

**Draft Statement of Findings for Wetlands and Floodplains  
New Headquarters Annex and Sugarlands Operations and Maintenance Complex  
Great Smoky Mountains National Park  
December 10, 2021**

**Recommended:**

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Alan Sumeriski  
Acting Superintendent, Great Smoky Mountains National Park

Date

**Certified for Technical Adequacy and Servicewide Consistency:**

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Date

**Approved:**

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Date

## INTRODUCTION

The National Park Service (NPS) is proposing to improve administrative, operational, and maintenance facilities in the Sugarlands Area of Great Smoky Mountains National Park (the Park) near Gatlinburg, Tennessee (Figure 1). The proposed improvements would include two separate projects:

- New Sugarlands Headquarters Annex (HQ Annex) - Construct a new administrative facility and associated parking and storage to address workspace deficiencies in the historic Sugarlands Headquarters building and replace the outmoded and inadequate Little River Ranger Station.
- New Sugarlands Operations and Maintenance Complex (O&M Complex) – Construct a new operations and maintenance complex to replace outmoded and inadequate facilities within the Sugarlands Maintenance Area.

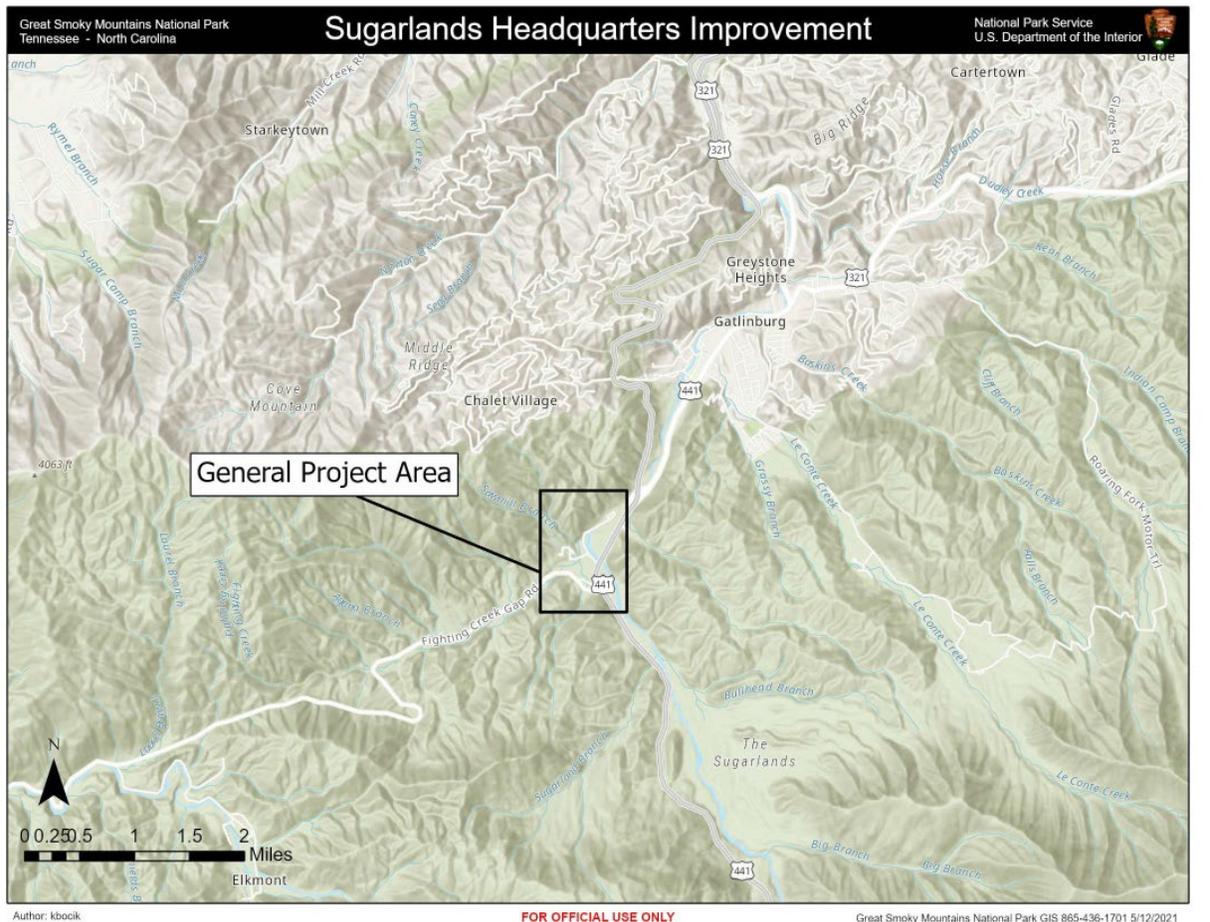


Figure 1. Map showing general project area for new Sugarlands Headquarters Annex and Operations and Maintenance Complex.

All proposed construction would be within the existing Sugarlands Maintenance Area (Figure 2), which consists of about 10 acres of developed land 0.4 miles northeast of the existing Sugarlands Headquarters building. The area is designated as General Park Development in the *General Management Plan* (NPS 1982) and is within the 100- and 500-year floodplain of West Prong Little Pigeon River. The previously disturbed and developed site primarily consists of buildings and parking, with scattered patches of maintained lawn and some forest on the edges. Site access is via Park Headquarters Road. Gatlinburg

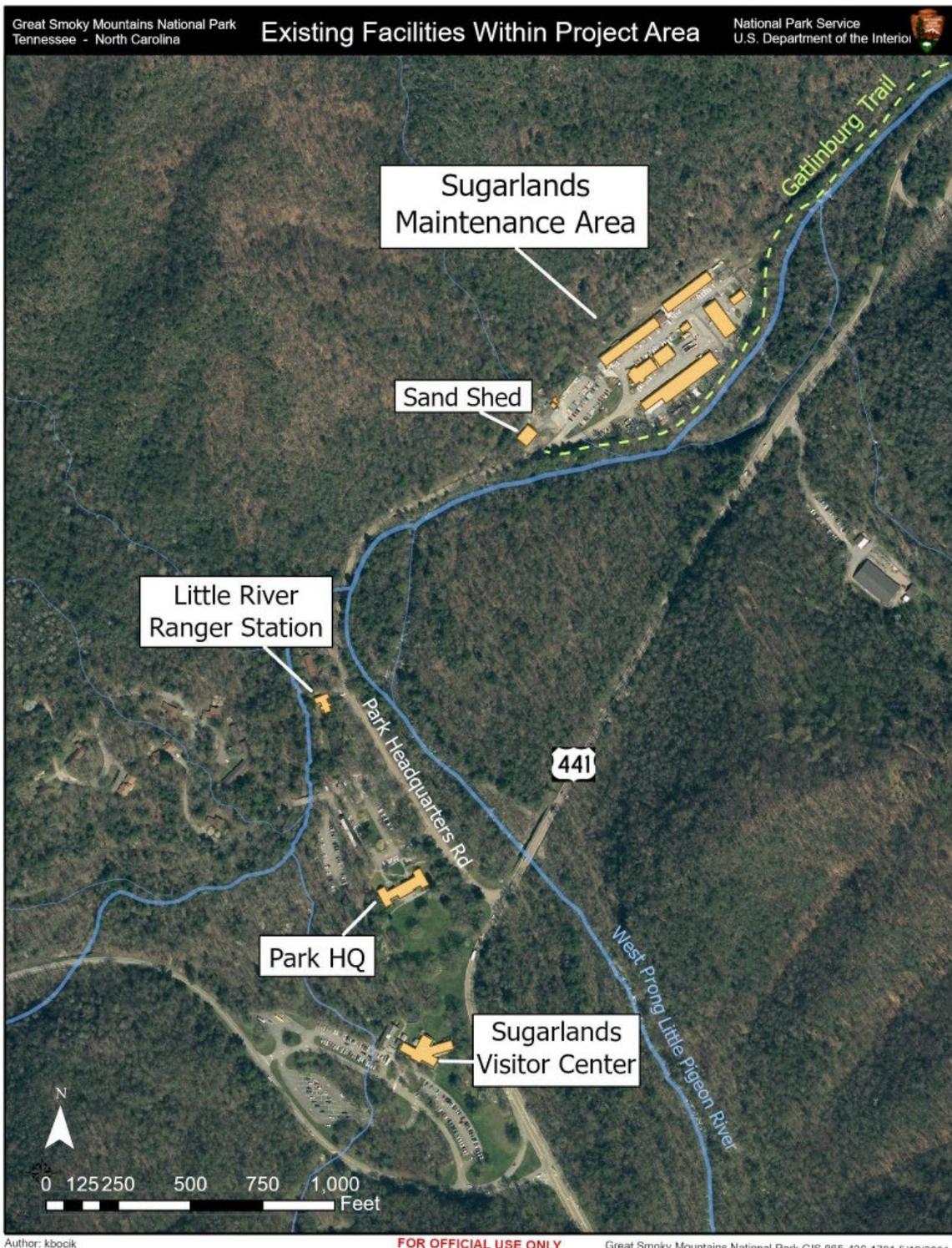


Figure 2. Map showing existing facilities and key features within the Sugarlands Area, Great Smoky Mountains National Park.

Trail and West Prong Little Pigeon River are south and southeast of the site. Forested areas designated as Natural Environment Type I in the *General Management Plan* are north and northwest of the site. The Park manages Natural Environment Type I areas as wilderness. Although no Congressionally designated wilderness presently exists in the Park, 464,544 acres have been formally recommended or proposed as wilderness (NPS 2016a). NPS manages recommended and proposed wilderness areas to preserve their wilderness character until Congress decides whether to designate them as wilderness (see *NPS Management Policies 2006* §6.3.1).

Executive Order 11990: *Protection of Wetlands* directs NPS and other federal agencies: (1) to provide leadership and to take action to minimize the destruction, loss, or degradation of wetlands; (2) to preserve and enhance the natural and beneficial values of wetlands; and (3) to avoid direct or indirect support of new construction in wetlands unless there are no practicable alternatives to such construction and the proposed action includes all practicable measures to minimize harm to wetlands. Director's Order 77-1: *Wetland Protection* and Procedural Manual 77-1: *Wetland Protection* (NPS 2016b) establish NPS policies, requirements, and standards for implementing Executive Order 11990. In accordance with these orders and procedures, NPS adopts a goal of "no net loss of wetlands" and strives to achieve a longer-term goal of net gain of wetlands Servicewide. This Statement of Findings documents compliance with these NPS wetland management procedures.

Executive Order 11988 *Floodplain Management* and Executive Order 13690 *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, require NPS and other federal agencies to evaluate the likely impacts of actions in floodplains, and to improve the nation's resilience to flood risk. The objective of Executive Order 11988 is to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Executive Order 13690 was issued to establish a Flood Risk Management Standard for federally funded projects to improve the nation's resilience to floods, and to ensure new federal infrastructure will last as long as intended. NPS procedures for complying with the floodplain Executive Orders are outlined in NPS Director's Order 77-2: *Floodplain Management* and Procedural Manual 77- 2: *Floodplain Management* (NPS 2002).

## **PURPOSE AND NEED**

### **Headquarters Annex**

The purpose of the HQ Annex project is to provide modern and code-compliant administrative workspace for park employees assigned to the Sugarlands Area. The project is needed to correct existing workspace deficiencies in the Sugarlands Headquarters building and the Little River Ranger Station. The existing Sugarlands Headquarters building currently houses the Superintendent's Office, division chiefs, and administrative and technical staff. The design process for the planned rehabilitation of the Sugarlands Headquarters building revealed that maintaining current employee workspace/occupancy levels, while meeting building code, life safety, and accessibility requirements, was not feasible without exterior additions or modifications that would affect the historic character of the building. Park management determined that constructing a new HQ Annex building to correct the workspace deficiencies would provide a code compliant workspace for employees, while maintaining the historic fabric of the existing Headquarters Building.

In a review of existing facilities, the Park determined that the new HQ Annex should also replace the existing Little River Ranger Station, which contains functional constraints (e.g., accessibility and life

safety challenges, inadequate space, poor layout, low ceilings) that cannot be practicably improved within the existing building. The park selected the new HQ Annex site from several candidate sites in the Sugarlands Headquarters area by means of a value-based decision-making process (NPS 2020). This site was selected for its proximity to the Headquarters Building and availability of previously disturbed land of sufficient acreage to meet program and operational requirements. The value analysis considered sites within and outside the floodplain and concluded that the non-floodplain sites were not viable alternatives.

### **Sugarlands Operations and Maintenance Complex**

The purpose of the O&M Complex project is to provide modern and code-compliant maintenance, administrative, and operational workspace for park employees assigned to the Sugarlands Maintenance Area. The project is needed to replace outdated buildings in the Sugarlands Maintenance Area that have exceeded their design life. The existing Maintenance Area serves as the Facility Management Division’s operational hub within the North District of the Park. The area also provides administrative and operational workspace and storage for other park divisions. Existing buildings within the Maintenance Area shown in Table 1.

**Table 1  
Existing Facilities within the Sugarlands Maintenance Area  
Great Smoky Mountains National Park**

<b>Building Description</b>	<b>Approximate Square Footage</b>
Maintenance Offices	3,930
Auto Garage & Trade Shops	10,343
Gas and Oil Building	270
HQ Annex and Warehouse Building	6,273
Wildlife Building	980
Radio/Historic Preservation	6,128
Equipment Storage Shed	10,920
Back Country Volunteer Storage Shed	128
Dozer Storage Shed	400
Vehicle Wash Station	100
Sand Storage Shed	2,000
Fire Cache, Fisheries and Vegetation Building	5,248
Total =	46,720

A Project Scoping Assessment for the Sugarlands Maintenance Area (NPS 2019) indicated that the condition of many buildings is so poor that disposal is the only practical option. The assessment team found numerous safety hazards, inadequate space or capacity for park maintenance and operations personnel, and facilities that are entirely insufficient for essential park operations and maintenance.

## **PROPOSED ACTION**

### **Headquarters Annex**

The proposed HQ Annex would be built in the southwest corner of the Sugarlands Maintenance Area in the general location of the existing sand storage shed (Figures 2 and 3). The proposed action for the HQ Annex project includes:

- Demolition of existing sand storage shed (~1,900 square feet [ft<sup>2</sup>]).

- Demolition of existing Little River Ranger Station (~2,200 ft<sup>2</sup>).
- Construction of a two-story administrative building (~7,000 ft<sup>2</sup>, 2 stories with a 3,500 ft<sup>2</sup> footprint) designed to meet Leadership in Energy and Environmental Design (LEED) Silver requirements. The finished first floor of the building would be elevated above the 500-year floodplain via grading and fill.
- Construction of and rehabilitation/reconfiguration of existing employee parking (~17,000 ft<sup>2</sup>).
- Construction of sidewalks (~1,500 ft<sup>2</sup>).
- Construction of basic stormwater drainage and stormwater best management practices, including a vegetated swale. Proposed stormwater runoff mitigation measures would be integrated with stormwater management at the O&M Complex, which would include construction of bioretention basins.
- Connections to existing utilities.

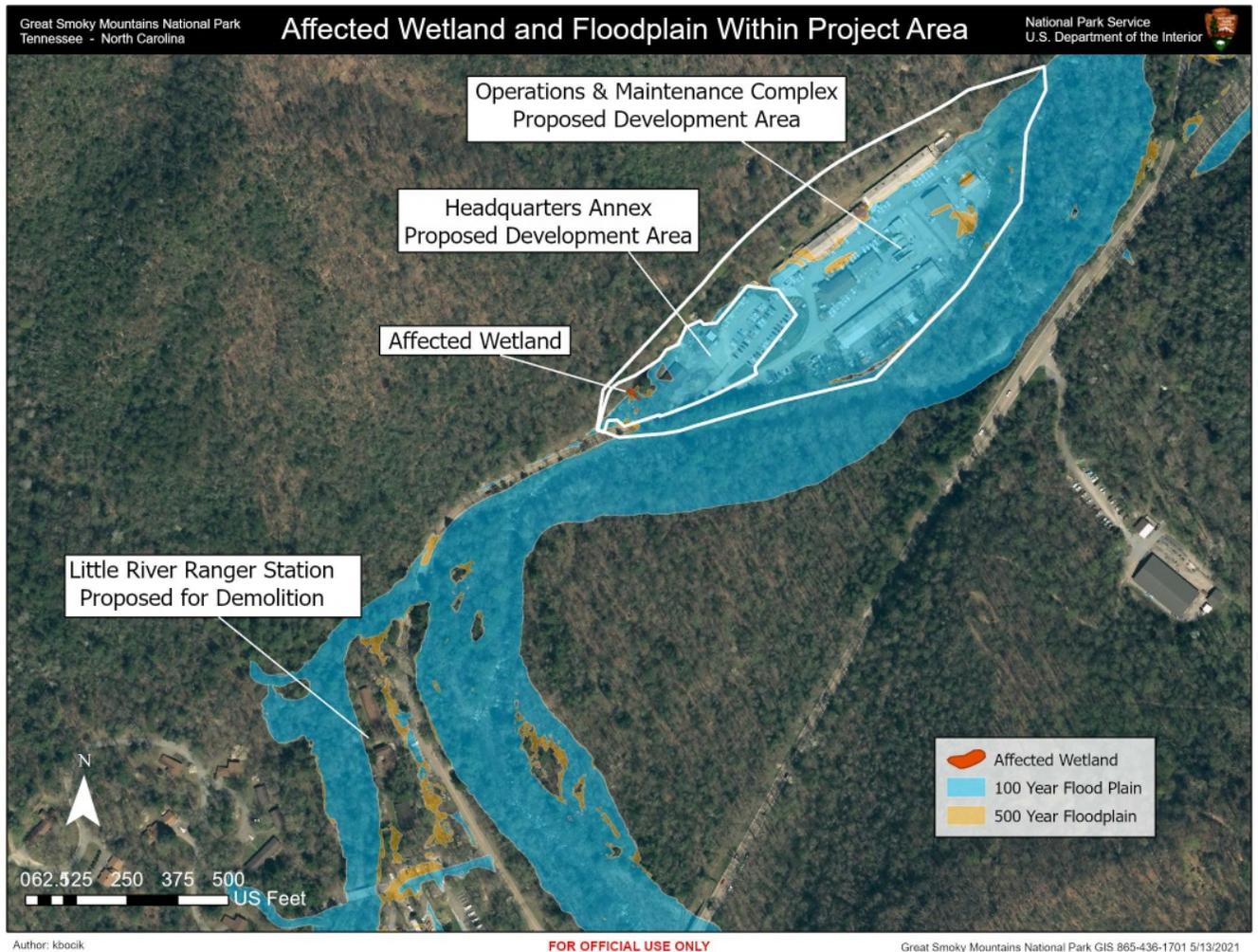


Figure 3. Map showing proposed development and demolition areas and the wetland and floodplain that would be affected by this project.

## **Sugarlands Operations and Maintenance Complex**

This project would demolish 10 existing deteriorated buildings (Figure 3) within the Sugarlands Maintenance Area and construct new code-compliant buildings to consolidate functions, increase capacity, and improve functionality. All proposed new construction would be within the Proposed Development Area shown in Figure 3. The entire Proposed Development Area is previously disturbed and is within the existing Sugarlands Maintenance Area. The proposed action for the O&M Complex project includes:

- Install temporary office trailers with power hookup for park staff and construction personnel within existing maintenance yard parking. Maintenance equipment and employees would be temporarily relocated to other existing maintenance areas within the Park such as the Cosby Maintenance Area, Oconaluftee Maintenance Area, or the Cades Cove Maintenance Area.
- Demolish facilities listed in Table 1.
- Remove all asphalt driveways and parking inside the fenced compound to the stone base course.
- Remove all overhead powerlines and poles from within compound.
- Construct new ~20,000 ft<sup>2</sup> garage/open maintenance bay with opposing overhead roll-up doors for drive-through capability and truck storage.
- Construct new covered vehicle washing and fueling stations adjacent to the garage/maintenance bay with separate gas, diesel, and propane tanks.
- Construct new ~50,000 ft<sup>2</sup> two-story office and support shop building.
- Construct new ~5,000 ft<sup>2</sup> storage shed with separate bays for sand, salt, and gravel.
- Construct new ~900 ft<sup>2</sup> storage building.
- Install new underground electrical service from service entrance to each new facility.
- Construct new 70,000 ft<sup>2</sup> concrete driveway and parking area with new curbing and base course.
- Construct new 470-foot-long metal covered parking area.
- Revegetate 50,000 ft<sup>2</sup> of unimproved areas.
- Remove temporary office trailers.
- Mill and recoat existing parking A (37,000 ft<sup>2</sup>) and 350 linear feet of adjacent roadway.
- Construction of stormwater drainage and stormwater best management practices (bioretention basins), which would be integrated with stormwater management at the HQ Annex.
- Connections to existing utilities.

All construction would be within the proposed development area shown in Figure 3. The site plan, specific building locations, design themes, and other specifics would be established during the design process. Square footage values presented above are estimates based on the Project Scoping Assessment and may change during design. The finished first floor of occupied buildings would be elevated above the 500-year floodplain in accordance with accepted engineering practices and as specified during design. Fuel, hazardous materials, and hazardous waste storage would be elevated at least 3 feet above the 100-year flood elevation.

## **CURRENT PROJECT AREA CONDITIONS**

### **Floodplain and Site-Specific Flood Risks**

The project area falls within the Upper West Prong Little Pigeon River sub-watershed (Hydrologic Unit Code (HUC)-12 060101070206), a subdivision of the Lower French Broad (HUC-8 06010107) sub-basin. Floodplain mapping completed for the Park by the U.S. Army Corps of Engineers indicates approximately 70% of the proposed project site (as well as 90% of all existing Maintenance Area

facilities) falls within the 100-year floodplain (Zone A, USACE 2020, Figure 3). Portions of the project area are also within the 500-year floodplain (Figure 3). In addition, portions Park Headquarter Road, which provides the only road access to the project area, is within the 100-year floodplain at the bridge over Fighting Creek (Figure 3). Based on the site-specific floodplain study completed by the U.S. Army Corps of Engineers (USACE 2020), water depths at the proposed development site during a 100-year flood event are predicted to range from 0 to 4 feet deep above existing ground level. Water depths on portions of Park Headquarters Road near the bridge over Fighting Creek are predicted to range from 0 to 5 feet.

While records exist for past flooding events in other areas of the Park, no records of major flooding events were found for the Sugarlands Headquarters area. For example, between March 25 and 29, 1994, the Newfound Gap weather station, which is in the Park near the headwaters of West Prong Little Pigeon River, recorded 9.19 inches of rain. This exceptional volume of precipitation over a relatively short time resulted in a major deluge on the Little River. In multiple areas the river crested its banks and inundated Little River Road in the Park. However, anecdotal evidence suggests that this event did not cause flooding or flood damage in the Sugarlands Area.

The floodplain in the project area is currently heavily impacted by existing road, parking, and building infrastructure. Fragmented undeveloped portions provide wildlife habitat for wetland and riparian species, allow for flood storage and stormwater infiltration, and facilitate floodwater conveyance.

The Sugarlands Area is currently served by an emergency notification system public warning siren located approximately 1,000 feet southwest of the Sugarlands Maintenance Area. The siren is operated by the city of Gatlinburg as part of its all-hazard notification system. In the event of flooding along the West Prong Little Pigeon River, the city can activate the system to broadcast warning tones and voice messages to alert visitors and Park staff of an emergency and provide evacuation routes and other critical information. The siren was installed in late 2017 and had not been activated for a flood event as of December 2021. Park staff also monitor weather data from the National Weather Service and existing weather stations in the Park. An existing stream flow gauge on the West Prong Little Pigeon River above Gatlinburg (approximately 0.6 miles downstream of Sugarlands Maintenance Area, US Geological Survey station 03469251) is available to monitor stream levels.

## **Wetland**

Wetland delineators initially consulted the National Wetland Inventory (NWI) Database (USFWS 2020) and on-the-ground wetland inventories conducted by the NPS (Pfennigwerth 2020) to assess known wetland locations within the project area. Finding none, the delineators (see qualifications presented below) visited the project area in May 2020 to conduct an exhaustive on-the-ground survey. They located one small wetland in the project area (Figures 3 and 4) and delineated and classified it per NPS Director's Order #77-1 and Cowardin et al. (1979).

The wetland is a small (0.004 acres) Palustrine Forested, Broad-Leaved Deciduous, Seasonally Saturated wetland (PFO1B). This Cowardin wetland type (PFO1) is the most common wetland type in the park. Roughly 75% of documented wetlands in the park (393 of 514) are classified as PFO1. The herbaceous layer in the wetland is dominated by the non-native invasive Japanese stiltgrass (*Microstegium vimineum*) and, to a lesser extent, sedge species (*Carex spp.*) and common rush (*Juncus effusus*). The shrub layer contains a mixture of sweetgum (*Liquidambar styraciflua*), green ash (*Fraxinus pensylvanica*), and Allegheny blackberry (*Rubus allegheniensis*).

Ephemeral drainage from the adjoining slope feeds the wetland before draining into the West Prong of the Little Pigeon River via a 24” corrugated metal drainpipe under Park Headquarters Road. The wetland is situated within a power utility right-of-way managed by Sevier County Electric System and maintained in an open state via hand-clearing. Given the wetland’s position within the right-of-way and adjacent to a road and developed maintenance area, it may have been created and maintained by artificial processes of human disturbance.

This wetland is likely not large enough to provide substantial wildlife habitat, although it may provide marginal seasonal habitat for insects or amphibians. It also likely provides a small amount of groundwater recharge, water filtration, and flood storage value. Given its small size, disturbed state, and location, this wetland likely provides minimal recreation or aesthetic value.



## JUSTIFICATION FOR USE OF FLOODPLAIN AND WETLAND

No practicable alternatives exist for locating this project outside of the 100-year floodplain and/or for avoiding impact to the small wetland on site because:

- Potential alternative sites outside the floodplain are constrained by steep terrain that is not suitable for construction without substantial re-contouring work that would be more damaging to Park resources.
- Within or adjacent to the proposed site, avoiding the floodplain is not feasible based on the presence of Natural Environment Type I land use designation adjacent to the site. As noted in the Introduction section, the Park manages Natural Environment Type I areas as wilderness.
- The proposed project area and associated floodplain have already been heavily disturbed by existing road, parking lot, utility right-of-way, and building infrastructure in the project area. Areas that are currently vegetated have been cleared and graded in the past. All existing Maintenance Area facilities fall within the floodplain. Alternative sites are relatively less disturbed and using one of these sites would require removing mature trees and associated resource damage.
- Existing water, sewer, and electric utilities are available at the proposed site. Most alternative sites would require installation of new utilities and associated resource impacts.
- Within the proposed site, avoiding impact to the wetland is not feasible without substantially increasing on-site excavation or importation of fill material, due to the positioning requirements of the building at the highest elevation possible to minimize the amount of earthwork (grading, fill) required to elevate it above the 500-year floodplain.
- Relative to the hundreds of wetlands in the park, the affected wetland is small (0.004 acres) and low-quality in terms of ecological condition, uniqueness, and function. Given its location between a slope and road drainage, the wetland likely developed as the result of hydrologic and/or topographic alteration during road construction. Because it is situated in a primitive roadway used for accessing a utility right-of-way, the wetland is, and would continue to be into the foreseeable future, routinely disturbed. This routine disturbance would maintain the wetland in a degraded, low-quality state.
- The park selected the new HQ Annex site from several candidate sites in the Sugarlands Headquarters area by means of a value-based decision-making process (NPS 2020). This site was selected for its proximity to the Headquarters Building and availability of previously disturbed land of sufficient acreage to meet program and operational requirements. The value analysis considered sites within and outside the floodplain and concluded that the non-floodplain sites were not viable alternatives.
- The park selected the O&M complex site after a preliminary review of four other potential locations near the Sugarlands Area that could support the operational needs of the program. These locations were dismissed from further consideration primarily due to terrain, floodplain impacts, or impacts to areas managed as wilderness.

## PROJECT IMPACTS AND FLOOD RISK

### Floodplain Impacts

#### *Potential Risk to Human Health and Safety*

As shown in Figure 3, most of the proposed development area is within the 100-year floodplain. The HQ Annex and O&M Complex buildings would be primarily used as daytime occupancy buildings, although

law enforcement and facility management staff would routinely use the buildings outside normal business hours. In addition, portions Park Headquarter Road, which provides the only road access to the site, is within the 100-year floodplain. Inundation of this 'one-way in, one-way out' road would hamper or prevent vehicular ingress and egress during an extreme flood event.

Potential risk to human health and safety would be mitigated by elevating the finished floor of occupied buildings above the 500-year floodplain elevation and implementing a flood forecasting and alter system (see Mitigation Measures section below for additional information).

Elevation of buildings would require placement of approximately 500 cubic yards of fill materials in the floodplain, which would result in minimal displacement of flood waters. This relatively small amount of fill is not expected to increase upstream water surface elevations or flood risk to developed areas upstream.

### ***Potential Risk to Property***

The primary risk to property would be flooding of the new buildings and facilities. Plans to elevate the finished floors of all occupied buildings above the 500-year floodplain and fuel, hazardous materials, and hazardous waste storage at least 3 feet above the 100-year flood elevation would greatly reduce this risk and meet the Federal Flood Risk Management Standard prescribed in Executive Order 13690. A large (100- to 500-year) flood event would pose risk to vehicles and equipment parked in the area; non-hazardous materials stored in the area; and secondary structures such as non-hazardous storage buildings, which would not be elevated above the 500-year flood elevation. Government-owned vehicles and equipment that are normally parked in the 100-year floodplain would be temporarily relocated to areas outside the floodplain. Details would be included in the flood response plan.

### ***Potential Risk to Floodplain Values***

Table 2 summarizes changes in land cover type that would occur under the proposed action. Impervious surfaces would increase by approximately 0.39 acres. The changes in land cover type could slightly reduce floodplain functions and values by decreasing flood storage capacity, reducing the ability of the floodplain to recharge and infiltrate stormwater, and reducing wildlife habitat. Land disturbance exceeds 5,000 ft<sup>2</sup> for these projects. Therefore, Section 438 of the Energy Independence and Security Act of 2007 (EISA 438) requires that the project retain rainfall on-site through infiltration, evaporation/transpiration, and re-use for the 95<sup>th</sup> percentile storm (i.e., 1.50 inches). Stormwater bioretention basins would be constructed on-site to meet this requirement and would minimize potential impacts on floodplain values. In addition, elevation of fuel storage and hazardous materials or waste storage at least 3 feet above the 100-year floodplain would reduce the risk of a release that could adversely impact floodplain values. As noted above and summarized in Table 2, most of the project area is previously disturbed and contains existing structural or parking infrastructure. Any decrease in floodplain value is expected to be negligible.

**Table 2**  
**Changes in Land Cover Type Under the Proposed Action**

<b>Land Cover Type</b>	<b>Existing Conditions (acres)</b>	<b>Proposed Action (acres)</b>	<b>Change (acres)</b>
Buildings	1.14	1.44	+0.3
Paved Surfaces (roads, parking, sidewalks)	2.95	3.04	+0.09
<b>Total Impervious Surfaces =</b>	4.09	4.48	+0.39
Gravel Surfaces	0.8	0	-0.8
Forest	2.2	1.8	-0.4
Maintained Grass	0.8	1.2	+0.4
Wetland	0.004	0	-0.004
Stormwater Management	0	0.4	+0.4
<b>Total Pervious Surfaces =</b>	3.8	3.4	-0.4

### **Wetland Impacts**

Under the proposed action, the small wetland (0.004 acres) on the site would be filled and permanently lost during construction of the HQ Annex. This wetland is likely not large enough to provide substantial wildlife habitat, although it may provide marginal seasonal habitat for insects or amphibians. It also likely provides a small amount of groundwater recharge, water filtration, and flood storage value. Given its small size, disturbed state and location, this wetland likely provides minimal recreation or aesthetic value. Filling of this wetland would result in loss of wetland functions and values, but the impacts would be negligible to minor based on the reasons discussed above. Because the short- and long-term adverse impacts on wetlands from this project total less than 0.1 acres, compensatory mitigation is strongly encouraged but not required by NPS policy (NPS 2016b). As discussed in the Wetland Mitigation section below, construction of stormwater bioretention basins on-site is expected to mitigate the loss of wetland functions.

## **MITIGATION MEASURES**

### **Floodplain Risk Mitigation**

The following floodplain risk mitigation measures would be implemented under the proposed action:

- To mitigate potential risk to human health and safety, the park would develop and implement a flood response plan for the Sugarlands Area, which would include a forecasting system, a flood alert system, and a pre-flood evacuation plan. The flood response plan would be developed and modeled off existing pre-flood evacuation plans for the Elkmont region of the Park and the adjacent city of Gatlinburg. Park staff would continue to monitor weather data from the National Weather Service and existing weather stations in the Park. The existing stream flow gauge on the West Prong Little Pigeon River above Gatlinburg (continuous gage approximately 0.6 miles downstream of Sugarlands Maintenance Area, US Geological Survey station 03469251) would be used to monitor stream levels, forecast potential flooding, and inform flood evacuation stages. The US. Geological Survey gage downstream of Sugarlands has a feature called WaterAlert that can be set to send flow and gage height data via text or email to a user defined address. If a pre-flood evacuation of the area becomes necessary, the Park’s Incident Command system would be activated with a Park Protection Ranger serving as the Incident Commander. The existing emergency notification system public warning siren located approximately 1,000 feet southwest

of the Sugarlands Maintenance Area would continue to operate as part of the city of Gatlinburg's all hazard notification system.

- To mitigate potential risk to property, the finished first floor of occupied buildings would be elevated above the 500-year floodplain in accordance with accepted engineering practices. Fuel, hazardous materials, and waste storage would be elevated at least 3 feet above the 100-year flood elevation. The HQ Annex building would be elevated using fill materials generated on-site. This building would be constructed in the western portion of the site where the existing elevations are higher to minimize the amount of fill required. The O&M Complex buildings would be elevated using fill or other accepted engineering practices as determined during design. Government-owned vehicles and equipment that are normally parked in the 100-year floodplain would be temporarily relocated to areas outside the floodplain. Details would be included in the flood response plan.
- To mitigate risk to floodplain values (stormwater storage capacity and infiltration), stormwater bioretention basins would be constructed to retain rainfall on-site through infiltration and evaporation/transpiration for the 95<sup>th</sup> percentile storm (i.e., 1.50 inches). In addition, elevation of fuel storage and hazardous materials or waste storage 3 feet above the 100-year floodplain would reduce the risk of a release that could adversely impact floodplain values.
- The structures and facilities would be designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 CFR Part 60).

### **Wetland Mitigation**

Because the short- and long-term adverse impacts on wetlands from this project total less than 0.1 acres, compensation is strongly encouraged but not required according to NPS Procedural Manual 77-1 (NPS 2016b). The proposed action includes construction of stormwater bioretention basins on-site totaling about 0.4 acres, which are expected to mitigate the loss of wetland functions. The preferred site for the basins is an existing maintained grass area at the northeastern end of the Sugarlands Maintenance Area. The stormwater bioretention basins would be planted with native plant species, which may include: American hornbeam (*Carpinus caroliniana*) (on edges), smooth alder (*Alnus serrulate*), black willow (*Salix nigra*), jewelweed (*Impatiens capensis*), fowl mannagrass (*Glyceria striata*), melic mannagrass (*Glyceria melicaria*), common rush (*Juncus effusus*), false nettle (*Boehmeria cylindrica*), shallow sedge (*Carex lurida*), fringed sedge (*Carex crinita*), leafy bulrush (*Scirpus polyphyllus*), swamp aster (*Symphotrichum puniceum* v. *puniceum*), and rice cut grass (*Leersia oryzoides*). The proposed bioretention basins would be larger in size than the impacted wetland (about 0.4 vs. 0.004 acres) and would likely provide more function than the impacted wetland. For example, because of their size, depth, and native species plantings, bioretention basins would have enhanced stormwater management and water filtration capacity, be dominated by native rather than non-native plant species, provide better amphibian breeding habitat, and potentially serve as a water source for other wildlife.

Based on their proposed location, the bioretention basins would be funded and built as part of the Operations and Maintenance Complex project but would be designed to treat stormwater for the entire area. Performance standards, monitoring, and maintenance requirements would be developed during the design process, with input from Park Resource Management and Science Division staff.

### **CONCLUSIONS**

The proposed action includes demolition of existing buildings and construction of new buildings and facilities in a previously disturbed and developed area within the 100-year floodplain of West Prong Little Pigeon River. The NPS evaluated alternative sites for the proposed action and determined that no

practical alternatives exist for construction the proposed buildings and facilities in a non-floodplain area. The NPS concludes that mitigation measures contained in this document would minimize risk and that there would be no unacceptable risk to human health and safety, unacceptable impacts to property, or substantial long-term adverse impacts to floodplain values. Therefore, the NPS finds the proposed action would be consistent with Executive Order 11988: *Floodplain Management* and NPS Director's Order 77-2: *Floodplain Management*.

The proposed action would also permanently fill a 0.004-acre wetland. The NPS evaluated alternatives to avoid and minimize impacts to the wetland and determined that no practical alternatives exist. Because the short- and long-term adverse impacts on wetlands from this project total less than 0.1 acres, compensation is strongly encouraged but not required according to NPS Procedural Manual 77-1 (NPS 2016b). The proposed action includes construction of stormwater bioretention basins on-site, which are expected to mitigate the loss of wetland functions. Therefore, the NPS finds the proposed action would be consistent with Executive Order 11990: *Protection of Wetlands* and NPS Director's Order 77-1: *Wetland Protection*.

## **QUALIFICATIONS OF THE DELINEATORS**

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Certified Flood Plain Manager, 2007

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Ph.D., Forestry, North Carolina State University, 2006

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M.S., Ecology & Evolution, University of Tennessee, 2017

B.S., Biological Sciences, University of Tennessee, 2011

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