DOE/EA-0936

ENVIRONMENTAL ASSESSMENT

OKLAHOMA STATE UNIVERSITY

PROPOSED
ADVANCED TECHNOLOGY RESEARCH CENTER

U.S. Department of Energy

JUNE 1995

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

ACM	Asbestos Containing Materials
ATRC	Advanced Technology Research Center
DOE	Department of Energy
EA	Environmental Assessment
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
HVAC	Heating, Ventilation, and Air Conditioning
MOA	Memorandum of Understanding
NEPA	National Environmental Policy Act
OSU	Oklahoma State University
SHPO	State Historic Preservation Officer
sf	square feet
#/yr	pounds/year
VOC	Volatile Organic Compounds

1.0 DOCUMENT SUMMARY

The Department of Energy (DOE) proposes to authorize Oklahoma State University (OSU or University) in Stillwater, Oklahoma, to proceed with the detailed design, construction and equipping of the Advanced Technology Research Center (ATRC). The proposed center would consist of research laboratories and office space housed in a three-story building providing 165,000 sf of workspace.

The ATRC would house research in: energy conservation, manufacturing processes and systems, materials and material processing, laser applications in industry and medicine, and technology development and technology transfer.

The DOE alternative to the proposed action is to not authorize the university to proceed (i.e., no funding). The consequence of no action to the University would be to abandon the project and to continue using existing facilities.

Prior to the DOE appropriations to the project the University considered several site alternatives and selected one which best met several functional and environmental criteria. DOE took no part in the site selection process.

The affected environment is an established University campus area that includes two buildings which would be demolished, several adjacent university buildings, some roadway and parking spaces, and a small amount of landscaped area (lawns, shrubs).

Construction impacts do not involve disturbances to sensitive resources and would be restricted to those typically associated with demolition, clearing, grading, and building construction. These impacts include transient noise, dust, local erosion, and traffic on local streets. One of the two buildings scheduled for demolition is of historic interest but has been approved for demolition in accordance with the terms and conditions of the Memorandum of Agreement (MOA) between DOE, OSU, and the Oklahoma SHPO, and accepted by Advisory Council on Historic Preservation.

The proposed ATRC would result in an increase of landscaped open space and would be an aesthetic improvement with benefits to the surrounding buildings and the campus as a whole. Impacts include the production of routine domestic solid waste, wastewater, and toxic air emissions from natural gas consumption. In addition, the facility would generate a range of hazardous waste from laboratory operations. All emissions and discharges from the proposed facility represent a small incremental increase over existing discharges at the University and are shown to be within the standards established by federal and state regulations. The ATRC would also contribute to energy conservation efforts, as it would replace two energy inefficient buildings.

There is a risk of accidents from laboratory operations involving hazardous and toxic chemicals (a minor risk based on past history), and a risk of building damage from tornado, with resulting hazardous material dispersion (likely to have unmeasurable collateral environmental effect).

2.0 PURPOSE AND NEED

Congress has provided funds to DOE to assist in the construction of the ATRC at OSU. DOE's purpose is to carry out this congressional intent (described below) and to contribute to its own mission by supporting research programs of the proposed ATRC.

The Advanced Technology Research Center would serve the nation's critical need for research by advanced undergraduates and post graduate students and staff in energy, manufacturing, the environment, and medicine. Focus areas for the ATRC would include energy conversion, storage and conservation; energy intensive manufacturing processes; hazardous and industrial waste management, and applied laser research in ophthalmology, computers, and telecommunications.

The University is already conducting research in these areas in six scattered buildings. The proposed design and location for the ATRC would serve the University's programmatic needs for state-of-the-art research facilities, long range expansion, consolidation of engineering research activities, handicap accessibility, and increased visibility of the College of Engineering, Architecture and Technology. (Ref 1) The associated demolition of existing buildings would also eliminate unsuitable and unsafe facilities, and carry out a 65-year old Campus Master Planning effort.

3.0 DESCRIPTION OF ALTERNATIVES INCLUDING THE PROPOSED ACTION

3.1 Proposed Action

The Department of Energy (DOE) proposes to authorize OSU to proceed with the detailed design, construction and equipping of the ATRC on the Stillwater, Oklahoma campus. House of Representatives Conference Report 101-235 appropriated in fiscal year (FY) 1990, funds to OSU in the amount of $2,810,000 for a research grant. This research grant was awarded in September 1990 to OSU. Modifications were made to the grant in May 1991 adjusting the total to $2,345,345. House of Representatives Committee Report 101-00 indicated that DOE FY91 appropriations included $5,000,000 for the ATRC. DOE modified the original grant with OSU on September 28, 1992, to show total of ATRC funding of $19,845,345: $7,345,345 to be provided by DOE and $12,500,000 to be provided by OSU.

Grant funds were made available to the University for the limited purpose of performing preliminary studies, including analysis necessary to prepare this environmental assessment. However, under the terms of the grant, the grantee may not initiate construction or take any other action which would affect the environment or limit alternatives until the DOE NEPA process has been completed and DOE has determined that the proposed action should proceed.

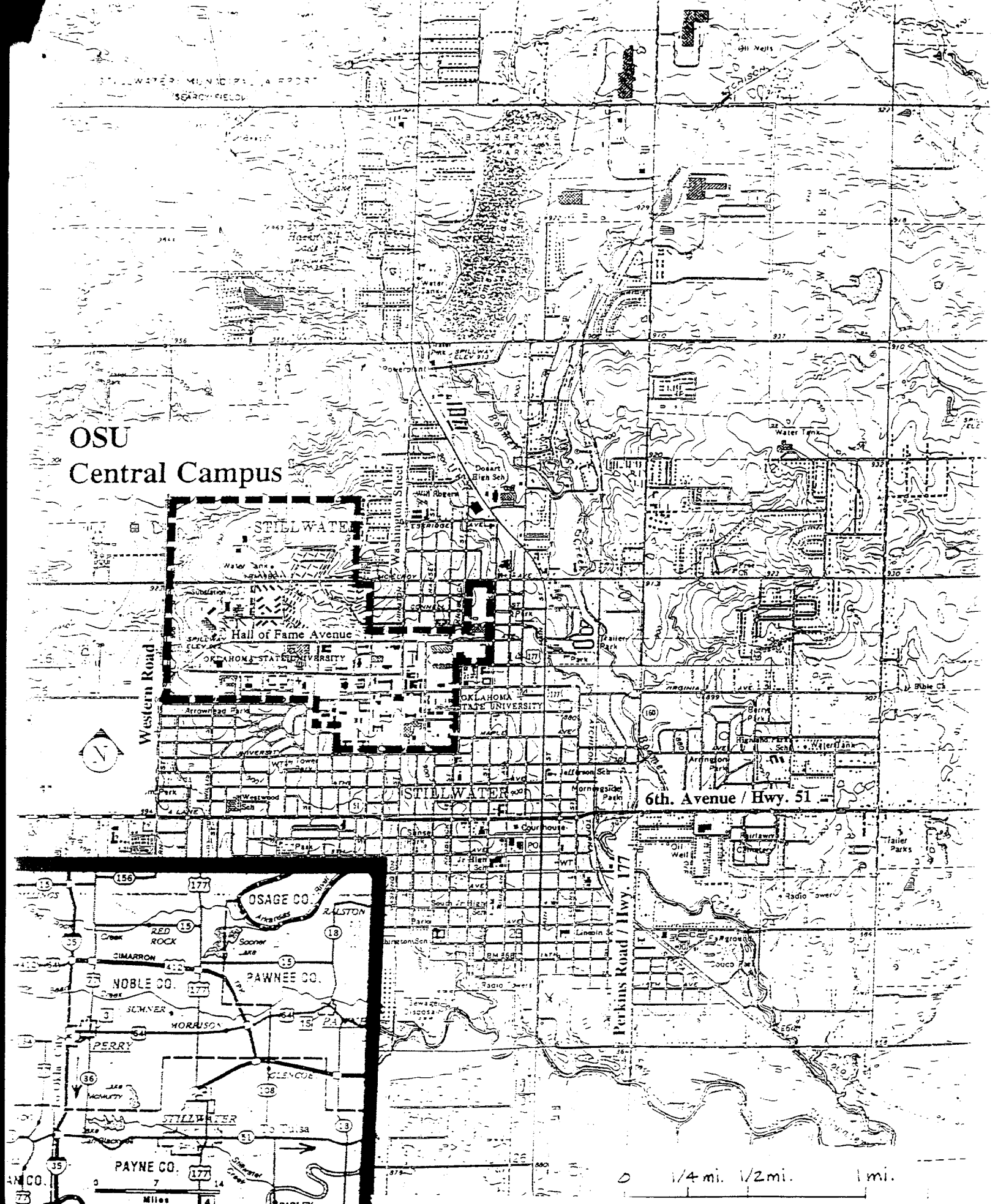

Figure 1: Location of Site within Oklahoma

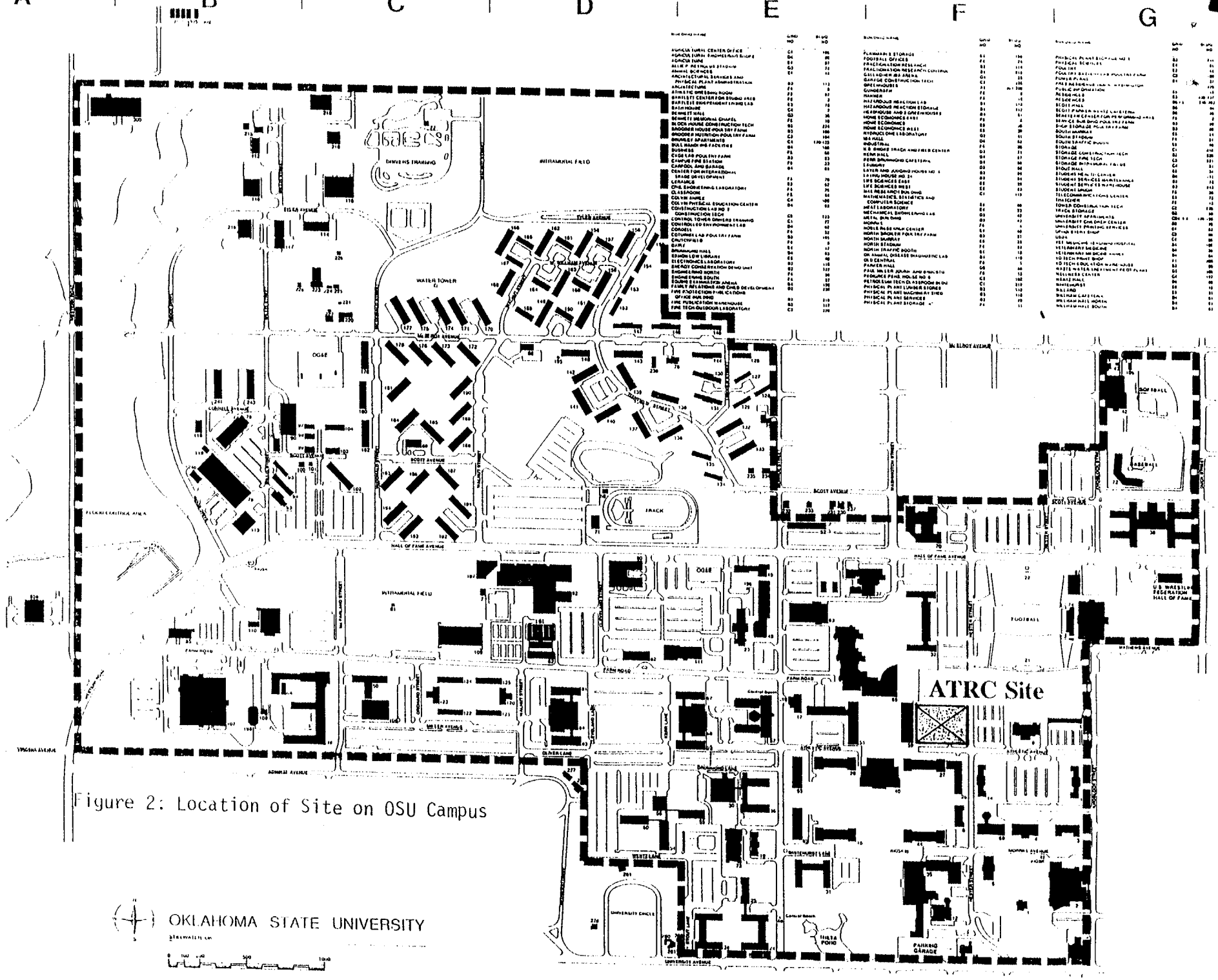

Figure 2: Location of Site on OSU Campus

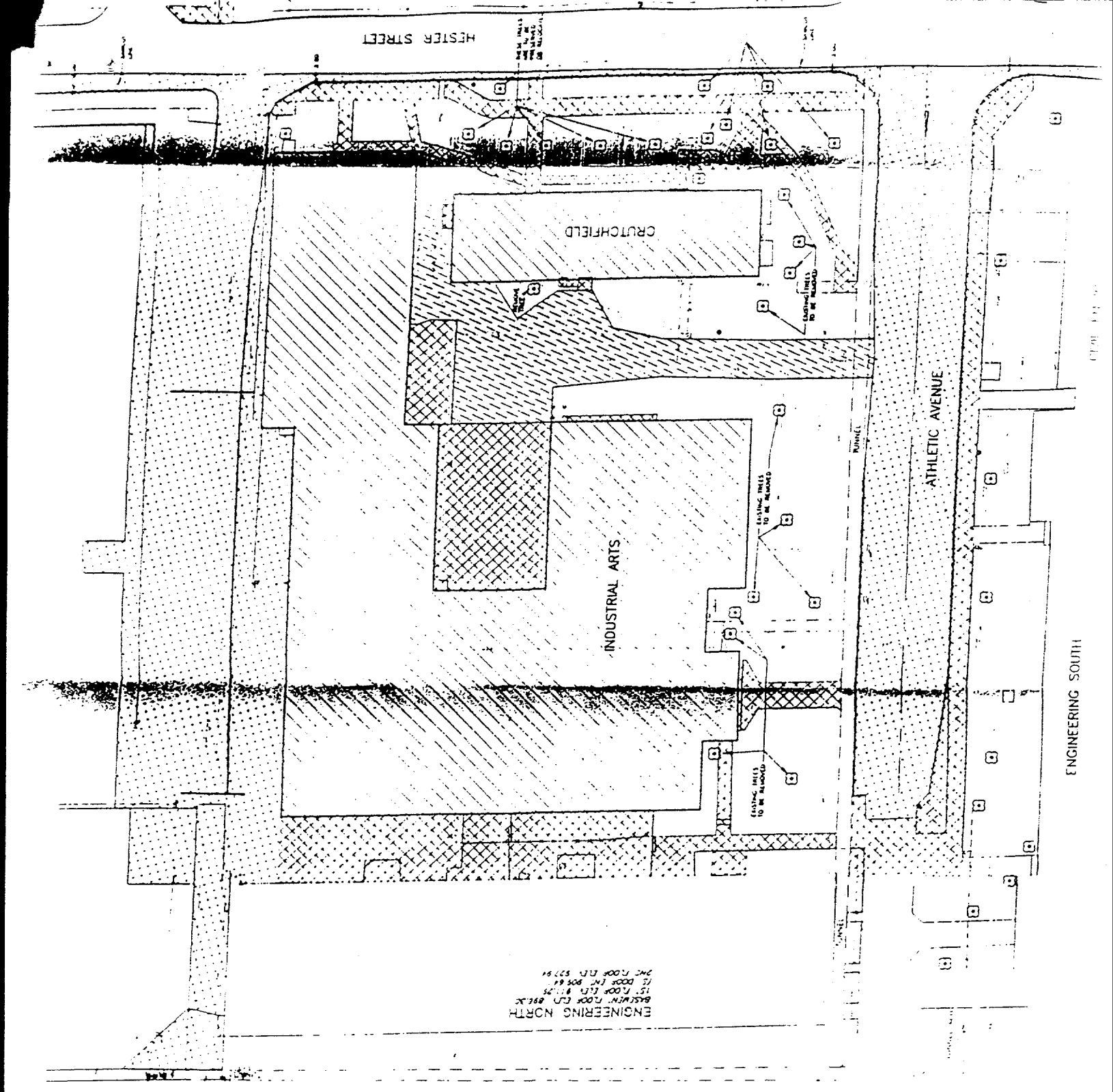

Figure 3: Location of Buildings to be demolished

SCALE: 1" = 40'

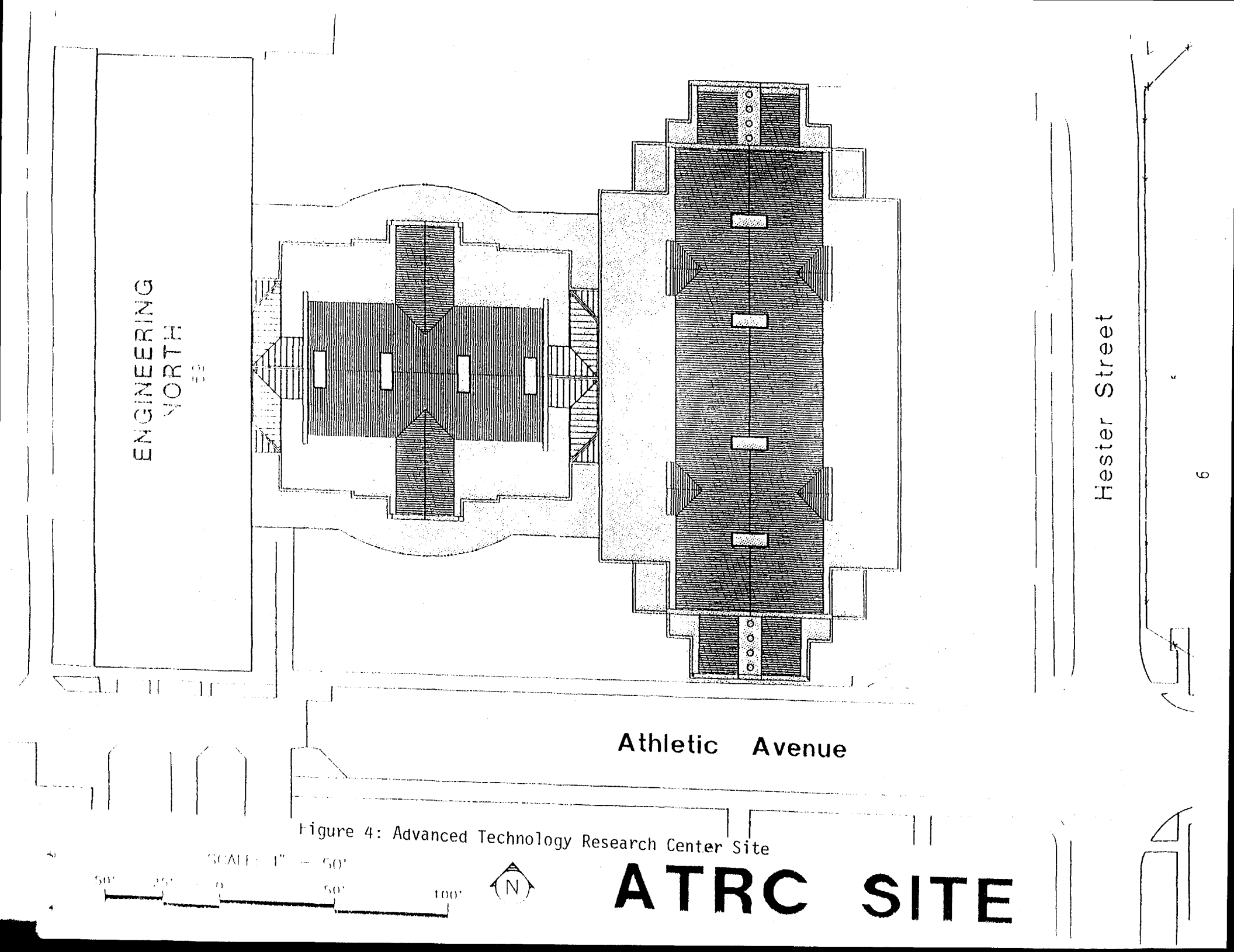

Figure 4: Advanced Technology Research Center Site

The proposed ATRC would consist of a single building with three 17.33 ft stories plus a basement with a 27 foot floor to floor height. The building would occupy a site footprint of nearly 45,000 square feet (sf) and provide a total working space of 165,000 sf. The commons areas would have a basement level and a 2nd floor. The laboratory portion would have a basement level and three stories.

Replacement parking will be located approximately 800 ft. north-northwest of the ATRC site, by expanding an existing parking area that is an unimproved site currently covered with grass and natural vegetation. This particular area has been planned for parking use for many years, going back at least as far as the 1930 campus master plan. There are no residential relocations involved and no loss of employment associated with the demolitions. During construction, approximately 50 University personnel currently working in the buildings to be demolished would be relocated to a variety of other campus buildings in accordance with their respective program areas (Ref 2).

3.2 Project Description

3.2.1 Construction Activities

Construction of the proposed ATRC (Figures 2 & 4) would begin as soon as the NEPA requirements are satisfied and DOE gives authorization to proceed.

Demolition of Crutchfield Hall and the Industrial Arts Building would be accomplished by dismantlement to permit salvage of marketable materials and then demolished using a bulldozer. The buildings to be demolished contain asbestos containing materials (ACMs). (See Section 5.1.3.1). There are no PCB's present per Ref. 1.

The proposed ATRC would take approximately 27 months to construct including the demolition of the two existing buildings. Foundations would consist of drilled piers and grade beams in the commons area, and spread footings to support basement walls and columns in the laboratory. At the north and south ends sheet piling would be used to protect existing utilities during the construction of the 27 foot deep basement.

The structural system for the commons area would be steel frame. The laboratory areas would be cast in place concrete from the basement to ground floor with structural steel framing above the ground floor. Steel framed floors would have cast in place concrete on steel form decks.

Construction would involve a variety of vehicles and equipment such as sheet pile drivers, dozers, graders, cement mixers, excavation equipment, compressors, pumps and other machinery (Ref 1,2). All equipment utilized on the project would have the necessary mufflers or other sound suppressants to meet federal guidelines. The existing university road system and parking facilities would accommodate additional traffic resulting from construction activities.

3.2.2 Operation Activities

The proposed ATRC would provide state-of-the-art laboratory and office space to conduct research activities and those activities essential to the support of research and teaching functions, as well as utility and service provisions in the following areas: energy conservation, manufacturing, processes and Systems, materials and material processing, laser applications in industry and medicine, and technology development and technology transfer (Ref 1). Table 3-1 is a tabulation of building space uses, with emphasis on program area laboratories grouped by primary research area (Ref 1).

Most of these activities are currently pursued at six scattered locations around the University: Engineering North, Engineering South, the Noble Research Center, the Mechanical and Aerospace Engineering Research Laboratory, Crutchfield Hall, and Engineering Laboratory (a quonset hut). These facilities are inadequate and could not be effectively modernized and expanded in their current settings. Upon completion of the ATRC, space at the four buildings not scheduled for demolition would be used for expansion of instruction and research not programmed to the ATRC. For example, laser research at the Noble Research Center, currently constrained from expanding, would move into space to be vacated upon ATRC completion. Details on the functional uses of the floor space is presented in the Appendix.

TABLE 3-1. PROPOSED ADVANCED TECHNOLOGY RESEARCH CENTER FACILITY OKLAHOMA STATE UNIVERSITY PLANNED FUNCTIONAL USES OF FLOOR SPACE

Assigned Floor Space	Area Assigned
Energy Conservation, Storage and Conversion	15,500 sf
Manufacturing Processes and Systems	14,750 sf
Materials and Material Processing	14,830 sf
Hazardous and Industrial Waste Management and Mitigation	8,600 sf
Laser Applications in Industry and Medicine	8,600 sf
Technology Development and Technology Transfer	7,495 sf
Offices and Conference Rooms	6,405 sf
Unassigned Areas	12,240 sf
Research Support Areas (Machine Shops, graphic services, analytical instrument maintenance, electronics shop)	24,330 sf
Building Support Areas (Restrooms, janitorial service areas, shipping/receiving, mechanical, ventilation, and electrical equipment areas)	12,450 sf
Corridors, Elevators, Stairs	39,800 sf

The proposed ATRC does not involve the use of radioactive materials.

3.3 No Action Alternative

Under the no action alternative, DOE would not authorize the University to proceed with construction or any other action which would affect the environment or limit alternatives.

The consequence of no action to the University would be to abandon the project and to continue conducting research in six scattered locations utilizing outmoded equipment and facilities preventing the University from expanding capabilities in the areas of energy conservation, manufacturing processes and systems, materials and material processing, laser applications in industry and medicine, and technology development and technology transfer. The no-action alternative restricts future research advances and places barriers to the effective integration of the University's professional research staff. Not replacing aging facilities with more energy efficient buildings to reduce overall energy consumption, pollutant emissions, along with waste minimization would necessitate a reduction in the training of students, service, and research as existing facilities became increasingly outmoded.

Under the no-action alternative, the minimum environmental impacts associated with construction and operation of the ATRC would not occur; however, the beneficial effects of consolidation and modernization of laboratory/office space, (for example, energy efficient HVAC systems, reduced air pollution through the use of updated fume hoods, improved lighting systems, and office automization) also would be missed.

There would be no new environmental impacts should the no action alternative be selected (Ref 2).

3.4 Conceptual Alternatives

The University considered three "conceptual" alternatives for the ATRC as part of project planning between October 1992 and February 1993. All three alternative concepts (See Figures 3.1, 3.2, 3.3) would ultimately utilize the following three sites in the vicinity of the Engineering North Building, which is currently the location of undergraduate education and faculty/staff offices for the College of Engineering, Architecture, and Technology:

- The proposed site
- The site south of Cordell Hall (parking lot)
- The site northwest of the corner of Hester St. and Athletic Ave. (tennis courts)

(Reference June 24, 1993 letter from John Houck, OSU, to Melvena Heisch, SHPO.) All three sites are occupied by buildings currently providing classroom and office space, as well as space currently serving parking or recreational uses.

As previously indicated (Section 2.0), the preferred alternative needed to satisfy several programmatic needs:

1. Ability to accommodate long range expansion.
2. Consistency with Campus Master Plan.
   [On October 8, 1930, the Oklahoma State Board of Agriculture (OSU's Governing body prior to the OSU Board of Regents) adopted a 25-year Campus Master Plan for the Stillwater Campus. The Plan recognized the shortcomings of Crutchfield Hall (then only 19 years old) and called for its razing and the erection of an "Industrial Engineering" building on its site. Each campus planning effort following the 1930 Plan has echoed the need for razing Crutchfield Hall.]
3. Visibility and aesthetic factors. (Providing the College of Engineering, Architecture, and Technology with an overt "Front Door" would, the University believes, help reverse the recent decline in enrollment at the College.)
4. Connectivity to functions in adjacent buildings. (The University believes that it is essential that the ATRC enable a commingling of the current strong undergraduate experience carried out in the Engineering North Building, with the world-class, graduate level research currently being performed at a distance on the northwest side of campus. A physical link with the Engineering North Building would also allow improved cooperation of graduate and under-graduate administration and eliminating inefficient duplication of administrative staff and equipment.)

The University also had a number of practical preferences, including:

5. Minimal impact on parking space.
6. Minimal site constraints or utility problems.
7. Cost and ease of construction.
8. Minimal demolition.
9. Minimal disruption of classes in surrounding buildings.
10. Attractive views from the building.

(Ref. Master Plan, Chapter 6) All three sites satisfy the first two programmatic criteria and the practical limitations, and will ultimately become part of the expansion of the College of Engineering, Architecture, and Technology. The three alternative "concepts" proposed to utilize the three sites in phases (1-4). The proposed alternative (Concept A) was preferred because it met the programmatic criteria, and provided other advantages (such as eliminating two obsolete, energy inefficient, and technically inadequate and potentially hazardous buildings) as well. (Ref 13) Concept B provided an east-west orientation reinforcing existing campus pedestrian circulation and maximizing passive solar potential, but its general orientation essentially destroyed the College of Engineering, Architecture and Technology corridor - the open space that could be developed from the Engineering South Building on the south to Cordell Hall on the north. Also, while it met the third programmatic requirement by providing a "strong public image statement" for the ATRC building and by providing an open plaza which used the College administrative offices as a strong focal point, it failed to meet the fourth

programmatic requirement. As previously indicated, based on evaluations of other successful advanced research centers, the ATRC planning team deemed it critical to connect the Engineering North Building with the research wing of the ATRC, providing ad-hoc areas for intensive collaborative efforts among researchers.

All three alternatives involved essentially the same campus location, and the same operational activities, and therefore equivalent environmental impacts, with one exception. Only Concept C provided for preservation of Crutchfield Hall. Crutchfield Hall is a masonry building with wooden floors, steps, and roofing, constructed on-grade. It was originally constructed in 1911 for use as a men's dormitory, and continued in that capacity until 1939. In 1939, the School of Music "inherited" Crutchfield Hall once additional dormitory space of safer construction was completed as part of the Works Progress Administration (WPA) programs on the OSU Campus. The facility continued in this mode until the completion and dedication of a performing arts center in 1971. At that time, the College of Engineering, Architecture, and Technology grudgingly accepted Crutchfield Hall to ease temporarily its critical shortage of faculty and graduate student office space. At this time, the building is 84 years old, although it has been scheduled for demolition since 1930, when the Oklahoma State Board of Agriculture (OSU's governing body prior to the OSU Board of Regents) adopted a 25-year Campus Master Plan for the Stillwater Campus. The plan recognized the shortcomings of Crutchfield Hall (then only 19 years old) and called for its razing and the erection of an "industrial Engineering" building on its site. Each campus planning effort following the 1930 Plan has echoed the need to raze Crutchfield Hall.

Because it would be impossible to integrate Crutchfield Hall functionally into the ATRC, Concept C focused on avoiding the site of Crutchfield Hall, by using land on and to the north of the Industrial Arts Building. [Adaptation of the building to the highly-technical and demanding research proposed would necessitate raising the building to excavate for a spread footing. Even continued administrative uses would require complete gutting of the facility and reinstallation of fireproof structural steel, sprinkler and fire alarm systems, HVAC and new electrical systems, and additional restrooms. A structural engineering report indicated that these rehabilitation costs, in addition to changes required to comply with the Americans with Disabilities Act of 1990 (elevator, handicapped ramp, etc.) would greatly exceed the worth of the structure]. The Concept provided for an angled wall of the College administrative offices to reinforce existing pedestrian circulation patterns and provide a backdrop for the plaza which could be constructed directly west of Crutchfield Hall. The Concept did not, however, meet the programmatic needs of the University: it was totally inconsistent with all Campus Master Plans from 1930 to date: it foreclosed the University's ability to create an independent facility south of Cordell Hall, seriously limiting long range expansion; and it represented an extremely poor use of critical land within the College campus.

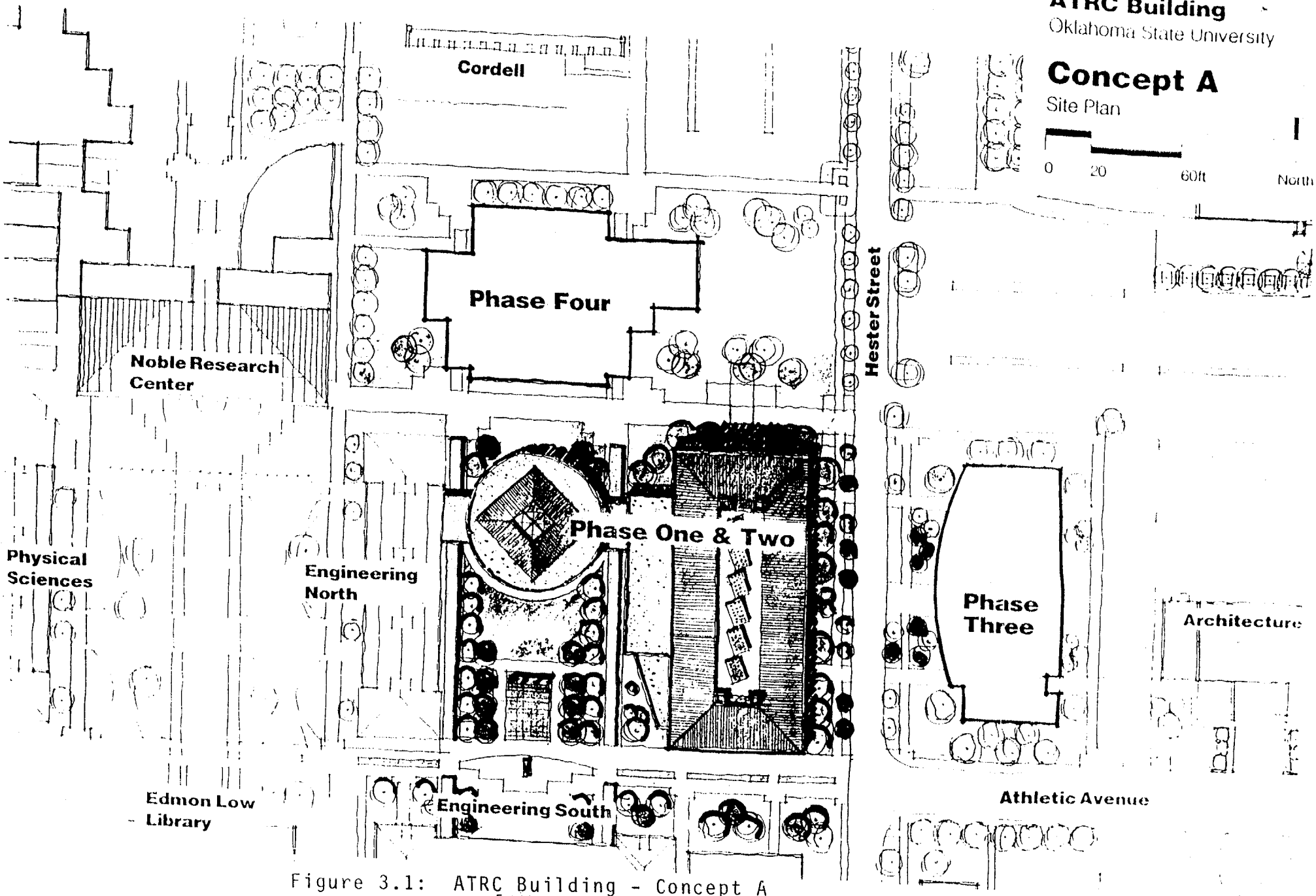

Figure 3.1: ATRC Building - Concept A

Frankfurt Short Bruza Architects Engineers Planners

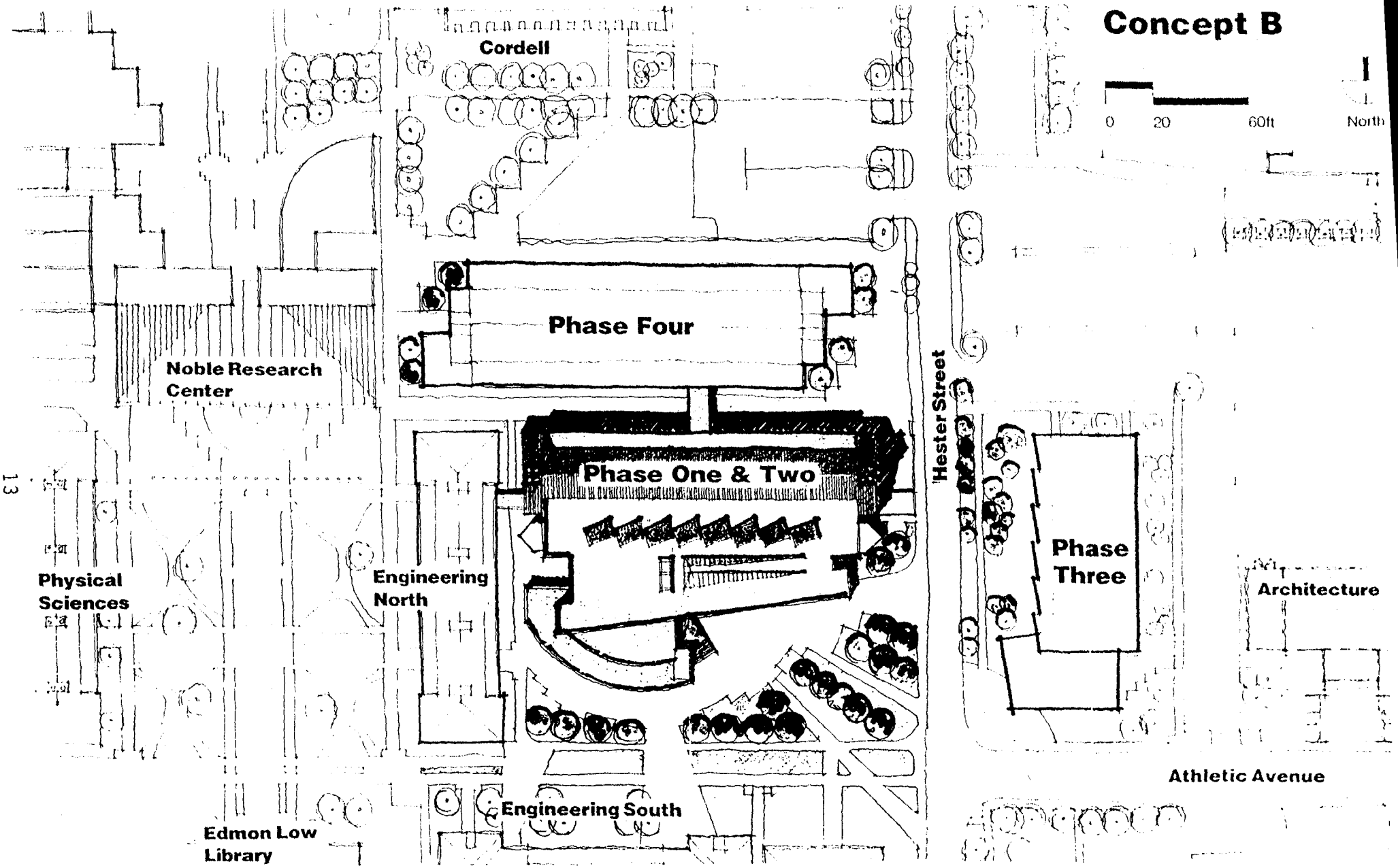

Figure 3.2: ATRC Building - Concept B

Frankfurt Short Bruza Architects Engineers Planners

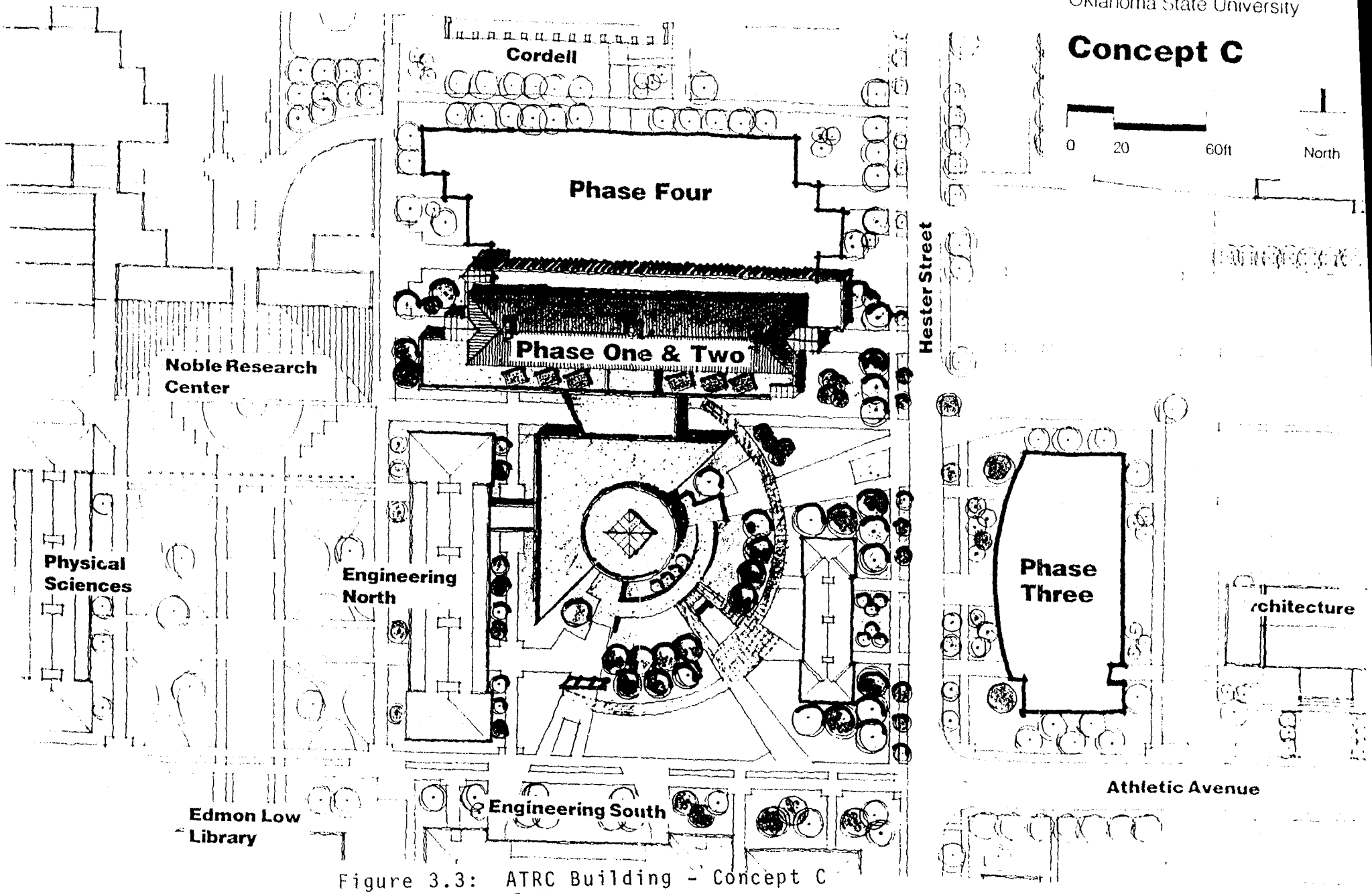

Figure 3.3: ATRC Building - Concept C

Frankfurt Short Bruza Architects Engineers Planners

In light of these facts, the State Historic Preservation Office agreed in late 1993, that further investment in Crutchfield Hall to prolong its use was infeasible from an economic and practical point of view. Thereafter, the University, DOE, and SHPO focussed their efforts upon the preservation of the building's historical and architectural value. See Section 5.1.1.

4.0 AFFECTED ENVIRONMENT

4.1 Site Description

Figure 1 shows the campus area in relationship to its environment in Stillwater. Figure 2 shows the site in relation to its campus environment showing walkways and landscaped areas.

The campus area is gently sloped terrain drained by Boomer Creek to the east and Stillwater Creek to the south. The portion of the campus in the vicinity of the proposed site, as shown on Figure 2, is fully developed consisting of buildings, traffic right of ways, pedestrian ways, parking areas, and landscaped areas including open plazas. The flora typical of this kind of developed environment would be trees, lawn grasses and garden shrubs. The fauna would be predominantly birds and rodents which are typically attracted to urban environments.

The proposed site is currently occupied by two buildings; Crutchfield Hall and the Industrial Arts Building, (Shown on Figure 3) which would be demolished prior to construction. Crutchfield Hall is a three story brick structure providing office space and study hall areas. The Industrial Arts Building provides space for undergraduate instruction and machine shops. An existing parking area would be expanded into a new area currently covered with grass and natural vegetation.

4.2 Air Quality

The area of the proposed project is in attainment with all national and state ambient air quality standards (Ref 14).

4.3 Surface/Ground Water Quality

As shown on Figure 1 the area is drained by Boomer Creek on the east and Stillwater Creek on the south. These streams are intermittent in their natural state, but currently have flows controlled by upstream reservoirs. They drain into the Cimarron River several miles downstream.

There are no significant aquifers in the vicinity of Stillwater and there are no water supply wells in the vicinity of the site. Groundwater is encountered along the Cimarron River and Stillwater Creek several miles from the site (Ref 2).

4.4 Soil

Surface cover at portions of the site not covered by concrete buildings, consists of a thin layer of topsoil. The underlying soil is a layer of variably brown stiff clay typically extending to depths of 6 to 12 feet. This overlies a lower clay level interbedded with calcareous zones to a depth of 12 to 15 feet. Weathered shale bedrock underlies the clay to an undetermined depth (Ref 2).

4.5 Sensitive Resources

4.5.1 Historic/Archeological

The proposed site for the ATRC includes two buildings that would be demolished in the construction process. One building, Crutchfield Hall, meets the National Register of Historic Places eligibility requirements.

4.5.2 Federal/State-Listed or Proposed Protected Species or Critical Habitats

The proposed project area does not contain any Federal or State listed or proposed protected species or critical habitats (Ref 1,7).

4.5.3 Floodplains/Wetlands

The proposed site is neither a designated floodplain or wetland (Ref 8).

4.5.4 National Forests, Parks, Trails, etc.

The proposed project area is not proximate to any national and/or State forests, parks, or trails (Ref 1).

4.5.5 Prime Farmland

The proposed project area is not proximate to any prime, unique or important farmland (Ref 1).

4.5.6 Special Sources of Water

The proposed project area is not part of a supply watershed and the groundwater underlying the site is not a sole-source aquifer.

5.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

5.1 Environmental Impacts of Construction

Proposed construction would take place over an approximately 27 month period. The following impacts would result from the proposed construction process.

5.1.1 Sensitive Resources

As indicated in Section 4.5, there would be no sensitive resources except an eligible historic property, Crutchfield Hall.

In 1993, based upon the collaborative efforts of the University, the Oklahoma Historical Society ("State Historic Preservation Office" or "SHPO"), and the University architects for the ATRC project, Crutchfield Hall was determined to be eligible for listing on the National Register of Historic Places. (Ref. July 6, 1993 letter from Melvena Heisch, SHPO, to John Houck, OSU; July 19, 1993 letter from Houck to Heisch; and December 10, 1993 letter from Houck to Claudia Nissley, ACHP). Recognizing that the proposed action involved demolition of Crutchfield Hall, the Department of Energy issued a Determination of Adverse Effect (Ref. 20, March 30, 1994 letter from C. Langenfeld to Melvina Heisch) and began discussions with the SHPO and Advisory Council on Historic Preservation (Golden, CO) on appropriate mitigation. A Memorandum of Agreement (MOA) consistent with 36 CFR 800.13 was executed by the University, DOE, and SHPO in April, 1994, and accepted by the ACHP in June, 1994. The MOA stipulates recordation measures for the purpose of historical and architectural documentation be carried out prior to demolition following specified Federal standards. Implementation of its terms is evidence that DOE has afforded the Council an opportunity to comment on the Advanced Technology Research Center project and its effects on historic properties, and that DOE has taken into account the effects of the undertaking on historic properties, in satisfaction of its responsibilities under Section 106 of the National Historic Preservation Act. It also represented the SHPO's agreement with the University's determination that alternatives to the demolition of Crutchfield Hall were not feasible.

The University was responsible for the development and compilation of the recordation materials, with DOE undertaking the responsibility to make sure that the terms of the MOA were satisfied. An extensive (Level I) HABS/HAER [See the "Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation"] recordation of the history and architecture of Crutchfield Hall has been performed by qualified professionals and accepted and archived by the Oklahoma Historical Society. Level I is the most stringent of 4 HABS/HAER documentation levels, and involves development of a full set of measured drawings (including floor plans, typical elevations, and construction details) recorded on linen or mylar media; production of large format, black and white photographs to record exterior and interior views of the facility; and preparation of a full written history of the facility.

The SHPO has determined that the documentation produced by the University meets all four HABS/HAER Standards: Standard I regarding adequacy of content; Standard II regarding quality of documentation: Standard III regarding appropriateness of materials; and Standard IV regarding clarity and conciseness (Ref. 21). On this basis, the SHPO has determined that the requirements of the Memorandum of Agreement have been satisfied, and therefore the NHPA Section 106 process is complete. More importantly, for purposes of compliance with the National Environmental Policy Act, SHPO acceptance of the documentation constitutes a determination that the effect of the undertaking

is not adverse, in accordance with 36 CFR 800.9(c), which provides:

> (c) Effects of an undertaking that would otherwise be found to be adverse may be considered as being not adverse for the purpose of these regulations:
>
> (1) When the historic property is of value only for its potential contribution to archeological, historical, or architectural research, and when such value can be substantially preserved through the conduct of appropriate research, and such research is conducted in accordance with applicable professional standards and guidelines;

5.1.2 Erosion/Run-Off

Erosion and runoff during construction would be controlled using conventional methods such as proper grading and preparation of surfaces for construction equipment, and use of hay bales downgradient of stockpiled material. (Ref 1)

5.1.3 Demolition/Construction Waste Disposal

5.1.3.1 Asbestos

Prior to demolition of the existing buildings on the proposed site, approximately 20-25 cubic yards of asbestos containing materials (ACMs) would be removed under a State license for disposal at the Laidlaw landfill in Oklahoma City. A qualified contractor would be retained to remove and dispose of the ACMS. ACMs would be managed pursuant to Oklahoma Statutes Title 40, Sections 451-457, and pursuant to Abatement of Friable Asbestos Materials Rules (Ref 2).

5.1.3.2 Excavation Waste/Disturbance of Contaminated Soil

There are no indications of the existence of any contaminated soils at the proposed site. It is estimated that approximately 49,000 cubic yards of uncontaminated soil would be excavated during proposed construction and removed by the contractor to a permitted landfill site (Ref 2).

5.1.3.3 Other Construction and Demolition Waste

The project would generate a total of approximately 2,000 cubic yards of waste material from both demolition and construction. Waste materials typical of this kind of demolition and construction would include masonry, wood, metals, plastics and paper. These materials would be removed to a local or regional landfill permitted to accept construction and demolition waste. The specific landfill would be selected by the contractor. The construction contractor will be required to seek recycling opportunities where applicable during the demolition of the existing buildings on the proposed site (Ref 1,2).

5.1.4 Air Quality Impacts (Dust, Equipment Emissions)

Emissions would occur from operation of construction machinery and trucks and from dust generated during demolition and construction activities. Emissions would vary over the 27 month construction period. Dust emissions would be abated using conventional methods such as water spray and other methods pursuant to Oklahoma Air Pollution Control Regulation(Ref 1,2).

5.1.5 Noise

Noise common to building demolition and construction would result from the temporary use of heavy equipment, diesel or gas driven machinery, and various engines and pumps. Construction would also produce temporary noise disturbances associated with construction induced traffic. Typical machinery would include bulldozers, cranes, air compressors, sheetpile driver, and a cement mixer. Typical noise level for a bulldozer would be 107 db at the source, 87-102 db at 50 ft, 81-96 db at 100 ft, 75-90 db at 200 ft, and 69-84 db at 400 ft. These levels compare to the pain threshold of 125 db, and an annoyance threshold at 65 db. At these levels persons outdoors within a 400 feet radius of the source, assuming no topographic attenuation, would experience noise in the annoyance range of 65 to 125 db. For persons indoors these levels would be considerably attenuated depending upon the acoustical insulation properties of walls and windows. These sources of noise would be intermittent and temporary during excavation, sheetpile driving, grading, and structure assembly (Ref 1,2, 12).

Contractors would be required by the University to use properly muffled equipment. While there would be no restrictions on working hours, normal construction hours would be 8 AM to 4 PM, Mondays through Fridays. Receptors of construction noise would include persons in surrounding the site. The location of the nearest indoor receptor is the building South of the ATRC. The distance varies between 100-400 feet from the source of noise at a given time. All nearby building receptors are University buildings housing academic activities and do not involve residential uses (Ref 1,2).

5.1.6 Transportation Impacts

The project would require no change to existing vehicular patterns. While no traffic study has been done for this project, construction induced traffic is not expected to have a disruptive effect on local circulation and access. Hester Street carries approximately 2,500 vehicles per day on a typical weekday during the academic semester (Ref 2). This load increases during special campus events such as graduation and football games.

The project would range between 20 to 40 vehicles per day during construction (Ref 1,2).

Only one new Department is planned. Impacts of personnel relocation would be temporary; adequate replacement work space exists on campus to accommondate the displaced personnel. Some parking spaces will be removed due to the construction process and space will be reconstructed at another campus location.

The replacement parking site would enhance the overall parking at the University. It would result in a net increase in spaces for the handicapped. The new location does not significantly affect the overall flow of traffic in its area, but does relieve some congestion in an area closer to the central campus. During special events such as football and basketball games and graduation exercises, it should relieve some of the attendant traffic congestion. Finally, the number of spaces in the new lot would actually exceed the number deleted by the ATRC construction.

5.1.7 Relocation

During construction, approximately 50 University personnel currently working in the buildings to be demolished would be relocated to a variety of other campus buildings in accordance with their respective program areas (Ref 2). Impacts of personnel relocation are temporary, since work space already exists on the campus to accommodate the relocated personnel.

5.2 Environmental Impacts of Operations

5.2.1 Domestic Waste

The estimated annual solid waste load for the ATRC is 750 cubic yards. This would be merged with the University's load of 25,000 cubic yards for disposal at a private local landfill, HEW Waste System Sanitary Landfill. The net increment of waste would be negligible taking into account the reduction from the demolished buildings (Ref 2).

5.2.2 Sanitary Waste

The estimated sanitary waste discharge of the ATRC is 5,200 gallons per day. This would be merged with University's total of approximately 500,000 gallons per day for discharge to the Stillwater municipal treatment plant. Sanitary discharge would include neutralized acidic and basic liquids from laboratories pursuant to treatment plant acceptance criteria. The net increase in sanitary waste load would be negligible taking into account the reduction in waste load from the demolished building (Ref 1,2). Sanitary discharge would include a small volume of autoclaved biological wastes (see section 5.2.4).

5.2.3 Hazardous Waste

Data on hazardous wastes expected from the proposed ATRC are summarized on Table 5-1 and discussed in the following sections.

The University generates approximately 30,000 pounds of hazardous waste annually. The ATRC would generate approximately 2,100 pounds (see Table 5-1).

ATRC hazardous wastes would be generated, stored and handled pursuant to the University's large quantity generator permit issued by EPA, number OKD 000829465. The University has in place a waste minimization program. Storage would take place in standard size containers which would be sealed and properly labeled as to type of waste and hazard warnings in accordance with the University's Laboratory Safety Manual and applicable federal and State

regulations(Ref 10.11).

TABLE 5-1. SUMMARY DATA ON HAZARDOUS WASTES

COMPOUND	LAB SOURCE	Proposed ATRC #/yr	OSU #/yr	DISPOSAL METHOD
Ethylamine	Energy Conversion, Fluid Mechanics and Thermal Sciences	227	600	Contractor Treatment Method
Nitro Compounds	Environmental and Hazardous Materials	79	2450	Contractor Treatment Method
Pentane	Thermodynamics	117	1	Fuel Blending
Non-Chlorinated Solvents	Thermodynamics	183	4776	Fuel Blending
Toluene	Web Processing	2.2	1232	Fuel Blending
Benzene	Web Processing, Laser Lab	1.5	21	Fuel Blending
Tetra Hydro Furan	Web Processing	4.8	29	Fuel Blending
Acetone	Laser	8	170	Fuel Blending
Methanol	Laser	17	406	Fuel Blending
Sulfonated Cyclic Organics	Environmental and Hazardous Materials	1000	0	Recycled
Glycol	Laser	33	2500	Resale/Reuse
Hydraulic Fluids	Machine/Milling Shop	450	29500	Resale/Reuse

Hazards control and training would be provided by the existing University program per 40 CFR 260 and 29 CFR 1910 (sections 120, 1200 and 1450) as described in the University's Laboratory Safety Manual (Ref 10).

The University's total hazardous waste load of 30,000 pounds per year is transported by a licensed contractor for treatment, storage, disposal and fuel blending at an off-site location in accordance with federal and state regulations. The current contractor is Environmental Enterprises of

Cincinnati, Ohio (EPA ID OHD083377010). The waste load of the ATRC would be merged with University's waste streams according to type of hazardous waste. The proposed ATRC generated quantities are compared with University wide quantities in Table 5-1 (Ref 2).

5.2.4 Biological/Medical Waste

The proposed ATRC would not generate medical wastes and no conventional biological wastes such as those associated with animal research laboratories. It would generate pproximately 3 liters per month of spent slurries. These slurries would contain bacteria on culture media from laboratories experimenting with biological waste treatment systems for conventional sewage and sludge. These bacteria would be destroyed in the laboratory by sterilization, and the slurry mixed with 15 to 30 liters of water per month prior to discharge to the sanitary sewer (Ref 2).

5.2.5 Radioactive and Mixed Hazardous/Radioactive Waste

The proposed ATRC would not generate radioactive or mixed hazardous/radioactive wastes (Ref 1,2).

5.2.6 Radioactive Exposures (Estimate Worker and Public Doses)

The proposed ATRC would have no sources of ionizing radiation such as X-rays, gamma rays, or neutrons. (The Terahertz Radiation Lab listed in Appendix A2: generates highly localized electromagnetic fields of very low intensity (i.e. 10^{-8} watts, a trivial level) similar to fields generated by computers and electric appliances

5.2.7 Air Emissions

5.2.7.1 Criteria Pollutants

The proposed ATRC criteria pollutant emissions would be associated with its incremental demand for heat and hot water supplied by a central gas-fired campus boiler facility. Emission estimates in pounds per year are as follows:

POLLUTANT	OSU EMISSION (#/yr)	ATRC EMISSION (#/yr)	PAYNE COUNTY STATIONARY SOURCES *(permitted)* (#/yr)
Particulates	3,079	37	257,000
SO2	369	4	10,800
NO_x	338,648	4084	878,000
VOC*	1,047	13	4,310,000
CO	24,629	297	813,000

* Volatile Organic Compounds

These estimates do not include a reduction in emissions from the proposed project because of the replacement of the two energy inefficient structures proposed for demolition. County data does not include unpermitted stationary sources and vehicles.

The OSU boiler is not permitted because it began operations prior to the permit program and was "grandfathered" under the regulations. While data on the status of the State Implementation Plan is not available at this time, it would appear unlikely that the proposed ATRC incremental emissions would threaten the current attainment status for any of the criteria pollutants (Ref 2,14).

5.2.7.2 Toxic Emission

No hazardous air pollutants subject to NESHAP would be produced by the proposed project. While the proposed ATRC will emit some (See table in Section 5.2.7.4 for quantities) benzene, NESHAPS limits on benzene emissions apply only to specific industrial categories which would not include the proposed ATRC.

Toxic emissions not regulated under NESHAPS associated with the ATRC would be as follows:

COMPOUND	SOURCE	OSU EMISSION (#/yr)	ATRC (#/yr)	THL* (#/yr)
Methane	Thermodynamics	500	3.35	no limit
Toluene	Web Processing	5	0.25	0.3×10^9
Benzene	Web Processing	21	15.25	0.6×10^7
Tetrahydrofuran	Web Processing Analytical/Instrum.	7.25	1.2	1.2×10^9
H (0.5%,HCl(0.2%) Xenon (3.11%)	Laser Lab	0.6	0.15	---
Mixed Gases: H_2S, C_2H_6, C_3H_8, He, N	Energy Conversion Fluid Mechanics Thermal Science	24	8	---

* Refers to the limiting emission estimated to produce the Threshold Limit Value (TLV) as defined by the American Conference on Governmental Industrial Hygienists (ACGIH) (Ref 15)

The above table demonstrates that the proposed ATRC and total OSU toxic emissions are many orders of magnitude less than those levels which, according to the ACGIH, would produce harmful effects in humans as result of airborne exposure. The limiting emission was estimated using order of magnitude analysis based on the dispersion model analysis of Geraghty & Miller (Ref 16), and the TLV values published by ATRC (Ref 15). While the values in the table are subject to large errors of estimate, it would appear that harmful effects to the public resulting from these emissions would be remote.

5.2.8 Noise

Equipment which would generate noise include high speed web handling, wind tunnel, and purolator test equipment. Noise generating equipment is being designed with acoustical insulation around the equipment enclosures. Noise from these sources would be confined to the respective laboratory areas and would not propagate to the external environment (Ref 2). In addition to these sources, other sources inside the proposed building include conventional heating, ventilation, and air conditioning machinery and conduits. The University has safety guidelines for workers operating near high level noise sources (Ref 17).

5.2.9 Socioeconomic Impacts

The OSU College of Engineering, Architecture and Technology (CEAT) currently spends approximately $12 million annually for research, technology development and transfer which supports 50 engineering faculty and 120 graduate students.

The proposed facility is expected to attract extramural funding. As a result, in the first two years the proposed ATRC is expected to add 5 new faculty and 25 additional staff to the CEAT with $1 million in payroll. By the fifth year this is expected to reach approximately $3 million, with a long term goal of $5 million. Total annual University expenditure for FY 1994 is **$175 million** and current payroll is $154 million.

5.2.10 Natural Hazards and Accidents

5.2.10.1 Risk Of Natural Hazards

The proposed ATRC is not in a seismic risk area. However, the proposed ATRC is in a tornado hazard area. According to the National Severe Storms Laboratory the expected frequency of a tornado at the proposed site would be 1 occurrence in 250 years with an unspecified wind speed substantially less than 200 mph (Ref 9, 18,19).

The proposed ATRC would be designed to meet or exceed the requirements of the Building Officials and Code Administrators (BOCA) National Building Code 1993 which is the adopted code of OSU and the State Fire Marshall which have code enforcement jurisdiction. The proposed ATRC building is designed for a wind speed of 80 mph (return period of 50 years), exposure condition "C" (open terrain with scattered obstructions having a height generally less than 30 feet). Conventional practice for buildings of this type in Oklahoma and on the campus does not include tornado-resistant design.

The effects of a tornado incident cannot be fully predicted. State-of-the-art prediction methods would involve a combination of wind tunnel studies on a model of the building, together with computer simulations. These studies are not conventionally performed for buildings such as the proposed ATRC. While such studies do provide a basis for tornado resistant design, micro-scale tornado effects are inherently unpredictable, and the effects of the tornado would still be uncertain.

Assuming the entire small chemical and hazardous waste inventory (See Table 5-1) were released, it would be rapidly dispersed, with no measurable collateral damage to persons or the environment.

5.2.10.2 Accidents and Other Risks

Research facilities such as the proposed ATRC may have accident risks associated with spills of hazardous materials, injuries to center personnel from inadvertent exposure, and from various incidents such as minor cuts and falls. Safety practices at the University pursuant to applicable Federal and State regulations are described in University's safety manual (Ref 11).

Accidents and injuries are monitored by the University's Physical Plant Environmental Health and Safety Department (EHS). Incidents of record include Accident Reports, Incident Reports, and Exposure Reports. With few exceptions, most incidents reported involved minor cuts or burns. In the past ten years 143 such reports have been filed from all campus activities, and none of these reports involved death or major injury requiring hospitalization. A review of the EHS log show that only 7 of these accidents were from laboratories such as those which would be included in the proposed ATRC (Ref 2).

The risk of accidents from the ATRC is expected to be no greater than that of similar facilities based on several years of accident reporting at the University. Based on this evidence, it is anticipated that accidents associated with the proposed facility would not be likely to threaten the health and safety of workers or the public.

5.2.11 Visual and Aesthetic Impact

The proposed ATRC would result in an increase of landscaped open space and would be an aesthetic improvement with benefits to the surrounding buildings and the campus as a whole.

5.2.12 Cumulative Impacts

Cumulative impacts are defined as "the environmental impact of the action when added to other past, present and reasonably foreseeable future actions . . . individually minor but collectively significant . . ." per 40 CFR 1508.7. Cumulative impacts have been considered in the context of each environmental impact discussed in this document, as well as in relation to the impact of the proposed project as a whole. There is no evidence that cumulative impacts from construction or operation would occur in the context of the National Environmental Policy Act (NEPA) .

Impacts from construction of the expanded parking lot would be temporary and would cause no cumulative impacts.

5.3 Compliance With Regulations

The ATRC would be covered by all regulations that currently apply to the University. The proposed project would not require any new permits or changes to existing permits. The proposed project would be constructed and operated in compliance with all applicable federal, state, and local environmental regulations (Ref 2).

6.0 RELATIONSHIP OF THE PROPOSED ACTION TO OTHER ACTIONS BEING CONSIDERED UNDER OTHER NEPA REVIEWS

The proposed ATRC is not related to other actions or to actions being considered under other NEPA reviews.

7.0 RELATIONSHIP OF THE PROPOSED ACTION TO APPLICABLE FEDERAL, STATE, REGIONAL OR LOCAL LAND USE PLANS AND POLICIES LIKELY TO BE AFFECTED

As a state owned property the campus of OSU is not subject to local land use or zoning ordinances. The growth of development of the campus is governed by a master planning process dating back to 1930. While the campus and the City of Stillwater independently determine their respective land uses, the proposed project does not engender any land use conflict.

8.0 LISTING OF PERSONS AND AGENCIES CONSULTED

Advisory Council on Historic Preservation, Claudia Nissley, Director, Western Office of Review

Oklahoma Historical Society, State Historic Preservation Office, J. Blake Wade, State Historic Preservation Officer

U.S. Fish and Wildlife Service, Tulsa Oklahoma, Kenneth D. Frasier

U.S. Army Corps of Engineers, Tulsa District, David Steele, Chief, Planning Division

State of Oklahoma, Department of Environmental Quality, Scott Thomas, Program Director

National Severe Storms Laboratory at Norman, Oklahoma, Bob Davies Jones, Meteorologist

9.0 REFERENCES

1. Environmental Report for the Advanced Technology Research Center Facility, Oklahoma State University, Stillwater Oklahoma. Frankfurt. Short. Bruza. Architects Engineers Planners, December 1993

2. Responses to Comments on Environmental Report:
   (1) John Houck, Director, Physical Plant Services, Oklahoma State University, July 13, 1994
   - Exhibit A: Description of Building Systems
   - Exhibit B: Memorandum of Agreement on Historic Preservation
   (2) Fred Schmidt, Project Director, Frankfurt, Short, Bruza, CP, August 24, 1994

3. Letter of February 10, 1994 offering assistance in preparing Memorandum of Understanding on Crutchfield Hall, Claudia Nissley, Director, Western Office of Review, Advisory Council on Historic Preservation

4. Memorandum of Agreement (MOA) on Crutchfield Hall, Approved by Robert D. Bush, Executive Director, Advisory Council on Historic Preservation, June 1, 1994

5. Letter of June 16, 1994 to Department of Energy from Claudia Nissley, Director Western Review Office, Advisory Council on Historic Preservation

6. Letter of June 30, 1994 to Oklahoma State University from Johnnie D. Greenwood, Director, Contracts Division, Department of Energy, Chicago Field Office.

7. U.S. Fish and Wildlife Service, Tulsa Oklahoma, No Effect Finding, July 27, 1992, signed by Kenneth D. Frasier

8. U.S. Army Corps of Engineers, Tulsa District, Letter of July 27, 1992, G. David Steele, Chief, Planning Division

9. National Severe Storms Laboratory, Norman Oklahoma, Record of Phone Conversation by Fred Schmidt, Frankfurt Short Bruza, CP, July 11, 1994

10. Laboratory Safety Manual, Section 3.3, Chemical Safety, Oklahoma State University, 1994

11. Laboratory Safety Manual, Section 3.4, Chemical Waste, Oklahoma State University, 1994

12. Environmental Impact Data Book, Chapter 8 - Noise, Tables 8-1 to 8-4, Anne Arbor Science, 1979

13. Advanced Technology Research Center Program Report, Volume 1, Chapter 6 - Existing Site Conditions, (alternative siting considerations), Oklahoma State University, February 1993

14. State of Oklahoma, Department of Environmental Quality, Letter on Air Quality, Scott Thomas, Program Director, August 12, 1994

15. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, 1993-1994

16. Air Pollution Hazard Analysis for the Institute for Micromanufacturing at Louisiana Tech University, Geraghty & Miller, December 15, 1992

17. Laboratory Safety Manual, Table G-16, Permissible Noise Exposure, Oklahoma State University, 1994

18. Thomson, H.C.S., U.S. Climatology & Weather Bureau, Tornado Probabilities, published in Monthly Weather Review, Vol 91, p 730-36, 1963

19. Abbey, R.F. Jr, Nuclear Regulatory Commission, Risk Probabilities Associated with Tornado Wind Speeds, published in Proceedings on the Symposium on Tornadoes; Assessment of Knowledge and Implications for Man, pp 177-236, Texas Tech University, June 22-24, 1976

20. Letter of March 30, 1994 to Oklahoma SHPO Office from Cherri J. Langenfeld, DOE Manager, Determination of adverse effect upon Crutchfield Hall.

21. Letter from Oklahoma State Historic Preservation Office, dated April 26, 1995 to Mr. John Houck, OSU, Ref. Acceptance of all documentation required per the Memorandum of Agreement.

APPENDICES

A 1: Supporting Documentation

Letter of February 10, 1994 offering assistance in preparing Memorandum of Understanding on Crutchfield Hall, Claudia Nissley, Director, Western Office of Review, Advisory Council on Historic Preservation

Memorandum of Agreement (MOA) on Crutchfield Hall, Approved by Robert D. Bush, Executive Director, Advisory Council on Historic Preservation, June 1, 1994

Letter of June 16, 1994 to Department of Energy from Claudia Nissley, Director Western Review Office, Advisory Council on Historic Preservation

Letter of June 30, 1994 to Oklahoma State University from Johnnie D. Greenwood, Director, Contracts Division, Department of Energy, Chicago Field Office, making recordation per the MOA (see ref 4) a pre-condition to a Finding of No Significant Impact for the proposed Advanced Technology Research Center

U.S. Fish and Wildlife Service, Tulsa Oklahoma, No Effect Finding, July 27, 1992, signed by Kenneth D. Frasier

U.S. Army Corps of Engineers, Tulsa District, Letter of July 27, 1992, G. David Steele, Chief, Planning Division

State of Oklahoma, Department of Environmental Quality, Letter on Air Quality, Scott Thomas, Program Director, August 12, 1994

A 2: FUNCTIONAL USES OF FLOOR SPACE

1 **Energy Conservation, Storage and Conversion:** 15,500 SF

- Energy Conservation Pilot Plant Lab
- Energy Storage and Conversion Labs
  - Renewable Energy Lab
  - Advanced Energy Conversion and Processing Facility
  - Natural Gas Conversion Facility
  - Natural Gas and Coal Conversion Facility
- Fluid Mechanics Lab
  - Large Wind Tunnels
  - Purolator Test Facility
  - Small Wind Tunnel
  - Small Scale Turbulence Facility
  - Water Tables/Water Tunnel Facility
  - Laser Doppler Velocimeter Mobile Unit and Maintenance
- Thermal Sciences Lab
  - Thermal Hydraulic Research Facility
  - Electronic Cooling Facility
  - Fluid Flow and Heat Transfer Facility

Indoor Environment Lab
- Thermodynamics Lab
- Adsorption Studies Facility
- High Pressure Vapor-Liquid Phase Facility
- Low Pressure Vapor-Liquid Phase Facility
- Liquid-Liquid Phase Equilibrium Facility
- Thermodynamic Processes Development Facility
- Polymer Thermodynamic and Transport Facility

2 **Manufacturing Processes and Systems:** 14,750 SF

Manufacturing Processes /Ultra Precision Machining and Grinding
- Temperature and Humidity Control Room
- Class 100 Clean Room
- Conventional Machining Facility
- Non-Conventional Machining Facility
- Metal Forming Facility
- Composite Research Facility
- Manufacturing Processes Computation Lab

Systems and Control Lab
- Library and Resource Room
- Control Room Simulator
- Real Time Simulation and Control Room
- Concept Development Room
- Computer Hardware Assembly and Interfacing Facility

3 **Materials and Material Processing:** 14,830 SF

Materials Processing
- Diamond Synthesis
- Characterization
- Tribology
- Scanning Probe Microscopy

Advanced Polymer Technology
- Fluid Mechanics and Rheology
- Mass Transfer (Web Processing)
- Web Processing/Polymer Thermodynamics
- Structural Composites

Web Handling
- Winding Laboratory
- Web Storage Room
- High Speed Web Laboratory
- Special Web Project Laboratory
- Web Transport Laboratory
- Computational Lab
- Professional Services
- Resource and Data Base Services

Chemical Separations
- Ultra Pure Water Processing Studies
- Membrane Separation

4 **Hazardous and Industrial Waste Management and Mitigation:** 8600 SF

Environmental and Hazardous Materials
- Process Laboratory
- Large Scale Process Laboratory
- General (Biological) Laboratory
- Preparation Room
- Isolation Room
- Environmental Laboratories

5 **Laser Applications in Industry and Medicine:** 8,600 SF

Laser Applications
- Moire Deflectometry Lab
- Medical Optometry Lab
- Laser Scattering Lab

Specialized Optical/Mechanical Techniques
- Guided Wave Optics
- Micro Lithography and Diagnosis
- E-Beam Lithography and Diagnosis
- Optical Characterization

High Power Colliding Pulse Modelocked Laser
- Terahertz Radiation Lab
- High Power Colliding Pulse Laser

Unassigned Laser Labs

6 **Technology Development and Technology Transfer:** 7,495 SF
Research Center Headquarters (offices)
Information and Knowledge Exchange (Lecture & Seminar Rooms)

7 **Offices and Conference Rooms**: 6,405 SF

8 **Unassigned Areas:** 12,240 SF

9 **Support Facilities** (Machine shops, graphic laboratories, analytical instrument laboratory, electronics shop, common areas, offices): 24,330 SF

10 **Building Support** (Restrooms, janitorial, shipping/receiving, mechanical, air handling and electrical equipment) 12,450 SF

11 **Circulation** (Corridors, elevators, stairs): 39,800 SF

Advisory
Council On
Historic
Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

Reply to: 730 Simms Street, #401
Golden, Colorado 80401

COPY

Dick

RECEIVED
FEB 17 1994
PFMC

February 10, 1994

John D. Houck, P.E.
Director, Physical Plant Services
Oklahoma State University
103 Asppa Building
Stillwater, OK 74078-0113

REF: Advanced Technology Research Center and Proposed Demolition of Crutchfield Hall, Oklahoma State University, Stillwater, OK

Dear Mr. Houck:

We have reviewed the information including the Draft Memorandum of Agreement (MOA) you recently forwarded us regarding the construction of the Advanced Technology Research Center (ATRC) and the proposed demolition of Crutchfield Hall. Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR Part 800, requires the Federal agency official with jurisdiction over an undertaking to assume the legal responsibility for complying with Section 106. We understand that Oklahoma State University (OSU) has applied for project funding through the Department of Energy (DOE). Although DOE may use the services of applicants to prepare the necessary information and analyses, it cannot delegate its responsibility to take the effect of the undertaking on historic properties into account and provide the Council with a reasonable opportunity to comment. Therefore, it is essential that DOE initiate the Section 106 review process with the Oklahoma State Historic Preservation Officer (SHPO) and the Council.

The intent of the Section 106 process is to accommodate historic preservation concerns with the needs of Federal undertakings. The SHPO's letter of October 1, 1993 sets out the historic preservation concerns raised by this project and provides a good basis for the alternatives analysis conducted through the Section 106 review. We recommend that the parties review the exterior design and site plan of the proposed ATRC Building to determine if these designs are compatible with the historic characteristics of the OSU historic district. The parties should also determine if these construction activities have the potential to uncover archeological resources that may be eligible for inclusion in the National Register and develop measures to treat such a discovery.

We look forward to working with you, DOE, the SHPO, and any other interested parties to analyze the needs of the University in the

development of this project and to assist the parties in developing and finalizing an MOA for the undertaking. If you have any questions you may contact Lee Keatinge of the Western Office of Review at (303) 231-5320.

Sincerely,

Claudia Nissley
Director, Western Office
of Review

MEMORANDUM OF AGREEMENT

Submitted to the Advisory Council on Historic Preservation
Pursuant to 36 CFR 800.6(a)

WHEREAS, the Manager of the U.S. Department of Energy (DOE), Chicago Operations Office (CH), as the Agency Official has determined that the Advanced Technology Research Center Project located at Oklahoma State University, Stillwater, Oklahoma, will have an effect upon Crutchfield Hall, situated at the N.W. corner of Hester St. and Athletic Ave. in Stillwater, Oklahoma which is a property eligible for inclusion in the National Register of Historic Places, and has consulted with the Oklahoma State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f);

NOW, THEREFORE, the undersigned representatives of the U.S. DOE, Oklahoma State University and the Oklahoma State Historic Preservation Office agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

1. Recordation measures for Crutchfield Hall shall be carried out in accordance with the "Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation: HABS/HAER Standards", originally published as Federal Register, Vol. 48, No. 190, Thursday, September 29, 1983, pp. 44730-34, and including all subsequent issues.

2. All documentation shall meet documentation level I, and shall be completed and accepted by HABS or HAER prior to the demolition of Crutchfield Hall, and copies of this documentation shall be made available to the Oklahoma SHPO and appropriate local archives designated by the Oklahoma SHPO.

3. All final reports of activities carried out shall be provided to the Oklahoma SHPO and, upon request, to other interested parties.

4. All historic and architectural documentation shall be carried out by or under the supervision of a person or persons meeting at a minimum the appropriate qualifications in history, architectural history, and/or architecture as set forth in the Department of Interior's "Professional Qualifications."

5. Should the Oklahoma SHPO or Council object within 30 days to any plans or specifications provided, the Agency Official

shall consult with the objecting party to resolve the objection. If the Agency Official determines that the objection cannot be resolved, the Agency Official shall request the further comments of the Council pursuant to 36 CFR Section 800.6(b).

Execution of this Memorandum of Agreement by the U.S. DOE, the Oklahoma State University, the Oklahoma SHPO, its subsequent acceptance by the Council, and implemenation of its terms, evidence that the U.S. DOE has afforded the Council an opportunity to comment on the Advanced Technology Research Center Project and its effects on historic properties, and the U.S. DOE has taken into account the effects of the undertaking on historic properties.

U.S. Department of Energy, Chicago Operations Office

By: David T Goldman Date: 4/18/94
Cherri J. Langenfeld
Manager

Oklahoma State University

By: Ray M. Bowen Date: 4/27/94
Dr. Ray M. Bowen
Interim President

Oklahoma State Historic Preservation Officer

By: J Blake Wade Date: 4-28-94
J. Blake Wade
State Historic Preservation Officer

Accepted for the Advisory Council on Historic Preservation

By: Robert D. Bush Date: 6-9-94
Robert D. Bush, Executive Director

Advisory
Council On
Historic
Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW #809
Washington, DC 20004

Reply to: 730 Simms Street, #401
Golden, Colorado 80401

June 16, 1994

Cherri J. Langenfeld, Manager
Department of Energy
Chicago Operations Office
9800 South Cass Avenue
Argonne, IL 60439

REF: Memorandum of Agreement regarding Crutchfield Hall, Oklahoma State University, Stillwater, OK

Dear Ms. Langenfeld:

The enclosed Memorandum of Agreement (MOA) regarding the demolition of Crutchfield Hall at Oklahoma State University (OSU) has been accepted by the Council. This MOA did not stipulate which party was responsible for the development and completion of the recordation materials nor did the Department of Energy specifically acknowledge its duty to ensure that its terms were fulfilled according to the Council's standard format. We understand that OSU will prepare the required recordation, but request that you take any steps that may be necessary to clarify this issue and ensure the completion of this material.

The Council's acceptance of this agreement evidences our comments as required by Section 106 of the National Historic Preservation Act and the Council's regulations. Please send a copy of this Agreement to the Oklahoma State Historic Preservation Officer and OSU. The Council appreciates your cooperation in reaching a satisfactory resolution of this matter.

Sincerely,

Claudia Nissley
Director, Western Office
of Review

Enclosure

MEMORANDUM OF AGREEMENT
Submitted to the Advisory Council on Historic Preservation
Pursuant to 36 CFR 800.6(a)

WHEREAS, the Manager of the U.S. Department of Energy (DOE), Chicago Operations Office (CH), as the Agency Official has determined that the Advanced Technology Research Center Project located at Oklahoma State University, Stillwater, Oklahoma, will have an effect upon Crutchfield Hall, situated at the N.W. corner of Hester St. and Athletic Ave. in Stillwater, Oklahoma which is a property eligible for inclusion in the National Register of Historic Places, and has consulted with the Oklahoma State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f);

NOW, THEREFORE, the undersigned representatives of the U.S. DOE, Oklahoma State University and the Oklahoma State Historic Preservation Office agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

1. Recordation measures for Crutchfield Hall shall be carried out in accordance with the "Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation: HABS/HAER Standards", originally published as Federal Register, Vol. 48, No. 190, Thursday, September 29, 1983, pp. 44730-34, and including all subsequent issues.

2. All documentation shall meet documentation level I, and shall be completed and accepted by HABS or HAER prior to the demolition of Crutchfield Hall, and copies of this documentation shall be made available to the Oklahoma SHPO and appropriate local archives designated by the Oklahoma SHPO.

3. All final reports of activities carried out shall be provided to the Oklahoma SHPO and, upon request, to other interested parties.

4. All historic and architectural documentation shall be carried out by or under the supervision of a person or persons meeting at a minimum the appropriate qualifications in history, architectural history, and/or architecture as set forth in the Department of Interior's "Professional Qualifications."

5. Should the Oklahoma SHPO or Council object within 30 days to any plans or specifications provided, the Agency Official

shall consult with the objecting party to resolve the objection. If the Agency Official determines that the objection cannot be resolved, the Agency Official shall request the further comments of the Council pursuant to 36 CFR Section 800.6(b).

Execution of this Memorandum of Agreement by the U.S. DOE, the Oklahoma State University, the Oklahoma SHPO, its subsequent acceptance by the Council, and implemenation of its terms, evidence that the U.S. DOE has afforded the Council an opportunity to comment on the Advanced Technology Research Center Project and its effects on historic properties, and the U.S. DOE has taken into account the effects of the undertaking on historic properties.

U.S. Department of Energy, Chicago Operations Office

By: David T. Goldman Date: 4/18/94
Cherri J. Langenfeld
Manager

Oklahoma State University

By: Ray M. Bowen Date: 4/27/94
Dr. Ray M. Bowen
Interim President

Oklahoma State Historic Preservation Officer

By: J. Blake Wade Date: 4-28-94
J. Blake Wade
State Historic Preservation Officer

Accepted for the Advisory Council on Historic Preservation

By: Robert D. Bush Date: 6-1-94
Robert D. Bush Executive Director

JUN 30 1994

Mr. John D. Houck, P.E,
Director, Physical Plant
Oklahoma State University
Physical Plant Services
103 PPA Building
Stillwater, OK 74078-0113

Dear Mr. Houck:

SUBJECT: MEMORANDUM OF AGREEMENT (MOA) REGARDING CRUTCHFIELD HALL, OKLAHOMA STATE UNIVERSITY (OSU), STILLWATER, OKLAHOMA

Enclosed is one original signed copy of the MOA allowing for the demolition of Crutchfield Hall situated at the N.W. corner of Hester St. and Athletic Ave. on the campus of OSU in Stillwater, Oklahoma. By a copy of this letter, I am also transmitting one original signed copy of the MOA to J. Blake Wade, the Oklahoma State Historic Preservation Officer.

In accordance with the terms and conditions of your Grant, specifically, Appendix C, Section 8, "The Grantee shall not take any irreversible action such as demolition of existing buildings, site clearing, ground breaking or start of construction prior to DOE providing a National Environmental Policy Act (NEPA) Clearance."

The proper development and completion of the recordation measures for Crutchfield Hall as listed in the MOA is a critical pre-condition to the Finding of No Significant Impact, and therefore must be completed prior to any issuance of the NEPA Clearance by the Department of Energy.

If you have any questions concerning the MOA or this correspondence, please contact Frederick W. Wysk at 708/252-8618.

Sincerely,

Johnnie D. Greenwood, Director
Contracts Division

Enclosure:
As Stated

cc: J. Kennedy, AMST
S. White, ESHD
M. Prouty, GLD
C. Wilhelmi, CD
J. Wade, SHPO
R. Bush, ACHP
K. Reid, OSU

FILE: Univ 53

CONCURRENCE

RTG. SYMBOL	INITIALS/SIG	DATE
PFMD	Wysk/wl	06/24/94
PFMD	Stenzel	06/21/94
PFMD	Selby	06/27/94
GLD	Prouty	06/29/94
CD		06/21/94

OFFICIAL FILE COPY

Oklahoma State University

PHYSICAL PLANT SERVICES

STILLWATER, OKLAHOMA 74078-0113
222 ASPPA BUILDING
405-744-7131

July 21, 1992

Mr. Stephen W. Forsythe
Field Supervisor
Ecological Services
U.S. Fish and Wildlife Service
222 South Houston, Suite A
Tulsa, Oklahoma 74127

Dear Mr. Forsythe:

Re: **Cultural / Archaeological Impact Statement Request For:**
Advanced Technology Research Center Facility
Oklahoma State University
Stillwater, Oklahoma

Oklahoma State University has applied for a Department of Energy Construction Grant for the referenced facility to be constructed on its Stillwater campus. A condition of Grant Award is the submission of a document which lists all potential environmental impacts associated with the proposed construction of the facility. Your assistance in preparing a portion of this documentation is requested.

A written statement referencing the presence of Federally proposed or designated threatened and/or endangered species and/or critical habitats in the proposed construction site is requested. The site is located in the central core of the campus which is located inside the city limits of Stillwater, Oklahoma and further described as the N1/2 of the SW1/4 of the SW1/4 of the NW1/4 of Section 14, T-19-N, R-2-E, Payne County, Oklahoma (refer to the attached map).

Your response to this request will be appreciated.

Please contact me at the above location if additional background information is required. Your documentation should be forward to this office, my attention.

Respectfully,

Al Tyson
Senior Architect

AT:bh
Attachment

cc: ATRCER1.doc

NO EFFECT FINDING

The described action will have no effect on listed species, wetlands, or other important wildlife resources.

Date 7-27-92

Consultation # 2-14-92-I-860

Approved by Kenneth D. Frazier

U.S. FISH and WILDLIFE SERVICE, TULSA, OK

DEPARTMENT OF THE ARMY
TULSA DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 61
TULSA, OKLAHOMA 74121-0061

REPLY TO
ATTENTION OF:

July 27, 1992

Planning Division
General Planning Branch

Mr. Al Tyson
Senior Architect
Oklahoma State University
Physical Plant Services
122 ASPPA Building
Stillwater, OK 74078-0113

Dear Mr. Tyson:

This is in response to your letter requesting a flood hazard evaluation of the property described as N/2, SW/4, SW/4, NW/4, sec. 14, T. 19 N., R. 2 E., Payne County, Oklahoma.

According to the current Federal Emergency Management Agency Flood Insurance Rate Map, the property is not in an identified flood hazard area (Zone C).

The Water Resources Development Act of 1990 requires a $25.00 fee for this flood evaluation. Please send a money order or personal check made out to "FAO USACE Tulsa District" to U.S. Army Corps of Engineers, Attention: General Planning Branch, Post Office Box 61, Tulsa, Oklahoma 74121-0061. In order to assure proper crediting for your evaluation, please include the property address when submitting your fee. A receipt will be returned to you.

Sincerely,

for G. David Steele, P.E.
Chief, Planning Division

Exhibit 1
LATA Clarification
8/24/94

MARK S. COLEMAN
Executive Director

DAVID WALTERS
Governor

State of Oklahoma

DEPARTMENT OF ENVIRONMENTAL QUALITY

August 12, 1994

Peter Gaskin
Bentley Engineering
120 Robert S. Kerr Ave.
Suite 900
Oklahoma City, OK 73102

Dear Mr. Gaskin:

In reference to our telephone conversation of August 9, 1994 please find enclosed a 1993 inventory of Payne County, Oklahoma, and EPA AP-42 emission factors for natural gas fired boilers. According to our records, the OSU power plant facility is a grandfathered source and has not been permitted; nor does it appear in our emission inventory.

Payne County is considered to be in attainment with all national and state ambient air quality standards.

EPA is presently utilizing contractual assistance to identify all the approved provisions of Oklahoma's State Implementation Plan (SIP). Presently the SIP is not available as a single document, but if you have questions concerning any of its specific conditions please feel free to contact this office.

Sincerely,

Scott Thomas

Scott Thomas
Program Director

ST:mb

F S B

Frankfurt Short Bruza *Architects Engineers Planners*

Telecon

Date: July 11, '94 **Project/No:** Okla. State Univ. Advanced Tech. Res. Center

Name: Bob Davies Jones

Company: Natl. Severe Storms Lab Norman, OK (405) 360-3620 **By:** FS ☐ Incoming ☑ Outgoing

Discussion:

Occurance of Tornados

Point frequencies occur once every 100 years for devastating tornados (approx).

Non devastating tornados frequency is once every 40 years.

TELECON.DOC

5701 North Shartel, Suite 210, Oklahoma City, Oklahoma 73118
Phone: (405) 840-2931 Fax: (405) 842-7750

U.S. Department of Energy
Finding of No Significant Impact
Proposed Advanced Technology Research Center
Stillwater, Oklahoma

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY:

The Department of Energy (DOE) has prepared an Environmental Assessment (EA) DOE/EA-0936, evaluating the construction and equipping of the proposed Advanced Technology Research Center (ATRC) at Oklahoma State University (OSU) in Stillwater, Oklahoma. Based on the analysis in the EA, the DOE has determined that the proposed action does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, the preparation of an Environmental Impact Statement is not required.

DESCRIPTION OF THE PROPOSED ACTION:

The proposed action is authorization of construction for a $7,345,345 grant to Oklahoma State University for the purpose of the detailed design, construction, and equipping the proposed ATRC. The proposed center would consist of research laboratories and office space housed in a three-story building.

ALTERNATIVES:

The DOE considered the no-action alternative. The University would not proceed with the project without the proposed authorization. The University studied several alternative sites and chose the proposed site as the one which best met a combination of functional and environmental criteria.

ENVIRONMENTAL IMPACTS:

The EA analyzes the impacts of constructing, equipping, and operating the proposed ATRC. Areas of potential impact evaluated in the EA included those associated with both the construction and operation of the proposed facility.

Construction impacts evaluated included the effects on sensitive resources (historical/archeological, protected species/critical habitats, wetlands/floodplain, national forests/parks/trails, prime farmland and special sources of water), erosion, waste disposal, air quality, noise, traffic, and parking.

Impacts of operations evaluated included the effects of waste generation (domestic, sanitary, hazardous, medical/biological, radioactive and mixed), air emissions (criteria, air toxins and radioactive), noise, socioeconomic impacts, radiologic exposure, risk of accidents, and other direct, indirect and cumulative long-term impacts.

No significant environmental impacts associated with the proposed construction or operations are anticipated. This finding of no significant impact for the

proposed action is based on the following factors, which are supported by information and analysis in the EA.

Impacts of Construction/Installation

Routine construction waste would be managed according to appropriate state and local regulations. Air quality impacts would be associated with delivery trucks and on-site construction machinery, and would be low-level and transient. Noise levels would be those conventionally associated with daytime construction activities and are not likely to disturb residences, workers or outdoor recreation. Traffic impact would not significantly affect local circulation or parking. Crutchfield Hall was determined to be eligible for listing on the National Register of Historic Places. A Memorandum of Agreement (MOA) consistent with 36 CFR 800.13 was executed by the University, DOE, and State Historic Preservation Office (SHPO) in April 1994 and accepted by the Advisory Counsel on Historic Preservation in June 1994. The MOA stipulates recordation measures for the purpose of Historical and Architectural documentation be carried out prior to demolition following specified Federal Standards.

The SHPO has determined that the documentation produced by the University substantially preserves the historic value of the property. Therefore, the effect of the undertaking is not adverse, in accordance with 36 CFR 800.9(c). None of the categories of sensitive resources cited above would be affected by the proposed project as they do not occur on or near the site.

Impacts of Operations

Waste Generation: Domestic and sanitary wastes would meet local requirements and can be readily accommodated by existing municipal services. The proposed ATRC would generate an estimated 2,100 pounds of hazardous and/or toxic waste per year. Waste generation would be covered by an existing hazardous waste generator permit maintained by the University. There would be no radioactive or mixed waste.

Radiation Exposure: Research envisioned for the proposed ATRC would involve no radioactive materials.

Air Quality: Toxic air emissions, consisting mainly of solvents used in laboratories would produce insignificant levels of public exposures in relation to threshold limit values as defined by the American Council of Government Industrial Hygienists. Criteria pollutants resulting from an increase in natural gas consumed at a University boiler would not represent a significant increase. There are no radioactive emissions.

Other Effects: Noise generated indoors or outdoors would be insignificant. Socioeconomic impacts would be small in the scale of overall University economic activity. Accidents from laboratory operations are likely to be minor based on a ten-year log at similar on-campus laboratories in which there have been no deaths or major injuries requiring hospitalization. There is a risk of building damage from tornado, with potential for dispersing hazardous material, but the effects would likely be insignificant. Overall, the incremental and cumulative environmental impacts of the ARTC with respect to

OSU, would be insignificant.

DETERMINATION:

Based on the analysis in the EA, the DOE has determined that the proposed Advanced Technology Research Center does not constitute a major Federal Action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969. Therefore, the preparation of an Environmental Impact Statement on the proposed action is not required.

PUBLIC AVAILABILITY: Copies of this EA (DOE/EA-0936) are available from:

Frederick W. Wysk
Programs and Facility Management Division
U.S. Department of Energy
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439
(708) 252-8618

For further information regarding the DOE NEPA process, contact:

Dr. W. S. White, NEPA Compliance Officer
Environmental, Safety, and Health Division
Chicago Operations Office
U.S. Department of Energy,
9800 South Cass Avenue
Argonne, Ill. 60439
(708) 252-2101

Issued at Argonne, Ill., this 3 day of July 1995.

David T. Goldman

David T. Goldman
Deputy Manager
Chicago Operations Office