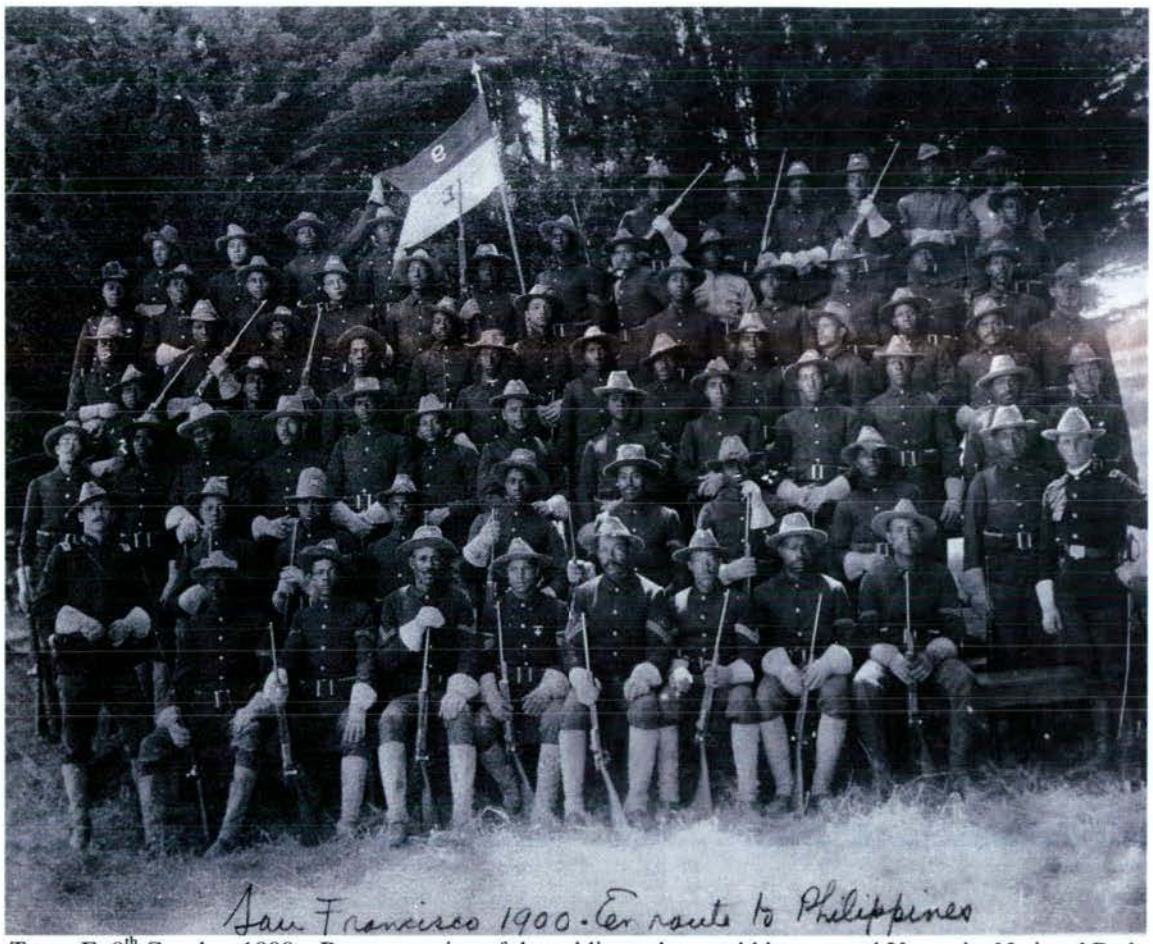
"Wawona's Lost Garden"
Buffalo Soldier Arboretum Restoration Feasibility Study



Troop E, 9th Cavalry, 1900—Representative of the soldiers who would later patrol Yosemite National Park

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THE YOSEMITE FUND
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Summary:

This study addresses a proposal to restore an arboretum constructed in1904 by African American troopers of the 9th Cavalry on the South Fork of the Merced River near Wawona. The arboretum would be a place to acknowledge the contributions of African Americans to early national park history, as well as the broader cultural diversity of Yosemite often missing from the Yosemite story. Existing documentation is sufficient to construct a reasonable facsimile of the original arboretum and its basic features, after further detailed surveys of the site.

The main project elements are as follows:

- Project area is within the Merced Wild and Scenic River Corridor
- Project area is within the listed Wawona Archeological District.
- Project would require cutting existing vegetation.
- Project would entail restoration of a trail network, including grading and paving.
- Project would entail installation of interpretive signs.
- Project would include installation of benches.
- Project would require a bridge over Big Creek at its confluence with the South Fork for visitor access.

Very preliminary estimates suggest the following as **minimum** costs for the primary elements:

- $46,680—Minimum-width level trail with asphalt paving, **or**
- $128,816—Minimum-width level trail of decomposed granite.
- $25,000—Minimum-width footbridge exclusive of geotechnical work and abutments capable of spanning Big Creek.
- $28,400—Porcelain enamel and Cor-ten steel interpretive display, contracted directly by Yosemite Fund

The location of the arboretum site within the Merced Wild and Scenic River corridor represents the primary challenge to the project. Yosemite's Environmental Planning and Compliance Office has made an initial determination that a formal Environmental Assessment would be required prior to beginning major work. The project would depend on resolution of current litigation relating to the Merced Wild and Scenic River Revised Comprehensive Management Plan and Supplemental Environmental Impact Statement.

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Introduction:

Yosemite National Park Interpretive Ranger Shelton Johnson breathes life into the story of Buffalo Soldiers in Yosemite every time he stands on stage or in front of a crowd. He captivates audiences with his charm and eloquence, but if visitors ask him where they can learn more, he has to tell them that at present the story begins and ends with him. The role of African American soldiers in protecting Yosemite has been largely forgotten. There is nothing more for the average visitor to see or experience. There are no books on the subject—the closest thing is Johnson's short monograph "Invisible Men: Buffalo Soldiers of the Sierra Nevada." In it, he notes that the arboretum constructed by the soldiers in Wawona "has been forgotten in the ensuing years, just like the men who built it, but their impact on Yosemite was real. The land remembers though the people may not."[1] This study, produced with a grant from the Yosemite Fund, examines the possibility of recreating the arboretum to produce a site recognizing the unique history of African Americans in the early national parks.

Location:

The arboretum was located on the south bank of the South Fork of the Merced River, west of its confluence with Big Creek (see Figure 1). The reference UTM coordinate for the confluence is 11 264129E, 4158072N.[2] As developed in 1904, the arboretum stretched approximately 1,400 feet westward from Big Creek, on the slope above the river. The main trail running through the arboretum extended another 1,300 feet to a bridge crossing the South Fork at Camp A. E. Wood, now the lower loop of the Wawona Campground. In 1904 a fish hatchery operated by the state of California occupied the south bank of the river east of Big Creek. The site is screened from Highway 41 on the north riverbank by a partially-wooded sandbar midstream. The arboretum location is within the Wawona Archeological District, determined eligible for listing on the National Register of Historic Places on December 8, 1978. The location is also within the Merced Wild and Scenic River Corridor.

[1] Shelton Johnson, ""Invisible Men: Buffalo Soldiers of the Sierra Nevada," unpublished monograph, 8. Available at http://www.cr.nps.gov/history/hisnps/NPShistorians/invisiblemen2.pdf

[2] Doug Hitchingham to Erin Beller, facsimile transmission, 23 August 2006, p. 1/3.

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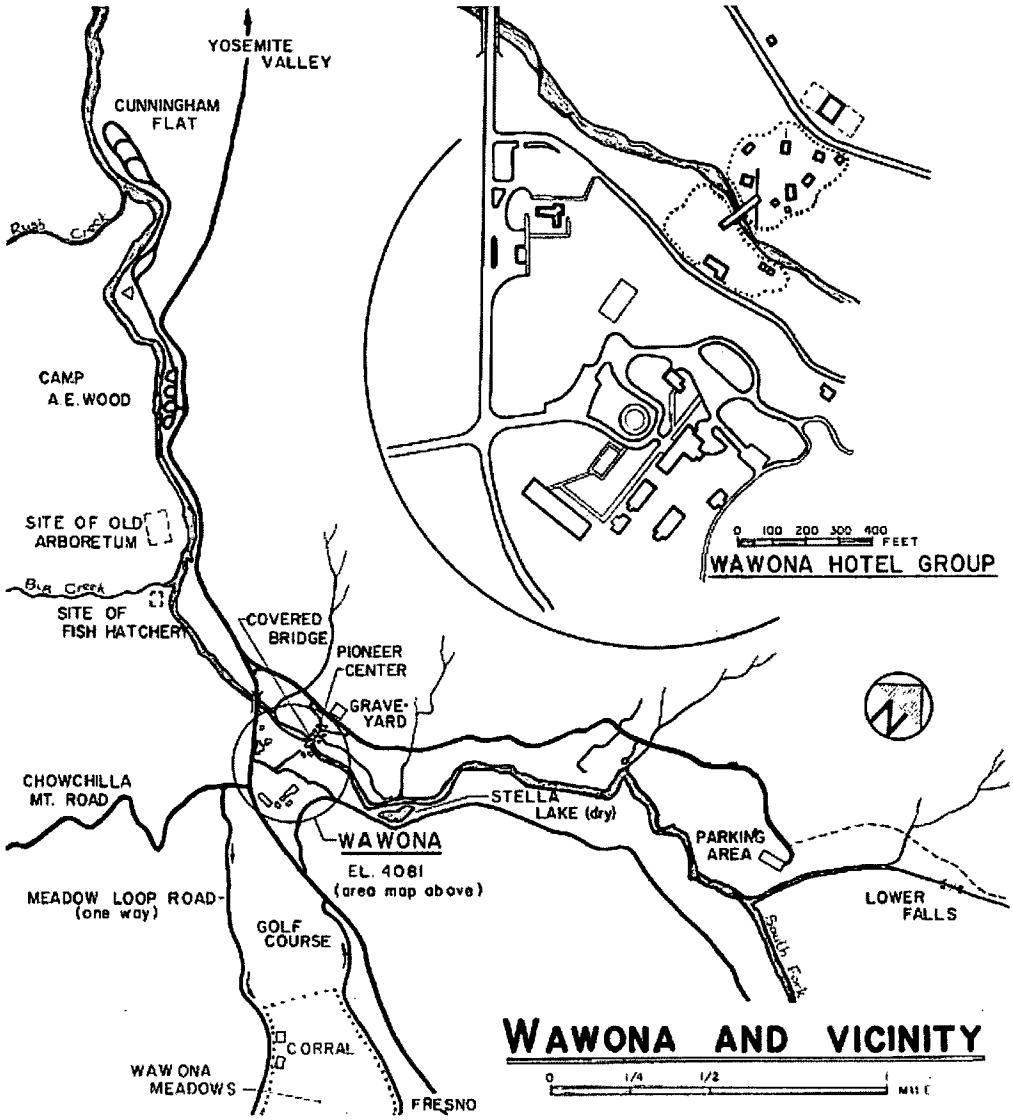

Figure 1. Arboretum Location at left center
Adapted from Shirley Sargent, *Wawona's Yesterdays* (1961)

Justification:

Yosemite National Park is not simply a place of natural beauty. It has also played host to a rich history of human interactions with nature. Beginning with the original native inhabitants, this history has reflected the increasing diversity of the American West and the contributions of a broad range of cultural traditions. John Muir, the most visible figure in Yosemite's history, was an immigrant from Scotland, as was Half Dome trail builder George Anderson. James Mason Hutchings was English, while John and Bridget Degnan made their way to Yosemite from Ireland. Polish native Gabriel Sovulewski commonly employed Italian stonemasons on his extensive trail projects throughout the park. Chinese immigrants also contributed their skills to the trails, as well as finding

work in hotel kitchens and laundries. African American soldiers patrolled the backcountry to protect Yosemite's environment from sheep guided by Mexican and Portuguese herders. Other settlers, park workers, and visitors came from throughout the United States, and indeed the world.

The present emphasis on natural processes in Yosemite National Park has resulted in much of this history being downplayed, almost to the point of invisibility for most visitors. While Yosemite is not a history park in the sense of a Civil War battlefield or a presidential home, what visitors see today is the product of centuries of human decisions and activities. Understanding this point helps visitors to see their place in the life of the park, and to appreciate the impact they can have upon it.

Restoring the Buffalo Soldier arboretum in Wawona would provide a tangible location for some of these intangible stories. Soldiers of the 24th Infantry and the 9th Cavalry were only in the Sierra Nevada national parks for relatively brief periods during 1899, 1903, and 1904. Their overall influence on the history of the parks was relatively modest. The important point is that they were there, acting as the face and authority of the United States government while advancing the innovative principle of federal land preserved simply for its scenic beauty. This was during a period when African Americans were treated as second class citizens in many parts of the nation, and their visibility minimized as much as possible. A restored arboretum would help to reverse a similar, though inadvertent, situation in the re-telling of Yosemite's history. Recent scholarship and practical experience both suggest that direct experience with a historical site has more impact for the average visitor than history on the page.[3]

Additional impetus for the arboretum could result from several external projects. Golden Gate National Recreation Area is currently conducting research for a Buffalo Soldiers Historic Trail linking the troops' winter garrison at the San Francisco Presidio with their summer postings in the Sierra. The Warriors Project, based at the University of Texas at El Paso is fostering research on the interactions between Buffalo Soldiers and American Indians in the west. Ken Burns' upcoming PBS series *America's Best Idea: Our National Parks* will explore the development of the National Park Service and its part in shaping America's identity. This will include a segment focusing on the role of African American troops in Yosemite.

Discussions in 2005 explored the possibility that the arboretum could have significant research potential for natural resources as a human-modified site subsequently left undisturbed for 100 years. It is now clear that this area has been heavily reused since 1904. The National Park Service built a wastewater treatment plant in 1934, with a pump house and sewage pond on flat ground near the river, and a spray field on the slope above. The spray field was expanded in the mid-1970s before the operation was ultimately shut down. The site has received numerous visitors over the years, from individuals seeking swimming holes on Big Creek to guided Yosemite Association hikes. As a result, the site is unlikely to have any unusual value for research purposes.

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[3] See for example Michael Kammen, *Mystic Chords of Memory: The Transformation of Tradition in American Culture* (New York: Knopf, 1991).

Historical Background:

The United States Army's involvement with national parks began at Yellowstone, which Congress created in 1872 without providing for its management and protection. As a result, many of the park's earliest visitors made determined attempts to continue the tradition that federal lands were meant for profitable use. Alarming reports of misuse and resource destruction prompted Gen. Phil Sheridan—commander of the Army's Division of the Missouri and instrumental in the park's creation—to repeatedly offer personnel for administrative and patrol duties. Mismanagement and corruption within the Department of the Interior meant that it would be 1886 before the first troopers would arrive.[4]

Yosemite, Sequoia, and General Grant national parks were established by Acts of Congress in the fall of 1890, but again without any system that could accomplish the protective goals spelled out by the acts. With this and the precedent of Yellowstone National Park in mind, the Secretary of the Interior recommended that a cavalry troop be stationed in Yosemite, with another to administer both the Sequoia and General Grant parks. Where Congress had specifically authorized this arrangement in the case of Yellowstone, the California deployment initially had no legal basis and the troops no formal law enforcement authority. Despite this, the troops first dispatched in May 1891 from the Presidio of San Francisco would patrol the three parks from May until October, hoping that winter conditions would be enough to deter trespassers during the remainder of the year. The Yosemite troop initially used a seasonal headquarters near Wawona, on the site of the present Wawona Campground. A semi-permanent post in Yosemite Valley followed the recession of the Yosemite Grant to the federal government in 1905. The officer in charge of the troop became the acting superintendent of the park, and as this position changed every year it made continuity of policies difficult. During the Spanish-American War in 1898, the regular troop was not dispatched. Archie Leonard and Yosemite native Charles T. Leidig took their place as the park's first civilian rangers, while Special Inspector J. W. Zevely of the Interior Department assumed the role of acting superintendent.[5]

The army found only a few Indian trails in the backcountry beyond the rim of Yosemite Valley. To aid their work, they improved upon these and established new trails as the need arose. Most of the current backcountry trail system was laid down by the army during this period. Because the cavalry units assigned to the park changed each year, trail routes had to be carefully mapped to avoid duplication of effort. This had the unintended effect of supplanting many of the early place names transmitted through oral tradition by new names and references reflecting the experiences of the new authority. To aid patrols after the first snowfalls, the army also marked trails with distinctive blazes cut into the bark of trees. These were in addition to previous marks left by sheepherders

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[4] See Chapter 3 "This Wonderland" in Harvey Meyerson, *Nature's Army: When Soldiers Fought for Yosemite* (Lawrence: University Press of Kansas, 2001).
[5] Meyerson, 66-67.

to mark their own trails through the wilderness. [6]

In addition to trails, the army also concerned itself with roads used by tourists visiting the park. Access to Yosemite was by way of four toll roads, which provoked complaints about high rates and the basic incongruity of reaching a national park, which was intended to be open to all, over a privately-held road. In 1892 under the administration of Capt. A. E. Wood, the army initiated a study to determine the feasibility of the federal government purchasing these roads. Legislation to provide for this was subsequently introduced in Congress, but was lost among unfinished business at the end of the fifty-fifth session. Congress authorized a new study in 1899, which advised that it would be advantageous for the government to own all the entry roads into the park so as to control traffic flow, and that additional roads should be constructed within the park to ease patrol work.[7]

The army took its commission seriously, and made significant advances in the protection of Yosemite's resources. Grazing was an ongoing concern, both by sheep in the high country, and by cattle and horses on patented land. Poaching of wildlife was a problem that provoked Col. S. B. M. Young, acting superintendent in 1896, to refuse to issue firearm permits to tourists, and to authorize troops to disarm those found carrying weapons inside the park. Despite this type of effort, poaching continued in the fall, after the regular departure of the troops.

Under the auspices of the military administration, the California Fish and Game Commission began planting trout in various Yosemite streams in 1892, and established a small hatchery at Wawona in 1895. The Army took a direct hand in fish stocking during the 1905-1908 patrol seasons, planting them much further afield than did the Fish and Game Commission. Earlier, Col. Young had strictly enforced prohibitions against human interference with flora, trees, animals, birds, and fish in the park. In large measure to help tourists time their visits to arrive during periods of full streams and waterfalls, the U. S. Geological Survey began measuring the flow of the Merced River and its tributaries in 1904.

The State of California proved to be unable to adequately pay for the care and improvement of Yosemite Valley and the Mariposa Grove, the two most heavily used portions of the Yosemite region. Despite arguments for state pride, financial reality won out and the state formally returned the Yosemite Grant to the federal government on March 3, 1905. The army then assumed management responsibilities for the entire park, and the following year moved their field headquarters from Wawona to the Valley. This made the army directly responsible for new duties, such as visitor services and the administration of concessions. Army engineers surveyed the bridges in the Valley, which at that point were constructed of wood, except for Pohono and Sentinel. The engineers

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[6] Linda Wedel Greene, *Yosemite: The Park and its Resources—A History of the Discovery, Management, and Physical Development of Yosemite National Park, California* (United States Department of the Interior/National Park Service, 1987), 320-324, 325-328.

[7] Ibid., 341-345; Francis P. Farquhar, *History of the Sierra Nevada* (Berkeley: University of California Press, 1965), 204, 205.

believed most would have to be replaced within a short time, and recommended the use of stone arch structures as durable, appropriate to the setting, and fitting monuments to the American government and its administration of the park.

Maj. Harry Benson, acting superintendent in 1905, and 1906 to 1908, was repelled by the clutter of concession buildings in Yosemite Valley. He noted that leases had been granted primarily on the basis of favoritism, and that residents in these properties expected large federal expenditures to maintain their buildings. After identifying the few structures he thought necessary, Benson recommended that the rest be cleared. Maj. William T. Littebrant continued this theme in 1913, suggesting that the existing village be replaced by a new development to the north of the Merced River, away from the major scenic attractions. He asked that the Secretary of the Interior send a landscape architect, structural engineer, and civil engineer to the park in order to begin work on a long-term development plan. Littebrant emphasized the need for new construction to harmonize with the surroundings, and to follow a common architectural theme. The Interior Department received these ideas with great interest, and they formed the basis for the new village as it was actually built by the National Park Service in the 1920s.

The Wawona Arboretum:

It was during the 1904 season that acting superintendent Maj. John Bigelow, Jr., commanding Troops K and L of the 9th Cavalry, created the first national park arboretum. Harvey Meyerson explains:

> He conceived and constructed this remarkable seventy-five acre facility in his spare time during the brief summer allotted to him, drawing on his frontier experience and hurried correspondence with horticulturalists on the East Coast. His arboretum had "the first marked nature trail in the national park system," with log seats and neatly painted signposts identifying plants by their Latin species names. Bigelow told the interior secretary that he hoped his pioneering facility would serve as the foundation for a full-scale Yosemite "nature museum" and education program such as would in fact eventually be undertaken by the National Park Service nationwide.[8]

To oversee the construction and upkeep of the arboretum, Bigelow detailed "First Lieut. And Asst. Surg. Henry F. Pipes, the surgeon of my camp, a young officer of no particular training as a botanist, but interested in his work, and doing it in the most efficient and satisfactory manner."[9] Pipes was assigned a noncommissioned officer and a private—both African American—to actually perform the work. Bigelow's description of the arboretum indicates both the standards that had been achieved, and the hopes he had for the future:

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[8] Meyerson, 235-236.

[9] Maj. John Bigelow, "Report of the Acting Superintendent of Yosemite National Park," 1904.

> The arboretum covers 75 to 100 acres of hilly timbered land, and has one main trail and several branch trails crossing it. Thirty-six trees and plants have already been labeled, 20 more have been identified and will be labeled soon, and plans have been made to transplant and plant many of the more familiar trees and plants of the park that are not already found there. The labels and signs are of one-inch plank, double coated on all sides with light-brown paint, and bearing names (English and Latin) in letters of dark brown. The labels are nailed to trees, the heads of the nails being well driven in and puttied over to prevent staining with rust. Small metal tags are used for flowers. Comfortable seats have been built, more paths opened up, deadwood and debris have been removed, and the arboretum brought up to a condition in which it may be considered as worthy and susceptible of development into a prominent feature of the park.[10]

The main trail ran from the Wawona Hotel along the south bank of the South Fork of the Merced River past the state fish hatchery to Big Creek, where it crossed by a small footbridge into the arboretum proper. The trail meandered approximately 50 yards back from the riverbank among alders, cottonwoods, ponderosa pines, sugar pines, firs, oaks, and various kinds of brush. Branch trails climbed further up the slope. Several bedrock mortars were also located within the arboretum. Given the limited time and manpower in 1904, it is likely that the trails were simply constructed, with whatever hand tools the troops had readily available. If Bigelow had had his way, the fully developed arboretum would have included a line of live oaks planted either side of the main trail for shade, and "a grove or avenue of about two dozen Big Trees" (*Sequoiadendron giganteum*) to match those planted in the Army camp across the river by Capt. Abraham Epperson Wood.[11]

Bigelow did not have his way, as subsequent developments caused the site to be abandoned the following year. Acting superintendent Capt. Harry C. Benson noted in his 1905 report that "unfortunately the location selected for the arboretum was on patented land on the south side of the river. This land has, by the act of February 7, been thrown out of the park, and it will soon be the site of the tracks of an electric railroad which is to come up the South Fork. Surveyors in passing through knocked down and destroyed some of the signs, but as many as possible have been gathered up and safely stored for future use on land within the park."[12]

The electric railroad was never built through Wawona, and with the Army's removal to Yosemite Valley in August, 1906, the arboretum was gradually forgotten. Ranger J. N. Morris rediscovered the site in 1929, describing a "well-beaten trail" and some 20 signs, most in excellent condition.[13] From 1934 the National Park Service developed part of the

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[10] Ibid.
[11] Ibid.
[12] Maj. H. C. Benson, "Report of the Acting Superintendent of Yosemite National Park," 1905.
[13] J. N. Morris, Ranger, "An Old Nature Trail is Found Near Wawona" in *Yosemite Nature Notes* IX, no. 3 (March 1930), 17-18.

area as a sewage treatment plant for Wawona. Despite this, features of the arboretum could still be distinguished in 1950 when Ranger O. L. Wallis surveyed the area (see Figure 2). He discovered eight signs weathered but still intact and legible, together with a faint trail and evidence of where benches had once been nailed to tree trunks.[14] During this period at least one sign was retrieved and taken to the Yosemite museum for preservation. The sewage plant spray field was expanded in the mid-1970s, but the complex has since been removed. Several concrete foundation elements from the complex remain on-site.[15] As of August 2006, several of the features recorded by Wallis can still be located, including cedar trees used as bench supports.

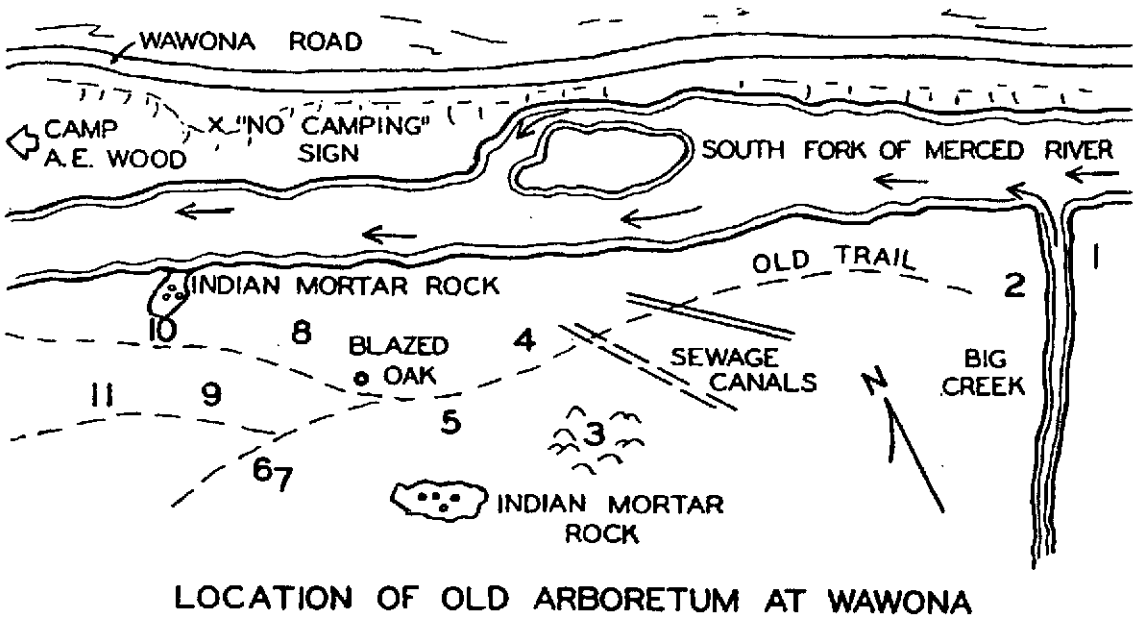

Figure 2. Sketch map of surviving features
O. L. Wallis, Park Ranger "Yosemite's Pioneer Arboretum" (1951)

1. Site of bench nailed to alder trees pictured in 1904 Superintendent's Report (Figure 3)
2. Alder with sign "Alder *Alnus rubra*"
3. Douglas fir with sign "Douglas spruce *Pseudotsuga Douglasii*" (Figure 4)
4. Ponderosa pine with sign "Yellow pine *Pinus ponderosa*" (Figure 5)
5. Douglas fir pictured in 1904 Superintendent's Report as "Douglas spruce" *
6. Sugar pine with sign, pictured in 1904 Superintendent's Report
7. Ponderosa pine with sign, pictured in 1904 Superintendent's Report
8. White fir with sign "Magnificent or silver fir *Abies magnifica*" *
9. Sugar pine
10. Douglas fir *
11. Incense cedar bench group pictured in 1904 Superintendent's Report *

* Identified in 2006 site visit (Figure 6)

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[14] O. L. Wallis, Park Ranger, "Yosemite's Pioneer Arboretum" in *Yosemite Nature Notes* XXX, no. 9 (September 1951), 83-85.
[15] Hitchingham, 3/3.

Figure 3. Footbridge over Big Creek (L) and bench nailed to alder trees (R), 1904. (Yosemite Research Library)

Figure 4. Douglas fir labeled "Douglas Spruce *Pseudotsuga Douglasii*", 1904 (Yosemite Research Library)

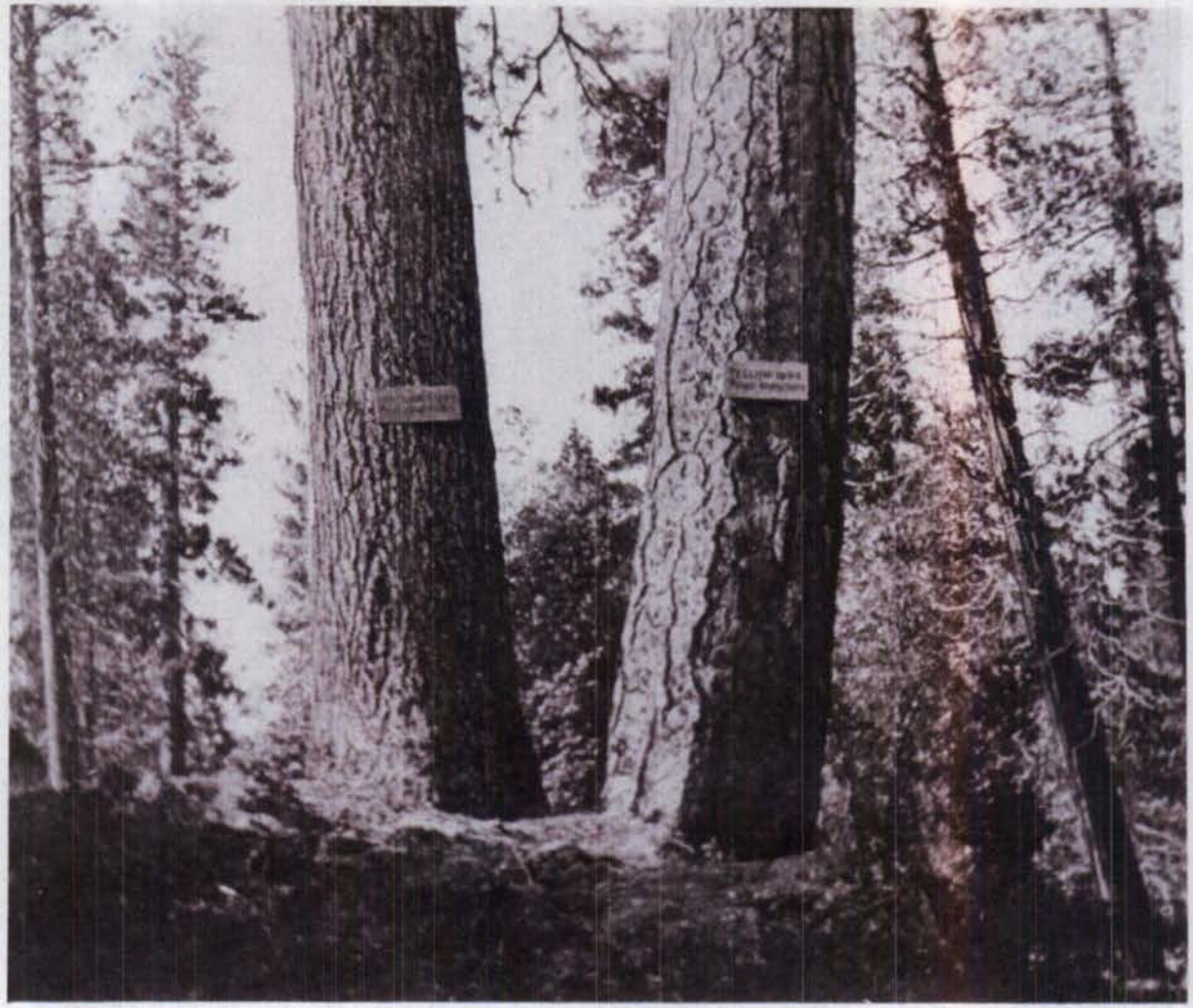

Figure 5. Sugar Pine and Ponderosa Pine, 1904 (Yosemite Research Library)

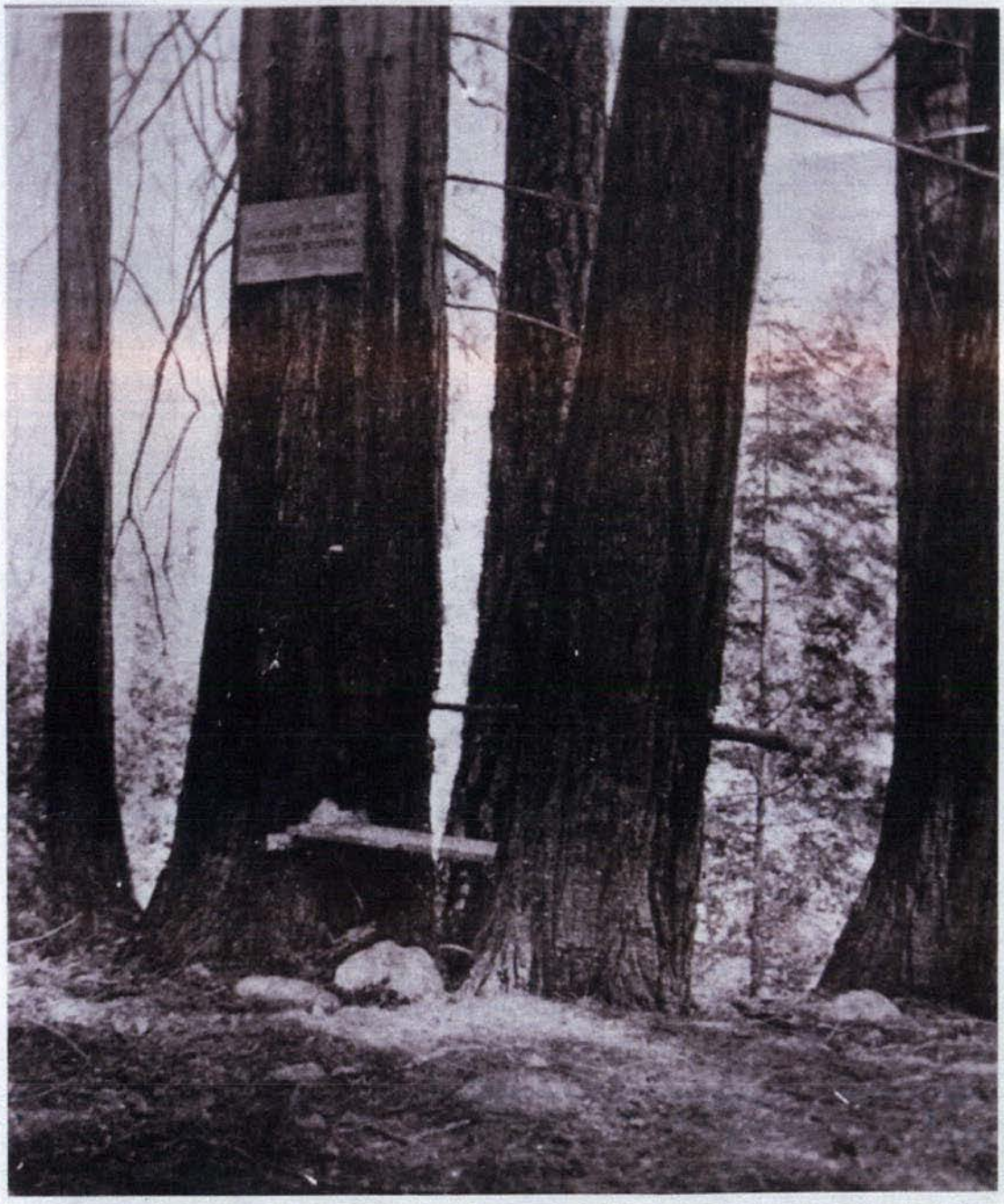

Figure 6. Incense Cedar bench group, 1904 (Yosemite Research Library)

Asphalt paving also requires a $4,000 one-time mobilization cost.

The U.S. Department of Transportation publication *Designing Sidewalks and Trails for Access* lists 36 inches as the critical minimum width for accessible pedestrian trails.[16] A rough estimate of the linear distance from Big Creek to the incense cedar bench group identified as Feature 11 on Wallis's map (Figures 2 and 6) is 1850 feet. This suggests that a minimum-width trail through the main section of the arboretum site would measure not less than 5550 square feet. As a result, trail costs could be expected to begin at:

- $128,816—decomposed granite
- $46,680—asphalt

Larger replica signs would be based on photographs in the 1904 Superintendent's Report (see Figure 6) and surviving examples preserved in the Yosemite Museum collections. Smaller metal plant tags would be based on a combination of a contemporary description and historical conjecture based on the appearance of the wooden signs. Both could be produced by Yosemite's sign shop, or given their simplicity, in large degree by volunteers.

Benches could also be produced through a partnership of park staff and volunteers. The originals were little more than planks nailed or notched into convenient tree trunks. Some locations are known, and others could be located based on modern requirements. Recreating these elements of the arboretum would require the approval of park botanists, unless it was determined that free-standing benches of a basic and complimentary design would be preferable.

Interpretive Displays would likely be located adjacent to Big Creek. They would provide an informational entryway into the arboretum covering the basic history of the site and the reason for its restoration. An expanded display could explain the broad background of those who helped make Yosemite National Park what it is today, and emphasize the roles of those who are often under-represented in the park's historical narrative.

A rough estimate for the cost of interpretive displays can be drawn from the budget developed for a proposed interpretive display at the Mono Pass trailhead:

- $11,000—Porcelain enamel sign panel on a Cor-ten steel base, with the Yosemite Fund contracting directly with the sign manufacturer.
- $17,400—Planning and design/personnel/project management/compliance/installation/administrative support

Economies of scale could be realized for multiple panels.

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[16] *Designing Sidewalks and Trails for Access Part II of II: Best Practices Design Guide* (Washington DC: U.S. Department of Transportation, Federal Highway Administration, 2001), 15-35

Proposed Restoration:

Restoration would cover three areas:

- Recreating the appearance of the original 1904 site
- Providing an interpretive display or displays to explain the Buffalo Soldier story and the cultural diversity inherent in Yosemite
- Improving access to the arboretum site.

Restoring the Arboretum would entail reestablishing the main trail from Big Creek into the arboretum site and the branch trails further up the slope; placing replica signs on or near specimen trees and plants; and installing benches of design and location similar to those found in the original arboretum.

The exact route and length of the trails would have to be worked out based on a close examination of the site. Documentation is slight, but recent visitors to the site have suggested that some of the basic routes can be picked out with some difficulty. In some areas close to the river the sewage plant would have obliterated earlier construction. Concerns about durability and visitor accessibility might require that the trails be completed to a higher standard than they were originally. Development of this standard would require on-site consultation with representatives of the Roads and Trails office. Based on the results of this consultation, it could be feasible to rebuild only a portion of the original trail to better manage construction and maintenance costs. Brush cutting and basic grading for the trail would present opportunities for volunteer involvement.

Estimates developed for the Lower Yosemite Falls restoration project in 2001 gave the following figures **per linear foot** for a trail 5 to 6 feet wide:

- $78—level trail
- $345—sloped ground trail with stone retaining wall.

Class A estimates developed for the Falls project in 2003 gave a more detailed breakdown **per square foot**:

- $1.95—grading, geotechnical work and fine grading
- $2.00—asphalt paving
- $12.00—decomposed granite paving

These are multiplied by factors of 15% for General Requirements, 5% Premium for subsistence, 8% for Contractor's Fee for a total factor of 28%. An additional factor of 30% is added for the additional considerations of transportation, climate, monitoring, etc., encountered in projects at Yosemite. For a level trail constructed in 2007, with adjustments for inflation since 2003, **per square foot**:

- $23.21—decomposed granite trail
- $7.69—asphalt trail

Improving Access to the arboretum site is one of the most important parts of aspects of the restoration, and also the most problematic. The original site could be reached by a footbridge over the South Fork of the Merced from Camp A. E. Wood, and a shorter log bridge over Big Creek. Neither bridge exists today, and the site can only be reached easily by wading across the river or the creek when the water is low. A dirt access/fire road runs around the north end of the Wawona golf course, past a maintenance building and a burn pit, and then along the south river bank to Big Creek along the basic route of the historic trail from the Wawona Hotel. Discussions in 2005 between Shelton Johnson, Wilderness Biotechnician Brenda Hanley, and Park Historian Charles Palmer concluded that this was the preferable approach to the arboretum. For much of its length it is the same route that would have been used by visitors in 1904, and it would help evoke the sense of walking back in time to the Wawona of a century ago. As with the trails in the arboretum site, durability and accessibility concerns could require improvements to the existing surface.

Big Creek is 29 feet wide with steep banks at its confluence with the South Fork. Further upstream the width reduces to 25 feet with similarly rugged banks and a rocky bed. A bridge over Big Creek near the confluence is essential for getting visitors to the arboretum site, and is the costliest element of the entire proposal. The original bridge was made of two narrow logs flattened on one side to form the tread, with a single pole handrail on the downstream side. While adequate for a time when personal risk was more readily accepted, historical accuracy would have to yield in a restoration to a modern design that could be made to look suitably rustic. A detailed analysis of the site would be required to develop specifications and an accurate cost estimate.

A range of basic **per square foot** construction costs for contemporary trail bridges of the type that would likely be needed at Wawona has been examined for the Happy Isles "Bridge to Wilderness" project:

- $184—Sonoma State University, Rohnert Park, California
- $202—California State Parks base figure
- $230—Lower Yosemite Falls 2002 (bridge structure only)
- $272—Happy Isles 2006 (exclusive of geotechnical work and abutment designs)

The U.S. Department of Transportation lists 36 inches as the critical minimum width for accessible trail bridges.[17] A bridge of this width capable of spanning Big Creek could be expected to cost upwards of $25,000.

[17] *Designing Sidewalks and Trails*, 16-4.

Figure 7. Example of arboretum sign, 1904 (Yosemite Research Library)

Compliance:

The arboretum site is located within the Wawona Archeological District which was determined eligible for listing on the National Register of Historic Places on December 8, 1978. Researchers from the (then) California State College, Stanislaus conducted a survey at the site in December, 1974, in conjunction with planning for a new sewage spray field. The survey found "a minimum of twenty-six bedrock mortar cups on three separate boulders, a well-developed midden deposit, and an extensive surface scatter of obsidian flake debitage" on a plateau intended for the spray field.[18] The National Park Service made a determination for the spray field project of No Effect on the archeological site early in 1975.[19] Because the Wawona Archeological District was listed after this determination was made, additional review of the area by the Archeology and Anthropology Branch would likely be necessary prior to any work taking place. On-site monitoring would be needed for work requiring soil disturbance, particularly trail construction.

The arboretum site is not located within designated wilderness and, as noted above, has been disturbed by the construction, expansion, and eventual removal of the Wawona sewage treatment plant. Nevertheless, clearing or trimming vegetation for trails and interpretive displays, and reintroducing elements of the built environment will require the involvement of the Vegetation and Ecological Restoration branch. Maj. Bigelow indicated in his 1904 Acting Superintendent's report that he was planning to transplant a number of species in the arboretum from elsewhere in Yosemite. There is no subsequent documentation suggesting that this ever took place, but the area should be surveyed for evidence of mature examples of species not native to the Wawona area.

The restoration project would require the services of the park's Historic Architect and Historic Landscape Architect during the development of any physical additions to the site. This would be particularly important for the design of the Big Creek footbridge and benches throughout the arboretum.

Based on the location of the arboretum site, and the major elements identified in this study, Yosemite's Environmental Planning and Compliance Office has made an initial determination that a formal Environmental Assessment would be required prior to beginning major work. The project is also dependent on resolution of the Merced Wild and Scenic River Revised Comprehensive Management Plan and Supplemental Environmental Impact Statement.

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[18] L. Kyle Napton and A.D. Albee, "Archeological Survey of Proposed Wawona Spray Field Construction," Institute for Archeological Research, California State College, Stanislaus. December 1974. Wawona Arboretum file, Yosemite Research Library.

[19] John D. McDermott, Director, Office of Review and Compliance, Advisory Council on Historic Preservation to John H. Davis, Acting Regional Director, Western Region, National Park Service, 21 April 1975. Wawona Arboretum file, Yosemite Research Library.

Summary Recommendation:

Because the arboretum site is located with the Merced Wild and Scenic River Corridor, the Yosemite Fund may wish to take no further action on this proposal pending final resolution of the Merced Wild and Scenic River Revised Comprehensive Management Plan and Supplemental Environmental Impact Statement.

Preliminary **minimum** estimates for primary elements:

- $46,680—Minimum-width level trail with asphalt paving, **or**
- $128,816—Minimum-width level trail of decomposed granite.
- $25,000—Minimum-width footbridge exclusive of geotechnical work and abutments capable of spanning Big Creek.
- $28,400—Porcelain enamel and Cor-ten steel interpretive display, contracted directly by Yosemite Fund

The location of the arboretum site within the Merced Wild and Scenic River corridor represents the primary challenge to the project. Yosemite's Environmental Planning and Compliance Office has made an initial determination that a formal Environmental Assessment would be required prior to beginning major work. The project would depend on resolution of current litigation relating to the Merced Wild and Scenic River Revised Comprehensive Management Plan and Supplemental Environmental Impact Statement.

Restoration of the Wawona arboretum is possible from the standpoint of major features. The driving factors are the physical location of the site itself, and the means of access to it. For this reason, and to gain the most efficient use of funds, it should only be attempted as a two-stage project, or two linked projects. The first stage would undertake an Environmental Assessment of the proposed work and develop detailed designs for the arboretum trails, footbridge, and interpretive features. The assessment results, designs and detailed cost estimates would be provided to the Yosemite Fund for review, modifications and approval before submission of a second grant proposal for the actual construction phase. Because this has the potential to be a high profile project of interest to those beyond the "traditional" National Park Service visitor base, it may be desirable to use the results of the first project phase to seek funding partners before Yosemite staff proceed with the formal proposal for the second phase.