

U. S. DEPARTMENT OF ENERGY  
OFFICE OF SCIENCE -- CHICAGO OFFICE

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)  
ENVIRONMENTAL EVALUATION NOTIFICATION FORM

**To be completed by "Applicant," i.e., organization receiving funds and/or implementing Federal Actions as defined by 40 CFR § 1508.18. For assistance, refer to "Instructions for Preparing SC-CH F-560, Environmental Evaluation Notification Form."**

Solicitation/Award No. (if applicable): DE-SC0001717

Organization Name: North Dakota State University

Title of Proposed Project/Research: Alterations/renovation of computer room in connection to award DE-SC0001717

Total DOE Funding/Total Project Funding: \$4,735,000

I. Project Description (use explanation page if additional space is required):

A. Proposed Project/Action (if applicable, delineate Federally funded/Non-Federally funded portions)

Please see Optional Additional Narrative below.

B. Would the project proceed without Federal funding?

Yes      No  
     

***If "yes," use explanation page.***

II. Description of Affected Environment:

Please see Optional Additional Narrative below.

## III. Preliminary Questions:

- |   |                          |                                     |
|---|--------------------------|-------------------------------------|
|   | Yes                      | No                                  |
| A. <u>Is the DOE-funded work routinely administrative or <i>entirely</i> advisory or a "paper study?"</u> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

***If "Yes", ensure that the description in Section I reflects this and go directly to Section V.***

- B. Is there any potential whatsoever for:

***Provide an explanation for each "Yes" response.***

- |  |                                     |                                     |
|--|-------------------------------------|-------------------------------------|
|  | Yes                                 | No                                  |
| 1. Work to be performed outdoors?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Major modification of a building interior?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. Threat of violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health?        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 4. Siting, construction or major expansion of waste treatment, storage, or disposal facilities?                                | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Disturbance to hazardous substances, pollutants, or contaminants preexisting in the environment?                            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 6. The presence of any environmentally-sensitive resources?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 7. Potential for high consequence impacts to human health or the environment?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8. The work being connected to another existing/proposed activity that could potentially create a significant impact?          | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 9. Nearby past, present, and/or reasonably foreseeable future actions such that collectively significant impacts could result? | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 10. Scientific or public controversy over whether impacts could be significant?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

***If "No" to ALL Section III.B. questions, go directly to Section V.***

## IV. Potential Environmental Effects:

***Provide an explanation for each "Yes" response.***

- A. Sensitive Resources: Could the proposed action potentially result in changes and/or disturbances to any of the following resources?

- |  |                          |                                     |
|--|--------------------------|-------------------------------------|
|  | Yes                      | No                                  |
| 1. Threatened/Endangered Species and/or Critical Habitats                          | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Other Protected Species (e.g., Burros, Migratory Birds)                         | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Sensitive Environments (e.g., Tundra/Coral Reefs/Rain Forests)                  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Cultural or Historic Resources  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Important Farmland  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. Non-Attainment Areas for Ambient Air Quality Standards                          | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. Class I Air Quality Control Region  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. Special Sources of Groundwater (e.g. Sole Source Aquifer)                       | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. Navigable Air Space   | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. Coastal Zones  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. Areas with Special National Designation (e.g. National Forests, Parks, Trails) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12. Floodplains and/or Wetlands  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

B. Regulated Substances/Activities: Would the proposed action involve any of the following regulated Items or activities?

	Yes	No
13. Natural Resource Damage Assessments	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14. Invasive Species or Exotic Organisms	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15. Noxious Weeds	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16. Clearing or Excavation (indicate if greater than one acre)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17. Dredge or Fill (under Clean Water Act, Section 404, greater than one acre)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18. Noise (in excess of regulations)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
19. Asbestos Removal	<input type="checkbox"/>	<input checked="" type="checkbox"/>
20. Polychlorinated biphenyls (PCBs)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
21. Import, Manufacture, or Processing of Toxic Substances	<input type="checkbox"/>	<input checked="" type="checkbox"/>
22. Chemical Storage/Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
23. Pesticide Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
24. Hazardous, Toxic, or Criteria Pollutant Air Emissions	<input type="checkbox"/>	<input checked="" type="checkbox"/>
25. Liquid Effluents	<input type="checkbox"/>	<input checked="" type="checkbox"/>
26. Spill Prevention/Surface Water Protection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
27. Underground Injection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
28. Hazardous Waste	<input type="checkbox"/>	<input checked="" type="checkbox"/>
29. Underground Storage Tanks	<input type="checkbox"/>	<input checked="" type="checkbox"/>
30. Radioactive or Radioactive Mixed Waste	<input type="checkbox"/>	<input checked="" type="checkbox"/>
31. Radiation Exposure	<input type="checkbox"/>	<input checked="" type="checkbox"/>
32. Nanoscale Materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>
33. Genetically Engineered Microorganisms/Plants or Synthetic Biology?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
34. Ozone Depleting Substances	<input type="checkbox"/>	<input checked="" type="checkbox"/>
35. Greenhouse Gas Generation/Sustainability	<input type="checkbox"/>	<input checked="" type="checkbox"/>
36. Off-Road Vehicles	<input type="checkbox"/>	<input checked="" type="checkbox"/>
37. Biosafety Level 3-4 Laboratory	<input type="checkbox"/>	<input checked="" type="checkbox"/>

C. Other Relevant Information: Would the proposed action involve the following?

	Yes	No
38. Existing, Modified, or New Federal/State Permits	<input type="checkbox"/>	<input checked="" type="checkbox"/>
39. Disproportionate Nearby Presence of Minority and/or Low Income Populations	<input type="checkbox"/>	<input checked="" type="checkbox"/>
40. Action/Involvement of Another Federal Agency (e.g. license/permit, funding, approval)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
41. Action of a State Agency in a State with NEPA-type law	<input type="checkbox"/>	<input checked="" type="checkbox"/>
42. Public Utilities/Services	<input type="checkbox"/>	<input checked="" type="checkbox"/>
43. Depletion of a Non-Renewable Resource	<input type="checkbox"/>	<input checked="" type="checkbox"/>
44. Other Pertinent Information Which Could Impact Human Health or the Environment	<input type="checkbox"/>	<input checked="" type="checkbox"/>

V. Applicant Certification that to the best of their knowledge all information provided on this form is accurate:

Does this disclosure contain classified, confidential, or other exempt information that DOE would not be obligated to disclose pursuant to the Freedom of Information Act? Yes  No

A. Organization Official (Name and Title): Valrey V. Kettner  
Associate Vice President  
Office of Sponsored Programs Administration

Signature: Valrey V. Kettner Date: 09/30/14

e-mail: val.kettner@ndsu.edu Phone: 701-231-9608

B. Optional Secondary Approval (Name and Title): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

e-mail: \_\_\_\_\_ Phone: \_\_\_\_\_

Remainder to be completed by DOE

VI. DOE Concurrence/Recommendation/Determination:

A. DOE Project Director/Program Manager or Contract/Grant Management Specialist:

Has the Applicant completed the Form correctly?  
Does an existing Generic Categorical Exclusion apply?

Yes  No

If yes, indicate:

Name and Title: Sable Williams, Contract Specialist

Signature: Sable Williams Date: 10/2/14

B. DOE NEPA Team Review:

Is the class of action identified in the DOE NEPA Regulations (Appendices A-D to Subpart D (10 CFR § 1021))?

Yes  No

If yes, specify the class(es) of action: B1.15, B5.1

Name and Title: Peter R. Siebach, NCO

Signature: Peter R. Siebach Date: 10/2/2014

C. DOE Counsel (if requested):

Name and Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

D. DOE NEPA Compliance Officer:

The preceding pages are a record of documentation required under DOE Final NEPA Regulation, 10 CFR § 1021.400.

- Action may be categorically excluded from further NEPA review. I have determined that the proposed action meets the requirements for Categorical Exclusion referenced above.
- Action requires approval by Head of the Field Organization. Recommend preparation of an Environmental Assessment.
- Action requires approval by Head of the Field Organization or a Secretarial Officer. Recommend preparation of an Environmental Impact Statement.

Comments/limitations if any:

NEPA Compliance Officer:

Name: Peter R. Siebach  
Peter R. Siebach 10/2/2014  
NEPA Compliance Officer

Optional Additional Narrative: (add additional detail to description to Sections I and II or explanations to responses in Sections III and IV.

Section I.A.

The intent of this alterations/renovation project is to obtain dedicated and complementary mechanical and electrical systems for the North Dakota State University (NDSU) Center for Computationally Assisted Science and Technology (CCAST) server room located in the Research 2 (R2) building in the NDSU Research and Technology Park (c.f. Attachment\_1\_Vicinity\_Map). All portions of this project are part of the Federally funded NDSU BER Award DE-SC0001717 "Advancing Science Through Computation at NDSU". We are asking for approval to proceed with this project.

The server room exists in the R2 building and was designed 12 years ago to support traditional information technology (IT) operations. The existing electrical and cooling equipment in this room can support limited IT operations, but it does not provide enough power and cooling capacity to house CCAST supercomputers. Obtaining complementary electrical and cooling capacity for the R2 CCAST computer room is imperative to ensure proper maintenance and growth of HPC hardware and software capabilities at CCAST, as well as concomitant development of competencies in computational science - two of the primary objectives of this BER award.

The new power and cooling systems will support only the CCAST server room and will not interconnect with the building electrical and mechanical systems.

The project is a modification to an existing building. The work to be performed will take place entirely on the existing building while the equipment will be added to the exterior of the building and to existing mechanical and electrical equipment rooms inside the building.

Specifically, a single, 200 ton capacity air-cooled chiller with economizer system will be installed. The integral economizer will allow partial or full free cooling during cold months of the year by eliminating or reducing the run-time of the chiller compressors. Space and interconnections for a second 200 ton chiller will be included for future expansion. Dual pumps will be installed in the existing second floor mechanical room and will circulate a glycol-water mixture through piping that connects with cooling distribution units (CDU) in the new mechanical room adjacent to the CCAST server room. The CDUs will circulate chilled water to rear door heat exchangers (RDHX) located on the back-side of each rack. The RDHXs cool the air leaving the servers to maintain a neutral room temperature of 75°F.

A dedicated electrical service will be added to support all functions of the server room. The new service will include a new dedicated utility transformer, 2 MW diesel generator, automatic transfer switch, switchboard, and electrical distribution. The generator will be housed in a weather- proof enclosure and will have an integral fuel tank. The generator will be prime-rated for continuous duty capability and will have Tier IV emission control to meet current EPA regulations. The existing 500kW UPS module cannot be fully utilized due to the size limitation of the existing conductors. This project will replace the conductors with a larger size to allow full utilization of the UPS module. A second 300kVA transformer will be added to feed distribution panels to support computer equipment within the CCAST server room. Electrical conductors and terminations will be included in the project to feed a second 500kW UPS and supporting electrical distribution equipment in the future. All racks will be fed by an overhead bus-duct electrical raceway for quick connection and simplified expansion.

A new electrical utility service line will be installed to serve the CCAST server room. The electrical line will run from the curb by the NW corner of the building around to the transformer. The length of this line will be approximately 420' (cf. Attachment\_2\_Electrical\_Site\_Plan). From the transformer we will extend a line into the building to the automatic transfer switch (ATS). A signal line will be run from the automatic transfer switch to the generator to tell it when to run. An electrical line will run from the generator into the building to bring that power in as needed to the ATS.

Section II.

The activity would occur indoors and outdoors.

Indoors: All interior work will take place in the mechanical room and in the areas where the chilled water will be distributed for use. No people will be displaced or disturbed during this process. The work will take start in the second floor mechanical room and will continue up from there onto the roof to the west and north above the roof.

Outdoors: The work will start in the curb where the electric utility loop is located west of the building. The new utility line will run to the east and then south behind the building to where the proposed transformer location will be. The new line will be bored from the start location to the transformer so there would be little impact on people and environment in the area. The work will take approximately 2 days with no interruptions to traffic. Additional underground work will be needed to install the signal wire from the automatic transfer switch to where the new generator will be installed and to install the electrical feed from the generator to the automatic transfer switch in the building. This work will be performed by boring the needed conduit, little impact on people and environment in the area will take place. A chiller system will be placed on the NE side of the building with piping run south above ground up the exterior wall into the second floor mechanical room. The chilled water piping will then run across the roof following the electrical piping along and drop down in to the rooms that will use the chilled water, with little impact on people and environment.

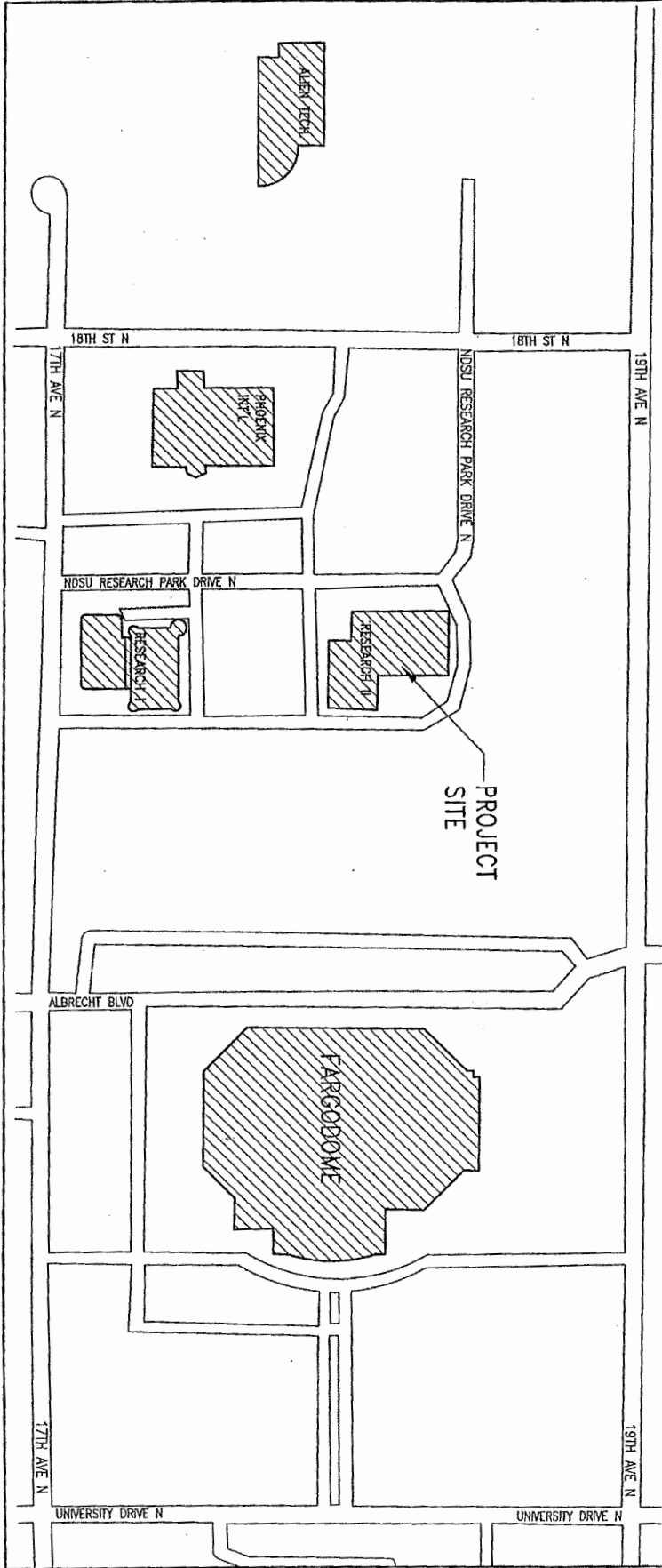
### Section III.B.

Two equipment items which will be added to the outside of the existing Research 2 (R2) building in the NDSU Research and Technology Park (c.f. Attachment\_1\_Vicinity\_Map) are the chiller with the economizer system (and associated piping) and the generator with Tier IV emission control (to meet current EPA regulations for power peak shaving). The chiller and the generator will be placed next to the R2 building on the NE side of the building and across the parking lot in already existing area dedicated for the new generator (next to the existing R2 building primary generator - c.f. Attachment\_2\_Electrical\_Site\_Plan), respectively. The new utility line will be bored from the NW location of the utility loop to the east and then south behind the building to the location of the transformer, with little impact on people and environment. Similarly, a conduit will be bored to install the signal wire and the electrical feed between the automatic transfer switch in the building to the generator, with little impact on people and environment. The water and electrical piping for the chiller will run from the chiller location on the NE side of the building above the ground up the exterior of the building south to the second floor mechanical room and from there across the roof to the rooms that use chilled water, with little impact on people and environment.

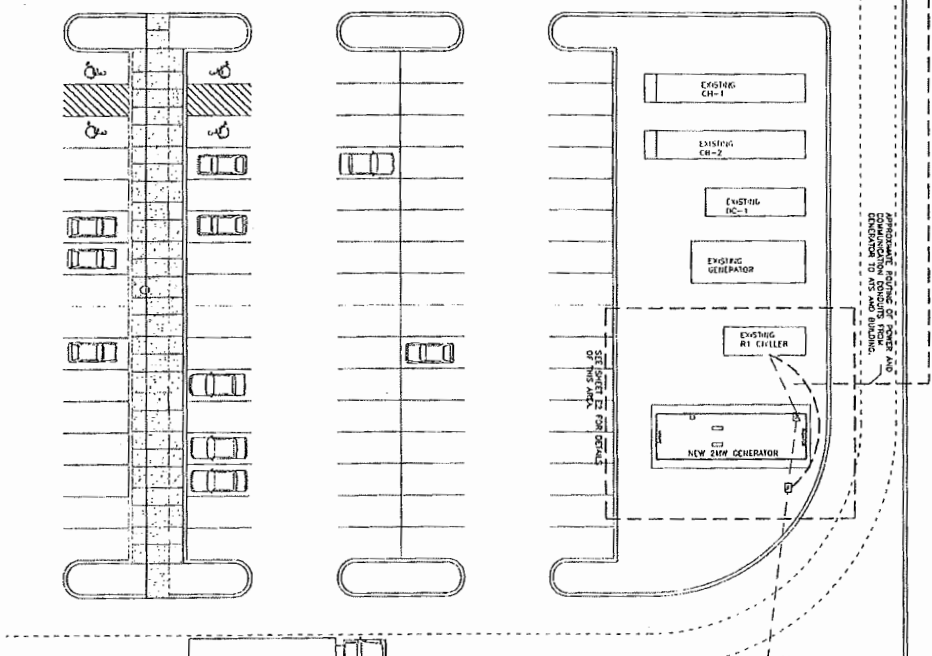
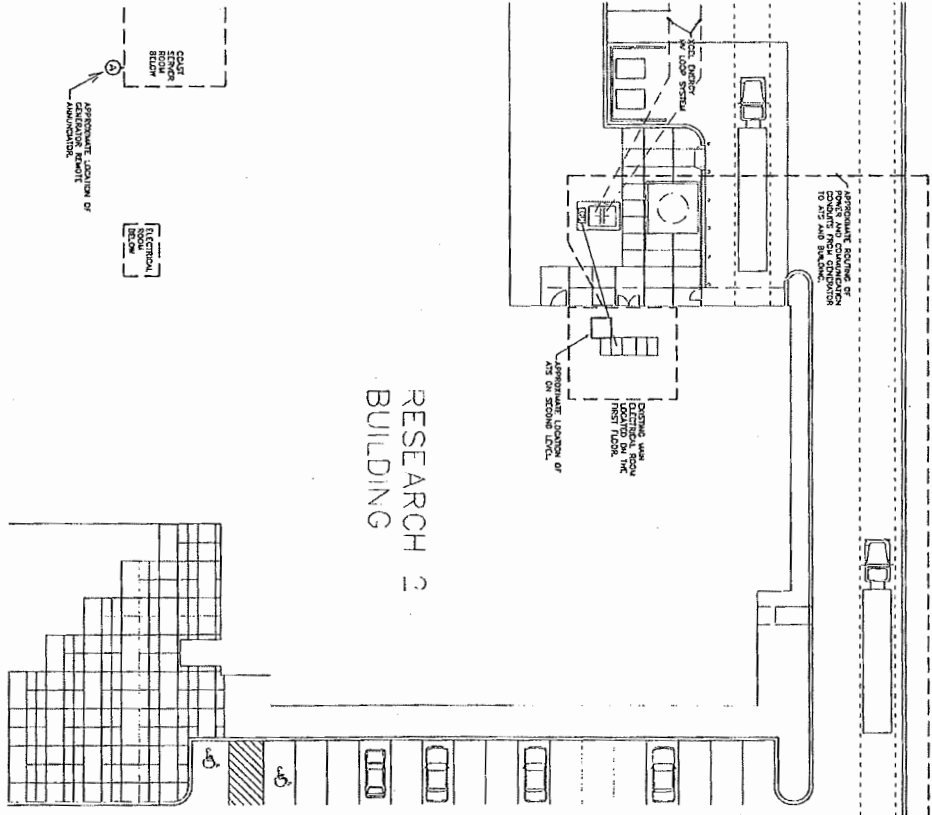
### Question 42.

We will not be involving the utility other than connecting to their lines.

VICINITY MAP



1 ELECTRICAL SITE PLAN  
 E1 1/32" = 1'-0"



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of North Dakota.

Date: 02/14/14	Sheet Number: E1	Project: NDSU - RESEARCH 2 BUILDING - CCAST GENERATOR ADDITION			
		Sheet Title: <b>ELECTRICAL SITE PLAN</b>			
Project Number: 0413144-000-00		Drawn By: SJR	Checked By: RF		