



ASAN AND AGAT UNITS MANAGEMENT PLAN AND ENVIRONMENTAL ASSESSMENT

PART 2 of 4 – Chapter 2

WAR IN THE PACIFIC NATIONAL HISTORICAL PARK



January 2024

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ALTERNATIVES





View of Asan Inland Unit and Asan Beach Unit from Asan Bay Overlook. Photo: NPS.

CHAPTER 2: ALTERNATIVES

This chapter describes the alternatives and other actions considered but dismissed. Two alternatives, Alternative A: No Action (Continue Current Management) and Alternative B: NPS Preferred Alternative, are being considered.

Implementation of the approved plan would depend on future funding. Approval of this plan does not guarantee that the funding and staffing needed to implement the plan would be forthcoming. Full implementation of the actions in the approved unit management plan (UMP) would likely take many years. Some actions described in this plan may be modified by further planning and design efforts.

DESIRED CONDITIONS

Desired conditions were developed by park staff to help identify the resource conditions, visitor experiences and opportunities, and facilities that the NPS strives to achieve in the Asan Beach, Asan Inland, Agat, and Mt. Alifan Units. These desired conditions, along with the planning challenges and opportunities identified in chapter 1, informed the development of the park's proposed action. The two alternatives considered in this chapter vary in their ability and approach to address the desired conditions. The park's 2017 foundation document, 2021 draft cultural landscape report, 1983 general management plan, and 1988 statement for management informed their development. Recent studies, models, and other data collection efforts also shaped the desired conditions, in particular projected future climate change scenarios (USGS 2023a, PIRCA 2020).

Desired Conditions for All Four Units

- Visitors are immersed in the World War II battlefield landscape, and through this power of place understand the significance of the sites.

- Visitors experience the diversity of park stories and vibrant ecosystems from many different perspectives.
- Connections between the community and resources important to CHamoru oral traditions are strong, thriving, and shared with visitors.
- Visitors can explore a natural wonderland of distinct and healthy ecosystems, where ecological function and native species diversity are maintained to the greatest extent possible within the cultural landscape.
- Native and traditionally used plants and animals are protected and restored where they are still viable, and critical habitat is preserved elsewhere on the island through community partnerships.
- Cultural resources are preserved in place to the extent possible, and treatment strategies guide and prioritize documentation or other actions when loss or damage is unavoidable.
- Access to and throughout the unit is welcoming for visitors of all backgrounds. Visitors of all ages and abilities can safely connect to the park's fundamental resources and values, and interpretive exhibits share key experiences that may be challenging to reach in person.
- To the greatest extent possible, information about the park is provided in multiple formats and languages, including CHamoru, English, and Japanese.¹
- Facilities are well-maintained and designed to be resilient to the impacts of sea level rise, flooding, erosion, typhoon damage, and wildland fire.

¹ The enabling legislation for War in the Pacific National Historical Park stipulates that "To the greatest extent possible, interpretative activities will be conducted in the following three languages: English, Chamorro, and Japanese" (P.L. 95-348, §6f).

Desired Conditions for the Coastal Units (Asan Beach and Agat)

- Marine ecosystems maintain their rich diversity of species, and visitors have the opportunity to learn about and experience the abundant animal and plant life of the reefs and inshore waters.
- Prominent coral reefs and submerged World War II resources, including two sunken amtracs, provide a fascinating destination for snorkeling and scuba diving.
- Visitors have the opportunity to engage in a variety of quality experiences, ranging from quiet contemplation and remembrance to active recreation, informal gatherings, and events.
- The Agat Unit shares a story of reconciliation and healing, as visitors experience the flags of the US, Japan, and Guam all together, within a cultural landscape that retains the highly intact marks of war.

Desired Conditions for the Inland Units (Asan Inland and Mt. Alifan)

- Community collaboration reduces the impact of invasive species, fire, erosion, and trampling on sensitive native habitats and archeological features.
- Visitors experience the upland battlefield and its expansive views and understand how the cultural landscape has evolved from the destruction of the war to healthy native plant communities.
- Visitors recognize and visualize the experience of US Marines traversing the battlefield from reef to ridge.
- At Asan Bay Overlook, visitors experience a solemn memorial to the many lives lost on Guam during World War II. Families and friends honor their loved ones in a peaceful and reverent environment.
- Visitors are able to see and learn about the park's highest-quality limestone forest and

savanna habitats on Mt. Alifan, which are preserved to the greatest extent possible.

- High on the slopes of Mt. Alifan, visitors experience the exposed mountainous terrain and can still see the World War II foxholes, berms, and fortifications that were built by the Japanese military.

ALTERNATIVE A: NO ACTION (CONTINUE CURRENT MANAGEMENT)

Concept Statement

The no-action alternative describes the current management of the project area and is a basis for comparison with the action alternative. Under the no-action alternative, management activities would continue without the benefit of an updated long-term plan, informed by new data and climate change projections. The park's coastal units at Asan Beach and Agat would continue to be very popular visitor destinations while grappling with frequent storm damage and closure of facilities, such as parking areas. The Rizal Point area of the park, as well as the Mt. Alifan and Asan Inland Units, would remain largely inaccessible to visitors. Resource management would focus on high-priority invasive species removal projects and cyclic maintenance to stabilize the units' World War II fortifications.

Current management activities are informed by multiple plans and guidance documents for resource management. The park's 1983 general management plan (GMP) provided direction for proposed boundary revisions, resource management, facility development, and visitor use. In 1988, the park completed a statement for management that articulated further guidance for zoning, visitor facilities, and resource protection. While the overall management vision included in these plans remains largely relevant, many of their specific recommendations have become outdated. Subsequent planning and data collection efforts currently supplement guidance from the GMP and statement for management and influence park operations today. These include the 2017 foundation document, the draft natural resources condition assessment

(Donaldson et al. 2017), the 2021 draft cultural landscape report for the Asan Beach and Agat Units, and the 2013 cultural landscapes inventory.

Management Zones

Because alternative A is a continuation of current management, this alternative would continue to rely on the management zoning approaches established in the park's 1983 general management plan and 1988 statement for management. As described in Chapter 1: Introduction, the GMP did not describe formal management zones or desired conditions for visitor use and resource protection. However, the GMP identified an approach for resource management, visitor use, and facility development specific to each unit that has functioned similarly to management zoning. This approach is generally consistent with the way the units are managed today.

The GMP identifies the Asan Beach Unit as the unit likely to receive the most visitation in the park. Recommendations for appropriate visitor activities, facilities, and services for Asan Beach reflect its expected high levels of use—both for off-island visitors and for local residents. The Asan Inland Unit is intended to be managed for light visitor and administrative use, due to its rugged terrain and dense vegetation. The GMP additionally proposed the development of the Asan Bay Overlook to commemorate the 50th anniversary of the Battle of Guam.

The Agat Unit is also identified as a primary location for visitor use and visitor-serving facilities in the GMP. For Mt. Alifan, the GMP describes a management vision for light visitor use, primarily by local residents. This management vision has not been achieved in the years since the GMP was approved, largely due to the challenge of providing adequate public access to this unit.

The zones proposed by the 1988 statement for management align with the management approaches described in the GMP but provide increased site-specific guidance. The three zones proposed for all units in the park

include an historic zone, a natural zone, and a development zone. Like the management guidance in the GMP, the zoning in the statement for management is consistent with the way the units are managed today, except for the development zone identified for a proposed trailhead parking area at Mt. Alifan that was not constructed. Visitor use within the park is concentrated at the coastal units and the Asan Bay Overlook, and no formal visitor access currently occurs within the Asan Inland and Mt. Alifan Units.

Site-Specific Management Guidance

ASAN BEACH UNIT

Visitor Use and Facilities

The park would continue to provide visitor facilities, including picnic tables, pedestrian paths and trails, parking, and restrooms for as long as possible. Periodic damage from storms and coastal or overland flooding would continue to occur, and park staff would implement temporary facility closures and conduct repairs as practicable. Weathering, flooding, and other types of damage would continue to impact the six monuments in the unit, and the park would conduct repairs and stabilization as practicable. Given projected impacts from sea level rise and storm surge, facilities and monuments would eventually become inaccessible to visitors or damaged beyond repair.

Park staff would continue ongoing efforts to enhance the accessibility of the beach with beach access mats during programming.

Resource Management

The NPS would continue to conduct vegetation management best practices to protect the cultural landscape. The park would continue to stabilize and protect the historic World War II fortifications in the unit through cyclic maintenance funding. The park is currently developing a project to preserve the World War II concrete fortifications, which would provide additional stabilization treatment to 15 of the fortifications and replace the metal shoring for four

fortifications in locations that are projected to be more resilient to flooding. Preservation and stabilization priorities for cultural resources would continue to be informed by cyclic condition assessments, the 2013 cultural landscapes inventory and the *Protocols for Assessment of Vulnerability of Historic Resources to Climate Change* report (Peterson et al. 2013). The submerged resources study that is currently underway at Asan and Agat would document submerged World War II resources and impacts from the battle on the barrier coral reefs.

The recommendations included in the 2021 rapid ethnographic assessment project (REAP) would be implemented as funding became available. These include compiling existing oral history interviews and continuing current oral history efforts, researching and sharing CHamoru place names for locations within the unit, conducting archeological surveys, and broadening the history shared by the park to include the periods before and after World War II.

Efforts to manage invasive species would continue, including coconut rhinoceros beetle (*Oryctes rhinoceros*) control and the brown tree snake (*Boiga irregularis*) removal project that is currently underway for Assan Ridge in collaboration with the US Geological Survey, US Fish and Wildlife Service (USFWS), University of Guam, and Virginia Tech. In addition to the brown tree snake, which has decimated Guam's native forest bird and lizard populations, the park would pursue an integrated pest management approach to control other detrimental invasive species, including little fire ants (*Wasmannia auropunctata*), rats, cats, and dogs. The park would continue to protect and support the recovering limestone forest ecosystem on Assan Ridge by outplanting native species with habitat, medicinal, and subsistence value. Park staff would continue to collaborate with the USFWS to conduct surveys of endangered tree snails along Assan Ridge.

The NPS Pacific Islands Inventory and Monitoring (I&M) network and park staff would continue to conduct annual assessments of marine resources, including surveys for

abundance and diversity of fish and corals, water quality, and non-coral invertebrates.

Interpretation and Education

The NPS would continue to communicate the park's interpretive themes through interpretation and educational programs hosted in the visitor center as well as through tours and events at each unit. The presence of NPS rangers at Asan Beach Unit would continue to be minimal.

Existing waysides and other interpretive signage would help convey the significance of the invasion beach during World War II, as well as the cultural and ecological importance of natural resources (such as along the Assan Ridge Trail). Events and programs taking place in the unit, including the annual Memorial Day flag display, would continue to foster meaningful connections between visitors and the park's purpose and significance.

ASAN INLAND UNIT

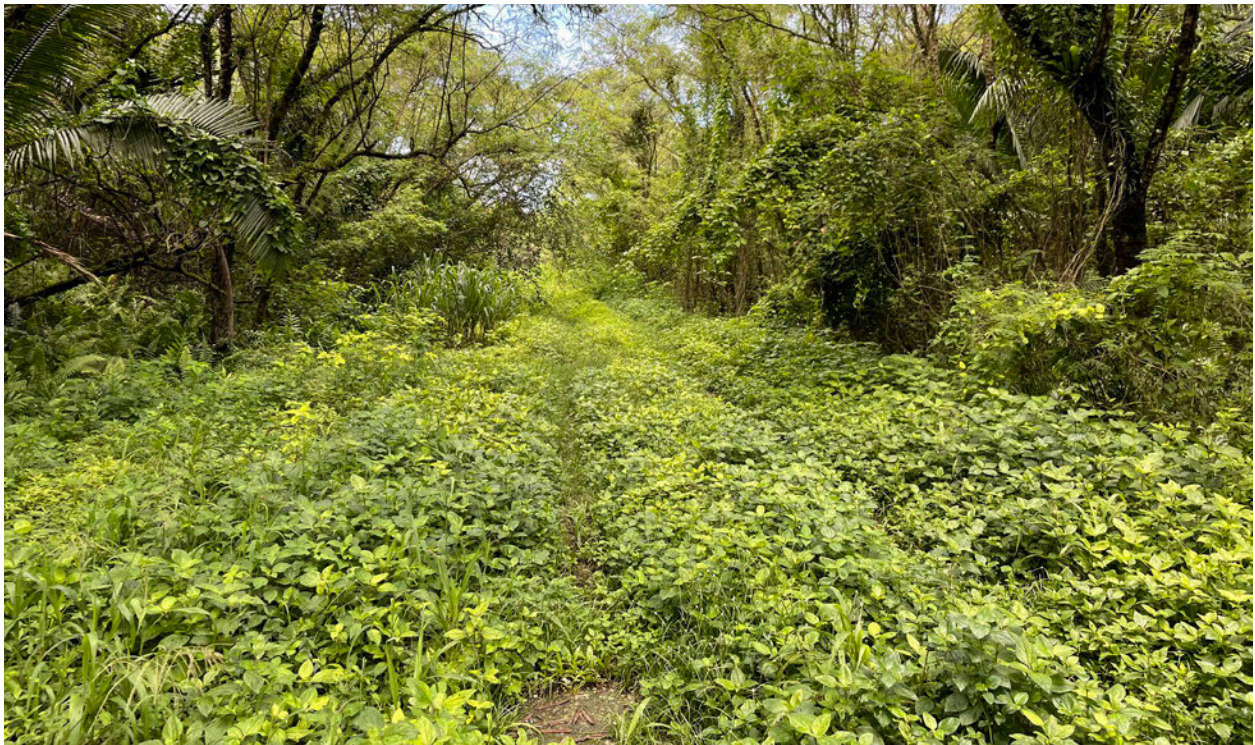
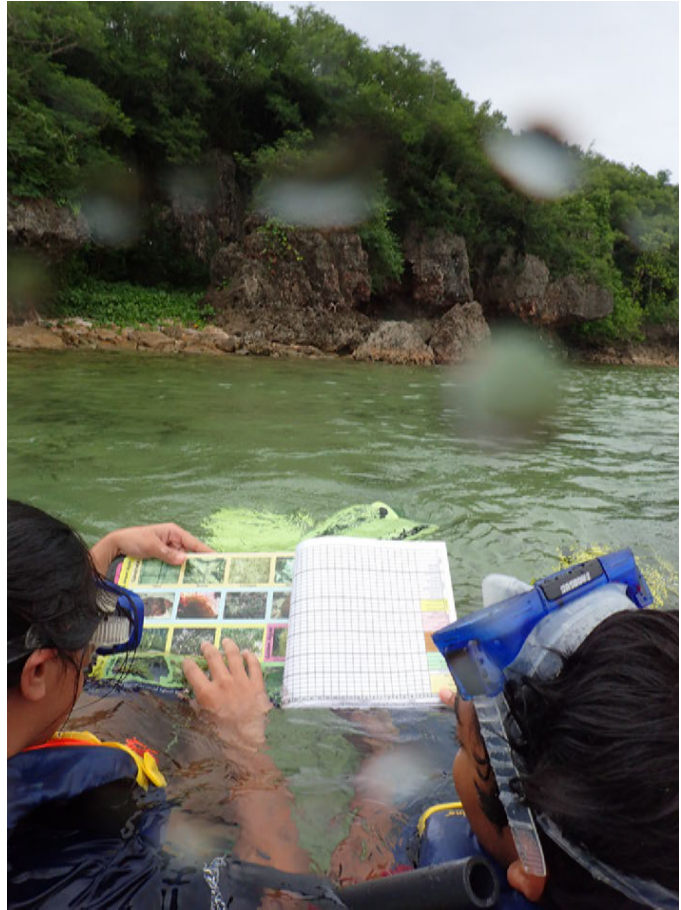
Visitor Use and Facilities

Under the no-action alternative, formal visitor access to Asan Inland Unit would continue to be restricted to the Asan Bay Overlook. Visitors would be able to view the Asan Inland Unit from above but would not have the experience of being immersed in the rugged terrain of the uphill battlefield. Visitor-created trails in the area around the overlook would continue to be used to access destinations such as Tony's Falls and would continue to cause trampling of vegetation and increased erosion.

The park's maintenance facility would continue to be located at the northern boundary of the unit, adjacent to Marine Corps Drive, and would not be accessible to the public.

Resource Management

The park would continue current resource management activities in Asan Inland Unit under alternative A. These include NPS I&M network surveys of vegetation every five years and annual monitoring of stream condition, aquatic species, and water quality at Saddok Assan (Asan River). Efforts to eradicate



1. [Top left] Volunteers clear vegetation at Apaca Point in the Agat Unit. 2. [Top right] Visitors learn about the park's natural resources. 3. [Bottom] Overgrown access drive at Rizal Point, which would become an accessible pedestrian route under alternative B. Photos: NPS.



1. [Top Left] Ga'an Point gun and flags at the Agat Unit. 2. [Middle left] Submerged amtrac off of the coast of the Agat Unit. 3. [Top right] 3rd Marine Monument at the Asan Beach Unit. 4. [Bottom] Monument row at Asan Beach Unit. Photos: NPS.

invasive species would continue, such as little fire ant monitoring and control and clearing invasive plants from endangered *Tinospora* vines. The park would continue efforts to support threatened and endangered species by outplanting rare and endangered plants, outplanting host plants for the endangered eight-spot butterfly, and conducting surveys for and protecting endangered tree snails.

Cultural resources management activities would continue to include cyclic condition assessments of cultural resources within the unit.

Interpretation and Education

Due to current visitor access constraints within the unit, interpretation and educational programming would only occur at the Asan Bay Overlook. The overlook features the Memorial Wall, etched with the names of the people of Guam and the US servicemen who died or suffered atrocities during World War II. In addition to the Memorial Wall, the overlook includes commemorative bronze sculptures and interpretive waysides.

AGAT UNIT

Visitor Use and Facilities

The park would maintain current visitor use opportunities and facilities in the Agat Unit for as long as possible. At Apaca Point, these would include picnic tables, pathways, and a parking area. Rizal Point would remain closed to formal visitor access. Ga'an Point would continue to provide a restroom, picnic tables, pathways, and a parking area large enough to accommodate a tour bus turnaround.

As at Asan Beach, damage from storms and coastal or overland flooding would continue to occur at Agat, and park staff would implement temporary facility closures and conduct repairs as practicable. The three flags and the Japanese defense guns at Ga'an Point would continue to be exposed to weathering and storm damage, including coastal erosion. Similar to Asan Beach, facilities and commemorative features within the Agat Unit would eventually become inundated or too damaged to repair.

Resource Management

Cultural resource management activities within the Agat Unit would be similar to those at Asan Beach, guided by cyclic condition assessments, the cultural landscape inventory, and the REAP. As at Asan Beach, the park would continue vegetation management and ongoing efforts to stabilize and protect the World War II resources along the coast, including submerged resources such as the amtrac. The submerged resources study that is currently underway for the coastal units would provide data to inform management activities for submerged resources.

Invasive species control would continue to address coconut rhinoceros beetles, little fire ants, rats, cats, and dogs. The NPS I&M network and park staff would monitor the same marine resources in the Agat Unit with the same regularity as at Asan Beach.

Interpretation and Education

Most interpretive and educational opportunities would continue to be offered at the visitor center, with most large special events occurring at Asan Beach Unit. Interpretation and education programs would also be held from time to time at Ga'an Point in addition to the visitor center and Asan Beach Unit. The presence of NPS rangers at the Agat Unit would continue to be minimal. Existing waysides would help convey the significance of the southern invasion beach during World War II.

MT. ALIFAN UNIT

Visitor Use and Facilities

The Mt. Alifan Unit would continue to remain difficult for visitors to access under the no-action alternative. There would continue to be no facilities within the unit.

Resource Management

Resource management activities in the Mt. Alifan Unit would continue to be extremely limited. Cultural resources management activities would continue to include cyclic condition assessments of cultural resources within the unit.

Interpretation and Education

Under the no-action alternative, there would continue to be no interpretive or educational programming at Mt. Alifan.

ALTERNATIVE B: NPS PREFERRED ALTERNATIVE

Concept Statement

Alternative B, the NPS preferred alternative, focuses on enhancing the visitor experience within the four units, while anticipating and providing guidance for how the park will address climate change impacts to resources and facilities. Alternative B describes a two-phased approach to facility development and removal, particularly within the park's coastal units of Asan Beach and Agat. The two phases are each based on a different sea level rise scenario and storm surge model provided by the USGS Coastal and Marine Hazards and Resources Program (USGS 2023a).

Phase 1 corresponds to a 0.8-foot (25-centimeter) rise in sea level, with one-year, 20-year, and 100-year storms modeled and analyzed by the planning team (see appendix E, figures E.3, E.5, and E.7). This phase begins at the time of plan completion and continues until the 0.8-foot (25-centimeter) rise is reached, or in the event of sudden loss of resources or facilities. Phase 2 then begins and extends to a 4.9-foot (150-centimeter) rise in sea level, with the same three storm intensities modeled (see appendix E, figures E.4, E.6, and E.8). As noted in chapter 1, the two phases represent climate change scenarios identified by the planning team within the plan's 20- to 30-year planning horizon. See the Climate Change Scenario Planning section of chapter 1 and appendix E for additional detail.

Under alternative B, resource management activities would focus on increasing resilience to impacts from climate change and other environmental stressors, such as invasive species. The NPS would follow an adaptive management approach for cultural resources that emphasizes documentation and stabilization of historic structures and archeological features, where possible, and

prioritizes preservation treatments in view of their likelihood of loss. Management of the park's cultural landscapes and diverse ecosystems would focus on enhancing native species that are adaptable to changing precipitation conditions, notably an increasing probability of intense storms, typhoons, and rainfall events but an overall decline in total annual rainfall (PIRCA 2020, 18–22). The park would additionally continue and build on current invasive species management activities, including measures for prevention and biosecurity, early detection and rapid response (EDRR), and invasive species control in areas where such species are established.

Alternative B emphasizes broadening the scope of interpretive and educational programs to tell the story of the park's landscapes and communities in the years before and after World II, in addition to commemorating the Battle of Guam and the war's Pacific Theater. To convey the historical context of the war and enrich the visitor experience, the park would incorporate a wider variety of current technologies into interpretive and educational materials. Alternative media formats would allow the NPS to provide access to park resources that are lost or challenging to reach in person and would allow the park to communicate the units' significance to a greater and more inclusive range of audiences.

Management Zones

Under alternative B, the four units within the planning area would rely on the management approach established in the park's 1983 GMP, without the additional overlay of management zones provided in the 1988 statement for management. Rather than management zones applied across the park, the NPS preferred alternative would include unit-specific guidance and desired conditions to determine resource management activities and the level of visitor access and facility development within the Asan Beach, Asan Inland, Agat, and Mt. Alifan Units. This site-specific guidance is described below and illustrated in figures 2.1 to 2.8.

Management Guidance for All Four Units

VISITOR USE AND FACILITIES

Coastal Units (Asan Beach and Agat)

The park would proactively manage facilities over time to reduce their susceptibility to climate change impacts. Existing facilities would be repaired and rehabilitated to make them more resilient to flooding and storm damage. If facilities are damaged or lost due to a storm event or episodic flooding, the NPS would not replace them in kind but would instead explore alternative construction methods or locations or determine whether the facility continues to be necessary. See the Asan Beach and Agat sections below for more detailed proposals.

Drainage and stormwater infiltration along roads, walkways, and near parking areas would be improved by using pervious surfaces where possible and creating bioswales. Naturally occurring wetland areas would be enhanced and expanded to absorb additional overland flows.

Public access to the shoreline with pathways and picnic facilities would be preserved for as long as possible. For new pathways or repairs to existing pathways, the park would use materials that are more resilient to shoreline erosion and flooding, such as compacted, crushed coral.

Near-shore marine activities such as snorkeling and tide-pooling would be promoted. The park would improve access to the beach for all people, including people with disabilities, through changes in site design, the use of beach access mats, and by providing beach access wheelchairs.

Inland Units (Asan Inland and Mt. Alifan)

The park would seek opportunities to establish interpretive trails through the inland units to help convey the reef-to-ridge experience of the 1944 battle. Expanding visitor use within the inland units could additionally offset projected future loss of

access and facilities within the coastal units due to sea level rise and storm surge.

The NPS goal to provide hiking trails through the units has existed since the completion of the park's GMP, and implementation has not occurred to date due to topographical and access challenges at Asan Inland and Mt. Alifan. The park would partner with the villages of Assan, Hågat, and Santa Rita, as well as with the Government of Guam and other public landowners to identify suitable locations for trailheads and small parking areas. Trail alignments would be determined based on the location of feasible trailheads. All trails would be routed to avoid impacts to villages and nearby residents as well as cultural and natural resources, including archeological features.

RESOURCE MANAGEMENT

Under alternative B, the NPS would continue the natural and cultural resource management activities described under alternative A. However, the park would additionally strengthen its adaptive management approach to more rigorously address climate change impacts to resources. This would involve additional monitoring and prioritization of management activities, as described below.

Historic Structures and Archeological Features

The NPS would maintain an adaptive management philosophy for historic structures and archeological features, considering new opportunities and risks as they arise and reprioritizing historic preservation projects as appropriate. In the near term, the NPS would emphasize monitoring, maintenance, and stabilization of historic structures and archeological features. The park would continue to undertake stabilization and maintenance activities for resources using cyclic maintenance funding. Historic structures or archeological features that become flooded would be managed as submerged resources. Heritage documentation would be prioritized for resources in the highest-risk areas.

Existing surveys of cultural resources within the park would assist in prioritizing documentation efforts: these include the 2013 cultural landscapes inventory and the 2013 historic resources vulnerability study conducted by Peterson et al. (NPS 2013, Peterson et al. 2013). Additional documentation of fortifications, earthworks, and other features would be conducted in the near- and medium-term, including measured drawings, large-format photography, and 3-D scanning of photogrammetry.

An archeological overview and assessment would be developed to identify and confirm high-priority archeological inventory needs. Archeological survey strategies would subsequently be developed to investigate high-priority areas for cultural resources.

Historic structures at highest risk of loss would be prioritized for documentation through the Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER)/Historic American Landscapes Survey (HALS) Heritage Documentation Programs or other appropriate methods. Risk of loss would be determined through regular monitoring of the condition of resources.

Historic structures and archeological resources meeting the conditions described below would be prioritized for documentation or other adaptive action:

- Damage from new or increased growth of destructive organisms, including plants, animals, insects, and fungi
- Increased soil erosion due to drought, wildfire, intense storms, and/or coastal inundation
- Exposure of new and known archeological sites through erosion or loss of shoreline
- Deterioration of archeological artifacts due to change in soil saturation and/or soil and water chemistry
- Damage to concrete structures, caves, and tunnels due to increasingly intense rainfall and higher winds
- Deterioration, corrosion, rusting, and salt deposits on materials that were not designed for inundation or saltwater exposure
- Metal corrosion in submerged resources due to ocean acidification
- Increased cracking due to ground heave and subsidence

In addition, sudden and extreme events such as flooding, wildfire, and storms could prompt a need to reprioritize management activities. In the event of severe damage, it may no longer be possible to repair or maintain a historic structure or archeological feature.

In prioritizing resources for adaptive management action, the park would also consider their significance and value to the community. In addition to relying on traditional cultural resources documentation to identify historical and ethnographic significance, the NPS would regularly engage with the public and with stakeholders to identify resources of highest community value.

Cultural Landscapes

The NPS would continue to manage the vegetation to maintain the open character of the cultural landscape.

Ethnographic Resources

In the event that certain native plant species are no longer viable in their original locations or habitats, the NPS would select more resilient native species for replanting. In selecting native plants that are more resilient to climate change impacts, the park would prioritize introducing fire-resistant plant species with traditional cultural and subsistence value. This includes talisai (Pacific almond or *Terminalia catappa*), niyoron (*Cordia subcordata*), and nanaso (half-flower or *Scaevola sericea*), among other species.

In consultation with partners, including cultural practitioners, the park would integrate traditional CHamoru place names into wayfinding and interpretation materials to reflect ancient and ongoing cultural connections to key sites within the park.

To identify and better understand climate change impacts to ethnographic resources within the units, the park would consult with stakeholders and conduct oral history interviews. This could happen through partnerships with local organizations and with the support of dedicated grant funding.

Natural Resources

Natural resources within the units with ethnographic importance would be protected as much as possible, especially for species and ecosystem processes that are more adaptable to climate change. The park would focus resource restoration efforts on endemic and sensitive ecosystems, such as the limestone forest at Assan Ridge and Mt. Alifan, the savanna/grassland ecosystem at Asan Inland and Mt. Alifan, and the marine ecosystem at Asan Beach and Agat.

The park would increase partnerships with the community to protect the health of Guam's coastal and upland ecosystems through reef-to-ridge management practices that reduce erosion and sedimentation. Partnerships could include non-profit, academic, and local and federal government organizations.

Coastal Units (Asan Beach and Agat)

Along the beach and in riparian areas, native vegetation would be enhanced and rehabilitated while maintaining the open character of the cultural landscape. Native mangrove vegetation, including nipa palm (*Nypa fruticans*), and wetland vegetation would be re-introduced where appropriate to protect the coastline and river outfalls from erosion. Invasive species management would be conducted to the greatest extent possible through individually funded projects, best management practices for prevention and early detection (see appendix D), and other base-funded or partnership-supported management activities.

Existing vegetation would be managed to protect key views and vistas that allow visitors to understand the influence of the island's landforms and vegetation on Japanese and US military strategy. The importance of tree

canopy and providing shade for visitors would be considered in viewshed enhancement and vegetation rehabilitation activities.

To support coral reef health and resilience for as long as possible, the park would expand efforts to select and outplant coral species that are more likely to be adaptable to ocean acidification and temperature increase. This would also support the health of other marine species that rely on coral, such as fish and invertebrates. In the event of significant coral loss, the NPS would employ an adaptive management approach to determine the increased risk to the shoreline and necessary mitigation measures.

Inland Units (Asan Inland and Mt. Alifan)

The NPS would increase revegetation efforts and invasive species management to reduce erosion, vegetate bare badlands, provide climate-change refugia, and protect the limestone forest, savanna habitat, and native and endangered species.

INTERPRETATION AND EDUCATION

Interpretation and educational activities in the units would continue to be provided in multiple, accessible formats. Under alternative B, the use of alternate programming formats would be expanded to ensure that the NPS is as inclusive as possible in sharing the park's stories and significance with visitors. Alternate formats may include video with audio description; tactile objects; 3-D digital models of resources that are challenging to reach in person; and information in multiple languages (CHamoru, Japanese, English, and others).

The park would continue to tell the story of the World War II Battle of Guam and the war's resounding impacts on the people of Guam and throughout the world. In addition, the NPS would expand interpretation about the broader context of the park sites to share the rich and layered history of these landscapes and their communities before and after the war.

As part of this effort, the NPS would increase interpretation of historical land uses and traditionally associated native plants and animals. Historic, ethnographic, and ecological values would be described in interpretive programs and waysides. The varied histories of each unit would be portrayed for visitors to increase understanding of land uses and communities in the years before and after World War II. To support such enhanced interpretation, the park would establish a program of CHamoru cultural practitioners and interpreters to share Indigenous knowledge and experiences about ecosystems, traditional practices, and place names. These cultural practitioners would be local residents with familial connections to the park sites.

To address the impacts of climate change and invasive species on unit resources, the NPS would provide information about native species that no longer exist within park boundaries. Impacts of climate change on cultural resources would also be highlighted for visitors at key viewing locations. The use of 3-D modeling of at-risk resources would allow them to be experienced by visitors even if they become submerged or entirely lost due to adverse conditions.

Coastal Units (Asan Beach and Agat)

Because the coastal units are the most heavily visited areas in the park, the NPS could provide a mobile visitor center that would be stationed at Asan Beach, Ga'an Point, and Apaca and Rizal Points on a rotating schedule. The mobile visitor center could serve as a contact station for members of the public to interact with a ranger and learn more about the outstanding resources within the park.

The NPS would increase interpretation of submerged World War II resources, such as the amtrac at Ga'an Point, as well as the rich diversity of marine life protected within the park's boundaries. Information would be shared through interpretive panels or waysides, through videos and digital 3-D models, or through diving tours provided by local companies. Enhanced coastal and riparian vegetation would be interpreted for its traditional use values and ecological functions.

Inland Units (Asan Inland and Mt. Alifan)

The park would provide interpretation of cultural and natural resources along the trails through waysides, digital tools, and/or a printed guide. Wayfinding signage would be provided to clearly identify trail mileage and level of difficulty of each segment.

Site-Specific Management Guidance

ASAN BEACH UNIT

Visitor Use and Facilities

Given its location along the coastline and high levels of visitor use, visitor experience within the Asan Beach Unit is especially likely to be impacted by sea level rise and storm surge. To improve resilience, development in the shoreline area would be reduced as described under phase 1 and phase 2 below. The park would increase existing efforts to maintain the natural shoreline defense of the fringing coral reefs for as long as possible.

Phase 1

The existing restroom and outdoor shower would be retained in place for as long as possible, until damage by storm and/or flooding makes repair infeasible. If damaged beyond repair, the restroom would be replaced with an accessible, portable toilet. An accessible pedestrian route would connect the restroom to the parking area and to the beach. A small storage shed for beach wheelchairs could be erected near the restroom facility.

The parking area closest to the shoreline and Punta Assan (Asan Point), which currently floods regularly, would be closed and re-vegetated. In lieu of the Punta Assan parking area, the NPS would construct an accessible pedestrian route from compacted, crushed coral to connect the existing shoreline path to Punta Assan and the base of the Assan Ridge. Through re-striping and reconfiguring the eastern portion of the lower parking lot, the park would maintain approximately the same number of parking spots despite the closure of the portion nearest the point. The existing picnic areas along the shoreline

Figure 2.1: Asan Beach Unit Development Concept, Phase 1
 War in the Pacific National Historical Park | Asan + Agat Units Management Plan



Figure 2.2: Asan Beach Unit Development Concept, Phase 2
War in the Pacific National Historical Park | Asan + Agat Units Management Plan



would be maintained in place for as long as possible. Low-level, solar-powered lighting would be provided along the primary pedestrian loop through the site. Lighting would be fully shielded and warm-toned to minimize light pollution and impacts on wildlife, such as the green sea turtle (*Chelonia mydas*) and hawksbill turtle (*Eretmochelys imbricata brissa*). See figure 2.1 for a site plan with more detail.

The five monuments along the shoreline would be relocated to protect them from damage or loss due to sea level rise and storm surge. The Third Marine Division Association Monument, the United States Landing Monument, and the Liberators Memorial would be moved to higher ground within the Asan Beach Unit, or relocated to the Asan Bay Overlook, or moved to another site that is protected from coastal impacts and supported by the community. Similarly, the two monuments for Filipino leader Apolinario Mabini would be relocated to a more resilient site identified in collaboration with the Filipino community on Guam. Ethnographic research about the importance of the monuments to the community and a determination of eligibility for listing in the National Register of Historic Places would be conducted before relocation, as part of implementation-level design and planning.

Due to its more protected location, the War in the Pacific Park Plaque near the upper parking lot could be relocated at the same time as the three military monuments or could be moved during phase 2. If not already located at the site (such as at Asan Bay Overlook), the NPS could install flagpoles for both the US and Guam flags in the new monument location to replace the failing poles removed at Punta Assan.

Phase 2

As part of phase 2, the remaining, eastern portion of the lower parking lot would be removed and re-vegetated in preparation for permanent inundation. This would result in the loss of approximately 35 parking spaces near the beach. The existing shoreline pathway would be retained in place for as

long as possible. Once sea level rises 4.9 feet (150 centimeters) or in the event of sudden storm damage or loss, the pathway would be reconstructed inland of compacted, crushed coral. Existing picnic areas would be removed or relocated inland when damaged by storms or flooding or due to imminent loss from shoreline erosion.

The accessible portable toilet would be retained in the current restroom location for as long as possible but would eventually move further inland to be closer to parking facilities. See figure 2.2 for a phase 2 site plan.

Resource Management

The park would replace the existing turf grass in the unit's large, open green space with a noninvasive species that is more salt-tolerant and less labor-intensive. The NPS would increase native strand vegetation along the shoreline and mangrove (including nipa palm) at the mouth of Saddok Assan to enhance ecological function and coastal protection and interpret the environmental history of the site before World War II.

The park would continue its efforts to remove the brown tree snake and other destructive invasive species from Assan Ridge and restore a healthy limestone forest ecosystem. If the park can successfully reintroduce birds to the Assan Ridge area, additional management efforts would focus on establishing a bird sanctuary along the ridge. The park would promote plants and insects along the ridge that are especially beneficial to birds.

Interpretation and Education

The NPS would interpret the multiple historic land uses of the site, including the World War II beach defenses and the location of the historic road and village. Additional interpretation of natural resources would also be provided at Asan Beach, including the marine areas and the limestone forest along Assan Ridge. A small open-air shelter for interpretation and educational programs would be constructed on higher ground near the base of Assan Ridge in phase 1.

ASAN INLAND UNIT

Visitor Use and Facilities

Phase 1

The park would formalize an existing social trail from Asan Bay Overlook to Tony's Falls. The trail would provide visitors with the opportunity to hike into the rugged terrain of Asan Inland Unit and experience unique vegetation and wildlife as well as a waterfall. See figure 2.3.

To pursue the long-term goal of establishing additional interpretive trails through the unit, the park would work with the village of Assan and other public landowners to identify a suitable trailhead for a future reef-to-ridge hike along the unit's abandoned jeep road.

Phase 2

During phase 2, assuming trailhead access is secured, the NPS would establish one or more additional trails through the unit to help visitors experience the full battlefield cultural landscape, landform and ecosystems, and views to the beach below.

AGAT UNIT

Apaca and Rizal Points

Visitor Use and Facilities

Phase 1

Sea level rise and storm surge modeling indicates that the Rizal Point area is likely to be the most resilient coastal site in the park in the long term, due to its higher elevation (USGS 2023a). Therefore, the preferred alternative proposes investing in visitor facilities and promoting visitor access to Rizal Point, which has not been regularly used for many years. This will allow the park to preserve visitor access to coastal resources for as long as possible.

The NPS would establish a pedestrian route from Apaca Point to Rizal Point and provide waysides at key viewpoints to interpret the Hâgat (Agat) invasion beach and fortifications, CHamoru traditional sites, and sea level rise. Four to five new picnic tables would be established near the new pedestrian route. The park would remove the abandoned restroom

at Rizal Point and replace it in a location farther inland, using a more resilient type of structure such as an accessible portable toilet.

A parking area along Shoreline Drive would be created at Rizal Point to accommodate about 15 cars and a tour bus drop-off zone. While Rizal Point itself is likely to be more resilient to storm surge inundation than the other coastal areas, the USGS storm surge model under phases 1 and 2 indicates that some flooding is projected along Shoreline Drive in the 20- and 100-year storm scenarios. The parking area would be designed to withstand occasional flooding, and adjacent bioswales as well as naturally occurring wetland areas would be enhanced and expanded to absorb additional flows. The overgrown driveway leading from Shoreline Drive to the point would be restored to meet accessibility standards and connected to the new restroom and route along the coast. See figure 2.4.

At Apaca Point, the park would maintain the picnic area and beach access in this part of the unit for as long as possible, given its popularity and frequent visitor use.

Phase 2

In phase 2, the picnic and parking areas at Apaca Point would be removed once sea level rises an additional 0.8 feet (25 centimeters) or in the event of sudden storm damage or loss. The riparian wetland area adjacent to the parking area would be expanded to store and filter stormwater and support native plants and animals. As sea levels approach 4.9 feet (150 centimeters) or higher, the low-lying portion of the pedestrian route to Rizal Point could transition into a water-based route for snorkeling, kayaking, or scuba diving. Visitor access would transition north to Rizal Point. See figure 2.5.

Interpretation and Education

As at Asan Beach Unit, NPS would interpret the multiple historic land uses of the site. A small kiosk for interpretive information would be constructed near the new parking area at Rizal Point in phase 1.

Figure 2.3: Asan Inland Unit Trail Concepts (Phases 1 + 2)
 War in the Pacific National Historical Park | Asan + Agat Units Management Plan

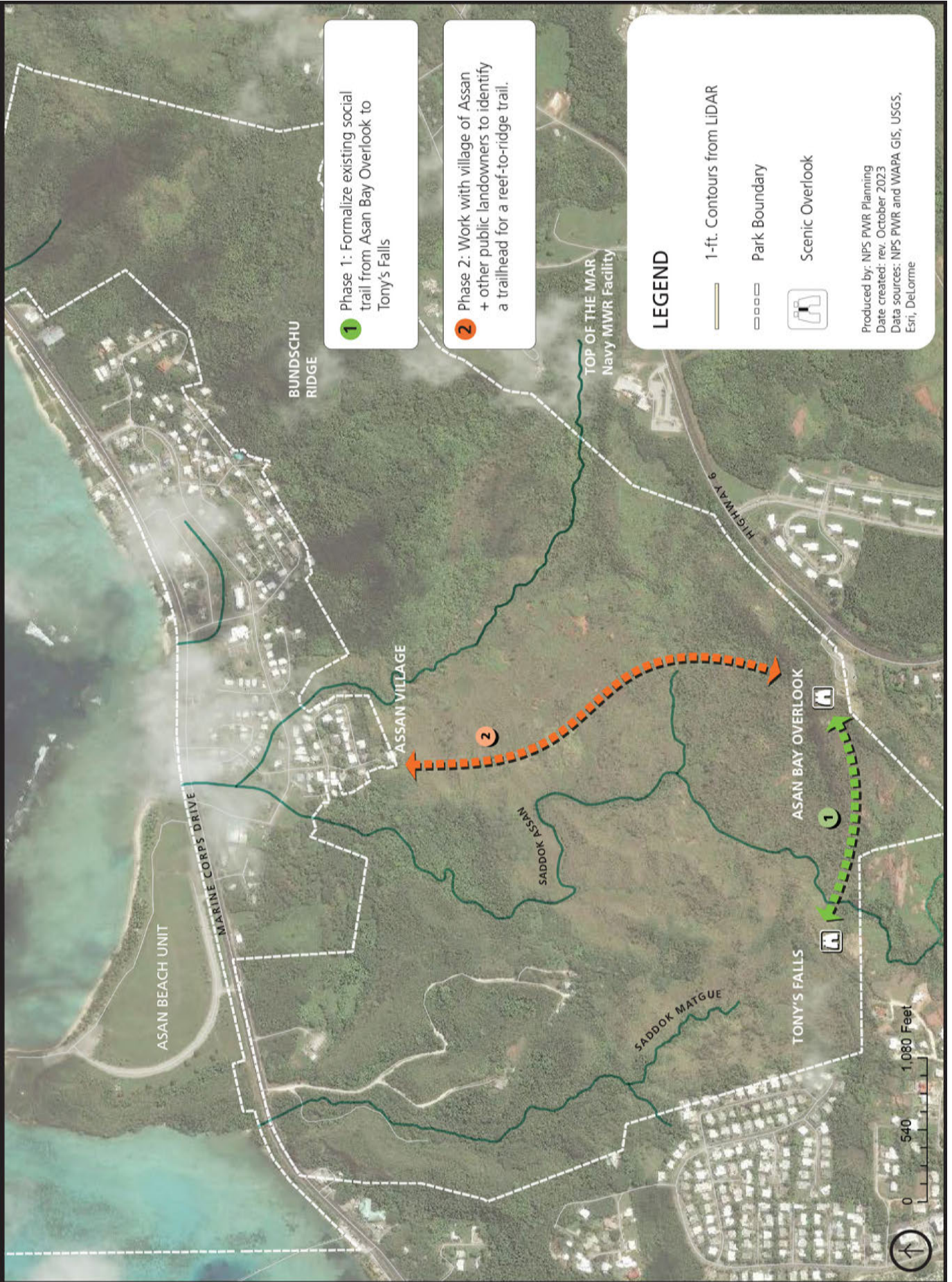
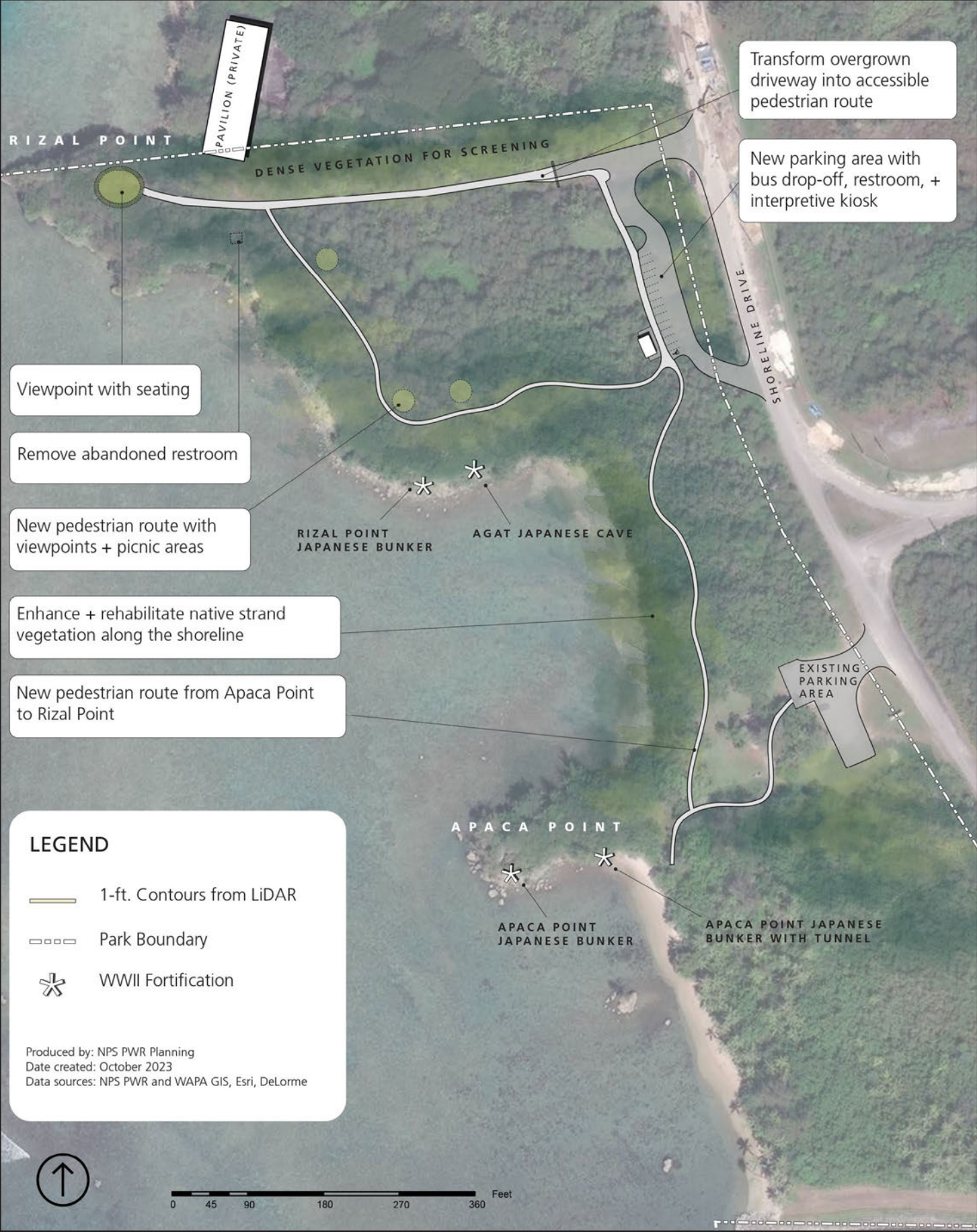


Figure 2.4: Apaca + Rizal Points, Agat Unit | Development Concept, Phase 1
 War in the Pacific National Historical Park | Asan + Agat Units Management Plan



Ga'an Point

Visitor Use and Facilities

Phase 1

In phase 1, the NPS would relocate visitor facilities away from areas of the site that are especially prone to coastal and overland flooding. Because this is another heavily visited area of the park, like the other coastal sites, visitor access would be preserved as long as possible by relocating facilities to higher ground, using construction materials that are more resistant to damage from flooding and erosion, and protecting the shoreline and river outfall with increased vegetation.

The existing parking area would be reconfigured to provide approximately 20 parking spaces, including accessible parking and an area for tour bus drop-off. The parking area would connect to an accessible pedestrian route through the site, constructed of materials such as compacted, crushed coral that would be more resilient to coastal flooding. The park would work with the Hågat Mayor's Office and Guam Waterworks Authority, as well as adjacent landowners such as the Catholic Church and Guam Public Works to connect the Ga'an Point walkways into a larger trail network along the shoreline side of Highway 2.

The restroom, which is currently at risk of loss due to its proximity to the river outfall, would be removed. A new restroom would be constructed to the southwest, along the eastern edge of the wastewater treatment plan. The NPS would consider installing an accessible portable toilet in this location as well.

The NPS would enhance picnic facilities at Ga'an Point by providing several additional tables and locating them along the accessible pedestrian route. See figure 2.6.

Phase 2

The park would preserve the iconic flags and guns onsite for as long possible; however, they would be relocated if they sustain significant damage during a storm, or when coastal erosion and flooding begins to undermine their footings. New, higher-elevation locations

for the flags and guns would be identified in collaboration with members of the public, the village of Hågat, other park partners, and NPS subject matter experts.

The proposed accessible pedestrian route through the site would be retained in place as long as possible. Once sea level rises 4.9 feet (150 centimeters) or in the event of sudden storm damage or loss, portions of the pathway closest to the shoreline would be removed. The eastern portion of the existing parking lot, closest to the river drainage, would similarly be removed in the event of damage or loss. See figure 2.7.

Once water levels rise above 4.9 feet (150 centimeters) or in the event of sudden damage or loss, the NPS would remove the restroom at Ga'an Point and shift formal visitor access opportunities north to Rizal Point.

MT. ALIFAN UNIT

Visitor Use and Facilities

Phase 1

As at Asan Inland Unit, the park would pursue the long-term goal of establishing an interpretive trail or trails through Mt. Alifan and would work with the villages of Hågat and Santa Rita, and other public landowners, to identify suitable trailheads and small parking areas. A trail or trails leading to key viewpoints along the slope of Mt. Alifan would allow visitors to experience the battlefield cultural landscape with views toward the Hågat invasion beach below. A former roadway alignment between Hågat and Santa Rita still exists within the unit and could be partially or fully integrated into a future trail route.

Phase 2

During phase 2, assuming trailhead access is secured, the NPS would establish one or more additional trails through the unit to help visitors experience the full battlefield cultural landscape, landform and ecosystems, and views to the beach below. See figure 2.8.

Resource Management

Resource management activities at Mt. Alifan would be the same as actions common to all inland units, except that the NPS would additionally install exclusion fences to protect the upper limestone forest in the unit from damage from invasive ungulates. The NPS would only fence areas of limestone forest within the park boundary, although the park could partner with the Navy to expanding fencing around other high-quality stands of limestone forest on the mountain.

Cost Estimates

One-time facility costs for implementation of alternative B include costs for the design, construction, as well as the removal or relocation of facilities including parking areas, portions of trails and walkways, small commemorative monuments, and restrooms. Most of these projects are severable from each other and would be accomplished in phases over time. The park would prioritize and implement projects based on impacts from climate change or storms, levels of visitation, operational considerations, and partnership opportunities. Projects would be designed and constructed following the facility investment priorities outlined in the NPS Facility Investment Strategy and would adhere to NPS Investment Review Board requirements. Some actions described in this plan may be modified by further planning and design efforts. Total cost of facility ownership as well as any increased staffing needs would also be considered as part of investment concept planning for project implementation.

No matter which alternative is selected, the implementation of the approved plan would depend on future NPS funding levels and service-wide priorities, as well as partnership funds and efforts. The approval of this plan does not guarantee that funding and staffing needed to implement the plan would be forthcoming. Full implementation of the plan could take many years.

Adaptive Management for Visitor Use and Climate Change Impacts

To provide a quality visitor experience while protecting park resources, the NPS identified indicators and thresholds for visitor use management using best practices created by the [Interagency Visitor Use Management Council](#). Indicators measure conditions that are related to visitor use, and monitoring is conducted to track those conditions over time. Thresholds have been identified that represent the minimally acceptable conditions associated with each indicator. The results from monitoring indicators and thresholds are used to inform and select the strategies park managers would use to achieve and maintain desired conditions.

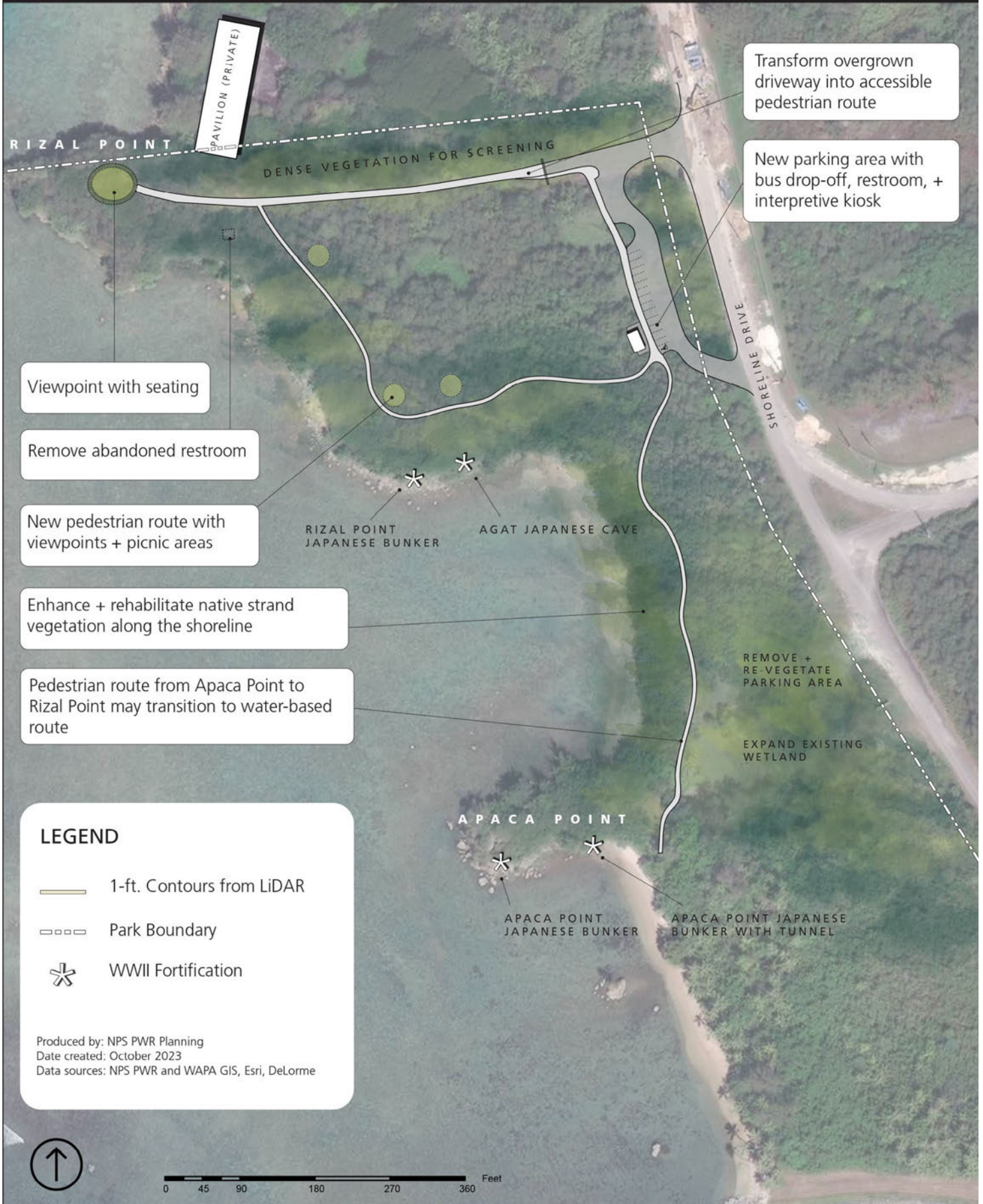
Indicators and thresholds applied to visitor use represent an adaptive management approach that is also useful for the park when responding to climate change impacts. Climate change indicators and thresholds can similarly be monitored to determine when to implement certain management strategies to achieve and maintain desired conditions. Given the direct relationship between climate change and visitor opportunities in the park, the NPS has taken an integrated approach to prioritize which resources and visitor experiences are likely to be the most sensitive to impacts from visitor use and climate change. In addition to the phase-based adaptive management approach described in alternative B, the park has identified the following two high-priority indicators for visitor use related to the unit management plan:

- Number of times per year a visitor facility needs to close due to flooding, storm damage, wildfire, or other natural impacts
- Incidences of human-caused damage to cultural resources

Appendix A identifies a threshold for each indicator, describes a monitoring approach, and lists management strategies that the park would undertake in the event a threshold is reached.

Figure 2.5: Apaca + Rizal Points, Agat Unit | Development Concept, Phase 2
 War in the Pacific National Historical Park | Asan + Agat Units Management Plan

National Park Service
 U.S. Department of the Interior





1. [Top] and 2. [Bottom] Park staff interpret resources for visitors. Photos: NPS.

Figure 2.6: Ga'an Point, Agat Unit | Development Concept, Phase 1
War in the Pacific National Historical Park | Asan + Agat Units Management Plan



Figure 2.7: Ga'an Point, Agat Unit | Development Concept, Phase 2
War in the Pacific National Historical Park | Asan + Agat Units Management Plan



LEGEND

- 1-ft. Contours from LiDAR
- Park Boundary
- Boundary: Federal Lands
- WWII Fortification

Produced by: NPS PWR Planning
Date created: October 2023
Data sources: NPS PWR and WAPA GIS, Esri, DeLorme

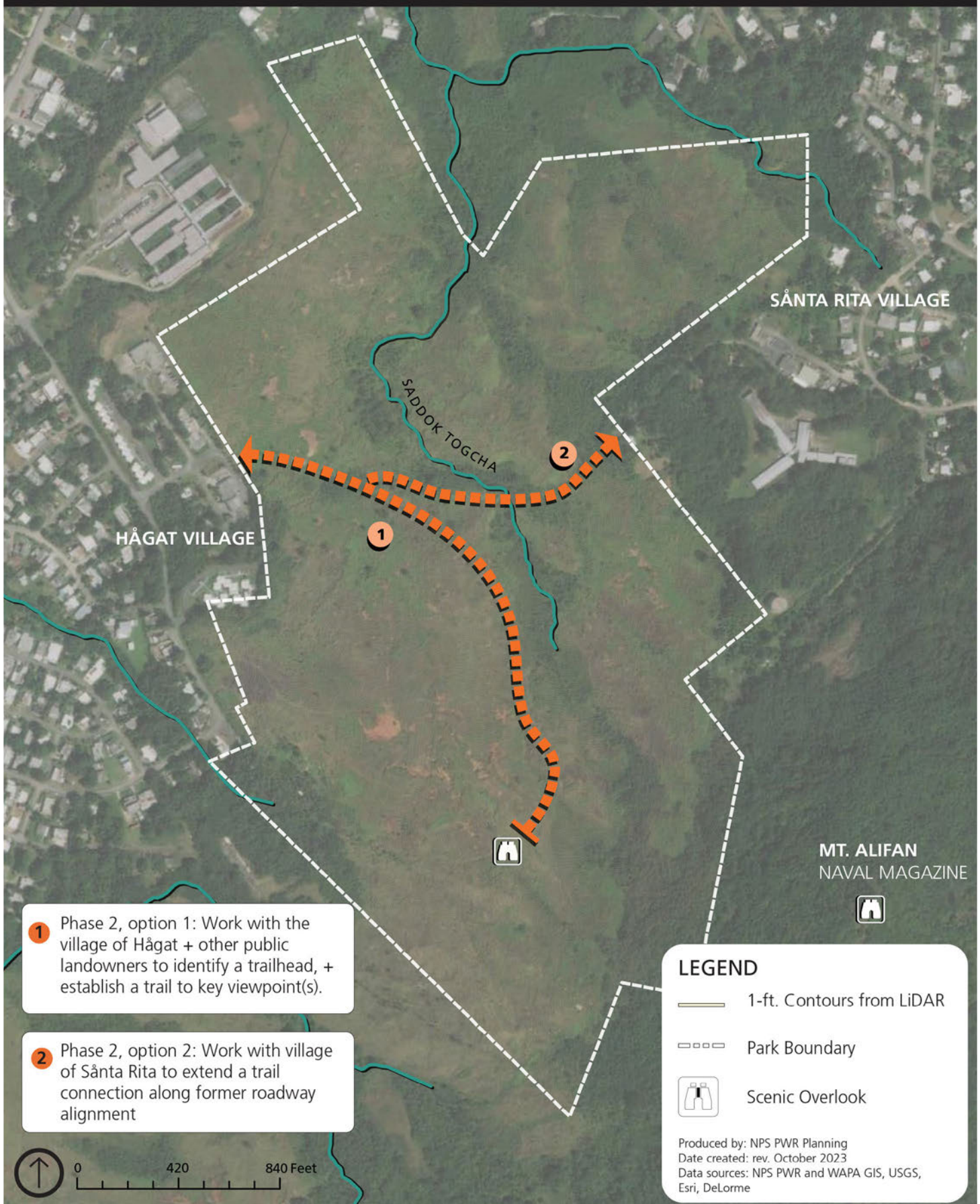
- Enhance + rehabilitate native strand vegetation along the shoreline
- Small picnic area + connection to existing trail system
- New restroom connected to accessible pedestrian route

- Reintroduce native mangrove vegetation, such as nipa palm, at river mouths
- Existing restroom near river outfall removed + area re-vegetated
- Expand small picnic area + provide informational kiosk
- Remove eastern portion of the parking area nearest the river outfall in the event of damage or loss



Figure 2.8: Mt. Alifan Trail Concepts (Phase 2)

War in the Pacific National Historical Park | Asan + Agat Units Management Plan



In identifying high-priority indicators, the park also considered the potential future need for an indicator related to trail and adjacent resource conditions, in view of the proposed trail additions within the inland units. Because alignments for trails have not yet been identified (except for the trail to Tony's Falls), trail-specific indicators would need to be developed as part of implementation-level design and planning.

VISITOR CAPACITY

Like indicators and thresholds, visitor capacity is a component of visitor use management. Visitor capacity is defined as the maximum amount and types of visitor use that an area can accommodate while sustaining desired resource conditions and visitor experiences, consistent with the purpose for which the area was established. Each park in the national park system must have a plan or a series of plans that satisfy the requirements identified in the National Parks and Recreation Act of 1978 (54 USC 100502), including the requirement for "identification of and implementation commitments for visitor carrying capacities for all areas of the system unit."

As described in NPS Director's Order 2: Park Planning, comprehensive plans provide overall direction and guidance on a variety of issues and topics in one document. Comprehensive plans include general management plans for entire parks or unit management plans, such as this one, that address multiple issues and topics within specific units of a park. As noted in Director's Order 2, given their general nature, comprehensive plans such as the unit management plan initially address the requirement to identify visitor capacities by assessing current levels of visitor use and baseline conditions for resources and visitor experiences. They typically include qualitative statements about the types and levels of visitor use that a unit could accommodate, while achieving and maintaining desired conditions consistent with the park's purpose. The director's order recommends that more detailed direction on visitor capacity should be provided in implementation-level planning. Given their general nature, comprehensive plans may not completely address the

requirement for visitor capacity due to the need for additional detailed analysis and subsequent decision-making on management strategies that inform the amounts and types of use that can be accommodated. Per the director's order, the full requirement for visitor capacity can be met as part of the park's planning portfolio, through subsequent plans that have a significant visitor use component.

In the case of the Asan and Agat Units Management Plan, the plan assessed baseline conditions for use, developed desired conditions, and identified management strategies, which provide vital guidance for how the park will provide for and manage the types and levels of use that can be accommodated. The park anticipates that future visitation levels and patterns will shift in response to climate change impacts, particularly at the park's popular coastal units. It is difficult to predict at this time how rising sea levels and storm surge, as well as changes in precipitation and storm frequency, will influence visitor use within the units. While visitation levels at the units are not currently considered a significant issue and do not pose a threat to visitor experience or resource conditions, the park has identified the need to evaluate and identify visitor capacity in the future as part of the site-specific implementation projects tiering from this UMP. For more information about current levels of visitor use in the park, see the Visitor Use and Experience section of chapter 3.

Plans, Studies, and Agreements

Several specific plans, studies, and agreements would be developed to implement alternative B. Some of these items would require additional project funding or increases to the park's operating base funding and staffing. Future plans for actions with potential to affect the environment would require formal analysis of alternatives in compliance with National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), the Endangered Species Act (ESA), and related laws. Such documents would reference and be tiered from this plan.

The following plans and studies are among the identified planning and data needs under alternative B.

PLANS

- Conservation plan for monuments
- Conservation recommendations to protect coral reefs (complete 2023)
- Cultural landscape report for all four units
- Historic structures report(s) and treatment plan (complete 2025)
- Land protection plan update
- Long-range interpretive plan (currently underway)
- Signage and wayfinding plan
- Trails plan for Asan Inland and Mt. Alifan Units
- Value analysis and plan for visitor and educational facility
- Vegetation management plan
- Wayside exhibit plan

STUDIES

- Archeological overview and assessment
- Archeological strategy
- Archeological surveys (section 110)
- Assess impacts of fishing and marine recreational activities on reef resources
- Ethnographic overview and assessment
- GIS data for cultural resources to support mapping and 3-D modeling
- Visitor use survey
- Visual resource inventory

Future agreements that could be needed to implement the plan would include agreements with villages and other public landowners to provide access or connections to new trails on NPS property.

ALTERNATIVES CONSIDERED BUT DISMISSED

The park considered other potential actions, including those identified through civic engagement, that were analyzed as part of the planning process. Actions that were determined to be infeasible and/or not responsive to the purpose and need for action were not carried forward for further analysis. These actions and the rationale for dismissing them are summarized in appendix B.

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