it does not follow that noise impacts from the SSC would be greatest there. The combination of two sound levels is not the arithmetic sum of the two levels. As discussed in Volume IV, Appendix 9, Section 9.1.3.2, combining two 40 dBA sources produces 43 dBA, while combining a 40 dBA source with an existing 50 dBA level produces no change in level. As a result, in the 50 dBA ambient sound level of the Illinois site for the SSC, sound from the construction and operations will not influence as large an area as it would at one of the more remote sites.

1252.15

See Comment Response 876.31.

1253.01

The assessment of wells potentially lost or closed due to SSC siting and construction at the site alternatives (see EIS Volume IV, Appendix 7, Section 7.2.3) does not support a conclusion that more wells will be lost in Illinois than at all other sites combined. The number of wells that may be lost due to siting the SSC in Illinois was not reported accurately in the DEIS. State records indicate 320 wells within the SSC

footprint; however, based on field surveys, the State estimates that only 6 to 31 wells may be directly affected and required to be closed because of the project. See Comment Response 979.02 for clarification of criteria used to assess the number of wells closed or affected and consequent revisions to EIS.

1253.02

See Comment Response 1369.09.

1253.03

See Comment Response 1369.09

1253.04

Comment noted. This information is consistent with that presented in EIS Volume IV, Appendix 4.

1253.05

Revised Volume I, Chapter 3, Table 3-7 shows that Illinois ranks next to the lowest in prime and important farmland acreage permanently converted by the proposed SSC project compared to the other sites analyzed in the EIS. The amount converted is less than one percent of the region inventory and is less than the average acreage lost each year to development. See revised Volume I, Chapter 3, Section 3.7.11; Chapter 4, Section 4.8.6, Chapter 5, Sections 5.1.7.2 and 5.2.11; and the Errata and Revisions to Volume IV, Appendix 13.

1253.06

Illinois has the largest acreage of wetlands (199 acres) that could be impacted without mitigation (e.g., facility or structure relocation). It is the DOE's policy to avoid wetlands impacts where practicable, in conformance with requirements of Section 404 of the Clean Water Act and Executive Order 11990. As a result, the actual impact to wetlands would be much lower than 199 acres. Once a site is selected and as final design is being completed, detailed plans to mitigate wetlands impacts would be developed in consultation with the U.S. Army Corps of Engineers (or delegated state authority), as required, and analyzed in the Supplemental EIS.

1253.07

The extra depth of shafts at the Illinois site does have an effect on the total cost of tunneling and has been taken into account in Volume IV, Appendix 2.

For the Illinois site, the cost of the deeper shafts may be compensated for by the reduced costs of tunneling in the uniform dolomite found at the deeper collider ring setting. There is neither a specific criteria

in the Invitation for Site Proposals addressing difficulty, nor a composite of site characteristics in the EIS defining difficulty of tunneling.

Geoengineering conditions (Volume IV, Appendix 5), cost (Volume IV, Appendix 2), water (Volume IV, Appendix 7) and Earth Resources (Volume IV, Appendix 6) all address aspects of site tunneling.

1253.08

See Comment Response 1279.357.

1253.09

See Comment Responses 533.03 and 1013.02.

1253.10

See Comment Response 1013.02.

1253.11

See Comment Response 1381.11.

1253.12

See Comment Response 1275.12.

1253.13

The Illinois groundwater data presented in Volume I, Chapter 4, Table 4-13 was collected by the State of Illinois in the region of the proposed SSC site. In those wells tested in the regions of the proposed site, the gross alpha activity ranged from undetectable to 4.6 pCi/l, with an average of 1.2 pCi/l. Studies of Illinois indicate that the potable groundwater supplied by the Cambrian-Ordovician aquifer system to a large portion of the northern part of the state exceeds the U.S. EPA MCL of 5 pCi/liter for total radium. A cautious approach with regard to the restriction of radium in potable water supplies has been taken by the State. Radium levels may be reduced by various water treatment methods.

The health impacts from radiation during SSC operations have been assessed in Volume IV, Appendices 10 and 12. There are no measurable impacts from cumulative effects of exposure to radium in drinking water and exposure to radiation from SSC operations. The dose equivalent to the general public at large from SSC operations is primarily through the air pathway and is less than 0.001 percent of that from natural background radiation.

1253.14

Comment noted.

12511300335885

1254.01

Table 4-4 in EIS Volume I actually states that in Illinois groundwater use is extensive; it is use of surface water that is minimal.

The EIS correctly indicates that the groundwater overdraft, especially for the shallow aquifer system, is large in Illinois. Overdraft in the deeper aquifers is less; the SSC will draw water for construction and operations from the deeper aquifer. See Comment Response 1279.115 for a general discussion of the overdraft condition.

The DOE agrees that current plans to pipe water from Lake Michigan to western suburbs do not include Kane County. However, water from Lake Michigan may become available to the SSC campus area and thus reduce overall demands on the regional aquifer systems.

1255.01

More detailed analysis of SSC-related impacts would be undertaken as part of the Supplement to this EIS (see the Foreword to Volume I). This would include an evaluation of State expenditures and financing costs, including those expenditures associated with the sealed incentive.

1256.01

Comment noted.

1257.01

Comment noted.

1257.02

The wetlands assessment that is presented in the EIS has been revised to include a reevaluation of wetlands location, type, and quality (see Volume I, Chapter 5, Section 5.1.5.3 and Volume IV, Appendix 11, Section 11.3.3.3). This information was derived from current versions of the U.S. Fish and Wildlife Service National Wetland Inventory maps and was supplemented by information from field surveys and current aerial photographs. Once the site has been selected, more detailed site-specific studies would be conducted for use in determining environmental impacts to wetlands and identifying appropriate mitigation.

1257.03

See Comment Response 1279.302.

1257.04

All wetlands located in proposed SSC project areas have been reevaluated on the basis of field surveys, U.S. Fish and Wildlife Service National Wetland Inventory maps and aerial photographs. The methodologies utilized are presented in EIS Volume IV, Appendix 11, Section 11.2.2, and

the evaluations are presented in Volume I, Chapter 5, Section 5.1.5.4 and Volume IV, Appendix 11, Section 11.3. A variety of mitigative alternatives, including wetlands avoidance, is possible. Pending final site selection, facility design, and facility location, mitigation plans will be developed in consultation with appropriate Federal and/or State agencies (COE, USFWS, MDNR) as required by Section 404 of the Clean Water Act. These would be presented in the site-specific Supplemental EIS.

1257.05

Executive Order 11988-Floodplain Management dictates that the 100-yr flood be used in floodplain encroachment assessment. It also should be noted that constructing to meet 100-yr flood standards is 3 to 4 times more stringent a standard than for a "project flood."

1257.06

The wetland assessment in the EIS has been revised to include only those wetlands that would be disturbed by construction of surface facilities. The proposed surface facility sites were superimposed over USFWS wetland maps to determine which wetlands could be impacted by surface construction. At this time, most states have not made specific proposals for ancillary facilities such as access roads, however, impacts due to ancillary facilities and access roads are analyzed in Volume I, Section 3.7.2 (cumulative impacts). Once a site has been selected, detailed construction plans would be developed, and consultations would occur with the U.S. Army Corps of Engineers to develop plans to mitigate wetland impacts. As required by Section 404 of the Clean Water Act, permits would be obtained for any dredge or fill activity in a wetland.

See Comment Response 1007.02 regarding floodplain impacts.

1258.01

See Comment Response 873.02.

1258.02

Comment noted.

1258.03

The DOE has no authority to alter the record of testimony given at SSC-related public meetings. See Comment Response 1126.05.

1259.01

Comment noted.

1259.02

See Comment Responses 880.04 and 1179.02.

1259.03

The SSC will affect some people negatively while benefitting directly those that work on the project and those that gain secondary employment from the project. Typically as large projects startup, unemployment goes down while labor force participation rates go up. Relocation services are also provided to assist business and to mitigate impacts on local area employment (see EIS Volume IV, Appendix 14).

EIS Volume IV, Appendix 4 summarizes the compensation policies for relocated residences and buildings. These policies provide for mitigation in terms of compensation. However, when other considerations are also important, such as "homestead," there would be a net adverse impact. To the extent that relocations can occur nearby, the impacts may be minimized.

SSC impacts to agricultural production would be relatively low overall in Illinois, but the impact on individual farmers could be high. Land acquisition is the responsibility of the proposer (EIS Volume IV, Appendix 4, Section 4.1). See Comment Response 880.04.

1259.04

Concerning impact on drainage in Big Rock and Welch Creeks area, see Comment Response 1100.02.

Concerning impacts due to contamination, see Comment Response 18.03.

On-site water for the SSC will be obtained primarily from the deeper aquifers. Because there is no apparent connection between the shallow and deep aquifers in the vicinity of the site, impacts to water levels in shallow wells are expected to be negligible. Although the on-site SSC and related off-site water use would contribute to the existing regional overdraft of the deeper aquifer, the incremental regional drawdown attributed to the SSC has been estimated to be small (see EIS Volume IV, Appendix 7, Section 7.2.3.3).

Water level impacts due to construction activities will be temporary, and can be minimized by selection of appropriate techniques (such as using slurry walls for water control rather than dewatering excavations through pumping).

1259.05

Comment noted.

12511300335888

1260.01

The data presented in EIS Volume IV, Appendix 5, Section 5.3.3, represents long-term averages and extremes for temperature, wind, precipitation, and severe weather conditions, and is considered sufficient for input into resources which consider climatic inputs. More recent data concerning frost penetration is not available. Data from recent extreme weather in the winter and summer of 1988 has not been compiled for publication and has not included in this EIS.

1261.01

Plans to mitigate wetland impacts will be developed in consultation with the U.S. Army Corps of Engineers as required by Section 404 of the Clean Water Act.

Prairie habitat in Illinois is relatively scarce in the project area. It is expected that as the DOE establishes the final placement of the collider ring and associated facilities, native prairie habitat can be avoided during final site design.

See Comment Response 1149.03 for a discussion of impacts on prime farmlands.

Potential impacts to local public services in the Illinois Region of Influence (ROI) and in DuPage, Kane, and Kendall Counties are presented in EIS Volume IV, Appendix 14, Section 14.1.3.3.C.

1261.02

The DOE will prepare a detailed decommissioning plan, cost estimate and NEPA documents when the decision to decommission is made (see EIS Volume I, Chapter 1, Section 1.4).

When the decommissioning studies of the site are underway, operational experience and the experience of decommissioning other accelerators, including other potential uses of the facility, will be considered.

1262.01

It is DOE policy to avoid and mitigate impacts to wetlands, to the full extent practicable. Requirements for a 404 permit are consistent with DOE obligations under Executive Order 11990 and DOE's regulations for compliance with floodplain/wetlands environmental review requirements (10 CFR Part 1022). The wetlands assessment provided in the EIS has been revised to reevaluate potential wetlands impacts and mitigation (see particularly Volume IV, Appendix 11, Section 11.3.3.3). The potential adverse effects on wetlands at the various sites alternatives will be considered in selecting a site for the SSC. Detailed plans to mitigate any anticipated wetlands impacts at the selected site to the extent practicable would be developed in consultation with the U.S. Army Corps of Engineers (or delegated state authority) and analyzed in detail

in the supplement to the EIS. Primary means to accomplish mitigation would be wetlands avoidance. The potential to avoid wetlands by facility realignments is discussed in Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.5.4; and Volume IV, Appendix 11, Section 11.3.

1262.02

The purpose and need for the SSC is discussed in Volume I, Chapter 2 of the EIS.

1262.03

See Comment Response 880.04. The beam abort area, or more accurately, the beam absorption area, is not a radioactive dump and is not used for storage of radioactive material. It is being designed to absorb the unused high energy protons remaining in the beams after the beams have been "used" as a result of collisions in the interaction regions. There will be no measurable radiation introduction into the environment above these absorbers, and no exposure to incremental radiation at the surface above these areas (see EIS Volume IV, Appendices 10 and 12).

1262.04

One purpose of the EIS is to project potential impacts associated with the project. Expected changes in such areas as socioeconomics, ecology, water resources, etc. are addressed using the best available data and accepted methods. Property value losses, if they were to occur, would not be compensable under present Federal law. See Comment Response 922.11.

1263.01

A summary of the impacts projected for the Michigan site are given in Volume I, Chapter 3, Section 3.4.4. Mitigations possible for minimizing impacts are given in Section 3.6. Cumulative impacts are discussed by resource area in Section 3.7.

1263.02

Comment noted.

1263.03

See Comment Response 223.06.

1263.04

Comment noted.

1264.01

Comment noted.

125113003358810

1265.01

Comment noted.

1266.01

The appropriate power cost for each of the BQL sites was used in the calculation of the total project cost. However, individual, site-specific annual operating costs as estimated in EIS Volume IV, Appendix 2, Section 2.4.3 vary only ± 3.7 percent in relation to the average annual operating cost (seven sites) of $270 million.

1267.01

Comments noted.

1268.01

The SSC is not similar to a nuclear reactor or a nuclear weapon. Site-selection criteria are described in EIS Volume III. The potential health and safety impacts associated with the SSC are typical of any construction project. Radiological risks are minimal (see EIS Volume I, Chapter 5, Section 5.6).

1269.01

Comments noted.

1270.01

EIS Volume IV, Appendix 7, Section 7.1.3.3 and Appendix 10, Section 10.2.3.3 have been revised to state that retention/siltation ponds will be adequate to handle water pumped out of the tunnel (see Comment Response 1217.01) so that impacts of silt-laden water on surface drainages will be minimal.

1270.02

See Comment Response 1217.01.

1270.03

See Comment Response 1217.01.

1270.04

Siltation of streams in the project vicinity will not be significant since effective mitigative measures will be implemented. Detailed discussion of mitigations are presented in EIS Volume I, Chapter 5, Section 5.1.2.1 and Volume IV, Appendix 7, Section 7.1.2.2.D.2. Also see Summary in Volume I, Chapter 3, Section 3.6 and Comment Response 1270.01.

1271.01

The EIS Volume IV, Appendix 5, Section 5.3.11 indicates that while unemployment rates in DuPage County have been below the national average for the past 12 years, those in both Kane and Kendall Counties have been above the national average since 1980.

1272.01

Comment noted.

1272.02

Some portion of the proposed SSC site would be inundated if nearby segments of the Upper Flat River are impounded. That may include project area J2, which is along the river at an approximate elevation of 400 ft. At this time it is difficult to determine the exact extent of inundation because the SSC and proposed dams are all in the proposal or planning stage. However, it is likely that the construction of the SSC in its present proposed location would impact the city of Durham's future intention of impounding the Upper Flat River. This impact is added to the EIS in response to the comment (Volume IV, Appendix 7, Section 7.1.3.5.G). See also Comment Response 1106.10.

1272.03

The text of Volume IV, Appendix 5, Section 5.5.8.1 has been corrected in the Errata based on this comment.

1272.04

See Comment Response 1272.03.

1273.01

Comments noted.

1274.01

Comment noted. The benefits to be obtained from SSC research are addressed in EIS Volume I, Chapter 2, Section 2.2.3.

1275.01

Comments noted.

1275.02

The commenter is correct. Illinois is one of two site alternatives that potentially contains prairie remnants on or near areas that are identified for potential use by SSC facilities. However, prairie is only one

type of sensitive habitat that is considered in the site selection EIS. Other sites may have other types of sensitive habitats that potentially could be vulnerable to development.

1275.03

Wetland impacts would be mitigated based on consultations with the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers. Mitigation measures that could be adopted include wetland avoidance, wetland enhancement, wetland replacement, and measures to reduce indirect impacts such as sedimentation. Also see Comment Response 958.04.

1275.04

See Comment Responses 979.02 and 1381.04.

1275.05

The comment on numbers of Illinois property owners is consistent with Volume IV, Appendix 4.

1275.06

See Comment Responses 880.04 and 1381.08.

1275.07

See Comment Response 1155.07.

1275.08

The DOE agrees that water inflow into the tunnel at the Illinois site will be higher than at several other sites. However, this rate of inflow will be low enough that it will not adversely impact the operation of the project, or the existing ground water use patterns in the area (see Comment Response 1279.141)

1275.09

See Comment Response 533.03.

1275.10

See Comment Response 1007.01.

1275.11

Regarding the potential for flooding problems related to SSC project construction, see Comment Response 1007.02.

Regarding the potential for siltation and pollution of the natural streams, the impact on larger streams such as the Fox River would be less because of the availability of larger flow to transport sediment

and to dilute any pollutants. However, it is anticipated that there will be minimal surface water quality impacts from the SSC project. See EIS Volume IV, Appendix 7, Section 7.1.3.3. All SSC project activities would comply with applicable environmental regulations, and the impact on the streams would be minimized (see EIS Volume I, Chapter 6).

1275.12

Water quality conditions are highly variable at all of the sites, as indicated in Volume I, Chapter 4, Section 4.2.1.2. Water quality data for each site are presented within individual site chapters in Volume IV, Appendix 5, Sections 5.1.2, 5.2.2, 5.3.2, 5.4.2, 5.5.2, 5.6.2, and 5.7.2. Data are summarized in Volume I, Chapter 4, Table 4-2.

1275.13

See Comment Response 1369.09.

1275.14

Volume IV, Appendix 16, Section 16.3.3.3 of the EIS describes scenic and visual mitigation measures that should be evaluated during final project design. These measures would serve to conceal the SSC facilities, reduce the degree to which they would contrast with their surroundings, or in other ways have the structures appear to be compatible with features in the vicinity. Until the mitigation measures are decided upon, their cost cannot be estimated.

Noise mitigations are discussed at the summary level in the EIS Volume I, Chapter 5, Section 5.1.4, and in detail in Volume IV, Appendix 9. Mitigative or control measures were incorporated into the development of the construction and the operations noise scenarios. Construction control measures included limiting spoils hauling to a 12 h/d basis. Additional construction mitigations that will be considered at the time of detail construction planning will include specifying quieted construction machinery and placing a berm around service and intermediate access areas during spoils removal operations in support of the tunnel boring machine operations. Mitigative or control measures assumed in the development of the operations scenario included specifying a quiet cooling tower, individual enclosure of the cryogenic compressors, and placing the pipeline that connects the service building with the compressor building in a well insulated trench. Additional mitigations that will be considered by the DOE during detail design include depressing the service area below grade, and berming the perimeter of the service area. Additional details about mitigation strategies will be provided in the Supplemental EIS.

1275.15

See Comment Response 1122.02.

The health impacts from radiation during SSC operations have been assessed in Volume IV, Appendices 10 and 12. There are no measurable adverse impacts from cumulative effects of exposure to radium in drinking water and exposure to radiation from SSC operations. The dose equivalent to the general public from SSC operations is primarily through the air pathway and is less than 0.001 percent of that from background radiation

1275.16

See Comment Response 1369.09. The DOE is committed to mitigations necessary for minimizing adverse impacts during all phases of the project (see EIS Volume I, Chapter 3, Section 3.6).

1275.17

Surface and groundwater quality impacts are projected to occur to varying degrees at most candidate sites. Although water quality impacts are generally considered to be negligible, site differences will be considered, among other factors, in the site selection. See also Comment Response 18.03.

1275.18

See Comment Responses 1007.04 and 1278.11.

1275.19

The comment is correct that the SSC tunnel would be above the water table at the Arizona site. In Texas, perched water tables exist above the regional water table; the tunnel alignment will be above the regional water table but below the perched water tables. The tunnel will be below the water table at the Colorado, Illinois, Michigan, North Carolina, and Tennessee sites. Tunnels can be constructed safely from a structural and hydraulic standpoint below the water table with available technology. Control techniques exist which can minimize groundwater infiltration both during tunnel construction and during SSC operations. Impacts on water tables and supplies are expected to be small even at the sites where the tunnel is below the water table. Differences between the sites, including the location of the water table and projected impacts on groundwater supplies will be considered, among other factors, in the SSC site selection decision. (See FEIS Volume IV, Appendix 7, Section 7.2 for detailed groundwater assessments of all sites, and Volume III for a description of the site selection procedure.)

1275.20

Comments noted.

125113003358815

1276.01

The DOE has made an independent analysis of the Fermilab cost adjustment to reflect savings that would be realized by using the Fermilab as the SSC injector. These are noted in EIS Volume IV, Appendix 2, Section 2.4.2.2. Other credits considered for the Illinois site include reduced construction costs for utility systems and campus facilities, and reduced operational expenses due to cost sharing with on-going, funded Fermilab research programs. To develop this adjustment, the DOE considered all available data such as the site proposal, Conceptual Design Report, and DOE Fermilab experience. The items mentioned in this comment have been considered in the analysis.

Since publication of the DEIS, a more detailed cost analysis was prepared by the DOE which is reflected in the SSC Site Task Force Report printed in its entirety in FEIS Volume III. Only under the longest operating lifetime assumed reasonable in this analysis is the Illinois site the least expensive.

1277.01

Transportation systems currently serving the Illinois SSC site are addressed in Volume IV, Appendix 5, Section 5.3.11.2. It is acknowledged that the Illinois site is currently served by an extensive system of roads, rail lines, and the Chicago O'Hare International Airport. However, some of the roads and the airport experience congestion during peak hours.

1278.01

The purpose of the EIS sent to EPA for comment was to support a siting decision. The DOE believes that the information and analysis, based on project conceptual design, presented in the EIS, as revised, is sufficient for that purpose. Upon final site selection, the DOE will prepare a Supplemental EIS based on more detailed site-specific design. The DOE acknowledges EPA's understanding that such a supplement would be prepared.

1278.02

The DEIS (Volume I, Chapter 5, Section 5.1.3) predicted that violations of the NAAQS PM_{10} standards would occur during construction of the SSC. Based on comments received, additional mitigations have been introduced to suppress dust during construction and the air pollution impacts have been recalculated. No violations of the NAAQS are now anticipated. EIS Volume I, Chapter 5, Section 5.1.3 has been modified accordingly. Consultation with the EPA and the applicable state air pollution control agency will occur during the development of the Supplemental EIS. In addition, the discussions in Volume I, Chapter 5, Section 5.1.3 on the utilization of the emergency diesel generators has been clarified. Also see Comment Response 1278.09. Potential emissions are expected to be

well below PSD triggers, and the project would not be subject to Part D New Source Review (NSR) for major sources. However, some general provisions (40 CFR 51.160-164) of the NSR regulations would apply.

The operations of the SSC will be in compliance with National Emission Standards for Hazardous Air Pollutants (NESHAP) limits for DOE-operated facilities (25 and 75 mrem/yr whole body and critical organ, respectively, dose-equivalents to the general public are less than 0.004 and 0.111 mrem/yr for whole body and critical organ exposure, respectively (EIS Volume IV, Appendix 12).

See also Comment Responses 1278.07, 1278.08, 1278.10 and 1278.11.

1278.03

The DOE concurs that wetlands impacts are an important environmental concern. The DEIS (Volume I, Chapter 5, Section 5.1.5) overestimated the wetlands acreage that could be potentially impacted by the construction and operations of the SSC. Additional field studies have been performed based on the USFWS National Wetlands Inventory Maps and aerial photography. This additional data was used to establish a conservative estimate of the maximum wetlands acreage that could be impacted by surface facility construction. As shown in EIS Volume I, Table 1-1, the total potentially impacted wetlands acreage for Illinois, Michigan, and North Carolina have been greatly reduced. It is the DOE policy (10 CFR Part 1022) to avoid wetlands impacts to the maximum extent practicable, in accordance with Executive Order 11990. It is also acknowledged that if dredge or fill material is to be placed in wetlands or other waters of the United States, a permit pursuant to Section 404 of the Clean Water Act (and wetlands mitigation) would be required. The final EIS (Volume I, Chapter 5 and Volume IV, Appendix 11) presents conservative estimates of the amounts of wetlands at each site which could potentially be impacted, and an indication of the quality of those wetlands. The DOE believes that EIS Volume I, Table 1-1 provides a clear relative comparison among the sites.

See Comment Response 1278.20 for a discussion on mitigation, including mitigation costs.

1278.04

The number of acres of wetlands projected to be impacted and the projected impacts on air quality have both decreased significantly in the FEIS. (See EIS Volume I, Chapter 5, and Volume IV, Appendices 7, 8, and 11). Thus, the anticipated ability to mitigate impacts has improved, and the anticipated costs would be small relative to the life cycle costs for the project. This EIS discusses mitigation to the extent possible, and more specific details of mitigation measures will be presented for the selected site in the Supplemental EIS.

In general, it would be possible to provide mitigation of all major adverse impacts in such areas as wetlands by careful design and placement of access and service areas. There is enough flexibility in final

design of the SSC at this time to adjust to many conditions that exist at the various proposed sites. For example, it is conceivable that at certain sites, the facilities at the service areas could be placed well below ground, and evaporation ponds (rather than cooling towers) could be used for cooling. This would limit surface disturbances. Similarly, if a service area in the present design impinges on wetlands, it may be possible for the service area to be moved some hundreds of feet away to minimize or eliminate such impacts.

All such mitigations involve costs. However, at this stage of design, it is not possible to firmly quantify these costs because they depend on the specific mitigation measures selected. There is further difficulty in cost quantification for such possible mitigations in that the flexibility for these measures not only varies among sites, but among areas within sites. Until detailed site studies are done, only general cost estimates can be made. With the revised projected impacts now presented in the FEIS, the cost of mitigation at any of the sites would be relatively small compared to overall project cost. While some variation in mitigation costs are expected among sites, the overall life cycle costs are similar for all sites and the comparison of mitigation costs would have no effect on site selection.

1278.05

The EPA comments attached as a separate enclosure will be answered on an individual basis.

1278.06

See Comment Responses 1278.07 and 1278.08.

1278.07

An analysis of the air pollution control rules and regulations of each of the BQL states was conducted to determine whether any major differences from the Federal PSD rules (40 CFR 52.21) exist that would make the SSC project PSD-applicable. The conclusion is that the SSC project would not be subject to PSD review in any of the BQL states. EIS Volume IV, Appendix 8, Table 8-A summarizes the results. The air quality regulations of all seven states and the Federal regulations are similar in the following logic:

- PSD applicability for the SSC would be triggered only if the project had a potential to emit 250 ton/yr or more of any pollutant subject to regulation under the Clean Air Act.
- Potential to emit, by definition, specifically excludes secondary emissions.
- Secondary emissions, by definition, include construction emissions.

The above discussion is incorporated into the EIS in Volume IV, Appendix 8, Section 8.1, including Table 8-A.

125113003358818

The definition of secondary emissions exempts construction emissions. The fugitive dust exemption is not required because SSC will emit very little, if any, fugitive dust during operations.

Once the final SSC site is selected, the State agency with PSD authority will be contacted and if necessary provided with all relevant data required in a PSD applicability determination.

1278.08

In the DOE's best judgment the SSC will not require a PSD permit. Non-criteria pollutant review for new sources under the PSD regulations is triggered only if the source is determined to be "major" under the PSD applicability determination. Since fugitive dust generated during construction is exempted from the determination of potential emissions in all SSC states and since all other criteria pollutants emitted from the SSC are below 100 tons/yr, a PSD construction permit should not be required.

The operations of the SSC will be in compliance with National Emission Standards for Hazardous Air Pollutants (NESHAP) limits for DOE-operated facilities (25 and 75 mrem/yr whole body and critical organ, respectively, dose-equivalents to the general public are less than 0.004 and 0.111 mrem/yr for whole body and critical organ exposure from airborne radioactivation products, respectively (EIS Volume IV, Appendix 12, Table 12.3.1-2).

Volume IV, Appendix 10, "Waste Disposition and Source Term Assessments" was based on conservative assumptions. Therefore, engineering and administrative controls such as filters and holdup to allow decay of short-lived activation products were not assumed. The DOE is committed to the concept of as low as reasonably achievable (ALARA) as stated in DOE order 5480.1 Chapter XI which states, "Exposures to radiation shall be maintained as low as reasonably achievable. Department policy is that operations shall be conducted in a manner to assure that radiation exposure to individuals and population groups is limited to the lowest levels reasonably achievable." The EIS does not demonstrate that the radiation exposure is as low as reasonably achievable. Estimates of radiation exposure in Volume I, Chapter 5, Section 5.1.6 are based on worst case conditions to ensure that the estimates are conservative. For example, the number cited above for dose-equivalents are for the site with the worst conditions, not an average for all site alternatives. The ALARA concept will be examined more fully in the Supplemental EIS. Additional site-specific design measures will be taken to assure that this concept is applied throughout the design of the SSC.

1278.09

SSC conceptual design includes five emergency diesel generators rated at 100-kW each, plus twenty-two rated at 50 kW each resulting in a total project capacity of 1,600 kW. Nonemergency use of these generators is

expected to consist of one hour of operation every two weeks to demonstrate readiness. Using emission factors from AP-42, Volume 1, Section 3.3 (EPA 1986), this results in NOx emissions of 0.9 tons/yr and emissions of less than 0.5 tons/yr for all other pollutants. This analysis has been incorporated into EIS Volume IV, Appendix 8.

Mutually agreeable permit limitations on the hours of emergency use can be imposed by the State air pollution control agency to ensure that combined non-emergency plus emergency operations do not cause emissions that trigger PSD when added to the other SSC operations emissions.

1278.10

SSC construction emissions of TSP will consume increment only in instances where they make a significant impact in pre-existing baseline areas. This EIS has not made a determination in which, if any, of the seven alternative states this may occur. Impacts of TSP during construction have been reduced considerably by the use of efficient emission controls and will be extremely local to the E and F areas.

It is possible that all or a major portion of the remaining increment will be consumed in the small areas immediately surrounding E and F sites during construction. Industrial growth and development of other sources in these areas may be temporarily postponed and/or additional fugitive dust mitigation may be required. Possible mitigations, all of which have been used on similar types of construction, are discussed in EIS Volume IV Appendix 8, Section 8.3.4. This issue would need to be addressed in more detail once the SSC site is selected. Consultations with the State agency with PSD authority and the regional EPA office would be made at that time and discussed in the Supplemental EIS.

The DOE is aware that, although the regulations do not specifically set a time limit for the available exemption from PSD increment consumption for construction or other temporary particulate emissions (see 40 CFR 52.21(f)(1)(iii), EPA uses a two-year maximum definition of "temporary" as an informal guideline in this context. However, the fact that construction for the SSC will occur over a wide area and is not expected to continue for longer than two years at any one location, may warrant some special considerations. An exemption from increment consumption would be pursued with the host State only in the unlikely event that a problem still remains after mitigation measures have been applied.

At that time the DOE would work with the State and EPA to determine under what conditions an exemption would be available. The text in EIS Volume I, Chapter 5, Section 5.1.3 has been changed to reflect these uncertainties.

1278.11

National Ambient Air Quality Standards (NAAQS) and all applicable state ambient air quality standards (AAQS) will be complied with both during construction and during operations of the SSC. As stated in EIS

Volume I, Chapter 6, "It is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with all applicable environmental statutes, regulations, and standards."

Fugitive dust emissions generated during construction projects are a common concern. The EIS has been modified in Volume IV, Appendix 8 and in Volume I, Chapter 5 to include for all states more efficient mitigations on TSP and PM_{10} emissions during construction. Specifically the use of chemical soil stabilization is proposed instead of twice daily watering for control of general site activity emissions. This significantly reduces the generation of dust and thus the resulting ambient air impacts of fugitive dust emissions. (EIS Volume I, Chapter 5, Section 5.1.3). No violations of the AAQS are now anticipated.

Additional air quality analysis will be performed after site selection and included in the Supplemental EIS. The availability of more definite design and construction planning information at that time will allow that analysis to be more detailed and contain more specific mitigation commitments.

Compliance with the AAQS will be addressed by the host state when its air pollution regulatory agency reviews any required permit applications.

1278.12

At the time of EIS publication, the proposed sites in Illinois, Michigan, and Tennessee were designated nonattainment for ozone. (EIS Volume I, Chapter 4, Section 4.4.2). If the site selected is in a designated nonattainment area, the state agency responsible and/or the appropriate regional EPA office will be consulted to determine whether offsets will be required for the nonattainment pollutants. The DOE recognized that there are no "de minimis" levels for increases of nonattainment pollutants in areas designated as nonattainment.

1278.13

All comparisons and references to TSP NAAQS have been removed from EIS Volume I, Chapters 4 and 5 and Volume IV, Appendices 5 and 8. TSP emissions and air quality estimates have been retained.

1278.14

The ISC model used was that included in Version No. 6 of EPA's UNAMAP software package dated July 1986. The EPA continues to update the software via change numbers. Change numbers 1 through 5 were included in the analysis. This information has been included in EIS Volume IV, Appendix 8, Section 8.3.4. The EIS has been modified to reflect this.

1278.15

Until the site for the SSC is selected, it will not be known whether the project will include the demolition of structures that contain asbestos.

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After site selection, a survey would be made to identify any asbestos-containing materials in structures to be removed. The DOE would comply with the NESHAP notification requirement, and would remove any asbestos from buildings before renovation or demolition of a structure is begun (see EIS Volume I, Chapter 6, Section 6.2.5). Disposal would be accomplished in accordance with applicable requirements

1278.16

The DOE is committed to construct and operate the SSC in compliance with applicable statutes and regulations (see EIS Volume I, Chapter 6), including Section 319 of the 1987 amended Clean Water Act concerning nonpoint source pollution assessment and control. A regulatory compliance plan, including coordination with State water pollution control agencies, will be prepared by the DOE for the selected site prior to construction.

1278.17

The DOE is not requesting a Section 404(r) exception; permit applications, pursuant to Section 404 of the Clean Water Act, will be submitted to the U.S. Army Corps of Engineers when site-specific facility design has progressed to a point that the site-specific information required in such permit applications is available.

Wetlands that could be affected by construction of surface facilities associated with the SSC have been uniformly reevaluated at all sites on the basis of post-DEIS field surveys conducted at the sites, USFWS National Wetland Inventory Maps, and aerial photographs (see Volume IV, Appendix 11, Section 11.2.2 for methodologies). These reevaluations provide information on both quality and quantity of wetlands that could be impacted at each of the sites, and this information is presented in Volume I, Chapter 5, Section 5.1.5.3 and also Volume IV, Appendix 11, Section 11.3. Until final site selection, facility design, and facility siting, specific impacts cannot be determined. Additional wetlands information and mitigation plans developed in consultation with appropriate Federal and/or State agencies (e.g., COE, USFWS, EPA) as required by Section 404 of the Clean Water Act will be presented in the site-specific Supplemental EIS.

1278.18

The selected site is estimated to potentially impact three acres of wetlands. Future expansion areas, as planned, could impact an additional 37 acres of wetlands. Wetlands mitigation could be accomplished by relocation of surface facilities that are located within or adjacent to wetlands. To further mitigate wetlands loss where avoidance or other mitigation is not effective, replacement in kind could be used as a form of mitigation. See Comment Response 1278.48. Further detail about the potential for mitigation and the costs of mitigation for the selected site will be presented in the site specific Supplemental EIS.

1278.19

The potential environmental impacts of the SSC construction and operations were evaluated by the DOE based on information provided by the States, supplemented by additional information obtained by the DOE, and documented in the EIS. Once a site is selected and final design is approved, plans to mitigate wetlands impacts will be developed in consultation with the appropriate Federal and State agencies and permits obtained from the U.S. Army Corps of Engineers as required by Section 404 of the Clean Water Act. It is DOE policy (10CFR Part 1022) to avoid, to the extent practicable, impacts to wetlands and floodplains. The preferred form of mitigation would be wetlands avoidance. The flexibility of surface facility siting should allow avoidance of most wetlands impacts (see Volume IV, Appendix 11, Section 11.3). Other types of mitigation that could be considered include wetlands restoration, enhancement, and/or creation. More detailed evaluation of potential impacts and specific mitigative measures (including soil erosion, groundwater, surface water, and wetlands) will be developed for the selected site and will be documented in the Supplemental EIS which will be provided to the public for review and comment prior to commencement of any SSC construction.

1278.20

A general discussion of possible mitigation strategies is presented in the EIS (Volume I, Chapter 3, Section 3.6; Chapter 5, Section 5.1.5.3; and Volume IV, Appendix 11, Section 11.3). A discussion of flexibility in siting the SSC surface facilities has been added to Volume I, Chapter 3, Section 3.6. Pending site-specific facility design, detailed mitigation plans are not possible. Such plans will be developed at the selected site, in consultation with EPA and other appropriate Federal and State agencies, and evaluated in the Supplemental EIS.

The wetlands assessment presented in the EIS has been revised to include a reevaluation of wetlands location, type, and quality (see EIS Volume I, Chapter 5, Section 5.1.5 and Volume IV, Appendix 11, Section 11.3). A conservative estimate of the amount of wetlands that may be impacted by construction of the proposed collider facilities at the Michigan, Illinois, and North Carolina sites are now placed at approximately 190, 199, and 41 acres, respectively, as opposed to the overly conservative estimates of 2,800, 850, and 258 acres as indicated in the DEIS. It should be noted that the Michigan number of 2,800 (in the DEIS) was incorrect even before the reevaluation. The potentially impacted wetlands were reevaluated after additional field work based on the USFWS National Wetlands Inventory Maps was completed. Map overlays of facility designs were used to more accurately estimate the wetlands that could be impacted by surface facility construction of the SSC. If future expansion areas are developed, the potential exists for an additional 319, 294, and 98 acres, respectively, of wetlands impacts. These acreages are conservative estimates that do not include potential facility realignments or other mitigation.

The DOE acknowledges the need for wetlands mitigation, such as wetlands habitat development or restoration, to compensate for destroyed habitats. However, in light of the reevaluated estimates of wetlands impacts, the DOE believes that such mitigation costs would not be a significant factor in site selection (although potential wetlands impacts are still considered a factor).

1278.21

DOE agrees that evaporation ponds would not be a feasible method for handling the cooling tower blowdown at Illinois, Michigan and Tennessee. The text in EIS Volume IV, Appendix 7, Sections 7.1.3.3.F.2 (Illinois), 7.1.3.4.F.2 (Michigan), and 7.1.3.6.F.2 (Tennessee) has been revised in response to the comment. Discussion of evaporation ponds is deleted for the three states. Other disposal alternatives are discussed.

1278.22

EIS Volume I, Chapter 5, Section 5.1.6.2, and Volume IV, Appendices 10 and 12, address the radiological implications of SSC operations on water resources, and discusses waste generation and disposal.

See also Comment Responses 524.06 and 769.03 for discussions of radioactive mixed waste.

1278.23

The EIS section referred to in the comment is correctly identified as Volume I, Chapter 4, Section 4.6.2.1. This section addresses the possibility of encountering existing hazardous materials at each of the proposed sites, particularly during construction. Based on the available information, none of the sites have known soil or groundwater contamination within the proposed SSC footprints.

The issue of hazardous wastes generated during construction of the SSC is addressed in Volume IV, Appendix 10, Section 10.1.3.2.B.3. A hazardous waste management program will be established for both the construction and operations phases of the SSC project in accordance with RCRA regulations. A major element of the program will be prevention of the creation of mixed wastes. Since the construction plans and operating procedures for the SSC have not yet been developed, the details of the hazardous waste procedures are not available for evaluation. Appropriate measures will be taken to ensure that hazardous materials are properly used and that any wastes generated are properly stored prior to disposal. There should be no wastes entering the underground environment.

1278.24

Industrial solvents and chemicals will not be used in the SSC tunnel during collider operation. Very limited quantities may be used during maintenance activities. Only liquid nitrogen and liquid helium will be

circulated throughout the length of the SSC tunnel along the beam tubes to cool the superconducting magnets. The only below-ground locations that could use hazardous materials are the interactions regions (collision halls) where the collision detectors will be located. It is possible that the design of the detectors may include some hazardous materials. Since the detectors are physics experiments that have not yet been designed, it is not known at this time what types and quantities of hazardous materials (if any) might be used in these devices. The design of the collision halls will include provisions to prevent the penetration of any spilled liquid hazardous materials to the surrounding soil.

The activation in soil/rock around the collider ring has been calculated based upon a series of conservative assumptions. (See Comment Response 1442.08). The total activity at the end of 25 years, dispersed around the 53-mile ring, is 4.3 curies of Na-22 and 12.2 curies of H-3. This would represent about 2×10^7 pCi of leachable Na-22 in a 20 m section and 2.8×10^9 pCi of H-3. This assumes no dilution by migration during the operation of the SSC. These concentrations, produced over a 25-year period by interactions of beam particles with residual gas in the vacuum chamber, are less than those calculated for an instantaneous beam loss by approximately 0.8 and 30 percent, respectively. The concentrations of accelerator-produced radionuclides at a well 50 m away from a beam loss are well below the EPA standard for public water supplies, and the concentrations from beam gas losses would be even less (EIS Volume IV, Appendix 12, Section 12.2.3.1.C).

1278.25

The use and disposal of hazardous/toxic materials during construction and operations of the SSC are discussed in EIS Volume I, Chapter 5, Section 5.1.6.1.B and Volume IV, Appendix 10. As noted in Section 10.1.3.2.B.2, a number of hazardous materials are likely to be used in the various shops and facilities which will support the operation of the collider. However, the exact nature and quantities of the chemicals that might be used are only speculative at this time since the support facilities and their specific operations have yet to be designed.

The DOE recognizes that further review is required prior to a decision on construction and operation of the proposed SSC. Accordingly, the DOE will prepare a Supplemental EIS to address in more detail the impacts of constructing and operating the proposed SSC at the selected site. The supplement will include a more detailed discussion of the impacts from the use and disposal of materials defined by 40 CFR 261.33.

1278.26

The DOE is committed to compliance with RCRA regulations for the generation, transportation, and management of hazardous wastes generated at the SSC project (see EIS Volume I, Chapter 6). It is recognized that

the SSC would be a generator of hazardous wastes under the RCRA definitions. As is currently done at Fermilab, the SSC would construct an on-site storage facility and obtain an RCRA permit to store hazardous wastes there prior to recycling, treatment, or disposal.

1278.27

EIS Volume IV, Appendix 10 covers waste disposal. Appendix 10, Section 10.1 covers hazardous waste. Hazardous waste will not be mixed with sewage or with cooling tower blowdown (industrial wastewater).

No hazardous wastes will be a part of the waste stream that will be sent to the wastewater treatment plant. Sludge generated from the wastewater treatment plant will be tested for hazardous waste (RCRA) characteristics. All hazardous wastes generated by the SSC facilities will be controlled by a waste minimization, collection, and disposal program that will keep these types of materials isolated from other waste streams (See Volume IV, Appendices 10 and 12).

1278.28

An investigation of existing or former hazardous waste sites in the vicinity of each of the seven proposed sites has been conducted for the EIS (See Volume I, Chapter 4, Section 4.6.2.1 and Volume IV, Appendix 5). The EPA, State and local agencies were contacted to determine if any of these sites would impact the construction of the SSC. None of the sites was found to have known soil or groundwater hazardous or toxic materials, contamination within the area of the proposed SSC site.

After site selection and before the start of construction, a confirmatory investigation would be performed at the selected site to confirm the original findings and ensure that no sites were overlooked.

1278.29

This information is consistent with that in EIS Volume IV, Appendix 10, Section 10.3.3.2. It is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards.

1278.30

The wetland assessment presented in the EIS has been revised to include the most current information on wetland location, type, and quality (see EIS Volume I, Chapter 5, Section 5.1.5.3 and Volume IV, Appendix 11, Section 11.3.5.3). A conservative estimate of the amount of wetlands that may be impacted by construction of the proposed collider facilities at the SSC in North Carolina is now placed at approximately 41 acres. If future expansion areas are developed, the potential exists for about another 98 acres of wetland impacts. These acreages are a conservative estimate, that do not include mitigation, and provide a relative comparison among sites. It is DOE policy to avoid wetland impacts where

practicable in accordance with requirements of Section 404 of the Clean Water Act and Executive Order 11990 Protection of Wetlands. Detailed plans to mitigate to the extent practicable any anticipated wetland impacts at the selected site would be developed in consultation with the U.S. Army Corps of Engineers and other Federal review agencies (and/or delegated State authority) and analyzed in detail in the Supplemental EIS. As a result the actual impact to wetlands would be much lower than the conservative estimate presented above. Mitigation is discussed in general in the EIS sections mentioned above and in Volume I, Chapter 3, Section 3.6. Volume I, Chapter 5, Section 5.1.5.3 explains the difference in wetland acreages reported between the DEIS and the Final EIS.

1278.31

See Comment Response 773.03. Site-specific mitigation measures to protect surface waters will be detailed in the Supplemental EIS for the selected site and will be based on final design and siting. Also see summary of mitigations in EIS Volume I, Chapter 3, Section 3.6.

1278.32

While sufficient information on spoils disposal is available to support site selection, the DOE agrees that more detailed information would be needed prior to construction and operation. This additional detailed information will be collected and analyzed in a site-specific Supplemental EIS prepared for the selected site.

1278.33

The Little River Reservoir completed in early 1988 roughly doubles the safe yield of Durham's water supply and should bring some relief to the water shortage experienced in the past in the proposed site area. The new reservoir has been included in the revised water supply assessment in EIS Volume I, Chapter 5, Section 5.1.2.4 and Volume IV, Appendix 7, Section 7.1.3.5.G. The assessment indicates that water requirement for the SSC project and additional off-site domestic use can be met by existing reservoirs in the project vicinity, which have adequate excess capacities. The safe reservoir yields used in the evaluation were estimated for 20-year drought conditions, i.e., a drought with an average recurrence interval of 20 years. The safe yields for a more severe drought would be less, but such yield data are not currently available. The drought in the last few years may be more severe than a 20-year drought. Furthermore, a drought may last more than one year. More detailed study on water supply reliability incorporating information from the recent drought years will be conducted and documented in a Supplemental EIS if the North Carolina site is selected for the SSC.

Utilization of existing sewage capacity in Durham and other municipalities is only one of the alternatives considered in the EIS. If existing capacity is not adequate to support the SSC, package treatment plants could be installed. Further detailed discussion of available

alternatives is presented in Volume IV, Appendix 7, Section 7.1.3.5.F. All project related wastewater will be treated and disposed of in compliance with all required permits.

Potential impacts of the SSC project on surface water quality may result from surface erosion, channel erosion, pollutant washoff, groundwater inflow control for the tunnel, and increased wastewater treatment plant effluent. Volume IV, Appendix 7, Section 7.1.3.5.F presents an assessment of the potential impacts and mitigative measures. Potential impacts on groundwater may result from surface and subsurface construction, disposal of wastewater from tunnel and shaft dewatering and inflow control, and leaching of spoils. Volume IV, Appendix 7, Sections 7.2.3.5.A.4 and 7.2.3.5.B.2 assess the potential impact on groundwater quality and present possible mitigative measures. The assessment indicates that, with proper mitigative measures, impacts to surface water and groundwater quality generally will be short-term and not significant.

1278.34

No violations of the AAQS are now anticipated. See Comment Response 1278.11.

1278.35

Mitigation techniques that have been assumed, as well as additional mitigation measures for controlling the sound emission of continuous and episodic noise events are discussed in detail in EIS Volume IV, Appendix 9 and at the summary level in EIS Volume I, Chapter 3, Section 3.6 and Chapter 5, Section 5.1.4. The DOE commitment to individual mitigation measures would be a function of the final site chosen. The DOE will address mitigation techniques for reducing noise impacts of construction and operations during final site and facility design and construction planning.

Additional potential mitigation techniques that would be considered during detailed design and construction planning could include the following:

The use of quieted construction equipment and the use of atmospheric sounding techniques to avoid loud sounds, such as blasting, when conditions are conducive to atmospheric focusing of sound. Inclusion of state-of-the-art noise control materials and techniques in the design of machinery buildings and equipment enclosures. Requiring contractors responsible for design to use verified and validated sound-emission models to identify equipment that would represent a potential noise impact if not subjected to special quieting techniques. Requiring designers and contractors to specify available quiet machinery and components in conjunction with the results of the modeling described above.

EIS Volume I, Chapter 3, Section 3.6 and Volume I, Chapter 5, Sections 5.1.4.1.B.1.a and 5.1.4.1.B.2.a have been revised. Volume IV, Appendix 9, Sections 9.1.3.1.B.1 and 9.1.3.1.C.1 have been corrected in the

Errata to include these additional mitigations. A more detailed monitoring and mitigation plan for blasting impacts will be presented in the Supplemental EIS.

1278.36

Discussion of the impact of increased commute traffic and construction vehicles on roads is contained in Volume IV, Appendix 9. It is anticipated that construction vehicles, especially haul trucks, will produce highly noticeable noise on roads. It is not anticipated that roads which experience increased loading because of commute traffic will produce a significant noise impact, as noted in Volume IV, Appendix 9, Section 9.1.3.1. As noted in Volume IV, Appendix 8 (in the cumulative impact discussions for each of the seven site alternatives) for North Carolina, the increase in air pollutants resulting from vehicle miles travelled because of SSC commute traffic was calculated to be less than 2.3 percent of the existing emissions in the primary impact counties.

The Final EIS incorporates the term "tons per year pollutant" in place of "vehicle miles travelled" which was used in the DEIS.

Site-specific mitigation plans will be described in the Supplemental EIS. These plans will take into account the results of detailed studies of the area of influence of the SSC. The impact of soil erosion and water pollution caused by proposed new roads would be mitigated by minimization of disturbed areas, rapid revegetation, and well-maintained sediment basins. With implementation of proper mitigative measures, the impacts are expected to be generally limited to the construction period and insignificant. Detailed discussion of impact mitigations are presented in EIS Volume I, Chapter 5, Section 5.1.2.1 and Volume IV, Appendix 7, Section 7.1.2.2.D.2 and summarized in Volume I, Chapter 3, Section 3.6.

1278.37

The discussion of cooling tower blowdown water is addressed in Volume IV, Appendix 10, Section 10.3.3.3. In the EIS, cooling tower blowdown was referred to as industrial wastewater.

1278.38

Little River Reservoir and Falls Lake are now shown on the maps in Volume I, Chapter 5, Section 5.1.2.2; Volume IV, Appendix 5, Section 5.5.2.1, and Appendix 7, Section 7.1.3.5.

1278.39

The wetlands assessment presented in the EIS has been revised to include a reevaluation of wetlands location, type, and quality (see EIS Volume I, Chapter 5, Section 5.1.5.3 and Volume IV, Appendix 11, Section 11.3.6.3). A conservative estimate of the amount of wetlands that may be impacted by construction of the proposed collider facilities at the SSC in Tennessee is now placed at approximately 38 acres. If future

expansion areas are developed, the potential exists for about another 66 acres of wetlands impacts. These acreages are a conservative estimate that does not include mitigation, and provide a relative comparison among sites. It is DOE policy to avoid wetlands impacts where practicable, in accordance with requirements of Section 404 of the Clean Water Act and Executive Order 11990, Protection of Wetlands. Detailed plans to mitigate, to the extent practicable, any anticipated wetlands impacts at the selected site would be developed in consultation with the U.S. Army Corps of Engineers (and other Federal review agencies and/or delegated State authority) and analyzed in detail in the Supplemental EIS. Mitigation, including the potential for facility realignment to avoid wetlands, is discussed in general in EIS sections mentioned above and in Volume I, Chapter 3, Section 3.6. The actual impact to wetlands would be much lower than the conservative estimate presented above. Volume I, Chapter 5, Section 5.1.5.3 explains the new wetlands acreages reported in the FEIS.

1278.40

The 364 acres of land includes land required for 34 disposal sites and for the retention pond adjacent to each of the disposal sites. The purpose of the retention pond would be to collect the runoff and retain the suspended solids in the water. The disposal sites are shown in Figure 10.2.3-8, Volume IV, Appendix 10 of the EIS. The disposal sites are located near each shaft.

Additional details of the excavated material implementation plan will be developed during the detail design and will be addressed further in the Supplemental EIS for the selected site.

1278.41

The number of wells that may have to be closed at the Tennessee site was not consistently presented in the DEIS. The number of wells that may actually have to be abandoned is significantly less than the 350 reported in Volume I of the DEIS. Approximately 70 wells are estimated to lie close enough to the proposed tunnel alignment that they may have to be abandoned and replaced by alternative water sources. See Comment Response 505.02. The environmental consequences of well abandonment are discussed in EIS Volume IV, Appendix 7, Section 7.2.3.6.

1278.42

See Comment Response 1278.11.

1278.43

Impacts from road construction and impacts to existing traffic patterns are addressed in EIS Volume I, Chapter 5, Section 5.1.8.6 A and Volume IV, Appendix 14, Section 14.2.1.3.F. The discussion provided in the EIS represents a reasonably accurate picture of conditions likely to occur if the Tennessee site is selected for the SSC. This includes a general

discussion of indirect traffic impacts (Secondary Impacts) caused by the indirect population growth resulting from the SSC. Impacts from road construction and induced growth will be addressed in greater detail in the Supplemental EIS for the selected site.

1278.44

The wetlands assessment presented in the EIS has been revised to include a reevaluation of wetlands location, type, and quality (see EIS Volume I, Chapter 5, Section 5.1.5.4 and Volume IV, Appendix 11, Section 11.3.4.3). A conservative estimate of the amount of wetlands to be affected by construction and operations of the SSC in Michigan is now placed at approximately 190 acres. If the proposed Michigan site is selected for the SSC, and as final design is approached, plans to mitigate wetlands impacts will be developed in consultation with the Michigan Department of Natural Resources as required by Section 404 of the Clean Water Act. As stated in the ISP, some flexibility is possible in the locations of service and access areas, and therefore most wetlands could be avoided by realignment of site facilities and/or environmentally sound placement of surface structures.

1278.45

It is anticipated that a limited number of existing private wells may be adversely affected or have to be abandoned because of the project (see Volume IV, Appendix 7). The State has indicated that an alternative water supply or compensation will be provided to affected well owners if a continuing need for water exists. The manner in which compensation or an alternative supply of water will be provided has not been finalized at this time but will be addressed in the Supplemental EIS for the selected site. The level of available data for this EIS does not provide for identification of individual affected wells. This level of record searches and field surveys will be performed for the Supplemental EIS for the selected site. Additional analyses will also be undertaken to quantify drawdown effects from potential SSC water supply wells. This information will be used for a site-specific evaluation of the effect of aquifer drawdown on existing wells. Because of the nature of wetlands in the area and the low groundwater infiltration rate expected (see Volume IV, Appendix 10, Section 10.2.3.4), no impacts to wetlands are expected from construction of the collider tunnel.

1278.46

The EIS is prepared based on the information provided by the State, as verified by DOE through site visits, published literature, State and Federal records, and discussions with State and Federal agency personnel. The State of Michigan has proposed several options for the disposal of excavated material: 1) dispose of inert material acceptable for commercial processing; 2) dispose of inert material unacceptable for commercial processing; and 3) dispose of leachable material (non-inert) to type II or type III landfills. The details are given in Volume IV, Appendix 10, Section 10.2.3.4.A. Additional details of the excavated

material implementation plan will be developed during the detailed design and will be addressed further in the Supplemental EIS for the selected site.

1278.47

See Comment Response 1278.11.

1278.48

Mitigation for wetlands (such as relocation of surface facilities that would avoid the need to fill in existing wetland areas) is discussed in EIS Volume IV, Appendix 11, Section 11.3. Details of specific methods that would be employed for specific facilities can not be presented at this time pending site selection, facility siting, and facility design. Specific mitigation plans will be developed in consultation with appropriate Federal and State agencies (e.g., COE, USFWS, MDNR) as required by Section 404 of the Clean Water Act. These would be presented in the site-specific Supplemental EIS.

1278.49

It is anticipated that some existing private wells may be adversely affected or have to be abandoned because of the project. The State has indicated that an alternative water supply or compensation will be provided to affected well owners if a continuing need for water exists. The level of design data available for this EIS does not provide for identification of individual affected wells. Record searches or field surveys will be performed for the Supplemental EIS for the selected site. Also, the manner in which compensation or an alternative supply of water will be provided has not been finalized at this time but will be addressed in the Supplemental EIS for the selected site. Site-specific evaluation of the effect of aquifer drawdown on existing wells and wetlands also will be conducted.

The State of Illinois' proposal suggests the use of freezing or slurry wall control to minimize groundwater inflow into major building excavations. Groundwater inflow into the tunnel is estimated to be low because the tunneling would be in low permeability dolomite rock formations. If sections of higher permeability, such as major rock fractures, are encountered during tunneling, they would be grouted or lined to minimize groundwater inflow (see Comment Response 1279.141). Consequently, the effects of the excavations, including tunneling, on groundwater levels and local wells are estimated to be negligible. The small amount of water pumped from excavations and tunnel inflow could be used or returned to the groundwater system by recharge from retention basins, thus further reducing impacts on the water table and existing wells. These options will all be further evaluated following final site design and will be addressed in a Supplemental EIS for the selected site. (See also discussions in Volume IV, Appendix 7, Section 7.2.3.3.A.1 and Comment Response 7.03.)

Only negligible impacts are expected on water levels in shallow aquifers and wetlands because (1) both on-site and off-site project water needs will be met primarily by pumping from deep confined aquifers which are poorly connected with shallow water table aquifer; (2) groundwater infiltration into the tunnel will be controlled to small rates during construction and negligible rates during operations; and (3) surface water and shallow groundwater drainage into open excavations during construction will be minimized through dikes and/or slurry walls around the excavation openings.

The EIS is prepared based on the information provided by the State and verified by DOE through site visits, published literature, State and Federal records, discussions with State and Federal agency personnel. The State of Illinois has proposed four quarries for the disposal of excavated material. These quarries would stockpile the excavated material and gradually blend them with their own produced material and sell the combined product. The quarries are identified in Figure 10.2.3-5, Volume IV, Appendix 10 of the EIS. Additional details of the excavated material implementation plan will be developed during the detailed design and will be addressed further in the Supplemental EIS for the selected site.

1278.50

The EIS is prepared based on the information provided by the State. The State of Illinois has proposed four quarries for the disposal of excavated material. These quarries would stockpile the excavated material and gradually blend them with their own produced material and sell the combined product. The quarriers are identified in Figure 10.2.3-5, Volume IV, Appendix 10 of the EIS. Additional details of the excavated material implementation plan will be developed during the detail design and will be addressed further in the Supplemental EIS for the selected site.

1278.51

See Comment Response 1278.11.

1278.52

As required under both Federal laws and State laws promulgated by U.S. Environmental Protection Agency regulating hazardous wastes cleanup, if contamination is encountered, the DOE will implement measures to safely remove and dispose of the waste.

EIS Volume IV, Appendix 5, Section 5.3.6, describes the surface waters containing thorium and associated decay products accumulated in Kress Creek and DuPage River as a result of Kerr-McGee plant chemical processing during the years 1931-1973 (now discontinued). The affected area is about 1 mi northeast of the proposed SSC site. Thorium-contaminated areas have been identified by Oak Ridge Associated Universities (ORAU) and Argonne National Laboratory. It has not been determined that any

thorium-contaminated areas exist within the proposed SSC siting boundary. The DOE and its operating contractors will comply with all applicable Federal, State, and local standards and will notify agencies if standards are exceeded. Volume I, Chapter 6, describes various environmental safety and health permits applicable to the siting, design, construction, and/or operations of the SSC and provides examples of the types of reporting required of the DOE

1278.53

See Comment Response 1278.11.

1278.54

EIS Volume I, Chapter 4, Section 4.4.1 of the EIS is intended to provide a rough forecast of the meteorological potential for regional air pollution episodes (i.e., stagnating conditions that can result in elevated pollutant concentrations over a wide geographic area for two or more days) over a five-year period. The number of forecast days of high air pollution potential listed for each SSC state was extracted from Figure 71 of Holzworth (Holzworth 1972). The Holzworth data is based upon certain meteorological factors (i.e., mixing layer depth and mean wind speed) that were thought to be good indicators of episodic conditions. The data are not correlated with any air quality measurements or based upon any regional-scale transport and dispersion modeling. The data in the EIS should therefore be viewed as a qualitative indicator of regional air pollution potential. The referenced data have been changed to reflect the appropriate use of these data.

1278.55

The ozone exceedance measured in North Dallas as shown in DEIS Volume I, Chapter 4, Table 4-6 is close to a major metropolitan center and is not representative of the SSC site. Ozone data closer to the Ellis County site are not available so it is unclassified. It is reasonable to assume that the ozone value in Ellis County will be lower because it is rural and distant from Dallas. The EIS has been changed accordingly in EIS Volume I, Chapter 4, table 4-6. The SSC-related emissions of CO, NOx, and VOCs during operations are almost entirely due to off-site commute traffic. The emissions resulting from this traffic constitute a fraction of a percent of the existing traffic contributions of these pollutant emissions. Ozone/carbon monoxide nonattainment is a complex and pervasive nationwide problem requiring an air quality management strategy that is national in scope. The PM_{10} and TSP AAQS violations have been eliminated. See Comment Response 1278.11.

1278.56

No inference has been drawn about the impact of SSC-related ozone precursor emissions on the formation of ozone for any SSC county (including Dallas County). The EIS preparers have worked closely with the Texas Air Control Board as well as with other state environmental agencies

while performing the required analysis for the EIS. If Texas is the selected site, we would expect that this interaction would continue in the foreseeable future and would benefit all parties.

1278.57

The necessary permits required for the discharge of wastewater, cooling tower blowdown water, and dewatering wastewater would be obtained after the site is selected and during final design. The details would be provided in the Supplemental EIS. See EIS Volume I, Chapter 6, Section 6.2.4.

It is DOE policy to conduct its operations in an environmentally safe and sound manner in compliance with applicable environmental statutes, regulations, and standards. See EIS Volume I, Chapter 6, Section 6.1.

1278.58

If the Colorado site is selected, the DOE has committed, as described in the EIS Volume I, Chapter 3, Section 3.6.2, that consideration will be given to the selection of the source of water supply for the SSC project with the intention of preventing "...effects on flows and water levels in both the Colorado basin and the South Platte river system." Although the Colorado Big Thompson Project would probably be at least one source of augmentation water if the proposed Colorado site were selected for the SSC, other options could continue to be considered during detailed design of the SSC. The final decision as to the source of water, and augmentation water in Colorado, would be addressed in a Supplemental EIS for the Colorado site if it is selected.

1278.59

The wetland assessment in the EIS has been reevaluated (see Volume IV, Appendix 11, Section 11.2.2). Based on this reevaluation, it was determined that the proposed east-west access road in Colorado would encroach upon 200 acres of wetlands. The siting and construction of this road would be the responsibility of the State. The DOE, to fulfill its NEPA responsibilities, has evaluated the impacts of this roadway based on the alignment proposed by the State. The DOE has already suggested to the State that the proposed road alignment be adjusted to minimize impacts to wetlands and the Barr Lake ecosystem. We believe this could greatly reduce impacts to wetlands from the proposed road. If Colorado is the selected site for the SSC, the State would apply for the permits and develop mitigation plans pursuant to Section 404 of the Clean Water Act.

1278.60

The DOE continues to consult with air pollution authorities with regard to state and local regulatory requirements. All provisions of the Clean Air Act, including Part D requirements for nonattainment areas, are or will be addressed throughout the project lifetime.

The use of carpools, vanpools, and buses are proposed as mitigations in the traffic analysis in EIS Volume IV, Appendix 14, Section 14.2.1.3.B.1.b and in Volume I, Chapter 3, Section 3.6.

1278.61

The paragraph on antidegradation in Volume I, Chapter 6, Section 6.2.1 has been revised to eliminate the confusing structure and to correct inaccuracies.

1278.62

The DOE is committed to implement proper soil erosion mitigative measures, such as minimization and containment of disturbed areas, rapid revegetation, and well-maintained sediment basins, to minimize the impact of soil erosion and pollutant washoff on water quality caused by the proposed SSC project. With implementation of proper mitigative measures, the impacts are expected to be generally short-term and insignificant. Detailed discussion of impact mitigations are presented in EIS Volume I, Chapter 5, Section 5.1.2.1 and Volume IV, Appendix 7, Sections 7.1.2.2 and 7.1.3.1. Site-specific mitigations would be addressed in the Supplemental EIS for the Arizona site if it is selected for the SSC.

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