

UNIVERSITY of MISSOURI

RESEARCH REACTOR CENTER

May 18, 2010

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Mail Station P1-37
Washington, DC 20555-0001

Reference: Docket 50-186
University of Missouri-Columbia Research Reactor
Amended Facility License R-103

Enclosed you will find the University of Missouri-Columbia Research Reactor's responses to the U.S. Nuclear Regulatory Commission's (NRC) request for additional information, dated April 20, 2010, regarding our renewal request for Amended Facility Operating License R-103, which was submitted to the NRC on August 31, 2006, as supplemented.

If you have any questions, please contact Leslie P. Foyto, the facility Reactor Manager, at (573) 882-5276 or foytol@missouri.edu.

Sincerely,



Ralph A. Butler, P.E.
Director

RAB/djr

Enclosures



MARGEE P. STOUT
My Commission Expires
March 24, 2012
Montgomery County
Commission #08511436



AO20
NRC



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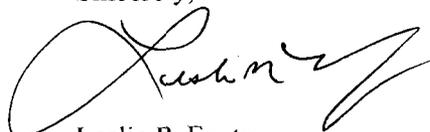
REFERENCE: Docket 50-186
University of Missouri – Columbia Research Reactor
Amended Facility License R-103

SUBJECT: Written communication as specified by 10 CFR 50.4(b)(1) regarding the response to the
“University of Missouri at Columbia – Request for Additional Information Re: License
Renewal, National Historic Preservation Act (TAC No. MD3034),” dated April 30, 2010

On August 31, 2006, the University of Missouri-Columbia Research Reactor (MURR) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) to renew Amended Facility Operating License R-103.

On April 20, 2010, the NRC requested additional information and clarification regarding the renewal request in the form of six (6) questions. Those questions, and the MURR’s responses to those questions, are attached. If there are questions regarding this response, please contact me at (573) 882-5276 or foytol@missouri.edu. I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,



Leslie P. Foyto
Reactor Manager

ENDORSEMENT:
Reviewed and Approved,



Ralph A. Butler, P.E.
Director

xc: Reactor Advisory Committee
Reactor Safety Subcommittee
Dr. Robert Duncan, Vice Chancellor for Research
Mr. Alexander Adams, U.S. NRC
Mr. Craig Basset, U.S. NRC



MARGEE P. STOUT
My Commission Expires
March 24, 2012
Montgomery County
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- Enclosed:
- Attachment 1: USGS 7.5 min. Topographic Map, Columbia Quadrangle – Relevant Portion
 - Attachment 2: USGS 7.5 min. Topographic Map, Columbia Quadrangle – Large Scale
 - Attachment 3: Topographic Map – MURR Site Grading Plan
 - Attachment 4: Photo of MURR Construction Site – Ungraded
 - Attachment 5: Photo of MURR Construction Site – Graded
 - Attachment 6: Topographic Map – Archaeological Sites within 1 Kilometer of MURR
 - Attachment 7: Topographic Map – Historic Sites and Districts in the Vicinity of MURR
 - Attachment 8: Photos (12) of MURR Site Structures
 - Attachment 9: Map of MURR Facility – Reference for Photographs of MURR Site Structures
 - Attachment 10: Map of MURR Facility – Reference for All MURR Site Structures

1. *Please provide the name of the United States Geological Survey (USGS) topological map quadrangle in which MURR is located. Also, for the map you are referencing, please state the year, township, range and section. Please attach a copy of the relevant portion (8½ x 11) of the current USGS 7.5 min. topographic map and, if necessary, a large scale project map. Please do not send an individual map with each structure or site. While the original map is preferable, a good copy is acceptable. USGS 7.5 min. topographic maps may be ordered from the Geological Survey and Resource Assessment Division, Department of Natural Resources, 111 Fairground, Rolla, MO 65402, Telephone: (573) 368-2125, or printed from the website <http://www.topozone.com/>.*

The MURR facility is located in the Columbia quadrangle, Missouri - Boone County, Township 48N, Range 13W and Section 24. The most current USGS 7.5 min. topographic map that is being referenced was printed in 1967 and photorevised in 1981. Attached are the relevant portion (8½" x 11") and large scale topographic maps of where the MURR site is located (Attachments 1 and 2).

2. *For the MURR facility, please state if the ground involved was graded, built on, borrowed, or otherwise disturbed. If so, please describe in detail and provide photographs, if applicable. If fill material was used, indicate "borrow areas" on the topographic map from which fill material was taken.*

The building area of the MURR site at the time construction commenced had a gradual rise from south to north. In addition to the removal of existing trees on the site, approximately 15,000 cubic yards of fill was deposited on the south and central portions of the site. Fill material was removed from the east side of Research Park Drive (formerly known as "Reactor Park Road"). The attached topographic map (Attachment 3) indicates relevant fill and cut areas. Also attached are photos of the site prior to grading (Attachment 4) and after grading (Attachment 5).

3. *Please state if you are aware of any archaeological sites on or adjacent to the MURR site. If so, identify them on the topographic map.*

A review of the archaeological records of the Missouri Department of Natural Resources and the Archaeology Survey of Missouri found no evidence of archaeological sites on the 7.5 acre MURR site. The nearest recorded archaeological site is approximately 1000 feet (304.8 m) from the facility. See attached topographical map (Attachment 6).

4. *Please state if the MURR is located in an area previously surveyed for historic properties, or a National Register District, or a local historic district. If so, please provide the name of the survey or district.*

The attached topographical map (Attachment 7) illustrates the proximity of National Register Sites, National Register Districts, and Certified Local Districts to the facility. There are no National Register Districts, or local historical districts on or near the 7.5 acre MURR site.

The closest National Register site, the Sanford F. Conley House, is located approximately one mile (1.6 km) from the facility. A State historic site, the Jewell Cemetery, a 0.45 acre historic cemetery, is located approximately 0.9 miles (1.5 km) from the MURR site.

5. *Please provide photographs of all structures. All photographs should be labeled and keyed to one map of the project area. Photographs must be clear black and white or color photographs on photographic paper, of minimum 3" x 5" size. Polaroid's, photocopies, emailed, or faxed photographs are not acceptable. Photographs of neighboring or nearby buildings are also helpful and should be labeled and keyed to one map of the project area.*

Attached are twelve (12) 4" x 6" color photographs (Attachment 8) of all of the MURR site structures. The photos are labeled and keyed to the attached map of the MURR site (Attachment 9). Arrows on the map depict the directions that the photographs were taken.

6. *Please provide a brief history of the building(s), including construction dates and building uses.*

The MURR was originally constructed in 1963-65 with two structures: the main building, which houses the Laboratory and Reactor Containment Buildings, and the associated Cooling Tower. The main building is now colloquially known as the "Laboratory Building." Several additions and an additional building have been added over the years.

For reference, please see the attached site map (Attachment 10) of these locations.

Cooling Tower 3rd cell: The Cooling Tower was originally built as a two cell tower. A third cell was added in 1972 to support the upgrade in power from 5 to 10 MWs.

Room 231 Addition: A complex of three rooms, now called Rooms 231A, B, and C, was added to the west side of the Laboratory Building in late 1978. These rooms were originally used for machine shop spaces, and have undergone many transitions over the intervening years. This space is currently used for offices, a welding shop, and a shipping work space.

Temporary Office Buildings #1 and #2: In 1990, in order to accommodate a growing staff, Temporary Office Buildings (TOBs) were added to the west side of the Laboratory Building, extending from the north outer corridor. These and the other TOBs are trailers mounted on concrete pads, rather than permanent structures.

Emergency Diesel Generator Addition: An additional two rooms were added in 1990 extending west from the Room 231 addition to accommodate a newer and larger capacity Emergency Diesel Generator (EDG) and an electrical Substation.

Temporary Office Building #3: Additional office space was added in 1992 in the form of a TOB, which extends south from the Laboratory Building, just west of the east loading dock.

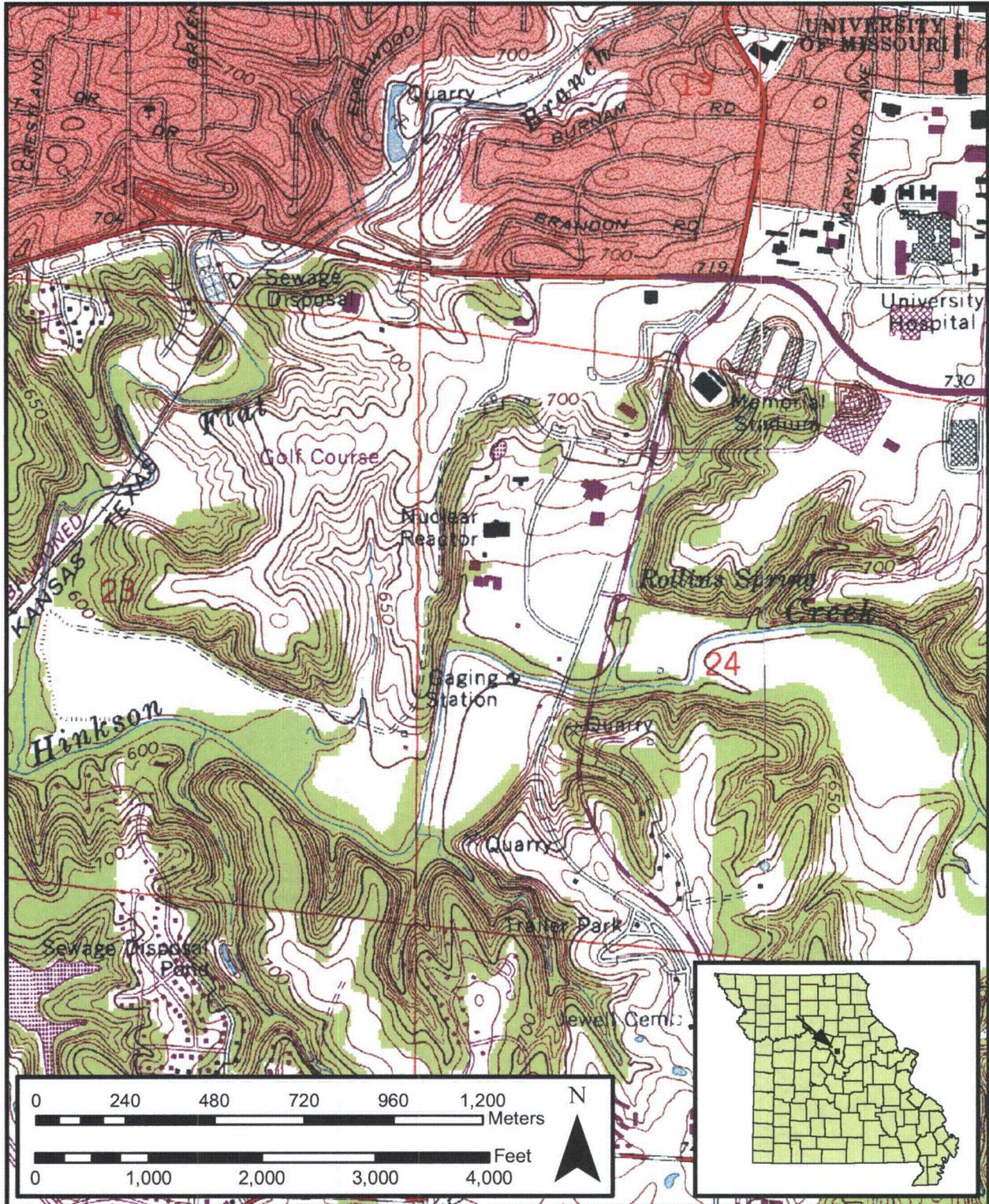
Temporary Office Buildings #4 and #5: Additional office space was again added in 1999-2000, this time to the northwest side of the Laboratory Building, opposite TOBs #1 and #2.

Industrial Building Addition: A 60,000 sq ft shell industrial building was added in 2002 to the southwest of the Laboratory Building. This space has housed clean rooms, processing, and laboratories, along with storage and shipping functions.

North Office Addition: In 2007, a large addition was added to the northeast of the Laboratory Building, adding space for offices, conference rooms, a shell space to build out for classrooms and laboratories, and a cyclotron facility. Construction of the North Office Addition (NOA) also moved the facility front entrance from the Laboratory Building lobby to the area between the Laboratory Building and NOA.

Shipping and Receiving Building: In an effort to minimize traffic within the 7.5 acre facility site, the Shipping and Receiving Building was built to the southeast of the main building complex in 2009-2010. This building allows couriers to drop off or pick up packages at MURR without entering the fenced area. This building is the only structure other than the cooling tower which is detached from the Laboratory Building.

ATTACHMENT 1



The MURR facility (designated "Nuclear Reactor") is located in the Columbia quadrangle, Township 48N, Range 13W, and Section 24. Basemap: USGS 7.5-minute Columbia, MO topographic quadrangle (1967, photorevised in 1981). Prepared by Matthew T. Boulanger, May, 2010.

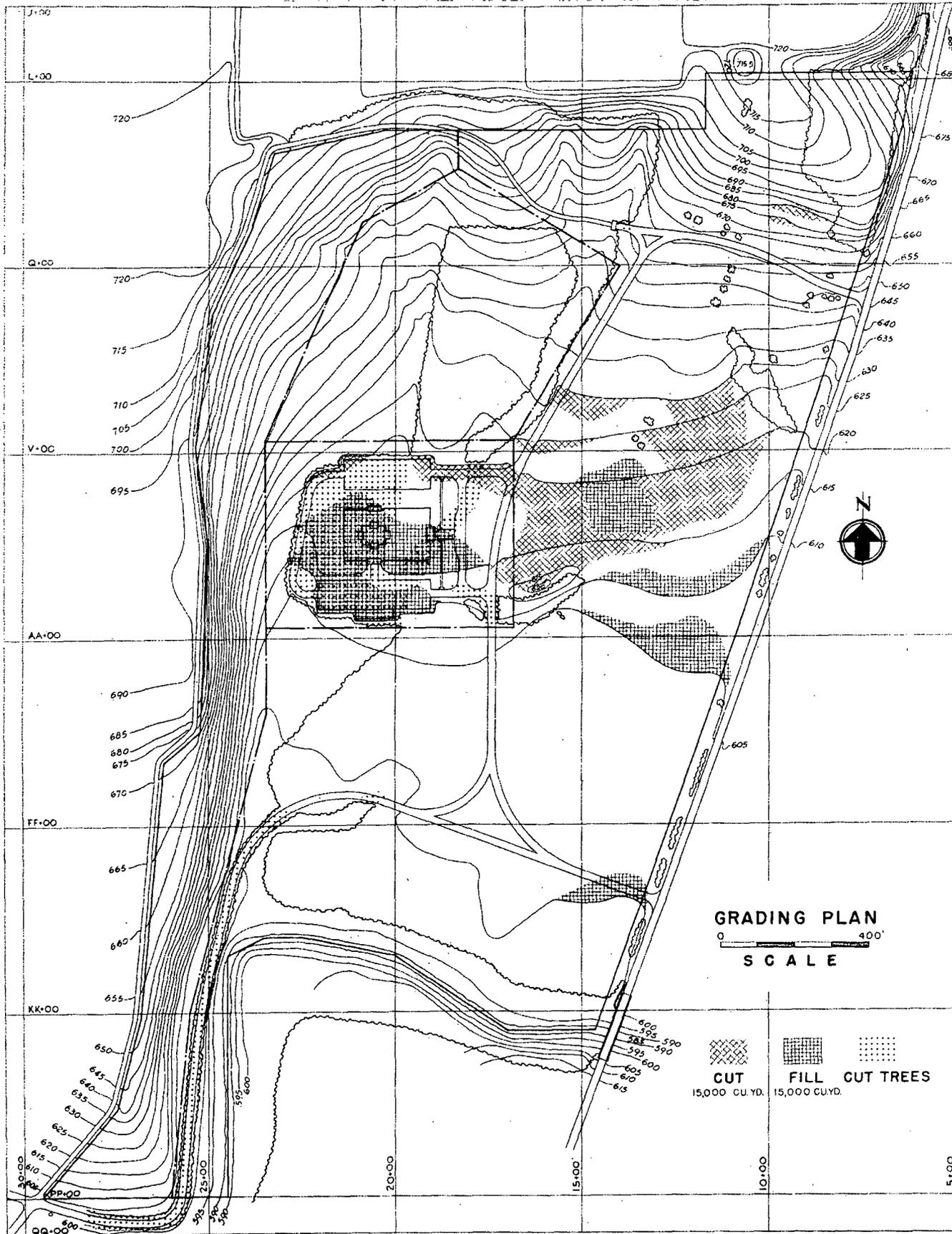
**THIS PAGE IS AN
OVERSIZED DRAWING OR
FIGURE,
THAT CAN BE VIEWED
AT THE RECORD TITLED:**

**ATTACHMENT 2
COLUMBIA QUADRANGLE
MISSOURI-BOONE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC).**

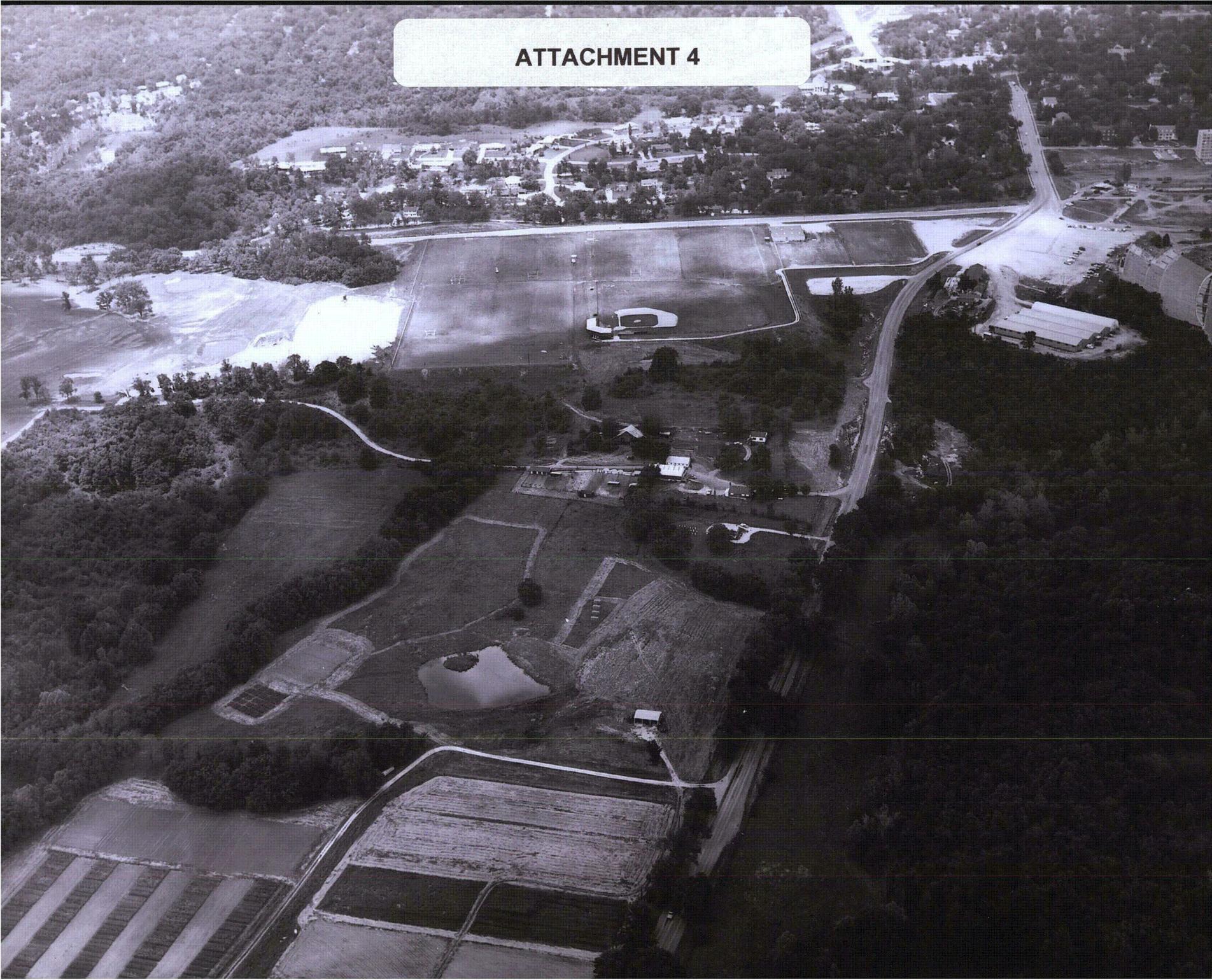
**WITHIN THIS PACKAGE...OR
BY SEARCHING USING THE
DOCUMENT/REPORT NO.**

D-01X

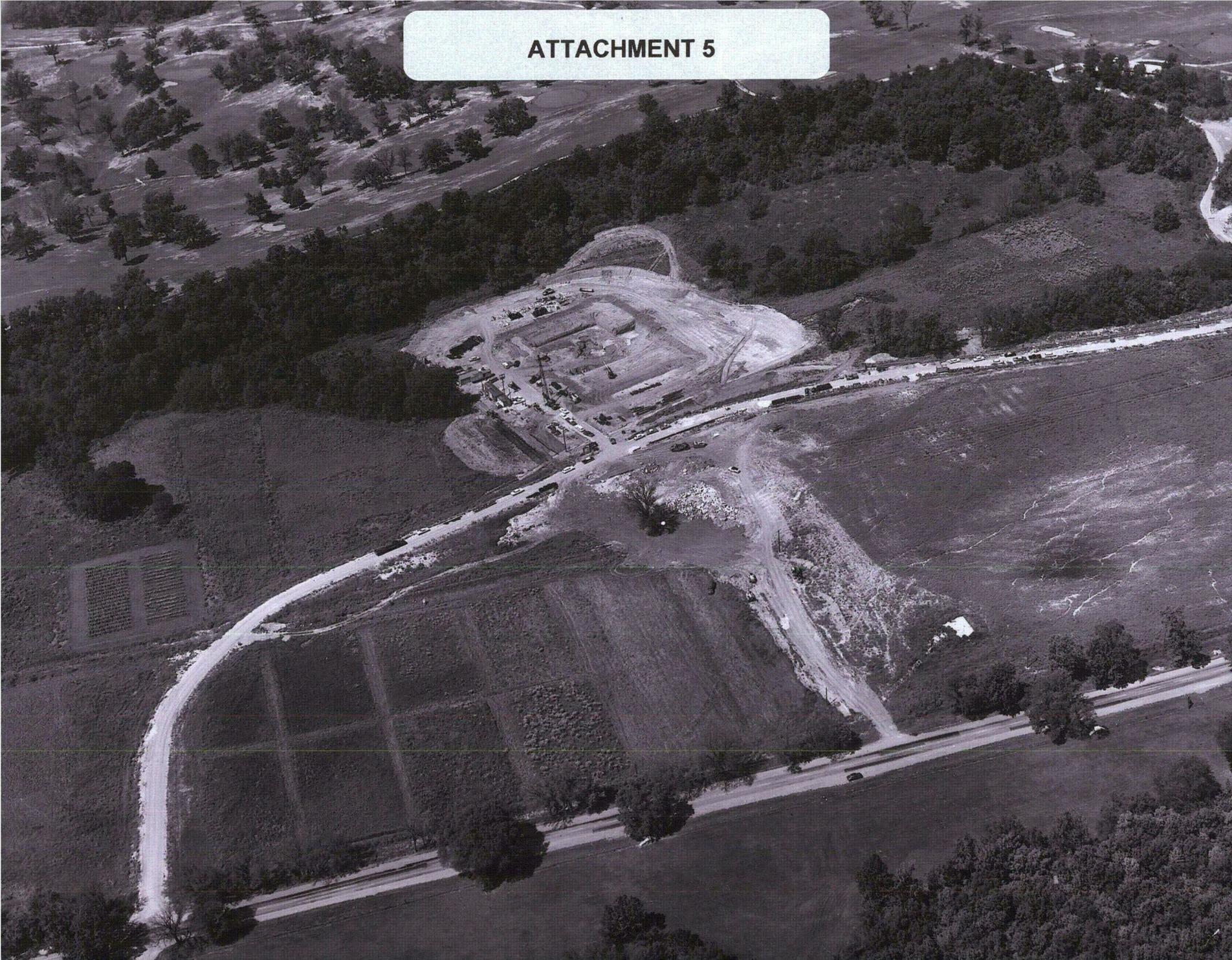
ATTACHMENT 3



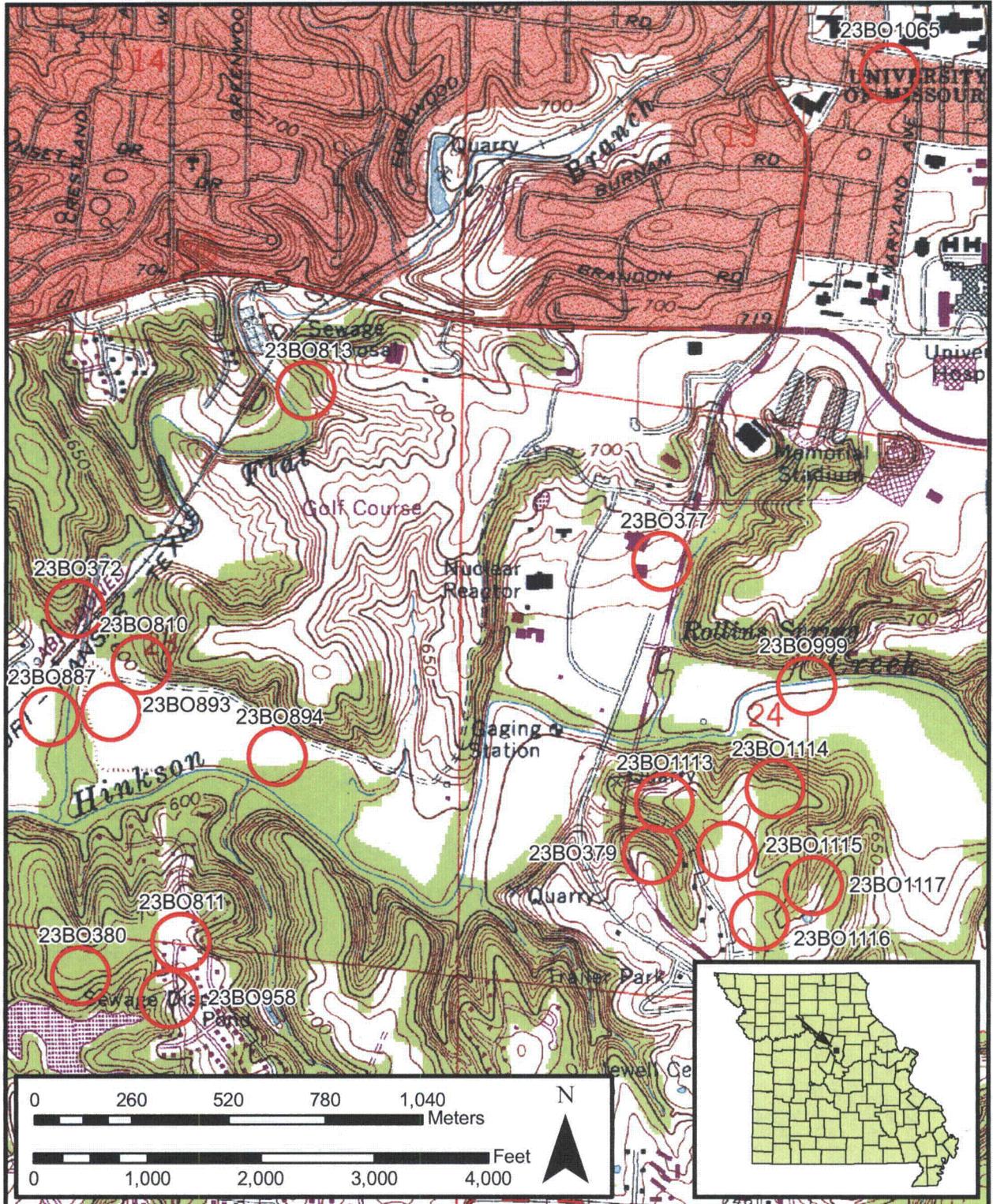
ATTACHMENT 4



ATTACHMENT 5

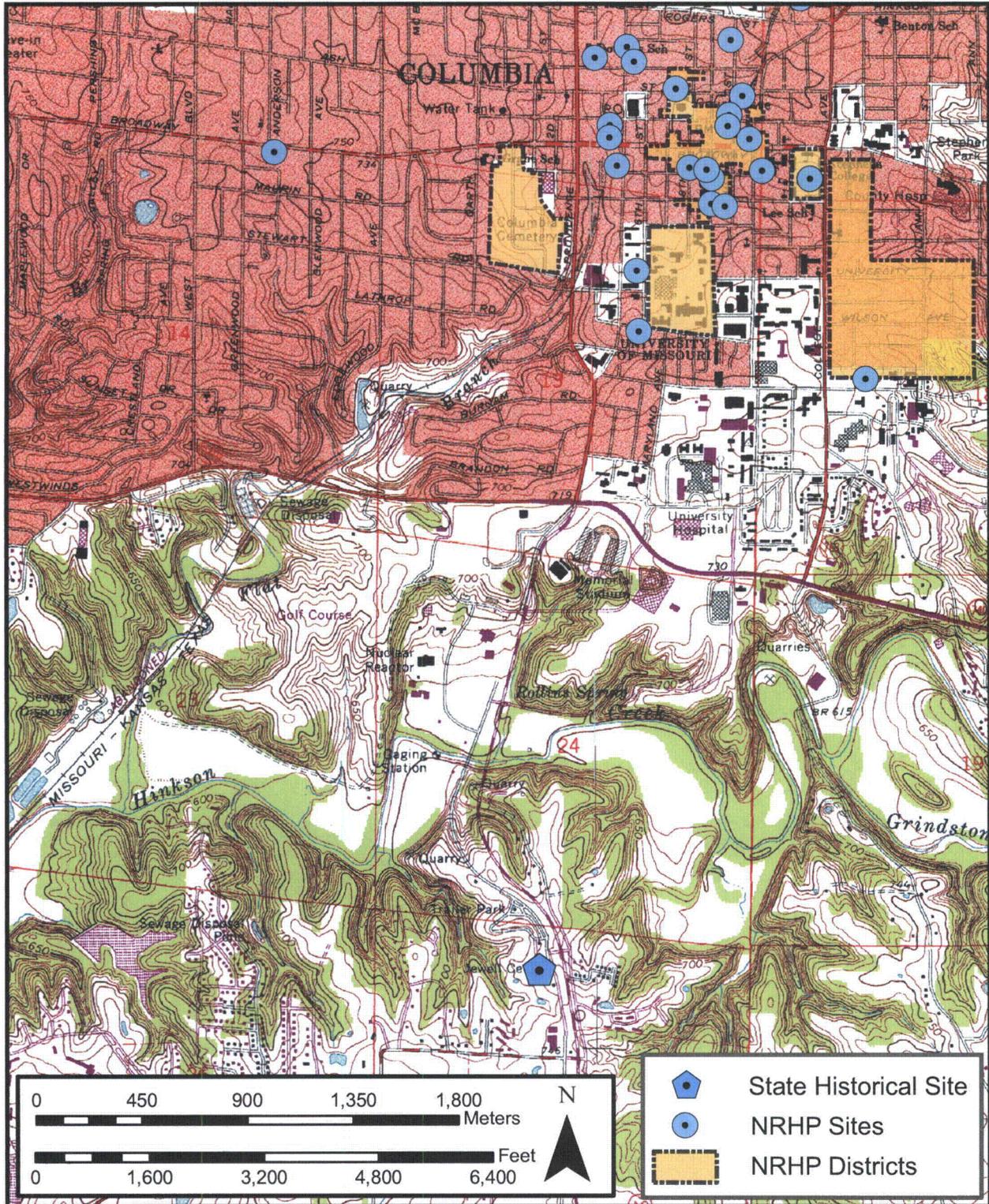


ATTACHMENT 6



Known archaeological sites within 1 km of the University of Missouri Research Reactor, as of May 2010. Site locations are approximate and based on data from the Missouri Department of Natural Resources and the Archaeology Survey of Missouri. Basemap: USGS 7.5-minute Columbia, MO topographic quadrangle (1967, photorevised 1981). Prepared by Matthew T. Boulanger, May, 2010.

ATTACHMENT 7



Historic sites and districts listed on the National Register of Historic Places, and State Historical Sites in the vicinity of the University of Missouri Research Reactor, as of May 2010. Locations are approximate and based on data from the Missouri Department of Natural Resources. Basemap: USGS 7.5-minute Columbia, MO topographic quadrangle (1967, photorevised 1981). Prepared by Matthew T. Boulanger, May, 2010.

ATTACHMENT 8



Photo #1 Southeast View of Reactor Laboratory Building

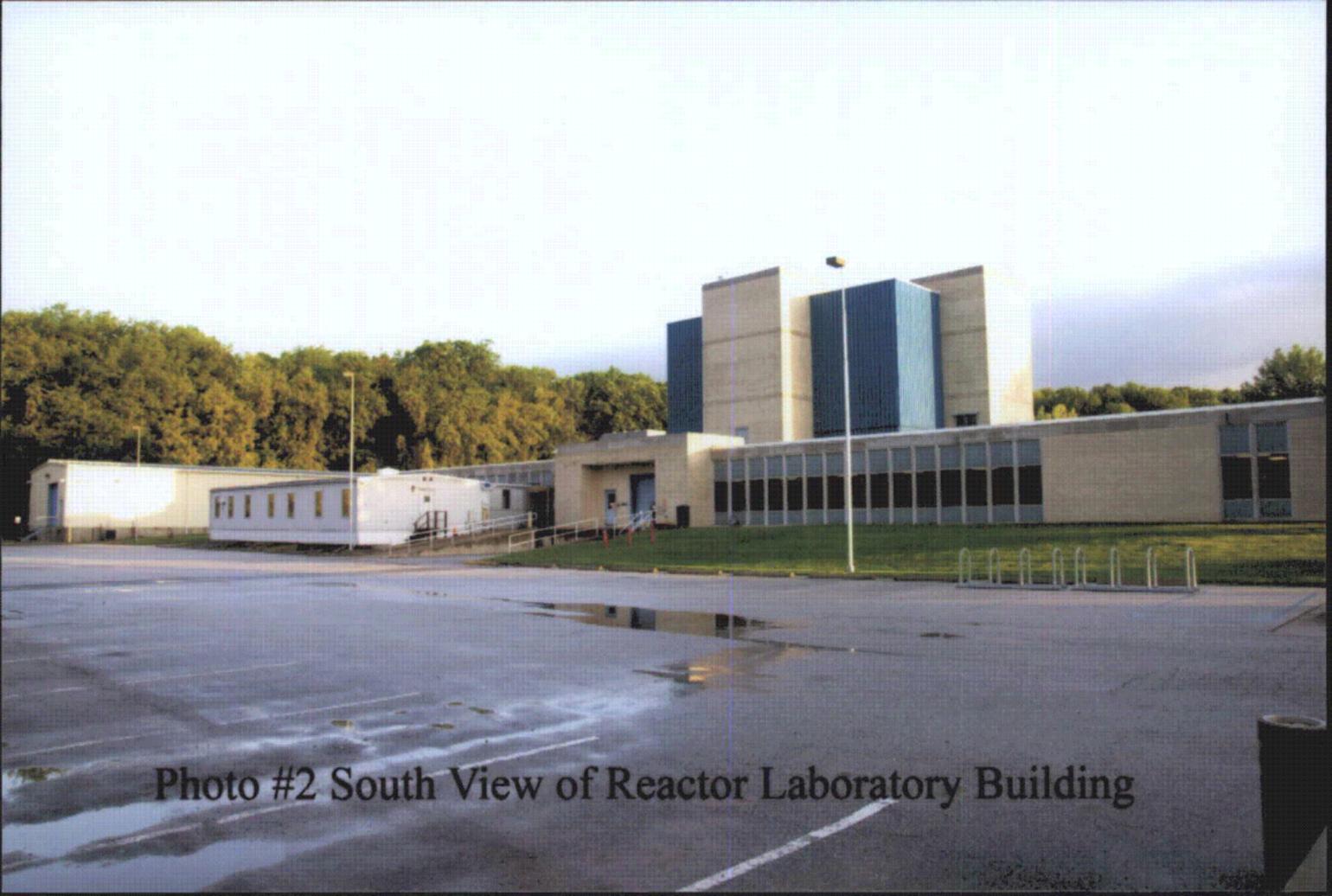


Photo #2 South View of Reactor Laboratory Building

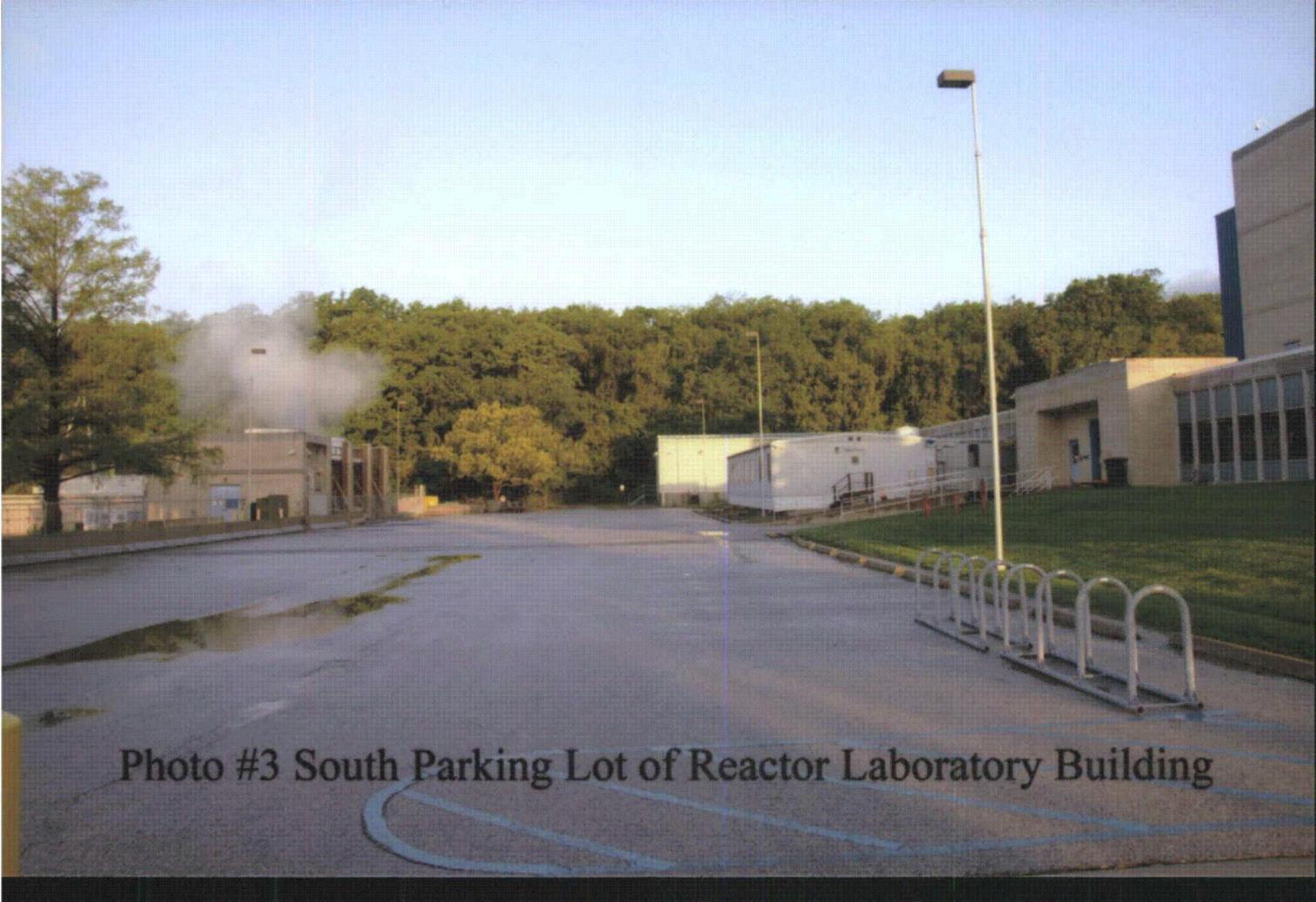


Photo #3 South Parking Lot of Reactor Laboratory Building



Photo #4 East View of Reactor Laboratory Building



Photo #5 Northeast View of Reactor Laboratory Building



Photo #6 Northwest View of Reactor Laboratory Building

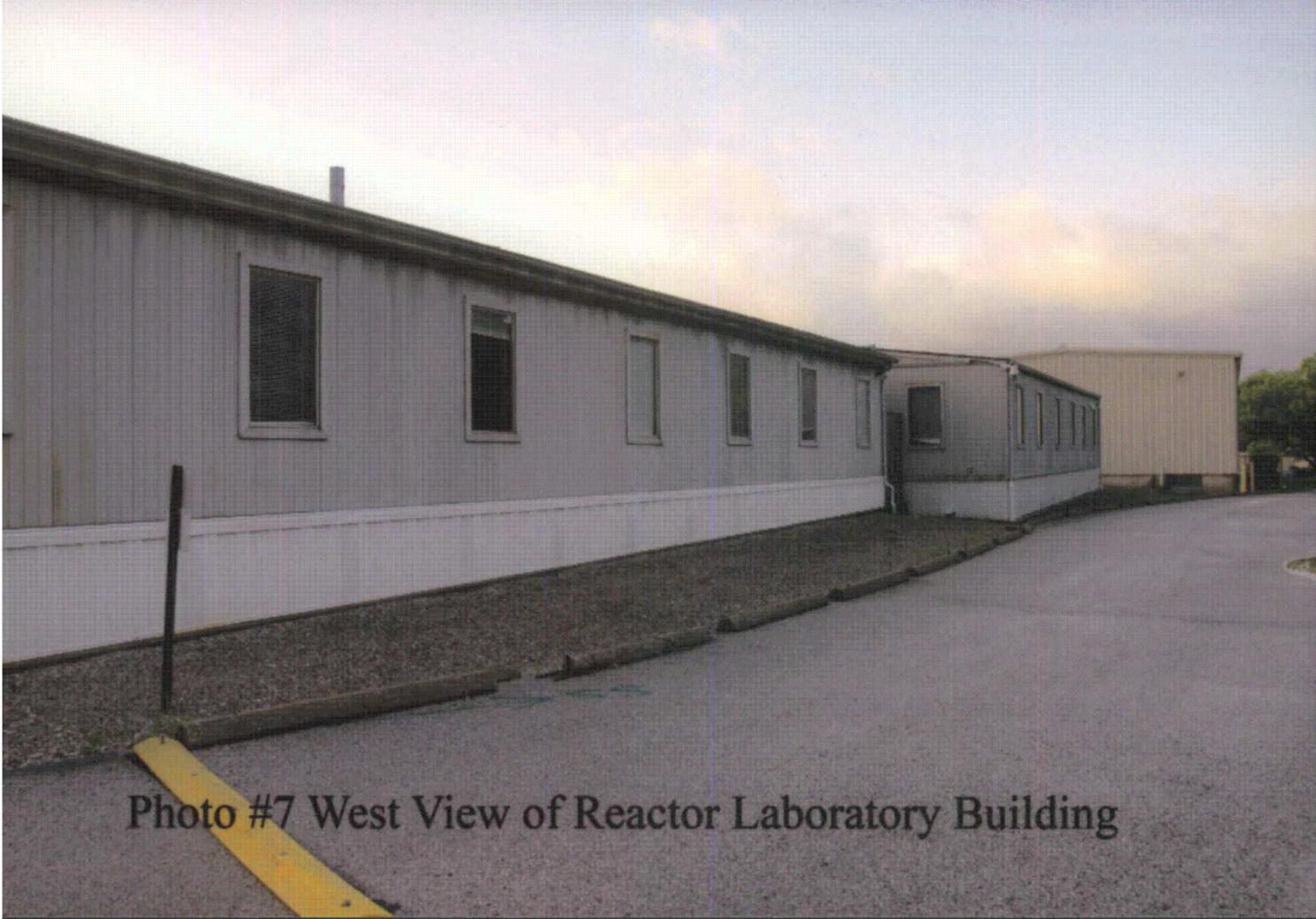


Photo #7 West View of Reactor Laboratory Building



Photo #8 Northwest View of Cooling Tower



Photo #9 South View of Shipping and Receiving Building

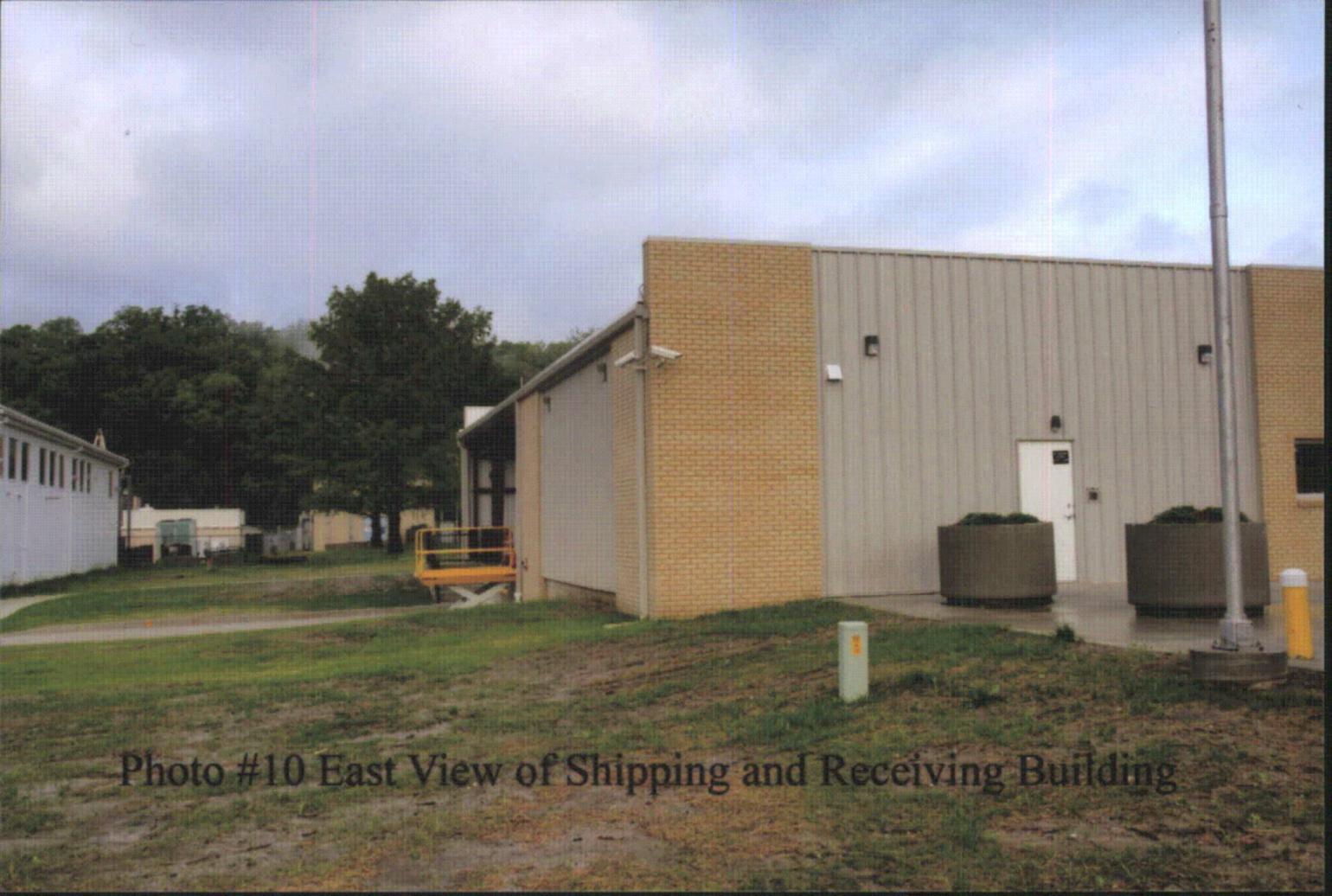


Photo #10 East View of Shipping and Receiving Building

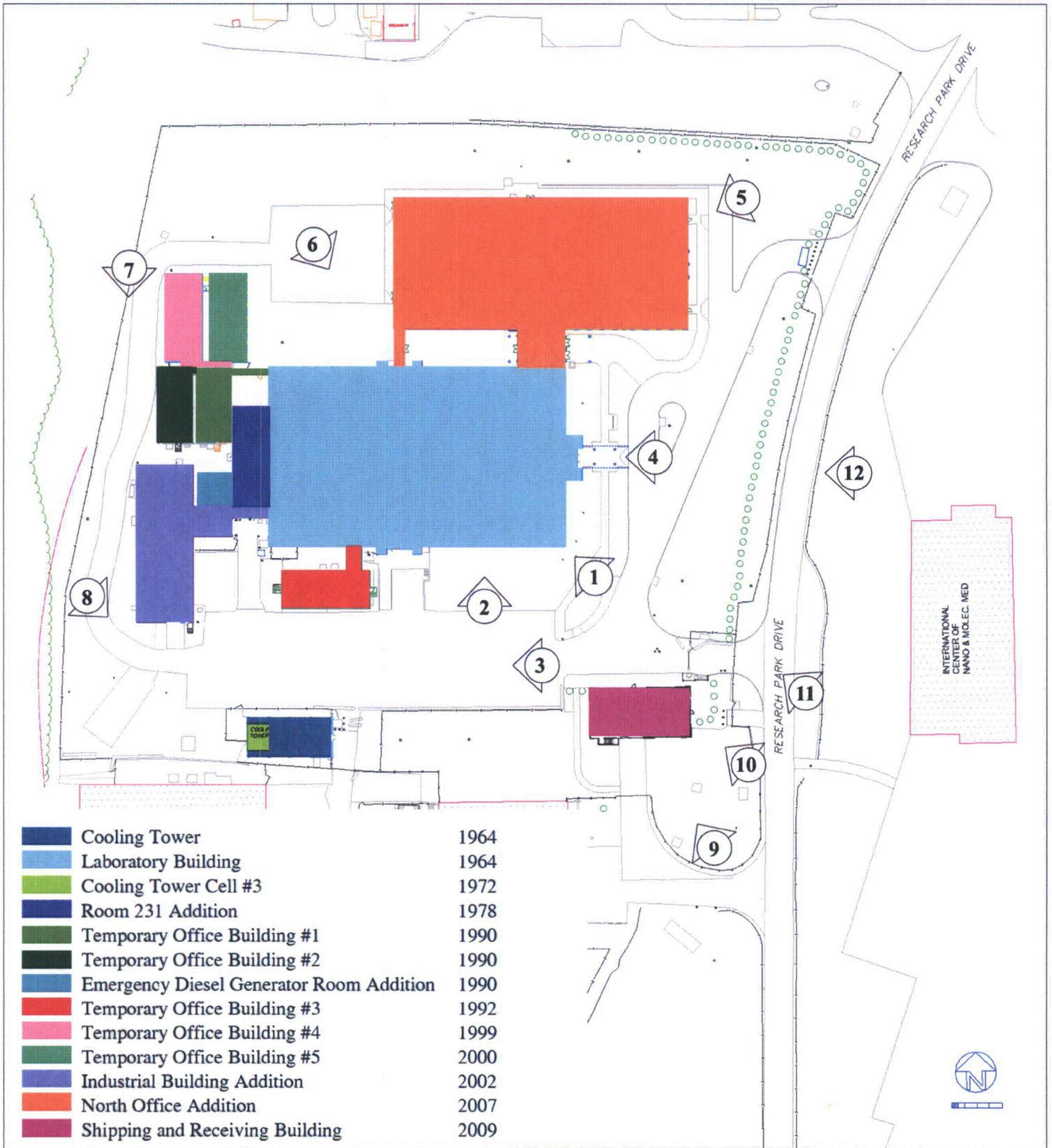


Photo #11 East View of MURR Site



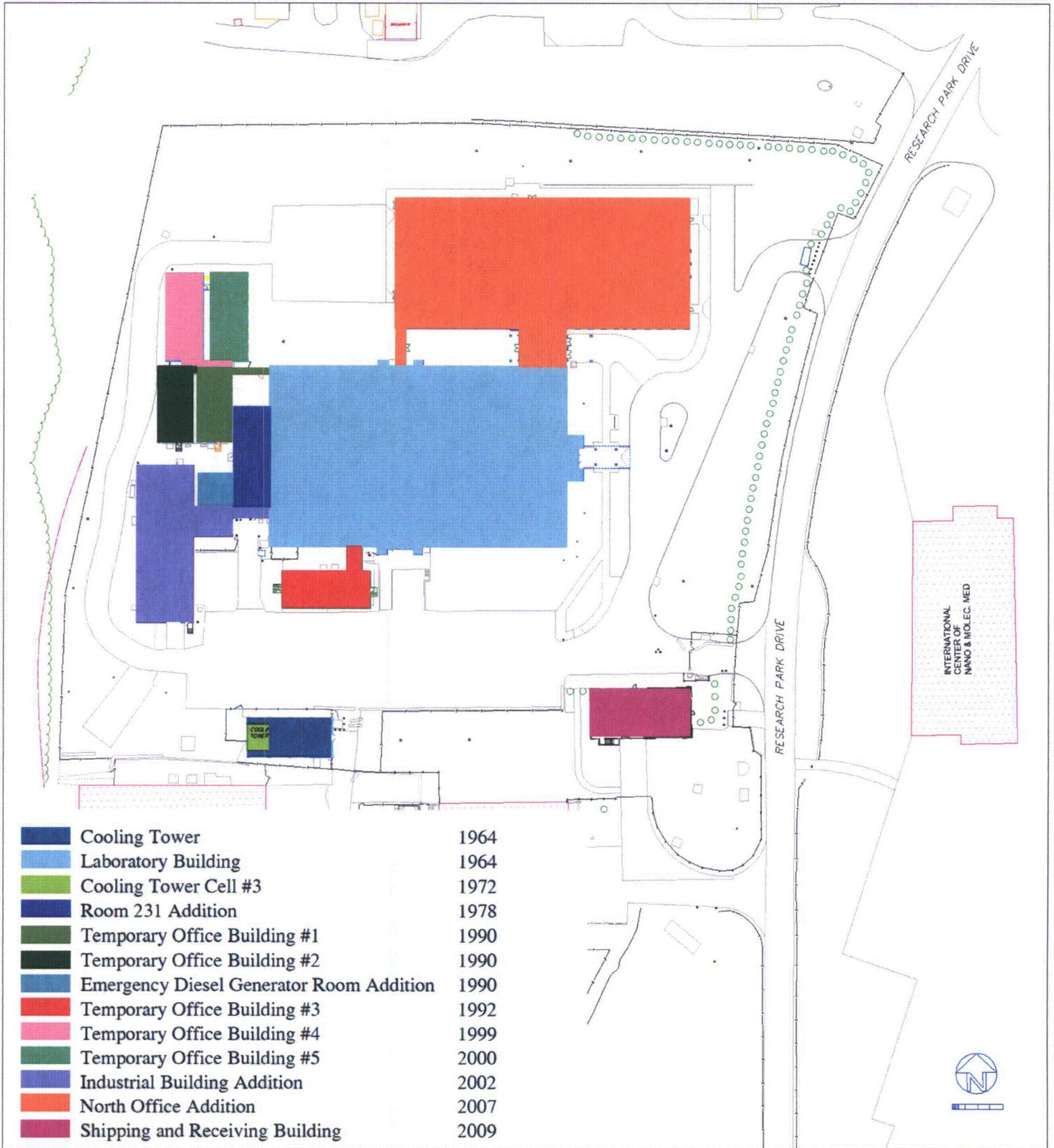
Photo #12 East View of MURR Site

ATTACHMENT 9



Map of MURR Facility

ATTACHMENT 10



Map of MURR Facility