

Greater Observatory Mesa Area Trail Plan

2025



City of Flagstaff Open Space Program

Table of Contents

<u>Executive Summary</u>	3
<u>Section I: The Value of Flagstaff Trails</u>	5
<u>Section II: Background Information</u>	6
<u>A. Goals & Objectives</u>	6
<u>B. GOMA Land Management Partners</u>	9
<u>C. Community Interest</u>	10
<u>D. Community Engagement</u>	11
<u>Priority Trail System—Map</u>	15
<u>Section III: Priority Implementation</u>	16
<u>A. Trail Integration & Construction</u>	16
<u>B. Trail Management</u>	16
<u>C. Messaging for Trail Users</u>	17
<u>D. Trailheads & Other Access Points</u>	17
<u>E. Restoration/Adoption—Roads & Trails</u>	19
<u>F. Trail System Implementation</u>	20
<u>Implementation Plan: Priority 1</u>	21
<u>Implementation Plan: Priority 2</u>	25
<u>Implementation Plan: Priority 3</u>	30
<u>Long Term Planning</u>	33
<u>Appendix A: Current Conditions</u>	39
<u>Appendix B: Development of Trail Plan</u>	49
<u>Appendix C: Sustainable Trails</u>	60
<u>Resources</u>	64
<u>References</u>	65

Executive Summary

Background

The Observatory Mesa Natural Area (OMNA) is beloved by the community for its natural beauty and recreational value. The community's passion for our natural areas, combined with OMNA's close proximity to downtown Flagstaff and twelve adjacent neighborhoods, has resulted in high use in the area, including unauthorized uses and associated impacts. The desire to address these impacts while providing diverse recreational experiences in the area motivated the creation of the Greater Observatory Mesa Area (GOMA) Trail Plan. The GOMA planning area is approximately 4,000 acres, generally bounded by the mesa's slopes on the south and east, and OMNA boundaries on the north and west sides. The three landowners in this area, the City of Flagstaff, U.S. Forest Service, and Lowell Observatory are partners in this Trail Plan.

The documented need for a formal trail system in GOMA guided the purpose of this plan. Planned management actions identified in the *Management Policies for Legally-Designated Open Space Properties* (2020) direct managers to "Establish a Trail System Plan for OMNA, in partnership with adjacent landowners, state/federal agencies, local organizations, and other stakeholders." (page 71). The community's interest in the property is also well documented from the 2004 voter-approved bond initiative that allowed for the property's purchase, the 2017-2018 Flagstaff Trails Initiative identifying planning on Observatory Mesa as a priority, and the over 3,000 individual comments received during this planning process.

Purpose and Goals

The purpose of the GOMA Trail Plan is to establish a formal, managed trail system that aligns with Flagstaff Open Space Program, Coconino National Forest, and Lowell Observatory management policies and reflects community desires to provide a balanced trail system on Observatory Mesa Natural Area and surrounding Forest Service lands.

Our goal is to create a well-managed trail system with wayfinding signage and sustainable alignments that protects cultural and natural resources and provides a variety of quality outdoor recreation experiences for the community. Based on robust public input and assessment, the plan identifies a non-motorized trail system with sustainable alignments, updated signage, and increased access and parking. Additional details ensure healthy wildlife habitats and cultural resource protections by establishing ecological zones, restoring unsustainable unauthorized trails, and closing abandoned roads to reduce motorized impacts.

Plan contents

The plan includes a three-phase approach for priority implementation and a section for long term strategies. The plan's priorities include conceptual alignments that provide a range of outdoor recreation experiences, management guidelines for the final completed trail system, and recommendations for the restoration of currently disturbed areas and unauthorized trails. The proposed trail system provides a higher density of trail loops near formal access

Executive Summary

points and where people use trails the most frequently, identifies longer loops for more remote experiences, and designated areas with no new trails to protect habitat and wildlife migration. All elements of the Trail Plan promote ecological conservation commensurate with the Arizona State Land Department sale and can be implemented once approved and funded.

OMNA was established via a conservation easement held by Arizona State Parks & Trails. The agreement provides that no more than 20 acres total is eligible for development (including trails) to ensure the conservation value of the property. This proposal identifies 7.8 acres for trail development within the OMNA boundary, for 39% of the total available 20 acres. When considering trail development versus road and trail restoration, the net change in recreation infrastructure on OMNA and U.S. Forest Service lands is an increase of 5.4 miles.

This proposal was created in partnership with land managers from the City of Flagstaff, Lowell Observatory, and the Coconino National Forest. The Coconino National Forest reviewed this trail plan, and the long-term intent is to establish a cross-jurisdictional agreement between the Coconino National Forest and City of Flagstaff that would permit the City to implement and maintain trails on Forest Service property. This partnership will improve trail system connectivity, leverage resources for plan implementation, and support effective cross-jurisdictional land management.

Lowell Observatory is interested in retaining undeveloped land within its property to benefit the organization and the Flagstaff community. This plan includes long-term recommendations, currently with no timeline established, for the Lowell Observatory property that can provide passive recreation opportunities and increase connectivity for the overall trail system. Additional long-term elements include utilizing railroad underpasses for trail connections and conceptual Flagstaff Urban Trail alignments which will be pursued when the timing is right for additional conversations.

The final Trail Plan will be adopted by the City of Flagstaff, reviewed by the Coconino National Forest, and considered by Lowell Observatory when appropriate and will be used to direct future management and trail implementation.

In summary, this plan proposes as priorities:

- Approximately 20 miles of additional natural-surfaced single-track trail.
- Approximately 8 miles of trails for adaptive uses.
- The addition of 2 more formal access points, which will result in a total of 8.
- Recommendations for trail signage for wayfinding, regulations, and etiquette.
- Additional parking and orientation for residents and visitors along Route 66 near the Public Works Yard and at the western boundary on Forest Road 515.
- Restoration of 4.5 miles of unauthorized trails and 10.5 miles of abandoned roads.
- Implementing two educational zones for interpretive signage for the purpose of increasing student and adult awareness of environmental, cultural, and historical significance.

Section 1: Value of Flagstaff Trails

Flagstaff is surrounded by forests, mountains, and canyons. This natural landscape is a defining element in the character of the Flagstaff community. For decades, community members and local organizations have advocated for protecting Observatory Mesa, and for good reason. Observatory Mesa is a critical tract of land for local flora and fauna and also provides human benefits through recreational opportunities, climate change resiliency, and economic prosperity via tourism.

When open space is incorporated on our blocks, in our neighborhoods, and throughout our city, the community benefits. People living in walkable neighborhoods get about 35–45 more minutes of activity per week, leading to improved health. Parks and preserves help bring people together across social, economic, and racial divides. Research shows open space has a positive impact on low-income urban communities by filling gaps in health inequalities and expanding transportation choices to give more freedom and mobility to all people. Trails also make us a more resilient community. When open space and trails are integrated into our community, they reduce negative impacts of urbanization such as traffic congestion, noise, pollutants, and infrastructure deterioration. They also help prevent changes in community character.

People experience trails in a variety of ways and time in nature is rejuvenating for many of us. Trails physically connect us to natural landscapes and ecosystems, this connection reminds us of our relationships with the world beyond built environments. Trails are our managed zone of human impact on a natural area, limiting our collective imprint while thoughtfully providing experiences for all users. Time with friends and family, peace and solitude, quiet and contemplation, education and study, exercise, sense of discovery and adventure, joy—this incomplete list of why people use trails illustrates the opportunities presented to the community and the opportunities a well-managed trail system provides.

Access to trails is one of the key reasons people visit the Flagstaff community. The recent *Economic Value of Trails in Arizona (2020)* survey found that over 83% of non-motorized trail users consider trails when deciding where to visit (p. 42). Approximately 56% of in-state travelers visiting Coconino County travel to Flagstaff to recreate outdoors (p.67-68).

As trail use increases in the Flagstaff area, responsible land management can ensure that the landscape is protected while allowing for the enjoyment of unique outdoor experiences and opportunities. Observatory Mesa, filling the skyline immediately west of downtown Flagstaff, is situated in an ideal location to provide thoughtful trail use, wildlife viewing, and environmental education close to home while protecting the natural landscape.

Section 2: Background Information

This proposal was developed to comply with policies ([see references](#)) of the City of Flagstaff and its partners. The plan strives to be consistent with the preservation of natural and cultural resources while providing quality and diverse user experiences for long-term land management for all who enjoy Observatory Mesa.

The proximity to downtown Flagstaff and twelve neighborhoods provides quality access to the entire community. The growing number of unauthorized and user created trails is adding to environmental impacts and is evidence of unmet desires in the current trail opportunities. Trail counters along formal trails in GOMA show use has steadily increased over time and land managers are committed to managing this natural area for the health of the ecosystem and the people who use it, now and into the future. Balancing conservation and resource protection with a high-quality trail system is needed to mitigate impact and conserve this important natural resource. Trails that are sustainably aligned and constructed while providing the range of experiences trail users seek to encourage use along approved corridors and reduce overall impacts to GOMA.

A. Plan Goals and Objectives

The objectives of this plan seek to align the proposed elements with the needs identified by the community and land managers and balance the interests expressed throughout the community engagement efforts.

Goal: Design a trail plan for GOMA based on community feedback and input, guiding policy, and best practices of sustainable trail design.

Goal: Reduce the impacts of motorized use in the GOMA area and work toward a non-motorized trail system.

Objectives:

- Identify motorized incursion and non-system roads.
- Partner with land managers to implement resource impact mitigation throughout the planning area.

Goal: Address unsustainable and unauthorized trails to improve environmental conditions in GOMA.

Objectives:

- Assess and document unauthorized trails.
- Review each trail for sustainability and consider for adoption.

- Define trail obliteration locations where trails are deemed unsustainable.

Goal: Increase local access to the formal trail system to advance the '[10 minutes walking distance to open space](#)' goal of the City of Flagstaff.

Objectives:

- Identify potential new access points for inclusion in the trail system based on location feasibility (e.g., traffic implications, rights of ways, parking) and community input.

Goal: Design a sustainable trail system that addresses impacts of unauthorized recreation and balances allowed user experiences with open space conservation.

Objectives:

- Request, consider, and incorporate community feedback to balance community desires for outdoor recreation and resource protection.
- Design trails to align with best practices for sustainable trail design.

Goal: Provide a variety of experiences to accommodate the desires of the community.

Objectives:

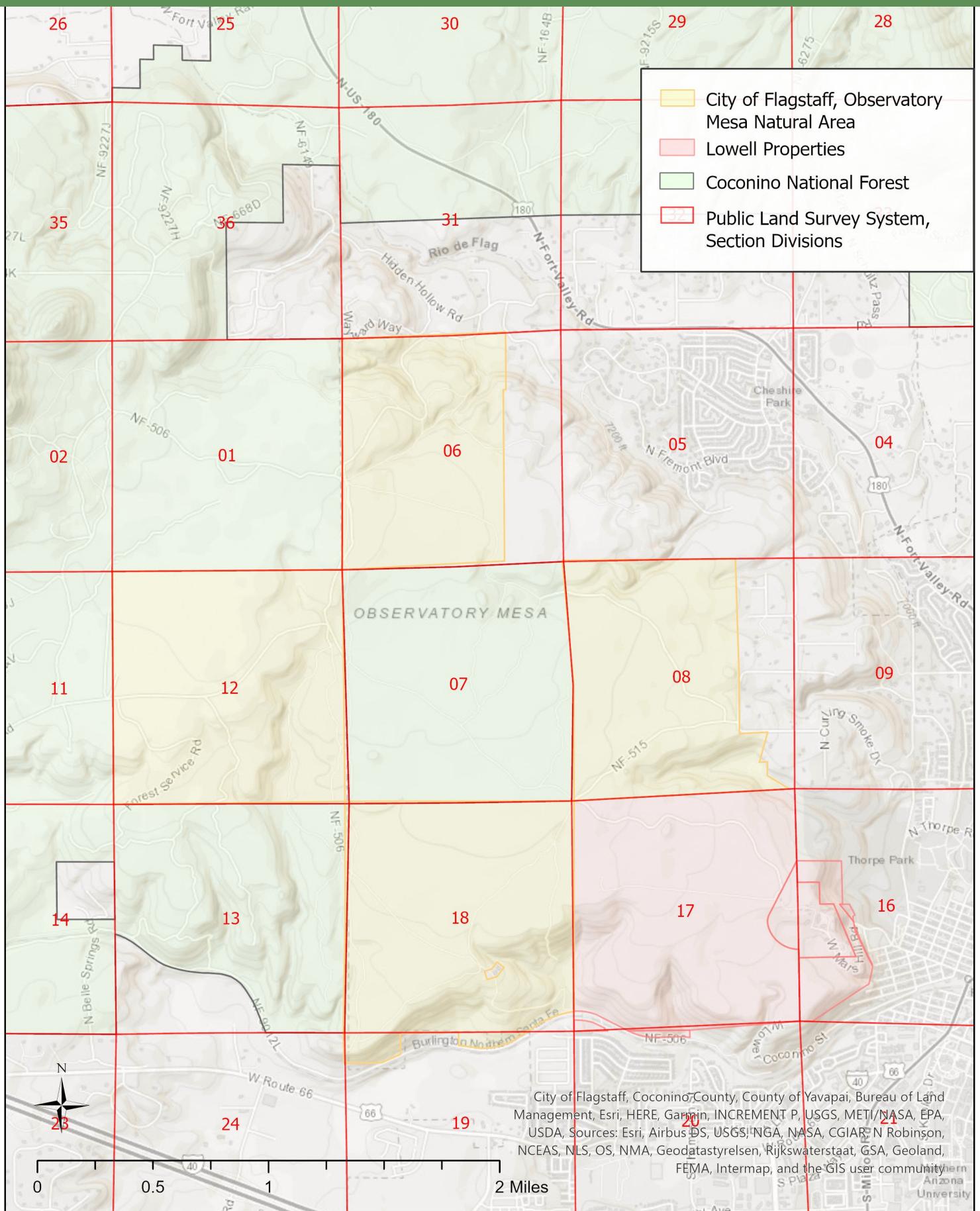
- Solicit community input for trail types, locations, and desired experiences.
- Provide diverse trail experiences in terms of intended recreation use, level of difficulty, and length.

Goal: Improve safety and wayfinding with increased signage and information for the formal trail system.

Objectives:

- Identify wayfinding information, messaging, and locations for trail signage to reduce confusion and inform the public on formal trails, legal requirements, and etiquette.
- Trail sign formatting will adhere to Flagstaff Urban Trail System (FUTS) standards

GOMA Land Ownership



B. GOMA land management partners

GOMA has a checkerboard configuration of land ownership and the multi-jurisdictional partnership allows for trail alignments to be placed on good terrain for sustainable trails and designed for user experiences based on the Mesa's geography and not be limited to property boundaries. The planning area exists in Township 21N 6E, Sections 1, 12, and 13, and Township 21N 7E, Sections 6, 7, 8, 17, and 18. The Fort Valley Connector trail (trail 5.12) extends north onto Townships 22N 6E (Section 36) and Township 22N 7E (Section 31) on Forest Service lands to join the Fort Valley trail system north of Highway 180.

Observatory Mesa Natural Area, City of Flagstaff

Bond initiative funds approved by voters in 2004 provided a match for an Arizona State Parks Growing Smarter grant in 2013. This strategy financed the acquisition of the Observatory Mesa Natural Area (OMNA). The Arizona State Land Department agreed to sell the 2,251 acres (Sections 6, 8, 12, 18) that now make up the area, recognizing that the property is vital to preserving environmental and community health. Because grant funds were utilized to purchase the acreage, the grant agreement bestowed Arizona State Parks a conservation easement over the property that requires the acreage to be retained forever in predominantly the condition reflected in the baseline documentation when it was purchased. The easement also includes the right to engage in and permit engagement in recreational uses of the property, including hiking, trail running, cycling, other forms of passive recreation, and educational and scientific study activities. The City's Open Space Management Plan reiterates the importance of preserving the unique conservation values associated with the property, including open space value, unique scenic beauty, native vegetation communities, diverse wildlife habitats, and cultural resources. Observatory Mesa Natural Area is a day-use area, and overnight uses, including camping, are strictly prohibited. Except for authorized use, motorized vehicles are not permitted, and therefore, planning recommendations are solely for passive recreation. A broad array of recreational day activities are currently available on the property, including hiking, bicycling, horseback riding, cross-country skiing, and snowshoeing.

Lowell Observatory

Lowell Observatory was established in 1894 by Percival Lowell. The Observatory is privately owned and operated, Section 17 being deeded to Lowell in 1910 by an Act from Congress. Though the primary mission of Lowell Observatory is to pursue the study of astronomy and provide astronomical educational opportunities to the public, the Observatory has always generously permitted walkers and bikers to enjoy their property. In the early 1990's, Lowell Observatory granted the City of Flagstaff an easement for the Mars Hill Flagstaff Urban Trail segment which runs from Thorpe Park through the northern part of Lowell Observatory's Property. The Observatory is also interested in retaining substantial undeveloped space to benefit its campus and the community. With this goal, Lowell Observatory is working with the City to dedicate the Lowell Observatory Trail System through a long-term process on the privately owned Section 17 that would complement their campus. The Observatory supports this trail plan proposal.

Because Section 17 is the Observatory's private property, Lowell cannot guarantee any trail recommendations in this report to be a permanent improvement of the property. At this time, outdoor recreation and experiential education recommendations in this report are flexible, with changes to any of the trail recommendations possible and dependent on future management and implementation of Section 17 and Lowell Properties.

Coconino National Forest

Conceptual trail alignments are visualized on Sections 1, 7, 13, 31, and 36, and comprise 13 of the 18.5 miles of new trails proposed. The Coconino National Forest's 2018 Forest, Land, and Resource Management Plan (Forest Plan) provides direction for the management of the forest surrounding Flagstaff. The Forest Plan provides integrated multiple-use and sustained yield of goods and services from the forest to maximize the long-term net public benefits in an environmentally sound manner. Following Forest Service directives, the Coconino National Forest Service is interested in supporting the City by reviewing the feasibility of this trail plan proposal and considering the plan's approval. Upon approval, the Forest Service would conduct a cultural and environmental analysis as required by the National Environmental Policy Act (NEPA) and then potentially issue a special use permit to the City to construct and maintain trails across jurisdictional boundaries to provide the best recreational benefits to the public. The Forest Service will also consider management options such as limiting motorized vehicle access for the Forest's section 7 (the section at the center of OMNA) to help support non-motorized recreation opportunities.

Greater Observatory Mesa Partners:



C. Community Interest

A bond initiative was approved by voters in 2004 to help provide funds to acquire Observatory Mesa Natural Area. In 2013, those funds supported an Arizona State Parks Growing Smarter grant as match to purchase 2,251 acres "for the express purpose of preserving the unique conservation values associated with these properties, specifically their open space value, unique scenic beauty, native vegetation communities, diverse wildlife habitats and historical/cultural resource". CFOSP,2017,p.6). The community's support for the 2004 bond fund is a testament that Observatory Mesa is an important open space area for the entire community, in addition to serving as a "neighborwoods" for downtown Flagstaff and nearby neighborhoods. This trail plan proposal supports the bond approved by voters and fulfills the City's commitment to provide community access to open space.

Since the purchase and preservation of Observatory Mesa Natural Area, the community routinely inquires about when a trail system will be planned and implemented. The Flagstaff Trails Initiative (FTI) (2018/2019 collaborative process) completed a public survey to gain public feedback on Flagstaff trails to develop their broader trail planning strategy. Over 1,700 public comments were compiled and evaluated to better understand the public's relationship to outdoor recreation in Flagstaff. FTI prioritized the regional public comments using a set of criteria developed to reflect the objectives of the regional trail strategy. Of the 77 recommendations for regional trail improvements, Observatory Mesa was the focus of six of those recommendations, including:

- Construct a new stacked loop system on Observatory Mesa accessible from downtown Flagstaff and Thorpe Park to help address local demand and reduce unauthorized trails. (priority - high)
- Connect Fort Valley and Observatory Mesa to help link two popular areas. (priority - high)
- Adopt unauthorized trails on Lowell Observatory property as part of Observatory Mesa system improvement. (priority - high)
- Evaluate unauthorized trails on Observatory Mesa for review and inclusion or closure and restoration to reduce impacts and redundancy. (priority - high)
- Connect Fort Valley to the Flagstaff Urban Trail System (FUTS) with a commuter route on Observatory Mesa that partially uses existing roads. (priority - medium)

The high level of interest in Observatory Mesa as expressed by public comments and prioritized recommendations validates the formal planning efforts underway. The community of Flagstaff values Observatory Mesa as an asset to the quality of life of its residents and the enjoyment of its visitors. Detailed information on the Regional Trail Strategy, interactive maps, and a complete list of public comments and prioritization criteria can be found at: <http://flagstafftrailsinitiative.org/>

D. Community Engagement in the Planning Process

The City of Flagstaff Parks and Recreation, Open Space, and Events (PROSE) Division contracted with [Southwest Decision Resources](#) to design and facilitate a public engagement process for the [Greater Observatory Mesa Trail planning](#) efforts. Public engagement has been designed in three phases which are detailed below:

Phase 1 Public Engagement: June - July 2022

Public meeting: PROSE hosted a public meeting on Wednesday, June 29th, from 5:00 to 7:00 PM, both virtually (via Microsoft Teams) and in person at Flagstaff City Hall, to receive public input regarding the first draft of the Greater Observatory Mesa Trail Plan. The results of this public meeting were synthesized and are available [here](#).

Public forum: The online survey for public comments was open over a 60 day period. Comments were processed and evaluated for plan improvements and are available [here](#).

Phase 2 Public Engagement: May - July 2023

Phase two outreach to stakeholders and public engagement resulted in 2,913 individual topical comments considered. Each comment was grouped into common themes for consideration.

Themes were compiled and reviewed to understand public sentiment regarding general impressions, place-based recommendations, and responses to specific questions asked. The synthesis of these comments is detailed [here](#), and the online community forum results are [here](#).

Stakeholder meetings: Prior to the 40-day public comment period (May 2023), 35 identified stakeholder groups were contacted to discuss updates to the draft trail plan.

Stakeholder groups included:

- City of Flagstaff commissions
- Homeowners Associations adjacent to Observatory Mesa Natural Area properties
- Local environmental organizations
- Local outdoor recreation organizations
- Federal, state, and local land management agencies

Sixteen meetings were held with stakeholder groups to discuss recommendations for the draft plan and four formal comment letters were received resulting in 42 individual comments.

Public meeting: The second public meeting was held on June 14th, 2023 from 5:00-7:00 pm at the Flagstaff Aquaplex to receive public input regarding the second draft of the plan. There were 35 participants (not including City Staff or volunteers), and a total of 104 comments were received.

Phase 3 Community Engagement: August 2024 - October 2024

In the final phase of community engagement, PROSE presented the Trail Plan draft based on the robust input received from previous community engagement and consultation with key partners, relevant land managers, and relevant commissions. A total of 442 individuals responded to either the online survey or attended the public meeting, producing 302 open-ended comments.

The third public meeting was held to discuss the trail planning process and the resulting Trail Plan on September 19, 2024, attended by 115 members of the community. The synthesis of these comments is detailed [here](#).



Tribal engagement

In addition to community outreach and engagement; environmental, cultural preservation, and archeological staff from ten tribal governments were contacted for comments, including:

Fort McDowell Yavapai Nation

San Carlos Apache Tribe

Havasupai Tribe

Tonto Apache Tribe

Hopi Tribe

White Mountain Apache Tribe

Hualapai Tribe

Yavapai-Apache Nation

Navajo Nation

Yavapai-Prescott Indian Tribe

Incorporating feedback into the plan

Several changes to the proposed trail system have been made based on input received throughout the planning process, including feedback from land managers, stakeholders, commissions, and the community. Significant areas of feedback and change are detailed below.

Conservation and habitat protection

Some stakeholders and community members expressed their desire to protect the landscape and important habitat zones on Observatory Mesa (e.g., habitat for Northern Goshawk or migration routes for pronghorn and elk). In order to reduce the impact of a Trail system on the landscape and habitat as well as known cultural resources on the landscape, several measures were taken:

- The buffer separating trail alignments and springs was increased from 500 feet to 1,320 feet.
- Trail concepts were removed that were near known seeps in Sections 7 and 12.
- Increased buffer from 250 to 500 feet between trail concepts and archeological sites and stock tanks which meets or exceeds recommended distances.
- The overall trail mileage was reduced by 17% to provide more unbroken habitat areas.

Based on these community-recommended changes, neither the Arizona Game and Fish Department nor the Coconino National Forest expressed concerns about the proposed trail plan's impact on habitat.

Access and trail location near residential neighborhoods

Additional access points to the area have been identified through the trail planning process to enhance walkability and access for several neighborhoods that are lacking. Some community members expressed concerns that creating new access, putting existing access points on a map, or creating new trails adjacent to their homes would bring additional traffic to their area and would potentially lead to inappropriate use of the area (e.g., becoming lost on private property due to close trail proximity). To address these concerns, proposed trails were moved further away from private property and, to the extent possible, used the existing geography to separate private property from the view of trails. Where access points are included on the map, clear language has been added to clarify where parking is available or not. Furthermore, two larger access locations have been identified away from private property (on Forest Road 515 and at the Public Works Yard on West Route 66), and the public will be encouraged to park their vehicles there. Some access points were removed from consideration entirely due to their location on private property and lack of community support to provide an easement. In order to provide clear guidance to the public about trail and access locations as well as appropriate behavior in the area, the Trail Plan includes the proposed addition of improving wayfinding and information signage throughout the area.

Providing diverse recreation opportunities

Many stakeholders and community members recognized the value of Observatory Mesa as a recreational area close to town. Many different recreational user types expressed that they currently or would desire to use the area for recreational experiences including equestrian, hiking, dog walking, mountain biking, cross-country skiing, snowshoeing, and e-biking. Though some expressed a desire for single-use (e.g., hiking only, mountain biking only) trails to reduce user conflict, in order to provide adequate access for all user types, the City of Flagstaff has determined to designate all trails in the Trail Plan as multi-use. Existing motorized alignments within the area will permit the use of e-bikes. Motorized travel in the planning area is limited to roads identified as open per the Coconino National Forest's Travel Management Rule.

Stakeholders and the community also expressed a wide range of desires for diverse recreational experiences. Many highlighted opportunities in the area for more accessible trail design and for differing levels of trail length and difficulty. To accommodate varying trail lengths, several loops of varying lengths have been identified in the priority planning area for OMNA and USFS lands:

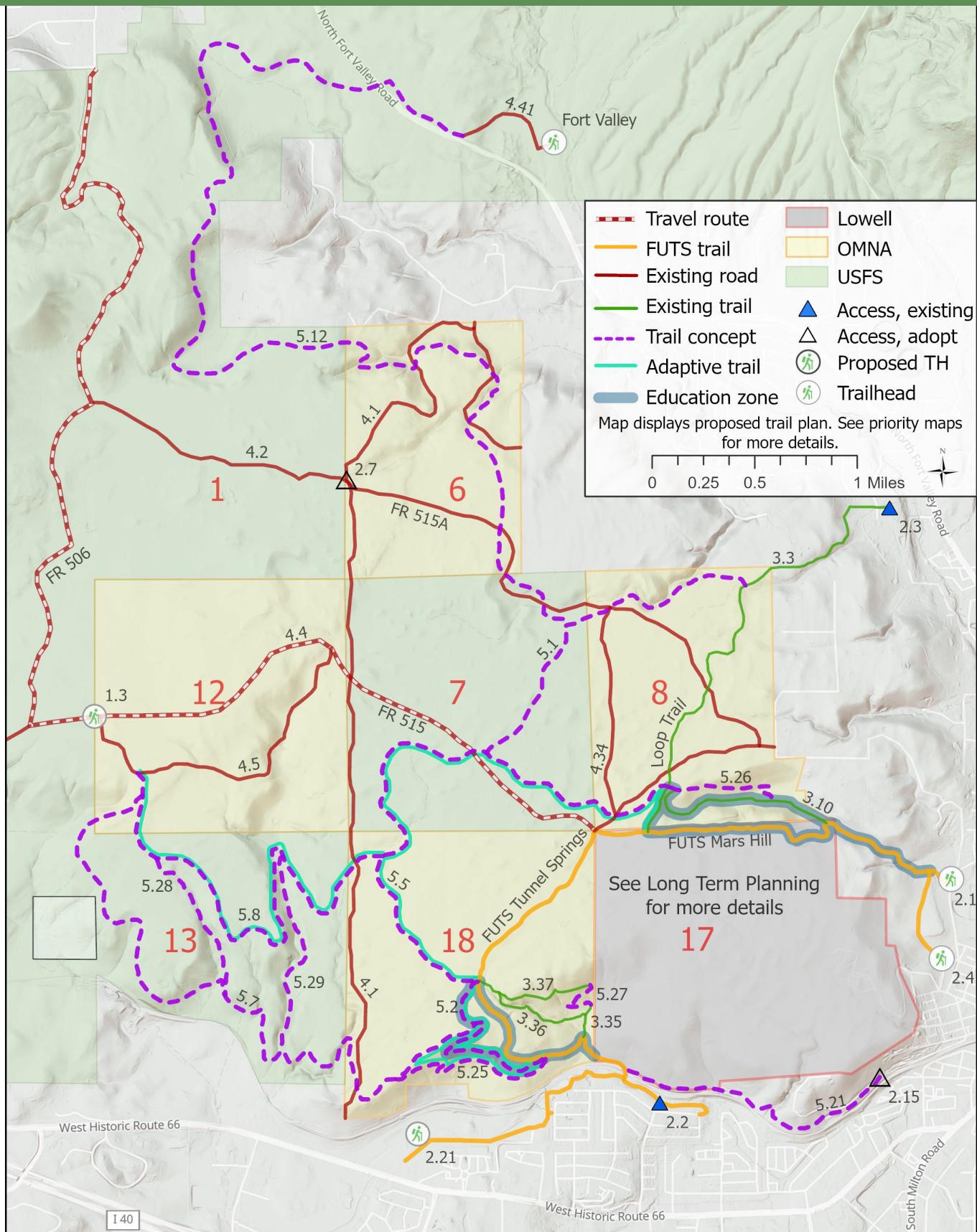
- 2-4 mile loops: 4
- 4-8 mile loops: 6
- 8+ mile loops: 4

To provide more accessibility in the trail system, several trails have been proposed to meet adaptive mountain biking trail design standards (e.g., 40-inch width, special considerations for obstacles that could topple an adaptive bike). Some expressed that they prefer utilizing the wider abandoned roadbeds for recreation over creating new single-track trails (to reduce the impact of new trail construction, to allow for walking or biking side-by-side, or to allow for adaptive mountain biking), so several of those roadbeds have been kept in the proposed trail system.

Many mountain bikers have a strong interest in this area and stated their preference for a diversity of trail difficulties and the inclusion of mountain biking features on some trails in the area. Such features could include berms, sloping at strategic locations to improve tire traction, establishing pronounced undulations such as rollers, and other features that change trail elevation for more fun, skills progression, and trail drainage. To meet those desires while maintaining a balance of use, all trails will be maintained as multi-use trails and will be accessible all allowed forms of recreation. However, four trails, IDs 5.25, 5.26, 5.28, and 5.29 will include mountain biking features and be designed to provide a range of experiences and difficulty levels. These features will not impede the walkability of the trail, and signage will be included in the trail system to set expectations and alert mountain bikers and non-mountain bikers to the presence of each other.

The City of Flagstaff is grateful for the robust engagement from land managers, stakeholders, commission members, and the community. This engagement has improved the proposed trail system to balances diverse community interests while also prioritizing the protection of open space. The proposal detailed in the remainder of this report will allow for a well-managed trail system that maintains sustainable and diverse uses of the area for generations to come.

Priority Trail System



Section 3: Priority Implementation

This section of the plan describes proposed trail construction, trailhead and parking projects, and restoration efforts for non-system or unauthorized trails and roads. The implementation of this integrated trail system will protect sensitive environmental and cultural resources, reduce unauthorized and impactful activities in the GOMA, and facilitate passive recreation opportunities to support community health and outdoor experiences.

A. Trail Integration and Construction

A field survey of existing trails and roads (both authorized and unauthorized) in GOMA identified a number of existing unauthorized trails and roads that are being recommended for integration into the formal trail system (see Appendix A). These segments provide increased connectivity and different loop options within the planning area. This plan also proposes the construction of 12 segments of new trail that further increase connectivity and provide additional experiences for trail users. The total mileage of adopted unauthorized trails into the system is 1.95 miles (not including long-term planning elements), and the total mileage of new trail construction is 19.93 miles. This will increase the trail mileage of the system from its current 5.27 miles to a new total of 27.15 miles on OMNA and Forest Service lands. Unless otherwise noted, new trails are being proposed for 24-inch width and natural surface. Motorized vehicles are not allowed within the planning area.

B. Trail Management

Allowed uses

This plan proposes all roads and trails to allow passive, multi-use activities. Hiking, trail running, horseback riding, and mountain biking are allowed uses on all trails throughout the GOMA area (horses are not allowed on the FUTS trail system).



Allowed use stickers will be placed on kiosks and trail junction signs.

E-bikes will be limited to use on existing motorized alignments within the planning area. The Open Space program will work with Coconino County to ensure consistency in trail management in OMNA in a way that aligns with this plan's goals. E-motorcycles are not allowed on natural surface or FUTS trails.

Trail use directionality

The trail system will be multi-use and bi-directional. Each trail will be open to all allowed uses traveling in either direction.

Adaptive mountain biking

Trail loops for adaptive mountain biking (aMTB) are identified to be constructed at 40" in width with associated signage included at trailheads and on relevant trail signposts within the GOMA area. Seven miles of new trails are proposed for aMTB use with opportunities to expand mileage via FUTS trails and adopted roads.



Example of trail signage for adaptive mountain bike trails

Intended user experience

Trail and road alignments create a variety of loops to provide a range of desirable experiences for hikers, runners, mountain bikers, and equestrians. Loop lengths, access to interesting terrain and viewsheds, and connectivity were considered throughout the planning area for allowed uses. See appendix C for more information.

Four trails (5.25, 5.26, 5.28, 5.29) will be designed and constructed to provide intentional experiences for biking while remaining open to all allowed uses. Both trails are near access points and will provide opportunities for bikers with beginner and moderate skill levels not currently available in the GOMA planning area.

C. Messaging for Trail Users

Trailhead kiosks installed as part of this plan will include maps of the trail system and messaging related to resource protection and proper trail etiquette. Potential messaging elements include:

- Right of way (uphill, user types)
- Respectful passing
- Maintaining safe speeds
- Show kindness for all users
- Keep dogs on leash and clean up after your pet
- Stay on trail to prevent environmental damage
- Do not startle wildlife
- Respect trail closures and restoration efforts

D. Trailheads and Other Access Points

This plan proposes that a City-owned parcel (ID 2.21 - Priority Trail System map) near the current Public Works Yard on Old Route 66, provide space for a new dedicated trailhead to access GOMA from the south. Current access at the southern boundary of OMNA does not have dedicated parking for trail users. Once implemented, this trailhead can serve and be advertised as the primary access point for trail use. Vehicle access to this area would not require travel on residential streets and would reduce potential conflicts between residents and trail users. The trailhead is proposed on City of Flagstaff property but is not within the OMNA boundary, with the added benefit of ensuring that the conservation easement held on Observatory Mesa Natural Area is upheld to "Limit development to not exceed 10% (or up to 20 acres) of the property" (City of Flagstaff Open Space Program, 2017, p.28).

Proposed future amenities include accessible bathrooms and parking spaces, educational kiosks and orientation, a bike maintenance station, and recycling and trash service.

The addition of a bladed parking area at the western boundary between Coconino National Forest Service land and OMNA (accessed from I-40 and A-1 road and Forest Service Road 515) will provide equestrian parking and access for those that approach GOMA from the west. Unauthorized parking is already occurring at this location, and the open and flat terrain is suitable for conversion into a bladed parking area for dedicated access. Since this location is within the Woody Ridge wildlife corridor, this proposal would only suggest adding a small number of designated spaces so that increased traffic is minimal.

The only existing formal parking area for Observatory Mesa is the Thorpe Park ball field parking lot, which also provides parking for the Thorpe Dog Park. Parking at the ball fields and dog park is adequate for trailhead use, but scheduled sporting events fill up available spaces and greatly reduce available parking for trail access. The only change this plan proposes for this parking area is the addition of signage to guide users to the appropriate trail access.

It is important to note that the City of Flagstaff performed an open space access analysis in 2018 in an effort to determine where improvements are needed to meet the City's goal of providing a 10-minute (1/4 mile) walking time to access open space from residents' front doors. While the above additions help improve access to some of the GOMA, the railroad line at the southern boundary and private lands bordering the focus area are challenges that restrict adding additional access to a few locations. Private Property to the east and north of the focus area also limit new points for access along that corridor. Authorized access points proposed will not provide public parking areas.

Series ID	Existing Access Description	Access Retention Proposal
1.1 Trail Head	Thorpe Park ball field parking lot located on N Thorpe Rd, Flagstaff.	Continue to permit use. Improve signage from parking.
1.2 Trail Head	Joe C. Montoya Community & Senior Center. (245 N Thorpe Rd, Flagstaff). This parking serves the senior center. It provides some parking for trail users.	Continue to permit use. Improve signage from parking area.
2.1 Access	Mars Hill FUTS pedestrian access. N Thorpe Rd, Flagstaff. Near Thorpe Park ball field parking lot.	Maintain existing access point. Install trail kiosk.
2.2 Access	Tunnel Springs FUTS pedestrian access. Located in the Railroad Springs neighborhood (Railroad Spring Blvd. & Adirondack Ave., Flagstaff).	Maintain existing access point. Install trail kiosk, recommend parking at trailheads.
2.3 Access	Flagstaff Loop Trail pedestrian access. Located in the Anasazi Ridge neighborhood (N Tillie Ln.).	Maintain existing access point. Install trail kiosk.
2.4 Access	Mars Hill FUTS pedestrian access. At Joe C. Montoya Community & Senior Center. (245 N Thorpe Rd).	Maintain existing access point.

E. Restoration or Adoption of Trails and Road Beds

The GOMA contains approximately 24 miles of unauthorized trails and informal roads. The long-term plan proposes to restore and naturalize approximately 14 of these miles.

Existing road and trail alignments were evaluated for their location, system connectivity, sustainability and condition, and value to the community (see Appendix C for more information). Alignments included for adoption met the following criteria:

- Are not located in sensitive environmental areas
- Are not located near cultural resources
- Are maintainable with respect to alignment, tread stability, and potential for new or improved drainage
- Are meeting un-met desires of the community for outdoor recreation in GOMA per community comments

Where identified, trail and road restoration efforts are recommended to restore the original environment by de-compacting travel ways, performing slope recovery to remove the physical benches, replacing organics to encourage moisture retention and seed propagation, and implementing signage to inform trail users of closure areas. For purposes of this report, only Road IDs 4.5 and 4.34 are not currently administrative roads and are proposed for adoption and maintenance.

The Fort Valley Connector (Recommendation #47 of the Flagstaff Trails Initiative's *Regional Strategy*, 2019) identifies a roadbed connection between the Fort Valley neighborhood and downtown, passing through the GOMA area. General maintenance on identified roadbeds is recommended for OMNA and USFS lands with signage for the commuter route. The commuter route will remain natural surface with drainage and surface improvements being the primary recommended efforts.

Trail & Road Bed Totals: Priority Proposed Trail System

Road/Trail Type	Mileage to Maintain	Mileage to Adopt/Maintain	Mileage to Decommission	Total Mileage
Existing Authorized Trails	5.27			5.27
Existing Unauthorized Trails		1.95	4.23	6.18
New Trail Construction				19.93
Existing Road Beds	12.35	1.27	10.46	24.08
Total Proposed Roads & Trails				40.77
Total Roads & Trails for Decommissioning				14.69

F. Trail System Implementation

The prioritized trail system improvements detailed on the following pages follow these implementation guidelines. Implementation plans will require ground-truthed trail corridors and approvals from land management partners.

1. Design all proposed trails and recommended reroutes.
 - Ground truth and flag trail system additions for the review and approval process.
 - Update planning maps with changes for future official trail maps.
2. Formally adopt all unauthorized trails and roads proposed for system inclusion.
 - Install trail system signage at all junctions for wayfinding and mileage.
 - Update trail maps on the City of Flagstaff website, FTI website, and trail apps.
 - Maintain and/or reroute trails to improve sustainability.
3. Formally adopt access points proposed for system inclusion.
 - Install official 'Trail Access' signage with relevant information, including allowed trail uses.
 - Update trail maps on the City of Flagstaff website, FTI website, and trail apps. Only include adopted access points on or near Lowell properties with approval.
4. Construct proposed parking areas for system inclusion.
 - Establish authorized parking prior to closing unauthorized trails/roads and trail construction.
 - Install trail system signage or kiosks in new parking areas.
 - Update trail maps on City of Flagstaff website, FTI website, and trail apps.
5. Construct proposed trails per the recommended priority order.
 - Upon completion of trail construction, install official trail signage at all junctions, including adopted trails.
 - Note: Priority trails are organized to assist with funding efforts and may not reflect actual implementation.
6. Decommission roads and trails proposed for removal.
 - Install official 'Trail Closed' signage.
 - Physically close start and end points using boulders, downed trees, vertical mulch, or other appropriate materials.
 - De-compact travel way to 4-6 inch depth.
 - Full fill recovery of single-track trails to re-establish cross slope.
 - Utilize native seed placement and install erosion control if necessary.
7. Perform annual trail assessments and maintenance on completed trails to preserve sustainability and prevent larger-scale trail damage. Assessments and maintenance should be performed in spring (April/May) or fall (September/October) each year.
 - Assess the trail system for drainage functionality, changes in tread width, tread stability, and user-created damage. Record notes and spatial data to assist maintenance efforts.
 - Perform trail maintenance based on assessed trail conditions.

Implementation Plan: Priority 1

Priority 1 efforts improve the formal trail system near existing and authorized access points to create additional loops, provide established trails for education zones, and improve access for the portion of the Mesa that receives the most use. Implementation plans focus on adding value to the current system without eliminating trails or access currently used by the community.

1. Maintain Loop Trail, Construct Priority 1 Trails:

- a. Maintain Flagstaff Loop Trail - ID 3.3 (2 miles): Improve drainage, re-establish consistent width, remove loose rocks, armor 2 locations east of OMNA boundary
- b. Construct ID 5.1, 5.26 (1.98 miles): Near FUTS Mars Hill and Tillie Lane Loop Trail access.
- c. Construct ID 5.2, 5.25 (2.18 miles): Short loop opportunities near FUTS Tunnel Springs.
- d. Construct ID 5.5 (2.64 miles): Connects new trails and FUTS alignments in the Mesa interior.
- e. Install trail wayfinding signage, top and bottom of trails.

Priority 1 Snapshot

Trail Maintained: 2 miles

Trail Constructed: 7.8 miles

Trail Adopted/Improved: 1.95 miles

Roads Adopted/Improved: 0

Access Points Adopted: 1

Parking Constructed: 0

Trails Decommissioned: 0

Roads Decommissioned: 0

2. Connect Lower Coconino St. with FUTS Tunnel Springs

- a. ID 2.15 (W Lower Coconino St): Install trail access signage at the existing but unauthorized access point.
- b. ID 5.21: Construct single track trail between FUTS Tunnel Springs and Lower Coconino St. using a waterline easement along the western portion of the alignment (1 mile).

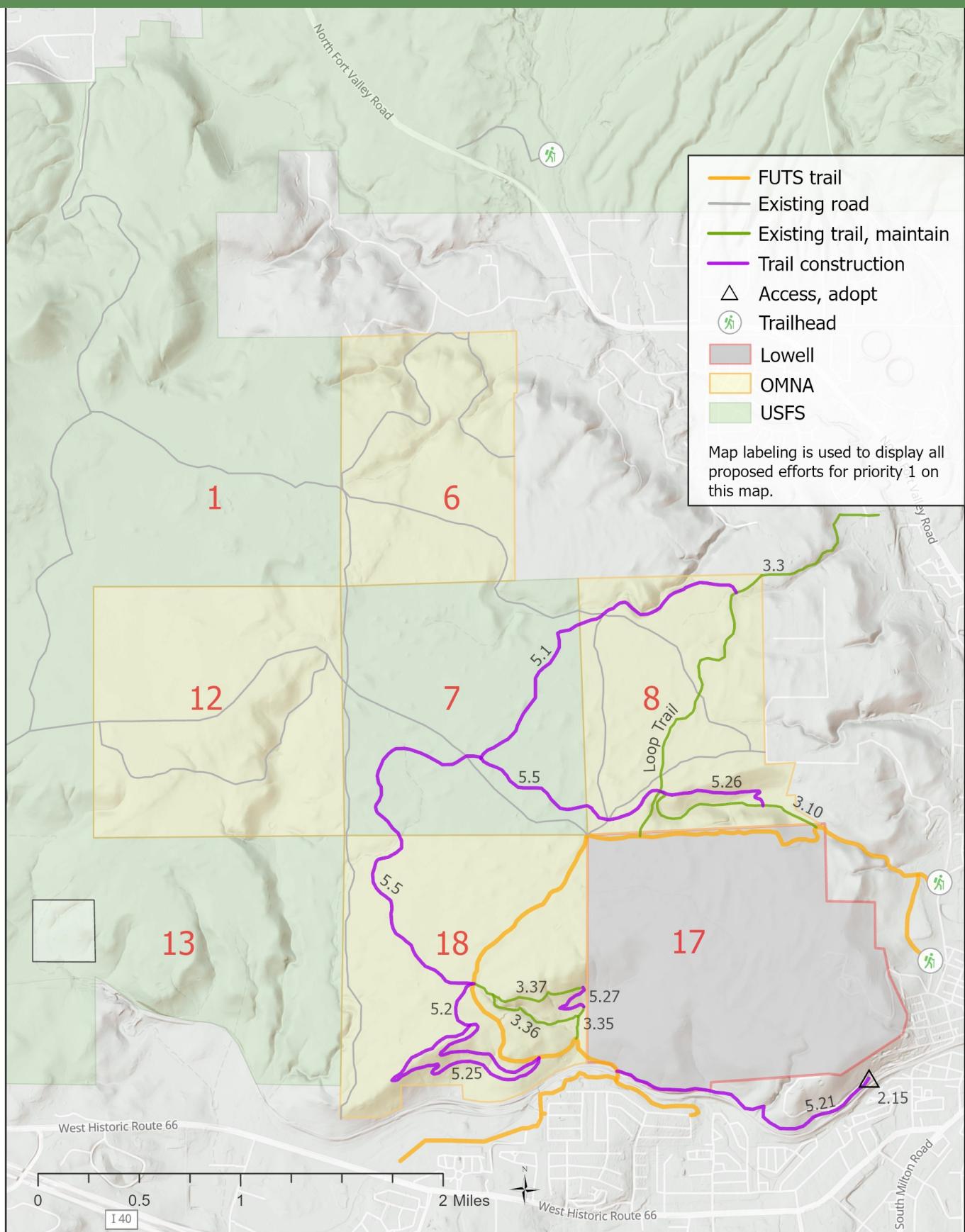
3. Formally Adopt and Maintain Trails:

- a. Perform trail maintenance and re-routes on trails 3.10, 3.35, 3.36, 3.37 (1.95 miles).
- b. Construct re-route 5.27 to avoid Lowell properties (0.24 miles)
- c. Install trail wayfinding signage, top and bottom of trails.

4. Install 'No Public Trail Access' signage at Kinlani Road

- a. Encourage trail users to utilize authorized access points at Thorpe Park.

Priority 1



Step	Series ID	Priority 1 Description	Proposal
1	3.3 Existing Authorized Trail	Flagstaff Loop Trail, 2 miles.	Remove loose rocks, improve drainage, re-establish width, construct rock armoring east of OMNA boundary.
1	5.1 New Trail	Creates a loop with the Loop Trail near the near Tillie Ln. access point. Purpose: Exercise/Loops. 1.48 miles.	Low to moderate construction intensity.
1	5.2 New Trail	Gains elevation at a reduced grade west of FUTS Tunnel Springs. Purpose: Loops. 0.93 miles.	Moderate construction intensity.
1	5.5 New Trail	Meandering trail connecting both Priority 1 trail systems. Purpose: Solitude/Loops. 2.64 miles.	Low construction intensity well suited for mechanized construction.
1	5.25 New Trail	Creates a loop with 5.2 along the south slope of the Mesa. Purpose: Exercise/Loops. 1.25 miles.	Moderate construction intensity.
1	5.26 New Trail	Creates short loops with 3.10 and FUTS Mars Hill. Purpose: Exercise/Loops. 0.5 miles.	Moderate construction intensity on a sustainable cross slope.
2	2.15 Access	West Lower Coconino Ave.	Formalize access point on W. Lower Coconino Ave, install signage. No parking provided.
2	5.21 New Trail	Connection between FUTS Tunnel Springs & Lower Coconino St. Purpose: Connectivity. 1 mile.	Alignment subject to discussion with land owners and their approval.
3	3.10 Existing Unauthorized Trail	Mars Hill alternative (Meadow Trail). Trail is well constructed and provides a loop from Thorpe Park. 0.75 miles.	Adopt and maintain with improvements. May be reviewed as a potential FUTS
3	3.35 Existing Unauthorized Trail	Existing alignment connects FUTS Tunnel Springs with trails 3.36 and 3.37. 0.14 miles.	Adopt and maintain portion within OMNA to connect 3.37 with FUTS Tunnel Springs

Step	Series ID	Priority 1 Description	Proposal
3	3.36 Existing Unauthorized Trail	User created single track trail. Aligned near bottom of drainage. 0.42 miles.	Adopt and sign as part of formal trail system with drainage improvements, tread widening
3	3.37 Existing Unauthorized Trail	Adopt to provide multi-use experiences east of FUTS Tunnel Springs. 0.64 miles.	Adopt and sign as part of formal trail system with drainage improvements, tread widening and re-routes.
3	5.27	Re-route trail 3.37 to avoid Lowell properties and connect to trail 3.35. Purpose: Connectivity. 0.24 miles	Moderate construction intensity.
4	Sign Installation	Promote authorized use and improve community safety by encouraging trail users to access OMNA at appropriate locations.	Install signage at the base of Kinlani Rd, prior to the Dorm property to deter drivers going to OMNA by driving through the property.

Implementation Plan: Priority 2

Priority 2 emphasizes additional trail parking while completing new trail construction, adopting existing roads, and decommissions user created trails.

In addition to formalizing access points implemented during Priority 1, expanded parking areas proposed for Priority 2 will reduce congestion at Thorpe Park while providing desirable access to newly constructed trails. System expansion intends to disperse trail use while decommissioning unsustainable trails will support land management directives and define user experiences.

1. Construct Trail Head at APN: 11201001E (ID 2.21):

The primary trail head for expanding parking beyond Thorpe Park will give trail users valuable access options west of the Flagstaff Public Works yard.

2. Construct Trail Head at FR 515 (ID 1.3): Trail users seeking expansive views and greater sense of solitude will be provided passive recreation access along the western boundary of OMNA.

3. Construct Remaining Trails and Maintain Existing Trails:

- a. Construct IDs: 5.7, 5.8, 5.12, 5.28, 5.29 (12.13 miles) to complete trail expansion.
- b. Maintain IDs: 3.1, 3.2 (3.27 miles). FUTS Mars Hill and Tunnel Springs trails will receive maintenance and re-surfacing in eroded areas.
- c. Install trail wayfinding signage, top and bottom of trails.

4. Formalize Access Point: Update signs and wayfinding at ID 2.7

5. Adopt Priority 2 Roads: Adopted roads on OMNA and USFS lands will expand non-motorized travel and provide administrative access for maintenance and fire fighting. IDs: 4.1, 4.2, 4.3, 4.4, 4.5, 4.34, 4.41 (13.62 miles). Increase signage, fencing and public outreach to communicate that motorized use is prohibited on OMNA lands.

6. Decommission Trails: Close junctions, de-compact trail beds, perform fill slope recovery where needed, replace organics, and install 'Trail Closed—Healing in Progress' signs to deter use.

IDs: 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.38, 3.39, 3.44 (4.23 miles)

Priority 2 Snapshot

Trail Maintained: 3.27 miles

Trail Constructed: 12.13 miles

Trail Adopted/Improved: 0 miles

Roads Adopted/Improved: 13.62 miles

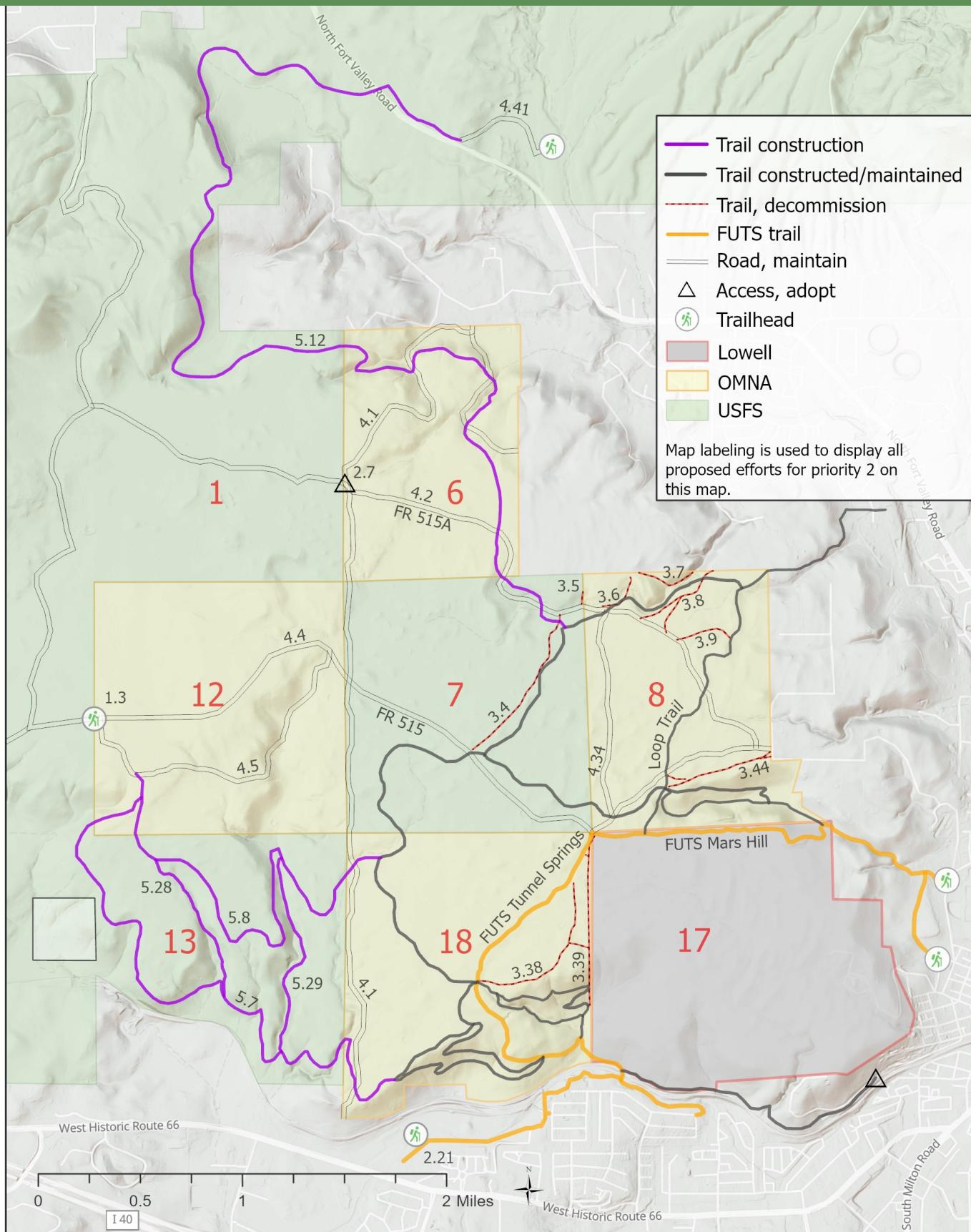
Access Points Adopted: 1

Parking Constructed: 2

Trails Decommissioned: 4.23 miles

Roads Decommissioned: 0 miles

Priority 2



Step	Series ID	Priority 2 Description	Proposal
1	2.21 Trail Head	APN: 11201001E (50.29 acres)-the parcel north west of the Public Works yard on West Route 66.	Construct a parking area to accommodate 25-30 vehicles, consider bathrooms, bike repair station, interpretive panels.
2	1.3 Trail Head (Equestrian)	West Forest Service Road 515 access to OMNA.	Construct a small aggregate parking area to accommodate 10 vehicles. Install 'Motorized Access Prohibited' signage and fencing.
3	5.7 New Trail	Single track connects the west boundary with ID 5.5 and provides longer distance loops. Purpose: Solitude/Exercise. 2.83 miles.	Moderate to high construction intensity. Constructed to eliminate the needs for the numerous road beds in the area.
3	5.8 New Trail	Loop opportunity with 5.7 and provides access to interesting terrain. Purpose: Solitude/Exercise. 2.29 miles.	Moderate construction intensity. Completes southwest loop network.
3	5.12 New Trail	Connects the Greater Observatory Mesa trail system with the Fort Valley trails north of Highway 180 to expand trail connectivity in Flagstaff. Purpose: Connectivity. 5.51 miles.	Low to moderate construction intensity well suited for mechanized construction. Coordinate with ADOT to install 'Trail Crossing' signs at Highway 180 prior to construction.
3	5.28 New Trail	Creates additional loop opportunities in Section 13 with trails 5.7 and 5.8. 0.65 miles.	Moderate construction intensity.
3	5.29 New Trail	Creates additional loop opportunities in Section 13 with trails 5.7 and 5.8. 0.85 miles.	Moderate construction intensity.
3	3.1 Existing Authorized Trail	Tunnel Springs FUTS segment. 1.75 miles. Overall good condition, some erosion needs to be addressed.	Complete all trail repairs.
3	3.2 Existing Authorized Trail	Mars Hill FUTS segment, 1.52 miles. Steep grades along the trail will benefit from proposed reroute	Complete all trail repairs and consider the proposed reroute (0.74 miles).

Step	Series ID	Priority 2 Description	Proposal
4	2.7 Access	FR 506 and OMNA Boundary.	Maintain existing access point. Install 'No Motorized Access' signage.
5	4.1 Existing Road	Hidden Hollow Pipeline Road. 5.43 miles.	Sign and Maintain for administrative access and outdoor recreation.
5	4.2 Existing Road	FR 506. 1.27 miles. Substantial erosion west of Matson Tank.	Sign and Maintain for administrative access and outdoor recreation.
5	4.3 Existing Road	FR 515a. 1.05 miles.	Sign and Maintain for administrative access and outdoor recreation.
5	4.4 Existing Road	FR 515. Provides administrative access and non-motorized recreation on the west side of OMNA. 3.49 miles.	Sign and Maintain for administrative access and outdoor recreation.
5	4.5 Existing Road	Existing Road. For non-motorized use on the west side of OMNA. 1.08 miles.	Sign and Maintain for passive use. Install way finding and 'non-motorized use only' signs.
5	4.34 Existing Road	Connects FR 515 and 515a. 0.83 miles.	Adopt and sign for additional option in this area.
5	4.41 Existing Road	Existing road bed north of Hwy 180. Connects trail 5.12 to Fort Valley trail head. 0.46 miles.	Adopt, install directional trail signs to direct users to and from the Fort Valley trail head.
6	3.4 Existing Unauthorized Trail	Connector trail partially located on an old road bed. USFS land, Section 7. 0.68 miles.	Decommission - Mechanized
6	3.5 Existing Unauthorized Trail	User created trail connects Matson Tank to private property to the north. 0.15 miles.	Decommission - Hand. Maintain gate.
6	3.6 Existing Unauthorized Trail	User created trail in drainage. Connects to old road bed and private property to the north. 0.17 miles.	Decommission - Hand
6	3.7 Existing Unauthorized Trail	User created trail begins and ends at private property fences. 0.37 miles.	Decommission - Hand
6	3.8 Existing Unauthorized Trail	User created trail connecting the Loop Trail with FR 515. 0.58 miles	Decommission - Mechanized

Step	Series ID	Priority 2 Description	Proposal
6	3.9 Existing Unauthorized Trail	Single track on or parallels road bed. 0.27 miles.	Decommission - Mechanized
6	3.38 Existing Unauthorized Trail	User created trail descends from the northwest corner of Section 17 to meet FUTS Tunnel Springs. 1.28 miles.	Decommission both segments. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
6	3.39 Existing Unauthorized Trail	Aligned on an old road bed, near the Mars Hill/Tunnel Springs junction. Short connection to other user created trails.	Decommission. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
6	3.44 Existing Unauthorized Trail	User created trail from Westridge. Multiple trail braids present. 0.47 miles.	Decommission all trail braids—Hand

Implementation Plan: Priority 3

Priority 3 will complete the Greater Observatory Mesa trail plan. All unsustainable and unauthorized roads will be decommissioned to reduce motorized incursion into OMNA lands, restore wildlife habitat, and discourage future motorized impacts in the area.

1. Decommission Roads: Close junctions, de-compact road beds, fill slope recovery, replace organics, install road closed signs. Consider barriers if motorized incursion continues.

a. IDs: 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.28, 4.29, 4.30, 4.32, 4.33 (10.46 miles)

Priority 3 Snapshot

Trail Maintained: 0 miles

Trail Constructed: 0 miles

Trail Adopted/Improved: 0

Roads Adopted/Improved: 0

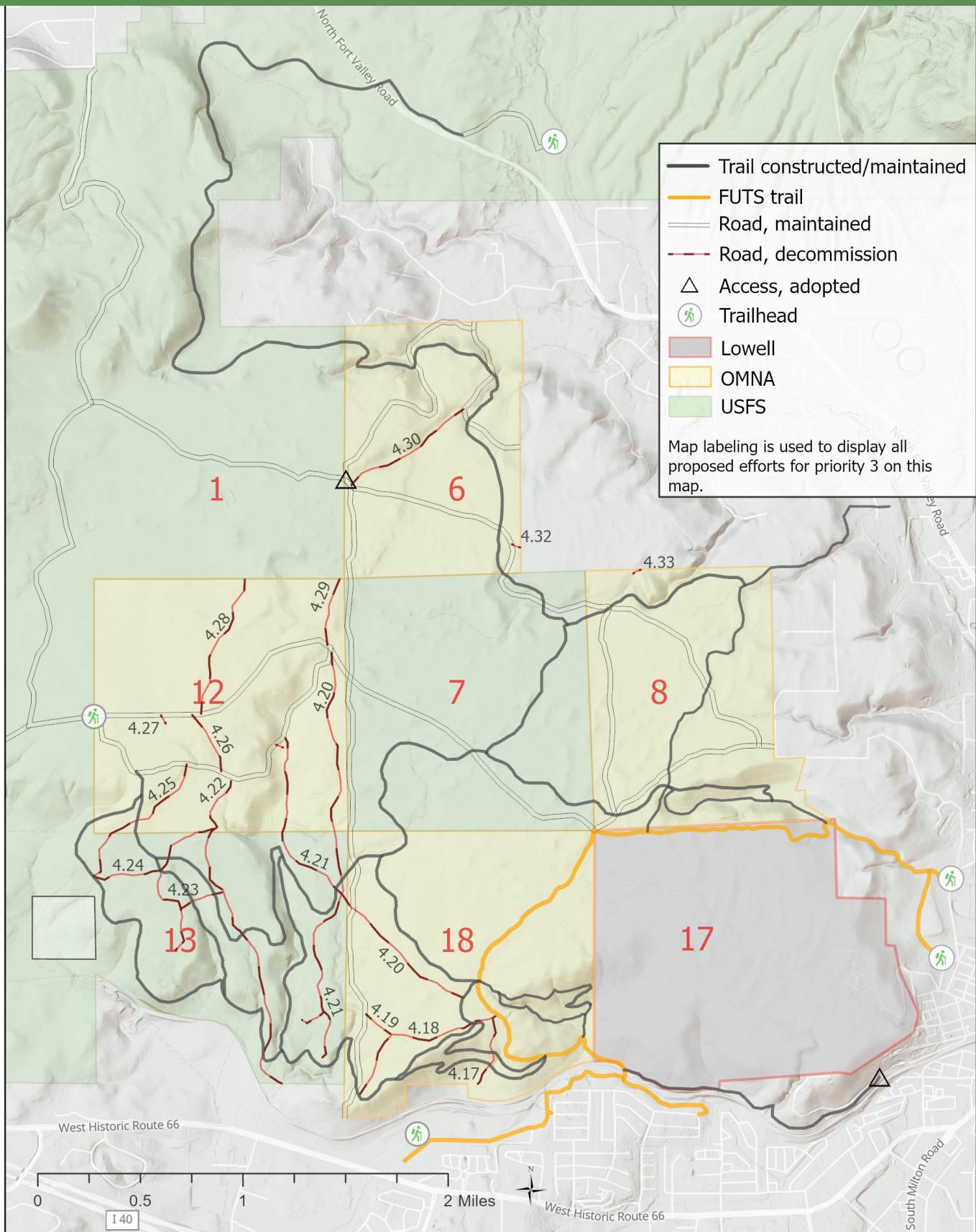
Access Points Adopted: 0

Parking Constructed: 0

Trails Decommissioned: 0

Roads Decommissioned: 10.46 miles

Priority 3

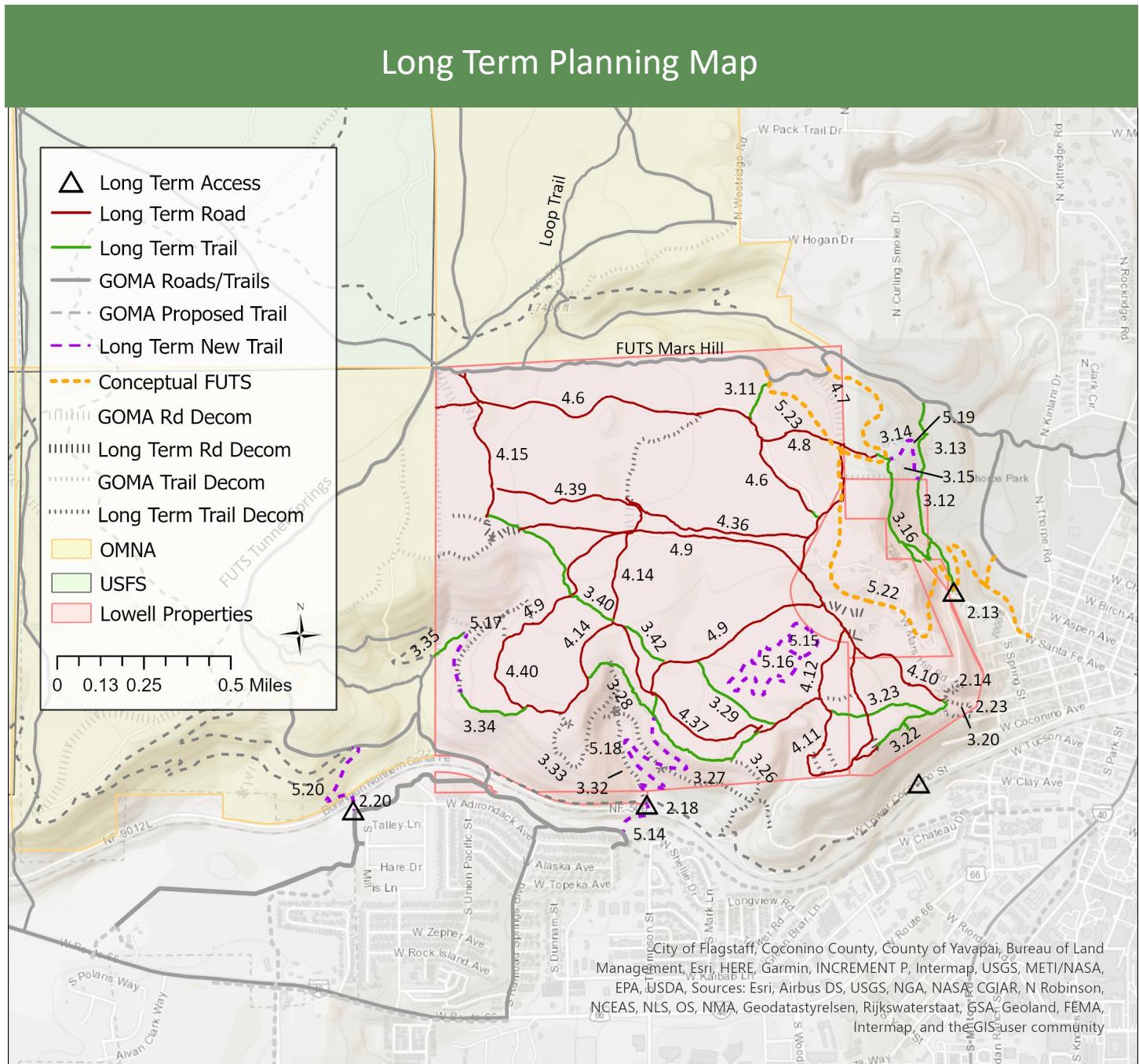


Step	Series ID	Priority 3 Description	Proposal
1	4.16 Existing Road	Along south OMNA boundary. 1 mile.	Decommission - Mechanized
1	4.17 Existing Road	Little used road bed- parallels FUTS Tunnel Springs. 0.29 miles.	Decommission - Hand
1	4.18 Existing Road	Connects to FUTS Tunnel Springs north of water tanks. 0.7 miles.	Decommission - Mechanized
1	4.19 Existing Road	Short road connection from ID 4.18 and the Pipeline Road. 0.17 miles.	Decommission - Mechanized
1	4.20 Existing Road	Prominent road between FUTS Tunnel Springs and FR 515. 1.65 miles.	Decommission - Mechanized
1	4.21 Existing Road	Light motorized use. dead ends twice in the southwest corner of the Mesa. 1.69 miles.	Decommission - Mechanized
1	4.22 Existing Road	Decommission to improve trail experience. 1.44 miles	Decommission - Mechanized
1	4.23 Existing Road	Eroded connection south of FR 515 on Forest Service land. 0.44 miles.	Decommission - Mechanized
1	4.24 Existing Road	Road bed connects to ID 4.23. 0.56 miles.	Decommission - Mechanized
1	4.25 Existing Road	Road enters OMNA lands west of ID 4.25. 0.66 miles.	Decommission - Mechanized
1	4.26 Existing Road	Road connection between FR 515 and ID 4.5. 0.27 miles.	Decommission - Mechanized
1	4.27 Existing Road	Motorized user created road, dead ends at a fire ring. 0.06 miles.	Decommission - Mechanized
1	4.28 Existing Road	User created road, ends at boundary fence to the north. 0.61 miles.	Decommission - Mechanized
1	4.29 Existing Road	Well established road bordering Section 7 on the west. 0.26 miles	Decommission - Mechanized
1	4.30 Existing Road	Well established road. 0.56 miles.	Decommission - Mechanized
1	4.32 Existing Road	Short road connection to private property. 0.02 miles.	Decommission to OMNA Boundary, repair fence - Mechanized
1	4.33 Existing Road	Short fall line road connecting to unauthorized trails. 0.08 miles.	Decommission to OMNA Boundary, repair fence - Mechanized

Long Term Planning

At this time, elements of this trail plan require additional conversations before funding and implementation can be pursued. The following map and tables detail the plan elements that will be pursued when the timing is more appropriate and implementation efforts can be sequenced accordingly.

The City of Flagstaff intends to re-new conversations with relevant jurisdictions to pursue the full intent of this plan when pertinent. The planning elements below are recorded for future approvals and implementation strategies.



Series ID	Long Term Description	Proposal
2.13 Access	Lower Mars Hill Road.	Formalize. Provides an additional access point near Thorpe Park.
2.14 Access	Mars Hill Road overlook.	Install 'No Trail Access' signage.
2.18 Access	Formalize access utilizing FUTS Santa Fe trail. Engineering will be required.	Existing underpass provides users access to OMNA without using FUTS Tunnel Springs. Provides loops/educational opportunities in the area. Subject to discussion with BSNF and their approval.
2.20 Access	Existing underpass is the closest OMNA access point to the proposed Railroad Spring trail head (APN: 11201001E). Formalize with	Subject to discussion with BSNF and their approval.
2.23 Access	Access near W Grand Canyon Ave. Little used, requires crossing private property.	Install 'No Trail Access' signage At Lowell property boundary.
3.11 Existing Unauthorized Trail	Short Connection from FUTS Mars Hill to road beds at the northeast corner of Section 17. 0.11 miles	Adopt as part of formal trail system with minor drainage improvements.
3.12 Existing Unauthorized Trail	Thorpe Park Mid Slope Traverse. Provides loop option from Thorpe Park with additional connection at Mars Hill Road. 0.52 miles.	Adopt. Subject to discussion with Parks & Rec Department and their approval. Maintain existing alignment.
3.13 Existing Unauthorized Trail	Redundant with ID 3.12 and provides no additional value to system. 0.08 miles.	Decommission. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
3.14 Existing Unauthorized Trail	Steep, fall line trail with no ability to maintain for sustainability. 0.14 miles.	Decommission. Install 'Trail Closed' sign, de-compact soil, full fill recovery.
3.15 Existing Unauthorized Trail	Thorpe Mesa Access. Provides access to the top of the Mesa and Lowell Properties. 0.04 miles.	Adopt only the upper .04 miles to connect to trail 5.19.

Series ID	Long Term Description	Proposal
3.16 Existing Unauthorized Trail	Thorpe Park Mesa Crest. Additional loop with ID 3.12 for short hikes from Thorpe park. 0.28 miles.	Adopt. Establish consistent trail width, improve drainage, add way finding signage Decommission south of ID 3.18 junction.
3.18 Existing Unauthorized Trail	Thorpe Traverse Connector. Trail connection between ID 3.12 and 3.16. 0.16 miles.	Adopt. Reroute to reduce grades and improve switch back.
3.19 Existing Unauthorized Trail	Confusing network of social trails off Mars Hill Road at ID 2.14. 0.27 miles	Decommission - Hand
3.20 Existing Unauthorized Trail	Narrow and steep trail. .06 miles	Decommission - Hand
3.23 Existing Unauthorized Trail	Southeast Lowell Single Track. Provides road bed connections to enhance loops near Lowell Observatory. 0.26 miles.	Adopt. Minor drainage improvements needed. Reroute sections to establish drainage.
3.25 Existing Unauthorized Trail	Two short, user created cut off trails near access ID 2.15. 0.12 miles.	Decommission - Hand
3.26 Existing Unauthorized Trail	Trail descends steeply just west of Lower Coconino St. with minor features for bikes. 0.31 miles.	Decommission - Hand
3.27 Existing Unauthorized Trail	Narrow, little used trail traverses mid slope on the south side of Lowell properties, terminating at two locations on Lower Coconino St. on the east. 0.62 miles	Decommission end points and at junctions - Hand
3.28 Existing Unauthorized Trail	Southern Mesa Trail, Section 17. Provides a valuable trail with view sheds to the south. 0.59 miles.	Adopt. Minor drainage improvements and remove downed trees. Good alignment overall but minor reroutes needed to reduce grades.
3.29 Existing Unauthorized Trail	South Section 17 Connector. Provides enhanced loop opportunities from Lowell Observatory Mesa. 0.24 miles	Adopt. Realign to utilize nearby cross slopes to improve sustainability. Establish consistent 48" trail width with minimal obstacles, desirable tread features, improve drainage, add way finding and adaptive MTB signage.

Series ID	Long Term Description	Proposal
3.30 Existing Unauthorized Trail	Short connection linking 2 road beds and access to views to the south. 0.06 miles.	Adopt. Maintain for drainage improvements.
3.32 Existing Unauthorized Trail	Provides access to the trail system from Access ID 2.18 east of FUTS Tunnel Springs. 0.38 miles.	Decommission—Hand. Realign away from bottom of drainage and replace with trail 5.18
3.33 Existing Unauthorized Trail	Unsustainable trail with no connections identified for adoption. 0.40 miles	Decommission - Hand
3.34 Existing Unauthorized Trail	Southwest Loop, Section 17. Loops options to rejoin FUTS Tunnel Springs or access other trails. Remove 0.25 miles of trail to avoid important wildlife area. 0.43 miles.	Adopt. Well built and in good condition. 3 sections are steep but short, necessitating reroutes. Improve drainage throughout.
3.35 Existing Unauthorized Trail	Lower Tunnel Springs Connector. Provides access and loops from the bottom of FUTS Tunnel Springs. 0.49 miles.	Adopt the lower 0.23 miles to connect with recommended reroute of 3.34 to avoid wildlife area. Decommission 0.26 miles.
3.40 Existing Unauthorized Trail	Provides important connection at the west side of Section 17. 0.56 miles.	Adopt. Establish consistent 36" trail width with minimal obstacles, desirable tread features, add way finding and adaptive MTB signage. Frequent drainage needed throughout but in maintainable condition.
3.41 Existing Unauthorized Trail	Short connection between east-west roads, Section 17. 0.33 miles.	Adopt. 24 drains needed or small realignments within 100 ft. of trail to improve condition. Decommission short connection between east-west roads, Section 17.
3.42 Existing Unauthorized Trail	Short connection on Lowell properties, 0.14 miles.	Adopt. Reroute to establish on cross slopes. Establish consistent 36" trail width with minimal obstacles, desirable tread features, improve drainage, add way finding and adaptive MTB signage.
4.6 Existing Road	Road parallels FUTS Mars Hill on the north side of Section 17 for loops from the Observatory and Thorpe Park. 1.07 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles, improve drainage.

Series ID	Long Term Description	Proposal
4.7 Existing Road	Northeast corner of Section 17, connects FUTS Mars Hill to the Observatory. 0.46 miles.	Sign and Maintain for passive recreation and adaptive MTB use, south segment.
4.8 Existing Road	Provides loops for Thorpe Park trails, Lowell Observatory and FUTS Mars Hill. 0.31 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles and improve drainage.
4.9 Existing Road	Looping road from the new proposed parking at Lowell Observatory. 1.41 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles and improve drainage.
4.10 Existing Road	Valuable connection from the Observatory to the downtown view point. 0.29 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles and improve drainage.
4.11 Existing Road	Loop creation and connects the Observatory to Lower W Coconino St. 0.83 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles and improve drainage.
4.12 Existing Road	Short connection from the Observatory - south. 0.2 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles and improve drainage.
4.13 Existing Road	Connects to system from the Observatory to the southwest. 0.17 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles and improve drainage.
4.14 Existing Road	Connects single track for adoption to the interior of Section 17. 0.7 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles and improve drainage.
4.15 Existing Road	Short connection from Section 17 to FUTS Mars Hill. 0.3 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles and improve drainage.
4.35 Existing Road	Short, forked road segment from existing trail access, Lowell Observatory. 0.09 miles.	Decommission - Mechanized
4.36 Existing Road	Road parallels ID 4.9. 0.47 miles.	Decommission - Mechanized
4.37 Existing Road	Southern Section 17. 0.53 miles.	Decommission - Mechanized
4.38 Existing Road	Northwest corner of Section 17. 0.20 miles.	Decommission - Mechanized

Series ID	Long Term Description	Proposal
4.39 Existing Road	Looping road segment, redundant to proposed trail system. 0.97 miles.	Decommission - Mechanized
4.40 Existing Road	Southwest corner of Lowell properties. 0.41 miles.	Sign and Maintain for passive recreation and adaptive MTB use. Remove large obstacles and improve drainage.
5.14 New Trail	Short Connector trail east of the FUTS Tunnel Springs underpass, 0.11 miles.	Subject to discussion with BSNF and their approval.
5.15 ADA Trail	Accessible trail from Lowell visitor center, provides educational opportunities. 0.28 miles.	Construct FUTS style, soft surface trail to ADA guidelines with educational panels.
5.16 ADA Trail	Accessible trail , longer loop connecting to ID 5.15. 0.54 miles.	Construct FUTS style, soft surface trail to ADA guidelines with educational panels.
5.17 New Trail	Short re-route of trail 3.34 to reduce grades on Section 17. 0.15 miles.	Moderate construction intensity—Hand
5.18 New Trail	Sustainable re-route of trail 3.32. 0.58 miles.	Moderate construction intensity—mechanized
5.19 New Trail	Re-route of trail 3.15. 0.2 miles	Moderate construction intensity close to town for volunteer events.
5.20 New Trail	Short Connector trail west of the FUTS Tunnel Springs underpass, 0.17 miles.	Subject to discussion with BSNF and their approval.
5.22 Planned FUTS trail	Proposed Lowell Trail.	Future discussions with the FUTS program for implementation.
5.23 Planned FUTS trail	Proposed FUTS Mars Hill reroute.	Future discussions with the FUTS program for implementation.

Appendix A: Current Conditions– Greater Observatory Mesa

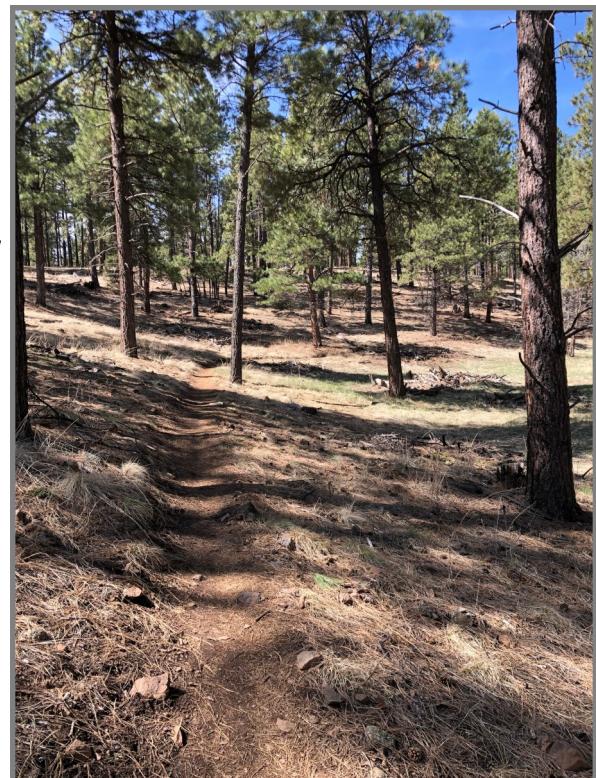
This section of the plan describes and displays the existing conditions in the Greater Observatory Mesa Area (GOMA), including existing roads, trails, trail heads, parking areas and signage. Some of the trails, roads, and parking areas are authorized uses and some are unauthorized and are therefore proposed to be either naturalized or adopted into the formal trail network. The map below summarizes these existing conditions.

Summary of Existing Trails

The Greater Observatory Mesa Area serves as local access to nature for the Railroad Springs, West Village, Flagstaff Mesa, Flagstaff Townsite, Westridge, Ridge Crest, Anasazi Ridge, and Cheshire neighborhoods. Subsequently, the area receives substantial recreational use due to its proximity to these neighborhoods and the downtown area. Additionally, the site is heavily used by the broader Flagstaff community. As a result, the area shows the effects of un-managed recreation and public use, including visible signs of deterioration and degradation, such as a proliferation in user-created trails, off-road vehicle damage, and trail width expansion.

Currently three designated authorized trails (5.8 miles) provide some access to the GOMA. However, a 2019-2021 comprehensive survey of the area identified approximately 15 miles of user-created unauthorized trails. This network of illegal trails, created from the desire for recreational opportunities, can be highly impactful to sensitive resources and confuse users.

The current designated trail system provides minimal access to only two out of the four sections owned by the City, and minimal access to Lowell Observatory's private property. The existing designated trails will require some repair and maintenance, as portions of the trail system have seen trail widening and braiding due to user intensity and weather events. Overall, existing formal trails are mostly adequate when considering condition and alignment, and are important to remain.

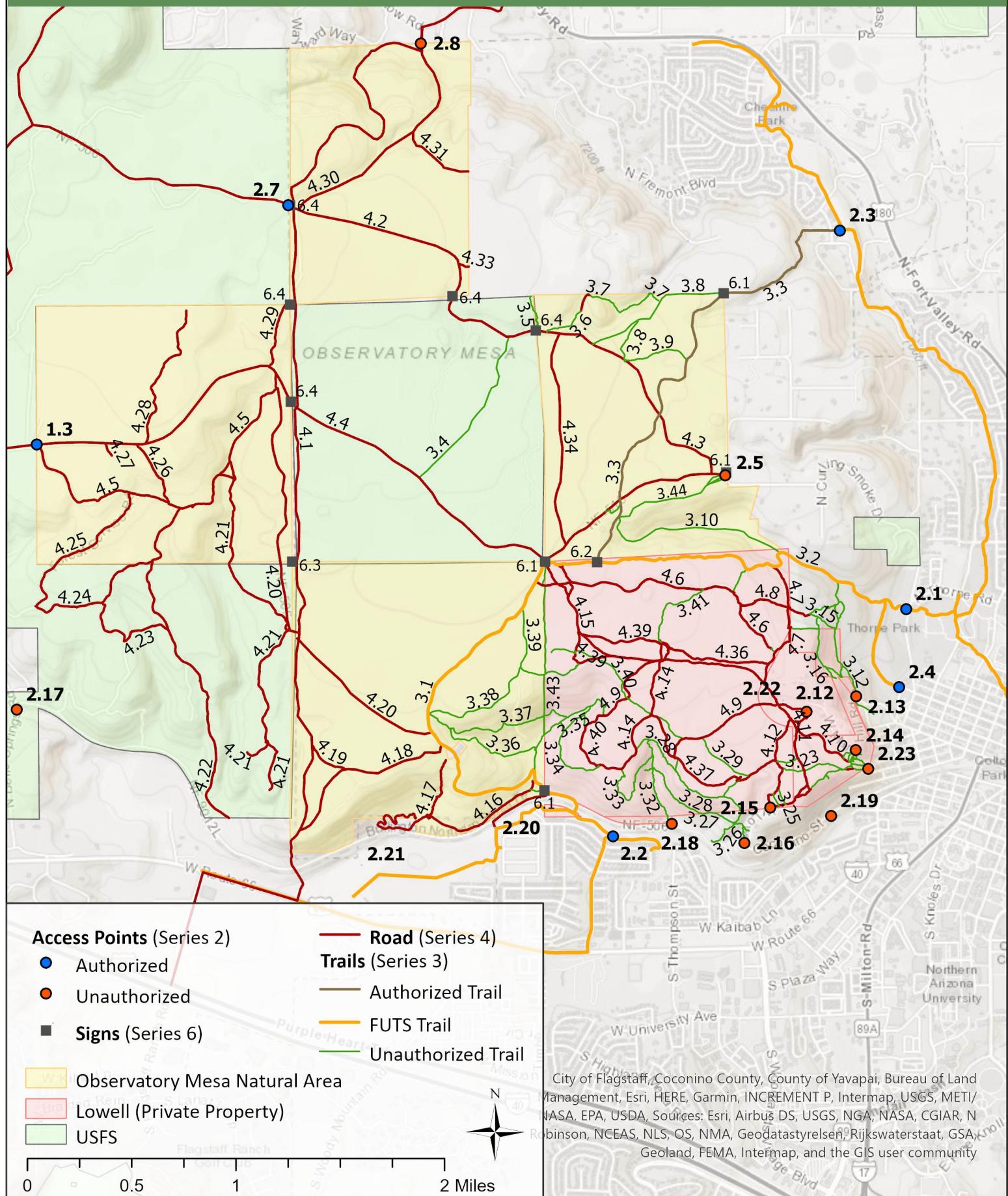


ID 3.10: A well built but unauthorized trail connects the Loop trail to the Mars Hill FUTS segment. This trail is labeled for adoption on the Proposed Trail System map.

Table & Map Series ID Labels Explained

1	Existing Parking Areas
2	Non-Motorized Access Points
3	Existing Trails
4	Existing Roads
5	Proposed Trail Alignments
6	Existing Signage

Current Conditions – Greater Observatory Mesa



B. Existing Parking

Existing authorized parking is limited for the GOMA. The parking lot at the Thorpe Park ball fields currently provides the only formal public parking area to access the mesa. This de-facto trailhead is well suited to access the FUTS Mars Hill trail segment but lacks appropriate trail and way finding information for users. Though the Joe C. Montoya Community & Senior Center parking area is not identified as a formal parking lot, it provides some supplementary parking and access. Lowell Observatory has continued to allow the community to park near their visitor center on private property, though no formal trail access is available there either. In addition, two unauthorized parking locations are being utilized.

Series ID	Parking Status	Description/Location	Condition
1.1	Authorized Trailhead	Thorpe Park ball field parking lot located on N Thorpe Rd, Flagstaff.	Adequate parking to accommodate users difficult during events.
1.2	Authorized Trailhead	Joe C. Montoya Community & Senior Center (245 N Thorpe Rd, Flagstaff). Serves the senior center and tennis courts and provides some parking for trail users.	No needs identified.
1.3	Unauthorized Parking	West Forest Road 515 access to OMNA. Users are parking near regulation sign just inside the boundary of OMNA.	Parking is taking place on vegetation.
1.4	Unauthorized Parking	East Forest Road 515 and N. Westridge Road, a private road with no public access.	Users often block OMNA gate and access via a private road.

ID 1.4 & 2.5: Unauthorized access on N Westridge Road. Trail users often park in front of the gate blocking emergency access to the Mesa.



C. Existing Non-Motorized Access Points

Six authorized access points provide non-motorized admittance. Two of these points have parking available, Mars Hill and Thorpe Park. Some residents of nearby neighborhoods, including Railroad Springs, West Village, Flagstaff Mesa, Flagstaff Townsite, Westridge, Ridge Crest, Anasazi Ridge, and Cheshire, are within a 10-minute walkable distance (1/4 mile or less) to one of these access points.

Series ID	Access Status	Description/Location	Condition
2.1	Authorized	Mars Hill FUTS pedestrian access. N Thorpe Rd, Flagstaff. Near the Thorpe Park ball field parking lot.	Needs directional routing and signage.
2.2	Authorized	Tunnel Spring FUTS pedestrian access. Located in the Railroad Springs neighborhood (Railroad Spring Blvd. & Adirondack Ave., Flagstaff).	Good condition. No needs identified.
2.3	Authorized	Flagstaff Loop Trail pedestrian access. Located near the Anasazi Ridge neighborhood (N Tillie Ln., Flagstaff).	Good condition. Installing a trail kiosk recommended.
2.4	Authorized	Mars Hill FUTS pedestrian access, behind the Joe C. Montoya Community & Senior Center. (245 N Thorpe Rd, Flagstaff).	Needs directional routing and signage.
2.5	Unauthorized	Flagstaff Loop Trail pedestrian access via east Forest Service Road 515. (N. Westridge Road Flagstaff).	Install 'no public trail access' signage at the base of Kinlani Road.



ID 1.3: Guidance displayed on this sign prohibit motorized use on OMNA lands but signage language does not explicitly prohibit this use.

D. Existing Trails

Accessible Trail Review: The three existing formal trails do not meet the requirements outlined by the Americans with Disabilities Act (ADA) guidelines, nor does the parking facility at Thorpe Park allow people with mobility impairments access to existing trails. ADA accessibility limitations are due to extended linear grades that exceed accessible design guidelines and exclude them from consideration. “When extreme or numerous conditions for exceptions make it impracticable to construct a trail that complies with the technical requirements, the entire trail can be exempted from complying with the technical requirements.” (Access Board, 2014, Exceptions 1 & 2). Accessible trails are considered in the Long-Term Planning section.

The following trail segments were recorded during the 2021 field season, additional user created trails are likely on the current landscape.

Series ID	Trail Status	Description/Location	Condition
3.1	Authorized	Tunnel Springs segment FUTS segment. 2.4 miles.	Overall good condition, some erosion needs to be addressed.
3.2	Authorized	Mars Hill FUTS segment. 1.4 miles.	Overall good condition, some erosion needs to be addressed.
3.3	Authorized	Flagstaff Loop Trail. 2 miles.	Routine trail maintenance recommended. Erosion damage east of OMNA boundary needs rock armoring at 2 sites.
3.4	Unauthorized	Connector trail partially located on an old road bed. USFS land, Section 7. 0.68 miles.	Narrow, lacks drainage and does not utilize cross slopes.
3.5	Unauthorized	User created trail connects Matson Tanks to private property to the north. 0.15 miles	Poorly aligned on the fall line with no drainage.
3.6	Unauthorized	User created trail in drainage. Connects to road bed and private property to the north. 0.17 miles.	Poor alignment and narrow. Little used.
3.7	Unauthorized	User created trail begins and ends at private property fences. 0.37 miles.	Does not benefit public trail use. Poorly aligned in drainage with moderate soil excavation.
3.8	Unauthorized	User created trail connecting the Loop Trail with FR 515. 0.58 miles.	Narrow and lacks drainage. Little damage from erosion.

Series ID	Trail Status	Description/Location	Condition
3.9	Unauthorized	Single track on or parallels road bed. 0.27 miles.	Fall line alignment with no drainage.
3.10	Unauthorized	Known as the 'Thorpe Gully', partially constructed single track on the hillside, partial road bed. Parallels FUTS Mars Hill trail. 0.75 miles.	Single track is well constructed but needs more drainage. Provides a short loop and disperses use away from the FUTS.
3.11	Unauthorized	Short connection with FUTS Mars Hill south to Lowell. single track. 0.11 miles.	24" tread width, good condition buts needs additional drainage.
3.12	Unauthorized	Traversing trail above Thorpe Park, connecting Mars Hill Rd with FUTS Mars Hill. Well built and ranges in width from 24 - 48". 0.52 miles.	Sustainable alignment and opportunities from Thorpe Park. Recommend widening north section for consistent width and more drainage. Signage and connections to Thorpe Park needed.
3.13	Unauthorized	Short, redundant trail. North half is road bed, south half is single track. 0.08 miles.	Redundant alignment to ID 3.12.
3.14	Unauthorized	Steep single track provided access to Lowell from Thorpe Park. 0.14 miles.	Poorly aligned on steep fall line with no drainage. Redundant.
3.15	Unauthorized	Provides same connection as ID 3.14. 0.13 miles.	Steep and on the fall line. Extensive reroute needed to provide valuable connection.
3.16	Unauthorized	Parallels ID 3.12. Creates additional loops near Thorpe Park. 0.28 miles.	Narrow, 18" tread. Good construction. Minor reroutes and more drainage needed.
3.17	Unauthorized	User created trail. Narrow and	Lack drainage, redundant.
3.18	Unauthorized	Connects upper and lower traversing trails above Thorpe Park .	Steep, narrow, little used. Reroutes needed.
3.19	Unauthorized	A maze of social trails from the overlook on Mars Hill Rd, accessing a rock feature in the drainage and road beds on the mesa. 0.27 miles.	Confusing network with no clear destination. A formal trail to the 'waterfall' can be established to limit impact.

Series ID	Trail Status	Description/Location	Condition
3.20	Unauthorized	Narrow and steep trail connecting Lowell properties with W Grand Canyon Ave. 0.06 miles.	Little used, crosses private property to access Lowell properties.
3.21	Unauthorized	Narrow and steep, Parallels ID 3.21. 0.08 miles.	Little used, crosses private property to access Lowell properties.
3.22	Unauthorized	Single track at eastern edge of Mesa. Accessed from Lowell Observatory or the Mars Hill Rd. overlook. 0.26 miles.	Provides quality viewpoint of downtown. Better trail definition and established overlook recommended. Trail needs consistent width and 20 drains but is in good condition.
3.23	Unauthorized	User created trail connecting the east edge of the Mesa with interior road beds. 0.26 miles.	Little used and narrow, aligned mostly on cross slopes or on the flats. Minor reroutes to improve drainage and tread width needed.
3.24	Unauthorized	User created single track connects road beds on Lowell properties.	18-24". Good condition.
3.25	Unauthorized	Two narrow trails cut off road bed trails near the access point on Lower Coconino St. 0.12 miles.	Little used, but redundant.
3.26	Unauthorized	Trail descends steeply just west of Lower Coconino St. 0.31 miles.	Steep fall line trail with minor constructed features for bikes. Poorly aligned.
3.27	Unauthorized	Narrow, little used trail traverses mid slope on the south side of Lowell properties, terminating at Lower Coconino St. on the east. 0.59 miles.	Likely a wildlife trail originally, evidence of limited human use.
3.28	Unauthorized	Single track trail along rim of Mesa, south side of Lowell properties. 0.59 miles.	Good alignment and in decent condition. Minor reroutes and drainage improvements needed.
3.29	Unauthorized	Single track connection between road beds, south central zone of Lowell properties. 0.24 miles.	Half the trail is a 6" deep rut. Does not use cross slope. Reroute to align on hill side.

Series ID	Trail Status	Description/Location	Condition
3.30	Unauthorized	Short connection linking 2 road beds and views to the south. 0.06 miles.	Good condition, but needs 6 drains.
3.31	Unauthorized	Provides valuable connection between roads. 0.14 miles.	No cross slope and fall line alignment, reroute for drainage.
3.32	Unauthorized	Constructed single track aligned in drainage. Connects top of mesa with rail-road access road. 0.38 miles.	Enjoyable but short trail. Aligned in the bottom of the drainage but well built.
3.33	Unauthorized	Eastern third of trail is bench cut, northwestern section is seldom used. 0.4 miles.	Potential as a valuable trail. Awkward western junction needs substantial reroute.
3.34	Unauthorized	Traversing single track around the southwest edge of Lowell properties. 0.43 miles.	Well built and in good condition. 3 sections are steep but short.
3.35	Unauthorized	Bottom of trail connects to FUTS Tunnel Springs. Aligned in and near a drainage. 0.49 miles.	Well constructed and only needs minor drainage improvements.
3.36	Unauthorized	Constructed trail uses drainage near FUTS Tunnel Springs. 0.43 miles.	Trail aligned near the bottom of drainage.
3.37	Unauthorized	Recently constructed traversing trail connecting FUTS Tunnel Springs with ID 3.35. 0.64 miles.	Narrow trail, traverses before losing elevation quickly.
3.38	Unauthorized	User created trail descends from the northwest corner of Section 17 to meet FUTS Tunnel Springs. 1.04 miles.	Poorly aligned trail follows fence line then meanders through a meadow, contributes thistle spread.
3.39	Unauthorized	Aligned on an old road bed, near the Mars Hill/Tunnel Springs junction. Short connection.	Fall line alignment in a meadow.
3.40	Unauthorized	User created single track that uses terrain for drainage. 0.67 miles.	In good shape overall, but needs improved drainage.
3.41	Unauthorized	User created trail connects east-west road beds in Section 17.	24 drains or small re-alignments within 100 ft. of trail needed.
3.42	Unauthorized	Short connection near south edge of Section 17. 0.14 miles.	6" deep rut, difficult to drain.

E. Existing Road Beds

Within the OMNA and Lowell Observatory's private property, 35.31 miles of recreation opportunities are placed on old roadbeds or utilize portions of old roadbeds that allow users to create loops and extend their experience. From a planning perspective, roadbeds act as connections to other trail use opportunities, but do not necessarily provide high-quality experiences. Roadbeds often have straight alignments and do not provide changing view sheds nor an intimate connection with the natural world. Current roadbeds do provide land managers access for maintenance and ensure wildland fire personnel access to manage forests and fight potential forest fires.

Roadbeds throughout the GOMA trail area are proposed for either adoption or decommissioning in this report. The Forest Service holds easements for several roads on the OMNA property, many of which have been closed to public motorized use as part of the Travel Management Rule (TMR) process. Due to resource constraints, these "closed" roads are not signed or physically blocked off, and visitors are required to reference an updated Travel Management Map to know if roads are open or closed to public use. Decommissioning closed Forest Service roads by physically blocking them generally requires approval through the National Environmental Policy Act planning process of the Coconino National Forest. This process is not necessary for decommissioning roads not included in the Forest Service network. Based on the 2011 Coconino National Forest Travel Management decision, motorized retrieval of big game is limited to Forest Service roads that are designated as "open" under the Travel Management Rule. Motorized cross-country travel to retrieve game is expressly prohibited under the Arizona Game and Fish Department hunting regulations.

Un-managed public use has resulted in a maze of unofficial roads that are often unnecessary and lead to dead ends. Some of these are causing erosion, degrading habitat, and facilitating illegal dumping. Parameters of the conservation easement for OMNA limit public use to activities that do not materially degrade the property's conservation values. Therefore, this proposal's content focuses only on providing passive recreational benefits within OMNA and neighboring lands to support the preservation of the natural environment. The conservation easement held by Arizona State Parks for the OMNA permits no more than 20 acres total to be developed.



ID 4.7 (north end): Junction with FUTS Mars Hill on Lowell property is well located to create loops from Thorpe Park.

ID	Description/Location	Condition
4.1	North-south road running the length of the Mesa for pipeline maintenance.	Steep in some locations with erosion damage and abundant loose rocks.
4.2	FR 506. Primary road on north side of Mesa. Connects lands to the west with interior.	Road is in good shape, one of the main contributors to motorized use on OMNA.
4.3	FR 515a. Access to the Mesa from N Westridge Rd. access and parking.	Traveled by non motorized users to access Watson Tank.
4.4	FR 515. Traverses Mesa from the west boundary to N Westridge Rd.	Mostly in good condition, some erosion and wide sections.
4.5	Creates loop for trail users at the west boundary of Section 7 to interior of the mesa.	Will benefit from improved drainage along fall line and steep sections of road bed.
4.6	East-west traverse, north zone of Section 17. Provides separation from FUTS Mars Hill.	In good shape but will benefit from frequent drainage.
4.7	Road connects FUTS Mars Hill to the planned Lowell Observatory facilities.	In good shape but will benefit from frequent drainage.
4.8	East-west road connecting trails at Thorpe Park with the north central area of Section 17.	Fall line alignment needs frequent drainage and narrowing.
4.9	Loop road system in the interior of Section 17.	Frequent drainage needed.
4.10	Road connects Lowell Observatory parking area with a view point of downtown.	Mostly in good shape, will benefit from improved drainage.
4.11	Road south- Lowell parking to Lower Coconino St.	In good shape, improved drainage needed.
4.12	Creates a loop with ID 4.11 from Lowell parking to Lower Coconino St.	Mostly in good shape, will benefit from improved drainage.
4.13	East-west road in south of Section 17.	Steep areas need frequent drainage.
4.14	North-south road connecting the southern rim of the Mesa with the interior of Section 17.	In good shape, will benefit from improved drainage.
4.15	North-south road at the northwest corner of Section 17. Connects to FUTS Mars Hill.	In good shape, needs improved drainage.

F. Existing Signage There is minimal signage supporting the 5.8 miles of formal trail, primarily posted at previous vehicle entry points to prevent illegal use. See Current Conditions map, page 11.

- 6.1 Regulation/Recreational signs - posted at main access points to educate the public about site regulations and recreational opportunities.
- 6.2 Directional Indicators – posted along trails to assist users to stay on designated trails.
- 6.3 Boundary signs – posted along the Observatory Mesa Natural Area to notify users of entering a protected area with regulations to deter illegal use and facilitate enforcement.
- 6.4 Motorized Vehicles Prohibited – posted at historic vehicle access points to deter illegal use and facilitate enforcement.

Appendix B: Development of the Trail Plan

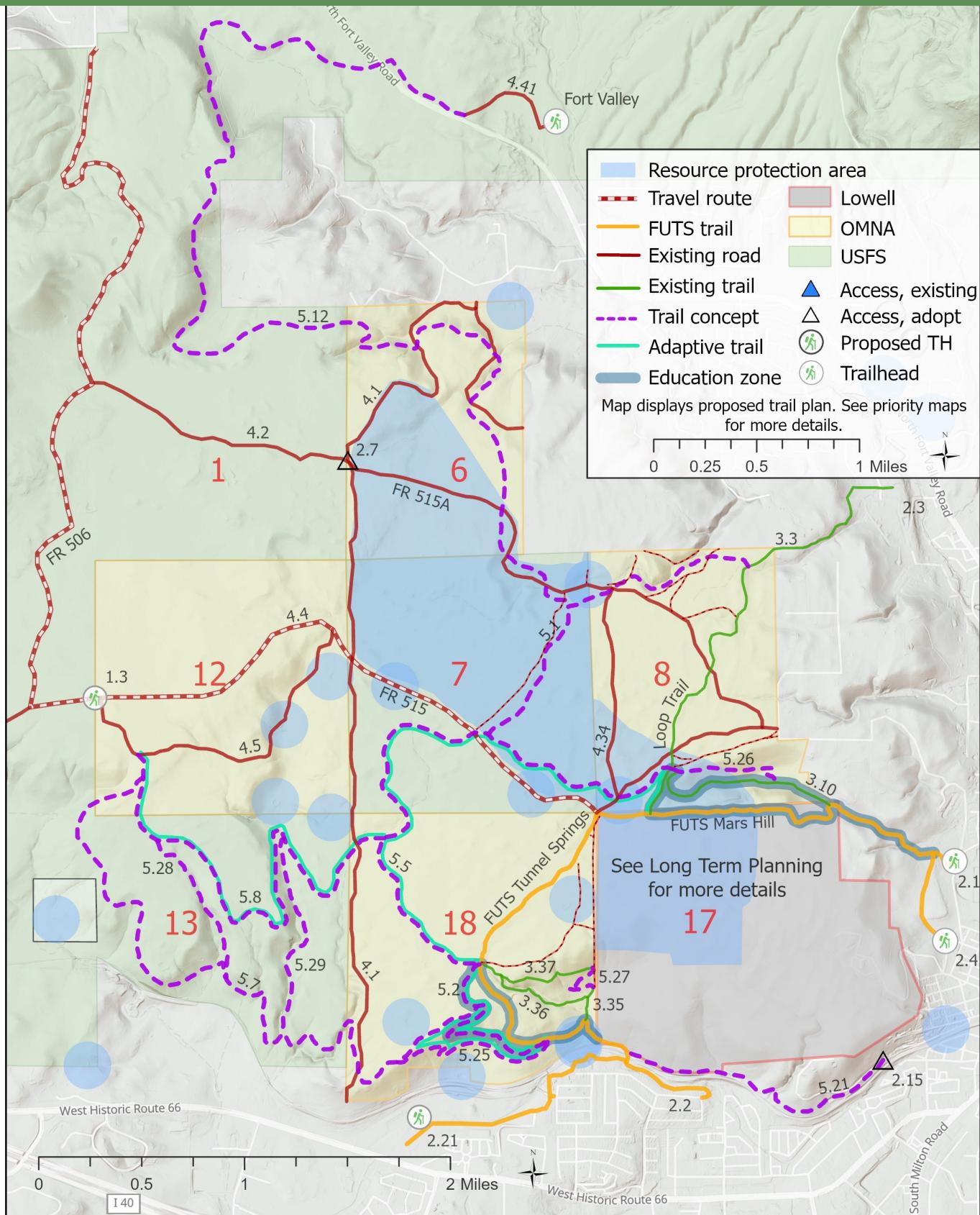
The purpose of the City's purchase of Observatory Mesa Natural Area and the directive outlined in the Arizona State Parks' held conservation easement is to assure that the Property will be retained forever in predominantly the condition reflected in the baseline documentation when the Property was purchased. This directive is to prevent any use of the Property that will significantly impair or interfere with conservation values. The conservation easement confines the use of the Property to passive recreation compatible with the maintenance of the Property's conservation values. OMNA is restricted from development that would exceed 20 acres total. Any proposed work must be approved by Arizona State Parks before implementation. Rights reserved in the conservation easement, include the right to engage in, or permit or invite others to engage in, all uses of the Property that are not expressly prohibited and are not inconsistent with the purpose of the easement. This includes the right to engage in and permit engagement in recreational uses of the Property, including hiking, horseback riding, cycling, and other forms of passive recreation, and the ability to engage in and permit others to engage in educational and scientific study activities.

These directives were closely considered during the development of this proposal and recommendations were developed to balance preservation and recreation. This plan applies a 1,320-foot buffer around springs, a 250 foot buffer around stock tanks, a 500 foot buffer around all archaeological areas (sites and isolated occurrences), general avoidance of the Northern Goshawk post fledgling area, and general avoidance of the Woody Ridge wildlife corridor. The following topics were considered during the development of this proposal to prevent or limit impact.



ID 3.28. User created trail, south side of Lowell Private Properties.

Resource Protection & Trail Concepts



i. Ecological Summary

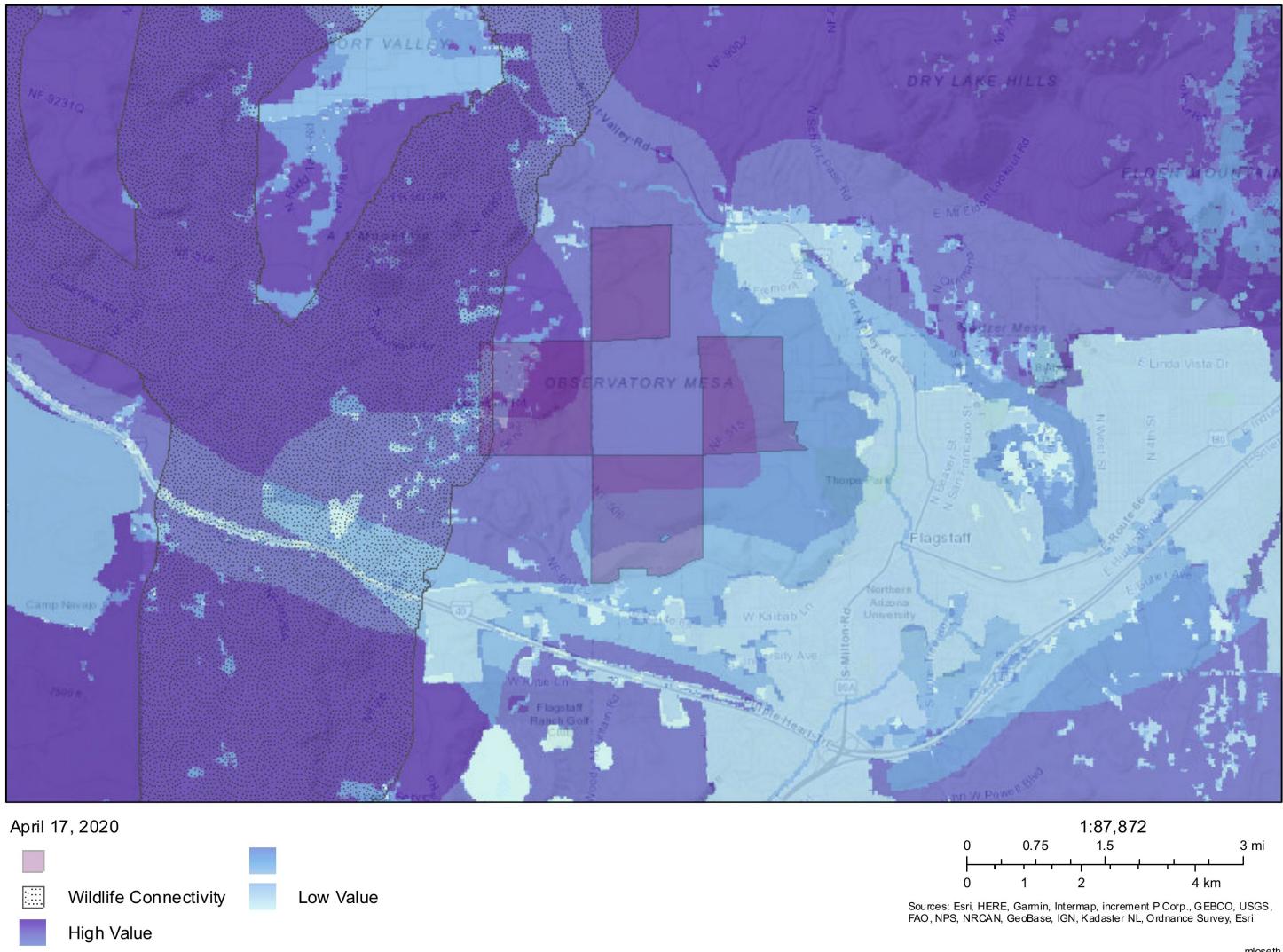
Geographically, the Observatory Mesa land form is located on the Coconino Plateau within the San Francisco Volcanic Field. Ranging in elevation from 7,050 to 7,560 feet, it is defined by moderately steep slopes rising from the surrounding area and capped by a relatively flat plateau.

The over-story of Observatory Mesa is comprised primarily of Ponderosa pine, with small pockets of Gambel oak. During a recent field inventory, a small number of Douglas fir trees were also identified on north-facing slopes. The under-story shrubs and grasses are mostly composed of: Arizona rose, Arizona fescue, mountain muhly, western wheat grass, blue grama, squirrel tail, silver lupine, and Rocky Mountain iris (CFOSP,2017,p. 73). Despite the absence of perennial streams, Observatory Mesa has a variety of springs, seeps and drainages that make it important to the Rio de Flag watershed (CFOSP,2017, p.67). Seasonally available water sources within the OMNA support a variety of seasonal and year-round species.

The location, water sources, and vegetative biodiversity of Observatory Mesa provide for a variety of wildlife habitats and “provide essential resources for diverse wildlife, including: elk, mule deer, pronghorn, grey fox, several species of squirrels, chipmunks and other small mammals, porcupine, mountain lion, black bear, various species of bats, turkey, raptors including red-tailed hawk, sharp-shinned hawk, and several owls, migratory and resident songbirds, and reptiles and amphibians such as chorus frogs and short-horned lizards”(CFOSP,2017,p.81). The undeveloped lands along the western portion of Section 12 of OMNA and beyond are considered an important wildlife corridor connecting habitat on the San Francisco Peaks with lands along the Mogollon Rim to the south. Known as the Woody Ridge corridor, the area provides numerous species with access to seasonally available resources throughout the year. The Arizona Game and Fish Department’s Species and Habitat Conservation Guide identifies the majority of Section 12 as “the highest wildlife conservation potential” (Arizona Game and Fish Department, 2012, p.50) due to its proximity to the Woody Ridge wildlife corridor. The corridor frames the Mesa to the west and provides habitat for special status species, including Northern goshawk, Mexican spotted owl, and bald eagle and are known to utilize the Mesa during their life span (CFOSP,2017, p.67).

i. Ecological Summary

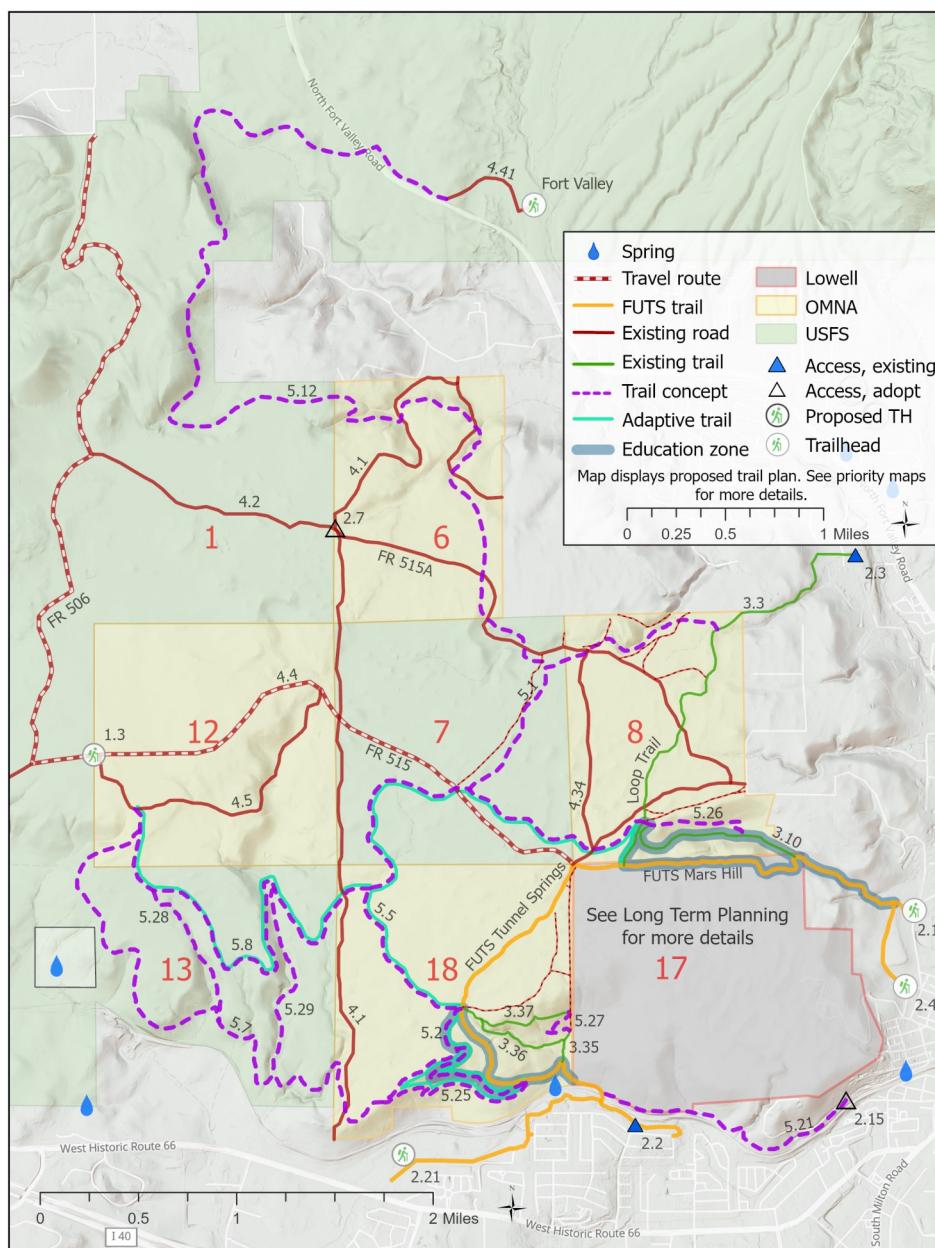
Wildlife Corridor & Habitat Value



Wildlife Corridors and Habitat Value of Observatory Mesa Natural Area (shown in purple) and surrounding area. Map courtesy of Arizona Game and Fish Department's Online Environmental Review Tool: <https://azhgis2.esri.com/>

ii. Sensitive Watersheds and Springs

There are several significant first order ephemeral streams/drainages which flow to the north and west into the Rio de Flag, and to the south into Clay wash which flow directly into the Rio de Flag. Two intermittent streams in Section 6 are tributaries of the Rio de Flag. Another intermittent stream in the northeast quarter of Section 8 flows to the east into the Rio de Flag. Section 12 has three intermittent streams, one of which feeds into Belle Spring in the adjacent Forest Service section. Section 18 has an intermittent stream that originates from Tunnel Spring. Sections 6 and 8 also contain ephemeral water sources that feed Matson Tank on the adjacent Forest Service section. These intermittent streams make Observatory Mesa Natural Area an important component of the Rio de Flag watershed. Watersheds support habitat for plants and animals with a greater variety of vegetation. Efforts to avoid watersheds were deliberate.



iii. Sensitive Species

Northern Goshawk Habitat

Observatory Mesa is ideal habitat for the northern goshawks, which rely on habitats composed of tall, old-growth trees with intermediate to heavy canopy coverage (often more than 40%) and minimal density of undergrowth. In 1993, a post fledgling area (PFA) was identified by the Forest Service. The PFA spans across City, Forest Service, and Lowell Observatory properties. In 2016, the Forest Service located two northern goshawk nest trees in Section 6 of the Natural Area. Though a PFA has not been formally identified, the drainage area was deferred from the mechanical cutting area to protect the sensitive species.

Post-fledgling areas (PFA) are typically 600 acre areas surrounding a nesting site, that are used by young goshawks before being independent of parents. Northern goshawks are protected under the Migratory Bird Treaty Act and are listed as “Species of Concern” (CFOSP,2017, p.83). In North America, several non-governmental conservation organizations petitioned the Department of Interior, United States Fish and Wildlife (1991 & 1997), to list the goshawk as “threatened” or “endangered” under the authority of the Endangered Species Act. Both petitions argued for listing due to historic and ongoing nesting habitat loss, specifically the loss of old-growth and mature forest stands throughout the goshawk’s known range. The northern goshawk is also listed in Appendix II of the Convention on International Trade in Endangered Species.

Research indicates that high levels of noise often causes nesting failure during the critical incubation stage. Arizona studies show that nests within 50 to 100 m (160 to 330 ft) of active logging failed. Other noisy activity, such as camping, can cause nest failure. To avoid disrupting the northern goshawk trail alignments are limited in the PFA boundary and avoid all nest stands to reduce human interaction. In addition, mechanized or hand construction of trails in the PFA area will be avoided during breeding season; March 1 - September 30, to reduce loud noises that may disrupt natural behavior (CFOSP,2017, p.83).

Bat Species Habitat

Six sensitive bat species have been identified within a 5-mile radius of Observatory Mesa, requiring habitat consideration. Bats tend to roost in snags, tree cavities, downed logs, or rock piles. Bats generally forage along forest edges, forest roads, trails, or natural openings. Additionally, they prefer a heterogeneous forest structure, and rely on clean, pooled, open bodies of fresh water as their water source. Trail alignments avoid water sources and will limit disruption to snags and downed woody debris.

iv. Cultural Resources

In 2013, the city of Flagstaff worked with Cornerstone Environmental Consulting, LLC to complete a cultural resource survey for OMNA. One site from the Formative Period (A.D.400-1542) was identified and contains a moderate density of prehistoric flaked stone. During this time, the Sinagua people occupied arable soils near the upper Rio de Flag along the northeastern edge of Observatory Mesa (Edwards et al,2013, p.5). The survey relocated two previously recorded sites (neither recommended for National Register), and discovered four additional sites, and twenty isolated occurrences (all ineligible for National Register of Historic Places). The survey also identified 25 historic resources. Sites are predominantly euro-American refuse scatters from 1915-1955. The expansion of ranching and logging followed the arrival of the railroad. According to the Coconino National Forest, Observatory Mesa was logged between 1926 and 1928, but similarly to many adjacent areas, was likely logged prior to 1900 as well. The Mesa was also used for grazing during this period, and artifacts near Tunnel Spring show evidence of ranching during the 1930's and 1940's (Edwards et al.,2013, p.10).

Cultural resource protection has been carefully considered. Regardless of resources at each site or occurrence, a 500-foot buffer was established around all archaeological areas within OMNA. The Forest Service has conducted a preliminary review of trail alignments on the Coconino and have not come across any concerns. Archeological surveys and clearances of the proposed trail corridor would be obtained prior to ground disturbing activities. State Historic Preservation Office review and approval would be necessary before implementation. The scope of archaeological support services for this project would include (1) pre-work consultation with the Arizona State Historic Preservation Office (SHPO); (2) field assessment of the trail work proposed within the boundaries of and within 50 feet of the project area's archaeological sites; (3) documenting any archaeological materials within the trail right-of-ways and marking any areas for avoidance from ground disturbance; (4) conduct post-treatment inspections for the trail work occurring within and adjacent to sites; and (5) prepare a brief technical memorandum for submittal to the City and SHPO.

v. Arizona State Parks and Trails Conservation Easement

In accordance with the conservation easement held by Arizona State Parks, no more than 20 acres total may be eligible for alteration or development and no changes may be made to the parcel that would seriously or negatively affect its conservation values. This proposal identifies 7.865 acres of OMNA for trail development within the Natural Area boundary, approximately 39% of the total available 20 acres.

Project	Acres
Forest Restoration and Thinning Projects (EXEMPT)	1,255
Rain Gauge	0.25
Westridge Gate	0.05
Matson Gate	0.05
Kiosks (4)	0.10
Dog Waste Bag Dispenser	0.05
Existing Trails (includes FUTS and Loop Trail on OMNA lands)	2.14
TOTAL APPROXIMATE ACREAGE CURRENTLY DEVELOPED	2.415
Proposed Trail Installation & Adoption	3.63
Proposed Supporting Infrastructure (5 kiosks (0.2/sign), 4 cultural protection (.01/sign), 5 non-motorized (.01/sign), ~ 15 trail markers (.01/sign), 14 interpretive (.02/sign), 5 temporary notice boards (.02/sign)).	0.72
Proposed Parking area at West Boundary	1
CURRENT & PROPOSED ACREAGE DEVELOPED AT 100% IMPLEMENTATION	7.865
APPROXIMATE REMAINING ACREAGE WITH TRAIL SYSTEM AT 100% IMPLEMENTATION	12.135

Arizona State Park grant funds were utilized to purchase Observatory Mesa Natural Area. The grant agreement bestowed Arizona State Parks a conservation easement over the Property that requires the acreage to be retained forever in predominantly the condition reflected in the baseline documentation when it was purchased. The conservation easement also necessitates the right to engage in, or permit or invite others to engage in all uses of the Property that are not expressly prohibited and are not inconsistent with the easement's purpose. The easement includes the right to engage in and permit engagement in recreational uses of the Property, including hiking, horseback riding, other forms of passive recreation, and the ability to engage in and permit others to engage in educational and scientific study activities.

vi. City of Flagstaff Open Space Program Directives

The Flagstaff Open Space Section's Management Plan for Legally-Designated Open Space properties contains detailed recommendations for proper management of OMNA. There are 5 overarching management goals for legally-designated open space properties:

1. To maintain, restore, and enhance the natural ecosystem processes of these properties, including watershed health (including intermittent streams), forest structure, native plant communities, and rare habitat types.
2. To protect cultural resources present within these properties.
3. To maintain and protect diverse and healthy wildlife populations.
4. To provide opportunities for public use of these properties through passive recreational use, resource interpretation, education, scientific research, and other compatible activities in a manner that is consistent with the preservation of the conservation values of the site and the management goals.
5. To maintain and develop partnerships that facilitate resource management, stewardship, and conservation.

This proposal will uphold Open Space Section goals in the following ways:

1. Encourage users to recreate in approved locations.
2. Restore unauthorized trails and closed roads.
3. Reduce visitor travel in watersheds, rare habitats, wildlife corridors, and cultural site areas.
4. Provide passive recreational opportunities for multiple user groups.
5. Provide additional access points to provide additional 10-minute community walking access time to open space.
6. Advance land use planning that minimizes the distance people have to travel by car by promoting transportation by biking and walking.
7. Partners with Coconino National Forest, Lowell Observatory, neighboring property owners, and the community to design and implement a trail plan that preserves the landscape and provides recreational opportunities.

Appendix B: vii - x

vii. Scientific Education

The potential for developing scientific education for K-12 programs, graduate education, life-long learning, and applied research on forest and grassland restoration is outstanding given the rich natural resources of the location. Potential local educational partners including Willow Bend Environmental Education Center, Northern Arizona University Centennial Forest, Lowell Observatory, Museum of Northern Arizona, Flagstaff Unified School District, Coconino Community College, and Coconino National Forest.

Developing educational signage and interpretive panels that highlight the biology, natural history, regional cultural landscapes and astronomy within the first 3 miles of trail heads and especially throughout trails on Lowell properties can create intentional educational opportunities that reflect the values of the community at large.

viii. Recreational Uses

Recreational trails will be highly compatible with conservation purposes and environmental education. Careful design and signage will protect natural and cultural resources by guiding visitors along paths to minimize impacts to sensitive resources. Perimeter viewing areas with interpretive signage will be designed to provide public opportunities to experience and learn about wildlife. Partnering with Arizona Game & Fish Department will offer opportunities to develop a *Watchable Wildlife* program that will enhance the public's enjoyment of the area.

ix. Management Considerations

Implementing the OMNA trail plan requires a multifaceted approach that integrates volunteer efforts, systematic monitoring, and funding strategies. By leveraging the strengths of volunteers and collaborating with local enforcement agencies, the Open Space Section can ensure effective management, maintenance, and protection of the OMNA trail system.

The Open Space Section uses the Legally Designated Open Space Management Plan to guide property management, monitoring, and maintenance. Current property management is accomplished with base budget funds administered from the City's general fund, grant funding, and volunteer projects.

The Open Space Section volunteer program is called the Open Space Stewards. The mission of this volunteer program is to promote the protection and management of open spaces through environmental stewardship. Volunteers work in city open spaces to report land management concerns, participate in volunteer projects, and conduct informal education. Continuing this volunteer program is important to successfully implementing the OMNA trail plan, especially as it pertains to monitoring and identifying needs for directing maintenance and enforcement partnership opportunities with the Flagstaff Police Department.

In addition to these efforts, the Open Space Section will continue to utilize the city's approved budgetary process to assess needs and request additional funding for maintaining the expanded trail system. Grant funding for implementation and continued maintenance will be applied for as available and as capacity allows.

x. Partnership Opportunities

Coconino National Forest, Lowell Observatory, and the City of Flagstaff are key partners in the success of this trail proposal. Consultation with these agencies was conducted during the development of this proposal to ensure ideas expressed in this report conform to best practices and have consensus between the land agencies. During the development of the final trail plan this partnership will continue. Furthermore, Section 5, "Next Steps," of this proposal, identifies many diverse partners and stakeholders that will be included in the review and development of the final trail concept.

Flagstaff Trails Initiative (FTI), a Flagstaff non-profit with the mission, "To improve the quality, connectivity and community support for a sustainable trail system that balances the demand for recreation with the community's vision for conservation, development, and health" will be a great partner. FTI will provide a variety of resources, such as providing review and comment during the development of the final concept, involving the public during the review process, and providing volunteer trail building and maintenance support for the trail system. The Regional Trail Strategy, FTI developed, is a collaboration between land management agencies, non-profit organizations, volunteer groups and trail contractors that is yielding results for Flagstaff's trails.

Appendix C: Sustainable Trail Recommendations

For trails to be sustainable, they must be developed in the context of the landscape. By seeing the trail as a feature on the landscape we are able to make the right decisions for the land and the trail. Soils, watersheds, climate and geology all play a factor in how trails are used and how they hold up over time. Amounts and types of use, and maintenance levels are also factors in how a particular trail acts upon the landscape. Existing and planned trails on Observatory Mesa can benefit by considering the following environmental condition factors.

xi. Natural Surface Trails

Constructing trails using native soils physically connects users to the landscape and allows for an intimate experience with their surroundings. The ability of single-track natural surface trails to continually engage users with their surroundings is valuable to all trail user communities. Natural surfaced trails are a cost-efficient means of trail construction and maintenance, and can be built in a partnership between a professional crew and volunteers.

xii. Hydrology

On average, the Flagstaff region receives 25 inches of precipitation per year, with the majority occurring from summer monsoonal rains and winter snow fall. Erosion is at its highest during summertime precipitation resulting in short but intense bursts of rain but can also occur during springtime snow melt. Water flowing over the surface, known as overland flow or sheet flow, is the primary source of erosion for trails in the Flagstaff area. Sheet flow should be considered in building trails and how maintenance is conducted.

xiii. Vegetation

The Ponderosa Pine forest community provides for welcome level of interception for trails under the forest canopy. Interception refers to the precipitation that does not reach the soil, but is intercepted by the leaves and branches of plants and the environments floor. Trees, shrubs and forbs create an organic layer on the forest floor, helping to infiltrate precipitation before sheet flow occurs. Interception should be considered during final trail alignment selection.

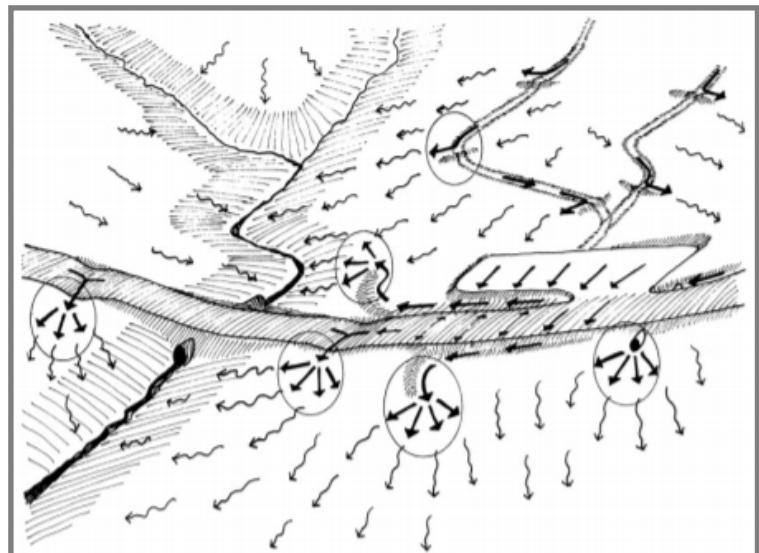


Diagram of how sheet flow affects trails, courtesy of State of New Hampshire Department of Resources & Economic Development, Division of Parks & Recreation; Bureau of Trails. (2017, January).

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xiv. Slope Angles

Trails that do not affect hydrological processes allow for sheet flow to continue unabated by the tread surface. Placing trail alignments on moderate to steep slopes of the Mesa can promote trail sustainability by providing enough velocity for water flow. Slow moving sheet flow on shallow or flat slopes tend to trap water on trails more easily, contributing to erosion, puddling and user response to muddy trails.

xv. Soils

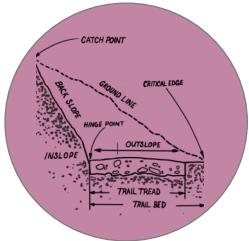
Substrate within the planning area is dominated by clay soils formed on basalt lava flows (Edwards et al., 2013, p.1). Clays are very fine grained soils, with their particles being plate like and oily and can attract and hold large amounts of water. They do not have enough pore space for water to drain through. This soil type tends to be muddy and will drain poorly when wet. It can also be the cause of trail erosion since the water is more likely to run across the surface. When clays are dry, the particles bond together and provide trail stability. If compacted appropriately (mechanical or from trail use), clay soils can be very resistant to erosion (State of Minnesota, 2017, p.6.8; Basch, et al., 20017, p.50).

Existing rock in the trail tread can improve trail stability. Fractured rock (not rounded) of any size can work to resist mechanical and environmental erosion and bind smaller soil particles together. Rocky terrain and trails tend to hold up better over time and limit subsequent maintenance requirements. Substrate should be considered when improving the trail surface.

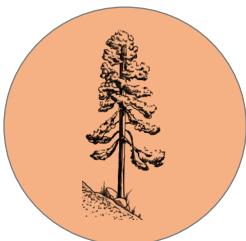


Left: Soil sample from the Loop Trail, OMNA property in early April, 2020. The Sample was rolled and squeezed by hand to determine soil characteristics. Clay soils do not break apart when squeezed or pressed, as opposed to soils with more dominant levels of loam and silt.

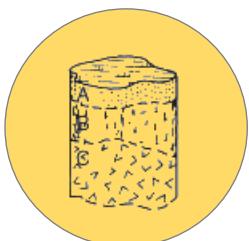
Trail Design Recommendations: Sustainability



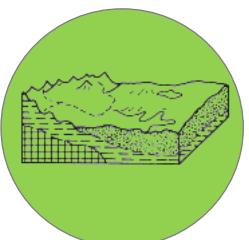
Trails located on shallow to flat slopes will not successfully shed water over time, due to trail travel ways compacting and losing sediment. Trail braiding and widening are more likely to occur during wet season.



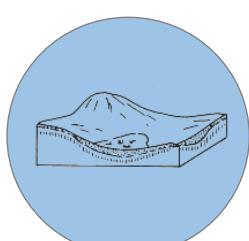
Trails located under the forest canopy are preferred over trails in open meadows for potential interception and limiting the effects of strong monsoonal rains.



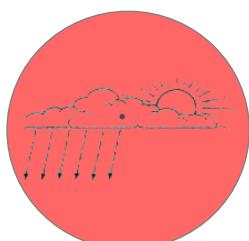
Clay soils and trail stability are greatly affected by water. Wet conditions can reduce trail conditions quickly, while dry conditions can provide well compacted and enjoyable trails. Grade reversals should be designed in to all alignments at 100 foot intervals or less to limit the distance water can flow down the trail at any given location.



Trails located on moderate to steep hillsides will better allow for sheet flow to continue over and past well-constructed trails without altering natural hydrological processes.



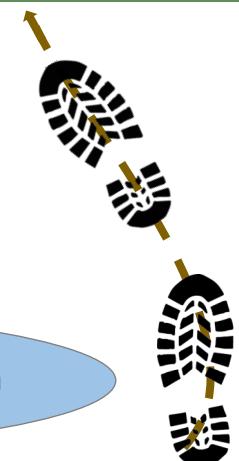
Strong monsoonal rains and snow melt can cause erosion quickly, and should be considered during trail design.



Due to the nature of seasonal precipitation and soil type, linear grades should be limited to 8% overall (distances of 50 feet or more) with short (50 feet or less) sections not to exceed 14% unless rock structures are built to mitigate erosion. Rocky terrain may allow for steep grades over short distances.

Recommendations: User Experience

Loop options for exercise opportunities and singular Observatory Mesa trail experiences



Connectivity to other trail systems in the region

Views of the Surrounding Landscape

Opportunities for solitude and relaxation utilizing more remote areas

Options for varying intensity levels including sustainable elevation loss and gain

Improved access and signage throughout the mesa

Opportunities for skills and fitness progression

Resources

The GOMA trail system is intended to provide meaningful experiences for non-motorized users: adaptive cyclists, equestrians, hikers and mountain bikers. There are a variety of great resources that can be applied when building trails for the user experience. This plan intends to blend design and construction standards to balance the varying interests of outdoor recreationists, and implementation of the approved trail plan should consider the array of desired trail characteristics of the community. Below is a list of links to resources for trail design and construction standards.

- [American Trails Resource Library](#): A large collection of resources pertaining to trail planning, design, construction and maintenance.
- [American Trails Resources– Hiking](#): A filtered selection of resources from the Resource Library.
- [Equestrian Design Guidebook for Trails, Trailheads and Campgrounds](#): A comprehensive manual for designing trails and providing experiences for equestrian use. Produced by the Forest Service Technology and Development Center.
- [Guidelines for a Quality Trail Experience– mountain bike trail guidelines](#): A comprehensive analysis of providing varied trail experiences for mountain bikers. Produced by the International Mountain Bike Association and the Bureau of Land Management.
- [Kootenai Adaptive Sport Association– Adaptive Trail Standards– 2020](#): Recently completed design and construction standards for safe and high quality adaptive cycling trails.

Guiding documents from local jurisdictions inform and expand the geography beyond the Greater Observatory Mesa. Additional planning resource are included on the References page of this document. Resources are linked below for comparison.

- [City of Flagstaff: Active Transportation Master Plan](#): The guiding document for active transportation in Flagstaff.

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