

Hydrological Instrumentation Facility (HIF) Environmental Assessment

Contract: 140G0120C0003



US Geological Survey

University of Alabama; Tuscaloosa, AL
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Acronyms

ADEM	Alabama Department of Environmental Management
AHCR	Alabama Historic Cemetery Register
APE	Area of Potential Effect
CAA	Clean Air Act
CEQ	Council on Environmental Quality
dBA	A-weighted decibels
DOI	Department of the Interior
EA	Environmental Assessment
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Association
FWS	United States Fish and Wildlife Service
GHGs	Greenhouse Gases
HAPs	Hazardous Air Pollutants
HARs	Historic Architectural Resource
HIF	Hydrologic Instrumentation Facility
IPaC	Information, Planning, and Consultation System
MSE	Mechanically stabilized earth
NAQQS	National Ambient Air Quality Standards
NRHP	National Register of Historic Places
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PBO	Programmatic Biological Opinion
PM	Particulate Matter
SLM	Suitable Land Management
SWPPP	Stormwater Pollution Prevention Plan
TES	Threatened and Endangered Species
USGS	United States Geological Survey
VOCs	Volatile Organic Compounds

1. Introduction

This Environmental Assessment (EA) has been prepared to evaluate the potential impacts for the construction of a new Hydrological Instrumentation Facility (HIF) in accordance with: the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321 et seq.); the regulations of the Council on Environmental Quality for implementing the procedural provisions of NEPA (40 CFR parts 1500–1508); the US Department of Interior (DOI) regulations for implementation of NEPA (43 CFR Part 46); the DOI’s Departmental Manual Part 516; and USGS’s National Environmental Policy Act. (USGS, 2016)

The United States Geological Survey (USGS) is proposing to construct a new HIF (Proposed Action), including a laboratory, office, and warehouse space. The existing facilities, owned by NASA, were determined to be at the end of their service life in NASA’s Agency Master Plan¹. NASA plans to demolish the existing facilities, located on NASA Stennis Space Center in Bay St. Louis, Mississippi, in 2022 (tentative). USGS’s new HIF would provide a continuation of the same services, including the sales, rental, repair, and servicing of equipment, as well as evaluation and development of new instrument technologies and the verification/certification of in-service equipment used to measure water velocity, and water level.

1.1 Location of Proposal

As shown in Figures 1, 2, and 3, the proposed HIF would be located on the University of Alabama campus in Tuscaloosa, Alabama, at the northeast corner of Kirkbride Lane and North Campus Way. Various locations, including shared spaces, were reviewed earlier in the project development process. The preliminary locations did not meet all the requirements needed to support the services or efficiently house all the equipment and square footage required for the HIF. The University of Alabama and the NOAA National Water Center², located at 205 Hackberry Lane on the University of Alabama campus, represent strong collaboration opportunities for USGS and the broader federal water enterprise. Given the circumstances of the current HIF facility and the desire to collocate with complementary academic and federal partners, the site on the University of Alabama Campus was identified for the Proposed Action given it provides the most benefits for a new HIF, including co-location of the NOAA National Water Center on campus, a growing water resources research emphasis at UA, and the offer of a no-cost land easement on campus for the building site.

1.2 Name and Location of Preparing Office

This report was prepared by Stanley Consultants, Inc., of Iowa City and Muscatine, Iowa, with direct oversight of the USGS —Water Resources Mission Area Office.

1.3 Estimated Start Date of the Proposed Action

It is proposed that the new HIF facility would begin construction by summer of 2021 for move-in as early as January 2023.

¹ https://www.nasa.gov/sites/default/files/atoms/files/nasamp23mar12_lores.pdf

² <https://water.noaa.gov/about/nwc>

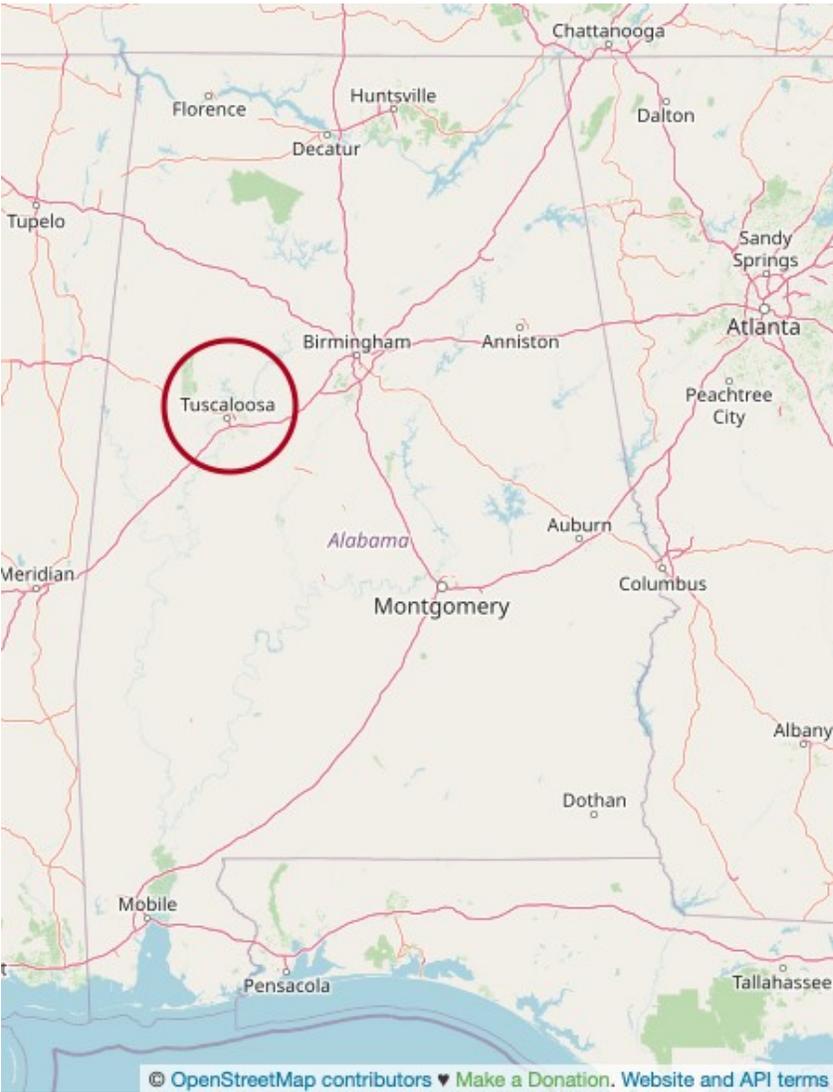


Figure 1. Location Map - Tuscaloosa, Alabama.



Figure 2. Location Map - University of Alabama Campus, City of Tuscaloosa.

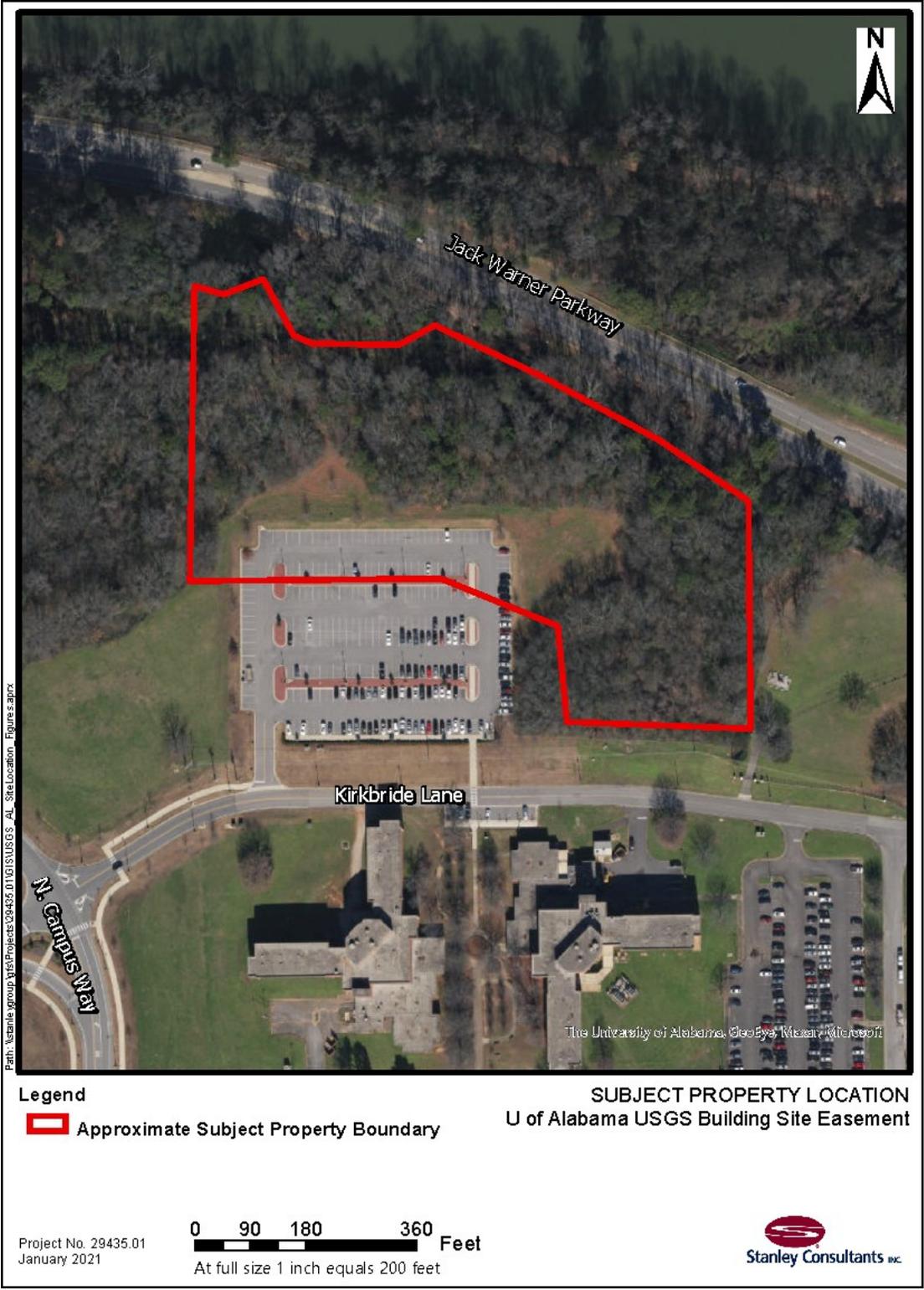


Figure 3. Location Map - University of Alabama Campus.

2. Purpose and Need for Action

The purpose of the Proposed Action is to maintain and expand USGS services provided at the HIF. The existing HIF facilities are owned by NASA and planned for demolition in 2022. Services provided at HIF include office water-resource monitoring and evaluations and provide equipment and training for other federal state, local and academic organizations, including private industry. New facilities are needed to maintain existing services and expand USGS capabilities to meet the hydrologic equipment needs of the Next Generation USGS Water Observing System. The Proposed Action is in direct alignment with US Department of Interior (DOI) priorities eight (Modernize our infrastructure) and nine (Reorganize the department for the next 100 years)³

2.1 Description of Proposed Action

USGS Programming identified the facilities needed based on the ability to accommodate the current mission and anticipated growth related to national water observing systems and associated research and development. The new HIF (Proposed Action) would consist of a laboratory and office with training and warehouse space. The Proposed Action includes constructing approximately 77,973 net usable square feet, including a laboratory, office and warehouse space. The building design would meet DOI policy on sustainability, the Guiding Principles for Federal Sustainable Buildings⁴ along with all local and state requirements for sustainable buildings and sites. USGS has incorporated energy efficiency and aesthetics related to sustainability into the proposed design, such as daylighting, renewable energy strategies, and sustainable site strategies for storm water management.

2.2 Decision to be Made

USGS is proposing to construct a new HIF with funds included in the Further Consolidated Appropriations Act, 2020 (H.R. 1865 – 162). Congress and USGS have consistently been interested in the new facility be collocated with complementary academic and federal partners. USGS is evaluating the project need and potential environmental impacts of the HIF construction in this EA, including the type of design and construction methods to include in subsequent decision making for the project.

2.3 Legal Mandates

The Proposed Action requires compliance with the several federal, state, and local regulations and one specific environmental covenant for the site. Examples of the regulations to comply with include the following:

- National Environmental Policy Act of 1969, as amended
- Clean Air Act, as amended
- Clean Water Act (CWA), as amended
- Executive Order 11988, Floodplain Management
- National Historic Preservation Act, as amended
- Endangered Species Act, as amended
- Executive Order 11990, Protection of Wetlands
- Executive Order 13112, Invasive Species

³ <https://www.doi.gov/ourpriorities> (dated 12/1/2020)

⁴ <https://www.energy.gov/eere/femp/sustainable-federal-buildings>

- Executive Order 13751, Safeguarding the Nation from the Impacts of Invasive Species
- Migratory Bird Treaty Act, as amended
- Title VI of the Civil Rights Act, as amended
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- Farmland Protection Policy Act, as amended
- Americans with Disabilities Act (ADA), as amended
- Occupational Safety and Health Act, as amended

In addition to the regulations listed above, there is an Environmental Covenant associated with the project site related to a previous petroleum spill and cleanup. The site has been declared No Further Action by the State of Alabama and the Environmental Covenant stipulates certain requirements for future development at the site. The Environmental Covenant and documentation related to this proposed project including communications with Alabama Department of Environmental Management (ADEM) is included in Appendix A.

2.4 Environmental Permits

Environmental permits anticipated for the Proposed Action include a construction stormwater permit and stormwater pollution prevention plan. These permits are covered under the National Pollution Discharge Elimination System (NPDES) program and include coordination with the City of Tuscaloosa for land development permits and the state regarding the Environmental Covenant in place for the proposed location of the site. See Appendix B for a project review from ADEM Water Division regarding Best Management Plans and permits.

3. Scoping and Issues

3.1 Internal Scoping

Internal team meetings of staff from USGS Water Resources Mission Area, USGS Office of Management Services and Stanley Consultants were held as part of the scoping process to identify potential areas of affected environment of significant concern, review project schedules, and determine potential interested parties to contact for comment on the proposed project.

3.2 External Scoping

Once the potential interested parties were determined, coordination, comments, and documentation with the parties and regulatory agencies was incorporated into the environmental review. Coordination included drafting notice letters to said agencies and groups. The agencies and parties listed below provided information and/or guidance relative to the development of the Proposed Action and were provided a summary of the proposed modernization plan for comments:

- U.S. Department of Interior- U.S. Fish & Wildlife Service Field Office
- Alabama Department of Environmental Management-Air Quality Division
- Alabama Department of Environmental Management-Stormwater Management

- Alabama Department of Environmental Management - Hazardous Waste Division
- USACE Floodplains/Wetlands
- Alabama Historical Commission
- City of Tuscaloosa Water and Pollution Control
- City of Tuscaloosa Public Works and Public Safety
- City of Tuscaloosa Electric Services
- City of Tuscaloosa Water and Pollution Control Department
- University of Alabama

The Board of Trustees of the University of Alabama System⁵ held two public virtual meetings to consider aspects of the proposed project. On December 10, 2020, the easement for the new HIF was approved, and on February 4, 2021, the proposed exterior architecture for the building was approved. In both cases, the meeting agenda was posted on the board website and local news media were notified in advance of the event. The meetings were simulcast live via YouTube.

3.3 Issues Analyzed and Not Analyzed

As part of the scoping process, issues for detailed review were identified based upon the site, location, previous environmental reviews available, interested parties' input, and general knowledge of the project. Based upon these criteria, it was determined that the following resources and issues would be addressed in detail as part of this study:

- Earth Resources including geology and soils
- Biological Resources including vegetation and threatened and endangered species and wetlands
- Water Resources including surface water, floodplains, and groundwater
- Air Resources
- Cultural Resources
- Aesthetic Resources including noise and visual aesthetics
- Socio-Economic Resources
- Other Concerns including construction, climate change/greenhouse gases and hazardous materials

Farmlands, aquatic resources, coastal zones, river crossings, and parks and recreational areas are not present in the Proposed Action study area. Therefore, these topics were not reviewed in further detail.

⁵ <https://uasystem.edu/board>

4. Alternatives

4.1 No Action Alternative

The No Action Alternative is defined as keeping the status of the HIF facility unchanged and not constructing a new HIF facility to accommodate the existing services. Current HIF facilities are approximately 70,000 square feet and are at the end of service life. NASA plans the demolition of these facilities at the NASA Stennis Space Center in 2022.

The No Action Alternative is not reasonable or a feasible alternative. The existing facility is beyond its useful life and continues to deteriorate. Increases in down time for science activities would impact the ability of USGS to provide services including the sales, rental, repair, and servicing of equipment, as well as evaluation and development of new instrument technologies and the verification/certification of in-service equipment used to measure water velocity, and water level. Eventually, the demolition of the existing facility in 2022 (tentative) will leave the USGS without critical infrastructure necessary to meet its mission responsibilities and relocation would still be needed.

4.2 Proposed Action

The development of the Proposed Action was initiated through USGS Programming, which identified the need for appropriate facilities, potential locations, and size estimates to house the services provided in the existing HIF. Based on these considerations, the Proposed Action includes the construction of a new HIF with office, laboratory and warehouse space on a donated easement provided by the University of Alabama in Tuscaloosa, Alabama. The proposed building design would be a two-story building approximately 72,000 square feet in size. The site is currently being used as a parking lot.

The building design would meet DOI policy on sustainability, the Guiding Principles for Federal Sustainable Buildings along with all local and state requirements for sustainable buildings and sites. Recommendations for energy efficiency, and aesthetics related to sustainability including options such as daylighting, renewable energy strategies, and sustainable site strategies for storm water management would all be incorporated into the proposed design as requested by USGS. The facility would include new capabilities that would meet the hydrologic equipment needs of the Next Generation USGS Water Observing System. Additional design and construction Details can be found in the “USGS HIF Project Summary FYI Document” attached to the November 23, 2020 correspondence located in Appendix A. The schematic diagram of the new HIF is provided in Figure 4.



Figure 4. Proposed Action - Schematic Site Plan.

5. Affected Environment and Consequences

This section provides information on the existing environment and analysis of how the Proposed Action could potentially affect the environment. As noted in Section 2 (*Scoping*), there are no important farmlands, aquatic resources, coastal zones, river crossings, parks or recreational areas are present so impacts to these resources are not addressed in this section. This section includes the reviews and analyses of the Proposed Action to potentially impact Earth Resources, Biological Resources, Water Resources, Air Quality, Cultural Resources, Noise, Aesthetics, Socio-Economic Resources, Climate Change/Greenhouse Gases, and Hazardous Materials.

Under the No Action alternative, no USGS actions would take place and there would be no physical impact on the environment as a direct result from construction. The No Action Alternative is not feasible and was not reviewed in detail but was maintained to provide a comparison of impacts with the Proposed Action.

5.1 Earth Resources

Soils

Affected Environment

Review of the report Soil Survey of Tuscaloosa County, Alabama, indicates that the Property is underlain by six soil types: Bama-Urban land complex, Smithdalefine sandy loam, Bama fine sandy loam,

Shatta silt loam, Montevallo-Nauvoo complex, and Shatta- Urban land complex soils.

Bama-Urban land complex is a well-drained soil that occurs on broad ridgetops and plateaus of the Coastal Plain uplands. Slopes range from 2 to 6 percent, and this soil is well suited to most engineering uses. Smithdale fine sandy loam is a deep, well-drained soil on ridgetops and side slopes of Coastal Plain uplands. Slopes range from 6 to 15 percent. This unit is commonly wooded and is well suited to both pasture and urban uses. Bama fine sandy loam is a deep, well-drained soil on sandy Coastal Plain uplands. Slopes range from 2 to 6 percent, and this soil is well suited to cultivated crops, pasture and hay, as well as woodlands. Shatta silt loam is a deep, moderately well drained soil that occurs primarily on the higher terraces of the Black Warrior River. Slopes range from 0 to 2 percent. This soil is well suited to cultivation, woodlands, and most urban uses. Motevallo- Nauvoo complex soils are both shallow and deep and occur in steep areas with slopes ranging from 15 to 45 percent. Most Montevallo-Nauvoo complex soils are woodlands, as shallow areas over rock and steep slopes are limitations for most agricultural uses. Shatta-Urban land complex soil consists of deep, moderately well drained soil on nearly level broad ridgetops and plateaus of Coastal Plain uplands. With slopes ranging from 0 to 2 percent, the soil is suited to most engineering and urban uses.

The Property is in the Coastal Plain Physiographic Province of northwestern Alabama. More specifically, the Property lies within the Fall Line Hills district of the East Gulf Coastal Plain Physiographic Province. The Fall Line Hills district is an area where streams descend from the more resistant sedimentary rocks of the Cumberland Plateau to the less resistant sands and clays of the Coastal Plain. It is characterized by broad ridges separated by valleys.

A review of maps published by the Alabama Geological Survey indicates that the Property is underlain by alluvium of the Black Warrior River. These deposits are Holocene (Recent) in age and consist of unconsolidated fine- to coarse-grained sand with lenses of gravel and clay. This formation ranges up to 60 feet in thickness in the Tuscaloosa area. Bedrock, the Pottsville Formation (Pennsylvanian Age), is beneath the unconsolidated gravel and clay deposits.

The nearest surface-water body is the Black Warrior River, at the northern Property boundary. According to the USGS 7.5-minute topographic map, the next nearest mapped surface-water bodies are a pond about 400 feet east of the easternmost part of the Property, and Palmer Lake, a pond about 1300 feet west of Building 19 West.

Okoboji silty clay loam is a level, very poorly drained soil in upland depressions and is subject to ponding. Typically, the soil is black or dark gray and mottled silty clay loam to a depth of approximately 10 inches. Permeability of the Okoboji soil is moderately slow (0.6 to 2.0 inches/hour in the surface layer and from 0.6 to 20 inches/hour in the subsoil). Runoff is slow or ponded and the available water capacity is high. The soil has a seasonal high-water table and a high shrink-swell potential.

Nicollet loam is a very gently sloping, somewhat poorly drained soil on slightly convex or plane slopes on knolls and swales. Typically, the soil is black to dark grayish brown friable loam to about 96 inches in depth. The soil is moderately permeable, and runoff is slow. The available water capacity is high.

Webster clay loam is a nearly level, poorly drained soil on slightly convex to slightly concave positions on uplands. Typically, it is present in swales. The soil is a black to very dark gray clay loam overlying olive gray mottled loam and sandy loam to about 96 inches in depth. The Webster soil is moderately permeable and surface runoff is slow. The soil has a seasonal high-water table and high available water capacity.

Clarion loam is a gently sloping, well-drained soil on convex knolls on uplands. Typically, the soil is black to dark gray-brown loam. In places, lenses of silt loam, loamy sand or sand are in the substratum. The

Clarion soil is moderately permeable and surface runoff is medium.

Coland-Terril complex soils are very gently sloping and gently sloping in long narrow valleys. The stream channel within this map unit meanders from side to side. The poorly drained Coland soil is on floodplains and is subject to flooding. The moderately well- drained Terril is on foot slopes and alluvial fans that receive runoff from adjacent upland soils. Typically, the surface layer of Coland soil is black to very dark gray mottled clay loam to about 107 inches. The Terril soil is very dark brown loam to a depth of about 92 inches. The complex is moderately permeable, and runoff is slow. The Coland soil has a high seasonal water table and available water capacity is high in both soils. Canisteo clay loam is a nearly level, poorly drained calcareous soil in shallow swales on uplands. Typically, the soil is black to dark gray clay loam and mottled silty clay loam to about 87 inches in depth. Small areas of very poorly drained Okoboji soils may be found in depressions. Canisteo soil is moderately permeable and surface runoff is slow or ponded. This soil has a seasonal high-water table.

Environmental Consequences

Disturbance of the vegetation, the soils, and the slope of the site during construction will impact the area and will be closely managed during construction to maintain site stability and structure. No significant impacts to the soils at the site are anticipated.

Fill dirt is estimated to be required for the project and the contractor will confirm that the fill dirt is clean and a soil type that is not easily erodible. Current fill volume estimate is 13,480 cubic yards. Stormwater best management practices will be put in place and maintained during construction of the project to control sediment erosion. Practices including silt fence, inlet protection and a stabilized construction entrance will be implemented as part of the pollution prevention plan and National Pollution Discharge Elimination System (NPDES) permit for construction. The permit and plan will require detailed site inspections by qualified professionals noting conditions of the best management practices and any need for additional controls.

Mitigation

No mitigation beyond the standard requirements for erosion plans and permits is needed.

Geology

Affected Environment

Tuscaloosa is situated near the approximate contact of the Cumberland Plateau section of the Appalachian Plateau and the East Gulf Coastal Plain section of the Gulf Coastal Plain physiographic province. The plateau region, or district, in this part of Alabama is identified more specifically as the Black Warrior Basin, a structural depression covering a 15-county area in northwest Alabama and northeast Mississippi. The landscape consists of flat-topped, high elevation plateaus separated by deep, steep-sided valleys. The highest elevations are in DeKalb and Madison Counties and the lowest elevations are in Tuscaloosa County. Rocks in the basin are Pennsylvanian in age and consist of shales, sandstones, conglomerates, and coal seams. Surface weathering of these strata, assigned to the Pottsville Formation, produces residual soils consisting of clays, silts, and sands.

Environmental Consequences

Geotechnical study of the site finds a top layer of soft sandy and silty soils which are low consistency and require additional support for the proposed structure. This topsoil layer can be reused for mixed fill after

compaction or proof-rolling. Excavation of rock is not expected and shallow foundations were recommended by geotechnical study.

Mitigation

No mitigation is expected due to the geology of the site.

5.2 Biological Resources

Federal Threatened and Endangered Species and Critical Habitat.

USGS contacted the US Fish and Wildlife Service via the Information for Planning and Consultation (IPaC) system to determine if threatened, endangered, proposed or candidate species or proposed or final designated critical habitat occurs within the boundary of the proposed project area.

The potentially impacted species in the project area include:

- Indiana Bat – There is no critical habitat for this species in the project area. The bat hibernates in the winter in caves or in abandoned mines. In summer, they roost under loose tree bark on living, dead, or dying trees. The USGS issued a “not likely to adversely affect” finding with the commitment to be consistent with Range-Wide Indiana Bat Protection and Enhancement Plan Guidelines. The tree clearing for the project will only occur between the dates of November 1 and March 31 to be safe even though no mines are close to the project site or any level mapped hibernaculum.
- Northern Long-eared Bat – No critical habitat has been designated for this species which is listed as threatened status. Based upon information provided in the IPaC response, the Proposed Action is consistent with activities analyzed in the FWS Programmatic Biological Opinion (PBO) dated January 5, 2016.
- Black Warrior Waterdog (Endangered) which is a salamander inhabiting streams in Alabama. Said streams must be dominated by clay or bedrock with little sand and contain abundant rock crevices and slabs for shelter and egg laying. No effect: The project area does not contain and will not impact this type of habitat area.
- Flattened Musk Turtle (Threatened) can be found in streams, rivers, or lakes with an abundance of crevices and submerged rocks or an accumulation of boulders or sand. No effect: The project area does not contain and will not impact this type of habitat area.
- The proposed project area does not contain suitable habitat for either listed TES plant species. Therefore, it is unlikely that the proposed project would negatively impact any TES or other special status species or habitat.

Correspondence with FWS and a list of the provided FWS TES and other special status wildlife species known to occur in Tuscaloosa County is provided in Appendix C.

Wildlife

Four additional wildlife species were listed as possible in the project area. These include:

- Inflated Heel splitter (Threatened) is a species of freshwater mussel or a river mussel. No effect. The project area does not contain and will not impact this type of habitat area.

- Triangular Kidneyshell (Endangered) is a freshwater mussel found in rivers in Alabama. No effect. The project area does not contain and will not impact this type of habitat area.
- Wood Stork (Threatened) lives in a primarily freshwater habitat such as a marsh, swamp, lagoon, pond or flooded field or ditch. They will nest in bald cypress, mangroves or dead hardwoods over water. Any tree clearing at the site will not impact any potential nesting areas for the wood stork if found in the project area because no tree clearing will occur in or near any water bodies.
- Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act to prevent any taking of the birds, their nests, or their eggs. The project site is in a potential nesting area. The trees to be cleared will be confirmed to be clear of nests so that no disturbances or takes occur.

FWS provided written concurrence on December 9, 2020 that the project is “not likely to adversely affect” the Indiana Bat or the Northern Long-eared Bat and a “no effect” since no other federally listed species/critical habitat are known to occur in the project area.

Mitigation

Any tree cutting required at the project site as part of grading and clearing shall be completed between October 15 and March 31 to avoid bat nesting season. A biologist will be available for consultation should any of these species be identified in the area during this period.

5.3 Water Resources

Surface Water

Affected Environment

Topography at the site is flat to the south with moderate slope drop-off to the north. Stormwater will drain overland and through storm drain to an on-site stormwater detention system comprised of existing underground detention systems and two new stormwater management basins. For the Proposed Action the roof drainage will be collected in underground pipes and conveyed to the stormwater management basins. The parking lot extensions will be drained using catch basins and underground pipes conveyed to the east stormwater basin.

The existing underground detention system in the north portion of the existing parking lot will be modified to remove conflicts with the new building foundations. The storage volume removed from the underground system will be replaced in the new stormwater basins. The outfall location of the existing north underground detention system will be modified to empty into the west stormwater basin.

Mechanically stabilized earth (MSE) retaining walls will be included at the northeast corner of the site near the wareyard and along a portion of the north side of the building near the north patio. The retaining walls at the northeast corner of the site consist of a 10-foot-high wall and a 5-foot-high wall with a 5-foot-wide bench between them. The retaining wall near the north patio is a 5-foot-high wall.

Environmental Consequences

The William Bacon Oliver Lake is the dominating surface hydrological feature closest to the site. The Proposed Action is not anticipated to result in short-term or long-term impact to surface water or groundwater resources because of construction or normal operating conditions.

During construction, there is the potential for surface water impacts from sediment-laden runoff or from hazardous materials spills (e.g., oil, gas, and hydraulic fluids). The projectspecifications will require methods to minimize these potentials to include secondary containment systems and implementation of erosion and sediment runoff controls. The contractor will be responsible for any potential National Pollutant Discharge Elimination System (NPDES) permit, or development and implementation of a construction stormwater pollution prevention plan (SWPPP).

Mitigation

No mitigation beyond the required sediment and erosion control plans is required.

Floodplains

Affected Environment

The project site is at the top of a ridge line that drains down across Jack Warner Parkway and into the William Bacon Oliver Lake. See Figure 5 and Appendix D for a local Federal Emergency Management Association (FEMA) Flood Hazard Map. The site is in an area of minimal flood hazard.

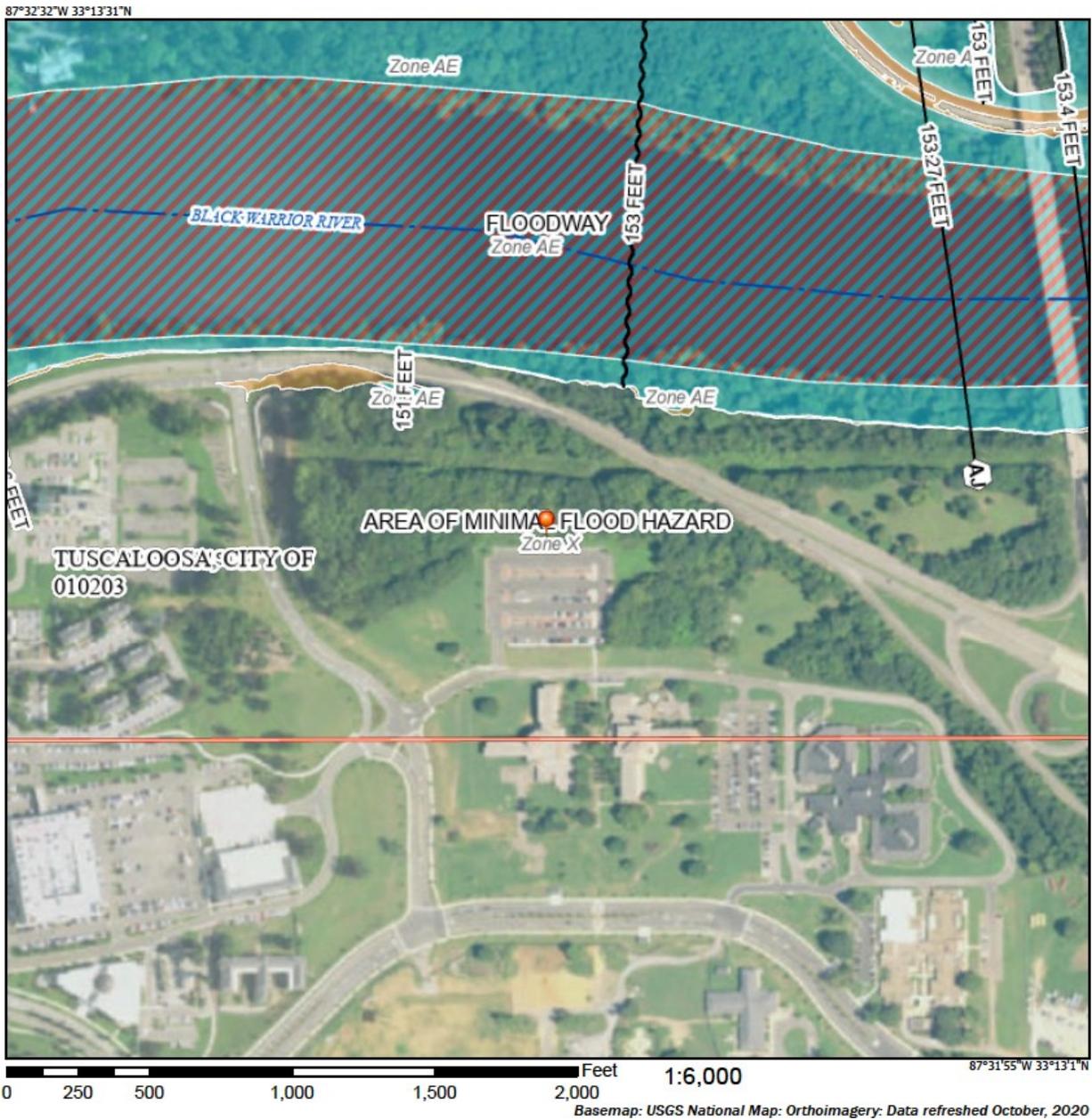


Figure 5. FEMA National Flood Hazard Layer at proposed HIF site.

Environmental Consequences

The Proposed Action will not impact floodplains or floodways.

Mitigation

No mitigation is required.

Wetlands

Affected Environment

The National Wetlands Inventory map for the subject site indicates no wetland areas on the project site. Due to the topography of the site being on a hill sloping down to the roadway and river, there are no likely

areas for wetlands to form. A recently developed parking lot by the University of Alabama on the subject site also found no wetlands on the site.

Environmental Consequences

The Proposed Action will not impact any wetlands.

Mitigation

No mitigation is required.

Groundwater

Affected Environment

Groundwater is water that exists underground in saturated zones beneath the land surface year-round resulting from long-term accumulation of water above or between relatively impervious subsurface strata, such as clays or bedrock. The primary water source is usually from infiltration of surface water into the subsurface, but it can also come from lateral flows of subsurface water from adjacent sources. The groundwater surface, sometimes called the “water table,” can fluctuate up or down throughout the year due to seasonal changes in climate, precipitation, vegetation, surface runoff, water levels in nearby water bodies, and other factors. Geotechnical drilling determined the depth to groundwater at the site to be approximately twenty-six feet. The depth is expected to fluctuate due to the conditions described above.

Previous groundwater contamination has been remediated. The Environmental Covenant stipulates any water drawn from the site be limited to non-potable purposes only (see Appendix A).

Environmental Consequences

Groundwater is not expected to be encountered during construction of this project. However, localized zones of “trapped” water may be encountered and should be expected to develop within the soil overburden, especially after extended wet weather. If the general excavation is performed during the winter or spring, groundwater seeps should be anticipated, especially following periods of precipitation. After building subgrade preparation is completed, it is not expected for groundwater to significantly affect construction, and dewatering of any shallow excavations, if necessary, shall be accomplished with conventional sumps and pumps.

Mitigation

No mitigation is anticipated.

5.4 Air Resources

Affected Environment

Since 1970, the federal Clean Air Act (CAA) and subsequent amendments have provided the authority and framework for EPA regulation of emission sources and the establishment of requirements for the monitoring, control, and documentation of activities that will affect ambient concentrations of certain pollutants that may endanger public health or welfare. The EPA has promulgated primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), two size categories of particulate matter (PM₁₀ and PM_{2.5}), O₃, sulfur dioxide (SO₂), and lead. The project area is in an existing attainment for all NAAQS and does not have any existing areas of concern for air quality.

Environmental Consequences

USGS will not be constructing any emission sources as part of the project. Emissions vented from laboratory exhaust hoods may include VOCs or Hazardous Air Pollutants (HAPs) and will not require airquality permitting due to facility type and emission rates of less than 100 tons/year⁶. Air quality impacts from the construction of the project are expected to be limited to the construction period only. Earth- moving and construction activities associated with development of the project would necessarily result in unquantifiable short-term increases in level of dust (PM10 emissions), both as a direct result of construction work. Potential impacts from these operations would be very minor and would vary from day to day depending on meteorological conditions such as wind or rain and types of equipment in use.

The project construction specifications require contractors to comply with state regulations including limits on the generation of fugitive dust. As discussed in the soils and groundwater sections, the NPDES permit and pollution prevention plan will include requirements for both dry and wet sediment transport offsite. This includes prevention of dust transport by methods such as wet suppression of haul roads along with speed reduction on windy days to prevent transport of dust off the project site.

Mitigation

No mitigation beyond the measures implemented during construction are required for the Proposed Action.

5.5 Cultural Resources

Affected Environment

An archaeology study encompassed all areas of direct and indirect effects that may fall within the Area of Potential Effect (APE) for the project area (Appendix E). The study included all areas of proposed construction activities or other potential ground disturbing activities associated with construction and investigated previously identified archaeological sites. The assessment identified whether the archaeology study area has the potential to contain unknown intact archaeological resources that may be potentially eligible for listing in the National Register of Historic Places (NRHP).

A study for architectural history accounted for any physical, auditory, atmospheric, or visual impacts to historic properties. The architectural history study area included a quarter-mile buffer around the project area in order to encompass all areas of direct and indirect effects.

The studies described in Appendix E provide detailed information and diagrams to assist in understanding the research completed and the areas and sites discussed in this section. Please refer to Appendix E for additional information for reference.

Environmental Consequences

No new archaeological sites or historic standing structures were identified or documented within the boundaries of the APE, which falls entirely within Site 1Tu808, the Historic Bryce Hospital Campus. Site 1Tu678 also falls within the boundaries of Site 1Tu808, and a portion of the mapped site boundaries fall within the present survey tract. Previous ground disturbing impacts have greatly reduced or even negated the potential for many areas of the tract to contain intact subsurface evidence of prior aboriginal or historic occupation.

Three Historic Architectural Resources (HARs) were identified during the study: HAR 1 (Bryce Cemetery

⁶ <http://adem.alabama.gov/alEnviroRegLaws/files/Division3.pdf>

#1A), HAR 2 (Bryce Hospital), and HAR 3 (Woolsey-Finnell Bridge, BIN6932). Proposed installation of a low landscaping wall and a line of vegetation along the eastern boundary will form a visual buffer between the proposed HIF and Alabama Historic Cemetery Register (AHCR) listed HAR1. Based on these plans and the absence of any evidence of unmarked burials between two GPR grids surveyed in 2010, the proposed project will not have an effect on HAR 1. Due to distance, as well as intervening buildings and vegetation, the proposed project will not have an effect on National Register of Historic Places (NRHP) listed HAR 2. Finally, due to distance, as well as intervening vegetation along the southern banks of the Black Warrior River, the proposed project will not have an effect on NRHP eligible HAR 3.

USGS anticipates that with the proposed buffering to minimize effects and further coordination with SHPO and the University, that the SHPO will concur with a No Adverse Effect from the Proposed Action.

Mitigation

No mitigation, beyond providing the measures to minimize effects as coordinated with SHPO (as described in above and for aesthetics in Section 5.7) is anticipated for cultural resources.

5.6 Noise Sensitive Resources

Affected Environment

Potentially noise-sensitive receptors include University buildings and dormitories located in the vicinity of the proposed construction and scattered residences located along Kirkbride Lane and North Campus Way. The Proposed Action and its operations are consistent with the uses and University campus planning.

Environmental Consequences

The mechanical units serving the building will be within the required sound level decibels for equipment, and the typical activities in the building are not anticipated to generate exterior noise.

The University buildings near the construction site will have increases in noise generated during construction activities. Noise generated during construction would be commensurate with any construction site with typical earth-moving equipment. This increase in noise levels is temporary and will be limited to those areas in the immediate proximity of construction. Noise levels should be controlled on the site within OSHA limits. The noise levels outside of the construction area should not exceed 60 dBA for more than a few hours per day. The short-term noise levels should not exceed 75 dBA at any time. The construction noise is considered a temporary nuisance, and no long-term impacts are anticipated from the operations of the building once complete.

As an operating University, impacts to classes and student-occupied dormitories should be considered for buildings with close proximity to the project site. To minimize the temporary impact from construction noise, the contractor will prepare a construction noise reduction plan to be reviewed by USGS and included in the construction documents. This plan will include abatement measures to minimize the construction noise, such as specific work-hour controls and the maintenance of normal noise-reduction muffler systems, dampeners, and sound aprons.

Mitigation

No mitigation beyond implementing the construction noise reduction plan for the temporary impacts of construction noise is needed.

5.7 Aesthetic Resources: Visual

Affected Environment

The USGS facility will be visible from the surrounding University buildings and Tuscaloosa area including the lake. The project area is currently an undeveloped area with a parking lot in the midst of a developed university area. The Bryce Hospital complex is assessed as part of the Cultural Resources section of this document. A parking lot exists on the site currently along with vegetation and trees. Located nearby are university classroom and dormitory buildings.

Environmental Consequences

The Proposed Action has the potential to visually impact the surrounding area. This impact will be minimized during the continued coordination with the University to develop a facility that is in keeping with the visual aesthetics of campus and the existing landscape of the area. Site clearing will be completed in accordance with FWS requirements. The building is proposed to blend with the landscape and provide landscaping and retaining walls that will preserve the scenic viewshed of the area. The visual quality of the area is expected to be positively impacted by the construction of the USGS HIF.

Mitigation

To mitigate potential impacts to the surrounding areas, USGS designed the site plan for the Proposed Action surroundings with buffers and visual screening, such as berming and landscaping, and by presenting an exterior façade approved by the University of Alabama on February 4, 2021.

5.8 Socioeconomic Effects

Affected Environment

Land Use

The proposed HIF site is located on the main campus within the previous Bryce Hospital complex that was first developed in 1861. The 185-acre site is currently owned by the University of Alabama and is partially developed as a parking lot with the remainder covered in vegetation. The topography of the site is fairly level at the south end sloping downward to the north towards the river. The site is surrounded by Jack Warner Parkway NE on the north and North Campus Way on the west. To the east is vegetated and forested areas that connect to Jack Warner Parkway. The project location is shown in Figures 2 and 3.

Based on site reviews, the proposed project area does not include any prime/important farmland or formally classified lands (National Parks and Monuments; National Natural Landmarks; National Battlefield Parksites; and Parks; wilderness areas; wild, scenic and recreational rivers; wildlife refuges; national seashores, lake shores, and trails; State parks; SLM-administered lands; National forests and grasslands; or Native American owned lands and leases).

Socioeconomics

Based on 2018 Census Data⁷, the population for the City of Tuscaloosa is 208,911 with 62% of the population classified as White alone ethnicity and 32% classified as Black. According to the US Census American Community Survey, the median household income in Tuscaloosa was \$54,459 which is about

⁷ U.S. Census Bureau (2018). American Community Survey 1-year estimates. Retrieved from Census Reporter.

10% higher than the amount in Alabama.

Tuscaloosa is home to the University of Alabama, the state's largest public university. Total University enrollment was 37,842 students in the fall of 2020. The University has almost 800 National Merit Scholars enrolled, and 13 alumni and students won Fulbright Awards for 2020-21⁸. Total statewide economic impact of the University of Alabama is \$2.905 billion, 13,784 jobs, and \$142,9 million in income and sales taxes⁹.

Environmental Justice

Based on the demographics and Census Data, 16.6% of people live below the poverty line in Tuscaloosa, which is the same as the state poverty rate, and 25% higher than the US poverty rate. The City of Tuscaloosa is not considered to be economically or socially disadvantaged. The ElevateTuscaloosa initiative works within and across the community to strategically invest in education, cultural arts, tourism, parks, recreation, and connectivity¹⁰.

Transportation

The University of Alabama has a Campus Master Plan 2017¹¹ (Master Plan) to outline various elements that make up the campus. The campus is a multi-modal network with a convenient walkway system, accommodations for bicycle, buses and automobiles. The Crimson Ride is the University's campus bus transit service, which started in 2007 and continues to provide an important role in providing campus-goers with a convenient alternative to driving.

Environmental Consequences

Due to its location and existing use, it is likely that the best use of the site is construction of the Proposed Action. The Proposed Action is consistent with the growth included in the Master Plan. The Proposed Action will be constructed on the University Campus with a Master Plan limiting adjacent development. There is not anticipated to be a substantial increase in commercial or residential development within the City of Tuscaloosa or the University campus once the Proposed Action is completed. There will be an increase of approximately 70 people accessing the campus as a result of the new HIF staffing. This increase is considered minimal to the overall character of the City of Tuscaloosa or University campus but will contribute to the local economy.

It is anticipated that socioeconomic impacts from implementation of the Proposed Action would be positive from the standpoint of potentially increased land values, greater opportunity for residential and commercial operations within the community, increased employment related to operations at the new facility, and greater community pride.

Contract documents will stipulate construction safety in accordance with OSHA requirements. Current vehicular access to the property will be impacted by the proposed construction in the use of the parking lot during the construction phase. The construction will occur in phases to assist in minimizing the truck and other vehicular traffic the increase from what presently exists during the construction of other University projects.

Adequate parking in accordance with zoning requirements and the Master Plan will be provided with

⁸ The University of Alabama, <https://www.ua.edu/about/quickfacts>

⁹ UA Center for Business and Economic Research

¹⁰ Elevate Tuscaloosa, <https://www.elevatetuscaloosa.com/>

¹¹ UA Campus Master Plan, <https://campusplanning.ua.edu/ua-master-plan/>

the Proposed Project. The anticipated vehicular speed will not change in the vicinity of the proposed site during the project construction. No significant change is planned for traffic patterns on main streets near the project site as part of the construction period. To minimize impacts from the new HIF. The Proposed Action is located and designed to accommodate the multi-modal transportation services and traffic circulation patterns consistent with the Master Plan.

Mitigation

No mitigation is proposed for any categories of socioeconomic effects.

5.9 Invasive Species

Affected Environment

An invasive species is an entity that causes ecological or economic harm in a new environment where it is not native. An invasive species can be introduced to a new area by multiple means of transportation and exchange. Invasive species affect each of our lives, all regions of the US, and every nation in the world. There are various invasive species that the Alabama Invasive Plant Council list to provide information to the public.

Environmental Consequences

The Proposed Action has the potential to impact the area with invasive species during construction. Prior to construction, the noxious weed list and the National Vegetation Management Plan need to be checked to define the invasive plants that must be addressed and the measures to be implemented to minimize their harm. The contractor is responsible for implementing preventative measures or eradication measures for the project site. Measures may include the inspection and cleaning of construction equipment, commitments to ensure the use of invasive-free mulches, topsoil and seed mixes, establishment of native vegetation and control or eradication strategies to be deployed should an invasion occur from the Proposed Action.

Mitigation

In coordination with USGS and the State of Alabama, the contractor will prepare and include an invasive species management plan for the Proposed Action as part of the contract specification to minimize the potential impacts.

5.10 Utilities

Affected Environment.

Utility maps indicate that most of the required utilities are located in close proximity to the site. Active utilities within the existing parking lot include electrical for lighting, telecommunication for security cameras, storm water collection and detention, and monitoring wells.

Environmental Consequences.

All utilities construction will be coordinated to confirm proper connections and capacities will be met. The wastewater discharge will consist of both general building sanitary sewer discharge as well as infrequent tank water discharge. The facility will use a sand-oil interceptor for the capture and removal of any tank water sediment. Utilities that service the building proposed for construction will be connected in compliance with all local and state regulations. Coordination with the City of Tuscaloosa

will occur related to approved discharge levels and any required permitting regarding wastewater discharge.

Mitigation

No mitigation is proposed for utilities.

5.11 Hazardous Materials

Affected Environment

A previous petroleum release¹² occurred at the subject site but has since been deemed by ADEM as No Further Action Required. An Environmental Covenant is in place documenting the release and the actions taken. The Covenant also lists Use Restrictions on the site that require prior approval from ADEM before development on the site. ADEM granted approval of the project on January 7, 2021, based on proposed construction controls including a vapor intrusion barrier system as part of the building foundation and maintaining 10 feet of distance from subsurface construction to the water table. The ADEM concurrence letter and Environmental Covenant are in Appendix A.

Environmental Consequences

The contractor shall manage construction appropriately and USGS will conduct maintenance activities in accordance with all applicable Federal, state and local regulations. The project specifications will require engineering control methods such as the vapor intrusion barrier system to minimize the potential for impacts from petroleum and other chemicals of concern during grading and excavation. Environmental impacts associated with the previous release are expected to be negligible.

During construction, heavy equipment would be required, and ground surfaces would be disturbed. While not anticipated at this time, the disturbance of ground materials may reveal the presence of hazardous or potentially hazardous materials. If found, the materials will be collected and disposed of appropriately.

Mitigation

No additional mitigation beyond following the Environmental Covenant is expected for hazardous materials.

5.12 Potential Adverse Effects from Greenhouse Gases

Greenhouse Gases (GHGs) include water vapor, CO₂, methane (CH₄), nitrous oxide, ozone, and several hydrocarbons and chlorofluorocarbons. Each GHG has an estimated Global Warming Potential, which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the Earth's surface. A gas's Global Warming Potential provides a relative basis for calculating its carbon dioxide equivalent (CO₂e), which is a metric measure used to compare the emissions from various GHGs based upon their Global Warming Potential related to climate change concerns. CO₂ has been assigned a Global Warming Potential of 1 and is therefore the standard to which all other GHGs are measured (IPCC, 2007).

Water vapor is a naturally occurring GHG and accounts for the largest percentage of the greenhouse effect. Next to water vapor, CO₂ is the second-most abundant GHG. Uncontrolled CO₂ emissions from power plants, heating sources, and mobile sources are a function of the power rating of each source, the

¹² P.E. LaMoreaux & Associates, Inc., Draft Phase I Environmental Site Assessment of Bryce Hospital, June 19, 2009.

feedstock (fuel) consumed, and the source's net efficiency at converting the energy in the feedstock into other useful forms of energy (e.g., electricity, heat, and kinetic).

Nitrous oxide emissions are emitted during the combustion of fossil fuels and solid wastes, as well as during agricultural and industrial activities. Nitrous oxide accounts for approximately 8 percent of global manmade GHG emissions.

Impacts from fugitive dust would be expected to be short term and only occur during the construction period. Based on the relatively small size of the affected area and current air quality conditions, it is expected that the Proposed Action would result in low impacts on air quality.

Other impacts on air quality as a result of construction activities come from emissions from construction vehicles and heavy equipment used in the construction process. Emissions stemming from these vehicles and equipment would emit hydrocarbons, particulate matter, and CO₂. Emissions resulting from the construction activities would be highly localized in the immediate project area and would minimally increase total emissions. Air emissions resulting from construction are expected to be minimal as these activities are not excessive in nature. Emissions stemming from the construction of the Proposed Action would not reduce air quality in the project area, would not exceed USEPA de minimis thresholds, and would not affect the current attainment status of Alabama; resulting in short-term, low impacts.

6. Public Involvement

In addition to the public meetings held during scoping by the University (see Section 2), USGS will place this EA on the USGS Water Mission Area Website¹³ with a 15-day public comment period. This comment period is provided to obtain public comment on both the environmental evaluation and the potential effects to historic properties in accordance with Section 106 of the National Historic Preservation Act prior to making final decisions on the Proposed Action. Information on the Section 106 Consultation is provided in Appendix E. Advertisements of the EA's availability will be provided with a press release, paid advertisements in local papers, letters to the interested parties, and posting on the University of Alabama website.

Given the current information and analysis, USGS anticipates that there will be a "Finding of No Significant Impact" for the Proposed Action. However, following the 15-day comment period, USGS will review and address the comments received and incorporate them into the environmental review for inclusion in the decision making for the Proposed Action.

¹³ <https://www.usgs.gov/HIF-EA>

7. List of Preparers and Reviewers

7.1 Preparers:

Stanley Consultants

- Angela Phipps, Principal Environmental Scientist
- Brian Roth, P.E.

University of Alabama

- Kristen R. Reed, Cultural Resources Investigator
- Sam Mizelle, Cultural Resources Investigator
- Matthew Gage, Director

106 Group

- Saleh Miller, History Manager
- Madeline Bray
- Molly McDonald

7.2 Reviewers

USGS

- E. Michelle Fishburne, Chief, Environmental Management Branch
- Eva J. Bryson, Environmental Manager