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FINAL
ENVIRONMENTAL IMPACT STATEMENT

SUPERCONDUCTING SUPER COLLIDER

Volume II
Comment Resolution Document

A. Comments
1. Letters

December 1988

U.S. Department of Energy
Washington D.C. 20585

LETTER 1515

STATE OF COLORADO

[illegible]

[illegible]

October 13, 1980

Mr. Wright Dunn, Chairman
DOE Site Task Force
GM-07[illegible]
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Dear Mr. Dunn:

Enclosed are the Governor Dick Lamm's comments on the DOE draft Environmental Impact Statement.

If you require clarification on anything contained herein, please contact me.

Sincerely,

Executive Director

enclosure

cc: Ed Temple
[illegible]

STATE OF COLORADO

EXECUTIVE CHAMBERS
136 State Capitol
Denver, Colorado 80203-1792
Phone (303) 866-2471

Roy Romer
Governor

October 15, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
US Department of Energy
Washington, DC 20545

Dear Dr. Hess:

The State of Colorado, local officials and residents, private corporations and institutions of higher education appreciate the opportunity to comment on the Draft Environmental Impact Statement for the Superconducting Super Collider. We want to commend the Department of Energy for producing such a well organized study in a short period of time. Information prepared for the Final EIS should provide valuable support to the site selection process.

This letter and its attachments constitute the State of Colorado's comments on the Draft EIS. The letter presents general comments on the Draft EIS and suggestions for improving the analysis of Colorado's site relative to several important issues. Attachment 1 compiles numerous specific textual and tabular changes which should be made to improve the accuracy of the Draft EIS. Attachment 2 is a generalized mitigation plan and an outline of the process we will undertake to develop a comprehensive plan for inclusion in the Supplemental EIS. Attachment 3 is a collection of state agency comment letters which provide detailed information about the issues discussed in this letter. Attachment 4 is the comment letter and map prepared by the Public Service Company of Colorado and Tri-State Generation and Transmission Association.

We offer this extensive body of comments for two reasons. First, it is in both DOE's and Colorado's interest to ensure that this environmental impact statement is adequate and acceptable to its broad audience. Many of our comments provide information and offer suggestions which will strengthen the document. Second, it is our responsibility to ensure that the information about Colorado is presented completely, accurately and fairly. Numerous comments serve this purpose by recommending changes which will improve the presentation of existing conditions and analysis of impacts at the Colorado site. In short, the incorporation of our comments in the Final EIS will greatly enhance DOE's ability to make a defensible final site selection decision.

GENERAL COMMENTS

We want to restate our support and the support of the people of Colorado for the Superconducting Super Collider. The benefits of building and operating this project in the United States are manifest. Not only will there be long-term technological spinoffs , there will also be practical benefits to education, industry and science in the near future. The Draft EIS correctly asserts this project need.

We want to reemphasize the readiness of our state to support and assist DOE in locating the SSC in Colorado. The Draft EIS begins to document the remarkable compatibility between Colorado and the the project, its scientists and support staff. From the development of our proposal to our review of the Draft EIS, our goal has been to assure DOE of the certainty and support which will accompany its decision to locate the SSC
2 facility in Colorado. We have accomplished this goal by:

- o ensuring broad participation in planning and evaluating the Colorado SSC;
- o preparing a preliminary mitigation plan for the SSC;
- o demonstrating a lack of controversial environmental issues related to the SSC; and
- o committing to a Colorado SSC Implementation Plan to support DOE efforts to build and operate the facility at the Colorado site.

The remainder of this letter and its attachments point out a number of specific steps Colorado will take to further add to this certainty.

3 We are not entirely satisfied with the Draft EIS characterization of the Colorado site. For example, the document overdramatizes the distance from the SSC site to the Denver metropolitan area. 4 It denigrates the capability of our state and local governments to respond to the opportunities afforded by growth related to the SSC. 5 It ignores the strong ties between the site vicinity and the Denver metropolitan area. 6 In comparing the seven sites, it fails to account for the relative completeness of Colorado's proposal. 7 We will be pointing to specific parts of the text and tables which should be changed to display a more balanced evaluation of the Colorado site.

It is clear from the document that the Colorado SSC proposal provided a greater level of detail than did proposals from other states. The resulting assessment of impacts is sometimes confused by the consequent differences in project scope. In apparent contrast to other states, we made every effort to fully describe all the roads and infrastructure
8 needs associated with the SSC in our September 1987 proposal. We intended that this full range of project detail be evaluated in the EIS in order to ensure consideration of all development necessary to successfully build and operate the SSC in Colorado. The Draft EIS acknowledges the full scope of Colorado's proposal by analyzing direct and indirect impacts over a broad geographic area. Unlike the minimal attention given to eventual road and infrastructure needs in other states, the Draft EIS provides a thorough inventory and analysis of all

SSC siting requirements for Colorado. We are confident that this strengthens the EIS process for Colorado and gives us an early start on the Supplemental EIS which will follow site selection.

The Final EIS should evaluate the capability of each state's proposed transportation and infrastructure package to meet future SSC-related demands. Where proposed improvements appear inadequate to meet demand over the life of the project, the Final EIS should disclose that fact and
9 analyze the impacts of providing adequate improvements. For example, Colorado's proposed 94 miles of new road are intended to accommodate all projected traffic volumes at a high level of service. No additional roads will be needed to meet future SSC-related demand. Other states propose a smaller number of new and improved road miles despite the fact that existing roads are already congested. The Final EIS should ensure that comparisons between sites account for the varying ability of their
10 transportation and infrastructure improvement plans to meet demands for the life of the project. This is essential to a fair and equitable evaluation of the sites.

Our reviewers have raised a number of questions about the compatibility of conclusions presented in the summary tables with the more thorough treatment of the same topics in the text. Because these tables are the most visible means of comparing the seven sites, they must accurately
11 reflect the best available information and compare like variables in a consistent manner. Many of our detailed comments will focus on this issue. We recommend that the Final EIS display comparison tables which carefully integrate pertinent information from the text and reach sound conclusions based on that information.

IMPORTANT ISSUES

Regional Availability of Aggregate There are adequate construction materials available within the region. Sand and gravel are plentiful throughout the front range and along the South Platte River. To date, much of this resource, particularly along the South Platte, has not been permitted or mined because sufficient supplies were available from
12 sources closer to developing areas. As demand increases and shifts further east, new sites closer to the SSC will be permitted and begin operations.

Coarser materials are available in the Greeley area about 65 miles from the SSC campus and along the western side of the Denver metro area. Crushed rock quarries are operating in Golden, Lyons, Morrison and Colorado Springs. The Cache la Poudre River valley between Greeley and Fort Collins contains significant aggregate resources. This area is connected to Fort Morgan by both highway and rail.

The numerous statements in the Draft EIS which suggest that such materials are not regionally available for the Colorado SSC should be changed. Please also refer to the attached memorandum from Pat Rogers, Colorado Geolgical Survey, and the "Strategic Resources Assessment Study" previously submitted to DOE. The latter concludes that, even with the

simultaneous construction of several large projects in northeastern Colorado, adequate sand and gravel, marine aggregate and concrete will be available.

Coping with growth. Local committees and state government have the commitment, expertise and resources to insure that all growth, induced and non-induced, can be accommodated without difficulty. Private sector resources are more adequate to respond quickly to increasing demand for housing and other needs of a growing population. The Draft EIS was incorrect to suggest that regionally available public and private resources are not adequate to meet these demands.

Our proposal and subsequent communications make very clear that we see growth in the project area to be a tremendous opportunity and not a source of concern. Projected growth rates are not excessively high, particularly when compared with the growth we experienced on the eastern slope of Colorado during the oil shale "boom." Fort Morgan and Brush both have responded to periods of rapid growth - during the 1960's when oil and gas activity peaked and during the early 1980's when the Pawnee Power Plant was built. Their experience and success in managing these sorts of growth underscore their confidence in handling SSC growth. Conclusions presented in the final EIS should take into account the capacity of local, regional and state resources to respond effectively to SSC induced growth.

Local governments in the project area have completed an inventory of available housing and of residential lots approved and ready for building. The resulting capacity is adequate to provide housing to 2 workers and families who choose to live in the Fort Morgan and Brush area. Supporting documentation was submitted at the September 23 hearing in Fort Morgan and, together with comment letters from these same local governments, should be used in revising the assessment of local capacity to accommodate growth in the final EIS.

Rail Yard Highway Alignment. The extension of State Highway 7 to the vicinity of Rail Yard will be aligned to avoid impacts on wetlands and other sensitive areas to the greatest extent practicable. The Department of Highways has evaluated options both to the north and south of Rail Yard. The currently preferred northern alignment is more than two miles from the recently detailed artificial eagle roost and will not have any effects on bald eagle activities at the roost. If impacts to wetlands cannot be avoided, the state will work with interested parties, including the Corps of Engineers, U.S. Fish and Wildlife Service and the Colorado Department of Wildlife.

Threatened/Endangered Species. The Draft EIS appropriately the potential impacts on threatened and endangered species in the downstream reaches of Colorado's water supply streams. Water will be delivered to Rail Yard via pipeline from wells in [illegible] aquifer and terminal reservoir at the existing Rail Yard facilities. [illegible] Rail Yard, in conjunction with the water supply pipeline (Morgan County Quality Water District). The [illegible] consultation [illegible] Service [illegible] the [illegible] adverse effect [illegible] Rail Yard [illegible]

not in our interest to engage in potentially lengthy threatened and endangered species consultations. The Final EIS should acknowledge Colorado's water supply proposal by deleting reference to the threatened and endangered species associated with the Colorado and South Platte rivers.

As noted above, the Draft EIS also exaggerates the potential for impacts to bald eagles at Barr Lake due to the proposed extension of State Highway 7 east of I-76. The proposed road will be too far away to cause any disruption.

16 Air Quality Impacts The Draft EIS concludes that construction of the SSC will cause exceedances of air quality standards at all sites including Colorado. Air emission permits will be issued for construction activites in Colorado when sufficient controls and practices are in place to protect against such exceedances. Colorado has permitted many large construction projects and anticipates no difficulty in approving air emission permits for the SSC. A more thorough analysis of air quality impacts should be done in the Supplemental EIS for the site selected. This should include an analysis of the impacts of secondary development attributable to the SSC.

17 Land Aquisition Plans The Draft EIS inaccurately characterizes Colorado's commitment to acquire land for the SSC. In our proposal and elsewhere, we have committed to purchasing 25 to 30 percent more land than DOE requires, but would transfer title of only those lands needed for the SSC facility. Our commitment reflects land ownership patterns in the project area and our desire to (1) not saddle landowners with uneconomic remnants and (2) afford DOE and the state adequate flexibility to assure full development of the SSC and ancillary facilities.

18 Farmland Conversion We disagree with findings in the Draft EIS which relate to the amounts of prime and "important" farmlands lost because of the SSC project and access roads. Part of our disagreement stems from the method used to categorize farmlands in the document. U.S. Soil Conservation Service maps indicate that minimal acreage of prime farmland will be affected by placement of the collider ring. Approximately 210 acres of prime farmland are subject to disturbance along the access road corridors.

Careful definition of "farmlands of statewide importance" should precede an analysis of impacts to such lands because there are significant differences from one state to another. "High potential dry croplands which would become prime if irrigated" is an important category of farmland throughout Colorado. It is very unlikely, however, that such land will be irrigated in the vicinity of the collider ring and access road due to the relatively high price of water, pumping costs and distance from probable sources.

19 Land Use Changes Less than 0.1 percent of the region's agricultural land will be converted to other uses. This will be a positive change, encouraging a more diverse local and regional economy, while preserving a strong agricultural base. The Draft EIS characterizes these land use changes in a negative light. Given the broad local support for the SSC

STATE OF COLORADO

LETTER 1515 (CONTINUED)

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project and the commitment of the three affected counties to cooperatively plan for development in the vicinity of the SSC facility, we recommend that the Final EIS present a more balanced discussion of the land use change issue for Colorado.

We also disagree with the apparent conclusion that land use changes in Colorado are somehow more significant than similar changes in other states. While it is true that the Colorado site will be transformed from being largely undeveloped to hosting a variety of research and industrial facilities, the actual changes are no more substantial than the construction of these same facilities in agricultural and residential areas of other states. The Final EIS should reflect a reassessment of the nature and importance of land use changes to each state.

20 Distance/Time The draft EIS reflects an urban orientation about travel distance and time. Moderate distances, regardless of the time taken to cover it, are portrayed as undesireable. The fewer miles, the better. In the west, distance is covered easily and quickly. We believe the Final EIS should take into account both travel distance and time in reaching conclusions about the relative separation between SSC sites and full service urban areas.

21 Planning for the Future The Draft EIS fails to take into account the tremendous advantages to both DOE and the state of locating the SSC in the Fort Morgan/Brush area. The relative lack of development there makes possible the careful planning of future land use, transportation systems, public service delivery and other aspects of a highly successful and diverse community. Colorado offers this opportunity because the local government jurisdictions are able and eager to build solid and creative communities around the SSC hub. Their ability to succeed is enhanced by the close ties which exist between the project vicinity and the metropolitan area and by growth patterns which are extending urban services northeast from Denver toward the project site.

CONCLUSION

We want to emphasize again that our comments are meant to support DOE's effort to comply with NEPA and reach a site selection decision. At the same time, we believe it is our responsibility to offer better information about the Colorado site and project impacts in Colorado. Should additional documentation or verification be required, we would be happy to assist DOE obtain the necessary information.

22 In general, the Draft EIS provides a well-organized, preliminary assessment of existing conditions and potential impacts at the seven sites under consideration. The Final EIS should build on these strengths and improve the consistency and balance of its treatment of issues which are important to the decision process. We endorse DOE's commitment to prepare a Supplemental EIS on the site selected and believe Colorado has already provided information and created an intergovernmental management system which will support speedy preparation of such a document. The preliminary mitigation plan included as Attachment 2 demonstrates that project impacts can be mitigated by management practices and mitigating

measures which have been proven effective. It also descibes the process we will undertake to use additional data to develop a more comprehensive and detailed mitigation plan in conjunction with the supplemental EIS.

The State of Colorado stands behind its September 1987 SSC Proposal and affirms the geotechnical excellence of its site. We are pleased that the Draft EIS found no significant environmental problems associated with building and operating the SSC in Colorado that cannot be mitigated by measures already proven to be effective. We have forged a strong alliance between units of local governments, area residents and state government to ensure that Colorado can deliver a technically superior, environmentally sound and surprise-free site for the Superconducting Super Collider.

Please contact Tim Schultz, Executive Director of the Department of Local Affairs if you have any questions about our comments or if you desire additional information about Colorado's site.

Roy Romer
Governor

Carl B. "Bev" Bledsoe
Speaker of the House

Tim Schultz
Executive Director
Department of Local Affairs

Ted Strickland
President of the Senate

Attachments:
1. Specific Comments of State Agencies
2. Preliminary Mitigation Plan
3. Supporting Letters and Memos from State Agencies
4. PSCo and Tri-State Comments

2340A

ATTACHMENT 1.

STATE OF COLORADO
SPECIFIC COMMENTS ON THE
SUPERCONDUCTING SUPER COLLIDER DRAFT EIS
OCTOBER 15, 1988

The State of Colorado's review of the Draft EIS identified specific instances where data presented were either incorrect, misleading or inconsistent with data presented elsewhere in the document. Our specific recommendations for altering text, tables and figures are presented in
23 this attachment. A brief explanation follows each recommendation. Cross references are also included to ensure that changes will be reflected in all pertinent parts of the Final EIS. Most of these specific comments relate to Volume I; however, changes made should also be reflected in the pertinent appendices.

I, 1-4 and 5 — Delete the reference to bald eagle habitat loss. According to the U.S. Fish and Wildlife Service and the
24 Division of Wildlife, the proposed access road corridor will be too far away from the roosting area at Barr Lake to cause habitat loss. See also I, 3-52, 4-53, 5.1.5-4 and IV, Appendix 11, page 11.

I, 3-28 — Delete reference to the South Platte and Colorado rivers in the water supply section of the table. Correctly identify the supplying entity as the Morgan County
25 Quality Water District. The district's proposal calls for providing domestic and industrial water to the SSC without necessitating new withdrawals from either the South Platte or the Colorado. See also I, 3-62.

26 I, 3-29 — The 1530 acres for electric transmission line is <u>not</u> fee simple. Change to say <u>easement</u>.

27 I, 3-29 — Explain what is meant by "diminished value" in footnote "d".

I, 3-30 — Footnote "e" is incorrect. The note should say: "Colorado has prosposed to purchase up to 25 to 30 percent more land than DOE requires in order to ensure
28 that affected land owners are not burdened with uneconomic remnants of land. Land purchased in excess of DOE need will be offered for lease back to the previous owners."

I, 3-34 — In the second paragraph, change "few" to "with the possible exception of one very small pond (less than 1/10 acre) in the vicinity of the K-6 interaction area,
29 there are <u>no</u> perennial aquatic systems in the immediate area of the proposed ring." There are no perennial streams in the area. This is confirmed elsewhere in the Draft EIS.

30 I, 3-34 In the fifth paragraph, the reference should be Morgan County Quality Water District, an entity completely distinct from Morgan County.

31 I, 3-35 Figure 3-9 should include the City of Greeley in Weld County. Correct the spelling of Larimer County.

32 I, 3-48 USGS data show that the Texas tunnel would be below the water table, not above the table as stated in the first paragraph.

33 I, 3-51 The reference in the table to "<30" oil and gas wells lost is incorrect. Data submitted to DOE summarized impacts to only four wells as follows:

- o 1 well located in the injector complex "B"
- o 1 well located in future expansion area "C"
- o 1 well located in the northern most part of the far cluster area "H"
- o 1 well approximately 1/2 mile NW of FB in the south arc area "D"

See also I, 5.1.1-3.

34 I, 3-51 The loss of 18 water wells as reported in the table is incorrect. There are six shallow alluvial aquifer wells within the collider ring, 4 more in the future expansion area "C" and 2 wells in the northern beam abort area "I", however these are off the beam line. Correct the information on page 4-21 as well.

35 I, 3-51 The air pollution and noise entries (the last two on the page) do not depict impacts related to standards or other criteria. The narrative on page 3-67 addresses air quality impacts and should be quantified for inclusion in Table 3-7.

36 I, 3-52 Again, there will be no bald eagle habitat loss due to construction of the east/west access road near Barr Lake.

37 I, 3-52 A survey of prairie dog towns has not yet been conducted; therefore it is premature to assert that there will be a loss of black-footed ferret habitat. A preliminary aerial survey and subsequent ground truthing on September 29 and 30, 1988 have indicated that there are no signifigant prairie dog communities on the ring or access corridors. A complete survey will be completed for the Supplemental EIS should Colorado be designated as the SSC site. See also I, 3-62.

38 I, 3-52 The table indicates that 20 acres of wetlands in the fee simple area will be impacted by the project. This estimate is too high for the SSC ring alone. Including the access roads proposed by Colorado, the 20 acre figure might be correct. DOE's contractor visited the Colorado site on September 28 through 30 to examine

wetlands subject to project disturbance. His estimate of wetland impacts should be substantially less than 20 acres for the ring and not exceed that figure for the entire project including access roads. The revised estimate should be used in the tables and text. Also change or explain the treatment of wetlands at I, 1-4 and 5, and 5.1.5-14.

39 I, 3-52 Experience with the bighorn sheep in Colorado suggests that impacts to habitat at the Arizona site must be more than "negligible." This conclusion should be reviewed and, if appropriate, revised. See also I, 4-62. Please refer to the memo from Ann Hodgson in Attachment 2 for further documentation.

40 I, 3-53 Information presented in the text of the Draft EIS (pages 4-7, 4-69 and 5.1.7-1) and appendices does not support the conclusions drawn about land use in the table. Revise the table or explain how the conclusions were derived.

41 I, 3-58 In the footnotes, make the language regarding cultural resource sites consistent (ie. "anticipated" versus "expected") or explain how the distinctions were derived. See also I, 5.1.9-2.

42 I, 3-61 The last paragraph should be revised to delete reference to impacts to bald eagles and mention the requirement to avoid <u>or</u> <u>mitigate</u> wetlands and floodplain impacts. While avoidance is preferable and is Colorado's goal, some impacts may be unavoidable.

43 I, 3-62 The top paragraph should be deleted. Colorado has already committed to a water supply plan which would not cause new depletions of the South Platte or Colorado rivers.

44 I, 3-62 Surveys for blackfooted ferrets will be conducted only if an inventory of prairie dog towns results in a determination that a sufficient prey base exists, pursuant to US Fish and Wildlife Service guidelines, to warrant such a survey. This survey needs to be completed within six months of the start of actual construction.

45 I, 3-63 Under Water Source for Colorado, delete "Partially met by". All of the required water will be provided by the Morgan County Quality Water District which will use existing groundwater supplies and, if necessary, acquire additional ground water or surface supplies through the conversion of existing senior water rights.

46 I, 3-69 The last sentence in section 3.7.10 should be amended to say: "Secondary development <u>in</u> <u>each</u> <u>state</u> is also . . ." The way it reads now, the sentence ascribes secondary development only to Colorado.

47	I, 4-2	Colorado topography would be more accurately described as "loess and alluvium covered plain."
48	I, 4-6	The last sentence in the second paragraph from the bottom should be changed to: "Eolian sands and alluvial deposits occur in limited areas around the collider ring and are potentially . . ."
49	I, 4-8	There will be no "minor water inflows" into unweathered Pierre shale during excavation. There will be minor inflows from the alluvium during excavation. The last sentence in the first full paragraph should be changed accordingly.
50	I, 4-8	The first sentence in Section 4.1.5 is incorrect. There will be no "small pockets of natural gas" encountered during construction in Colorado. Natural gas occurs only at depths well below the level of construction disturbance.
51	I, 4-10	The maximum floodplain width for a drainage channel at the Colorado site is 6500 feet. A 10,000 foot floodplain width does occur at the confluence of Beaver and Buck creeks. See also I, 4-12.
52	I, 4-11	FEMA flood hazard boundary maps maps are available for the lower portion of Badger Creek in Morgan County. Preliminary flood insurance rate maps for Beaver Creek, Buck Creek and Shears Draw have also been completed. See also I, 4-12 and 5.1.2-3.
53	I, 4-11	Inclusion of the South Platte River water quality data is not relevant to an assessment of impacts at the SSC site. The entry should be the same as that of Arizona: "No surface water quality data for the immediate vicinity." Delete or modify the references to Colorado in the first two paragraphs of Section 4.2.1.2 on pages 4-12 and 4-13.
54	I, 4-13	There are not 14 NPDES permits in the near vicinity of Colorado's site. All but two of these permits are for discharges into the South Platte and its tributaries at least 15 miles from the collider ring.
55	I, 4-17	There is no gypsum in the Pierre Shale bedrock. Sulfates and carbonates are the result of water leaching through the loess and alluvium above the Pierre Shale.
56	I, 4-29	Blasting at the EFI site in Colorado occurs more than 5 miles away from the collider ring. Furthermore, EFI has offered to relocate its fabrication facilities to a site even more distant from the ring should Colorado be awarded the site.

57	I, 4-44	Pronghorn antelope are not migratory. They are nomadic. Please change the third paragraph in section 4.7.1 to reflect this.
58	I, 4-47	It is very unlikely that there are any areas contaminated by oil and gas activities within the ring footprint. Oil and gas operations are regulated by the Colorado Oil and Gas Commission which prohibits any actions which could cause contamination. Mr. McHugh's letter does not reference contaminated locations; it merely outlines the occurences of oil and gas wells within the 1 mile buffer area as requested.
59	I, 4-52 and 53	For reasons already cited, the number of threatened and endangered species for Colorado should be reduced or the number shown should be footnoted. At a minimum, the Colorado River fish species should be deleted from the table as should the fourth full paragraph on 4-53. See also IV, Appendix 11, pages 11 and 12.
60	I, 4-53	Colorado does not propose to upgrade I-76. The reference in the last sentence of the fifth paragraph should be changed to "where the State has proposed to extend SH 7 which . . ."
61	I, 4-55	Change the list of T&E species as discussed above.
62	I, 4-85	Freeway access to the Colorado site includes I-70 in addition to I-76.
63	I, 4-95	It appears that the one campsite mentioned as being within the ring is one of the two campsites with human burials. This is not the case.
64	I, 4-100 and 102	The Final EIS should provide an assessment of paleontological resource potential in North Carolina. The conclusions should be based on supporting data.
65	I, 5.1.1-3	As noted above, (I, 3-51), only 4 oil and gas wells may be affected due to construction of the SSC.
66	I, 5.1.1-4 & 5	"With the exception of Colorado" (last paragraph, second sentence on page 5.1.1-4) is not correct. There are abundant rock resources available within the region. Coarse materials are plentiful along the front range; high quality sands and fines are available in the Fort Morgan area. A significant demand in the Fort Morgan/Brush area would also spur new sand and gravel activities east of the metropolitan area and continue to draw aggregate from the Front Range between Colorado Springs and Greeley/Fort Collins, all within the "region" and all within typical haul distances on existing rail lines or excellent highways.

67 I, 5.1.2-17 Here and elsewhere the Draft EIS asserts that a lack of FEMA floodplain mapping is indicative of a "low potential for flood hazards and flooding." This is not correct. The text should be changed accordingly.

68 I, 5.1.2-26 The reference to groundwater supplies in the second paragraph is only partly correct. At the Colorado site, shallow alluvial aquifers may be disturbed by surface construction. These aquifers are generally small and dispersed around the SSC site. There is no groundwater in the Pierre shale.

69 I, 5.1.2-26 Insert "non tributary" before aquifer in the second line. Delete the rest of the paragraph beginning with "Transfer of . . ." Replace it with new text as follows: "Additional water demand will be met by the district's other wells and, if necessary for direct supply or augmentation, by the purchase and conversion of existing senior agricultural water rights."

70 I, 5.1.3-2 The reference to Fermilab at the bottom of this page begins a series of inconsistent statements about its utility to the SSC. In some places, the Draft EIS asserts that Fermilab will cut SSC costs. Elsewhere the document explains that the extensive modifications required to make Fermilab compatible with the SSC are very expensive and their success uncertain. It is important that the Final EIS be consistent and clear about the alleged advantages of the existing Fermilab facility.

71 I, 5.1.5-3 As noted above (I, 3-52), Colorado's experience with big horn sheep during construction of the Strontia Springs dam in Waterton Canyon strongly suggests that construction of the SSC in Arizona would have significant impacts on the local population.

72 I, 5.1.5-3 The third paragraph of the Colorado section incorrectly reports that up to 20 acres of "woodland" could be lost. Only a very small portion of area wetlands could be considered woodland areas.

73 I, 5.1.5-4 Again, the access highway will be too far away from the Barr Lake roosting area to disturb the bald eagles.

74 I, 5.1.5-10 Colorado has proposed to supply water to the SSC via a contract with the Morgan County Quality Water Ditrict. The district will obtain the needed water from its existing wells and, if necessary, from the conversion of senior water rights from other uses.. There will be no new depletions from the Colorado or the South Platte rivers. The Final EIS should evaluate our proposed water supply and not continue to speculate about alternatives.

LETTER 1515 (CONTINUED)

75	F, 5.1.5.10	The rising plover and least tern are not "water fowl."
76	F, 5.1.5.14	As discussed above (F, 5.1.4), the correct number of wetlands acres likely to be impacted by the SSC ring is just over twenty. When both the ring and the access roads are considered, the total subject to disturbance not approach 20. However, the state's commitment to avoid wetland disturbance wherever practicable will further reduce the number of acres actually impacted.
77	F, 5.1.5.20	In our experience, "protection" of existing wetlands does not constitute mitigation for wetland losses. Colorado has committed to the replacement of wetlands where disturbance of existing wetlands is unavoidable. The text in the third paragraph of subsection c. should be changed.
78	F, 5.1.7-5 & 6	The reference in the text and table to 184 acres of "permanently removed farmlands" is not clear. Are these prime farmlands or are they the prime and important farmlands discussed for other sections? Or are they the total of all farmed acres converted to other areas? This should be made clear. The U.S. Soil Conservation Service does indicate that only one acre of Prime Farmland will be lost at the F3 access site. We also question the appropriateness of combining Prime Farmland with other categories such as farmlands of Statewide Importance. Farmlands of Statewide Importance vary from state to state and should be carefully defined so the EIS reader can make accurate comparisons.
79	F, 5.2.5.17	We strongly disagree with this and subsequent characterizations of Fort Morgan and Brush as having inadequate resources to accommodate SSC-related growth. Testimony submitted at the September 28, 1988 hearing at Fort Morgan and other data included in this comment letter and the letters of local jurisdictions refute the conclusion that impacts to housing, public services and public facilities in these communities will be difficult to mitigate. Moreover, the data in Tables 5.2.8-5 and 5.2.8-6 cited in the text as evidence of the "noteworthy exceptions," do not seem to support the conclusion. The statement should be deleted or modified. See also FC, Appendix IA, pages 10, 12 and 18.
80	F, 5.2.5.21	It appears that the implicit balance during the first three years of construction for Adams County are caused by the county having to provide a range of health and social services to the SSC campus. This is not correct. By prior agreement, the City of Fort Morgan has provided these services. The figures in the table should be reviewed and, if appropriate, changed. See also FC, Appendix IA, page 23.
81	F, 5.2.5.24	We disagree with the notion that "boomtown" conditions will cause significant disruption in Fort Morgan and Brush. Compared to the very real recession conditions

experienced by small Western Slope communities during Colorado's oil shale boom, SSC-related growth is not expected to cause major disruption. Available capacity, reliance on regional resources, planning by local jurisdictions and the backing of the state will all ensure that growth is managed and accommodated in a manner that avoids the kind of disruption cited in the text. Detailed information about this was submitted at the September 29 hearing and is incorporated into this letter and attachments.

82 I, 5.1.8-28 The table raises a number of issues. First, how can there be disruption to traffic patterns in Colorado, which has the best level of service, and not in other states which have lower levels of service? Second, if existing levels of service are quite low in some states, how can their minimal number of new and upgraded road miles accommodate future SSC-induced traffic increases? Third, the indirect traffic increase data need explanation as to why Colorado experiences so much greater impact than other states, particularly Arizona.

83 I, 5.1.8-30 The same three questions raised in 5.1.8-28 apply to this table.

84 I, 5.1.9-2 We question the need to include the sentence "Additional archaeological sites containing burials may be present..." when in the previous paragraph it has been stated that the existence of prehistoric burials cannot be excluded at any of the sites. Strike the sentence in question because it is redundant and incorrectly suggests that there is a greater chance that such sites will be found in Colorado than in other states. See also 15.1.3.2 page 18.

85 I, 5.1.9-4 Reference should be to a Programmatic Agreement (P.A.) not an M.O.U. Replace elsewhere in text as appropriate. See IV, 15 page 1; IV, 15.1.1 pp2-4, etc.

86 I, 5.1.10-2 & 3 Why is the Colorado column blank? This should be explained in a footnote or entries made showing no impact.

87 I, 5.2-1 The Colorado SSC site certainly has access to abundant aggregate resources. The second sentence in section 5.2.2 should be rewritten to say that "All of the proposed sites are located . . ." Evidence to support our contention that construction resources are plentiful within the region is submitted as part of this letter and in separate comment letters.

88 I, 5.2-10 The proposed Two Forks Dam would be located just below the confluence of the North Fork and the South Fork of the South Platte River.

89	I, 5.4-1	The loss of four oil and gas wells in Colorado is not an unavoidable impact. The wells can be redrilled using slant drill techinques. The State of Colorado has committed to pay for such mitigation.
90	I, 5.4-1	Similarly, Colorado has committed to replacing any water supply lost due to placement of the SSC ring. Therefore, the possible loss of 12 wells is mitigatable.
91	I, 5.4-1	Most of the 20 wetland acres subject to disturbance by the ring or access roads will be avoided by siting refinements, corridor adjustments and bridging. What cannot be avoided, must be mitigated.
92	I, 5.4-2	The text does not support the conclusion that land use would be substantially altered only in Colorado and Arizona. As stated elsewhere, land use changes in Colorado will not be substantial and they are welcomed as being beneficial to the local and regional economy.
93	I, 5.6-2	Delete reference to Colorado in the last sentence, first paragraph of section 5.6.1.2.
94	I, 5.6-7	We are glad to see the abundance of earthen resources noted and would only add that, even with competition, their availability will be adequate. See, for example, the "Strategic Resources Assessment Study" already submitted to the DOE.
95	IV, 5.2.1.6p13	The second paragraph should be rewritten to reflect information about the availability of gravel submitted with this letter.
96	IV, 5.2.2.1p22	The second sentence should read: "classified to protect secondary <u>recreational use</u>, warm water . . .".
97	IV, 5.2.2.1p22	The table depicts data from the South Platte River about 50 miles upstream of Fort Morgan. This distance should be noted. Some standards should be added: 2000/100ml for fecal coliform and 6.5-9 for pH.
98	IV, 5.2.8.2p57	The distance from the SSC site to the Tower Road Landfill is 65 miles. The distance to the Morgan County Landfill is 30 miles.
99	IV, 5.2.8.2p58	The Morgan County Landfill is incorrectly located on the map. It is northeast of Fort Morgan about half way between Fort Morgan and Brush. The Tower Road Landfill should be added to the map south of Brighton about half way between I-76 and I-70.
100	IV, 5.2.10.1p87	The proposed Narrows Dam, although very unlikely to be built, would be located north<u>west</u> of Fort Morgan.
101	IV, 5.2.10.3p97	The estimate of prime farmland at the Colorado site is too high. Most of that becomes prime only if

irrigated. As discussed elsewhere, the likelihood of obtaining irrigation water for these lands is very small.

102 IV, 5.2.11.2p127 The Fort Morgan Municipal Airport also meets FAA requirements for operating a non-directional beacon and has an automatic runway light system.

103 IV, 5.2.11.2p128 The Northeast Colorado Transportation Association provides bus service to the counties in northeastern Colorado on an "as requested" basis. It also provides transportation services to the elderly and handicapped.

104 IV, 5.2.12p139 The two National Registry properties are outside of the area to be affected by the project.

105 IV, 5.2.12p143 Colorado has a policy for dealing with human reburials. Please insert the following sentence at the end of the 2nd paragraph of section E: "A reburial policy negotiated by the State Archaeologist and the Colorado Native American Heritage Council is in place and procedures have been implemented." See also IV, 15.1.3.2p22.

106 IV, 6.3.2.3p12 As noted elsewhere, additional aggregate resources will be permitted in response to demand.

107 IV, 8.4.2.1p24 While unmitigated construction activity may cause air pollution exceedances, permit requirements will prevent exceedances from actually occurring.

108 IV, 14.2.1.3p27 It is incorrect to conclude that levels of service on Fort Morgan roads "could decrease to unacceptable levels." This assumes that Fort Morgan and Morgan County take no steps to improve their road system despite the prospects of future growth. In fact, Fort Morgan is in the midst of a seven year road improvement plan designed to ensure that its road network will accommodate growth.

109 IV, 15.1.3.2p18 #2, 3rd paragraph, incorrect reference. Change 'Joyner (1988) to 'Pearce and Whitacre (1988)'.

110 IV, 15.1.3.2p21 #4, 4th paragraph. The location of site 5WN10 is not known exactly. The Township and Range location is known, but not the section. Since this particular Township and Range overlaps the ring, it is possible that the site is in a section which lies both inside and outside the ring. It would be more correct to say "potentially located" in place of "recorded" in the second sentence.

111 IV, 15.1.3.2p21 Table 15-4 as referenced in the text actually refers to the Illinois site. The correct refence is to Table 15-3

LETTER 1515 (CONTINUED)

112 (V, 15.1.3.2p22 6.2nd paragraph: "We feel that the Highway Access road Survey is a "systematic survey in the project area". In order to avoid any confusion, delete "in the proposed project area" and insert "on the proposed SSC footprint" in the first sentence. Then add a new sentence: "However, an archaeological sample survey of the proposed access roads, including proposed corridors linking Denver and Fort Morgan with the proposed SSC site, has been completed (Bryant 1980).

1465A

ATTACHMENT 2.

COLORADO SUPERCONDUCTING SUPER COLLIDER
PRELIMINARY MITIGATION PLAN
OCTOBER 15, 1988

SCOPE AND PURPOSE

The State of Colorado, in conjunction with federal agencies, local governments, residents and interest groups, has developed a preliminary mitigation plan for the Superconducting Super Collider (SSC). The purpose of the plan is to set forth an array of general practices and measures which the state feels will avoid or minimize impacts to the natural and human environment caused by building and operating the SSC in Colorado.

This preliminary plan anticipates a more thorough and detailed mitigation plan which will be developed in conjunction with the Supplemental Environmental Impact Statement, should it be prepared for the Colorado site. The general practices and measures presented in the plan reflect our current knowledge of the impacts attributable to the SSC based on the Draft EIS. We believe the elements of this preliminary plan will provide strong guidance to the preparation of a final plan and will remain valid components of that plan.

113 For the purposes of this plan, the SSC project includes the following components:

- Collider ring, campus, injector complex, beam abort areas, experimental halls and remote access and cooling sites;
- Tunnel spoils handling and storage;
- External access roads and internal road network;
- Electric transmission lines and substations;
- Railroad spur;
- Water pipelines, treatment plants and wastewater treatment facilities; and
- Natural gas pipelines.

Part I of this preliminary plan presents the design and management practices and the mitigating measures which will apply to construction and operation of the SSC and its ancillary development, subject to refinement based on findings of the Supplemental EIS.. Part II outlines the process Colorado will use to ensure the full coverage, effectiveness and broad acceptability of the final plan.

We present this plan as evidence that Colorado is moving ahead to build a broad consensus about the availablily of actions which will successfully avoid and mitigate SSC-related impacts. The Supplemental EIS will offer us an opportunity to move beyond the concepts presented here toward a set of specific commitments and recommendations which the Department of Energy can rely on to adequately address impact mitigation concerns within Colorado and around the nation.

PART I. PRELIMINARY MITIGATION PLAN

PROJECT DESIGN AND MANAGEMENT PRACTICES

The following siting, design, construction and operation practices are intended to avoid and reduce conflicts with the natural and human
114 environment. The State of Colorado recommends that the Department of Energy follow all practices subject to its (DOE's) jurisdiction or discretion. The state will require that these practices be followed for all activities undertaken by the state or by entities acting on behalf of the state.

115 1. Final siting of all surface features at the SSC ring and along roadway and utility alignments will avoid wetlands, prime and unique farmlands, highly erodible slopes, flood plains, stream channels, known cultural resources, natural vegetation and existing trees wherever practicable.

116 2. Tunnel spoil materials will be conveyed to suitable sites for storage and reclamation by a closed conveyance, generally covered trucks, or the materials will be stabilized prior to transport.

117 3. A detailed reclamation plan for the management of tunnel spoils will be developed and implemented to avoid adverse effects from wind blown dust, soil erosion and runoff.

118 4. The SSC domestic and industrial water supply will be designed and operated to avoid the need for new depletions from the South Platte and Colorado rivers.

119 5. A comprehensive surface water management program will be developed for the campus, injector facility and experimental areas to channel runoff to existing drainage areas and reduce surface erosion.

120 6. Construction grading will be phased and managed to minimize disruption of existing vegetative cover. Any trees in construction areas that are not to be removed will be fenced and protected.

121 7. Revegetation of all disturbed areas will be accomplished using xerophytic and native plant species to the maximum extent feasibile.

122 8. All cut and fill areas will be sloped to 2:1 or less. Temporary stabilization will occur.

123 9. All ditching will be limited to a length of a one day exposure.

124 10. All grading, ditching and cut and cover operations will require the stockpiling of topsoil and replacing it on the surface when the surface is saturated with moisture.

125 11. Grading and other surface disturbance will not take place during periods of inclement weather or when the soil is saturated.

126 12. All creek crossings will be spanned with bridges or culverts designed to pass flood flows.

127 13. Pesticide and rodenticide applications will be managed to minimize problems to fish and wildlife and to surface and ground water.

128 14. All construction waste material and debris will be collected and disposed of in an approveed facility.

129 15. All petroleum, oil and lubricants used during construction will be managed to prevent spills. All used POL products will be collected and disposed of in an approved facility.

130 16. Concrete trucks will be washed at a site and in such a mannaer that washwater will not enter drainageways or areas of natural vegetation.

MITIGATION MEASURES

CULTURAL RESOURCES

Impacts. Construction of the SSC ring, experimental halls, access roads, pipelines, transmission lines and other surface facilities may disturb historic, cultural, archaeological and paleontological resources. Indirect impacts may occur due to land use changes induced by the presence of the SSC.

Mitigation.

131 1. Execute a programmatic agreement between the DOE, SHPO, ACHP and perhaps others. Typically calls for the completion of necessary surveys and, in descending order of preference:

a. Avoidance of resources

b. Relocation of resources

c. Data recovery, analysis and curating

d. Recordation

In addition, monitoring will occur during construction to ensure compliance with the agreement and known properties will be protected from vandalism.

WATER QUALITY

Impacts. There are no perennial streams or other significant permanent surface water features in the project area. Therefore impacts to surface water quality from construction and operation of the SSC will be negligible. The shallow alluvial groundwater deposits are of mixed but generally fair quality. Surface construction, particularly of the large experimental halls will occur in these alluvial resources. Water quality of the South Platte River will not be affected.

Mitigation.

132

1. Reclamation of tunnel muck, to include a detailed siting and grading plan, revegetation and runoff control.

2. Storm water detention basins as appropriate

3. Temporary erosion controls during construction

4 Permanent erosion controls for cut and fill slopes

5. Permanent erosion controls for stream channels and drainage ways

6. Zero discharge of domestic and industrial effluent

7. See also the designated management practices for general commitments related to the protection of surface and ground water quality

WETLANDS

Impacts. Wetland resources in the project area and along access corridors are small and isolated. The most important wetlands subject ot possible project related impacts are located north of Barr Lake along the proposed expansion of Bromley Lane. Disturbance to wetlands may occur as a result of construction activities, particularly of the SSC campus and access roads where avoidance is not practical. Groundwater levels are not anticipated to change and will therefore not affect wetlands.

133

Mitigation. Wetlands will be avoided wherever practicable. Wetlands will be protected from nearby construction activity through the use of the management practices already described, including erosion control and vegetative stabilization.

Where disturbance cannot be avoided, wetlands will be replaced on at least an acre for acre basis. Acquisition of nearby farmed or grazed riparian areas and their dedication to wetlands may be a practical and effective mitigation. Any woody vegetation lost will be replaced on the lands dedicated to wetland purposes. Unavoidable impacts associated with the access road corridor in the vicinity of Barr Lake will be the subject of detailed mitigation discussions with the appropriate state and federal agencies.

Compliance with Section 404 of the federal Clean Water Act and Executive Order 11998 will ensure that these or comparable mitigating measures are undertaken in association with the SSC project.

Wetland enhancement may occur if plans to develop an SSC Village and associated multipurpose reservoir are implemented.

AIR QUALITY

Impacts. Direct impacts will occur during construction and consist of blowing dust from earth disturbance, traffic along dirt roads, and emissions from construction equipment. Air emissions from operation of the SSC facility will be negligible. Additional traffic due to construction and operation of the project, as well to growth induced by the project, will result in increased vehicular emissions.

Mitigation.

1. Phased grading program.

2. Fugitive dust control for gravel roads and disturbed areas.

3. Soil stabilization.

134 4. Revegetation of disturbed areas.

5. Stabilization and revegetation of tunnel spoils piles.

6. Emission controls on equipment.

7. Car pools, van pools and bus service will be used to the maximum extent practicable to bring construction and operation workers to the site.

In addition to these measures, all activities must comply with the requirements of the Colorado Air Quality Control Act and the federal Clean Air Act.

See also the management practices set forth above.

VEGETATION

Impacts. Natural plant communities in the project area are typically small and widely spaced. Therefore, disturbance by surface activity will largely be avoided. Riparian vegetation is further discussed above in the wetland section. Plant species of special concern are not likely to exist in the project area; however, additional survey work may be conducted to ensure the absence of such species.

135 Mitigation. Assuming that future surveys confirm that threatened, endangered and other species of special concern will not be affected by the project, no vegetation impact mitigation is necessary beyond the management practices already identified. Significant enhancement may occur as a result of the project, both at the SSC campus and along access corridors. Moreover, the possible construction of an SSC Village and associated reservoir would allow for vegetative enhancements.

WILDLIFE

Impacts. Terrestrial habitat will be lost or devalued due to surface facilities, roads and utilities associated with the project. The total acreage of surface of all temporary and permanent disturbances is approximately 1330 acres, most of which is low value habitat, ie. cultivated cropland or grazing land. No critical habitat will be lost. The few trees in the area provide nesting sites for Swainson's hawks and other raptors. Some trees which provide nesting sites for Swainson's hawks and other raptors may be lost if avoidance is not practicable. Indirect impacts associated with project-induced growth may also affect terrestrial habitat. As noted in the wetland section, small wetland and riparian areas with relatively high habitat value may be disturbed.

136 There will be virtually no loss of aquatic habitat because no perennial streams will be affected by the project, access roads or utility corridors. Similarly, no ponds or lakes will be affected, although a few small stock ponds and pools of standing water occur in the project area. There will be no direct impacts to the South Platte River or to off-channel reservoirs along the South Platte.

Mitigation.

1. Disturbance of important habitat, such as wetlands and large trees, will be avoided wherever practicable.

2. Fencing will be kept to a minimum.

3. The state will acquire and manage open space areas for wildlife purposes.

4. Public access will be provided to certain lands for the purpose of wildlife recreation.

5. Enhancement activities could include improvement of habitat in conjunction with the SSC Village and reservoir.

6. Powerlines shall be built in accordance with specifications in "Suggested Practices for Raptor Protection on Powerlines - the State of the Art in 1981" (Raptor Research Report no. 4).

SOCIOECONOMICS

137 Impacts. Local impacts include land use changes, increased traffic, acellerated demand for housing, education, public facilities and public services, and an alteration of life style for some. Increasing financial needs will be met by increasing revenues to most affected jurisdictions.

Regional impacts will be insignificant due to the ability of the front range urban corridor to absorb growth.

Mitigation. Key mitigation components will be an accepted relocation procedure, implementation of the Public Facilities and Services Program (PFSP) and establishment of a community liason office in Fort Morgan. Specific mitigation will address impacts to school districts, housing resources, traffic volumes and patterns, and local government expenditures for the full array of public services and facilities.

The state has committed to ensure that local jurisdictions do not suffer a net fiscal loss due to the SSC. Accordingly, existing grant programs and other mechanisms will be employed to direct the needed resources to affected units of local government. The SSC Financing Authority will manage additional efforts to raise funds and implement needed improvements and enhancements.

The Public Facilities and Services Program will involve the cooperative efforts of the affected local jurisdictions and the Department of Local Affairs. Implementation of the program entails six steps:

- o forecasting public facility and service demands;
- o evaluating current capacities;
- o deciding how to meet projected demand;
- o estimating public revenue generated by the SSC project;
- o adjusting public finance mechanisms, including state grant programs, to fund needed improvements;
- o managing implementation of the needed improvements; and
- o monitoring actual impacts and adjusting plans accordingly.

The PFSP will be fully operational within three months of formal selection of Colorado as the SSC site.

PART II. DEVELOPMENT STRATEGY FOR FINAL MITIGATION PLAN

In this preliminary mitigation plan, Colorado has identified general mitigation measures and management practices which offset impacts caused by construction and operation of the SSC.

138 We also propose to create a mechanism for the preparation of a final mitigation plan as part of the Supplemental Environmental Impact Statement process. The resulting set of mitigating measures and management practices will satisfy the requirements of the National Environmental Policy Act and identify specific actions which will be incorporated as conditions to project permits. Colorado has already initiated a permit management team which will consolidate permit application requirements and assist DOE obtain needed government approvals. The team will play a central role in integrating the SEIS effort with development of the detailed mitigation plan.

The State of Colorado has committed to mitigating the impacts of the SSC. In particular, the state will support practices and measures which:

- Apply to an actual impact;
- Are cost effective; and
- Have a high probability of success.

The following outline describes how Colorado will work with a broad range of jurisdictions and interests to develop a comprehensive mitigation plan in conjunction with the EIS. The objective of the process is to obtain broad support for the full range of mitigation recommendations needed to avoid or minimize impacts attributable to the SSC. The process will begin immediately after Colorado is identified as the preferred site in the final EIS.

A. Supplemental Scoping

1. Governmental Agencies

   a. Provide an outline of data needs as per the Permit Management Team Agreement.

   b. Identify possible data sources.

   c. Work with DOE's consultant to prepare an outline for predraft document.

2. Public

   a. Will be encouraged to identify issues which they feel are germane to the site specific analysis and to recommend mitigation measures.

3. Environmental Groups and Other Special Interests

   a. Inform DOE and the state of their concerns.

   b. Provide a range of options they feel are appropriate mitigation measures or solutions.

B. Supplemental Information Gathering

1. DOE contractor proceeds.

2. Permit Management Team is fully operational.

3. Establish an SSC Mitigation Task Force.

   a. Membership

      i. DOE
      ii. Permit Management team reps.
      iii. Environmental groups
      iv. Interested citizens
      v. Contractors
      vi. State SSC funding authority

b. Purpose

i. Identify appropriate mitigations and practices
ii. Negotiate final list/recommendations

4. DOE prepares final site characterization /site layout.

a. All groups review for potential opportunities and concerns

C. Mitigation Task Force Activities

1. Establish work groups to focus on specific needs.

2. Review predraft SEIS materials if allowed by DOE.

3. Solicit input from others as needed.

4. Prepare draft mitigation plan including cost estimates and responsibilities.

5. Submit draft plan to DOE for inclusion in Draft SEIS.

6. Review Draft SEIS and public comments. Evaluate other data pertinent to Permit Management Team activities.

7. Finalize mitigation plan and obtain statements of support from local, state and federal agencies, environmental groups, and other special interest organizations.

8. Submit the plan to DOE for inclusion in Final SEIS and ROD.

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ATTACHMENT 3.

COLORADO STATE AGENCIES
COMMENTS AND SUPPORTING DATA
FOR THE
SUPERCONDUCTING SUPER COLLIDER DRAFT EIS

CONTENTS

Letter from A. Ray Chamberlain, Department of Highways, 10/3/88

Memo from W.P. Stanton, Colorado Water Conservation Board, 9/23/88

Memo from Pat Rogers, Colorado Geological Survey, 9/22/88

Memo from Charlie Unseld, Division of Local Government, 9/22/88

Letter from Kathryn Dolan, Water Quality Control Division, 9/14/88

Memo from Ray Mohr, Air Pollution Control Division, 10/4/88

Memo from Ann Hodgson, Division of Wildlife, 9/12/88

Memo from Colby and Gumina, Department of Local Affairs, 10/3/88

139 Table by Susan Cannon, Colorado Geological Survey, 7/14/88

NOTE, Written comments were also submitted at the September 29, 1988 hearing by the following people representing Colorado State Government:

Governor Roy Romer
Tim Schultz, Executive Director, Depoartment of Local Affairs
Chips Barry, Executive Director, department of Natural Resources
Dr. Thomas Vernon, Executive Director, Department of Health
A. Ray Chamberlain, Executive Director, Department of Highways
Peter Decker, Commissioner, Department of Agriculture
Susan Collins, State Archaeologist
Senator Ted Strickland
Representative Don Ament
Dr. George Morgenthaler

Numerous other comments have been and will be submitted which provide additional information relative to the issues raised in this letter and its attachments.

2685A

LETTER 1515 (CONTINUED)

STATE OF COLORADO

DEPARTMENT OF HIGHWAYS

4201 East Arkansas Ave.
Denver, Colorado 80222
(303) 757-9011

October 3, 1988

The Honorable Roy Romer
Governor of Colorado
Executive Chambers
136 Capitol Building
Denver, Colorado 80203-1792

Dear Governor Romer:

The Colorado Department of Highways has reviewed the Draft Environmental Impact Statement for the Superconducting Super Collider Project. The material presented in the document fairly represented the transportation issues of the Colorado site. Some points of clarification need to be stated.

140 As committed at the February 12, 1988 Public Hearing, the Department of Highways conducted site surveys, research, and analysis of the affected environment and potential impacts. The areas of additional study included Archaeology, History, Paleontology, Wetlands, Wildlife, Ecology, Hydrology, Floodplains, Socio-Economic analysis and Traffic. The results and findings of these supplemental studies are included in the Draft Environmental Impact Statement. As these studies have shown, there will be no significant impacts associated with the roadway construction. The Department of Highways will employ all measures necessary to mitigate all impacts resulting from the construction. These studies will also be used as a baseline allowing final placement of the roadway alignment and as a guide in the development of projects which will avoid and/or minimize impacts.

Wetlands are identified as present within the proposed highway corridor. The potential wetland impacts identified are considered minimal; however, we are certain that the impacts can be reduced substantially further. In particular, the surveys point out that the southwest parkway crosses a quality wetland north of Barr Lake. Adjustment of the alignment along with appropriate design techniques will minimize impacts to the wetland complex.

141 We are exploring methods and have identified an alternative which may avoid wetland impacts at the Barr Lake location. While avoidance is the preferred wetland mitigation, the Department has had success with wetland creation and enhancement. Other measures to create, enhance or preserve existing wetlands will be employed should total avoidance not be possible.

142 Prior to conducting the on-site environmental surveys, it was necessary to obtain permission to trespass from the property owners along the proposed east\west parkway corridor. A mailing was sent to each property owner notifying them of the proposed SSC Project, the proposed access roads, the fact that their property was identified as falling within the highway corridor and that it was necessary to get permission for environmental specialists to cross their land to survey their property. Following this, agents of the Department of Highways were sent out to make personal contact with the landowners to further explain the project and to obtain written permission to trespass. These contacts did not elicit any significant opposition to the SSC Project or the proposed highway construction. While it is always the case that, no one wants a highway project to take their property, concerns about environment, social and economic impacts were not received through this process.

143 As stated in the Draft Environmental Impact Statement, approximately 94 miles of new roadway and approximately 91 miles of improvements to existing roadways, will need to be constructed. It is our considered opinion that since all of these new miles of roadway are to be two lane facilities initially, they will not spark new uncontrolled or unwanted development. All roadways will be planned and constructed with the cooperation of the local entities and their planning agencies. Measures to plan new access and to maintain existing access will proceed with full consideration of the local needs for transportation and their agricultural activity.

144 Included in the previous submittals by the Colorado Department of Highways is an estimate that thirteen relocations (consisting of one business and twelve residences) may be required for the construction of the major access roads. It should be stated that this is a worst case estimate which may be reduced by adjustment of the alignments. However, replacement housing is available on the west end of the east/west parkway where most of the relocations will be necessary. In the outlying areas, if relocations are necessary, options, such as, relocating or reconstructing the residences nearby on the same owner's property, will be considered.

145 Further, it must be stated that construction of the new roadway does not constitute the addition of limited value roadways. In particular, the east/west parkway may be useful as a more direct high quality route linking the local remote farming operations with market, storage and distribution centers.

225-775 88 - 2 (BOOK 10)

146 Descriptions of the other Best Qualified List of States roadway needs and projected impacts seem to be highly optimistic. For example, most of the states plan to site the SSC Ring in close proximity to major urban centers, projecting minor or no deterioration or impact on existing traffic volume service levels. One state, in particular, indicates that only 31 miles approximately of new or improved roadway will be necessary to support the SSC facility at their location, projecting a high level of service in the year 2000. However, they also disclose that a recent Transportation Plan of the area indicates the need for approximately 2000 additional lane miles of highway and\or freeway by the year 2000.

147 Most states seem to be confident that only small numbers of existing roadways will need improvement, due to the presence of a large existing roadway network. However, it is questionable to imagine that existing local roads are either structurally or geometrically suited to the loads to be imposed by heavy equipment and transport of tunnel materials and magnets for the lining of the ring.

Attached are copies of pages in the DEIS which are marked to reflect necessary minor changes.

148 The discussion in Volume I - Page 5.2-1 seems to overemphasize the lack of aggregates in the Colorado Area. It is our judgement that there are adequate quantities of aggregates available within the state and region to meet the needs of the construction of the SSC facility and the roadway system.

149 The Department of Highways has a continuing commitment to provide its expertise and technical resources to the planning and construction of the necessary Roadway Network. The Department of Highways is certain that the roadway planning and construction can be completed with sensitivity to the local communities and with adequate care to protect the environment.

Sincerely,

A. RAY CHAMBERLAIN
Executive Director

5.2.9.5 Threatened and Endangered Species

A. Federally Listed, Proposed, or Candidate Species

1. Plants

There are no federally protected plant species in the Colorado ROI. There are two federal candidate plant species that may be present in the ROI. These are streaked ragweed (Ambrosia linearis), a USFWS neomexicana Category 2 species, and Colorado butterfly plant (Guara neomexicana ssp. coloradoensis), a USFWS Category 1 species.

Showy prairie gentian (Eustoma grandflorum) is rare in Colorado as a whole and may find suitable sites within the ROI. No surveys of these species are available within the ROI.

2. Wildlife

Federally, listed threatened and endangered species in the general vicinity are migratory and typically associated with the wetlands and reservoir/riverine areas north and west of the site (Opdycke, HSFS 1988). These species include:

- o Piping plover, Charadrius melodus (threatened)
- o Whooping crane, Grus americana (endangered)
- o Bald eagle, Haliaeetus leucocephalus (endangered)
- o Peregrine falcon, Falco peregrinus (endangered)
- o Least tern, Sterna antillarum (endangered).

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The black-footed ferret (Mustela nigripes), which is endangered is associated with larger prairie dog towns. While prairie dog towns are present throughout the ROI, there are no data on the proximity and size of the towns or on the presence or absence of the black-footed ferret.

The greater prairie chicken (Tympanuchus pallidicinctus) is monitored in the CRP northwest of the site; however, there is no evidence that it is present at the site.

3. Bald and Golden Eagles

The DOW has been collecting data for mid-winter counts of bald eagles since 19[illegible] in the northeast region of the state. The areas surveyed are the r[illegible]rs, South Platte River, and selected tributaries in the area nor[illegible] Denver to the state lines. Table 5.2.9-10 summarizes the m[illegible]ts for the region, 1980 to 1988, compared to the state

4. Other Federally Protected Species

The following species are federal candidate species and may be present in the area:

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- o Swift fox, Vulpes velox
- o Preble's jumping mouse, Zapus hudsonius preblei
- o Ferruginous hawk, Buteo regalis
- o Swainson's hawk, Buteo swainsoni
- o Long-billed curlew, Numenius americanus
- o Western snowy plover, Charadrius alexandrinus nivosus
- o Mountain plover, Charadrius montanus
- o Streaked ragweed, Ambrosia linearis
- o Colorado butterfly plant, Gaura neomexicana sp. coloradensis.

B. State-Protected Species

The State of Colorado does not list plants as endangered or threatened. The only state-protected species is the Colorado (blue) columbine, the state flower, which is found in the Rocky Mountains and is absent in the prairie areas.

State-listed wildlife includes five species, all with endangered status. The two species known to have overlapping ranges with portions of the ROI include:

this is genus for prairie chicken should be Pedioecetes

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- o Bald eagle, Haliaeetus leucocephalus
- o Plains sharp-tailed grouse, Tympanuchus phasianellus jamesi.

The three other listed species may, from time to time, be sited in the ROI but are largely found in adjacent areas, especially the reservoir and South Platte River and tributaries. These are:

- o Peregrine falcon, Falco peregrinus
- o Sandhill crane, Grus candensis
- o Whooping crane, Grus americana.

5.2.9.6 Unique Ecosystems and Communities Potentially Affected

A. Statutorily Protected Areas

There are no protected areas in the immediate site area. The Pawnee National Grasslands, Jackson Lake, and Barr Lake State Recreation areas are to the north and northwest of the site within the general ROI.

B. Remnant Communities, Virgin Stands, or Unique Areas

There are no communities and associations in the ROI that are remnant, virgin, or unique.

Paleontology corrections

15.2.3.2 Colorado

A. Resource Evaluation and Impact Assessment

1. Scientific Basis

For a description and discussion of the geological stratigraphy in the proposed Colorado SSC site, reference should be made to Appendix 5 and Appendix 6.

The surface geology within the proposed project area primarily consists of late Pleistocene and Holocene eolian and alluvial deposits (Bryant et al. 1981; Scott 1978; Sharps 1980; Trimble and Machette 1979).. In addition, there are smaller amounts of Cretaceous marine shales, terrestrial sands, and early Tertiary terrestrial deposits.

There are several identified Quaternary units. From oldest to youngest these are Slocum Alluvium, Louviers Alluvium, Peoria Loess, Broadway Alluvium, and late Pleistocene aeolian sand (Hunt 1954; Scott 1962; Indeck 1988), as well as other unnamed and Holocene deposits within and surrounding the proposed project area.

Based on the presence of bison in the Slocum Alluvium, these deposits are probably no older than 500,000 years in age. The Slocum Alluvium, Louviers Alluvium, and Broadway Alluvium have produced large mammal fauna from the Denver area (Hunt 1954; Scott 1962, 1963), including mammoth, camel, extinct horse, buffalo, and small ground mammals. The Peoria Loess in Yuma County has produced fossil remains, including giant ground sloth, peccary, camel, horse, and badger, as well as other small mammals (Graham 1981). Holocene deposits, such as the Piney Creek Alluvium, have also produced faunal material in archaeological contexts. In addition, petrified wood and isolated bone fragments were recovered from stream deposits near the project area, but their contexts were such that they could have been transported from their original province (Indeck 1988).

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The Cretaceous Pierre Shale in the project area is composed of two primary units, as described in Appendix 5. According to Sharps (1980), U.S.G.S. Mesozoic invertebrate fossil locality No. 15874 is located nearby in the Pierre Shale in Section 7, T1S, R57W, on a tributary drainage to Badger Creek. This was inspected during a paleontological reconnaissance for proposed SSC-related roads (Indeck 1988), but additional fossils were not located. Fossils such as Sphenodiscus and Baculites clinolobatus are diagnostic of the Upper Transition Member of the Pierre Shale in northeastern Colorado (Scott 1978).

No flora is known to my knowledge.

The Pierre Shale fauna and flora are well known; scientifically important fossils have been found in northeastern and east-central Colorado. The University of Colorado Museum has recovered fish and marine reptile remains; part of a mosasaur was recovered from near Flagler, south of the

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study area (Lee 1897). Core samples taken recently from five areas in the vicinity of the proposed SSC site revealed (traces of) upper Cretaceous trace fossils, including gastropods, brachiopods, pelecypods, and ammonites (Kauffman and Batt 1987).

"Trace fossils" are worm burrows, animal tracks, etc. Core samples most likely would bring up small fragments of body fossils like gastropods, etc.

157

155 Late Cretaceous Fox Hills Sandstone is not present in the area of the collider ring but is discontinuous nearby and potentially affected by SSC-related access road construction (Indeck 1988). According to Sharps (1980), U.S.G.S. Mesozoic invertebrate fossil locality No. 15866, is near the proposed project area in the Fox Hills on a tributary drainage to Badger Creek. The area was inspected during the paleontological reconnaissance for the proposed access roads (Indeck 1988), and no additional fossils were located.

156 Fossil plants, invertebrates (marine mollusks), fish scales and vertebrae, sharks' teeth, and an insect have been identified in the Fox Hills Sandstone in eastern Colorado. Ophiomorpha is present differentiating it from the overlying Laramie Formation (Scott 1978). The type locality for a fossil leaf-hopper Mesojassoides gigantea is south of the study corridor (Oman 1937).

The late Cretaceous Laramie Formation and the Denver Formation (Late Cretaceous to Paleocene) also occur only in limited areas across the area of the proposed access roads (Indeck 1988). Fish, amphibians, reptiles, mammals, and dinosaurs have been recovered from the Laramie Formation in Weld County (Carpenter 1979) as well as plant and invertebrate fossils. The Denver Formation in the Denver area has produced late Cretaceous leaves and dinosaur bones and early Paleocene leaves and mammal, reptile, and amphibian bones and teeth (Brown 1962; Middleton 1983).

2. Known Paleontological Localities

According to Sharps (1980), two localities occur in areas potentially affected by road construction. U.S.G.S. Invertebrate Fossil Locality No. 15874 is located in the nearby Pierre Shale in Section 7, T1S, R57W, on a tributary drainage to Badger Creek. U.S.G.S. Mesozoic invertebrate fossil locality No. 15888 is near the proposed project area in the Fox Hills, on a tributary drainage to Badger Creek.

158

A series of five cores that were drilled at the Last Chance Drilling site near the proposed project area (Kauffman and Batt 1987) produced traces of upper Cretaceous trace fossils, including gastropods, brachiopods (i.e., Lingula), pelecypods, and ammonites (i.e., Baculites). No other known fossil localities are located in the proposed SSC collider ring.

3. Discussion

Stratigraphic levels that potentially contain fossil materials include the recent alluvium, eolian sands, and the Peoria loess. The Upper Cretaceous Pierre shales may also be fossiliferous. Outside the area of

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Accuracy / correction.

diverged from the Oregon Trail, the major route to Fort Laramie established by Fremont and others, and was heavily used by immigrants and gold seekers heading west. Portions of the trail and the Fort Morgan cut-off are close to the SSC project area (Mehls 1984).

The region was given impetus to develop a cattle industry between 1840 and 1870 because of the huge surplus of cattle in Texas at that time. Herds were driven along the Texas Trail, north to Kit Carson, across the SSC project area to Brush, and then north eventually to Montana.

The Fort Morgan Canal, completed in 1884 by homesteaders who worked on the canal in exchange for water rights, was instrumental in the settlement of Fort Morgan. Other irrigation companies and districts built a large network of ditches and reservoirs.

Homesteading began in 1862 with passage of the Homestead Act. Eastern Colorado remained the domain of the cattle ranchers until around 1870 when agricultural colonies based on communal irrigation development were established (Mehls 1984). This was followed closely by an increase in homesteading in more marginal areas, where dryland farming techniques were utilized. This technique of farming the drier plains continued through the 1930s and is still used today in eastern Colorado.

2. Discussion

Thirty-eight cultural resource properties are currently recorded within the project vicinity, referred to as the region of influence (ROI) (State of Colorado 1987). These sites are listed on Table 15-3.

One of the properties, the Fort Morgan Post Office, is listed on the National Register (Colorado Historical Society 1987); the remainder have not been evaluated for National Register eligibility. The 38 known properties include 22 prehistoric archaeological sites, three historic archaeological sites, nine sites with historic standing structures, three historic cemeteries, and an archaeological site with both prehistoric and historic components.

163 Within the proposed SSC site, ~~Joyner~~ Pearce and Whitacre (1988) has identified several irrigation canals and ditches constructed in the late 1800s and early 1900s that are potential National Register sites. These sites, which are located close to the proposed SSC footprint, fit the RP3 Plains Context of Early High Plains Irrigation and Farming to 1900 and the Engineering Water Irrigation Context. Other similar sites may occur within the SSC project area.

It is anticipated that future project-related archaeological and historical surveys may locate additional archaeological sites within the project area. Prehistoric sites within the proposed project area are particularly likely along drainages such as Badger, Beaver, and Bijou creeks. Additional archaeological sites containing burials may be located.

An archaeological survey of the proposed new airport site in western Adams County (Burney 1987) recorded two lithic scatters and 27 isolated finds. This study includes a description of a local resident's artifact collection which consists of Paleo-Indian to recent prehistoric materials from western Adams County.

The most likely sites to be located in the proposed SSC project area are open lithic scatters with earlier sites associated more frequently with drainage systems. Sites are most likely to date from Late Archaic to Late Prehistoric times (Joyner 1988).

164 Joyner (1987) surveyed portions of ~~a~~ the proposed ~~SSC access~~ E-470 roadway within areas of Adams and Arapahoe Counties which are environmentally similar to the SSC study area. One prehistoric site and ten isolated finds were recorded. Activities such as farming, ranching, nonprofessional collecting of artifacts, energy development, and transportation have substantially impacted many cultural resources (Joyner 1988).

165 The previously recorded prehistoric sites within the proposed project area include open lithic sites and open campsites dating from the Paleo-Indian through the historic period; two prehistoric sites include human burials (Table 15-3). Only one previously recorded prehistoric archaeological site, WN-10, is recorded within the proposed ~~the~~ collider ring. This is a campsite containing hearths, ground stone tools, projectile points, and pottery, however, its exact location is not recorded.

An archaeological survey of proposed access roads to the proposed SSC site (Joyner 1988) involved inspection of approximately 20% of two linear alignments, a 63-mi-long by 1,000-ft-wide east-west corridor in Adams County, and a 18.5-mi-long by 60-ft-wide north-south corridor in Morgan County. Seven prehistoric sites and ten isolated prehistoric finds were identified in potentially affected areas. Six of the sites are open lithic scatters; the other is an open lithic/ceramic scatter. Two of the sites (AM504 and MR478) could be significant and would require further evaluation; the other sites are considered ineligible for inclusion on the National Register. MR478 dates between approximately A.D. 1550 and 1750. The other sites could not be temporally placed.

5. Historic Sites

The three recorded historic archaeological sites within the proposed project area include structural foundations, scatters of historical debris, and a historic trail (Table 15-4).

A complete historic building survey has not been conducted; however, local residents and amateur archaeologists report the existence of several historic sites in the project area (State of Colorado 1988). Although these sites are reported to be of local significance they have not been evaluated using National Register criteria. Within the proposed SSC ring, six potentially significant historic sites were identified including two cemeteries, three schools, and an area referred to

STATE OF COLORADO

COLORADO WATER CONSERVATION BOARD
Department of Natural Resources
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Roy Romer
Governor
J. William McDonald
Director
David W. Walker
Deputy Director

MEMORANDUM

TO: Steve Norris, Joint Review Process

FROM: William P. Stanton WPS

DATE: September 23, 1988

SUBJECT: Preliminary Comments - Floodplains

Persuant to your request, my comments regarding floodplain issues in the Draft Environmental Impact Statement (DEIS) for the Superconducting Super Collider (SSC) are listed below:

DEIS 4.2.1.1 - Runoff and Flooding

166 Last paragraph - The idea that the existence of "flood insurance mapping" is an indicator of the significance of flooding is false. Some cities and counties do not even participate in the NFIP. FEMA insurance maps account for only about 1/3 of floodplain mapping in Colorado. However, this notion was applied equally to all sites.

167 Table 4.2 and last paragraph - There is a FEMA approximate flood hazard boundary map (FHBM) published for Morgan County. Preliminary Flood Insurance Rate Maps (FIRM's) have also been prepared (7/2/88) for Morgan County which will include approximate floodplains for Beaver Creek, Buck Creek and Shears Draw. However, these maps are still preliminary. Therefore, the statement in the last paragraph that there is no FEMA map for the site in Colorado is technically incorrect.

168 Table 4.2 and 4th paragraph - The "10,000 foot wide floodplain" in Colorado was measured across two converging floodplains at the confluence of Beaver Creek and Buck Creek. At that location, the maximum width of the floodplain is more on the order of 6,500 feet for Beaver Creek and 3,500 feet for Buck Creek. Also, our mapping was conservative (i.e. probably shows a flood larger than the 100-year flood).

DEIS 5.1.2.1 - Runoff and Erosion Impacts

169 Both the Colorado and Arizona sites are singled out as having an impact from drainage diversions. Perhaps only these sites have the potential for open cuts during construction or we are the only states that addressed the problem.

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5.1.2.2 - Floodplain Impacts

170 Paragraph 7 - Contrary to the text, the Arizona site is in a floodplain. There are no FEMA insurance maps because there are no people living near the site. The statement that no maps means "insignificant" flooding is false. Arizona called it "sheet flows" and got off clean as a whistle! Give me a topo map and I will show them where the floodplains are.

171 Paragraph 8 - The first sentence is not true for Morgan County. As previously described, Badger Creek is shown on a FHBM. The existence or non-existance of a map has nothing to do with potential for flooding. As you are aware, the CWCB also did a floodplain assessment which was apparently not included in DEIS.

172 Paragraph 11 - I have not verified the floodplain widths. However, since the criteria for a major impact is 25 percent or more of the floodplain width, as stated in paragraph 6, all three of these locations impact the floodplain and require mitigation. We have known this all along.

173 Paragraph 12 - It is interesting to note that the narrative for Illinois and Texas included 4 detailed maps of floodplains at certain collider features. Illinois' problem at J6 (Kess Creek) appear to be similar to our problems at K3 (Antelope Creek) and K6 (Sand and Vega Creeks).

DEIS Volume IV, Appendix 5

5.2.2 - Water Resources

5.2.2.1 A. - Surface Runoff and Flooding

174 Paragraph 2 - The floodplain width on table 5.2.2.1 is unfairly stated since this is where two floodplains come together. The table also shows maximum, not average, floodplain widths which would give a better idea.

175 Paragraph 5 - Flooding on the South Platte River has nothing to do with the ring site. The runoff season and flood sources (rain, snow, and rain on snow) on the South Platte is not the same as for Beaver or Badger Creeks. Why discuss it?

176 Table 5.2.2-2 - The table does not include any streams that effect the ring so why have it?

177 Paragraph 10 - The CWCB did not field check any sites other than at K6, the confluence of Sand and Vega Creeks. The CWCB floodplain map was not included in DEIS.

178 Table 5.2-2-1 - The estimated flood depths appear consistent with our analysis. The flood width for Beaver Creek also includes the Buck Creek floodplain at its widest point.

DEIS Volume IV, Appendix 5

5.2.9 - Ecological Resources

Figure 5.2.9-1 - Drainage Basin Map

179 This map incorrectly shows the location of stream channels and does not show the divide between these basins.

Figure 5.2.9-3 - Wetlands in the Immediate Vicinity

180 This map shows the 100-year floodplains prepared by URS, not by the CWCB, and it is missing a piece of Beaver Creek. Are we the only state to show floodplains on our wetlands map?

/bj

LETTER 1515 (CONTINUED)

STATE OF COLORADO

ROY R. ROMER
GOVERNOR

JOHN W. ROLD
DIRECTOR

COLORADO GEOLOGICAL SURVEY
DEPARTMENT OF NATURAL RESOURCES
715 STATE CENTENNIAL BUILDING — 1313 SHERMAN STREET
DENVER, COLORADO 80203 PHONE (303) 866-2611

MEMORANDUM

TO: Steve Norris, JRP

FROM: Pat Rogers, CGS

DATE: September 27, 1988

SUBJECT: ADEQUACY OF SSC AGGREGATE RESOURCES

181 1) There is abundant fine aggregate (sand) meeting specifications for Portland Cement Concrete (PCC) in the immediate Ft. Morgan area. This would constitute approximately 40% of the concrete aggregate needs of the SSC project.

182 2) PCC quality coarse aggregate needs for the project can be supplied from permitted and operating gravel operations at Greeley or from the South Platte valley, Adams County in the NE Denver Metropolitan area. These producing areas are 55 and 75 miles respectively from Ft. Morgan and both are served by railroad that could ship via unit trains to Ft. Morgan.

183 3) Any project needs for high quality, low sodium limestone aggregates can be supplied from operating and permitted quarries west of Ft. Collins or from Colorado Springs. (One hundred miles and 140 miles respectively.)

184 4) Less stringent project needs for aggregates for Asphaltic Concrete roadbase, etc. can be met by local suppliers in the Ft. Morgan area.

185 5) In the unlikely case that several of the major proposed projects of the Colorado Front Range area would have simultaneous demands, Colorado Aggregate producers could put additional production equipment on line with very short lead time. If additional permitted reserves are needed for the SSC project, they could be fast-tracked and brought into production in 6 to 12 months through the JRP.

186 6) To meet any need for additional permitted reserves of coarse aggregate, there are immense resources available in the Cache La Pondre valley between Greeley and Ft. Collins. This area is served by excellent highway and rail services direct to the Ft. Morgan area. Average haulage distance would be about 70 miles for these sources.

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STORY OF THE PAST. . KEY TO THE FUTURE

Steve Norris
Page two
September 27, 1988

187 In summary, we believe that Colorado's available permitted aggregate supply within the region is very adequate for the SSC and other forseeable project needs. As actual demands emerge, additional permitted reserves can and will be added from the very large available resource base of the region. As such, aggregate supply for the SSC project from within the region is very adequate and could be met without excessive cost impacts.

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LETTER 1515 (CONTINUED)

STATE OF COLORADO

Department of Local Affairs

Roy Romer
Governor

DIVISION OF LOCAL GOVERNMENT

To: Steve Norris

From: Charlie Unseld CTU

Date: September 22, 1988

Re: Land Use Impacts - SSC DEIS

188 At first glance, the land use impacts appear to put Colorado at a comparative disadvantage relative to other sites. Table 3.7 characterized Colorado's land use impact as "conversion of agricultural production lands." Except for Arizona ("conversion of Wilderness Study Areas") all other states' impacts are described as "minor local changes from existing." This seeming comparative disadvantage is contradicted elsewhere, however, for example, P. 4-69 "The Colorado, Michigan, North Carolina, Tennessee, and Texas sites are still largely agrarian." P. 4-7 "Of the seven sites, only Illinois presents a situation where growth is triggering .... major changes from one category of land use to a new higher development classification. The remaining six sites do not portray this kind of future growth." P.5.1.7-1 "... it appears that despite obvious variations in regional settings, there is a high degree of congruence among the seven sites in terms of types of land use changes anticipated by the SSC project development." This seeming internal inconsistency should be corrected, by revising the characterization of the Colorado site in Table 3-7.

189 In any case, the impact -- primarily that of converting agricultural land to other uses -- is of minor consequence. For permanently removed farmlands (all sites), "None of these acreages is as much as 0.1 percent of the total prime farmlands inventory of the seven regions" (P. 5.1.7-5). Further, "The incremental increase in loss of prime and important farmland is small and below the average lost per year by other development annually" (P. 5.2.-8). (Additionally "Half of the impacted prime farmlands in Colorado are due to the 58 mi two lane highway connecting the site to Denver", P. 5.1. 7-5)

190 Even if Colorado's land use change impact is viewed as more significant than that of other states, it is not necessary nor is it wise to assume that this change is a negative impact. Colorado should turn a potential drawback to an advantage, by promoting such change as positive and welcome. State economic development policies stress diversifying the economy, and lessening dependence on resource-based or agricultural industries.

1313 Sherman Street, Room 520, Denver, Colorado 80203 (303) 866-2156

191 The SSC helps accomplish this goal. This goal is supported by county governments as well as the State. Loss of prime agricultural lands is an issue of concern in the urbanized, sprawling Front Range, but not in Washington, Morgan, or eastern Adams County.

192 A related issue concerns growth management. P. 5.1.7-4 identifies Arizona and Colorado as having a "lack of ... a network of settlements to serve as hodes for commercial growth." P. 5.2-6 states that the "SSC project development would likely be the most significant source of growth in the Northeastern Colorado region even if the Pawnee Generating Station, Unit II is constructed ..... Land use patterns are expected to change dramatically and would challenge the regional and local planning agencies as they manage growth. Nevertheless, there is considerable local professional planning experience in managing rapid growth generated by large-scale projects." We need to take care to minimize the attention paid to boom-town impacts, and emphasize local and state desire for and ability to manage such growth.

STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH
4210 East 11th Avenue
Denver, Colorado 80220
Phone (303) 320-8333

Roy Romer
Governor

Thomas M. Vernon, M.D.
Executive Director

September 14, 1988

Mr. Steve Norris
Colorado Joint Review Project
Department of Natural Resources
1313 Sherman Street, Room 718
Denver, CO 80203

RE: Superconducting Super Collider
Draft Environmental Impact Statement Comments

Dear Mr. Norris:

The following are my comments on the water quality portions of the above-
193 referenced EIS. Overall, it appears to give an accurate description of the potential water quality impacts of the SSC in Colorado, with only a few minor changes needed.

Volume 1

194 1) Section 4.2.1.1 - Paragraph three, on local watersheds, mentions the other six sites, but does not cover Colorado.

2) Table 4-2 - Under Water Quality, Arizona is listed as not having any surface water quality data from the immediate vicinity. This is also the case for Colorado; however, data from a station on the South
195 Platte River, many miles away, is used instead. This is not an accurate reflection of water quality in the immediate vicinity, does not contribute to an assessment of the baseline conditions at the site, and should therefore be deleted.

Volume 4

3) Section 5.2.2.1(A) - The last paragraph on page 19 states that runoff records are not available for Beaver and Badger Creeks (which are on the site) but are available for Kiowa Creek, west of the project.
196 This data is useful only if the drainage area for Kiowa Creek is compared to the the drainage areas for the other two creeks, so that some rough estimate of their flows can be made. Otherwise, this information should be deleted.

4) Table 5.2.2-2 - This information (flow data from the South Platte,
197 etc.) appears to be of dubious value, given that a flood of the South Platte would probably not impact the site, and similar data is not available for the site.

198 5) Section 5.2.2.1(B) - The first paragraph on page 22 contains two small errors: the South Platte River is classified for secondary recreational use, not just boating; and the standards for these sources have been adopted, not adapted. Also, the phrase "Waters of the South Platte River and its tributaries" should be expanded to make clear that the stream segments which cross the site are included in this classification.

199 6) Table 5.2.2-3 - This water quality data is irrelevant to the site; not only is it for the South Platte (see comment #2, above) but it is for a station near Kersey, which is at least 50 miles upstream of the South Platte segment nearest the site. The list of parameters chosen is also odd; for example, why is turbidity included when there is neither data nor a limit? And there are standards for some of the parameters, but they are not listed (such as pH, which has a stream standard of 6.5 - 9.0 s.u., or fecal coliform, which has a stream standard of 2000 org/100 ml).

200 7) Section 7.1.3.2(F)1 - The first paragraph on page 28 states that discharge from a treatment plant on site to state waters is possible. This is inconsistent with Section 7.2.3.2.B.2. (third paragraph, page 106), which states that the new treatment facility would discharge to finishing lagoons, with ultimate disposal by application on irrigable land.

This paragraph also states that, in effect, the quality of any discharge from a treatment plant on site would be as good as or better than the stream quality. Therefore, the paragraph which follows it should be amended to add that a positive impact to surface water quality is also a possibility.

201 8) Section 7.1.3.2(F)2 - This states that Colorado has not made any specific proposal for the disposal of industrial wastewater. This conflicts with Section 7.2.3.2(B)2 (third and fifth paragraphs, page 106), which states that industrial wastewater would be treated at the proposed new treatment plant, would not discharge to surface waters, and would have a negligible impact on groundwater. The first statement is also repeated in Section 10.3.3.3(B)1, with a centralized evaporation pond proposed in the following paragraph. It is not clear whether this suggestion is from DOE or Colorado, or how it fits in with the on-site treatment plant.

202 9) Section 10.3.3.1(B)1 - The second paragraph in this section (page 4) states that, for the far cluster area and other areas separate from the main campus, Colorado has not proposed a plan for treatment and disposal of sewage. This is directly contradicted by the next sentence, which states that Colorado has proposed septic tanks and

9) leach fields. Septic tanks combined with leach fields are considered treatment, and are a fully adequate means of disposal of sewage; thus the first sentence is misleading. This error is repeated in Table 10.3.3-2.

I appreciate the opportunity to review the EIS, and hope that my comments are useful. If you have any questions, please give me a call at 331-4596.

Sincerely,

Kathryn Dolan
Engineering Technician
Permits and Enforcement Section
WATER QUALITY CONTROL DIVISION

xc: Tom Looby, Office of Health and Environmental Protection, CDH
Cary Broetzman, Office of Health and Environmental Protection, CDH

Colorado Department of Health
Air Pollution Control Division
INTER-OFFICE COMMUNICATION

TO: Steve Norris, JRP

FROM: Ray Mohr, APCD

DATE: October 4, 1988

SUBJECT: Additional Comments on Draft EIS on Superconducting Supercollider

---

My September 12 memo to you indicated there were two issues we identified in our initial review of the draft EIS. These were the lack of an analysis of any secondary impacts associated with construction of the Superconducting Collider (SSC) and the violation of ambient air quality standards for PM_{10} and Total Suspended Particulate (TSP). The following comments apply to these two areas.

203

Air Quality Impacts Identified as Part of Actual SSC Construction

The report notes (Table 4-6) the primary ambient particulate standard is 260ug/m^3 (24-hour average), however, it does not address the secondary standard of 150 ug/m^3. Colorado regulations require the Division to protect any ambient air quality standard. Consequently, the secondary standard should be noted as being more stringent.

The modeled impact of the site development/construction activities indicate that the particulate matter ambient levels will exceed the standards by a factor of three or more. The report then states (Volume IV, Appendix 8, Page 12 second paragraph) that "none of the affected States' regulations require construction emissions to be analyzed, primarily because of their temporary nature." This statement is not true. Colorado does review site development/construction activities to ensure that ambient standards will be met. Only projects by less than 25 acres in area and which take less than six months to complete are exempt from review.

204

Due to the high impact levels a more thorough review should be made of the particulate emission mitigation measures and the associated location by construction activities to determine if the modeled impacts are correct. The Division permits numerous site preparation projects annually and they are not usually a problem.

An Approach to Assessing the Air Quality Impacts from Secondary Development

The Colorado Department of Highways and the Colorado Department of Health have developed a consultation process with regard to identifying the air quality impacts from proposed highway projects. The process is basically a meeting and review of the project by both parties to identify critical factors that would need to be considered or analyzed during the environmental impact statement development process. Although there are numerous criteria that a proposed project could be evaluated against the major area relates to delaying the attainment of air quality standards or creating new violations where none existed before. The second major criteria relates to the incorporation into the project modifications in design to mitigate any identified impact.

205

Memo to Steve Norris
October 4, 1988
Page Two

In the case of the SSC, the Colorado Department of Highways did conduct a corridor analysis for the project. However, that report does not address air quality impacts adequately either. The report concludes without adequate technical basis there will be no impacts on air quality from transportation related projects to the SSC. An adequate assessment of secondary impacts should begin with the identification of transportation assumptions used for the traffic data presented in this report. Air quality modeling could then be conducted on the critical areas or sites in the corridor if necessary. The DOE should either utilize an analysis approach of this type for the final EIS for all areas or perform the analysis in a supplemental DEIS for the selected site.

Other Comments

The following comments were developed by Division staff and were not included in the initial September 12 memo to you.

206 1. On-site monitoring to determine actual PM_{10} background may be necessary for permitting purposes. Colorado default background values for PM_{10} may be conservative and create permitting problems.

207 2. Table 4-6, comparison of Air Quality data for site alternatives, leaves off the (former) secondary NAAQS for TSP is significant, as it is still on the books as a state standard, and the background is high. These same comments apply for Table 8-17.

208 3. In Section 5.1.3 the report states that, "other conventional air pollutants, such as ozone, would not be directly emitted." Ozone is never directly emitted by sources. For evaluating potential ozone impacts, they should be looking at VOC emissions.

209 4. The TSP background is from the State site at Brush, rather than the Pawnee site, as stated in the report. The background number is in about the right range for a worst-case analysis. For the rural parts of the Supercollider ring, background would be lower.

210 7. Section 8.2.1.1A states that none of the seven states have standards more stringent than the federal ones. Since the federal TSP standard has been abolished, but Colorado retains a secondary TSP standard, this is not true for Colorado.

cc: Brad Beckham
John Leary
Tom Looby
Program Managers
Jim Geier
Alan Dresser
George Gerstle
Nancy Chick

LETTER 1515 (CONTINUED)

STATE OF COLORADO
Roy Romer, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
AN EQUAL OPPORTUNITY EMPLOYER
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192

REFER TO

To: Mike McHugh, Deprtment of Natural Resources

From: Ann Hodgson, Division of Wildlife

Subject: Stress in Bighorn Sheep Ref. the SSC DEIS, Section 4.7.5.1 Arizona.

Date: 12 September 1988

The SSC DEIS appears to make a number of assumptions regarding how harmful the construction and/or operation of the SSC could be on various wildlife populations. The DEIS text has a tendency to portray all fish and wildlife impacts as minimal, which may not be a defensible conclusion. Unfortunately, even in the appendices, all pertinent information may not be revealed. One suggested conclusion which may be questionable is that desert bighorn sheep in the Maricopa Mountains of Arizona should not be affected by the SSC. We briefly reviewed the literature regarding (desert) bighorn sheep. We suggest that human-mediated disturbance, in fact, probably exacerbates stress in bighorn sheep (DeForge 1981, Miller and Smith 1985, Bailey 1986).
211 Human-mediated stress coupled with other environmental stressors such as reduced availability of water or forage, or increased density, etc. may predispose the animals to periodic pneumonia epizootics (Colorado Division of Wildlife 1987; Spraker, Hibler, Schoonveld and Adney 1984). Thus, a conclusion that increased stressors affecting a desert bighorn sheep population will not mediate subacute to chronic bronchopneumonia leading to mortality is extremely speculative.

Literature cited:

Bailey, J.A. 1986. The increase and dieoff of Waterton Canyon bighorn sheep: Biology, Management and Dismanagement. Proc. Fifth Biern. Symp. North Amer. Wild Sheep and Goat Council: 325-340.

SEP 19 1988
DEPARTMENT OF NATURAL RESOURCES

DEPARTMENT OF NATURAL RESOURCES, Hamlet J. Barry, Executive Director
WILDLIFE COMMISSION, George VanDenBerg, Chairman • Robert L. Freidenberger, Vice Chairman • William R. Hegberg, Secretary
Eldon W. Cooper, Member • Rebecca L. Frank, Member • Dennis Luttrell, Member • Gene B. Peterson, Member • Larry M. Wright, Member

Colorado Division of Wildlife. 1987. Mountain Sheep Investigations: Experiments on identifying and managing stress in mountain sheep. Fed Aid Project _____ (2A) (4).

DeForge, J. R. 1981. Stress: Changing Environments and the effects on desert bighorn sheep. Desert Bighorn Council Trans. 25: 15-16.

Miller, G. and E. L. Smith. 1985. Human activity in desert bighorn habitat: what disturbs sheep? Desert Bighorn Council Trans. 29:4-7.

Spraker, T. R., C. P. Hibler, G. G. Schoonveld, and W. S. Adney. 1984. Pathologic changes and microorganisms found in bighorn sheep during a stress-related die-off. Journal of Wildlife Diseases 20(4): 319-327.

ABH/mks/00000288

cc: M. Miller
L. Budde
D. Todd

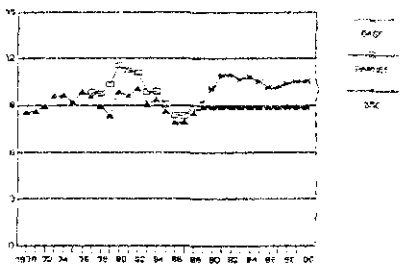
MEMORANDUM TO: Tim Schultz
FROM: Steve Colby and Kent Gamina
RE: Socioeconomic Impacts from the SSC are Manageable
DATE: 3 October 1988

212 **Introduction:** The Draft Environmental Impact Statement (DEIS) on the Superconducting Super Collider (SSC) attempts to outline the environmental effects of construction and operation of the SSC at the seven sites competing for the project. In doing so the DEIS makes a number of "colorful" statements questioning the ability of Colorado to accommodate the socioeconomic impacts from the project. These concerns are overstated and not supported by information collected in the Colorado Proposal to DOE, the consultants drafting process for the DEIS or the work of the local SSC committees in Morgan County.

The socioeconomic impacts from the proposed SSC project construction and operation can be managed within existing state and local agency programs. This statement is supported by the following experience, analysis and preparations:

213 1) The forecast employment and population growth peak from the project impacts stays below 10% over baseline for all counties and communities except those in Morgan County and, perhaps, eastern Adams County. **This 10% growth above baseline over a multi year period is well within the *range of normal facility and* service planning and financing capabilities of these more urban jurisdictions.**

Figure 1
Morgan County Employment Base with Pawnee and SSC Impacts (Thousands)



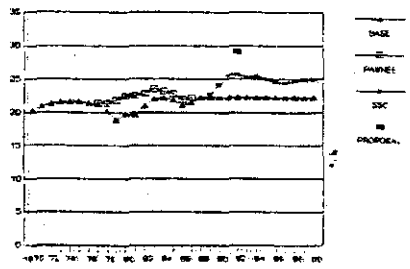
2) In Morgan County the DEIS forecasts a 11,000 employment peak from the SSC project. **This impact employment level is <u>below</u> the peak impacts experienced in Morgan County in 1980 with the Pawnee Power Plant construction project at Brush.** The communities involved have been there before. Local leadership has the tested experience to comfortably cope with the expected influx. Many of the local political leaders, public service managers and businessmen from that period remain in positions of authority today.

3) The DEIS bases its **"boomtown" concern for Morgan County** on a comparison of existing activity in the county to that expected with the population impacts from the SSC. This **is exaggerated** because it is

based on the low levels of service demands in recent years and does not take into account the capacity built into the County for population peaks of the past decade. The Pawnee Power Plant construction project ran from 1977 to 1980. Within three years it generated a peak direct employment of 2200, 100% above that projected in 1976. Peak resident project employment in Morgan County totalled 1000, with an additional 250 weekly commuters. As shown in **Figure 1**, the total direct and induced employment impact was a 2000 or 22% increase over the 1976 baseline county employment of 9200. In all of this, county facilities and services showed few signs of overcapacity or severe stress, even with the unexpected doubling of the employment level over that forecast -a chronic problem with the multitude of energy projects being built simultaneously in the late 1970's.

The employment boom did not trigger an equivalent population bulge. In fact, annualized Morgan population increased only 1280, or 7% during the period. While annual values no doubt miss brief monthly peaks, the lower population impacts are more a reflection on the close proximity of the Denver and Greeley-Loveland-Ft.Collins metro areas. This recent history should be noted in making the population forecasts for the SSC. The mobility of employees during the Pawnee project contradicts the number of negative comments made in the DEIS about the "stressful commute" and "distant site".

Figure 2
Morgan County Population with Pawnee and SSC Impacts
(Thousands)



4) **Local facility and services capacity in Morgan County** to accommodate growth has increased since the Pawnee project. Since completion of the powerplant, Morgan County employment and population have declined from a 1982 peak of 11,000 and 23,000 respectively to current levels of 8,900 and 22,000. This has freed up excess capacity in the full range of public and private services. As can be seen from Figure 1, the employment forecasts for the SSC merely represent a return to employment levels experienced in Morgan County in the early 1980's. The capacity to accommodate this growth with public and private facilities and services was developed then, expanded since, and can be refurbished to accommodate the expected SSC growth with little difficulty.

For example, from the high peak population estimates the DEIS concludes that 950 housing units would need to be provided in Morgan County. The DEIS then raises questions on the capacity of Morgan County to provide

this housing on the basis of the low levels of previous years building permits and recent vacancy rates. (DEIS Vol.IV, App 14. p.78) Neither of these measures reflect supply. Rather they reflect the low demand for housing that the area has experienced in recent years. Morgan county has **600 ready-to-build residential lots** within its towns boundaries directly served by streets and utilities. Another 600 lots are platted but would require short extension of utilities and street upgrades. Construction workforce and materials to build the housing come from all along the northern Front Range, as is shown by the bids received on public and private projects in the County. To meet the temporary housing demand peak there are hundreds of modular construction worker housing units in storage in the Rocky Mountain area ready for relocation to the SSC site.

In considering public service capacity it is important to differentiate between structural capacity and current staffing and equipment capacity. Expansion of structural capacity requires long lead times and considerable funding. Staff and equipment expansion can be accomplished much more quickly and in concert with demands.

An example is the new **County Justice Center** which was just recently completed. This building **has the capacity within its walls to triple** the staff and operations of the various public safety functions. The expensive and time consuming capital construction needed to accommodate the SSC population impacts has already been completed. All that is needed is the addition of staff and equipment as actual demands for services warrant. This can be done quite quickly.

In medical and health care facilities the Morgan County has 70 acute care beds that are occupied at only 35% of capacity. The outpatient facilities could accommodate double the current patient load with corresponding increases in staff and equipment. Major upgrades of medical equipment are currently underway. In short, **medical facilities could easily handle the expected SSC impact** with quick additions of staff and equipment.

Schools in the County received a full dose of the baby bust in the last decade. With the fall in local and national birth rates, County schools have seen a 25% decline in enrollments since 1972. In the same period school facilities have been expanded to provide more diverse educational opportunities. As with public safety and hospitals, with the quick addition of staff and equipment the current elementary and secondary school facilities in the County, serving a 4500 enrollment, could easily accommodate the two year peak enrollment of 5400 envisioned in the DEIS.

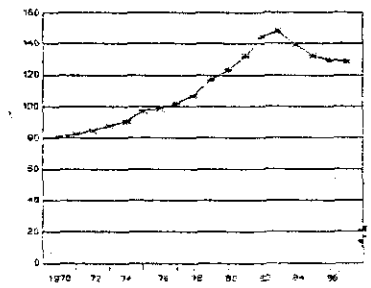
It must be pointed out that in the Colorado proposal to DOE for location of the SSC, population growth impacts from the early, larger SSC scenario were forecast to be twice as high as were estimated in the DEIS (see Figure 2). Even at these much higher impacts, state and local officials felt that they were prepared to handle the socioeconomic and public finance impacts from the SSC project. The state proposal to DOE on SSC site location itemized the infrastructure needs to accommodate

the growth. **This clearly shows the preparedness necessary to prevent "boom" conditions.**

4) **The state has had broad experience in dealing with socioeconomic impact and has a number of well developed programs for the necessary analysis, community participatory planning and public finance of the facilities and services to mitigate the impact. Specifically, the Departments of Local Affairs, Health, Highways, Public Safety and others have on their staff people who conducted the analysis, finance and mitigation programs for the energy project construction boom-bust cycle in western Colorado in the 1977-84 period.**

During the mineral fuels boom of the late 1970's, the population of a four county area in northwestern Colorado rose from 107,000 in 1978 to 144,000 in 1982. This is 35% and 37,000 growth over three years, covering an area and population much larger than the 16% and 3500 forecast for Morgan County. Some communities in this and other regions of the state experienced much higher growth rates. This "energy boom" had considerably more uncertainty and disagreement between parties than would exist with the SSC project. The state developed programs to handle this process. The current version is outlined below.

Figure 3
Northwestern Colorado Energy Boom (Population in Thousands)



Outline of the Public Facilities and Services Program (PFSP): The actual process of fulfilling the state and local commitments to mitigate the impacts is composed of eight steps:

1) Forecasts of public facility and service demands that will result in each affected jurisdiction from the SSC, from existing trends in the communities and any other factors at play during the forecast period.

2) Evaluation of current and projected capacity of existing public facility and service programs in each jurisdiction and at the regional level.

3) Decisions about the best way to meet the qualitative and quantitative improvements needed to accommodate demand forecasts, including temporary facilities, shared service programs and private contracting.

4) Estimates of the capital and operating costs involved. Specification of the jurisdiction responsible for long run operation of

the facility or service program.

5) Projections of the public revenue implications of the SSC project for the various jurisdictions involved.

6) Adjustment of public finance mechanisms to provide the funding for the needed improvements, including interjurisdictional transfers, borrowing and tax system adjustments.

7) Plan, design, bid and manage implementation of the specified improvement projects.

8) Ongoing monitoring of actual employment, population, facility and service capacity and loads to correct the forecasts and adjust development plans.

All of these steps are conducted in a close cooperative effort with the local government jurisdictions affected. In many cases special technical assistance is provided by state staff or through funding for professional local government staff or consulting expertise so that the local governments can fully evaluate and participate in the planning and implementation process. A key roll for the county and regional organizations is to maintain the broad coordination of the effort.

Additionally, a close working relationship with the principle SSC contractors and subcontractors has been and will be established to evaluate and plan for the mitigation of socioeconomic issues.

PFSP Experience: Beginning in 1977 the state government and a number of local governments began to form programs to mitigate the anticipated impacts from the energy and mineral construction boom that was forecast for the state. Key to these efforts was the development of a State Impact Assistance Office which used an executive branch discretionary fund to supply local governments and state line agencies with grants to facilitate planning, operating and construction projects. Since 1978 this program has distributed $ 135 M in such funds with an average grant size of around $ 75,000.

Cooperative planning processes with local governments and the impacting corporations were developed. Notable among these were the Colorado Joint Review Process (CJRP) for shared permitting development, and the Cumulative Impacts Task Force (CITF). The latter program, running from 1980 to 1984, was jointly funded and managed by state agencies, local governments and industry. It built a consensus based computer model which monitored and forecast facility and service capacity at the specific agency and jurisdiction level as energy projects were proposed, developed and closed. Six counties with 120 jurisdictions were simultaneously evaluated for three scenarios on 20 different energy construction and operations projects. This is considerably beyond the scale of anything anticipated from the SSC.

Specific Implementation For the SSC:
The PFSP has begun with the formation of local groups to work with the state on the assessment and planning for the various types of public

facilities and services. This has been accomplished with the Local SSC Committees which were formed in late 1987 to prepare materials for the State's SSC Proposal Supplement and who have provided much of the information and analysis presented in this memo of response on the DEIS. These committees will continue to participate with state agency staff, the SSC project managers and other parties in the eight tasks outlined above.

A number of existing state technical assistance and grant programs have existing operations in the SSC impact area which will be upgraded to accommodate the public facility and service planning, financing and operations needs generated by the project. Particular among these will be the Field Staff of the Department of Local Affairs with offices in Ft. Morgan and Loveland. Funding programs currently available to the area which will be expanded include the CDBG, CSBG and Impact grant programs located in the Department of Local Affairs which have a long history of accommodating socioeconomic impact situations.

Implementation Schedule: From the bases of past experience and existing socioeconomic mitigation programs, the state will be able to set-up the fully operational PFSP in three months following the selection of Colorado as the SSC site. Many of the elements are already established as existing state and local programs which will be upgraded.

SUMMARY OF WELLS: COLORADO SSC SITE

nd Area ocation	Water Wells	Producing Oil & Gas Wells	Injection and Disposal Wells	Plugged and Abandoned Wells	Dry and Abandoned Wells	Shutin Wells	Total
Campus	0	0	0	0	3	1	4
Injector	0	1	0	0	12	0	13
Future Expansion	4	1	0	0	6	0	11
Collider Ring	6	1	0	9	17	0	33
Intermediate Access	0	0	0	0	0	0	0
Service Areas	0	0	0	1	1	0	2
Near Cluster	0	0	0	1	8	0	9
Far Cluster	0	1	0	0	8	0	9
Abort/External Beams	2	0	0	2	21	1	26
Abort/External Beam Access	0	0	0	0	3	0	3
eraction Regions	0	0	0	0	0	0	0
TOTALS	12	4	0	13	80	2	110

214

ompiled from State of Colorado Oil and Gas Commission Data by Susan Cannon, Engineering eologist, Colorado Geological Survey

335

ATTACHMENT 4.

PUBLIC SERVICE COMPANY OF COLORADO
AND
TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.

COMMENTS ON THE
SUPERCONDUCTING SUPER COLLIDER DRAFT EIS

SEPTEMBER 26, 1988

2688A

LETTER 1515 (CONTINUED)

TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.
12076 GRANT STREET P.O. BOX 33695 DENVER, COLORADO 80233 (303) 452-6111

September 26, 1988

Mr. Jim Bryant
Colorado Superconducting Super Collider
1313 Sherman Street
Centennial Building - Room 420
Denver, CO 80203

Dear Jim:

The attached comments on DOE's SSC Draft EIS have been jointly prepared by Public Service Company and Tri-State. We recommend that your office forward this information to the DOE in order that they may correct errors in the document. 215

Should you have any questions, please call Steve Brodsky or me.

Best regards,

F. Jere Bates
Director of Planning

FJB:SFJB:djb

enc

cc: Bill Martin, Public Service Company
Gil Friesen, Tri-State
Bob Pflager, Morgan County REA

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

Electric Utility Comments
on the
DOE's SSC Draft Environmental Impact Statement

The following comments address electric utility issues found in the DOE's SSC Draft Environmental Impact Statement (DEIS) dated August 1988. These items are presented here in order to enhance and correct various items found in the DEIS. Each item is prefaced by its volume, appendix and page number.

1. Volume IV, Appendix 1-3, Page 20, Figure 1.2.2-4

216 The Figure incorrectly depicts the tapping of the existing Pawnee to Daniels Park 230 kV line. The correct configuration would be to sectionalize the existing line on the north-south segment, as shown on the attached map. This map was previously provided as part of Colorado's response to DOE's Post Site Visit Inquiry dated August 1988.

The Figure shows the three 230 kV transmission lines entering the SSC East Substation to be on different rights of way. While this is one option, it has not been determined whether the DOE would require these lines to be on one, two, or three rights of way. This was previously discussed in Colorado's response to DOE's Post Site Visit Inquiry dated August 1988.

2. Volume IV, Appendix 1-3, Page 21, Figure 1.2.2-5

217 The map inadvertently misleads the reader about relative distances. To resolve this, the map should be labeled, "not drawn to scale".

3. Volume IV, Appendix 1-3, Page 24, Section 1.2.2.15, Construction Power

218 The discussion on available voltages to serve construction power should be modified to include 7.2 kV, 12.5 kV and 115 kV.

This comment also applies to Table 4-30, page 4-92 of the same Volume and Appendix.

4. Volume IV, Appendix 4, Summary 1-5, Table 1-1

219 The Summary notes that Colorado requires 99 miles of additional transmission lines. It should be noted what features are included in this figure. Based on information provided by the DOE, it is believed that the SSC facility requires more reliability than what is normally provided by

electric utilities. The standard practice of the electric utility industry is to plan and design the transmission system to withstand any single contingency outage. If this ordinary approach were used here, then Colorado would require an additional 49 miles of transmission, instead of the 99 miles noted in the Summary. However, being able to withstand multiple failures yields a much more reliable power system. By including an additional 50 miles of transmission (99 miles total) the Colorado site can withstand the majority of all possible double contingencies in the SSC vicinity.

It is recommended that the 99 miles sited in Table 1-1 be footnoted to further explain the difference in reliability.

These comments also apply to Table 3-3 of Volume IV, Appendix 4, page 3-27.

5. Volume IV, Appendix 4, Page 4-92, Table 4-30

220 The available voltages for construction power should be changed to 7.2 kV, 12.5 kV and 115 kV as discussed previously in Item 3.

6. Volume IV, Appendix 5a, Page 128, Section B.1.a, Ownership

221 The first paragraph is incorrect, the service for the area in the vicinity of the Colorado site is provided solely by Morgan County (MCREA).

7. Volume IV., Appendix 5a, Page 129, Section B.1.c, Interrelationship with Other Electric Utilities

222 MCREA is a Member of the Tri-State Generation and Transmission Association and purchases all of its power from Tri-State and not from "independent sources".

8. Volume IV, Appendix 5a, Page 130, Section B.1.e, Planned Future Upgrades/Additions

223 The words, "PSCo's Pawnee Generating Station II", should be replaced with "PSCo's Pawnee Generating Station Unit II".

The last sentence in the first paragraph should be replaced with, "PSCo's Pawnee Generating Station Unit II is planned for operation in the late 1990s".

9. Volume IV, Appendix 5a, Page 131, Table 5.2.11-11,

224

System Capability/Peak Demand Profiles for Electric Service Utilities

The reserve capacities found in the Table are not correct. We recommend that it be replaced with the following data which Tri-State has previously submitted to the Rural Electrification Administration as Form 12. Public Service Company has previously submitted this data to the Colorado Public Utilities Commission as, "Electric Demand and Supply Plan 1977-2006," dated February 1987.

SYSTEM CAPABILITY/PEAK DEMAND PROFILES FOR
ELECTRIC SERVICE UTILITIES

	1987	1986	1985	1984	1983	1982
PSCo						
System Generating Capability (MW) (7)	2716	2924	3008	3023	2941	2857
Firm Purchases	890	600	608	475	226	460
Net Eff. Capability	3606	3524	3616	3498	3167	3317
Firm Peak Demand (MW)	3092	3150	2933	2868	2875	2809
Reserve Capacity	514	374	683	630	292	508
Tri-State						
Load (1)	678	660	718	685	628	696
Loss (2)	30	34	39	36	32	37
Contract Sales (3)	175	50	50	--	--	--
Total Demand (4)	883	744	807	721	660	733
Generating Capability (5)	899	899	899	899	899	899
Contract Purchases (6)	578	577	557	557	554	553
Total Capacity	1477	1476	1456	1456	1453	1452
Reserve Capacity	594	732	649	735	793	719

Footnotes

(1) Total Tri-State load for Colorado and Wyoming loads. Tri-State's Nebraska loads are served entirely by non Tri-State resources.

(2) Losses calculated on CRSP and Basin purchases, and load served from Tri-State resources 6% loss in 1987; 7% in previous years.

(3) Sales to PSCo, began May 1985

(4) Load + losses + contract sales. Reflects August Demand in all years except 1985 (July).

(5) 604 MW coal-fired, 295 MW oil-fired

(6) Includes purchases from P-SMBP, CRSP, and Basin Electric

(7) 1987 reduction in Generation due to classifying Ft. St. Vrain as a purchase.

10. Volume IV, Appendix 14, Page 108, Sections B.1.a, Construction

225 As noted previously in Item 3, the available construction voltages should be 7.2 kV, 12.5 kV and 115 kV.

11. Volume IV, Appendix 14, Page 108, Sections B.1.a, Operations

The statement,

"These three utilities would provide the 230-kV service required for the facility including construction of the necessary transmission facilities to connect SSC substations with existing power grids."

226 should be modified to read,

"These three utilities propose to provide the 230-kV service required for the facility including construction of the necessary transmission facilities to connect the proposed SSC substations with existing power grids."

The important difference here is that it has not been determined who would pay for which facilities.

12. Volume IV, Appendix 14, Page 109, Sections B.1.a, Operations

227 The fourth paragraph on page 109 may be clearer if it were augmented with a short table showing the individual transmission lines and their total of 99 miles.

13. Volume IV, Appendix 14, Page 110, Sections B.1.a, Operations

228 There is some inconsistency in abbreviating the Public Service Company of Colorado. Page 110 uses both "PSC" and 'PSCo". It is recommended that the same abbreviation be used throughout the DEIS.

14. Volume IV, Appendix 14, Page 112

229 The first paragraph's reference to the "schedule for the unit" should specifically note which unit.

The third paragraph should note that all of MCREA's power is purchased from Tri-State, as noted previously in Item 7.

15. Volume IV, Appendix 14, Page 113

The fourth paragraph fails to take into account the fact that the region's dependence on coal greatly outweighs that of gas or oil. Consequently, this paragraph is lacking in factual support and should be omitted. 230

The discussion found in the fifth paragraph seems to misplace the location of the proposed SSC site. Perhaps the discussion confuses the new 230 kV transmission line between Ault and Ft. St. Vrain with one between Sidney and North Yuma. Furthermore, since the nature of this paragraph is editorial, it is recommended that it be omitted.

16. Volume IV, Appendix 14, Page 159, Section H.2

Paragraph one should state that the second unit (Pawnee Generating Station Unit II) is 485 MW and not 500 MW. 231

The first sentence of the second paragraph should be replaced with, "Pawnee Generating Station Unit II is planned for operation in the late 1990s."

LETTER 1516

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
ARIZONA STATE OFFICE
3707 N. 7TH STREET
PHOENIX, ARIZONA 85014

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
1790 (931)

October 17, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN, Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

We have reviewed the Draft Environmental Impact Statement (DEIS) on the Superconducting Super Collider (SSC) proposal and submit the enclosed comments on the material that addresses public lands in Arizona managed by the Bureau of Land Management.

Thank you for the oppertunity to review and comment on this DEIS.

Sincerely,

Lynn H. Engdahl
Associate State Director

Enclosure

HA.1- 4057

LETTER 1516 (CONTINUED)

Superconducting Super Collider DEIS

General Comments

1 On an overall basis the DEIS describes and analyzes the general impacts anticipated by the selection and installation of the SSC project in Arizona. However, several areas could be improved to reflect a more accurate and meaningful depiction of the existing environment and the anticipated impacts.

2 One area that should be strengthened is the various recreational sections in Volume IV. The project writers have made good use of the Recreational Opportunities Spectrum (ROS) criteria in their analysis of changes in recreation settings and opportunity, but the DEIS lacks analysis of significant changes on specific recreation opportunities like hunting, trapping or back-country camping. Factors associated with SSC project siting and operation may alter existing recreation patterns, increase the number of visitors, change the types and dispersal of current recreation activities, and cause possible recreation use restrictions or closures along certain parts of the SSC ring area.

3 Another area that should be strengthened in the more specific EIS are the mitigating measures.

Specific Comments: Volume I

Chapter 3:

4 Page 64, paragraph B. The DEIS states that fencing would mitigate impairment of movement and migration. Fencing creates a significant barrier to animal movement. On bighorn range any fencing is critical. Human access is not as important as new roads, new fences, buildings, parking lots, railroad spurs and loud noises in restricting animal movements. The significance of these impacts needs to be considered and appropriate mitigation measures developed to reduce their impacts. On desert bighorn range, water development would be an effective mitigating tool to alter daily and seasonal movements of the animals so they can avoid the barriers.

5 Page 64, paragraph D. We suggest rewriting this sentence as follows: "Where noise may cause sheep to avoid traditional water sources, alternative water sources would be provided."

Chapter 4

6 Page 4-72, 4.8.4. Federal land use plans for the Arizona site should be mentioned.

7 Page 4-72 Under 4.8.5, "Existing Land Use." Add: "On the Arizona site livestock grazing is permitted by the BLM on three grazing allotments within the project.

Chapter 5

8 Page 5.1.2-30, first paragraph, last sentence. Delete the sentence beginning with "However, . . . ". Add the following: "One well used for watering livestock in the BLM South Vekol Allotment would be in the affected area. This well is located in T. 8 S., R. 1 E., Sec. 21, NW/4 SW/4, GASRBSM."

9 Page 5.1.5-2, paragraph 4. We believe the Ross article lists specific stipulations for a powerline project in Nevada. These stipulations are site and project specific and have no bearing on the SSC project. They are not Bureau wide guidelines, nor are they necessarily mitigating measures.

Similar stipulations may well be developed for this site if Arizona is chosen. The problem of mitigating for loss of habitat and individuals should be addressed.

10 Page 5.1.5-3, paragraph 1. The Maricopa bighorn population is well below the level accepted as necessary to maintain a viable population. This makes the population very vulnerable to any outside impacts. In Volume IV, Appendix 5a, page 81, a statement is made about bighorn sheep reaction to sharp, loud noises, or other forms of human disturbance. This statement is contrary to the observation in this paragraph.

11 Page 5.1.7-4, paragraph 4. Add: "Construction and other activities associated with the project will result in inconvenience to grazing operations permitted by BLM. Increased accessibility may result in vandalism to livestock management improvements. Grazing management units may be segregated by fencing of new roads and/or facilities. Permittees will need to increase their supervision of operations to address these impacts."

Specific Comments: Volume IV:

Appendix 3, Decommissioning Plan:

12 Page 1, 3.1. If surface reclamation of the land surface following the removal of all components in option 2 was not considered, we believe it should be addressed.

Page 2, 3.2.1.1, 3.2.1.2, 3.2.1.4; Page 3, 3.2.2; and page 5, 3.2.5.6. The document states that access ways, tunnels, and shafts will be sealed. A brief description as to how this would happen would be helpful.

Appendix 5a, Affected Environments at Site Alternatives:

13 Pages 62 to 95, 5.1.9. None of the references cited are included in the References section which begins on page 153. All of the species/concepts discussed in Appendix 5 should be discussed in Appendix 11. See our comments on Appendix 11.

14 Page 62, 5.1.9.1. Item 4 should be revised or deleted. All areas discussed are dependent on such cycles.

15 Page 64, 5.1.9.2.A, first paragraph. The area on map is closer to 60 percent Arizona Upland and 40 percent Lower Colorado.

16 Page 65, Figure 5.1.9-2. Arizona Upland Desertscrub occurs on and adjacent to the mountain depicted NE of the "LC" in the center of the ring. There is "LC" in the SW area of the ring.

17 Page 71, 5.1.9.2.B, Animal Community Composition. The discussion should include reference to the richness of the vertebrates in the area. The wildlife species are: Lower Colorado, 87 species; Arizona Upland, 114 species; and Sonoran Riparian Woodlands, 115 species (BLM files).

18 Page 73, section 3. The reference should be 5.1.9.4 for javelina and mule deer.

19 Page 75, 5.1.9.5.A.1. The document should mention that there is only a remote possibility that the Swainson's hawk may nest in a small patch of grassland at the south end of Vekol Valley where the project would attempt to extract and transport water to the ring.

20 Page 75, 5.1.9-4. Trapping activity for bobcat, coyote and fox should be mentioned.

21 Page 76, Table 5.1.9-3. Correct the spelling of the scientific names for the Swainson's hawk and Tumamoc globeberry.

22 Page 77, item 3. The spelling for the three listed plants is: Tumamoca macdougalii, Neolloydia erectocentra, and Peniocereus greggii v. transmontanus. Correct this in the narratives and tables as appropriate.

23 Page 78, item 1, paragraph 2. Fifty-seven tortoises were marked on the Maricopa Plot.

24 Page 79, Figure 5.1.9-3. Aerial reconnaissance by Schwalbe, Cordery, and Haughey in 1988 indicates that substantial high density habitat may occur in mountainous areas in the southern part of the ring area that is presently not shown on the map. The narrative should reflect this information.

25 Page 80, paragraph 1. Arizona's mountain tortoises do not require ephemeral washes, though they will use them. Tortoises in mountain habitats will nest in soft soil at the entrance to burrows, or wherever they can find sufficiently deep soil in a protected situation. Tortoises may not reach maturity until 30 years of age. The narrative should reflect this information.

26 Page 82, 5.1.9.6. A map should be provided that shows the impacts on the three wilderness study areas, the Butterfield Stage Route, and the De Anza Historic Trail. We suggest deleting Figure 5.1.9-4.

27 Page 95, 5.1.10.2.A. This entire section appears misplaced and its location may be confusing to the reader. The WSA analysis could be placed in Section 5.1.9.6 which already contains a detailed WSA description and analysis.

28 In order to clarify this section add the following headings: Wilderness Study (above third paragraph on page 97), Recreation Resource Management and Opportunities (above paragraph 7 on page 99) and Grazing Management (above the second paragraph on page 100).

29 Page 97, 5.1.10.2.A. Paragraph 3 on page 97 references a WSA map (Figure 5.1.9-5). This map should be added.

30 Page 99, 5.1.10.2.3.A.3. Revise paragraph on solitude as follows: "Solitude: Some outstanding opportunities for solitude exist for a limited number of visitors due to the WSAs' rugged mountainous terrain, variety of landscapes, and plant cover. Opportunities for solitude would be lessened if visitor use increases as most recreation use occurs along the Butterfield Stage Route and in the canyons and washes in the eastern part of the WSA. Visitor contacts would increase due to the channeling and concentration of visitors in the WSAs' few washes and canyons."

31 Paragraph 6. This entire paragraph is inaccurate. The rationale behind BLM wilderness recommendations is accurately described on page 82.

32 Paragraph 7 (continuing on page 100). If the narratives on "Semi-primitive Non-motorized Recreation" and "Semi-primitive Motorized Recreation" are separated into two paragraphs, the description of existing recreation opportunities should be much clearer. Change the third sentence to read: "Semi-primitive non-motorized recreation opportunities offered includes . . . April." Change the sixth sentence to read: "Semi-primitive motorized recreation opportunities are available for vehicle-based recreationists seeking natural landscapes, sightseeing activities, picnic sites, camping areas and ORV riding areas."

33 Page 100, 5.1.10.2.A.3, paragraph 3. Delete the paragraph "As the AUM . . . the three allotments" since it is erroneous. In its place add: "Two other BLM grazing allotments may be affected by SSC support facilities. One, the Beloat allotment, by the construction of the expressway spur from Goodyear to I-8; and another, South Vekol, by the draw down of groundwater by the pumping of the Vekol Valley well field. Grazing preference on these additional allotments are:

Allotment	Animal Unit Month (AUM)
Beloat	2,988
South Vekol	1,863"

Appendix 11, Ecological Resources Assessments:

34 Page 6, 11.3.1.2, paragraph 3. Thornber fishhook cactus and Higgins cholla are not discussed in Appendix 5. Neolloydia was discussed in Appendix 5, but not in this Appendix. Swainson's hawk is also discussed in Appendix 5, but not here.

Last paragraph, continuing on to page 7. Neither Ross 1986, nor Palmas 1987 are in the Reference section. The mitigation does not constitute official BLM measures for Arizona and is not necessarily appropriate for this site (see previous comments on page 5.1.5-2).

35 Page 7, 11.3.1.2, first paragraph. Add as the first sentence: "The Maricopas have the highest known tortoise density in Arizona, perhaps 150/sq mi." Revise the third sentence to read "The proposed locations . . . by the BLM to determine density, to establish size class (age) structure and sex ratios, and to establish a baseline for trends through time."

This paragraph should address tortoise movement corridors or areas near ancillary facilities. Also, consider adding the observation that tortoise deafness could result from some anticipated noise levels.

36 Page 8, top of page. Delete the first sentence.

Page 9, 11.3.1.4, paragraph 1. Barbed wire fencing for livestock or burros would not necessarily impact tortoises. However, chain link fencing to prevent human access would adversely impact tortoises.

Page 9, 11.3.1.4. Revise the first sentence of paragraph 2 as follows: "Some information is available on hunting frequency and success ratios in the area. For example, in unit 39 in 1985 there were 971 hunter days for mule deer and hunter success was 12.5 percent. However . . . "

The following list of potential mitigation measures to resolve or reduce impacts associated with the project should be added as a section following 11.3.1.4.

37 Pre-construction clearances for T/E plants, state protected plants, desert tortoise, raptors.

Provide windows of operation (seasons of avoidance) for raptors, desert bighorns, and desert tortoise.

Provide tortoise barriers along paved and high-use dirt roads adjacent to and within mountains, with culverts or similar structures allowing animals to pass across unharmed.

Create alternate water sources for mule deer and desert bighorn where existing sources would be precluded easy access due to construction, maintenance, or operational use.

Revegetate disturbed sites with native Sonoran Desert plant species.

Monitor effectiveness of mitigations on tortoise, bighorn, and raptors.

Appendix 13, Land Resources Assessments:

38 Page 15, 13.1.3.1. Add the following to the list in part C - BLM Recreation Planning Terms. "Semi-primitive Non-motorized Recreation Opportunity Class: (Insert the definition supplied in our meeting in July, 1988)."

Page 18, 13.1.3.1. First paragraph. Add two sentences and change the third and fourth sentences to read: "SSC project development will change recreation opportunities in areas affected by project installation and associated facilities. The changes in recreation settings and opportunities will cause a
39 shift in classification of impacted project areas from the present 'Semi-primitive Non-motorized Recreation (Class II ROS)' and 'Semi-primitive, Motorized Recreation (Class III ROS)' opportunity settings to the Roaded, Natural Recreation opportunity setting (Class IV ROS) . . . SSC Project.

6

These shifts in recreation opportunity would represent a one or two step change in opportunities. In areas affected by the project ring, structures and roads, recreation opportunities dependent on unroaded and natural landscape would decline and be supplanted by vehicle-dependent types of recreation activity.

Page 18.123.1.2.1, paragraph 2. "At the following area characteristics, based on the above analysis, the following summarizes anticipated impacts on the wilderness resources by MSA.

"North Maricopa Mountains MSA: Installation of service areas F-6 and F-7, and service area E-6, along with associated road development, will cause a long-term loss of naturalness, solitude, and primitive recreation opportunities on 5,050 acres (7 percent of the MSA). Wilderness characteristics on the remaining 69,833 acres of the MSA would not be directly impacted by SSC project installation or the sight or sound of SSC operations, as project related facilities and landscape modifications are screened by distance and topography.

40 "Butterfield Stage Memorial MSA: Construction of service area E-6 and 1.5 miles of cut and cover trenching operations will cause the long-term loss of naturalness across the western there of the MSA, representing 3,150 acres. Project facilities and landscape modification impacts would not be noticeable from the remaining 6,415 acres of the MSA and impacts on wilderness resources there would be negligible.

"South Maricopa Mountains MSA: Installation of portions of the campus area and service/access area 1-2, 1-3, C-4, E-4, and E-5 would cause the loss of wilderness character on 7,000 acres (8 percent of the MSA) either through direct construction impacts, or through the sights and sounds of SSC project facilities and operations. Although screened by the project area, all SSC facilities either top out on the outer outer perimeter of the area. Impacts from SSC construction and operations on wilderness values, or primitive recreation opportunities in the east interior portions of this 72,033 acre MSA are considered negligible, as SSC facilities would be screened by mountains or diminished by distance."

Page 18.123.1.3.1, last paragraph, last sentence: Delete the last sentence. Follow with "Only two corridors.

41 "Three SSC grading alignments will be considered by the proposed SSC project. Approximately two-thirds of the northeast and southeast quadrants of the Collider are region include a portion of the Bighorn Alignment. The remaining one-third, along with the northeast quadrant and the north half of the southeast quadrant are located in the Conley Alignment. The remainder of the southeast quadrant is within the Lower Vendt Alignment. The north half of the Conley area is shared and Conley Alignment. The southern half is in the Lower Vendt. Additionally, the Bighorn Alignment may be affected by the proposed approximately four from Chandler Airport to 1-8.

"Although no reduction in the grazing capacity is expected on these allotments due to the SSC, construction and other activities associated with a project of this magnitude usually result in inconveniences to the grazing operations. These are usually in the form of cut fences, gates left open, livestock loss from road kills, increased vandalism due to better accessibility. *Also the fencing of newly constructed roads and* facilities can create obstacles in old livestock grazing patterns. It can split what was once a single management unit into several or isolate a water source from open range. Finally, a livestock well in the South Vekol Allotment may be impacted by the drawdown of ground water by the pumping of the Vekol Valley well field.

"The impacts and mitigation measures of the total project and its ancillary developments can best be identified in a site specific analyses."

42 *Mitigating the impacts* discussed would add to the cost of grazing operations for the permittee and government.

Appendix 15, Cultural and Paleontological Resources:

43 Page 1, 15.1.1, first sentence. Change the sentence to read: "The cultural resource assessments include a list of significant sites at each of *the proposed SSC sites.*"

44 Page 4, Subsection A, Part 1, 4th statement beginning "Intensive field inventories . . . " Insert a comma after "historical".

45 Page 4, part 2. Since the first paragraph is redundant, it should be deleted.

46 *Page 5, Subsection B., first paragraph, third line.* Replace "facility" with "Areas where facility construction zones are proposed. " Change the sentence in lines 6 and 7 to read: "These kinds of activities may threaten surface and subsurface elements of historic and archaeological sites." Delete the last sentence.

47 Page 5, Section 15.1.2.2, paragraph 2. The entire paragraph should be deleted.

Page 6, First partial paragraph, last two lines. Change statement "4)" to read: "4) the extent of the development of predictive studies on resource potential and distribution."

48 Page 6, First full paragraph, third line. Delete "to determine their significance."

Page 6, Fourth full paragraph, last sentence. Insert "criteria" after "eligibility", then delete the remainder of the sentence.

Page 6, Fifth full paragraph, last line. Delete "of contributing elements".

49 Page 7, First partial paragraph, *third line. Delete "mitigation measures* will be adopted." Then insert "mitigation measures would be developed based on scientifically sound research programs."

50 Page 8, 15.1.3.1, Subsection A, part 1, second paragraph, sixth line and sixth paragraph, second line. "Shackley and Rice 1985" are cited in the narrative and should be listed in the "References" section of this Appendix.

Page 9, First full paragraph, second sentence. Replace the sentence with the following: "These people are probably the descendants of the Hohokam, but exist in a smaller population and on a different economy."

Page 9, Second full paragraph, fifth line. The citation for "Rice and Shackley 1985" should be listed in the References section (or is this the same
51 as "Shackley and Rice 1985"?)

Sixth line. "Brook, et al. (1977)" should be shown in the References section of this Appendix.

Page 9, Fifth full paragraph, line three. The full name of the trail, "Juan Bautista De Anza Trail" should be used.

Fifth line. Delete "eligible" and insert "under consideration".

Page 10, Part 2, Third full paragraph, Line twelve. Insert "RMP" after "entire."

Page 10, Paragraph 5. Change this to read: "A recent study . . . is the 'Corridor Studies Report: Santa Rosa to Gila Bend 230 kV Transmission Line
52 Project,' prepared by Wirth Associates, Inc. in August, 1982. A Class II sample survey was performed and documented in Chapter 4 of that document. Then, in 1986, Margerie Green of Archaeological Consulting Services surveyed the line in its entirety and documented this in a technical report (A Cultural Resource Survey of the Proposed Arizona Public Service Company Santa Rosa to Gila Bend 230 kV Transmission Line, Archaeological Consulting Services, Ltd., Tempe, Arizona, May 1986).

53 Page 15, Third full paragraph, last sentence. Delete the entire sentence.

LETTER 1517

NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
MARLENE J. FLUHARTY
KERRY KAMMER
O. STEWART MYERS
DAVID D. OLSON
RAYMOND POUPORE

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

DAVID F. HALES, Director

October 17, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

The enclosed material was compiled by the Michigan Department of Natural Resources (DNR) staff in response to the Draft Environmental Impact Statement (DEIS) issued for the Stockbridge Superconducting Super Collider (SSC) site. The enclosure contains the written material from the DNR referenced in my testimony given on September 26, 1988, at the DEIS hearing in Stockbridge, Michigan. 1

I would urge you to pay particular attention to the section pertaining to wetlands because of the apparent misunderstandings with respect to the quantity of wetland resources located within the fee simple property required by the Department of Energy (DOE) for the SSC project. Our analyses shows that within the 8,000 acres required in fee simple there are 892 acres of wetlands. Most of these wetlands can be avoided and the remainder can be easily mitigated. 2

The conclusions drawn by staff of the DNR Land and Water Management Division (the Environmental Protection Agency (EPA) delegated administrator for the protection of wetlands under Section 404 of the Clean Water Act) were referenced in my testimony and further supported with maps that accurately portray the distribution of wetland resources in the fee simple areas of the Stockbridge SSC site. These maps are more detailed than the U.S. Fish and Wildlife Service wetlands inventory maps and utilize current land use and land cover data which provide a precise definition of the wetland resources. 3

R 1026-1
5/88

4 A very thorough report detailing the availability of regional ground and surface water supplies has also been prepared by DNR staff. Abundant fresh water resources are available and entirely capable of supplying the SSC with no measurable impacts on regional water supplies. The DEIS does not clearly state, as it should, that there are no local or regional overdrafts. Aquifer systems in Ingham and Jackson Counties do not exhibit any of the undesirable effects of ground water overdrafts.

Please feel free to contact Deputy Director Michael D. Moore (517-322-5112) of my staff if any of the submitted material needs clarification or supplemental information.

Sincerely,

David F. Hales
Director
517-373-2329

Enclosure

cc: Mr. Michael D. Moore, DNR
Mr. James Heinzman, SSC

LETTER 1517 (CONTINUED)

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF COMMERCE

DOUG ROSS, Director

Superconducting Super Collider Commission

Suite 100
320 N. Washington Square
Lansing, Michigan 48913
517-334-6407

Chairperson:
David Adamany

Members:
G. Robert Adams
John M. Amberger
Jack C. Bartkwell, III
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Kenneth M. Case
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Bernard G. Pope
Fred G. Secrest
Martha Sorensen
Joanne Stefl

Executive Director:
John Hanieski

Secretary:
John Mogk

Governor's Representative:
Curtis Wiley

October 17, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
Office of Energy Research
ER-65, GTN
U.S. Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

5 You will find the written commentary to the Draft Environmental Impact Statement (DEIS) by the Michigan SSC Commission enclosed. We have identified each topic area with a heading and provided citations to specific portions of the DEIS within each topic. In addition, we have cross-referenced other testimony and provided copies of those submissions whenever possible. In short, we have tried to provide a roadmap to Michigan responses for your editors.

6 A serious error in the DEIS is the assertion that there are 2,800 acres of wetlands in the fee simple area. Michigan most strongly protests this unsubstantiated estimate and documents the true situation. I trust this error will be corrected in a prominent way in the final EIS.

Thank you for the opportunity to comment on the DEIS. The Department of Energy and its consultants with RTK Associates are to be congratulated on producing a formidable document in a very short time frame.

Yours truly,

John F. Hanieski

John F. Hanieski, Ph.D.
Executive Director Michigan SSC Commission

Enclosures

PRINTED ON RECYCLED PAPER

COMMENTS ON THE DRAFT
ENVIRONMENTAL IMPACT STATEMENT

Submitted by
The Michigan SSC Commission

October 17, 1988

The draft Environmental Impact Statement (EIS) is impressive, both for the very broad range of topics it covers and for the detail it contains on each of the seven proposed SSC sites. Its size alone testifies to the enormous amount of work invested by the Department of Energy and its consultants in gathering and analyzing data from a variety of sources in an exhaustive study to find the most qualified location for the SSC.

7 However, we do have some concerns regarding certain elements of this document and what it conveys about the Michigan Stockbridge site. The material that follows is our written response to the draft EIS. In some cases, this material compliments verbal testimony given to the DOE team that conducted the draft EIS hearing in Stockbridge on September 26; in other instances, the text of this response addresses issues not covered at the public hearing.

This response cross-references testimony presented at the public hearing or submitted separately, when possible, as a guide to the editor of the final EIS. Copies of prepared verbal remarks or written items are provided as attachments when we were able to obtain them.

WETLANDS

Our first and foremost concern with the draft EIS is the inaccurate claim in Table 1-1 of the Volume I Summary (and elsewhere throughout the document) that 2,800 acres of wetlands present in the "fee simple" areas of the Stockbridge site would be directly impacted by the SSC facility. Not only do we have evidence that there is less than 900 acres of true wetlands in the fee simple 8 areas, we also believe that the actual number of acres of wetlands that will be affected by construction and operation of the SSC will be even less than this. Unfortunately, in many cases Table 1-1 is the first chart encountered by readers of the draft EIS, and it creates an erroneous impression that the Stockbridge site is environmentally fragile.

At best, the 2,800-acre figure in Table 1-1 is ambiguous and is contradicted by more detailed analyses of the actual SSC impact contained in later sections of the draft EIS. Worse, the statement implies to the casual reader an irrevocable loss of critical habitat that simply is not warranted nor substantiated. The wetlands issue is one that should have been reasonably defined for purposes of impact assessment, but apparently is not.

The following points on this issue are presented for your consideration:

9 1. Calculate and compare "environmentally sensitive areas" located within the fee simple boundaries for each of the seven proposed SSC sites. This

would provide a more accurate and fair basis for evaluating not only the Michigan site, but all seven sites which have among them significant environmental differences (wetlands vs. deserts, for example).

In Michigan, they would include 892 acres of wetlands — none of which are of high value ecologically or crucial to the local or regional ecosystems. It would not include extensive tracts of agricultural lands. In Arizona, for comparison, they would include about 1,130 acres of sensitive desertscapes and the dependent flora and fauna. [Vol. I, Chapter 5, pages 5.1.5-1 & 2]

Note separately how many acres of sensitive wildlands would actually be disturbed by construction (about 620 acres or less in Michigan, depending upon avoidance measures implemented) and how many acres would be permanently lost due to SSC operations (about 260 acres or less here) requiring mitigation. [Vol. I, Chapter 5, Pages 5.1.5-5 & 6] Also note flexibility in siting that could further reduce actual impact.

Revise Table 1-1 accordingly with this new information by replacing "Wetlands in the fee simple areas" with "Environmentally sensitive areas in the fee simple properties". This would improve consistency in the draft EIS which made clear distinctions for other land types, such as farmlands that would actually be lost to SSC facilities and agricultural property that would continue to be farmed within the SSC borders.

2. Correct your information regarding 2,800 acres of wetlands present in the Michigan Stockbridge fee simple areas. We have been unable to locate any such information, either from our own data or that provided by the U.S. Fish and Wildlife Service East Lansing Field Office, the U.S. Army Corps of Engineers, or the National Wetlands Inventory maps which were included in Michigan's site proposal.

In our original proposal for the Stockbridge SSC site, we used draft wetlands maps provided by the U.S. Fish and Wildlife Service in the summer of 1987 to determine that there were about 794 acres of wetlands in the fee simple areas of the SSC footprint. That level of analysis seemed appropriate at that time, and more costly studies did not appear to be justified.

10

However, since the draft EIS identified 2,800 acres of wetlands within the fee simple areas of the Stockbridge site, we have conducted a digitized analysis from the Michigan Resource Inventory System of the state DNR and concluded that there are about 892 acres in actual wetlands within the fee simple areas. This recent study by the Michigan Department of Natural Resources (MDNR) matched hydric soils, existing land uses and vegetation types occurring within the SSC footprint in Michigan to produce a more accurate portrait of the wetlands present at the Stockbridge site than has been obtained from any other source to date. A description of the data collection and analysis methodology by Michael Scieszka of the MDNR Land and Water Management Division, related written materials, and a set of six maps showing hydric soils, hydric soils and wetlands, wetlands, agriculture and open land, urban areas and forests are attached.

3. Connect the apparent operative assumption that transfer of ownership of these lands does not, in and of itself, constitute a loss of wetlands. In fact, if any of the fee simple property turned over to the DOE and not used for new facilities were taken out of farming, some wetland areas would actually be recovered — a positive benefit that is understated in the draft EIS. In addition, the piecemeal draining and conversion of small acreages of non-contiguous wetlands, not covered by existing state law, would cease within the SSC fee simple boundaries. The draft EIS eventually addressed this possibility: "Some future protection of wetlands on fee simple estate lands controlled by the DOE might be a beneficial mitigating factor on the project. The fee simple status effectively precludes future development of wetlands in these areas." [Vol. I, Chapter 5.1.5, Page 28] 11

4. Recognize the total acreage of wetlands in the immediate vicinity of the Stockbridge site and in the region — especially the nearby Haehnle Wildlife Sanctuary, Dansville State Game area, Waterloo Recreation Area, numerous lakes, ponds and streams, and the Grand River basin — when considering the total impact upon wildlife habitats in this area. The presence of these other protected areas near the proposed SSC site offers a significant buffer to any direct adverse affects caused by the construction or operation of the SSC, particularly for migratory waterfowl. The SSC site would also pre-empt future adverse developments in this area. 12

5. Explain why resources clearly outside of the ring footprint, and avoided by design in the siting of the SSC in the Stockbridge proposal, were singled out for study of negative impacts "based upon worst-case analysis . . . " in Michigan. For example, a 40-acre tract of black spruce in the Waterloo Recreation Area near J1 and other ecologically sensitive areas in this vicinity were identified. [Vol. I, Chapter 5, Page 5.1.5-5, last paragraph]. Since this type of statement is apparently not applied to any other site's analysis, it is impossible to know if the same "worst-case" standard is applied consistently. It is also a moot point, because a worst-case situation would not be allowed to occur by virtue of state and federal laws requiring minimal impacts only, and by the exercise of prudent engineering and construction techniques. Furthermore, the boundary of the Waterloo Recreation Area falls entirely outside the SSC fee simple area and has been recognized as a constraint to be avoided and protected from encroachment. 13

6. Acknowledge that Michigan is the only state which has the authority of the Environmental Protection Agency (EPA) under section 404 of the Clean Water Act to define and manage an independent wetlands protection program. We have that distinction because our analytical capabilities match or exceed those of even the federal government, and because we have demonstrated over the last few decades through innovative legislation and determined monitoring and enforcement by the MDNR, an unequalled commitment to the protection of this valuable resource. This unique management ability should be acknowledged in the final EIS. 14

7. Revise the draft EIS in order to put into proper perspective the issue of wetlands in Michigan. The draft EIS does note that "None of the wetlands which might be lost or severely impacted by construction are known to be 15

of special significance or high value ecologically or recreacionally. The collider ring is situated so as to avoid the most productive and valuable of wetland habitat in the area. Loss of this habitat is therefore of only moderate concern, particularly in light of the presence of wetland habitat of high value both in the immediate area and regionally." [Vol. I, Chapter 5.1.5, Page 27] Unfortunately, this evaluation is buried in a somewhat inconspicuous location within the document where only a determined and careful reader could find it. This qualitative statement more aptly describes the wetlands issue at the Stockbridge site than any quantitative analysis.

8. Incorporate the state's suggestions from its proposal and subsequent conversations with the DOE regarding various mitigative plans to avoid impact on sensitive lands by flexible planning of surface buildings where alignment is not critical, and by replacing lost wetlands in unused portions of the SSC property or elsewhere on state-owned land. It has also been proposed, for example, that the use of evaporative cooling ponds instead of towers at the service areas would create new wetlands in some cases while alleviating local residents' objections to noise expected from the cooling tower machinery. Cooling ponds could also provide reserves of water for fire protection at the facility. The net result could be a gain in total acres of wetlands habitat after the SSC is built in Michigan, and an enhanced setting for the facility and its users. These measures should effectively minimize much of the potential wetlands impact discussed in the draft EIS. 16

The DOE team has shown a serious interest in our proposals to avoid, minimize or mitigate wetlands loss during previous discussions. The DOE has already demonstrated its willingness to preserve and protect natural settings and habitats at Fermilab, and we anticipate the same enthusiasm for wildland preservation from the DOE here, and a relatively easy cooperation between Michigan and the DOE on this matter.

In summary, as stated by David Hales, director of the Michigan Department of Natural Resources, in his verbal testimony on September 26 at the draft EIS hearing in Stockbridge:

—There will be minimal conflict between the SSC facilities and wetlands. 17

—In most cases, minor adjustments which do not compromise the project can be made to avoid conflicts.

—Where there is no prudent or feasible alternative, the project can be mitigated.

Thomas Anderson, co-sponsor and author of the "Goemaere-Anderson Wetland Protection Act" (Michigan Public Act No. 203 of 1979), also told the visiting draft EIS team that he believed the actual impact upon wetlands in Michigan would be small. Anderson, who chaired the state House Committee on Conservation, Environment and Recreation for 14 years and who is now a member of the Michigan Natural Resources Commission, said "I am convinced that a relatively small amount of wetlands will be affected." 18

Copies of additional material on this topic are attached as follows:

-Hales' testimony to the draft EIS public hearing 9-26-88;
-The "Wetland Protection Guidebook" of the Michigan DNR which contains the Wetland Protection Act;
-John Mogk's letter to Dr. Wilmot N. Hess dated 9-6-88;
-Written comments from Steven A. Ott and a table on "Quantitative Reference to Wetlands in Michigan in the Draft EIS" dated 10-6-88, and "Comments on the Draft EIS SSC -- Appendix 11, Ecological Resources" dated 9-16-88;
-A memo from Steve Sadewasser to Dennis J. Hall, Land and Water Management Division at the Michigan DNR regarding "Wetland Impacts" dated 9-21-88;
-"Soils - Acreage Report" from the Michigan DNR;
-"Data Collection and Analysis Methodology for SSC Project Area" and other written materials from Michael Scieszka of the DNR Land and Water Management Division, dated 10-11-88.
-A set of six new maps developed by the MDNR delineating wetlands, hydric soils, forests and other surface features of the Stockbridge SSC area.
-"Hydric Soils of the State of Michigan 1985" by the U.S. Department of Agriculture and the Soil Conservation Service.

GROUNDWATER RESOURCES

19 The impact upon Michigan's underground water supply by the SSC, depicted in Table 1-1 as causing "incremental increase to local overdraft," is an oversimplification of verified data which shows abundant groundwater supplies in Michigan -- much of these reservoirs untapped.

The Saginaw Basin alone encompasses an immense area of about 13,000 square miles, underlies at least parts of 29 counties, and contains so many gallons of water that Michigan clearly has a wealth of available groundwater. A recent review of existing data by the MDNR (requested by RTK on October 4, 1988) shows that at least six trillion gallons of groundwater is available in the two-county area under the proposed SSC footprint near Stockbridge. Recharge rates are estimated to average 56 billion gallons per year, or about
20 120,000 gallons per square mile per day. The U.S. Geological Survey estimates that the sustainable yield of the three-county area (Clinton, Eaton and Ingham counties) is from 200 to 400 million gallons per day, depending upon managment procedures used. This and more information on the topic are contained in an October 11, 1988, report titled "Groundwater Resources of Ingham and Jackson Counties" by Burrel P. Shirey.

Michael Moore, deputy director of the Michigan DNR for Region III (which includes the SSC area), testified at the September 26 draft EIS hearing in Stockbridge that groundwater and surface water resources will not be adversely affected by construction or operation of the SSC. Moore also noted that the
21 state anticipated increased need for water in the Stockbridge vicinity when it created the Michigan SSC Commission and proposed the site.

"The potential effects of the increased need for water in Stockbridge are covered by the state's guarantee to supply water to the SSC campus from a water treatment facility operated by the township or city," Moore said. "The development of the water system will be monitored by the Michigan Department

of Public Health and the SSC Commission office to ensure no adverse impacts from local water supply are felt by local residents."

Municipal water supplies for the cities of Lansing and Jackson comprise the two largest concentrated developments of the regional aquifer system in the vicinity of the SSC project. There has been an overall decline in groundwater use throughout the region, and a corresponding rise in the local static water table. This is described in greater detail in material and correspondence
22 from Ronald Van Til, Water Resource analyst at the MDNR, to Jim Heinzman of the Michigan SSC Office dated October 13, 1988, and attached.

Conditions commonly associated with overdrafting are not known to occur in Lansing or Jackson. There is no ground subsidence, intrusion of water of undesirable quality, contravention of existing water rights, deterioration of the economic advantages of pumping, or excessive stream flow infiltration in the region of influence.

The city of Lansing's drawdown cone has stabilized for one of two reasons. The first possibility is that pumping declines in recent years have been large enough to halt the further expansion of the cone. The second is that the
23 drawdown cone has intercepted a large recharge zone which is sufficient to stop the expansion of the cone.

This local drawdown at Lansing (30 miles northwest of Stockbridge) has had no effect on the water supplies for the communities of Stockbridge or Leslie.

Although we understand that Table 1-1 is an introductory summary, it nevertheless creates the impression that a substantial overdraft already exists, contributing to local fears that the SSC may cause private wells to go dry. However, Table 4-4 of the draft EIS describes "Water Resources Available" for the Stockbridge site as follows: "Extensive surface water and
24 groundwater resources; surface water use mostly for power plant cooling; only limited localized overdraft of groundwater." (Vol. I, Chapter 4, Page 4-19) Similarly, the text describes plentiful water supplies in Michigan: "Local and regional aquifers and relatively abundant groundwater resources occur at the Illinois, Michigan and Texas sites." (Vol. I, Chapter 4, Section 4.2.3, Page 4-18)

Depth-to-water figures included in the draft EIS for Michigan show a range of from five to 50 feet (Vol. I, Chapter 4, Table 4-3, pages 4-14 and 4-15). And while some temporary, localized impact may be seen on a very small scale during construction of the SSC, overdrafts in Michigan do not carry the serious implications that they do in many western states where groundwater
25 supplies are typically much smaller and arid conditions limit recharge rates. In Michigan, some private wells may be shallow and only reach glacial drift aquifers. Short-term pumping disturbances could be felt during construction if dewatering were necessary immediately adjacent to one of these wells. The interuption of the groundwater supplies in areas where shallow wells are present is easily solved by lowering the drop pipe, or by extending the well to a greater depth into the bedrock.

The state has responded to local residents' concerns by promising to bear the cost of providing short-term replacement water lost due to construction work,
26 or for extending private wells to greater depths if a localized overdraft

occurs due to SSC activities. The state has also established an SSC Ombudsman to handle complaints of this nature should they occur.

In a related topic, Table 1-1 also states that 80 water wells would be lost at the Michigan site. However, a closer reading of Appendix 7 (Vol. 4, Page 122) reveals that of the 80 wells identified as being within the SSC footprint (apparently including the stratified fee areas as shown in Figure 7-18), not
27 all would necessarily be displaced by the tunnel. The DOE has said that wells outside the 70-foot-diameter "restricted zone," but still within the 1,000-foot zone, could remain in place with DOE approval, and that replacement wells could also be located within the 1,000-foot zone with prior authorization from DOE. These factors suggest a much smaller impact to existing wells and private water supplies than indicated in Table 1-1.

28 A copy of the October 11 MDNR report on groundwater supply in Michigan, and a copy of the Van Til material are attached.

GEOLOGY

The sections of the draft EIS regarding Michigan's geology seem to be accurate. However, we do have concerns about portions of the text that deal with an alleged potential presence of natural gas in sub-strata or a presumed hazard of encountering unrecorded or poorly sealed oil and gas wells. Geologists feel that none of these problems will occur during construction of the SSC in Michigan.

R. Thomas Segall, state geologist and supervisor of wells in Michigan, testified at the September 26 hearing in Stockbridge that no threat from gas exists to tunneling operations at the proposed SSC site here. According to Segall, the draft EIS statement titled "Geologic Hazards" is misleading when it claims that natural gas, "presumably from poorly-sealed production wells, has been observed in sediments beneath the drift." [Vol. IV, Page 4-8]
29

"Concerns of escaped gas from poorly sealed oil and gas wells being discharged to uphole rock formations in the proposed area of the SSC are not well-founded," Segall said. "The location of the observed gas 'near the Michigan site' apparently refers to the only known case of such an occurrence in the region — the Cal-Lee oil field [some distance from Stockbridge]. In Cal-Lee, a subsurface blowout occurred during the drilling of an oil and gas test well. Gas escaped and traveled several miles through the drift until the well was brought under control."

However, Segall said, the 1968 Cal-Lee blowout has no relation to the SSC because it occurred more than 15 miles away "updip" from the SSC site. He noted that no gas has been reported or is known to be associated with the Saginaw, Bayport or Michigan formations in the area of the SSC site.

He also said that the Section 5.4.1.5 "Geologic Hazards" [Vol. IV, Appendix 5B, pages 14, 15 and 16] appears "excessively long considering that drift gas has not been reported in the area of the proposed SSC site. The nearest reported case is 17 miles east of the proposed site.

"Although drift gas has been reported in several Michigan counties, the rock units which are primarily responsible for its occurrence — rocks of the Antrim Shale and the Detroit River Group — do not subcrop below the drift in either Jackson or Ingham counties," Segall said. "Records of the Michigan DNR and the Michigan Department of Public Health show no record of drift gas occurrence in either Jackson or Ingham counties." Segall also said, "The probability of encountering an undocumented oil and gas test well in the region of the proposed SSC area would be very unlikely."

"Tunneling in these formations poses no threat of gas-related hazards," Segall concluded.

In written testimony submitted in a September 23, 1988, letter to Michael Wolfe at DOE from Jerome C. Neyer (of Neyer, Tiseo & Hindo, Ltd., Farmington Hills, Michigan, a consulting engineering firm), the Stockbridge site geology was described as "one of the most favorable environments for underground construction." The letter went on to describe shaft and tunnel construction techniques that have been used successfully on other projects in Michigan, as well as previously used dewatering methods.

30 "All in all, the subsurface conditions at the Stockbridge site are favorable for underground construction," Neyer wrote. "Underground construction is never easy but it becomes somewhat less difficult when conditions are relatively uniform (even if uniformly bad). It becomes even less difficult if conditions are relatively uniform and uniformly good. This is the case in Stockbridge."

Also, in written comments submitted to DOE on September 21, 1988, by Robert Patzer, executive director of the Associated Underground Contractors, inc., of Bloomfield Hills, Michigan, the geology of the Stockbridge site was evaluated by Ronald Heuer, a geotechnical consultant from McHenry, Illinois.

A copy of Patzer's letter with the comments from Heuer is attached.

31 On a technical item, the illustration showing location of oil wells at or near the Michigan site [Vol. IV, Appendix 5b, Figure 5.4.1-6, Page Michigan 18] needs to be updated with the new data sent to RTK in August at RTK's request.

32 A copy of Segall's verbal testimony from the September 26 public hearing in Stockbridge, a copy of the Neyer letter to Wolfe dated 9-23-88, a copy of the Patzer letter with Heuer's comments are attached.

SITE SPECIFIC ADAPTATIONS AND COSTS

33 In Volume 3 of its proposal, Michigan suggested locating some components of the injector system below tunnel level to minimize the need for cut-and-cover construction techniques. In a response to questions left behind by the DOE site visit team after its tour of the Stockbridge area, Kin Y. C. Chung wrote to Daniel Lehman on June 8, 1988, describing in greater detail "flexibility in construction of the MEB and HEB." Also, in response to other questions raised by the DOE site visit team, Chung provided information in the same submittal regarding the idea of raising the main ring level 10 to 20 feet above the original proposed elevation to save construction costs for the experimental stations, shafts and the tunnel itself.

34 The actual location and elevation of the accelerator components are, of course, DOE decisions. However, upon reading the text of the draft EIS [specifically Vol. IV, Appendix 1, Section 1.2.4, pages 37-46; and Appendix 2], we do not understand why this information on design flexibility at the Michigan site — requested by DOE — was not included in the draft EIS. We have a few suggestions to make on this topic:

1. Include in the draft EIS the information requested by DOE that the injector complex may be located closer to the surface than the main accelerator ring. The injector system may be either 20 to 30 feet underground in glacial drift, or in bedrock 20 feet above the plane of the main ring.

2. Acknowledge the suitability of bedrock information at the Stockbridge site to accomodate final design of the experimental halls. Based on preliminary geologic information and uncertainty over details of the size
35 of the experimental halls, our August 1987 proposal adopted a conservative elevation of 800 MSL floor for the accelerator ring. However, if very large experimental halls require extensive excavation to place them at tunnel elevation, a feasible and economical alternative could be to raise the accelerator tunnel to 810 or 820 feet. This could require tunneling through mixed composition for a short distance near E7 on the ring, but would lead to a significant savings in construction costs for the experimental halls. Further borings and detailed experimental hall designs would be needed before making this change.

3. Recognize that potential construction cost savings may be gained at the Stockbridge site because of the flexibility available in tunnel alignment here. The tunnel plane at the Michigan SSC site was assumed to be horizontal and flat in our proposal. A slight tilt to the tunnel plane would bring the experimental areas closer to the surface while leaving the tunnel within competent rock around the entire perimeter.

4. Note that the tunnel could also be folded through very small angles in a symmetric way to also bring experimental areas closer to the surface while maintaining adequate depth around the perimeter of the ring. Since the experimental areas lie in a region where bedrock elevation ranges from about 850 to 950 MSL, the main ring could still be constructed entirely within bedrock. We do not know, however, what effect folding might have on the dynamics of proton accelerators or the complexity of

the SSC engineering design.

5. Consider that cooling ponds may be feasible at some or all of the service areas at the Michigan site, instead of cooling towers. Ponds, such as those used at Fermilab, would have certain advantages such as utilizing (rather than eliminating) some wetlands, reducing noise pollution that would be created by cooling towers, contributing to a visually pleasing landscape where towers would be less attractive, and saving money. Site-specific engineering would be required to determine the application and extent of the cooling-pond options.

6. State whether geotechnical information regarding tunnel and facility flexibility information submitted at DOE request by Chung in his June 8, 1988, letter to Lehman was taken into account in the construction cost estimates [Vol IV, Appendix 2] used for site evaluation and comparative analysis.

36 A copy of Chung's June 8, 1988, letter to Lehman is attached.

ENVIRONMENT & ECOLOGY

37 This section of our written response to the draft EIS includes discussions of air quality, surface water quality, tunnel spoils disposal, threatened or endangered species, and cultural/paleontological resources.

Air Quality

38 The air quality background estimates used in the draft EIS do not accurately represent the air in the vicinity of the proposed SSC site near Stockbridge. [Table 1-1 and Vol. I, Chapter 4, Table 4-6 on Page 4-27]

As explained by Dorothy Bailey of the MDNR Air Quality Evaluation Unit (AQEU) in her review of the draft EIS, "There are no monitors operating in the Stockbridge area.

"The contractor elected to use the measurements from the closest monitor to the source. These monitors are not located in areas that can be classified as representative of the proposed SSC site [which] is a rural farming area with the closest sources approximately 13 miles away. The nearest major PSD source is approximately 20 miles away."

39 "The monitors used by the consultant are in metropolitan Detroit and Lansing. To directly use measurements from the urban areas of Detroit and Lansing to obtain background air quality estimates for a rural area such as Stockbridge is inappropriate," Bailey said.

The MDNR Air Quality Division has provided more accurate estimates of the Stockbridge area by using monitors in Lansing and Jackson, but balancing those measurements with data from rural areas similar to the Stockbridge vicinity.

A copy of Bailey's memo regarding this subject along with revised air quality figures are attached.

Surface Water Quality

The IDNR Surface Water Quality division identified several errors in the evaluation of the Michigan site in the draft EIS (Vol. II Table 4-2 on Page 4-13; Vol. IV, Appendix D, Table 5.4.1-1, pages Michigan 27 and 28, and part of the text on Page Michigan 26; Vol. IV, Appendix D, Table 5.4.2-2, pages Michigan 44 and 45).

40 Mercury values cited are values obtained in the Michigan site approximately one mile downstream, otherwise, mercury is undetectable in normal flows.

According to the text figure of the EIS, an Michigan point was used in using the mercury standard, for example. The perceived distortion of the mercury standard appears to be largely due to misinterpreting the data. Most of the water quality values for mercury have been less than detectable values. These results are entered into STORET as the detection limit followed by a remark code and indicates the true value is lower. It appears that these remark codes were omitted during data analysis so that most samples were reported as having mercury concentrations equal to the level of detection.

To the best of our knowledge, there have been no other samples collected in this region with detectable mercury levels in the past ten years, Davis said.

Other mistakes seem to have been made regarding the dissolved oxygen in rivers when the 5-day use of a chloride standard not applicable in this case, application of the wrong test procedure, identifying wastewater treatment plants, and others.

Davis's analysis of the draft EIS sections on surface water quality is somewhat lengthy. Therefore, his entire report including references to specific sections and earlier versions the draft EIS is attached.

Tunnel Spoils Disposal

41 The draft EIS (Vol. IV, Appendix E, Section 4.1.1.1, Page Michigan 17) described the percentages of rock spoils in the last sentence of the first paragraph. Did these calculations take into account information on rock types attached to Daniel Jackson by Z. F. C. Chang on June 30, 1978, in response to questions that arose at the EIS wrap-up meeting on June 27, 28 and 29, that should be considered.

Surface land disposal of spoils -- specifically the reference to Syracuse in equally Rock Mt. Lakeside 13, Table 10-10 -- Page 21 -- raises a question: Have the Corporation considered and included sample results from actual testing samples submitted to Dale Carmody on May 11, 1978 used to achieve this data and determine the surface disposal spoils disposal? If not, this should be included.

42 Also, the Lakeside 13 contained value appeared to be the same but presented in the EIS Appendix D, Table 10-10 -- Page 21 -- raises questions: Do one expected discussion the quality of water that are stored drinking water aquifers. Should testing of the water chemistry and for be included?

especially if the reactive sulfides after leaching do not violate water quality standards. The statements and conclusions found in Appendix 10 [see reference above] should be reworded accordingly.

In a 12-foot-diameter tunnel boring, a lens or small portion of the rock unit may contain reactive sulfides, yet leachate analyses of the composite 12-foot area may not exceed or even approach water quality standards. These spoils may be able to be disposed of in the designated quarries with the approval of the Michigan DNR, and without extensive pretreatment or separation.

44 Copies of Chung's June 8 and June 30 letters to Lehman are attached.

Threatened or Endangered Species

45 The data on wildlife resources and threatened or endangered species regarding the Michigan site appears to be accurate in the draft EIS, according to the MDNR Wildlife Division which reviewed this part of the document.

As Mike Moore of the MDNR testified at the public hearing September 26, no sitings of the Indiana Bat have occurred recently in the Ingham and Jackson county areas.

In a September 23, 1988, letter, Karl R. Hosford, chief of the MDNR Wildlife Division, noted that "existing data and preliminary surveys are inadequate to eliminate the possibility that sensitive resources occur on areas proposed for
46 surface disturbance. Therefore, appropriate contact with state officials could be effective in a decision on final placement and design of conventional structures to avoid impacts to the champion [pignut hickory] tree or other important species."

Hosford also pointed out that the diversity and relative abundance of habitats in the SSC site area and in the region provides a buffer of stable, natural environments for native fauna and flora.

A copy of Hosford's letter is attached.

Cultural/Paleontological Resources

The draft EIS identified 125 prehistoric and 82 historic archaeological sites
47 with the Michigan SSC site area. Of these, only seven prehistoric sites lie within proposed facility locations. An extensive survey of historic buildings showed that no national register sites were found within facility boundaries, although two potentially eligible sites are present which could be protected as was the case for an historic structure located at Fermilab. [Vol I, Chapter 4, pages 4-96 and 4-97]

Tunneling activities (other than at access points) should not be expected to disturb any of these sites or buildings because of the substantial depth of
48 the tunnel. Surface construction may affect the seven prehistoric sites mentioned above, although as suggested in the wetlands section, careful planning and adjustments in locations of those structures which are flexible could avoid these sites.

SOCIO-ECONOMIC ISSUES

The draft EIS studied in detail the potential impact of the SSC upon the residents, economies, local services and lifestyles of the rural areas and small communities that surround the proposed Stockbridge site. For the most
49 part, we agree or accept the analyses put forward in the document.

However, on three topics we are submitting comments that should prompt changes either to data presented or conclusions drawn — (1) the expected size and impact of the construction workforces, (2) the impact upon farmlands and
50 agricultural business, and (3) the ability of local school systems to absorb an
51 anticipated increase in K-12 enrollment.

Workforce

The DOE team heard verbal comments on September 26 from John Rakolta, Jr., Ken Case and Ann Boomer Milligan.

Rakolta, president of Walbridge Aldinger which is one of the largest General Contractors/Construction Managers firms in the U.S., said the availability of transient construction workers in Michigan "is much higher than indicated by the draft EIS."

Rakolta questioned the validity of the projection of 6,680 immigrant workers to the Stockbridge area during 1992 (the peak year of construction) listed in the draft EIS [Vol. I, Chapter 5, Table 5.1.8-5, Page 5.1.8-16], suggesting that the actual number would be significantly lower. He explained that, based upon his experiences on projects here and elsewhere, Michigan construction
52 workers are much more mobile that those living in other parts of the country. He noted that he drove to the hearing in Stockbridge from Livonia, a Detroit suburb, 50 miles in 50 minutes.

"Many tradesmen drive round-trip more than 120 miles daily in Michigan," Rakolta said. "We've found this not to be true in other areas. Within that radius, tradesmen living in western Wayne County and southwestern Oakland County will be available for this project."

He added that much of the large pool of construction workers residing in the greater Detroit area would be within a daily commuting distance of the Stockbridge SSC site, as well as workers from Flint, Lansing, Jackson, Battle Creek and Ann Arbor. Prime contractors and subcontractors from these same cities are very mobile as well, he said.

Case, secretary/treasurer of the Michigan State Building and Construction Trades Council which represents more than 100,000 building trades workers in the state, addressed the same issue in his verbal testimony September 26.

53 Case noted that "69,000 building trades workers live within a 75-mile radius, or one and one-half hours or less driving time to the project. 11,000 of those workers live within a 50-mile radius, or a one-hour drive or less. Having skilled tradesmen in these numbers available within these distances will eliminate the need to import large numbers of workers from other areas and states."

Milligan, corporate secretary of The Boomer Company of Detroit which is one of the largest construction material suppliers in the state, cited the "boomtown" effects predicted in the draft EIS [Vol. I, Chapter 5, Section 5.1.8.5, pages 5.1.8-19 through 5.1.8-25].

Milligan said she did not believe that such an effect would be seen in Michigan which, she said, "has a strong history of moving manpower and materials around the state to accomodate construction timetables.

54 "The vast majority of the supplies necessary for building the SSC are in ready abundance throughout Michigan, and our infrastructure makes it relatively easy to transport these materials to the site without excessive cost or loss of time. In addition, many of the required suppliers are already located very near the Stockbridge site."

Milligan described in detail the large capacities of concrete and steel suppliers nearby in lower Michigan, the greater truck weights permitted on Michigan roads compared to other states, and the large number of material suppliers generally situated in southern Michigan due to the industrial nature of our economy here.

"In conclusion, Michigan's supplier industry has an abundance of resources to provide economical production and efficient delivery of quality products to the Stockbridge site without seerious impact to the community," Milligan said.

55 Copies of the testimony given by Case and Milligan are attached, along with four pages of data on the labor and supplier pools which was prepared for the May 31-June 3 DOE site visit to Michigan.

Farmlands

As is the case with wetlands, the number of acres of prime or potential prime farmland contained within the fee simple areas of the proposed SSC site in Michigan does not necessarily mean that these agricultural properties will be removed from farm production. [Vol I, Chapter 4, Table 4-23, Page 4-77]

Although the draft EIS apparently does not mention this, conversations between DOE and Michigan officials have led us to believe that the portions of the fee simple areas not used for SSC facilities would be leased back for agricultural
56 use. This could reduce the number of acres of farmland impacted by the project to an estimated 500 or less.

In addition, Michigan has asked the DOE to consider giving prior owners of farmland first options at leasing back their former properties for continued agricultural use after the property is acquired by the state and turned over to the DOE, a point not noted in the draft EIS.

The state has also instituted a plan for the property acquisition process here that will give farmers a 50-percent "farmland equity payment" above the appraised current value of agricultural property as compensation for fluctuating farmland values in recent years. This payment is specified in the state legislation signed by the governor July 15, 1988 (Public Act 274 of 1988). The draft EIS makes no apparent mention of this feature.

57 A copy of Public Act 274 of 1988 is attached. Also, a copy of verbal testimony given by Rebecca Jeppesen of the Michigan Farm Bureau at the September 26 public hearing on the draft EIS is attached.

Education

The draft EIS describes an anticipated impact on local school enrollments in the vicinity of the SSC site in Michigan, but apparently does not mention state mechanisms already in place to relieve local school districts of any financial impacts due to construction or operations. [Vol. I, Chapter 5, Table 5.1.8-6, Page 5.1.8-18]

58 In legislation sign by the governor July 15, 1988 (Public Act 274 of 1988), the state pledged to reimburse local governments for property taxes lost due to the transfer of private properties to DOE ownership. This should relieve local governments from the initial negative impacts to revenues caused by the SSC. In addition, a long-standing state education aid system automatically increases state funding to local districts which are hit with large increases in enrollment whether anticipated or not.

Again, since we do not expect construction workers to establish residences near the site in large numbers, we do not anticipate a sudden increase in pupil enrollment at local schools near the site during the early stages of the SSC project. The operational influx of new residents should be a more gradual process, and is expected to be spread over a larger geographic area including the cities of Lansing, East Lansing, Jackson and Ann Arbor.

TECHNICAL CORRECTIONS

59 In carefully reading the draft EIS, the Michigan SSC team noted a number of technical errors in the text that should be corrected for the final EIS. These include map errors, mis-spelled names of roads, and other items.

60 The map of Michigan showing the Region of Influence (Vol. I, Chapter 5, Table 5.1.8-4, Page 5.1.8-5) shows a 12-county area in central and southeastern Lower Michigan. However, the smaller map on the same page (lower left corner) depicts a much larger area covering most of the southern half of Lower Michigan. The blacked-out area on the smaller map of Michigan should be made proportionally smaller.

The state of Michigan includes two peninsulas. The Upper Peninsula of Michigan was omitted from the map on Page 5.1.8-5 and elsewhere in Michigan maps in the draft EIS. The U.P. should be added to these maps of the state.

The following technical mistakes in Volume IV, Appendix 1 were noted:

Page 40, Section 1.2.4.4, Paragraph 2 -- insert "Roots" prior to Station Road (line 3).

Page 41, Section 1.2.4.5, Paragraph 1 -- change Rage to "Race" in last line.

— Paragraph 5 — correct Munth to "Munith" in last line.

61

Page 42, Section 1.2.4.6, Paragraph 2 — correct Munth to "Munith" in last line.

— Paragraph 3 -- correct Edger to "Edgar" in last line.

Page 46, Section 1.2.4.13, Paragraph 2 -- correct Edger to "Edgar" in second line.

— correct Edger to "Edgar" in sixth line.

— correct Annus to "Annis" in sixth line.

LIST OF ATTACHMENTS

(Michigan Draft EIS Response)

-Dr. Hales' testimony to the draft EIS public hearing 9-26-88;
-The "Wetland Protection Guidebook" of the Michigan DNR which contains the Wetland Protection Act;
-John Mogk's letter to Dr. Wilmot N. Hess dated 9-6-88;
-Written comments from Steven A. Ott and a table on "Quantitative Reference to Wetlands in Michigan in the Draft EIS" dated 10-6-88, and "Comments on the Draft EIS SSC — Appendix 11, Ecological Resources" dated 9-16-88;
-A memo from Steve Sadewasser to Dennis J. Hall, Land and Water Management Division at the Michigan DNR regarding "Wetland Impacts" dated 9-21-88;
-"Soils - Acreage Report" from the Michigan DNR;
-"Data Collection and Analysis Methodology for S3C Project Area" and other written materials from Michael Scieszka of the DNR Land and Water Management Division, dated 10-11-88.
-A set of six new maps developed by the MDNR delineating wetlands, hydric soils, forests and other surface features of the Stockbridge SSC area.
62
-"Hydric Soils of the State of Michigan 1985" by the U.S. Department of Agriculture and the Soil Conservation Service.
-A copy of the October 11, 1988, MDNR reoport on groundwater supply in Michigan.
-A copy of the Van Til material.
-A copy of Segall's verbal testimony from the September 26, 1988, public hearing in Stockbridge.
-A copy of the Neyer letter to Wolfe dated 9-23-88.
-A copy of the Patzer letter with Heuer's comments.
-A copy of Chung's June 8, 1988, letter to Lehman.
-A copy of Hosford's letter.
-A copy of Bailey's memo along with revised air quality figures.
-Hobrla's analysis of the draft EIS sections on surface water quality including
references to specific sections and tables within the draft EIS.
-A copy of Chung's June 30, 1988, letter to Lehman.
-Copies of the verbal testimony given on September 26, 1988, by Case and Milligan.
-Four pages of data on the labor and supplier pools which was prepared for the May 31-June 3 DOE site visit to Michigan.
-A copy of Public Act 274 of 1988.
-A copy of verbal testimony on the draft EIS given September 26, 1988, by Rebecca Jeppesen of the Michigan Farm Bureau.

LETTER 1517 (CONTINUED)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 21, 1988

TO: Jim Heinzman, Department of Natural Resources
Superconducting Super Collider Liaison

FROM: Rick Hobrla, Surface Water Quality Division
Superconducting Super Collider Liaison

SUBJECT: Draft Environmental Impact Statement for the
Superconducting Super Collider

We have reviewed the draft Environmental Impact Statement (EIS) for the Superconducting Super Collider (SSC). We restricted our review to those portions of the EIS dealing specifically with surface water quality issues in Michigan. Based on this review, we have a number of changes and corrections to propose.

Michigan's water quality standard for dissolved oxygen in rivers is misrepresented in Table 4-2 on page 4-11 in Volume I. This table shows 7 mg/l as the minimum dissolved standard. This standard applies only to designated trout streams. Since there are no designated trout streams on or within the collider ring, the appropriate dissolved oxygen standard to reference is the one for warmwater streams. This value is 5 mg/l. The reference in
63 the Table 4-2 should be changed from 7 to 5 mg/l.

Several of the values for Michigan's water quality standards in Table 5.4.2-3 on pages 5APP5A2188837-5APP5A2188838 in Volume IV are incorrect, incomplete or misleading:

(1) The fecal coliform standard is shown as 200 per 100 ml. The complete standard is 200 per 100 ml as a 30-day average and 400 per 100 ml as a 7-day average. We would prefer that the standard be given in its entirety, but, for the sake of simplicity, we are willing to accept the existing wording.

(2) The dissolved oxygen standard should be changed from 7 mg/l to 5 mg/l as explained above.

(3) The dissolved solids standard is shown as 750 mg/l. The complete standard is 750 mg/l as a 30-day average and 500 mg/l as a daily maximum. We would prefer that the standard be given in its entirety, but, for the sake of simplicity, we are willing to accept the existing wording.

(4) The chlorides standard is shown as 125 mg/l. This standard only applies to waters protected for public water supply. Since there are no potable surface water intakes in the vicinity, this standard does not apply. We recommend that it be removed from the table.

(5) The lead standard is shown as 655 ug/l. The actual lead standard is based on water hardness. Assuming a typical hardness value of 250 mg/l as $CaCO_3$, the standard for lead would be 14 ug/l to protect against chronic toxicity. We recommend that the lead standard should be changed from 655 to 14 ug/l.

(6) The mercury standard is shown as 0.2 ug/l. The standard for mercury to protect the human life cycle is 0.0006 ug/l. We recommend that the mercury standard should be changed from 0.2 to 0.0006 ug/l.

On page 5APP5A2188836 of Volume IV Appendix 5b the draft EIS states "Notable constituents commonly in excess of standards are mercury and fecal coliform, occasional exceedances are also found with dissolved oxygen and chloride." We disagree with a portion of this statement.

As mentioned above, there is no chloride standard in this region and, therefore, the standard cannot be exceeded.

64 The perceived violations of the mercury standard appears to be largely due to misinterpreting the data. Most of the water samples tested for mercury have shown less than detectable values. These results are entered into STORET as the detection limit followed by a remark code to indicate the true value is lower. It appears that these remark codes were omitted during data analysis so that most samples were reported as having mercury concentrations equal to the level of detection. To the best of our knowledge, there have been no water samples collected in this region with detectable mercury levels in the past ten years.

We recommend that the statement quoted above be changed to read "Fecal coliform concentrations have commonly exceeded the standards with occasional exceedances of the dissolved oxygen standard reported as well." We also recommend several changes to the mercury concentrations listed in Table 5.4.2-3. For STORET Station No. 380031 the maximum mercury concentration should be reduced from 1.0 ug/l to 0.2 ug. A "less than" symbol should be added in front of the minimum mercury concentration of 0.1 ug/l. And the average mercury concentration of 0.37 ug/l should be eliminated or recalculated.

Two facilities should be added to the listing in Table 5.4.8-1 on page 5APP5A2188881. The Delhi Township Wastewater Treatment Plant is in Ingham County approximately 25 miles from the SSC site. It has a treatment capacity of 2.0 million gallons per day (mgd), an actual average flow of 1.5 mgd and an excess capacity of 0.5 mgd. The Webberville Wastewater Sewage Lagoon is in Ingham County approximately 25 miles from the SSC site. It has a treatment capacity of 0.228 mgd. The actual average flow and excess capacity are unknown because the flows are currently unmetered.

65 In conjunction with these additions, the statement immediately above Table 5.4.8-1 which reads "Five of the seven wastewater treatment plants..." should be changed to read "Six of the nine wastewater treatment plants...".

Also in Table 5.4.8-1, the treatment capacity for Springport should be reduced form 0.17 to 0.11 mgd and the excess capacity should be lowered from 0.116 to 0.056 mgd.

In Figure 5.4.8-1 the Delhi Township Wastewater Treatment Plant should be added approximately five miles due south of Lansing. The Webberville Wastewater Sewage Lagoon should be added about five miles east of Williamston. The Leslie facility should be moved from the west side of the collider ring to approximately the center of the ring. The Ypsilanti facility should be moved due west so that it is in Washtenaw County rather than Wayne County.

If you have any questions concerning these comments, please call me at 335-4183.

Rich

cc: Paul Zugger
Rich Powers
Bryan Morris

COMMENTS ON THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT
SUPERCONDUCTING SUPER COLLIDER

APPENDIX 11, ECOLOGICAL RESOURCES

11.2.2 Assumptions, Pages 3 - 4.

66 *Please specify assumptions used in assessing impacts directly (or indirectly)* attributed to on-site development. In particular, indicate the assumed acreage of disturbance for the campus, injector, future expansion, service areas, intermediate access areas, buried beam zone access areas, etc. For the aforementioned project facilities, state where site independent assumptions were made and, if so, describe those made at Michigan's Stockbridge site.

11.3.4.3 Wetlands (Michigan), Page 22, Paragraph 4, Last Sentence.

67 *Please explain the assumptions and methods used to derive the 2,800 acres of* wetlands, as compared to determinations made at the other alternative sites. As stated, wetlands would comprise over one-third (36 percent) of the 7,885-acre fee simple area. This data is inconsistent with prior assessments which were based on the draft National Wetlands Inventory maps and included in the Michigan proposal (refer to Volume 5, Table 5.8-1, Page 5-70).

11.3.4.3 Wetlands (Michigan), A. Construction Impacts, Page 22, Paragraph 5.

68 *The discussion of construction impacts lacks clarity in characterizing* wetlands directly affected. The analysis is ambiguous and does not allow the reader to discern (quantitatively or qualitatively) between those wetland resources directly preempted due to construction, as contrasted with wetlands which are "adjacent or near" the proposed surface facilities, e.g., indirectly affected.

Wetlands within the fee simple area are not synonymous with wetlands displaced. While the resource may potentially be at risk once the property has been conveyed, the assumptions made in II.2.2 (above) should allow a finite acreage of wetlands affected (e.g., displaced) to be presented in the DEIS. As a consequence, a lack of consistency appears to exist between the wetlands analyses of alternative sites. For example, in II.3.2.3 (Colorado) the DEIS states "...surface facilities related to the proposed SSC project intrude on approximately 20 acres of Class I wetlands." This degree of specificity is not apparent in Michigan's evaluation. Despite this fact, the 20 acres displaced in Colorado are nonetheless represented (in Volume 1, Tables 1-1 and 5.6-4 and Section 3.7.7) as being directly comparable to the 2,800 acres of wetlands in Michigan's fee simple area. These numbers do not permit a direct comparison of wetland impacts between sites and should be appropriately modified. Direct impacts to wetlands are properly comparable in the DEIS; in the absence of field studies or construction plans, however, there is little demonstrated basis in the analysis for including acreages of wetlands which may be indirectly affected. 69

The analysis of wetlands should be clarified to address the abundance of the resource present. A "small" number of acres in the fee simple area may suggest a greater (rather than lesser) significance if displaced, given the overall acreage of the resource in the collider ring or in the project setting. There appears to be an implied absolute scale of comparison of acreages disturbed without regard for the relative abundance or distribution of the resource. Scarcity may imply greater importance and/or significance, where the resource is at risk. Conversely, the fact that the edge of a DOE fee simple area may cross a wetland greater than 10 acres does not, in and of itself, warrant the assumption of loss (refer to Volume 1, Section 5-4). To the contrary, the larger the size of the wetland, the more resilient the resource may become to perturbations. 70

II.3.4.3 Wetlands (Michigan), A. Construction Impacts, Page 23, First Paragraph, Last Sentence. 71

References to Areas B and C and the respective acreages of wetlands disturbed appear to be transposed.

II.3.4.3 Wetlands (Michigan), Figures II-5, II-6 and II-7, Pages 25 - 27. 72

Each figure requires explanation that the dotted line was provided in the ISP and the solid line is the modified location of the facility as proposed by the State of Michigan.

Steven A. Gut
16 September 1988

Table 1-1

MAJOR ENVIRONMENTAL IMPACTS OF CONSTRUCTING AND OPERATING THE SSC AT THE SITE ALTERNATIVES

Impacts	Arizona	Colorado	Illinois	Michigan	North Carolina	Tennessee	Texas
Water Resources							
Loss of water wells	0	18	320	80	9	350	8
Water supply	Groundwater supply: incremental increase to local overdraft	Groundwater supply: purchase of groundwater now going to other uses	Groundwater supply: incremental increase to regional overdraft	Groundwater supply: incremental increase to local overdraft	Surface water supply: use of large fraction of excess capacity	Surface water supply: use of large fraction of excess capacity	Surface water supply: use of small fraction of excess capacity
Air Quality							
Construction TSP emissions ambient air quality (% of TSP 24-hr NAAQS)	170	190	230	190	216	225	225
Ecological Resources			4836.5			1434	
Wetlands in fbo single drain	none	20 acres	850 acres	[redacted]	250 acres	<10 acres	<10 acres
Habitat loss: threatened and endangered species	Tumamoc globeberry	Bald Eagle	Prairie brush clover; Indiana bat	Indiana bat	None	Tennessee purple coneflower; Indiana Bat	Black-capped vireo
Socioeconomics							
Number of jobs							
Total[1], each yr Construction	8,506	8,935	10,896	9,663	8,717	8,531	8,851
% increase[2]	0.86	0.87	0.27	0.48	0.94	1.33	0.45
Total[1], first yr Operations	8,160	8,301	7,044	8,322	8,398	8,886	8,513
% increase[2]	0.34	0.37	0.13	0.21	0.55	0.85	0.26

Site	Wetlands (Acres)	SSC Area Designation (Fee Simple Areas)
Arizona	0	
Colorado	20	E1, E3, E9
Illinois	850	E1, J2, J4, J5, J6
Michigan	2,800	E1, E4, E5, F1, F2, F3, F6, F8, F9, F10, J1, J2, J3, J5, J6, K2, K4, B, C
North Carolina	258	A, B, C, E2, E3, J1, J2, J3, J6
Tennessee	less than 10	A, B, E6, E8, J4, K5, K6
Texas	less than 10	J4

74

Such impacts listed above would be an incremental addition to the regional rate of wetland degradation and conversion occurring as a result of agricultural drainage and/or rural/suburban development.

3.7.8 Prairies

Only the sites in Illinois and Texas have prairie remnants. In both cases, the incremental additions of the SSC project to regional impacts on prairie remnants would be limited to secondary impacts due to induced population growth.

3.7.9 Cedar Glades

Only the region in the vicinity of the Tennessee site has cedar glades. Approximately 22 percent of the forested land near the Tennessee site contains red cedar with several glades in the vicinity of the proposed site. None of those known glades would be impacted by the project; however, there could be some secondary impacts from construction. These impacts are incremental additions to other regional impacts (tree harvesting and stock grazing) on cedar glades.

3.7.10 Land Use

The SSC project development would probably be an important/significant source of growth in each region. The location of the SSC in Arizona will require conversion of portions of the site from multiple-use lands (including grazing, recreation, and Wilderness Study Area) to light

LETTER 1517 (CONTINUED)

Table 5.6-4

NATURAL AND DEPLETABLE RESOURCES REQUIRED
COMPARISON AMONG SITES

	Arizona	Colorado	Illinois	Michigan
1. Earthen resources				
High quality aggregate	1,800,000 tons	1,800,000 tons	1,500,000 tons	1,900,000 tons
Mid quality aggregate	150,000 tons	180,000 tons	13,000 tons	180,000 tons
Stone bedding	83,000 tons	30,000 tons	30,000 tons	30,000 tons
Cement	80,000 tons	85,000 tons	143,000 tons	80,000 tons
Availability/impact	Plentiful locally - no impact.	SSC uses 0.04% of permitted aggregate reserves - impact minor.	Plentiful locally - no impact.	Plentiful locally - no impact.
2. Land resources				
Fee simple area	15,030 acres	7,690 acres	10,508 acres	7,885 acres
Prime farmland	36 acres	175 acres	108 acres	125 acres
Important farmland	0 acres	285 acres	55 acres	134 acres
Wetlands	0 acres	20 acres	850 acres	827,800 acres
Wilderness/parks	1,818 acres wilderness study area	0 acres	0 acres	0 acres
Prime & Important farmlands Converted for SSC Use (% of inventory in site region)	0.001	0.2	0.01	1
3. Water resources[2]				
Construction	332 acre-ft groundwater	332 acre-ft groundwater	332 acre-ft groundwater	332 acre-ft groundwater
Fossil	403 acre-ft/yr groundwater	403 acre-ft/yr groundwater	403 acre-ft/yr groundwater	403 acre-ft/yr groundwater
Industrial	1,775 acre-ft/yr groundwater	1,775 acre-ft/yr groundwater	1,775 acre-ft/yr groundwater	1,775 acre-ft/yr groundwater
Availability/impact	Operational use of industrial water exceeds groundwater recharge but impacts considered negligible.	Availability good - impact insignificant.	SSC will increase current water use slightly - impact insignificant.	Use of multiple well fields spreads load - impact insignificant.
4. Other resources				
Electric power[2]	888 million kWh/yr	888 million kWh/yr	888 million kWh/yr	888 kWh/yr

ICHP5223-4029

LETTER 1517 (CONTINUED)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 21, 1988

TO: Dennis J. Hall, Chief, Land and Water Management Division

FROM: Steve Sadewasser, Lakes and Streams Protection Unit

SUBJECT: Superconducting Super Collider, Wetland Impacts

As requested by Mike Moore, I have reviewed pertinent sections of the DOE Environmental Impact Statement and have the following comments:

75 1. A check with Mike Scieszka reveals that approximately 3,145 acres of hydric soils are found within the entire project area (including all "fee simple" areas). As you know, this does not mean that there are 3,145 acres of wetlands since, even by federal standards, the presence of hydric soils represents only one of the three necessary criteria for defining an area as wetland. At best, this figure represents potential wetlands. His figures clearly show that the majority of the areas containing hydric soils are in agricultural use. Mike has developed excellent visuals and data which graphically demonstrate this point. I urge using his products as focal points for presenting the Department's review of the EIS.

76 2. The EIS identifies the entire acreage of "wetlands" (method of obtaining acreage not indicated but U.S. Fish and Wildlife Service, East Lansing Field Office was not the source) but in the first data table, there is no indication that only a portion would be impacted by the project. This appears to be the only land category that is treated this way. Note that impacts to farmlands are separated into categories that show actual impact (i.e. "Prime and Important Farmlands Converted for SSC Use") but wetlands potentially impacted are separated only within the body of the report. This is further clouded by the "Impacts" Section 3.7.7 which states that the summary table in that section reflects impact, rather than presence. I recommend that this point be made in either the oral, or the written comments submitted. The point is, changes in ownership or subsurface use rights do not constitute impacts to wetlands and the failure to indicate this in the EIS has apparently led to confusion about wetland impact levels.

77

78 3. Their "worst case" amount of wetland at risk from construction impacts is identified in the EIS as including 380 acres "temporarily" disturbed (wetlands that can be reclaimed) and 260 acres that will be permanently destroyed and therefore subject to mitigation. In the "Environmental Consequences . . . " section, the EIS states, "The magnitude and nature of negative impacts are based upon worst-case

analysis . . ."(5.1.5.1.B.4). This statement is not applied to any other state so it is not possible to know if the same standard is applied consistently. The reason that this is important is that worst case will not be permitted, especially since such a large portion of the project is flexible as to specific location (SSC staff points out that many of the facilities around the ring can be located anywhere within a distance of 1,000 feet of that shown on the conceptual plan). The estimates by Gilbert Commonwealth of less than 100 acres of impact are far more likely as maximums and, even then, are likely to be overstating what will actually be necessary (the EIS shows that much of the wetland impact can be eliminate by very slight configurational changes). State and federal laws require that minimal impact occurs which makes "worst case" estimates essentially meaningless.

79 4. There have been questions about how mitigation would be applied. I suggest we respond by referring to our administrative rules, particularly R 281.925 Mitigation. The progression that leads to mitigating only for unavoidable impacts as well as the requirements for no net loss of wetland resources, addressing the functional impacts, and providing offsets within the area of the impact should all provide clear guidance of the legal commitments and requirements in the State. I am of the belief that this is one of the most clear and thorough guidelines for mitigation in the nation and I believe that it will assist in establishing our "credentials" as leaders in wetland protection.

80 I believe that the four items above should form the core of the Department's response to the portions of the EIS that do not accurately represent this subject. If you would like additional details or have facts arranged in a different format, please let me know.

Steve Sadewasser

LETTER 1517 (CONTINUED)

SOILS - ACREAGE REPORT
(SUPER)

DATE 12-FEB-
TIME 15:56:3
PAGE: 1

SWR - LAND AND WATER MANAGEMENT DIVISION
MICHIGAN RESOURCE INVENTORY PROGRAM

SOIL CODE	SOIL TYPE	ACRES	P
Ad	Adrian muck	213.87	2.
AmA	Ambosaurus-Capac sandy loams, 0 to 3 percent slopes	237.46	3.
BrB	Boyer sandy loam, 0 to 6 percent slopes	61.85	0.
BsD	Boyer-Spinks loamy sands, 12 to 18 percent slopes	3.76	0.
BsE	Boyer-Spinks loamy sands, 18 to 30 percent slopes	12.65	0.
BwA	Brady sandy loam, 0 to 3 percent slopes	153.26	1.
CaA	Capac loam, 0 to 3 percent slopes	470.01	5.
Ch	Cohoctah silt loam	40.94	0.
Co	Colwood-Brookston loams	223.03	2.
Ed	Edwards muck	110.81	1.
EvB	Elva Variant channery sandy loam, 2 to 6 percent slopes	5.17	0.
Gf	Gilford sandy loam	116.17	1.
Gt	Granby loamy fine sand	169.05	2.
Hs	Histosols and Aquents ponded	7.11	0.
Hm	Houghton muck	459.98	5.
Ks	Kawkawlin very fine sandy loam	274.53	3.
KbA	Kibbie loam, 0 to 3 percent slopes	65.37	0.
Lm	Lenawee silty clay loam	2.91	0.
MaB	Marlette fine sandy loam, 2 to 6 percent slopes	235.09	3.
MaC	Marlette fine sandy loam, 6 to 12 percent slopes	10.16	0.
MaD2	Marlette loam, 12 to 18 percent slopes, eroded	3.87	0.
MtB	Metea loamy sand, 2 to 6 percent slopes	12.16	0.
Na	Napoleon muck	101.73	1.

81

BA-1 40%

SOILS - ACREAGE REPORT
(SUPER)

SOIL01_02

DATE: 12-FEB-
TIME: 15.56.3
PAGE: 2

DNR - LAND AND WATER MANAGEMENT DIVISION
MICHIGAN RESOURCE INVENTORY PROGRAM

CODE	SOIL TYPE	ACRES	P
OsB	Oshtemo sandy loam, 0 to 6 percent slopes	102.49	1.
OsC	Oshtemo sandy loam, 6 to 12 percent slopes	34.41	0.
OtB	Oshtemo-Spinks loamy sands, 0 to 6 percent slopes	173.14	2.
OtC	Oshtemo-Spinks loamy sands, 6 to 12 percent slopes	27.89	0.
OwB	Owosso-Marlette sandy loams, 2 to 6 percent slopes	23.13	0.
OwC	Owosso-Marlette sandy loams, 6 to 12 percent slopes	16.58	0.
Pa	Palms muck	167.99	2.
Pt	Pits	10.07	0.
RdB	Riddles-Hillsdale sandy loams, 2 to 6 percent slopes	538.04	6.
RdC	Riddles-Hillsdale sandy loams, 6 to 12 percent slopes	127.39	1.
RdD	Riddles-Hillsdale sandy loams, 12 to 18 percent slopes	8.09	0.
Sb	Sebewa loam	51.50	0.
SnB	Sisson fine sandy loam, 2 to 6 percent slopes	22.36	0.
SnC	Sisson fine sandy loam, 6 to 12 percent slopes	8.03	0.
SpB	Spinks loamy sand, 0 to 6 percent slopes	389.43	7.
SpC	Spinks loamy sand, 6 to 12 percent slopes	97.23	1.
ThA	Thetford loamy sand, 0 to 3 percent slopes	168.83	2.
W	Water	0.47	0.
11B	Boyer-Oshtemo sandy loams, 1 to 6 percent slopes	25.63	0.
11C	Boyer-Oshtemo sandy loams, 6 to 12 percent slopes	30.06	0.
11D	Boyer-Oshtemo sandy loams, 12 to 18 percent slopes	4.41	0.
13B	Ormas-Spinks complex, 0 to 6 percent slopes	53.83	0.
13C	Ormas-Spinks complex, 6 to 12 percent slopes	29.52	0.

SOILS01_02

SOILS - ACREAGE REPORT
(G)

DATE: 12-FEB-
TIME: 09 55 2
PAGE: 1

DNR - LAND AND WATER MANAGEMENT DIVISION
MICHIGAN RESOURCE INVENTORY PROGRAM

CODE	SOIL TYPE	ACRES	P
Ad	Adrian muck	46.94	2.
AnA	Aubbeenaubbee-Capac sandy loams, 0 to 3 percent slopes	41.66	2.
BsD	Boyer-Spinks loamy sands, 12 to 18 percent slopes	2.48	0.
BsE	Boyer-Spinks loamy sands, 18 to 30 percent slopes	0.17	0.
ByA	Brady sandy loam, 0 to 3 percent slopes	21.83	1.
CaA	Capac loam, 0 to 3 percent slopes	24.25	1.
Co	Colwood-Brookston loams	43.00	2.
Ed	Edwards muck	29.71	1.
Gf	Gilford sandy loam	42.22	2.
Gr	Granby loamy fine sand	62.86	3.
Hn	Houghton muck	125.84	6.
Ka	Keowns very fine sandy loam	64.93	3.
MaB	Marlette fine sandy loam, 2 to 6 percent slopes	55.41	2.
MeD2	Marlette loam, 12 to 18 percent slopes, eroded	3.87	0.
Na	Napoleon muck	37.56	1.
OsB	Oshtemo sandy loam, 0 to 6 percent slopes	87.91	4.
OsC	Oshtemo sandy loam, 6 to 12 percent slopes	17.16	0.
OtB	Oshtemo-Spinks loamy sands, 0 to 6 percent slopes	34.89	1.
OtC	Oshtemo-Spinks loamy sands, 6 to 12 percent slopes	4.63	0.
OwB	Owosso-Marlette sandy loams, 2 to 6 percent slopes	0.08	0.
OwC	Owosso-Marlette sandy loams, 6 to 12 percent slopes	6.23	0.
Pa	Palms muck	17.67	0.
Pt	Pits	5.73	0.

SOILC1_DS

SOILS - ACREAGE REPORT
(H)

DATE 12-FEB-
TIME. 11 56 9
PAGE. 2

DNR - LAND AND WATER MANAGEMENT DIVISION
MICHIGAN RESOURCE INVENTORY PROGRAM

CODE	SOIL TYPE	ACRES	P
DwC	Dwosso-Marlette sandy loams, 6 to 12 percent slopes	10.35	0
Fa	Palms muck	51.99	2.
RdB	Riddles-Hillsdale sandy loams, 2 to 6 percent slopes	177.82	9.
RdC	Riddles-Hillsdale sandy loams, 6 to 12 percent slopes	4.71	0.
Sb	Sebewa loam	51.50	2.
SnB	Sisson fine sandy loam, 2 to 6 percent slopes	22.36	1.
SnC	Sisson fine sandy loam, 6 to 12 percent slopes	8.03	0.
SpB	Spinks loamy sand, 0 to 6 percent slopes	94.45	4.
SpC	Spinks loamy sand, 6 to 12 percent slopes	27.52	1.
ThA	Thetford loamy sand, 0 to 3 percent slopes	77.18	3.
13B	Ormas-Spinks complex, 0 to 6 percent slopes	0.34	0.
16A	Brady sandy loam, 0 to 3 percent slopes	8.00	0.
18	Gilford-Colwood complex	4.72	0.
20	Houghton muck	10.41	0.
49C	Hillsdale-Riddles sandy loams, 6 to 12 percent slopes	0.60	0.
	TOTAL (H)	1956.62	

LETTER 1517 (CONTINUED)

SOILS - ACREAGE REPORT (SUPER)

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MICHIGAN RESOURCE INVENTORY PROGRAM

CODE	SOIL TYPE	ACRES	P
13D	Drmas-Spinks complex, 12 to 25 percent slopes	12.73	0.
14B	Spinks sand, 0 to 6 percent slopes	80.53	1.
14C	Spinks sand, 6 to 12 percent slopes	29.48	0.
15A	Teasdale fine sandy loam, 0 to 3 percent slopes	192.21	2.
16A	Brady sandy loam, 0 to 3 pertent slopes	119.10	1.
17	Barry loam	33.80	0.
18	Gilford-Colwood complex	543.19	6.
20	Houghton muck	135.23	1.
29A	Kibbee fine sandy loam, 0 to 3 percent slopes	23.99	0.
30	Edwards muck	84.63	1.
35B	Arkport-Okee loamy fine sands, 2 to 6 percent slopes	120.41	1.
35C	Arkport-Okee loamy fine sands, 6 to 12 percent slopes	78.12	0.
35D	Arkport-Okee loamy fine sands, 12 to 25 percent slopes	10.28	0.
37	Palms muck	168.60	2.
40	Lenawee silt loam	11.67	0.
42B	Riddles sandy loam, 2 to 6 percent slopes	110.04	1.
42C	Riddles sandy loam, 6 to 12 percent slopes	38.65	0.
43A	Dishorn bery fine sandy loam, 0 to 3 percent slopes	220.92	2.
44C	Leoni gravelly sandy loam, 6 to 12 percent slopes	0.43	0.
45	Martisco muck	0.44	0.
46	Sebewa loam	11.74	0.
47	Histosols and Aquents, ponded	14.91	0.
48	Napoleon muck	8.31	0.

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DNR - LAND AND WATER MANAGEMENT DIVISION
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CODE	SOIL TYPE	ACRES	P
49B	Hillsdale-Riddles sandy loams, 1 to 6 percent slopes	196.51	2.
49C	Hillsdale-Riddles sandy loams, 6 to 12 percent slopes	52.91	0.
49D	Hillsdale-Riddles sandy loams, 12 to 18 percent slopes	10.61	0.
52	Pits, gravel	0.17	0.
56D	Riddles-Lecni complex, 10 to 20 percent slopes	6.83	0.
61B	Saylesville silt loam, 2 to 8 percent slopes	2.40	0.
62A	Del Ray silt loam, 0 to 3 percent slopes	4.12	0.
63	Henrietta muck	171.20	2.
64B	Marlette-Owosso complex, 2 to 6 percent slopes	22.86	0.
64C	Marlette-Owosso complex, 6 to 12 percent slopes	13.33	0.
W	Water	9.29	0.
	TOTAL (SUPER)	7867.03	

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(A)

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CODE	SOIL TYPE	ACRES	P
AaA	Aubbeenaubbee-Capac sandy loams, 0 to 3 percent slopes	56.61	10
BsE	Boyer-Spinks loamy sands, 18 to 30 percent slopes	4.69	0.
ByA	Brady sandy loam, 0 to 3 percent slopes	43.02	8.
Ch	Cohoctah silt loam	40.11	7.
Co	Colwood-Brookston loams	20.20	3.
Ed	Edwards muck	26.61	5.
Gf	Gilford sandy loam	12.26	2.
Hn	Houghton muck	24.10	4.
Ka	Keowns very fine sandy loam	69.34	13.
KbA	Kibbie loam, 0 to 3 percent slopes	10.70	2.
Ln	Lenawee silty clay loam	2.91	0.
OsB	Oshtemo sandy loam, 0 to 6 percent slopes	3.52	0.
OsC	Oshtemo sandy loam, 6 to 12 percent slopes	2.78	0.
OtB	Oshtemo-Spinks loamy sands, 0 to 6 percent slopes	15.69	3.
OtC	Oshtemo-Spinks loamy sands, 6 to 12 percent slopes	5.58	1.
Pa	Palms muck	53.38	10.
RdB	Riddles-Hillsdale sandy loams, 2 to 6 percent slopes	62.46	12.
RdC	Riddles-Hillsdale sandy loams, 6 to 12 percent slopes	22.33	4.
RdD	Riddles-Hillsdale sandy loams, 12 to 18 percent slopes	6.36	1.
SpB	Spinks loamy sand, 0 to 6 percent slopes	34.21	6.
SpC	Spinks loamy sand, 6 to 12 percent slopes	1.69	0.
	TOTAL (A)	519.15	

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CODE	SOIL TYPE	ACRES	P
Ad	Adrian muck	155.42	9.
AnA	Aubbeenaubbee-Capac sandy loams, 0 to 3 percent slopes	42.52	2.
BsD	Boyer-Spinks loamy sands, 12 to 18 percent slopes	1.29	0.
BsE	Boyer-Spinks loamy sands, 18 to 30 percent slopes	7.59	0.
ByA	Brady sandy loam, 0 to 3 percent slopes	83.55	4.
Ch	Cohoctah silt loam	0.83	0.
Co	Colwood-Brookston loams	25.95	1.
Ed	Edwards muck	48.95	2.
Gf	Gilford sandy loam	23.55	1.
Gr	Granby loamy fine sand	102.09	6.
Ha	Histosols and Aquents, ponded	2.92	0.
Hn	Houghton muck	214.07	12.
Ka	Keowns very fine sandy loam	34.03	2.
KbA	Kibbie loam, 0 to 3 percent slopes	4.75	0.
MtB	Metea loamy sand, 2 to 6 percent slopes	7.95	0.
Na	Napoleon muck	8.39	0.
OsB	Oshtemo sandy loam, 0 to 6 percent slopes	4.36	0.
OtC	Oshtemo-Spinks loamy sands, 6 to 12 percent slopes	11.11	0.
OwB	Owosso-Marlette sandy loams, 2 to 6 percent slopes	5.82	0.
Pa	Palms muck	44.94	2.
Pt	Pits	4.34	0.
RdB	Riddles-Hillsdale sandy loams, 2 to 6 percent slopes	257.59	15.
RdC	Riddles-Hillsdale sandy loams, 6 to 12 percent slopes	69.04	4.

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CODE	SOIL TYPE	ACRES	P
SpB	Spinks loamy sand, 0 to 6 percent slopes	410.52	24
SpC	Spinks loamy sand, 6 to 12 percent slopes	59.42	3.
ThA	Thetford loamy sand, 0 to 3 percent slopes	69.41	4.
	TOTAL (B)	1700.40	

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CODE	SOIL TYPE	ACRES	P
11B	Boyer-Oshtemo sandy loams, 1 to 6 percent slopes	15.80	1.
11C	Boyer-Oshtemo sandy loams, 6 to 12 percent slopes	7.16	0.
11D	Boyer-Oshtemo sandy loams, 12 to 18 percent slopes	4.41	0.
13B	Ormas-Spinks complex, 0 to 6 percent slopes	19.06	1.
14B	Spinks sand, 0 to 6 percent slopes	19.32	1.
14C	Spinks sand, 6 to 12 percent slopes	1.06	0.
15A	Teasdale fine sandy loam, 0 to 3 percent slopes	138.95	9.
16A	Brady sandy loam, 0 to 3 percent slopes	103.49	6.
17	Barry loam	24.37	1.
18	Gilford-Colwood complex	489.47	31.
20	Houghton muck	43.76	2.
29A	Kibboe fine sandy loam, 0 to 3 percent slopes	23.99	1.
30	Edwards muck	28.42	1.
35B	Arkport-Okee loamy fine sands, 2 to 6 percent slopes	31.56	2.
37	Palms muck	112.82	7.
40	Lenawee silt loam	11.67	0.
42B	Riddles sandy loam, 2 to 6 percent slopes	26.25	1.
42C	Riddles sandy loam, 6 to 12 percent slopes	32.13	2.
43A	Dixboro bery fine sandy loam, 0 to 3 percent slopes	181.96	11.
45	Martisco muck	0.44	0.
46	Sebewa loam	6.99	0.
49B	Hillsdale-Riddles sandy loams, 1 to 6 percent slopes	113.08	7.
49C	Hillsdale-Riddles sandy loams, 6 to 12 percent slopes	21.15	1.

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CODE	SOIL TYPE	ACRES	P
49D	Hillsdale-Riddles sandy loams, 12 to 18 percent slopes	1.00	0.
5eD	Riddles-Leoni complex, 10 to 20 percent slopes	6.50	0.
62A	Del Ray silt loam, 0 to 3 percent slopes	4.12	0.
63	Henrietta muck	64.10	4.
64B	Marlette-Owosso complex, 2 to 6 percent slopes	4.31	0.
W	Water	0.80	0.
	TOTAL (C)	1540.67	

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MICHIGAN RESOURCE INVENTORY PROGRAM

CODE	SOIL TYPE	ACRES	P
RdB	Riddles-Hillsdale sandy loams, 2 to 6 percent slopes	40.16	2.
RdC	Riddles-Hillsdale sandy loams, 6 to 12 percent slopes	31.31	1.
RdD	Riddles-Hillsdale sandy loams, 12 to 18 percent slopes	1.73	0.
SpB	Spinks loamy sand, 0 to 6 percent slopes	48.09	2.
SpC	Spinks loamy sand, 6 to 12 percent slopes	8.40	0.
ThA	Thetford loamy sand, 0 to 3 percent slopes	22.24	1.
W	Water	0.47	0.
11B	Boyer-Oshtemo sandy loams, 1 to 6 percent slopes	10.03	0.
11C	Boyer-Oshtemo sandy loams, 6 to 12 percent slopes	20.90	1.
13B	Ormas-Spinks complex, 0 to 6 percent slopes	34.43	1.
13C	Ormas-Spinks complex, 6 to 12 percent slopes	29.52	1.
13D	Ormas-Spinks complex, 12 to 25 percent slopes	12.75	0.
14B	Spinks sand, 0 to 6 percent slopes	55.54	2.
14C	Spinks sand, 6 to 12 percent slopes	28.27	1.
15A	Teasdale fine sandy loam, 0 to 3 percent slopes	53.27	2.
16A	Brady sandy loam, 0 to 3 percent slopes	7.61	0.
17	Barry loam	9.43	0.
18	Gilford-Colwood complex	51.01	2.
20	Houghton muck	97.38	4.
30	Edwards muck	56.22	2.
35B	Arkport-Okee loamy fine sands, 2 to 6 percent slopes	41.45	2.
35C	Arkport-Okee loamy fine sands, 6 to 12 percent slopes	68.24	3.
35D	Arkport-Okee loamy fine sands, 12 to 25 percent slopes	10.28	0.

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DNR - LAND AND WATER MANAGEMENT DIVISION
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CODE	SOIL TYPE	ACRES	P
37	Palms muck	55.64	2.
42B	Riddles sandy loam, 2 to 6 percent slopes	83.79	4
42C	Riddles sandy loam, 6 to 12 percent slopes	6.52	0.
43A	Dixboro bery fine sandy loam, 0 to 3 percent slopes	38.95	1.
44C	Leoni gravelly sandy loam, 6 to 12 percent slopes	0.63	0.
46	Sebewa loam	4.75	0.
47	Histosols and Aquents, ponded	14.91	0.
48	Napoleon muck	8.31	0.
49B	Hillsdale-Riddles sandy loams, 1 to 6 percent slopes	77.92	3.
49C	Hillsdale-Riddles sandy loams, 6 to 12 percent slopes	29.05	1.
49D	Hillsdale-Riddles sandy loams, 12 to 18 percent slopes	3.94	0.
52	Pits, gravel	0.17	0.
61B	Saylesville silt loam, 2 to 8 percent slopes	2.40	0.
63	Henrietta muck	107.10	5.
64B	Marlette-Owosso complex, 2 to 6 percent slopes	18.55	0.
64C	Marlette-Owosso complex, 6 to 12 percent slopes	13.33	0.
W	Water	8.49	0.
	TOTAL (G)	1990.18	

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SOILD.02

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DNR - LAND AND WATER MANAGEMENT DIVISION
MICHIGAN RESOURCE INVENTORY PROGRAM

CODE	SOIL TYPE	ACRES	P
Ad	Adrian muck	11.52	0.
AnA	Aubbeenaubee-Capac sandy loams, 0 to 3 percent slopes	96.68	4.
BrB	Boyer sandy loam, 0 to 6 percent slopes	29.13	1.
ByA	Brady sandy loam, 0 to 3 percent slopes	4.86	0.
CaA	Capac loam, 0 to 3 percent slopes	420.38	21.
Co	Colwood-Brookston loams	133.36	6.
Ed	Edwards muck	5.53	0.
EvB	Eleva Variant channery sandy loam, 2 to 6 percent slope	5.17	0.
Gf	Gilford sandy loam	38.13	1.
Gr	Granby loamy fine sand	4.10	0.
Ha	Histosols and Aquents, ponded	4.20	0.
Hn	Houghton muck	95.97	4.
Ka	Keowns very fine sandy loam	106.01	5.
KbA	Kibbie loam, 0 to 3 percent slopes	49.61	2.
MaB	Marlette fine sandy loam, 2 to 6 percent slopes	172.07	8.
MaC	Marlette fine sandy loam, 6 to 12 percent slopes	10.16	0.
MtB	Metea loamy sand, 2 to 6 percent slopes	4.21	0.
Na	Napoleon muck	55.79	2.
OsB	Oshtemo sandy loam, 0 to 6 percent slopes	4.94	0.
OsC	Oshtemo sandy loam, 6 to 12 percent slopes	8.63	0.
OtB	Oshtemo-Spinks loamy sands, 0 to 6 percent slopes	122.36	6.
OtC	Oshtemo-Spinks loamy sands, 6 to 12 percent slopes	6.57	0.
OwB	Owosso-Marlette sandy loams, 2 to 6 percent slopes	17.23	0.

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CODE	SOIL TYPE	ACRES	P
BrB	Boyer sandy loam, 0 to 6 percent slopes	32.42	20
CaA	Capac loam, 0 to 3 percent slopes	25.38	15
Co	Colwood-Brookston loams	0.53	0
KbA	Kibbie loam, 0 to 3 percent slopes	0.31	0.
MaB	Marlette fine sandy loam, 2 to 6 percent slopes	11.61	7.
OsB	Oshtemo sandy loam, 0 to 6 percent slopes	1.75	1.
OsC	Oshtemo sandy loam, 6 to 12 percent slopes	5.83	3.
SpB	Spinks loamy sand, 0 to 6 percent slopes	2.17	1.
14B	Spinks sand, 0 to 6 percent slopes	5.67	3.
14C	Spinks sand, 6 to 12 percent slopes	0.14	0.
20	Houghton muck	3.68	2.
35B	Arkport-Okee loamy fine sands, 2 to 6 percent slopes	47.40	29.
35C	Arkport-Okee loamy fine sands, 6 to 12 percent slopes	9.88	6.
37	Palms muck	0.14	0.
49B	Hillsdale-Riddles sandy loams, 1 to 6 percent slopes	5.51	3.
49C	Hillsdale-Riddles sandy loams, 6 to 12 percent slopes	2.11	1.
49D	Hillsdale-Riddles sandy loams, 12 to 18 percent slopes	5.48	3.
	TOTAL (J)	160.00	

LETTER 1517 (CONTINUED)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

October 17, 1988

TO: [illegible] Water Bureau, Water Quality Division

FROM: [illegible] Water Resources, Surface and Groundwater Quality Unit, Water Pollution Control Section, Water Division

SUBJECT: Superconducting Supercollider - Draft EIS - Michigan site / Critique of groundwater assessment

As you have requested, I have reviewed Volume IV, Appendix B "Water Resources Assessments" of the draft EIS for the Michigan site for the SSC.

To begin with, the entire appendix is rather hard to understand; there has to be a clearer definition of exactly what they are talking about. For instance, the draft states in several places that there will be measurable impact. What does "measurable" mean and to what extent ? Does "not significant" mean negligible ? What is their definition of "overdraft" ?

Following is my interpretation of what is stated in each section of the draft as it relates to the Michigan site.

2.2.1 i. Michigan
A. Construction
1. Water levels/Overdraft

During the construction phase of the SSC, the added demand on water resources by the direct construction (20 million for mixing concrete, etc.) would be spread around the area of the ring and would have negligible impact at the local or regional groundwater levels and would not result in a local or regional overdraft condition.

The increase in water demand due to the influx in the population during construction (12: water use by facilities for drinking, cooking and cleaning, etc.) would be measurable at the regional level and long-term but the impact would not be significant. This is because the increased water demand would be scattered over the area of several counties and mostly located in cities and towns that have existing water supply systems. Public supply systems such as Lansing and Jackson are already of an opinion that the increase in demand due to the SSC would not be significant. I interpret this statement as meaning that the measurable effect would be the increased demand and it would be on a regional basis, mostly because the population increase would be spread over most of regional area. Additionally, does the term "not significant" mean "negligible" ? It is that, then the "measurable" may mean to be perceptible, "negligible" and "measurable" are synonymous.

NOTE:
1. Paragraph 2 Pg. 118 states measurable impact from construction AND OPERATION. The operation part should not be included here as the heading of this section is only dealing with construction. The section on operation comes later.
84 2. The opening statements on pg. 117 state that glacial drift, Saginaw and Marshall formation will be utilized as water sources, yet the rest of the draft ignores the drift and Marshall and only mentions the Saginaw.

Groundwater control during construction of surface facilities, access shafts and the tunnel itself would result in negligible
85 impact on water levels.

2. Recharge
Construction of the facility would have negligible impact on the areas ability to provide recharge to area groundwaters.

3. Subsidence
No impact.
86

4. Water quality
Construction and operation of the facility would have negligible impact on groundwater quality.

NOTE:
This section again combines construction and OPERATION impacts together. They should be separated and individually evaluated

5. Public Water Supply Systems
The demand from construction and operation of the facility would have negligible impact on larger water operations such as Lansing and Jackson, but could have measurable impact on smaller local systems, such as Stockbridge. The anticipated measurable impact
87 appears to be in regards to the <u>infrastructure</u> of existing well fields (IE: treatment systems, distribution pipes, added wells) not available groundwater supply.

NOTE
This section again talks about construction and operation combined. The operation phase should not be included in here. If the operations phase is removed and addressed separately, what is the anticipated effect on public water supplies due only to construction ?

6. Wells
Measurable impact at the local level. This is to be expected
88 since some area water wells will be plugged. This section seems to imply that the impact appears to be in regards to local <u>water use patterns</u>, NOT groundwater availability.

B. Operations
1. Water level/Overdraft
89 Direct water demand effects due to operation of the facility would be negligible at remote facilities such as access shafts. Demand at the main campus area (about 1,050 gpm) is such that a measurable impact on local private wells as well as the

Stockbridge public supply system is most probable. The most measurable effect would be in the increased cone of influence developed by the added wells in the public supply system and its possible resulting lowering of water levels in adjacant private water wells.

The actual impacts CANNOT be determined at this time since the actual physical location and number of any added public supply wells has not been determined at this stage. Because of this, the possible impacts of any new cone of influence of these added well(s) cannot be actually determined as to extent. All that CAN be said is that the increased demand will result in increased pumpage from the public water system, resulting in an increased cone of influence, with the increased cone of influence possibly affecting local private water wells in the near vicinity, IF there are any wells around. The actual extent of the cone of influence cannot be determined as yet, since the new wells are not yet installed.

The anticipated groundwater demand effects that this facility will have on local area water supplies, both in water level effects and water use patterns, is no different than the effects that a continuing population growth and demand will have over time.

90 2. Water Quality
Groundwater quality impacts would be negligible

SUMMARY
The draft EIS document is not easily understood. I had to re-read it about a dozen different times to get a clearer understanding of exactly what it was saying and I am still not exactly sure that my interpretation is correct. Some comments are as follows.

91 1. The statements should be laid out in a more straightforward manner. The section on Construction should deal ONLY with construction impacts, but statements in this section also cover operation impacts as well. Statements on construction and operation impacts should be clearly separated into their appropriate categories and NOT mixed together. (Example: page 118 Paragraph 2 is a classic example).

2. Better definition is needed, such as what do they mean by "measurable" impacts and the definition of "overdraft". Additionally, WHAT the impacts are expected to be should be spelled out. Don't just say that there will be measurable impacts on local water supplies; Be more specific and say clearly WHAT the impacts will be (IE: lowered water levels; need for added wells, etc.). In some sections, it appears that the measurable impacts they are talking about deal with water levels, while in other areas the measurable impact appears to be related to water use patterns or infrastructure. MAKE THESE STATEMENTS MORE CLEAR AS TO WHAT EXACTLY IS BEING TALKED ABOUT AND THE IMPACTS EXPECTED.

225-775 88 - 5 (BOOK 10)

3. The draft clearly states that the glacial drift, Saginaw and Marshall formations will be utilized for water supplies, yet the bulk of the draft appears to only be talking about the Saginaw and leaves out the drift and the Marshall.

4. The bottom line of the draft seems to be that the SSC facility will have an effect on the Stockbridge public water supply system in that added well capacity will be needed, as well as added treatment facilities. This added demand on the public supply may have an effect on local private water wells in that the increased cone of influence developed by the public water system may affect water levels of adjacant private wells. This is most likely true.

B. P. Schlitz

cc: R. Reed, Supervisor Geology Section
Files

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

October 11, 1988

TO: J. Heinzman, Associate Director, Michigan SSC Commission

FROM: B. P. Shirey, Senior Geologist, Glacial and Groundwater Geology Unit, Geological Survey Division

SUBJECT: Request for more information on area groundwater resources for the Stockbridge SSC site and surrounding areas.

As per the request by RTK and Associates on October 4, 1988 and our subsequent meeting on October 5, 1988 regarding added data on water resources of the SSC Stockbridge site, enclosed is a brief evaluation of groundwater data for the area. Because of the requested due date of October 13, 1988, not much time was available to really get into any analysis.

92

This report is general in scope and, as such, should not be used as a substitute for additional on-site water evaluations if the Stockbridge site is chosen. The report will, hopefully, provide needed information to better evaluate and answer the concerns regarding groundwater resources.

Following is a brief summary of the report.

1. There is about 6 trillion gallons of groundwater in storage within the area.

2. Estimates of annual recharge to the groundwaters is on the order of 56 billion gallons minimum. Values may be higher.

3. USGS estimates that the sustainable yield of the Tri-County area (Clinton, Eaton and Ingham Counties) is from 200 - 400 million gallons per day.

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4. Area municipal wells are about 200 - 250 feet deep; about 10-12" diameter; test pump at about 300-500 GPM with drawdowns of 20 - 60 feet and yield specific capacities of from 9 - 26 gallons per minute per foot of drawdown.

5. Area glacial drift is capable of producing supplies of groundwater. However, drift is largely unused in the area.

If you have any questions, please feel free to contact me at any time.

B. P. Shirey

cc: R. Reed, Supervisor, Geology Section
Files

Act No. 274
Public Acts of 1988
Approved by the Governor
July 15, 1988
Filed with the Secretary of State
July 15, 1988

STATE OF MICHIGAN
84TH LEGISLATURE
REGULAR SESSION OF 1988

Introduced by Senators N. Smith and Sederburg

ENROLLED SENATE BILL No. 788

AN ACT to amend the title and sections 3, 7, and 11 of Act No. 26 of the Public Acts of 1987, entitled "An act to create the Michigan superconducting super collider commission; to prescribe its powers and duties; to prescribe the powers and duties of certain state agencies and certain state officials; and to repeal certain acts and parts of acts of specific dates," being sections 3.813, 3.817, and 3.821 of the Michigan Compiled Laws; and to add sections 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22.

The People of the State of Michigan enact:

Section 1. The title and sections 3, 7, and 11 of Act No. 26 of the Public Acts of 1987, being sections 3.813, 3.817, and 3.821 of the Michigan Compiled Laws, are amended and sections 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22 are added to read as follows:

TITLE

An act to create the Michigan superconducting super collider commission; to prescribe its powers and duties; to prescribe the powers and duties of certain state agencies and certain state officials; to provide for the establishment of the superconducting super collider in this state; to provide for the purchase of certain property for the superconducting super collider; to provide for certain equity payments; and to provide for reimbursement to local governments for taxes lost due to purchase of certain real property for the superconducting super collider.

Sec. 3. As used in this act:

(a) "Commission" means the Michigan superconducting super collider commission created in section 4.

(b) "Contiguity" means in close proximity, touching, or near.

(c) "Department" means the department of commerce.

(d) "Local government" means a city, village, township, county, a local or intermediate school district, a community college district, or any special taxing district.

(e) "Ombudsman" means the superconducting super collider ombudsman created in section 19.

(f) "Parcel" means that portion of a property that has unity of ownership, contiguity, and unity of use.

(g) "Superconducting super collider" means a 20 trillion electron volt superconducting super colliding particle beam accelerator proposed by the United States department of energy.

Sec. 7. The commission shall do all of the following:

(a) Act as an agent of this state in presenting to the United States department of energy site proposals for 1 or more sites in this state which would be appropriate locations for the superconducting super collider.

(b) Represent the state in matters concerning the superconducting super collider before the legislative and executive branches of the federal government and the public.

(c) Represent the state in negotiations with the United States department of energy regarding the superconducting super collider.

(d) Develop and implement both of the following:

(i) Plans for state participation in the superconducting super collider project.

(ii) Proposals for alternative methods of financing of plans for state participation in the superconducting super collider project.

(e) Consult with the senate majority leader, speaker of the house of representatives, senate minority leader, and minority leader of the house of representatives on matters pertaining to attracting the superconducting super collider to this state.

(f) Consult with the United States senators and representatives from this state on matters pertaining to attracting the superconducting super collider to this state.

(g) Contract with the Michigan energy and resource research association to aid in the preparation of the state's proposal to the United States department of energy for the superconducting super collider.

(h) Hold public meetings, and provide information as appropriate, to inform and educate local citizens as to the nature of the state's proposal to attract the superconducting super collider to this state.

(i) Perform, in a cost effective manner, all efforts necessary to attract the superconducting super collider to this state including, but not limited to, research, preparation and submission of reports, and education of the public.

(j) Provide that adequate and appropriate compensation is made by state government, federal government, contractors or other appropriate persons to local governments and individuals for losses including loss of water, loss of roads, damage to drainage fields, crop loss, roadway wear, and other damage resulting from the construction of the superconducting super collider.

(k) Provide that adequate and appropriate compensation is made to businesses or individuals whose property is acquired or who are relocated as a result of the superconducting super collider for measurable business losses or agricultural production losses, as a result of the acquisition of land under this act.

Sec. 11. Effective July 1, 1991, all powers and duties granted to the commission under this act shall be transferred to and shall be performed by the department of commerce and the commission shall be dissolved.

Sec. 12. (1) The commission shall purchase all real property necessary for the construction and operation of the superconducting super collider at the fair market value of the property.

(2) If the acquisition of a portion of a particular parcel of real property in fee simple under subsection (1) would destroy the practical value or utility of the remainder of that parcel, or reduce the fair market value of the entire parcel by greater than 50%, the commission shall offer to acquire the entire parcel.

(3) The commission shall offer to enter into option agreements and pay property owners option payments on all parcels of real property to be acquired in fee simple necessary for the construction and operation of the superconducting super collider at a price of 5% of fair market value of the property, but not less than $500.00, if the option agreement is signed by the property owner within 60 days of the offer. If Michigan is chosen as the final site of the superconducting super collider, the commission shall offer option payments by no later than April 1, 1990 to property owners for property to be acquired. The option payment shall not be applied against the purchase price of the property if the option is exercised. The terms of the options shall include a provision that the option shall extend for a period of 1 year after the date the option agreement is signed by the property owner. The option agreement shall also provide that the option will terminate immediately upon the official announcement by the president of the United States or the president's designee that this state has not been chosen by the federal government as the site for the superconducting super collider. Within 90 days after an option on a parcel of real property is terminated, the state shall clear the title of the property as it relates to that option.

(4) The commission shall pay all reasonable relocation costs incurred as a result of the superconducting super collider pursuant to the uniform relocation assistance and real property acquisition policies act of 1970, Public Law 91-646, 42 U.S.C. 4601 to 4602, 4604, 4621 to 4633, 4635 to 4636, 4638, and 4651 to 4655.

(5) Upon the official announcement by the president of the United States or the president's designee that Michigan has not been chosen as the site of the superconducting super collider, the commission shall not offer to enter into any additional option agreements with property owners pursuant to subsection (3) and shall discontinue any activities related to the surveying, appraisal, or acquisition of land for the superconducting super collider.

Sec. 13. (1) A farmland equity adjustment program is created to compensate property owners for the purpose of encouraging the continuation of agriculture and reestablishing agricultural lands displaced by the superconducting super collider.

(2) Except as provided in subsection (3), the department of commerce shall provide a farmland equity adjustment payment to a property owner of real property greater than 5 acres that is acquired in fee simple by the commission for the superconducting super collider prior to October 1, 1990. The payment shall equal 50% of the fair market value of the real property less the fair market value of any homestead, improvements related to the homestead, appurtenances, and acreage related to or associated with the use of the homestead improvements related to the homestead, or appurtenances. This payment shall be made to the property owner at the time of closing unless the property is sold pursuant to a deferred payment agreement under section 14.

Sec. 14. (1) At the option of the seller, the commission shall purchase property under section 12 and provide farmland equity adjustment payments under section 13 on a deferred installment payment schedule not to exceed 10 years after the date of purchase. However, the commission shall receive title of the property at the time the deferred payment agreement is entered into. If property is purchased on a deferred payment schedule pursuant to this section, the commission shall pay interest on the balance owing to the seller at the same rate as the state's rate of return on its investments in the common cash fund.

(2) If property is purchased on a deferred payment schedule pursuant to this section, the seller may request, at any time, full payment of the outstanding principal, plus any accrued interest, owing to him or her. The state may grant the sellers request under this subsection in the event of financial hardship or other reasonable cause. In the event of death of the seller, the state shall grant the request.

(3) A deferred payment agreement entered into under this section shall be assignable.

Sec. 15. (1) The commission shall purchase underground stratified fee rights necessary for the construction or operation of the superconducting super collider at a minimum price of $5.00 per 70,000 cubic feet, or at a higher appraised value determined by the commission.

(2) The commission shall offer to enter into option agreements and pay property owners option payments on underground stratified fee rights under subsection (1) at a price of $1.00 per 70,000 cubic feet, if the option agreement is signed by the property owner within 60 days of the offer. The option payment shall not be applied against the purchase price of the rights acquired under this section if the option is exercised. The terms of an option purchased under this section shall include the same provisions for termination of the option as specified in section 12(3). If Michigan is chosen as the site of the superconducting super collider, the commission shall offer option payments by no later than April 1, 1990 to property owners for rights to be acquired under this subsection.

Sec. 16. (1) To reimburse local governments for ad valorem taxes levied under the general property tax act, Act No. 206 of the Public Acts of 1893, being sections 211.1 to 211.157 of the Michigan Compiled Laws, lost due to the removal of real property from the property tax rolls for the establishment of the superconducting super collider, the department of treasury shall make payments in lieu of taxes to those local governments that levy ad valorem taxes.

(2) The treasurer of each local tax collecting unit affected under this section shall forward to the state treasurer a statement of payments lost due to the removal of real property from the property tax rolls for the establishment of the superconducting super collider. The statement shall include a legal description of each parcel of property purchased by the commission under this act that is located within that local tax collecting unit.

(3) The state treasurer shall cause a warrant to be drawn on the state treasury in an amount equal to the amount of payments required by this section for each local government and shall transmit that warrant to the treasurer of the local government for deposit in the treasury of that local government. The payments required by this section to a local government shall be calculated by multiplying the current ad valorem millage rate of the local government by the lesser of the following amounts:

(a) For property removed from the tax rolls for the establishment of the superconducting super collider in the local government, the state equalized value of the property in the year prior to the removal.

(b) The amount obtained by subtracting the then current state equalized value of the local government from its adjusted state equalized value. The adjusted state equalized value for the year in which the property is removed from the tax rolls shall be calculated by multiplying the local government's prior year's state equalized value by the inflation rate for the then current year as certified under section 34d of the general property tax act, Act No. 206 of the Public Acts of 1893, being section 211.34d of the Michigan Compiled Laws. The adjusted state equalized value for subsequent years shall be calculated by multiplying that year's inflation rate by the prior year's adjusted state equalized value of the local government.

Sec. 17. The state shall pay, through legislative appropriation of funds provided under Act No. 51 of the Public Acts of 1951, being sections 247.651 to 247.674 of the Michigan Compiled Laws, after consulting with the boards of county road commissioners in affected counties, the cost of initial county or secondary road construction or improvement needed for the construction or operation of the superconducting super collider.

Sec. 18. Local governments shall not be responsible for the cost of water systems, sewers, waste disposal systems, or preparing new property tax descriptions associated with the construction and operation of the superconducting super collider.

Sec. 19. A property owner whose property is acquired for the superconducting super collider may retain improvements for removal from the site at salvage value. A salvage value will be prepared by the commission at the request of the property owner.

Sec. 20. The commission shall provide information and assist individuals in areas impacted by the construction and operation of the superconducting super collider in obtaining job training for work associated with the superconducting super collider.

Sec. 21. (1) The director of commerce shall appoint and be responsible for 1 or more individuals within 30 days of the effective date of this act to serve as the superconducting super collider ombudsman. The ombudsman may act on behalf of the state in attempting to reconcile grievances between the state and any person aggrieved by the planning, construction, or operation of the superconducting super collider.

(2) Any person aggrieved pursuant to subsection (1) may submit a request to the ombudsman to review the grievance. The ombudsman shall respond within 7 days of the request.

Sec. 22. The department shall promulgate emergency rules to implement this act. These emergency rules shall be promulgated pursuant to the administrative procedures act of 1969, Act No. 306 of the Public Acts of 1969, being sections 24.201 to 24.328 of the Michigan Compiled Laws.

This act is ordered to take immediate effect.

Secretary of the Senate.

Clerk of the House of Representatives.

Approved .....

.....
Governor.

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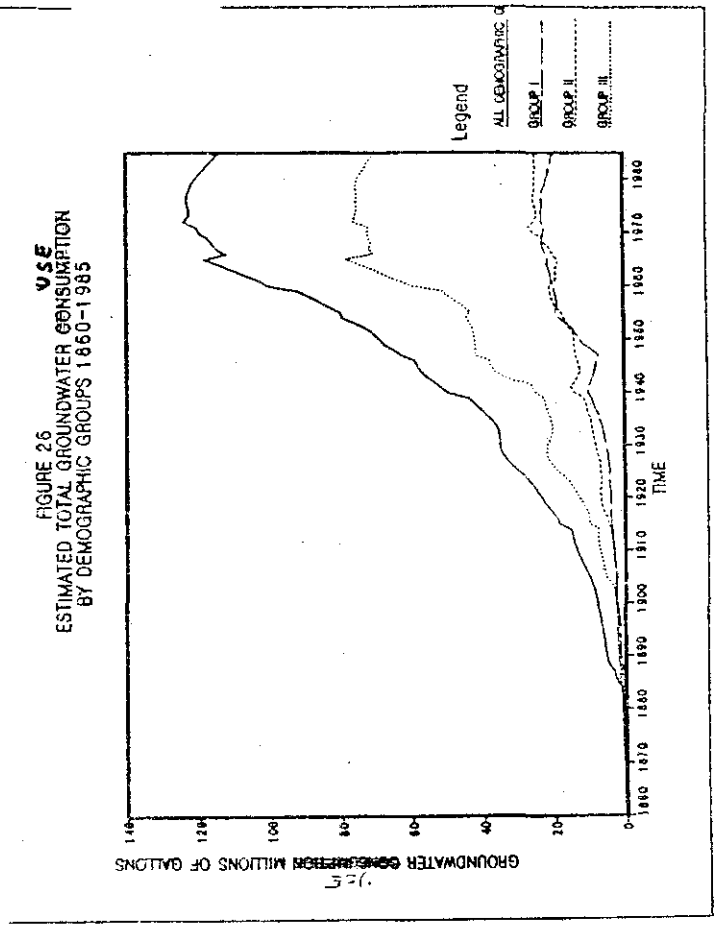
ATTACHMENT C



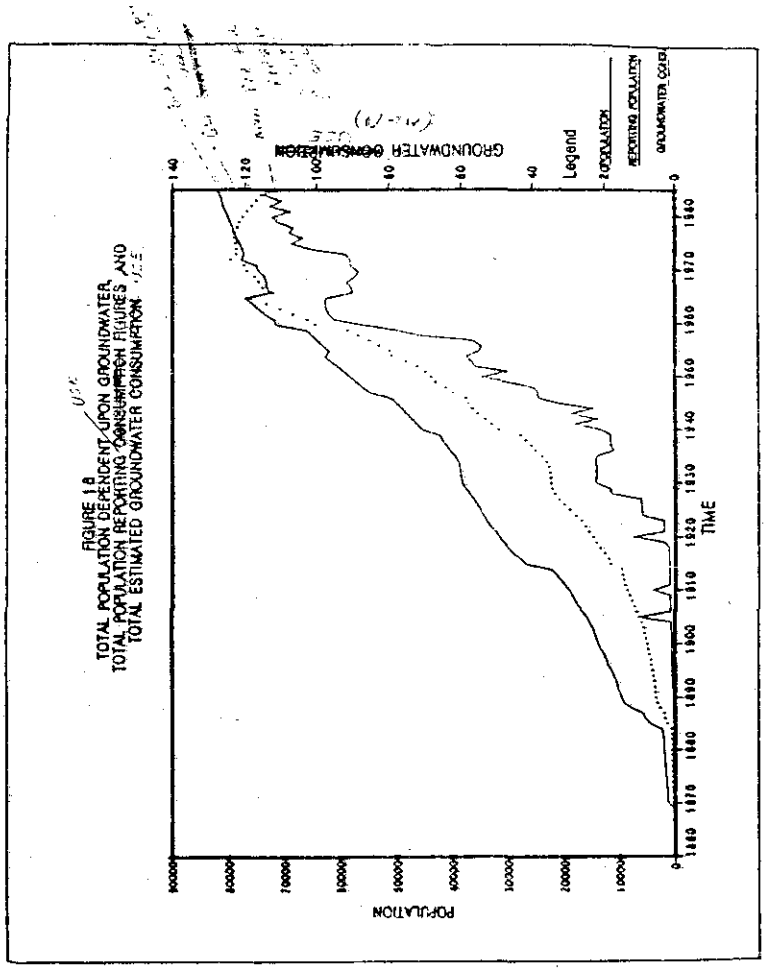


FIGURE 1.B
TOTAL POPULATION DEPENDENT UPON GROUNDWATER,
TOTAL POPULATION REPORTING CONSUMPTION FIGURES, AND
TOTAL ESTIMATED GROUNDWATER CONSUMPTION
POPULATION
TIME
GROUNDWATER CONSUMPTION
Legend
POPULATION
REPORTING POPULATION
GROUNDWATER COND

MUNICIPAL GROUND-WATER PUMPAGE
(Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WSSN 6250

MUNICIPALITY: Springport - Jackson County

SOURCE: Ground - Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	---	1960	
1985	37.3	1972	---	1959	
1984	49.3	1971		1958	
1983	37.7	1970		1957	
1982	32.5	1969		1956	
1981	36.2	1968		1955	
1980	25.8	1967		1954	
1979	25.1	1966		1953	
1978	37.4	1965		1952	
1977	44.9	1964		1951	
1976	45.1	1963		1950	
1975	45.6	1962		1949	
1974	46.6	1961		1948	

LETTER 1517 (CONTINUED)

MUNICIPAL GROUND-WATER PUMPAGE
(Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WSSN 6970

MUNICIPALITY: Webberville- Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	---	1960	
1985	54.8	1972	---	1959	
1984	68.2	1971		1958	
1983	60.2	1970		1957	
1982	49.3	1969		1956	
1981	49.9	1968		1955	
1980	44.9	1967		1954	
1979	50.4	1966		1953	
1978	56.0	1965		1952	
1977	50.1	1964		1951	
1976	41.4	1963		1950	
1975	36.8	1962		1949	
1974	---	1961		1948	

LETTER 1517 (CONTINUED)

LETTER 1517 (CONTINUED)

(Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WSSN 6420

MUNICIPALITY: Stockbridge - Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	---	1960	
1985	52.7	1972	---	1959	
1984	54.4	1971		1958	
1983	40.4	1970		1957	
1982	47.2	1969		1956	
1981	44.3	1968		1955	
1980	43.5	1967		1954	
1979	49.9	1966		1953	
1978	49.5	1965		1952	
1977	44.9	1964		1951	
1976	46.3	1963	26.4	1950	
1975	38.1	1962	26.02	1949	
1974	40.2	1961 *	23.52	1948	

MUNICIPAL GROUND-WATER PUMPAGE (AMOUNTS IN MILLION GALLONS)

3.

WSSN 3470

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MUNICIPALITY: Jackson- Jackson County

SOURCE:

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1908		1895		1882	
1907		1894		1881	
1906		1893		1880	
1905	730	1892		1879	
1904		1891		1878	
1903		1890		1877	
1902		1889		1876	
1901		1888		1875	
1900		1887		1874	
1899		1886		1873	
1898		1885		1872	
1897		1884		1871	
1896		1883		1870	

LETTER 1517 (CONTINUED)

LETTER 1517 (CONTINUED)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WELL 3370

WATER QUALITY Jackson - Jackson County

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1947		1934		1921	
1946		1933		1920	
1945		1932		1919	
1944		1931		1918	
1943		1930		1917	
1942		1929	2,328,756	1916	
1941		1928	2,071,643	1915	
1940		1927		1914	
1939		1926		1913	
1938		1925		1912	
1937		1924		1911	
1936		1923		1910	
1935		1922		1909	

WATER USE (Amounts in Million Gallons) UNITED STATES DEPARTMENT OF THE INTERIOR
WSSN: 3470 GEOLOGICAL SURVEY

MUNICIPALITY: Jackson - Jackson County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	4,869.2	1960	3,997
1985	3,061.9	1972	4,918.7	1959	4,536
1984	3,035.0	1971	4,487.1	1958	3,889
1983	3,087.3	1970	4,336.7	1957	
1982	3,313.7	1969	4,638.4	1956	
1981	3,511.5	1968	4,609.2	1955	
1980	3,734.2	1967	4,636	1954	
1979	3,993.1	1966	5,110	1953	
1978	4,225.1	1965	4,676	1952	3,656
1977	4,330.2	1964	4,507	1951	
1976	4,103.9	1963	4,216	1950	3,128
1975	4,072.4	1962	4,236	1949	
1974	4,634.0	1961	4,087	1948	

LETTER 1517 (CONTINUED)

LETTER 1517 (CONTINUED)

(Amounts in Million Gallons) UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MSU 2830
MUNICIPALITY: Grass Lake, Jackson County
SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1975	24.3	1960	
1985	24.8	1974	30.2	1959	
1984	251.9	1973	32.8	1958	
1983	232.1	1970	26.6	1957	
1982	227.0	1969	26.3	1956	
1981	23.8	1968	23.75	1955	
1980	22.3	1967	23.54	1954	
1979	23.5	1966	30.94	1953	
1978	21.6	1965	21.5	1952	
1977	26.4	1964 *	25.70	1951	
1976	---	1963	25.70	1950	
1975	23.1	1962 *	13.52	1949	
1974	24.0	1961 *	15.85	1948	

LETTER 1517 (CONTINUED)

WSSN 1580 (Amounts in Million Gallons) UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MUNICIPALITY: Concord – Jackson County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	37.2	1960	
1985	74.7	1972	31.2	1959	
1984	66.6	1971	41.1	1958	
1983	49.7	1970	31.2	1957	
1982	41.5	1969	30.2	1956	
1981	42.3	1968	27.2	1955	
1980	43.8	1967	29.45	1954	
1979	45.8	1966	27.60	1953	
1978	46.5	1965	28.47	1952	
1977	59.7	1964	25.42	1951	
1976	53.5	1963	27.81	1950	
1975	48.1	1962	21.35	1949	
1974	37.6	1961	22.96	1948	

(Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WSSN 7120

MUNICIPALITY: Williamston- Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	---	1960	
1985	91.0	1972	---	1959	
1984	---	1971		1958	
1983	96.4	1970		1957	
1982	105.5	1969		1956	
1981	112.8	1968		1955	
1980	91.0	1967	56.1	1954	
1979	94.9	1966		1953	
1978	93.1	1965		1952	
1977	98.6	1964		1951	
1976	---	1963		1950	
1975	147.4	1962		1949	
1974	---	1961		1948	

LETTER 1517 (CONTINUED)

MUNICIPAL GROUND-WATER PUMPAGE (Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

2 of 2

WSSN: 4170

MUNICIPALITY: Mason-Ingham County

SOURCE:

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1908		1895		1882	
1907		1894		1881	
1906		1893		1880	
1905		1892		1879	
1904		1891		1878	
1903	37.5	1890		1877	
1902		1889		1876	
1901		1888		1875	
1900		1887		1874	
1899		1886		1873	
1898		1885		1872	
1897		1884		1871	
1896		1883		1870	

LETTER 1517 (CONTINUED)

LETTER 1517 (CONTINUED)

MUNICIPAL GROUND-WATER PUMPAGE
(Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

1 of 2

WSSN 4170

MUNICIPALITY: Mason - Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	179.5	1960	140.84
1985	240.1	1972	192.2	1959	138.37
1984	240.1	1971	206.2	1958	134.0
1983	231.7	1970	185.5	1957	
1982	227.7	1969	202.1	1956	
1981	232.8	1968	188.1	1955	
1980	217.4	1967	187.5	1954	
1979	229.8	1966	184.7	1953	
1978	191.4	1965	173.2	1952	
1977	206.4	1964	169.3	1951	
1976	218.5	1963	171.2	1950	
1975	211.0	1962	147.2	1949	
1974	222.5	1961	176.9	1948	

MUNICIPAL GROUND-WATER PUMPAGE
(Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WSSN 4340

MUNICIPALITY: Michigan State University - Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	1,805.2	1960	913.7
1985	1,632.1	1972	1,711.5	1959	813.7
1984	1,646.5	1971	1,665.8	1958	835
1983	1,623.0	1970	1,808.5	1957	810.3
1982	1,533.2	1969	1,970.1	1956	916.3
1981	1,642.7	1968	2,019	1955	814.2
1980	1,626.9	1967	1,874	1954	732.4
1979	1,678.7	1966	1,541	1953	748.6
1978	1,697.8	1965	1,404	1952	784.5
1977	1,675.0	1964	1,255	1951	614.0
1976	1,720.7	1963	1,133.50	1950	591.1
1975	1,800.2	1962	1,088.4	1949	583.1
1974	1,799.7	1961	1,017.1	1948	428.7

MUNICIPAL GROUND-WATER PUMPAGE (Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

1 of 2

WSSN: 4340

MUNICIPALITY: Michigan State University - Ingham County

SOURCE:

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1947	424.8	1934		1921	
1946	355.1	1933		1920	
1945	260.0	1932		1919	
1944		1931		1918	
1943		1930		1917	
1942		1929		1916	
1941		1928		1915	
1940		1927		1914	
1939		1926		1913	
1938		1925		1912	
1937		1924		1911	
1936		1923		1910	
1935		1922		1909	

MUNICIPAL GROUND-WATER PUMPAGE
(Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

2 of 2

WSSN 3770

MUNICIPALITY: Lansing Twp.- Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	749.8	1960	413.9
1985	410.9	1972	716.7	1959	432.3
1984	389.4	1971	742.3	1958	431.1
1983	430.7	1970	527.9	1957	411.8
1982	515.0	1969	748.6	1956	403.9
1981	516.2	1968	687.7	1955	134.3
1980	513.2	1967	609.5	1954	105.1
1979	531.7	1966	636.6	1953	120.4
1978	537.5	1965	607.4	1952	116.0
1977	507.6	1964	526.9	1951	99.2
1976	586.5	1963	481.36	1950	72.7
1975	----	1962	544.9	1949	102.5
1974	630.8	1961	435.7	1948 *	105.

LETTER 1517 (CONTINUED)

LETTER 1517 (CONTINUED)

MUNICIPAL GROUND-WATER PUMPAGE (Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

1 of 2

WSSN: 3770

MUNICIPALITY: Lansing Twp. - Ingham County

SOURCE:

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1947	99.40	1934		1921	
1946	56.32	1933		1920	
1945		1932		1919	
1944		1931		1918	
1943		1930		1917	
1942		1929		1916	
1941		1928		1915	
1940		1927		1914	
1939		1926		1913	
1938		1925		1912	
1937		1924		1911	
1936		1923		1910	
1935		1922		1909	

WATER USE (Amounts in Million Gallons) UNITED STATES DEPARTMENT OF THE INTERIOR
3760 GEOLOGICAL SURVEY

MUNICIPALITY: Lansing - Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	8,850.2	1960	6,440
1985	7,944.8	1972	8,558.9	1959	6,424
1984	8,249.2	1971	8,403.7	1958	6,050
1983	8,105.4	1970	7,946.3	1957	6,202
1982	8,182.2	1969	8,364.7	1956	6,302
1981	8,607.4	1968	7,205.9	1955	6,256
1980	8,592.5	1967	7,801.28	1954	5,895
1979	9,574.1	1966	8,008	1953	6,287
1978	9,307.6	1965	7,789	1952	5,845
1977	9,202.9	1964	7,247	1951	5,637
1976	8,976.5	1963	7,132	1950	5,411
1975	8,099.4	1962	6,741	1949	5,284
1974	8,053.9	1961	6,100	1948	5,624

LETTER 1517 (CONTINUED)

LETTER 1517 (CONTINUED)

MUNICIPAL GROUND-WATER PUMPAGE (Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

2 of 2

WSSN: 3760

MUNICIPALITY: Lansing - Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1947	5,479	1934	2,828	1921	
1946	4,882	1933	2,493	1920	2,261.88
1945	4,917	1932	2,334	1919	
1944	5,166	1931	3,693	1918	
1943	4,709	1930	3,074	1917	
1942	4,057	1929		1916	
1941	3,939	1928		1915	
1940	3,424	1927		1914	
1939	3,257	1926		1913	
1938	2,970	1925		1912	
1937	3,321	1924		1911	
1936	3,354	1923		1910	1,058.5
1935	2,887	1922		1909	

MUNICIPAL GROUND-WATER PUMPAGE (Amounts in Million Gallons)

1 of 3

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WSSN 3760

MUNICIPALITY: Lansing-Ingham County

SOURCE:

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1908		1895		1882	
1907		1894		1881	
1906		1893		1880	
1905	≈ 600	1892		1879	
1904		1891		1878	
1903		1890		1877	
1902		1889		1876	
1901		1888		1875	
1900		1887		1874	
1899		1886		1873	
1898		1885		1872	
1897		1884		1871	
1896		1883		1870	

MUNICIPAL GROUND-WATER PUMPAGE
(Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

NSSN 3940

MUNICIPALITY: Leslie - Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973	* 72.3	1960	65.8
1985	96.3	1972	---	1959	66.5
1984	110.2	1971		1958	
1983	92.9	1970		1957	
1982	94.1	1969	67.5	1956	
1981	90.4	1968	67.46	1955	
1980	94.2	1967	69.17	1954	
1979	104.6	1966	67.14	1953	
1978	101.0	1965	67.51	1952	
1977	93.2	1964	67.63	1951	
1976	98.1	1963	71.11	1950	
1975	---	1962	62.19	1949	
1974	* 88.2	1961	72.59	1948	

IIA.1- 4140

LETTER 1517 (CONTINUED)

WATER USE (Amounts in Million Gallons) UNITED STATES DEPARTMENT OF THE INTERIOR
WSSN: 1995 GEOLOGICAL SURVEY

MUNICIPALITY: East Lansing + (Meridian Twp.) - Ingham Co. * E. Lansing - Meridian Twp. 1973 → 757.

SOURCE: Ground Water Data for Michigan Totals 795.7 + 757.2 = 1,552.9

OPERATION YEAR		TOTAL YEAR		OPERATION YEAR		TOTAL YEAR		OPERATION YEAR		TOTAL YEAR	
1986				1973 *	E.L. / Meridian Twp. / E.L.-Meridian Twp. / Total	653.4 / 795.7 / 757.2 / 1,552.9		1960		457.4	
1985	*	2,106.6		1972		1,247.5		1959		460.6	
1984	*	2,221.5		1971		1,243.6		1958		416	
1983	*	1,986.9		1970		1,285.6		1957		395.5	
1982	*	1,804.3		1969		1,249.6		1956		388.9	
1981	*	1,915.5		1968		1,212.8		1955		430.9	
1980	*	1,741.0		1967		1,073.3		1954		459.3	
1979	*	1,775.2		1966		939.9		1953		420.3	
1978	*	1,702.3		1965		908.9		1952		379.6	
1977	*	1,653.6		1964		780.6		1951		358.2	
1976	*	1,599.4		1963		749.0		1950		357.6	
1975	*	1,566.3		1962		580.3		1949		337	
1974	*	1,486.9		1961		499.7		1948		342	

HISTORICAL GROUND-WATER PUMPAGE
(Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WSSI: 1995 See. E. Lansing

MUNICIPALITY: Meridian Twp. - Ingham County

SOURCE: Ground-Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1986		1973		1960	149.3
1985		1972	286.6	1959	105.89
1984		1971	267.1	1958	* 100
1983		1970	211.5	1957	
1982		1969	190.0	1956	
1981		1968	117.60	1955	
1980		1967	91.18	1954	
1979		1966	56.03	1953	
1978		1965	51.33	1952	
1977		1964	41.50	1951	
1976		1963	43.26	1950	
1975		1962	149.91	1949	
1974		1961	124.04	1948	

MUNICIPAL GROUND-WATER PUMPAGE (Amounts in Million Gallons)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WSSN: 1995

MUNICIPALITY: East Lansing - Ingham County

SOURCE: Ground Water Data for Michigan

OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR	OPERATION YEAR	TOTAL YEAR
1947	337	1934		1921	
1946	313	1933		1920	
1945	276	1932		1919	
1944	306	1931		1918	
1943	264	1930		1917	
1942	243	1929		1916	
1941	278	1928		1915	
1940	219	1927		1914	
1939	205	1926		1913	
1938	180	1925		1912	
1937	148	1924		1911	
1936	161	1923		1910	
1935		1922		1909	

LETTER 1517 (CONTINUED)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

October 6, 1988

TO: Ron Van Til, Office of Water Resources

FROM: David A. Hamilton, P.E., Chief, Hydrologic Studies Unit
Land and Water Management Division

SUBJECT: Flows on the Grand River

95 Following your request, I have pulled together some data to characterize the flow on the Grand River. I am using data from the USGS gage at Eaton Rapids (#04111000). The drainage area at the gage is 661 square miles and includes most of the area affected by the proposed SSC project. The gage was active from 1950 to 1982.

The average discharge for the thirty two years of record is 462 cfs. If we look at median monthly flows, they range from a high of 886 cfs in April to a low of 138 cfs in September.

If you have any additional questions, please call me at 517-335-3177.

DAH:cg

LETTER 1517 (CONTINUED)

NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
MARGERIE J. FLOHARTY
GORDON C. GUYER
HENRY KRAMER
D. STEWART MYERS
DAVID O. OLSON
RAYMOND POIRONE

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
P.O. BOX 30028
LANSING, MI 48909

DAVID F. HALES, Director

October 13, 1988

Mr. Jim Heinzman
Superconducting Super Collider Office
320 North Washington Sq., Suite 100
Lansing, MI 48813

Dear Mr. Heinzman:

As per your request, I have updated and summarized water use information for the SSC project area for RTK Associates (see Attachment A). Public water supply information, in particular, has been updated to 1987. The other water use categories represent the most recent data available and are considered representative of current conditions.

I have also amended the text originally submitted for ISP Appendix D (D2.2 Water). This revised text is included as Attachment B. Water use information requested for the City of Ann Arbor, which is outside of the study area, is as follows: Public Water Supply 16.1 MGD withdrawn (13.7 surface; 2.4 groundwater) and 1.61 MGD consumed (1.37 surface; 0.24 groundwater).

96

Finally, Attachment C was provided by the U.S. Geological Survey District Office (contact: Richard Mandle 517-377-1608). It summarizes groundwater use data for municipalities in the central Lower Peninsula of Michigan. Although this area is considerably larger than the immediate SSC site, it is considered representative of the groundwater demands from municipalities in Ingham and Jackson counties.

After reviewing the information on both water use and water resources, it is evident that available water supplies in the SSC project area greatly exceed current water demands. Although there is limited information on projected future water demands, it is significant that a number of municipalities have experienced a decline in public and industrial water use since the late 1970's. This trend, combined with an abundant water resources base, continues to make the Michigan site an ideal location for the SSC.

Sincerely,

Ronald Van Til
Water Resources Analyst
517-373-0014

Attachments

R1025
H.68

225-775 88 - 6 (BOOK 10)

ATTACHMENT A

WATER USE: SSC PROJECT AREA

I. Ingham County Water Use

Water Use	Withdrawn (MGD) Surface	Withdrawn (MGD) Groundwater	Consumed (MGD) Surface	Consumed (MGD) Groundwater
Power Generation	122.3	0.7	1.65	<0.01
Self-Sup. Industrial	<0.1	1.0	0	0.10
Public Supply	0	32.9	0	3.29
Irrigation	1.1	0.3	1.05	0.28
	123.4	34.9	2.70	3.6

97

II. Jackson County Water Use

Water Use	Withdrawn (MGD) Surface	Withdrawn (MGD) Groundwater	Consumed (MGD) Surface	Consumed (MGD) Groundwater
Power Generation	0	0	0	0
Self-Sup. Industrial	<0.1	0.5	0	0.05
Public Supply	0	13.7	0	1.37
Irrigation	2.1	3.1	2.0	2.94
	2.1	17.3	2.0	4.36

Contact: Ronald Van Til
Office of Water Resources
(517) 373-0014

Surface Water Uses

Water use information for Michigan Counties is available in three reports published by the Michigan Department of Natural Resources, the U.S. Geological Survey, and the Michigan Cooperative Extension Service. They include: 1) Water Use for Thermoelectric Power Generation in Michigan, Michigan Department of Natural Resources and U.S. Geological Survey, 1986, 2) Municipal Water Withdrawals in Michigan, Michigan Department of Natural Resources and U.S. Geological Survey, 1982, and 3) Impact Evaluation of Increased Water Use by Agriculture in Michigan, Research Report 449, Michigan State University Agricultural Experiment Station, 1983. Aggregate industrial water use information is available from Water Use in Manufacturing: 1982 Census of Manufacturers, U.S. Department of Commerce, 1986.

Ingham County

Annual water withdrawals for all major uses in Ingham County are estimated at 158 million gallons per day (mgd). Of this, 78 percent (123 mgd) is from surface water sources. Most surface water withdrawals occur in the northern part of the county at some distance from the Stockbridge site, primarily form four thermoelectric power plants in the Lansing/East Lansing area. Three of the nine public water supply systems in Ingham County are located near the Stockbridge site. However, these and other municipal water supply systems in the county rely entirely on groundwater withdrawals. Surface water withdrawals for industrial water use and irrigation together account for less than one percent of the total water withdrawals in the county. Industrial water use occurs primarily in the Lansing/East Lansing area. Irrigation water is applied on an estimated 2,400 acres throughout the county for a variety of commercial crops, as well as for golf courses and parks.

Jackson County

Annual water withdrawals for all major uses in Jackson County are estimated at 19 mgd. Of this, 11 percent (2.1 mgd) is from surface water sources. There are no thermoelectric power plants in the county; therefore, overall water withdrawals are significantly lower than for Ingham County. Thirteen public water supply systems are operated throughout Jackson County, generally in the central and southern parts of the county at some distance form the Stockbridge site. These systems rely entirely on groundwater rather than surface water withdrawals. Similarly, industrial water withdrawals are made almost entirely from groundwater, primarily through public water supply systems. Irrigation occurs on an estimated 8,000 acres throughout the county, with 40 percent (2.1 mgd) of the total irrigation water withdrawn from surface sources.

LETTER 1517 (CONTINUED)

Associated Underground Contractors, Inc.

2355 FRANKLIN ROAD, P.O. BOX 7025, BLOOMFIELD HILLS, MICHIGAN 48302-7025 (313) 338-6191

September 21, 1988

United States Department of Energy
Superconducting Supercollider Commission
Site Selection Task Force
Washington, D.C. 20545

Attention: Mr. Michael Wolfe

Dear Mr. Wolfe:

Unfortunately, the Associated Underground Contractors, Inc. was late in requesting presence on the agenda for the September 26, 1988 public hearing in Stockbridge, Michigan.

98 In lieu of a personal presentation I am submitting written testimony from Mr. Ronald Heuer, a geotechnical consultant from McHenry, Illinois. As you can see from the enclosed, Mr. Heuer has extensive experience in the tunnel construction industry with special emphasis on rock tunnel construction methods.

I am hopeful that the task force will take the time to analyze Mr. Heuer's analysis of the Michigan site.

Sincerely,

Robert A. Patzer,
Executive Director

bcc: Mr. John F. Hanieski, SSC Commission
Mr. Jerome Neyer, Neyer, Tiseo & Hindo, Ltd.
Mr. Mike Crawford, NECA of Michigan

RONALD E. HEUER
GEOTECHNICAL CONSULTANT

3317 West Ringwood Road
McHenry, Illinois 60050-8581
815-675-2003

Telex: 910240621O/Heuer UD

12 September 1988

Mr. Robert A. Patzer
Executive Director
Associated Underground Contractors, Inc.
2355 Franklin Road, PO Box 7025
Bloomfield Hills, Michigan 48302

Subject: File 8712
Michigan SSC Study

Dear Bob:

This letter is to report my interpretation of how tunneling conditions at the Michigan Stockbridge SSC site compare with those at other SSC sites being considered by the Department of
99 Energy, based upon review of the summary geologic information for each site contained in the Draft Environmental Impact Statement (DEIS), dated August 1988. Pertinent soil, rock, and groundwater information is contained in Volume I, Chapter 4; Volume IV, Appendices 5a, 5b, 5c, 6, and 7 of the DEIS.

1. Introduction

As a matter of introduction so that you may better judge the significance of this letter, I am enclosing a copy of my professional resume, outlining my experience working on several
100 hundred tunnel projects in the last 20 years for Owners, Engineers, and Contractors. I have worked throughout the US, in Canada, and in several other countries. A large portion of my work has involved interpretation of geologic information to predict tunneling conditions, prior to actual excavation.

I have studied additional geologic data from the Michigan site, observed rock core from the Michigan SSC borings, and have

observed the rock formations to be tunneled, where these formations are exposed in the area in surface outcrops and excavations. Also, I have observed the Sagimaw formation (major tunnel horizon) in a tunnel excavation in Flint, Michigan, several years ago.

For the other proposed SSC sites, I have either observed rock core or surface outcrops of the formations to be tunneled, or have worked on tunnel projects in similar geologic materials and environments, for all of the other states involved.

2. Interpretation

I believe tunneling conditions to be expected at the planned tunnel location for Michigan SSC are favorable. In addition to the Flint tunnel mentioned above, I have worked on a number of tunnel projects in similar rock formations and geologic settings throughout the northeast and northcentral United States and southern Canada. Nearly flat-lying interbedded sandstone, shale, siltstone, limestone, and minor interbedded coal rocks of Paleozoic age such as are indicated at the Stockbridge site, generally present relatively favorable tunneling conditions unless the tunnel encounters something such as the following:

101

a. Rock material which is very soft, weak relative to insitu stresses, or unstable and susceptible to slaking or swelling.

b. Rock material which is very strong or hard and difficult to excavate.

c. A rock mass which is very jointed, or faulted, folded, sheared, weathered, or otherwise disturbed so that it is either unstable about the tunnel excavation; or of high mass permeability producing large water flow into the tunnel.

d. Gases such as methane or hydrogen sulfide, very salty water, or some similar material within the rock.

RONALD E. HEUER
GEOTECHNICAL CONSULTANT

e. The tunnel is located sufficiently deep that problems of rock support or water inflow are magnified by high rock or water pressures.

The information from the Stockbridge site indicates no significant problems of these types would be expected at this site.

The Stockbridge SSC tunnel is relatively shallow (150 to 200 ft average depth), so that rock and water pressures are relatively low. The geologic structure at Stockbridge appears to be simple, with no evidence of significant faulting, folding, shearing, extensive jointing, weathering, etc, at tunnel level. The coal content appears to be very low. The rock mass appears to be permeable enough to have allowed gas from the coal to escape, but of sufficiently low permeability that water inflow would not be expected to be a large problem. There is no indication of other significant gas or water chemistry problem. The rock materials themselves are indicated to be weak enough to cut easily be a tunnel boring machine, but to be strong enough to be stable, and to be relatively stable chemically and not susceptible to significant slaking or swelling.

Not only has the exploration to date found no evidence of such problems, but significant problems of these types would not be expected in the relatively simple and stable geologic conditions indicated at this site.

Based on the DEIS information and my previous experience with rock types and geologic settings such as exist at the other proposed SSC sites, it appears as if none of the other proposed SSC sites are as simple and favorable geologically. Each of the other sites appears to have some negative features which the Michigan site does not have. For example, consider the following factors which are arranged approximately in order of decreasing technical complexity and risk (i.e., "a" is most risky, in my judgement):

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a. One site is expected to contain a significant amount of solution features in at least one of the limestone formations to be tunneled. Tunneling in such conditions is risky because of potential large inflows of water and soil materials when the tunnel encounters such features. Significant water and delays can result. Identifying all such features ahead of the tunnel is questionable with current technology.

b. Some sites have a complex geologic structure with such features as folding, faulting, shearing, metamorphism, and igneous intrusive activity. Structural features of these types commonly increase tunnel instability. The increased complexity increases the degree of uncertainty and risk with the present limited investigation.

c. For several states the depth from the ground surface and water table down to tunnel level is from several times to many times deeper, than at Michigan. This would tend to increase water inflow, and would increase construction costs because of increased shaft and tunnel depth. One state apparently proposes to construct the large experimental halls in mined underground chambers because of the proposed tunnel depth. Such mining is likely to be more expensive than surface construction, and could be much more expensive if adverse geologic features are present at the excavation location, but are not yet identified by present limited investigation.

d. Some states have a large percentage of the tunnel in claystone which is expected to be susceptible to slake and/or swell behavior to some degree. These materials are indicated to be weak enough that they can be expected to exhibit overstress failures if not adequately supported at the proposed tunnel depth over

RONALD E. HEUER
GEOTECHNICAL CONSULTANT

at least portions of the tunnel line. Hard concretions in these claystones may cause excavation difficulties.

e. Some states have very strong rock (to 39,000 psi) and hard rock (to Total Hardness of 228) which are expected to reduce tunnel boring machine penetration rates.

All of these problems are things which I have experienced before on tunnel projects in similar geologic settings. Each of the other proposed SSC sites has one or more of these unfavorable characteristics which apparently are not present at the Michigan site. Given adequate geologic exploration and proper engineering, I believe the SSC facilities could be constructed at any of these sites. All sites (including Michigan) currently have some risk associated with them because the geologic information at each site is currently limited. However, at the current level of investigation detail, the Michigan site presently seems to be least risky. This, to me, is what seems most favorable about the Michigan site.

3. Summary

My interpretation is that conditions at the Michigan SSC site are favorable for tunneling. The geologic setting here seems to be simple and straight-forward, without a high risk of encountering surprises and unfavorable conditions. The other proposed sites all appear to have one or more unfavorable characteristics or risks not present at the Michigan site.

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I appreciate the opportunity of reviewing the DEIS. If you have any questions about this letter or if I may be of further service, please do not hesitate to contact me.

Sincerely yours,

Ronald E. Heuer

Ronald E. Heuer

REH:dlv
Enclosure

8712 REH
880913

RONALD E. HEUER
GEOTECHNICAL CONSULTANT

RONALD E. HEUER

3317 West Ringwood
McHenry, Illinois 60050
815-675
Telex: 9102406210/Heux

HEUER, RONALD E.

PERSONAL DATA:

Date of Birth: 7 April 1940
Citizenship: United States

EDUCATIONAL RECORD:

University of Illinois, Urbana, Illinois
B.S. Degree in Civil Engineering - 1963
M.S. Degree in Geology - 1965
Ph.D. Degree in Civil Engineering, Rock Mechanics - 1971

WORK EXPERIENCE:

1975-date Consultant on underground construction projects for owners, engineers, contractors, and legal counsel.
1974-1975 Foster-Miller Associates, Inc. Alexandria, Virginia
1969-1974 A. A. Mathews, Inc., Arcadia, California and Rockville, Maryland

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Geotechnical engineering and engineering geology for underground construction. Geological studies, soil and rock mechanics analyses; evaluation and design of existing and proposed initial support and final lining, selection and design of excavation methods. Underground projects ranging from large chamber excavations in rock, to shield and compressed air tunneling in soft ground. Work with owners and engineers in design and construction stages, with contractors in prebid and construction phases, and with legal counsel in claim evaluation and presentation. Structural design of cast-in-place concrete linings and of initial support systems including fabricated steel liners, precast concrete segments, steel ribs, rock bolts, and shotcrete. Experience on over 200 underground projects.

REGISTERED ENGINEER:

Illinois, Wisconsin, California, New York, Virginia

PROFESSIONAL SOCIETIES:

American Society of Civil Engineers
Association of Engineering Geologists

RONALD E. HEUER
GEOTECHNICAL CONSULTANT

TEACHING EXPERIENCE:

Lecturer in extension courses on tunneling in both rock and soft ground:
University of California, Los Angeles, 1972 and 1973
University of California, Berkeley, 1974
University of Wisconsin, Milwaukee, 1973-1978, 1984, 1985
University of Illinois at Urbana-Champaign, 1975-1978.
Appointment as Associate Professor. Teaching undergraduate and graduate courses in soil mechanics, rock mechanics, and foundation engineering with emphasis on courses related to underground construction.

PUBLICATIONS:

1. "Geology of the Soyalo-Ixtapa Area, Chiapas, Mexico", MS thesis in Geology, University of Illinois, 1965, 103 pp.
2. "Geomechanical Model Study of the Behavior of Underground Openings in Rock Subjected to Static Loads", Ph. D. thesis in Civil Engineering, University of Illinois, 1971, 368 pp.
3. "Excavation and Support of Navajo Tunnel No. 3", 1972 RETC Proc., June, 1972, Chicago, co-authored with P. E. Sperry.
4. "Design/Selection of Shotcrete for Temporary Support of Tunnels", Proceedings of Eng. Found. Conf. on "Use of Shotcrete for Underground Structural Support", July 1973, South Berwick, Maine, ASCE.
5. "Important Ground Parameters in Soft Ground Tunnels", Proceedings of Eng. Found. Conf. on "Subsurface Exploration for Underground Excavation and Heavy Construction", August, 1974, Henniker, New Hampshire, ASCE.
6. "Catastrophic Ground Loss in Soft Ground Tunnels", 1976 RETC Proc., June 1976, Las Vegas.
7. "Site Characterization for Underground Design and Construction", Proceedings of NSF specialty Workshop on "Site Characterization and Exploration", C. H. Dowding, Ed., Evanston, Ill., ASCE, 1978.
8. "Excavation and Support of Gatineau Shaft", 1983 RETC Proc., June 1983, Chicago, co-authored with W. C. Cox and J. M. Loignon.
9. "Ocean Bottom Tap, Point LePreau Cooling Water Tunnels, New Brunswick", 1985 RETC Proc., June 1985, New York, co-authored with F. Breu.
10. "Design of PCCP Pressure Tunnel Liners", 1987 RETC Proc., June 1987, New Orleans, co-authored with P. M. Douglass, C. C. Sundberg, and S. L. Paul.
11. "Anticipated Behavior of Silty Sands in Tunneling", 1987 RETC Proc., June 1987, New Orleans, co-authored with D. L. Virgens.
12. "Geotechnical Investigations for Construction Dewatering for Soft Ground Tunneling", Proc. Peck Symp., Prentice-Hall, 1987, in press, co-authored with P. M. Douglass.

EXAMPLES OF SPECIFIC UNDERGROUND PROJECTS

Experience has included working for owners, engineers, contractors, and legal counsel in all phases of underground design and construction, in a wide range of ground conditions. Examples of recent and major projects include the following:

Planning, Analysis, and Design, including planning and evaluation of geotechnical investigations, soil and rock mechanics analyses, tunnel design, analysis and design of tunnel lining and support systems and preparation of Contract Plans and Specifications.

- Member of Design Review Board for Trans-Koolau Tunnels in Honolulu, twin highway tunnels in basalt flows and saprolite.
- Stanley Canyon Project, Colorado. Pressure tunnel and shaft, 9 ft ID by 17000 ft long under 1500 ft head, in granite.
- Eklutna Tunnel, Anchorage. Water supply tunnel 6 ft ID by 8000 ft long in mixed glacial soils. Includes tap into existing tunnel.
- PATH Exchange Place Station, New Jersey. Renovation of existing subway station in Manhattan Schist, includes new inclined escalatorway and new passages with breakout into existing tunnels in operation.
- Rogers Pass Tunnel, British Columbia. Evaluation of tunneling conditions, initial support, and final lining requirements for single track railroad tunnel in metamorphic rock at depths up to 4500 ft.
- Member of 4 man panel established by government of Mexico City to review proposed methods of slurry machine tunneling at depth in Mexico City clay.
- Member of Board of Special Geotechnical Consultants established by Chief Engineer, Southern California Rapid Transit District, Los Angeles, to assist in planning and evaluation of geotechnical investigations for subway preliminary design.
- Sewer tunnel, 8 ft diameter, in glacial outwash sand adjacent to Rock River, Rockford, Illinois. Geotechnical investigation, tunnel design, and preparation of contract documents.
- Section B-10 of Washington, DC Metro System. Twin 18 ft diameter tunnels and subway station, mostly in schist and gneiss, with portions in weathered rock and residual soil.

- Design of 30,000 ft of sewer tunnel in alluvial clay and sand, Kansas City.

- Sewer tunnels in Milwaukee in various glacial, alluvial, and estuarine soils, including river crossings.

- Paitovi-Lanus water supply tunnel, 16 ft diameter in soft clay and sand, including crossing under river, Buenos Aires, Argentina. Participated in analysis of tunnel failure, geotechnical investigation, tunnel redesign.

- Participated in design of Section A-11 of Washington, DC Metro System. Twin 18 ft diameter tunnels and subway stations in gneiss and schist.

- Crosstown Interceptor, Austin, Texas. Participated in design of 8 ft diameter sewer tunnel in limestone and shale.

- Mt. Baker Ridge Tunnel, 60 ft diameter highway tunnel in glacial till, Seattle, Washington, multiple drift perimeter tunnels filled with concrete. Structural model testing of joints between adjacent perimeter drifts.

- Aurora-Ramparts Tunnel No. 1, Colorado. Design of new concrete lining of existing unlined water tunnel, to be pressurized, 6 ft diameter in rock.

- Zion-Mount Carmel Tunnel, Utah. Study of stability of two lane highway tunnel immediately adjacent to cliffs in Navajo sandstone, Zion National Park.

- Lucky Friday Mine Shaft, Idaho. Design concepts for concrete lining of 18 ft diameter shaft 7500 ft deep in quartzite and argillite, including squeezing fault zones.

- Atigun Pass, Brooks Range, Alaska. Feasibility study for pipeline tunnel in metasedimentary rocks, partially in permafrost, interpretation of tunneling conditions and support requirements.

- Two track subway tunnel, 30 ft diameter, Mexico City. Participated in design of segmented precast concrete lining for tunnel in sand and gravel.

- Thornton Quarry, Illinois. Evaluation of stability of 45 ft wide by 107 ft high unlined tunnel in limestone ridge in aggregate quarry.

- Chambers Creek Tunnel, Tacoma, Washington. Planning and interpretation of geotechnical exploration for sewer tunnel in mixed glacial deposits below water table.

RONALD E. HEUER
GEOTECHNICAL CONSULTANT

- Intersite Tunnel, Winnipeg Airport. Concepts of design and construction for 20 ft diameter tunnel excavation in medium clay and hard glacial till with 10 ft of cover under airport runway.

- Romeoville Quarry, Illinois. Design of 30 ft wide by 20 ft high service tunnel in dolomite.

- Precast concrete segment design concepts for sewer tunnels in Mexico City clay.

Prebid Studies for Contractors - Study of available geologic information to predict anticipated ground behavior, support requirements, and potential problems, for contractors use in preparing bids and in planning construction procedures and equipment.

- Lake Travis Intake, Austin, Texas. 12 ft diameter tunnel and 40 ft wide by 60 ft high chamber in limestone and marl; including lake intakes, drilled shafts and conventional shafts.

- Syar Tunnel, Utah. 8.5 ft diameter tunnel in mixed sedimentary rocks.

- Montreal Sewer Tunnel Contracts 4.1, 4.3, 6.4. Approximately 12 ft diameter tunnels in limestone, shale, mixed face.

- New Waddell Dam Tunnels, Arizona. 20 ft diameter diversion and outlet tunnels in mixed volcanic andesite and tuff.

- West Interceptor Phase 2, Anchorage, Alaska. 78 inch sewer tunnel in silt and sand driven with compressed air and dewatering.

- Crosstown and Northshore Interceptors, Milwaukee. 30 ft and 17 ft diameter tunnels in dolomite.

- Casagrande Storm Drain Tunnels, Phoenix. 21 ft diameter tunnels driven below water table in very coarse sand, gravel and cobble alluvial deposits.

- Spirit Lake Drainage Tunnel, Washington. 12 ft diameter tunnel driven through mixed igneous and volcanic rocks to drain Spirit Lake, partially filled by eruption of Mount St. Helens.

- Onion Creek Interceptor, Section IV, Austin, Texas. 7 ft diameter tunnel driven through weak clay shale with shallow crossings under small river.

- Stillwater Tunnel Completion, Utah. Interpretation of squeeze behavior and support requirements, 10 ft diameter tunnel in shale at depths up to 2500 ft.

- Rocky Mountain Pumped Storage Project, Georgia. 40 ft diameter tunnel and shaft in mixed sedimentary rocks.

- Section F-4a, Anacostia River Crossing, Washington, DC. Twin single track subway tunnels in clay and sand, evaluation of dewatering and compressed air requirements for subaqueous shield driven tunnel.

- Sections E-1d and E-6e, Washington, DC. Twin single track subway tunnels in clay and sand, evaluation of dewatering and compressed air requirements.

- Contracts 105 and 107, Singapore. Design-construct proposal for twin single track subway tunnels in residual soils developed from granite and sedimentary rock, and in alluvial sand and soft marine clay; evaluation of dewatering and compressed air requirements, initial lining design, underpinning requirements, plan of additional geologic exploration needed for final design.

- Three Rivers water tunnel, Atlanta, Georgia. 10 ft diameter tunnel in gneiss, residual soil, and weathered rock.

- Milwaukee Contracts 287 and 288. 8 ft diameter sewer tunnels in hard silt glacial till and mixed face conditions below water table.

- SWOOP Tunnel, San Francisco. Evaluation of compressed air requirements for 14 ft diameter sewer outfall tunnel through sand formations under Pacific Ocean.

- Donkin-Morien Mine Access Tunnels, Nova Scotia. Twin 25 ft diameter tunnels through mixed sedimentary strata for undersea coal mines.

- MARTA Contract CN430, Atlanta. Single and double track subway tunnels in gneiss and mixed face conditions.

- Foothills Tunnel, Colorado. Water tunnel in mixed igneous and sedimentary rocks.

- Bicounty Water Tunnel - West, Washington, DC. 12 ft diameter tunnel in schist and gneiss.

- Hades and Rhodes Tunnels, Utah. Small diameter water tunnels in mixed sedimentary rocks.

- Springfield, Ohio sewer tunnel. 9 ft diameter, rock and alluvial soil.

- Lexington-Market tunnels, Baltimore. Twin 18 ft diameter subway tunnels, residual soil and coastal plain sand and gravel, compressed air.

- North Shore Outfall tunnel, San Francisco. 17 ft diameter, sand and Bay mud.

- Vat Tunnel, Utah. Small diameter machine bored tunnel in mixed sedimentary rock.

- Mondawmin Tunnels, Baltimore. Twin, single tube subway tunnels in gneiss and schist.
- Peach Tree Station, Atlanta. Subway station in gneiss and twin single track compressed air subway tunnels in gneiss and residual soil.
- Deep Sewer Tunnels, Chicago. Large diameter machine bored storm sewer tunnels in limestone.
- San Bernadino Tunnel, California. 16 ft diameter water tunnel in mixed igneous and metamorphic rocks, on California Aqueduct.
- San Fernando Tunnel, California. 18 ft diameter machine bored water tunnel in alluvial deposits and weak sedimentary rock, on California Aqueduct.
- Buckskin Mountains Tunnel, Arizona. 20 ft diameter machine bored water tunnel in mixed extrusive igneous rock.
- Sections A-9a and A-10a, Washington, DC. 20 ft diameter machine bored, twin single track subway tunnels in gneiss and schist.

Consulting During or Post Construction - Consulting with owners, contractors, and legal counsel in evaluating ground conditions, in developing solutions to ground behavior and support requirements, and in claim analysis and presentation.

- Disputes Review Board. Member of 3 man panel established by Owner and Contractor to resolve disputes which arise during construction.
  - Mt. Baker Ridge Tunnel Bore, Seattle
  - Seattle Metro Bus Tunnels
  - San Antonio Storm Drain Tunnels

- Hex River Tunnel, South Africa. Evaluation of ground conditions and support requirements for single track railroad tunnel 13 km long in mixed sedimentary rock, drill and blast excavation.

- Crosstown and Northshore Interceptors, Milwaukee. Evaluation of initial support for 30 ft tunnels in dolomite including low cover areas, evaluation of water inflows and grouting behavior.

- Shafts and appurtenant structures, Milwaukee. Design of initial support and water control measures for shafts in mixed glacial soils and rock, tunnels and chambers in rock. Contracts CT-2 and 3/4, NS -2, 7, 8, 11.

- Section F4a, Anacostia River Crossing, Washington, DC. Evaluation of precast concrete lining behavior and ground behavior in Earth Pressure Balance tunnel under river. Plans for tunnel breakthrough into shaft.

- Northside Contract VI, Houston. Evaluation of squeeze behavior in stiff fissured clay around 9 ft diameter jacked pipe.

- Straight Creek (Eisenhower) Tunnel, First Bore, Colorado. Participated in redesign of tunneling methods and support systems after problems encountered. These formed basis of design for subsequent Second Bore.

- Navajo Tunnels No. 3 and 3A, New Mexico. Rock mechanics analysis and design of support system after difficulties encountered during construction of 18 ft diameter machine bored tunnel in weak sandstone and shale.

- Point Lepreau Tunnels, New Brunswick. Analysis of rock plugs for ocean bottom tap for nuclear power plant tunnels in sandstone and shale under Bay of Fundy.

RONALD E. HEUER
GEOTECHNICAL CONSULTANT

- Cameron Run Tunnels, Alexandria, Virginia. Seven tunnels 20 ft diameter spaced 28 ft cc in sand fill of railroad embankment. Analysis of steel liner plate stability.

- Big Walker Mountain Tunnels, Virginia and East River Mountain Tunnels, West Virginia. Separate contracts, each twin two lane highway tunnels in mixed sedimentary rocks, evaluation of ground conditions.

- Central Park Subway, New York City. Double track subway tunnel and junction structures in Manhattan schist, evaluation of ground conditions.

- Gathright Dam Concrete Membrane, Virginia. Cutoff wall 8 ft thick by 103 ft high by 700 ft long, constructed in cavernous limestone dam abutment by underground mining methods, evaluation of ground conditions and proposed construction procedures.

- Mineral Creek Diversion Tunnel, Arizona. 16 ft diameter tunnel in mixed sedimentary and igneous rocks, stream diversion around open pit copper mine, interpretation of ground conditions and initial support design.

- Wreck Cove Power Project, Nova Scotia. Multiple tunnels and powerhouse excavation in mixed igneous and metamorphic rocks, interpretation of ground conditions.

- Section D-4a and Section F-1b, Washington, DC. Twin single track subway tunnels in sand and clay, interpretation of ground behavior.

- Rochester, New York, 5 ft diameter sewer tunnel in silt under New York State Barge Canal, investigation of collapse.

- Cuyahoga Valley Interceptor, Contract D, Cleveland. Small diameter sewer tunnel in varved clay, alluvial silt and sand, evaluation of ground conditions.

- Bolton Hill Tunnels, Baltimore. Twin single track subway tunnels in residual soil and weathered metamorphic rock, evaluation of ground conditions.

- Flint Sewer Tunnel, Contract 4, Michigan. Small diameter sewer tunnel in sandstone, shale, and glacial soils, evaluation of ground conditions.

- WSSC Project W-80, Washington, DC. 8 ft diameter machine bored tunnel in metamorphic rock, interpretation of ground behavior.

RONALD E. HEUER
GEOTECHNICAL CONSULTANT

- Sewer tunnel, Jonquiere, Quebec. 10 ft diameter tunnel in sensitive clay, interpretation of failure of steel liner plate in heavy frost conditions.

- Lynwood Collector Sewer, Ottawa, Ontario. 10 ft diameter tunnel in sand, sensitive clay, and rock, interpretation of dewatering requirements and design of initial support of liner plate and steel ribs and wood lagging.

- Thunder Bay tunnels, Ontario. 10 ft diameter tunnel in soft clay and sand, interpretation of wood lagging behavior.

- Three Rivers West tunnel, Atlanta. 10 ft diameter conventional excavation in residual soil materials, evaluation of flowing ground conditions.

- Friendship Heights Station, Washington, DC. Evaluation of rock slope stability.

- Mondawmin Station, Baltimore. Evaluation of rock slope stability and effects of blasting vibrations.

- Nipawin Drainage Tunnel, Saskatchewan. 10 ft diameter tunnel driven under dam site in glacial soils, with precast concrete lining designed to leak to provide relief of hydrostatic uplift pressures. Evaluation of lining concepts and excavation difficulties.

- Powerhouse Excavation, Cat Arm Hydroelectric Project, Newfoundland. Evaluation of blasting damage in surface excavations in rock.

- Sauro-Agri-Sinni Tunnels, Italy. 4 meter diameter tunnels in clay at depths to 110 meters, and in partially cemented sand and silt. Evaluation of clay squeeze pressures and structural adequacy of precast concrete lining, and of flowing ground conditions.

- City Water Tunnel No. 3, New York City. 27 ft diameter horseshoe excavation in Manhattan schist, evaluation of rock collapses and support requirements.

- Gatineau Pump Station, Quebec. Shaft 120 ft diameter by 65 ft deep in sensitive clay, design of steel liner plate and rib initial support system.

Gilbert/Commonwealth engineers and consultants
GILBERT ASSOCIATES, INC., P.O. Box 1498, Reading, PA 19603 / Tel. 215-775-2600 / Cable Gilasoc / Telex 836-431

June 8, 1988

Mr. Daniel Lehman
Lead, Geology and Tunneling Subgroup
SSC Site Task Force
DOE, ER-65
Washington, DC 20545

Subject: Answer to Issue/Concerns for
Michigan SSC Site Visit
May 31 - June 3, 1988
GEOLOGY AND TUNNELING
62-0664-014

Dear Mr. Lehman:

The responses to the issues/concerns as discussed during your Michigan SSC site visit, dated May 31 to June 3, 1988 are finalized in the following:

Issue 1: ROCK QUALITY

The rock unit through which most of the collider tunnel will pass is the Saginaw Formation, a cyclothemic sequence of sandstone, shale, limestone, and thin coaly seams. Rock strength, RQD values, and percent core recovery is quite variable in this unit, raising concerns for support requirements and uniformity of boring properties (TBM).

104 The collider tunnel will be constructed in bedrock consisting of 75% Saginaw Formation, 15% Bayport Formation, and 10% Michigan Formation (See Figure ER-1, Geological profile, Rev. 2, May 11, 1988). The engineering properties of rocks were summarized in Figure 3.5-6 (Revised) dated April, 1988 (Attachment 1). The major rock types in Saginaw Formation are sandstone and hard shale.

To assess rock stability for tunneling, tests for slake durability and swell on shale samples, were performed. The results indicate that the slake-durability values are high (68 to 96%) and the swell pressures are below 5 psi (Test results sent to RTK dated April 8, 1988). The rock permeabilities obtained from the field water pressure tests vary from 4.2×10^{-4} to less than 1×10^{-6} cm/sec. Based on the engineering properties of the rocks, it is expected that most of the tunnel will be stable with either no support or light rock bolt support (See Page 3-92, Volume 3 Proposal). The percentage of rock types in each of the three formations described above and the length of initial support required along the proposed tunnel will be calculated and submitted to DOE as soon as possible.

Issue 2: WATER INFLOW

105 Water volumes and inflow rates will be an important consideration in tunnel and shaft design and construction. The booster/injector area is in low, poorly drained and swampy ground. Glacial outwash deposits (sand and gravel) and zones within the Saginaw Formation may be quite permeable, with questionable stand-up properties.

525 Lancaster Avenue, Reading, PA / Morgantown Road, Green Hills, Reading, PA 215 775-2600
209 East Washington Avenue, Jackson, MI 517 788-3000

SOIL PERMEABILITY

106 The overburden soils consist of medium dense to very dense silty sand and stiff to hard silty clay. The field falling head tests indicate that the coefficients of permeability vary from less than 1 x 10^{-7} cm/sec to 3 x 10^{-2} cm/sec (see Attachment 2). Additional permeability data from the sand and gravel quarry at 1.5 miles south of the collider ring in Jackson (visited by DOE Geologists, June 2, 1988) will be submitted to DOE as soon as possible.

ROCK PERMEABILITY

TOP OF THE SAGINAW FORMATION - The rock permeability values based on the field water pressure tests are summarized in Attachment 3. The values vary from less than 1 x 10^{-7} to 7 x 10^{-4} cm/sec with an average value of 1.3 x 10^{-4} cm/sec.

30 FT. ABOVE AND 30 FT. BELOW THE CENTERLINE OF THE TUNNEL - The rock permeability values vary from 4.2 x 10^{-4} to less than 1 x 10^{-6} cm/sec with an average value of 7.34 x 10^{-5} cm/sec (See Revised Figure 3.5-6, Attachment 1). An analysis of the steady-state water seepage into unlined rock tunnels at this proposed site indicates that about one-third of the tunnel would experience about 0.4 gpm inflow per 100 feet of tunnel, one-half would experience about 4 gpm per 100 feet, and the remainder may experience average inflows of up to 25 gpm per 100 feet (See page
107 3-89, Volume 3, Proposal.)

These calculations present the worst case conditions, the assumption is direct groundwater recharge at tunnel elevation from saturated sands and gravels over the bedrock. The presence of silt and clay in the glacial sediments, as well as shale beds and partings in the Saginaw formation isolated the rock at tunnel elevation and will greatly reduce the actual water inflow during tunneling.

Sump pumps will be used to control water inflow during shaft and tunnel construction. The geological conditions present during deposition of the Saginaw Formation produced a sandstone with frequently interbedded shale partings and shale beds. The presence of the frequently interbedded low permeability shales effectively reduces and in some cases cuts off the vertical migration of groundwater from permeable formations above the rock. Minimal control of groundwater at the base of the excavation is all that is anticipated to be necessary with slurry wall construction through the glacial sediments.

SHAFT AND EXPERIMENTAL CONSTRUCTIONS

Based on the soil and rock permeabilities, the use of the slurry wall in soils and vertical cut in rock is
108 feasible. Groundwater inflow will be controlled with minimal sump pump dewatering at the base of the excavation. The application of slurry wall techniques for structural walls up to 150 ft. deep in soils is constructible and is economically feasibile. The quantity of the water inflows in gpm in the shaft during construction will be estimated and provided to DOE as soon as possible.

BOOSTER/INJECTOR AREA

The Michigan Stockbridge site offers the DOE flexibility in construction of the MEB and HEB.

Two methods are feasible:

109

1. Locate MEB and HEB at 20 ft. below collider tunnel. Construct the MEB & HEB tunnels entirely in rock as stated in Page 3-109, Volume 3 Proposal.
2. Locate LINAC, MEB, and HEB close to surface. In order to minimize any differential settlements, pile or drilled pier foundation to support the tunnel may be needed. Additional soil

information near injector facilities would be required to verify the feasibility of this method. Should this method be considered, more data will be provided if necessary.

MAIN RING LEVEL

110 The additional geotechnical investigation indicates that the ring level at most of the areas could be raised to 10 to 20 ft. above the original proposed elevation (tunnel bottom elevation at El. 800 feet) and still have adequate rock cover. To locate the collider ring close to the surface may reduce significantly the construction costs for the experimental stations, shafts, and the tunnel itself. The data necessary to support a new SSC configuration can be developed for DOE evaluation and cost optimization, if required.

Issue 3: ACID SPOIL LECHATE

111 The Saginaw Formation contains discontinuous layers of high-sulfur coal, and also abundant pyrite. The presence of sulfide minerals may create problems for spoil disposal because of acid leachate (especially if sulfur reducing bacteria are present).

112 The boring information indicates that the Saginaw Formation contains a very small percentage of coal and pyrite. The content of sulfur obtained from sulfur analyses of three (3) coal samples from Michigan (See Attachment 4) ranges only from 1.05 to 1.86%. The leachate analysis results (Attachment 5) and coal samples with pyrite indicate that all leaching and reactive sulfide values are well below the allowable disposal limitations. This information was sent to RTK dated May 11, 1988.

113 The volume of coal has been calculated to provide DOE additional information. The assumptions and calculations are attached. The total coal volume in the construction spoil is estimated to be 3000 cyd which is only approximately 0.1% of the 3.3 million cyd of the total disposal quantity (Attachment 6).

114 The glacial sediments in the vicinity of the Stockbridge site were primarily derived from the most recent glaciation of Wisconsinan age. Natural groundwater quality in the glacial aquifers is derived from the glacially reworked mixture of local rock. The tunnel boring spoils are not anticipated to be substantially different in composition than the overlying glacial material. The above mentioned LEACHATE testing results which are substantially below disposal limitations indicate these spoils may be similar in composition to the glacial overburden.

DISPOSAL SITES

115 Specific disposal sites for the tunnel spoil have been preliminarily selected based on the quarry capacity, licensability and haul distances from the extraction sites. In the transmittal of April 27, 1988, to RTK (Attachment 7), the estimated capacity and location of each of these sites were provided (see Figure RTK-1 in the attachment). Additionally, Table RTK-1 provides the estimated spoil volumes extracted from the E, F, and K locations around the ring, the corresponding primary disposal site, preliminary disposal costs and the approximate haul distances. Disposal costs were based on preliminary quotations from the owners. Each site was inspected by a representative from the Land and Water Management Divison of the Department of Natural Resources and no cause was found to preclude their further consideration for disposition of the spoil material.

116 A response is being prepared per your request on existing experience with coal mine reclamation in Michigan. This summary of conditions will be sent as soon as possible. Acidic leachate and water quality problems were not encountered in the Cedar Run coal mine reclamation project at Williamston. Preliminary testing of the water quality and the results of NPDES monitoring of the dewatered mine effluent that was discharged to the Red Cedar river support this. We will provide this data and send it to you as soon as possible.

Issue 4: METHANE

Natural gas accumulations from two sources may be encountered in excavations: (1) gas from decomposition of organic materials and paleo-soil horizons in the glacial tills; (2) gas from sub-Saginaw Formations which has been trapped by glacial clays. Gassy conditions have implication for design, sealing, and ventilation of excavations, and for operational safety.

1. GAS FROM DECOMPOSITION OF ORGANIC MATERIALS AND PALEO-SOIL HORIZONS IN GLACIAL TILL - No Paleo-soil horizon or woody materials were encountered during the site investigation and are considered to be rare occurrences in Michigan. (Refer to paper by R. L. Rieck and H. A. Winters, 1980, "Distribution and Significance of Glacially Buried Organic Matter in Michigan's Southern Peninsula," Physical Geography, January, Vol. 1, pp. 74-89. Attachment 8)

117 As stated by Dr. C. E. Prouty of Michigan State University, (1988), there is no evidence of a "continuous", "widespread" organic layer (peat and organic matter) that would represent a Paleosoil such as would be expected to separate two different glacial epochs (the Wisconsinan and Illinoisian). Most glacialologists think only the former occurred in Michigan. The small isolated organic deposits in glacial till would not appear likely danger spots for methane generation.

2. GAS FROM SUB-SAGINAW FORMATIONS - Methane gas has not been reported in the formations which would be encountered during collider construction within the vicinity of the site. A majority of reported occurrences in Michigan are located within areas where the bedrock underlying drift is composed of oil bearing strata such as the Antrim Shale or Berea Sandstone. Formations within tunnel elevation are separated from these oil/gas bearing units by a thick Coldwater Shale sequence (about 400 ft). Geological and hydrogeological conditions and the quantity of coal in the Saginaw Formation are apparently not sufficient to produce methane. Drift and bedrock gas in the aquifers in the vicinity of the SSC site have not been reported. The development oil and gas in Michigan is controlled by the Michigan Oil and Gas Act 61, P.A. 1939. Relocating drilling pads (directional drilling) to avoid cultural (such as the SSC tunnel) and environmentally significant features is routinely undertaken by the Michigan Geological Survey Division of the Department of Natural Resources. A permit to drill a well cannot be obtained without approval of this state agency.

   A deep casing program is required for the drilling of the oil and gas in Michigan. The Oil and Gas Well Casing Program is described below:

   - Surface Casing - Oil and gas wells in Michigan are drilled to a point below the deepest fresh water aquifer and casing is cemented to that depth. The cement seal is required to be pressurized and checked for leaks prior to drilling through the next section of rock.

   - Intermediate Casing - Beneath the surface casing is a smaller hole that is drilled to a point that effectively prevents the upward migration of gas and oil. This casing is cemented in place in a unit known as the A-1 carbonate. Gas encountered below this unit cannot migrate to stratigraphically higher formations because gas will not pass through this zone. The blow out preventers are checked, and the cement seal is tested before drilling to the prospective target zone, the Niagaran or Trenton (Ordovician). 118

   - Production Casing - In the event oil and/or gas is discovered, a third string of casing is set into the producing zone and cemented in place.

Inspection records for the wells in the vicinity of the Stockbridge area are kept by the Geological Survey Division of the Department of Natural Resources. The depth of oil and gas wells in the area

is more than 3500 feet. Operating lease sites are routinely inspected in Michigan by geologists. This function in the vicinity of the Stockbridge SSC site is performed by the Department of Natural Resources, East Lansing District Offices.

119 Noise and vibration measurements during drilling and pumping operations shall be provided.

Issue 5: RQD VALUES

The most recent tunnel profile (ER-1, Rev. 2, May 11, 1988) gives different RQD values for core from site borings than were provided in the original proposal. In all cases RQD values have improved.

120

The RQD values for cores from site borings have been recently revised taking into account the effect of the mechanical breaks on cores from the drilling operations. The revised RQD values have been incorporated into Dwg. No. ER-1, Revision 2. Results have been verified by the geologists from Michigan State Geological Survey.

Should you have any questions or need additional information, please call Mr. James Heinzman at (517) 334-6407 or me at (215) 775-2600, ext. 7356.

Very truly yours,

Kin Y. C. Chung, Eng. Sc.D., P.E.
Consulting Geotechnical Engineer

KYC/kdw
Attachments

cc: T. Baillieul (DOE)
Dr. K. Bakhtar (RTK)
Dr. M. Werner (RTK)
J. Heinzman ✓
J. Hanieski
J. Mogk
S. Ott

ATTACHMENT 4

Table 1.--Proximate, ultimate, Btu and forms of sulfur analyses of 3 coal samples from Michigan. Each sample represents the entire thickness of the bed. (All analyses except Btu are in percent. Original moisture content may be slightly more than shown because samples were collected and transported in plastic bags to avoid metal contamination. Form of analyses: A, as received; B, moisture free; C, moisture and ash free. All analyses by Coal Analyses Section, U.S. Bureau of Mines, Pittsburgh, Pa.)

SAMPLE NO.	FORM OF ANALYSIS	PROXIMATE ANALYSIS				ULTIMATE ANALYSIS					BTU VALUE	FORMS OF SULFUR		
		Moisture	Volatile matter	Fixed carbon	Ash	Hydrogen	Carbon	Nitrogen	Oxygen	Sulfur		Sulfate	Pyritic	Organic
IN-1-75	A	13.3	36.3	48.7	1.7	6.1	69.5	1.5	20.2	1.0	12,410	0.03	0.66	0.36
	B		41.9	56.1	2.0	5.3	80.2	1.7	9.6	1.2	14,320	0.03	0.76	0.42
	C		42.8	57.2		5.4	81.8	1.7	9.9	1.2	14,610	0.03	0.77	0.43
IN-2-75	A	10.3	36.1	51.0	2.6	5.8	70.0	1.4	19.0	1.2	12,630	0.05	0.77	0.42
	B		40.2	56.9	2.9	5.2	78.1	1.6	10.8	1.4	14,070	0.05	0.85	0.46
	C		41.4	58.6		5.4	80.3	1.6	11.3	1.4	14,490	0.06	0.88	0.48
EA-3-75	A	18.6	33.3	42.3	5.8	6.1	59.8	1.1	25.8	1.4	10,660	0.08	0.99	0.34
	B		40.9	52.0	7.1	4.9	73.5	1.3	11.5	1.7	13,100	0.10	1.22	0.41
	C		44.0	56.0		5.3	79.2	1.4	12.2	1.9	14,100	0.11	1.31	0.44

Reference: U.S. Geological Survey, 1975, "Chemical Analysis of Three Coal Samples from Michigan". Samples collected by Harry O. Sorenson, August 7.

TABLE S-11
LEACHATE ANALYSIS
in mg/l

Rock with Pyrite

	SB-18 138'-147.5'	SB-15 113.5'-121'	SB-15 138.5'-143.5'	SB-7 Coal 50'	SB-10A Coal & Gypsum 118'-119'
Arsenic	<0.001	0.002	0.018	<0.001	0.084
Barium	0.20	0.14	0.34	<0.05	<0.05
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	<0.02	<0.02	<0.02	<0.02	0.11
Chromium	<0.02	<0.02	<0.02	<0.02	0.03
Lead	<0.05	<0.05	<0.05	<0.05	0.53
Mercury	0.0002	<0.0004	<0.0002	<0.0002	<0.0004
Selenium	<0.0002	0.006	<0.002	0.025	0.002
Silver	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	<0.02	<0.02	<0.02	<0.02	0.07
Reactive Cyanide	<0.2	<0.2	0.2	<0.5	<0.5
Reactive Sulfide	30	30	30	<100	<100
Phosphate	<0.05	0.32	2.1	<0.05	0.01
Chloride	<2	<2	<2	<2	<2
Sodium	1.0	0.56	0.56	3.0	0.47
Calcium	44	15	14	51	200
Potassium	14	3.3	1.4	5.0	<0.4
Magnesium	7.0	3.9	2.5	6.7	5.8
Sulfate	<2	20	4	85	3700

Solid Waste Disposal Evaluation
Leachate Maximum Permissible Limits (in mg/kg)
EP Tox + Zn and Cu

Arsenic	5	Copper	100	Silver	5
Barium	100	Lead	5	Zinc	500
Cadmium	1	Mercury	0.2	Sulfide	500
Chromium	5	Selenium	1	Cyanide	250

IIA.1- 4170

LETTER 1517 (CONTINUED)

ATTACHMENT 6

VOLUME OF COAL CALCULATION

SSUMPTIONS

. Coal seams in Michigan are lense-like - no lateral continuity. We ssume a coal will pinch out after 1/4 mile of linear extent.

. We assume that the two borings (SB-8, SB-10) with coal at tunnel evel are representative of tunnel geology.

. Coal seam in SB-8 will dip through the tunnel with direction of dip erpendicular to tunnel's center line.

. Coal seam in SB-10 will strike southwest to northeast across the unnel; little apparant dip at SB-10.

ALCULATIONS

113 OAL VOLUME AROUND sb-8 = 1320 X 15 X 0.5 = 366.6 Cyd

1720 = linear extent of coal in feet
15 = width of coal in tunnel, in feet
0.5 = thickness of coal in feet

oal volume around SB-10 = 1320 x 15 x1.5 = 1100 cyd

1320 = linear extent of coal in feet
15 = width of coal in tunnel, in feet
1.5 = thickness of coal in feet

unnel volume = 3.3 million cyd

ta' coal volume in tunnel = 1500 cyd

ssume same volume in shafts and in experimental stations = 1500 cyd

TAL COAL VOLUME = 3000 cyd

PCENT COAL OF TOTAL EXCAVATION = 3000/3,300,000 = 0.1 % -

MICHIGAN

SUPERCONDUCTING SUPER COLLIDER

SUPPLEMENTAL UTILITY RESPONSE

TO

RTK SITE VISIT CHECKLIST

April 1988

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ATTACHMENT 7

Gilbert/Commonwealth, Inc. engineers & consultants
229 E. Washington Avenue, Jackson, MI 49201/Tel. 517 788-3000

April 27, 1988
62-0664-016

Mr. Don Scapuzzi, P.E.
RTK Engineering
1800 Harrison Street
Post Office Box 23210
Oakland, CA 94623-2321

Dear Mr. Scapuzzi:

SUBJECT: SSC PROJECT
Michigan Stockbridge Site
RTK Checklist Supplemental Responses
Site and Infrastructure, and Transportation

Attached for your use is one copy of the supplemental site and infrastructure response and the supplemental transportation response to the RTK site visit checklist. The information herein supplements the "Initial Utility Response to RTK Site Visit Checklist," March 18, 1988.

This response includes a more detailed identification of the primary disposal sites for the SSC tunnel spoil material and provides a modified description of the proposed upgrade to the county road system to ensure all season routes between the extraction points and the primary disposal sites.

Please advise us should you require any clarification of this submittal or require further information to complete your assessment.

Yours very truly,

Steven A. Ott
Project Manager

ARB/rc

Attachment

cc: J. Hanieski

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229 East Washington Avenue, Jackson MI 49201 (517) 788-3000 • 120 Cedar Bluff Road, Suite 308, Knoxville TN 37923 (615) 690-4299

RTK Site Visit Checklist

Generic
Michigan
Site and Infrastructure

RTK DATA (Item 1, Page 1 of 1)

Design/construction schedule for road and utilities which will be built by the proposer and furnished to DOE at no cost.

SUPPLEMENTAL RESPONSE

Roads

See RTK Supplemental Response (Generic, Site and Infrastructure, Item 2, Page 1 of 1).

RTK DATA (Item 2, Page 1 of 1)

Any changes to roads, utilities or soil disposal sites from those listed in the proposal.

SUPPLEMENTAL RESPONSE

Spoil Disposal Sites

Table S-11 and Figure S-2 included as part of the response to DOE letter of January 19, 1988 (Attachment 2, Socioeconomics and Infrastructure) provided a list of local extractive quarry sites that potentially could be utilized for disposal of the SSC spoil material. This list of quarries was developed from the aggregate source inventory of the Michigan Department of Transportation. From this list of quarries and other sources, specific disposal sites have been preliminarily selected based on the quarry capacity, licensability and haul distances from extraction sites. Figure RTK-1 provides the estimated capacity and location of each of these primary disposal sites.

Table RTK-1 provides estimated spoil volumes extracted from the E, F and K locations around the ring, the corresponding primary disposal site, preliminary disposal costs and the approximate haul distances utilizing the all season road routes included as part of the State of Michigan road upgrade program.

The Michigan Department of Natural Resources has inspected the primary disposal sites identified herein and found no cause to preclude their further consideration for disposition of the spoil material. The disposal sites generally represent quarries with the capacity to accept volumes at least equal to the minimum extraction volume from a typical E or F location. The owners have been contacted and are receptive to receiving the spoil material for the disposal fees indicated in Table RTK-1. These disposal sites in no way constitute all the disposal sites available but are intended to demonstrate the ability at the Michigan site to properly dispose of all the tunnel spoil in an expedient manner unrestricted by seasonal load limitations.

Roads

Figure LR-1 included in the Attachment 2 Response to the DOE letter of January 19, 1993, identified county primary and local roads to be improved to all season status and new roads to remote access sites.

The general schedule for reconstruction, resurfacing or surfacing was provided in Volume 4, Section 4.2.3 of the original proposal.

Minor modifications to the proposed county road upgrade program have subsequently been prepared based on providing all season haul routes to the primary disposal sites identified on Figure RTK-1.

Table RTK-2 provides a listing of the specific county roads to be upgraded, type of upgrade and general construction schedule relative to the SSC Facility construction. A more detailed design/construction schedule can be developed by the state once the Department of Energy updates their construction schedule for the SSC Facility.

RTK DATA (Item 1, Page 2 of 5)

Provide the actual construction/improvement plan for the proposed road transportation improvements planned for the SSC project. These plans should include information on the type of development planned (including detailed maps), development schedule, cost, financing arrangements, size of construction work force, major materials requirements, relocation needs, and an environmental baseline characterization for a 2-mile corridor based on 1 mile on either side of the right-of-way centerline.

SUPPLEMENTAL RESPONSE

Table RTK-2 and Figure RTK-1 included herein provide a listing of the specific roads, types of upgrade and general construction schedule relative to the SSC Facility construction.

The estimated annual construction work force associated with these upgrades is as follows:

	Annual Construction Work Force
1989-1990	51
1990-1995	52
1995-2000	5

RTK DATA (Item 1, Page 3 of 5)

Provide the actual construction/improvement plan for the proposed rail transportation improvements planned for the SSC project. These plans should include information on the type of development planned including detail maps, development schedule, cost, financing arrangements, size of construction work force, major materials requirements, relocation needs, and an environmental baseline characterization for a 1 mile corridor based on 0.5 mile on either side of the right-of-way centerline.

SUPPLEMENTAL RESPONSE

The new one-half mile railroad siding and loading dock facility will be constructed by the State of Michigan at the inception of the SSC Facility construction effort. The estimated construction schedule is two months with a construction work force of 8 men. A more detailed construction schedule can be provided once the Department of Energy updates their construction schedule for the SSC Facility.

RTK DATA (Item 2, Page 4 of 5)

Where it was indicated that public transit services will be provided directly to the SSC project, provide an actual plan that details the type of service planned, interrelationships with other existing public transit systems, development schedule, cost, and financing arrangements.

LETTER 1567 (CONTINUED)

[illegible] Site Specific

[illegible]

Transportation

[illegible]

[illegible]

[illegible]

TABLE RTK-1
SPOIL DISPOSAL SUMMARY

SSC Spoil Extraction Points	Est. Spoil Extraction (thousand cu. yd.)	Primary(1) Disposal Site	Preliminary Disposal Costs ($/cu. yd.)	Approx. Haul Distance (miles)
E1	65	Crownover	N.C.	13
E2	65	Crownover	N.C.	14
E3	65	Crownover	N.C.	20
E4	65	Spartan #3	Not available	18
E5	65	Spartan #3	Not available	5
E6	65	Capitol #2	$1.00	2
E7	65	Spartan #1	$ .25	5
E8	65	Spartan #1	$ .25	1
E9	65	Spartan #2	$ .25	3
E10	65	Spartan #2	$ .25	9
F1	70	Crownover	N.C.	16
F2	70	Crownover	N.C.	21
F3	70	Larson	Not available	1
F4	70	Capitol #2	$1.00	13
F5	70	Capitol #2	$1.00	7
F6	70	Capitol #1	$1.00	1
F7	70	Spartan #1	$ .25	2
F8	70	Spartan #1	$ .25	5
F9	70	Spartan #2	$ .25	7
F10	70	Crownover	N.C.	15
K1	325	Crownover	N.C.	14
K2	325	Crownover	N.C.	14
K3 (Future)	325	Barr	Not available	12
K4 (Future)	325	Barr	Not available	9
K5	325	Capitol #2	$ .25	5
K6	325	Capitol #2	$ .25	2
TOTAL	3,300			

N.C. = No charge (specific gravity ≥ 2.6)

Average Haul Distance(2) = 9.2 miles

(1) See Fig. RTK-1 for location and capacity of sites
(2) Weighted average based on volume extracted

LETTER 1517 (CONTINUED)

RTE Site Visit Checklist

Generic
Michigan
Michigan Infrastructure

TABLE RTE-1
PROPOSED COUNTY ROAD UPGRADE PROGRAM
NON-SDC FACILITY

Particular Before Road Improvements After SDC Construction

Rusty Road/Ruby	- River Road - River Junction Road to Lasting Road
Mt. Hope Road	- Seymour Road to M-100
Dudley Road	- M-57 to "E-4"
Jarvis Road	- "E-4" to Textile Road
Bean	- M-57 to "E-4"
Covert Road	- "E-4" to Textile Road
Silvey Road	- "E-4" to Waterloo Mantik

Improvements after SDC Construction

Barry Road	- Lansing Road to M-100

Particular After SDC Construction

Mt. Hope Road	- I-96 to Seymour Road
Bean Road	- I-96 to Seymour Road
Waterloo Mantik	- Dudley Road to Mt. Hope Road
Vicente/Sunrise Road	- "E-4" to Mt. Hope Road
Bunn/Cowlitz Road	- Bunn to Kensington Road
Kensington Road	- Cowlitz to Mt. Hope
Textorial Road	- M-100 to M-57
River Junction Road	- I-96 to River Drive Road
River Drive/Sepper Road	- River Junction Road to "E-4"
Textorial Road	- Bring Jacob Road to Cowlitz
Cowlitz Road	- Textorial Road to Seymour Road
Bellevue Road	- Bellevue Crossing Road

LETTER 1517 (CONTINUED)

TABLE RTK-1
(Continued)

Henry Road	- River Junction Road to "F-3"
Lansing/Farrall Road	- "E-2" to M-106
Tuttle Road	- Bellevue Road to Rolf Road
Rolf Road	- Barnes Road to "E-8"
Barnes Road	- Edgar Road to Meridian Road
Eden/Rolf Road	- Barnes Road to Kip Road
Hull Road	- "E-8" to Kipp Road
Kipp Road	- US-127 to Dexter Highway
Dexter Trail Road	- Kipp Road to M36, "E-10" to M-52
Ives Road	- M-36 to Columbia Road
Columbia Road	- Ives Road to Williamston Road
Meridian Road	- Columbia Road to Barnes Road
Williamston Road	- M-36 to Columbia Road
Carter Road	- M-52 to Dexter Trail
Herney/Hoechel/Morton Road	- M-106 to M-52
Milner Road	- M-52 to "J-3"
Maple Lane Road	- River Junction Road to "E-4"
Edgar Road	- Bellevue Road to "K-3"
Portage Lake Road	- Coonhill Road to "J2"
Mount Road	- M-36 to "E-8"

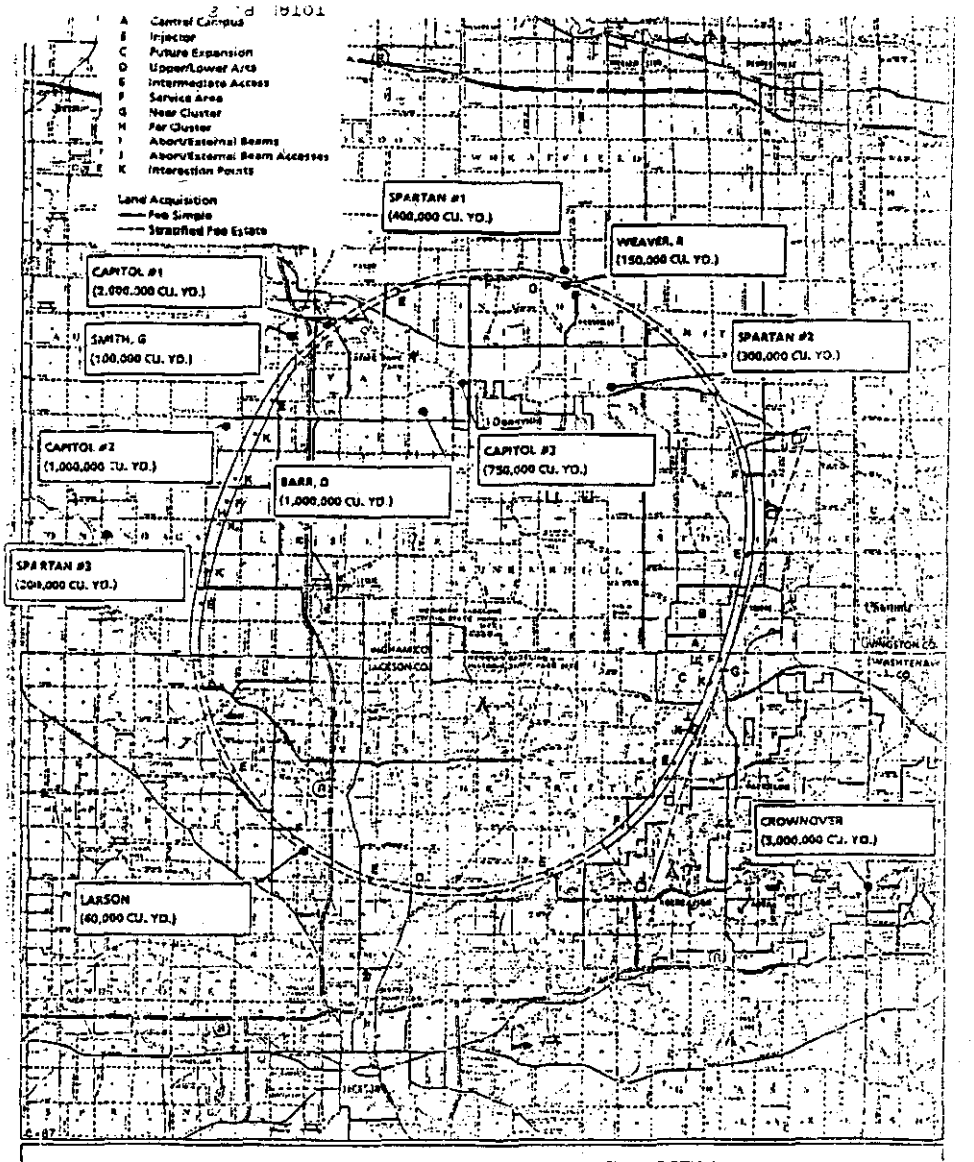

FIGURE RTK-1

SUPERCONDUCTING SUPER COLLIDER

Gilbert/Commonwealth, Inc. engineers and consultants
P.O. Box 1498, Reading, PA 19603-1498/Telephone 215-775-2600, Cable Gilasocr/Telex 836-431

June 30, 1988

Mr. Daniel Lehman
Lead, Geology and Tunneling Subgroup
SSC Site Task Force
DOE, ER-65
Washington, D.C. 20545

Subject: *Supplement to Answer to Issue/Concerns*
for Michigan SSC Site Visit
May 31-June 3, 1988
Geology and Tunneling
62-0664-014

Ref.: Answer to Issue/Concerns for Michigan SSC Site Visit, "Geology and Tunneling", dated June 8, 1988

Dear Mr. Lehman:

The additional information as requested during your Michigan SSC site visit from May 31 to June 3, 1988 (see the above reference) is provided in the following:

1) The percentage of the rock types along the collider ring

The percentage of the rock types along the collider ring was computed as shown in Attachment 1. The results are:

a) For each rock formation with respect to full length of tunnel (assume 15 feet tunnel diameter)

121

SAGINAW FORMATION

Sandstone	47.8%
Shale	22.1%
Siltstone	4.7%
Mudstone	0.5%
	75.1%

BAYPORT FORMATION

Sandstone	12.8%
Limestone	1.7%
Mudstone	.8%
	15.3%

MICHIGAN FORMATION

Sandstone	4.3%
Shale	2.9%
Siltstone	1.4%
Limestone	1.0%
	9.6%

Gilbert Way, Reading, PA 19603-1498 (215) 775-2600 • 525 Lancaster Avenue, Reading, Pa 19603-1498, (215) 775-2600
320 Cedar Bluff Road, Suite 300, Knoxville, TN 37923, (615) 690-4300

Gilbert/Commonwealth engineers and consultants
GILBERT/COMMONWEALTH, INC. P.O. Box 1498, Reading, PA 19603/Tel 215 775-2600/Cable Gilsoc/Telex 838-431

b) Overall for 53.5 miles collider tunnel

Sandstone	65%
Shale	25%
Siltstone	6.1%
Mudstone	1.3%
Limestone	2.6%

2) Initial support and final lining requirements

Based on the rock quality as stated in Attachment 2, the initial support during tunneling was estimated:

30% - *unsupported to spot bolting, assume 1 bolt per 8 feet of tunnel*

40% - two bolt pattern at 4 feet center to center

122 25% - four bolts and strapping over upper 90° each at 4 feet center to center

5% - Steel ribs, W4 x 13 at 4 feet center to center

The final lining requirements are also evaluated as:

10% - no final lining required, only rock bolts will be required

25% - 2 to 3 inches shotcrete and rock bolts (4-bolt pattern) are necessary

65% - 9" cast-in-place concrete lining or 6" precast concrete segmented lining will be required

3) Additional permeability data from Cooper St. sand and gravel quarry in Jackson

123 The in-situ permeability test data from the quarry were obtained from the slug tests and are shown in Attachment 3. The permeability values range from 2.5×10^{-4} to 1.17×10^{-4} cm/sec. A geological profile of the sand and gravel quarry is also included in the Attachment. This quarry is only 1-1/2 miles south of the ring in Jackson county. The overburden soils are representative to most portions of the soils along the collider ring.

4) The quantity of the water inflows in gpm in the shaft during construction

124 The quantity of the water inflows in the shaft during construction was estimated using a simplified well analogy. The formula used is in accordance with the book entitled "Construction Dewatering" by Powers, 1981. The typical subsurface condition consists of 50 feet of overburden soils with water table at 10 feet below ground surface. The shaft is assumed to be excavated 90 feet into the bedrock. The permeability values of the glacial soils and the rock are estimated to be 1×10^{-3} and 1×10^{-4} cm/sec respectively. The slurry wall was assumed to be constructed through the overburden soils and embedded a few feet into the rock for a 25 feet diameter shaft with 130 feet water head.

The water inflow is computed to be 21.5 gpm. The assumptions and the calculations are included in Attachment 4. Based on the information obtained from the preliminary geotechnical investigation (Figure ER-1, Geological Profile, Rev. 2,

LETTER 1517 (CONTINUED)

May 11, 1988), the general order-of-magnitude inflow into one of the Michigan SSC shaft during excavation in rock can be estimated on the order of 10 to 100 gpm. Inflows in this range are within the range of common experience, and can be handled with sumps in the excavation. Site-specific geological information is required at the design stage to verify the water inflow conditions.

5) Water Quality and NPDES monitoring data at the Cedar Run Coal Mine Reclamation Project, Williamston, Michigan

Acid mine drainage was not encountered at the Cedar Run Coal mine reclamation project in Williamston. The NPDES discharge permit, water quality, and the monitoring results are enclosed in Attachment 5 for your reference.

125 This site was an abandoned strip mine operation which left a 35 foot deep, 5 acre pond surrounded by shale spoils (gob piles) and some coal. The banks were steep and stabilized with vegetation. Reclamation through re-contouring at this site was necessary to reduce the public hazard and potential for drowning.

The initial pond water sample obtained prior to dewatering indicated a normal surface water quality (see Attachment 5). The NPDES monitoring of the pond water discharged to the Red Cedar River also indicated that there was no acid mine water produced during the reclamation process.

Exposed spoils were buried rapidly at this site thus minimizing the potential for oxidation of these materials. Isolating the coal spoils from oxidation through rapid burial effectively stops the generation of acid leachate.

6) Noise and Vibration measurements during drilling and pumping operations

126 An additional boring and placement of a geophone on the bedrock would be necessary to obtain the raw data for the vibration analysis. Measurements obtained on noise and vibration previously reported were not close enough to these wells to yield reliable results. It is our understanding that the noise and vibration analysis for these pumping wells were to be generated with existing data. This was confirmed as a result of our written request for clarification of this subject and your response by personal communication on June 21, 1988. We will continue to pursue alternative methods of generating this data. Additional information will be submitted if reliable results can be obtained from these alternate sources.

Very truly yours,

Kin Y. C. Chung, Eng. Sc.D., P.E.
Consulting Geotechnical Engineer

KYCC/ejr

Attachments

cc: T. Guillaieul (DOE)
Dr. R. Schuster (RTK)
Dr. M. Werner (RTK)
J. Heinemann
J. Hanicski
J. Moss
R. [illegible]

LETTER 1517 (CONTINUED)

STATE OF MICHIGAN

DEPARTMENT OF COMMERCE

Superconducting Super Collider Commission

[illegible]

Memo To: Michigan Superconducting Super [illegible] Commission

From: [illegible], Secretary

Subject: [illegible] September [illegible] Meeting

Date: September 6, [illegible]

[illegible]

LETTER 1517 (CONTINUED)

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF COMMERCE

DOUG ROSS, Director

Superconducting Super Collider Commission

Suite 100
320 N. Washington Square
Lansing, Michigan 48913
517-334-6407

Chairperson:
David Adamany

Members:
G. Robert Adams
John M. Amberger
Jack C. Bardwell, III
Henry V. Bohm
Timothy Carpenter
Kenneth M. Case
Lawrence W. Jones
Joseph P. Kearney
Bernie Lennon
William E. Long
Walter J. McCarthy, Jr.
William T. McCormick
Edward McNamara
Michael D. Moore
Bernard G. Pope
Fred G. Sacrey
Martha Sorensen
Joanne Stafl

Executive Director:
John Hamichi

Secretary:
John Mogk

Governor's Representative:
Curtis Wiley

September 6, 1988

Dr. Wilmot N. Hess
Chairman
SSC Site Task Force
Department of Energy
P.O. Box ER-20, Germantown
Washington, D.C. 20545

Dear Dr. Hess:

127 In the interest of clarifying Michigan's wetlands picture, I feel it incumbent upon me as the lead on setting for Michigan to bring to your attention a misunderstanding raised by the SSC Draft EIS (August, 1988) (DEIS), which on balance is an impressive and comprehensive document. Table 1-1 of the DEIS is entitled "Major Environmental Impacts of Constructing and Operating the SSC at the Site Alternatives" and tabulates and summarizes those sensitive resources that would be impacted or new infrastructure required to support the SSC configuration proposed by each finalist state. There is one major exception, however. The Table describes all wetlands to be transferred in fee and is not limited to those affected by construction or operation of the SSC. This subtle shift in the middle of the table has been totally missed by virtually everyone not intimately familiar with the project, as represented by the attached article appearing in the Sunday, August 28, 1988 edition of The New York Times.

The appendices of the DEIS, on the other hand, describe the potential effect on the Michigan wetlands: (1) 620 acres will be directly affected by construction and (2) 360 acres of these would be reclaimed after building is complete (5.1.5-5). More importantly, "none of the wetlands which might be lost or severely impacted by construction are known
128 to be of special significance or high value ecologically or recreationally" (5.1.5-27).

Michigan will fully mitigate and upgrade the 260 acres of low value wetlands to be permanently disrupted out of the 2,800 acres to be transferred in fee, as I stated during our formal presentation to the Task Force on May 31, 1988 and which will be reconfirmed at Michigan's September 26, 1988 EIS hearing. This is quite a different picture than is portrayed to the public by the Table.

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Letter to: Dr. Hess
September 6, 1988
Page Two

129 I summarize this information, too, because of the question which you raised of me on May 31, 1988 with respect to wetlands Michigan expects to be lost by its proposal. There will be no net loss, but rather an upgrading of wetlands and overall enhancement of the natural environment through sound planning for the SSC, replacing the piecemeal and haphazard land development which might otherwise occur.

We look forward to the upcoming EIS hearing later this month and the Governor's presentation to the Secretary on October 6, 1988 to further emphasize the environmental compatability of the Stockbridge site with the SSC.

Best regards.

Sincerely,

John E. Mogk
Secretary

JEM:ds
encls.
cc: Dr. L. Edward Temple
Dr. Robert Diebold
Mr. Richard Nolan
Mr. Donald Trost
Mr. Brian Quirk

LETTER 1517 (CONTINUED)

THE NEW YORK TIMES - August 28, 1988

Atom Smasher Could Require 100 Miles of Roads

Environmental effects are projected by U.S.

WASHINGTON, Aug. 27 (AP) — The Department of Energy, in a preliminary report on environmental changes that would be caused by construction of the proposed superconducting super collider, says 100 miles of new roads will be required if the atom smasher is built in Arizona or Colorado.

By contrast, the project will need only 8 to 10 miles of new roads if it is built in Illinois or Michigan. However, up to 2,800 acres of important wetlands could be affected by construction work at the Michigan site.

The findings were contained in the draft of an environmental impact statement made public Friday by the department as part of a process that is expected to result in selection of a site early next year.

Other states competing for the $4.4 billion research project are North Carolina, Tennessee and Texas.

From Huge to Tiny

The collider will be an underground ring, 53 miles in circumference, of magnets capable of whipping proton beams into each other with 20 times the force of the world's most powerful existing accelerator. Scientists hope to learn more about the nature of matter from studying the subatomic particles created by the proton collisions.

Supporters argue that it is needed to keep the United States competitive in the next century, while opponents say the project would siphon much-needed money from other scientific research.

The report provided data about the collider's anticipated impact at each of the seven alternative sites on such things as water resources, air quality, ecological resources and employment.

Effects That Are Foreseen

The statement did not rank the seven sites in terms of overall advantages and disadvantages. The report listed the following as among effects of the project:

¶Water wells lost due to construction of the project: Arizona, none; Colorado, 18; Illinois, 320; Michigan, 80; North Carolina, 9; Tennessee, 350; Texas, 2.

¶Wetlands affected by construction: Arizona, none; Colorado, 20 acres; Illinois, 850 acres; Michigan, 2,800 acres; North Carolina, 258 acres; Tennessee, less than 10 acres; Texas, less than 10 acres.

¶Threatened and endangered species whose habitat could be lost: Arizona, Tumamoc globeberry; Colorado, bald eagle; Illinois, prairie brush clover and Indiana bat; Michigan, Indiana bat; North Carolina, none; Tennessee, purple coneflower and Indiana bat; Texas, black-capped vireo.

¶Total peak-year jobs during construction, both from direct employment at the super collider and other jobs that would be created due to the project: Arizona, 9,586; Colorado, 9,935; Illinois, 10,996; Michigan, 9,665; North Carolina, 9,717; Tennessee, 9,531; Texas, 9,651.

¶New roads that would have to be built: Arizona, 101 miles; Colorado, 94; Illinois, 8; Michigan, 10; North Carolina, 38; Tennessee, 13; Texas, 31.

¶New power lines that would be required to reach super collider substations: Arizona, 41 miles; Colorado, 99; Illinois, 2; Michigan, 6; North Carolina, 4; Tennessee, 32; Texas, 5.

The draft of the environmental impact statement will be open for public comment for a 45-day period, Sept. 2 to Oct. 17.

Public hearings are scheduled for Sept. 26 in Stockbridge, Mich., and Waxahachie, Tex.; Sept. 29 in Fort Morgan, Colo., and Murfreesboro, Tenn.; Oct. 3 in Butner, N.C., and Tempe, Ariz., and Oct. 6 in Aurora, Ill.

After consideration of comments on the draft document, the Department of Energy plans to identify a preferred site in November, issue a final environmental impact statement in December and announce the final site selection in January.

130 The following comments are provided in support of David F. Hales, Director of the Michigan Department of Natural Resources, whose oral and written testimony were presented to the Department of Energy on the Draft Environmental Impact Statement for the Superconducting Super Collider. It was suggested therein (page 2) that text and tables of the final EIS indicate potential impacts on Michigan's wetlands only to those areas where construction or operation will impact those resources. This submittal is provided accordingly:

131
1. Table 1 lists references to 2800 acres of wetlands and the number of wetland areas greater than 10 acres in sections and tables of the DEIS. It is the Michigan Department of Natural Resources' belief that the acreage of wetlands in each category has been overstated and requires revision.

2. Inconsistencies within the data presented are noted in the number of areas of wetlands to be affected (greater than 10 acres), e.g. 56 vs. 90.

132 Also, lack of agreement on the wetlands to be affected by surface facilities is noted. There are inconsistencies noted between Table 5.4.9-5 (Volume IV, Appendix 5) and Tables 3-7 and Section 11.3.4.3 (Volume IV, Appendix 11, page 22) when compared with Section 3.7.7 (Volume I, page 3-68) and Section 5.4 (Volume I, page 5.4-1).

S. A. Ott
October 6, 1988

TABLE 1

QUANTITATIVE REFERENCE
TO
WETLANDS IN MICHIGAN
IN THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

OCTOBER 1988

Reference	Title	SSC Area Designation	2800 ac.	Wetland Areas >10 ac.
Volume I				
Section 3.4.4, p 3-39	Michigan Site		x	x(56)
Section 3.7.7, p 3-68	Wetlands	x		
Section 4.7.1, p 4-45	Ecological Resources			x(56)
Section 5.1.5.4, p 5.1.5-17	Michigan Wetlands		x	x(56)
p 5.1.5-25	Construction Impacts	x[1]		
Section 5.2.7, p 5.2-4	Wetlands		x	x(56)
Section 5.4, p 5.4-1	Unavoidable Adverse Impacts	x	x	
Section 5.6.4.4, p 5.6-11	Michigan			x(90)
Table I-1, p 1-4	Major Environmental Impacts of Constructing and Operating the SSC		x	
Table 3-7, p 3-52	Impacts of Constructing and Operating the SSC	x	x	
Table 5.6-4, p 5.6-9	Natural and Depletable Resources Required		x	
Table 6-2, p 6-5	Sites with Facilities Proposed in Wetlands	x		
Volume IV, Appendix 5				
Table 5.4.9-5, p 76	Wetlands within Proposed Surface Facility Locations	x[1]		
Volume IV, Appendix 11				
Section 11.3.4, p 21	Michigan			x(56)
Section 11.3.4.3, p 22	Wetlands	x[1]	x	

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[1]Affected areas not consistent with others listed.

SUMMARY STATEMENT

ATTACHMENT ONE

The Michigan Department of Natural Resources, as the delegated wetlands administrator, has defined the wetlands resources that lie within the DOE required Fee Simple acquisition for the entire Stockbridge SSC ring. The definition was conducted through the use of the MIRIS computer mapping system of the DNR, Land and Water Management Division, the same division responsible for the Clean Water Act Section 404 wetland protection responsibilities. The capabilities of this system and method of analyses applied to determine the acreage of wetland resources in the fee simple areas are detailed in this attachment. The land cover and soil data for the SSC Footprint for the entire Stockbridge project area was entered in to our Geographical Information System data base. A series of maps starting with the hydric soil classification, hydric soil and existing land use (farming-industry etc.) and ending with the co-occurrence of wetland vegetation, open water and hydric soils were prepared to determine the amount of wetland resources at risk within the fee simple acquisition areas.

133

The tables and maps found in this attachment accurately portray the distribution and acreage of each wetland type encountered for the entire SSC ring. These maps, which match vegetative cover with wetland soil type and land use, quickly demonstrate that the wetland resources can easily be avoided at most of the proposed construction sites. Most of the land has already been converted to agricultural usage and thus presents no wetlands conflict. Minor shifts in location of the flexible facilities would further diminish the potential impacts on the wetland resources.

Based on our analyses we conclude that:

1. There will be minimal conflict between the SSC facilities and wetlands.

2. In most cases minor adjustments which do not compromise the project can be made to avoid conflicts.

3. Where there is no prudent or feasible alternative, the project can be mitigated.

ATTACHMENT ONE
WETLANDS

DEPARTMENT OF NATURAL RESOURCES SUMMARY OF STATEMENTS AND ATTACHMENTS REGARDING THE MICHIGAN DEIS SSC STOCKBRIDGE SITE

134 WETLANDS: The state of Michigan, Department of Natural Resources, having the delegated authority of the EPA under section 404 of the Clean Water Act to administer a wetlands protection program has determined the 2,800 acres of wetlands listed as impacted in table 3-7 and elsewhere in the DEIS is not appropriate. The 2,800 acre estimate was not derived from U.S. Fish and Wildlife Service, Army Corps of Engineers, or Michigan Department of Natural Resources methods of wetlands assessment.

135 Wetlands encountered within the fee simple area required by the DOE total 892 acres as determined by the DNR MIRIS Computer Mapping system. The comments presented at the September 26, 1988 Draft Environmental Impact Statement hearing by Department of Natural Resources Director, David F. Hales, along with the tables and maps utilized for his exhibits are found in attachment one. This attachment explains the methodology and the use of the computer mapping system utilized to determine that 892 acres of wetland lie within the fee simple acquisition. This analyses was undertaken specifically to halt any further misinterpretation regarding the acreage of wetland resources encountered in the Fee Simple properties at the Michigan SSC Stockbridge site.

136 Michigan has the delegated authority to define the wetland resources, and Michigan has the delegated authority to protect and manage these valuable natural resources. The text and tables of the final EIS need to be changed to indicate only those areas where potential impacts on wetlands from construction or operation will occur. The enumeration of those proposed revisions by table and section are listed in attachment one.

COMMENTS REGARDING INCONSISTENCY OF IMPACTED RESOURCE ASSESSMENTS

137 The method of assessing impacts to sensitive environments was not handled consistently throughout the DEIS with respect to wetlands, sensitive upland communities, affected desert environments, and farmland. Please note that impacts to farmlands are separated into categories that show actual impact (i.e. "Prime and Important Farmlands Converted to SSC use" -- Section 5.6.3 page 5.6-9 resources precluded from development table 5.6-4, Item 2 Land Resources), but wetlands potentially impacted are separated only within the body of the report. This is further clouded by the "impacts" section 3.7.7 which states that the summary table in that section reflects impact, rather than presence. The point is, changes in ownership or subsurface use rights do not constitute impacts to wetlands and the failure to indicate this in the DEIS has apparently led to confusion about wetland impact levels.

138 Appendix 11, Ecological Resources contains a series of statements which need clarification. Attachment One details additional

questions regarding specific sections of the DEIS relevant to wetland impact assessments discussed in Appendix 11.

AIR QUALITY

139 Attachment Two addresses the air quality section of the DEIS. Air Quality Division of the Michigan Department of Natural Resources has determined the monitoring stations utilized to assess air quality impacts were not close enough to the Michigan Stockbridge SSC site to provide an accurate determination of impacts. The monitors used by the consultant are in metropolitan Detroit and Lansing. To directly use measurements from the urban areas of Detroit and Lansing to obtain air quality estimates for a rural area such as Stockbridge is inappropriate.

GROUNDWATER AND SURFACE WATER RESOURCES

140 Attachment Three addresses the availability of groundwater and surface water resources. There is an abundant supply of groundwater and surface water available for development within the region and in proximity to the city of Stockbridge. Increased water use for the SSC campus was anticipated by the State of Michigan SSC Commission. Further expansion of the Stockbridge Municipal supply will not adversely impact local groundwater use patterns.

ECOLOGICAL RESOURCES

141 Attachment Four contains the letters received from the State of Michigan Department of Natural Resources Wildlife Division. The Department of Natural Resources will assist DOE in their efforts to protect the potential Indiana Bat habitat should these nesting and foraging areas be identified within the SSC ring.

GEOLOGY AND TUNNELING

142 Attachment Five contains the testimony of R. Thomas Segall, State Geologist and Supervisor of Wells, Chief of the Michigan Department of Natural Resources, Geological Survey Division regarding methane gas and the potential to encounter uncharted oil and gas wells. His testimony explains the regional geological conditions and the historical perspective necessary to properly evaluate the statements found in the DEIS regarding natural gas and oil wells. The probability of encountering either gas in the formations to be tunneled, and uncharted oil or gas well is very unlikely. If such a well existed, the technology during the time of its drilling would not have allowed it to be drilled to the depth of a pressurized reservoir. If such a well did exist, and was poorly plugged, gas to surface would have been noted in surrounding water wells or at other surface expressions. None have been noted.

143 Attachment Six contains the comments pertinent to spoils disposal. The water quality analyses from leachate testing of the SSC spoils did not exceed water quality standards. Leachate analyses of coal, Michigan Formation, Saginaw Formation and the Bayport Limestone were forwarded to RTK and to the DOE. It is not apparent from the written analyses regarding spoils disposal that these recent leachate results were utilized for preparation of the DEIS. Specifically section 10.2.3.4 Michigan, A. Excavated Material should acknowledge that none of the leachate analyses performed on rock core collected for this project exceeded water quality standards. Special disposal handling techniques would only be necessary if sections of rock were encountered that would produce leachate in excess of the water quality standards.

SURFACE WATER QUALITY

144 Attachment Seven details corrections which need to be entered into the final EIS regarding surface water quality section. The primary problems identified in the attachment are of a technical nature and relate to specific sections where data has been misinterpreted or does not apply to water quality standards for this region.

ATTACHMENT ONE WETLANDS

Summary Statement for Attachment One

Department of Natural Resources Director David F. Hales' Comments

Specific questions pertinent to appendix 11, ecological resources

MIRIS land cover land use data collection and analyses methodology Ingham/Jackson County SSC project

Current use inventory classification system definitions for the MIRIS program (Exhibit B)

Summary of tables and maps found in Attachment One

Table Listing. . . . . Summary of hydric soils
Table Listing. . . . . Summary of land cover/use
Table Listing. . . . . Summary of hydric soils/wetlands
Table Listing. . . . . .*Quantitative references to wetland

*Table of inappropriate quantitative references to wetlands in Michigan by specific section in the DEIS. (This is the enumeration of sections and tables in the DEIS referred to in David Hales testimony citing sections of the DEIS where
145 inappropriate references to either wetland impacts, or the number of acres to be transferred in fee simple appear.)

MIRIS maps of land use land cover and soils

Agriculture and open . . . . . Number One
Hydric soils map . . . . . Number Two
Hydric soils and wetlands. . . . . Number Three
Wetlands . . . . . Number Four
Urban. . . . . Number Five
Forest . . . . . Number Six

Attachment Two. . . . . Air Quality
(letter from Dave Yanacko and Dorothy Bailey)

Attachment Three. . . . . Ground and Surface Water Resources
(Water resources assessments, Pete Shirey and Ron VanTil)

Attachment Four . . . . . Ecological Resources
(Letter of review by Karl Hosford, Wildlife Division Chief)

Attachment Five . . . . . Geology and Tunneling
(Letter of review by R. Thomas Segall, State Geologist, Geological Survey Division Chief)

Attachment Six. . . . . Spoils Disposal
(Supporting text and DEIS specific references)

Attachment Seven. . . . . Surface Water Quality
(Technical critique of surface water section by Rick Hobrla)

ATTACHMENT TWO

AIR QUALITY

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 21, 1988

TO: Dave Yanochko, Permit Section

FROM: Dorothy Bailey, AQEU

SUBJECT: Air Quality Background Estimates for the Super Collider Project

The air quality background estimates used by the DOE contractor are not representative of the air in the area of the proposed Super Collider location near Stockbridge.

There are no monitors operating in the Stockbridge area. The contractor elected to use the measurements from the closest monitor to the source. These monitors are not located in areas that can be classified as representative of the proposed Super Collider site. The proposed site is a rural farming area with the closest sources approximately 13 miles away. The nearest major PSD source is approximately 20 miles away.

146 The monitors used by the consultant are in metropolitan Detroit and Lansing. To directly use measurements from the urban areas of Detroit and Lansing to obtain background air quality estimates for a rural area such as Stockbridge, is inappropriate.

The estimates provided by the Air Quality Division incorporated monitors in Lansing and Jackson, but balanced those measurements with data from areas that are similar to the Stockbridge area. Where Lansing or Jackson did not have a monitor for a particular pollutant then data from monitors in the most representative locations were used, exclusively. All of the estimates provided by the AQEU are considered conservative.

The final resolution of the issue of background values would require an ambient monitoring program in the Stockbridge area.

If you have any further questions or comments, please contact me.

D.B.

DEB:mh
cc: L. Pocalujka

ATTACHMENT THREE

GROUND AND SURFACE WATER RESOURCES

Stockbridge Site State of Michigan September 2, 19

TABLE 5.5-1

AMBIENT AIR QUALITY STANDARDS[a] AND EXISTING AMBIENT AIR QUALITY IN THE SITE VICINITY
(micrograms/cubic meter)

	Primary[b]	Secondary[c]	the EIS was	Existing Ambient Concentration
Total Suspended Particulate (TSP)				
annual arithmetic mean	50	50	45	31
24-hour maximum[d]	150	150	107	62
Sulfur Dioxide (SO_2)				
annual arithmetic mean	80 (0.03 ppm)	-	15	20
24-hour maximum[d]	365 (0.14 ppm)	-	99	70
3-hour maximum[d]		1300 (0.5 ppm)		120
Nitrogen Dioxide (NO_2)				
annual arithmetic mean	100 (0.054 ppm)	100	34	15
Carbon Monoxide (CO)				
8-hour maximum[d]	10,920 (9 ppm)	10,920	10.4	5
1-hour maximum[d]	40,320 (35 ppm)	40,820	23.7	10
Ozone (O_3)				
1-hour maximum	0.12 ppm	0.12 ppm	0.13	0.09
Lead (Pb)				
quarterly arithmetic mean	1.5	1.5	0.06	0.05

147

[a]From U.S. EPA, Title 40, Code of Federal Regulations Part 50 (40 CFR 50), National Primary and Secondary Ambient Air Quality Standards. These standards have also been adopted by the State of Michigan.

[b]Primary standards define the levels necessary to protect the public health with an adequate margin of safety.

[c]Secondary standards, generally more stringent than primary standards, define the levels necessary to protect the public welfare and property from any known or anticipated adverse effects of a pollutant.

[d]Concentration not to be exceeded more than once per year.

LETTER 1517 (CONTINUED)

STATE OF MICHIGAN

DEPARTMENT OF COMMERCE

Mr. Patrick Coleman
Senior Hydrologist
Earth Technology Corporation
7619 Long Beach Boulevard
Long Beach, California 90807-4319

Dear Patrick:

The informal reports addressing the a specific concern over groundwater supply availability and surface water uses for the Michigan SSC Stockbridge site are enclosed. Location of the SSC at the Michigan Stockbridge site will not contribute to local or regional overdraft conditions if they are generally understood. The long term experience ground subsidence, depletion of groundwater reserves, intrusion of water of undesirable quality, contamination of existing water sources, deterioration of the economic advantages of locality, or excessive surface flow infiltration in the vicinity of influence conditions for the SSC Stockbridge site.

Lowering the gradient to water not only occasionally occurs, while the regional cones are generally overcome by lowering the drop pipe in the well or by drilling deeper. The right to reasonable use of the groundwater in the regional aquifers are managed in Michigan. Those people who are deemed unfit for the public good, or necessary for municipal expansion and/or highways and bridges are legal matters.

Available information contained pertains to the Jackson Formation alone for purposes of existing groundwater withdrawals in the region. A qualitative estimate of groundwater in storage in the Jackson Formation for Ingham and Jackson County, MI has calculated to be 4 billion gallons. The annual recharge to groundwater is roughly approximately 40 million gallons/day.

Mr. Derrick Coleman
October 13, 1988
Page Two

151 The corresponding estimate for sustained yield for the Tri-County area (Clinton, Eaton and Ingham Counties) prepared by the U.S. Geological Survey ranges from 200 to 400 million gallons per day. Tremendous amounts of groundwater remain untapped in the glacial sediments which easily hold hundreds of billions of gallons of reserves in buried outwash throughout central Ingham County and portions of Jackson County.

152 The base flow conditions of the Grand River water shed in the area of the Stockbridge SSC site have been characterized for your analyses. We do not manage the smaller surface water sheds on an individual basis because there have been no associated water use conflicts or overwithdrawal of surface water that would merit such a rigorous approach. Again this data demonstrates the abundance of the surface and water resources of high quality and quantity.

The major conclusions that can be drawn from these two reports are:

153
1. Location of the SSC in Michigan will not contribute to overdraft conditions at a local or regional level.

2. Regional development can occur in the communities surrounding the SSC without incurring water quantity or quality problems within the foreseeable future.

Please feel free to call if there are any questions regarding portions of this submittal. We are also including these reports in the material submitted directly to Wilmot Ness for Draft Environmental Impact Statement comments addressing the local and regional ground and surface water supply conditions.

Sincerely,

James R. Heinzman

James R. Heinzman
Associate Director, Geologist
SSC Commission Office
(517) 334-6487

LETTER 1517 (CONTINUED)

ATTACHMENT EOCR

ECOLOGICAL RESOURCES

STATE OF MICHIGAN

[illegible]

DEPARTMENT OF NATURAL RESOURCES

[illegible]

[illegible]

September 21, 1988

Mr. James Reinman
Associate Director/Geologist
Superconducting Super Collider
[illegible]
[illegible]
[illegible]
Lansing, Michigan 48911

Dear Mr. Reinman:

On September 21, 1988, the Land Management and Natural Features Inventory Program and the Key Habitat Inventory Program reviewed the Ecological Resources chapter of the Draft Environmental Impact Statement for the Superconducting Super Collider Project. They found the information on wildlife, species, and threatened and endangered species to be accurate.

[illegible] the location of special [illegible] features and known locations [illegible] threatened and endangered species on [illegible] of the project vicinity, and [illegible] state [illegible] [illegible] for surface [illegible] operations [illegible].

[illegible] and preliminary surveys are [illegible] [illegible] resources occur on [illegible] proposed for surface disturbance. Therefore, [illegible] contact with state officials could be effective in a decision on final placement and [illegible] of [illegible] structures to avoid impacts to the champion tree or other important species.

The fragmentation of habitat types further may negative impacts to wildlife species. The diversity of ecological resources and the presence of the Kalamazoo Sanctuary, Kalamazoo Recreation Area, and Kensville and Gregory State Game Areas provide a single, natural environment to support native fauna and flora.

Sincerely,

[illegible]

[illegible]
Wildlife Division
[illegible]

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

June 3, 1988

TO: James Heinzman, Associate Director, Michigan SSC Commission

FROM: B. P. Shirey, Geologist, Glacial and Groundwater Geology, Geological Survey Division

SUBJECT: Natural gas present in the Saginaw Formation at the SSC ring location

On Wednesday, June 1, 1988 you called the office to ask for staff participation in a meeting with the SSC site selection committee. In addition, you also asked that we be prepared to answer questions regarding natural gas in the Saginaw formation.

The most likely source of documentation of any gas problems would be the existing water wells that are drilled into the Saginaw formation in the area of the proposed ring. Any complaints of gas problems would have been reported to the local and state health departments since they have jurisdiction over residential water wells and investigate complaints involving water wells.

158 I contacted the Ingham County Health Department and talked with Mr. Gary Rowe. He told me that they had no complaints of natural gas being present in water wells in the area of the ring. I then contacted the State Health Department and talked with Mr. Mike Gaber of the Water Supply Division. He told me they had no complaints of gas in the area of the ring. The closest complaints were to the east of the site around Howell and Fowlerville and one case in Williamston to the north of the site. At the Williamston site, Mr. Gaber did not know in what formation the well was completed.

In summary, there are no complaints of gas problems in the Saginaw Formation in the location of the SSC ring.

B.P. Shirey

BPS:jt

cc: Mr. Gary Rowe, Ingham County Health Dept.
Mr. Mike Gaber, MDPH
Mr. Richard Bissell, DNR

LETTER 1517 (CONTINUED)

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF COMMERCE

DOUG ROSS, Director

Superconducting
Super Collider
Commission

Suite 100
320 N. Washington Square
Lansing, Michigan 48913
517-334-6407

Chairperson:
David Adamany

Members:
G. Robert Adams
John M. Amberger
Jack C. Barnhwell, III
Henry V. Bohn
Timothy Carpenter
Kenneth M. Case
Lawrence W. Jones
Joseph P. Kearney
Bernie Lennon
William R. Long
Walter J. McCarthy, Jr.
William T. McCormick
Edward McNamara
Michael D. Moore
Bernard G. Pope
Fred G. Secrest
Martha Sorensen
Joanne Stoff

Executive Director:
John Hanesti

Secretary:
John Mogk

Governor's Representative:
Curtis Wiley

April 7, 1988

Dr. Matthew L. Werner
Earth Technology Corporation
3777 Long Beach Boulevard
Long Beach, California 90807-3309

Dear Dr. Werner:

The enclosed summary of geologic conditions influencing the occurrence of natural gas in the glacial drift of Michigan is forwarded per your request. The information relates the known occurrences of "drift gas" and/or shallow bedrock gas to regionally extensive areas of potential shale source rocks. It appears that migration directly from the shale source rock into permeable glacial drift confined by clay may be one method for trapping this gas.

I hope this summary will adequately address your concerns over the possible occurrence of gas during the SSC tunneling project. If I can be of further assistance, please contact me.

Sincerely,

Jim Heinzman

James R. Heinzman, Senior Geologist
Associate Director, Michigan SSC Commission
(517) 334-6407

JRH/kls
Enclosure

PRINTED ON RECYCLED PAPER

GEOLOGIC CONDITIONS INFLUENCING THE
OCCURRENCE OF NATURAL GAS
IN THE
GLACIAL DRIFT OF MICHIGAN

The Southern Peninsula of Michigan is nearly centered over a geologic structure known as the Michigan Basin. Filled with rocks ranging in geologic age from Cambrian upward through rocks as young as Jurassic, the basin is deepest and the entire rock sequence is thickest in the Gladwin-Midland county region west of Saginaw Bay. From this central region, the rock layers gradually slope upward and outward in all directions beneath the glacial drift and toward the edge of the basin. Prior to glaciation, the bedrock surface was highly eroded and many rock units were truncated and entirely removed from around the basin edge. As a result, most of Michigan's oil-and-gas bearing formations form the bedrock surface of the Southern Peninsula.

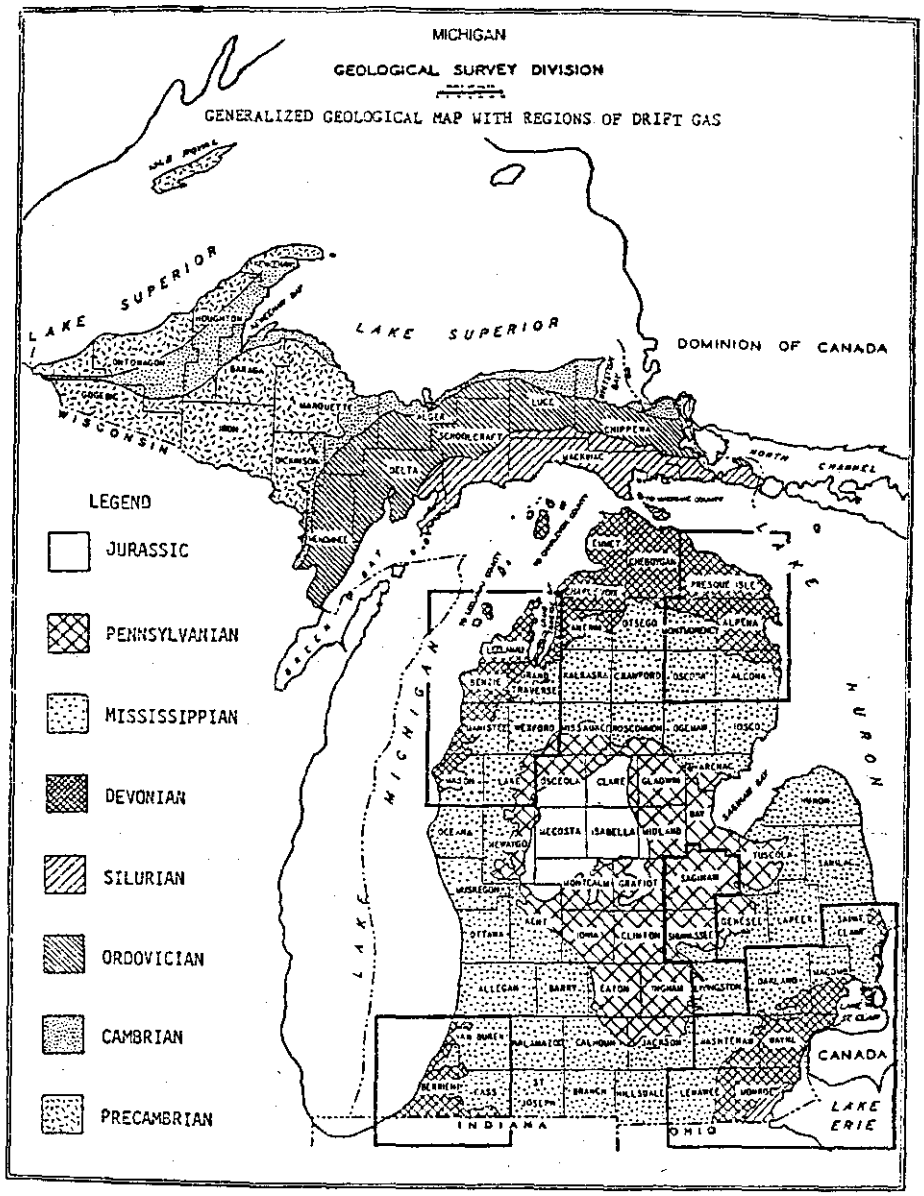
160 Virtually the entire Southern Peninsula of Michigan is covered by glacial drift, a mixture of unconsolidated gravel, sand and clay deposited by several glacial advances. These sediments vary in thickness from over 1000 feet to zero feet in isolated areas of bedrock outcrop. In addition to variations inherent to the different types of glacial deposits such as moraines and outwash sheets, the thickness of the glacial drift is further modified by the bedrock topography. Pre-glacial stream erosion and glaciation have caused the bedrock to be highly dissected by valley systems. Greater than average thicknesses of drift material are found in those regions where bedrock valleys are overlain by moraines.

Accumulations of bedrock-derived natural gas, composed mainly of methane, occur in association with the glacial materials, either trapped within or at the base of these deposits. Although natural gas may occur throughout the State in glacial materials, it appears generally to be confined to areas near the periphery of the basin that are underlain by different gas or oil bearing formations. Though drift gas may occur in parts of Northern Peninsula counties, reported occurrences are confined to Southern Peninsula counties, particularly in those regions underlain by the Berea Sandstone and Antrim Shale. Theoretically, however, any hydrocarbon-bearing strata may be potential source rocks.

Confirmed occurrences of drift gas have been reported in the following counties: Alcona, Benzie, Berrien, Grand Traverse, Lenawee, Livingston, Macomb, Manistee, Mason, Monroe, Montmorency, Oakland, St. Clair, Saginaw, Washtenaw, and Wayne. In addition, unverified reports indicate the presence of drift gas in Alpena, Bay, Muskegon, Ottawa, and Shiawassee counties.

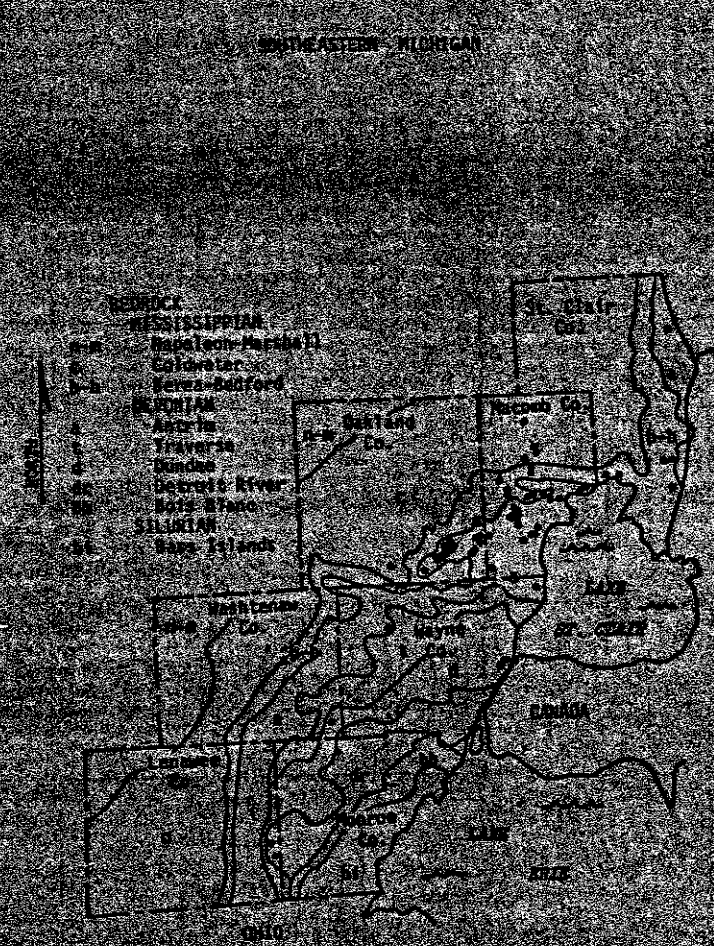
Gas originating in bedrock strata may escape into basal glacial deposits where these materials are composed of porous and permeable sand and gravel. In this type of glacial material, the gas can migrate both laterally and vertically. Where the sand and gravel are overlain by impervious clay lenses or layers a suitable trap may be formed to contain the migrating gas. Although clay lenses may be present to a greater or lesser degree in all glacial sediments, they are more commonly found in glacial lake-plain deposits which have a high concentration of clays and silts.

The majority of drift gas occurrences have involved small quantities of gas. Only one field, discovered in 1929 in Mason County, has produced drift gas commercially. Wells producing initially high amounts of gas are usually depleted within a matter of weeks or months, albeit there are a few scattered exceptions to this generalization. Where production persists, the gas has been utilized for domestic heating and other uses.

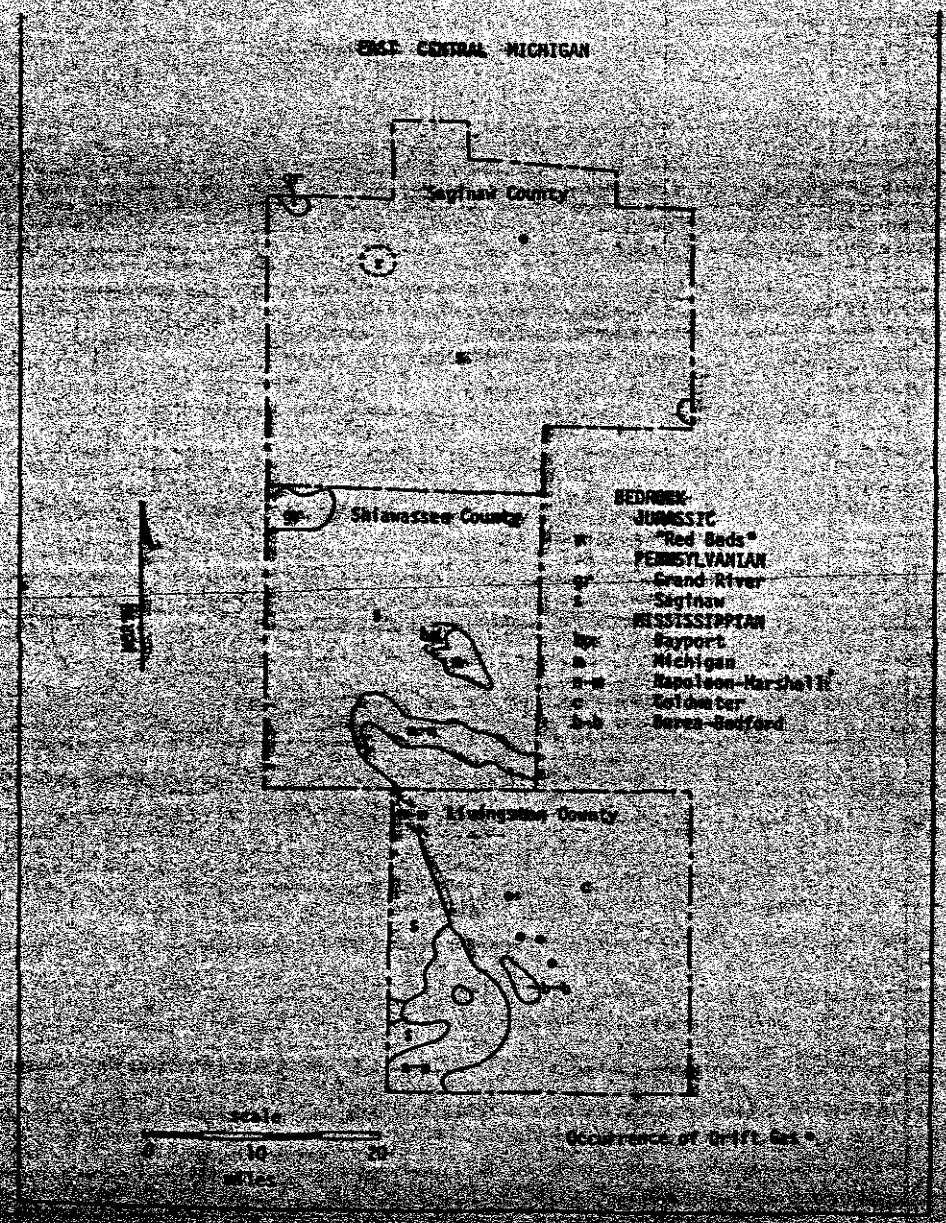

MICHIGAN
GEOLOGICAL SURVEY DIVISION
GENERALIZED GEOLOGICAL MAP WITH REGIONS OF DRIFT GAS
LAKE SUPERIOR
LAKE SUPERIOR
DOMINION OF CANADA
WISCONSIN
NORTH CHANNEL
LEGEND
JURASSIC
PENNSYLVANIAN
MISSISSIPPIAN
DEVONIAN
SILURIAN
ORDOVICIAN
CAMBRIAN
PRECAMBRIAN
LAKE MICHIGAN
LAKE HURON
CANADA
LAKE ERIE
INDIANA
OHIO

DATE: 1977

LETTER 517 (CONTINUED)



LETTER 1517 (CONTINUED)



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ATTACHMENT SIX

SPOILS DISPOSAL

GEOLOGY: Re: Spoils Disposal

COMMENT: Volume 4, Appendix Six, Section 6.3.4.2 Rock and Earthen Materials, first paragraph, last sentence:

Have the calculations of rock spoils by percentage taken into account information on rock types submitted to Mr. Daniel Lehman by K. Y. Chung on June 30, 1988 in response to issues/concerns for Michigan SSC visit, geology and tunneling, dated June 8, 1988?

161 Another issue that needs to be resolved in the discussion of spoils disposal pertains specifically to the reference of Pyrite in spoils 3-4% Table 10.2.3-4, Vol. IV, Appendix 10, P. 17. With respect to that section we would like to have the following question answered. Were the laboratory methodology and leachate sample results submitted to Mr. Dilip Derasary on May 11, 1988 utilized to prepare this table and subsequent discussions regarding spoils disposal?

162 The results of leachate tests conducted on core material indicated the quality of water did not exceed drinking water standards. Special handling of the waste may therefore not be necessary especially if the reactive sulfides after leaching do not violate water quality standards. In a 12-foot diameter tunnel boring, a lens or small portion of the rock unit may contain reactiwe sulfides, yet leachate analyses of the composite 12-foot area may not exceed or even approach water quality standards. These spoils may be able to be disposed of in the designated quarries with the approval of the Department of Natural Resources.

ATTACHMENT SEVEN

SURFACE WATER QUALITY

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 21, 1988

TO: Jim Heinzman, Department of Natural Resources
Superconducting Super Collider Liaison

FROM: Rick Hobcla, Surface Water Quality Division
Superconducting Super Collider Liaison

SUBJECT: Draft Environmental Impact Statement for the
Superconducting Super Collider

We have reviewed the draft Environmental Impact Statement (EIS) for the Superconducting Super Collider (SSC). We restricted our review to those portions of the EIS dealing specifically with surface water quality issues in Michigan. Based on this review, we have a number of changes and corrections to propose.

163 Michigan's water quality standard for dissolved oxygen in rivers is misrepresented in Table 4-2 on page 4-11 in Volume I. This table shows 7 mg/l as the minimum dissolved standard. This standard applies only to designated trout streams. Since there are no designated trout streams on or within the collider ring, the appropriate dissolved oxygen standard to reference is the one for warmwater streams. This value is 5 mg/l. The reference in the Table 4-2 should be changed from 7 to 5 mg/l.

Several of the values for Michigan's water quality standards in Table 5.4.2-3 on pages 5APP5A2188837-5APP5A2188838 in Volume IV are incorrect, incomplete or misleading:

164 (1) The fecal coliform standard is shown as 200 per 100 ml. The complete standard is 200 per 100 ml as a 30-day average and 400 per 100 ml as a 7-day average. We would prefer that the standard be given in its entirety, but, for the sake of simplicity, we are willing to accept the existing wording.

165 (2) The dissolved oxygen standard should be changed from 7 mg/l to 5 mg/l as explained above.

Mr. Jim Heinzman
September 21, 1988
Page 2

166 (3) The dissolved solids standard is shown as 750 mg/l. The complete standard is 750 mg/l as a 30-day average and 500 mg/l as a daily maximum. We would prefer that the standard be given in its entirety, but, for the sake of simplicity, we are willing to accept the existing wording.

167 (4) The chlorides standard is shown as 125 mg/l. This standard only applies to waters protected for public water supply. Since there are no potable surface water intakes in the vicinity, this standard does not apply. We recommend that it be removed from the table.

168 (5) The lead standard is shown as 655 ug/l. The actual lead standard is based on water hardness. Assuming a typical hardness value of 250 mg/l as $CaCO_3$, the standard for lead would be 14 ug/l to protect against chronic toxicity. We recommend that the lead standard should be changed from 655 to 14 ug/l.

169 (6) The mercury standard is shown as 0.2 ug/l. The standard for mercury to protect the human life cycle is 0.0006 ug/l. We recommend that the mercury standard should be changed from 0.2 to 0.0006 ug/l.

On page 5APP5A2188836 of Volume IV Appendix 5b the draft EIS states "Notable constituents commonly in excess of standards are mercury and fecal coliform, occasional exceedances are also found with dissolved oxygen and chloride." We disagree with a portion of this statement.

170 As mentioned above, there is no chloride standard in this region and, therefore, the standard cannot be exceeded.

The perceived violations of the mercury standard appears to be largely due to misinterpreting the data. Most of the water samples tested for mercury have shown less than detectable values. These results are entered into STORET as the detection limit followed by a remark code to indicate the true value is lower. It appears that these remark codes were omitted during data analysis so that most samples were reported as having mercury concentrations equal to the level of detection. To the best of our knowledge, there have been no water samples collected in this region with detectable mercury levels in the past ten years.

225-775 88 - 8 (BOOK 10)

We recommend that the statement quoted above be changed to read "Fecal coliform concentrations have commonly exceeded the standards with occasional exceedances of the dissolved oxygen standard reported as well." We also recommend several changes to the mercury concentrations listed in Table 5.4.2-3. For STORET Station No. 380031 the maximum mercury concentration should be reduced from 1.0 ug/l to 0.2 ug. A "less than" symbol should be added in front of the minimum mercury concentration of 0.1 ug/l. And the average mercury concentration of 0.37 ug/l should be eliminated or recalculated.

171 Two facilities should be added to the listing in Table 5.4.8-1 on page 5APP5A2188881. The Delhi Township Wastewater Treatment Plant is in Ingham County approximately 25 miles from the SSC site. It has a treatment capacity of 2.0 million gallons per day (mgd), an actual average flow of 1.5 mgd and an excess capacity of 0.5 mgd. The Webberville Wastewater Sewage Lagoon is in Ingham County approximately 25 miles from the SSC site. It has a treatment capacity of 0.228 mgd. The actual average flow and excess capacity are unknown because the flows are currently unmetered.

178 In conjunction with these additions, the statement immediately above Table 5.4.8-1 which reads "Five of the seven wastewater treatment plants..." should be changed to read "Six of the nine wastewater treatment plants...".

172 Also in Table 5.4.8-1, the treatment capacity for Springport should be reduced form 0.17 to 0.11 mgd and the excess capacity should be lowered from 0.116 to 0.056 mgd.

173 In Figure 5.4.8-1 the Delhi Township Wastewater Treatment Plant should be added approximately five miles due south of Lansing. The Webberville Wastewater Sewage Lagoon should be added about five miles east of Williamston. The Leslie facility should be moved from the west side of the collider ring to approximately the center of the ring. The Ypsilanti facility should be moved due west so that it is in Washtenaw County rather than Wayne County.

If you have any questions concerning these comments, please call me at 335-4183.

Rob

cc: Paul Zugger
Rich Powers
Bryan Morris

LETTER 1517 (CONTINUED)

NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
MARLENE J. BLUMBERG
GORDON E. GUYER
KERRY KAMMER
D. STEWART MYERS
DAVID D. OLSON
RAYMOND POUPORE

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
P.O. BOX 30028
LANSING, MI 48909

DAVID F. HALES, Director

October 11, 1988

Mr. Jim Heinzman
SSC Project
320 North Washington Square
Lansing, Michigan 48913

Dear Jim:

Data Collection and Analysis Methodology for SSC Project Area

Jim, per your request, I have written up a short discussion of the steps, procedures, definitions, etc., we used to develop the map sets and statistics. If there are any questions, feel free to contact me at 517-373-1178.

Sincerely,

Michael Scieszka
Land and Water Management Division

MS:mp

cc: Mr. Michael Moore, Region III, MDNR

DATA COLLECTION AND ANALYSIS METHODOLOGY
INGHAM/JACKSON COUNTY
SSC PROJECT

The following is a list of the steps the Michigan Resource Information System (MIRIS) used to collect, digitize, analyze and output various maps and statistics requested for the SSC Project Area. The time frame covered starts in February when the base and soils data was digitized.

1. Base digitization – MIRIS has already encoded the USGS Topographic base maps for the project area. The coordinate system was the South Michigan Zone of the State Plane Coordinate System. The consultants provided a 2,000 foot scale (delineated on topos) collider ring configuration and the delineations of each SSC facility (A through J). These were encoded into a separate file and a one-mile zone from all facilities was added.

2. Soils Encoding – MIRIS had already encoded the Ingham County Soils Survey. Each individual soils sheet was encoded using the topographic base file for digitizer set up. The soils file is a polygonal file with a single text descriptor per polygon. The system used for all data capture is an Intergraph Inc., IGDS configuration. The collider ring and facilities from step 1 were used to clip out subsets of the entire county file. The Jackson County soil survey was digitized for the entire configuration and clipped out according to each SSC facility.

174

3. Soils Analysis – USDA-SCS provided a list of "Prime Agricultural Lands" and "Farmlands of Statewide Importance". MIRIS staff created a data base table (using Intergraph's DMRS) which identified whether the soil was one of the important categories. Each SSC facility's soils file was run through this table and an acreage calculation was made and was inserted in each polygon's record. An acreage report program totalled each into a separate facility report and a project area report. A set of maps based on the identification of the important soils maps was produced. These utilized Intergraph's GPPU package.

4. Bedrock maps – Geological Survey Division analysis maps which delineated bedrock formations and topography were digitized as an overlay to the base map–see step 1.

5. Plotter Output – Fourteen different maps were plotted showing various combinations of soils, base and geologic features.

6. Land Cover/Use – MIRIS had previously delineated the land cover/use. The source material was 1978 1:24,000 scale color infrared flown during leaf on conditions. The classification system for the cover/use mapping is basically level three of the Geological Survey Circular 671, 1972, Anderson, Hardy and Roach, with the exception of the wetland classes, where we used the U.S. Fish and Wildlife Service definitions of Wooded, Shrub/Scrub, Aquatic, Emergent, and Flats (see Exhibit B). After the land cover/use activities were identified on acetate overlays they were manually transferred and rectified to a USGS topographic base map. This insured a proper planimetric fit to woodlots, section lines, roads, water bodies, etc.

LETTER 1517 (CONTINUED)

7. Land Cover/Use digitization - Using Intergraph IGDS MIRIS digitized the polygonal land cover/use data for SSC Facilities (except for twelve E's and F's within Facility B - these were excluded due to their very small nature and the flexibility in the final placement of these facilities). An acreage report for the land cover/use activities identified in the project area was produced.

8. Hydric Soils - As per Step 3, using the Hydric Soils of the State of Michigan USDA-SCS, October, 1985, a data base table was constructed, a hydric soils acreage report and set of maps were produced.

9. Land Cover/Use Theme Maps - Using Intergraph's QPFU programs MIRIS produced land cover/use maps which retrieved from the polygon files aggregations of URBAN and BUILT-UP, AGRICULTURE AND OPEN LANDS, UPLAND FORESTS, and WETLANDS (including lowland wooded species). Separate maps were plotted for the project area.

10. Co-occurrence - MIRIS interactively overlaid hydric soils with the wetlands theme map, by SSC facility. Where the co-occurrence of hydric vs. lowland hardwood or wetland species was found a polygon was created. An acreage user command was run providing an acreage total per co-occurrence. These were aggregated into an individual facility total and an overall total.

11. Plotter Output - Six final maps were produced (prints are contained herein, along with the hydric soils, land cover and hydric soils/wetlands acreage reports).

Specific operator manuals for base, land cover/use and soils encoding were used during these procedures. They can be provided if additional information on MIRIS methodology is needed.

EXHIBIT B

CURRENT USE INVENTORY

CLASSIFICATION SYSTEM DEFINITIONS

The land cover and structures upon Michigan's landscape are going to be identified, classified and mapped by many different groups every five years through the PA 204 current use inventory process. To insure that these current use inventories are of maximum value for determining the extent and location of Michigan's land resources, and for tracking changes in those land resources, it is very critical that consistency be maintained in the classification system.

The classification system which the Inventory Advisory Committee (IAC) has established is based upon explicit organizing criteria to maintain consistency among groups preparing current use inventories and between the first current use inventories and those which will follow:

175

1. It is comprehensive enough to allow for an appropriate category for identifying the existing use of every 2.5 to 5.0 acres of land in Michigan.

2. Every category has a unique description or set of characteristics to resolve questions of double or multiple category qualifications.

3. The classification system can be applied using aerial photography as the primary source of data for the inventory. Since aerial photography has certain limitations, the classification system recognizes those limitations and is designed to allow different interpreters using aerials to obtain the same results. Further, a minimum level of accuracy in the interpretations of different categories is obtainable using the system.

4. The current use classification system is part of a larger one which allows for the interpretation and mapping of subcategories when larger scale photography is available or where on-the-ground checking can occur.

The following list of land cover/use categories make up the current use classification system adopted by the IAC. The definitions provided should be used by the interpreter to distinguish between the categories.

URBAN AND BUILT UP LANDS

Urban or Built Up Land is comprised of areas of intensive use with much of the land covered by structures. Included in this category are cities, villages, strip developments along highways, transportation, power, and communications facilities, and areas such as those occupied by mines and quarries, shopping centers, industrial and commercial complexes, and institutions that may, in some instances, be isolated from urban areas.

176

As development progresses, land having less intensive use may be located in the midst of Urban or Built-up areas and will generally be included in this category. Agricultural land, forest, wetland, or water areas on the fringe of Urban or Built-up areas will not generally be included. The Urban or Built-up category takes precedence over others when the criteria for more than one category are met. For example, residential areas that have sufficient tree cover to meet Forest Land criteria will be placed in a Residential category.

RESIDENTIAL

111 Multi-family residential—medium to high rise

177

This category includes all multi-family and apartment structures of four or more stories and generally containing an average gross density of 20 or more dwelling units per acre (50 or more per hectare). Included are apartments, condominiums, and the like whether in complexes or as single structures. When mapping this category, include lawns, parking areas and small area recreational facilities such as basketball or tennis courts built on the site.

112 Multi-family residential--low rise

This is similar to 111 except that it is for structures of 3 or less stories and contain an average gross denisty of up to 19 dwelling units per acre. Duplexes are not included in this category, but townhouses are.

113 Single family/duplexes

178 This category includes areas having detached single and two-family structures generally containing an average gross density of no more than 6 dwelling units per acre (15 units per hectare). Lawns, drive ways and associated structures such as garages, tool sheds, garden sheds, etc., should be included in the 113 category. Strip residential areas should be identified if they consist of 2 or more contiguous dwellings where the combined lawn areas amount to 5 acres or more.

115 Mobile home park

Groupings of three or more mobile homes and related service structures and recreational spaces belong in this category.

COMMERCIAL, SERVICES AND INSTITUTIONAL

121 Primary/central business district

179 The 121 category should be used to identify the main commercial service center in the community. The uses included in this class are retail establishments and the business, financial, professional and repair services of the area. The 121 category often contains institutional uses such as governmental offices, churches and schools. These should not be separated out unless they exceed approximately one-third of the area.

122 Shopping center/malls

This is usually a structure or closely packed group of structures that contain a large amount of floor space and a variety of commercial and service

establishments. Shopping centers/malls have large common parking lots, usually larger in area than the structure grouping itself.

124 Secondary/neighborhood business district

These areas are composed of relatively compact groups of stores, institutional structures, offices and service providers outside of the 121 category. The 124 classes are usually located on major streets and are surrounded by non-commercial uses. Parking is scattered throughout the area. Junkyards are included in this category.

126 Institutional

Education, government, religious, health, correctional and military facilities are found in this category. All buildings, grounds and parking lots that compose the facility are included within the institutional class. The athletic fields associated with a school facility should be included with the buildings in this category. Small institutional units in developed areas that do not meet the minimum size standard should be placed within the adjacent categories.

INDUSTRIAL

13 Industrial

Industrial areas include a wide array of uses from light manufacturing and industrial parks to heavy manufacturing plants. Identification of light industries—those focused on design, assembly, finishing, and packaging of products—can often be based on the type of building, parking, and shipping arrangements. Light industrial areas may be, but are not necessarily, directly in contact with urban areas; many are now found at airports or in relatively open country. Heavy industries use raw materials such as iron ore, lumber, or coal. Included are steel mills, pulp or lumber mills, oil refineries, chemical plants and brick making plants. Stockpiles of raw materials, large power sources, and waste product disposal areas are usually visible, along with transportation facilities capable of handling heavy materials.

180

138 Industrial Parks

The 138 category should be used to map those areas set aside within the community and specifically provided with the necessary community facilities such as roads, water and sewer lines, power to support industrial growth and development.

TRANSPORTATION, COMMUNICATIONS, UTILITIES

141 Air transportation

This category includes all facilities directly connected with air transport, whether it be commercial, municipal, military, or private. The area delineated as 141 on the inventory should contain the runways, terminals, service buildings, hangers, navigation aids, fuel storage areas, parking lots and a limited buffer area. Grass landing strips are included in this category.

142 Rail Transportation

181 This category is used to map switching yards, including associated roundhouses and buildings used for maintenance and repair.

143 Water transportation

This category includes those areas related to water transportation, excluding the water. The major components of this category are port areas, docks, shipyards and locks. Recreationally oriented marinas and yacht basins should be mapped under the 193 category.

144 Road Transportation

Identify only limited access highways and associated interchanges in this category.

145 Communications

Those areas associated with radio, radar, television, telegraph, telephone, etc., are included in this category. Smaller facilities or those associated with industrial, commercial or other uses should be included within the category which they are associated with.

146 Utilities

Those areas associated with the transport or storage of gas, oil, water, and electricity are included in this category. Also included are solid waste disposal and transfer stations, sewage treatment facilities, and water treatment plants. Small facilities or those associated with an industrial, commercial or extractive use should be included in those categories.

EXTRACTIVE

Extractive mineral land encompasses both surface and subsurface mining operations, such as sand and gravel pits, stone quarries, oil and gas wells, and metallic and nonmetallic mines. In size, these mineral activities range from the large open pit mines covering thousands of acres to the often unidentified oil and gas wells less than a foot square. Extractive operations include primary crushers, concentrating or processing plants, stockpiles, maintenance buildings, waste dumps, tailings basins and parking lots. The waste dumps and tailing basins are located generally within
182 relatively short distances from the mining and processing facilities. Uniform identification of all of the diverse mineral extraction facilities may be difficult from remote sensor data alone.

Generally the concentrating, agglomeration or smelting and refining facilities are located near the source of the minerals and are included as a part of the primary facilities for classification and for taxation. In some instances there may be further processing that may be classified as an industrial facility. Areas of future reserves are included in the appropriate present use category; i.e., as agricultural or forest lands, regardless of the anticipated future use. Unused pits or quarries that are flooded are placed in the water category if the water body is larger than 2.5 acres (1 to 2 hectares). Areas of tailing, waste dumps and abandoned or unused pits and

quarries, that are not flooded, generally are subject to reclamation as provided for in Michigan's Act 92, P.A. 1970, as amended, and are vegetated and otherwise reclaimed.

171 Open pit

Extractive activities which are primarily carried out upon the surface of the earth through the creation of a large pit.

1711 Metallic Mineral Quarry
1712 Nonmetallic Mineral Quarry
1713 Coal
1714 Sand and Gravel
1719 Other

172 Underground

Extractive activities primarily carried out underground.

1721 Metallic
1722 Nonmetallic
1723 Coal
1729 Other

173 Wells

This category includes the areas used for the extraction of oil and nautral gas and other minerals from the sub-strata. In the case of one individual well, the area immediate surrounding the well is all that is placed into this category. Care must be taken not to confuse these wells with water wells.

1731 Oil
1732 Gas
1733 Brine Production
1734 Waste Disposal
1739 Other

179 Other extractive.

Extractive uses not covered in the above categories.

OPEN LAND AND OTHER

19 Outdoor cultural and public assembly.

This category consists of land and structures used for outdoor cultural, and public assembly purposes. Examples would be zoos, botanical gardens, fairgrounds, amusement parks, race tracks, stadiums, drive-in movie theatres, and amphitheatres.

193 Outdoor recreation

183 This category includes recreational facilities and areas which are on open land. This category may contain on these park lands incidental buildings such as shelters, toilets, beach change areas, etc. Do not, however, map forest, water, wetland and barren land which these areas as 193, map them in their respective 5, 3, 4, or 7 classifications. Included in this category are playgrounds and athletic fields not associated with a school, golf courses, miniature golf, shooting ranges, off-road vehicle tracks, swimming beaches and pools, marinas, yacht basins and boat launching facilities.

199 Cemeteries

Include chapels, mausoleums and maintenance buildings along with the burial grounds.

AGRICULTURAL LANDS

184 Agricultural land may be defined broadly as land used for production of food and fiber. The agriculture of land class is divided into five subcategories for the purpose of the Harvest use inventory.

21 Cropland

Land used to produce crops such as small grains, hay or row crops including vegetables.

22 Orchards, bush fruits, vineyards and ornamental horticulture areas

This category is to be used to map areas which produce fruit and berry crops. Horticulture areas including nurseries, flower and seed production areas, and sod farms should be placed in this category. Inactive orchards should be labeled according to condition of ground cover.

23 Confined feeding operations

Feeding operations are large, specialized, livestock-production enterprises, chiefly beef cattle feedlots and large poultry farms, but also including large hog, dairy, and fur-bearing animal farms. Excluded from this classification are shipping corrals and other temporary holding facilities. Game farms and zoos do not meet the animal-population densities to be placed in this subcategory.

24 Permanent pasture

This category produces grasses and certain types of legumes which are grazed by animals. The land is continuously used for pasture with tillage only to reestablish the grasses and legumes.

29 Other agricultural lands

Greenhouses and noncommercial training areas primarily for race horses should be placed in this category. Farmsteads are not to be separated out from the field type surrounding them.

NONFORESTED LANDS

Nonforested land (open land, rangeland) is defined as areas supporting early stages of plant succession consisting of plant communities characterized by grasses or shrubs. In cases where there is obvious evidence of seeding, fertilizing or other cultural practices, these areas should be mapped as cropland or permanent pasture (Agricultural Land 21 and 24 respectively).

31 Herbaceous openland

Herbaceous openlands (prairies, grassland, rangeland) are dominated by grasses and forbs. Such areas are often subjected to continuous disturbance such as mowing, grazing or burning to maintain the herbaceous character.

185

32 Shrubland

Shrubs are dominated by native shrubs and low woody plants. If left undisturbed, such areas are soon dominated by young tree growth. Typical shrub species include blackberry and raspberry briars, dogwood, willow, sumac and tag alder.

33 Pine or oak opening (savannah)

This category should be used to classify those openings in oak or pine forestland where grass cover is so thick that seeds cannot germinate. Oak savannahs primarily occur in the sandy plains through Muskegon, Oceana, Newaygo and Mecosta counties, although some may still exist in some of the more southern counties. The pine savannahs can be found in the jack pine forestland between Gaylord and Grayling.

FOREST LAND

186

Forest lands are at least 10 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest use.

Forest land can generally be identified rather easily from high altitude imagery. On some lands there may be large areas that have little or no visible forest growth. Lands such as these on which there is forest rotation (involving clear cutting and regeneration) should be classified under the Forest Land Category. Lands that meet the criteria for Forest Land and also are being used for a higher category should be placed in the higher category. A residential area in a heavily forested cover type should be placed in the 113 category.

BROADLEAVED FOREST (GENERALLY DECIDUOUS)

In Michigan, typical broadleaved species include oak, maple, beech, birch, ash, hickory, aspen, cottonwood and yellow poplar.

411 Northern Hardwood

Areas throughout Michigan where the following species predominate or are intermixed--sugar and red maple, elm, beech, yellow birch, cherry, basswood and white ash.

187

412 Central hardwood

This category of beech/maple and oak/hickory forest lands are found primarily south of the tension zone (the line between Bay City-Muskegon where soil types and plant species are different). Species found in the 412 category also include sugar and red maple, beech, basswood, cherry and ash.

413 Aspen, white birch and associated species

The 413 category should be used to map the trembling aspen, bigtooth aspen, white birch and related species.

414 Lowland hardwoods

Ash, elm and soft maple along with cottonwood, balm-of-Gilead and other lowland hardwoods will be mapped through this category.

CONIFEROUS FOREST

Coniferous forests include forested land in which the trees are predominantly those with needle foliage. [illegible]

42[illegible] [illegible]

[illegible] forests where [illegible] pine predominate.

422 Other upland conifers

188 The 422 category should be used to map white or black spruce, balsam or douglas fir [illegible] areas covered by larch and hemlock.

423 Lowland conifers

This lowland species category includes stands of predominantly cedar, tamarack, black and white spruce and balsam fir [illegible].

424 Managed christmas tree plantation

The 424 category should be used to map areas which are specifically managed for the short term growth and harvesting of scotch pine, douglas fir and black or white spruce.

WATER BODIES

189 The water category includes all areas which are predominantly or persistently water covered. Where water areas are vegetated [illegible] placed in the Wetland category. Sewage treatment or water supply facilities are a [illegible] and should be [illegible] to be separately identified.

51 Streams and waterways

This category includes rivers, streams, creeks, canals, drains, and other linear bodies of water. Water courses less than 300 feet in width do not need to be identified on the land cover overlay. Where the water course is interrupted by a control structure which creates an impoundment, the impounded area should be classified as a reservoir. The boundary between streams and lakes, or reservoirs, is the straight line across the mouth of the stream. The St. Mary's, St. Clair and Detroit rivers are connecting waters of the Great Lakes system and should be placed in the 54 category.

52 Lakes

Lakes are nonlinear water bodies, excluding reservoirs. A water body should be classified as a lake if a structure has been installed primarily to regulate or stabilize lake levels without significantly increasing the water area. The delineation of a lake will be based on the areal extent of water at the time the data is collected. Islands within lakes which are too small to delineate will be included in the water area.

53 Reservoirs

Reservoirs are artificial impoundments of water, whether for irrigation, flood control, municipal and/or industrial water supply, hydroelectric power, or recreation. The reservoir category should not include lakes which have had control structures built to stabilize lake levels without significantly increasing the water area. Reservoirs can usually be identified by the presence of dams, levels, or other water control structures.

54 Great Lakes

The Great Lakes are the waters of Lake Superior, Lake Michigan, Lake Huron, Lake St. Clair and Lake Erie. Connecting waterways are the St. Clair, St. Mary's and Detroit rivers. Bays and estuaries of these lakes and waterways should be included under this heading.

WETLANDS

Wetlands are those areas between terrestrial and aquatic systems where the water table is at, near, or above the land surface for a significant part of most years. The hydrologic regime is such that it permits the formation of hydric soils or it supports the growth of hydrophytic vegetation. Hydrophytes are usually established on wetlands, although some alluvial deposits and mud flats may be nonvegetated. Examples of wetlands include marshes, mudflats, wooded swamps, and floating vegetation situation on the shallow margins of bays, lakes, rivers, ponds, streams and manmade impoundments such as reservoirs. They include wet meadows or perched bogs and seasonally wet or flooded basins or potholes with no surface water outflow.
190 Open water areas deeper than two meters (6.7 feet), and permanently or semi-permanently flooded shallower water areas with less than 30 percent vegetative cover are classed as Water.

Wetland areas drained for any purpose, and which no longer support hydrophytes, belong to other land use categories, whether it be Agriculture Land, Nonforested Land, Forest Land, or Urban and Built Up Land. When the drainage is discontinued and such use ceases, classification reverts to Wetland after characteristic vegetation is reestablished. Areas that have been dredged, dammed, or otherwise altered by man to create wetland conditions with its resultant, hydrophytic vegetation, are classified as Wetlands.

The Wetland classification is divided into two main categories—Forested and Non-forested.

FORESTED (WOODED) WETLANDS

191 Forested wetland includes seasonally flooded bottomland hardwoods, shrub swamps, and wooded swamps including those around bogs. Wooded swamps and flood plains contain primarily oaks, red maple, elm, ash, alder, and willow. Bogs typically contain larch, black spruce, and heath shrubs. Shrub swamp vegetation includes alder, willow and buttonbush.

611 Wooded wetland

This class applies to wetlands dominated by trees more than 20 feet tall. The soil surface is seasonally flooded with up to 12 inches of water. Several levels of vegetation are usually present, including trees, shrubs and herbaceous plants. Some of the predominate tree species include: ash, elm, red maple, cedar, black spruce, tamarack, and balsam fir. Where hardwoods or conifers dominate the wetland area, use the 414 or 423 categories respectively.

612 Shrub/scrub wetland

This class applies to wetlands dominated by woody vegetation less than 20 feet tall. Vegetation includes shrub and small or stunted trees. This class includes both stable shrub wetlands and areas in a successional stage leading to wooded wetlands. Some of the predominate species include alder, dogwood, sweetgale, leatherleaf, willow-buttonbush associations and water willow. Any standing dead trees, shrubs and stumps should be placed in the 612 category.

NONFORESTED WETLANDS

Nonforested wetlands are dominated by wetland herbaceous vegetation or are nonvegetated. These wetlands include inland nontidal fresh marshes, fresh-water meadows, wet prairies, and open bogs. The following are examples of vegetation associated with nonforested wetland. Narrow-leaved emergents such as cordgrass and rush are dominant in coastal marshes. Both narrow-leaved emergents such as cattail, bullrush, sedges, and other grasses, and broad-leaved mergents such as water lily, pickerelweed, arrow arum, and arrowhead, are typical of fresh water locations. Mosses and sedges grow in wet meadows and bogs.

192

621 Aquatic bed wetland

The 621 category is to be used to map an area that generally has 30 percent or more vegetation cover of submerged, floating leaved or floating plants and is less than two meters (6.7 feet) deep. Typical plant species are yellow water lily, duck weed and pond weeds.

622 Emergent wetland

These are wetland areas dominated (30 percent or more cover) by erect, rooted herbaceous hydrophytic plants, which are present for most of the growing season in most years. Typical species include cattail, bulrush, sedges, reeds, wild rice, pickerel weed, arrowhead, etc.

623 Flats

These are level or nearly level deposits of unconsolidated sand, mud, organic sediments with less than 75 percent aerial coverage of stones, boulders, or bedrock; and less than 30 percent aerial coverage of vegetation other than pioneering plants.

BARREN LAND

Barren land is land of limited ability to support life and little or no vegetation. Land temporarily barren owing to man's activities and where it may be reasonably inferred that the land will be returned to its former use, is included in one of the other categories. Agricultural land termporarily without vegetation because of tillage practices is still classified as agricultural land. Sites for urban development stripped of cover before construction begins should be classified as urban and built up. Areas of extractive and industrial land having waste and tailings dumps should be placed in the respective extractive and industrial category. Three main categories will be used to represent barren lands.

193

72 Beaches and riverbanks

The 72 category should be used to map sloping accumulations of exposed sand and gravel along shorelines.

73 Sand dunes

The 73 category is used for hills, mounds or ridges of wind blown sand in a primarily unvegetated condition.

74 Bare exposed rocks

The base exposed rocks category includes areas of bedrock exposure, scarps, talus, slides and other accumulations or rock without vegetative cover.

LETTER 1518

October 7, 1988

The Honorable John Herrington
Secretary of Energy
Department of Energy
The Forrestal Building
1000 Independence Avenue,SW
Washington, D.C. 20585

Dear Secretary Herrington:

I support the Administration's position on funding for basic science research. Investment in research by government and industry is an investment in the future of our Nation.

The Superconducting Super Collider will strengthen America's position as the world leader in science and technology. The Superconducting Super Collider will insure America's commitment to provide the finest in laboratory facilities to our scientific community, helping to develop future generations of Nobel laureates in America.

America needs the Superconducting Super collider, and Texans want the SSC built in Texas. The corporate community of Texas supports the efforts of the Texas National Research Laboratory Commission to build and operate the Superconducting Super Collider.

Sincerely,

Bob Hutchins

Bob Hutchins
102 Kirkwood Ct.
Sugar Land, Texas 77478

LETTER 1519

MARELCO POWER SYSTEMS, INC.

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October 20, 1988

Dr. Wilmor Hess, Chair
SSC Site Task Force
Office of Energy Research
ER-65, GTN
U.S. Dept. of Energy
Washington, DC 20545

Dear Dr. Hess:

As residents and employers of the area of Michigan most directly affected by the proposed superconducting super collider project that has been considered for our area, we wish to advise you that we are wholeheartedly in favor of locating the project here.

Let me know if there is anything we can do to help you in regard to this project.

We appreciate your considering our area of Michigan.

Sincerely,

MARELCO POWER SYSTEMS, INC.

Peter H. Burgher
President

/lr

IIA.1- 4231

LETTER 1520

October 17, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force, ER-65/GTN
Office of Energy Research
U.S. Dept. of Energy
Washington DC. 20545

Dear Dr. Hess:

I have reviewed the Draft EIS for the Superconducting Super-Collider and have the following comments and concerns as they pertain to the Michigan site.

1 First I would like to acknowledge the preparers of the D-EIS. They did an excellent job covering a very complex project. It appears the final site selection will be difficult.

2 I am concerned however with the wetland impacts and the potential impacts to migratory birds, especially the sand hill cranes and endangered and threatened species both plants and animals. I am also concerned with the potential disruption of ground water movement,

3 hydrology and the potential of contamination of my own drinking water supply. My home is currently located within the ring and very close to the 1000' foot buffer zone. In addition

4 I am concerned about my property value and

also long term effects on the recreational opportunities, particularly hunting as the rate of change from rural/agricultural land use to residential & other developed land uses increases

It alarmed me to see on page 23 - appendix 5 where the MDNR in essence preauthorized wetland permits. It seems to be when over 2000 acres of wetland may be impacted that under current Michigan laws Acts 203 & 346 and Army Corps of Engineer 404 permits that many
5 of the permits will be required to provide an opportunity for public review and hearings. Unless the document can explain the discrepency between > 2000 acres of affected wetlands and a DNR approval of wetland permits my only conclusion is that you have printed mis information or your assuming smooth sailing because of a political promise. This may not be so.

Furthermore I would like to know how Michigan could still be under consideration as a site
6 because there are other feasible sites that would not impact wetlands as greatly. I thought that impacts to wetlands must be minimized via prudent and feasible alternatives as mandated under Executive Order 11990.

7 The Draft EIS or perhaps those here in Michigan

who are for the project assume more homes, bigger tax base, a conversion of farmland and wildlife habitat is a positive benefit and impact. I can only see a 53 mile 1000 foot wide right of way as disruptive to recreational resources, decreasing personal property value in some areas such as outlying areas in Jackson and Ingham counties while spuring development in already too quickly developing areas such as Ann Arbor, Brighton, Mason, & Okemos. I doubt the promised advantages will really help the people in Stockbridge and other rural areas.

The document did talk about further review that would be required if Michigan were chosen. The preparers should be aware that fen wetlands are the home of many rare, & threatened plants and animals and that further on site field review should include
8 surveys for such habitats and species. There are over 200 plants alone on Michigan's Endangered & Threatened Species List. A review of the known records in the MNFI data base is not a substitute for on site field reviews for both plants and animals. Note that your table did not show Platanthera leucophaea as a C-1 federal Species. This should be corrected

I am concerned that electromagnetic fields could possibly disrupt sandhill crane staging behavior. ELF research is certainly geared along the lines to at least answer
9 some basic biological questions. Assumptions that affects will be masked are troublesome. Especially when the biological accumulation of such affects can be devastating to the environment, wildlife and to us.

Reading the document has only raised more
10 concerns and questions in my mind and I am not at all convinced that there are enough monitoring plans to insure both long term and short term safety and mitigation of
11 impacts. ~~and short term~~. I would propose monitoring wells for ground water contamination and long term (including base line) studies
12 on the affects of wildlife and wetland systems.

Sincerely,

Kim Herman
11300 Dixon Rd.
Rives Junction, MI
49277

LETTER 1521

Dear Sirs:
We are against the
1 S. S. C. locating in Ellis
County.
Sincerely,
Mr. & Mrs
Mitchell West
Please help us out!

IIA.1- 4236

LETTER 1523

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments---Changes to the Template

Dear Sir:

1 The first thing you will notice on Table 3-3 is that Illinois proposes using Fermilab as the SSC injector. The State ENR and its supporters have indicated that this is the key advantage of the Illinois proposal. However, upon reading the EIS, it becomes very clear just how important Fermilab is for maintaining our leadership role in particle research. In fact, Fermilab and the SLAC at Stanford are going to play major roles while the SSC is being built, and on into the 21st Century. You scientists need Fermilab in full operation while the SSC is being constructed, otherwise you run the risk of losing precious time and prestige to your enviable CERN and Russian counterparts. You and we know that Fermilab therefore becomes the "Fermilab disadvantage" for the Illinois site. Why? Quite simply, you cannot hook the Fermi Tevatron up as the SSC injector without jeopardizing the loss of Fermilab for 1, 2 or possibly 3 years. Therefore this major change in the Invitation for Site Proposals as proposed by Illinois becomes the major disadvantage of the Illinois site.

2 Regarding other changes which Illinois has made in their site proposal, Chart 3-3 clearly shows that Illinois has made more changes or adjustments to the so-called ring template than any other state. Illinois proposes moving 5 service access areas (F sites) from their original positioning. Only Michigan has as many as 3 such changes being made. Also, Illinois has changed the ISP so that 4E shaft sites will be moved from their original position. Even more such changes have been recently proposed by the Illinois ENR. Only one other state changes one E site location. And perhaps more importantly, Illinois proposes moving the buried beam zone access areas J at 5 locations. Any and all changes as proposed mean altering the original design concept of the SSC and will necessitate changes which equate to increased time and costs

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

for the Illinois site. As E and F sites are moved further from the ring, additional tunneling and angled shafts become necessary. The Illinois tunnel is already the deepest of the seven proposed sites, and actually exceeds the maximum optimum level of 600 feet below the surface at one stretch. By adding additional angled tunnels to accommodate the altered E, F, and J sites, there will be far more tunneling required at the Illinois site than at any other alternative location. All of this adds up to increased tunneling time and costs that the Illinois taxpayer must pay for this tunnel and not the Federal Government. Without a doubt, the Illinois site provides the most difficult and costly tunneling project of the seven sites.

3 It bears pointing out that these 14 or more changes proposed by Illinois can be compared to absolutely zero changes to the template as originally proposed in Arizona, Colorado, North Carolina and Texas. The DOE has designed the SSC, but Illinois apparently knows more than you scientists do, because they have chosen to redesign it for you. All I can say to you gentlemen is Good Luck!

Sincerely,

Donna Bryski
38W738 Murray Road
St. Charles, IL 60175

Donna Bryski

LETTER 1524

LAW OFFICES

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SUITE 1200
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October 14, 1988

SSC Draft EIS Comments
Dr. Wilmot Hess, Chairman
SSC Site Task Force
Office of Energy Research, ER-65,GTN
Department of Energy
Washington, D. C. 20545

RE: SSC Draft EIS

Dear Chairman Hess:

I have had a chance to review the DOE-EIS - 0138D issued by the U.S. Department of Energy. From my review of the document, I have concluded that it would be an impossible task to do a definitive analysis at this time.

1 I live in Campton Township on Silver Glen Road, within 1000 feet of the proposed tunnel. This is within the area of greatest residential development--the rural area. I have lived in the same home for 27 years and watched the area go from farmland to a prime rural residential area of substantial homes on predominately one acre sites.

From my review of the draft EIS, it has become abundently clear to me that the location of the SSC in the site proposed will create monumental problems, many of which can be determined at this point and many which not be known until the development progresses and actual start-up is commenced.

2 Since we are dealing with a proposed larger installation than presently in existence, the ultimate reactions and hazards cannot be determined until operation begins. Everyone can speculate and give their thoughtful assurances, but the fact of the matter is that no one known for sure what possible reaction or side affects may develop. If and when they do, it could be too late because the damage done to the property and individuals within the range of the destruction could be catastrophic. I have yet to hear any one or more individuals guarantee that it cannot happen here. This one factor alone

should prohibit any consideration of putting such an operation in such a highly industrialized and populated area. This is particularly true when there are so many wide open spaces in this country where the risks would be much, much less.

3 The reports evaluation of the water supply and disruption of the underground structure and sources indicate clearly that the study recognizes the substantial hazards to our water supply in the area. The communities involved have been struggling with the water supply situation for many years. The problems are escalating all of the time and changing constantly. Substantial numbers of homes in different areas are suddenly without water from a source that has been accepted as never ending.

4 Traffic and road conditions, which are touched on by the draft are a major problem today and getting worse by the week. The report cannot possibly present the situation where it can be readily realized.

5 I know that many groups in the area are objecting strongly to this location as suggested. It is obvious that the politicans are using this as a "political football". Discounting political considerations, it is difficult to see why the politicans are pushing so hard for this project. A consideration of the advantages to the community and the State will not justify the tremendous expense and risks to the public at large.

Since I am very much aware of the repetitious nature of all of these objections, I will conclude at this point. I felt it was necessary to raise my voice in support of the objectors.

Respectfully submitted,

Richard D. Shearer

RICHARD D. SHEARER

RDS:jh

LETTER 1525

Oct. 15, 1988

Dr. Wilmot Hess
SSC Site Task Force
Office of Energy Research
Washington, D.C. 20545

Dear Dr. Hess,

The EIS proves time and time again that Illinois is not the place to site the SSC. Other states are far more acceptable. I cannot even begin to believe that Illinois would even be considered because of the populated area of nothing else. You just don't take something of this magnitude and place it in an area such as ours. It would be just ridiculous! Why didn't the Governor of Illinois and the DOE of Illinois disclose the plan years ago and perhaps something could have been worked out to place it in a less populated area in Illinois, perhaps in southern Illinois? If it is sited here we are not looking to work things out. We are willing to go to court to stop this disgusting project being thrust upon us! This is not meant to be an idle threat, this is what we are all willing

1

IIA.1- 4241

LETTER 1525 (CONTINUED)

to do. We have land and a set of buildings that is in the path, to be taken down, and believe me we are not going to let that happen!
There are other states much better suited than Illinois - Take it there!!

Sincerely,
Marion Scott
Box 414, Rte. 1
Sugar Grove, Ill. 60554

LETTER 1526

MINORITY DESIGN PROFESSIONALS COUNCIL

October 17, 1988

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PAST PRESIDENT
ALBERTO F. GUTIERREZ, P.E.

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Re: SSC DEIS Comments

Dear Dr. Hess:

1 The Minority Design Professionals Council (MDPC) is an organization comprised of some twenty sustaining minority owned firms in the Dallas/Fort Worth area. The design firms are architectural, engineering or a combination of these fields.

Our comments address the DEIS as a whole, but specifically Appendix 4: Land Acquisition and Appendix 14: Socioeconomic Assessment, as they impact upon the Texas site.

2 The MDPC supports the SSC and naturally favors the Texas site. The DEIS should address the availability of minority owned business resources that can be involved in not only the land acquisition phase of the project but also with the design effort required for the SSC.

3 The socioeconomic impacts, both direct and indirect, of utilizing these resources should be included in Appendix 14 in the FEIS.

Very truly yours,

MINORITY DESIGN PROFESSIONALS COUNCIL

Marcelino Z. Arredondo, P.E.
President

MZA/jlo
enrgyeis.com

cc: All MDPC Board Members

P. O. Box 741313 Dallas, Texas 75374-1313 (214) 739-0094

LETTER 1527

300 Montcalm
Marquette Mich
Oct. 16, 1988

Dr Mimot Hess:

Dear Sir

In spite of what the media says there are many, many
1 people against the L & C Bridge
located in Erie Co Pa. around
Marquette.

My husband and I think it
will be a terrible thing for
2 our town and county. Our town
is small and the streets are
already congested. Taxes will
be increased and so much good
3 farm land will be gone from us
4 Many people will lose their
farms and homes. The dust
5 created will also be a great
factor.
6 Please consider our plea
against this.

Yours Truly,
P Alexander Brick Medford

IIA.1- 4244

LETTER 1544

October 16, 1988

Dear Doctor,

I am a student at Joliet West High School in Joliet, Illinois. I would like to see the building of the Supercollider Super Conductor at Fermilab. There are many good reasons why I would like to see this happen.

First of all, the EPA has already approved the Illinois site. It is fedrally safe for use.

Secondly, the building of the SSC in Texas would mean the relocation of all the physicists and their families. Their moving and settling of the new houses and communities they would need would cost millions.

Third, Fermilab already has its proton accelerator that the scientists could also use. It already offers an excellent facility for newcomers to use, and there is plenty of work space.

For all of these reasons, I believe Illinois is the ideal site for the SSC.

Sincerely,
Aaron Starner

IIA.1- 4245

LETTER 1545

10-14-88

DEAR MR. HESS

I CAN NOT BELIEVE AT THIS STAGE ILLINOIS IS STILL BEING CONSIDERED FOR THE SSC. THE ONLY PEOPLE THAT WANT IT ARE THE ONES THAT HOPE TO MAKE MONEY OUT OF THIS DEAL. LIFELONG RESIDENTS OF AURORA LIKE MYSELF BELIEVE STRONGLY IT DOESN'T BELONG HERE. THE SSC, NUCLEAR POWER PLANTS AND THINGS OF THIS NATURE SHOULD NOT BE BUILT IN ANY AREA WITH SUCH A LARGE CONCENTRATION OF PEOPLE PERIOD. I HOPE YOU AND YOUR STAFF WILL COME TO RECOGNIZE THIS FACT.

YOURS TRULY,

Joseph A. Ammer Jr

JOSEPH A. AMMER JR.
461 SO. SPENCER ST.
AURORA, ILL. 60505

LETTER 1546

10-16-88

Dear Dr. Hess,

I'm a sophomore at Joliet West High School in Illinois. I'm taking biology and my teacher, Mrs. Lenick, asked us to write to you about why the Super Collider should be in Illinois.

I don't really know much about it, but I know by having it in Illinois it would save the U.S. millions of dollars. We have all the equipment here in Illinois.

I hope this letter wasn't a waste of your time. I'm getting extra credit for writing this.

Sincerely,

Amanda

IIA.1- 4247

LETTER 1547

TEXAS SUPERCONDUCTING SUPER COLLIDER AUTHORITY
9400 N. Central Expressway
Suite 908, L.B. #160
Dallas, Texas 75231
(214) 987-9792

Jack W. Evans
Chairman

William S. Banowsky
President

Jerry R. Junkins
Finance Chairman

October 13, 1988

Dr. Wilmot Hess
Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U. S. Department of Energy
Washington, D.C. 20545

RE: SSC DEIS Comments

Dear Dr. Hess:

Please find enclosed the comments and remarks of the review team of the Texas Superconducting Super Collider Authority. The review team assembled by the TSSCA was comprised of professional technical experts who developed the original site proposal for the Dallas/Ft. Worth SSC Authority presended to the Texas National Research Laboratory Commission for the State competition.

Each member of the DEIS review team has reviewed materials in the DEIS in the member's field of expertise. The reviewer was asked to provide comments on possible omissions, deletions, or inaccuracies in the data of the DEIS. Our goal in our review was to provide creditable comments to the DOE from a regional point of support to the Texas National Research Laboratory Commission.

Our comments in our review have been forwarded to Dr. Ed Bingler for possible inclusion in the report by the Texas National Research Laboratory Commission to be submitted to the DOE.

The Texas SSC Authority wishes to thank each member of the Department of Energy for the outstanding job they have done on the Superconducting Super Collider project. The professionalism displayed by the DOE staff and contract personnel has been exemplary in the field of public service.

Thank you for a job well done and the opportunity to respond to the DEIS.

Sincerely,

Robert D. Duke

MEMORANDUM

TO: James R. Nichols, P.E.

FROM: Thomas C. Gooch, P.E.

SUBJECT: Comments on the Draft Environmental Impact Statement for the Superconducting Super Collider

DATE: September 6, 1988

2 As requested by you and Mr. Bob Duke of the Texas Superconducting Super Collider Authority, I have reviewed portions of Appendix 5, Appendix 7, Chapter 4, and Chapter 5 of the Draft Environmental Impact Statement for the Superconducting Super Collider. My comments deal primarily with water resource issues, but I have touched on other areas where appropriate. Specific comments are given below:

APPENDIX 5

3 1. Appendix 5, Page 1. In Section 5.7.1.2, the last sentence of the first paragraph begins "The same scale...". It should begin "The time scale...".

4 2. Appendix 5, Page 6. In the first full paragraph, the fourth line, Woodbine should be capitalized.

5 3. Appendix 5, Page 18. According to the U.S.G.S. Water Resource Data, Texas (Buckner et al., 1987), the confluence of Waxahachie Creek and Chambers Creek is 4.9 miles (not 3.25 miles) downstream from Bardwell Dam. (See the location description for the U.S.G.S. gage on Waxahachie Creek near Bardwell.)

4. Appendix 5, Page 19. Figure 4.7.2-1 contains several errors:

- The title is confusing since only one major watershed, that of the Trinity River, is shown.
- Some county lines are mislocated, some county names are incorrect, and several county names are missing.
- 6 The Trinity River is mislocated in places.
- The location of Waxahachie and the Liberty gage should be shown, as was the location of the Rosser gage.

Attachment 1 to this memorandum is a copy of Figure 5.7.2-1 with suggested corrections shown in red. Attachment 2 is a copy of a map from the Fort Worth District Corps of Engineers 1962 "Comprehensive Survey Report on the Trinity River and Tributaries, Texas." This 1962 map gives information needed for Figure 5.7.2-1.

5. Appendix 5, page 20. Some corrections should be made to Figure 5.7.2-2:

7

- Joe Pool Lake, on Mountain Creek upstream from Mountain Creek Lake, has now been completed and should be shown.
- The West Fork of the Trinity River should be shown to extend upstream west of the Dallas city limits.
- Mountain Creek should connect with the West Fork of the Trinity River downstream from Mountain Creek Lake.
- It might be desirable to show the City of Grand Prairie, a large Dallas suburb which extends into Ellis County.
- Richland Creek Reservoir is now known as Richland-Chambers Reservoir.

Attachment 3 shows Joe Pool Lake and the current city limits of Grand Prairie. The West Fork of the Trinity River and Mountain Creek downstream from Mountain Creek Lake are shown in red in the inset on Attachment 3.

8

6. Appendix 5, page 21. Table 5.7.2-1 includes a column called "width of flood plain." In the text on page 24, these data are referred to as "flooding widths." Are the data actually floodplain widths, or widths of flooding from a specific event (say the 100-year flood)? This should be clarified in the table.

9

7. Appendix 5, page 22. Both Lake Bardwell and Lake Waxahachie are used for recreation. Lake Waxahachie has no controlled flood storage and is not truly used for flood control.

10

8. Appendix 5, page 23. Table 5.7.2-2 would be more useful if it showed the period of record for the five gages. It should be noted that the Chambers Creek near Corsicana and Mountain Creek near Cedar Hill gages have been discontinued (due to reservoir development). There is a new gage on Chambers Creek near Rice, with a drainage area of 807 square miles.

11

9. Appendix 5, page 24. The Texas Water Commission has adopted new Supplemental Surface Water Quality Standards as of April 1988. The standards are given in the October 9, 1987, and April 15, 1988, Texas Register.

12

10. Appendix 5, page 25. The 1988 Supplemental Surface Water Quality Standards adopted by the Texas Water Commission include this general policy statement:

"It is the policy of this state and the purpose of this chapter to maintain the quality of water in the state consistent with public health and enjoyment, propagation, and protection of terrestrial and aquatic life, operation of existing industries, and economic development of the state; to encourage and promote development and use of regional and areawide wastewater collection, treatment, and disposal systems to serve the wastewater disposal needs of the citizens of the state; and to require the use of all reasonable methods to implement this policy."

13 11. Appendix 5, page 25. In the 1988 Supplemental Surface Water Quality Standards, there are 40 segments (rather than 35) designated in the Trinity River Basin.

14 12. Appendix 5, page 25. The segments in the project vicinity have changed slightly. Segment 814 is now Chambers Creek above Richland-Chambers Reservoir and extends "from a point 4.0 kilometers (2.5 miles) downstream of Tupelo Branch in Navarro County to the confluence of North Fork Chambers Creek and South Fork Chambers Creek" (Texas Register, April 15, 1988). Segment 815 is Bardwell Reservoir, and Segment 816 is Lake Waxahachie.

15 13. Appendix 5, page 25. It is not correct to say that the quality for Lake Waxahachie should be similar to that shown for the Waxahachie Creek gage. Most of the drainage area contributing to the Waxahachie Creek gage is downstream from Lake Waxahachie, and flow at the Waxahachie Creek gage includes treated sewage effluent from the City of Waxahachie, which enters the stream below Lake Waxahachie.

16 14. Appendix 5, page 25. The discussion of Table 5.7.2-3 given in the second to last paragraph is misleading. The criteria for chloride, sulfate and total dissolved solids are in terms of maximum allowable annual average concentrations. As shown in Attachment 4 to this memorandum, annual average concentrations of these constituents do not exceed state standards. The state does not set a standard for instantaneous values of chloride, sulfate and TDS. It is not valid to compare instantaneous values to an annual standard.

17 15. Appendix 5, page 26. Table 5.7.2-3 shows a classification and standards for Waxahachie Creek near Waxahachie. In fact, this is an unclassified segment, and the only constituents on the table for which standards apply are fecal coliform and dissolved oxygen.

18 16. Appendix 5, page 27. Some of the standards for Segment 814 have been changed. The chloride standard is now an annual average not to exceed 90 mg/l, and the sulfate standard is now an annual average not to exceed 160 mg/l. (Texas Register, April 15, 1988.)

19 17. Appendix 5, page 63. Figure 5.7.8-1 does not show three of the major sewage treatment plants in the region - Fort Worth Village Creek, TRA Central and TRA Ten Mile. Attachment 5 is a copy of Figure 5.7.8-1 with these plants shown in red.

20 18. Appendix 5, page 65. Figure 5.7.8-2 does not show Fort Worth's major landfill, the Southeast Landfill, in the proper location. Attachment 6 is a corrected copy of the figure. The figure omits many private facilities.

21 19. Appendix 5, page 70. Figure 5.7.9-1 shows streams (including the one labeled the Trinity River) appearing and disappearing randomly. It does not show Joe Pool Lake or Lake Waxahachie. Attachment 7 is a copy of a portion of the U.S.G.S. 1:250,000 Dallas sheet, with some of the streams highlighted in red.

22 20. Appendix 5, page 85. Lakes Bardwell and Waxahachie are used for recreation. Lake Waxahachie is not used for flood control.

23 21. Appendix 5, page 88. The dashes should be removed from "prohibits" and "func-tions" in the first paragraph of Section D.

24 22. Appendix 5, page 158. "William F. Guyon Associates, Inc." should be "William F. Guyton Associates, Inc."

APPENDIX 7

25 23. Appendix 7, page 73. Figure 7-11 is the same as Figure 5.7.2-2 in Appendix 5, and Comment 5 would apply.

26 24. Appendix 7, page 77. It is likely that the conflict between external beam access area J4 and the Chambers Creek flood plain can be mitigated by moving the access area. Page 5.1.2-4 in Chapter 5 says that "service and access shafts can be moved some distance."

27 25. Appendix 7, page 83. The discussion of available surface water is incorrect and is inconsistent with the treatment of the same subject on page 28 of Appendix 5. The total supply available to the Tarrant County Water Control and Improvement District Number One when Richland-Chambers Reservoir is completed will be over 470,000 acre-feet per year. Compared to District use, this means an available excess of about 290,000 acre-feet per year now, and about 170,000 acre-feet per year by the year 2000.

28 26. Appendix 7, page 143. Figure 7-11 does not show general areas where groundwater might be developed.

29 27. Appendix 7, page 143. This discussion leaves the impression that most or all of the increased water use caused by the project would be groundwater. In fact, only a small portion of the increased water used in Texas would be groundwater. Attachment 8 to this

memorandum shows the division of municipal water use between surface water and groundwater in Dallas, Ellis and Tarrant Counties, based on available data. Attachment 9 shows the estimated division of the additional use caused by operation of the SSC between surface water and groundwater. Attachment 9 shows that the increased groundwater use will be 615 acre-feet per year to 654 acre-feet per year, about 18 percent of the total increase caused by the SSC.

This estimate of increased groundwater use is probably somewhat high, since the computations do not reflect the decreasing percentage of total use supplied by groundwater in Dallas and Tarrant Counties. The projected increase of 615 to 654 acre-feet per year compares to 1985 total groundwater use in Dallas Ellis and Tarrant Counties of 46,768 acre-feet per year.

30 28. Appendix 7, page 143. In the Dallas-Ellis-Tarrant County region, groundwater provides less than 6 percent of the total municipal use. While the Woodbine and Twin Mountains formations are among the major aquifers in the area, they are only a minor part of the overall water supply picture. Most water is provided by surface reservoirs.

31 29. Appendix 7, page 143. It should be noted that the 1984 Texas Water Plan suggests that it is safe to continue overdrafting of the Trinity Group, which includes the Twin Mountains aquifer, through 2030.

32 30. Appendix 7, page 143. The impact on groundwater is largely mitigated by the provision of over 80 percent of the direct and indirect project use from surface water. It should also be noted that the continued conversion to surface supplies by major municipal users may eliminate the current regional overdraft of groundwater.

33 31. Appendix 7, page 146. The third paragraph discusses "...alternative water supply sources or equal or better quality...". This should be "...alternative water supply sources of equal or better quality...".

34 32. Appendix 7, page 146. The provision of replacement wells or an alternative water supply would be full (rather than partial) mitigation for well closure.

CHAPTER 4:

35 33. Chapter 4, page 4-4. Under geologic sources in Table 4-1, Texas is listed as having "minor oil production from over 800 ft. depth." Appendix 5 states that the nearest producing well is 10 miles southeast of the site. "No producing wells are known within the immediate vicinity of the site and the potential for undiscovered occurrences beneath the site is small." (Page 15 in Appendix 5.) Table 4.1 should be modified to indicate that there is no oil production at the site.

36 34. Chapter 4, page 4-11. Under water quality in Table 4-2, Texas' standard for TDS (based on annual average levels) is compared with instantaneous observations. As discussed in Comment 14, this is not a valid comparison.

37 35. Chapter 4, page 4-15. The entry on groundwater quality in Table 4-3 includes the wording "below weathered zone units and essentially dry." This should probably be "below weathered zone units are essentially dry."

CHAPTER 5

38 36. Chapter 5, page 5.1.2-20. Figure 5.1.2-11 is the same as Figure 5.7.2-2 in Appendix 5, and Comment 5 would apply.

39 37. Chapter 5, page 5.1.2-28. In Texas, less than 20 percent of the water use caused by the project will be met by groundwater. (See comment 27 above.) This should be mentioned in the discussion of operational impacts to groundwater resources in the fourth paragraph.

40 38. Chapter 5, page 5.1.2-29. The discussion of water level/overdraft impacts in Texas should include the following points.

- Less than 20 percent of direct and indirect increase to water use will come from groundwater in Texas. Over 80 percent will be supplied by surface water.
- Groundwater supplies less than 6 percent of the total municipal use in the area, which makes the Woodbine and Twin Mountains aquifers only a minor part of the overall water supply picture. Most water is provided by surface reservoirs.
- The impact on groundwater is largely mitigated by providing over 80 percent of the direct and indirect project use from surface water.

41 39. Chapter 5, page 5.1.2-30. Project groundwater use in Texas would be very limited, making the impact on groundwater resources negligible.

STATE OF TEXAS
THOMAS C. GOOCH
50668
REGISTERED PROFESSIONAL ENGINEER

9/7/88

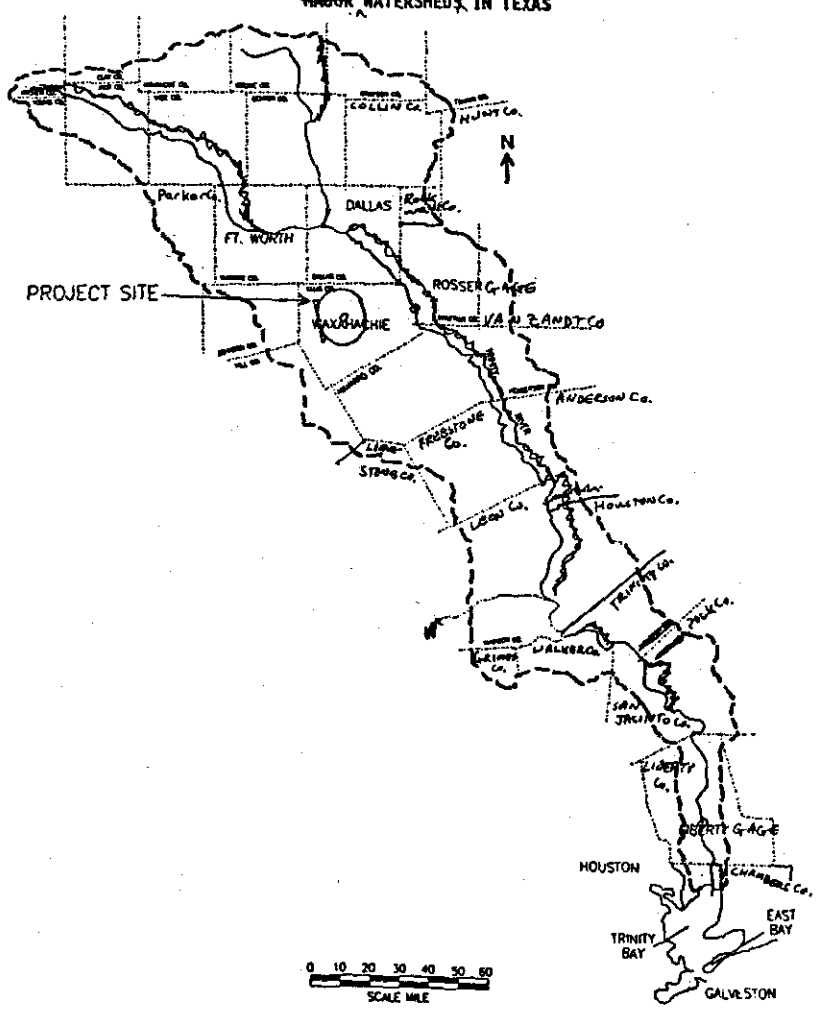
Thomas C. Gooch

Thomas C. Gooch

LETTER 1547 (CONTINUED)

Attachment 1
Affected Environments at Site Alternatives
Texas 19

Figure 5.7.2-1
TRINITY RIVER ~~MAJOR~~ WATERSHEDS IN TEXAS



6

3APPSIZ158829

DEIS Volume IV Appendix 5

42

Attachment 2

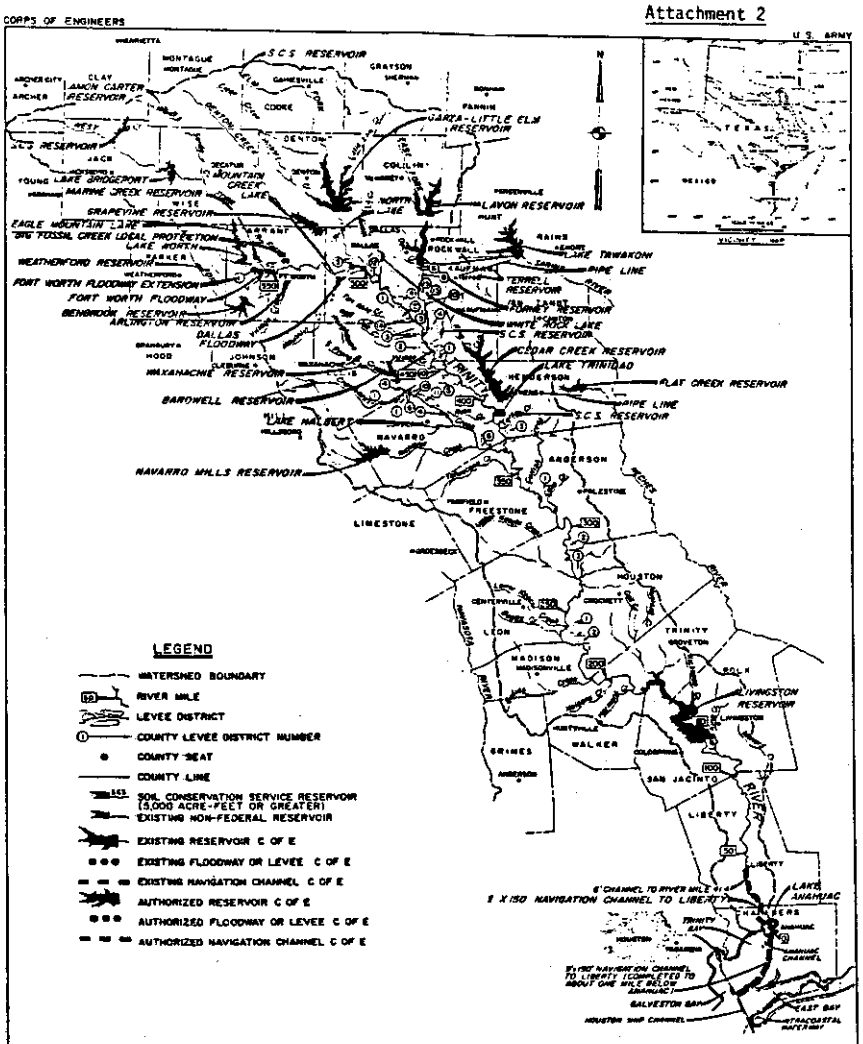


FIGURE 1

EXISTING AND AUTHORIZED IMPROVEMENTS

10

LETTER 1547 (CONTINUED)

Attachment 3

7

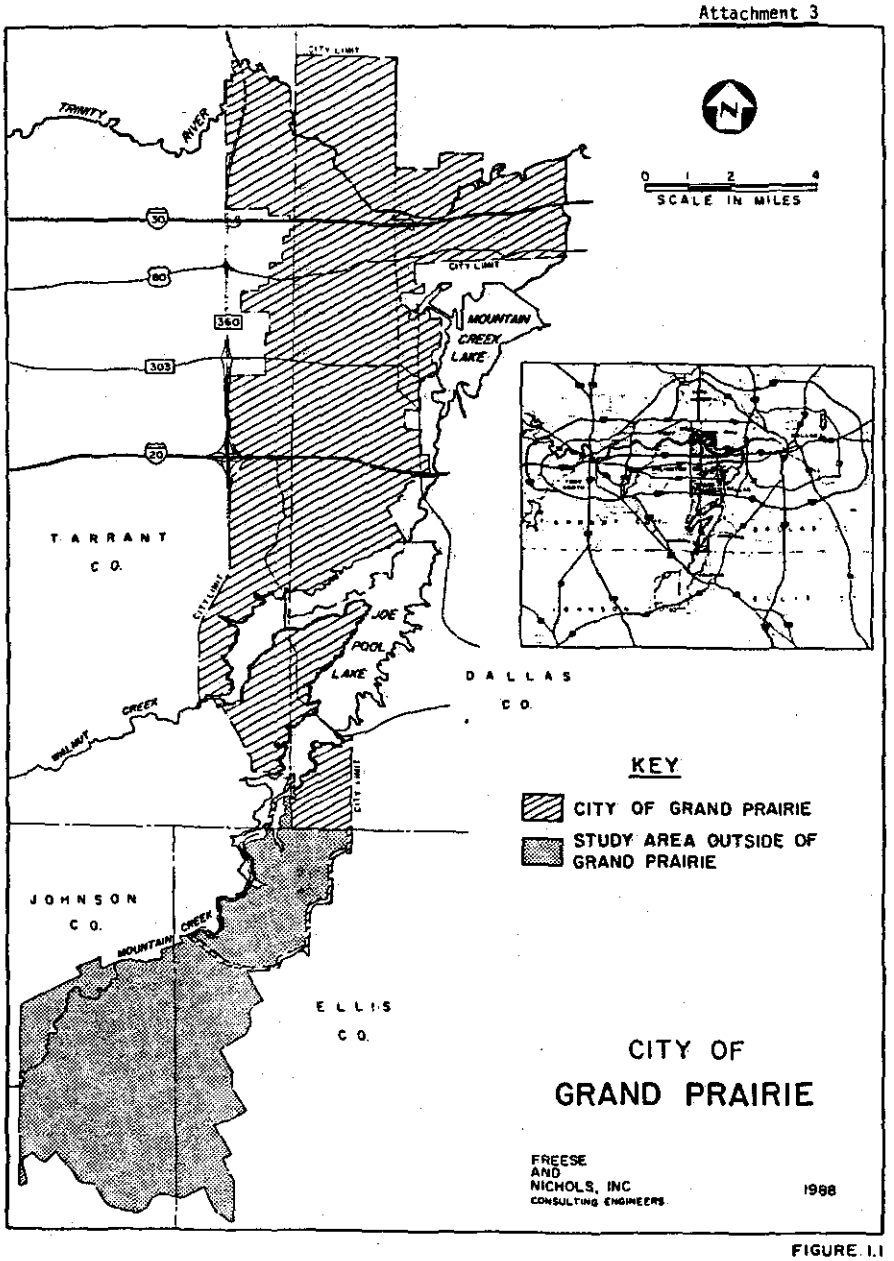


FIGURE 1.1

Attachment 4

Chambers Creek near Corsicana

Water Year	Number of Observations	Dissolved Solids (mg/l)		Chloride (mg/l)		Sulfate (mg/l)	
		Average	Weighted Average	Average	Weighted Average	Average	Weighted Average
1975	9	321	226	28	14	79	46
1976	9	374	175	54	6	87	41
1977	9	316	204	35	12	76	36
1978	7	381	312	54	33	90	74
1979	5	279	255	28	21	67	60
1980	6	332	227	37	13	76	46
1981	5	320	165	41	7	70	31
Total	50	335	197	40	10	79	41
Standard			500		90		160

Waxahachie Creek near Waxahachie

Water Year	Number of Observations	Dissolved Solids (mg/l)		Chloride (mg/l)		Sulfate (mg/l)	
		Average	Weighted Average	Average	Weighted Average	Average	Weighted Average
1981	6	256	245	31	15	41	29
1982	6 a	301	302	22	20	43	41
Total	12 b	278	262	27	17	42	32

43

No standards for dissolved solids, chloride or sulfate.

a) Weighted averages for 1982 are based on 5 observations, since no flow measurement was available for one sample.
b) Weighted averages for 1981-82 are based on 11 observations.

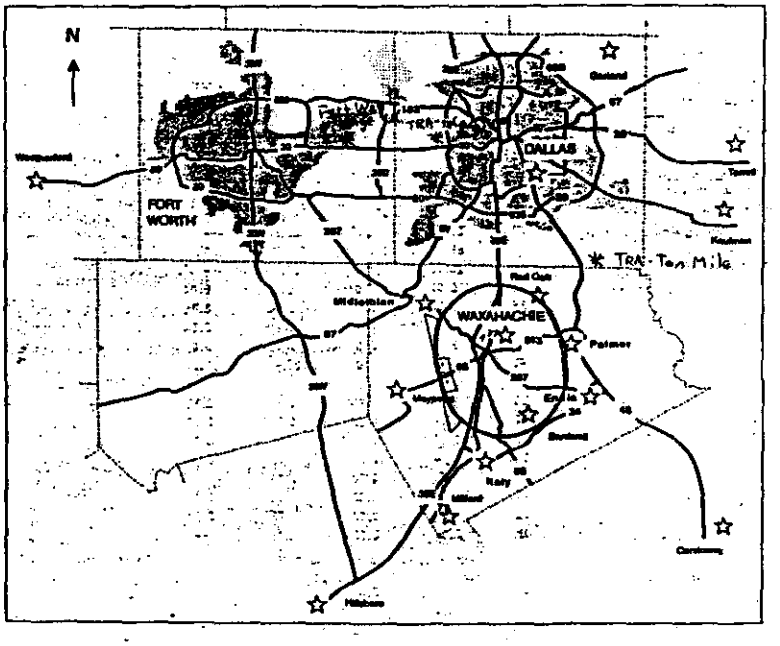
Bardwell Lake near Ennis

Water Year	Number of Observations	Average Dissolved Solids (mg/l)	Average Chloride (mg/l)	Average Sulfate (mg/l)
1975	2	151	12	21
1976	1	159	8.6	18
1977	1	166	12	22
1978	1	161	16	28
1979	0	-	-	-
1980	3	167	14	28
1981	3	180	15	28
1982	3	178	15	26
Total	14	169	14	25
Standard		300	50	50

Figure 5.7.8-1

APPROXIMATE LOCATION OF EXISTING SEWAGE TREATMENT PLANTS WITHIN THE TEXAS SSC REGION

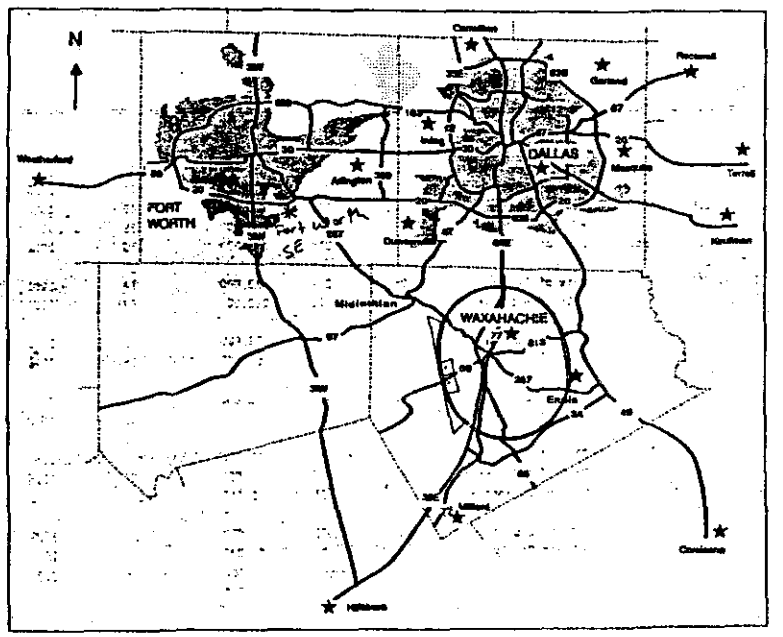
19



☆ Approximate Location of Existing Sewage Treatment Facilities in the Texas SSC Area

Figure 5.7.8-2

APPROXIMATE LOCATION OF EXISTING SOLID WASTE DISPOSAL SITES WITHIN THE TEXAS SSC REGION



44

★ Approximate Location of Existing Solid Waste Disposal Facilities in the Texas SSC Area

29

Attachment 8

Division of Municipal Use
between Surface Water and Groundwater

		Municipal Water Use in Ac-Ft		% of Total Use	
		Surface Water	Groundwater	Surface Water	Groundwater
Dallas County	- 1985	417,118	14,616	96.6%	3.4%
Ellis County	- 1985	8,052	5,788	58.2%	41.8%
	- 2000	14,834	4,699	75.9%	24.1%
Tarrant County	- 1985	190,986	17,218	91.7%	8.3%
Total - 1985		616,156	37,622	94.2%	5.8%

Notes: a. All water use figure from the Texas Water Development Board.
b. Ellis County yar 2000 groundwater use is from Table 5.7.2-7 *in the SSC Draft EIS. Year 2000 surface water use is TWDB* projected total minus groundwater.

29

Attachment 9

Division of Increased Use Due to Operation of the SSC between Surface Water and Groundwater

	Increased Surface Water Use in Acre-Feet	Increased Groundwater Use in Acre-Feet
Direct		
-Campus	1,700	0
-Far Cluster	0	160
-Service Areas	0	320
Indirect		
-Dallas County	497 - 652	18- 23
-Ellis County	243 - 315	77-100
-Tarrant County	193 - 257	17- 23
-Other Counties	22 - 27	23- 28
	2,655-2,951	615-654

Note: For indirect use, the increase due to the SSC from Table 7-8 in Appendix 7 is multiplied by the fraction of total county use supplied by surface water or groundwater from Attachment 8. For other counties, a 50-50 division of use is assumed.

ALBERT H. HALFF ASSOCIATES, INC.
ENGINEERS AND SCIENTISTS

September 15, 1988
AVO 1010

Texas SSC Authority
9400 North Central Expressway
Suite 908, L.B. 160
Dallas, TX 75231

Att: Mr. Bob Duke

RE: Review of Draft Environmental Impact Statement of the Superconducting Super Collider Appendix 11

Dear Mr. Duke:

Review of Section 11.3.7 Texas starting on Page 50:

45 *Section 11.3.7.1* Sensitive Terrestrial/Aquatic Communities, Page 50 last sentence states: "Construction of facilities in the J4 area would have significant impact on Chambers Creek". This statement is over stated because the construction of J4 would only impact a small area (less than 10 acres) of the Chambers Creek flood plain. The Chambers Creek flood plain contains hundreds to thousands of acres of similar habitat.

46 Section 11.3.7.2 Threatened, Endangered and State Protected Species (p.51).
Third Paragraph in reference to the Black-Capped Vireo "Breeding populations have not been reported recently in Ellis County, although recent surveys are reported to be inadequate. The nearest known nesting habitat occurs along the White Rock Escarpment, approximately 2 to 3 miles west of a line parallel to the edge of area I." This is a true statement, that the edge of the White Rock Escarpment in located 2 to 3 miles to the west, but it should be noted that the referenced known nesting site occurs in Dallas County approximately 10 to 15 miles to the north.

47 Section 11.3.7.3 Wetlands (p. 52)
"Wetlands at the Texas site encompass about 3% of the land cover in the vicinity of the ring". This number 3% needs to be clarified in relation to the area " in the vicinity". Does this mean within the 2 mile corridor of the ring or within Ellis County as a whole.

ALBERT H. HALFF ASSOCIATES, INC.
ENGINEERS AND SCIENTISTS

Texas SSC Authority
September 15, 1988
Page 2

Section 11.3.7.3 C. Mitigation (p.54)
"The impacts of construction activities associated with J4 can only be mitigated by locating J4 to areas outside of the Chambers Creek area." There are alternatives for mitigating the Chambers Creek construction, such as:

48

1. detailed design analysis to limit adverse construction impacts;
2. design mitigation features into the site plan such as creating wetlands, and planting of bottomland hardwoods; and
3. acquire an adjacent area with similar habitat which would be purchased for permanent habitat preservation.

If I may be of further assistance to the SSC Authority, please do not hesitate to call.

Sincerely,

ALBERT H. HALFF ASSOCIATES, INC.

David S. Morgan
Vice President
Environmental Scientist

/fw

cc: Albert H. Halff
Chris Stanford

MEMORANDUM

TO: Robert Duke
Texas SSC Authority
9400 North Central Expressway
Suite 908, LB160
Dallas, Texas 75231

DATE: September 7, 1988

FROM: Jerry F. Roberts
Albert H. Halff Associates, Inc.

RE: DEIS Review

Attached are my comments on Volume I, Chapter 5, Appendix 2, Appendix 5, and Appendix 10. Since the Trinity River Authority is the agency that will supply water and wastewater treatment, I gave those sections to Wayne Hunter of TRA (467-4223) to review. His comments are incorporated herein.

49

Please call if you have questions.

APPENDIX 1 - ENGINEERING DESCRIPTION

1.2.7.5 Buried Beam Zone Access Areas

50 The text says that J6 is located in "a partly subdivided area with home 0.2 miles east of B02." The number, type, and condition of the homes disrupted by J6 should be investigated. Many of the homes in the B02 area are mobile homes. Additionally, the homes may not be occupied.

1.2.7.8 Roads

51 Highway improvements listed in the Draft EIS include some significant differences from those shown in Volume 4 of the Texas proposal. The EIS lists specific improvements which were not listed in the proposal. In addition, the Texas proposal states that 211 miles of existing road will be upgraded while the EIS lists only 22 miles of upgraded road. The Texas proposal also states that 2.1 miles of new road will be constructed, while the EIS states that 22 miles of new two-lane, paved access roads and 4.1 miles of new one-lane, gravel roads will be constructed.

1.2.7.12 Waste Water

52 The EIS states that blowdown water from F3 will be pre-treated and transported to the existing TRA Red Oak Regional Wastewater Treatment Plant, and evaporation ponds "will be constructed for the other eight service areas." The Texas proposal states that blowdown from "eight sites in the Near Cluster" will be handled by evaporation ponds. Assuming the Texas proposal intended to evaporate the blowdown from the eight service areas, rather than from sites in the Near Cluster, this still leaves the question of handling blowdown at F3. Is this the most efficient and economical method, and has TRA agreed to it?

APPENDIX 6 - EARTH RESOURCES ASSESSMENTS

5.7.1.3. Geologic Structures

"Faults in the Austin Chalk have displacements of up to 100 feet."

53 Volume 1, Chapter 4, Table 4-1

Austin Chalk "faults with possible maximum displacement of 100 feet"

Though displacements of 100 feet have been reported, this is the exception rather than the rule. Displacements of more than 10 feet are rare and most are less than a few feet.

VOLUME I - CHAPTER 5

5.1.2 - 28 & 29 Water Resources - Wayne Hunter, TRA

Each of these sections categorize the Texas site as having an adverse impact due to the project's contribution to a present groundwater overdraft situation. As you are aware, the campus and far cluster water usage is to be provided by means of a surface water source. The only use of groundwater will be at each cooling tower along the ring.

54 At the time in which the Trinity River Authority submitted preliminary information for water availability for the SSC, the Authority was involved in discussions with representatives of Ellis County regarding a desire on the part of Ellis County entities to convert from groundwater and surface water usage to strictly surface water usage. The Texas Water Development Board (TWDB) has since participated with ten Ellis County municipalities and six water supply corporation to fund a long range water master plan to address long range needs for Ellis County. To date, the preliminary results of the study indicate the following:

1. There is a potential available water source (surface water) that holds sufficient capacity to meet the needs of Ellis County. This supply is the TCWCID#1 Richland Chambers Reservoir.

2. The majority of the sixteen Ellis County entities desire to proceed with a transfer from present groundwater usage to surface water usage and implementation of such a transfer is now being evaluated.

Accordingly, it cannot be said that the use of groundwater for the cooling towers is a perpetual adverse impact. Action is presently underway to alleviate the impact, with or without the SSC.

Page 5.1.2 - 20 - Wayne Hunter, TRA

55 Figure 5.1.2.-11 does not show Joe Pool Lake. This may not be significant to the proposal but is likely to conflict with TRA general background information which may have been submitted.

5.2 - 12 (3rd Paragraph) Texas - Wayne Hunter, TRA

56 The DART rail system will not likely be in a mode of construction by mid-1989, as a result of a recently failed bond issue. In addition, two other significant region-wide projects which complement the DFW Metroplex's diversity include the Alliance Airport and the U.S. Bureau of Engraving Currency Plant, both of which are presently under construction.

Please note that the above comments were prepared by Wayne Hunter of the Trinity River Authority.

APPENDIX 2 - COST ESTIMATES

2.1 Purpose and Scope

57 This paragraph states that project costs in this Appendix includes those costs which would be incurred by DOE and the states . . . It does not include the $1 billion authorized by the State of Texas for the Texas site.

APPENDIX 5 - AFFECTED ENVIRONMENTS AT SITE ALTERNATIVES

5.7.8.3 Hazardous Waste Disposal Facilities

58 The Ellis County Disposal Company Landfill is located in Ennis, not Ellis, Texas.

APPENDIX 10
10.2 EXCAVATED MATERIAL AND DEWATERING WASTE DISPOSAL

10.2.3.7.A. Excavated Material

59 The given figures of 2.6 million cubic yards of excavated materials is substantially less than the Halff estimate of 3.8 million cubic yards. No back-up calculations are provided. The 2.6 million cubic yards is consistent with the estimates for other states.

10.2.3.7.A.5. Recommendation

60 The statement that 90% of the spoil being disposed in landfills is not accurately reflected in Table 10.2.3-9 where it is implied that all Austin Chalk could be used in quarries or for cement mill feed.

10.3 SEWAGE, SOLID WASTE, AND INDUSTRIAL (NON-HAZARDOUS) WASTEWATER

Section G.1. Page 12 - Wayne Hunter, TRA

61 It is suggested that in order to clarify the description of the proposed package treatment plant the following be added, plant liquids process treatment will include primary clarification aeration through a nitrification enhanced activated sludge process, filtration, and disinfection. Solids treatment will consist of aerobic digestion followed by a dewatering method yet to be established. The dried solids will be disposed of offsite by contract with one of several private solid waste haulers in the area.

Section G.1. Page 17 - Wayne Hunter, TRA

The cooling water disposition at the far cluster should recognize two options:

1. Tying into the existing City of Ennis collection system, or

2. Utilization of an evaporation pond as with the other towers.

62 Either one of these alternatives are acceptable, however, the most cost effective option cannot be defined at this time until more site specific data is available.

In addition, note that the other sites have defined the potential for evaporation feasibility as a function of rainfall and climate. We could also likely define our sites evaporation potential utilizing state adopted design criteria.

MEMORANDUM

DATE: October 10, 1986

TO: TSSCA

FROM: Mike McKinney - TU Electric

SUBJECT: Utilities - DEIS Review

Please note changes made by T U Electric engineers in their review of the DEIS. These changes reflect inaccurate data. Changes were made in the following areas;

Utilities Section - Page 152 text 3) Operations beginning paragraph - cities served added... Midland, Odessa, Irving, Tyler, and Killeen.

63 Page 152 - Revised paragraphs Nos. 4 and 5

Page 152 - Revised table on "Reserve Margins"

Page 153 - Revised data in paragraphs Nos. 1. 2. and 5.

Page 154 - Revised data in Table 14.2.2-7

G. Texas

1. Electricty

a. Service Assessment for Project Demands

1) Preconstruction

Preconstruction electrical utility impacts are expected to be short-term and negligible. Activities would include various geotechnical drilling and site monitoring operations. Limited electric power requirements for these activities probably would be met by portable power generators.

2) Construction

Because of the large construction power requirements and the duration of construction, it is assumed that the SSC contractors would use utility power for construction work. This utility power can be brought on site by providing a pole line that could be removed when work is compelte, or by early construction of permanent facilities to support construction work.

64 It is anticipated that construction power would be supplied to contractors at the site by tapping the existing 69-kV network of power lines located in the vicinity.

The pole lines constructed, whether temporary or permanent, would be routed along existing or newly acquired rights-of-way. Temporary substations could be built by the contractor to distribute medium-voltage power, around the area on a temporary pole line to the tunnel boring machines (TBMs). Step-down transformers and a low-voltage distribution system would provide 480-V construction power from this aerial line.

Construction power for structures around the ring could be served either by portable on-site generators with routed power cord, or by placing temporary pole lines from nearby existing power lines to provide 480-V construction power. For either scenario the impact would be short-term and negligible.

3. Operations

Electric power for the project would be supplied by Texas Utilities Electric Company (TU Electric), which plans to provide 345-kV service to Substations 1 and 2 via new and existing transmission lines. The two points of service chosen would provide power independently to each substation from separate grids.

TU Electric provides electric service to over 5 million people, about one-third of the state's population. The service territory extends 600 mi from far west Texas eastward to near Louisiana and 250 mi. from the Oklahoma border southward into Central Texas.

Service is provided in 87 counties to 361 incorporated cities, including Dallas, Fort Worth, Midland, Odessa, Wichita Falls, Arlington, Irving, Plano, Waco, Tyler and Killeen.

Texas proposes to provide 345-kV service to Substation 1 by constructing a new switching station and 345-kV transmission line from an existing-345-kV line. The new line would be approximately 3.1 mi long. Substation 2 would be serviced by constructing a new switching station and 345-kV transmission line. This would require construction of a new transmission line. This would require construction of a new transmission line approximately 1.5 mi long.

Electric power distribution around the booster rings and collider tunnel would be accomplished by routing power cables either in conduit or duct banks around the circumference of the ring. Electric power would be distributed to the buildings by underground duct banks.

The TU Electric utility system currently has available capacity of 19,462 MW. Its current reserves are 2,774 MW, which is 244 MW above the 13% capacity margin minimum established by the Electric Reliability Council of Texas (ERCOT) for its member utilities. TU Electric is a member of ERCOT and is considered in ERCOT assessments of system capabilities and operations. ERCOT currently has 47,398 MW of capacity, of which 9,375 MW are reserves. In 1996, ERCOT estimates that there will be 9,833 MW of reserve capacity. This reserve capacity is backed up by the regional interties to neighboring utility systems.

In 1996, TU Electric estimates that it would have 825 MW of capacity reserves above the ERCOT 13% minimum. This would provide sufficient reserve capacity to meet the projected SSC load requirements without construction of any additional generating capacity.

The following table summarizes the capacity, load and reserve characteristics of TU Electric in 1987 and 1996.

TEXAS UTILITIES ELECTRIC COMPANY RESERVE MARGINS
(MW)

	1987	1996
Dependable Capacity	19,462	25,504
Firm Peak Demand*	16,688	21,363
Capacity Margin	2,774	4,141
Capacity Above 13% Capacity Margin**	244	825

*Firm Peak Demand does not include interruptible loads
**Calculated based on ERCOT 13% minimum required capacity margin

TU Electric plans electric generating capacity addition to maintain the minimum 13% capacity reserve level required by ERCOT utilities. Capacity additions would include an additional 6,000 MW to be put in place by 1996. This would increase the system total available capacity to approximately 25,500 MW.

TU Electric can meet the requirements of the SSC load during construction and during the first year of operations without impacting its latest resource plan. During the period of 1987 through 1996 TU Electric capacity margins remain above the ERCOT minimum of 13% with the SSC included in its demand. No specific resource plan is provided beyond 1996, and it is likely that TU Electric generating plans would change with time. A possible change is the deferral of the retirement of 1,856 MW of capacity currently scheduled for retirement prior to 1996. Engineering studies have indicated that the life of this capacity may be extended, making it available to serve future loads such as the SSC.

b. Service Assessment for Population-Related Demands

65 TU Electric can also meet the demand growth in the SSC region caused by the influx of construction and operations workers and secondary commercial and industrial activities supporting the SSC during construction and the first year of operations. Secondary loads during construction reach a maximum of 23 MW by 1992, and a maximum of 18 MW by 2000 druing operations. Table 14.2.2-7 shows the planning reserves with and without the SSC and secondary loads.

c. General Assessments

The capacity margins within the ERCOT region are expected to range from 19.8% in 1987 to 16.6% in 1996. Capacity purchases, principally from non-utility generators, are being used to supplement ERCOT capacity on both short-and long-term basis. Projected capacity margins exceed the planning guidelines adopted by the region, thus planned capacity resources are expected to be adequate during the 1987-1996 period.

66 ERCOT systems project additions of approximately 14,722 MW of new and up-rated generating capacity during the decade 1987-1996. Retirements during that period are expected to be approximately 2,199 MW, resulting in net additions of some 12,523 MW.

Because transmission improvements within ERCOT have not proceeded as planned, a considerable increase in loading of existing transmission has occurred. Further increases are expected because of various forms of inter-utility and non-utility generation (NUG) wheeling.

The increasing utilization of transmission facilities for wheeling has been, and would continue to be, a significant reliability concern within ERCOT. During 1986 several instances occurred where economy transactions were interrupted because of insufficient transmission capacity.

Table 14.2.2-7

TEXAS UTILITIES ELECTRIC COMPANY
RESERVE MARGINS WITH AND WITHOUT SSC

Year	Projected Firm Peak Demand MW	SSC Load MW	Secondary Load MW	Planned Resources MW	Capacity Margin W/O SSC MW	Capacity Margin W/SSC MW	Percent Capacity Margin* W/SSC %	Percent Capacity Margin* W/SSC %
1987	16,688	0	0	19,462	2,744	2,744	14.3%	14.3%
1988	17,057	0	0	20,125	3,068	3,068	15.2%	15.2%
1989	17,504	1	3	20,623	3,119	3,115	15.1%	15.1%
1990	17,998	2	12	21,686	3,690	3,676	17.0%	16.9%
1991	18,500	4	22	22,448	3,939	3,913	17.5%	17.4%
1992	19,110	8	23	22,673	3,763	3,732	16.5%	16.3%
1993	19,170	16	21	29,531	3,821	3,784	16.2%	16.1%
1994	20,276	36	22	24,249	3,973	3,915	16.4%	16.1%
1995	20,854	36	18	24,904	4,050	3,996	16.3%	16.0%
1996	21,363	200	15	25,504	4,141	3,926	16.2%	15.4%

*Percent Capacity Margin= (Capacity Margin in MW)(Planned Resources in MW)

Source:

SSCAP14C22388154

The situation has been aggravated by the impediments that have occurred in construction and operation of needed transmission facilities. With greater utilization of the transmission grid being projected, future reliability within the ERCOT region cannot be expected to remain at current levels without the completion of planned transmission improvements.

Current forecasts indicate that up to 2,475 MW of the capacity within ERCOT by 1996 (approximately 10% of total) would be in the form of non-utility generation facilities. The long-term reliability of such facilities has yet to be established, and concern exists over issues such as their dependency on natural gas for fuel, unit dispatchability, wheeling, minimum load constraints, and long-term availability. The future impact of non-utility generation on the reliability of electric supply within ERCOT remains uncertain.

Several major nuclear projects represent the bulk of additional capacity expected to be completed within ERCOT during the next few years. These are South Texas 1 and 2 (1,250 MW each), and Comanche Peak 1 and 2 (1150 MW each). Collectively, these four units represent 38% of the expected increase in ERCOT capacity during the next ten years. As is the case with all nuclear units, there is considerable technical, regulatory and political uncertainty associated with bringing these units on line. Should unforeseen impediments occur, ERCOT could incur significant risk to the adequacy of its future electric supply.

The final location of the proposed SSC facility may require relocation of several transmission lines in the vicinity. This would require some rerouting of the lines to be relocated to maintain system continuity and customer service. Any impacts from this rerouting would be short-term and negligible.

2. Natural Gas

a. Service Assessment for Project Demands

Preconstruction gas demand probably would be met using bottled propane so that impacts to the natural gas utility would be negligible.

Natural gas deliveries can be made to the SSC through an extensive natural gas pipeline network that crosses the proposed site. These lines are owned or operated by Lone Star Gas Company (Lone Star), Valero Energy Company (Valero), and Texas Utilities Fuel Company (TU Fuel).

67 Lone Star operates as a transmission company, collecting natural gas at its source and transporting it to market, where it is distributed to residential, commercial and industrial customers, or unaffiliated pipeline customers. Valero also operates as a natural gas transmission and distribution network that gathers, purchases, and sells natural gas, and provides third-party gas transportation services. TU Fuel owns a natural gas pipeline system, and acquires, stores, delivers gas, and provides other services for the generation of electric energy by TU Electric.

Lone Star has developed an underground storage system consisting of ten separate storage reservoirs located at strategic points along the company's pipeline. This system can store up to 65 billion ft^3 (BCF) of gas that can be withdrawn to supplement gas supplies during periods of high demand. Valero maintains a storage facility in Wharton, Texas with 6.7 BCF of gas available for withdrawal. Withdrawal rates from this facility can run to 800 million ft^3 per day.

Valero's natural gas pipeline systems are located primarily along the Texas Gulf Coast and throughout south Texas and extend westward to Pecos, Texas. The company also jointly owns and operates pipelines that extend from Waha, Texas, to the Dallas-Forth Worth area and from Waha to San Antonio.

Lone Star's natural gas system primarily services a 120,000 mi^2 area of northeast Texas and southern Oklahoma. Its network stretches north-south from Norman, Oklahoma, to Houston, Texas, and east-west from Abilene, Texas, to the Louisiana border.

Texas has proposed that Lone Star deliver natural gas to the SSC through its existing pipelines. With gas transmission lines on-site, construction of new pipeline would be minimized. Providing service to the campus area would require constructing a new 3-inch natural gas main from the existing twin 6-inch gas mains serving Waxahachie from the south. The length of this line would be approximately 2.5 mi. Providing service to the far cluster would require constructing a new 3-inch main from an existing 30-inch main. The length of this line would be approximately 2.7 mi.

Final location of the ring and improvements to local roads to handle construction and service traffic may require relocation of smaller gas lines. If this occurs impacts would be short-term and negligible if proper construction techniques are followed.

The use of bottled propane may be an alternative for meeting fuel requirements at remote service areas during construction or operations.

Possible mitigative alternatives that would be considered during detail design include:

- Connection of the natural gas system to a single off-site supply source with the use of a 15-mi pipeline to connect the East and West clusters.
- Use of coal or fuel oil as an alternate heating fuel.
- Use of electric heat for requirements now using fuel.

HQ-4438

MEMO TO: Texas SSC Authority
Attn: Robert Duke

FROM: Don Hicks,
Vice President, Regional Research and Technology Program, North Texas Commission

SUBJ: Review Comments on Socioeconomic topics in the Department of Energy (DOE) SSC Environmental Impact Statement (EIS)

SUMMARY

The Socioeconomic Factors section of the SSC-EIS is based on a series of analyses using state-of-the-art and widely accepted impact estimation procedures. I see no evidence that any of the assumptions, by which the use of these techniques is generally justified, are systematically biased either for or against an particular site. The EIS has been attentive to the need for substantive contextual background and qualifying statements. In all, I feel the Texas ROI and specific Ellis County site have been fairly and competently portrayed in this study.

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SPECIFIC RESOURCE REFERENCES

Volume I, pp. 5.1.8-1 thru 5.1.8-25

The Socioeconomic coverage of the EIS was defined in such a way as to assign primary importance to the employment, income and related impacts of the siting of the SSC in an existing economy and population settlement. The conventional approach to tracing out such expected impacts involves tailoring a multisector input-output (I-O) model of an economy, generally of a large-scale geography such as the nation or state. For smaller geographies, corresponding models are generally not available given the formidable costs of data development required for the equations. In such cases, the impact estimates of larger scale models are "stepped down" -- via adjustment factors (see Table 14.1.2-1) and applied to the smaller geography. This is, of course, one potential source of error, because the guiding assumption is that the estimates for the larger geography apply uniformly across all component geographies lower than the level of the adjustment factors.

69

I could find no detailed discussion of the I-O modeling used to guide this section. However, my impression is that whatever the sources of measurement error associated with such "turn the crank" methods would neither be substantial nor, more importantly, would be systematically biased against the Texas site more so than toward others. It may well be that the EIS process actually had access to smaller-scale regional and/or county models with which to generate quantitative estimates on

the impacts associated with the indicators of interest. For me the bottom line is that the methodology used appeared to be applied uniformly.

The results of such estimation procedures are generally as reliable as the specification of the equations that comprise the model(s). Again, I found no discussion of such details beyond that in Appendix 14. Nonetheless, the models used -- and the estimates reported -- indicate that reasonable care was taken to make sense of the estimates derived and to understand them in their respective contexts. The resulting discussions did not stray far from the quantitative estimates generated by the model.

Some small issues can be cited regarding the input assumptions. For example, the assumption of an inverse relationship between in-migration of workers in broad skill categories and the extant unemployment rates in a regional labor market is based on empirical documentation. However, this approach is not informed by the growing realization of the importance of segmented labor markets in which skill shortages (and tight labor markets) can coexist with high unemployment rates. This structural unemployment phenomenon is especially likely in association with idiosyncratic and specialized economic activities such as the SSC.
In addition, there is much evidence to suggest that estimation procedures are unreliable for understanding impacts several years out. Nonetheless, this caution is expressed in the EIS discussion. And I have no superior methodology suggest for consideration.

The first-stage selection process which produced the short-list of seven states was such that much of the potential variation on socioeconomic indicators was eliminated. Proximity to major metro areas reduced substantially the possibility that the SSC would make a greater impact on one host site than another. Although the EIS suggests that indirect and induced impacts will show a greater range of variation than direct effects, the methodology used raises little concern that those effects are misstated or misinterpreted. In short, there appears to be little in the socioeconomic section that would help to differentiate the sites substantially. One exception is the necessity facing some sites of having to expand substantially the public transportation/utility infrastructures to serve relatively remote sites (See 5.1.8.3-4, p. 5.1.8-17).

Appendix 5C, Part 5.7.11.1

70 This section accurately portrays the Texas ROI as one which is expected to enjoy longterm population growth and economic expansion at rates that will exceed the national average. It also accurately portrays the increased industrialization of the region -- driven by absolute and relative increases in manufacturing -- as well as the building dominance of Dallas and

Tarrant Counties within the eight-county ROI.

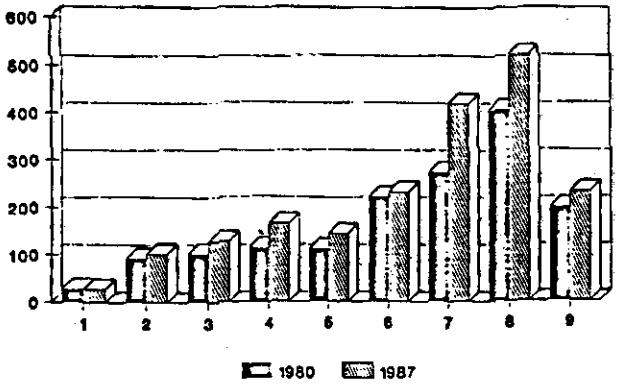
The analysis of the public finance features of the Texas ROI is straightforward and accurate. A discussion of the relatively rapid structural shift in the past ten years away from reliance on the oil and gas severance tax as a major revenue source for the state would have been a clarifying insight, although its omission is by no means a flaw in the analysis.

Appendix 14, up to 14.2

71 In this resource are to be found the descriptions of the estimation procedures used in the impact analysis. This section conveys a state-of-the-art and very craftsman-like analytical plan.

FIGURE 2.

DALLAS/FORT WORTH METROPLEX
1980 - 1987 Employment Shifts



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Legend

1. Oil & Gas
2. Construction
3. Transportation/Communication/Utilities
4. Finance/Insurance/Real Estate
5. High Tech Manufacturing
6. Rest of Manufacturing
7. Services
8. Trade
9. Government

Data Source: Economic Analysis Center, State of Texas.
Prepared By: Regional Research & Technology Program, North Texas Commission.

To: Texas Superconducting Super Collider Authority

From: Hylan B Lyon Jr
Vice President for Science and Technology TSSCA

Subject: Review of the Environmental Impact Statement section regarding decommissioning.

1. Volume IV Appendix 3 covers the Decommissioning Plan for the SSC at the end of its useful life. Decommissioning is estimated to take place 25-35 years after commissioning in 1996, that is the years 2021 to 2131. The plan is based upon a "well supported" assumption that there will be little residual radioactivity at
73 the SSC at the time of decommissioning and that measurable amounts of radioactivity would only be present in local, well-defined areas

2. The report draws upon a study done at the Argonne National Laboratory (1). These "well supported" assumptions draw upon the experience of decommissioning other accelerator sites. The analysis is based upon the following:

-The main sources of residual radioactivity at the time of decommissioning, namely the beam absorbers, would be completely removed and disposed of as low-level radioactive waste.

74 -The entire complex of tunnels would be sealed to prevent accidental or unplanned access.

-All accelerator components not salvaged for use elsewhere will be left in place in the sealed tunnels, even though their measured level of radioactivity would be very low or negligible.

-The above-ground service areas would be dismantled; the equipment and structures salvaged, if possible, or removed from the site as waste material.

-The linear accelerator (Linac) may be used for medical or educational purposes.

-The campus complex would be left in place for future use.

3. The Decommissioning Activities described in the report systematically describe how each component of the SSC would be treated. Each component part will be purged of its low level radioactive components and these will be disposed of in DOE or
75 State owned low level nuclear waste disposal areas. The rest of the non-radioactive material will either be salvaged for use

---

1 Chen, S.Y.; Opelka, J.J.; Chambers, W.C.; and Stavron, J. Technical Assessment of Environmental and Cost Implications of Superconducting Collider Decommissioning. Argonne, Il: Argonne National Laboratory, Mar 1988. NLA/EES-TM-347, July

elsewhere or left to remain if it is non-obtrusive. A decommissioning plan and compliance with NEPA requirements for that plan would have to be completed before the end of the SSC operations.

4. The major impacts of decommissioning operations relate to the exposure of the workers to the low-level radioactivity. For the cleanup of the beam lines and the interaction halls the total exposure per worker is forecast to be equivalent to less than one years exposure to the naturally occurring background radiation. This exposure is 300 mrem per person and 100 mrem per person respectively. The background radiation naturally occurring in Ellis county is one of the lowest in the nation at 100 mrem/yr. Previous analysis by the TSSCA indicates that these levels of exposure result in no clinical incidence of radiation related diseases. 76

The exposure of workers decommissioning the main ring beam absorbers would be 1/2 of that allowed as the occupational exposure dose limit for workers (which is 5000 mrem/yr). Public exposure as a result of these activities would be immeasurably small.

5. Costs are estimated to be 15% of the annual operating expense, approximately $38 million. Decommissioning would take about one year to complete. 77

6. The EIS scenario used to generate these conclusions is the only point of departure we have to form our opinions. In making this judgement local citizens will have to give a certain amount of credibility to the expert opinion referenced in this report. We can point to the fact that the TSSCA had earlier sought independent expert views on the DOE lowlevel nuclear waste disposal and hazardous waste disposal plans. Our review by active professionals in the field residing in Texas did agree with and support the DOE's conclusions. 78

There will be some challenge that even today's professionals are not meeting tough enough standards, which can be a point of debate. However, the weight of experience and scientific opinion appear to support the conclusions of the EIS study.

7. Four issues were not covered directly in the study.

First, there may be medical research interest in more than the LINAC, the LEB and HEB are accelerators in their own right, by the time of decommissioning these may be desired as medical treatment and research facilities. The report discusses only the LINAC as a possible salvageable facility. 79

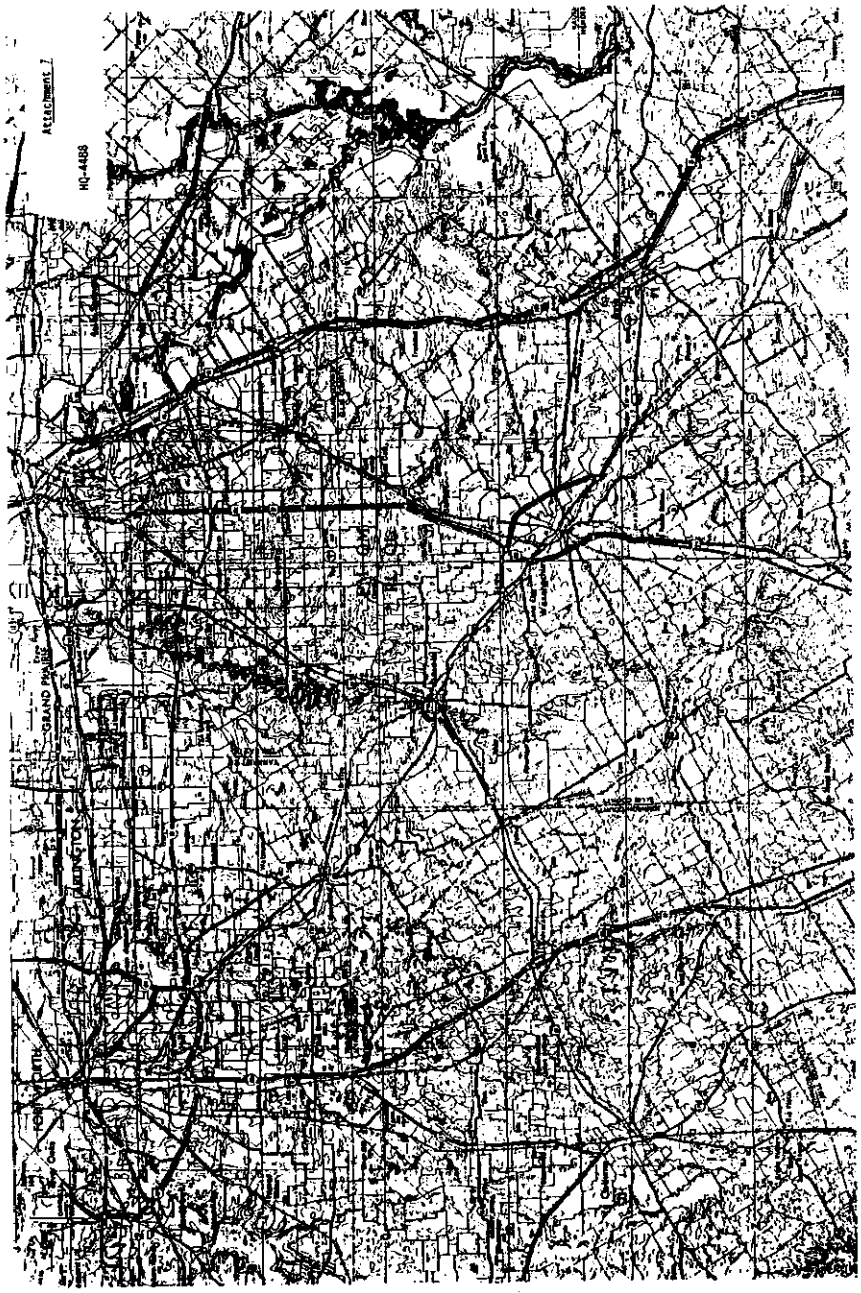
Second, there is no mention of reversion of title to the land to the original owners, or to other private citizens. These questions were of public interest early on in the SSC discussions and were addressed by DOE at the early Q and A sessions. They

have not been addressed in the EIS

Third, there is the issue of inadvertent access to the tunnel. DOE plans on sealing off the ring by blocking the access points. There is the possibility over the years of some other construction project breaking into the ring through an alternate path. There should be no radioactive danger if this occurs but this needs to be verified by DOE.

Fourth, there is a low probability of surface effects due to any possible collapse of the ring. these are not covered in the study. In the austin chalk this should have a very low probability of occurence, in the taylor marl the tunnel is so deep that the effect would be minimal. However, the issue is not covered and should be addressed.

8. I recommend that the TSSCA take the initiative to raise these four issues at the hearings to make sure the DOE response is on the record.


Attachment 7
HC-4408
GRAND PRAIRIE
ARLINGTON
TOM GREEN

The Joiner-Rose Group, Inc.

4125 Centurion Way
Dallas, Texas 75244

214/392-7800

Fax: 214/991-3781

Dallas
New York
Chicago
Houston
Austin

September 6, 1988

Albert H. Halff Associates, Inc.
8616 Northwest Plaza Drive
Dallas, Texas 75225

Attention: Mr. Albert H. Halff

Subject: **Environmental Impact Statement-Superconducting Supercolider Acoustics and Noise-Review Comments**

Gentlemen:

80 We have reviewed the submitted noise and vibration sections of the environmental impact statement on the Texas site for the superconducting, supercolider. overall it appears to be a good document. We can see that much effort has gone into it. Our comments are outlined below:

81 The definition of "impact", while the same as used in many environmental impact statements, is open to question as it defines impact to humans as only those people who are "highly annoyed" (Volume 4, Appendix 9, Page 4). There are many other people exposed to slightly lower noise levels who will be "annoyed" rather than "highly annoyed" and will have a definite negative reaction to this intrusion although it is not considered an impact by the E.I.S.

82 The document did not examine the condition beyond the point where "noise becomes indistinguishable from the background noise" (Volume 4, Appendix 9, Page 4). This appears to be where the noise intrusion becomes a numerically equal to the background noise. Intruding noise, especially if it has a "character" to it is noticeable and distinguishable even if it's magnitude is as much as 10 dB below the ambient noise. Such characteristics could be a pulsating, intermittent, rythmic character or a spectrum with tonal components and would show up considerably when compared to natural semi-continuous background noise such as, distant traffic, wind in the trees, etc.

83 The stated methodology for figuring attenuation includes distance and air absorption and did not include effects from topographic and vegetational influences, therefore it is stated that the calculated noise levels represent conservative values (Volume 4, Appendix 9, Page 5). Omitted was the effect of down wind propagation which can increase noise levels up to 20 dB in some cases over long distances. Vegetation is not really significant, unless very dense. Topographic effects could be, but is typically not substantial in the relatively flat lands of Texas. Wind should be addressed in the study.

84 Two conflicting statements appear to exist (Volume 4, Appendix 9, Page 6). "Increased passenger vehicle traffic on road during both construction and operations will <u>not</u> have the potential to create significant noise impacts". ..."Area residents <u>are likely to be annoyed</u> by noise levels from roads which experience increased traffic as a result of SSC".

The Joiner-Rose Group, Inc.

85 The E.I.S. states "These figures are based upon road construction activity, attenuating over distance at a rate of 6 DBA per doubling a distance" (Page 17, Volume 4, Appendix 9). Other studies have shown such attenuation rates can be optimistic and a lower rate (4) has been found more appropriate (Highway Noise-A Design Guide for Highway Engineers-National Co-op Highway Research Program Report #117-Fig. B-5).

86 A velocity of 2.0" per second is being used as an acceptable criteria for blasting ground vibration (Page 81, Volume 4, Appendix 9). This is basically damage threshold. The criteria that is being used for "no impact" is that of structural damage of fragile building elements. "Blasting will be controlled through reduced levels of vibration below that which produces structural damage..." (Page 93, Volume 4, Appendix 9) even though the report states that at vibration levels of 1/5th to 1/10th of this letter level humans will consider it severe" (Page 75, Volume 4, Appendix 9). Therefore the conclusion is that even though nearby residents are judging an intrusion as "severe", the EIS is reporting that this is not an impact.

87 Blasting is to be forbidden that produces over pressures which cause "excessive public complaints" (Page 93, Volume 4, Appendix 9). This means that enough over pressure levels are being allowed to cause annoyance high enough to cause some public complaints, but not enough to be considered excessive. Here again it appears that the intrusion which is being created below "excessive public complaints" is not being considered as an impact, even though people are expected to be substantially annoyed.

88 In general, the report appears to define "impacts" as only those intrusions causing the most severe levels of annoyance. We would suggest that a statement be included to clarify the fact and even quantify the fact that substantial portions of people will have their environment impact degraded and will find it noticeable and annoying, but yet are not considered annoyed enough to reach the impact threshold defined in the report.

Very truly yours,

THE JOINER-ROSE GROUP, INC.

Tom Rose, P.E.
Executive Vice President

TR:vh

LETTER 1547 (CONTINUED)

TEXAS SUPERCONDUCTING SUPER COI LIDER AUTHORITY
9400 N. Central Expressway
Suite 908, L.B. #160
Dallas, Texas 75231
(214) 987-9792

October 3, 1988

Jack W. Evans
Chairman

William S. Banowsky
President

Jerry R. Junkins
Finance Chairman

FAX # 214-739-7074

Mr. Phillip Stafford
Texas National Research Laboratory Commission
7557 Rambler Rd., Suite 216
Dallas, Texas 75231

Dear Mr. Stafford:

89 Enclosed herewith is my analysis of socio-economic findings contained in the Draft Environmental Impact Statement for the Superconducting Super Collider.

90 I have not enclosed Dr. Holloway's report which should be resubmitted to the Department of Energy. In my analysis I note an error in the number of relocations in the community of Boz. You may not desire to draw attention to the number of Boz relocations.

Should you require additional information or clarification of any information contained herein, please do not hesitate to let me know.

Sincerely,

STEVE ROWERTON
Vice President
Operations

mha

REVIEW OF DEIS
SOCIO-ECONOMIC IMPACT OF THE SSC
Submitted By: Steve Howerton
9-30-88

I. Executive Summary/Key Findings

91 The Texas National Research Laboratory Commission (TNRLC) has validated the Texas socio-economic impact study contained in the DEIS. While the TNRLC is in agreement with DEIS findings, the TNRLC has taken one further step to evaluate worst case socio-economic scenarios within the Texas environment. Even the worst case socio-economic scenario can be properly mitigated.

92 The DEIS (Volume I, Chapter 5 and Volume IV, Appendix 14) adequately identifies and evaluates economic and social change associated with preconstruction, construction and operation of the SSC within the Texas environment.

93 The DEIS identifies no unmanageable adverse socio-economic impacts to the Texas Environment that would result from the SSC Project. In fact, the nature of SSC associated economic and social change will be predominately positive in the event of a Texas siting decision.

94 Socio-economic impact studies conducted by the TNRLC confirm the nature and extent of predicted impacts identified in the DEIS. The TNRLC has also attempted to develop worst case scenarios assuming that an unpredicted, disproportionate amount of inmigrant population chooses to reside in Ellis County (Exhibit 1, Holloway Study). A comparison of net fiscal impacts for local governments in Ellis County as reported in the DEIS and the TNRLC worst case socio-economic scenario is depicted in Figure 1.

The worst case socio-economic scenario has been reviewed by public officials of Ellis County (county, special district, school district and city officials) to insure an understanding of the most extreme potential public service demands and public finance impacts which may result from the SSC.

95 As a result of a careful review of worst case socio-economic scenarios, only public school officials in Ellis County have expressed concern over potential net negative fiscal impacts.

The TNRLC has agreed to develop financial mitigation strategies to insure that net negative fiscal impacts do not occur for school districts in Ellis County. An example of such a state mitigation assistance strategy is enclosed. (Exhibit 2).

II. Comparison of Texas-generated with DEIS Data and Identification of Discrepancies

No significant data discrepancies exist between Department of Energy and TNRLC-generated socio-economic data. However, the TNRLC has modeled several worst case socio-economic scenarios to assess level of project acceptance by local public officials and to determine requirements for mitigation assistance within Ellis County.

Several significant assumptions were made to create the worst case socio-economic scenario. These assumptions and corresponding data comparison with DEIS data are as follows:

Assumption 1: Net inmigration of SSC employees and dependents to Ellis County may be disproportionately more than traditional gravity modeling would indicate.

SSC RELATED CHANGE IN POPULATION (ELLIS COUNTY):
DATA COMPARISON: DEIS TO TNRLC

96

	1990	1993	1996	1999
DEIS	1,376	2,416	1,941	2,234
TNRLC	2,355	3,607	4,427	2,778
% DIFFERENCE	171.1	149.2	228.0	124.3

Assumption 2: Net inmigration of SSC employees and dependents to specific communities within Ellis County may be disproportionately more than traditional gravity modeling would indicate.

SSC RELATED CHANGE IN POPULATION: (WAXAHACHIE/REST OF COUNTY)
DATA COMPARISON: DEIS TO TNRLC

	1990		1993		1996		1999	
	A	B	A	B	A	B	A	B
DEIS	1,102	2,274	1,939	477	1,566	375	1,711	435
TNRLC	1,143	1,212	1,862	1,745	2,602	1,825	791	1,987
% DIFFERENCE	103.7	53.2	96.0	365.8	166.1	486.0	46.2	456.7

A Waxahachie
B Rest of Ellis County

III. Comparison between states on key indicators with analysis of differences

97 There appears to be no significant qualitative differences between the key indicators for Texas and Illinois.

IV. Omissions

None

V. Errors

A. DEIS Volume 1, Chapter 5 (pg. 5.1.8-9) total number of relocations...224 (should be 175).

111 B. DEIS Volume IV, Appendix 14 (page 263) "Altogether, there would be 224 relocations required to accommodate SSC siting there... (should be 175).

C. DEIS Volume IV, Appendix 14 (pg. 265) "The town of Boz contains about 25 residences" (should be 74 residences, 38 conventional construction and 36 mobile homes or modular construction).

VI. Possible misinterpretations or inappropriate conclusions

A. Volume IV, Appendix 14 (page 265)

> One entire community would be disbanded by the fee simple land offering, as complete a breakup of a social subgroup as one ever is likely to encounter. The town of Boz contains about 25 residences. Most of these residences are in mobile homes or modular structures; less than ten are permanent (brick) homes. All would have to be removed to make room for the SSC campus area.

98 An inappropriate conclusion may have been drawn concerning the acquisition of land in the Boz Community. That conclusion is as follows:

> One entire community will be disbanded by the fee simple land offering, as complete a breakup of a social subgroup as one ever is likely to encounter.

As a mitigative measure, the entire community of Boz

(not an incorporated town or city) or those community members that desire to maintain their social/community subgroup status may be relocated to a planned residential development in the general vicinity of the present location of Boz.

99 Such a group relocation, in addition to maintaining the community subgroup, could dramatically enhance the quality of life of the community members by providing more adequate public service infrastructure (roads, water and wastewater service).

B. Volume IV, Appendix 14 (page 265)

3. Farm Operators

Agricultural land withdrawal by the SSC is a major concern of this group particularly with regard to compensation.

100 The attitudinal study compiled by the Ellis County Environmental Review Committee reflects testimony received in public hearings conducted between February 4, 1988, and February 25, 1988. During the above stated time frame, many agricultural land owners expressed concern that fair compensation be provided for farm land and that farming activities be allowed in stratified fee acquisition areas.

Subsequent to these environmental hearings, public information meetings and public hearings were held to fully explain the State of Texas land acquisition process to all effected land owners.

As a result of the land acquisition meetings and a determination that stratified fee areas could be used for agricultural purposes, the concerns of effected agricultural land owners about fair market compensation for land and agricultural use of stratified fee areas have been virtually eliminated.

During the DEIS public hearings held in Waxahachie, Texas, September 26-27, 1988, no testimony was given that indicated these concerns still exist.

VII. Conclusion

101 The TNRLC has made a special effort to educate and prepare the general population and the public officials of the local governments of Ellis County for the economic and social change anticipated to occur with a Texas SSC siting decision.

The local governments of Ellis County have demonstrated an ability to assimilate rapid growth as explained by Holloway...

> Ellis County has 2.4% of the population in the Region of Influence (ROI) in 1986 but only 2.2% in 1980. During 1980-1986, Ellis County population grew by 18,157 people or 30.4% over 1980 compared to 22.1% for the ROI (Table 3). The Ellis County labor force grew by 11,097 or 39.5% from 1980-1986 while the ROI labor force grew by by 440,548 or 31% (Table 4).
>
> The Texas Department of Health in 1986 published population projections for counties in Texas and according to these projections Ellis County will grow by 72.6% from 1986-2010 while the ROI will grow by 34.8%. In short, it is fair to say that the ROI has been a rapidly growing area and rapid growth is expected in the future. Furthermore, Ellis County, in recent years, has been growing at a more rapid pace than the ROI and it is expected that the County will continue to grow faster than the ROI in the future. In large part this faster growth rate for Ellis County is the result of "spill-over" growth from the Dallas metroplex. The SSC will be located in a rapidly growing "shadow" of Dallas.

The Texas region of influence for the SSC project and Ellis County, in particular, are ideally suited to accommodate the economic and social change associated with preconstruction, construction and operation of the SSC.

94

COMPARISON OF NET FISCAL IMPACTS OF SSC
LOCAL GOVERNMENTS IN ELLIS COUNTY

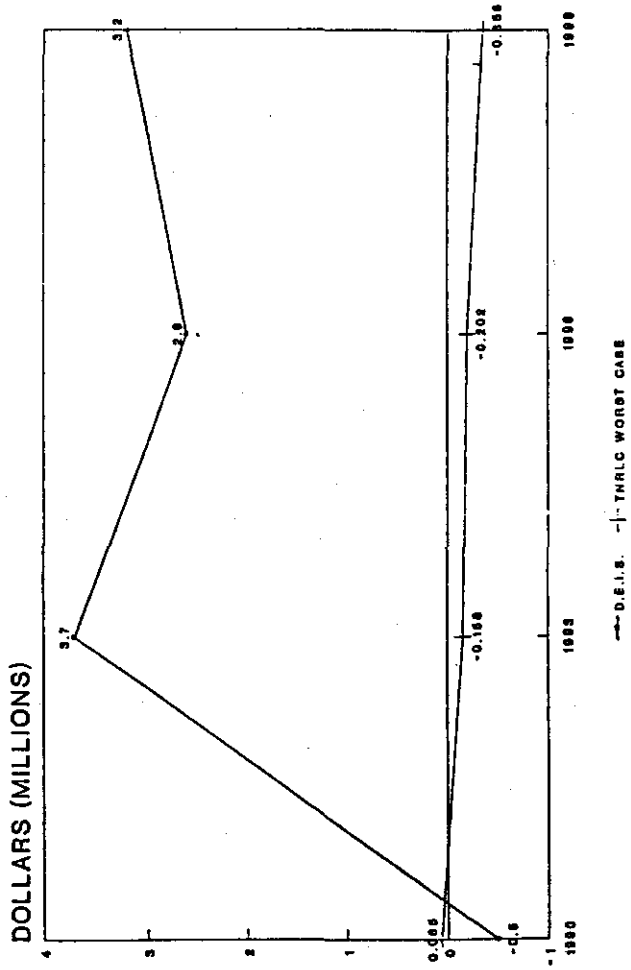


FIGURE 1

EXHIBIT 2

PROPOSAL FOR ELLIS COUNTY SCHOOLS

Enact in the education code the following:

16.157 Enrichment Equalization Allotment

103 (e) *If a school district is in the county where a "super-collider" is* constructed the district shall receive an amount equal to the full equalization allotment for each pupil whose parent, guardian, or person having lawful control of the pupil is employed in the construction of the "super-collider". The Commissioner of Education will require such information as is necessary to administer this section.

EXPLANATION: This will give an amount equal to .3 x the Foundation school program cost of the district for each pupil whose parent is employed in the construction.

Example:

District A has: $\frac{3,000,000 \text{ cost}}{1500 \text{ ADA}}$ = 2000 per pupil x .3 = $600 payment

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BROWN-FARRAR
REALTORS®

September 6, 1988

Mr. Robert Duke
Texas SSC Authority
9400 No. Central Expressway
Suite 908, L.B. 160
Dallas, TX 75231

Dear Bob:

In accordance with your request of late last week, I have scanned the portions of the draft EIS for the SSC as it relates to our Texas site- and specifically relating to land requirements. My comments are as follows:

104 1. Overall, there appear to be no major impacts to this area by construction of the SSC in Ellis County, Texas.

2. I have one question pertaining to Table 3-6, M, Summary of Site - Sepcific Land Acquistion Plans - Parcels. Texas is shown as having 224 relocations involved. Bob, as you and I conducted a physical inventory on the ground and came up with only 175-180, I do not understand where the number of 224 was derived.

105 It should perhaps be emphasized also that so far as we know, ours are all residential relocations. And beyond that, many involve mobile or modular homes. Most fall into low to moderate price ranges - thus reducing the overall cost.

106 3. Table 3-7 shows the loss of 2 water wells. Are these individual wells or co-op wells?

107 4. Also, in Table 3-7, under 'habitat loss: sensitive communities, commercial & recreational," Texas is shown as having 820 acres "disturbed". I'm not sure what this is, but does it need to be addressed or clarified?

108 5. Table 3-7 indicates that "historical sites" in Texas are to be "identified." I would point out that only one historically designated and marked home has been located in the affected areas. It is the old Dunaway home lcoated in Area B. It does have a Texas Historical Marker, but is not believed to hold any National designations. I have personally showed it to Mr. Stanly Graves of the Texas

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Historical Commission - and he felt there would be no major problems.

6. Available Housing - This topic was addressed during the DOE site visits and is addressed in the draft EIS. It is felt that there is more than adequate housing available in Ellis, Dallas and Tarrant Counties.

I hope these comments will be useful. If you have any questions, please call.

Sincerely,

G. Edwin Farrar
Managing Partner

The following narrative is provided in response to SSC DEIS Volume IV, Appendix 14, "Infrastructure Assessments, Transportation - Texas B7":

b. Direct Traffic Impacts, paragraph 05

Dallas/Fort Worth International Airport is the fourth busiest airport in the world based on total passengers (42,000,000); and aircraft arrivals and departures (625,000), in 1987. DFW ranks fourteenth in the world in terms of air cargo and mail with nearly 500,000 tons handled in calendar year 1987. Through August 1988, total passengers and air cargo and mail were 4.79 percent and 7.6 percent, respectively, ahead when compared with the same reporting period in 1987. Since the United States Department of Transportation began reporting on-time arrivals and departures, Dallas/Fort Worth International Airport has consistently ranked in the top five airports in terms of on-time arrivals and departures. Planned airfield improvements at DFW Airport include extending two of the airport's four north-south parallel runways by 2000 feet; constructing two new runways and adjoining taxiway complexes; and improvements to DFW Airport's two existing air cargo complexes. As Dallas/Fort Worth Airport is a 24 hour airport and operates without restrictions on arrivals and departures, given the around the clock nature of airline passenger and air cargo operations, Dallas/Fort Worth International Airport is positioned better than any other U.S. airport to accomodate the level of activity anticipated for the airport throughtout the construction and on-line operating phases of the Superconducting Super Collider installation in Ellis County, Texas. As DFW Airport nears its 15th year anniversary, it is noteworthy that the airport has been closed less than 24 hours in its history because of weather. For further information, please contact Joe M. Dealey, Jr., Director Public Affairs, Dallas/Fort Worth International Airport, Post Office Drawer DFW, DFW Airport, Texas 75261. Telephone: (214)574-6701.

LETTER 1548

FM208 10/03/88

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
116 WEST JONES STREET
RALEIGH NORTH CAROLINA 27611

INTERGOVERNMENTAL REVIEW COMMENTS

MAILED TO

U.S. DEPT. OF ENERGY
SSC SITE TASK FORCE
ER-65/GTN, OFFICE OF ENERGY RES.
WASHINGTON, D.C. 20545

FROM

MRS. CHRYS BAGGETT
DIRECTOR
N C STATE CLEARINGHOUSE

PROJECT DESCRIPTION

DRAFT EIS FOR THE SUPERCONDUCTING SUPER COLLIDER-PROPOSED SITE SELECTION FOR LARGEST SCIENTIFIC INSTRUMENT - FACILITY WILL BE DESIGNED TO INVESTIGATE THE BASIC STRUCTURE OF MATTER

SAI NO 89E00000135 PROGRAM TITLE - DEIS

THE ABOVE PROJECT HAS BEEN SUBMITTED TO THE NORTH CAROLINA INTERGOVERNMENTAL REVIEW PROCESS. AS A RESULT OF THE REVIEW THE FOLLOWING IS SUBMITTED ( ) NO COMMENTS WERE RECEIVED

(X) COMMENTS ATTACHED *

SHOULD YOU HAVE ANY QUESTIONS, PLEASE CALL THIS OFFICE (919) 733-0499.

*Note: The attached comments are duplicates of ones already sent to your office by the SSC project coordinator for this state.

cc: Regions J & K

LETTER 1548 (CONTINUED)

State of North Carolina
Department of Natural Resources and Community Development
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor
S. Thomas Rhodes, Secretary

Edythe McKinney
Director
Planning and Assessment

MEMORANDUM

TO: Chrys Baggett

FROM: Bill Flournoy BF

RE: SSC Draft EIS
SCH# 89-0135

DATE: October 10, 1988

The Department of Natural Resources and Community Development has reviewed the draft EIS for the proposed Superconducting Super Collider. Attached are comments from divisions within this department.

WLF:bsc

Attachments

P.O. Box 27687, Raleigh, North Carolina 27611-7687 Telephone 919-733-6376

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LETTER 1548 (CONTINUED)

State of North Carolina
Department of Natural Resources and Community Development
Division of Environmental Management
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor
S. Thomas Rhodes, Secretary

September 19, 1988

R. Paul Wilms
Director

MEMO TO: Bill Flournoy

FROM: John Dorney

SUBJECT: Review of water quality-related Issues in Draft EIS for Super Conducting Super Collider

I have reviewed the nine volumes of the draft EIS for the SSC with regard to water quality in North Carolina. In general, it is a well written, thorough review of the issue. The following suggestions are made to clarify or expand discussions of various portions. If I can be of further help, please let me know.

1 1. Volume IV. Appendix 5c, pg. 24 (and tables)

a. Stream classifications - all of the Neuse basin is also NSW (nutrient sensitive waters).

b. The turbidity water quality standard only applies to discharges (point sources) rather than ambient data.

2 c. The notation that average levels of Pb and Hg exceed water quality standards is true only when samples with less than detection are assigned half of the detection limit when averages are calculated (which is DEM's general procedure also). Note should be made in the text of this mathematical decision. A more useful measure for low level metals is the % of samples which exceed the standard.

2. Volume IV. Appendix 7. (7.1.3.5F.2)

3 a. Pg 59, para. 2 - Treatment of the far cluster's wastewater at the Durham or Oxford WWTPs would involve long, expensive pipelines. A more cost effect approach

Pollution Prevention Pays

P.O. Box 27687, Raleigh, North Carolina 27611-7687 Telephone 919-733-7015

An Equal Opportunity Affirmative Action Employer

MEMO TO: Bill Flournoy
September 20, 1988
Page Two

on the northern end of the ring would be to use land application systems (septic field or spray) for the domestic waste and surface discharge for the cooling water. This would remove any dissolved oxygen impact on the small streams in the area and also not violate DEM policy regarding BOD -laden waste discharge to zero flow streams.

4 b. Pg 59, para.3 - Land application (spray or septic) would also be feasible.

JD/jho
cc: Charles Wakild
David Williams

DIVISION OF WATER RESOURCES

October 5, 1988

MEMORANDUM

TO: Bill Flournoy

FROM: John Sutherland

SUBJECT: Comments on the DEIS for the SSC

Here are our comments by volume:

Volume IV, Appendix 5

5 1. Page 21: Figure 5.5.2-2 shows Mayo Reservoir in Virginia rather than in North Carolina. The reservoir should also be much larger.

6 2. Page 29: Table 5.5.2-4. See attached table that has been corrected and updated. Projections are to the year 2000.

Volume IV, Appendix 7

7 3. Page 52, under Surface Runoff. The first sentence of the third paragraph should read "..., it could have a measurable impact on runoff and increase flows in Knap of Reeds Creek." Also, the second sentence could more clearly be stated as follows: "However, with the use of detention and retention basins, these increases could be kept at the negligible level."

8 4. Page 59, under Surface Water Use. The available excess from Lake Butner should be 7,500 acre-feet/year rather than 8,400 because the current water withdrawn from Lake Butner is 2,465 acre-feet/year. Also, in the last line of page 59, "Lake Michie" should be replaced by "Little River Reservoir."

9 5. Page 60, under Surface Water Use, first full paragraph. What is the source of 5,600 acre-feet/year of excess water for Durham County? Durham's current supply can yield up to 47,000 acre-feet/year of water. Using Table 5.5.2-4, the current excess is about 21,200 acre-feet and the year 2000 excess would be about 5,000 acre-feet.

10 6. Page 60, under Surface Water Use, first full paragraph. The discussion about the City of Durham is outdated. Durham's Little River Reservoir is complete and was full during the spring of 1988. The total usable storage of the reservoir is 4.0 billion gallons, and it has a 20-year safe yield of 21.4 million gallons per day (23,976 acre-feet per year). The City of Durham should

be able to easily meet the peak water needs in 1992 associated with the construction of the SSC. The first sentence of the paragraph should be rewritten as follows: The City of Durham recently completed the Little River Reservoir to effectively double the safe yield of water supply from Lake Michie. The sentence starting with, "For all but the City of Durham...," should be amended as follows: "For all counties, the impacts from the combined effects of SSC construction use of water and from off-site increases in domestic water use should be negligible compared to excess capacity of their existing water systems." The remainder of the paragraph should be deleted.

Volume 1, Chapter 3

11 7. Page 3-42, under 3.4.5: In the last paragraph the words "Lake Michie" should be replaced by "Mayo Reservoir."

Attachment

Affected Environments at Alternative Sites
North Carolina 29

Table 5.5.2-4

SURFACE WATER USE IN PROJECT VICINITY

Water Source	User	Quantity Current acre-ft	Quantity Projected acre-ft
Neuse River Basin			
1. Lake Butner-Knap of Reeds Creek			
Butner	Residential	--	--
~~Durham~~	~~Residential~~	--	--
~~Durham/OWASA~~	~~Residential~~	~~935~~	--
Cozart Sanitary District	Comm/Indus	~~4~~	--
Lyons Station Sanitary District	Comm/Indus	~~220~~	--
Umstead State Hospital	Residential	--	--
Total		2,463 ~~1,845~~	3,138 ~~2,560~~
2. Lake Michie-Flat River			
Durham	Residential	25,773 ~~29,775~~	41,909 ~~43,770~~
3. Lake Rogers-Ledge Creek			
Creedmoor	Residential	250	525
4. Irrigators, general			
15 ponds, wells, streams	Irrigation	5,385	--
Roanoke River Basin			
1. Isaac Walton Lake-Satterfield Creek			
Roxboro	Residential	1,780 ~~4,770~~	1,900 ~~6,810~~
2. Kerr Reservoir-Roanoke River	Comm/Indus	2,800	3,500
Oxford	Residential	877 ~~1,306~~	1121
Oxford	Comm/Indus	448 ~~327~~	560
~~Corps of Engineers~~	~~Cooling~~	~~?~~	
3. Mayo Reservoir-Mayo Creek			
CP & L Electric Generating Plant	Cooling	8,200 ~~3~~	16,400 ~~-~~
4. Irrigators & General 20 ponds	Irrigation	727	--
Tar River Basin			
1. Irrigators & General 25 Ponds & Wells	Irrigation	4,016	--

Sources: North Carolina Department of Natural Resources and Community Development 1988a and 1988b; Carolina Power and Light Company 1977.

6

Air Quality Section

October 3, 1988

MEMORANDUM

TO: Bill Flournoy

FROM: Russell Hageman RH

SUBJECT: SSC Draft EIS

12 These are some comments on the air quality aspects of the SSC Draft EIS. Probably the comments on "background" and CP&L, Roxboro, are the most important.

13 I 3-67 That CO NAAQS is exceeded in likely not true. See comments on 5.1.3-7.

14 I 4-27 The CO 2nd maximum is the more usual comparison rather than the maximum, probably all states were done this way.

15 I 5.1.3-7 CO values for the SSC contribution at the SSC site appear to have been added to downtown Durham monitoring site "background". The "background" at the SSC site is undoubtedly much lower. Perhaps the same was done for other states.

16 IV 5.5-45 (5.5.4.2) Actually there are State Ambient Air Quality Standards (15 NCAC 2D .0400). The only real difference from numbers in Table 5.5.4-3 is 150 for TSP-24-hr.

17 IV 5.5-45 (5.5.4.3) The data in Table 5.5.4-4 do not reflect all the latest data sent in. Note also Collins & Aikman, Siler City. In addition, CP&L's Roxboro Plant should be added to the list. The omission apparently occurred because the original questions were about PSD sources (which CP&L, Roxboro, is not), and CP&L, Roxboro, never made it on to the list when the questions changed. X1 on the map should be in the upper right corner of the County; CP&L, Roxboro, is approximately where X1 is now.

18 IV 8.4.5.1 B (Table 8-41) The high value for CO 1-hr Total caused by high background is not representative of SSC site. Perhaps this should be footnoted, too. See comment on I 5.1.3-7.

cc: N.O. Gerald

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT

SUPERCONDUCTING SUPER COLLIDER

DIVISION OF COMMUNITY ASSISTANCE

5.5.10.1 Regional Setting

Since the original submission of information regarding land use planning and regulation, several changes have taken place which positively affect the prevention of incompatible land uses near the SSC site.

Granville County has simultaneously prepared both a draft land use plan and a draft zoning ordinance. These documents are currently being reviewed by the public. Two initial public information meetings have been held (September 26 & 27, 1988) and public hearings are scheduled for mid-October. The County Commissioners have publicly stated their intention to adopt both documents in November.

19 The Community of Butner Planning Commission has approved a new land use plan, new subdivision regulations, and a new zoning ordinance in August 1988. These documents now more clearly delineate the boundary of Butner's jurisdictions than previous documents and establish better control over development within their jurisdiction.

Person County is currently preparing a county-wide zoning ordinance. Public review and hearings are proposed for late 1988 with action by the County Commissioners in early 1989.

Durham County and the City of Durham have recently consolidated their planning commissions to form a City-County Planning Board. This new structure will enable the county to more effectively implement their growth controls.

It is recommended that several statements in 5.5.10.1.D and 5.5.10.2.B be amended as indicated in the attached document.

RECOMMENDED AMENDMENTS TO:

Affected Environments at Site Alternatives
North Carolina

(changes in bold type)

5.5.10.1.D. Paragraph 5, pp. NC 81-82

20 Under North Carolina state law, the establishment of comprehensive zoning and subdivision regulations is delegated to either the county level for all unincorporated lands or to incorporated municipalities, such as cities. Counties can issue zoning regulations for either their entire jurisdictions at once as did Durham County (1987), or piecemeal by township, as did Person County for Roxboro and part of Flat River Townships (1983). Person County and Granville County are currently reviewing zoning ordinances that will be applicable county-wide (Person County, Granville County 1988). Durham, Granville, and Person Counties have subdivision regulations in effect. Several municipalities located in the SSC project study area have prepared land use plans and have zoning ordinances and/or subdivision regulations in effect. The community of Butner has recently prepared a land use plan update (1987) and has a zoning ordinance and subdivision regulations in effect. The cities of Oxford, Roxboro, and Creedmoor have zoning and subdivision regulations in effect.

5.5.10.2.B.1. SSC Project Near Cluster Quadrant, p. NC 91

21 The last sentence should be replaced with the following:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

5.5.10.2.B.1.b. Injector Area B, p. NC 91

22 The last sentence should be replaced by the following:

The southwestern portion lies within the planning and zoning jurisdiction of the Community of Butner, and is classified as a rural watershed area. The northern and southeastern portions lie within the planning jurisdiction of Granville County and is designated as rural watershed in the land use plan and zoning ordinance presently under consideration.

225-775 88 - 11 (BOOK 10)

5.5.10.2.B.1.d.2. East Buffer Area and Buried Beam Zone 1 Buried Beam Zone Access Areas J3 and J4, p. NC 92

23 Paragraph 1: The last line of the paragraph should be replaced with the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

24 Paragraph 2 (site J3): The last line of the paragraph should be replaced with the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

25 Paragraph 3 (site J4): The last line of the paragraph should be replaced with the following statement:

The site is privately owned and a land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

5.5.10.2.B.1.e. Near Cluster Ring G ..., p. NC 94

26 Paragraph 9 (site J6): The last sentence should be replaced with the following statements:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

27 Paragraph 10 (site E10): The last sentence should be replaced with the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

28 Paragraph 11 (site F9): The last sentence should be replaced with the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

S.5.10.2.B.2.a. Far Cluster Ring H ...

Paragraph 1 should be replaced with the following:

29 The far cluster quadrant, located in both Granville County and the Allensville Township of Person County, is privately owned, with land use consisting mainly of agriculture and forested land. Some rural residences are found along intersecting minor roads, and several small lakes and drainages are located in the area. One overhead transmission line crosses the arc and another is found approximately 1,000 ft to the north. Generally, the area is sparsely developed and of a rural/agricultural character. **Both Person and Granville Counties presently are considering adoption of zoning ordinances for these areas. The Person County Development Plan and draft Granville County Land Use Plan classify the area as rural.** Areas scattered throughout the quadrant are designated as prime farmland, and the area is expected to maintain its rural character due to a lack of development pressure.

Paragraph 3 (site K3): The last sentence should be replaced with the following statements:

30 **A zoning ordinance for this area is currently being considered by Person County. The Person County Development Plan proposes no changes in use.**

Paragraph 4 (site K4): The third sentence should be replaced with the following statement:

31 **The area is designated as prime farmland and is privately owned. A zoning ordinance for this area is currently being considered by Person County.**

Paragraph 5 (site F5): The last sentence should be replaced with the following statements:

32 **A zoning ordinance for this area is currently being considered by Person County. The Person County Development Plan proposes no changes in use.**

Paragraph 6 (site K5): The last sentence should be replaced with the following statements:

33 **A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural.**

Paragraph 7 (site E6): The last sentence should be replaced with the following statements:

34 **A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural.**

5.5.10.2.B.3.a. Western Arc Quadrant D, p. NC 96

35 Paragraph 1: The fifth sentence (which begins "land use restrictions") should be replaced by the following statement:

A county-wide zoning ordinance is currently under consideration by Person County.

36 Paragraph 2 (site E2): The third sentence should be replaced by the following statement:

The area is privately owned and zoning restrictions for the area are currently under consideration by Person County.

37 Paragraph 3 (site F2): The third sentence should be replaced by the following statements:

The land is privately owned and designed as prime farmland. Zoning for the area is currently under consideration by Person County.

38 Paragraph 4 (site E3): The fifth sentence should be replaced by the following statement:

A small portion of the area is designated as prime farmland, and zoning for the area is currently under consideration by Person County.

39 Paragraph 7 (site F4): The last sentence should be amended as follows:

The Person County Development Plan proposes no land use changes; and zoning for this area is currently under consideration by Person County.

5.5.10.2.B.4.a. Eastern Arc Quadrant D

40 Paragraph 1: The final sentence should be replaced by the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

41 Paragraph 2 (site F6): The final sentence should be replaced by the following statement:

Portions of the site and surrounding area are designated as prime farmland, and a land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

Paragraph 3 (site E7): The final sentence should be replaced by the following statement:

42 The northeast portion of this area is designated as prime farmland, and a land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

Paragraph 4 (site F7): The final sentence should be replaced by the following statement:

43 A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

Paragraph 5 (site E8): The final sentence should be replaced by the following statement:

44 The site is designated as prime farmland, and a land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

Paragraph 6 (site F8): The final sentence should be replaced by the following statement:

45 A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

Paragraph 7 (site E9): The fifth sentence should be replaced by the following statement:

46 A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

DIVISION OF PARKS AND RECREATION

INTER-DIVISIONAL MEMORANDUM

TO: Bill Flournoy

FROM: Carol Tingley C Tingley

DATE: September 30, 1988

SUBJECT: Draft EIS for the Superconducting Super Collider

The Division of Parks and Recreation has reviewed the Draft Environmental Impact Statement for the proposed Superconducting Super Collider (SSC). Our Division includes the N. C. Natural
47 Heritage Program, which inventories and monitors the status of rare species and significant natural areas in North Carolina. The following comments are primarily from the Natural Heritage Program.

Generally, the DEIS is reasonably thorough, and primary impacts are considered. Secondary impacts are not discussed, however. There are two such secondary impacts of concern to us: (1) The moving of the N. C. National Guard from the Butner facility to some other facility is likely, and possible locations which have been mentioned include game lands such as the Sandhills Game Land
48 or Caswell Game Land. Wildlife and the natural environment could be greatly impacted by such a move. (2) Siting of the SSC would likely cause accelerated growth in the Butner area, which is the portion of the study area containing the greatest number of significant natural areas. Although development may eventually impact such natural areas anyway, siting of the SSC would accelerate concerns about the protection of these natural areas. These and other secondary impacts unfortunately appear to be outside the scope of the DEIS and are not covered by it.

Below are specific comments, and the Volumes and Pages to which the comments refer.

Volume I

49 Page 4-46. Terrestrial ecotypes for NC are listed as "Cropland". This is incorrect, based on the listings for the other states. Some forest types should be listed.

Bill Flournoy
Page Two
September 30, 1988

50 Page 4-55. Table 4-17. Harperella has since been Proposed Endangered by the U. S. Fish and Wildlife Service. It is no longer a C1 species. Also, the material in parentheses for the other species (R and C) should be listed as C2 for all these six species.

51 Page 4-56. The paragraph of North Carolina contains several errors. "Marperella" is a typo; it should be "Harperella". This is the same species as "Bishop's weed" on Table 4-18; "Harperella" is the name used by the U. S. Fish and Wildlife Service and thus should take precedence. The N. C. Natural Heritage Program does have population data for all species on Table 4-17 and 4-18 located in the SSC vicinity. A major error is the inclusion of the Coppercheek darter in the North Carolina paragraph. This fish is endemic to Tennessee and is not found in North Carolina (see Table 4-18 on page 4-58). The two sentences referring to the darter should be moved to the paragraph on Tennessee species.

52 Page 4-57. Table 4-18. The footnote categories do not match those in the table. The "S" on the table is "Special Concern". This phrase should be listed in the footnote. The "C1" for several plants in NC should be "PP" (Primary Proposed). Also, the Ancient floater is the same species as the Dwarf wedge mussel (on Table 4-17). To avoid confusion, the name "Dwarf wedge mussel" should be used throughout the DEIS. The name "Ancient floater" appears a number of times in the text. The sunflower is spelled incorrectly; it is Schweinitz's.

53 Page 4-65. The rare plants on the old fields and transition zones occur primarily over circumneutral or basic soils . Some of them have prairie affinities. The second sentence of the second paragraph such be reworded to included this information. The statement about the Roanoke bass is in error. The bass is found in a number of sites from central Virginia to northern North Carolina; it is found outside the SSC area.

54 Page 5.1.2-16. The map on this page, and the same map on other pages throughout the document, fails to properly illustrate Mayo Reservoir. This is a large lake that occupies most of Mayo Creek just north of the SSC ring. These maps show it as a tiny lake in Virginia.

55 Page 5.1.7-5. There is an important typo: NC should be listed as having 593 acres, rather than 393.

Bill Flournoy
Page Three
September 30, 1988

56 Page 5.6-11. The statement in section 5.6.4.3 seems inconsistent with the comments made about impacts in the other six states. Certainly there are some impacts, such as the loss of prime farmland, loss of wetlands, etc.

Volume IV, Appendix 5c.

57 Page 75. The N. C. Natural Heritage Program does have population data for all the candidate species in the SSC area. A sentence in the middle of the page states otherwise, presumably because the information for the page came from the U.S. Fish and Wildlife Service, which does not deal with population data.

58 Page 76. Same comments about a sentence at the top of the page. The NC NHP does have population data available.

59 Page 77. Plant table. "Harperella" is the same species as "Bishop's weed". The latter name in the table should be replaced by "Harperella". Omitted from the table is Echinacea laevigata (smooth coneflower), which is found in the proposed site area and is state protected. This species is listed on page 75, but somehow it is not listed on page 77. There are also a number of small typos on the scientific and common names. A number of typos are present on the animal table, the most glaring of which is the "Neuse River dog" instead of "Neuse River waterdog".

60 Page 144. There is no mention of Hinton (1988) in the References list, but Hinton is cited several times on page 144 and 145.

Volume IV. Appendix 7.

61 Page 53. The map again fails to properly show Mayo Reservoir.

Volume IV. Appendix 11.

62 Page 36. Note again that "Ancient floater" is the same species as "Dwarf wedge mussel". The latter name should take priority, as this is the common name in use by the U.S. Fish and Wildlife Service.

Thank you for the opportunity to review this information.

cc: Chuck Roe
Harry LeGrand

September 22, 1988

MEMORANDUM

TO: Bill Flournoy, Planning and Assessment

THROUGH: Harry Layman, Director, Forest Resources

FROM: Don H. Robbins, Staff Forester DHR

SUBJECT: Superconducting Super Collider (SSC) Project Draft EIS in Durham, Granville, and Person Counties in North Carolina

Project #: 89-0135 and 88-0645
Due Date : 10-4-88

We have reviewed the above subject environmental document and have the following comments:

1. If North Carolina is selected for the project, forestry and related resources will be impacted as follows according to their data.

   a. 1,190 acres of woodland and ecological resources will be disturbed as a result of construction of the actual project.

   b. Approximately 100 acres of woodland would be used for spoils disposal, if other non-woodland sites could not be located. 63

   c. Some woodland for ancillary facilities such as highways, roads, gas pipeline, and transmission lines will be taken up. This could amount to approximately 276 to 543 acres of woodland (assuming that 65% of the area is forested) depending on what is needed for transmission lines and who provides the power.

   d. 186 acres of palustrine forest wetlands would be involved.

2. The 1,190 acres of habitat that will be disturbed for the actual facility could possibly be increased if they have to do more cut-and-cover excavation than what they plan to do for the injector facility. 64

3. It is hoped that the merchantable timber that has to be cut to permit the construction could be salvaged for pulpwood and sawtimber to reduce the need for piling and burning of debris. 65

66 4. The document indicates that precautions will be taken to prevent erosion and sedimentation from damaging the water resources, but I did not find any provisions for protecting the remaining standing trees outside of construction limits from damage by the heavy equipment.

67 5. The document does adequately describe the forest resources in Volume IV, Appendix 5C that will be involved in North Carolina, and it appears that their information and data are correct.

68 6. In North Carolina they indicate the following concerning purchasing of land for the project - 7,950 acres to be held in fee simple estate outright, 7,947 acres to be held in stratified fee estate (this will be an area that is greater than 15' below the ground that is 70' high by 1,000' wide), and 15,897 acres total, not including the ancillary facilities.

7. It is hoped that the U. S. Department of Energy would manage or allow the property owners to continue to manage the existing woodland that is not disturbed by construction over the 7,947 acres that would be acquired as stratified fee estate. It is also hoped that DOE would attempt to manage the woodland that is not needed in the 7,950 acres that they would acquire in fee simple estate.

69 8. The Division of Forest Resources does not wish to stand in the way of progress if North Carolina is the selected site. We, of course, would hope that all provisions could be made to cause the least impact to the forest and related resources during the pre-construction, construction, and operating phases of the project.

DHR/lnc

cc: Technical Dev. Section Chief Fred White, Central Office
Operations Section Chief Dane Roten, Central Office
District Forester Greg Williams, Hillsborough Office

LETTER 1548 (CONTINUED)

North Carolina Wildlife Resources Commission

512 N. Salisbury Street, Raleigh, North Carolina 27611, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Bill Flournay, Chief
Environmental Assessment, NRCD

FROM: W. Donald Baker
Habitat Conservation Program Manager
Division of Boating and Inland Fisheries

DATE: October 4, 1988

SUBJECT: Comments on SSC Project Draft EIS

Vol. I, Page 1-4

70 Water Resources - The proposed SSC in NC will use a large fraction of excess capacity. The Piedmont of North Carolina is having significant problems meeting its potable and industrial water needs during the summer months. Without ensuring minimum flows, may of our aquatic game and nongame species may face serious population declines in the future.

Vol. I, Page 1-4

71 Ecological Resources (Wetlands) - North Carolina faces the third highest wetland loss of the seven states being considered for the SSC. Adequate surveys to determine species diversity in these wetlands have not been conducted.

72 Ecological Resources (Habitat loss: threatened and endangered species) - Authors of the DEIS state that there are no T or E species in the SSC area. Therefore, it cannot be stated as fact that there are no federally listed Threatened and Endangered species in the proposed collider area.

Vol. I, Page 3-28

73 Sewage from campus areas - 6 miles to existing system

From DEM Report number 84-04: "There are presently 2,395 point source dischargers of waste to surface waters in the State of North Carolina. These discharges include both industrial and domestic wastes and are permitted under the National Pollution Discharge Elimination System

(NPDES). At the present time, approximately twenty-eight percent of dischargers are not in compliance with their final permit limits. Forty-six percent of 342 municipal plants are not meeting limits while twenty-five percent of 2,053 nonmunicipal plants are not meeting final limits. As a result, the quality of the State's receiving waters is being adversely affected.... Regardless of the priority assigned for inspections, many plants may go uninspected for years because of limited staff."

This quote from a DEM report indicates that North Carolina has not been able to adequately manage its wastewaters. Therefore, additions to the wasteload in this environmentally sensitive area may harm native wildlife species.

Vol. I, Page 3-28

Waste Disposition: Spoils disposal - 17 sites on 315 acres, all within about 2 miles of the site

74 The depth of the spoils material (up to 20 feet deep in forested areas) will essentially eliminate native wildlife habitat. DOE would need to mitigate this loss. Also, before any spoils material is deposited on these sites, a complete inventory of plant and animal species found at each site needs development. Finally, spoils material must not be allowed to erode into existing waterways.

Vol. I, Page 3-42

75 Quote: "The entire tunnel would be constructed by tunneling in the interlayered metamorphosed volcanic and sedimentary rocks below the water table." There can be no guarantees that local streams, creeks, and rivers will not be dewatered by SSC construction activities during drought periods. Should this happen, many native aquatic species could be extirpated. There are significant aquatic species in this area. They will be described later in this comment paper.

Vol. I, Page 3-52

76 Habitat loss: T and E species

DEIS states that no T or E species habitat loss will take place; however, complete surveys of the area have not been accomplished. Therefore, it is unknown whether T or E species habitat exists in the area.

77 Habitat loss: sensitive communities, commercial and recreational - 1,190 acres disturbed.

This loss needs to be mitigated. All disturbed acres need to be completely surveyed for plant and animal species present.

Vol. I, Page 3-60

Energy: Electric Power - 888,000,000 KWH/YR used during operations; 42,600,00 KWH/YR used during construction.

78 During operation of the SSC, the energy used during a year equals that used by 74,000 households. Depending upon the proportion of electricity generated from coal fired power plants, the plants producing this electricity will significantly increase the loading of pollutants into the atmosphere, thus increasing the threats from acid precipitation and global warming. These impacts have not been addressed in this DEIS. In a state, such as North Carolina, which is already experiencing significant acidification of its rainfall, this issue is extremely important.

Vol. I, Page 3-61

DOE - Committed Mitigations

79 Should North Carolina be chosen as the SSC site, DOE needs to commit itself to completing a survey of the entire SSC area for animal and plant species. Once the surveys are completed, DOE should commit itself to consult with the State to mitigate any problems for State listed species.

Vol. I, Page 3-69

Prime and Important Farmlands loss - 593 acres in North Carolina.

80 North Carolina will suffer the greatest prime and important farmland acreage loss of any candidate SSC state. Given the tremendous global atmospheric changes modeled for the "greenhouse effect," any future prim farmland loss is extremely significant for the state and nation. This loss should be fully mitigated by possible purchase of bottomland acreage along the upper Tar River and along the upper South Flat River.

Vol. I, Page 4-10

81 General Characteristics: North Carolina is the only state listed with three drainage basins associated with the proposed SSC site. As described in the WRC comments for preparation of the DEIS, this area is significant for many reasons. Location of the SSC in this ecologically sensitive area should be fully mitigated by purchase of significant tracts of land along the major creeks and rivers in the proposed SSC area.

Vol. I, Page 4-27

Comparison of Ambient Air Quality Data for Site Alternatives

North Carolina has the highest 1-h average and the highest 8-h average for Carbon Monoxide levels of any other state being considered for the SSC. In fact, North Carolina's 8-h average CO concentration is 50% greater than the National Ambient Air Quality Standards. Additionally,
82 a 3% increase in this 1-h average ozone concentration for NC will result in an exceedence of the national Ambient Air Quality Standards for ozone.

The effects of these carbon monoxide and ozone concentrations on plant and animal species may be significant. Direct and indirect increases in these concentrations from SSC activities are not clearly stated in the DEIS.

Vol. I, Page 4-45

4.7.1 Ecological Resources of the Alternative Sites - states the Piedmont NC site has the most productive ecosystem of all the sites. Also states NC has diverse habitats (edge effect) especially at the borders between croplands, forests, and wetlands. Also states NC contains sensitive and major wetland areas in the vicinity of the SSC site. Page 4-49 states NC occupies a diverse mesic, terrestrial and aquatic ecosystems.

83

> Contradiction: Vol. 4 Ap. 5c of 16 - page 76. The proposed SSC site in NC is located in the middle of the Piedmont physiographic province and no major transition zones are present. Also, states the three different river systems are similar in floral and fauna components and we take exception to this. Also these three systems in the upper reaches are vastly different from other streams in NC by harboring wildlife and fish species not located in other sections of the state. Example, Roanoke bass.

Vol. I, Page 4-49

84 In the discussions of the drainage basins involved in NC, there needs to be a discussion of the rare aquatic animal communities found in South Flat River, Mayo Cree, and the upper Tar River. These communities will be discussed later in this comments paper.

Vol. I, Page 4-51

85 The bottom paragraph does not identify the state. This should read: "The generally rural nature of much of the proposed SSC in NC offers ...". Furthermore, this opening sentence and entire paragraph contradicts paragraph E located on page 5.1.5-41 which states no recreationally important plant or animal species are found in abundance.

Vol. I, Page 4-56 and 4-57

86 The number of state listed threatened or endangered species is associated with each state in this section of the DEIS. It is not appropriate to compare one state with another state relative to T and E state listed species. Some states have just initiated the listing process; while, other states have a more mature program for listing species. North Carolina has just initiated its efforts to list rare animal species, and we have little site specific data for animal species throughout our state. Also, each state has different criteria for listing state threatened and endangered species.

87 During recent weeks, at the request of North Carolina's Department of Natural Resources Commission's Nongame & Endangered Wildlife Program has surveyed creeks and rivers in the SSC proposed site area in North Carolina for the dwarf wedge mussel - a proposed federally listed endangered species known to occur in the Neuse and Tar drainages.

88 During the early 1980s, Dr. Arthur H. Clarke contracted with the US Fish and Wildlife Service to survey the Tar River and other local river systems for the Tar River spiny mussel - a federally listed endangered species. While surveying the Neuse River below Raleigh to the sound area, he could only find Elliptio complanata, a pollution tolerant species. As reported by Dr. Richard Johnson, fourteen species of mussels have been found in the Neuse Drainage during past decades. Therefore, Clarke's findings indicate a serious decline in mussel diversity in the Neuse River below Raleigh.

89 During the WRC's most recent survey activities in the Neuse, Tar, and Roanoke Drainages, survey conditions were poor. The water was a little high and quite turbid. However, a mussel refuge was discovered in the South Flat River in Person and Durham Counties. Eight of the Neuse River's fourteen species were found in the South Flat River. Also, two new species records were discovered for this Neuse River tributary. Therefore, ten of sixteen mussel species known to inhabit the Neuse

River Drainage Basin have been found in the small South Flat River tributary. These were the species found:

Species	Proposed State Status
Fusconaia masoni	Threatened
Elliptio complanata	Common
Lasmigona subviridis	Common
Anodonta cataracta	Common
Anodonta imbecilis	Undetermined
Strophitus undulatus	Common
Villosa delumbis	Special Concern
Villosa constricta	Special Concern
Lampsilis cariosa	Special Concern
Lampsilis radiata	Special Concern

Although the dwarf wedge mussel (Alasmidonta heterodon) was not found in the South Flat River, one cannot assume that it does not exist there. Considering that survey conditions were very poor during the past few weeks and that appropriate dwarf wedge mussel habitat is found in the South Flat River, it is very likely that the species exists in the river. Also, the Carolina madtom (Noturus furiosus), a special concern, endemic fish species was found in the South Flat River.

90 As a group, mussels are extremely important water quality indicator species. Considering the South Flat River's value as a water supply resource for Durham and Durham County, it is in the best interest of all involved with natural resources conservation to manage the land and water resources in the South Flat River to maintain these high water quality indicator species. Any activities, such as siltation or introduction of contaminants could significantly reduce mussel diversity in this area. Also, should the lower Neuse River's water quality improve, the South Flat RIver could be a source of native mussel individuals for restocking the lower Neuse River.

No mussels were found in the North Flat River. Sedimentation is a major form of pollution of this river in Person County.

91 The Mayo Creek, a tributary of the Roanoke River was surveyed above Mayo Lake. Although the creek was quite shallow, four mussel species were found: Lasmigona subviridis, Elliptio complanata, Strophitus undulatus, and a presently unidentified mussel species.

92 No mussel species was found in Dial Creek, and only Elliptio complanata was found in Grassy Creek.

93 During the most recent survey period, conditions were very poor in the upper Tar River Drainage Basin. The water level was about one foot higher than under normal conditions for this time fo year, and the water was quite turbid. Although no dwarf wedge mussels were found near the proposed SSC ring site, two mussels species of concern were found in this area: Fusconaia masoni (will be state listed Threatened) and Lampsilis cariosa (will be state listed Special Concern). It appears that the dwarf wedge mussel is restricted to an area of the Tar River from HW 158 down to the next bridge crossing in Granville County. However, because of the extremely poor survey conditions experienced

during the past few weeks, it is possible that a small population of the dwarf wedge mussel exists near the proposed SSC ring site crossing of the Tar River.

94 One other factor needs consideration relative to the dwarf wedge mussel. We do not know which fish host is required by the dwarf wedge mussel for successful maturation of its young. It is possible that the Tar River in the area of the SSC ring crossing in Granville County is significant for the continued survival of the fish host. If the fish host is extirpated, the dwarf wedge mussel will also be eliminated. Many questions remain to be answered concerning the ecology of the dwarf wedge mussel. We cannot assume that activities downriver from a known population of the dwarf wedge mussel will have no effect upon the population.

95 Finally, all individuals concerned with natural resources conservation should understand that mussel species diversity is declining rapidly throughout the United States. Many mussel species are on the Federal list of endangered and threatened species, and many more will be added in the very near future. This country is faced with the loss of not just species but an entire family of very important water quality indicator organisms if we do not conserve natural resources in such critical refuge areas as the upper Tar and South Flat Rivers in Granville, Person, and Durham Counties.

Vol. I, Page 4-57

96 This table does not specify what 'S' stands for. We suspect that it refers to special concern species..

Vol. I, Page 4-64

97 It is very probable that several natural areas of concern for animal species in the area, in addition to the upper Tar River and the South Flat River, occur in the proposed SSC site area. We cannot identify these areas until through surveys of the area have been completed.

Vol. I, Page 4-65

98 North Carolina, second paragraph, last sentence. The last sentence should read as follows: "It is particularly sensitive to increased sedimentation and alteration of its habitat (riffle-pool).

Vol. I, Page 4-97

99 The authors of the DEIS state that "no intensive survey has been undertaken in the actual proposed North Carolina SSC project area and data are not available to predict numbers of projected locations of cultural resources." Why didn't the authors state the same information for animal surveys for the area?

Vol. I, Page 5.1.1.2

100 The 2.6 to 3.2 million cubic yards of spoils materials will essentially destroy native plant and animal communities in the spoils disposal sites. There needs to be some mitigation of these habitat losses.

Vol. I, Page 5.1.2-2

101 Runoff and Erosion Impacts - Removal of vegetation during preparation of spoils and site construction states "might result in some increased runoff". We object to this wording and suggest that this will result in increased runoff.

Vol. I, Page 5.1.2.17

The construction of roads associated with the proposed SSC site in North Carolina will have significant effects on plant and animal communities - especially aquatic communities. Highway construction has
102 the highest average annual rate of erosion (256 tons per acre) compared with any other land use activity in the State. Siltation of mussel beds is recognized by malacologists as one of the most significant threats to the continued survival of our mussel species. Fish and other aquatic species, such as benthic macroinvertebrates, are also extremely sensitive to siltation. In general, North Carolina is having difficulty controlling runoff from road construction sites.

Vol. I, Page 5.1.2-17

103 It states in paragraph two that they plan to cross several streams for road construction. The above paragraph states impacts from floodplain encroachment on these streams would be negligible. We take exception because these impacts would have detrimental effects upon the Roanoke bass populations in the Flat River from habitat loss.

Vol. I, Page 5.1.2-27

Water Use - bottom paragraph, last sentence. "However, because this increased water use would be well within the existing systems' capacities of available excess water, the increased use is not
104 considered a significant impact". We take exception to this statement and find supporting data in Vol IV, Appendix 5c-5.5.2 Water Resources on page 28. This states information was not always available on specific uses or ultimate delivery sites. Actual amounts of water supplied to each user were available only for half of these and no information on residential or commercial and industrial uses within Butner or Durham was available. Also 5.2-2 in Vol I, III, IV, Appendix 4 states "In North Carolina both direct and indirect water requirements could affect the currently expanding Durham water supply.

Vol. I, Page 5.1.2-27

105 It is not clear whether the SSC would limit its water use activities during drought periods. Without limits, minimum flows may not be possible below Mayo Reservoir, Lake Mickie, Little River Reservoir, and Lake Butner. This is especially true considering the rate of water use increase experienced during recent years in the Research Triangle Area.

Vol. I, Page 5.1.3-8

106 The Vehicle Miles Traveled during the construction of the SSC in North Carolina would be nearly 35 million miles per year, and would be approximately 25 million miles during operation per year. In this area where CO pollution is already a problem, between 300 and 415 tons of CO would be produced from SSC related activities. The effects on people, plants, and animals may be significant.

Vol. I, Page 5.1.5-6

107 North Carolina - See paragraph 2, recommend more desirable plant species than black locust seedling such as lespedeza.

Vol. I, Page 5.1.5-7

108 Flat River Slopes Above Lake Mickie - See paragraph 2. Road construction would adversely impact fisheries habitat in these streams, so what is the mitigation?

Vol. I, Page 5.1.5-11

109 The DEIS states that "there are not federally listed species known to be in the proposed site area." This statement needs to be expanded by acknowledging that adequate surveys have not been completed for the proposed SSC site location in North Carolina.

Vol. I, Page 5.1.5-35

110 Construction Impacts - See paragraph 2 "Conversion of this habitat would be a permanent adverse effect of this project. However the degree of significance to the region, is low due to the relatively small areas impacted, as compared to the habitat available in the region". We disagree with this. This does not consider cumulative and permanent impacts to this area. The first sentence contradicts the second. See 5.1.7-1, second paragraph discusses land use changes from the project. See table 5.1.7-2, discusses lands in fee simple areas which would be destroyed by the project due to road construction. Such construction could prove adverse to fisheries habitat.

Vol. I, Page 5.1.8-16

111 North Carolina will experience the greatest in-migration of workers and their families of any state proposed for the SSC. In an area already experiencing water shortages during drought periods and having significant air quality problems, increased human populations will expand stresses on natural ecosystems.

Vol. I Page 5.1.10-19

112 North Carolina-Spoils - "Spoils are projected to have no impact". We disagree with this statement. Refer to Vol. I page 4-49, see the last sentence of second paragraph, "There are several relatively rare plant communities; the most notable are the Upland Depression Swamp Forests". See Vol 4, Ap. 10.2.3.5 - North Carolina, Table 10.2.3-7 pages 23-24. This table shows close proximity of spoils to these wetland areas. We feel that these rare wetland communities will be impacted.

Vol. IV. Ap. 5, Page 72

113 The authors of the DEIS state that the fauna of the proposed site are typical of the North Carolina Piedmont. It is not appropriate for them to make such a generalization. No adequate surveys have been completed for any animal taxon. Just based upon a limited survey for the dwarf wedge mussel, there is evidence that this area may be extremely significant for the North Carolina Piedmont. Because this area contains the headwaters of three major North Carolina drainages and because water quality is relatively good, many native aquatic species may find refuge in this area. Also, aquatic and terrestrial species from the Mississippi River Drainage may be present in this area as a result of past stream capturing events between the Roanoke and New River systems. Therefore, with more intensive investigation, we may find this area to be extremely species rich and of major importance to our understanding of biogeography.

Vol. IV, Ap. 5, Page 74

114 The authors of the DEIS state animal life is moderately abundant in the flowing waters associated with the proposed SSC site in North Carolina. From the preliminary survey work completed by the WRC, it must be stated that this area, particularly the South Flat and Flat Rivers, are unusually diverse and animal life is very abundant.

During a recent survey of the Tar River Drainage Basin (roughly 10% of North Carolina's area) for the Tar River spiny mussel, no area of that basin had as high a mussel diversity as seen in the South Flat and Flat Rivers. Under ideal conditions, WRC personnel are confident that additional mussel diversity will be found in this area. To put this into perspective, the South Flat and Flat Rivers provide habitat for

nearly a third of the mussel species found along the entire United States Atlantic slope region from the Altamaha River in Georgia to the Potomac River system. Therefore this is an important refuge area for this family of very important water quality indicator species.

Vol. IV, Ap. 5, Page 77

Additional species need to be added to the list of State listed protected animals:

115

Scientific Name	Status
Villosa delumbis	Special Concern
Lampsilis cariosa	Special Concern
Lampsilis radiata	Special Concern
Noturus furiosus	Special Concern

Vol. IV, Ap. 7, Page 55

116 The authors of the DEIS state that "in addition to Knap of Reeds Creek with the campus disturbance in its watershed and close to its channel, Flat River and South Flat River, Dial Creek (all tributary to the Neuse River), and Grassy Creek (tributary to the Roanoke River), all have SSC facilities in the vicinity of their channels." They state that the disturbances could cause a measurable increase in surface erosion and sediment transport. This sedimentation could have very significant negative effects on the outstanding aquatic resources in the Flat River and its tributaries.

Vol. IV, Ap. 7, Page 57

117 The authors of the DEIS state that "impacts to surface water quality caused by the SSC facility in North Carolina may come from surface erosion, channel erosion, pollutant washoff, dewatering the tunnel, and increased wastewater treatment plant effluent. Most of these would be direct result of the SSC development, some may also result indirectly from in-migration of people for the facility." This clearly indicates that aquatic habitats will be impacted negatively and downriver water resources for humans may also be negatively impacted. Decrease of water quality in the Tar, Flat, and South Flat RIvers could result in the loss of outstanding aquatic resources.

Effluent from dewatering of the tunnels may contain harmful contaminants. Plans call for discharge of these waters to nearby streams (or possibly reinjection) after passing through sedimentation ponds. These effluents may be harmful to significant rare species in the receiving waters.

Vol. IV, Ap. 11. Page 3

118 The authors of the DEIS state the "assessment of ecological effects must look at the unique or unusual (uncommon or rare) characteristics of the ecological systems occupying the site...". It is inappropriate to assess this state's attractiveness for SSC construction based upon the numbers or density of uncommon or rare species. No adequate surveys have been conducted for animal species in proposed SSC site area. There is a very high probability that significantly rare animal species, yet to be discovered, exist in this area.

North Carolina Department of Cultural Resources

James G. Martin, Governor
Patric Dorsey, Secretary

Division of Archives and History
William S. Price, Jr., Director

October 11, 1988

MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: David Brook
Deputy State Historic Preservation Officer

SUBJECT: Draft Environmental Impact Statement, Superconducting Super Collider, Durham, Granville, and Person Counties
CH 89-E-0000-0135

We have reviewed the above draft environmental impact statement and would like to offer the following comments.

119 While the document adequately addresses the direct effects of the proposed project upon archaeological resources and historic structures and how to mitigate any adverse effects at this stage of the site selection process, indirect or secondary effects of the project upon such resources have not been considered. It is likely that development in the area of the SSC project will increase as a direct result of project construction and operations. Increased development will result in the irretrievable loss of or damage to archaeological resources and historic structures. Pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended), the entire area of potential effects should be considered.

120 Volume IV, Appendix 4, pp. 25-26, states that the state of North Carolina will acquire from 525 to 935 acres of land for attendant ancillary facilities in support of the Superconducting Super Collider project. The state of North Carolina has also proposed to construct these facilities in support of the project. The draft environmental impact statement does not address the long-term, yet foreseeable, effects of this construction upon historical and archaeological resources, nor does it state whether the state of North Carolina or the U.S. Department of Energy will be responsible for identifying and mitigating any adverse effects upon historical and archaeological resources resulting from this construction. Pursuant to the regulations of the Advisory Council on Historic Preservation, these two issues need to be addressed as part of the Section 106 process and reflected in the final environmental impact statement.

109 East Jones Street • Raleigh, North Carolina 27611
(919) 733-7305

Chrys Baggett
October 11, 1988, Page Two

We would also recommend that several changes be made to the DEIS with reference to historic structures.

121 In Volume I, Chapter 4 under "Affected Environment" (p. 4-97), Chapter 5 under "Environmental Consequences and Mitigative Measures" (p. 5.1.9-3), and Volume IV, Appendix 15, "Cultural and Paleontological Resources, North Carolina" (p. 52), it is stated that an intensive survey of the proposed North Carolina SSC project area has not been undertaken. We believe this is misleading since comprehensive (i.e., intensive) historic structures surveys have been completed in Granville and Durham counties. Person County is the only county in the immediate project area which has not had an intensive level architectural survey. Reference is also made on p. 4-97 to the Bennehan-Cameron Plantation National Register Historic District. This historic district has not been listed in the National Register, although it was determined eligible by the Keeper of the Register in 1978. We suggest that these statements be clarified in the final EIS.

122 A comprehensive historic structures survey of Durham County has been completed since the initial cultural resources information was compiled for the SSC. As a result, several properties were added to the Division of Archives and History's study list for future nomination to the National Register on July 21, 1988, including eight properties located within or adjacent to the SSC project area. Therefore, we recommend that the following structures be added to Table 15-10, "Historic Sites Located in the Vicinity of the Proposed North Carolina SSC Site" (Volume IV, Appendix 15, under "Cultural and Paleontological Resources, North Carolina, p. 50):

Bowling Mill. South side of SR 1471 at Flat River. (Placed on study list July 10, 1986, and omitted from earlier submittal.)

Bowling-Glenn House (Captain W. W. Bowling House). East side of SR 1603, 0.25 mile south of SR 1471.

Copley-Latta House. North side of SR 1471, 0.3 mile west of SR 1607.

Rougemont Village Historic District. North and south sides of SR 1471, east of US 501 (see attached sketch map).

Carrington Farm and Cemetery. West side of SR 1608, 0.6 mile west of SR 1607.

Quail Roost. West side of US 501, 0.2 mile northwest of SR 1615.

Bobbitt-Aiken Farm Complex. South side of SR 1471, 0.25 mile west of Orange County line.

Will Chambers House. North side of SR 1471, 0.4 mile west of SR 1474.

Hill Forest Log Houses. North side of SR 1628, 0.3 mile east of US 501.

The addition of the above historic structures to Table 15-10 increases the total number of historic properties identified within the vicinity of the proposed SSC project area from 54 to 63, and the number of Durham County properties from 6 to 15. These changes should be reflected in the narrative in Volume IV, Appendix 15, "Cultural and Paleontological Resources, North Carolina," p. 45, under 4. Historic Sites. Also in the same section (p. 52, second paragraph) the recently completed comprehensive historic and architectural inventory of Durham County (Sheffield, 1988) should be cited along with the other survey references. These additional Durham County properties need to be evaluated to determine what, if any, effect the SSC will have on them.

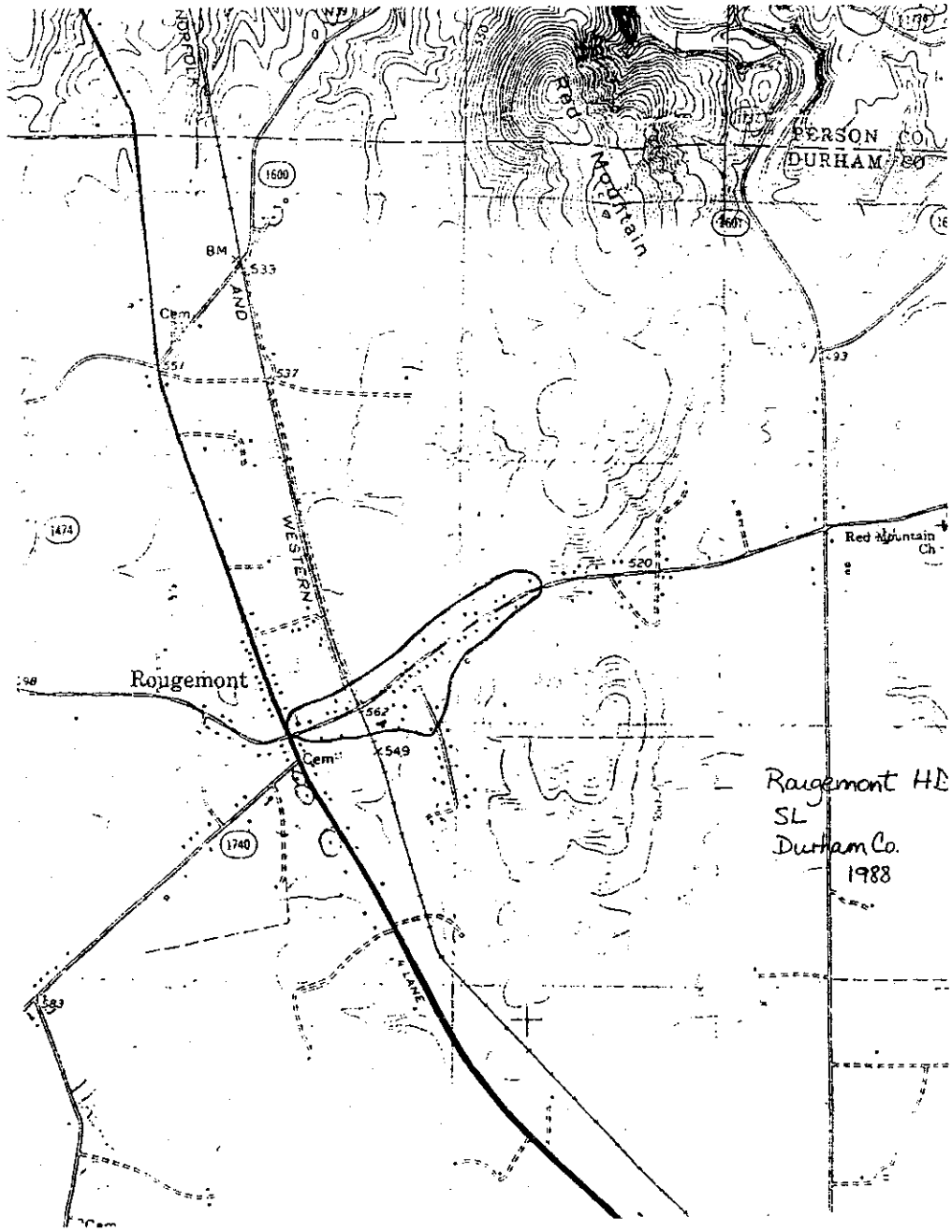
The above comments are made pursuant to Section 106 of the National Historic Preservation Act of 1966, the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800, and to Executive Order 11593, "Protection and Enhancement of the Cultural Environment."

123 Thank you for your cooperation and consideration. If you have questions concerning the above comments, please contact Ms. Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

DB:slw

Attachment

LETTER 1548 (CONTINUED)



225-775 88 - 12 (BOOK 10)

Dr. Wilmot Hess
Page Two
March 14, 1988

124 Although the 1471 Site is above the SSC location and would not flood land over the tunnel, I am concerned that the close proximity of this site (less than 1/2 mile) could prevent the City from constructing this dam due to limits on blasting of rock during construction if the SSC is constructed first.

125 If none of the above concerns would technically prevent the construction of one of these dams, I am still concerned about whether or not the Federal Government would allow land which it owns to be flooded. There also appears to be a potential conflict between access point J-2 and the construction of a dam at Site C, as well as possible flooding of J-2 by a dam at Site A, B or C. Also, there may be a conflict with dam Site B and the southern most Soil Disposal Site.

126 Although I have not yet seen the road improvements which may be planned to serve the SSC, I feel that the EIS and the plans for these road improvements should address the impacts on the City's future water supply developments. I would like to know if the Flat River or any of its tributaries will be crossed by these roads and what would be the elevation of those crossings?

127 I understand that there would be a significant volume of cooling water used by the SSC. Although the cooling water discharges would normally be considered to be non-polluting, I am concerned that the cycles of concentration in cooling towers could result in a 20 fold increase in concentration of such parameters as fluoride in treated water and lead, mercury, chromium and selenium in the raw water used. Information on the water quality of Mayo Reservoir and Lake Butner would be helpful in evaluating this potential problem.

128 Finally, I would like to know if any consideration could be given to using the SSC tunnel as a water supply conduit after it is decommissioned for research purposes. It would appear that the 53 mile tunnel would provide an opportunity for exchange of water between communities close to the tunnel.

Dr. Wilmot Hess
Page Three
March 14, 1988

129 I hope you will consider these comments in the EIS. I would also like to know, what, if any, restrictions the SSC would place on Durham's future water supply plans. Your consideration of these comments will be greatly appreciated.

Sincerely,

DEPARTMENT OF WATER RESOURCES

A. T. Rolan
Director

ATR/cgb

Attachments

cc: Mr. Orville W. Powell, City Manager, City of Durham, 101 City Hall Plaza, Durham, North Carolina 27701
Mr. Donald L. Cordell, Manager, Hazen and Sawyer, P.C. Post Office Box 2875, 2024 W. Main Street, Durham, North Carolina 27705
Mr. William L. Dunn, Board Science & Technology, 116 West Jones Street, Raleigh, North Carolina 27611
Mr. John P. Bond, III, County Manager, Durham County Judicial Building, Sixth Floor, 201 East Main Street, Durham, North Carolina 27701

North Carolina Department of Crime Control and Public Safety

James G. Martin, Governor

Joseph W. Dean, Secretary

October 5, 1988

MEMORANDUM

TO: Clearinghouse

FROM: Nathaniel H. Robb
Assistant Secretary

RE: Draft EIS-SSC

130 This project may have an impact on the use of some or all of the facilities of Camp Butner, North Carolina, by the National Guard. So long as provisions are made to provide substitute facilities for the use of the Guard, this department supports this project.

NHR/ls

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LETTER 1548 (CONTINUED)

County of Durham
PLANNING, ZONING & INSPECTION DEPT.
Durham, North Carolina

October 5, 1988

Ms. Chrys Baggett
Department of Administration
State Clearinghouse
116 West Jones Street
Raleigh, N.C. 27611

Dear Ms. Baggett:

131 This letter conveys specific concerns of the administration for the City of Durham and the Durham County Board of Commissioners on the Draft Environmental Impact Statement for the proposed siting of the Superconducting Super Collider in Durham County, North Carolina. Although these points were included in the public record at the public hearing in Butner on October 3, 1988, by William V. Bell, Chairman of the Durham County Board of Commissioners, and Gerald E. Kelley, Assistant Director for the Durham City/County Planning Department, it is important that the following comments be recorded in the State Clearinghouse process of North Carolina.

132 1. The potential fiscal impact of the SSC is an estimated annual loss of tax revenues of $53,000 from "fee simple" acquisitions alone. A greater financial concern raised by the Draft EIS is the projected need for an additional 154 full time public service employees. Those positions would represent total salary and benefit costs of over $4 million to be split among City government, County government, and the school systems. The EIS does not provide enough detail to calculate costs to each unit of government, but the most efficient means of raising the $4 million for new employees (on the county-wide tax base) would require an increase of more than six cents on the current 65 cent tax rate. If North Carolina is selected, direct aid would be critical in order for Durham County to provide SSC related public services without levying a substantial property tax increase.

Ms. Chrys Baggett
October 5, 1988
Page 2

133 2. Regarding land use regulation, the EIS dismisses regulatory measures as minor adjustments, but in fact Durham County would require rezoning from Rural District to Research and Research Application Districts, submission of site plans for Special Use Permit consideration, satisfy water quality basin standards of the zoning ordinance, and enforce local sedimentation/erosion control regulations for the SSC.

134 3. The City of Durham is evaluating four site locations for a future water supply on the Flat River. What long range water supply implications confront the City of Durham if the SSC is built? (See attached letter dated March 14, 1988, to Dr. Hess from A. T. Rolan.)

4. The following citations from the Draft EIS will require approval from either the Durham City Council or the Durham County Board of Commissioners via policy changes or ordinance amendments.

135 a. In Appendix 10, p. 7, the State proposes sewerage from the far cluster, service area 5, and the emergency service building would be pumped to the City of Durham Eno Treatment Plant.

136 b. Volume 1, Chapter 3, p. 28, the State proposes water be taken from Lake Michie to serve the far cluster, service area 5, and the emergency service building.

137 5. The East End Connector transportation project should be included between U.S. #70 and the East-West (Dean) Expressway to provide a suitable route from the SCC campus to Research Triangle Park and the Raleigh-Durham Airport. This important roadway was omitted from Appendix 14, p. 54.

138 Thank you for the opportunity to share these points, and I trust the Final EIS and the Concurrent Resolution Document in the Final EIS will clarify the issues raised by the City of Durham and Durham County if North Carolina is selected as the designated site for the SCC.

Sincerely,

Gerald E. Kelley
Assistant Director

GEK/dc

March 8, 1988

Terry,

This package contains three maps which show potential inundation levels which might affect the Superconductor Supercollider. They are all copied from the USGS map at a scale of 1"=2000'. They show the normal pool elevation for three dams in the Hill Forest area (sites A,B,C) and the site at SR 1471:

1) The first map shows the approximate locations of the four dam sites at this point of our study. Normal pool elevations are indicated in parentheses.

2) The second map shows the location of site A dam with the inundation perimeter in blue (El. 430.0).

3) The third map shows the location of dam sites B and C with the inundation perimeter marked in red (El. 440 for both dam sites). The blue line shows the water level for the SR 1471 site (El. 452.0).

139

These elevations are not set in stone, but are estimates for normal pool elevations at this stage of our study.

The other site we are considering on the Flat River is at Lake Michie. The normal pool elevation of this dam would be in the range of El. 360-370. This elevation on the Flat River occurs nearly two miles south of SR 1471, and will not impact on the Supercollider site.

If I can be of further assistance, don't hesitate to call.

Sincerely,

MAZEN AND SAWYER, P.C.

Russell Jones

Russell E. Jones, E.I.T.

REJ/vp

LETTER 1548 (CONTINUED)

CITY OF DURHAM
NORTH CAROLINA

Department of Water Resources

CITY OF MEDICINE

March 14, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, D. C. 20545

SUBJECT: SSC EIS Scoping Comments for North Carolina Site

Dear Dr. Hess:

As Director of Water Resources for the City of Durham, I would like to provide comments for your consideration during the above EIS process. The City of Durham is dependent on the Flat River and Little River Watersheds for its municipal water supply. The combined water supply of Lake Michie and Little River Lake is 42 MGD and is projected to meet the water needs of Durham for the next 15-20 years.

Because of the time required to develop a new water supply reservoir, the City of Durham currently has engineering studies underway to identify a future reservoir on the Upper Flat River. THe Upper Flat River area has been considered as a future water supply for Durham for many years. We currently have four dam
140 sites under consideration on the Flat River above Lake Michie.

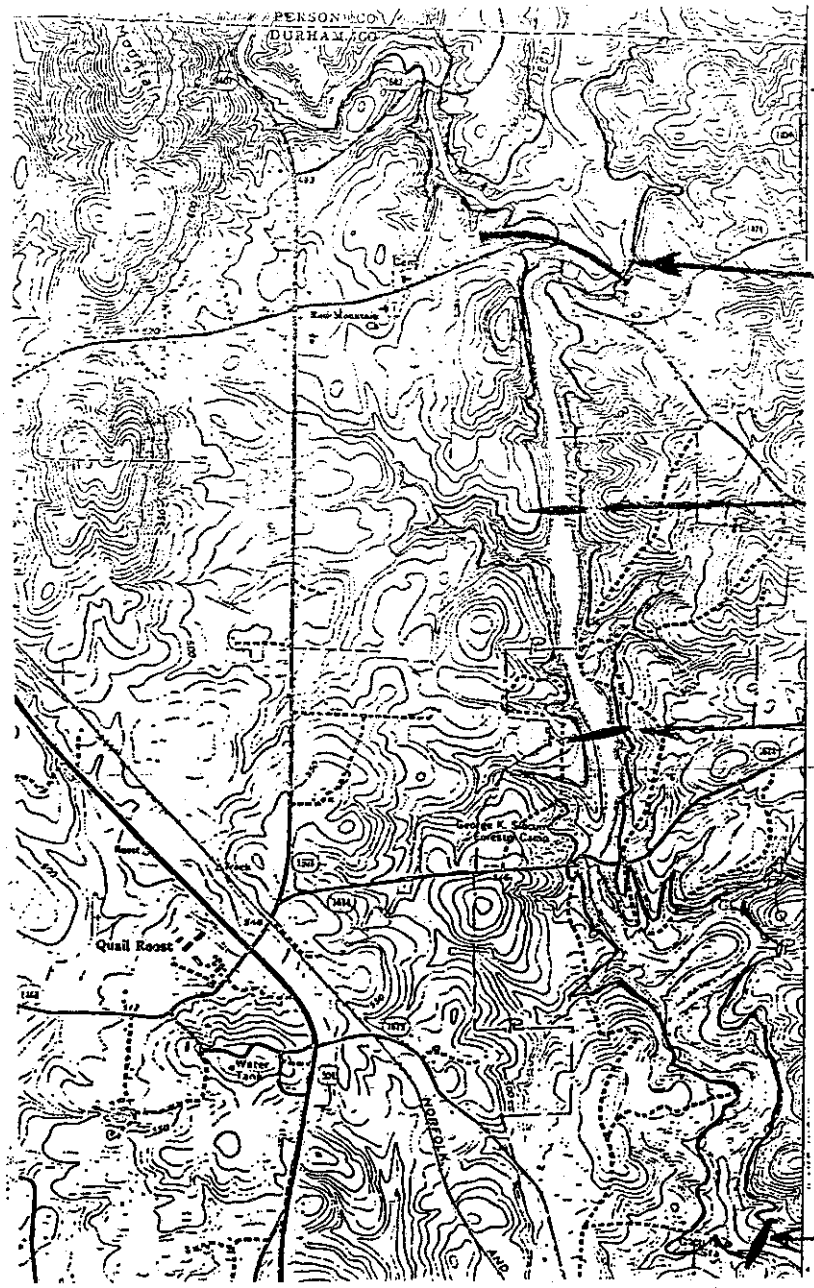
The potential dam sites are shown on the attached copies of USGS maps and are labeled as Site A, B, C and Site 1471. I have also attached maps which show the approximate areas to be flooded by the various alternatives.

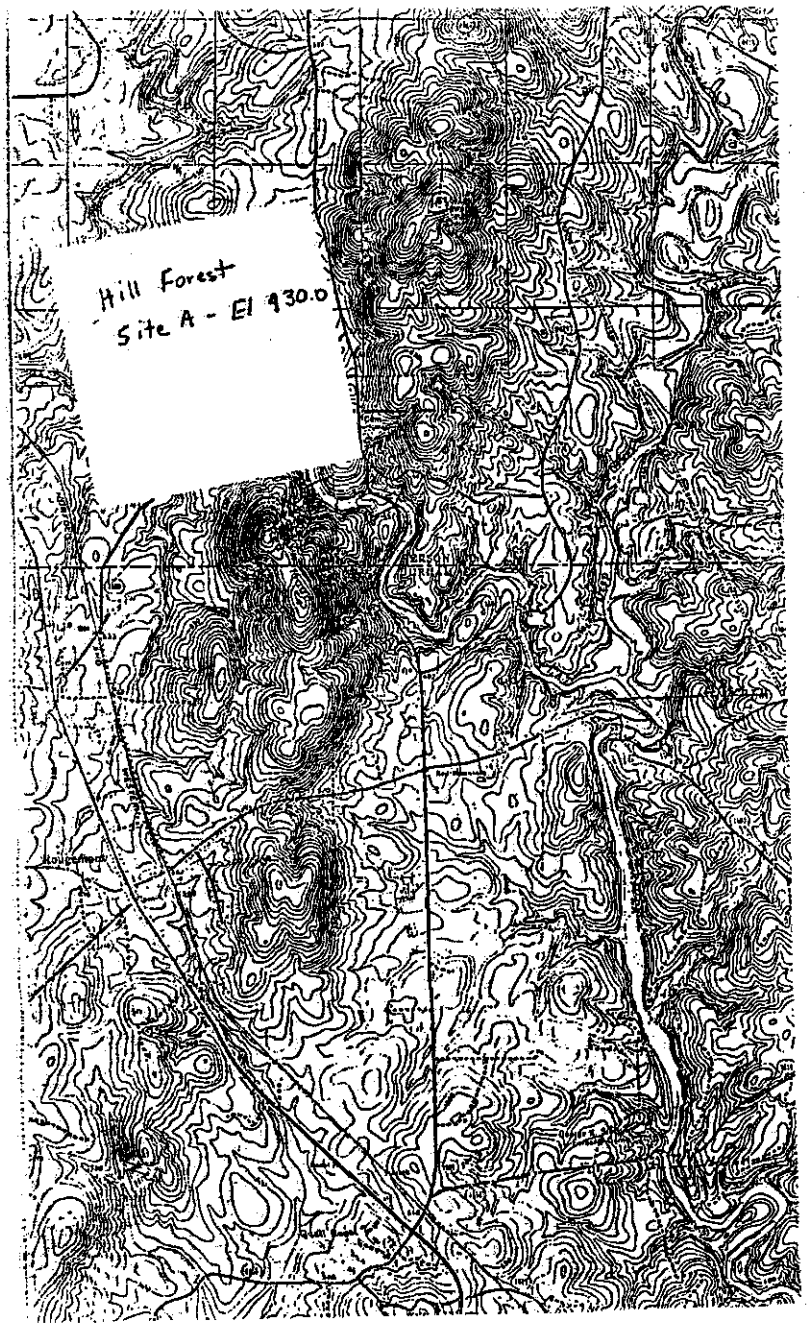
As you can see, if we assume a maximum surcharge of water over the dams of 10 feet, then dam Site A would have a maximum water elevation over the SSC tunnel location of 440 feet MSL. For Sites B and C this elevation would be 450 feet MSL. I am obviously concerned about whether or not any of these alternative water supplies could be developed to serve Durham if the SSC is constructed here.

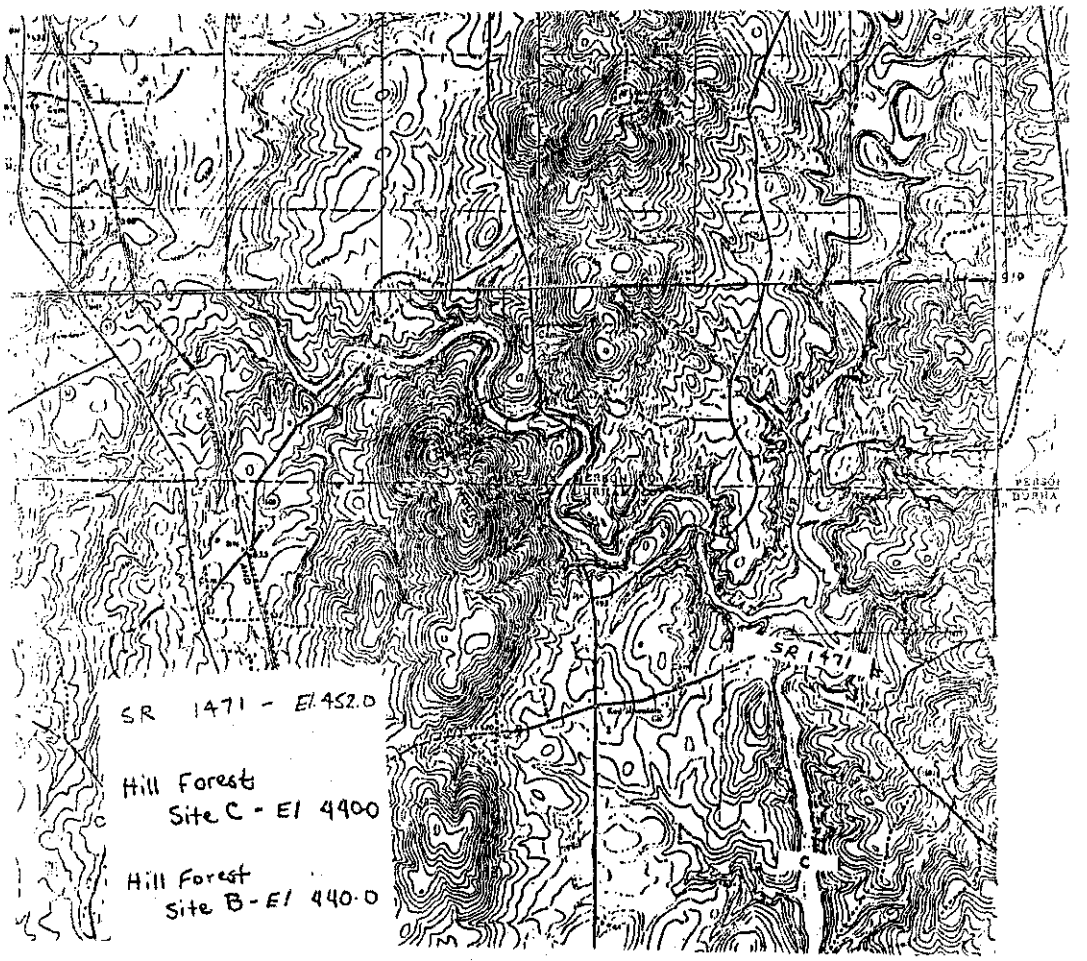
101 CITY HALL PLAZA, DURHAM, NORTH CAROLINA 27701
(919) 683-4381

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

LETTER 1548 (CONTINUED)




Hill Forest
Site A - El 930.0


SR 1471 - El. 452.0
Hill Forest
Site C - El 440.0
Hill Forest
Site B - El 440.0
SR 1471
C
C

LETTER 1549

Betsy and Al Phillips
524 E. Wilson St.
Batavia, IL 60510
October 17, 1988

SSC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Dear Sirs:

There are many factors why the SSC should not be built in Illinois! I have enclosed many articles that show our state is ill suited environmentally and economically for this project in our backyard. 1

While "Big" Jim Thompson has spent his energies trying to woe this project with our tax dollars. Illinois is and has been in a state of decline. His "Build Illinois" program has turned into "Bilk Illinois" - a hugh debt for our children and grandchildren. The Illinois citizens simply can not afford this ill-conceived collider. 2

Let us look at the environment. Some environmental issues include:

1. Health hazard of expanded PCB storage at Fermilab 3
2. Increased nuclear waste storage at Fermilab (SSC) 4
3. The area's water shortage
   a. During the drought, this summer, we had bans on water usage because are pumps were dangerously low. And <u>we can not afford any extra users</u>. 5
4. Illinois ranks 35th in air quality. My home street Wilson is bumper to bumper with traffic during rush hour, giving off a lot of carbon monoxide and noise to a residential area with many children. 6

Also our insurance agent, Chuck Larson (State Farm) said
7 our home would not be covered for any damage done during blasting or digging of the SSC. Our house represents my family's biggest investment and we are left holding the bag.

The area's schools are overcrowded and understaffed. We
8 had a local referendum last spring to help. The state of Illinois was no money.

The people that live in the Tri-Cities (Geneva, Batavia, and St. Charles) came here because of the rural atmosphere and to get away from Chicago. The politicians are trying to
9 make a "high tech" corridor at our expense. We are not going to let that happen! Many citizens and groups are becoming aware that Fermilab is not a good neighbor. The buffaloes, geese, and prairies are fine window dressings to cover up the numerous hazardous environmental problems at Fermilab.

The SSC project doesn't belong in Illinois or anywhere!
10 Please read the enclosed articles and realize that what we are saying is correct.

Sincerely,

Al & Betsy Phillips

Al Phillips Family and Friends

P.S. New York state could not have been wrong!

LETTER 1549 (CONTINUED)

CHUCK LARSON, Agent
Auto - Life - Health - Home and Business

121 So. Batavia Avenue, P.O. Box 37 Batavia, Illinois 60510
Phone: Bus. 312 879-2440

February 18, 1988

Mr. & Mrs. Allan L. Phillips
524 E. Wilson St.
Batavia, IL 60510

Dear Al and Betsy,

Your Homeowners Policy with State Farm Insurance will not cover any damage done to your home due to any blasting or digging in connection with the Super Collider project.

Sincerely yours,

Chuck Larson

Chuck Larson

CC:sae

LETTER 1549 (CONTINUED)

National report

Little decline found in nuclear accidents

From Chicago Tribune wires

WASHINGTON—The number of accidents at nuclear power plants has remained at nearly 3,000 annually in past years, showing the industry is unwilling or unable to improve safety, a study by a consumer group said Monday. Public Citizen said in the study that since the partial meltdown at Three Mile Island nine years ago near Harrisburg, Pa., the U.S. industry has done little to tighten safety standards. The nonprofit, private group said the number of mishaps in commercial nuclear power plants was 2,810 last year, 2,836 in 1986 and 2,974 in 1985. At the end of last year, 105 nuclear plants were in commercial operation against 99 at the same point a year earlier.

Nation

OCT. 88

National report

28 years of nuclear 'incidents' kept secret

From Chicago Tribune wires

WASHINGTON—Serious mishaps over 28 years at a government plant in South Carolina that produces materials for nuclear weapons were kept secret for national security reasons and not reported at the time to Washington by regional officials, Energy Department officials said Tuesday. According to a 1985 memorandum, 30 "reactor incidents of the greatest significance" occurred at the Savannah River facility and were not disclosed to the public. One of the most serious was the November, 1970, melting of a rod used to start an atomic chain reaction, causing radioactive contamination of an adjacent room. The reactors were closed after an incident in August. Energy Department officials have told members of Congress that production will not resume until safety is assured.

IIA.1- 4343

State leads in child abuse rise

Number of cases up 30% in Illinois, 2% in U.S.

TRIB APRIL 6 88

By B. Bruce Dold

Illinois had the nation's largest increase in reported child abuse and neglect cases last year, according to a new survey that suggests the decade-long rise in child abuse in the U.S. may be leveling off.

Across the nation, the number of abuse and neglect reports increased by 2 percent, the smallest rise in 10 years, according to the annual report of the National Committee for Prevention of Child Abuse.

But the report warned that "the continued high number of deaths continues to concern child welfare administrators and advocates. In both 1986 and 1987, an average of over three children per day were reported as fatal victims of child abuse."

The report also contends that many states still fail to provide reliable, valid information on mortality rates.

Illinois had 91,723 reports of abuse and neglect, a 30 percent rise over the previous year. It topped 10 other states that experienced double-digit increases in abuse reports.

The report by the Chicago-based child abuse group was released formally at a press conference Tuesday in Washington, D.C. The projections of abuse and neglect are based on actual figures from officials in 42 states and the District of Columbia who responded to a telephone survey by the committee.

According to the report:

- An estimated 2.2 million reports of abuse and neglect were made nationally in 1987, a 2 percent increase over the previous year. It was the smallest increase reported since 1977-78, when abuse reports decreased by .24 percent.
- An estimated 1,132 children died from child abuse or neglect last year, a 4 percent decrease from the previous year.
- The percentage of adults who say they did something to prevent child abuse has not changed in the last two years, and better educated and more affluent adults are more likely to report suspected abuse.

The projection of child abuse deaths was based on reports from 34 states. The 4 percent decrease in deaths for 1987 followed a 33 percent increase in 1986.

The reports are based on each state's fiscal year, which may not necessarily coincide with the calendar year. For example, 1987 figures for Illinois are the results for a one-year period ended last June 30.

In Illinois, state officials found evidence to substantiate 39,006 of the 91,723 reports. In 1988, Illinois expects to log 95,000 reports, said David Schneidman, spokesman for the Illinois Department of Children and Family Services (DCFS).

The department substantiated 55 deaths from abuse and neglect in Illinois in 1987, a significant drop from the previous year's 79 deaths. But preliminary figures indicate that deaths from abuse and neglect will be higher in 1988, say state officials.

In Illinois and across the nation, experts say the stubbornly high number of reported abuse cases is attributed to growing abuse of drugs and alcohol, more children living in poverty and more teen pregnancies, as well as more publicity about abuse.

The dramatic increase in reports in Illinois also may be owing in part to tougher laws requiring more professionals in child care fields to report suspected abuse, officials said. Several media reports of tragic deaths from child abuse also have drawn broad attention to the problem in the state.

"Illinois has come forward to say, 'We need more services,'" said Deborah Daro, director of research for the National Committee for Prevention of Child Abuse. "It may be that they've really begun to get the message out to the public."

Gordon Johnson, state DCFS director, appealed last November for 1,000 new foster parents, citing the dramatic rise in abuse cases and the need to place abused and neglected children in temporary substitute homes.

Since then, 800 new foster parents have signed up for training, Johnson said. "It has eased the crisis to a great extent," he said. "But with the 30 percent increase in reports, we're still looking for more foster homes."

In Illinois, state and local officials have taken several steps in recent years to improve investigations of child deaths that may have been caused by abuse or neglect, including more comprehensive autopsies under state guidelines.

The child abuse study included a national survey of 1,250 people, which said that 25 percent had taken some step in the last year to prevent child abuse and 13 percent had reported a case of suspected abuse to public officials. A similar survey two years ago found that 23 percent had taken some step to prevent child abuse.

The survey found that people aged 25-49, with higher incomes and education levels, are more likely to report abuse.

"That tells us that we still have to educate the public in general," Daro said. "We need to make these systems accessible to families in all income groups and living situations."

In one controversial area, the survey asked people whether child welfare agencies should investigate all reports of abuse or whether parents should be reported only where there is "clear evidence" of serious harm.

Some parents groups have charged that public welfare agencies have become overzealous in investigating abuse charges and have violated parental rights.

But the survey found that 67 percent believed all reports of abuse should be investigated, while 30 percent said only those cases in which "clear evidence" is present should be investigated.

LETTER 1549 (CONTINUED)

Funds run short for foster parents

Copley News Service

SPRINGFIELD — Parents in Illinois' 9,100 foster homes have been *told they won't be paid for taking care of foster children in* May or June unless the legislature passes a supplemental appropriation in April.

The Illinois Department of Children and Family Services sent the notices in March's foster care reimbursement checks, which *were mailed last week, DCFS spokesman Tom Teague said.*

Teague said DCFS needs an additional $12 million to pay for foster care until the end of the fiscal year.

"If we don't get it, we'd rather not consider what might have to be done," he said.

Last November's reimbursement checks arrived late, but that was because of a cash-flow problem in the comptroller's office, Teague said. *This time, DCFS has run out of money,* he said.

"This is not a scare tactic," he said. "We're being open. We have every intention of paying the foster parents, but we need the supplemental appropriation."

Teague said there will be no delay in reimbursement checks if the legislature acts promptly.

Part of the reason for the shortfall is a dramatic increase in cases of child abuse and neglect, which has resulted in record numbers of children in need of foster care, said DCFS administrator Hector Villafana, who spent the past 10 days walking from Chicago to Springfield to publicize the plight of foster care.

"Foster parents are leaving the system because of the lack of funding," he said.

Spokesman Jo Warfield said that over the past three years, DCFS has cut its administrative staff *by 40 percent and its case*workers handle 80 clients each, twice what caseloads should be.

And even if DCFS chose to pay foster parents by changing its budget, she said, that would still require legislative action.

Even without a tax increase, DCFS's proposed budget for next year allocates enough money to pay foster parents for the entire year, Warfield said.

Schools forecast teacher layoffs

BCN April 6 88

Copley News Service

SPRINGFIELD — A majority of Illinois school districts face teacher *layoffs and deficits next school* year, according to a survey, released Tuesday.

Roughly 88 percent of 669 responding school districts said they will suffer without increased revenues, according to a Illinois State Board of Education finance survey *completed in February.*

About 59 percent of school districts may lay off teachers for next year, the survey showed.

Nearly 54 percent said they would have to borrow money to pay fiscal year 1989 operating expenses, according to the survey.

In addition, many districts said they are in trouble this year.

About 87 percent of the districts *said this year's expenditures* will exceed revenues, and 47 percent said they will borrow this year to pay this year's debts.

There are 981 districts statewide.

"The state's financial problems are eroding local schools' efforts to provide our children with high-quality educational opportunities," state Superintendent Ted Sanders said.

"Without a state tax increase, *our children and our future will suf*fer the consequences of larger class sizes, fewer course offerings and diminishing supplies of textbooks and other materials."

A breakdown of area counties shows the percentage of schools in each county considering cost-cutting and revenue-raising measures this year:

- *Borrow money — Kane County,* 50 percent; DuPage County, 41 percent; Kendall County, 67 percent; and Will County, 64 percent.
- Lay off teachers — Kane, 67 percent; DuPage, 44 percent; Kendall, 67 percent; Will, 64 percent.
- Lay off other staff — Kane, 67 percent; DuPage, 30 percent; Kendall, 33 percent; Will, 57 percent.
- Defer resource purchases — *Kane, 50 percent; DuPage, 44 per*cent; Kendall, 67 percent; Will, 57 percent.
- Ask for a local tax increase — Kane, 67 percent; DuPage, 44 percent; Kendall, 67 percent; Will, 64 percent.
- Increase student fees — Kane, 83 *percent; DuPage, 52 percent;* Kendall, 100 percent; Will, 43 percent.
- Increase number of students per teacher — Kane, 67 percent; DuPage, 70 percent; Kendall, 67 percent; Will, 79 percent.
- Reduce extracurricular activities for next year — Kane, 50 percent; DuPage, 33 percent; Kendall, 33 percent; Will, 43 percent.

IIA.1- 4345

Economically, Illinois given 'average' grades

By Merrill Goozner

Illinois has the resources but is doing only an average job in adopting policies to foster economic development, according to a report released Tuesday. The result is average economic performance—a step up from last year—and a near-failing grade in business vitality.

"Making the Grade: The 1988 Development Report Card for the States," issued by the Washington, D.C.-based Corporation for Enterprise Development, ranked the 50 states in more than 100 fiscal, economic, social and political indexes. The not-for-profit organization then grouped the indexes into four "subject" areas and issued grades for each state.

Illinois got a "C" in economic performance, up from a "D" a year ago. It also received a "C" in development policy, a "D" in business vitality and a "B" in resource capacity. The latter three grades were the same as last year's.

With the exception of Minnesota, the leading states in the study were from the Northeast—Connecticut, Maryland, Massachusetts, New Jersey and Vermont. All received all "A"s and "B"s on their report cards.

These leading states are "investing, directly and in partnership with private industry, in the quality of their work forces, the excellence of their schools, the capacity of their financial networks, the condition of their roads and bridges and water systems, and in all the other building blocks of state economies," said Robert Friedman, president of the Corporation for Enterprise Development.

"Illinois' 'C' in policy signals that more effort and investment is necessary—and possible—if Illinois is to advance in today's economy," he said.

Illinois' worst grades came in those areas considered key to future economic development. The state received an "F" in education policy and an "F" in entrepreneurial energy.

The state ranked 43d in per-pupil spending in higher education, 39th in per-pupil spending in primary and secondary education and has adopted none of the five indicators of education reform measured in the report.

AP Laserphoto

Robert Friedman describes his Washington organization's "Report Card for the States."

They included computer literacy, providing for compensatory education and adopting teacher incentive programs.

"Education is absolutely critical to our future economic health and growth," said Wally Bierman, chief economist at the Illinois Department of Commerce and Community Affairs. "But I also agree with the Il-

See Grades, pg. 8

LETTER 1549 (CONTINUED)

Grades

Continued from page 1

linois State Chamber of Commerce that any time you increase business taxes you hurt your business climate." The chamber is a leading opponent of a state tax increase to support public education.

Meanwhile, one area where the state is putting its resources—a beefed-up effort to foster new business activity—isn't showing results, according to the study. It ranked Illinois dead last among 50 states in entrepreurial energy.

Using data supplied by David Birch of the Massachusetts Institute of Technology, the state had the second-lowest number of new companies per 10,000 existing companies and ranked 26th in the number of high-growth companies.

State economic development officials downplayed the results. "The combinations of these different indexes are quite arbitrary and detrimental to the states," Bierman said. "While the ranges might be quite narrow, there's still a No. 1 and a No. 50."

The Corporation for Enterprise Development began its report card project last year to counteract the widely reported state economic development rankings issued by the Grant Thornton accounting firm. Sponsors of the Corporation for Enterprise Development include organized labor and corporate foundations.

The Grant Thornton report, also issued annually, places a premium on low wage rates and low state and local taxes. It usually ranks Great Plains and Sun Belt states near the top, while the heavily unionized states of the Northeast and Middle West are relegated to the bottom. Illinois was ranked 42d last year.

The Corporation for Enterprise Development report turns the criteria stressed by Grant Thornton upside down. For instance, Illinois' improving grade in economic performance was based in part on its seventh-place showing in average annual pay and its 17th-place ranking in pay growth—indicators that each year keep it near the bottom of the Grant Thornton index.

Despite Illinois' high standing in those subcategories, its overall economic performance grade was held back by its 44th-place ranking in employment, which was based on unemployment, duration of unemployment and job growth statistics, and a 41st-place showing in equity, which was based on poverty statistics and the ratios of black-to-white and rural-to-urban incomes.

Illinois also fared poorly in quality-of-life indexes. The state ranked 32d in crime, 35th in air quality and 41st in infant mortality.

Group urges tax hike to aid poor children

By Jean Davidson

A state tax increase is needed to fund $611 million in education and welfare programs and end the deterioration of services for the poorest children, say leaders of a child-advocacy group.

"We would support a tax increase to generate more resources, with the caveat that taxes be coupled with reform," Jerome Stermer, executive director of Voices for Illinois Children, said Monday.

In a legislative appeal supporting Gov. James Thompson's call for an income tax increase, the group painted a grim picture of life for the one child in five who grows up poor in Illinois. Pointing to Chicago infant mortality rates of 21 per 1,000 live births, a figure twice the national average, and Chicago public school dropout rates of almost 50 percent, the agency concludes there is no time to waste.

If the General Assembly does not substantially increase programs for youth in the spring session, "it will mean we are writing off" children still young enough to benefit from early childhood education and other assistance, Stermer said.

"The cost is high," said Malcolm Bush, vice president of the advocacy agency. "But the cost of not acting in the long term is higher."

The report, "A Children's Agenda," culminates almost a year of study by Illinois business, civic and community leaders. Recommendations include:

- A $400 million increase in funding for elementary and secondary education to bring the state's contribution to 50 percent of costs, fulfilling the constitutional mandate to assume primary responsibility for education. Funding for the Children at Risk early education program should be raised $62 million.
- Raises for welfare families, who have received no increases since 1985. At least $90 million should be allocated to increase grants by 15 percent.
- Expanded day care assistance for low-income families. The Department of Children and Family Services, which currently spends $43 million for day care for 18,100 children from low-income families, should get an additional $30 million.

"We would like to double our day-care slots," said David Schneidman, a department spokesman. "But it's not likely we'll get that money. Our top priority with any new appropriations would be cutting the caseload burden on our staff so that we can do a better job for the children we now serve."

Apr 1988 - TRIB

LETTER 1550

6800 Sundown Lane
Yorkville, IL 60560

October 16, 1988

SSC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Dept. of Energy
Washington, DC 20545

SSC Draft EIS:

What the "Draft Environmental Impact Statement" on the "Superconducting Super Collider" says is OK. It's what it doesn't say that's so bad. It does not address the following 3 concerns:

1 1. The safety of Fermilab should have been examined. The safety of Fermi is a necessary but not sufficient condition to guarantee the safety of the SSC. Specifically, the safety of Fermi was not demonstrated in the following ways:

2 a. It should have been approved by Underwriters Laboratories. The U.L. organization is very effective in finding what, if anything, is wrong with something from a safety viewpoint. The same applies to the SSC. If it's going to be shooting 40 trillion volts of hot protons 300 feet below people's living rooms, it should be subject to the same safety standards that apply to the electrical devices in those people's homes.

3 b. A study should have been made of all people living within ten diameters of the Fermi ring, to see if these people have any health problems that are significantly different from the general population. Special emphasis should have been placed on looking for growth abnormalities, such as pregnancy complications, birth defects, cancers, etc., but the study should not have been limited to only these problems.

4 c. A study should have been made of all animals that died after living inside the Fermi ring, to see if they died of natural causes. This is something that should have been done on an ongoing basis since day-one at Fermi.

5 d. A study should have been made of field mice living inside the Fermi ring, by catching a statistically significant number of them, and doing whatever is necessary to determine if any have cancers or other abnormal health problems.

6 e. A study should have been made of bugs living inside the Fermi ring, to look for mutations or other abnormalities. Nonflying bugs, such as ground ants that have lived for several generations inside the ring, would have been best suited for this study.

7 f. A study should have been made of plants living inside the Fermi ring, to look for mutations or other abnormalities.

2. The risks and dangers from catastrophic things going wrong with the SSC were not addressed. EIS Volume I 5.1.6-17 says "The most serious accident that could occur in the category of safety hazards is a fire in the tunnel.". Whoever wrote this doesn't have a very good imagination.

   EIS Volume I 1-1 says "... discoveries resulting from the SSC may lead to benefits that are impossible even to envision.". The phrase "impossible even to envision" applies to the results of the SSC experiment. This means that no one knows the results of this experiment in advance - good or bad.

   We all know about converting matter into energy. We currently know of 2 ways to do this - fission and fusion (as in A-bombs and H-bombs). Since we already know of 2 ways to do it, it is reasonable to assume there may be other, as yet undiscovered, ways to do it.
8 Since the results of the SSC experiment are "impossible even to envision", one might speculate that the SSC could quite unexpectedly discover a new way to convert matter into energy. We suddenly have the possibility of a much more serious accident than "a fire in the tunnel". If this new discovery is made, will there be anyone left at the SSC to write down the formula?

   I predict this won't happen, but, once you accept the possibility of an unanticipated conversion of matter into energy, an even worse scenario becomes possible. This would be the triggering of a self-sustaining chain reaction that propagates at the speed of light, converting the entire mass of the earth into energy in one cataclysmic event. This would have an "environmental impact" on the moon, which would probably go shooting like a cannon ball out of the solar system. In this case it doesn't matter which state gets the SSC "plum".

   Many other different events can be envisioned, that are much worse than "a fire in the tunnel", and these don't include those that are "impossible even to envision". It's absurd to bury your head in the sand, as the Draft EIS has done, and pretend there are simply no risks greater than a fire in the tunnel.

3. The question of environmental impact from SSC sabotage was not addressed. The SSC could come under attack from organized terrorists, angry local residents, or even juvenile vandals. What
9 would be the environmental impact if this happened? Everything from bullet holes in the helium tanks (or trucks) to coordinated dynamite sticks down the tunnel access shafts should have been examined, as to its possible impact on the SSC, its employees, nearby residents, schools and homes over the tunnel, air & water, etc.

I have the following additional comments on the SSC:

Why should we believe the Department of Energy (DOE) that the SSC will be safe, when this same DOE allowed 350,000 pounds of uranium dust and other radioactive waste to leak from the Fernald nuclear plant near Cincinnati, causing cancers and deaths among area residents? Why should we believe that the DOE will operate a safe SSC, when they had full knowledge of the above safety problems for 3 decades, but failed to take corrective action because of "budgetary considerations"? According to recent Senate testimony, the DOE has also failed to use proper security at some of its other research labs. Are we so naive as to believe that the DOE has suddenly reformed, and there are no longer any "budgetary considerations", just in time for the SSC? 10

Illinois isn't the only state where there's strong local opposition, but, I interpret the figures in EIS Volume I Table 8.1 (showing Illinois with well over 3 times the number of "Interested Persons" as the next closest state) to mean that Illinois is the state with the most & strongest local opposition.

I wrote both Illinois U.S. senators letters of opposition to the SSC in Illinois. Both sent back form letters, thanking me for my support for this great project, which they also support. Do not believe any figures coming from these senators, on the amount of "grass roots support" they have measured in favor of the SSC in Illinois.

11 I'm not a member of CATCH, but I certainly agree with their position. I was glad to hear them say they plan to use legal litigation, taking it all the way to the Supreme Court if necessary, to stop the SSC from being built in Illinois. This should hold the SSC in the tar pit for a long time.

The risks of the SSC should be borne by those willing to accept them, and not by a lot of unsuspecting innocent people, or even suspecting innocent people, down whose unwilling throats the SSC has been crammed.

If the U.S. can afford it, the SSC should be built, but NOT IN A POPULATED AREA, and this means NOT IN ILLINOIS.

Sincerely,

Hal Lowe

Hal Lowe

cc: CATCH Illinois

LETTER 1551

Mabel R.Ross
327 Chestnut St.
Batavia, IL 60510
October 17, 1988

SSC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Dear Sirs:

It is inconceivable that DOE has not realized that you really owe the U.S. citizens and taxpayers of this country an accountability and responsibility for the use of atomic energy.

Why shouldn't we fear the dumping of atomic particles at Fermilab and other DOE facilities? Do you really care about the environment - radionuclides in the drinking water from
2 tunnel seepage or low area water tables because of the SSC usage (over 3 million gallons daily)? The SSC will be a water "hog" and a danger to a heavy populated area's drinking water. Maybe some cities will have to sue DOE? But in the end the local residents and taxpayers pay for your "toy".

Where is the future funding for the SSC coming from? What about those communities already "raped" by DOE plants?
3 The news reports that it will cost hundreds of billions to clean up these polluted plants. The SSC will be more of drain on the DOE budget! DOE should clean up its act before it begins to play with the SSC.

Sincerely,

Mabel R. Ross

Mabel R. Ross

LETTER 1552

P.O. Box 1125
Asbury Park, NJ 07712
October 15, 1988

U. S. Department of Energy
Washington, DC 20545

Attention: Mr. Ernest C. Baynard, III
Assistant Secretary Environment, Safety and Health

Subject: Draft Environmental Impact Statement (EIS) Super Conducting Super Collider (SSC)

Dear Secretary Baynard,

1 Please register in the EIS the undersigned as being in opposition to the construction of the Superconducting Super Collider as presented in the EIS.

2 The construction of the SSC is of great concern to the residents and property owners of Tennessee. The greatest concerns are about the adverse impact on peoples health, safety, and welfare that the SSC will cause while being constructed and operated above and under the earth.

Sincerely,

Thomas B. Floyd

Thomas B. Floyd

Michael - 10/19
Late-blooming comment per our conversation - Janet

10-22-88
* D.J.
Please log and route through the system.

IIA.1- 4352

LETTER 1553

Oct 15, 1988

DR Wilmot Hess
SSC Site Task Force
ER-65 / GTN
Office of Energy Research
US Department of Energy
Washington DC 20545

Dear Dr Hess,

As a member of the Illinois SSC Citizens Mitigation Advisory Task Force I wish to submit this report and include it in the Final EIS. We did not receive the final report on time to submit. Therefore I have made minor changes on this document. Make sure all of these comments are addressed.

1

Carol J Bayer

Carol J. Bayer
45 Stirrup Cup Ct
St Charles Il 60174

Atch: Report

IIA.1- 4353

225-175 88 - 13 (BOOK 10)

DRAFT

INTERIM REPORT

October 4, 1988 including
October 11, 1988 revisions

At the September 27 SSC Citizens Mitigation Advisory Task Force meeting the group broke into three subgroups for the purpose of raising issues specific to each county. On October 4 the task force met in county groups again and reviewed are interim draft prepared by Linda Cooper, the group facilitator that integrated the first set of notes from each of the county groups.

What follows is a second draft reflecting the additional comments from each of the county groups. The content was developed after three task force meetings where a total of nine hours was devoted to the development and refinement of issues. In general the issues and items from the notes appear to fall into several categories:

1. The identification of oversights, omissions or unclear information.

2. Mitigation measures.

3. The further detailing of issues to take simultaneous impacts into account.

At the October 4 meeting, the Kendall County and Montgomery people added land acquisition, blasting and well add acquifer issues to the list.

In Dupage land acquisition issues were the top priority. They suggested use of local point of contact for residents to get answers to questions and resolve problems related to land acquisition and relocation. After further discussion at the October 4 meeting the DuPage folks suggested that a committee or "office of mitigation" with a role similar to that of an ombudsman be created. They further suggested that an impartial body be established to hear citizen complaints, and that body be equipped with funds and authority to determine and award appropriate remedies in cases where people are adversely impacted. Furthermore, they suggested that when construction contracts are let for bids, a condition of the bid (written into the specifications) include a requirement that bidders provide mitigation proposals

Among these same lines the Kendall County and Montgomery people suggested a Mitigation Review Board be established to provide a vehicle for citizens redress and general protection. They thought this review board might be comprised of county officials and citizens. They thought this idea was a form of local recourse in the context of the federal and state land acquisition rules.

With regard to property values the DuPage group felt a premium of $22,500 and moving allowance was appropriate. The group suggested that the condemned houses be donated to organizations helping the homeless and the needy. Finally they urged flexibility in specific site location points for example, where possible adjustment should be made in the location of access shafts to preserve historic sites or particularly important private pieces of property.

acquisition if the western campus is not constructed, i.e., prime farm land and old structures in Kaneville such as the 120 year old blacksmith shop, the oldest in Illinois and 100 year old farm houses.

Another issue raised in this context is a request to have identified by U.S. DOE all the possible land acquisition implied for expansion, such as the railroad spur to Kaneville. The land requirements in the State of Illinois land use maps do not reflect the stated use of the Kaneville area. As now written the State intents to have ponds in back of the high school and take more land.

Similarly, DuPage queried whether or not additional shafts will be necessary for construction. Concern that "surprise" shafts may result in loss of additional surface areas was the root of the concern.

The Dupage County group ranked blasting second in priority consistent with their time dependent criteria for ranking the issues. The Kendall County group did not initially discuss blasting, but at the October 4 meeting the Kendall and Montgomery people suggested pre and post blasting inspection of area homes to determine if blasting actually caused any adverse affects might serve to protect citizens who might be affected and prevent abuse by some who might try to take advantage of the situation.

Kane County linked noise and blasting together. The Kane County discussion included the effect of noise and blasting near live stock and thoroughbred horses in confinement. They pointed out that there are an estimated 4,000 head of cattle, 2300 head of pigs and several horse breeding operation which would require relocation during blasting near F4, E5, E6, E7, and E8. (See DEIS page 49.)

Dupage's discussion of blasting included a proposed mitigation strategy that would compensate affected people for nuisance value as well as for potential losses of sensitive equipment for example. They felt advance notice of blasting was appropriate and in general the State should insure for economic losses caused by blasting.

The Kane County Group identified where truck traffic might impact on schools and other areas of activities such as Dunham Road, St. Charles High School E5, Lilylake School, E7, and Kaneland Schools especially on Dauberman Road. They questioned whether Dauberman Road would be open for general use for routing children from Kaneville and Sugar Grove to school. It is now the primary and only artery. They suggested that the need for new roads,

will affect the environment According to a 1978 Kane County Natural areas inventory, this road development would go through a natural area developed by the Forest Preserve (located north of Jericho Road, S.E. of Camp Dean Girl Scout Camp). In addition it was noted that Camp Dean Road is heavily traveled seasonally by families transporting scouts to camp. Based on this analysis they felt this may also necessitate a railroad crossing from Rt 30 to gain access to F4. The truck route discussions are identified as examples of localized routing preference. They further suggested that the routing of trucks not include: Main Street in Kaneville, Dunham, and Rt 25 or County Club Rd in St. Charles. They suggested Francis Road to Rt 38 as an alternative route to avoid Kaneland Schools. Blackberry township, Kane County, in a separate communication indicated a citizen concern about road upgrades and safety featrues such as left turn lanes, intersection illumentation and demand traffic signals along Route 47 from Waubonsee Community College north to Elburn. Also they are concerned about the condition of the Harley Road railroad overpass, this is the only overpass between Randall Road and Route 38 at Meredith Road. Present plans

The Kane County group also noted map omissions such as St. Charles H.S. and Norris Recreation Center plus a new home development of 1000 homes near E9 suggesting a portion of dense population may have been overlooked. Concern was targeted on the impact of noise on the Kaneland School E6 and the Waubonsie Valley School.

Noise was not raised by the other counties as an issue of concern.

Fear of radiation exposure from radioactive waste was identified by the Kendall County/Montgomery group. It was suggested that many people don't understand low-level and high-level radioactive waste regulations and handling but fear that at decommissioning the tunnel may be attractive place to store radioactive waste. The group acknowledged the state environmental assessment Volume 3, page 72, characterization "lack of suitability" to describe why this use would not take place, but questions were raised concerning what it might take to go from "unsuitable" to "suitable".

The Kane County group's discussion of radiation included the acknowledgement of the dangers associated with radiation, and its cumulative effect as the basis of their concern. In this regard fear of beam loss, the basis for the 10mrem calculation, the radiation implications of a beam loss through a shaft site, and the potential impact of electromagnetic fields on humans were all identified as also of concern.

On the subject of waste the group's distrust of the federal commitment to ship wastes to an appropriate wast facility was expressed by a request for a commitment document that specifies a location for the waste and a storage limitation of 60 days on site. The motivation here is to assure that the regional bad experience with an industrial site in West Chicago is not repeated. The group also feel that the same kind of commitment should be made for mixed waste.

Specific concern for Big Rock Drainage District 2 consisting of 3000 acres of watershed was expressed. The group suggested that this area was not included in the discussion of surface use. Concern about tile disruptions as a result of the proposed Kaneville sewage treatment plant and SSC waste water discharge would cause Welsch Creek to rise, and affect the area septic fields. field drainage. The tile system currently drains field acreage and the communities of Big Rock and Kaneville.

In the general category of safety, several concerns were raised. The Kendall County, concern was focused on the question of fire and the ring. The fear of explosion underlies the question of whether the size and scale of the ring magnifies any impacts. Kane County members expressed concern about security at the E and F sites and whether the aesthetics enable security at each location. The Kane County group also noted several gas pipelines near the K3 sites that were not identified on the state map. Elaborating on the issue of the gas lines parallel to Dauberman Road along the entire length of the "far cluster", the group identified four lines that are under high-pressure, three measuring 24" and one 36" in diameter located .3 to .4 mi. from several access points along Dauberman Road. They also identified low and high pressure lines adjacent to St. Charles H.S. and through the Fox Chase Development, leading directly to the E9 site.

The Kane County people disagreed with the state conclusion (Volume 3) that area fire and police protection was adequate.

While there may be a difference in the assumption of risk at the basis of the disagreement, the Kane County people indicated that the Western Kane County communities rely on county provided services. They noted that much of the fire protection to towns around the ring is provided by volunteer departments (some of which will loose tax based revenue such as the Kaneville

Fire Protection District). The recommendation is that the state should address the issue of funding, training, man power and equipment for fighting fires and explosions at locations on the ring which have liquid helium and nitrogen plants and storage. At the present time the firemen are neither trained or equipped to handle this situation. This is made worse in Batavia because they will lose 10 percent of their tax income to Fire Protection District. If the town and fire protection districts are not going to fight the fire at these locations what is DOE going to do to protect the neighbors of these locations.

Air pollution concerns were raised by Kane County noting the non-attainment status of the general area of ozone and carbon monoxide and excession of standards for suspended particulate emissions for the construction phase.

Kane County folks recommended that the Department of Conservation target extra grant money to the county to mitigate stress on community and natural resources and needs be anticipated with forsight.

DuPage County group's single comment on the subject was the recommendation to use Fermilab's temporary storage capability.

The subject of water and drainage arose in all discussions. The Kendall County group questioned sedimentation impacts. Adding to their previous discussion, the Kane County group operating under the assumption that significant silting of the aquifer will also occur, and water loss will occur questioned the availability of water for live stock demands and others affected by water loss. DuPage County members identified the impact on the water table and private wells as key and suggested contamination protection. The Kane County group suggested a variety of potential impacts concerning water supply and contamination and suggested that a definition of an "affected well user" be developed. They suggested a definition for a radius of responsibility for water supply be established as well, and a methodology by which people can document water loss should it occur, during SSC construction. Additional discussions about water focused on the discrepancies between the state assessment and the federal DEIS and the federal emphais on ground water supply. Illinois states that from 6 to 31 wells will have to be relocated (page 49, Il. Volume 3) whereas the US DOE states that 320 wells lie within the zone for the ring (DEIS Vol. I, Ch. 4-21). Illinois does not identify and concerns to the ground water supply, yet the DOE states throughout the EIS that Illinois will experience local water level declines and aquifer overdraft which "...would be measurable at the regional level and of long-term consequence". Further it state "...that the impact cannot be effectively mitigated within the time frame of the project." (DEIS Vol. I, Ch. 5.1.2-28-29.) The statement by the DEIS that these overdrafts and significant depletions "...would recover once water withdrawls cease." (after the 25-30 year operation.) This is of little consolation to people in Kane County who need the water in their late time. This need to be addressed

include closing this road (the overpass is a narrow wooden structure) as a through route to Route 38. Repair is beyond the township's ability to fund from present sources. (The full letter was sent to the Illinois Department of Transportation

The Kane County people suggested that the railroad Spur from Big Rock to Kaneville be located on DOE property rather than taking more farm land for this transportation purpose. Furthermore, they suggest the railroad crossing over Rt 30 should be constructed as an overpass or underpass instead of a surface crossing. Route 30 is a high-traffic road which would have safety compromised by another surface railroad crossing.

In the area of socioeconomic impact the issue of loss of local tax base was raised in the Kane County group and among the DuPage group members. In the Kane County discussion the loss of tax base especially the estimated 10 to 11 percent to Kaneville and the impact on the Kaneland Schools was of concern. After further discussion on October 4 the group decided that raising tax rates, one of the state mitigation options, was an inappropriate mitigation strategy. The DuPage group viewed loses of homes and businesses as displacement not tax base elimination and emphasized the offset in other revenues as outlined in the Draft EIS. They considered the 1989 loss at 1.3 million as estimated in the DEIS Volume IV, Appendix 14 as minimal if placed in the context of the anticipated longer term benefit.

As was indicated earlier, the Kane County group linked noise and blasting. (See discussion of blasting). Other areas of noise concern were related to background noise levels that may have been overlooked such as the noise associated with proposed expansion in a traffic at DuPage and O'Hare over Aurora Control Center. The incremental additional noise of the truck traffic in this context was raised as an issue.

DuPage ranked hauling next on there list. Included here is the issue of excessive dust induced by truck traffic. The impact on Warrenville Road and the excessive dust resulting from N-S Toll road construction are already preexisting issues. Thus they suggest special access roads for trucks, the use of a maximum number of sites to dispose of spoils and the closest sites that would reduce truck mileage. The DuPage people further suggest avoiding rush hours for truck traffic and avoiding residential areas to the extent possible. To avoid traffic congestion they recommend advance planning, i.e., putting roads in before construction begins. Gridlock is already common place in some areas. Advance planning would assist in avoiding furtner gridlock. There is a need to review future plans on the books and determine the impact of the SSC. Both Kendall/Montgomery and DuPage emphasized enforcement of covered trucks during spoil hauls.

Kendall County and Montgomery people ranked traffic congestion and spoil disposal one and three in the prioritization. Kendall County is rapidly growing and traffic is increasing. The two bridges (south of Aurora) across the Fox River will not accommodate truck traffic thus Rt 34 for construction routing is important but was not among those roads targeted for improvement. The whole area is not targeted for a road change for another ten years. A 1990 transportation study is needed. Also there was concern about hauling from populated areas to non-populated areas potentially transferring impacts from one area to another. They felt it was important to know where the 17 spoils sites mentioned by the state team were located. It was suggested during the state briefing at the September 22 meeting that spoils did not necessarily have to be removed at every access shaft. The Kendall/Montgomery people suggest equitable distribution of the impacts of spoils removal and hauling be a factor in planning. They also questioned what was included in "disallowed activities".

The Kane county group on the issue of property and land acquisition has suggested arbitration be a part of the process. They suggested ammending the 1985 Illinois SSC Act in this regard. The specifics would include a minimum of three independent appraisers, one selected by owners, one by the state and one by the appraisers.

In this regard the Kendall County and Montogomery people at the October 4 meeting discussed the basis for determining fair market value. They discussed the classic difficulty of the tax assessment value being below market value and the citizens caught between the historic desire to keep tax assessment value low and then at sale selling at higher values. The desirability of out of locale appraisers was discussed. One member who is particularly knowledgeable in this area suggested that if she were selling her home, she would get a higher appraisal for her home (which is not affected here) if her appraiser came from Chicago or Naperville than if he/she came from the local town. The issue was left unresolved but will be addressed further at subsequent meetings.

Thus the question of who the independant assessors will be and how they will be choosen was raised as an important issue. Some fear a state policy of "bargain basement prices" for land acquisition will prevail, thus the interest conceptually in the review board. The mitigation concept raised by the DuPage people was motivate by a slightly different and broader question...whether or not after selection the state and the federal government would have a continuing interest in mitigation. In other words, will mitigation be reduced in priority after the SSC is awarded.

The Kane county group emphasized the importance of the state making good on the promise to negotiate the need for the western campus with USDOE. They also emphasized the state commitment to spare homes and the town from land

Initially two out of the three counties prioritized the issues but did so in different ways.

The Kendall County and Montgomery people tended to prioritize the issues based on an understanding of the general concerns expressed by their communities. The DuPage people prioritized the issues on the basis of time dependency--for example, land acquisition is the first action after site selection, thus land acquisition is the first item on the DuPage list.

As of this writing the Kane County group has not ranked the issues they have raised, but may do so. To preserve the integrity of the individual groups decisions, the following represent the issues as ranked by the Kendall and Dupage County task force members as of the September 27 meeting.

Kendall (& Montgomery)	DuPage (Time Dependent Order)	
Traffic congestion	Land acquisition	
Radiation and waste disposal	Blasting	
Spoil disposal	Hauling/spoil disposal	
Property Values	Loss of local tax base	
Visual/Aesthestics of surface facilities	Electricity rates	
Impacts of induced growth:	Groundwater	
infrastructive planning &	Radioactive waste	Considered
financial planning	Loss of farm land	non-issues
	Wildlife	for DuPage

LETTER 1554

Letter to the editor

SSC is bad for Illinois

Editor, The Beacon-News:

The Superconducting Super Collider will not be good for Illinois; Citizens Against the Collider Here has proved this on numerous issues.

Our wetlands will be endangered and our ground water, our wells, will be compromised, and there will be dangers from the beam-abort areas and exploding magnets, not to mention seven years of dump-trucks, dynamite and drilling.

Despite this, the politicians hold their ground and ignore reality. Who are the politicians representing?

In light of the devastating effects of siting the SSC in Illinois, it obviously is not the Fox Valley.

In the book, "Poliscide," by Lowi and Ginsberg (Macmillan), it is clear that, in bringing Fermilab to Illinois, the state was not working in the best interests of its citizens.

It is made clear in "Poliscide" that a hidden agenda existed; the politicians were motivated by the perceived prestige of the project; the annilation of the lower-middle class (and therefore undesirable to DuPage County) village of Weston and the mistakenly perceived economic benefits the accelerator would provide the area.

"Poliscide" describes the falsehoods perpetrted on the village of Weston, the lost revenues for the surrounding towns and the uncompensated overloading of area school systems.

"Poliscide" means "political murder," and there are many parallels between the SSC and the events described in "Poliscide."

"Political murder" is being plotted by our elected officials.

A difference of monumental impact, however, is CATCH, whose members have read "Poliscide" and are taking measures to prevent the political murder; for every CATCH member, there are at least 10 others who are opposed to the SSC in Illinois.

Illinois' opposition to the SSC is growing, not declining. CATCH is just the tip of the iceberg.

The Department of Energy can be sure of continuing opposition if it is foolish enough to select Illinois as the SSC site. There are no open arms for the SSC in the Fox Valley.

Thompson and his minions may portray Illinois as welcoming the SSC, but that portrayal is false. The DOE can learn much by seeing through Thompson's facade and recognizing his hidden agenda.

The DOE must listen to the true voice of the Fox Valley saying, "No SSC."

From Ms. Lisa Schramer
Aurora

IIA.1- 4366

LETTER 1555

October 4, 1988

SSC Site Task Force
ER-65/GTN
Office of Energy Research
U. S. Department of Energy
Washington, D.C. 20545

Dear SSC Site Task Force Committee:

A hearing was conducted at the Stockbridge, Michigan site on September 26, 1988, at the Stockbridge High School in which we were in attendance.

1 At the conclusion of that meeting we had an opportunity to speak with Mr. Brian J. Quirke, Public Information Officer for the Department of Energy.

He was ask the following question to which he was unable to provide an adequate response. Upon his suggestion, we ask that you respond to this question in your Final EIS Report.

2 Question: Being in the "Beam Abort Zone" or the stratified fee area, what are we to do if our water well goes dry and we have to ask the DOE for permission to drill a new well? How long do we have to wait? What provisions are provided for water usage in the interim? Nothing has been provided in the way of documentation in your report for us to know what we can expect in this emergency situation!

3 Also, as persons directly affected by the SSC project should Michigan be the chosen site, we would request that you add our name to the list of individuals to receive the Final EIS Report.

4 Make no mistake about our position---we are definitely against this project due to the fact that may areas of concern have not been adequately addressed in any of your documentation to date.

5 That being said, may I take this opportunity to commend you on your choice of Mr. Quirke for Public Information Officer. His presence at the meeting and concern that we as individuals directly affected by this project be provided an opportunity to obtain truthful information was a definite PLUS for the DOE.

Sincerely,
Mr. & Mrs. Max E. Boyce
Mr. and Mrs. Max E. Boyce
4708 M-36
Stockbridge, Michigan 49285

IIA.1- 4367

LETTER 1556

North Carolina
Department of Administration

James G. Martin, Governor

James S. Lofton, Secretary

October 19, 1988

MEMORANDUM

TO: U.S. Dept. of Energy, SSC Site Task Force

FROM: Chrys Baggett, State Clearinghouse

RE: Draft EIS for the Superconducting Super Collider

Attached are additional comments which were submitted following our clearance letter on your:

_____ Notification to Clearinghouse of Intent to Apply for Assistance

__X__ Environmental Review

_____ Other

If you have questions regarding these comments, please contact me at (919) 733-0499.

CB/jt

Attachment

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LETTER 1556 (CONTINUED)

STATE OF NORTH CAROLINA
Division of Health Services
A-95/EIS Project Review Response

Project: [illegible] SALEM COLLEGE Project No.: 87-E-0135

County: SALEM

The following are our comments on the above referenced project.

[illegible]

[illegible] Surveyed water lines encountered in the project area adjacent to the proposed project. Due to a possible rupture during construction, the contractor should contact the appropriate water system officials to specify a work schedule.

[illegible] The proposed project will be constructed using water transmission which are used for drinking. Precautions should be taken to prevent contamination of the watersheds and sources by dirt and other harmful substances. Additional information is available by contacting the Public Water Supply Branch at (919) 733-2321.

[illegible] Back disinfectant devices should be installed on all domestic private water lines. Additional information is available by contacting the Public Water Supply Branch at (919) 733-2321.

[illegible] Plans and specifications of all water system improvements must be approved by the Division of Health Services prior to the initiation of construction. For information contact the Public Water Supply Branch (919) 733-2321.

[illegible] Asbestos disposal via land application must be accomplished as set forth by SHCD-OEC at (919) 733-3061.

[illegible] Hazardous waste should be disposed of in a properly permitted landfill. For information concerning landfills and hazardous waste determination, contact the Solid Waste Management Section (919) 733-2178.

[illegible] Adequate erosion control measures should be employed to stabilize disturbed areas for sediment control. These should also be taken care of before constructing drainage ditches. Additional information is available by contacting the Sediment Control Branch at (919) 733-4574.

[illegible] A spill control program may be necessary to prevent the migration of toxicants to adjacent areas when the amount of pollutants to be contained is considerable. Additional information is available by contacting the Toxic Chemical Branch at (919) 733-3407.

[illegible] Operation and maintenance of the sewage treatment facilities for the protection of groundwater and for surface water quality. Any request for the disposal of the effluent of any wastewater and a description of a public water supply that may have contamination effect on the quality of the effluent must be presented in accordance with 15A NCAC 2H .0105, and such permit should be obtained by the water supply owner and appropriate Division of Health Services personnel. We have no objection of the above project.

[illegible] [illegible] Date: Public Water Supply Branch
Reviewer

LETTER 1557

Linda Voelker
231 S. Glenwood
Aurora, IL. 60506

SSC EIS - Scoping
SSC Site Task Force
Office of Energy Research
U. S. Department of Energy
Washington, D.C. 20545

Dear Member,

On Thursday, October 6, 1988, you will be holding a hearing concerning the Superconducting Super Collider. This hearing will be held at Waubonsie High School in Aurora. I will be unable to attend this meeting. Therefore, I am writing to you.

I oppose the siting of the SSC in Illinois. I will make my comments brief.

FARMERS, FARMS AND FARM FAMILIES: You have read the articles in our local papers; you have read our letters; you have talked with us. You know our negative feelings about having the SSC sited in the Fox Valley. You have seen our fierce love of family, land, and heritage. You have heard our pleas. You have heard the desperate cries which come from deep within our souls -- Let us keep what our grandparents owned, what our parents owned, and what we hope, one day, our children will own.

SOCIAL CONCERNS: 10,996 persons will be required to build the SSC. Many of these workers will come from other parts of the country. These workers will bring with them their own set of personal and social problems. This community is already beset with very serious social problems. For example, the Aurora area is, for lack of a better term, the dumping ground," for the Elgin Mental Health Center. (This includes not only the mentally ill, but also the criminally insane) Before you make a decision about the location of the SSC, I hope that you will come to our community and take a very close look at us. You will then be able to see the difficult circumstances under which so many persons are attempting to exist. You will see our street people and the people who live under the bridges. The social services in this community cannot care adequately for our own. How, then, can we care for those who would be coming here?

WATER IS LIFE: Even aside from the SSC, persons living in DuPage and Kane Counties have an ongoing concern about the supply of water and the quality of the water which does exist. For example, Welsh Creek has almost dried up and one can walk across the Fox River in spots. The SSC would affect the quality of the ground water. In addition, 320 wells will be affected.

FISH AND WILD LIFE: There are the fish and the animals. Their populations will be decreased if the SSC were to be sited in Illinois.

Some important men and women in high places may say, "Who cares?" Who ~~cares about~~ the little people and their problems and their close knit little communities? Who cares about their water? Who cares about the fish and animals? And who cares about the Fox River Valley farmers and their land and their families? The plain simple bottom of the line answer is, "We care"! Those of us who call these communities home, care very much.

At this point in time we can only hope that someone far away in Washington will care enough about us to place the SSC somewhere else.

Respectfully Yours,

Linda Voelker

LETTER 1958

STATE OF NORTH CAROLINA
OFFICE OF THE GOVERNOR
RALEIGH 27603

JAMES G. MARTIN
GOVERNOR

Board of Science and Technology
Room 2049
116 West Jones Street
Raleigh, NC 27603

12 October 1988

Dr. Wilfred N. Hess, Chairman
SSC Site Task Force
RW-27/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC Site Comments

Dear Dr. Hess:

Attached are comments on the Draft Environmental Impact Statement for the Superconducting Super Collider by the North Carolina Department of Natural Resources, referred through the SSC Department of Administration Site Clearinghouse.

In addition, the State Clearinghouse is today sending a complete set of the comments received on the Draft Environmental Impact Statement. Six of these comments have previously been sent to you as coordinated by the SSC Project Office at a meeting on September 12, 1988 in Washington.

Sincerely,

[illegible]
Director

Attachments
cc: SSC Project Office

Enclosure

cc: [illegible]

LETTER 1558 (CONTINUED)

North Carolina Department of Cultural Resources

James G. Martin, Governor
Patric Dorsey, Secretary

Division of Archives and History
William S. Price, Jr., Director

October 11, 1988

MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: David Brook
Deputy State Historic Preservation Officer

SUBJECT: Draft Environmental Impact Statement,
Superconducting Super Collider, Durham,
Granville, and Person Counties
CH 89-E-0000-0135

2 We have reviewed the above draft environmental impact statement and would like to offer the following comments.

3 While the document adequately addresses the direct effects of the proposed project upon archaeological resources and historic structures and how to mitigate any adverse effects at this stage of the site selection process, indirect or secondary effects of the project upon such resources have not been considered. It is likely that development in the area of the SSC project will increase as a direct result of project construction and operations. Increased development will result in the irretrievable loss of or damage to archaeological resources and historic structures. Pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended), the entire area of potential effects should be considered.

4 Volume IV, Appendix 4, pp. 25-26, states that the state of North Carolina will acquire from 525 to 935 acres of land for attendant ancillary facilities in support of the Superconducting Super Collider project. The state of North Carolina has also proposed to construct these facilities in support of the project. The draft environmental impact statement does not address the long-term, yet foreseeable, effects of this construction upon historical and archaeological resources, nor does it state whether the state of North Carolina or the U.S. Department of Energy will be responsible for identifying and mitigating any adverse effects upon historical and archaeological resources resulting from this construction. Pursuant to the regulations of the Advisory Council on Historic Preservation, these two issues need to be addressed as part of the Section 106 process and reflected in the final environmental impact statement.

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(919) 733-7305

We would also recommend that several changes be made to the DEIS with reference to historic structures.

5 In Volume I, Chapter 4 under "Affected Environment" (p. 4-97), Chapter 5 under "Environmental Consequences and Mitigative Measures" (p. 5.1.9-3), and Volume IV, Appendix 15, "Cultural and Paleontological Resources, North Carolina" (p. 52), it is stated that an intensive survey of the proposed North Carolina SSC project area has not been undertaken. We believe this is misleading since comprehensive (i.e., intensive) historic structures surveys have been completed in Granville and Durham counties. Person County is the only county in the immediate project area which has not had an intensive level architectural survey. Reference is also made on p. 4-97 to the Bennehan-Cameron Plantation National Register Historic District. This historic district has not been listed in the National Register, although it was determined eligible by the Keeper of the Register in 1978. We suggest that these statements be clarified in the final EIS.

6 A comprehensive historic structures survey of Durham County has been completed since the initial cultural resources information was compiled for the SSC. As a result, several properties were added to the Division of Archives and History's study list for future nomination to the National Register on July 21, 1988, including eight properties located within or adjacent to the SSC project area. Therefore, we recommend that the following structures be added to Table 15-10, "Historic Sites Located in the Vicinity of the Proposed North Carolina SSC Site" (Volume IV, Appendix 15, under "Cultural and Paleontological Resources, North Carolina, p. 50):

Bowling Mill. South side of SR 1471 at Flat River. (Placed on study list July 10, 1986, and omitted from earlier submittal.)

Bowling-Glenn House (Captain W. W. Bowling House). East side of SR 1603, 0.25 mile south of SR 1471.

Copley-Latta House. North side of SR 1471, 0.3 mile west of SR 1607.

Rougemont Village Historic District. North and south sides of SR 1471, east of US 501 (see attached sketch map).

Carrington Farm and Cemetery. West side of SR 1608, 0.6 mile west of SR 1607.

Quail Roost. West side of US 501, 0.2 mile northwest of SR 1615.

Bobbitt-Aiken Farm Complex. South side of SR 1471, 0.25 mile west of Orange County line.

Will Chambers House. North side of SR 1471, 0.4 mile west of SR 1474.

Hill Forest Log Houses. North side of SR 1628, 0.3 mile east of US 501.

The addition of the above historic structures to Table 15-10 increases the total number of historic properties identified within the vicinity of the proposed SSC project area from 54 to 63, and the number of Durham County properties from 6 to 15. These changes should be reflected in the narrative in Volume IV, Appendix 15, "Cultural and Paleontological Resources, North Carolina," p. 45, under 4. Historic Sites. Also in the same section (p. 52, second paragraph) the recently completed comprehensive historic and architectural inventory of Durham County (Sheffield, 1988) should be cited along with the other survey references. These additional Durham County properties need to be evaluated to determine what, if any, effect the SSC will have on them.

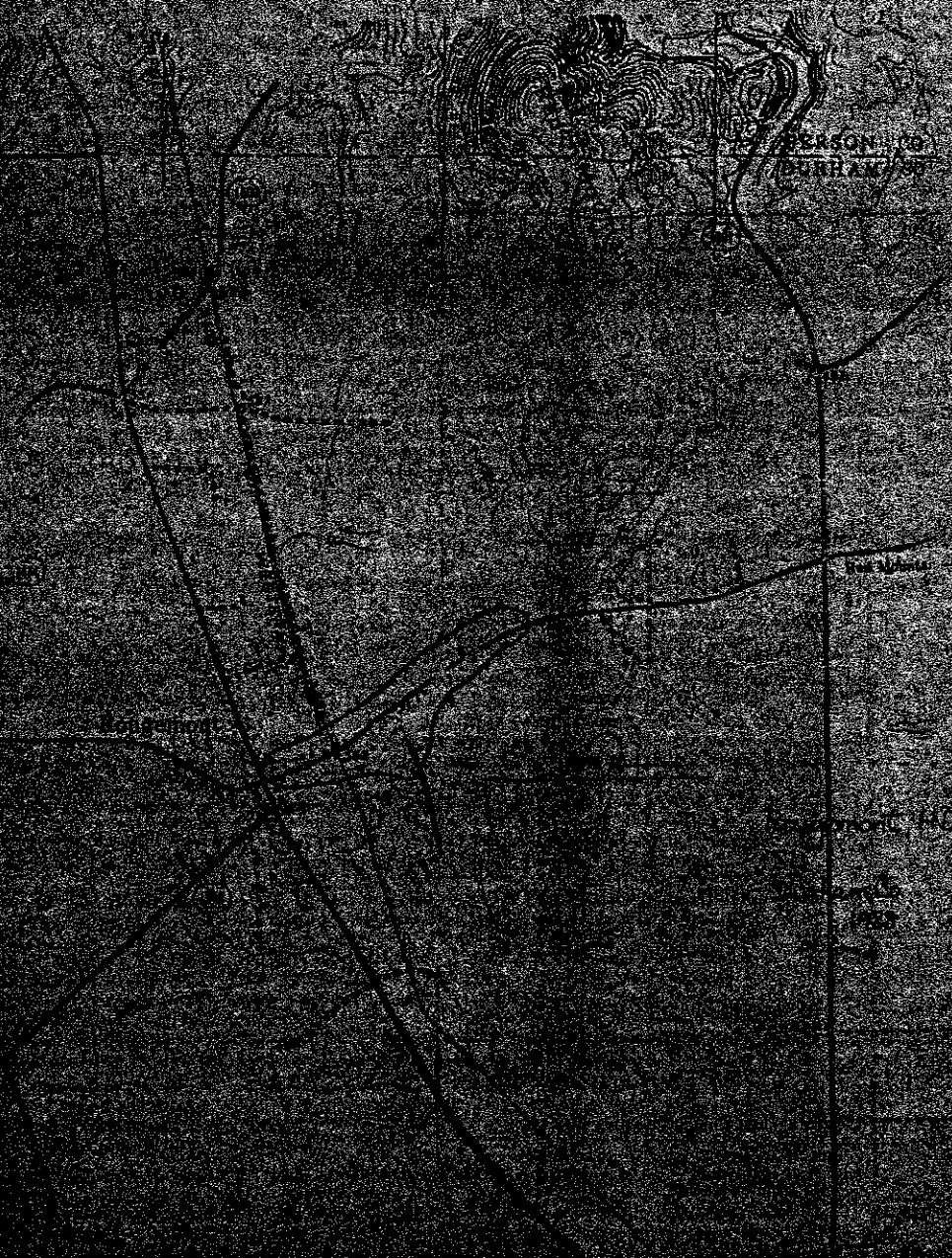
The above comments are made pursuant to Section 106 of the National Historic Preservation Act of 1966, the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800, and to Executive Order 11593, "Protection and Enhancement of the Cultural Environment."

7 Thank you for your cooperation and consideration. If you have questions concerning the above comments, please contact Ms. Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

DB:slw

Attachment

LETTER 1558 (CONTINUED)



LETTER 1559

TEXAS NATIONAL RESEARCH LABORATORY COMMISSION

10100 BURNET ROAD
BUILDING 130, ROOM 1.130
P.O. BOX X, UNIVERSITY STATION
AUSTIN, TEXAS 78713-7508
TELEFAX: (512) 471-8542
PHONE: (512) 471-8163

October 14, 1988

Dr. Wilmot Hess, Chairman
SSC Site Selection Task Force
Department of Energy
19901 Germantown Road
Germantown, Maryland 20874

Dear Dr. Hess:

During the recent hearings held by the Department of Energy on the draft Environmental Impact Statement (DEIS) on September 26 and 27, 1988 in Waxahachie, Texas, several witnesses offered testimony on technical issues which appeared to reflect at least a partial misunderstanding of the State's siting proposal for the SSC. The witnesses I refer to are Stephen and Claire Pierce, and Jack Brown.

Mr. & Mrs. Pierce raised questions in the geotechnical area relative to the quality of the geological data base, construction-related impacts on shallow alluvial aquifers, and potential groundwater contamination from radionuclide migration related to accelerator experiments. They allege that the quality of the geotechnical database is deficient because (1) the Department of Energy proposal preparation schedule was short and did not allow time for detailed field investigations; (2) geologic mapping was based partly on interpretation of aerial photography without detailed field investigations; and (3) examination by Mr. Pierce of a streambed outcrop on his private land allegedly reveals faulting of alluvial terrace gravels against Taylor Marl. They also expressed concern that construction-related impacts on shallow alluvial aquifers would include indiscriminate borings through Taylor Marl underlying the terrace deposits which would provide man-made openings which would allow cross-formational flow of groundwater and possible contamination of such formation waters. These questions reflect a lack of appreciation for the quality and level of detail used to prepare the State's proposal.

Dr. Wilmot Hess, Chairman
October 24, 1983
Page No. 2

Mr. Frank Moore of Waxahachie testified to his concern over the potential for additional taxes which might be levied against citizens of Ellis County and he reiterated the mistaken notion in his comments that local residents of Ellis County would be facing some of the costs of the owner's decision to acquire land for [illegible] the Waxahachie site [illegible] in preparation and does not reflect [illegible] the owner's proposal.

Our Commission, on behalf of the State of Texas, has already [illegible] documents which were addressed by me in my April 29th statement in accordance with the [illegible]. However, since testimony offered during the hearing on the case is about the fact of that document, there does not appear to be an avenue for the Commission to respond to misconceptions in the hearing. Such as those I cite above, which are incomplete, misleading, or wrong other than to write to your office expressing our views on the issue.

Clearly, we wish to avoid any action which might interfere with the NEPA process, and so I write asking for your guidance as to how we might respond to the technical issues raised during the hearings and clarify the record. If there are no legal or procedural obstacles to submitting a written response, we are prepared to do so immediately.

Sincerely yours,

Richard C. Kingler
Executive Director

RCK/[illegible]

cc: Mark J. Spencer
[illegible]

LETTER 350

PETITION

We, the undersigned residents of Jackson County, State of Michigan, do not want the proposed Superconducting Super-Collider built on the proposed site in Jackson and Ingham counties in the State of Michigan.

WARNING—No one shall knowingly sign this petition more than once, or sign a name other than his/her own.

NAME	STREET AND NUMBER (Give Rural Route Number if no street)	POST OFFICE	DATE OF SIGNING Month	Day	Year

NAI-4377-A