

Wilson's Creek National Battlefield

Cultural Landscape Report/Environmental Assessment

Alternative 1. The No Action Alternative: Preserve existing conditions and continue current management strategies (No Action).

The No Action alternative focuses on preservation of the existing character of the Wilson's Creek National Battlefield landscape and the current interpretation of the battlefield that exists today.

Under this alternative, there would be no changes to the facilities that currently accommodate visitor access and interpretation, park administration, and maintenance. Proposed changes that have already been approved, such as the addition of new wayside exhibits at Bloody Hill, would be permitted to proceed. The existing visitor center would continue to serve as the primary means for visitor contact and orientation. The entrance drive, associated parking lot, and Tour Road would remain the primary vehicular access route for visitors to experience the park's resources. Visitors would also continue to gain the majority of their knowledge about the Battle of Wilson's Creek by experiencing the exhibits located within the visitor center and as waysides located at Tour Road stops and along pedestrian trails. The current picnic area would also continue to support the visitor experience. Equestrian use of certain trails would also continue.

No provision would be made to accommodate parking beyond the use of current parking areas, including the current horse trailer parking facilities. Existing landscape patterns of spatial organization, composed of clearings surrounded by a generally wooded landscape that occurs at the Gibson Oatfield and house site, Ray Cornfield, Ray House, bottomland area near the Pulaski Arkansas Battery position, East Battlefield Overlook, Sharp Cornfield and Stubblefield, Edwards Cabin site, Guibor's Battery, Bloody Hill, and West Overlook/Route of Union Advance and Withdrawal, would be perpetuated. No further vegetation removal and thinning would be undertaken and current mowing and vegetation management regimens would continue. The glade habitats would continue to be overrun with Eastern red cedar trees, which are affecting the threatened Missouri bladderpod.

No change would be made to the interpretation of the battlefield landscape. Views identified as important interpretive vistas, such as from the East and West Battlefield Overlooks, would continue to be managed for clear sight lines, while other views that have been identified as important, but are not currently open, would not be cleared. The proposed treatment of vegetation communities outlined in the CLR, such as rehabilitation of Manley Woods, the glade communities, and young woods; the expansion of the trail system and adjustment of trails subject to erosion; the updating of the park's wayside exhibits, and the addition of more cannon to improve marking of the battlefield would also not occur.

Major components of the alternative include:

- Maintenance of existing landcover character and patterns.
- Maintenance of existing interpretive programs and media.
- Maintenance of existing landscape features and systems.
- Continued protection of natural and cultural resources.
- Continued repair of deteriorated features and systems.

Selection of the No Action alternative would preclude the park from meeting some of the goals identified for consideration as part of the GMP, the remaining aspects of the CLR treatment plan not yet implemented as discussed in the Purpose and Need statement, and the LRIP. No further exploration of ways to utilize the cultural landscape as a tool for interpreting the events of the battle would be conducted.

Selection of the No Action alternative would also limit the park in its ability to explain the historical context within which the battle occurred, and the updated understanding of some battle events and troop movements that followed the installation of current wayside exhibits.

Alternative 2. Implementation of Remaining CLR Treatment Plan Recommendations, Proposed Deer Management Strategies, and the Interpretive Programs Indicated in the LRIP

Interpretation is a means of commemoration and memorialization. Interpretation of the Battle of Wilson's Creek and its impact on Missouri and the Western Theater of the Civil War are already a focus of the park. As part of an overall strategy for managing the cultural landscape, the Action alternative recommends developing additional connections between interpretive programming and what is known about the landscape that comprised the park at the time of the battle through vegetation management for views and character, trail establishment, cannon placement, wayside installation, and depiction of vernacular lifeways present at the time of the battle layered with battle and troop movement information.

This rehabilitation alternative suggests completing the implementation of recommendations provided within the 2004 CLR based on an understanding of which recommendations have been implemented, which remain viable, and which require modifications to meet current park management goals and the guidance afforded in planning documents prepared after 2004.

Rehabilitation of the landscape is intended to establish contemplative and interpretive areas within the park that afford opportunities for the public to reflect on the events of the battle. The design of these areas will focus on selective restoration or depiction of mid-nineteenth century features for which documentation exists. Through these, visitors will learn first-hand about the battle as it occurred within a landscape composed of small farmsteads the patterns of which were determined to a large degree by landform, topography, soils, and water resources and other influences associated with the natural environment. Several directed viewsheds will be cleared to support an understanding of the battlefield from contemplative and interpretive nodes and other key locations. The ongoing efforts conducted by the park to manage natural resources for diversity, conservation, and historic character will serve as a foundation for interpreting the battlefield.

The CLR also recommended interpreting farmsteads present in 1861 through the indication of former field and fence patterns using mow patterns and posts, the planting of orchards, and the placement of wayside exhibits. Proposed trail extensions would be developed to provide connections with historic features not located along existing trails. Wayside exhibits would convey information about historic farmstead features at specific locations and viewpoints, providing a clear connection between the battle.

The majority of the existing developed core of the park would remain similar to its current condition. The entrance drive, parking area, picnic area, visitor center, tour road and tour stops, Ray House interpretation, and maintenance area would continue to function and have a similar appearance to that present today. The parcels acquired since 2004 would be integrated into the visitor experience, including trails to Sigel's first position and waysides and a day-use/picnic area at Double Spring, or adapted for park administrative use, such as the Sweeny Museum property.

The Gibson, Ray, and Sharp fields will continue to be interpreted as agricultural fields edged by period appropriate fencing and through the management of crop exhibits in limited locations. In areas where historic farming practices are proposed to be interpreted, the goal would be to present an agricultural character. The remainder of the park will be managed to promote a savanna and grassland community, with the exception of the glades and Manley Woods. The Wilson's Creek and Skegg's Branch stream corridors will be managed to promote water quality.

Action Items

Specific actions resulting from the implementation of this alternative are anticipated to include:

Land Acquisition/Assimilation

- **Complete proposed land acquisitions and conservation easement establishment.**
- **Clear the parcel acquired to the southeast, and integrate into savanna management practices.** Extend a trail onto the property from the existing Manley Woods trail.
- **Establish a day-use/picnic area in the Double Spring parcel.** This parcel is located west of Highway ZZ in the southwest corner of the park. Use it to develop a small parking area to accommodate visitors, and a modest picnic area. Plant trees to shade the picnic area. Install wayside exhibits that explain the Civil War era use of this area by both Union and Confederate soldiers. and the nearby free flowing spring. Consider establishing a trail that extends under Highway ZZ through an existing culvert that conveys Terrell Creek beneath the road corridor for pedestrian access.

Roads and Parking

- **Establish a new equestrian parking area northeast of the visitor center.** The parking area will be accessed from the park entrance road. It is estimated that the parking area will encompass approximately 1 acre of land. It will be composed of an access road, trailer parking spaces, and a trailhead that connects riders to the equestrian trail system. This project was identified in the 2003 General Management Plan as a park goal, and conveyed as a treatment recommendation in the CLR. It replaces use of the temporary horse trailer parking area located between the Ray House and McElhaney House. The relocation of the horse trailer parking area is intended to remove horse trailer traffic from the park tour road.
- **Rehabilitate the existing horse trailer parking area.** Once the new equestrian parking area is constructed, there is no further need for the existing temporary horse trailer parking facility. The existing parking area will be rehabilitated to remove the parking use and to establish native plant communities on the former site. W. Farm Road 190, which extends between the park tour road and Haseltine Road (S. Farm Road 115) and is limited to park use, will remain.

Pedestrian Trail System

- **Expand the existing pedestrian trail system.** Eleven new trail segments are proposed for the park to enhance the interpretive opportunities available for visitors. Trails are anticipated to be treated as back-country foot paths surfaced with hard-packed earth, minimally graded, with rock work in limited locations, and the use of water bars to direct stormwater away from the trail surface.

The proposed new trails include the following:

1. *Visitor center to Bloody Hill via Sharp's Farm.* This trail is described in the LRIP. This trail follows the Union advance from the opening shots until Gen. Lyon's advance is halted on Bloody Hill. Features include a trailhead at visitor center parking area, wayside at Sharps Farm where the family took shelter, and a Union artillery position. The trail will have a branch where Capt. Plummer's battalion was ordered to ford Wilson's Creek to protect Lyon's main forces from being flanked. The trail will also link with the Union triage station behind Bloody Hill. The trail would link with the main Bloody Hill interpretive trail. The trail would also intersect the proposed new tour road stop number one. Much of this proposed trail was included in the CLR treatment plan.
2. *Bloody Hill Trail to Gibson's Mill Crossing.* This trail is described in the LRIP. This trail would be a branch from the Union advance trail to the point on Wilson's Creek where Capt. Plummer's

battalion forded the creek near Gibson's Mill. The CLR recommends construction of a pedestrian footbridge across the creek. This proposed trail was included in the CLR treatment plan.

3. *Gibson's Mill Crossing to Ray Cornfield/Springhouse.* This trail is described in the LRIP. It continues to follow Capt. Plummer's battalion's march towards their fight in Rays' Cornfield, crossing the existing Ray Cornfield trail. Trail access includes a link with the existing Gibson's Mill Trail.
4. *Tour Road stop 3 to Reid's Battery.* This is a spur trail which leads south from the Tour Road Stop 3 trailhead to the position of Reid's Fort Smith Battery. The Battery fired across Wilson's Creek to Sigel's position at Stop 5 during the southern attack. Two cannons with a wayside are to be located here. The trail crosses the site of the town of Wilson's Creek, a post- Civil War community and a wayside will tell that story.
5. *Extend Pulaski Battery Trail to Guinn Farm site* (also McCulloch's Headquarters). Research has suggested that the Pulaski Battery was located further northeast along the ridge line than was previously understood. This trail represents an extension of the existing trail. Cannon and waysides would be relocated to the new interpreted more accurate battery location.
6. *Tour Road trailer siding to Sigel's First Position* (once land to east is acquired and cleared). Additional lands incorporating Sigel's First Position have been preserved and will eventually be added to the park. It is recommended that the trailer parking siding at the curve of the road should serve as a parking area/trailhead to hike to the point. This position should offer an exceptional view of the south end of the battlefield where a contemplative node is recommended. Existing portions of the Manley trail would be used with a spur trail from Manley to Sigel's first. Two cannon and a wayside would be placed here.
7. *Edward's Cabin to Bledsoe's Battery.* This trail is described in the LRIP. From Edward's Cabin, a trail would lead eastward to the plateau on the south slope of Bloody Hill. Bledsoe's Missouri State Guard Battery would be featured on the plateau with two cannons, wayside and rest stop (contemplative node). Bledsoe's guns fired on Bloody Hill in support of southern attacks, as well as McCulloch's attack on Sigel. A portion of this proposed trail was included in the CLR treatment plan.
8. *Bledsoe's Battery to Tour Road stop 6* (Guibor's Battery). This trail is described in the LRIP. The trail links Bledsoe's Battery and Tour Road Stop 6 along the approximate position of the Southern battle lines, and parallel to the Bloody Hill Trail along the Union battle lines.
9. *Confederate advance route to Bloody Hill* (two alternative routes). This trail is described in the LRIP. A trail between the two battle lines would interpret battle from the Southern soldier's experience. One route could be from Bledsoe's Battery to the Bloody Hill Trail. Another could be from a point east of Tour Road Stop 6 and connecting at Totten's Battery or other point on Bloody Hill.
10. *Extend the West Overlook Trail from Tour Road stop 8.* This spur trail would intersect the Visitor Center to Bloody Hill Trail to provide a connection.
11. *Sigel's Advance Trail.* This trail is described in the LRIP. From Sigel's First position, the visitor would return via the Manley trail to a point on the old railroad grade. The trail would follow the grade to Wilson Creek. A bridge across the creek would be constructed utilizing the concrete railroad abutments and pillars. After crossing the creek, the trail continue to follow the railroad grade, access the Sharp field, link with Sigel's second position and conclude at Tour Road Stop 5.

- **Trailhead parking:** The visitor center and tour road stops 1, 2, 3, 5 and 7 are best suited for trailhead parking due to the spaces available at these locations.
- **Loop Hikes:** While the recommended trail additions focus on interpreting the battle, several short “loops” can be identified for visitors with limited time. An example would be a loop at Bloody Hill, which incorporates the existing trail with the addition recommended trails 8 and 9. A site bulletin and website guide will be prepared to assist visitors in developing appropriate routes.
- **Construct new bridges to convey trails across Wilson’s Creek and Skegg’s Branch.** The proposed new trail segments require two crossings of Wilson’s Creek and one of Skegg’s Branch. New footbridges would be built near Gibson’s Mill to accommodate the Gibson’s Mill crossing associated with new trail segments 2 and 3 described above. A bridge crossing of Skegg’s Branch would facilitate the Wire Road crossing near Tour Road stop 5. A Wilson’s Creek footbridge crossing in the southeastern corner of the park would support the establishment of the Sigel’s Advance Trail.

Footbridge crossings were also indicated in the CLR treatment plan to accommodate new proposed trail routes. Guidelines regarding bridge construction were indicated as follows:

Design the bridges to work with the hydrology of the Wilson’s Creek corridor, particularly in the founding of the bridge abutments to avoid interfering with the stream’s flow during storm events. Design the bridges to be as unobtrusive as possible and a product of their own time. Utilize simple materials, such as painted metal and wood, and muted colors that are compatible with the rural character of the historic landscape. Consider bridge designs that are low and do not draw the eye. Site the bridge to fit within existing grades as much as possible to avoid extensive grading to provide trail connections to the bridge decking.

- **Realign trail segments that are regularly subject to erosion.** Trail sections that are steep and regularly subject to erosion are proposed for abandonment. These included the southern half of the Manley Uplands Trail between the access route to the Manley Cemetery and the segment at the southern end that would connect to a new interpretive/contemplative node associated with Sigel’s First Position, as well as the trail that extends through the southeastern section of the Sharp stubblefield, a segment of the trail from the Wilson’s Creek valley west of the Wire Road Bridge leading toward the Lyon Marker, and a trail that parallels Highway ZZ in the southwestern corner of the park. Several of these trails are discussed further below as part of the equestrian trail system. Replacement routes of connection are indicated for the equestrian trails. For the trail extending west from the Wire Road Bridge, Trail #7 described above would replace the need for this trail. Surface materials are anticipated to be hard-packed earth, rock edging, and water bars.

Equestrian Trail System

- **Realign sections of the equestrian trail to address erosion concerns.** Segments of Manley Uplands Trail are steep and subject to erosion. This project entails rerouting equestrians from most of the Manley Uplands Trail, and establishing a new trail segment that parallels the tour road to its west between tour stop 3 and the existing trail east of tour stop 4. The trail as it currently extends through the Sharp stubblefield would also be removed due to steep and erodible slopes, and realigned to the south to link up with the existing trail that parallels Terrell Creek. A third segment of the trail that extends south from the Wire Road east of Highway ZZ would also be removed due to steep and erodible slopes. Instead riders would be redirected to the Wire Road via a new trail that cuts diagonally across the southwestern corner of the park, linking the

trail south of the stubble field with the Wire Road. Associated with this realigned trail are two proposed new bridge or ford crossings.

- **Add new trail segment west of the Sharp crop fields.** Equestrian riders would be able to ride in a loop that includes the Wire Road, the proposed new segment extending diagonally across the landscape west of the Sharp stubblefield, and another proposed new trail connecting the Sharp Farm site with the diagonal trail by edging the Sharp cornfield to the west. A portion of this trail would coincide with the proposed Sigel's Advance Trail noted above, and the width and surface of the trail would be designed to accommodate both uses.
- **Establish an equestrian trail between the proposed new parking area and existing equestrian trails.** This project was conveyed as a treatment recommendation in the CLR. The CLR suggested the use of the Manley Spur Trail to connect horse riders with the existing equestrian trail through the Ray Cornfield. The Manley Spur Trail is no longer in use. This route presents the problem of either requiring a ford crossing of Wilson's Creek, which would limit its usefulness during high water periods, or construction of a bridge, or a passageway connected to Tour Road bridge #1. Alternately, horseback riders could be connected to the existing trail system by following the proposed route of the new pedestrian trail to Bloody Hill, and other new or proposed routes providing a connection to the Wire Road east of Guibor's Battery. Both options will be addressed in the EA.

Interpretive Exhibits and Features

- **Establish a new Tour Road stop 1.** This stop is designed to serve as a battlefield orientation opportunity for visitors. This was recommended in the CLR treatment plan to be located near the beginning of the tour route, established in conjunction with a cleared viewshed toward the open field to the south east.
- **Install 7 upright orientation exhibits at trailheads.** This is recommended in the 2009 Long-Range Interpretive Plan (LRIP). They are proposed for the
 1. Visitor Center to Bloody Hill Trail to be located within the visitor center parking area
 2. At Tour Road stop 1 for the Gibson's Mill/Plummer's Crossing Trail
 3. Tour Road stop 2 for the Ray Springhouse/Cornfield Trail
 4. Tour Road stop 3 at the East Overlook/Reid's Battery/Pulaski Battery Trail
 5. At the Edward's Cabin
 6. Tour Road stop 4 at the Trail to Sigel's First Position
 7. At Tour Road stop 6 at the Confederate Advance Trail
- **Install 24 trail waysides.** Park wayside exhibits were installed circa 1985. Only those at Bloody Hill have been replaced and updated since initial installation. New wayside exhibits are needed to convey accurate and compelling battlefield stories. Wayside exhibits would interpret the following topics: (several of these are intended for interpretation along proposed new trail segments):
 1. Totten's first shots, near rock outcrop in front of visitor center
 2. Short House site
 3. Edgar Cemetery
 4. Manley Cemetery

5. Plummer's Crossing at Wilson's Creek and the new footbridge
 6. Town of Wilson Creek
 7. Ray Cornfield, Union perspective
 8. Ray Cornfield, Confederate perspective
 9. McCulloch's Headquarters near the Guinn Farmstead
 10. Guinn Farmstead and orchard exhibit
 11. Quarry on Wire Road
 12. History of the Wire Road and Iron Bridge
 13. Camp life of the southern soldier
 14. Sharp farmhouse, community perspective, slavery
 15. South Overlook at Wire Road/tree line
 16. Union field hospital site and treatment of those wounded on the battlefield
 17. First infantry contact by Lyon's Army/Cawthorn's delaying action
 18. Trail intersection, Plummer's order to ford the creek
 19. Union order of battle
 20. Medal of honor recipients
 21. Union Army order of battle
 22. Southern Army order of battle
 23. Missouri State Guard/Sterling Price
 24. Double springs/military use of Wire Road
- **Install 29 new cannon.** Cannon placed on the battlefield help visitors to understand the key positions of each army. Cannon were often located on high ground, or aimed at the enemy positioned on high ground, which constituted key terrain for the combatants. A total of 17 cannon are recommended for Union positions, and 11 for Confederate positions. Another cannon interpretive exhibit is proposed for the environs of the visitor center.

Cannon are proposed for the following locations:

Union Positions

1. Totten's First Position: Hilltop by visitor center
2. Totten's First Position: Hilltop by visitor center
3. Sokalski's First Position: North side of tour road between intersection and first bridge
4. Totten's Second Position: Bloody Hill trail
5. Totten's Second Position: Bloody Hill trail
6. Totten's Second Position: Bloody Hill trail
7. Totten's Second Position: Bloody Hill trail

8. Sokalski's Second Position: Bloody Hill trailhead
9. Sokalski's Second Position: Bloody Hill trailhead
10. DuBois' Battery: Trail spur, Bloody Hill Trail
11. DuBois' Battery: Trail spur, Bloody Hill trail
12. Backoff's First Position: Sigel's First Position, hilltop in southeast corner
13. Backoff's First Position: Sigel's First Position, hill top in southeast corner
14. Backoff's Second Position: West side of Sharp's Stubblefield
15. Backoff's Second Position: West side of Sharp's Stubblefield
16. Backoff's Third Position: Tour Road stop 5
17. Backoff's Third Position: Tour Road stop 5

Visitor center

18. Visitor Center Exhibit: Visitor center walkway

Confederate Positions

19. Reid's Battery: South end of field by Tour Road stop 3
20. Reid's Battery: South end of field by Tour Road stop 3
21. Bledsoe's Battery: Plateau west of Edward's Cabin
22. Bledsoe's Battery: Plateau west of Edward's Cabin
23. Bledsoe's Battery: Plateau west of Edward's Cabin
24. Guibor's Battery: Tour Road stop 6
25. Guibor's Battery: Tour Road stop 6
26. Guibor's Battery: Tour Road stop 6
27. Guibor's Battery: Tour Road stop 6
28. Pulaski Battery: Hilltop near Wire Road/stop 3 trail. This is an existing cannon that would be moved northeast from its present location
29. Pulaski Battery: Hilltop near Wire Road/stop 3 trail. This is an existing cannon that would be moved northeast from its present location.

- **Install 5 artillery waysides.** New wayside exhibits would be associated with several of the new artillery positions. These include the following:
 1. Totten's First Position (visitor center)
 2. Reid's Fort Smith Battery (stop 3)
 3. Sigel's/Backoff's First Position
 4. Backoff's Battery (stop 5)
 5. Bledsoe's Battery (Confederate Advance Trail)
- **Install an orchard exhibit at the Guinn House site.** This project was included in the CLR treatment plan. The orchard would be similar in design and implementation to the orchard installed at the Ray House for

interpretive purposes. *[Additional information about the Ray House orchard installation to be provided by the park to develop assumptions regarding the size and species, spacing, and planting process.]*

- **Interpret the domestic precincts of the Guinn, C.B. Manley, Sharp, Edwards, Gibson, Short, T.B. Manley, and Edgar house sites.** The CLR includes treatment recommendations for how to interpret former residential properties within the battlefield landscape that entail the use of mow patterns to delineate fields, fencelines, and building foundations. Planted features or simple posts could also be used to interpret missing features to afford a vertical element within the landscape.
- **Establish contemplative/interpretive nodes at 11 locations.** The 2003 GMP indicates the establishment of contemplative nodes at key locations on the battlefield as a goal for the park. The CLR treatment plan suggested specific locations and treatments for contemplative nodes. The 2009 LRIP expanded on the concept to include contemplative, orientation, and interpretive nodes. Eleven of these spaces, which would feature either one of the orientation signs noted above, or a cleared area with a bench, a cleared view, and a shade element such as a single deciduous tree. Contemplative nodes are sited away from the Tour Road for quiet contemplation, and afford a view to important battle event location. Interpretive nodes are often located in association with roads and tour road stops. Nodes are proposed for the following locations:
 - Manley Cemetery (contemplative)
 - Edgar Cemetery (contemplative)
 - Wire Road Bridge (contemplative)
 - Plummer's Crossing /Gibson's Mill (contemplative)
 - Pulaski Battery/Guinn Farm Orchard (contemplative)
 - Tour Stop 3 (interpretive)
 - Tour Stop 5 (interpretive)
 - Tour Stop 6 (interpretive)
 - South Overlook (contemplative)
 - Union Field Hospital location behind Bloody Hill (contemplative)
 - Sigel's First Position (contemplative)
- **Viewsheds.** Visual access to opposing army positions and features of the battlefield is important to allow visitors to understand battle events. Several key viewsheds are proposed to be established/maintained from visitor trails, Tour Road stops, and overlooks. Ten viewsheds are to be established/maintained. Several of these were also indicated in the CLR as part of the treatment plan. Clearing is addressed further in vegetation management below. The viewsheds are as follows:
 1. Orientation view from new Tour Road stop 1
 2. DuBois Battery to Ray House
 3. Pulaski Battery to DuBois/Ray Cornfield
 4. East Overlook to Bloody Hill
 5. Sigel's First to Sharps field
 6. Guibor's Battery to Totten's Battery Second Position

7. Tour Road Stop 5 to Edward's Cabin
8. Reid's Battery to Tour Road Stop 5
9. Ray House to Ray Cornfield/Bloody Hill
10. View from West Overlook Trail

Vegetation Management

- **Clear vegetation from interpreted viewsheds.** Trees that obstruct or interfere with the 10 viewshed locations noted above will be removed as part of this project. This project was included in the CLR treatment plan. The April 2014 Vegetation Management Implementation Plan indicates the effort to reestablish critical viewsheds will include the following actions:
 1. Clear 5.2 ha (12.85 acres) of Eastern red cedar woodland and forest from areas visible from three or more different observation points.
 2. Thin canopy cover of 35.9 ha (88.71 acres) of upland deciduous woodland and forest from areas visible from four or more different observation points.
 3. Clear 10.1 ha (24.96 acres) of Eastern red cedar woodland and forest from areas visible from one or two different observation points.
 4. Thin canopy cover of 27.6 ha (68.20 acres) of bottomland deciduous woodland and forest.
 5. Thin canopy cover of 92.9 ha (229.56 acres) of the remaining upland deciduous woodland and forest where views to critical elements of the battlefield would be improved.
 6. Maintain open viewsheds with prescribed burns.

[These totals will be updated to reflect the current viewshed proposals Topography will be taken into consideration in the calculation of cleared area.]

- **Install screen buffer plantings along the park boundary, around water treatment plant and proposed equestrian parking area.** Portions of the park boundary occur in close proximity to busy roads. Other parts of the boundary abut potential future residential subdivision sites. Features such as the former wastewater treatment plant are located within view of visitor use areas and should be screened. This project entails the establishment or maintenance of screen buffer plantings between visitor use areas and busy roads through the planting or retention of principally evergreen trees and shrubs that extend for approximately 100 feet. *[The proposed buffers indicated in the CLR have been amended to reflect the acquisition of adjacent parcels, and to address deer management recommendations.]*
- **Establish a 25-foot deer management zone between the park boundary and adjacent roads.** A 25-foot-wide zone should be maintained through mowing between the edge of the woodline and the park boundary fence along Elm Street (Farm Road 182) and Highway ZZ. This clear zone is intended to increase the visibility of deer to passing motorists. Establishing the clear zone will entail removal of trees and other woody growth, and maintenance through regular mowing.

- **Rehabilitate glade communities.** Glades are rare xeric habitats where bedrock is exposed on the surface and soils are very thin. They are typically treeless openings that can support an endangered plant species, the Missouri bladderpod (*Lesquerella filiformis*). The glades require an prescribed fire and other treatments to prevent becoming overgrown by Eastern red cedar trees. Several trees were mechanically removed in 2004 after the CLR was completed, but efforts to remove cedar trees has since fallen off. The recommendations in the 2004 CLR convey as part of the preferred alternative. Measurable objectives for managing glade communities are indicated in the Fire Management Plan.¹ More specific actions outlined in the 2014 Vegetation Management Implementation Plan as follows:
 1. Clear 1.6 ha (3.95 acres) of thin-soiled Eastern red cedar woodland from Bloody Hill glade and 1.2 ha (2.96 acres) from North Bloody Hill glade. Remove woody debris with a prescribed burn in two to five years.
 2. Clear 1.0 ha (2.47 acres) of thin-soiled Eastern red cedar woodland from Walnut glade and 0.4 ha of Eastern red cedar woodland and forest from Wire Road glade. Remove woody debris with a prescribed burn in two to five years.
 3. Clear 4.2 ha (10.38 acres) of thin-soiled Eastern red cedar woodland from Manley glade. Remove woody debris with a prescribed burn in two to five years.
 4. Thin canopy cover of 3.5 ha (8.65 acres) of upland deciduous woodland and forest on Bloody Hill glade and 3.4 ha (8.40 acres) on North Bloody Hill glade.
 5. Thin canopy cover of 2.6 ha (6.42 acres) of upland deciduous woodland and forest on Wire Road glade and 0.9 ha (2.22 acres) on Walnut glade. Also, thin canopy cover of 0.6 ha (1.48 acres) of bottomland deciduous woodland and forest on Manley glade and <0.1 ha (0.25 acres) on Terrell Creek glade.
 6. Thin canopy cover of 3.2 ha (7.91 acres) of upland deciduous woodland and forest on Manley glade.
 7. Maintain glade communities with prescribed burns. Work with the Missouri Department of Conservation to address the specific needs of the endangered Missouri bladderpod in terms of the season in which to burn, and the frequency of burning.
- **Rehabilitate savanna and open mixed forest communities.** Savannas were one of the key vegetation communities present within southwest Missouri at the time of European-American settlement. They were open-grown woodlands with an understory of native grassland communities. Present-day mixed forests are typically post-agricultural successional communities, that were formerly savanna communities and have been impacted by fire suppression, grazing, and cultivation. The reestablishment of savanna and grassland communities at Wilson's Creek was recommended in the CLR as a way to recall the historic landscape that had not yet been plowed at the time of the Civil War battle, and to enhance views of the battlefield for visitors. The recommendations for managing current areas of open mixed forest to promote savanna included in the CLR convey as part of the preferred alternative, with specific actions indicated in the 2014 Vegetation Management Implementation Plan included as follows:
 1. Maintain recently opened, open, and/or thinned woodlands with prescribed burns, mowing, and/or chemical treatments. Burn, mow, and/or use chemical treatments to promote native

¹ Fire Management Plan, 1-9.

grasses and forbs. Areas infested with invasive species that may be difficult to manage could be treated through the limited use of grazing by goats.

2. Assess all open and thinned areas for the quality of the native herbaceous vegetation present, and subsidies areas lacking an acceptable native herbaceous vegetation component.
3. Convert 77 ha of non-native ruderal grassland to native herbaceous vegetation.

This approach is recommended for the parcels that have been added to the park since 2004, with the exception of the General Sweeny's Museum parcel.

- **Cultural vegetation.** Cultural vegetation, such as the Osage orange hedgerow, the groves of trees associated with the Edgar and Manley cemeteries, and the sugar maple trees near tour stop 5, should continue to be retained and protected as indicated in the 2004 CLR.
- **Mown/cultivated areas.** There are several areas of the park that are maintained in fescue or other pasture grass cover through mowing, or in cultivated crop exhibits either in house, or through local farmers who have entered into a lease agreement with the park. Current management practices associated with these areas should continue.
- **Restored prairie areas.** Several areas within the park have been managed for several decades to promote prairie plant communities. The largest remaining areas of prairie restoration are located in the northwestern corner of the park. The composition of the restoration areas is primarily graminoid, although forbs are also present. Prescribed fire is an important management tool, as is invasive species control efforts. Current park management strategies for these areas are recommended to continue as part of the preferred alternative.
- **Manley Woods.** The 2004 CLR recommends preservation and protection of the Manley Woods community. The recommendations included in the CLR convey as part of the preferred alternative.

Infrastructure

- **Relocate the high-tension electrical lines underground or outside of the park.** This recommendation was included in the CLR. Since the CLR was completed, the existing line has been upgraded. Relocation of the line outside of the park is not likely to occur due to the orientation of the line. Placing the line underground, which would require extensive archeological investigations and mitigation, remains an option, if not a very low priority for park funding.

Deer Management

- **Institute a program that diminishes deer populations within the park to 20 per square mile.** The deer management project will entail depredation of existing populations to reduce the number to the state's carrying capacity figure of 20 individuals per square mile. Currently, it is estimated that there are as many as 300 per square mile living within the park. It is anticipated to take three years of active depredation to adequately reduce the population, and then a regular bi-

annual depredation effort. The park will partner with the Missouri Department of Conservation to conduct the appropriate efforts.

Water Resources

- **Restore watershed.** The 2004 CLR recommends that the park actively address stormwater management on site, and recommend to upstream neighbors that they do the same. Goals for stormwater management are to increase direct infiltration of stormwater flow into the ground for recharge and to reduce erosion by establishing riparian buffers to diminish the flow of silt into streams, and establishing filter strips along roads and parking areas that similarly slow and detain stormwater flow and increase infiltration into the ground. The CLR recommends potentially establishing small water detention systems as a way to increase infiltration. The recommendations included in the CLR convey as part of the preferred alternative.
- **Establish riparian buffers along stream corridors.** Riparian buffers are bands of trees, shrubs, and grasses along water courses that detain and slow water moving overland toward the water course. Riparian buffers exist to a degree along Wilson's Creek. Where they do not currently exist, they can be established by diminishing mowing and allowing woody plants and grasses to occupy the banks of the stream. The exception would be where directed views need to be maintained through clearing. In these locations, mechanical removal of woody trees and shrubs is required. The recommendations included in the CLR convey as part of the preferred alternative.
- **Establish filter strips along roads and parking areas.** Filter strips and vegetated swales will be established along the downhill margins of all roads and parking areas to capture runoff, slow the water, and increase infiltration.