TRAILS MASTER PLAN
REPORT

MUSKINGUM WATERSHED CONSERVANCY DISTRICT

NOVEMBER 2025

MUSKINGUM WATERSHED CONSERVANCY DISTRICT

Natureshape

Muskingum Watershed Conservancy District
Trails Master Plan Report
November 2025

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Photography by Troy Scott Parker unless otherwise noted
COVER PHOTO: Seneca Lake from location of planned trail east of Marina Point

Contents

PART 1

HIGH-LEVEL VIEW OF THE TRAILS MASTER PLAN

MUSKINGUM WATERSHED CONSERVANCY DISTRICT

Natureshape

1

Executive Summary

Over the past decade, the Muskingum Watershed Conservancy District (MWCD) has steadily expanded public access and recreational amenities across its lakes, parks and campgrounds. Recognizing the growing public interest in trail-based recreation, MWCD published its Trails Blueprint in 2019. This foundational step established broad goals but lacked the details to guide large-scale investments. In 2021, MWCD hired full-time trails staff who began improving existing trails, exploring new alignments, and balancing increasing public demand to expand the trail system. Building on this early progress, MWCD recognized the opportunity to accelerate trail development through a comprehensive vision and clear prioritization framework.

In 2021, MWCD conducted a Park Amenity and Activity survey, where 87% of respondents identified trails as "important" and ranked them as the top amenity. This local finding reflects the 2024 Statewide Comprehensive Outdoor Recreation Plan (SCORP), which also notes that trails are among Ohio's most requested outdoor amenities. At the same time, MWCD received trail proposals from various organizations, which were often duplicative and disconnected, emphasizing the importance of a coordinated, long-term plan.

Trails are essential for attracting visitors to MWCD facilities and enhancing camping activities. When high-quality trails are accessible near campgrounds, day visitors are more likely to extend their stay overnight. This results in a longer average length of stay and increased occupancy during the shoulder seasons. Each trailhead serves as a gateway and plays a crucial role in Ohio's outdoor recreational economy.

Recent surveys from the Ohio & Erie Canal Towpath Trail indicate that trail users contribute approximately $6.9 million annually to the local economy, particularly benefiting rural areas. Trail visitors support local towns and villages by spending money on groceries, dining, gear, and rentals. High-quality trail networks strengthen the visitor economy by encouraging repeat trips and directing spending into rural communities. This supports local businesses by helping small towns thrive as gateways to the trail network. Trails promote healthier lifestyles, foster social connections, and enhance the quality of life for residents and visitors. In summary, the trail network increases recreational opportunities and allows communities to engage with and benefit from the outdoor recreational economy.

To address this need and fully recognize the benefit of a comprehensive, well-connected trails system, MWCD commissioned the Trails Master Plan (TMP), a 20-year vision and implementation framework to develop a regionally significant trail network across MWCD recreational assets: Atwood, Beach City, Charles Mill, Clendening, Leesville, Piedmont, Pleasant Hill, Seneca, and Tappan. The plan proposes 297 miles of trails on MWCD land, of which over 248 miles will be entirely new. Trail planning emphasizes user enjoyment, sustainability, and accessibility.

The MWCD trail plan addresses the needs of various user groups. New trails will offer new opportunities for hiking, mountain biking, and equestrian users. The plan also proposes a significant increase in the mileage of accessible trails, boosting it from 7.6 miles to 37.7 miles across the District, a 496% increase, ensuring more opportunities for visitors of all abilities.

The Trails Master Plan outlines a 20-year strategy to develop 297 miles of trails, divided into three phases. The goal is to add an average of 12 miles of new trails each year.

- 2026-2029 – Phase 1
  This phase focuses on priority projects considered “high impact, lower cost.”
- 2030-2037 – Phase 2
  This phase will involve construction to complete the MWCD core trail network.
- 2038-2045 – Phase 3
  This phase will focus on completing remaining TMP projects.

The estimated overall investment for the Trails Master Plan is $61 million. The most substantial single element of the plan is the proposed 4.05-mile paved connector along Atwood Lake, which has an estimated cost of $10.23 million. The plan also includes various measures and recommendations to reduce costs, such as in-house construction and/or installation of bridges, boardwalks, and trailheads, as well as the bulk purchase of materials.

In August 2025, the MWCD Board of Directors approved the Trails Master Plan principles and authorized the submission of a Phase 1 design and construction package for the FY 2026 budget.

The Trails Master Plan introduces over 248 miles of new trails, making it one of Ohio’s most comprehensive and forward-thinking recreation initiatives. The plan establishes the Muskingum Watershed Conservancy District as a leader in outdoor recreation across Ohio. It aims to expand access to outdoor activities, boost the economic vitality of nearby communities, and provide valuable health and quality-of-life benefits throughout the watershed. Designed as a phased, fiscally responsible investment over the next 20 years, the plan will create an interconnected network that encourages exploration, fosters stewardship, and ensures that future generations develop lasting connections to the MWCD and the natural landscapes it protects.

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FAQ for Understanding the Trails Master Plan (TMP)

What is the mission of the Trails Master Plan (TMP)?

"Shape enjoyable, sustainable, and practical trails that benefit the MWCD region, can be used by the majority of visitors, and are located on readily available land."

"Readily available land" is primarily land that MWCD already owns but can also include adjacent land owned by cooperating entities such as the US Army Corps of Engineers (USACE) and the Ohio Dept. of Natural Resources (ODNR).

Which lakes are included in the TMP?

This report covers Atwood, Beach City Reservoir, Charles Mill, Clendening, Leesville, Piedmont, Pleasant Hill, Seneca, and Tappan.

Wills Creek Reservoir was originally part of the TMP but its planning was paused early in the process and it is not included in TMP trail estimates. Wills Creek may be planned separately at a later time. For more information, see page 91.

The TMP By the Numbers

Note: Numbers are **estimates** for trails on MWCD land.

297	total miles of new and existing trails
248	miles of new trails
49	miles of existing trails (69% of currently existing trails)
290.5	miles of dedicated off-road trails
6.5	miles of trail on currently used paved and unpaved roads (i.e., roads open for public vehicular use). These are mostly short segments of longer trails where off-road routes are unavailable or impractical.
276	miles of natural surface trail (mostly native soil, with crushed stone, aggregate mix, or stone-armored tread as needed)
20	miles of hard-surface trail (usually asphalt, mostly as paved trail or path, less as trail segment on paved road)
58	trailheads with constructed and managed parking

64	boardwalks totaling 6,477 feet (1.24 miles) in length
64	trail bridges totaling 2,137 feet (0.40 miles) in length
56	trail embankments totaling 10,261 feet (1.94 miles) in length
297	miles (i.e., all trails) open for hiking and trail running
190	miles of trails open for mountain biking
66	miles of trails open **only** for hiking and trail running (some of this mileage is also ABA-accessible)
38	miles of ABA-accessible trails, including about 18 miles of natural surface trails
24	miles of trails open for equestrian use
1.4	miles of archery trail at Seneca

Lakes in the Trails Master Plan

What do proposed trails look like?

Natural surface trails

Natural surface trails include trails surfaced with native soil, crushed stone, aggregates, gravel, stone armoring, and other unbonded, naturalistic materials. They will be designed with a **reversing grade** (see photos at right) where trails traverse slopes at a relatively gentle average grade but zigzag left and right as they go. It's called a reversing grade because the trail grade keeps reversing between climbing and descending.

Reversing-grade trails drain water through their periodic dips, making them more sustainable than road-like trails that maintain constant grades, especially steeper trails and trails that climb straight up slopes. The ups and downs, as well as changes in direction, allow reversing-grade trails to go around trees, rocks, and other obstacles while changing directions and sightlines, making reversing-grade trails more enjoyable than road-like trails.

An existing example of a reversing-grade trail on MWCD land is 30-06 Trail at Pleasant Hill. It straddles the border between Pleasant Hill and Mohican State Park. It's considered to be one of the most fun trails in Mohican. It's also steeper and narrower than most trails in the TMP will be, so it's not representative of most planned trails in this report.

Most trails in the TMP that are not intended to be accessible have average grades of 3.5%. A few have 4.5%. Even fewer are intentionally steeper at 5-6%, as a response to a difficult site or to optimize a bikeable trail for faster downhill travel at controllable speeds.

Paved trails

New paved trails in the TMP are extensions of existing paved trails in the campgrounds. They look and feel very much like existing paved trails.

How was the master plan for each lake developed?

The trail system at each lake is designed to take visitors to the best land-based features and create the best experiences that each lake has to offer, yet the mission to form practical trails keeps trails down to earth. Consequently, trails weave their way into sites in low-impact, opportunistic ways, working with the land and the immediate context to shape enjoyable, sustainable, and practical trails that average users can enjoy.

At each lake, a few of many TMP objectives include:

- **Placing trails where the site is most interesting and attractive** such as places with more pleasant forests, trails near water, trails near rocks,

Reversing-grade trails drain sustainably, are fun to be on, and look and feel like they become parts of their sites, especially when they are narrow and weave around trees and rocks. Trails in upper left and lower right are biking-hiking trails; the other two are hiking only.

high points, viewpoints, and topographically interesting and aesthetically attractive places.

- **Forming multiple-use trails** as a way to increase the number of users that can enjoy the same trails.
- **Going where people want to go,** forming loops from most starting points, creating logical circulation, providing trailheads with parking, connecting campgrounds to trails, and using trails to create off-road routes through campgrounds.
- **Forming low-impact, low-key trails:**
  - Weaving around trees rather than removing them
  - Keeping trails as narrow as practical and as rustic as the local site, usage, and context allow
  - Creating reversing-grade trails as described earlier
  - Avoiding wet areas as much as feasible
  - Avoiding being on extremely steep slopes
  - Avoiding or minimizing the need for trail structures (bridges, retaining walls, embankments, etc.)
- **Crossing drainages at the best sites.** Going where the most enjoyable and sustainable drainage crossings can be made with a practical yet attractive trail structure (boardwalk, bridge, etc.). The best location for crossing each drainage was usually located first. Trails were then laid out to use those crossings.
- **Creating naturalistic ABA-accessible trails,** i.e., trails that naturally look and feel accessible as opposed to looking "accessible" because of a high degree of engineering or feeling "forced" into a site that doesn't lend itself to accessibility. Nearly half of new accessible trails are conceived as natural surface trails.
- **Respecting residential privacy** while also providing trail system access to nearby residents.

For more information, see "The Shaping of the Trails Master Plan" beginning on page 100.

How should we interpret the TMP maps?

The TMP maps mean "something like that" because the TMP is a two-stage project and the maps only show Stage 1. Here's how it works.

The TMP is a master plan. A master plan shapes the look and feel of the big picture at a large scale while leaving the details of certain smaller pieces to be fully determined and detailed through subsequent planning.

The maps in this report show the results of Stage 1, planning the big picture of trails at a large scale in a somewhat schematic way. The exact locations of individual trail segments on the ground, however, are the smaller pieces to be fully determined and detailed in Stage 2.

Stage 2 occurs up to 20 years in the future when trail planners, designers, and builders develop actual trails on the ground through site-specific, detailed trail planning, design, and construction. Stage 2 is charged with not only developing a precise alignment for each trail but also making the actual trail alignment **better** than its Stage 1, schematic representation.

Hence on-the-ground planning and design in Stage 2 completes the planning and helps fulfill the objectives established by Stage 1. The final maps of trails on the ground will be different in their details—sometimes very different—but still recognizable compared to Stage 1 maps.

For more information, see "The Shaping of the Trails Master Plan" beginning on page 100.

How real are the numbers in the TMP?

All numbers in Stage 1 are estimates. Yet since part of the purpose of Stage 1 is estimating the resources needed to implement the plan in Stage 2, numbers of physical quantities are intended to be realistic estimates.

Trail mileages and lengths of trail structures such as bridges and boardwalks in Stage 1 came from measurements of schematic trail segments developed in Google Earth (a geographic information system (GIS) with 3D visualization tools). These measurements are very precise because they came from digital representations, which accounts for the very precise mileages and lengths in the Stage 1. But since we expect actual trails on the ground to be different from their schematic Stage 1 representations, their actual lengths will be somewhat different.

The following chapters introduce the TMP for individual lakes

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Atwood Lake

Atwood Lake Highlights

- Hawk Ridge trails and trails around the observation tower are replaced with singletrack, shared-use hiking and mountain biking trails with gentler grades and more loop options.
- An accessible new shoreline trail from near the vacation cabins to Cemetery Bay provides lake views and access to two dog beaches.
- A new, 3-mile-long hiking-biking trail explores the recently acquired valley northwest of the campgrounds.
- Proposed trails connect to the USACE day use park (requires USACE cooperation), creating trails and loops between the dam and the rest of Atwood's trails.
- The main paved path through the campgrounds to Cemetery Bay is proposed to be extended to a new trailhead west of Dellroy as a paved, off-highway trail. Building this extension in this way, however, is extremely expensive, especially along the nine causeways on State Route 542. See the following discussion.

Atwood Lake Discussion

Extending paved trail from the Cemetery Bay trailhead to Dellroy

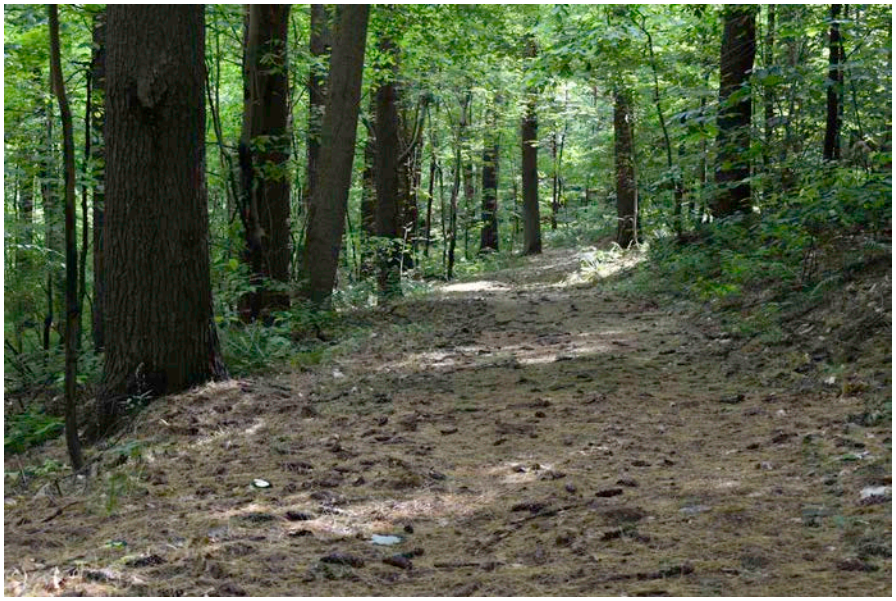
Existing Woodland, Eagle, and Cemetery Bay trails link together end-to-end to form over 3 miles of paved trail from the west side of the park to Cemetery Bay.

A 3.6-mile, bike path-style extension is proposed to connect these trails to East Marina and the Village of Dellroy along State Route 542. The trail, separate from the highway, would be between the highway and the lake. Compared to bike lanes on Rt 542, this off-road trail has a higher recreational value, would receive more use, and is safer.

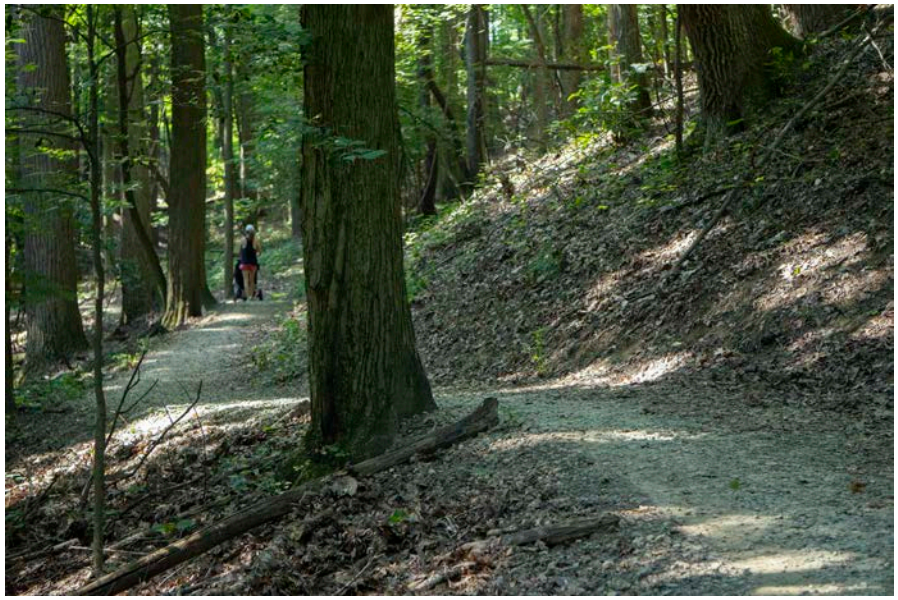
However, between interagency planning, engineering, design, and construction, this off-highway, greenway-style extension would be extremely expensive.

Atwood Lake: Existing and Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage	New trail/path	Existing trail/path	Trail on current road	Natural surface tread	Hard surface tread	MTB/ hiking trail	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike	ABA accessible	Other use
Existing trail mileage	7.20	—	7.20	0.00	2.96	4.24	0.00	0.00	2.96	4.24	4.24	0.00
Proposed trail mileage	21.89	17.38	4.51	0.00	14.02	7.87	13.51	0.00	0.51	7.87	9.24	0.00
Proposed mileage change	14.69	17.38	-2.69	0.00	11.06	3.63	13.51	0.00	-2.45	3.63	5.00	0.00



"Before"—Existing Hawk Ridge trail at Atwood is built like a small road. Its tread (travel surface) slopes downhill so much that it's uncomfortable to walk on.



"After"—New trails would shape more like this trail: narrower, more winding, with a reversing grade and a tread that's closer to level from side to side. Most new trails would have a native soil surface rather than the aggregate surface shown here. (Photo by Ralph Protano)

South shore trail

The south shore was studied to create a potential route for a continuous recreational trail off of Rt 542. Due to a disconnect in publicly owned land, an off-road connection from Atwood Dam to the bike lanes on Rt 542 is not currently feasible.

The trail in the recently acquired valley

The 3-mile hiking-biking loop trail in the recently acquired valley northwest of the campgrounds is Atwood's longest natural surface trail. It climbs to one of the highest elevations in the trail system while exploring a long, secluded valley and its tributaries forested mostly with hardwoods.

Atwood Resort property

This parcel was studied for possible recreational trails. No trails are proposed here, however, due to lack of recreational quality compared to trails elsewhere in Atwood.

Oil and gas wells

The presence of numerous shallow oil and gas wells at Atwood further restricted where trails could be. Proposed trails attempt to avoid most wells but still come close to a few that couldn't be avoided.

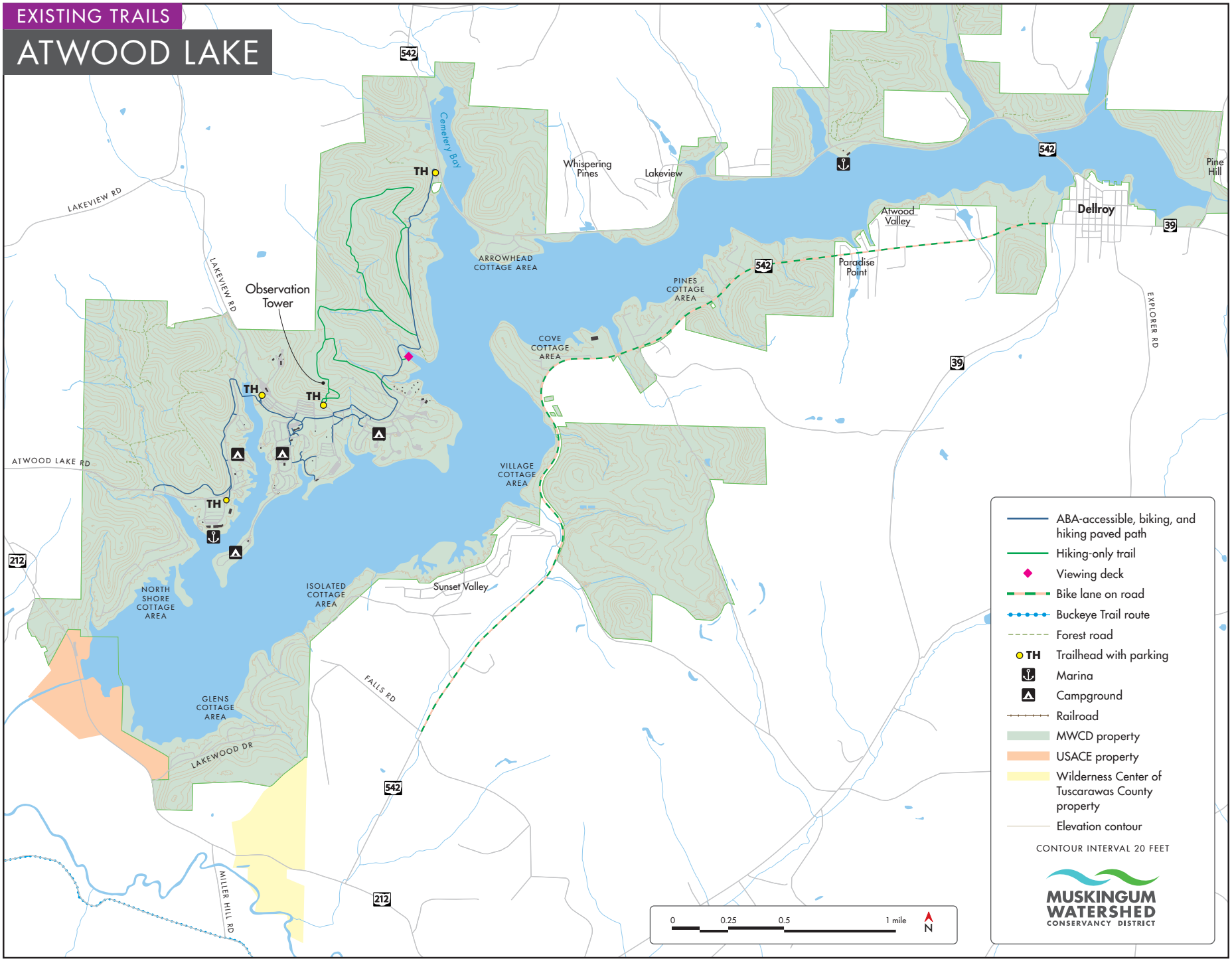
Leesville and Atwood are complementary

While an off-highway trail loop around Atwood Lake would be extremely expensive, the TMP proposes a 31-mile hike-bike trail loop around Leesville Lake. The closest trailhead on the Leesville loop trail is only 4.8 miles from Dellroy via quiet country roads.

Visitors who overnight at Atwood can make day trips to Leesville to experience long hike-bike trails through undeveloped forest around a quiet, scenic lake with a scarcely developed shoreline. The proposed trail systems at Leesville Lake and Atwood Lake were planned to complement each other.

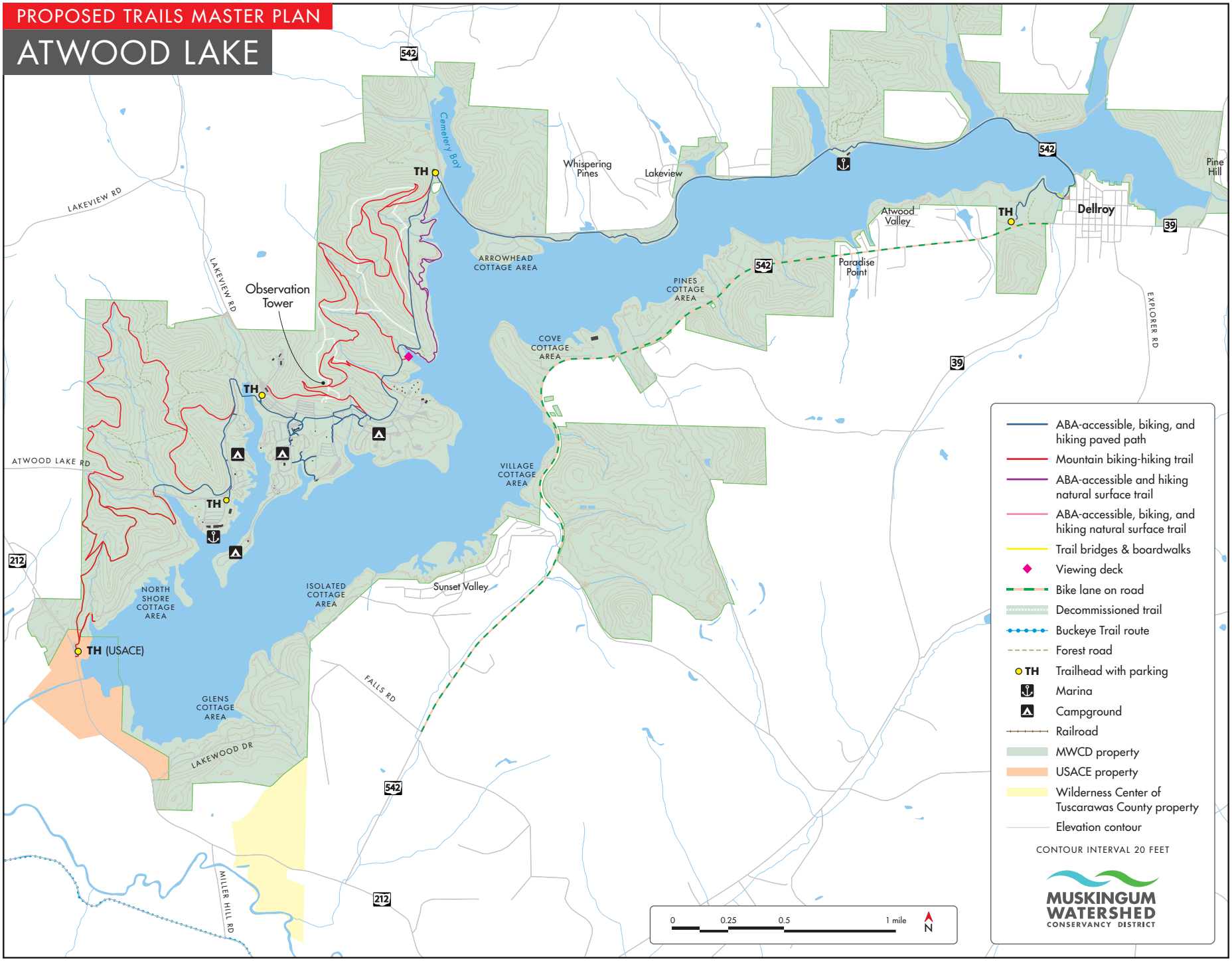
EXISTING TRAILS

ATWOOD LAKE



PROPOSED TRAILS MASTER PLAN

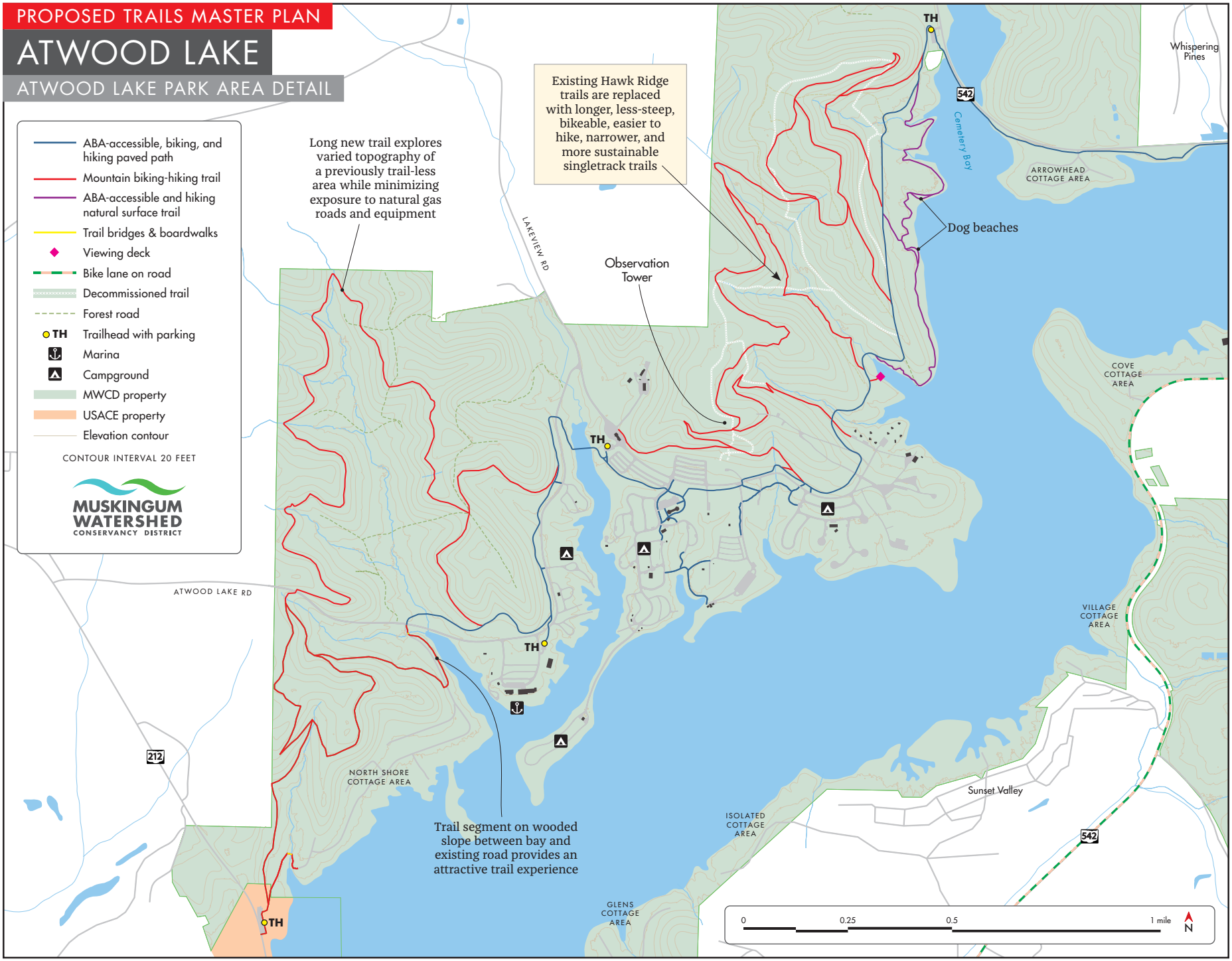
ATWOOD LAKE



PROPOSED TRAILS MASTER PLAN

ATWOOD LAKE

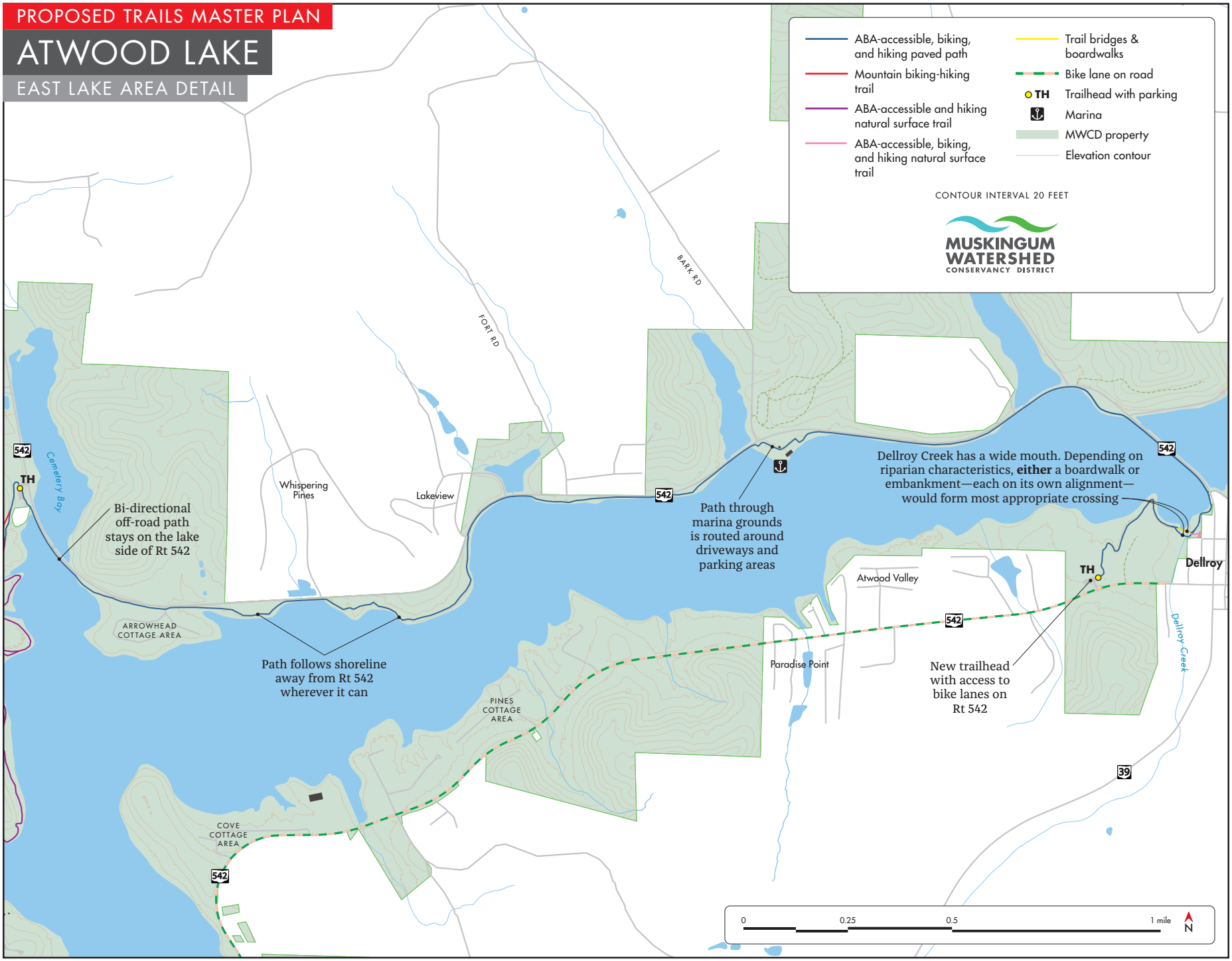
ATWOOD LAKE PARK AREA DETAIL



PROPOSED TRAILS MASTER PLAN

ATWOOD LAKE

EAST LAKE AREA DETAIL



4
Beach City Reservoir

Beach City Reservoir Highlights

- In its wide variety of landscape features and character of its trails, Beach City Reservoir is one of the most unique of the nine lakes. It offers rich experiences in all four seasons including winter when views abound on the higher elevation trails.
- Over half of the proposed trails are ABA-accessible natural surface trails. All other trails are hiking-only.
- A railroad grade on the valley floor, likely built in the 1860s, provides access to a wide range of long-established wetlands, large and small ponds, floodplain forests, and creek views.
- An exceptional 1.4-mile accessible trail climbing the trail-less valley wall of South Fork Sugar Creek passes through boulders, a hemlock grove (rare on MWCD land), and along the edges of natural sandstone cliffs. Trailheads with parking at both ends enable downhill-only travel if users can arrange shuttle service. This trail also connects to the railroad grade trail via a high, 90-foot trail bridge across South Fork Sugar Creek and a high boardwalk winding between large trees across a glade-like floodplain.
- Trails explore abandoned sandstone quarries, an abandoned railroad, wetlands, creekside areas, floodplains, rocky uplands, and a wide variety of forest types.

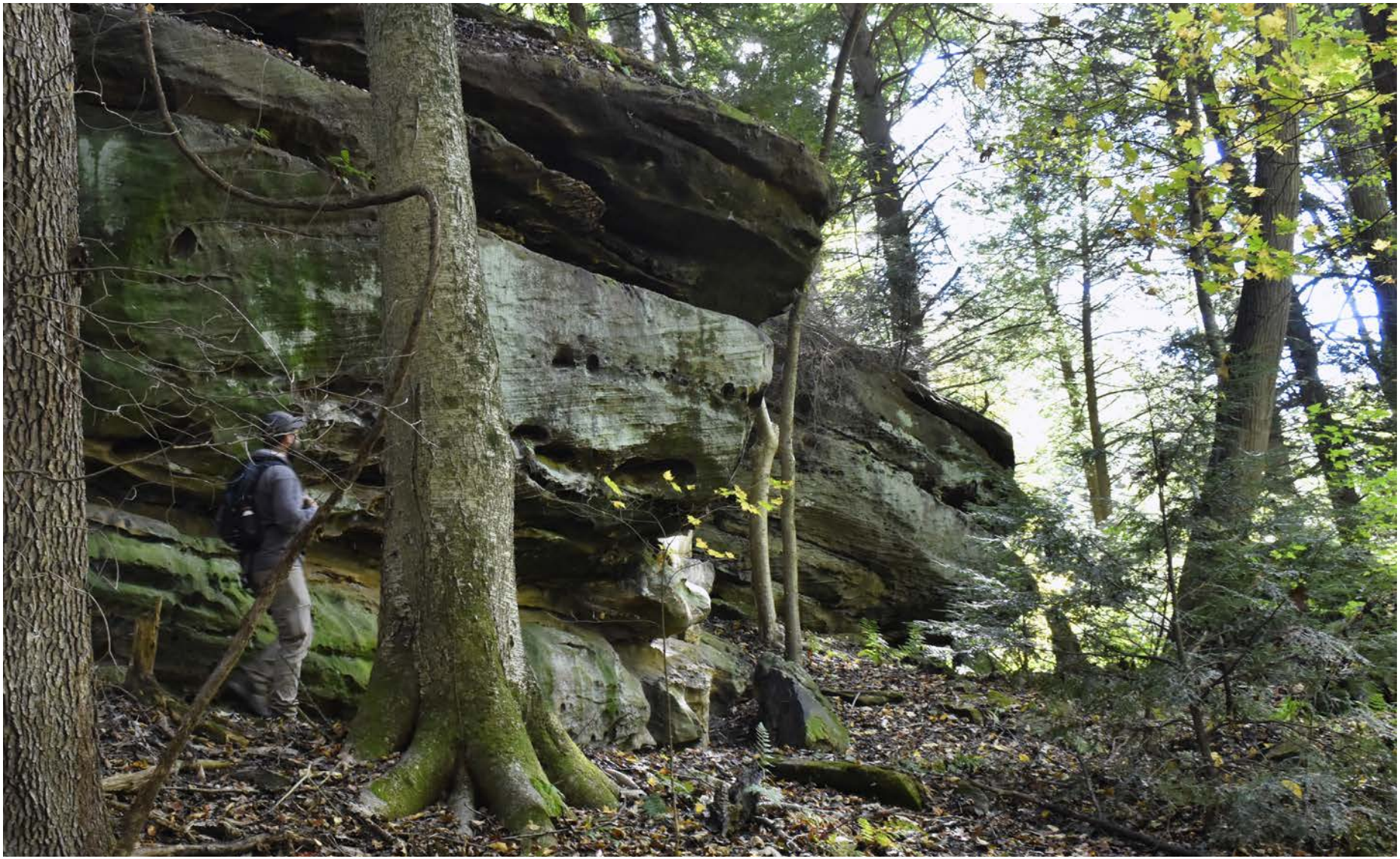
Beach City Reservoir Discussion

Industrial Heartland

The former railroad grade on the valley floor was abandoned when Beach City Dam was constructed in the 1930s. Freight trains still rumble through the valley on new tracks constructed above the spillway level of the dam. The railroads, quarries, unpaved roads, high water that naturally occurs every couple of years, potential for the entire valley floor to be flooded by the dam, and the trails weaving through it all epitomize the Industrial Heartland character of the region.

Beach City Reservoir: Existing and Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage	New trail/path	Existing trail/path	Trail on current road	Natural surface tread	Hard surface tread	MTB/ hiking trail	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike	ABA accessible	Other use
Existing trail mileage	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proposed trail mileage	9.31	9.31	0.00	0.32	9.31	0.00	0.00	0.00	8.75	0.32	5.00	0.00
Proposed mileage change	9.31	9.31	0.00	0.32	9.31	0.00	0.00	0.00	8.75	0.32	5.00	0.00



An exceptional accessible trail passes through this site as well as below and on top of similar cliff-like formations at Beach City. Many trails above the valley floor pass through rocky areas in places that have never had planned trails.

A rich environment best appreciated slowly

More than any other lake, Beach City changes at every turn. Hiking and accessible trails take advantage of this quick-changing nature that is best appreciated at a slow pace. Trails need to be nimble in places to pass through all kinds of situations, often in a small area. Some of the longest trail bridges and most interesting boardwalks in the TMP are proposed here.

Beach City is also rich in all four seasons, even in winter when views and vistas abound on the higher-elevation trails.

Reasons to exclude biking trails

The small area available for trails, the flexibility needed to thread trails through wetlands and climb through rocks and cliffs, and the inability to extend trails to the adjacent communities of Beach City and Dundee (see below) suggested a hiking-only trail system.

The final reason for a hiking-only system is that ODNR's adjacent Beach City Wildlife Area excludes biking because state statute prohibits bicycling on all state wildlife area lands. Prohibiting biking on MWCD land at Beach City is the best way to create full compatibility on trails that cross the border between MWCD and ODNR state wildlife area land.

Hiking trails designed on MWCD lands and the trails located at Beach City Wildlife Area, such as Dundee Falls, would complement each other. Both trail systems would see benefits from connecting across property lines if the opportunity would arise.

Proximity to populated areas

MWCD's property near Beach City is relatively close to a wide range of populated areas from Strasburg to Canton and nearby "Amish Country." The lack of public trails in the region causes heavy use on the few trails located at Beach City Wildlife Area. With many of the anticipated visitors being residents of the area, these trails will often be occupied and feel safe even without other amenities being present. Offering a large amount of accessible trails also tends to make places feel safer.

Kaylor Road and Soehnlen Road trailheads increase reservoir capacity

Trailheads along Kaylor and Soehnlen roads are excavated into roadside slopes, with excavated material hauled out of the area that is below the dam spillway. This practice compensates for the small amount of fill (which is mostly aggregate surface for old railroad grade trails) that trail construction will add below the dam spillway.

These parking areas are intended to be built as parking bays fitted between existing large trees. Each bay would hold one or a few cars. The location and number of bays and the total number of parking spaces would be worked out on site depending on where trees are. The locations, sizes, and number of parking bays shown on the maps are only meant to illustrate the concept.

Extending trails to the Beach City community proved impractical

Planning attempted to link Beach City trails to the Beach City community but could not feasibly do so while remaining entirely on MWCD property—some of which is either very narrow, exceedingly steep, or both. A connector trail entirely on MWCD land would also require two multi-span, high trail bridges across North Fork Sugar Creek. In addition, the decision to prohibit bikes on trails on this property would reduce public use of such a trail to the point that it could not be justified. Together, these factors make extending a trail to Beach City impractical.

Extending trails to Dundee proved impractical

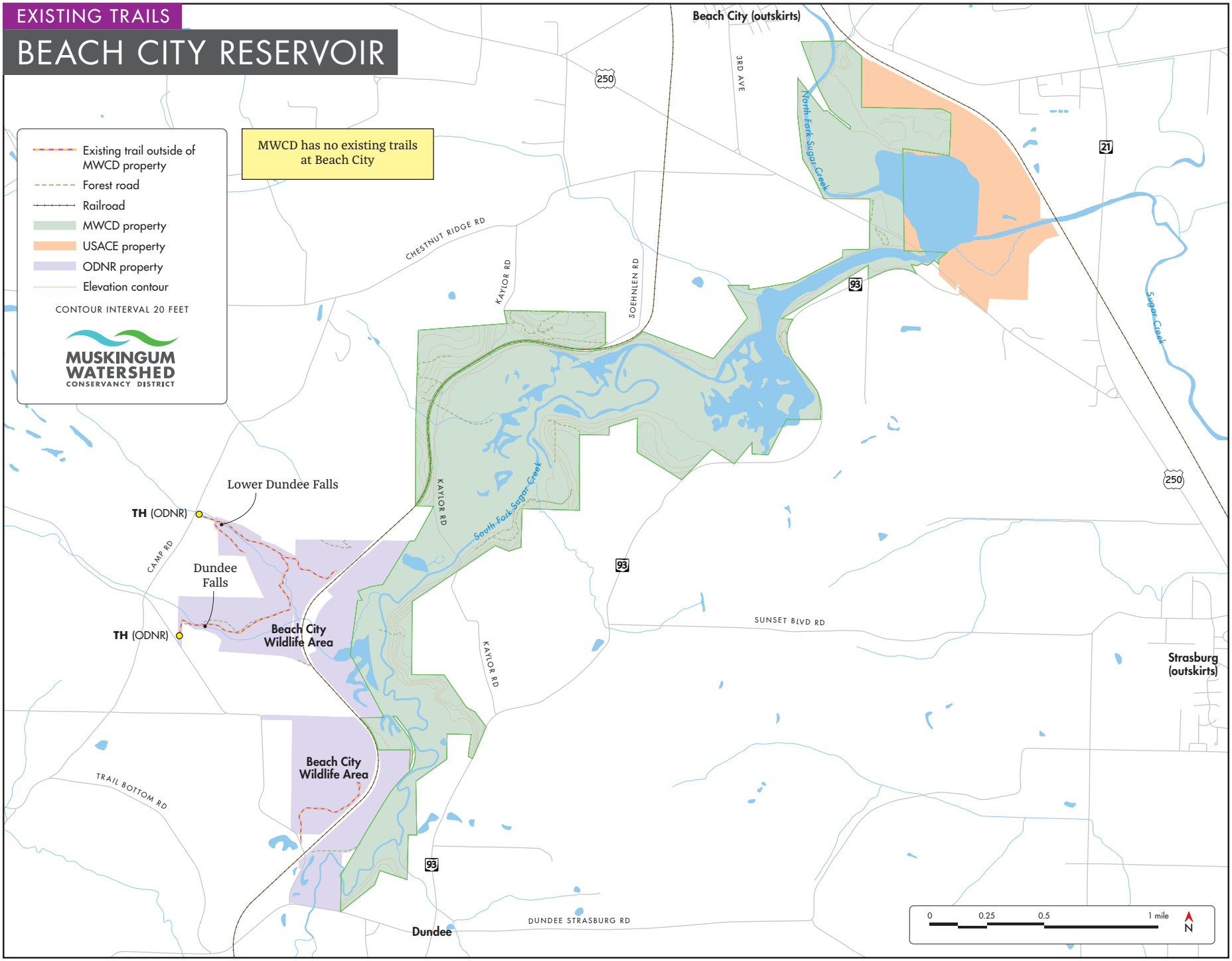
Planning attempted to link trails to Dundee Strasburg Road by multiple routes but all options encountered combinations of wetlands, property lines, topography, and lack of good options for crossing South Fork Sugar Creek that collectively made the connection unfeasible.

Five of eight trailheads are below spillway level

All of the trailheads immediately along Kaylor and Soehnlen roads are below spillway level. Any restroom facilities at those trailheads will be limited to accessible portable toilets.

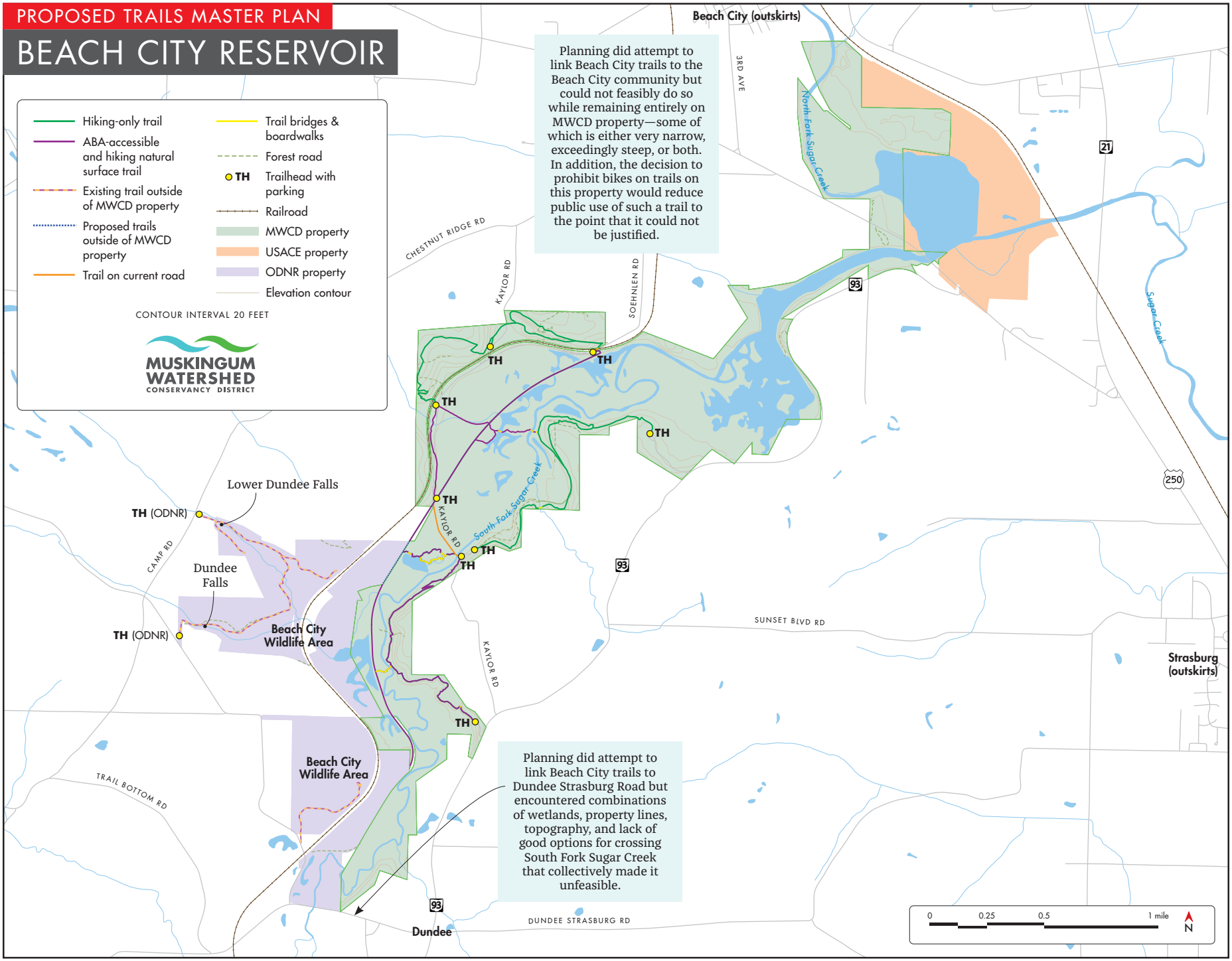
EXISTING TRAILS

BEACH CITY RESERVOIR



PROPOSED TRAILS MASTER PLAN

BEACH CITY RESERVOIR

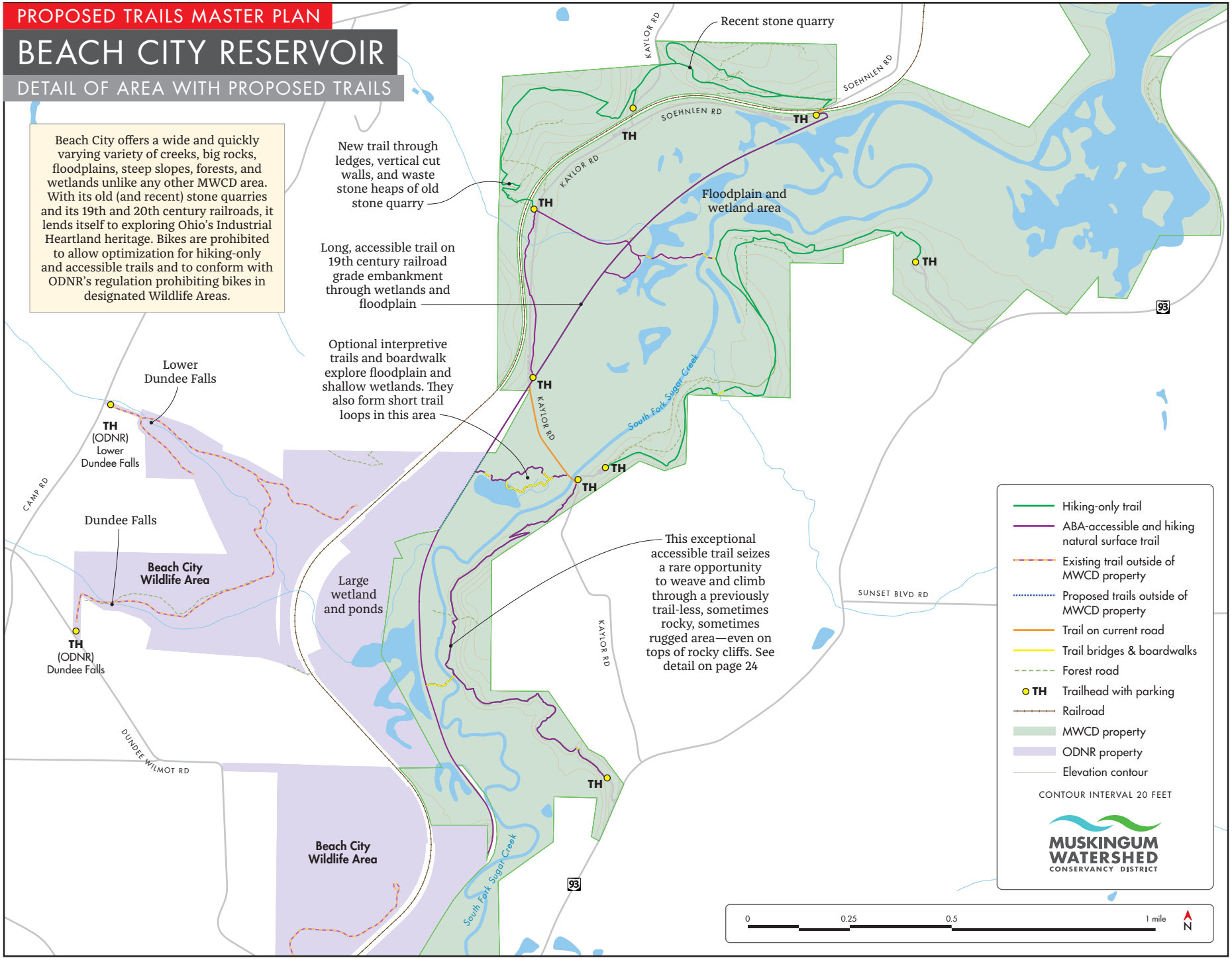


PROPOSED TRAILS MASTER PLAN

BEACH CITY RESERVOIR

DETAIL OF AREA WITH PROPOSED TRAILS

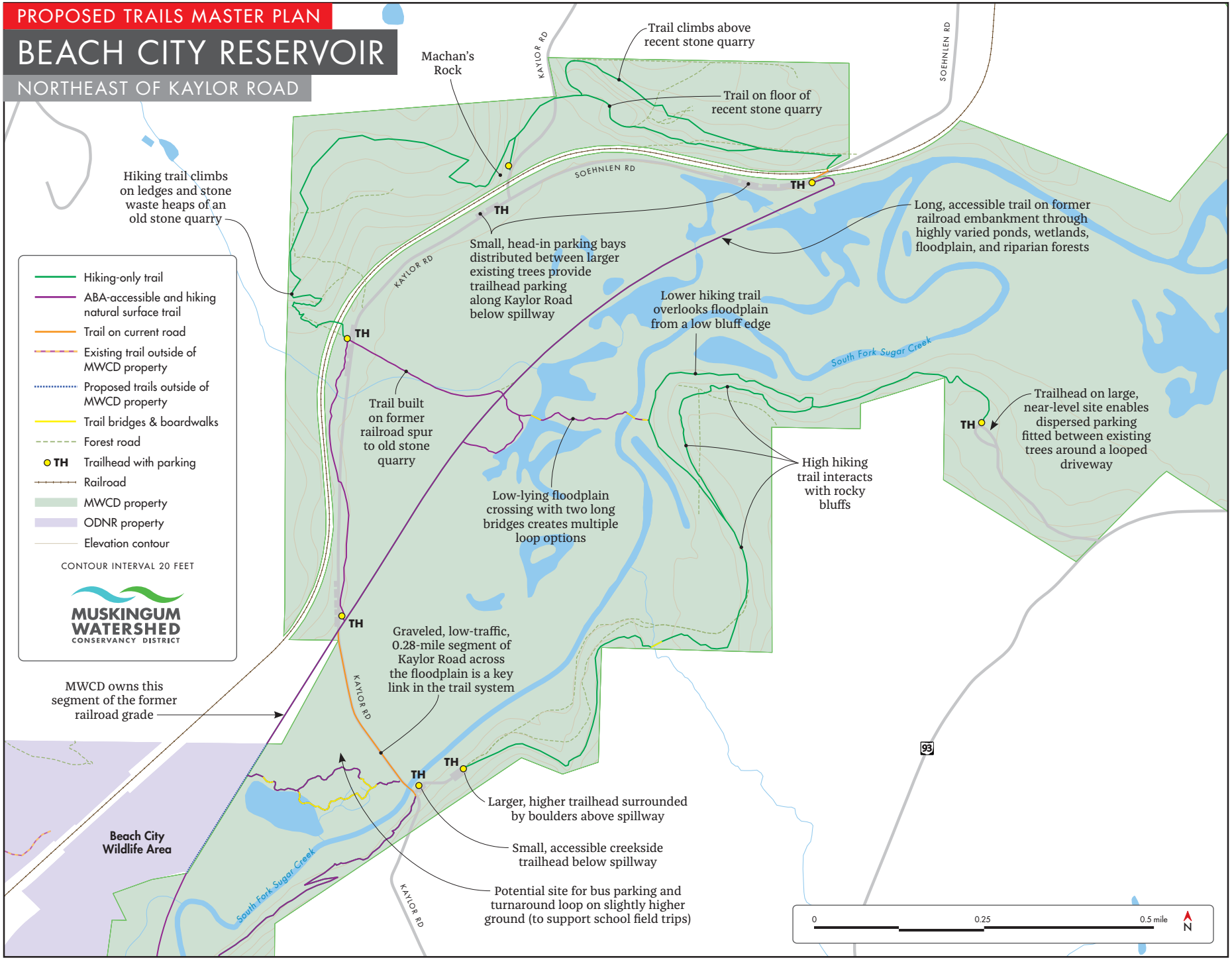
Beach City offers a wide and quickly varying variety of creeks, big rocks, floodplains, steep slopes, forests, and wetlands unlike any other MWCD area. With its old (and recent) stone quarries and its 19th and 20th century railroads, it lends itself to exploring Ohio's Industrial Heartland heritage. Bikes are prohibited to allow optimization for hiking-only and accessible trails and to conform with ODNR's regulation prohibiting bikes in designated Wildlife Areas.



PROPOSED TRAILS MASTER PLAN

BEACH CITY RESERVOIR

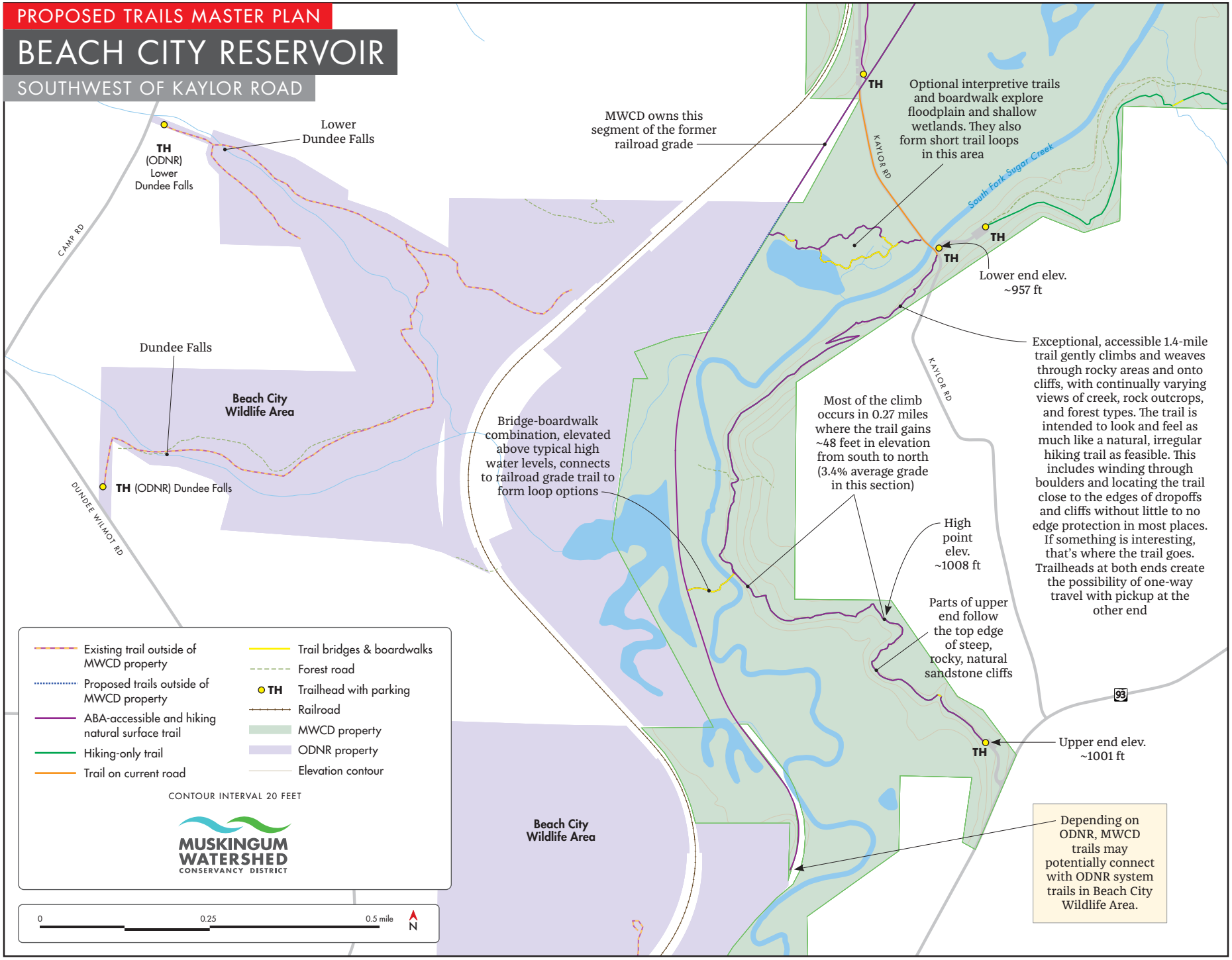
NORTHEAST OF KAYLOR ROAD



PROPOSED TRAILS MASTER PLAN

BEACH CITY RESERVOIR

SOUTHWEST OF KAYLOR ROAD



5
Charles Mill Lake

Charles Mill Lake Highlights

- Trails on popular Fisherman's Point are expanded into accessible natural surface loops and brought closer to the scenic east shore. A new "tree trail" is proposed for the southern part of the peninsula that comes close to the largest trees. A viewing deck under the canopy of existing trees is proposed for the southern tip.
- The Main Peninsula would have an accessible trail all along its western edge, from the far north end of the campground to the Messerly Center near the southern tip.
- The Eagle Point area and the Main Peninsula are proposed to be linked via accessible trails along State Route 430 (requires cooperation with ODOT).
- An extensive system of accessible trails is proposed for "Long Point," the area south of Eagle Point. They have an adventurous nature and a large lakeside deck.
- The Johnny Appleseed area has exceptionally good terrain, microtopography, and healthy hardwood forest for a fun mountain biking-hiking area with a new trailhead next to State Route 603.
- A 4.2-mile hike-bike Johnny Appleseed Trail between the existing Fisherman's Point parking area and the new Johnny Appleseed trailhead would be the longest and most varied trail at Charles Mill.
- The Donaldson Family Nature Trail area has singletrack, hiking-only reroutes to move trails out of wet areas and away from US Route 30. A new trail above the river explores a slope rich in maples and hardwoods.

Charles Mill Lake Discussion

Nearly all trails near the campgrounds (Eagle Point and Main Peninsula) would be accessible hiking trails

With a topographic range of about 30 vertical feet, these sites are not flat. They feature many topographic ins and outs. Most trails would traverse significant slopes, ascending and descending as need be. Accessible hiking trails will be interesting in terms of grades and slopes but not difficult to use.

Charles Mill Lake: Existing and Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage	New trail/path	Existing trail/path	Trail on current road	Natural surface tread	Hard surface tread	MTB/ hiking trail	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike	ABA accessible	Other use
Existing trail mileage	3.07	—	3.07	0.00	2.93	0.14	0.00	0.00	3.07	0.00	0.19	0.00
Proposed trail mileage	17.98	15.99	1.99	0.10	16.84	1.14	8.33	0.00	9.55	0.10	6.71	0.00
Proposed mileage change	14.91	15.99	-1.08	0.10	13.91	1.00	8.33	0.00	6.48	0.10	6.52	0.00

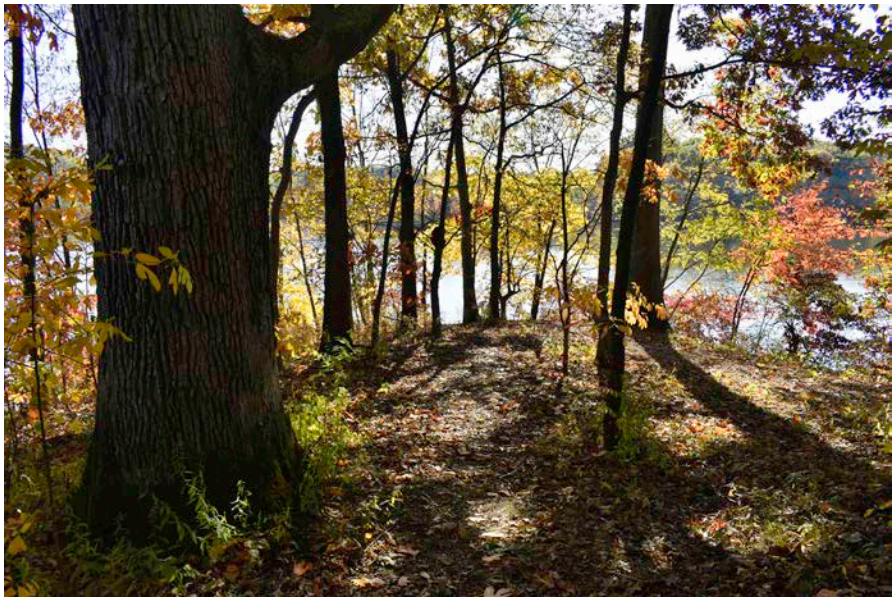
Fisherman's Point

From the parking area, the existing trail along the center of the peninsula will be decommissioned. Instead, two trails will traverse both sides of the peninsula as they ramp downward toward the low neck in the middle. A third new trail will follow the east shoreline from the neck up toward the north end of the parking area. All three new trails go through relatively open hardwood forest with moderately sized trees and views of the lake.

A single trail crosses the neck on a raised embankment that will keep the trail dry during typical high water levels that flood the current trail.

South of the neck, the loop trail mostly remains in its current location but the trail is improved for accessibility in spots where needed. A third, short "Tree Trail" is added to the southeast part of the peninsula where the largest trees grow. Some of the trees are over 200 years old. This trail would come close to the trunks of seven or so of the largest trees on the peninsula. It may have some interpretive panels.

At the southern tip of the peninsula, a wooden deck approximately 14 feet deep and 37 feet wide would curve as it follows the land. The deck would be about 8 to 9 feet above normal lake level and would ideally be at least partially shaded by existing nearby trees.



A viewing deck is planned for the tip of Fisherman's Point. Ideally, it would be partly under some of the larger trees at the tip, perhaps wrapping around their trunks.

All trails on the peninsula would be accessible, mostly with native soil treads except for an aggregate surface on the neck embankment.

"Long Point"—the land south of Eagle Point Campground—gets extensive trails

Long Point has long been appealing as prime land for trails at Charles Mill. Yet there's a wildness to its varying topography and microtopography, mixed trees and mixed understory, and in-and-out shorelines.

The TMP leans into the wildness, using it to form adventurous yet accessible hiking trails that incorporate the natural things that make it feel wild. Trails explore the most interesting parts of the area, perch above steep slopes down to the lake, climb to the ridgetop, and head out on the long point at the southern tip.

A pair of boardwalks island-hop across a bay to complete a large trail loop that couldn't happen otherwise. The longer boardwalk climbs high in its center to make a bridge for small boats to pass under.

A large, accessible trailside deck on the southeast shore of Long Point is envisioned as about 24 feet deep and 24 to 32 feet wide, at about 17 feet above normal lake level. Actual dimensions will be worked out in the field. Ideally, the deck will be under the shady canopy of large trees as a kind of outdoor room.

The Johnny Appleseed area

New trails in the area will be in undeveloped parts of the site. Much of the area is covered with exceptionally pleasant hardwood forest.

The existing access road will continue to be gated at its current gate location. The new Johnny Appleseed trailhead will be entered from the existing access road and located alongside Rt 603 immediately south of the existing access road. Hence no changes are needed to the intersection with Rt 603.

The existing Johnny Appleseed amphitheater is already slated to be removed and its site restored. New trails will avoid going into the former theater site, the restoration area (except possibly a bit of its southwest edge), and the parking areas on top of the hill.

The TMP does not call for anything specific to happen with the existing parking areas on top of the hill, leaving MWCD free to decide what to do with them. If something is developed that should connect to trails, it will be easy to connect it. If something is done that should remain separate from trails, it will be easy to maintain the separation that is already planned.

Donaldson Trail

The biggest change reroutes the trail off of the gravel gas road along US 30 by moving it higher on the slope, improving views while moving the trail farther from US 30. The new alignment would be a narrower, purpose-built hiking trail.

The above reroute also eliminates the steepest fall-line segment of the center trail in the Donaldson system.

The lowest part of the trail next to the river, which tends to flood at least once a year, is rerouted further up the slope to get above annual high water levels.

A new trail through higher quality hardwood forest is added between the center and easternmost trails. This trail has better views than the existing nearby trails and creates additional loop options.

Trail changes in the area are not expected to impact existing wildflower habitat, and the boundaries of that habitat are to be considered in detailed onsite trail design.

Potential connections to Ashland Soil & Water Conservation property

MWCD trails in the northeast corner of the Johnny Appleseed area come close to the border with this property in two places, making it easy to connect to future trails on that property if Ashland so desires. Due to topography, it appears that the MWCD trail in the southernmost of those two places would be simpler and more intuitive to build if it could briefly cross the border with Ashland's permission.

Potential difficulties with Johnny Appleseed Trail between Fisherman's Point and Rt 603

Keeping the trail on MWCD land requires building an approximately 565-foot boardwalk along the edge of the lake just south of the property line. The lakebed may be rocky at least on the east end of the boardwalk, which would complicate construction of the piers. A floating boardwalk could be considered but is likely to be impractical given that water levels in Charles Mill Lake can rapidly change and that spillway elevation is 23 feet higher than conservation pool (normal lake) level.

With further site study, building this segment of the trail may turn out to be impractical. If that happens, the north end of Johnny Appleseed Trail would begin at the nearby planned trailhead on Rt 603 just south of Mifflin.

New trailheads are located close to state highways

New trailheads along State Routes 603 and 430 are close to and highly visible from the highways. This placement helps make the best use of limited land while making patrol easier for ranger staff.

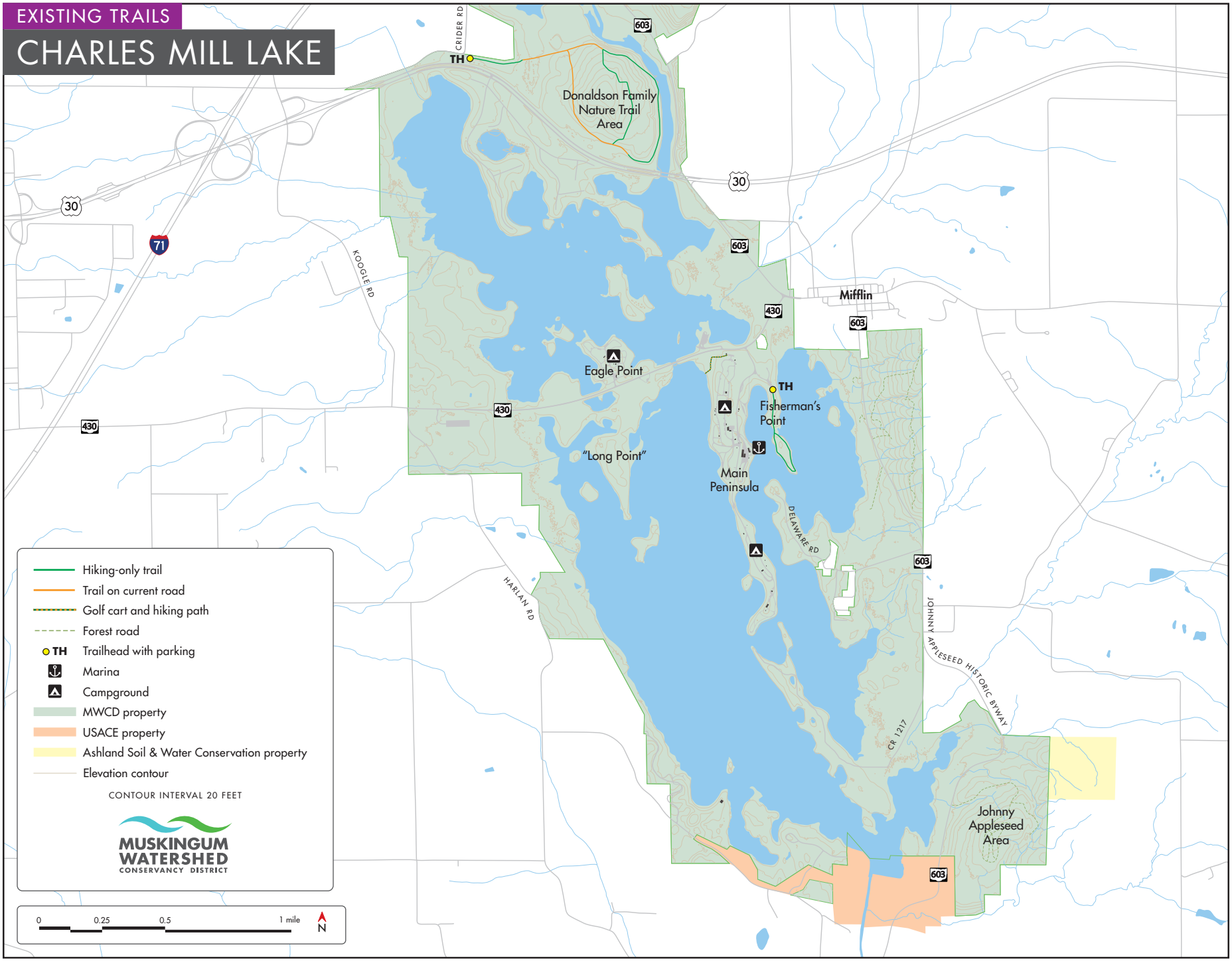
Mifflin is difficult to reach by trail

Planning tried to connect an off-road trail to the town of Mifflin but extensive wetland on MWCD land between the west edge of Mifflin and the Main Peninsula discourages trail development. Wetland analysis will likely be needed before any such route could be seriously considered.

If the Town of Mifflin can work with landowners to extend a trail toward MWCD or facilitate an alternate route between Fisherman's Point and Rt 603, a connection to Mifflin may be possible.

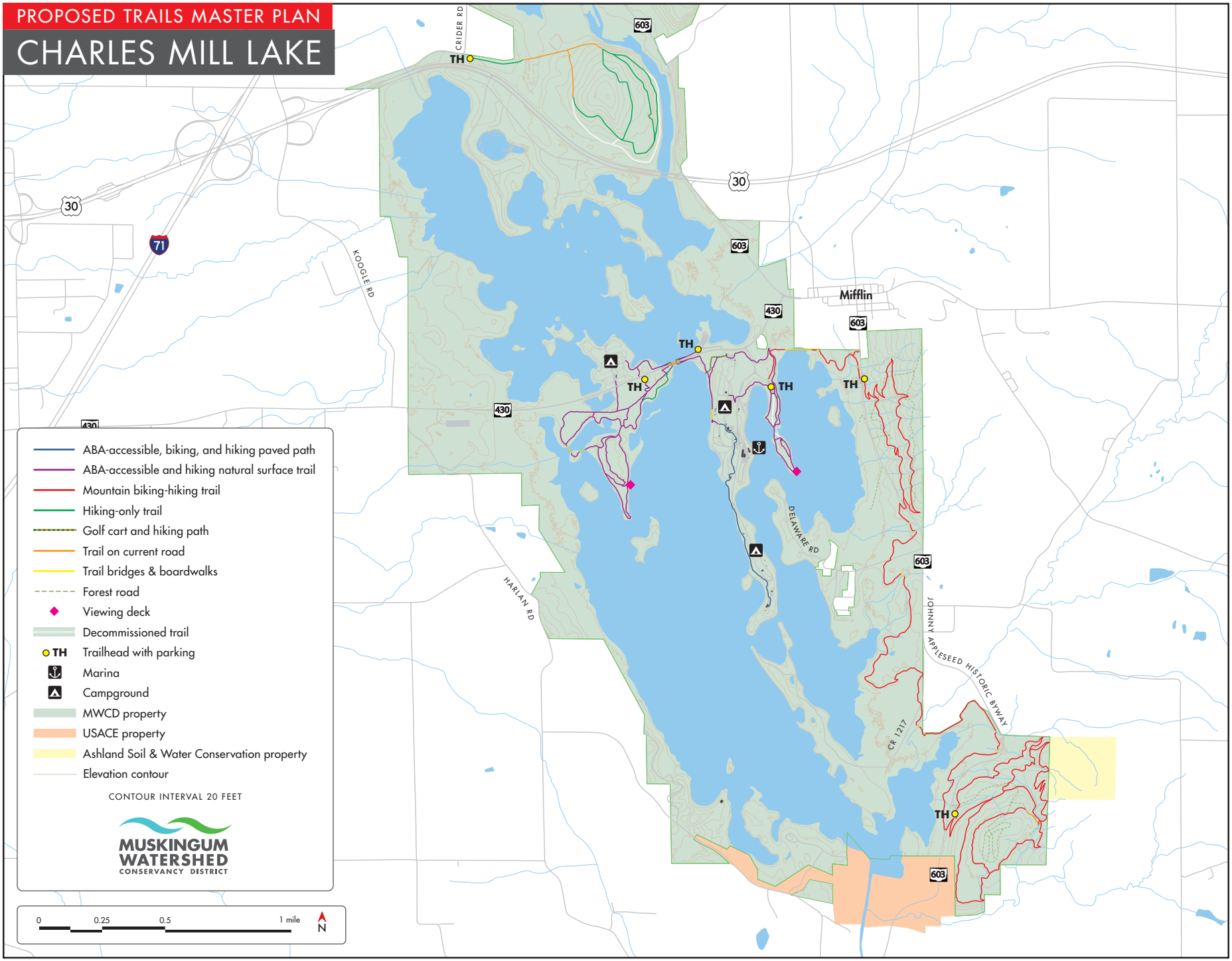
EXISTING TRAILS

CHARLES MILL LAKE



PROPOSED TRAILS MASTER PLAN

CHARLES MILL LAKE

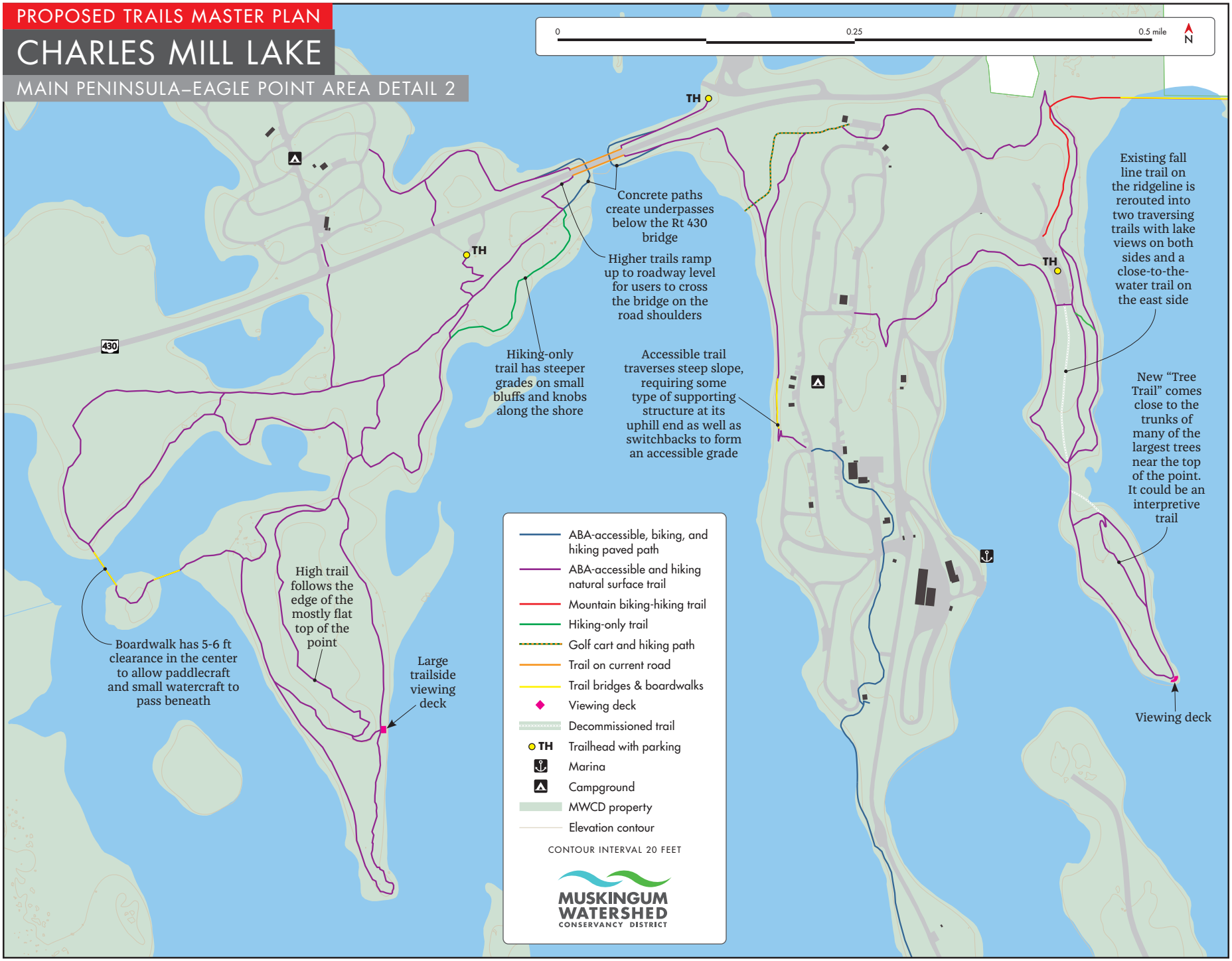


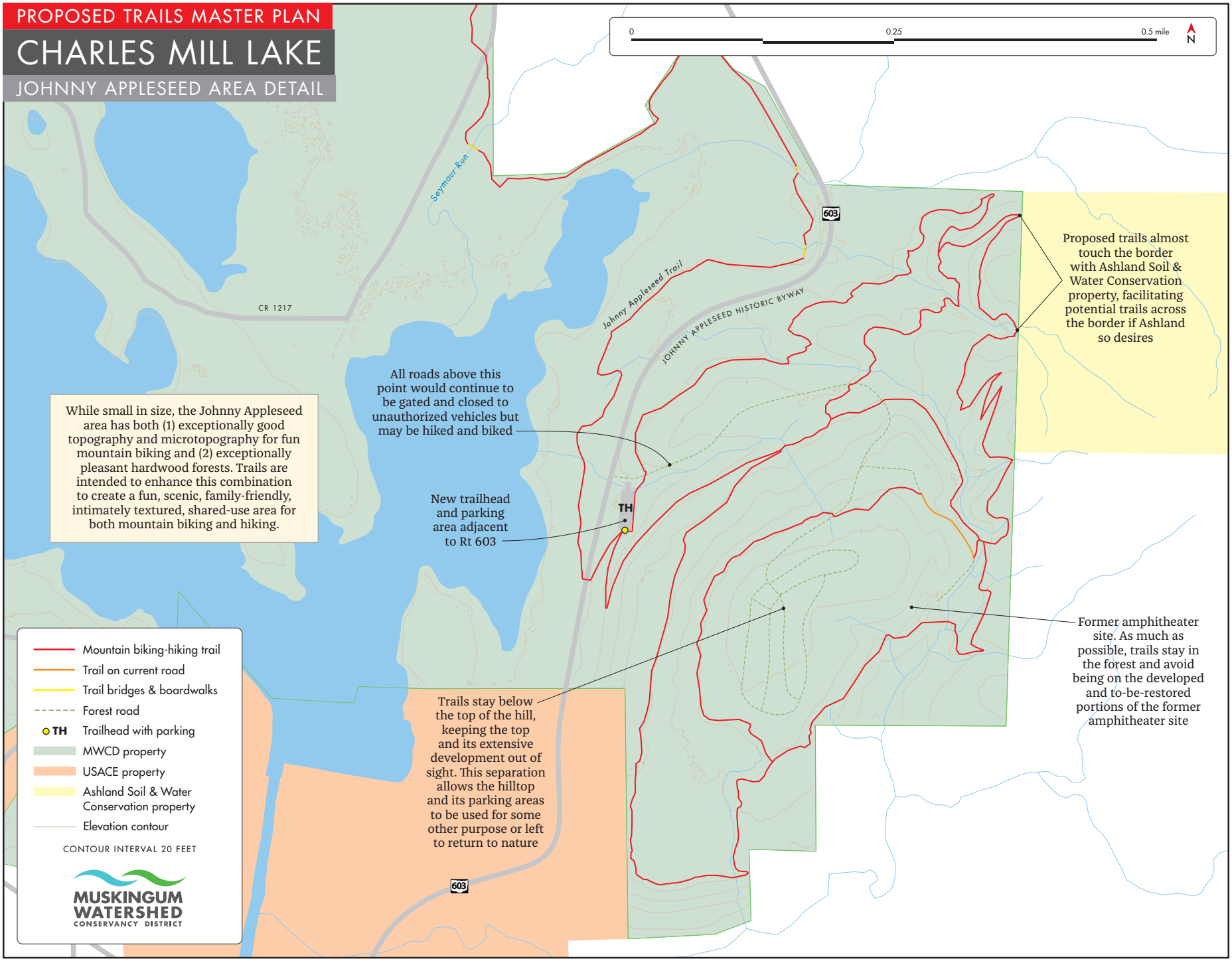

PROPOSED TRAILS MASTER PLAN
CHARLES MILL LAKE
MAIN PENINSULA–EAGLE POINT AREA DETAIL 1
0
0.25
0.5 mile
N
603
430
TH
Eagle Point
"Long Point"
Main Peninsula
Main campground
Fisherman's Point
Johnny Appleseed Trail
JOHNNY APPLESEED HISTORIC BYWAY
DELAWARE RD
With three short exceptions, all trails on Eagle Point, "Long Point," the main peninsula, and Fisherman's Point are ABA-accessible—mostly with native soil (preferable) and/or crushed stone wherever feasible
Hard-surface trail from the main campground to the recreation center enables shared-use off-road travel close to the westside lakeshore
Swim beach
ABA-accessible, biking, and hiking paved path
ABA-accessible and hiking natural surface trail
Mountain biking-hiking trail
Hiking-only trail
Golf cart and hiking path
Trail on current road
Forest road
Viewing deck
Trail bridges & boardwalks
Decommissioned trail
TH Trailhead with parking
Marina
Campground
MWCD property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT

PROPOSED TRAILS MASTER PLAN

CHARLES MILL LAKE

MAIN PENINSULA–EAGLE POINT AREA DETAIL 2




PROPOSED TRAILS MASTER PLAN
CHARLES MILL LAKE
JOHNNY APPLESEED AREA DETAIL
0
0.25
0.5 mile
N
Seymour Run
CR 1217
603
Johnny Appleseed Trail
JOHNNY APPLESEED HISTORIC BYWAY
Proposed trails almost touch the border with Ashland Soil & Water Conservation property, facilitating potential trails across the border if Ashland so desires
All roads above this point would continue to be gated and closed to unauthorized vehicles but may be hiked and biked
While small in size, the Johnny Appleseed area has both (1) exceptionally good topography and microtopography for fun mountain biking and (2) exceptionally pleasant hardwood forests. Trails are intended to enhance this combination to create a fun, scenic, family-friendly, intimately textured, shared-use area for both mountain biking and hiking.
New trailhead and parking area adjacent to Rt 603
TH
Former amphitheater site. As much as possible, trails stay in the forest and avoid being on the developed and to-be-restored portions of the former amphitheater site
Trails stay below the top of the hill, keeping the top and its extensive development out of sight. This separation allows the hilltop and its parking areas to be used for some other purpose or left to return to nature
603
Mountain biking-hiking trail
Trail on current road
Trail bridges & boardwalks
Forest road
TH Trailhead with parking
MWCD property
USACE property
Ashland Soil & Water Conservation property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT

PROPOSED TRAILS MASTER PLAN

CHARLES MILL LAKE

DONALDSON FAMILY NATURE TRAIL AREA DETAIL

6
Clendening Lake

Clendening Lake Highlights

- Nearly all of Clendening's 4,800 acres of land—and nearly all of the lakeshore—is undeveloped forest. Clendening has no cottage areas, only two nearby residential areas near the marina and Rt 799, and only one small campground. Only a few relatively quiet roads enter MWCD land and boating use is light, making nearly all of Clendening quiet and peaceful.
- Over 70 miles of trail—including 59 miles of new, mostly purpose-built singletrack—are proposed for Clendening, making it by far the largest trail system in the TMP.
- The proposed 33-mile hike-bike Clendening Trail is a continuous loop around the lake west of State Route 799. Except for a few short on-road segments, the trail is new, natural surface singletrack.
- Combined with existing, hiking-only Buckeye Trail around the lake east of Rt 799, one could hike a 44-mile loop around the entire lake.
- 12 new trailheads with parking put most of the trail system within 3 miles of a trailhead, enabling most hikers to experience all of the trails as short day hikes. The existing USACE park at Clendening Dam would be a de facto 13th trailhead.
- A concentration of 30 miles of hike-bike natural surface trails around the Fort Steuben peninsula and Colman Run Bay create a hiking-biking area with multiple loops accessible from four trailheads. This mini-system enables longer loop hikes and rides without going around large portions of the lake.
- Due to Clendening's large size and long distances, mountain biking is expected to be the dominant use of its biking-hiking trails.
- The concentrated hiking-biking area includes two proposed trails optimized for faster downhill biking. One descends 210 ft in 0.64 mile at 6% average grade; the other descends 182 ft in 0.61 mile at 5.6% average grade. Detailed site design should seek to improve the trail experience of these trails.
- The longest downhill runs in Clendening are southeast of the dam. From a local summit at 1261 feet, two trail routes each descend ~335 ft in ~1.55 miles at an average grade of 4.5%, a rare trail experience in Ohio and

Clendening Lake: Existing and Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage	New trail/path	Existing trail/path	Trail on current road	Natural surface tread	Hard surface tread	MTB/ hiking trail	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike	ABA accessible	Other use
Existing trail mileage	11.38	—	11.38	1.29	10.32	1.06	0.00	0.00	10.09	1.29	0.00	0.00
Proposed trail mileage	69.19	58.89	10.30	1.04	68.12	1.07	57.58	0.00	10.57	1.20	2.33	0.00
Proposed mileage change	57.81	58.89	-1.08	-0.25	57.80	0.01	57.58	0.00	0.48	-0.09	2.33	0.00

fun for bikers of any ability.

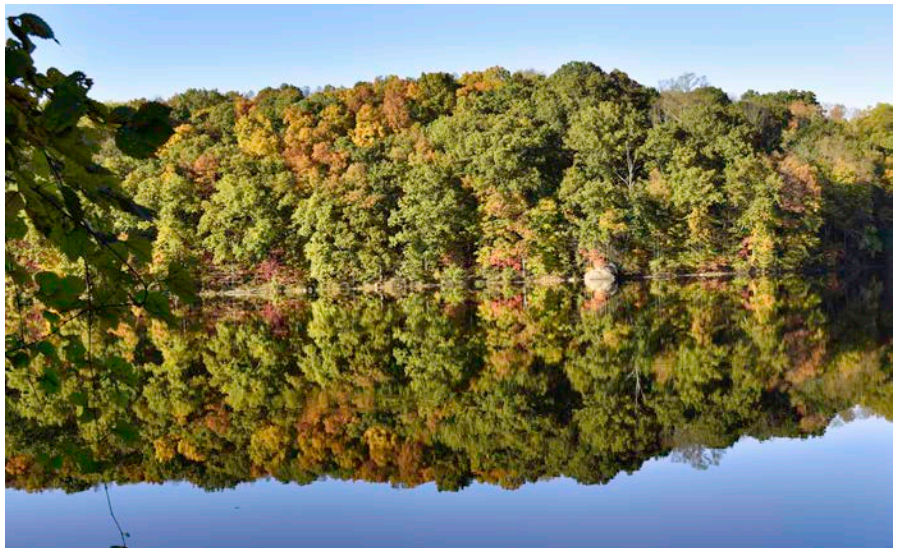
- Hiking-only trails north and northwest of the dam explore a 19th-century stone quarry, the lakeshore, and a small creek cascade. Loops are possible when combined with Clendening Trail. Two trailheads provide access.
- Much of the north shore of Clendening is on south-facing slopes hosting older, open hardwood forests. While not old growth forest, these continuous stretches of open forest—and the narrow trails that weave through them—provide the next-best experience of what eastern Ohio's old growth forests were like before 1800.
- Clendening Trail is both accessible and bikeable from the marina east to a new trailhead on Rt 799 near Huff Bay. An 800-foot trail exploring along the rocky shoreline near this trailhead provides one of the best close-to-the-water lakeshore trails in the TMP. It makes an accessible loop with Clendening Trail.
- An especially engaging segment of Clendening Trail is on the south shore near Chaney Road. Next to Chaney Road, the trail crosses a rocky, small, and often dry drainage that forms a high cascade below the bridge when there is enough water to flow. Exposed bedrock in the creek channel (see photo on page 106) suggests an old-school timber stringer bridge with two mortared stone piers on the bedrock. In both directions from here, the trail traverses a wide variety of slopes, rock outcrops, and inlets while being sometimes close to the lakeshore, crossing creeks on bridges in deep, steep ravines. A peaceful trailhead with parking dispersed in the trees at the end of Chaney Road makes it easy to visit this segment of Clendening Trail.

Clendening Lake Discussion

Primitive trails as standard for Clendening

Clendening is the least developed of the nine lakes. Correspondingly, trails here are envisioned as being primitive, rustic, adventurous, and opportunistic in shape and character, leaning into the wildness, seeking to become part of it. The smooth, schematic trail lines on the maps are expected to become much richer in shape, detail, and context-appropriate character on the ground.

However, even as new trails at Clendening are intended to be on the primitive side, they will still be easier to hike than Clendening's existing Buckeye Trail segment. Grades will be gentler, trail tread will be wider, and new trailheads create more frequent access points.



The planned Clendening Trail loops around all of Clendening Lake west of OH Rt 799. Most of Clendening, including most of the shoreline, is undeveloped. Most of the forests are hardwoods.

Trailheads as invitations

Part of the purpose of new trailheads along Rt 799 and Norris Road is to invite passing drivers to stop, see what Clendening has to offer, and make it easy to be on a trail. This invitation along paved thoroughfares doesn't contradict intent to keep Clendening primitive. Instead, it tells newcomers that this primitiveness exists and invites them to sample it to see if they like it.

Most of Buckeye Trail remains remote, restricted to hiking, lightly used, and low-key

No new trails or bike usage are planned east of Rt 799 except for short, bikeable, off-road trail segments of Clendening Trail between the causeways on Rt 799. This results in the Buckeye Trail (BT) being the only major trail east of Rt 799. BT will remain hiking-only here.

The TMP deliberately maintains the current low-key, low-use character of the BT in Clendening because the physical trail is not designed to handle a high amount of use. Although new trailheads are proposed near both ends

of the long trail segment east of Rt 799, that is incidental. The trailheads are optimized to serve new, bikeable and/or accessible trails. Substantial hiking on Rt 799 is needed to reach the off-road segment of the BT from either trailhead.

Ideally, trail signs at the current BT trail entrances along Rt 799 would remain much as they are so that the BT remains inconspicuous. While design of sign standards is not part of the TMP, planners suggest that BT could retain the use of blue blazes and not be required to use MWCD trailhead signs in this context.

New trails near the YMCA and BSA camps

Only two private camps are at Clendening, Camp Tippecanoe (YMCA) and Fort Steuben Scout Reservation (Boy Scouts of America). Trails stay away from camp facilities and shoreline areas used by the camps. Both camps, however, can benefit by using MWCD-maintained trails that cross the roads that connect the camps to the lakeshore.

More about the concentrated hiking-biking area

The concentrated trail area around Colman Run Bay and the Fort Steuben peninsula mostly consists of a higher elevation trail and a lower elevation trail that occasionally meet or merge. Topography, views, and the trail experience along the high trail and low trail are quite different, making each trail a distinct experience.

Currently, the lowest trail in the concentrated trail area is designated as the Clendening Trail. This choice is arbitrary and primarily keeps things simple at this point. As planning progresses, however, and the character of Clendening Trail as a whole becomes more apparent, it should be considered which individual segments of the high and low trail should be designated as the Clendening Trail through this area. The goal is to make Clendening Trail be the most engaging trail it can be while remaining usable and attractive to its intended users.

Note that trail users can use Adams Road and Simpson Road as shortcuts between different parts of the concentrated trail area. These roads also make trail management and rescues in the area easier.

Potential primitive campground in the concentrated hike-bike area

While the TMP was not charged with planning any type of camping, planners noticed and identified a potential 12.7-acre primitive campground on a small ridge north of the public boat ramp on Simpson Road. Campers could hit the trails in the concentrated hike-bike area right outside the campground.

To optimize a potential campground while planning trails that work whether or not the campground is ever built, planners designed the campground boundary, the campground road system, and the trails around the campground so that they all work together—yet the trails still work even without the campground. So the campground is optional in the TMP.

Potential backcountry campsites at Clendening?

Given the length of Clendening Trail, providing backcountry camping along the trail would be beneficial. It would be a new type of activity that MWCD would have to manage. Current management is not set up to support it.

TMP planners, however, did notice some potential backcountry sites. One excellent potential site is along the lakeshore at the end of an old road near the southwest corner of McConnell Bay. The old road provides administrative access by truck but would be closed to all other vehicle use.

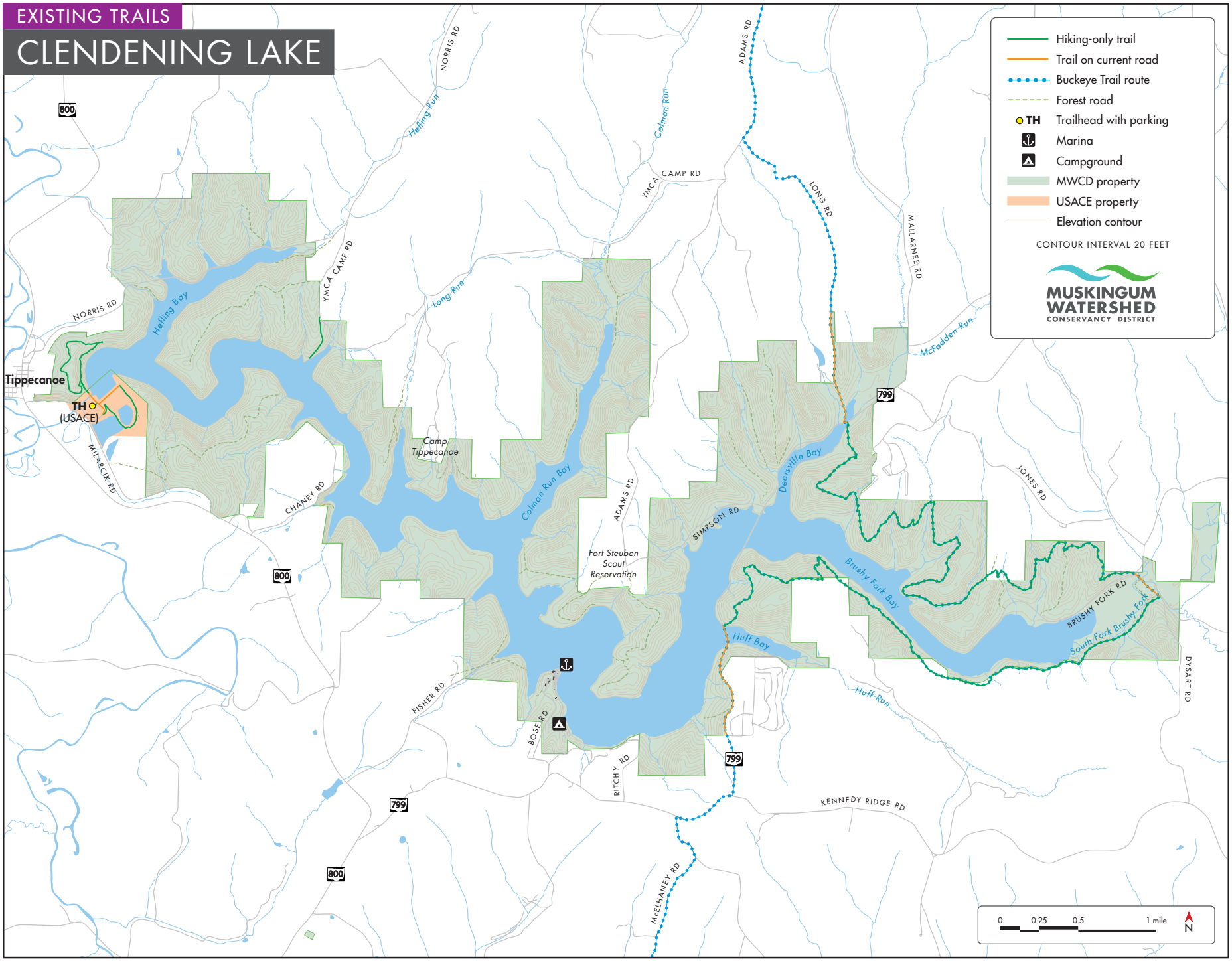
The large peninsula south of Hefling Bay offers other potential backcountry campsites with administrative road access.

Future planning can add more trails to Clendening

With almost 70 miles of trail planned at Clendening, master planning reached the point where that seemed like enough for now, especially since there were some areas that even MWCD staff had never visited. But the door for planning even more trails at Clendening is not closed. The area near the trailhead on Milarcik Road stands out as a less-known place that may be able to support additional bike-optimized trails, especially some sections with highly varied, quick-changing topography.

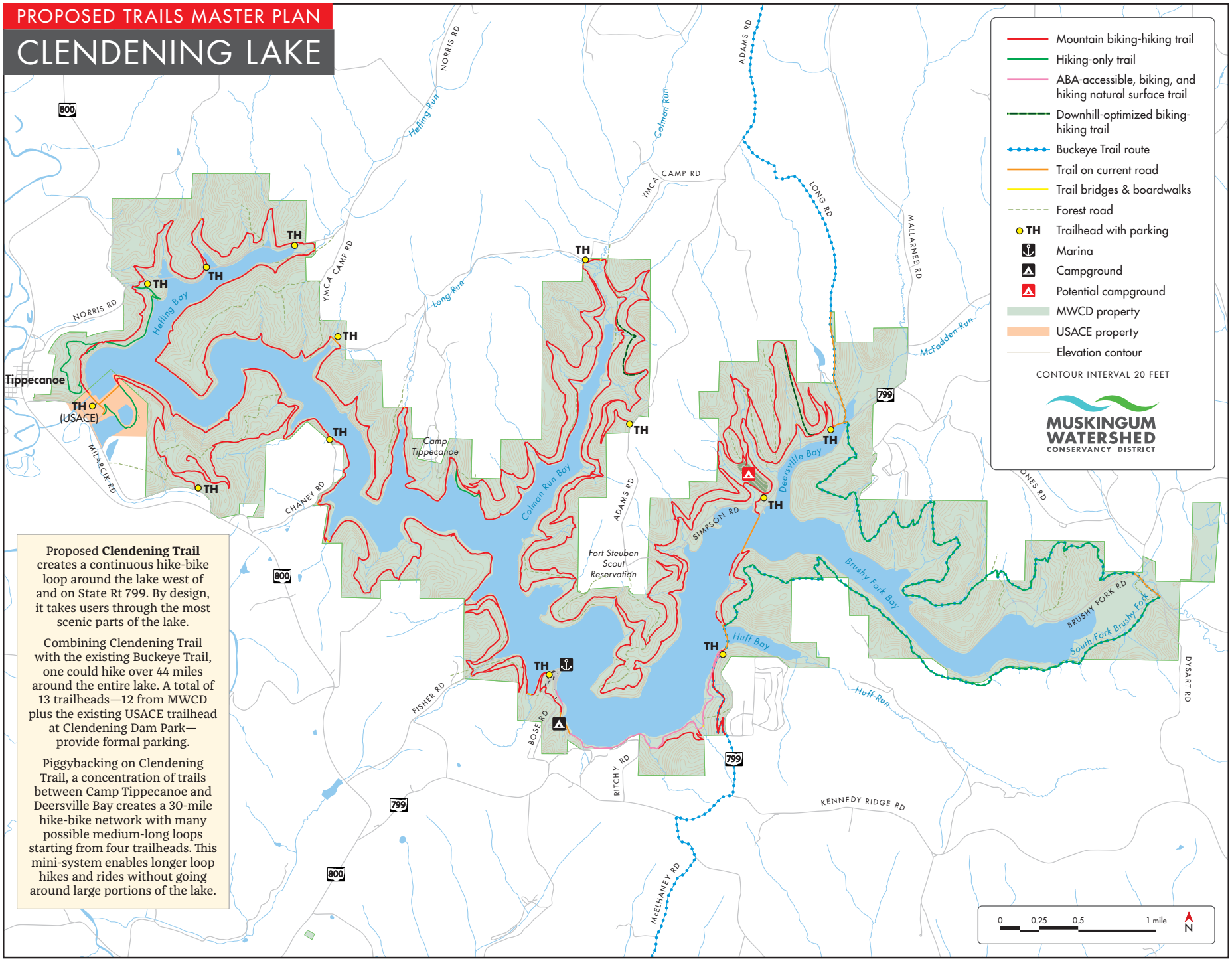
EXISTING TRAILS

CLENDENING LAKE



PROPOSED TRAILS MASTER PLAN

CLENDENING LAKE



Proposed **Clendening Trail** creates a continuous hike-bike loop around the lake west of and on State Rt 799. By design, it takes users through the most scenic parts of the lake.

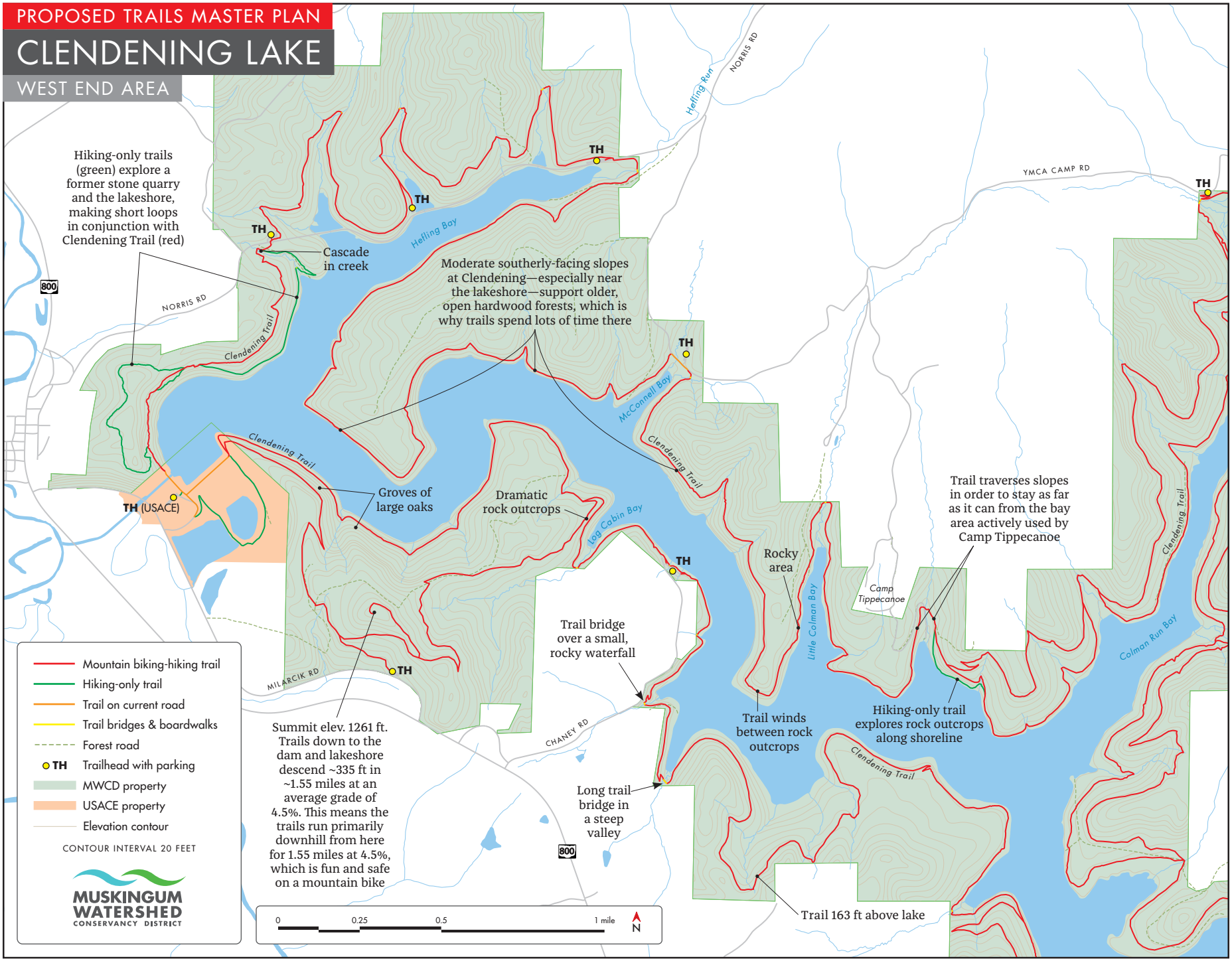
Combining Clendening Trail with the existing Buckeye Trail, one could hike over 44 miles around the entire lake. A total of 13 trailheads—12 from MWCD plus the existing USACE trailhead at Clendening Dam Park—provide formal parking.

Piggybacking on Clendening Trail, a concentration of trails between Camp Tippecanoe and Deersville Bay creates a 30-mile hike-bike network with many possible medium-long loops starting from four trailheads. This mini-system enables longer loop hikes and rides without going around large portions of the lake.

PROPOSED TRAILS MASTER PLAN

CLENDENING LAKE

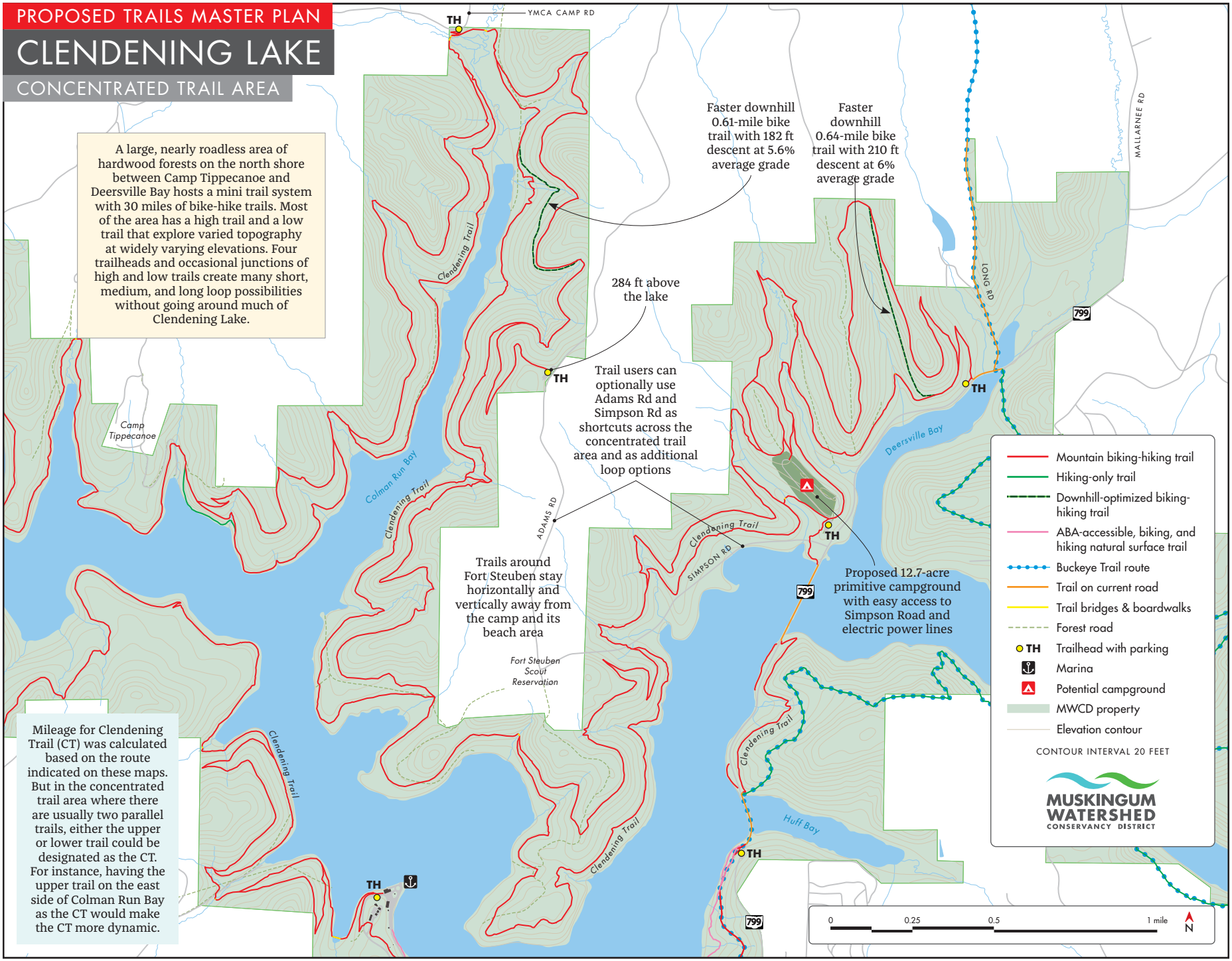
WEST END AREA

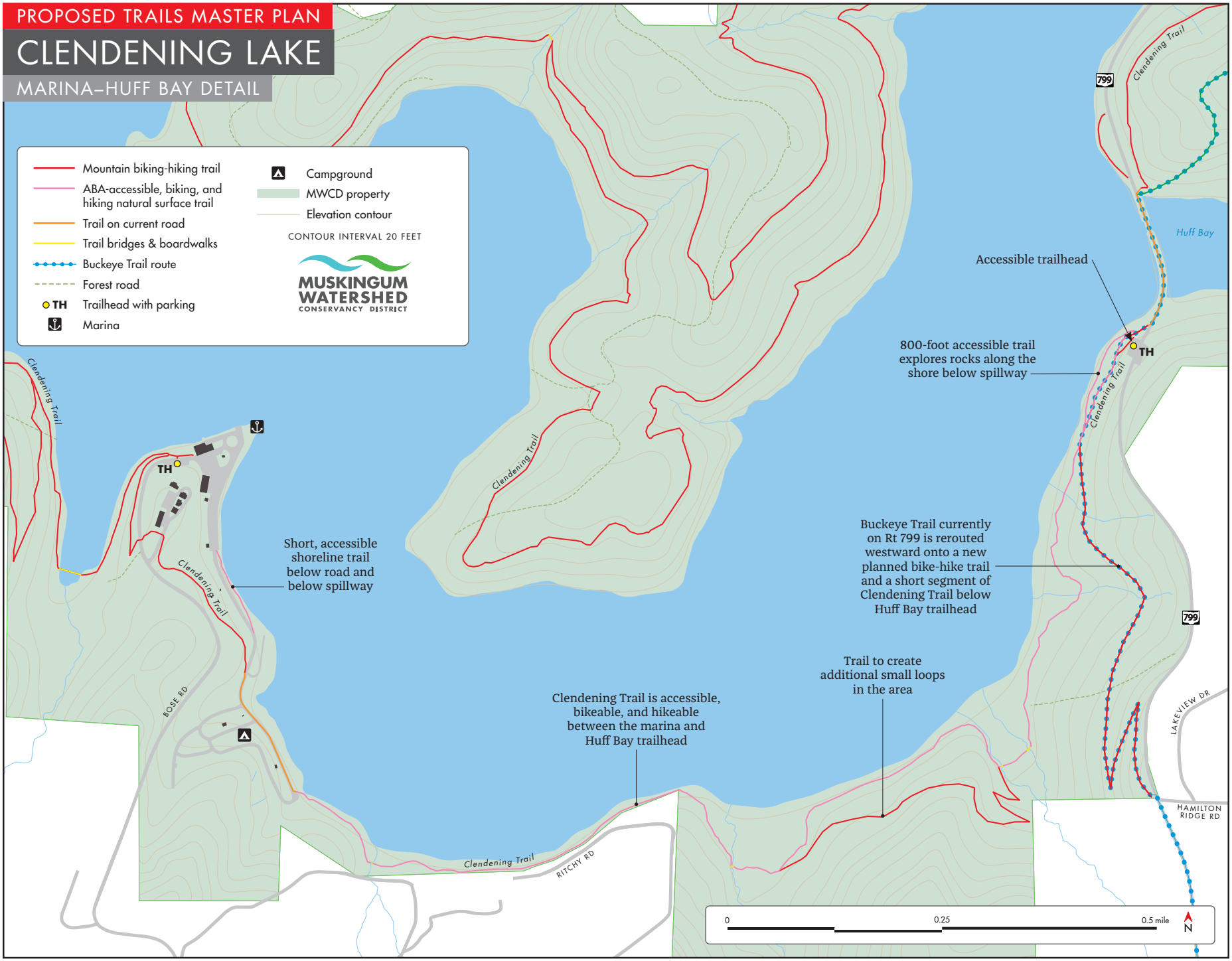


PROPOSED TRAILS MASTER PLAN

CLENDENING LAKE

CONCENTRATED TRAIL AREA

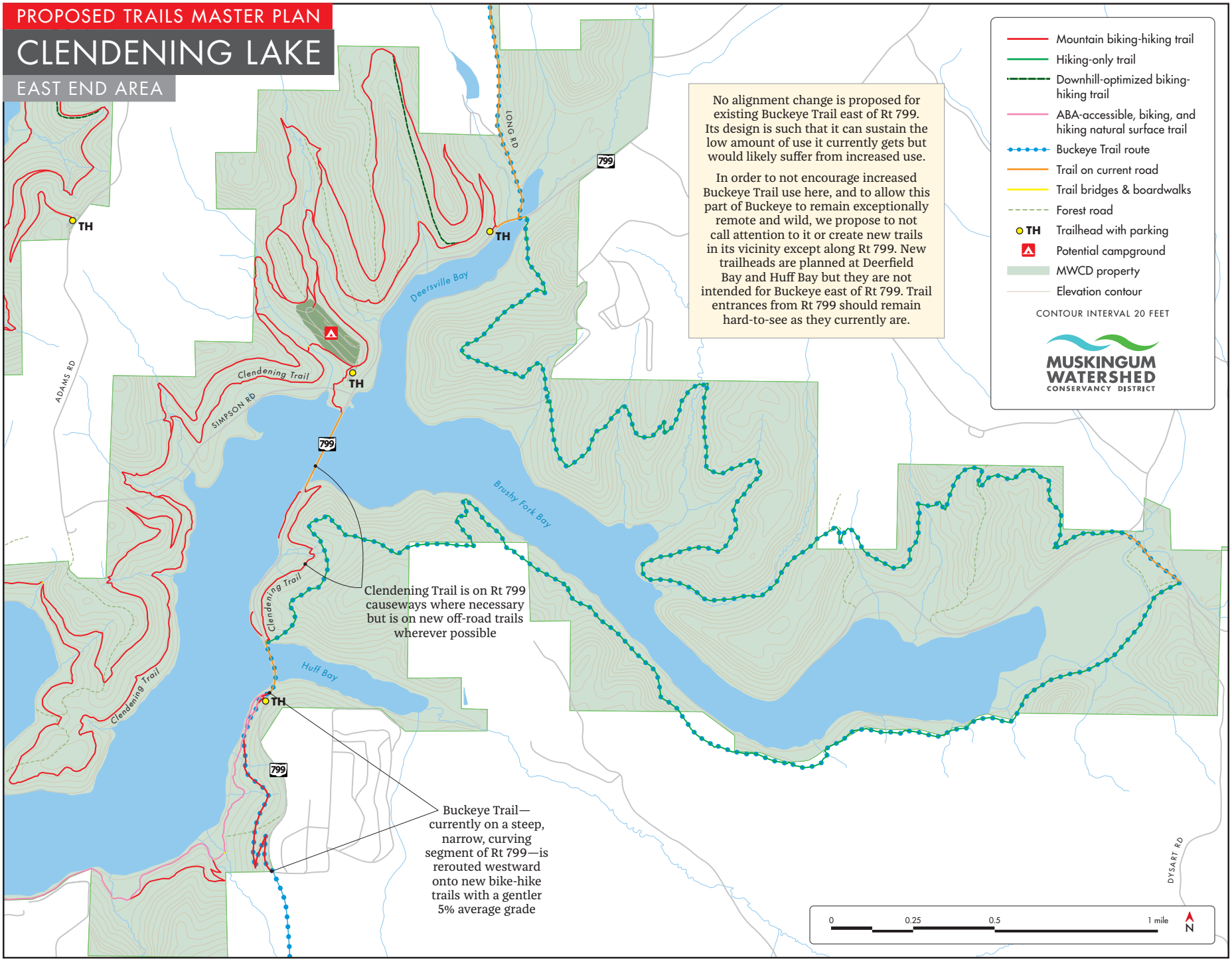



PROPOSED TRAILS MASTER PLAN
CLENDENING LAKE
MARINA–HUFF BAY DETAIL
Mountain biking-hiking trail
ABA-accessible, biking, and hiking natural surface trail
Trail on current road
Trail bridges & boardwalks
Buckeye Trail route
Forest road
TH Trailhead with parking
Marina
Campground
MWCD property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
Clendening Trail
TH
Short, accessible shoreline trail below road and below spillway
ROSE RD
Clendening Trail is accessible, bikeable, and hikeable between the marina and Huff Bay trailhead
RITCHY RD
Clendening Trail
Trail to create additional small loops in the area
Buckeye Trail currently on Rt 799 is rerouted westward onto a new planned bike-hike trail and a short segment of Clendening Trail below Huff Bay trailhead
799
Clendening Trail
Huff Bay
Accessible trailhead
TH
800-foot accessible trail explores rocks along the shore below spillway
Clendening Trail
799
LAKEVIEW DR
HAMILTON RIDGE RD
0
0.25
0.5 mile
N

PROPOSED TRAILS MASTER PLAN

CLENDENING LAKE

EAST END AREA



7

Leesville Lake

Leesville Lake Highlights

- Leesville Lake has no existing trails except a short segment of Buckeye Trail across the southwest corner.
- The proposed 31-mile hike-bike "Leesville Trail" loops the entire lake, connecting all lakeside communities.
- Additional trails are proposed near local population centers at the upper end of the lake's North Fork and in the area between Pines Cottage Area and Camp Wakonda.
- 10 new trailheads with parking enable trail users to park outside of marinas and residential areas.

Leesville Lake Discussion

Leesville has a challenging geometry that led to the Leesville Trail

Both the North and South forks of the lake are exceedingly long and narrow, but narrow like a valley rather than a canyon. Its many large inlets have the same shape: long and nearly level as they very slowly ascend inland away from the lake, also shaped like narrow valleys with near-level bottoms that are too wide to span with a simple trail bridge.

Combined with the fact that MWCD's land along Leesville's forks tends to be narrow, trails have a difficult time climbing up the valley walls. In many places, a trail gently traversing its way up a slope can't climb up very far before (a) it has to descend again to go through yet another inlet with its floor at or just above lake level, or (b) it bumps into a property line or the edge of a community that we don't want to come too close to.

This pattern, which repeats again and again in Leesville, makes it very difficult to have more than one trail through a given area in most areas around the lake.

So the plan evolved to have just one trail through the land around nearly all of the lake, rather than several separate trails as most of the other lakes have.

That one trail became the Leesville Trail.

Leesville Lake: Existing and Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage	New trail/path	Existing trail/path	Trail on current road	Natural surface tread	Hard surface tread	MTB/ hiking trail	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike	ABA accessible	Other use
Existing trail mileage	2.44	—	2.44	0.00	2.44	0.00	0.00	0.00	2.44	0.00	0.00	0.00
Proposed trail mileage	43.05	40.61	2.44	2.07	41.01	2.04	36.51	0.00	3.61	2.51	1.75	0.00
Proposed mileage change	40.61	40.61	0.00	2.07	38.57	2.04	36.51	0.00	1.17	2.51	1.75	0.00

The Leesville Trail is remarkable but has many constraints

It's remarkable because the trail is scenic, peaceful, and quiet along its entire route despite—and often because—of how it weaves through all of its constraints. The lakeshore around the entire lake is mostly undeveloped and untouched even near residential areas. The trail climbs and descends a lot as it goes through continual forest on moderate slopes around both forks of the lake. Boardwalks and bridges add interest and create landmarks.

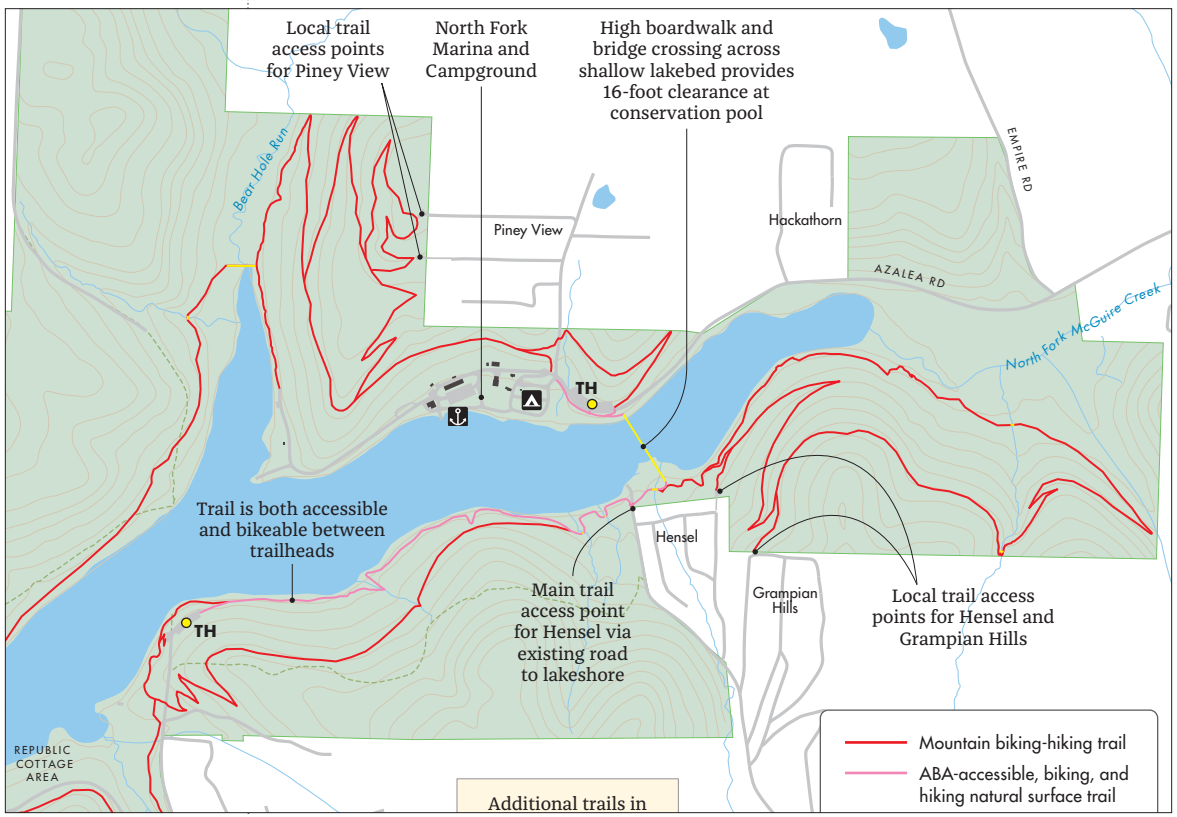
Discussing its many constraints explains much about why the trail is where it is:

- Camp Muskingum, Camp Aldersgate, Falcon Camp, Hills Cottage Area, and Camp NEOSA have their main facilities relatively close to the lakeshore. To go around them on undeveloped MWCD land at a respectful distance, Leesville Trail climbs about 200 vertical feet on limited land, creating a number of climbing turns on both sides of each developed/used area.
- 14 residential areas—North Bay, Piney View, Hensel, Grampian Hills, Palermo on the Lake, Rockwood Park, Lakeshore Park, Barnhouse, Butterfield Cottage Area, Lake Villa, Rock Canyon Park, Lake Park, Thornhill, and Dublin Estates—have only relatively thin strips of MWCD land between them and the lakeshore. In these places, Leesville Trail needs to stay as close to the lakeshore as it can in order to respect their privacy. At the same time, however, Leesville Trail tries to stay above the dam spillway elevation (14.5 feet above normal pool) wherever it can. So Leesville Trail dips below spillway elevation where it needs to in order to preserve privacy but otherwise stays above spillway elevation.
- In Capper (residential area) and three MWCD cottage areas—Republic, Pines, and Glens—residential lots and MWCD boundaries are such that Leesville Trail can only go through them on their roads.
- MWCD's property boundaries in many drainages do not extend far enough up the drainages to be able to cross them with a short or simple crossing. This boundary issue created the need for several long, high boardwalks to cross wide inlets along Leesville Trail.

The North Fork crossing

The North Fork crossing (in the center of the map below) spans the North Fork between Hensel and a spot east of North Fork Marina. This location provides a better alternative to a boardwalk placed farther upstream. A boardwalk placed upstream would likely be lower, causing it to catch debris flowing into the lake from North Fork McGuire Creek; would be less scenic; and would add 1.2 miles to Leesville Trail including 0.6 miles on Azalea Road.

The North Fork crossing avoids all of the above with a high, somewhat audacious structure that would be above spillway elevation and attract visitors just by existing. With its horizontal supports entirely above the spillway level and a deck height about 16 feet above normal pool, boats can easily pass beneath it even when water levels are high (which is typically only about 3 feet above normal). This accessible structure, the largest and most visible proposed trail structure in the TMP, can attract trail use and—just by existing—put Leesville Lake and Leesville Trail on the map.



A new, accessible trailhead at the north end of the crossing enables visitors to park at the crossing itself, away from the marina, campground, and nearby homes.

The crossing is accessible and bikeable, as is the lakeshore trail heading west from Hensel to a new trailhead east of Republic Cottage Area. This hard-to-find trailhead, which is also away from homes, is intended mostly for local residents and visitors who come specifically to use the accessible trail segment.

The lake is shallow at the North Fork crossing site. Aerial imagery recorded in March of multiple years shows the crossing site to be mostly above water due to the annual draw-down of the lake. The bridge portion of the structure would be a single span of 70-80 feet across the deepest channel that still has water in it in the March imagery even with the lake level drawn down. Hence the structure itself would indicate where the deepest water is.

The TMP does not have a definite design for the North Fork crossing. Many possibilities exist, widely varying in materials, span lengths, sustainability, colors, and costs. MWCD, however, in keeping with its other visitor amenity structures, would favor a context-appropriate yet attractive structure that enhances the area while fitting the existing character and scale of the area.

"Going big" with the Leesville Trail stemmed from four facts

1. The many people who live around the shores of Leesville Lake and in the surrounding area would have a low-impact way to enjoy and explore the lake while improving their physical and mental health.
2. Leesville Lake would become a greater asset for MWCD by providing long, scenic, quiet, lake-looping trails that can be easily be enjoyed by visitors who lodge at nearby Atwood and Tappan. Leesville would complement Atwood and Tappan by providing what Atwood and Tappan can't.
3. The inherent wide appeal of a trail looping the entirety of a large, scenic, quiet, previously trail-less lake with an undeveloped shoreline would bring visitors to the area who would not otherwise come. Whether or not they lodge at MWCD lakes, and whether or not they actually travel the trail around the entire lake, these visitors would contribute to the local economy and therefore help MWCD fulfill its mission to provide beneficial recreation in the region.
4. The lake loop trail is relatively gentle and mostly just 3 feet wide, attracting users who appreciate gentle, scenic, quiet journeys more than fast action or great physical challenge. The other proposed trails are short, are not exceptional, and are mostly for local residents. Hence Leesville will continue to be a quiet, peaceful refuge for its residents while pleasing its new visitors.

But the Leesville Trail isn't necessarily a done deal

Despite the benefits of building the entire Leesville Trail, it is relatively expensive due to its many large trail structures. It is also one of the least compelling trails in the TMP, partly because of all of the obstacles it has to overcome and partly because it may not seem as fulfilling or useful as other trails at other lakes. Hence while Leesville Trail is in the TMP and is presented in this report, it will be up to MWCD to decide how much of it to build and on what timeframe. Public feedback on the matter may be illuminating.

Bikes prohibited in Leesville Wildlife Area

By state statute, ODNR's Leesville Wildlife Area lands do not allow biking. Hence MWCD's bikeable Leesville Trail cannot enter those lands. (Beach City Reservoir has the same issue with Beach City Wildlife Area.)

Because GIS databases differ on where some of the boundaries between MWCD and Leesville Wildlife Area are (differences are visible on the maps as white gaps between these properties), the TMP keeps trails within the boundary least favorable to MWCD.

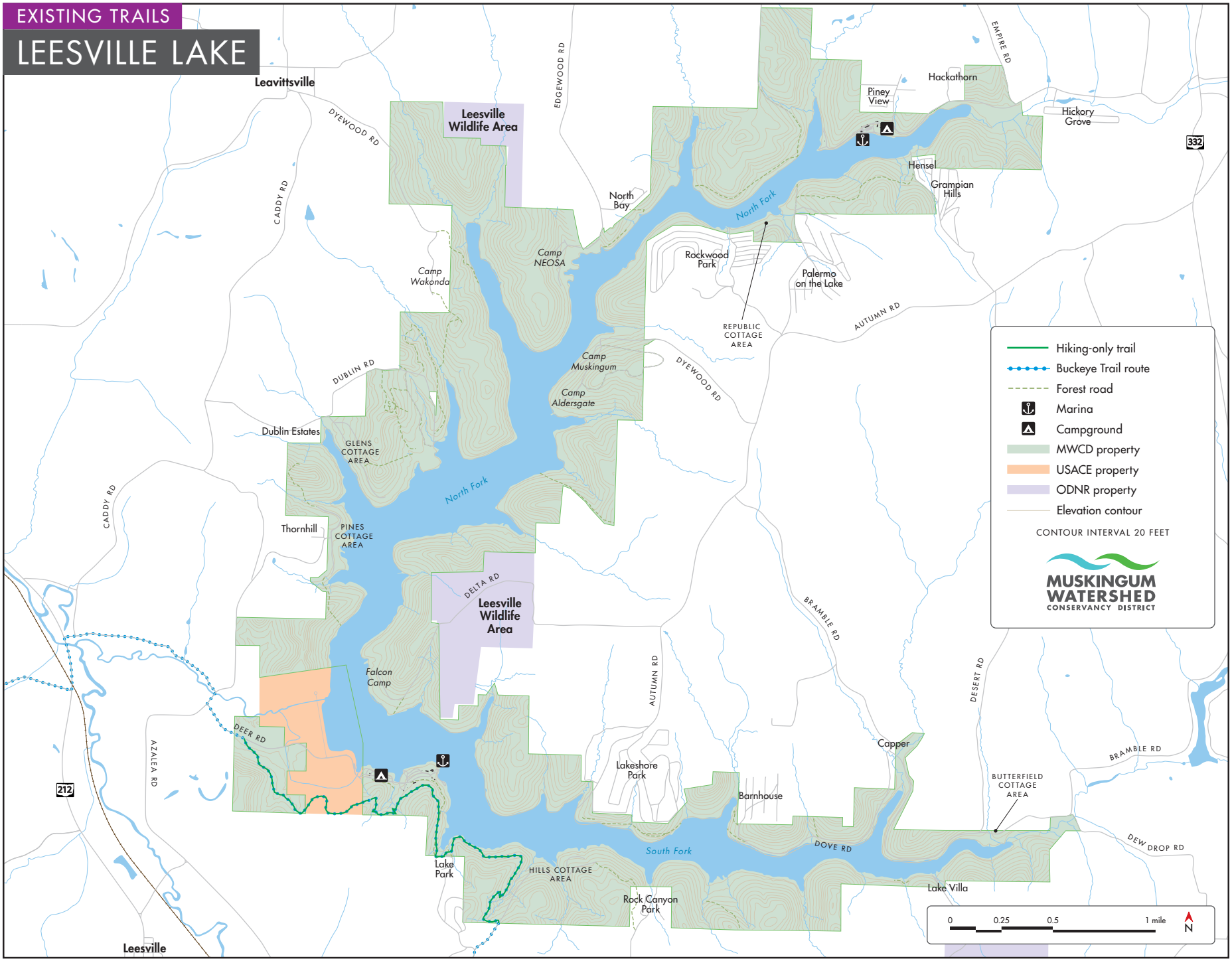
Firefly Woods (formerly Camp Firebird-Roosevelt)

Proposed trails in the Firefly Woods area provide local trails traversing the hilly site while keeping some distance away from all of the existing buildings, especially the historic structures near the lake. A trailhead for the area is placed high up along Dublin Road where an existing cleared field provides enough space for a large parking lot. Restricting most public parking to this higher lot preserves the mostly car-free character of the historic part of Firefly Woods where the original 19th-century barn and farmhouse are. The historic area includes the buildings added by the CCC in the 1930s that were used as the local work camp for tree planting and restoration work associated with the then-new dam and lake.

The top of the ridge in the Firefly Woods area, easily accessed from Dublin Road, could potentially be a new campground. Trails in the area are planned so that they can easily connect to a campground if it is built but still work equally well if a campground is not built.

EXISTING TRAILS

LEESVILLE LAKE



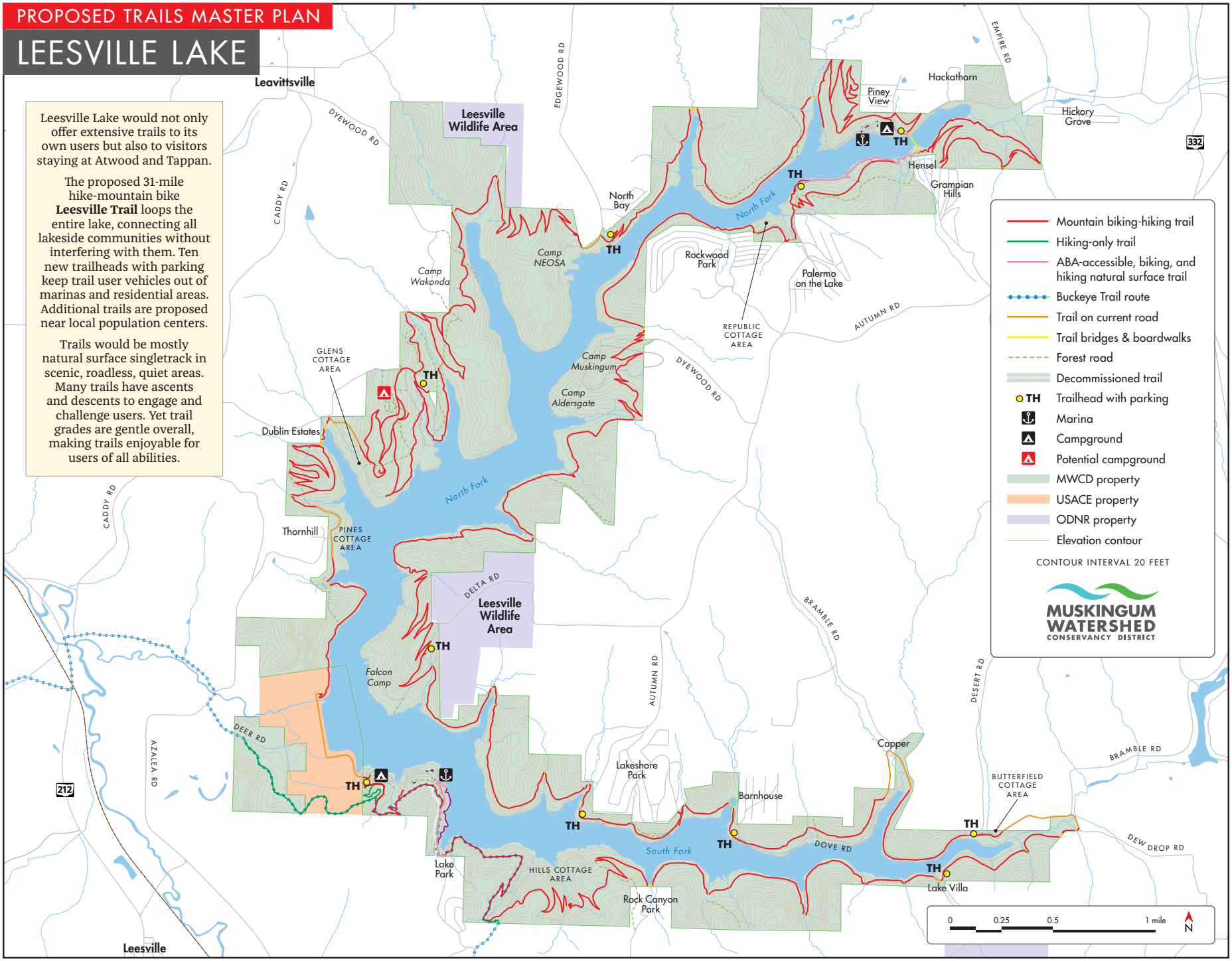
PROPOSED TRAILS MASTER PLAN

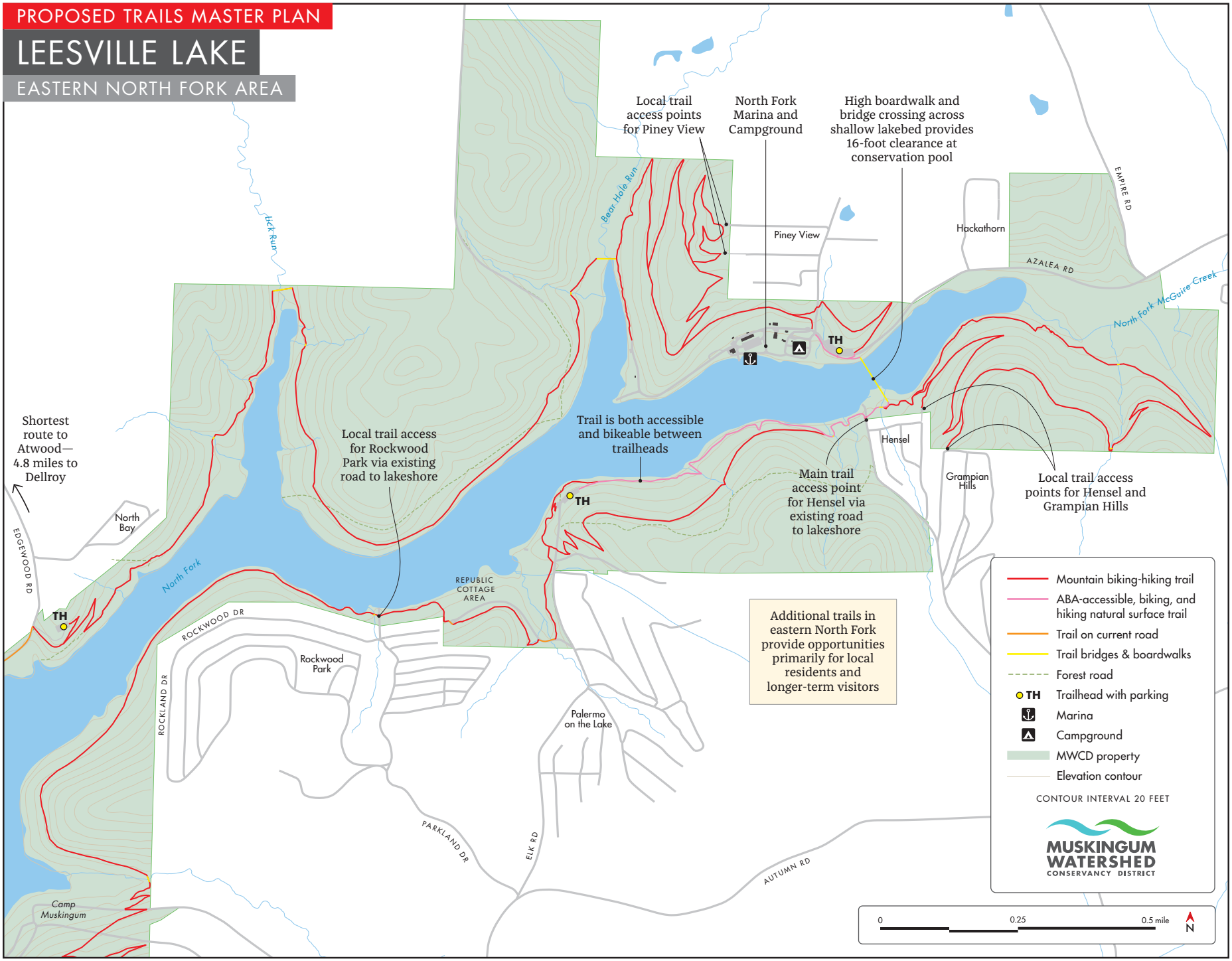
LEESVILLE LAKE

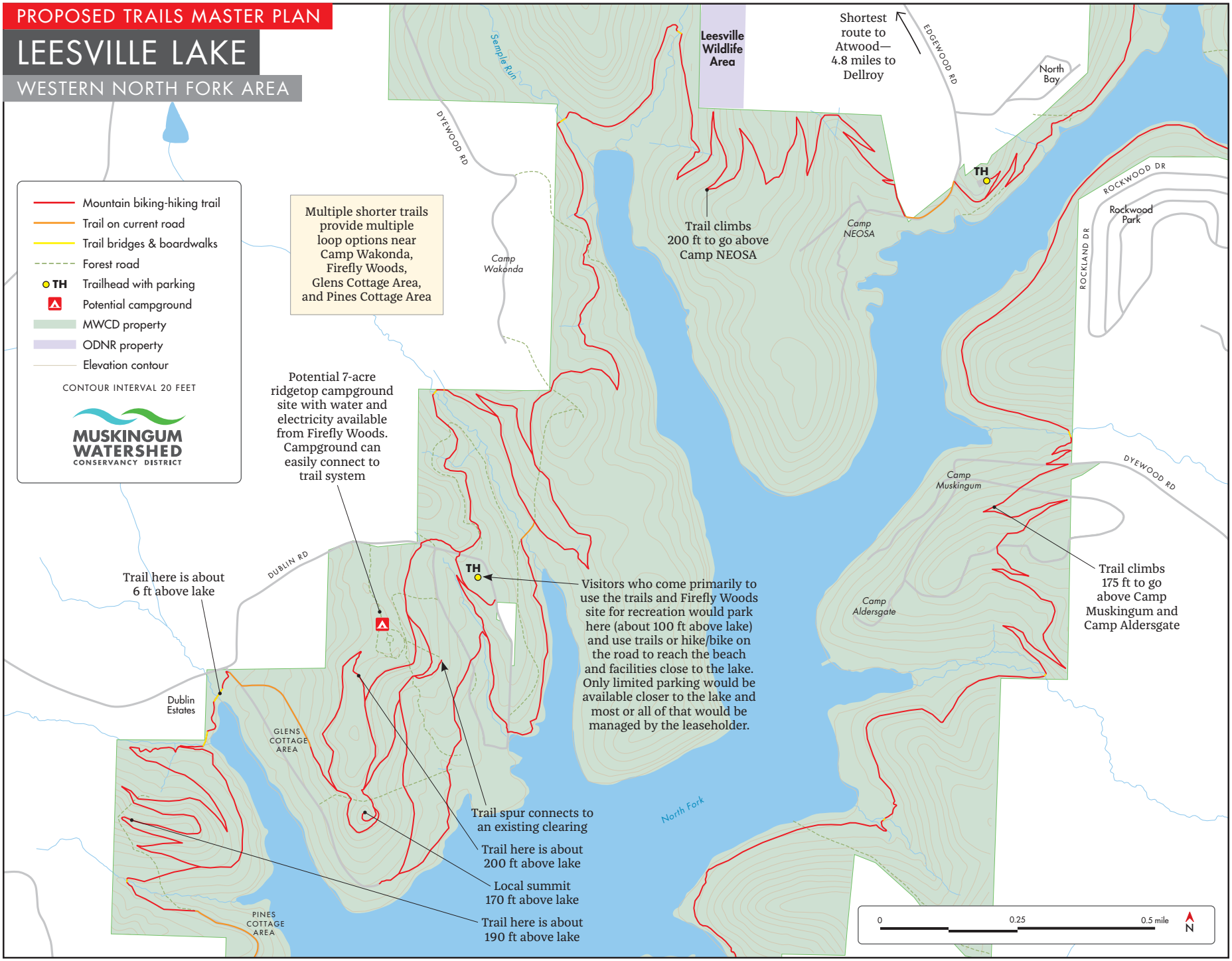
Leesville Lake would not only offer extensive trails to its own users but also to visitors staying at Atwood and Tappan.

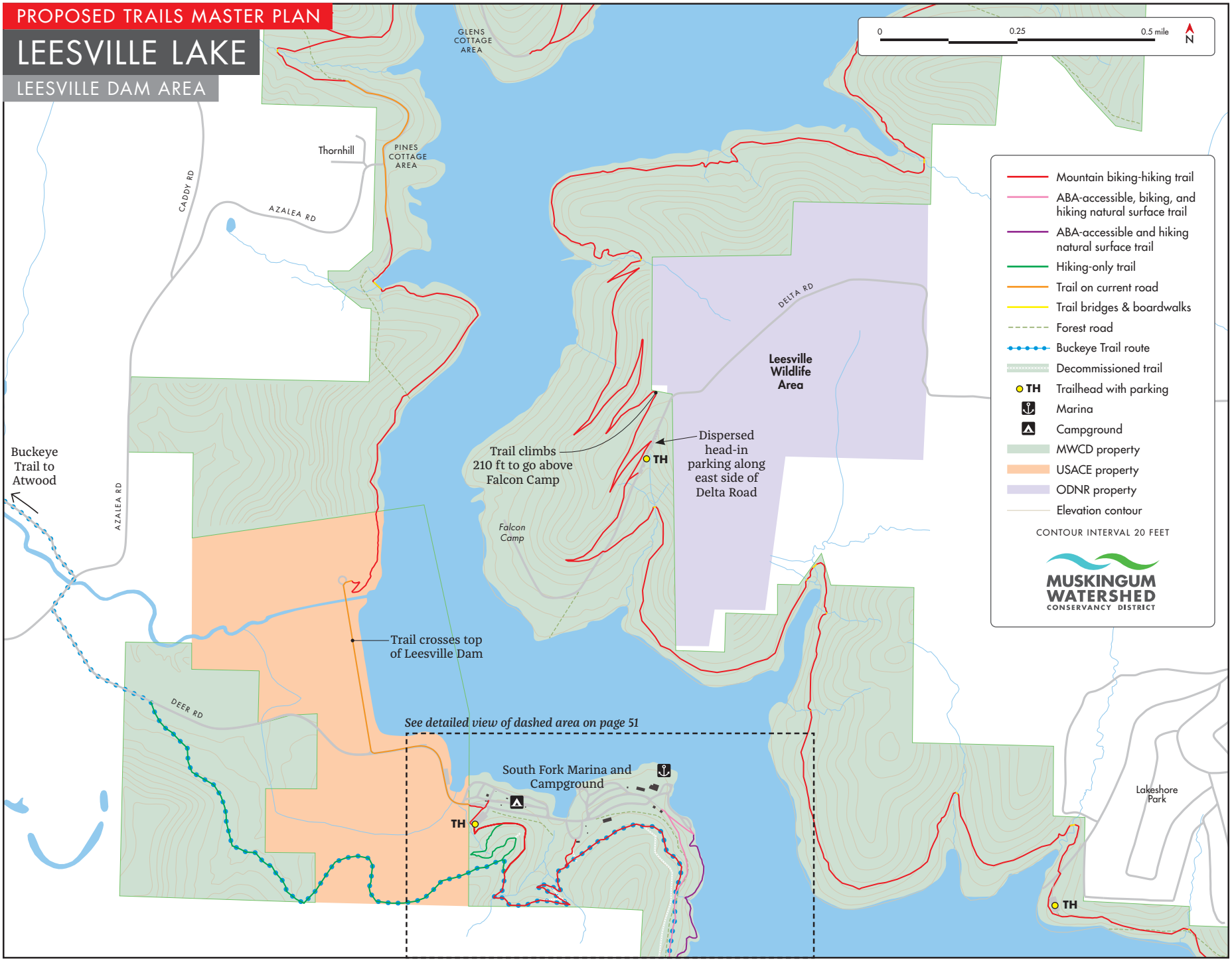
The proposed 31-mile hike-mountain bike **Leesville Trail** loops the entire lake, connecting all lakeside communities without interfering with them. Ten new trailheads with parking keep trail user vehicles out of marinas and residential areas. Additional trails are proposed near local population centers.

Trails would be mostly natural surface singletrack in scenic, roadless, quiet areas. Many trails have ascents and descents to engage and challenge users. Yet trail grades are gentle overall, making trails enjoyable for users of all abilities.




PROPOSED TRAILS MASTER PLAN
LEESVILLE LAKE
EASTERN NORTH FORK AREA
Local trail access points for Piney View
North Fork Marina and Campground
High boardwalk and bridge crossing across shallow lakebed provides 16-foot clearance at conservation pool
Shortest route to Atwood—4.8 miles to Dellroy
Local trail access for Rockwood Park via existing road to lakeshore
Trail is both accessible and bikeable between trailheads
Main trail access point for Hensel via existing road to lakeshore
Local trail access points for Hensel and Grampian Hills
Additional trails in eastern North Fork provide opportunities primarily for local residents and longer-term visitors
Bear Hole Run
Tick Run
North Fork McGuire Creek
Piney View
Hackathorn
Hensel
Grampian Hills
North Bay
North Fork
REPUBLIC COTTAGE AREA
Rockwood Park
Palermo on the Lake
Camp Muskingum
EDGEWOOD RD
ROCKWOOD DR
ROCKLAND DR
PARKLAND DR
ELK RD
AUTUMN RD
AZALEA RD
EMPIRE RD
TH
Mountain biking-hiking trail
ABA-accessible, biking, and hiking natural surface trail
Trail on current road
Trail bridges & boardwalks
Forest road
Trailhead with parking
Marina
Campground
MWCD property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
0
0.25
0.5 mile
N

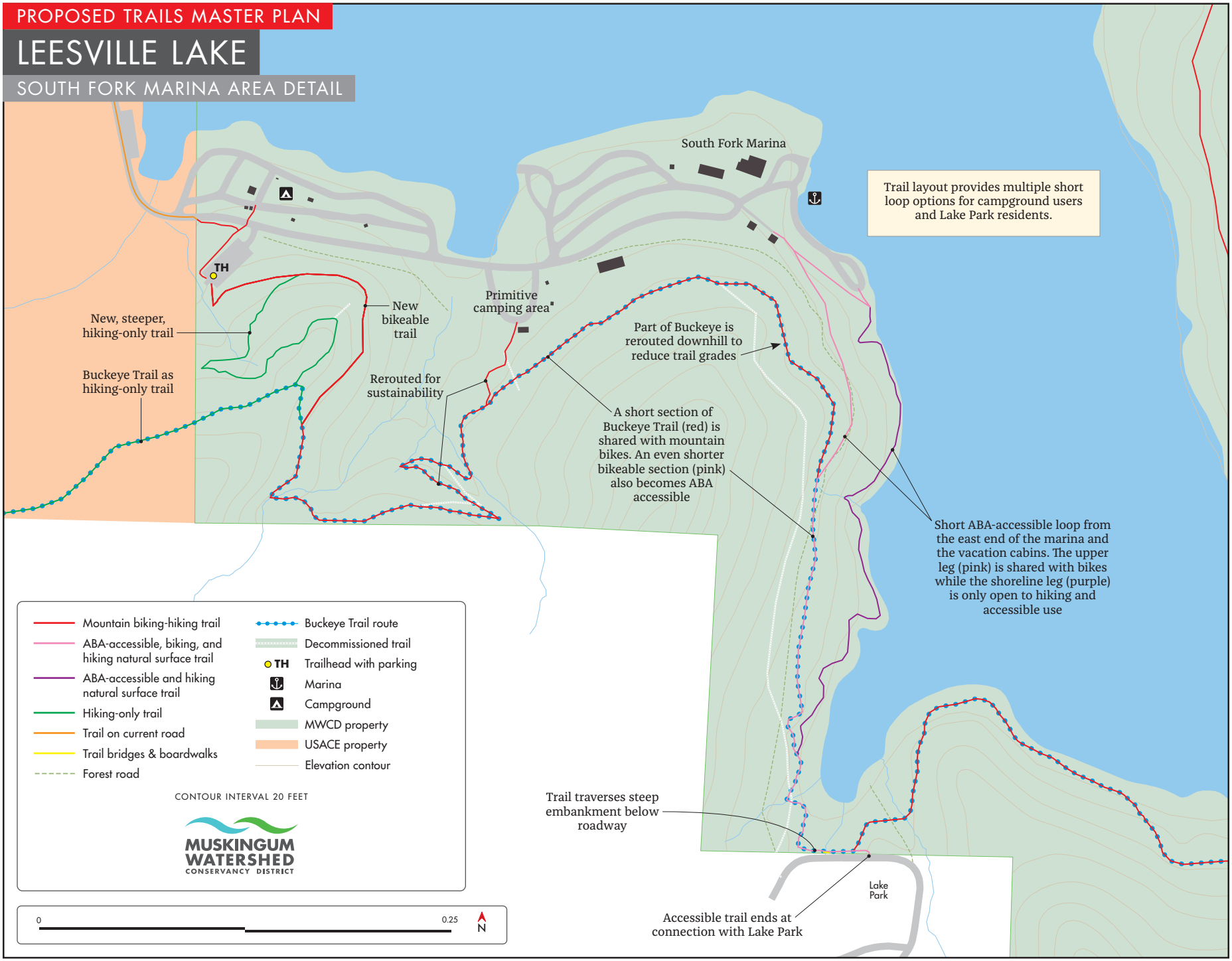

PROPOSED TRAILS MASTER PLAN
LEESVILLE LAKE
WESTERN NORTH FORK AREA
Mountain biking-hiking trail
Trail on current road
Trail bridges & boardwalks
Forest road
TH Trailhead with parking
Potential campground
MWCD property
ODNR property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
Multiple shorter trails provide multiple loop options near Camp Wakonda, Firefly Woods, Glens Cottage Area, and Pines Cottage Area
Leesville Wildlife Area
Shortest route to Atwood—4.8 miles to Dellroy
EDGEWOOD RD
North Bay
Semple Run
DYEWOOD RD
Camp Wakonda
Trail climbs 200 ft to go above Camp NEOSA
Camp NEOSA
TH
ROCKWOOD DR
Rockwood Park
ROCKLAND DR
Potential 7-acre ridgetop campground site with water and electricity available from Firefly Woods. Campground can easily connect to trail system
DUBLIN RD
Trail here is about 6 ft above lake
TH
Visitors who come primarily to use the trails and Firefly Woods site for recreation would park here (about 100 ft above lake) and use trails or hike/bike on the road to reach the beach and facilities close to the lake. Only limited parking would be available closer to the lake and most or all of that would be managed by the leaseholder.
Camp Muskingum
Camp Aldersgate
DYEWOOD RD
Trail climbs 175 ft to go above Camp Muskingum and Camp Aldersgate
Dublin Estates
GLENS COTTAGE AREA
North Fork
Trail spur connects to an existing clearing
Trail here is about 200 ft above lake
Local summit 170 ft above lake
Trail here is about 190 ft above lake
PINES COTTAGE AREA
0
0.25
0.5 mile
N

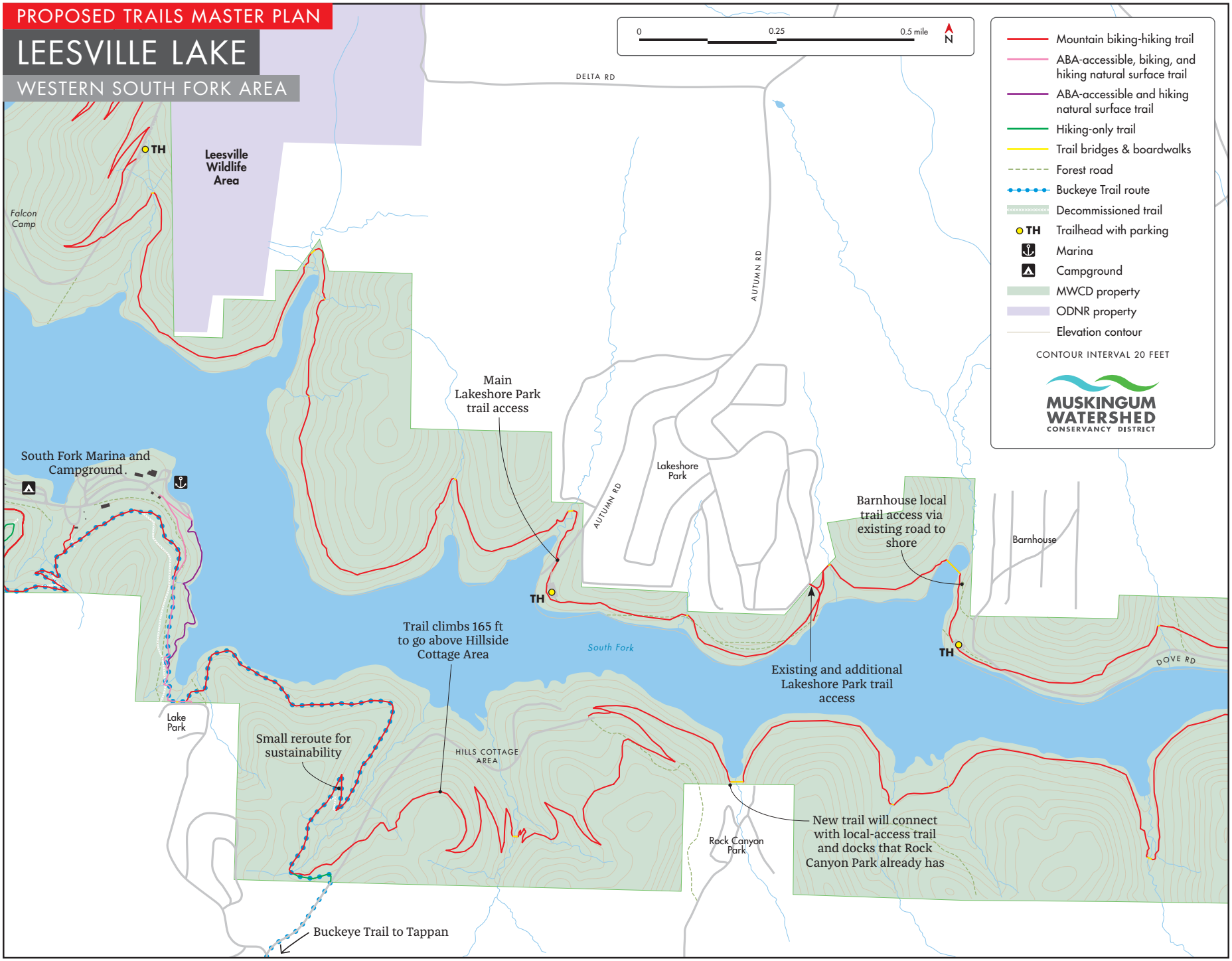

PROPOSED TRAILS MASTER PLAN
LEESVILLE LAKE
LEESVILLE DAM AREA
0
0.25
0.5 mile
N
GLENS COTTAGE AREA
PINES COTTAGE AREA
Thornhill
CADDY RD
AZALEA RD
DELTA RD
Leesville Wildlife Area
Trail climbs 210 ft to go above Falcon Camp
TH
Dispersed head-in parking along east side of Delta Road
Falcon Camp
Buckeye Trail to Atwood
AZALEA RD
Trail crosses top of Leesville Dam
DEER RD
See detailed view of dashed area on page 51
South Fork Marina and Campground
TH
Lakeshore Park
TH
Mountain biking-hiking trail
ABA-accessible, biking, and hiking natural surface trail
ABA-accessible and hiking natural surface trail
Hiking-only trail
Trail on current road
Trail bridges & boardwalks
Forest road
Buckeye Trail route
Decommissioned trail
TH Trailhead with parking
Marina
Campground
MWCD property
USACE property
ODNR property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT

PROPOSED TRAILS MASTER PLAN

LEESVILLE LAKE

SOUTH FORK MARINA AREA DETAIL

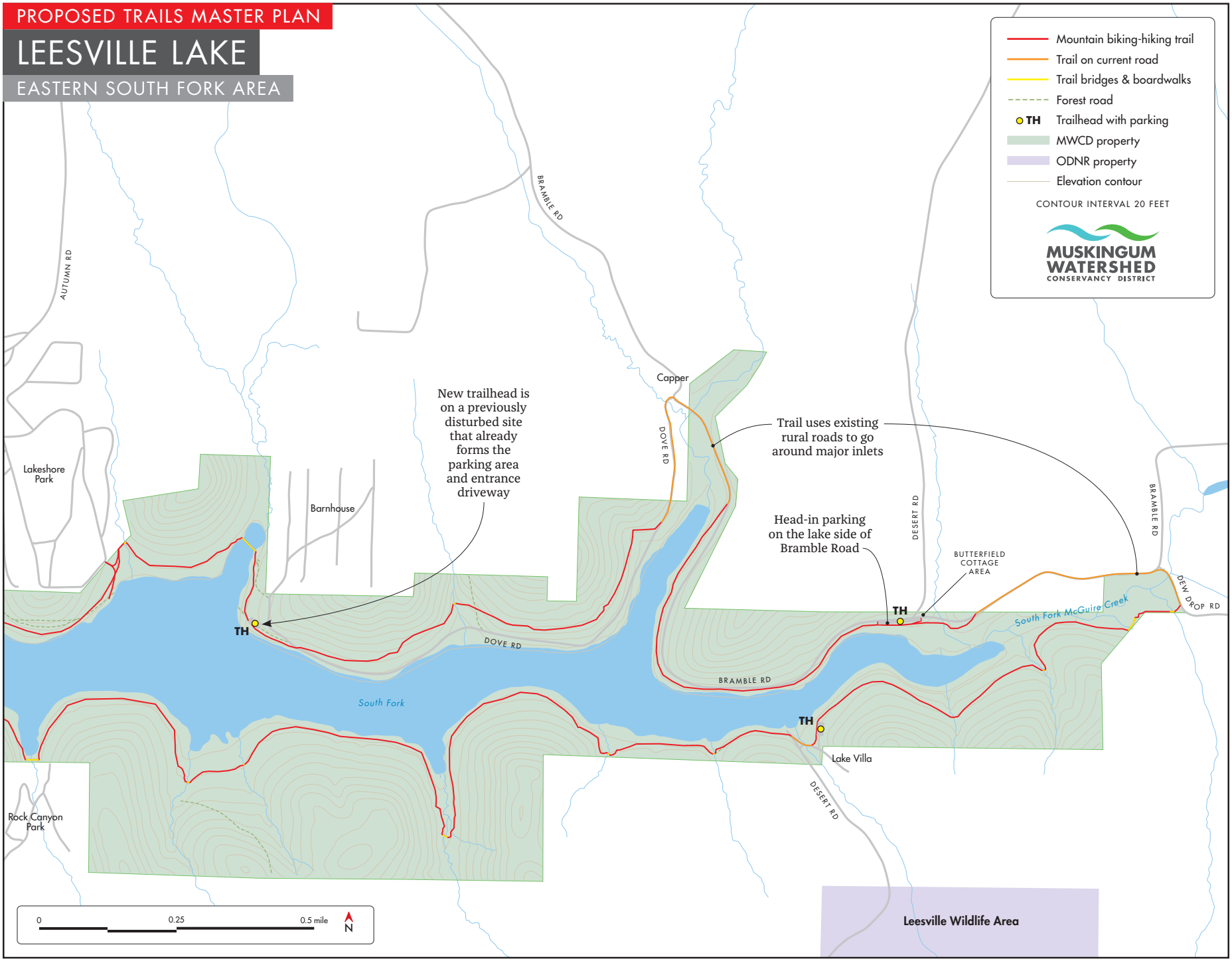



PROPOSED TRAILS MASTER PLAN
LEESVILLE LAKE
WESTERN SOUTH FORK AREA
0
0.25
0.5 mile
N
DELTA RD
TH
Leesville Wildlife Area
Falcon Camp
AUTUMN RD
Main Lakeshore Park trail access
Lakeshore Park
AUTUMN RD
Barnhouse local trail access via existing road to shore
Barnhouse
South Fork Marina and Campground
TH
Trail climbs 165 ft to go above Hillside Cottage Area
South Fork
TH
DOVE RD
Existing and additional Lakeshore Park trail access
Lake Park
Small reroute for sustainability
HILLS COTTAGE AREA
Rock Canyon Park
New trail will connect with local-access trail and docks that Rock Canyon Park already has
Buckeye Trail to Tappan
Mountain biking-hiking trail
ABA-accessible, biking, and hiking natural surface trail
ABA-accessible and hiking natural surface trail
Hiking-only trail
Trail bridges & boardwalks
Forest road
Buckeye Trail route
Decommissioned trail
TH Trailhead with parking
Marina
Campground
MWCD property
ODNR property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT

PROPOSED TRAILS MASTER PLAN

LEESVILLE LAKE

EASTERN SOUTH FORK AREA



8

Piedmont Lake

Piedmont Lake Highlights

- With pleasant hardwood forests on moderate slopes with rocks here and there, surrounding a narrow, quiet, undeveloped lake, Piedmont may provide some of the most iconic "Best of Ohio" experiences.
- In addition to a segment of Buckeye Trail that remains mostly unchanged, Piedmont gains five new trail areas arranged in three geographically separate groups that are not connected by trails.
- Each trail area was chosen because it is highly suited for trails that take advantage of unique qualities of that area, typically topography, landscape and forest quality, aesthetics, site access, and size. Hence each area has its own distinct look, feel, and sense of place.
- The five areas collectively host 36 miles of new trail while leaving large swaths of Piedmont's 4,416 acres of land untouched, including the entire eastern shore.
- The Marina area has a new shoreline path between the marina and campground and hiking-only trails on a steep ridge above the campground.
- Shoehorn Ridge area has gentle hike-bike trails through attractive hardwood forests along a scenic ridge with leaf-off views.
- The Golda area offers a dense network of hike-bike trails with fun topography and a lot of elevation change, faster downhill bike trails, and a very nice accessible shoreline trail.
- The Egypt area offers more challenging mountain biking and hiking in and around previously mined land and highwalls.
- The Old Growth area offers a hiking trail through an isolated remnant of old growth forest.

Piedmont Lake Discussion

Separate trail areas rather than a loop trail around Piedmont

Planning found it neither feasible nor desirable to have a loop trail around Piedmont Lake. Instead, the identified trail areas take visitors through many of the best parts of Piedmont.

Piedmont Lake: Existing and Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage	New trail/path	Existing trail/path	Trail on current road	Natural surface tread	Hard surface tread	MTB/ hiking trail	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike	ABA accessible	Other use
Existing trail mileage	4.89	—	4.89	0.00	4.75	0.14	0.00	0.00	4.75	0.00	0.00	0.14
Proposed trail mileage	40.66	36.07	4.59	1.36	39.56	0.57	31.35	0.00	8.21	0.91	1.12	0.14
Proposed mileage change	35.77	36.07	-0.30	1.36	34.81	0.43	31.35	0.00	3.46	0.91	1.12	0.00

Marina area—6.42 miles of trail

This area has 1.83 miles of new trail, 0.14 miles of existing hard-surface walkway near the marina, and 4.45 miles of existing Buckeye Trail that remains after 0.3 miles of Buckeye is replaced with new trail.

A new hard-surface hiking, biking, and accessible path along the shoreline connects the campground and marina. About 300 feet of the path is relatively technical construction to traverse the steepest part of the embankment of the road to the campground above the shore.

Several short hiking-only trails with average grades of 5% climb the ridge south of the campground and form a natural surface trail to the marina. One of the ridge trails creates a gentler reroute for the short and very steep segment of Buckeye Trail mentioned above.

Shoehorn Ridge area—6.76 miles of new trail

Located just east of the marina, "Shoehorn Ridge" is an unofficial name that emerged during planning for a previously nameless area and can be changed if desired. The lowest trail provides formal access to the swim beach. Much of the length of the other trails follows natural topographic benches around the shoehorn-shaped ridge. These benches are often just above steep slopes below, creating dramatic yet safe and easy trails—easy to use and easy to build—through open hardwood forests with excellent views during leaf-off.

Up to about 14.6 acres of relatively level forest on top of the ridge, 240 feet above the lake, could optionally be used for one or more new camping areas. Both Piedmont and nearby Clendening would benefit from additional places to camp, especially primitive sites and "glamping" sites favored by many visitors who come primarily to hike and bike trails. Yet the ridgetop site is large enough to potentially offer other types of camping and lodging options if desired. Water and electric service should be relatively easy to obtain in this area.

The proposed campground site, the proposed road climbing up from Marina Road, a new trailhead close to Marina Road, trails in the area, and the trail-road crossing are all planned to optimally work together. The trailhead provides trail-use parking up on the ridge away from the marina and existing campground areas so that no new parking needs to be constructed down there.

Trails, however, are planned so that they work equally well whether or not the proposed campground(s) are built. If any campground is built here, it will be easy to connect it to the trail system.

Golda area—13.66 miles of new trail

"Golda" is the old place name for the area between Reynolds Road Cottage Area and the public boat launch located off of Reynolds Road.

New trailhead parking would be built along the existing roadbed east of the public boat launch and existing trailer turnaround loop. Road signs would guide visitors to park in the appropriate parking area for either the boat launch or the trails.

A second, smaller trailhead would be built near the top of the Golda ridge just north of Skyline Drive. A cleared area used for hunter parking currently exists there; the new trailhead would be constructed in this clearing.

The Golda area appears to have pleasant hardwood forests and excellent, varied topography for great mountain biking and hiking trails with lots of ins and outs. Its topography, much more varied than most MWCD lakes, is one of the best features of this area. Trails here might be some of the most fun mountain biking and hiking trails in the TMP.

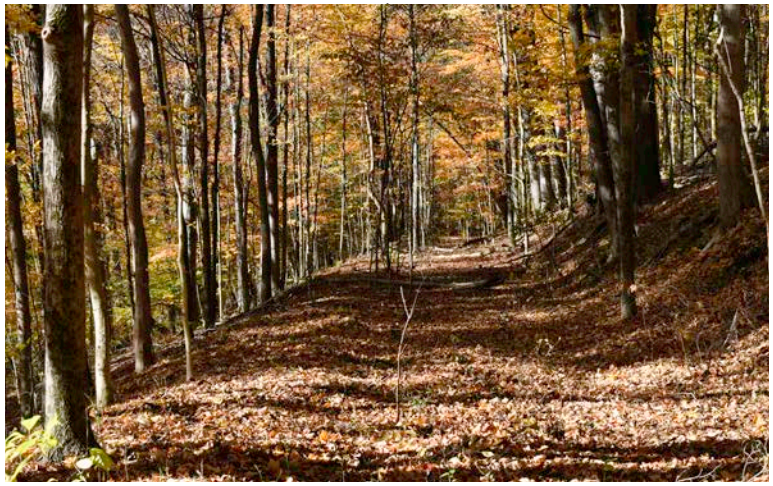
Starting at the lower trailhead near the boat launch, an accessible hiking trail follows the scenic shore. (Bikes are excluded from the accessible portion of the trail in order to create a pedestrian-only zone but bikers can use another segment of shoreline trail farther from the trailhead.) This is one of the few shoreline trails on MWCD lakes where one would see nothing obviously manmade along the entire trail. It may be desirable to provide a viewing deck along the accessible portion of the trail. The map shows two possible locations based on having the widest possible views but fieldwork is needed to find the best location—or to conclude that nothing along the trail is sufficiently "worth it" to provide any viewing deck.

Note that the deck could be quite large, even large enough to host a group activity. It's meant to give visitors a place to linger and perhaps meet with others; a location close to the trailhead may be better at fulfilling the socializing function.

The Golda area includes a trail optimized for faster downhill biking that drops over 200 feet. The upper leg has an average grade of 6%; the lower leg averages 5%. These grades are steep enough to be fast and fun for bikers of average or better ability. Despite being optimized for faster downhill biking, this trail and others like it in the TMP aren't closed to uphill biking or to hiking in either direction. Downhill bikers need to exercise caution and maintain their ability to stop, which is possible with 5-6% grades.

Near Reynolds Road Cottage Area, trails stay as far as possible from homes and docks. Instead of taking the easy route of using the dock road

along the shore, a lower trail traverses the steep, wooded hillside well above the cottage area docks but well below the backyards of homes. An upper trail switchbacks its way out of a drainage and up the extremely steep slope to the upper side of Reynolds Road, then uses that road to go above the cottage area. Since most trail users prefer to travel loops, having two trails that make a loop could reduce the amount of traffic on each trail by half compared to having only one trail. The cottage area also gets its own spur trail to connect it to the upper trail.



Piedmont has some attractive, open hardwood forests with rocks here and there. This is a former road, not part of the planned trail system.

Egypt area—12.48 miles of new trails

A wide, low drainage crossed with a 190-foot boardwalk is the natural boundary between the Golda and Egypt areas.

While Golda is meant to have fun trails in mostly pleasant forests, Egypt offers a wider range of experiences, terrain, and environments. More experienced bikers will gravitate here but even average bikers can ride it.

Some trails at Egypt are on previously mined land and some aren't. Trail and landscape character can change quickly along the same trail. Deep drainages with their floors not far above lake level alternate with some of the highest elevations at Piedmont to shape a trail system with ups and downs of 230 vertical feet.

The highest point in the Egypt area is the undisturbed top above mining highwalls. A loop trail over the top is the steepest and most difficult trail in the TMP but within the ability of more seasoned bikers. Going clockwise is easier, with a gentler ascent and a steeper descent, but the trail is bidirectional.

The Egypt area has its own trailhead on its south end off of Egypt North Road. The trailhead site is such that a second parking area can be added east of the initial parking area if needed.

Old Growth area—1.34 miles of new hiking-only trail

MWCD owns a small, isolated parcel along Egypt North Road. It shapes much like the Big Dipper star constellation with a long, very thin neck attached to a larger area. This larger area, much like a physical and ecological island, has a remnant of old growth forest entirely surrounded by topographically lower reclaimed mine land now owned by ODNR as a state wildlife area.

The parcel and its one trail climb 353 feet above the trailhead in about 1.34 miles of trail. The trail switchbacks through the old growth grove, topping out at the summit of the parcel with excavated highwalls dropping off below it. As the highest place in the area, it offers a sweeping long view during leaf-off.

To maintain a sustainable average trail grade of about 5%, some small parts of the trail need to cross onto ODNR land that is also unmined remnant land above nearby excavated highwalls. Five of 10 proposed switchbacks are on the undisturbed top edge of a mined-land highwall, making them more dramatic than usual. Because the trail is so constrained by topography, property boundaries, and ecological considerations; because the trail needs to use ODNR state wildlife area land on which biking is prohibited; and because the parcel is isolated from other MWCD land and trails, the trail would be designated as hiking only.

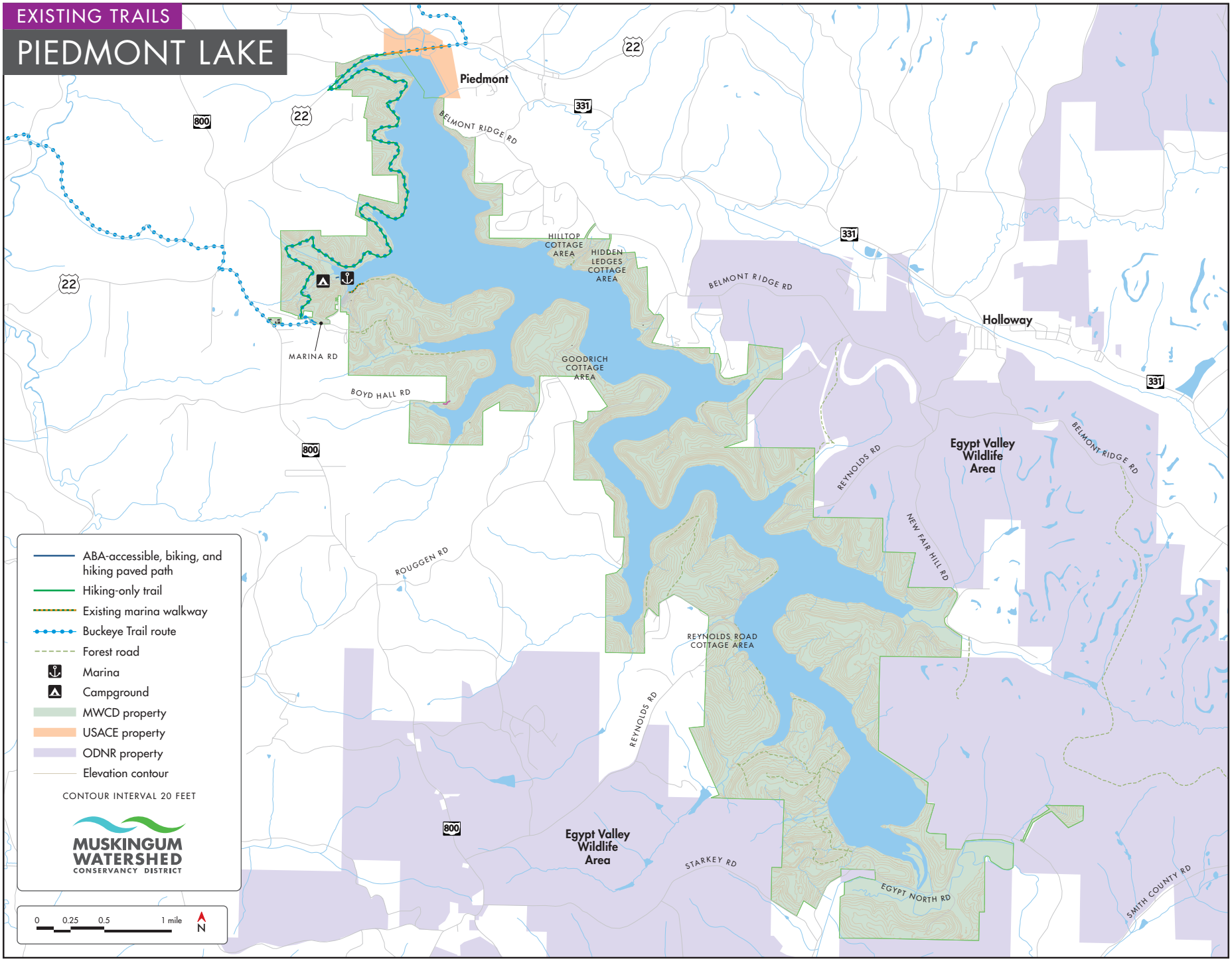
To minimize site impacts of trail excavation in the old growth grove, trail tread width is recommended to decrease to 18-24 inches. This width is very comfortable for a hiking trail but would require hand-built construction. Hand-built construction can also carefully minimize impacts to individual trees and even large individual tree roots. Ideally, the entire trail would be hand-built to this narrow width in order to minimize site impacts, structurally emphasize environmental sensitivity, and discourage uses other than hiking.

The parcel has just enough frontage on Egypt North Road for a small, head-in parking area for a trailhead. Along with signage , a narrow flight of steps on the narrow trail climbing out of the trailhead will make it physically clear that the trail is not intended for any wheeled vehicles including bikes.

At the time of this writing, ODNR has not formally agreed with this plan, so future progress depends on approving a formal agreement.

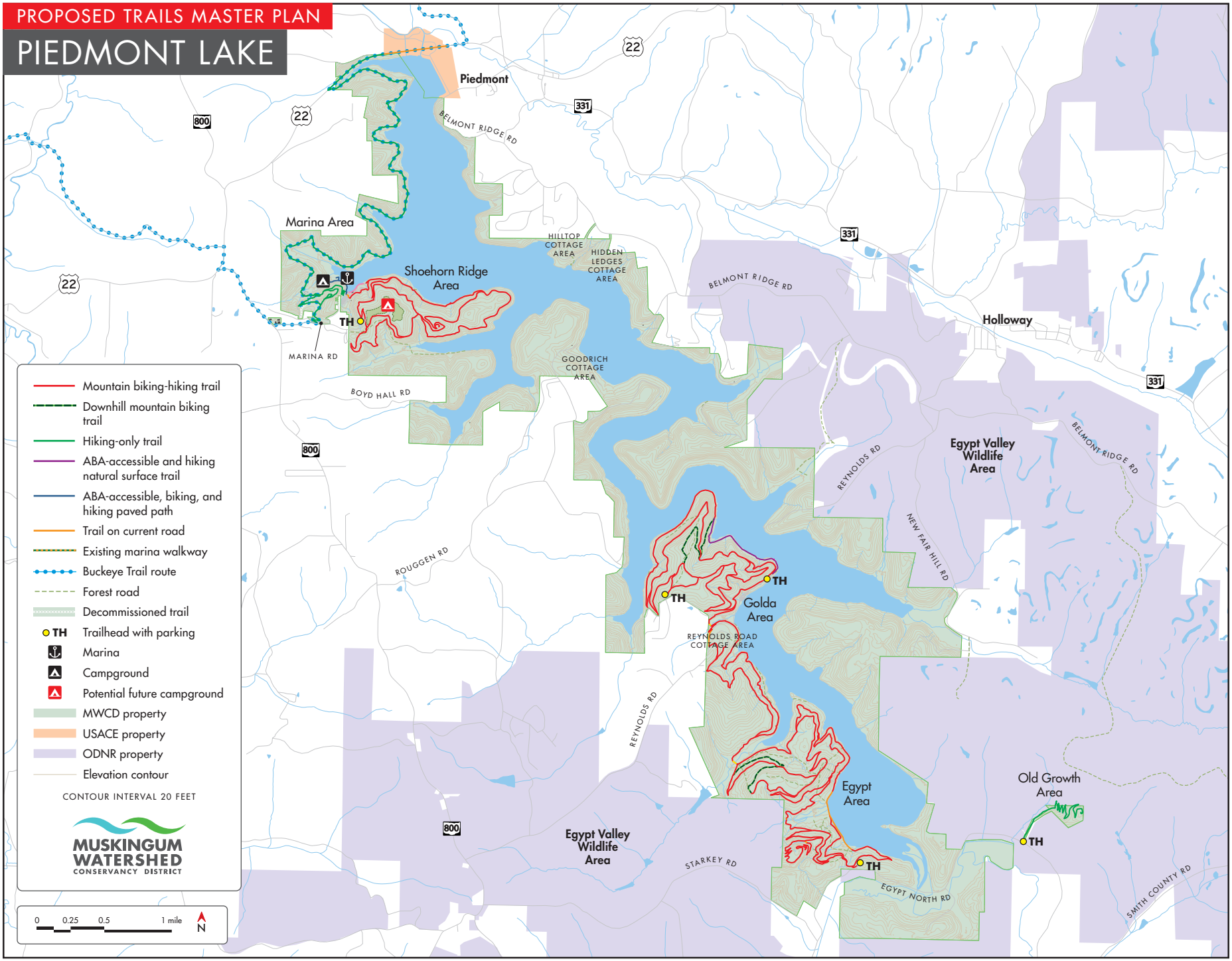
EXISTING TRAILS

PIEDMONT LAKE



PROPOSED TRAILS MASTER PLAN

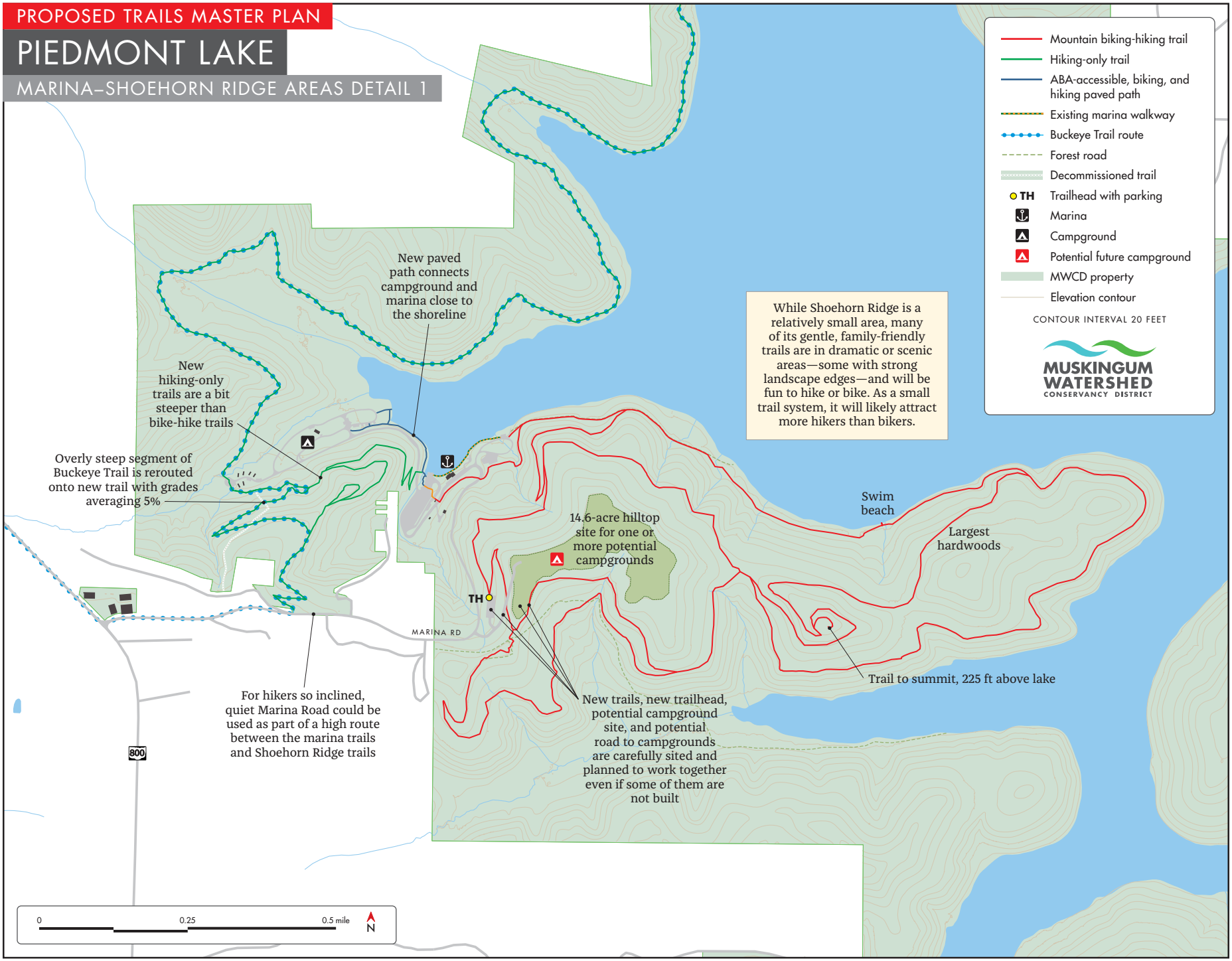
PIEDMONT LAKE



PROPOSED TRAILS MASTER PLAN

PIEDMONT LAKE

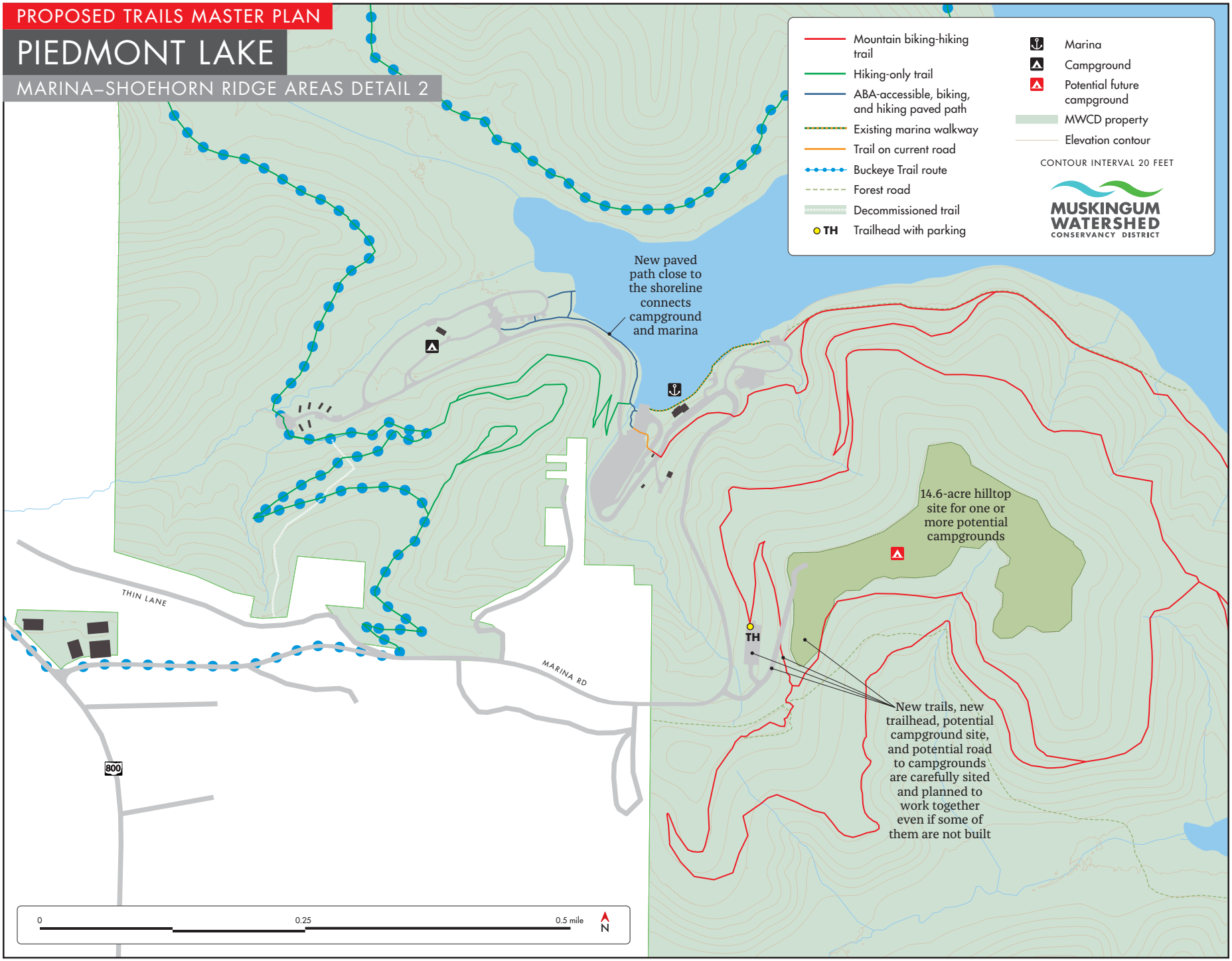
MARINA–SHOEHORN RIDGE AREAS DETAIL 1

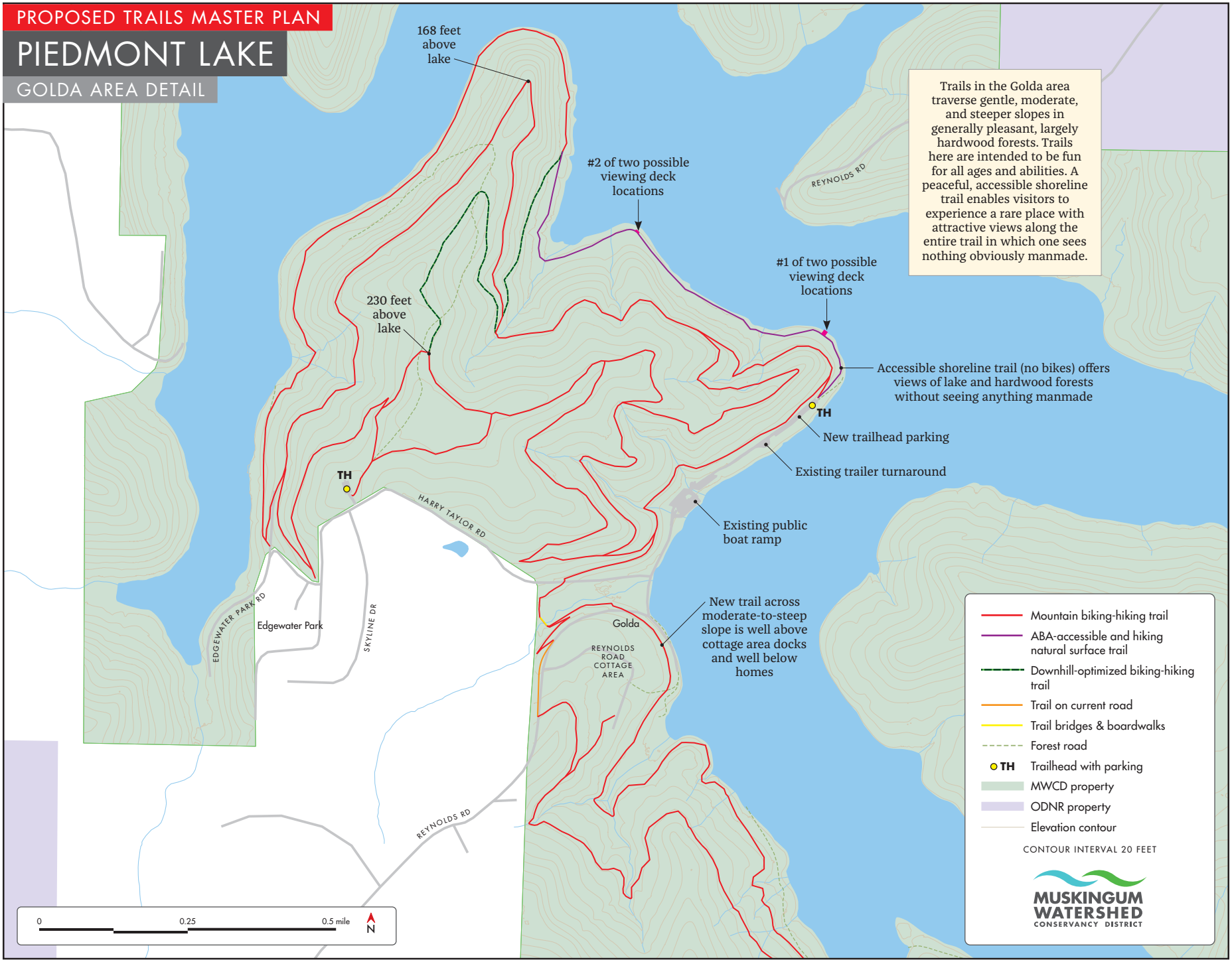


PROPOSED TRAILS MASTER PLAN

PIEDMONT LAKE

MARINA–SHOEHORN RIDGE AREAS DETAIL 2

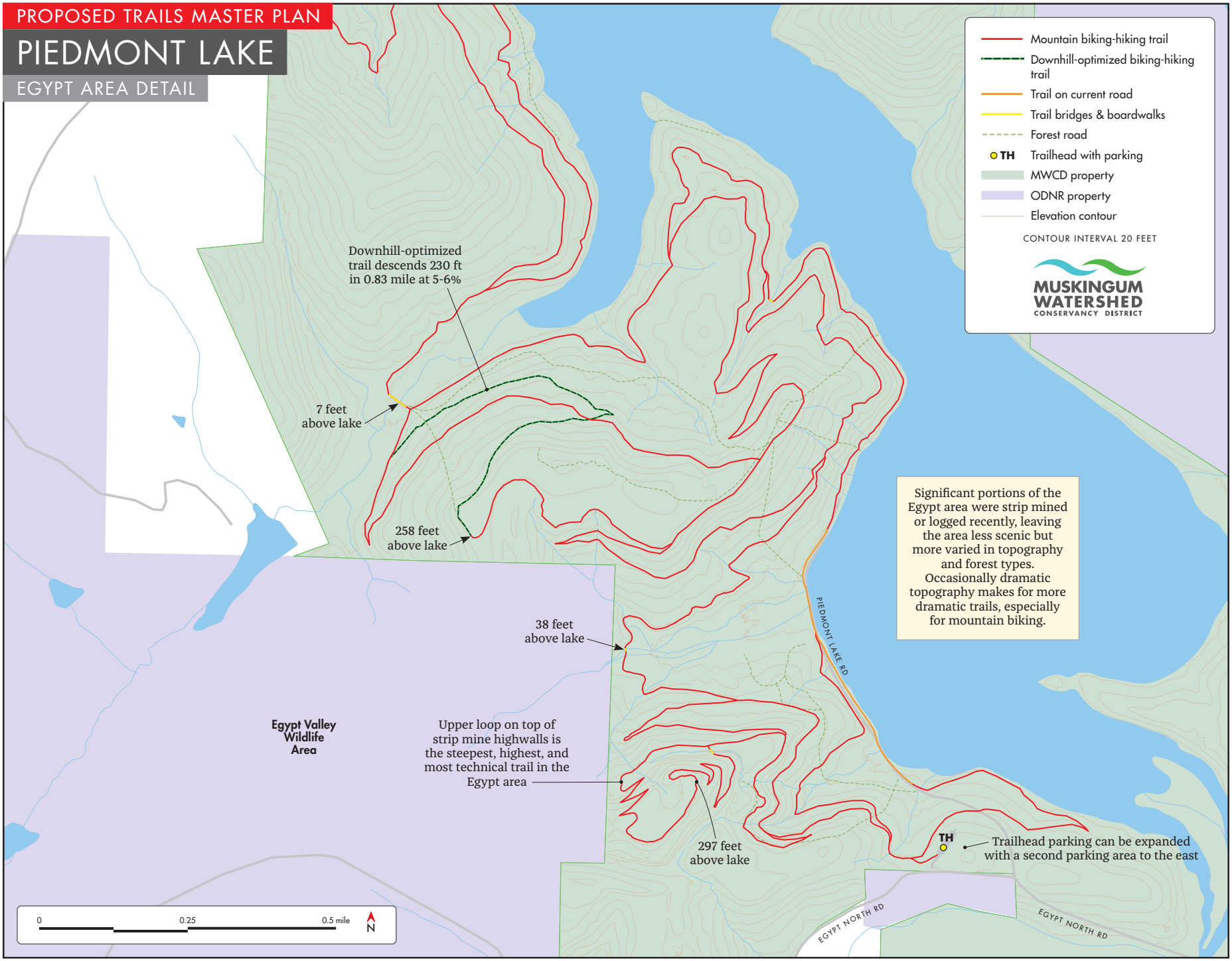



PROPOSED TRAILS MASTER PLAN
PIEDMONT LAKE
GOLDA AREA DETAIL
168 feet above lake
#2 of two possible viewing deck locations
#1 of two possible viewing deck locations
230 feet above lake
Trails in the Golda area traverse gentle, moderate, and steeper slopes in generally pleasant, largely hardwood forests. Trails here are intended to be fun for all ages and abilities. A peaceful, accessible shoreline trail enables visitors to experience a rare place with attractive views along the entire trail in which one sees nothing obviously manmade.
Accessible shoreline trail (no bikes) offers views of lake and hardwood forests without seeing anything manmade
TH
New trailhead parking
Existing trailer turnaround
TH
Existing public boat ramp
HARRY TAYLOR RD
EDGEWATER PARK RD
Edgewater Park
SKYLINE DR
Golda
REYNOLDS ROAD COTTAGE AREA
New trail across moderate-to-steep slope is well above cottage area docks and well below homes
REYNOLDS RD
REYNOLDS RD
0
0.25
0.5 mile
N
Mountain biking-hiking trail
ABA-accessible and hiking natural surface trail
Downhill-optimized biking-hiking trail
Trail on current road
Trail bridges & boardwalks
Forest road
TH Trailhead with parking
MWCD property
ODNR property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT

PROPOSED TRAILS MASTER PLAN

PIEDMONT LAKE

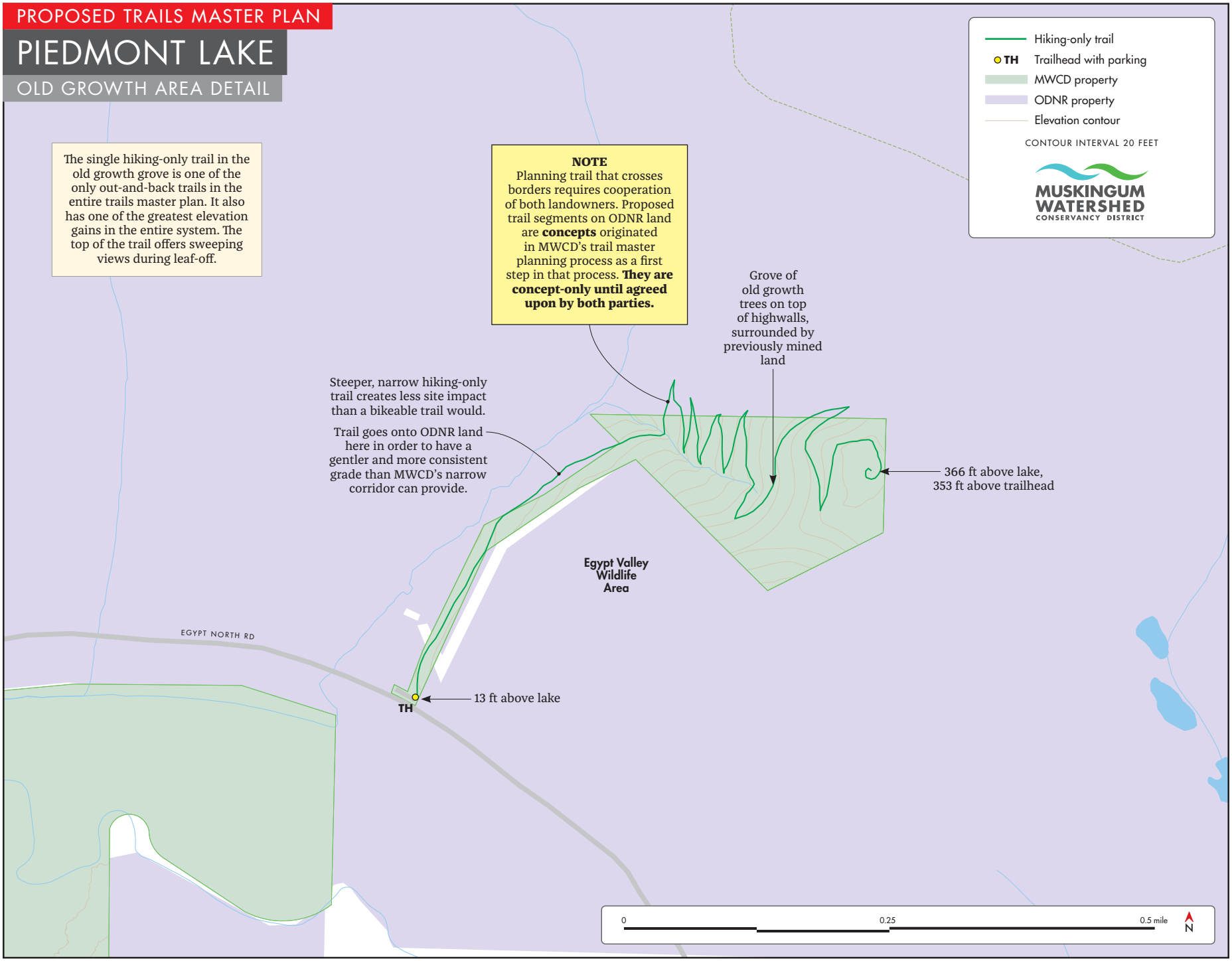
EGYPT AREA DETAIL



PROPOSED TRAILS MASTER PLAN

PIEDMONT LAKE

OLD GROWTH AREA DETAIL



9

Pleasant Hill Lake

Pleasant Hill Lake Highlights

- Pleasant Hill becomes a better destination for trails on MWCD land, a gateway for trails into adjacent Malabar Farm State Park and Mohican State Park/Memorial State Forest, and a regional link that joins all four entities into a regional trail system.
- In Pleasant Hill Lake Park, a new spine trail connects existing hard-surface trail segments with new paved segments to form a continuous shared-use trail across all of the public campground areas and major activity areas.
- Most existing equestrian-hiking and hiking-only trails in the park are rerouted to have better alignments and form a more coherent trail system. New hiking-only trails connect many of the campground areas directly to the new equestrian-hiking trail network. The resulting trail system in the park has more equestrian-hiking and hiking-only trail mileage than it currently has.
- New equestrian-hiking and hiking-only trails are added near Malabar Farm State Park. Most of these trails extend into Malabar. *(Note: At the time of this writing, these cross-border trails are subject to a future agreement between MWCD and ODNR that has yet to be developed and approved.)*
- The long-closed equestrian-hiking trail on the south shore of the lake will be rerouted in several places and reopened. This trail restores the only equestrian link between extensive equestrian-hiking trail systems in Malabar, northwest of Pleasant Hill, and Mohican State Park/Memorial State Forest southeast of Pleasant Hill.
- A new mountain biking-hiking trail through the gorge between Idlewood Cottage Area and the dam enables hiking and mountain biking between Pleasant Hill Lake Park and Mohican State Park.
- Up to seven new trailheads will be built. They include two shared-use trailheads with pull-through horse trailer parking for equestrians as well as regular parking for hikers.
- Visitors could hike around the entire lake on trails for the first time. (Making this circuit using trails as much as possible would require using trails through Mohican State Park in order to avoid hiking on County Road

Pleasant Hill Lake: Existing and Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage	New trail/path	Existing trail/path	Trail on current road	Natural surface tread	Hard surface tread	MTB/ hiking trail	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike	ABA accessible	Other use
Existing trail mileage	15.71	—	15.71	0.40	14.76	0.95	1.42	12.71	0.70	0.95	0.87	0.00
Proposed trail mileage	28.85	17.90	10.95	1.06	26.63	2.22	4.98	17.17	4.53	2.24	1.75	0.00
Proposed mileage change	13.14	17.90	-4.76	0.66	11.87	1.27	3.56	4.46	3.83	1.29	0.88	0.00

3006 by going below Pleasant Hill Dam.)

Pleasant Hill Lake Discussion

Equestrian-hiking trail mileage tabulation

In tabulating trail mileage, the administratively closed equestrian-hiking trail on the south shore was counted as existing trail mileage. Hence the 4.66 miles of new equestrian-hiking trail on MWCD land in the TMP actually is new mileage located in Pleasant Hill Lake Park and the area near Malabar.

Re-imagining Pleasant Hill Lake Park trails

The TMP re-imagines the trail system of the entire park as it exists today and as it will exist with planned future campground renovations of Area E. Every existing trail was considered and evaluated on its own merits as well as its role within the park and the lake as a whole. The objective was to keep what works while changing or removing what doesn't work well enough.

The big picture that emerged—and that the TMP proposes—has three main components.

- Decommission and restore most of the natural surface trails in the north half of the park in order to form a new, more coherent, more sustainable, loop-based, and larger system of natural surface, equestrian-hiking trails in that area.
- Connect as many campground and lodging areas as possible with a new, shared use, paved spine trail that also links directly or indirectly with the marina, welcome center, and swim beach.
- Directly connect individual campground areas, the cabin area, and the spine trail to the new equestrian-hiking trail system to the north.

In the proposed plan, the equestrian-hiking trail system in the park is mostly new. It traverses slopes with gentle average grades, eliminates existing fall line segments and trails through wet areas, and forms a more coherent system of loops exploring hilly, forested, and highly variable terrain. At drainage crossings with flowing water, hikers can use new crossing structures while equestrians use fords.

One new equestrian-hiking trail crosses State Route 95 twice (requires cooperation with ODOT). The western crossing routes the trail through an existing, very tall and wide box culvert underpass. A creek flows through the culvert with typically shallow water that horses can walk through. Switchbacked trails up to the highway enables hikers to go up and over the highway if they so choose; the crossing has excellent sightlines. Hikers can also go over the top of the box culvert on the south side of the highway in order to cross the creek; equestrians continue to use the existing creek ford. The eastern crossing of Rt 95 is a crosswalk with excellent sightlines.

From most campground areas and the cabin area, hikers can get to the equestrian-hiking trails via shorter, hiking-only trails that connect directly to these areas. Hikers can also get to the paved, accessible, hiking and biking spine trail from these areas.

Together, all of these trails create many stacked loop options for hikers from any starting point. Equestrians have fewer loop options in the park than hikers but more equestrian loops and trails are planned than exist today, including short loops from the horse camp.

Trails near Malabar Farms State Park

This area used to have Pleasant Hill's best hardwood groves, revered for having nearly old growth forest quality. An F1 tornado in 2022, however, flattened some of the best groves and caused extensive damage in multiple places. Salvage logging cleared some of the devastation but tangles of downed trees still remain.

Several new and rerouted trails work around the relatively small affected areas in which visitors will see the forest naturally regenerate over the coming decades. Mostly, though, the new trails enable users to enjoy previously trail-less parts of the extensive forests, rock outcrops, and rocky creeks that still beckon and delight.

The northernmost new trail is a equestrian-hiking trail along the high side of Switzer Creek, often with views of the creek in open hardwood forest. With cooperation of ODOT, the trail could go under the existing Rt 95 Switzer Creek bridge by rearranging and cementing rocks under the north end of the bridge to form a usable trail tread about 18 inches above the typically low creek flow. A bypass trail for hikers can take them up and over the highway for the short periods in which creek flows submerge the raised tread.

Upstream, this trail crosses Switzer Creek on a 70-foot bridge and connects to existing equestrian-hiking and hiking-only trails in Malabar. It also connects to new equestrian-hiking trails to the south that replace and reroute two excessively steep equestrian-hiking trails that both connect into Malabar.

The southernmost new trail takes hikers along the edge of a dramatic ravine to Ferguson Falls just inside Malabar. Equestrians can reach the falls

via the next new trail to the north in Pleasant Hill, which also passes close to multiple rock outcrops along the way. Both trails, like the others in this area, can be used as part of multiple loops in Malabar and Pleasant Hill.

The trail along Clear Fork and south shore

Although only the trail along the south shore was closed due to wetland damage caused by the trail, the closure caused the stretch of trail along both sides of Clear Fork Mohican River to become disused. Much of it has overgrown and is now difficult to find.

This trail will be rerouted and reworked in places to improve trail drainage and sustainability in places on the west side of Clear Fork. The wetland damage that caused the trail to be closed is proposed to be remedied by building up a low, aggregate-surfaced embankment approximately 620 feet long. While a boardwalk that could support horses was considered, an embankment is safer and more naturalistic as it blends into the site better in the long run. Careful construction of the embankment with trail-scaled equipment can limit site impacts to the 5- to 6-foot-wide footprint of the embankment.

This wetland and embankment work requires a wetland permit from USACE; hence this part of the project is subject to USACE approval. The work may also require MWCD to create new wetland to mitigate the loss of wetland in the footprint of the embankment (typically three times more wetland is created than is lost). In addition, lake volume mitigation must be implemented to compensate for the volume of aggregate and any other material imported into the impoundment area of the dam. New wetland creation and lake volume mitigation could occur in hard-to-see locations along back channels in the Clear Fork delta.

Further east, along the steep bluff over the lake, the trail will be rerouted to form a gentler and more sustainable grade and to move the trail closer to the lake and farther from nearby homes along the edge of MWCD's narrow property. At its high point, the trail will be about 95 feet above the lake with a very steep slope below it and an excellent view of the Clear Fork delta as it enters the lake.

The eastern end of the south shore trail, where it crosses Pleasant Hill Road, will also be rerouted in order to form a gentler, more sustainable trail grade.

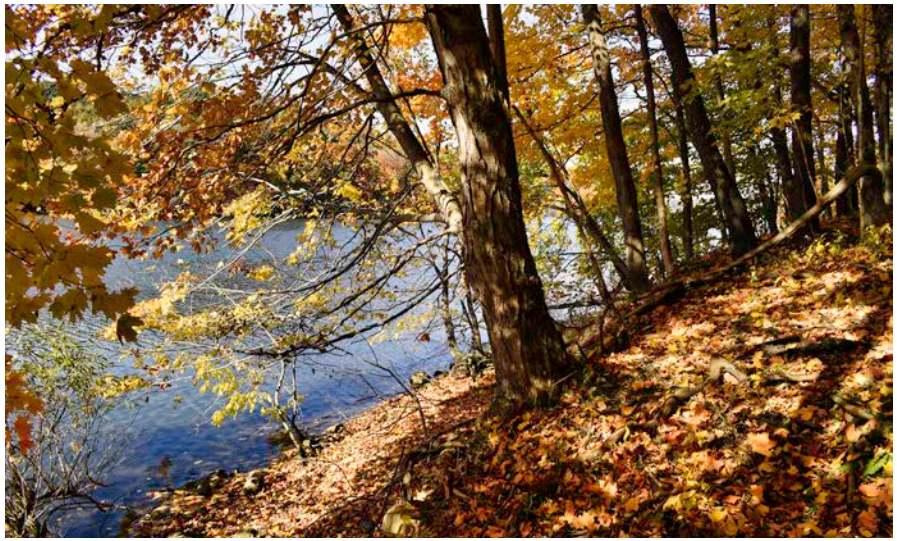
Two new equestrian-hiking trailheads

The maps show four sites, labeled ETH1 through ETH4, for potential new trailheads with multiple pull-through horse trailer parking lanes (possibly with vehicle-adjacent hitching highlines) as well as regular parking for hiker vehicles. Hiker vehicle parking would be along one side of the trailhead area at least 30 feet or further from horse trailers and highlines. These trailheads are much larger in size than typical trailheads with regular parking stalls; the maps show their approximate size and potential configurations. Trailheads could also include other equestrian features such as a mounting ramp or a small shelter structure (for people).

The TMP proposes building two of the four potential trailheads with equestrians weighing heavily in selecting which two are built. Equestrian input would also be sought in the design of the selected trailheads with the goal of designing excellent and practical equestrian trailheads tailored to local needs and desires.

Trails in the gorge between Idlewood Cottage Area and the dam

A proposed biking-hiking trail through the gorge would connect the east end of the proposed shared use spine trail in Pleasant Hill Lake Park with the existing biking-hiking 30-06 Trail near the dam. Criss-crossing the border between Pleasant Hill and Mohican State Park, 30-06 Trail (named for County Road 3006 at its northern end) is anything but straight as it connects



A new trail in the gorge near the dam would be close to the lake in places.

with Mohican's extensive bikeable trails. Among other things, the gorge trail would enable bikers and hikers to stay at Pleasant Hill and visit Mohican by trail.

The gorge trail is off-road except for two stretches of dead-end residential roads on MWCD land, the longer of which is on Shoreline Drive through Idlewood Cottage Area with the lake on one side. The trail crosses the deep, steep tributary gorge south of Idlewood on a new 80-foot trail bridge, switchbacks up the gorge wall above County Road 1027, and makes it way south above the road. The southern end of the gorge trail is proposed to be on the back side of the guardrail along the high embankment of County Road 3006, from which it connects to 30-06 Trail.

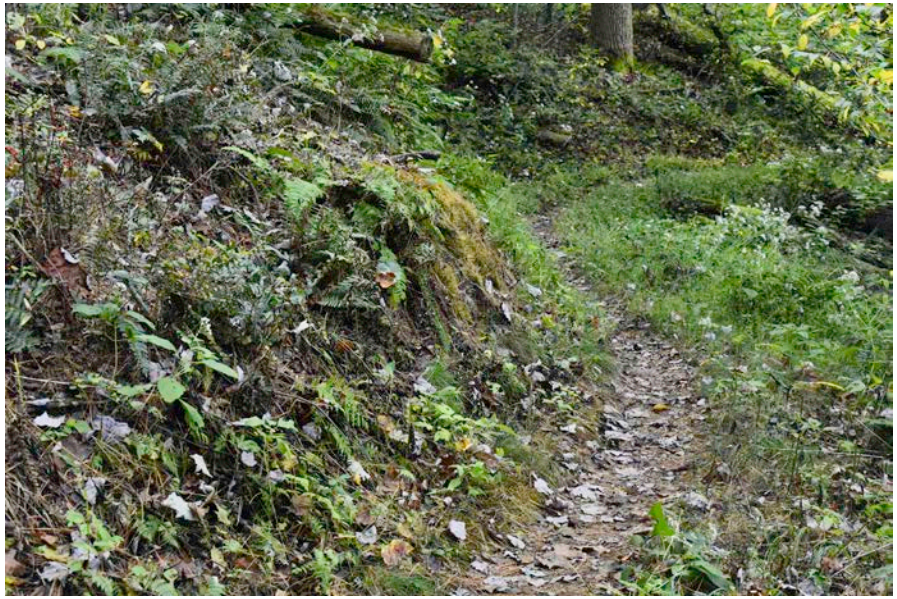
In the heart of the gorge, a second biking-hiking trail crosses 1027 Road and follows the lakeshore relatively close to the water. It's a lovely, must-see trail for Pleasant Hill visitors and can be traveled as a loop with the gorge trail. It has a proposed new trailhead on its north end. If needed, a second trailhead could be built near its southern end.

30-06 Trail is an approximate example for many planned natural surface trails

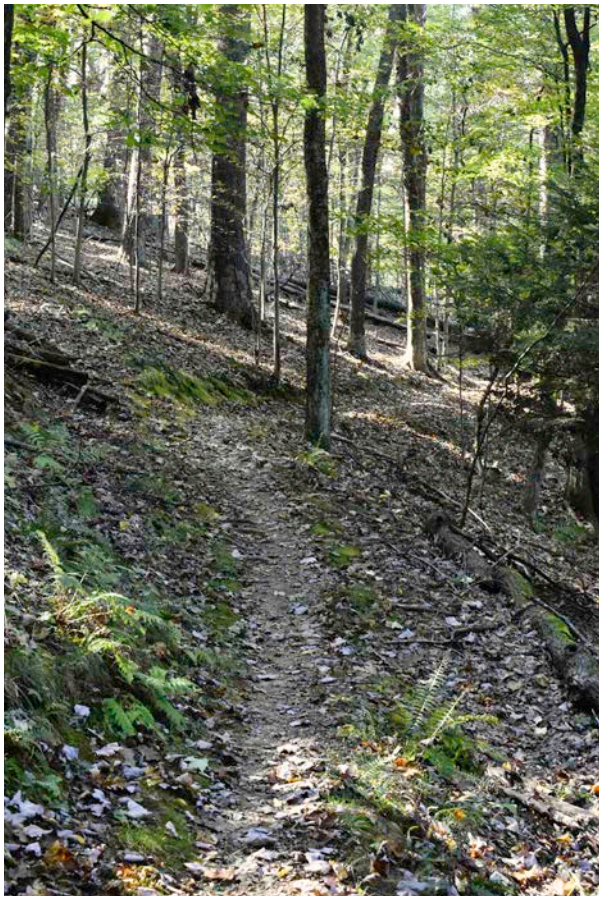
30-06 Trail was planned primarily for moderate to advanced mountain biking. The following was noted:

- 30-06 Trail has a reversing grade intended to be fun for riding and adequate to drain the trail. Since much of the trail on MWCD land is on a dry slope, some parts have relatively few dips and they are often short and shallow.
- 30-06 has steeper average grades than most trails in the plan that are intended for shared hiking-biking use by average hikers and bikers. Being steeper makes it harder to bikers to climb up the trail and faster to come down. Bikers do come down it fast, which is partly what makes it fun. In contrast, most planned trails in this report have gentle average grades that are easy for average riders to ride uphill and require pedaling in order to go downhill fast.
- Most of its backslopes (the steeper part of the trail cut between the travel surface and the undisturbed slope above the trail) are too steep. As a result, silty and loose backslope soil in many parts of the trail slumped and eroded onto the tread before the backslope revegetated. The slumped soil lands along the inside edge of the tread, narrowing the usable part of the tread by 40-60% of its originally constructed width.

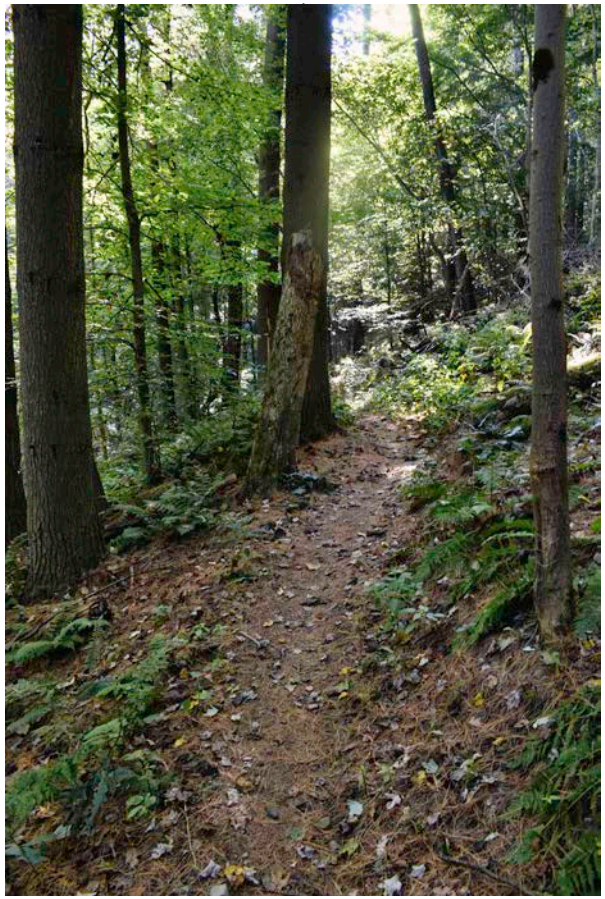
30-06 Trail has a reversing grade with a lot of variation in frequency depending on how wet or dry the slope is. Here the slope is wetter and dips are more frequent.



30-06 Trail: Backslope/cutslope is too steep in many places, causing soil to slump into the tread before the backslope revegetated. Trail tread in many places has narrowed to 40-60% of its originally excavated width (note narrow width of bare earth).



30-06 backslope is too steep and consequently slumped even on this gentle-moderate slope. Note slumping and narrowed tread in the immediate foreground. Good reversing grade.



Backslope is too steep but otherwise the trail has a good feel here. The trail reverses grade and goes downhill where we lose sight of it.

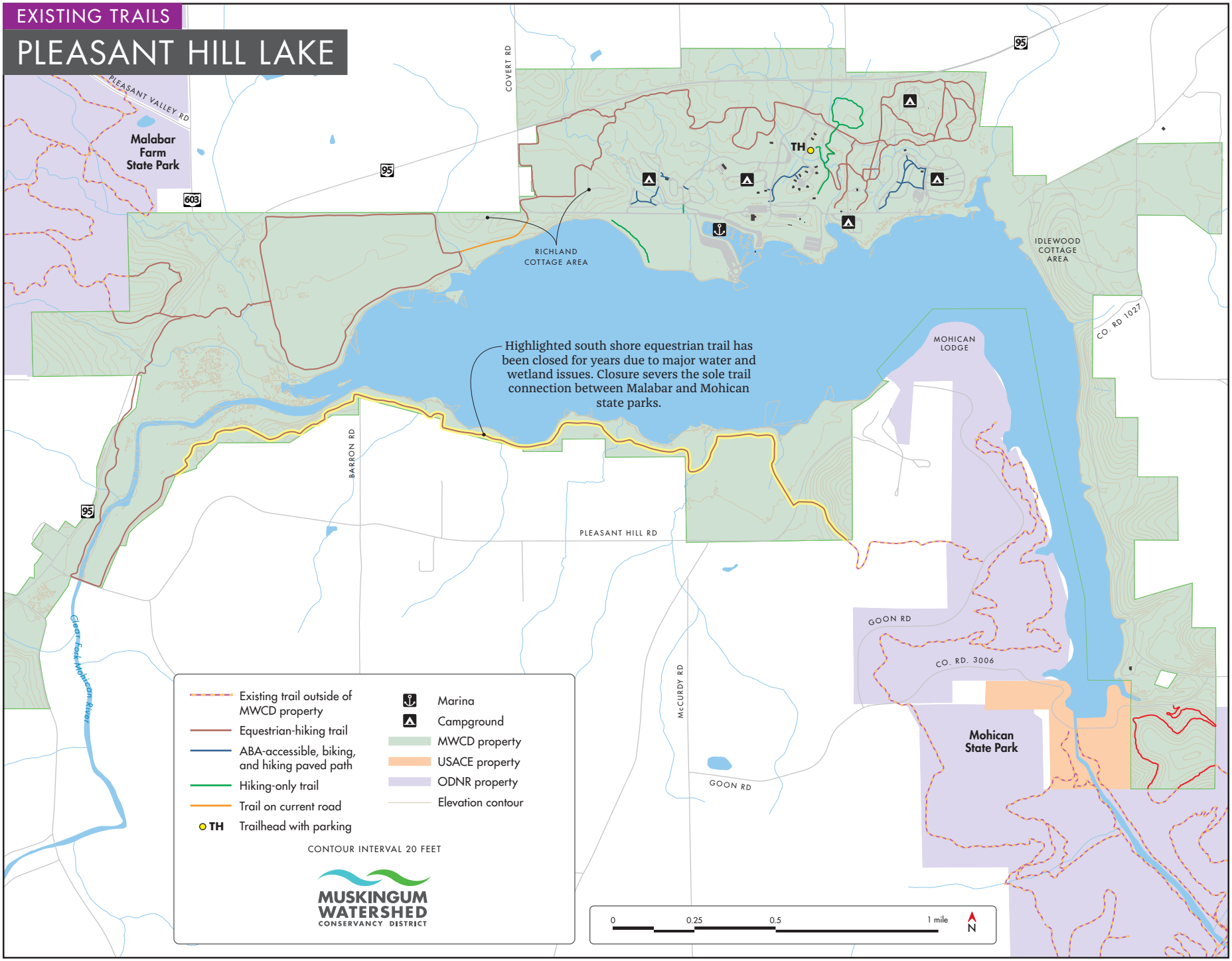
Tread was constructed with very little shoulder, making the trailbed less stable, making it harder for users going in opposite directions to pass, and making the trail more challenging for beginner riders. Tread has also compacted and displaced, making it into a shallow rut that channels water along the trail until water falls off the trail in a dip (which is typical and expected).

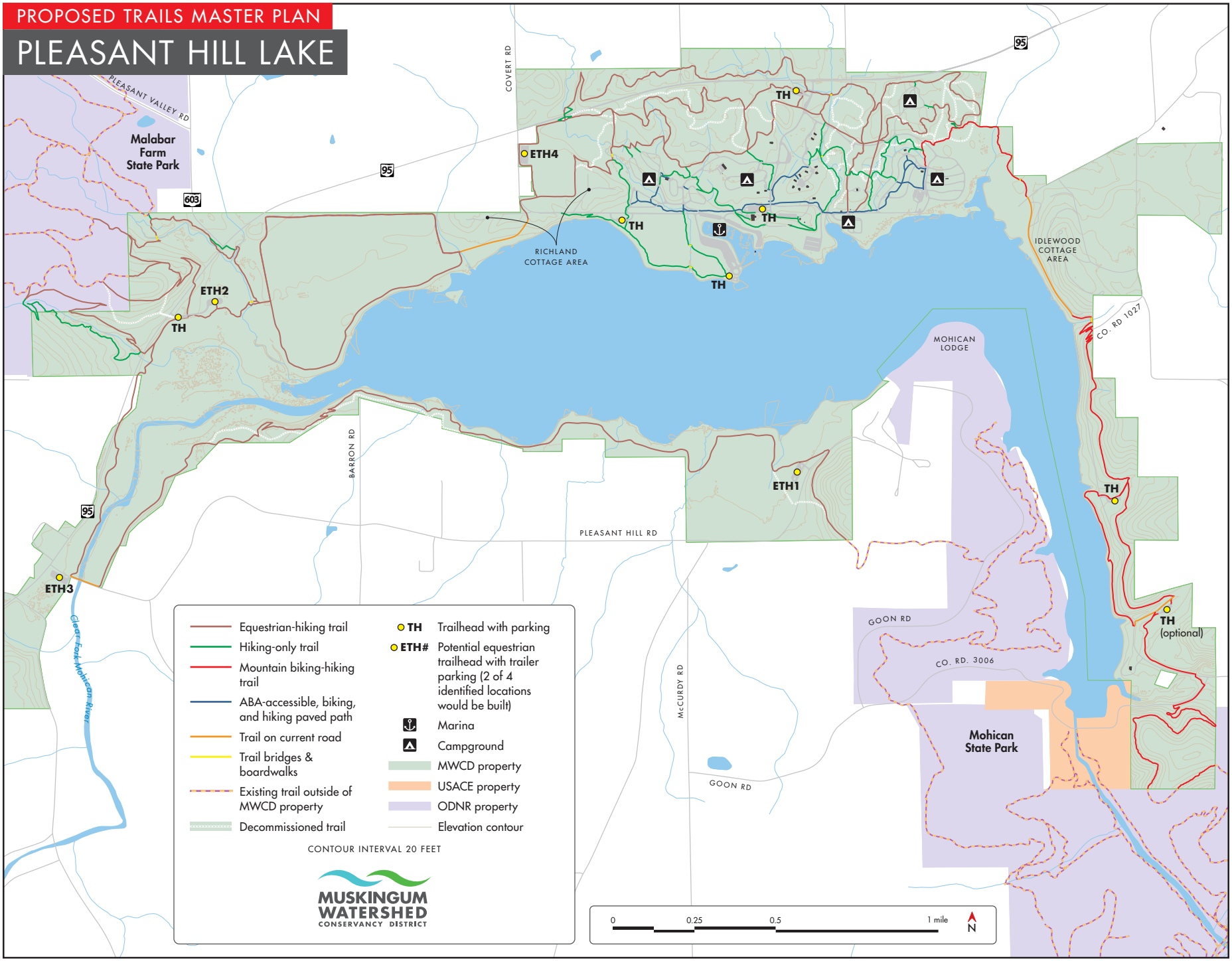
- Tread has very little shoulder on its outside (downhill) edge. Having a gently rounded, wider shoulder buttresses the tread, makes it easier to step off of the tread along the outside edge (which is helpful when users pass each other), and makes the trail more resilient in the long run.

Consequently, 30-06 Trail is a better example of planned new natural surface trails than most existing natural surface trails on MWCD land—but it's not a great example. Planned new trails will be designed for shared-use hiking and biking, have gentler average grades, gentler backslopes, wider usable treads (usually 3 feet or 5.5 feet wide), and more generous shoulders than 30-06 Trail. See "Partial-bench trail specifications" on page 118 for photos and drawings.

EXISTING TRAILS

PLEASANT HILL LAKE

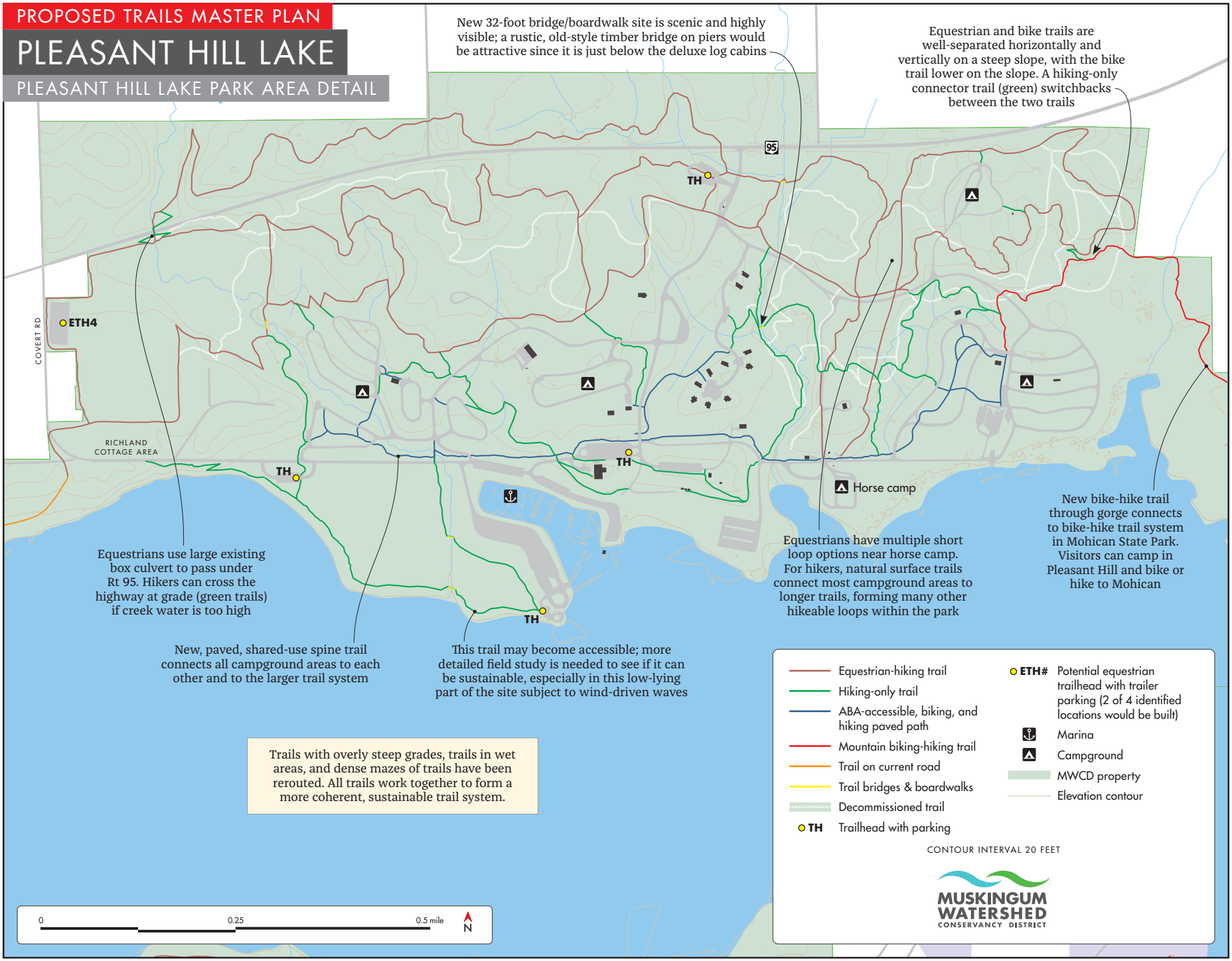


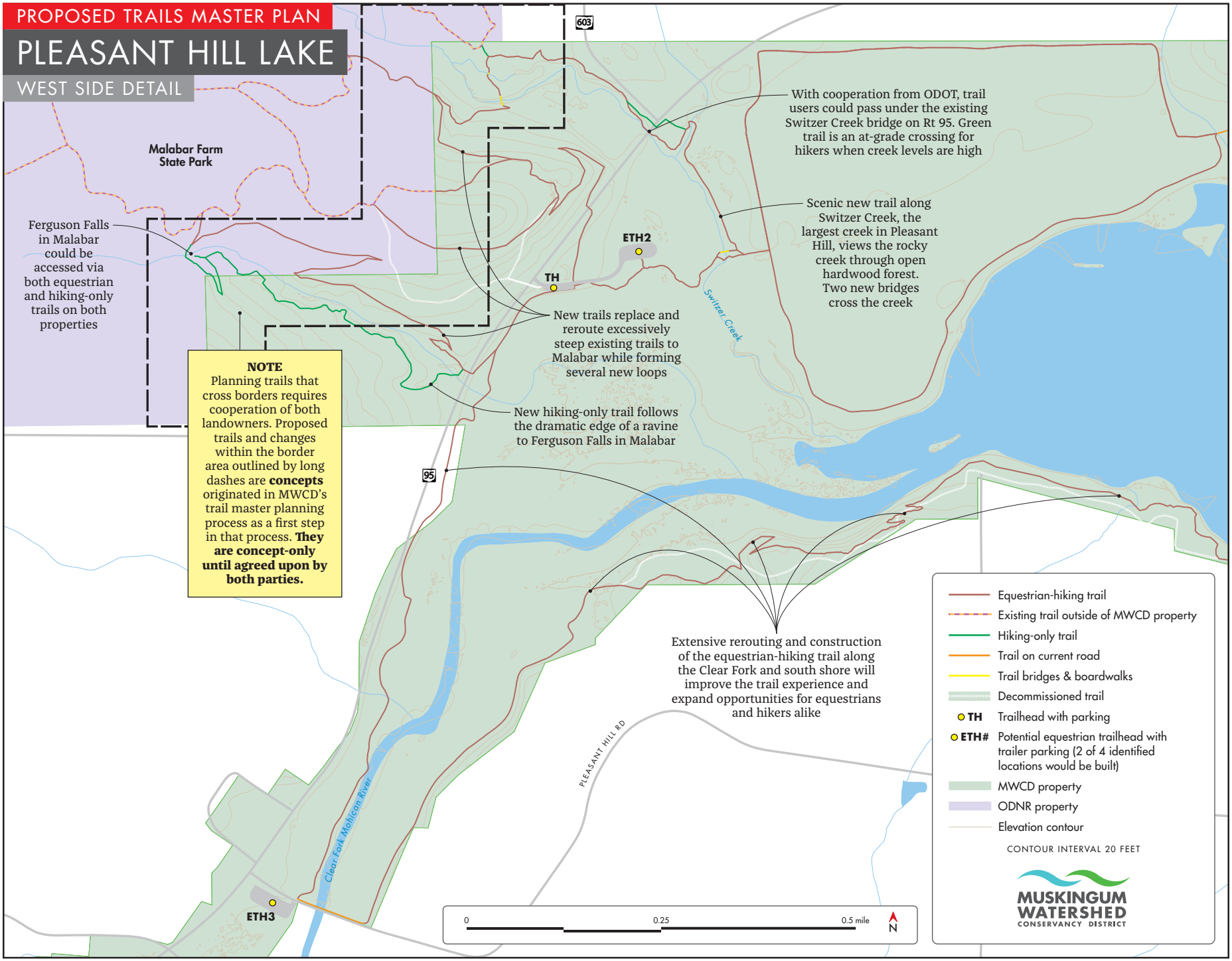

PROPOSED TRAILS MASTER PLAN
PLEASANT HILL LAKE
PLEASANT VALLEY RD
Malabar Farm State Park
603
95
COVERT RD
ETH4
TH
RICHLAND COTTAGE AREA
IDLEWOOD COTTAGE AREA
CO. RD 1027
MOHICAN LODGE
ETH2
BARRON RD
ETH1
PLEASANT HILL RD
ETH3
Clear Fork Mohicon River
McCURDY RD
GOON RD
CO. RD. 3006
Mohican State Park
TH (optional)
Equestrian-hiking trail
Hiking-only trail
Mountain biking-hiking trail
ABA-accessible, biking, and hiking paved path
Trail on current road
Trail bridges & boardwalks
Existing trail outside of MWCD property
Decommissioned trail
TH Trailhead with parking
ETH# Potential equestrian trailhead with trailer parking (2 of 4 identified locations would be built)
Marina
Campground
MWCD property
USACE property
ODNR property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
0
0.25
0.5
1 mile
N

PROPOSED TRAILS MASTER PLAN

PLEASANT HILL LAKE

PLEASANT HILL LAKE PARK AREA DETAIL

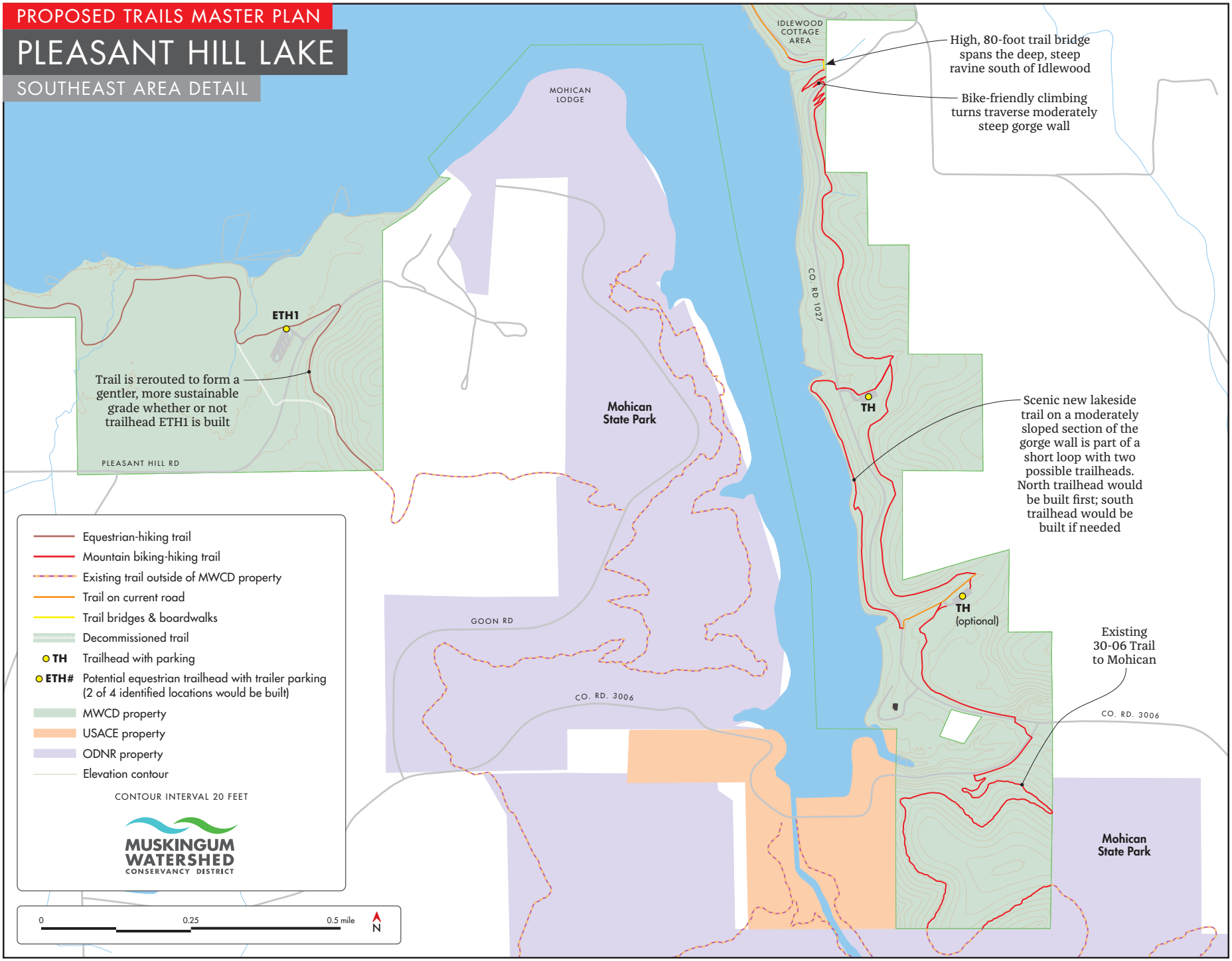



PROPOSED TRAILS MASTER PLAN
PLEASANT HILL LAKE
WEST SIDE DETAIL
Malabar Farm State Park
603
95
Ferguson Falls in Malabar could be accessed via both equestrian and hiking-only trails on both properties
NOTE
Planning trails that cross borders requires cooperation of both landowners. Proposed trails and changes within the border area outlined by long dashes are concepts originated in MWCD's trail master planning process as a first step in that process. They are concept-only until agreed upon by both parties.
ETH2
TH
ETH3
New trails replace and reroute excessively steep existing trails to Malabar while forming several new loops
New hiking-only trail follows the dramatic edge of a ravine to Ferguson Falls in Malabar
With cooperation from ODOT, trail users could pass under the existing Switzer Creek bridge on Rt 95. Green trail is an at-grade crossing for hikers when creek levels are high
Scenic new trail along Switzer Creek, the largest creek in Pleasant Hill, views the rocky creek through open hardwood forest. Two new bridges cross the creek
Switzer Creek
Extensive rerouting and construction of the equestrian-hiking trail along the Clear Fork and south shore will improve the trail experience and expand opportunities for equestrians and hikers alike
Clear Fork Mohican River
PLEASANT HILL RD
0
0.25
0.5 mile
N
Equestrian-hiking trail
Existing trail outside of MWCD property
Hiking-only trail
Trail on current road
Trail bridges & boardwalks
Decommissioned trail
TH Trailhead with parking
ETH# Potential equestrian trailhead with trailer parking (2 of 4 identified locations would be built)
MWCD property
ODNR property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT

PROPOSED TRAILS MASTER PLAN

PLEASANT HILL LAKE

SOUTHEAST AREA DETAIL



10
Seneca Lake

Seneca Lake Highlights

- Parkside and Woodlands campgrounds get 8.9 miles of new natural surface, paved, and accessible trails to create a looped trail system with a total of 11 miles of trails east of State Route 574.
- New biking-hiking trails near Marina Point, Chestnut Grove Cottage Area, and West Shore Cottage Area create a local area trail system with several loops.
- New accessible-hiking trails around the lagoon north of Marina Point Campground, through the public boat ramp area, and through the site of the former Camp Guernsey, a CCC work camp, create gentle trails in that area.
- A new 5.7-mile biking-hiking trail system above Noble Cottage Area and Jim Ball Road provides multiple loops and climbs to a local summit 278 feet above the lake.
- MWCD's first archery trail would be built west of Rt 574 above Parkside. Buckeye Trail (BT) west of Rt 574 could be rerouted onto new Parkside trails east of Rt 574, eliminating two highway crossings while getting more of BT off of Rt 574.
- Big Island gets its own system of designated trails.

Seneca Lake Discussion

The big picture of new trails at Seneca

MWCD owns 4,060 acres of land at Seneca (in addition to 3,550 acres of water) and the shoreline of Seneca Lake is 40 miles long. However, the combination of property boundaries, roads, topography, residential areas, behavior of native soils, trail drainage issues, and the varying recreational value of forests (including many younger, denser forests and areas filling with invasive shrubs) preclude development of large trail systems with high recreational value on par with other MWCD lakes.

Hence three relatively small trail systems are added to suitable land at Parkside and Woodlands campgrounds within Seneca Lake Park, to land near Marina Point, and to an upland site near the Noble Cottage Area. Each

Seneca Lake: Existing and Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage	New trail/path	Existing trail/path	Trail on current road	Natural surface tread	Hard surface tread	MTB/ hiking trail	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike	ABA accessible	Other use
Existing trail mileage	5.95	—	5.95	0.42	4.60	1.35	0.00	0.00	4.62	1.33	0.73	0.00
Proposed trail mileage	24.62	22.55	2.07	0.42	22.59	2.03	11.66	0.00	15.35	6.41	3.87	1.41
Proposed mileage change	18.67	22.55	-3.88	0.00	17.99	0.68	11.66	0.00	10.73	5.08	3.14	1.41

of these trail systems has its own character, sense of place, and visitor appeal.

Trails near Parkside and Woodlands campgrounds

Both campgrounds get longer, almost entirely new natural surface trails that replace current natural surface trails and provide an entirely different way to explore the area. The new hiking-only trails, with average grades of 5% or less, traverse the slopes above the campgrounds to form lower and upper trails with traversing and ramping connections between them, forming more trail loops and crossing many more drainages and ravines than the current natural surface trails. The new trails strive to pass through the more pleasant forests in the area and to explore the most interesting topography.

The lower trails create close-to-camp trails that connect to many parts of the campground, serving as collector trails and a way to make short loops in conjunction with the paved trails along the lakeshore. The upper trails climb higher up the slopes. One of the higher trails crosses Park Road to connect Parklands and Woodlands trails; lower trails form return loop options.

Buckeye Trail, which used to be on the west side of Rt 574 mostly separate from Parkside trails, can be rerouted onto the proposed uppermost Parkside trail. It also has non-looping trail segments that connect with Buckeye's on-road Rt 574 route at both ends of MWCD's property. This new alignment eliminates two crossings of Rt 574 and gets more of BT off of Rt 574.

Two short loops of new paved, shared use, and accessible trails extend existing paved trails east of the swim beach and around Picnic Point. They create a paved, off-road, closer-to-the-lake version of a popular hiking and running circuit without needing to travel on park roads.

A new accessible natural surface trail along the lakeshore connects the new paved trails near the swim beach with the vacation cabins in Woodlands. This trail has its own accessible high boardwalk crossing over the wide drainage that separates Parkside and Woodlands. Users can return along the same trail; travel along the narrow, quiet, close-to-level paved road between the vacation cabins and Parkside; or hike higher up into Woodlands on steeper, non-accessible trails.

New archery trail

A new 1.4-mile archery trail with its own trailhead provides archers with a wide range of targets for honing their skills. It's located west of Parkside on the west side of Rt 574 in a previously trail-less area separate from all other trails. Each target, at distances from 15 to 50 yards, is on its own range extending roughly perpendicular to the trail. Unlike a typical level and open shooting range, these naturalistic ranges have topographic and forest conditions encountered in hunting situations. Each range has a natural forested slope rising behind the target; it acts as a backstop that prevents off-target arrows from flying too far past the target. The ranges challenge archers with many 35- to 50-yard targets (one can always shoot from closer to a target if needed).

A short section of the archery trail is below private homes. For safety, there are no shooting ranges near these homes.

Trails near Marina Point

A number of new and different things are proposed in this area.

From Marina Point campground, a new accessible natural surface trail that is also open to bikes extends around the lagoon north of Rt 313 (Lashley Road), crosses Lashley Road going south through MWCD's public boat ramp, and explores the lakeshore and forest as a short loop on a small peninsula. Both ends of the loop connect to USACE's existing trailhead and park at the north end of the dam.

From the USACE trailhead, another trail goes west across Rt 574 to explore the site of Camp Guernsey, the former CCC work camp at Seneca in the 1930s. This part of the trail is still accessible but no longer open to biking. With a crushed stone surface laid on top of the ground to preserve any artifacts that may still be buried in the trail route, the trail follows a detailed route carefully prescribed by the National Park Service (NPS) through this historic site. TMP maps show the NPS-approved route.

South of Camp Guernsey, the trail is proposed to continue as a hiking-only (non-accessible) route across USACE and ODNR property through the fish hatchery as an off-highway reroute of BT around the dam. If all of this proposed trail is built, it will be through the cooperation of MWCD, USACE, ODNR, and the Buckeye Trail Association (BTA). BTA and MWCD would reroute the BT onto the MWCD portion of the trail through MWCD's public boat ramp.

Northeast of Marina Point, a separate system of mountain biking-hiking trails loops through uplands south and north of Fish and Game Road. A trail continues north across Rt 313/Lashley Road and forms another loop through a topographically engaging and varied valley that will be one of the best parts of this mini trail system. Trail spurs connect to Chestnut Grove and West Shore cottage areas for direct bike-hike access.

A new trailhead on Rt 313/Lashley Road creates parking for trail users who drive to this system. This is the only dedicated trailhead proposed for this biking-hiking mini system because these trails are mostly intended for Marina Point campers and local residents who live nearby. Some additional parking would be available along bikeable trail at the MWCD public boat ramp and USACE trailhead north of the dam.

If BTA chooses to reroute BT onto segments of the biking-hiking trails that roughly parallel its current on-road route on Rt 313/Lashley Road and also reroute around the dam, BT will have 1.7 miles less mileage on state routes 313 and 574. BT would be almost entirely off of main roads between Nighthawk Road in the north to the south edge of Woodlands along Rt 574.

Trails near Noble Cottage Area

This 5.7-mile trail system provides multiple loops while climbing a high ridge above the cottage area. The highest trail follows the long top of the ridge and tops out at 278 feet above normal lake level, one of the highest summits close to the lake. A hilltop gas pad is nearby to the south but it's higher than the highest trail and therefore not visible from the trails.

The southerly faces of the ridge feature very pleasant hardwood forest that is uncommon at Seneca. Enabling visitors and locals to enjoy this forest is partly why trails are here. Having a significant place to climb, get some exercise, and enjoy the view from the summit and the ridgetop trail—all unique experiences at Seneca—are the other major reasons for having trails here.

TMP maps show two trailheads for this area. The main trailhead is on State Route 147 so that visitors can get to the main trailhead via well-signed state routes without driving on local roads.

The other trailhead on Jim Ball Road is intended for local residents. Although the parking area could be larger, it is intended to have only have a few head-in parking spaces along the west side of the road. To prevent most non-local visitors from knowing about this trailhead or parking here, this trailhead and the trail leading to it from the main trails near Noble Cottage Area could be omitted from the standard park map given to visitors. A sign at this trailhead can direct visitors to park at the main trailhead if this small parking area is full. Limiting parking and making it difficult or impossible to park elsewhere nearby is one of the best ways to limit the amount of user traffic at a trailhead. See the TMP map for this area for more details.

Big Island trails

Big Island would have a shoreline perimeter trail that more or less follows the coast as well as trails that head into the interior from what appear to be the best places to dock. Actual trails into the interior should be from the actual best places to dock. One key idea is for visitors to see an official trail—ideally a trail junction with standard trail junction signs—as soon as possible after landing (or even before landing).

Trails that go into the interior should make the best of large trees found on the island. Trails will also need to work with, work around, or attempt to minimize the impacts of former sanctioned and unsanctioned activities on the island.

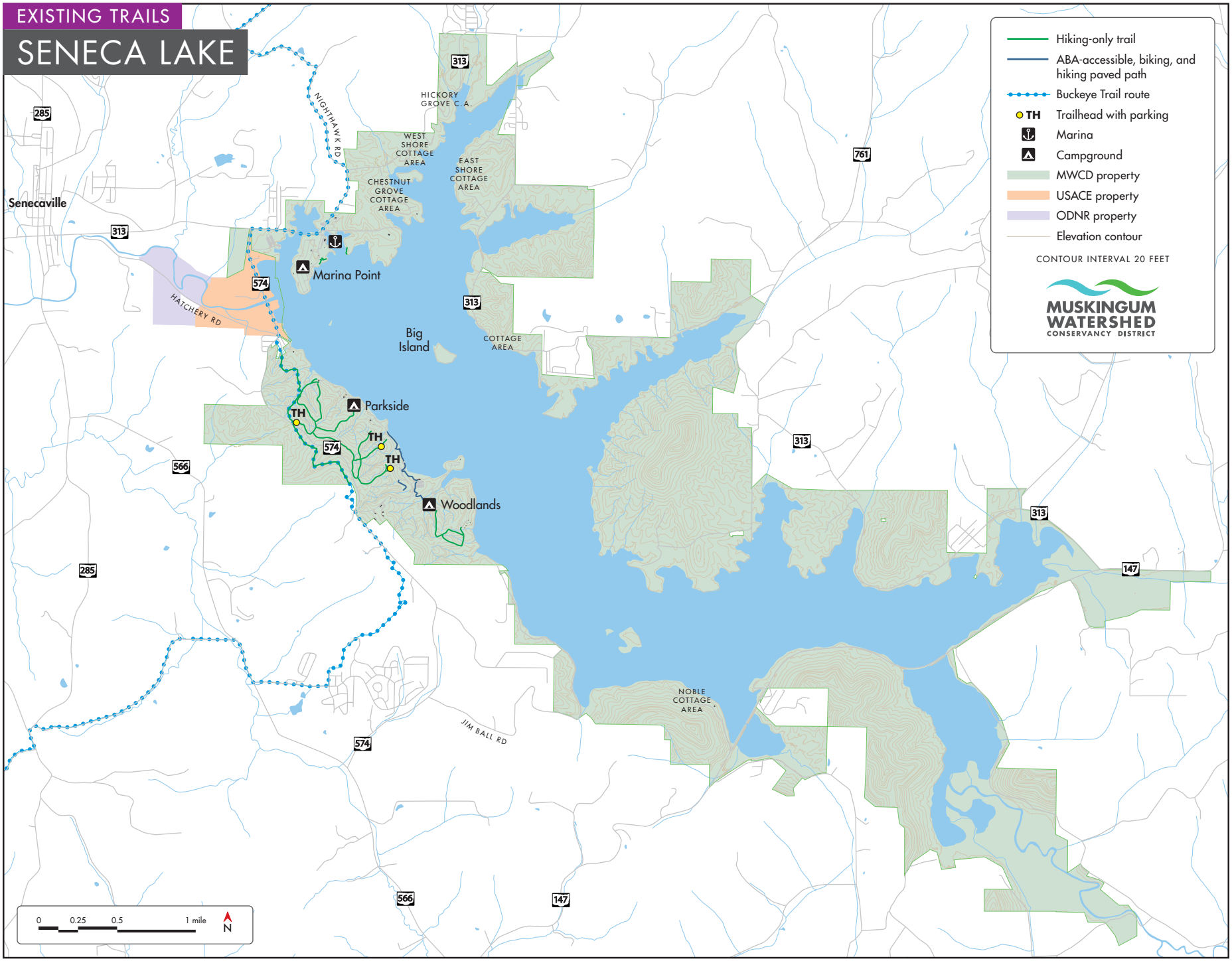
Another key idea for the island is to keep it rustic. There's a small part of all of us that would like to pretend we've found an uncharted island. Even though trails have junctions and standard signs, trail construction should be low-key. The island has relatively little topography and no apparent drainage issues, so natural soil tread should suffice for low-use trails even if they are on near-level ground. The perimeter trail is drawn such that it traverses a sideslope as often as possible, and there is enough topographic variation around the perimeter to form a reversing grade to create tread drainage even if the tread becomes rutted. Interior trails can try to be on higher ground or on sideslopes where possible.

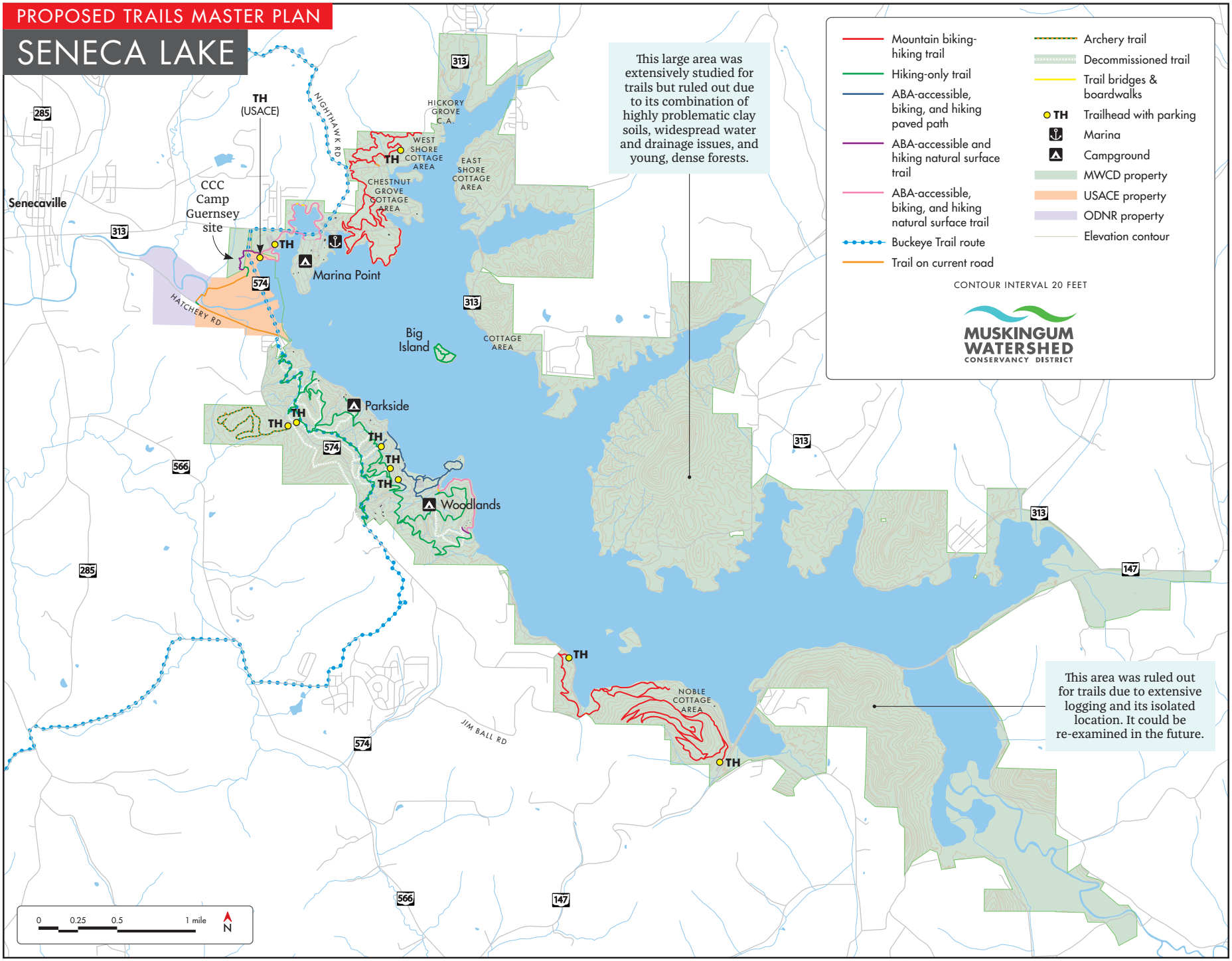
Spillway level at Seneca is 10 feet above normal pool, so trail construction should try to stay at least 7 feet above normal pool wherever feasible. Building risers or steps down to the water can be problematic over the long run because of continual erosion from waves, wind, and high water. Between continual shoreline change and intent to keep things rustic, strive to minimize trails and trail structures below the spillway.

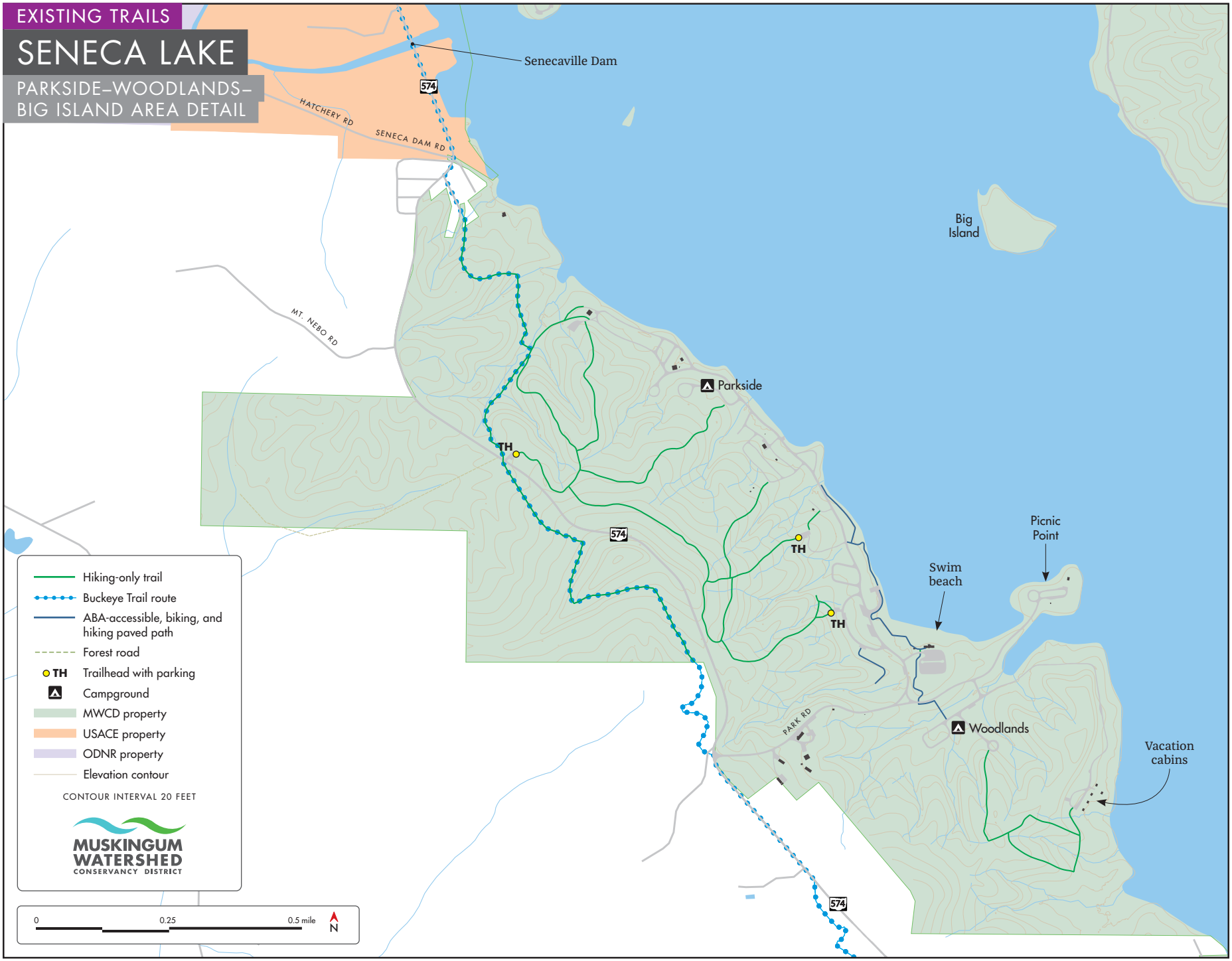
Visitors would enjoy some type of special amenity for spending time on the island such as a small tree-sheltered deck for watching the sunset, a swing hung from a big tree branch, or at least a few well-placed rustic log benches. Whatever it is, it should be unique to the island and formed as if it grew there.

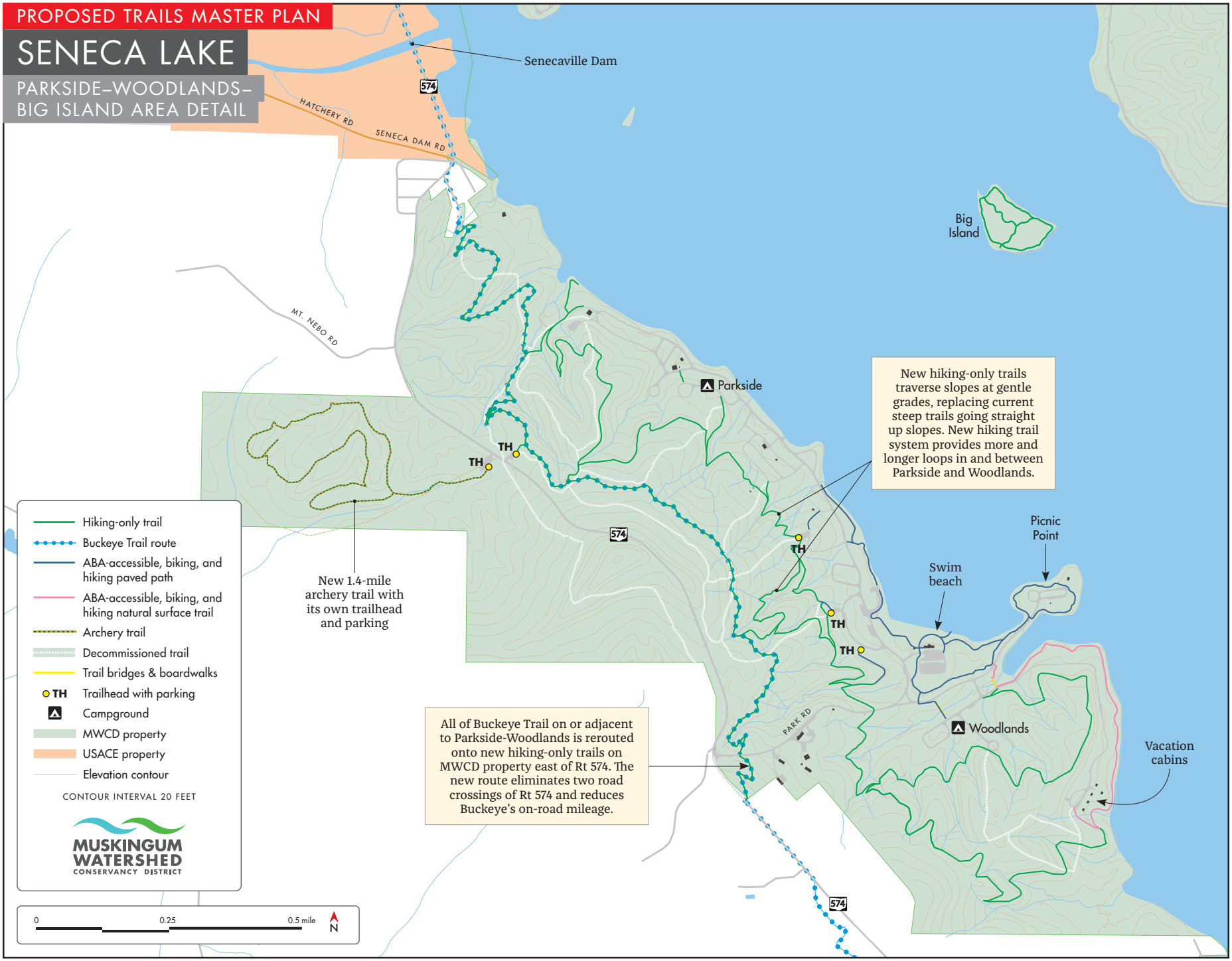
EXISTING TRAILS

SENECA LAKE




PROPOSED TRAILS MASTER PLAN
SENECA LAKE
This large area was extensively studied for trails but ruled out due to its combination of highly problematic clay soils, widespread water and drainage issues, and young, dense forests.
Mountain biking-hiking trail
Hiking-only trail
ABA-accessible, biking, and hiking paved path
ABA-accessible and hiking natural surface trail
ABA-accessible, biking, and hiking natural surface trail
Buckeye Trail route
Trail on current road
Archery trail
Decommissioned trail
Trail bridges & boardwalks
TH Trailhead with parking
Marina
Campground
MWCD property
USACE property
ODNR property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
TH (USACE)
CCC Camp Guernsey site
Senecaville
NIGHTHAWK RD
HICKORY GROVE C.A.
WEST SHORE COTTAGE AREA
EAST SHORE COTTAGE AREA
CHESTNUT GROVE COTTAGE AREA
Marina Point
HATCHERY RD
Big Island
COTTAGE AREA
Parkside
Woodlands
NOBLE COTTAGE AREA
JIM BALL RD
This area was ruled out for trails due to extensive logging and its isolated location. It could be re-examined in the future.
285
313
574
566
147
0 0.25 0.5 1 mile
N

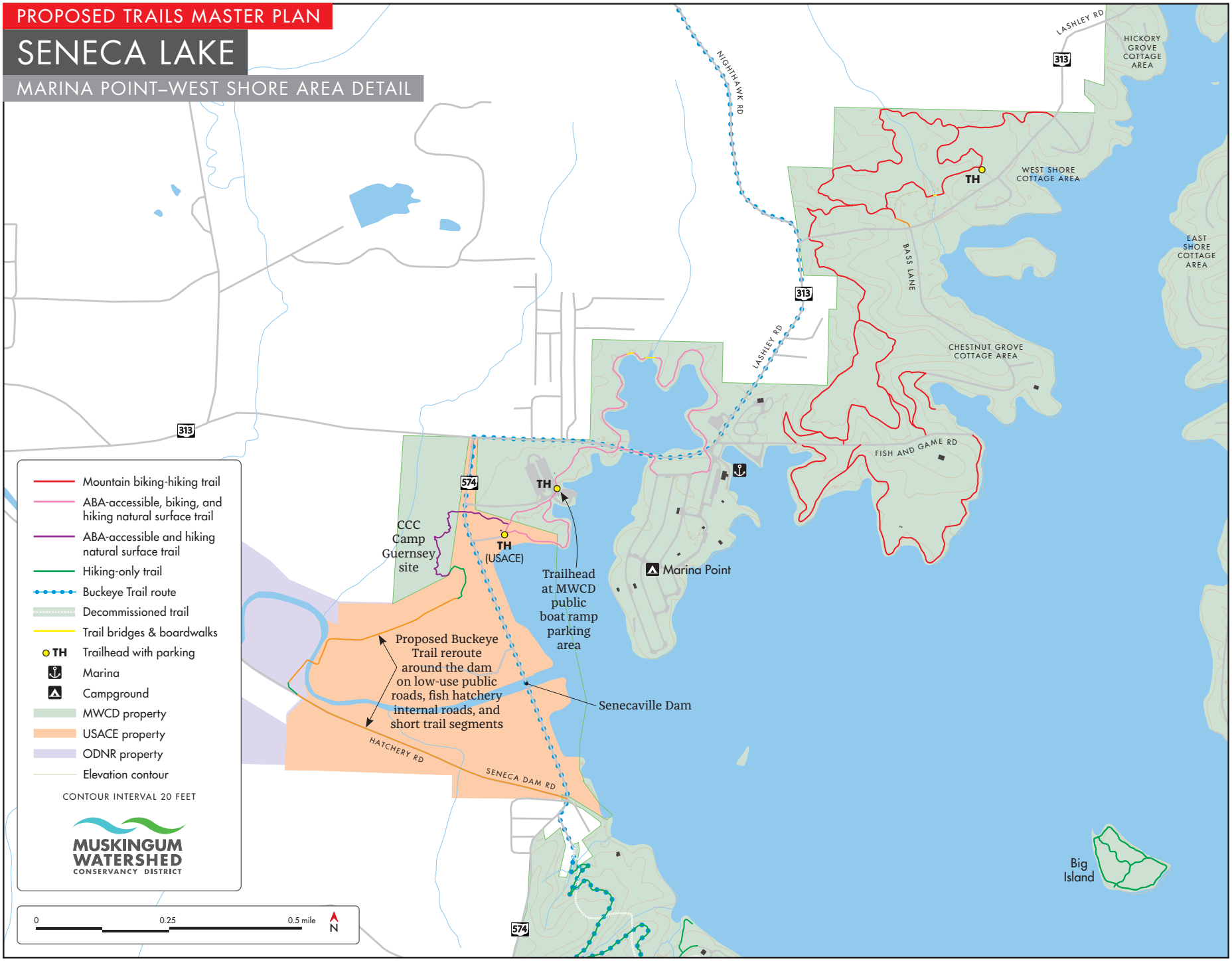

EXISTING TRAILS
SENECA LAKE
PARKSIDE–WOODLANDS–
BIG ISLAND AREA DETAIL
Senecaville Dam
574
HATCHERY RD
SENECA DAM RD
MT. NEBO RD
Big
Island
Parkside
TH
574
TH
TH
Picnic
Point
Swim
beach
PARK RD
Woodlands
Vacation
cabins
574
Hiking-only trail
Buckeye Trail route
ABA-accessible, biking, and
hiking paved path
Forest road
TH Trailhead with parking
Campground
MWCD property
USACE property
ODNR property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM
WATERSHED
CONSERVANCY DISTRICT
0
0.25
0.5 mile
N


PROPOSED TRAILS MASTER PLAN
SENECA LAKE
PARKSIDE–WOODLANDS–
BIG ISLAND AREA DETAIL
Senecaville Dam
574
HATCHERY RD
SENECA DAM RD
MT. NEBO RD
Big Island
Parkside
TH
TH
574
New hiking-only trails traverse slopes at gentle grades, replacing current steep trails going straight up slopes. New hiking trail system provides more and longer loops in and between Parkside and Woodlands.
Picnic Point
Swim beach
TH
TH
TH
New 1.4-mile archery trail with its own trailhead and parking
All of Buckeye Trail on or adjacent to Parkside-Woodlands is rerouted onto new hiking-only trails on MWCD property east of Rt 574. The new route eliminates two road crossings of Rt 574 and reduces Buckeye's on-road mileage.
PARK RD
Woodlands
Vacation cabins
574
Hiking-only trail
Buckeye Trail route
ABA-accessible, biking, and hiking paved path
ABA-accessible, biking, and hiking natural surface trail
Archery trail
Decommissioned trail
Trail bridges & boardwalks
TH Trailhead with parking
Campground
MWCD property
USACE property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
0
0.25
0.5 mile
N

PROPOSED TRAILS MASTER PLAN

SENECA LAKE

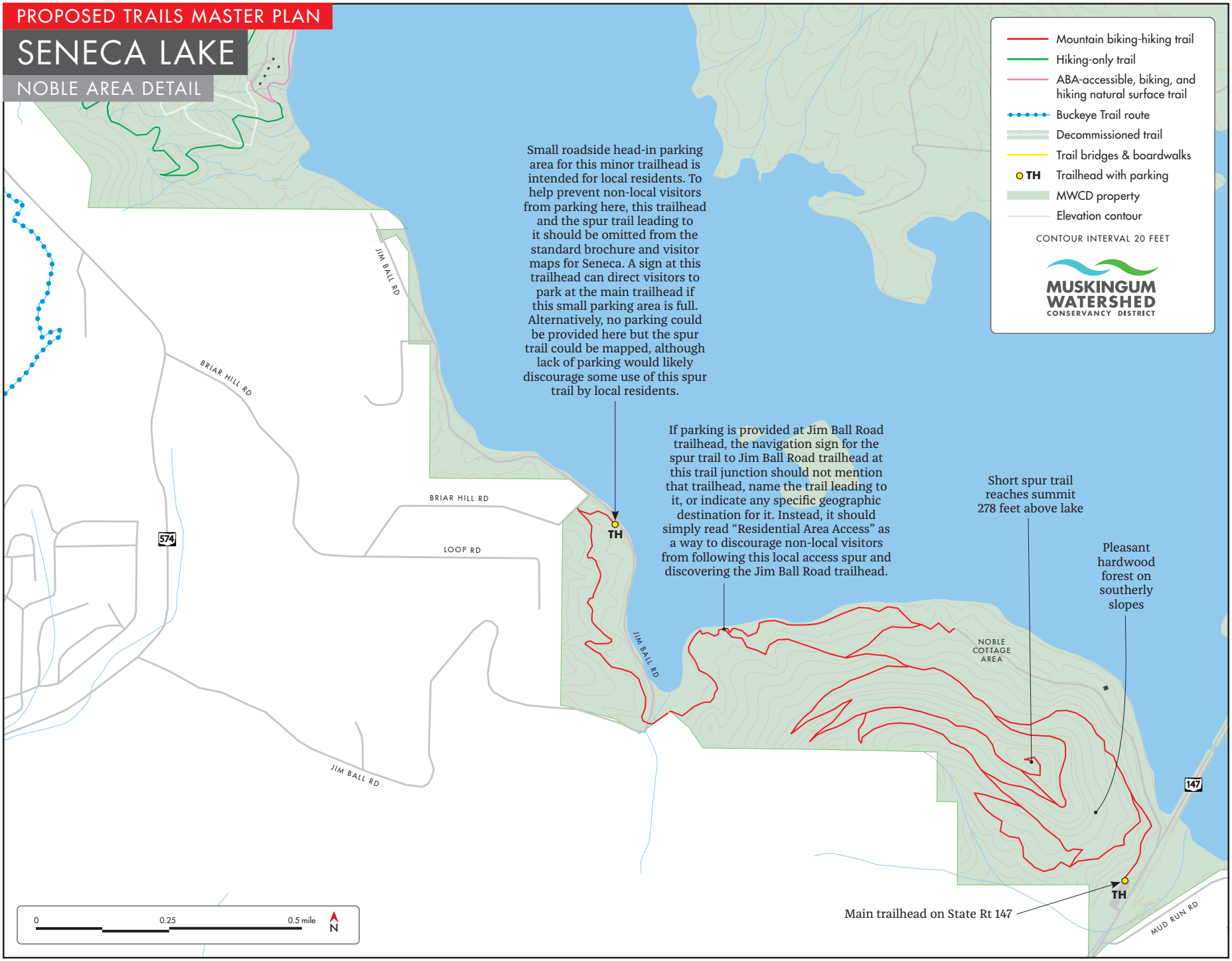
MARINA POINT–WEST SHORE AREA DETAIL



PROPOSED TRAILS MASTER PLAN

SENECA LAKE

NOBLE AREA DETAIL



11

Tappan Lake

Tappan Lake Highlights

- Over 41 miles of several types of trails, mostly in Tappan Lake Park, will provide many loop options from short loops near the campgrounds to many possible medium and long loops.
- The trail system is kid-friendly for kids of all ages, for kids out by themselves as well as with their parents. Among other benefits, the trail system gives kids (and all users) multiple ways to hike and bike all around the park without using roads or having the fear of getting seriously lost.
- The trail system is designed to make it fun and inviting to travel around the park by trail instead of driving. A relative lack of parking in public areas and trailheads also discourages visitors from getting around the park by driving.
- New paved trail segments will link and extend existing paved trails to form two continuous, shared-use, off-road spine trails. The new extensions will connect campground Areas 1 through 7, and connect other facilities such as the cabins, new tree house lodging units, swim beach, and docks to the Welcome Center and Activity Center. The paved spine trails create the shortest off-road route between all of these facilities in a simple, coherent way. The two trails total 3.5 miles in length and intersect at the swim beach parking area (see map). Both trails are accessible. One of them, which is entirely new, climbs 280 vertical feet in 1.3 miles to the planned new Area 7 at an average grade of 4%.
- In addition to the spine trails, two or more natural surface trails out of each of the campground and lodging areas make it easy to access the entire trail system from each area.
- Beginner and casual hikers and bikers can enjoy Tappan's new natural surface trails with average grades of 3.5% for hike-bike trails and 5% for hiking-only trails. Seasoned trail users also enjoy trails with these grades.
- Turkey Ridge in the east side of Tappan Lake Park has more elevation range near the campgrounds—290 feet—than any of the other nine lakes. This high elevation range combined with moderate slopes makes Turkey Ridge more dramatic but also causes many of the new trails that climb the ridge

Tappan Lake: Existing and Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage	New trail/path	Existing trail/path	Trail on current road	Natural surface tread	Hard surface tread	MTB/ hiking trail	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike	ABA accessible	Other use
Existing trail mileage	19.87	—	19.87	0.17	18.44	1.43	0.00	7.09	11.22	1.56	1.58	0.00
Proposed trail mileage	41.36	29.64	11.72	0.17	37.88	3.48	25.61	7.09	4.83	3.71	5.89	7.09
Proposed mileage change	21.49	29.64	-8.15	0.00	19.44	2.05	25.61	0.00	-6.39	2.15	4.31	0.00

to have switchbacks or climbing turns. Since six trails with three different usage types climb Turkey Ridge in order to provide loop options, the trail map for the Turkey Ridge area is especially dense with trails.

- Visitors who don't want to do much climbing on trails also have miles of suitable trails near the lake level.
- Campground Area 7 is planned to be built along the top of Turkey Ridge, removing segments of the existing Turkey Ridge Loop and the trail between Area 5 and Beall Farm. The TMP plans new trails around and through the new, long Area 7 to replace the lost trail segments and their connectivity.
- Nearly all of the existing Deer, Pine, and Fox trails will be decommissioned as trails and managed as forest roads instead. New hike-bike singletrack trails will traverse the many slopes of the area with gentler grades and sustainable design. The new trails are planned to avoid past and future logging areas while providing better views, a wider range of topographic experiences, more mileage, more connections to campgrounds, and more short and long loop options.
- Beall Farm will continue to be a hiking-only area for trails.

Tappan Lake Discussion

Buckeye Trail reroute through Tappan Lake Park

The Buckeye Trail Association (BTA), which developed and manages the Buckeye Trail (BT) statewide, utilizes the Century Barn at Beall Farm in Tappan. BTA leases Beall Farm from MWCD.

BTA has long sought to reroute the BT to come through Beall Farm. The TMP accordingly creates trails such that multiple versions of such a reroute are possible (although parts of all options are on hike-bike trail segments consistent with the TMP objective to create mostly shared-use trails). With cooperation between MWCD and BTA, the Buckeye Trail within Tappan Lake Park can be rerouted onto mostly new trails proposed in the TMP that MWCD would build and maintain.

BTA would be able to use what it deems to be the best combination of trail segments as its reroute. Hence the TMP leaves it to BTA to choose the final reroute and does not propose any timeline for when particular segments would be built. Proposed trail maps show Buckeye Trail in its current location because it's not known which trails BTA will designate as the reroute.

Even after Buckeye Trail is rerouted inside the park, its current alignment—which is currently open to equestrians—is planned to continue to serve as an equestrian trail.

Trails that don't climb much

While most of Tappan's trails climb the many slopes and ridges, trail hikers and bikers who don't want to do much climbing have miles of trail options:

- A 2-mile-long natural surface, accessible, hiking, and biking trail follows the lakeshore beginning from the public boat launch at Area 1.
- The 2.2-mile-long paved spine trail stays on the valley bottoms and near the lake with very little elevation change.
- Several short hiking-only trails in the Beall Farm area have little elevation change.
- The singletrack trail from the vacation cabins to Beall Farm and a new trail around the Beall homestead have limited climbing.

Trailheads

Two existing trailheads—at Beall Farm and at the public boat launch near Area 1—would become more recognizable with standard trailhead treatment.

In addition, four new trailheads are planned:

- South of the swim beach, an information and orientation kiosk would be built along the lake edge of the large day-use parking area near the swim beach. Trail visitors would park in the existing parking area.
- The parking area south of the Activity Center would become a trailhead. Some additional parking spaces could be added to the south if needed.
- A trailhead with two head-in parking areas would be added at the entrance of Area 6. One parking area would be along the east side of Tappan Lake Park Road; the other would be along the south side of the Area 6 entrance road.
- A rural trailhead would be built along McGonigal Road in the saddle of the ridge west of Area 3. This trailhead enables biking and hiking visitors to access Tappan's trails without entering Tappan Lake Park.

More about trail planning in the new Area 7 campground

New trail segments that connect with or go through the planned new Area 7 campground work with the preliminary design of the campground so that

they can be incorporated during construction without requiring changes to road or campsite locations.

Campground design needs to incorporate TMP trails and add curb cuts and/or hard-surfaced approaches where natural surface trails connect with and cross roads.

New natural surface trail segments into the campground are planned around anticipated major cutting and filling of the Area 7 ridgetop site. Specifically, trails into Area 7 are planned to enter in the places where cutting and filling are minimal, i.e., where the final surface of Area 7 will be close to the existing site grade, so that trails can enter the campground with minimal grading and site work for trail construction. Those new segments should be designed and built by trail professionals rather than campground construction contractors.

More about Deer, Pine, and Fox trails

Existing Deer, Pine, and Fox trails will continue to be trails until the new trails that replace them are constructed. After that, rather than being reclaimed, the existing routes will remain open as forestry roads but will not be mapped as trails, signed, or frequently mowed.

Thoughts on Tappan trail planning

- Trails at Tappan were not intentionally limited to the Tappan Lake Park area or the south shore. Potential trails on the rest of MWCD land at Tappan were not found to have sufficient reason to exist, so no trails in those areas made it into the TMP.
- In Tappan Lake Park, natural surface trails closest to the campgrounds and the valley floor create short and kid-friendly loops around individual campground areas. The close-in trails also serve as sustainable collector trails that connect to the larger trail system beyond the campgrounds.

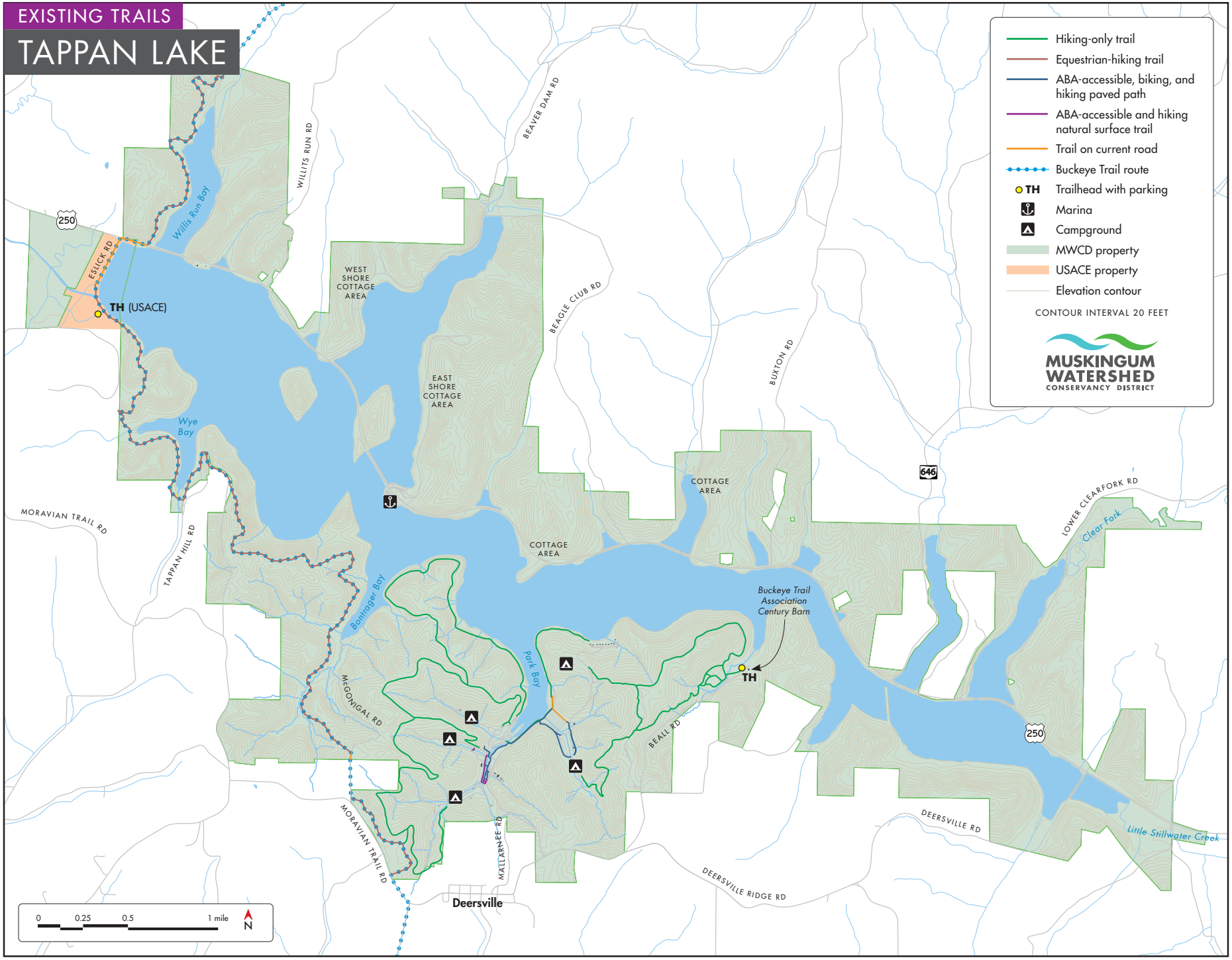
Notable trails of interest

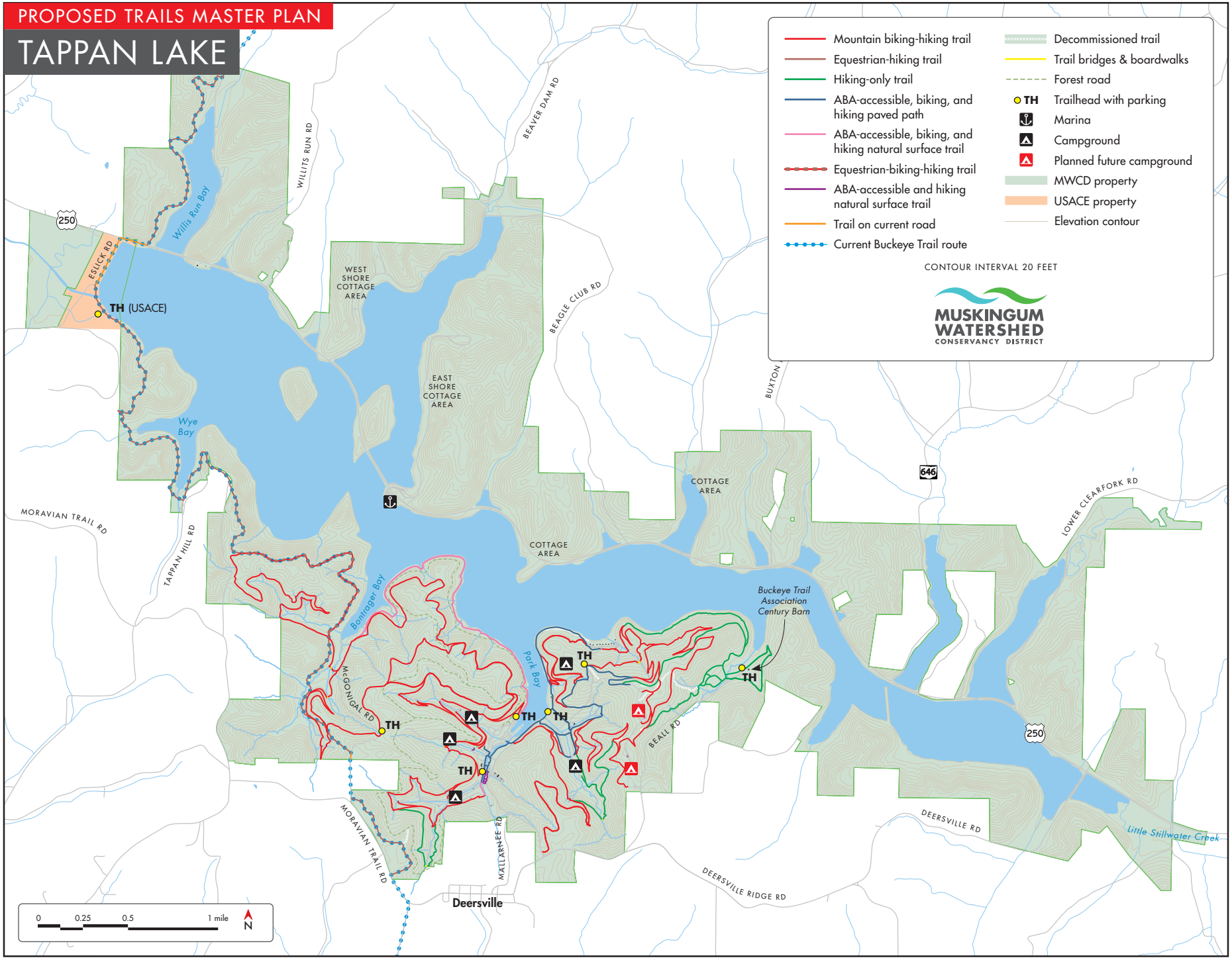
- A new trail enables trail users to hike or bike into the park from the main entrance without being on steep, narrow Tappan Lake Park Road. The upper part of this trail will eventually become part of the BT.
- A new trail is planned to go around the Beall Farm homestead. Buckeye Trail Association (BTA) has expressed interest in using this trail as a place to train volunteers to plan, design, and build new trail.
- East of Haney Road, an existing segment of the BT has excellent views of the lake during autumn and leaf-off. This segment is so attractive that a new trail segment is planned to climb to its upper end in order to encourage more people to enjoy it by making it part of a loop. With BTA's cooperation, this segment of BT could be shared with bikes and MWCD would then take over its maintenance in the future.
- Two trails feature high, single-span bridges over deep and steep ravines. One is a hiking-only trail above Area 4 that follows the edge of a steep ravine before bridging it with a 60-foot span with stairs on both ends. The other is a 65-foot span above the vacation cabins.

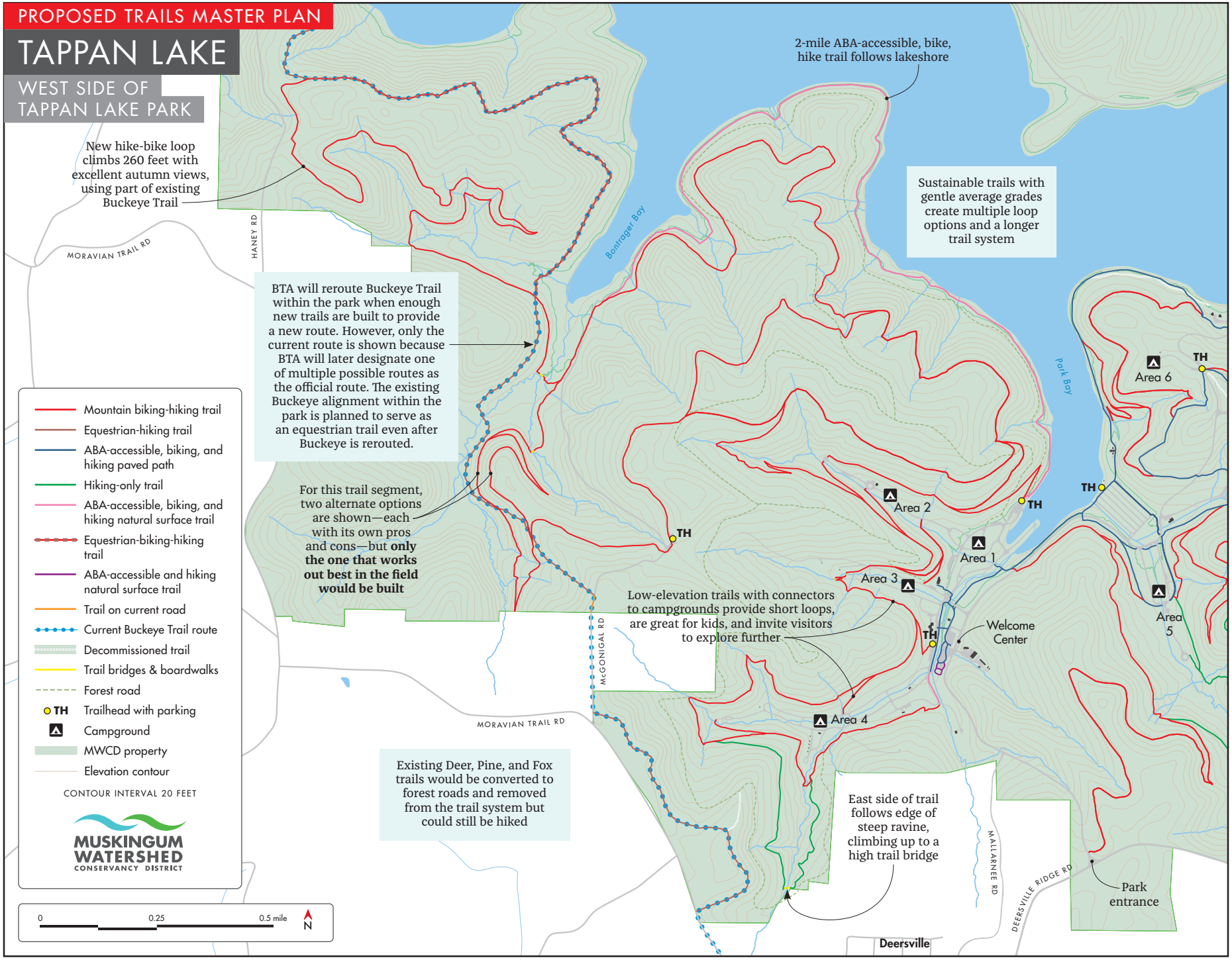
Two high bridges in Tappan and an 80-foot bridge in Pleasant Hill near Idlewood Cottage Area would be similar in form to this 70-foot fiberglass reinforced composite deck truss in Redwoods National Park. In a deck truss, the truss is below the deck and out of sight from users on the bridge. Railings would be a different style and the trusses would be a different color. (Photo by Wagners CFT US)

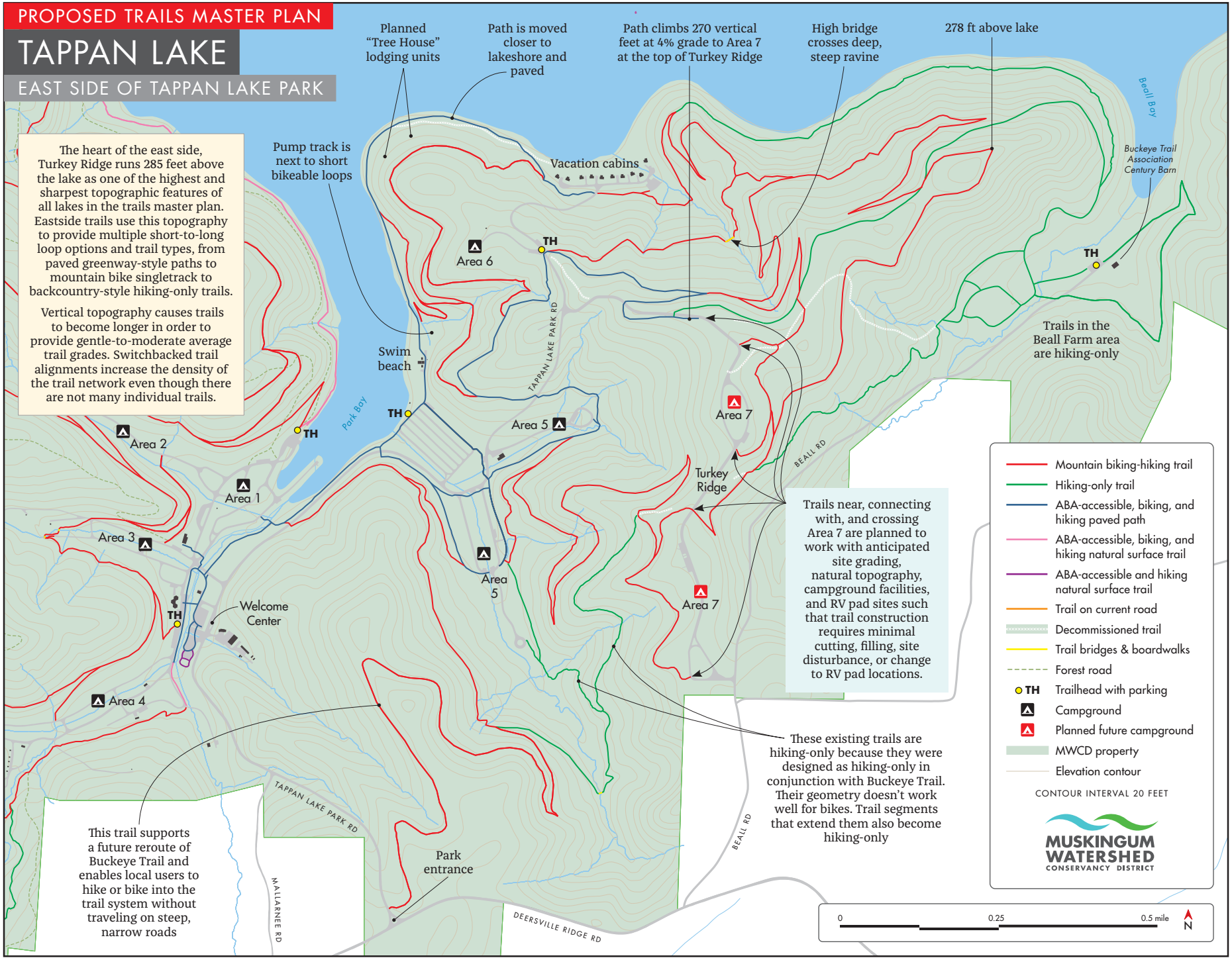
EXISTING TRAILS

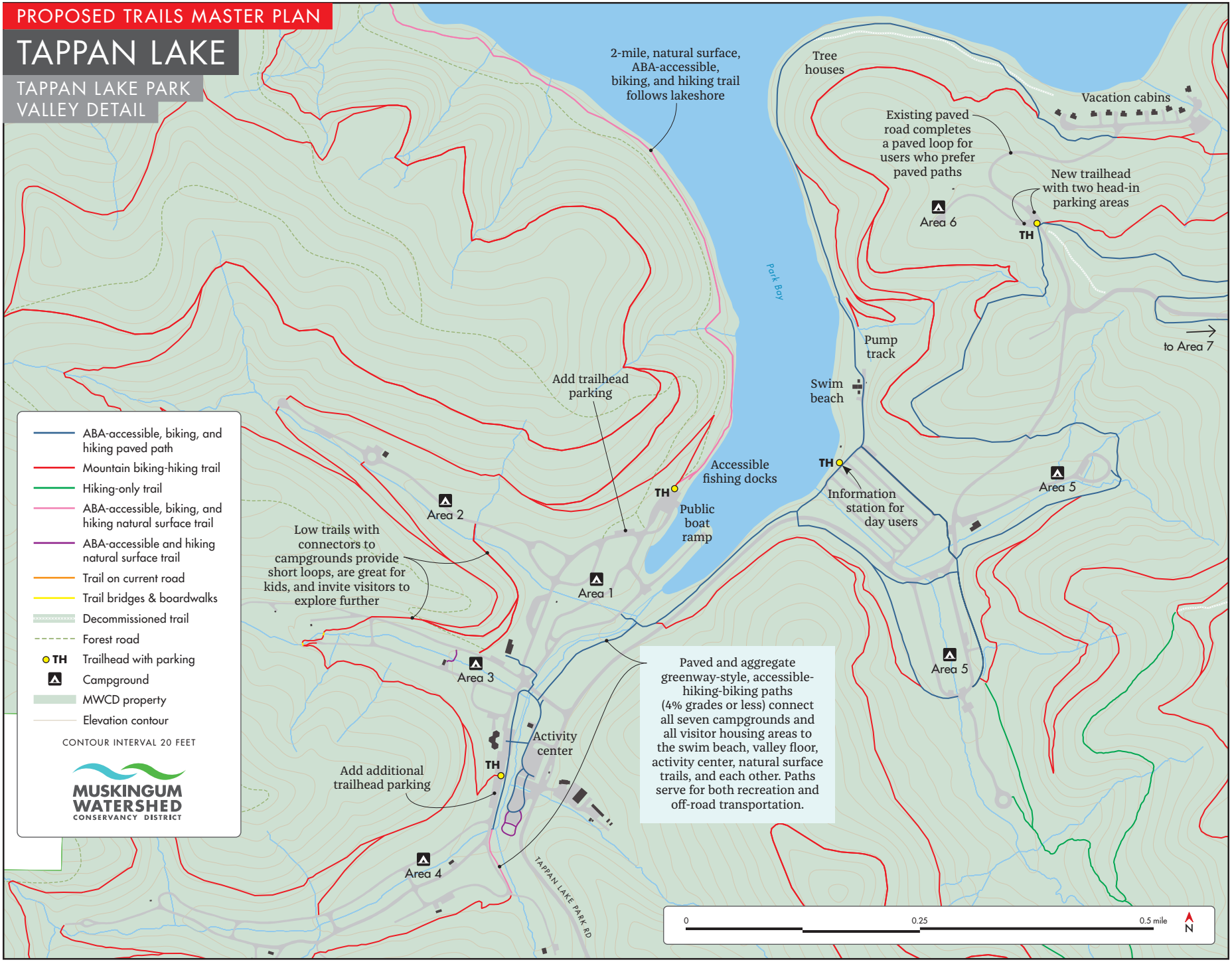
TAPPAN LAKE




PROPOSED TRAILS MASTER PLAN
TAPPAN LAKE
Mountain biking-hiking trail
Equestrian-hiking trail
Hiking-only trail
ABA-accessible, biking, and hiking paved path
ABA-accessible, biking, and hiking natural surface trail
Equestrian-biking-hiking trail
ABA-accessible and hiking natural surface trail
Trail on current road
Current Buckeye Trail route
Decommissioned trail
Trail bridges & boardwalks
Forest road
TH Trailhead with parking
Marina
Campground
Planned future campground
MWCD property
USACE property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
TH (USACE)
WEST SHORE COTTAGE AREA
EAST SHORE COTTAGE AREA
COTTAGE AREA
COTTAGE AREA
Buckeye Trail Association Century Barn
Willis Run Bay
Wye Bay
Bontrager Bay
Pork Bay
Little Stillwater Creek
WILLITS RUN RD
BEAVER DAM RD
BEAGLE CLUB RD
BUXTON
ESLICK RD
MORAVIAN TRAIL RD
TAPPAN HILL RD
McGONIGAL RD
BEALL RD
LOWER CLEARFORK RD
DEERSVILLE RD
DEERSVILLE RIDGE RD
MALLARNEE RD
Deersville
250
646
0 0.25 0.5 1 mile
N


PROPOSED TRAILS MASTER PLAN
TAPPAN LAKE
WEST SIDE OF TAPPAN LAKE PARK
New hike-bike loop climbs 260 feet with excellent autumn views, using part of existing Buckeye Trail
2-mile ABA-accessible, bike, hike trail follows lakeshore
Sustainable trails with gentle average grades create multiple loop options and a longer trail system
BTA will reroute Buckeye Trail within the park when enough new trails are built to provide a new route. However, only the current route is shown because BTA will later designate one of multiple possible routes as the official route. The existing Buckeye alignment within the park is planned to serve as an equestrian trail even after Buckeye is rerouted.
For this trail segment, two alternate options are shown—each with its own pros and cons—but only the one that works out best in the field would be built
Low-elevation trails with connectors to campgrounds provide short loops, are great for kids, and invite visitors to explore further
Existing Deer, Pine, and Fox trails would be converted to forest roads and removed from the trail system but could still be hiked
East side of trail follows edge of steep ravine, climbing up to a high trail bridge
Park entrance
Welcome Center
Area 1
Area 2
Area 3
Area 4
Area 5
Area 6
TH
Bontrager Bay
Park Bay
HANEY RD
MORAVIAN TRAIL RD
McGONIGAL RD
MALLARNEE RD
DEERSVILLE RIDGE RD
Deersville
Mountain biking-hiking trail
Equestrian-hiking trail
ABA-accessible, biking, and hiking paved path
Hiking-only trail
ABA-accessible, biking, and hiking natural surface trail
Equestrian-biking-hiking trail
ABA-accessible and hiking natural surface trail
Trail on current road
Current Buckeye Trail route
Decommissioned trail
Trail bridges & boardwalks
Forest road
Trailhead with parking
Campground
MWCD property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
0
0.25
0.5 mile
N


PROPOSED TRAILS MASTER PLAN
TAPPAN LAKE
EAST SIDE OF TAPPAN LAKE PARK
The heart of the east side, Turkey Ridge runs 285 feet above the lake as one of the highest and sharpest topographic features of all lakes in the trails master plan. Eastside trails use this topography to provide multiple short-to-long loop options and trail types, from paved greenway-style paths to mountain bike singletrack to backcountry-style hiking-only trails.
Vertical topography causes trails to become longer in order to provide gentle-to-moderate average trail grades. Switchbacked trail alignments increase the density of the trail network even though there are not many individual trails.
Planned "Tree House" lodging units
Path is moved closer to lakeshore and paved
Path climbs 270 vertical feet at 4% grade to Area 7 at the top of Turkey Ridge
High bridge crosses deep, steep ravine
278 ft above lake
Beall Bay
Buckeye Trail Association Century Barn
Pump track is next to short bikeable loops
Vacation cabins
Swim beach
Park Bay
TH
Area 1
Area 2
Area 3
Area 4
Area 5
Area 6
Area 7
TAPPAN LAKE PARK RD
BEALL RD
Turkey Ridge
Welcome Center
Trails in the Beall Farm area are hiking-only
Trails near, connecting with, and crossing Area 7 are planned to work with anticipated site grading, natural topography, campground facilities, and RV pad sites such that trail construction requires minimal cutting, filling, site disturbance, or change to RV pad locations.
These existing trails are hiking-only because they were designed as hiking-only in conjunction with Buckeye Trail. Their geometry doesn't work well for bikes. Trail segments that extend them also become hiking-only
This trail supports a future reroute of Buckeye Trail and enables local users to hike or bike into the trail system without traveling on steep, narrow roads
Park entrance
MALLARNEE RD
DEERSVILLE RIDGE RD
Mountain biking-hiking trail
Hiking-only trail
ABA-accessible, biking, and hiking paved path
ABA-accessible, biking, and hiking natural surface trail
ABA-accessible and hiking natural surface trail
Trail on current road
Decommissioned trail
Trail bridges & boardwalks
Forest road
TH Trailhead with parking
Campground
Planned future campground
MWCD property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
0
0.25
0.5 mile
N


PROPOSED TRAILS MASTER PLAN
TAPPAN LAKE
TAPPAN LAKE PARK
VALLEY DETAIL
2-mile, natural surface, ABA-accessible, biking, and hiking trail follows lakeshore
Tree houses
Vacation cabins
Existing paved road completes a paved loop for users who prefer paved paths
New trailhead with two head-in parking areas
Area 6
TH
Park Boy
to Area 7
Pump track
Swim beach
Add trailhead parking
Accessible fishing docks
TH
Public boat ramp
TH
Information station for day users
Area 5
Area 2
Low trails with connectors to campgrounds provide short loops, are great for kids, and invite visitors to explore further
Area 1
Area 3
Activity center
Area 5
Paved and aggregate greenway-style, accessible-hiking-biking paths (4% grades or less) connect all seven campgrounds and all visitor housing areas to the swim beach, valley floor, activity center, natural surface trails, and each other. Paths serve for both recreation and off-road transportation.
TH
Add additional trailhead parking
Area 4
TAPPAN LAKE PARK RD
ABA-accessible, biking, and hiking paved path
Mountain biking-hiking trail
Hiking-only trail
ABA-accessible, biking, and hiking natural surface trail
ABA-accessible and hiking natural surface trail
Trail on current road
Trail bridges & boardwalks
Decommissioned trail
Forest road
TH Trailhead with parking
Campground
MWCD property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
0
0.25
0.5 mile
N

12
Wills Creek Reservoir

Wills Creek Reservoir Discussion

The original concept for the TMP included Wills Creek Reservoir as the site of a world-class mountain biking (MB) trail system capable of attracting expert riders and hosting pro-level events.

Early in the planning process, however, it became evident that the intent, character, trail types, terrain, and planning of such a MB-centric facility at Wills Creek Reservoir would be so fundamentally different from the other nine lakes that Wills Creek should be planned separately. Creating a world-class MB facility also requires planners who specialize in creating such facilities.

Hence TMP consultants and MWCD agreed to focus planning efforts for the TMP on the other nine lakes.

Yet because some early Wills Creek planning occurred before Wills Creek was removed from the TMP, we present those findings here to inform future Wills Creek planning.

Challenges

During the planning process, MWCD used grant funding from Clean Ohio to acquire several large tracts of reclaimed coal mining land that would likely be beneficial for an expert MB trail system. The new property consists of large areas riddled with unreclaimed surface mines that make navigating the property difficult.

MWCD's experience on the ground at Wills Creek, however, was limited to a specific piece of property acquired earlier, leaving most of the area unexplored. Unlike the other nine lakes, the chaotic manmade topography of mining highwalls, waste heaps, ponds, and rock piles needs to be explored on the ground and couldn't be master-planned virtually like the other lakes. Expanding property boundaries and a chaotic landscape that had to be explored in the field contributed to the decision to remove Wills Creek from the TMP.

In addition, land acquired with Clean Ohio grants limits the types and scale of recreation and development that can occur on these lands in order to foster and preserve land reclamation. Development is still possible on these properties but certain guidelines need to be followed. Some of those guidelines make it difficult to impossible to locate facilities such as campgrounds, large event spaces, parking areas, and trailheads with parking on those lands, causing these facilities to be located relatively far from the main trail areas.

The Wills Creek region is also known for clayey soils that easily pond water and become slippery and muddy when wet.

Initial Wills Creek planning

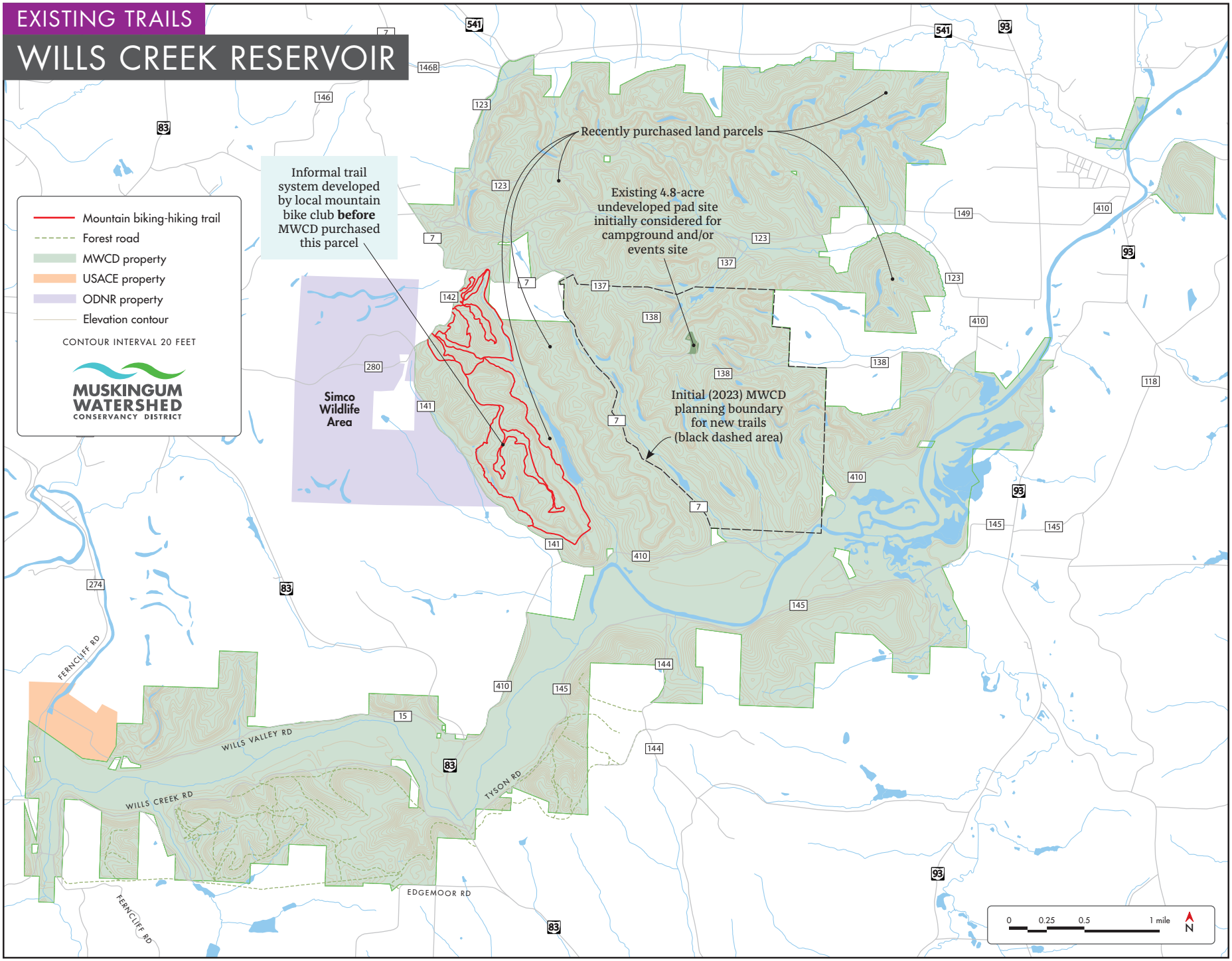
Initial early planning focused on finding sites where campgrounds and event spaces could be located and how they could connect to main trail areas.

Planning for Wills Creek was largely remote using satellite imagery, LIDAR topographic data, and some aerial imagery. Little time was spent on the ground in new locations. Given development constraints, areas that are likely favorable for trails, campgrounds, and event spaces were remotely identified for further planning efforts.

Because of the type of trail system and facilities desired, difficult terrain, limits on development, the large amount of land available at Wills Creek, and potentially clayey soils less suited to trails than soils at the other lakes, it is recommended that more detailed planning takes place before building trails at this location.

EXISTING TRAILS

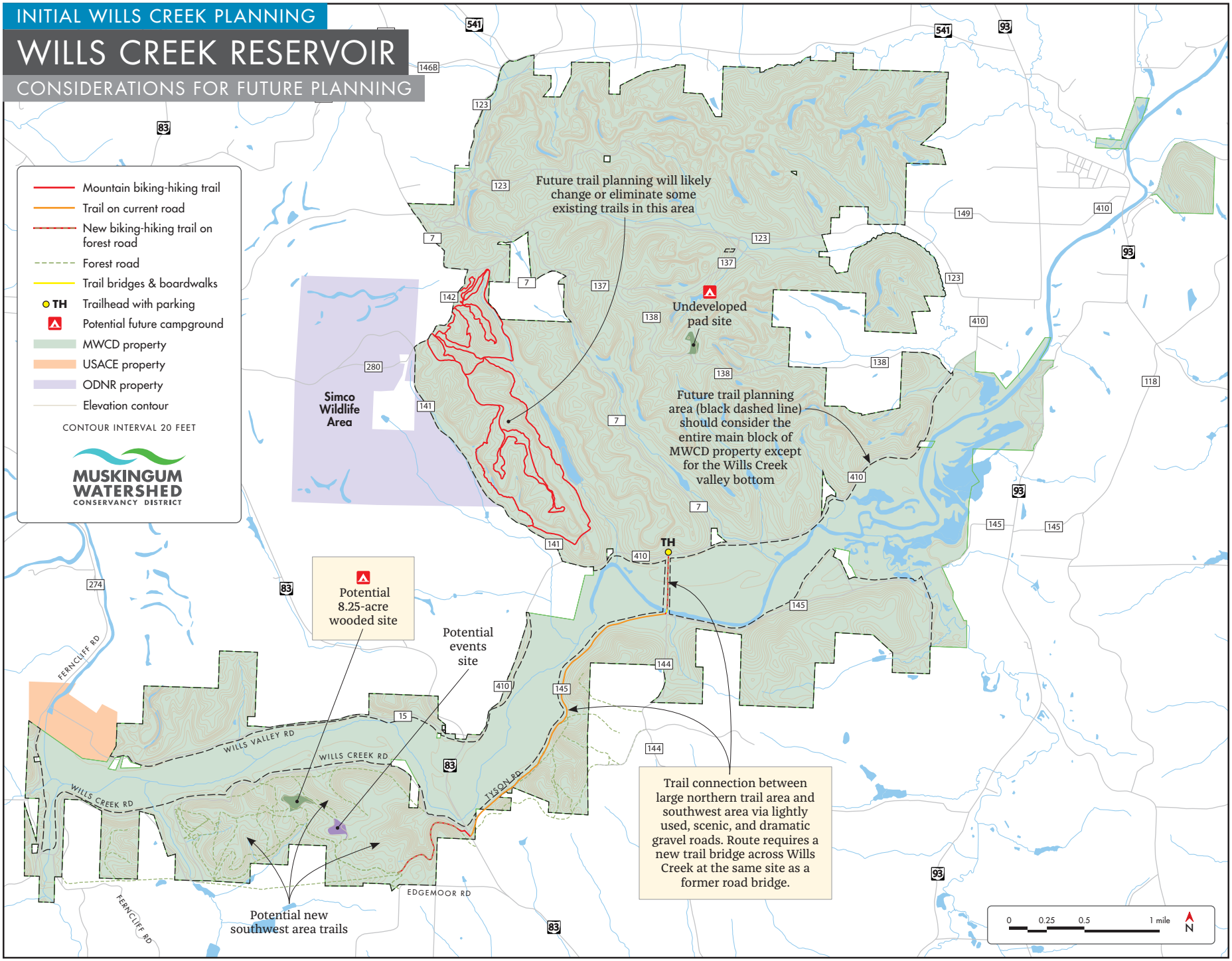
WILLS CREEK RESERVOIR

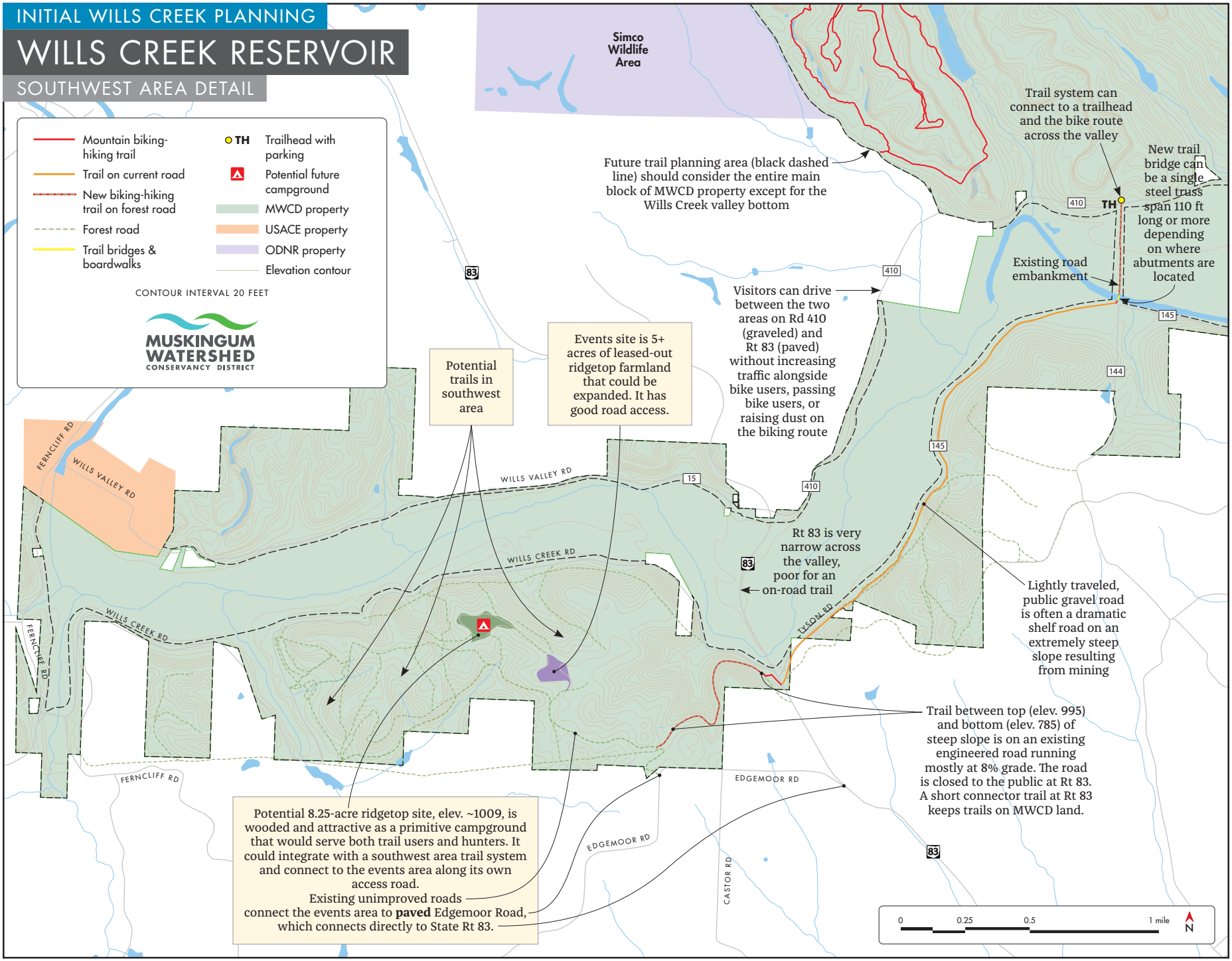


INITIAL WILLS CREEK PLANNING

WILLS CREEK RESERVOIR

CONSIDERATIONS FOR FUTURE PLANNING




INITIAL WILLS CREEK PLANNING
WILLS CREEK RESERVOIR
SOUTHWEST AREA DETAIL
Mountain biking-hiking trail
Trail on current road
New biking-hiking trail on forest road
Forest road
Trail bridges & boardwalks
TH Trailhead with parking
Potential future campground
MWCD property
USACE property
ODNR property
Elevation contour
CONTOUR INTERVAL 20 FEET
MUSKINGUM WATERSHED CONSERVANCY DISTRICT
Simco Wildlife Area
Future trail planning area (black dashed line) should consider the entire main block of MWCD property except for the Wills Creek valley bottom
Trail system can connect to a trailhead and the bike route across the valley
New trail bridge can be a single steel truss span 110 ft long or more depending on where abutments are located
Existing road embankment
Visitors can drive between the two areas on Rd 410 (graveled) and Rt 83 (paved) without increasing traffic alongside bike users, passing bike users, or raising dust on the biking route
Potential trails in southwest area
Events site is 5+ acres of leased-out ridgetop farmland that could be expanded. It has good road access.
Rt 83 is very narrow across the valley, poor for an on-road trail
Lightly traveled, public gravel road is often a dramatic shelf road on an extremely steep slope resulting from mining
Trail between top (elev. 995) and bottom (elev. 785) of steep slope is on an existing engineered road running mostly at 8% grade. The road is closed to the public at Rt 83. A short connector trail at Rt 83 keeps trails on MWCD land.
Potential 8.25-acre ridgetop site, elev. ~1009, is wooded and attractive as a primitive campground that would serve both trail users and hunters. It could integrate with a southwest area trail system and connect to the events area along its own access road.
Existing unimproved roads connect the events area to paved Edgemoor Road, which connects directly to State Rt 83.
WILLS VALLEY RD
WILLS CREEK RD
FERNCLIFF RD
EDGEMOOR RD
CASTOR RD
TYSON RD
83
410
145
144
15
TH
0 0.25 0.5 1 mile
N

13

Summary of Existing and Proposed Trail Mileages

Existing Trail Mileage on MWCD Land

	Trail/path segment mileage[1]	New trail/path	Existing trail/path	Trail on current road	Natural surface tread[2]	Hard surface tread[2]	MTB/ hiking trail[3]	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike[4]	ABA accessible	Other use[5]
Atwood	7.20	—	7.20	0.00	2.96	4.24	0.00	0.00	2.96	4.24	4.24	0.00
Beach City	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Charles Mill	3.07	—	3.07	0.00	2.93	0.14	0.00	0.00	3.07	0.00	0.19	0.00
Clendening	11.38	—	11.38	1.29	10.32	1.06	0.00	0.00	10.09	1.29	0.00	0.00
Leesville	2.44	—	2.44	0.00	2.44	0.00	0.00	0.00	2.44	0.00	0.00	0.00
Piedmont	4.89	—	4.89	0.00	4.75	0.14	0.00	0.00	4.75	0.00	0.00	0.14
Pleasant Hill	15.71	—	15.71	0.40	14.76	0.95	1.42	12.71	0.70	0.95	0.87	0.00
Seneca	5.95	—	5.95	0.42	4.60	1.35	0.00	0.00	4.62	1.33	0.73	0.00
Tappan	19.87	—	19.87	0.17	18.44	1.43	0.00	7.09	11.22	1.56	1.58	0.00
Total existing trail mileage	**70.51**	**0.00**	**70.51**	**2.28**	**61.20**	**9.31**	**1.42**	**19.80**	**39.85**	**9.37**	**7.61**	**0.14**

1 **Trail/path segment mileage** is total trail mileage per lake for all trail types combined. The remaining columns indicate trail mileage for different trail types.
2 **Natural surface tread** is soil, crushed stone, gravel, or other unbonded trail surfaces. **Hard surface tread** is asphalt, concrete, and similarly bonded tread surfaces.
3 **MTB/hiking trail** is singletrack mountain biking-hiking trails.
4 **Shared-use hike/bike** refers to greenway-style, shared-use paths for hiking, road bikes, mountain bikes, strollers, etc. and to trail segments on existing public roads. Often hard-surfaced (paved).
5 **Other use**—see chapter for the specific lake.

Estimated Proposed Trail Mileage on MWCD Land

	Trail/path segment mileage[1]	New trail/path	Existing trail/path	Trail on current road	Natural surface tread[2]	Hard surface tread[2]	MTB/ hiking trail[3]	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike[4]	ABA accessible	Other use[5]
Atwood	21.89	17.38	4.51	0.00	14.02	7.87	13.51	0.00	0.51	7.87	9.24	0.00
Beach City	9.31	9.31	0.00	0.32	9.31	0.00	0.00	0.00	8.75	0.32	5.00	0.00
Charles Mill	17.98	15.99	1.99	0.10	16.84	1.14	8.33	0.00	9.55	0.10	6.71	0.00
Clendening	69.19	58.89	10.30	1.04	68.12	1.07	57.58	0.00	10.57	1.20	2.33	0.00
Leesville	43.05	40.61	2.44	2.07	41.01	2.04	36.51	0.00	3.61	2.51	1.75	0.00
Piedmont	40.66	36.07	4.59	1.36	39.56	0.57	31.35	0.00	8.21	0.91	1.12	0.14
Pleasant Hill	28.85	17.90	10.95	1.06	26.63	2.22	4.98	17.17	4.53	2.24	1.75	0.00
Seneca	24.62	22.55	2.07	0.42	22.59	2.03	11.66	0.00	15.35	6.41	3.87	1.41
Tappan	41.36	29.64	11.72	0.17	37.88	3.48	25.61	7.09	4.83	3.71	5.89	0.00
Total proposed trail mileage	**296.91**	**248.34**	**48.57**	**6.54**	**275.96**	**20.42**	**189.53**	**24.26**	**65.91**	**25.27**	**37.66**	**1.55**

Proposed Trail Mileage Change on MWCD Land

Positive values indicate mileage increase as net gain. Negative values indicate mileage decrease as net loss caused by decommissioning existing trails.

	Trail/path segment mileage[1]	New trail/path	Existing trail/path	Trail on current road	Natural surface tread[2]	Hard surface tread[2]	MTB/ hiking trail[3]	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike[4]	ABA accessible	Other use[5]
Atwood	14.69	17.38	-2.69	0.00	11.06	3.63	13.51	0.00	-2.45	3.63	5.00	0.00
Beach City	9.31	9.31	0.00	0.32	9.31	0.00	0.00	0.00	8.75	0.32	5.00	0.00
Charles Mill	14.91	15.99	-1.08	0.10	13.91	1.00	8.33	0.00	6.48	0.10	6.52	0.00
Clendening	57.81	58.89	-1.08	-0.25	57.80	0.01	57.58	0.00	0.48	-0.09	2.33	0.00
Leesville	40.61	40.61	0.00	2.07	38.57	2.04	36.51	0.00	1.17	2.51	1.75	0.00
Piedmont	35.77	36.07	-0.30	1.36	34.81	0.43	31.35	0.00	3.46	0.91	1.12	0.00
Pleasant Hill	13.14	17.90	-4.76	0.66	11.87	1.27	3.56	4.46	3.83	1.29	0.88	0.00
Seneca	18.67	22.55	-3.88	0.00	17.99	0.68	11.66	0.00	10.73	5.08	3.14	1.41
Tappan	21.49	29.64	-8.15	0.00	19.44	2.05	25.61	0.00	-6.39	2.15	4.31	0.00
Total proposed trail mileage change	**226.40**	**248.34**	**-21.94**	**4.26**	**214.76**	**11.11**	**188.11**	**4.46**	**26.06**	**15.90**	**30.05**	**1.41**

1 **Trail/path segment mileage** is total trail mileage per lake for all trail types combined. The remaining columns indicate trail mileage for different trail types.
2 **Natural surface tread** is soil, crushed stone, gravel, or other unbonded trail surfaces. **Hard surface tread** is asphalt, concrete, and similarly bonded tread surfaces.
3 **MTB/hiking trail** is singletrack mountain biking-hiking trails.
4 **Shared-use hike/bike** refers to greenway-style, shared-use paths for hiking, road bikes, mountain bikes, strollers, etc. and to trail segments on existing public roads. Often hard-surfaced (paved).
5 **Other use**—see chapter for the specific lake.

Recommended Additional Trail Mileage on Cooperating Neighboring Lands

While MWCD cannot direct trail development on neighboring lands, the following table shows the estimated mileages of recommended new trails on non-MWCD land shown on TMP maps.

	Trail/path segment mileage[1]	New trail/path	Existing trail/path	Trail on current road	Natural surface tread[2]	Hard surface tread[2]	MTB/ hiking trail[3]	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike[4]	ABA accessible	Other use[5]
Beach City Reservoir: MWCD and Beach Valley Wildlife Area (ODNR) jointly aspire to forming hiking-only trails joining both properties but trail alignments are too preliminary to map or measure at the time of this writing. Hence we count recommended additional trail mileage here as 0.00.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clendening: Existing and proposed trail mileage for Clendening Dam (USACE)	1.18	0.16	1.02	0.28	1.18	0.00	0.16	0.00	1.02	0.00	0.00	0.00
Leesville: Existing and proposed trail mileage for Leesville Dam (USACE)	0.95	0.54	0.41	0.33	0.62	0.33	0.21	0.00	0.00	0.33	0.00	0.00
Pleasant Hill: Proposed trail mileage for Malabar Farm State Park (ODNR)	0.84	0.84	0.00	0.00	0.84	0.00	0.00	0.84	0.00	0.00	0.00	0.00
Seneca: Proposed trail mileage for Senecaville Dam (USACE)	0.56	0.56	0.00	0.23	0.33	0.23	0.14	0.00	0.19	0.23	0.27	0.14
Seneca: Proposed trail mileage for Senecaville State Fish Hatchery (ODNR)	0.75	0.75	0.00	0.71	0.43	0.00	0.00	0.00	0.43	0.32	0.00	0.00
Tappan: Existing trail mileage for Tappan Dam (USACE)	0.67	0.00	0.67	0.67	0.67	0.00	0.00	0.67	0.00	0.00	0.00	1.41
Total estimated recommended additional trail mileage on neighboring cooperating lands	**4.95**	**2.85**	**2.10**	**2.22**	**4.07**	**0.56**	**0.51**	**1.51**	**1.64**	**0.88**	**0.27**	**0.00**

1 **Trail/path segment mileage** is total trail mileage per lake for all trail types combined. The remaining columns indicate trail mileage for different trail types.
2 **Natural surface tread** is soil, crushed stone, gravel, or other unbonded trail surfaces. **Hard surface tread** is asphalt, concrete, and similarly bonded tread surfaces.
3 **MTB/hiking trail** is singletrack mountain biking-hiking trails.
4 **Shared-use hike/bike** refers to greenway-style, shared-use paths for hiking, road bikes, mountain bikes, strollers, etc. and to trail segments on existing public roads. Often hard-surfaced (paved).
5 **Other use**—see chapter for the specific lake.

Grand Total Proposed Trail Mileage on MWCD and Non-MWCD Land

The following table shows the estimated total mileage of proposed trails on MWCD lands combined with the estimated total recommended additional trail mileage on cooperating neighboring lands as shown on TMP maps.

In terms of data sources, the following table totals the preceding "Estimated Proposed Trail Mileage on MWCD Land" and "Recommended Additional Trail Mileage on Cooperating Neighboring Lands" tables.

	Trail/path segment mileage[1]	New trail/path	Existing trail/path	Trail on current road	Natural surface tread[2]	Hard surface tread[2]	MTB/ hiking trail[3]	Equestrian/ hiking trail	Hiking-only trail	Shared use hike/bike[4]	ABA accessible	Other use[5]
Atwood	21.89	17.38	4.51	0.00	14.02	7.87	13.51	0.00	0.51	7.87	9.24	0.00
Beach City	9.31	9.31	0.00	0.32	9.31	0.00	0.00	0.00	8.75	0.32	5.00	0.00
Charles Mill	17.98	15.99	1.99	0.10	16.84	1.14	8.33	0.00	9.55	0.10	6.71	0.00
Clendening	70.37	59.05	11.32	1.32	69.30	1.07	57.74	0.00	11.59	1.20	2.33	0.00
Leesville	44.00	41.15	2.85	2.40	41.63	2.37	36.72	0.00	3.61	2.84	1.75	0.00
Piedmont	40.66	36.07	4.59	1.36	39.56	0.57	31.35	0.00	8.21	0.91	1.12	0.14
Pleasant Hill	29.69	18.74	10.95	1.06	27.47	2.22	4.98	18.01	4.53	2.24	1.75	0.00
Seneca	25.93	23.86	2.07	1.36	23.35	2.26	11.80	0.00	15.97	6.96	4.14	1.41
Tappan	42.03	29.64	12.39	0.84	38.55	3.48	25.61	7.76	4.83	3.71	5.89	0.00
Grand total estimated proposed trail mileage on MWCD and non-MWCD land	**301.86**	**251.19**	**50.67**	**8.76**	**280.03**	**20.98**	**190.04**	**25.77**	**67.55**	**26.15**	**37.93**	**1.55**

1 **Trail/path segment mileage** is total trail mileage per lake for all trail types combined. The remaining columns indicate trail mileage for different trail types.
2 **Natural surface tread** is soil, crushed stone, gravel, or other unbonded trail surfaces. **Hard surface tread** is asphalt, concrete, and similarly bonded tread surfaces.
3 **MTB/hiking trail** is singletrack mountain biking-hiking trails.
4 **Shared-use hike/bike** refers to greenway-style, shared-use paths for hiking, road bikes, mountain bikes, strollers, etc. and to trail segments on existing public roads. Often hard-surfaced (paved).
5 **Other use**—see chapter for the specific lake.

PART 2

IN-DEPTH VIEW OF THE TRAILS MASTER PLAN

MUSKINGUM WATERSHED CONSERVANCY DISTRICT

Natureshape

14

The Shaping of the Trails Master Plan

Chapter 2 presented some aspects of the TMP. This chapter explains how the TMP was developed.

The Trails Blueprint and the TMP

MWCD's Trails Blueprint (2019) focused on conceptual longer-distance trail connections outside of MWCD land: trails between MWCD lands and populated areas (towns and cities), trails between MWCD lakes, trail connections to existing and proposed regional trails, and water trails on regional rivers.

The TMP complements the Trails Blueprint by focusing on lands owned by MWCD and adjacent lands owned by cooperating entities. Trails on MWCD lands serve MWCD visitors directly, can be planned and built by MWCD relatively quickly in a process and schedule it controls, and cost far less to plan and build than most of the trails in the Trails Blueprint would.

The Two-Stage Trail Planning Process

Strictly speaking, Stage 1 is the Trails Master Plan (TMP). Stage 2 is the implementation of the TMP. Trail planning occurs in both stages, however, because Stage 2 develops and completes the trail planning begun in Stage 1.

Stage 1: Master planning

Master planning establishes the intended character of trails and trail systems in the TMP as a combination of planning principles and rough trail alignments—trail lines on maps—that are generated by those principles interacting with specific sites.

Stage 2: Detailed field planning, design, and construction

Stage 2 occurs later—possibly many years later in a 20-year build-out—when particular trails are planned, designed, and flagged in detail prior to construction. Working on the ground in this stage, experienced trail planners and designers use the same planning relationships that generated Stage 1 to develop specific, detailed trail alignments.

They can begin by using GPS to mark a Stage 1 route on the ground as a reference line, not a requirement. This rough line provides a starting point they can refer to as needed while exploring the surrounding area. At this detailed scale, they follow the same planning relationships used in the master plan, exploring the site to discover its detailed topography, unique character, best and worst features, and potential for a trail that fulfills the TMP principles even better than the rough line shown in the master plan.

If the field planning area is relatively large and the site offers flexibility, the best alignment that field planners develop may differ significantly in distance from the Stage 1 line. The master plan not only allows this variance to occur; **it expects variance to occur** in the course of forming the best context-specific trail in each site.

If the field planning area is large enough, such as a section of a lake with multiple trails, trail junctions can move and the number of trails may increase or decrease. These variations are also acceptable as long as the detailed alignments are clearly better than the master plan alignments.

The intended character of field-designed trails can also differ from the master plan character. For example, a site may offer more opportunities for advanced mountain biking trails than the master plan lines represent. If MWCD agrees and can support more advanced mountain biking trails at this

site, Stage 2 can generate trails very different from Stage 1 for this area.

Stage 1 is a master plan, not a rigid plan. It's a thoughtfully developed yet flexible schematic that does its best to find general, schematic alignments for enjoyable, sustainable, and practical trails without having detailed site-specific information to work from. Stage 2 planners have the detailed site-specific information to improve on the schematic Stage 1 alignment. Again, the goal is to use the two-stage process to develop the best trails that the site and context enable.

The TMP Consultants

From a nationwide Request for Proposals (RFP), MWCD selected a collaboration headed by Natureshape LLC based in Boulder, Colorado. The principal of Natureshape, Troy Scott Parker, who grew up west of Youngstown, Ohio, is most widely known as the author of *Natural Surface Trails by Design: Physical and Human Design Essentials of Sustainable, Enjoyable Trails* (2004).

Forest City Trails of Cleveland, Ohio—Ralph Protano, Principal—provided field investigations and cost estimates for the TMP. Over 11 years, Protano built the natural surface trails program at Cleveland Metroparks from scratch, including management, personnel, tool and equipment purchasing, project development and management, project planning and design, and cost estimation.

The two consultants have successfully collaborated on several projects in Ohio including the development of trail plans for the two largest reservations in the Cleveland Metroparks system.

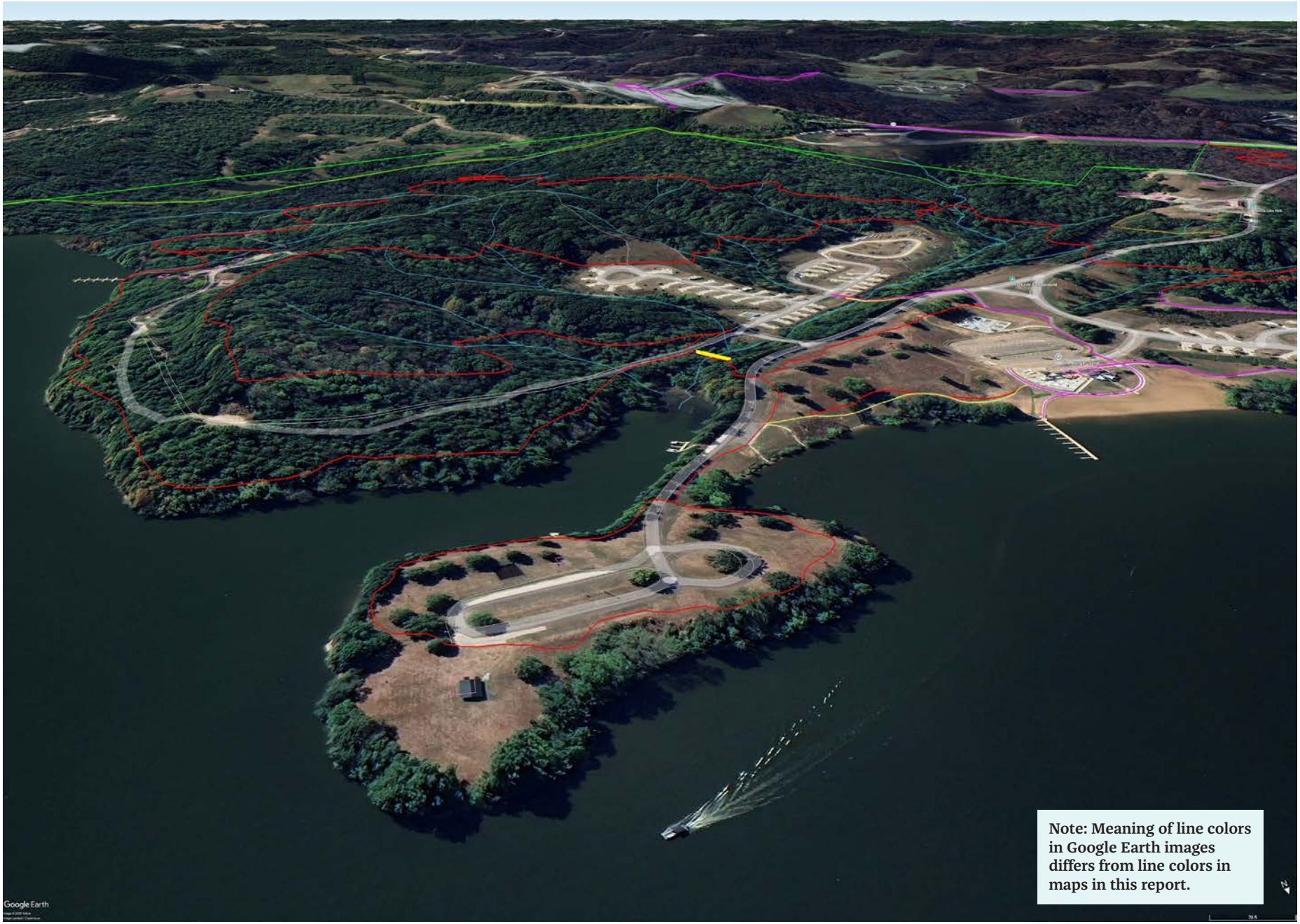
Largely Virtual Planning Process

Given the planning area of over 40,000 acres spread around nine lakes, the timeframe, and the scope of the project (all existing and proposed trails and trailheads), planning needed to be largely virtual. Generally typical topography; relatively consistent soils; relatively low environmental sensitivity across the planning area; digital and online data and resources; MWCD's geographic information system (GIS) data; shared knowledge, experience, review, and feedback of MWCD staff; and ability to examine areas and issues onsite all supported successful virtual planning.

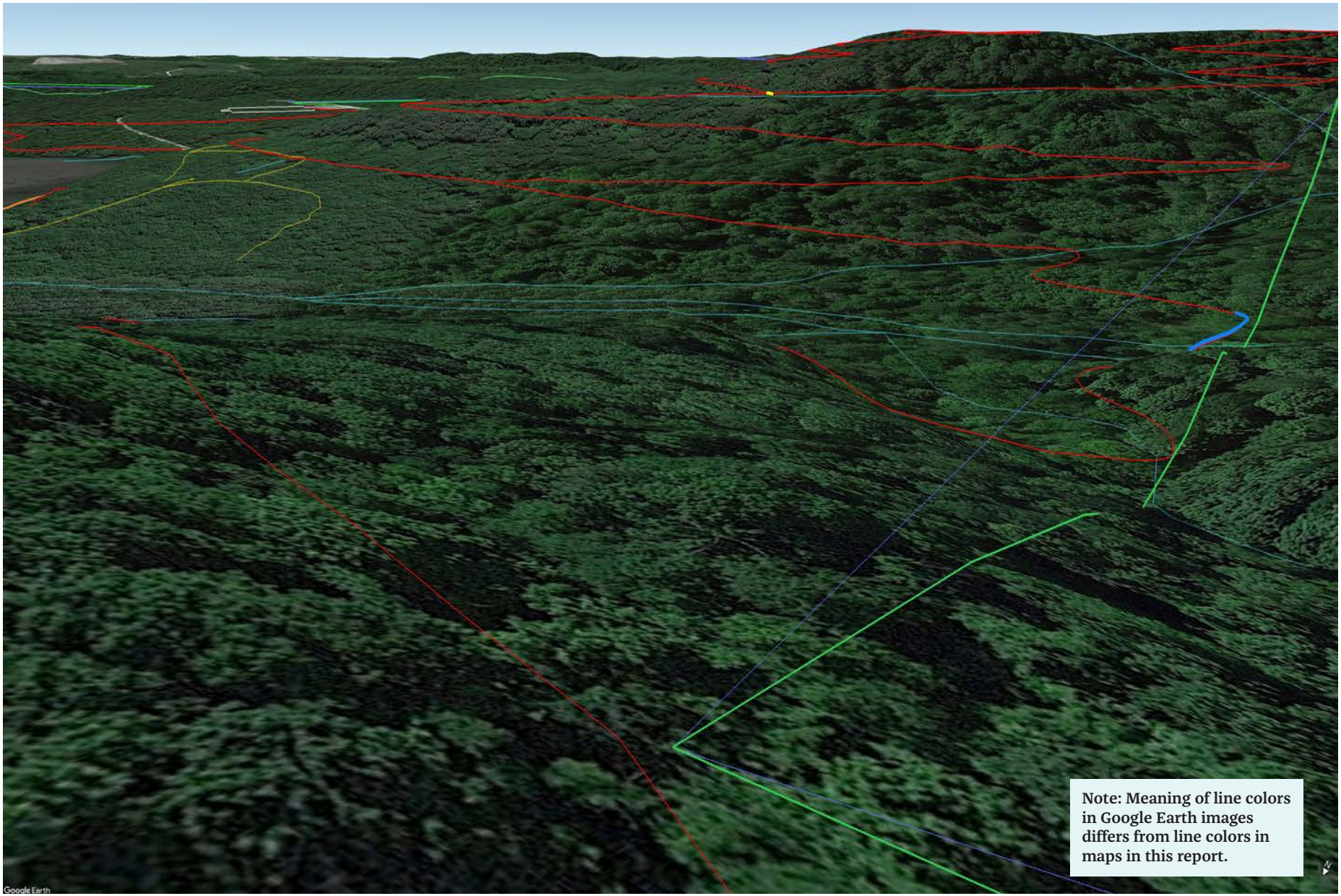
After visiting each lake to experience the lay of the land and existing facilities, experience its sense of place, examine its existing trails, examine local soils for their suitability as trail tread, develop a feel for the strengths and unique features of each lake, and test some initial theories, Natureshape developed the trail plan for each lake virtually in Google Earth.

Google Earth creates three-dimensional views of any site by combining satellite imagery captured in different years and seasons, topographic data (LIDAR topographic data with 2-foot resolution in this case), and drawn features such as proposed trail lines.

Developing and presenting master plan trail lines in Google Earth is a much richer experience than working in a conventional two-dimensional GIS system. Screen captures of the TMP in development presented on the next few pages convey a sense of how master plan–level planning looks in Google Earth. They also paint a picture of some of the strengths and weaknesses of virtual planning.

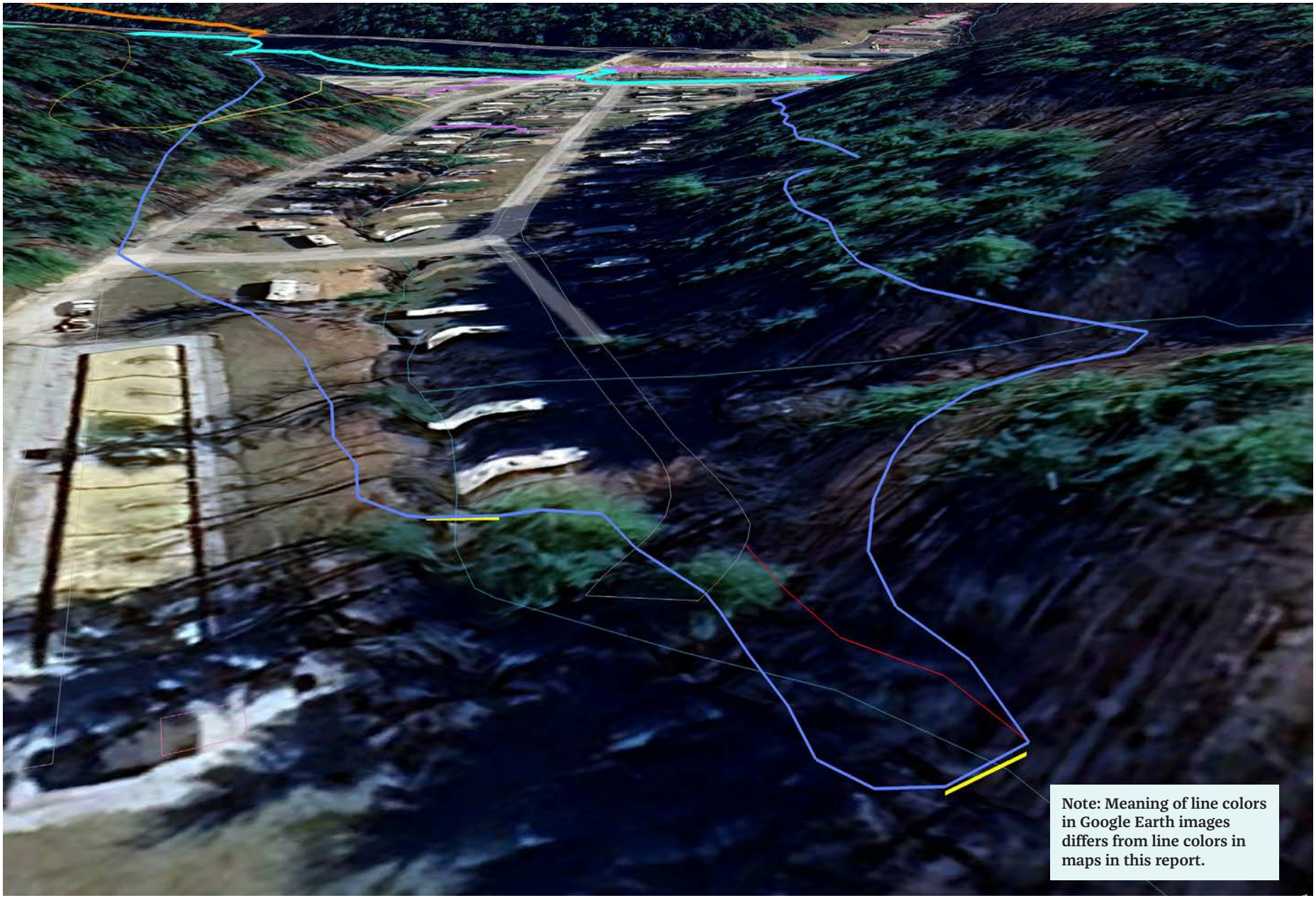


Seneca Lake with Picnic Point in the foreground, the swim beach at right, and Woodlands campground at center. Red lines represent proposed trails (without indicating trail type), purple lines indicate existing trails, thick yellow lines represent boardwalks and bridges, and green lines are MWCD property boundaries in 3-D space and projected on the ground.

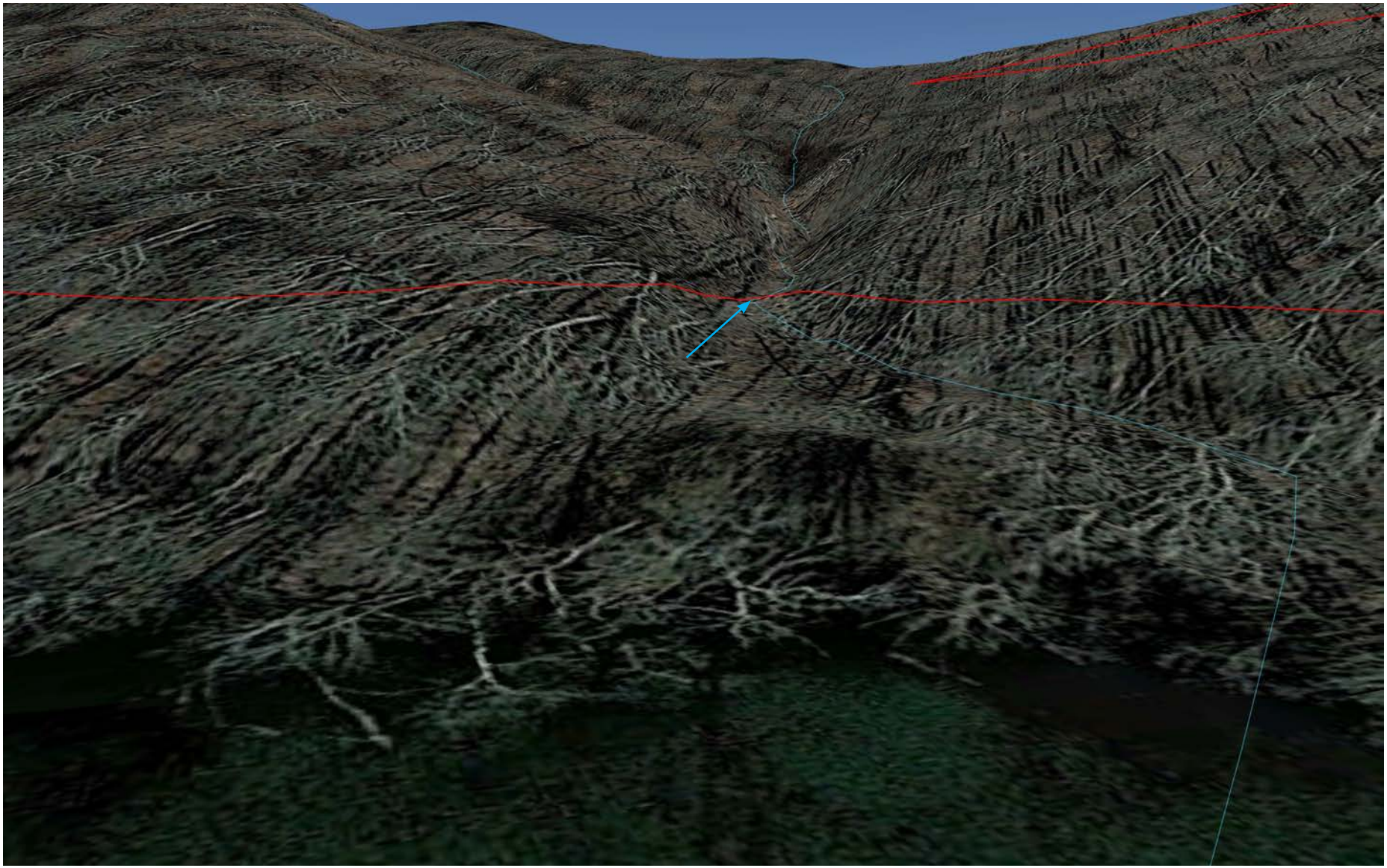


Note: Meaning of line colors in Google Earth images differs from line colors in maps in this report.

Egypt area at Piedmont. Look at the long, straight lines in the top half of this image. Because we see them from the side, we see the extent to which master plan–level proposed trail lines are mostly grade lines, i.e., lines of constant grade across a site. Except for the steeper trails in the upper right corner, these lines are drawn at 3.5% with grades measured every 100 feet. When these trails are laid out in the field in the real world, their grades will be more variable as they adapt to detailed topography and site features. The TMP intends for field planners to locate trails in the best places for trails on each particular site. Hence the TMP maps show that the trail system will look "something like that" with the expectation that actual trails will be in different places when optimized for the features and nuances of their sites.



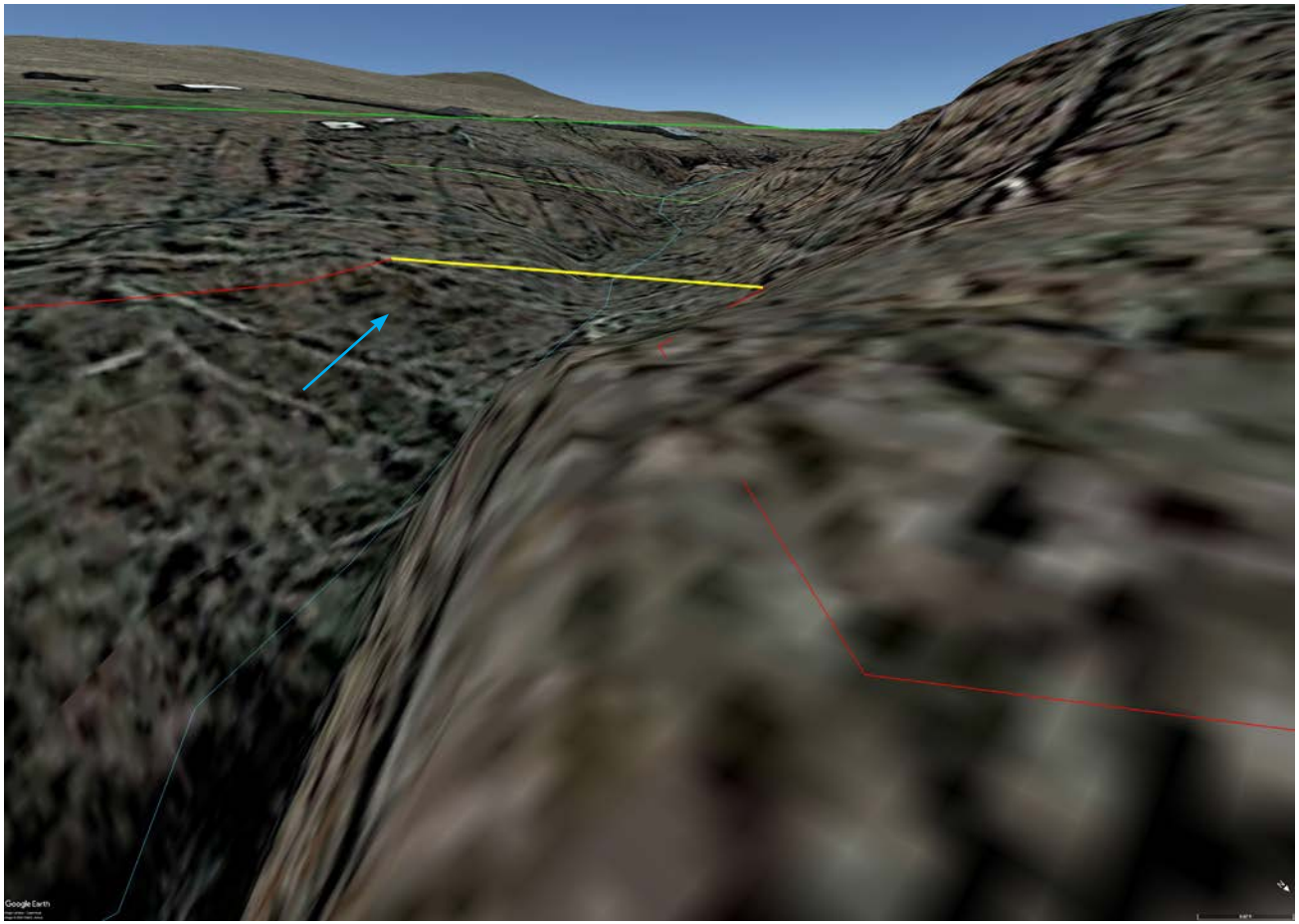
Tappan Area 3 campground with a proposed trail around and through the area weaving through constricted spaces between campsites and the water treatment facility. Low-resolution satellite imagery and slight georeferencing alignments between satellite imagery and features on the ground become more apparent at smaller scales. In other words, things don't always line up perfectly. Readers need to understand that accuracy of trail lines diminishes at smaller scales. Also note that the ground isn't visible wherever trees grow. A small drainage that the trail needs to cross three times (twice on new structures, once on an existing road embankment) is in the foreground shadows.



Determining drainage locations first

Throughout the TMP, the optimal locations for drainage crossings were figured out first. Then trail segments were planned between the optimal drainage crossings.

For example, in this site at Clendening just east of the dam, this drainage carved a deep, steep ravine across much of the slope. It would be difficult to cross the ravine with a trail. Near the bottom of the slope just above the lake (the lake is in the immediate foreground), the drainage becomes less distinct and therefore wider, wetter across a larger area, and more difficult to cross. The location marked by the blue arrow is the one place where the drainage is narrow and its walls are not excessively steep, allowing a trail to cross here with minimal construction and minimal site impact. The trees with white trunks are large oaks that are a feature of this area, so we want to minimize site impact here. Hence this drainage crossing location became what is known as a control point, a point where the trail needs to go even before the location of the rest of the trail is known. The rest of the trail was laid out later.



Virtual planning with field checking and ground truthing

A drainage near Chaney Road in Clendening seemed to have a cascade and cliffs in Google Earth. The photo at right was made during a site visit to check it out. The photo was taken from about the spot shown by the blue arrow above, looking across the drainage just above the edge of the cascade. The vertical, sharp-edged shapes of landforms in Google Earth views suggest that the site is rocky, which in turn suggests that the drainage crossing structure could be more attractive as a traditional three-span timber bridge with two mortared stone piers. Site visits and videos confirm that this is the case, so notes to this effect are part of the TMP. In another matter, exactly where the bridge will be and how close the trail will be to the cliff in the foreground will be determined when the actual trail is designed in the field.

Looking across the drainage from the position shown by the blue arrow at left, the upper edge of the cascade is visible as the straight line in the right center of this smartphone video frame capture. The rocky drainage with a small watershed has a bedrock bottom that could easily support a traditional timber bridge with mortared stone piers or pier bases.

Strengths and Limits of Virtual Planning

If you've examined the images and read the captions on the preceding pages, you can see how thoughtful, thorough, and in-depth work with virtual planning tools—combined with site visits, clear intents, and a lot of imagination—can be used to generate context-specific, context-appropriate trail concepts. These concepts—the lines of proposed trails in Google Earth and on the TMP maps—are detailed in some ways yet still conceptual overall. As you can see from the Google Earth images, we can never create detailed trail alignments virtually because we don't have enough detailed data. Often we can't even see the ground.

Hence the best that virtual trail planning can do in master planning is to strive to put conceptual, workable trails in the most optimal locations we can find while satisfying the relationships we want them to satisfy.

Detailed trail alignments need be worked out by experienced trail designers in the field, on the ground in Stage 2.

Trail Planning Methodology

Trails in the TMP were generated using a set of 28 project-specific relationships. These relationships were used as rules of thumb to generate desired outcomes within the TMP. Natureshape LLC, which researches how to make trail planning and design easier to learn and practice, developed the set to

- generate and explain trails and trail systems in Stage 1 (master planning), and
- enable future trail planners and designers to generate and explain trails on the ground in Stage 2 using the same relationships that generated Stage 1.

Using the word 'generate' is intentional. Experienced trail planners and designers know that they use many rules of thumb that tell them what to do and what not to do in any given context. They also know that these rules of thumb work together to generate detailed trail plans and designs directly from the context. The more experienced trail planners and designers are, the more thoroughly they use many rules of thumb to shape context-appropriate relationships that lead to good outcomes and avoid shaping relationships that lead to bad outcomes.

What's a good outcome? An enjoyable, sustainable trail, aka "good trail." We add "practical" as a desired outcome for the TMP in order to rule out extravagance and favor practical approaches. This addition gives us **enjoyable, sustainable, and practical trails as our definition of a good outcome and a good trail**.

We could even use the entire TMP mission statement as our desired good outcome: "Shape enjoyable, sustainable, and practical trails that benefit the MWCD region, can be used by the majority of visitors, and are located on readily available land."

Yet we don't need to use the whole statement because the project-specific set of 28 relationships that generate the TMP generate everything in the mission statement.

The 28 project-specific relationships are, in fact, 28 more rules of thumb for experienced trail planners and designers to use in addition to the hundreds of rules of thumb that form the toolbox of trail planning and design.

The TMP works as well as it does because every piece of every trail in 249 miles of new trail in the TMP strives to fulfill all 28 project-specific relationships on top of the hundreds of rules of thumb that generate trails in general. Stage 2 needs to do the same thing: work in smaller, specific contexts to fulfill all or nearly all of project-specific relationships with every piece of trail—along with the hundreds of rules of thumb that generate trails in general—to find and bring about the best outcome that the context can provide.

About the 28 project-specific relationships that generated the TMP

The table beginning on the next page presents the whole list. To add clarity, each relationship/rule of thumb is paired with its opposite, spelling out what to do and what not to do.

Note that some relationships don't apply to some contexts. In practice, it's clear from the context which relationships apply to that context.

The list of relationships is presented as a simple list with no subheads or higher-level organization because no higher-level organization can adequately categorize these relationships without restricting their context-appropriate relevance, flexibility, and scale. Instead, planners and designers need to apply any relationship that applies to the context at hand.

The 28 Project-Specific Relationships/Rules of Thumb That Generated the TMP (on top of general trail planning and design relationships)

Relationships/rules are numbered for reference only. None of the relationships are more important than the others. Neither the sequence in which they appear nor the order in which they are used is relevant.

#	Seek to	Seek to avoid
1	Plan trails and trail systems as open networks that could or do connect to other trails beyond MWCD properties and facilitate potential future connections between MWCD properties and other public lands and communities.	Seek to avoid setting up MWCD trails as closed systems ("isolated islands").
2	Locate MWCD trails entirely on readily available land (i.e., land owned by MWCD or by a cooperating neighboring entity).	Seek to avoid locating trails on non-MWCD property unless it belongs to a cooperative entity with whom an agreement can be reached.
3	Connect populated areas (communities, campgrounds, MWCD cottage areas, and adjacent private residential areas) to the trail system while protecting their privacy as much as feasible.	Seek to avoid locating trail or trail traffic too close to populated areas where alternate trail alignments are available.
4	Locate trails to visit interesting landscape features and edges such as lakeshores, ridges, slope hinges (see page 135), viewpoints, high places, rocks and rocky areas, water features, higher-quality forests, etc.	Seek to avoid endless lookalike trails in the trees with little differentiation, variety, or sense of where one is in the landscape.
5	Locate trail in healthy, pleasant hardwood forests with open understory.	Seek to avoid locating trail in pine forests subject to logging, in recently logged or farmed areas, in dense understory, or in invasive shrubs and vines.
6	Shape fun, engaging, sustainable, often shared-use trails that can be enjoyed by a large number and range of users, especially average users.	Seek to avoid overly difficult, overly technical, and single-use trails that can be enjoyed by relatively few users unless we want to limit the type and/or amount of trail use.
7	Provide accessible trails that feel as naturalistic as feasible, including trails with native surface treads, and use the site and its nuances to enhance the sense of place.	Seek to avoid accessible trails that look or feel over-engineered in a way that diminishes the trail experience or sense of place.
8	Form trails that gently and gracefully move through their sites, embrace and use the nuances of their sites, feel like they belong where they are, and are otherwise largely invisible when one is not on them.	Seek to avoid trails that bulldoze their way through their sites, ignore or wipe out the nuances of their sites, feel like they don't belong where they are, or are highly visible from a distance.
9	Form the narrowest trails and singletrack that can support intended trail use(s), typically 3-foot and 5.5-foot treads for natural surface trails.	Seek to avoid forming overly wide trails for the intended amount and type of trail use, and seek to avoid setting trails up to be excessively widened by trail users.
10	Form loops, stacked loops, and multiple loops—from short to long loops—from many starting points.	Seek to avoid isolated trails that aren't connected to a larger trail system.

#	Seek to	Seek to avoid
11	Resolve and avoid problems primarily through trail planning and design, especially in finding and establishing the alignment of trails to use the site to the best advantage of the site, trail users, and trail managers.	Seek to avoid solving problems primarily through trail construction, especially expensive and extensive construction, that could be avoided with better planning and design.
12	Plan trails and trail structures to be resilient and sustainable in changing conditions, climate change, and more extreme weather events, including frequency, intensity, duration, and changing normals for precipitation, runoff, floods, droughts, extreme wind events, temperature, plant growth, wildfire, etc.	Avoid assuming that the future will be the same as the past in terms of weather and climate patterns and extremes, especially for precipitation, runoff, temperature, wind, and wildfire.
13	Form sustainable natural surface trails that can be maintained with reasonable effort because they do not rapidly change shape through erosion, inevitable soil/tread displacement from trail use, excessive muddiness, water problems, or being bypassed, widened, or shortcut by users. (We accept that at least slow change in trail shape over time is inevitable for natural surface trails and that we can work with it through reasonable trail maintenance effort.)	Seek to avoid setting up natural surface trails to undergo rapid and predictable change over time that will require reconstruction or rerouting to sustain in the long run.
14	Align trails to traverse moderate sideslopes.	Seek to avoid traversing steep and extremely steep sideslopes or being on level or near-level sites that cannot quickly drain water downhill.
15	Align natural surface trails to traverse slopes with a gentle to moderate average grade such that the gentler the slope is, the gentler the average trail grade is.	Seek to avoid natural surface trails going straight up a slope (or anywhere near this angle) for more than a very short distance because such trails are impossible/difficult to drain, tend to erode, and are prone to being widened and bypassed by users as they erode and degrade.
16	Form natural surface trails with frequently reversing grades that drain trail water at each low point.	Seek to avoid long grades on natural surface trails without grade reversals for drainage, especially on steeper average grades.
17	Locate trails on sites with normally dry soils as a matter of course.	Seek to avoid being on wet sites, seepy sites, or wetlands as a matter of course (unless trails are intended to offer trail experiences in such places).
18	Locate trail above dam spillway elevation in order to avoid flood risk and avoid adding fill material in the flood control reservoir below spillway elevation.	Seek to avoid trail or trail structures (embankments, etc.) below dam spillway elevation except (1) as necessary to create trail corridors or desirable trail experiences that require being closer to normal pool levels or (2) construction would remove material from below spillway to mitigate fill added below spillway elsewhere.
19	Plan trails to work well with native surface tread (typically native soil) as much as feasible.	Seek to avoid setting up trails that need to be surfaced with imported material such as crushed stone, gravel, asphalt, wood, boardwalk, or other tread hardening method except as needed to support other intents.

#	Seek to	Seek to avoid
20	Locate native-surface trail on firm and stable loamy soil, i.e., soil that is a well-drained mix of clay, silt, and sand.	Seek to avoid locating native-surface trail on soil that is predominantly clayey or sandy, both of which create tread displacement problems in certain unavoidable conditions.
21	Use planning to minimize need for and size of trail structures, i.e., bridges, boardwalks, culverts, and other constructed infrastructure.	Seek to avoid using trail structures to "buy our way out of" situations that could be avoided with a different or better trail alignment.
22	Optimize drainage crossing locations, i.e., trail crossings of water channels or water bodies, by finding the best crossing locations first, then planning trails to use those crossings.	Seek to avoid crossing drainages at less-than-optimal locations without first looking for and planning to use more optimal crossing locations.
23	Plan for right-sized trail structures for their contexts, e.g., not too big, too small, too long, too short, too wide, too narrow, too overbuilt, too underbuilt, etc.	Seek to avoid trail structures that are inappropriately sized—physically and aesthetically—for their contexts.
24	Achieve as much balance as feasible between using naturalistic, context-appropriate character, colors, textures, longevity, look, feel, weathering, and sense of place of materials and shapes in trail structures and the intent to reduce or minimize the frequency and effort of trail structure maintenance and reconstruction over the long run.	Seek to avoid trail structures that look or feel grossly more artificial or out-of-place than the trail that they help to form.
25	Provide enough trailheads to make most of the trail system accessible to the majority of day hikers who, as a national average, seldom hike farther out than 3 miles (6-mile round trip).	Seek to avoid very long trails and trail segments with no intermediate public access points.
26	Provide some trailheads or trail access points at each lake that can be used without paying a park entrance fee.	Seek to avoid locating all trail access behind an entrance station with a entry fee.
27	Locate trailheads with parking outside of marinas, residential areas, and other places where we don't want trail visitors to park. Use signage to restrict parking and/or advise trail visitors to park at nearby trailheads.	Seek to avoid trail visitors parking in marinas, residential areas, and along roads because there is nowhere else to park or they don't know about nearby trailheads with parking.
28	Plan and design trailheads to have organized entrances, organized parking with wheelstops and/or marked stalls, and consistent signage in order to create a first impression of managed, respectful recreation.	Avoid informal or unstructured trailheads, unorganized parking, and trailheads that feel shabby, untidy, or not well maintained.

As you can see, the 28 project-specific relationships are wide-ranging, practical, down-to-earth rules of thumb that make sense in the context of the TMP. They don't contradict each other in the context of the TMP. They structure themselves in the sense that it's clear which relationships apply to which contexts. You see their effects in TMP trail alignments, maps, and discussions throughout this report. Listing their opposites in the "seek to avoid" column makes it easier to know whether something in question fits the "seek to" or "seek to avoid" relationship.

Note that for almost every one of these relationships/rules, the TMP occasionally does what it seeks to avoid. This is not violating a rule—rather, it is a deliberate choice to accept a different relationship that produces a less-than-optimal outcome. In other words, the trail in these places isn't as

good as it could have been had the preferred relationship been maintained. However, the alternative was often to have no trail at all. Practical compromises were made where necessary, though these were uncommon and had limited impact. The most common compromises involve relationships 4 and 5 because sometimes a trail has to go through a less-attractive site in order to get to the next more-attractive site.

Because the 28 project-specific relationships are meant to shape wide-ranging trail planning and design guidance at multiple scales in all kinds of contexts—and are not meant for casual reading, especially for lay readers—we present a sampling of more specific relationships generated by the 28 project-specific relationships. This sampling is presented in categories and reads in a more familiar way. Use it to get a feel for how the project-specific relationships shape everything in the TMP.

Note that this sampling often echoes the project-specific list itself, which is to be expected because it applies project-specific relationships to more specific contexts. **It is the power of the 28 project-specific relationships that we see their effects everywhere in the TMP and that we clearly see whether something at hand fits the "seek to" or "seek to avoid" relationship.**

A Sampling of More Context-Specific Relationships Generated By the 28 Project-Specific Relationships

General relationships for trails

- Strive to locate trails in the most attractive and interesting parts of sites where people most want to be, such as places that are topographically interesting, aesthetically pleasant places, places with more pleasant forests, high places and viewpoints, trails near water, trails near rocks, trails along landscape edges such as slope hinges (see page 135), etc. The more attractive and engaging a site is, the easier it is to form a good trail in that site.
- Plan trails that create logical circulation, go where people want to go, and form loops from most starting points. Stacked loops enable users to make shorter or longer journeys from the same starting point.
- Plan trails with characteristics that respondents specifically requested in MWCD's Trail Development Survey (see page 136). Respondents
  - want well-maintained trails with clear markings and signage,
  - strongly prefer loop trails over out-and-back routes,
  - appreciate variable distance options (stacked loops) and variable difficulty levels, and
  - value natural, non-commercialized settings with minimal traffic noise.

  Trails in the TMP are planned to fulfill all of these requests. Trails with variable difficulty levels can be developed in Stage 2 when planners have more detailed knowledge of specific sites. Master planning forms most trails to be easy to moderate because it's easier to shape new trails to be more difficult (which usually involves making them steeper, narrower, or rougher) than to shape new trails to make them easier (less steep, wider, smoother).
- Plan most new trails as shared-use trails (usually hike-bike) in order to increase the number of users that can enjoy the same trails. Trails in Ohio benefit from continual moderate use that keeps trails visible and prevents vegetation from overgrowing trails. Well-designed hike-bike trails that create continuous, constantly varying small-scale fun with reversing grades can be highly enjoyable trails for both hiking and biking and can satisfy even advanced bikers simply by being fun overall. Planning successful multiple use trails has some specifics; see page 114.
- Plan and design natural surface trails to have reversing grades such that no part of the trail is level and any water that flows along the trail will periodically fall off the trail in a dip. The closer to level that a natural surface trail is, the more likely it is to hold water, become muddy, form a puddle, and be bypassed and widened by users trying to stay dry.
- Create trails with gentle average grades (typically around 3.5%) that are not tiring for hikers and horses, are easy to ride uphill for bikers, and are not inherently fast for bikers riding downhill (riders generally have to pedal to go fast downhill on most trails). Local grades in reversing grade alignments can be steeper but only for very short distances. Hence trails with reversing grades can have a wide range of grades running for short distances yet still average to about 3.5% average grade over longer distances.
- Design trails to avoid predictable problems where feasible. Design context-appropriate solutions to unavoidable problems (especially solutions that use the nuances and natural opportunities of a site).

- Wherever feasible, locate natural surface trails such that they can sustainably drain downhill to the side, typically by traversing a slope.
- Note that in Ohio, the lower a trail is on a slope, the more likely it is to be wet from water that drains down along the surface of the slope as well as drains vertically and horizontally *through* the slope. The TMP puts many trails higher on slopes to keep them drier.
- Cross drainages at the best sites, i.e., where the most enjoyable and sustainable crossings can be made in the most practical yet attractive ways. Throughout the TMP, the best location for crossing each drainage was usually located first, then trails were laid out to use those crossings.
- As much as feasible, plan trails to
  - avoid wet areas (especially wetlands)
  - avoid being on extremely steep slopes because trail construction has high site impacts and users generally don't enjoy being on extremely steep slopes
  - avoid being in areas that were recently logged or are slated for future logging
  - avoid or minimize the need for trail structures (bridges, retaining walls, embankments, ditches, turnpikes, constructed drainage, etc.)
  - avoid creating trails that require frequent or avoidable maintenance.
- Plan trails to be as narrow and rustic as feasible for their intended types and amounts of use. Narrower trails provide more naturalistic trail experiences, can have tighter and more naturally shaped alignments, and expose less bare tread and backslope surface to displacement and erosion than wider trails. Narrower trails will typically have 3-foot wide (singletrack) or 5.5-foot wide treads. If in doubt as to appropriate width, make trails narrower rather than wider because it is better and easier to widen a narrow trail than to narrow a wide trail.

Trails and trail users

- Plan extensive trail systems that encourage users to spread themselves out across each system, which reduces trail crowding, reduces potential user conflicts, causes most trails to have relatively few users at any given time, and creates more peace, quiet, and solitude for users.
- Plan trails for average MWCD visitors (see page 136). Relatively few mountain bikers responded to the survey but some expressed desire for more advanced trails and challenges than most shared-use hike-bike trails at MWCD would offer. (Wills Creek Reservoir is intended to serve mostly advanced and intermediate mountain bikers.) Opportunities for more advanced biking trails may emerge in Stage 2 when sites are explored in detail.
- Create some ABA-accessible trails at each lake. The federal Architectural Barriers Act (ABA) sets accessibility guidelines based on physical mobility, as opposed to the more comprehensive and more restrictive Americans with Disabilities Act (ADA) that also sets guidelines for hearing, vision, and other disabilities. At the same time, the TMP seeks to form accessible trails that look and feel naturally accessible—as opposed to looking "accessible" because of a high degree of engineering and/or feeling "forced" in a site that doesn't lend itself to accessibility. Nearly half of accessible trails are conceived as natural surface trails. Ideally, native soil tread can work if we accept that the trail may be too soft for accessible use during wet periods.
- Create accessible trails that also accommodate families with strollers; able-bodied users who want wider, smoother, and gentler trails; multi-generational families and groups; and sometimes tots on bikes traveling with hiking families.

Trail structures

- Design and build trail structures with durable materials while still considering context-appropriate look and feel for each structure in its particular setting. For example, using manmade materials as decking for a long boardwalk in most settings may look and feel more appropriate than using manmade material as decking on a small bridge or boardwalk in a remote or highly scenic area. Similarly, a railing or toe rail for a structure with manmade decking may be made of wood or timber for its aesthetic and tactile properties.
- Minimize size and length of trail structures as much as feasible (the TMP already locates drainage crossings on what appear to be optimal sites for practical crossing structures).
- Design trail structures in context-appropriate ways—not too utilitarian, not too elaborate, not too underbuilt or overbuilt, not too skimpy or too massive, not ugly, not too extreme in trying to be beautiful, etc.
- Use embankments instead of boardwalks where the site is not wetland,

even if the site is below dam spillway elevation. Embankments are more durable, more naturalistic, and less visible as they blend into the site in the long run.

- Where feasible, design trail structures to have some natural shapes or at least non-square angles (as opposed to purely curvilinear shapes).
- While Stage 1 maps show most boardwalks being perfectly straight for simplicity, they don't have to be straight on the ground in Stage 2. Articulated boardwalks can be much more appealing than straight boardwalks, especially boardwalks on land that can zig and zag around trees, site features, and topography.

Trails and campgrounds

- Connect existing campground trails and form new trails to connect activity centers and individual campground areas to each other.
- Connect activity centers and individual campground areas to the larger trail system wherever feasible.
- Form stacked loop trails near campgrounds that create short and longer trail journeys from various points in the campground.
- Create a denser network of short and minor trails near larger campgrounds to invite campers into the trail system and distribute them among many trails (as opposed to concentrating everyone on only a few busier trails).

Trailheads

- Locate trailheads with parking such that most trail segments are within 3 miles of a trailhead. This 3-mile spacing is based on the national average that most day hikers travel no more than 6 miles round trip, enabling average day hikers to reach all or most trail segments in a 6-mile round trip. This spacing also makes trail construction, maintenance, management, and rescues easier by creating more access points with parking. Trailhead parking areas can also be used as staging areas during trail construction.
- Locate trailheads with parking outside of marinas, residential areas, and other places where we don't want trail visitors to park. Use visitor-facing maps and signs to direct trail users to designated trailhead parking areas.
- Wherever feasible, locate trailheads where their entrances have good sightlines along the road in both directions.
- Locate trailheads away from nearby residences.
- Provide some trailheads at each lake that can be used without paying a park entrance fee.
- Plan and design trailheads to have organized entrances, organized parking with wheelstops and/or marked stalls, and consistent signage. This level of organization creates a first impression of managed recreation that improves visitor behavior and respect for resources.
- Design larger trailheads with parking with a site for a restroom. At first, restrooms may be rented portable units until the amount of use is known, at which point decisions can be made as to whether to keep providing portable restrooms, build a permanent restroom, or not provide a restroom.

Trails and residential areas

- Wherever feasible, plan trails to protect the privacy of homes and residents near trails while also providing local residents access to the trail system. Such connections are usually formed by spur trails that connect residential areas to longer-distance through trails.
- Connect trails to as many residential areas on and adjacent to MWCD land as feasible while remaining on readily available land.

Locating trails on readily available land

- Readily available land is land owned by MWCD as well as lands owned by cooperating neighboring land management agencies (primarily ODNR and USACE) and nonprofit organizations.
- While all trails in the TMP are on readily available land, working with private landowners and easements is not beyond possibility.
- Plan to be willing to work with local governments who want to extend trails across non-MWCD land in order to connect with MWCD trails, especially if they can provide their own land or arrange easements on private land. Advise local governments to speak with MWCD's Trails Division as early as possible and before making any plans.

Defining trail sustainability

Sustainability for a trail means being both physically sustainable and wanting a trail to endure because we value it.

1. **Physically sustainable:** A trail is physically sustainable when it can be maintained over time with a reasonable and sustainable amount of trail maintenance because its design and location minimize erosion, muddiness, water problems, undesired user behaviors, environmental damage, and other forces that would rapidly degrade it and/or degrade the surrounding site.
2. **Valued and worth sustaining:** A trail is worth sustaining when users, land managers, and communities value it enough to invest the ongoing work required to maintain it over time.

Shared-Use Hiking and Mountain Biking Trails

While the TMP adds a great many hiking and mountain biking (MB) trails, virtually all of them are planned and designed as shared-use singletrack trails that accommodate both uses and allow two-way travel for both uses. While such trails are not common in Ohio, they are common and proven to work in many other parts of the US and the world. The national model that works best is a trail with the following eight characteristics:

1. It has a well-understood rule that bikers must yield to hikers.
2. It is not heavily used.
3. It has an average grade of 3.5% to 4.5% that is easy to travel uphill and causes a low coasting speed for bikers traveling downhill.
4. It traverses slopes (rather than going close to straight up or straight down a slope).

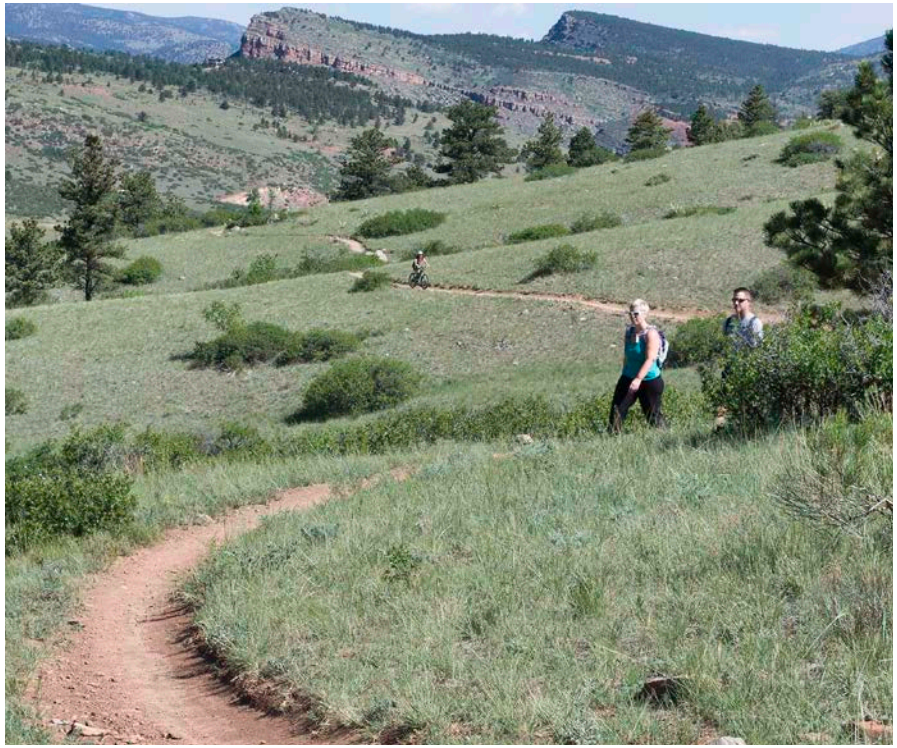
Example yield sign and rules. The yield diagram is used worldwide. Enforcement for MWCD has yet to be determined.

This particular sign is on Picture Rock Trail in Lyons, Colorado. Designed by Pete Webber author of *Managing Mountain Biking: IMBA's Guide to Providing Great Riding* (2007), it was one of the earliest trails that had all eight characteristics by design. The trail opened in 2008.

5. It has reversing grades designed into the alignment for user enjoyment and variety as well as trail drainage.
6. It typically has sufficiently long sightlines to see other nearby trail users (vegetation clearance may be needed in dense understory).
7. It is relatively narrow (5.5 feet or less).
8. It has a shoulder or a relatively easy way for one or both users passing on a narrow trail to move enough to the side to pass (see page 118).

The TMP forms all hiking-MB trails with characteristics 3, 4, 5, 7, and 8 so that the physical structure of these trails supports shared hiking-MB use.

A success story: The caption of the sign photo introduced the Picture Rock Trail that opened in September 2008. At the time of this writing in October 2025, over 17 years later, Picture Rock is still an excellent and beloved hiking-MB-equestrian trail. So yes, successful shared hiking, mountain biking, and equestrian use based on these eight characteristics can be achieved and sustained.



Picture Rock Trail in Lyons, Colorado in 2012, four years after it opened.

Picture Rock Trail in 2012. In soil that displaces and erodes easily, the trail uses a gentle average grade and frequently reversing grades to go around a drainage. It crosses the drainage where it is easiest to cross. TMP trails are intended to look and feel similar as they create sustainability and small-scale fun at the same time.

Shaping lower-use trails by design and user choices

Having lower-use trails (characteristic #2) reduces user encounters and hence potential user conflicts. Lower-use trails also create more peace, quiet, and solitude for users.

At the same time, however, we want trails to have enough use to naturally make them look and feel inviting, well-used (without vegetation in the tread), and safe to use—as opposed to growing over with vegetation from lack of use. Creating enough trail use to keep trails looking and feeling inviting—as well as being able to offer large mileages of both hiking and MB trails—are both part of why most trails in the TMP are hiking-MB trails.

The TMP attempts to form lower-use trails that all receive comfortable amounts of use by creating large trail systems for average MWCD users who typically don't travel too far on trails. MB users, especially intermediate and advanced users, will likely gravitate to the outer trails. Most such users will be new MWCD users attracted by TMP trails. Local residents, hikers and mountain bikers alike, will also likely start their trail trips from trailheads outside of campgrounds. Since the larger trail systems have more trailheads with parking, the design of the systems themselves encourages users to spread out across the system.

MWCD campers will likely be the primary users of trails close to campgrounds. Campers who are intermediate or advanced mountain bikers will likely ride out of the campground area quickly and spend more of their time on trails away from campgrounds. Hence most mountain bikers on trails close to campgrounds will be kids, families, and beginners. To accommodate this type of use mixed with hiking use, trails close to campgrounds will typically be wider and shorter than trails further out.

Use of MWCD trails should also be on the low side because most MWCD lakes are not close to large populations of local users. Trailheads with parking will be designed with adequate but not large numbers of parking stalls. Limiting trailhead parking spaces is a time-proven way of both limiting the number of people on trails at any given time and spreading trail usage out across the larger trail system.

Restricting trail use through management

Trails designated as hiking-MB trails in the TMP can be restricted further if needed. Following are some possibilities:

- Busy trails can be restricted to hiking-only use if necessary.
- Particular trails could be open to MB use in one direction but open for hiking use (1) in both directions or (2) only in the opposite direction from MB traffic.
- If a trail is open for MBs only in one direction, that direction can be permanent or can reverse periodically.
- Temporal management: A trail can be closed to either MBs or hikers at certain times, such as certain days of the week, to enable the other user group to enjoy the trail with fewer user encounters during those times. Temporal management works best for trails used mostly by regular trail users who can plan around the schedule.
- While it is possible for a trail to be restricted to MB use only, it is difficult to envision a MWCD trail where this would be necessary.

These types of restrictions require enforcement. Part of the reason for allowing hiking-MB trails to have two-way use for all users is to cause users to take personal responsibility to be ready for anything while also being respectful of other users—all without need or expectation of additional enforcement.

Ideally, however, the combination of a relatively small population of trail users and multiple high-mileage trail systems should be sufficient to maintain the desired low-but-not-minimal amount of trail use on all or most trails.

User behavior and dominant use on shared hiking-MB trails

Characteristic #1—bikers must yield to hikers—is the most difficult one to achieve in the real world. If hikers typically outnumber mountain bikers on Trail A, some mountain bikers tend to use other trails that have fewer hikers, reducing the number of mountain bikers on Trail A in the long run.

On the other hand, if mountain bikers outnumber hikers on Trail B, hikers on Trail B tend to step off the trail to enable mountain bikers to pass without stopping, and mountain bikers tend to come to look for and expect that behavior. Mountain biking becomes the dominant use of Trail B. If hikers familiar with Trail B start to avoid it in order to avoid so many MB encounters, mountain biking becomes an even more dominant use.

If a dominant use develops on a given trail, MWCD can (1) do nothing, (2) accept it and lean into it by managing the trail primarily for its dominant use, or (3) try to change it. The most appropriate course of action depends on what creates the best outcome in the specific context.

Again, however, with a relatively small population of trail users—many of whom aren't seeking to go too far on trails—and multiple large trail systems where some users—especially regular users—have incentive to spread out, it should be possible for users to harmoniously coexist by spreading themselves out and being respectful of each other when they do meet on the trails.

The TMP and Existing Trails

Each segment of existing trail was evaluated by checking it against all 28 project-specific relationships. If more than a few project-specific relationships were in the "seek to avoid" category, the trail segment was rerouted or decommissioned.

Extensive existing natural surface trails were decommissioned in Atwood, Pleasant Hill, Seneca, and Tappan (Deer, Pine, and Fox trails) because new trails in those areas could provide much better outcomes.

Trails and Hunting

New trails are not intended to adversely affect hunting. Trails were not added to most smaller areas of MWCD lands in part to preserve their current condition for hunting. Boundaries of restricted areas are not planned to change because trails are added to an area.

Hunters will be permitted to use trails for hunting access and transporting harvested game, provided they adhere to designated trail-use regulations.

15

Select Trail Design and Construction Matters

This chapter discusses certain trail design and construction matters pertinent to the TMP.

NATIVE SOILS IN CONSTRUCTED TRAILS

With a few exceptions, dryland soils around the nine TMP lakes are loams.

Trail tread: As natural surface trail tread, typical dryland loams have enough clay to become firm and stable and have enough sand to bear weight well, drain internally, and dry out relatively quickly. In compacted tread, they have considerable resistance to light displacement and erosion forces but can erode and displace much faster with heavier or faster water flows and more intense trail use. In general, they form good to very good trail treads. Variations in clay-silt-sand ratios and soil behaviors were noted, which accounts for the range between good to very good results in natural surface trail treads.

Backslopes: In their native, uncompacted form—especially when freshly exposed within backslopes—prevailing loams tend to be loose, highly erosive on steeper slopes, and prone to sloughing on steeper slopes. The gentler that backslopes are, the more stable they are and the better that they revegetate and accumulate forest litter.

Fillslopes: Prevailing loams in fillslopes become firm after repeated wetting and drying cycles—and especially over the first winter—even without mechanical compaction. As fill, loams with more clay become firmer than loams with less clay, but all of the prevailing loams become firm enough to support partial-bench trails and embankments using the construction method described on page 118.

Fillslopes revegetate faster and more readily than backslopes. Vegetation helps fillslopes become more stable than natural soil firming alone.

Noted exceptions to prevailing loams

Seneca: Slopes above Parkside Campground consist of a heavy clay that holds water and becomes sticky and slick when wet. Compacted soil has excellent resistance to erosion and displacement but uncompacted soil can form gullies on steeper slopes. Uncompacted fillslopes will tend to settle more over time, so mechanical compaction of fillslopes during construction is recommended. Tread may also need to be surfaced with imported material to provide more of an all-weather surface.

Soil in the areas near Noble Cottage Area, West Shore Cottage area, and the marina appear to be closer to typical loams.

Beach City Reservoir: Loam with more sand than usual was noted along the lower part of the accessible trail between Kaylor Road and the stony cliffs to the southwest. Some parts of the tread may need to be surfaced with imported material to provide a sufficiently firm and stable tread for accessible use. Beach City Reservoir may have sandier than usual soils in many areas.

Pleasant Hill: Existing trails north of the horse camp were a bit sandier

than usual and the slopes were less steep. The nearby gorge area (Idlewood Cottage Area to the dam) has some extremely steep slopes with excellent, firm loam for trail tread. In general, the steeper that existing native soil slopes are, the firmer that trail tread in that soil may be.

PARTIAL-BENCH TRAIL SPECIFICATIONS

As much as possible, trails in the TMP traverse gentle to moderate slopes. A few relatively short segments traverse steep slopes.

The behavior of MWCD's typical dryland loams in trails and the process of building trails with machinery combine to make partial-bench trail the best trail construction technique.

A partial-bench hiking trail built in the 1930s blends into its site as if it has always been there. Partial-bench trails minimize the size of the backslope and have fillslopes that are just a bit steeper than the slope below the trail. Since fillslopes readily revegetate because they are made of loose soil, fillslopes disappear relatively quickly. The gentler the backslope is, the better it tends to revegetate, accumulate forest litter, and blend into the site.

In partial-bench construction, half or more of the trail tread is excavated from ("benched into") the slope. The rest of the tread is built up on fill using the soil excavated from cutting the bench. **See diagram on the next page.**

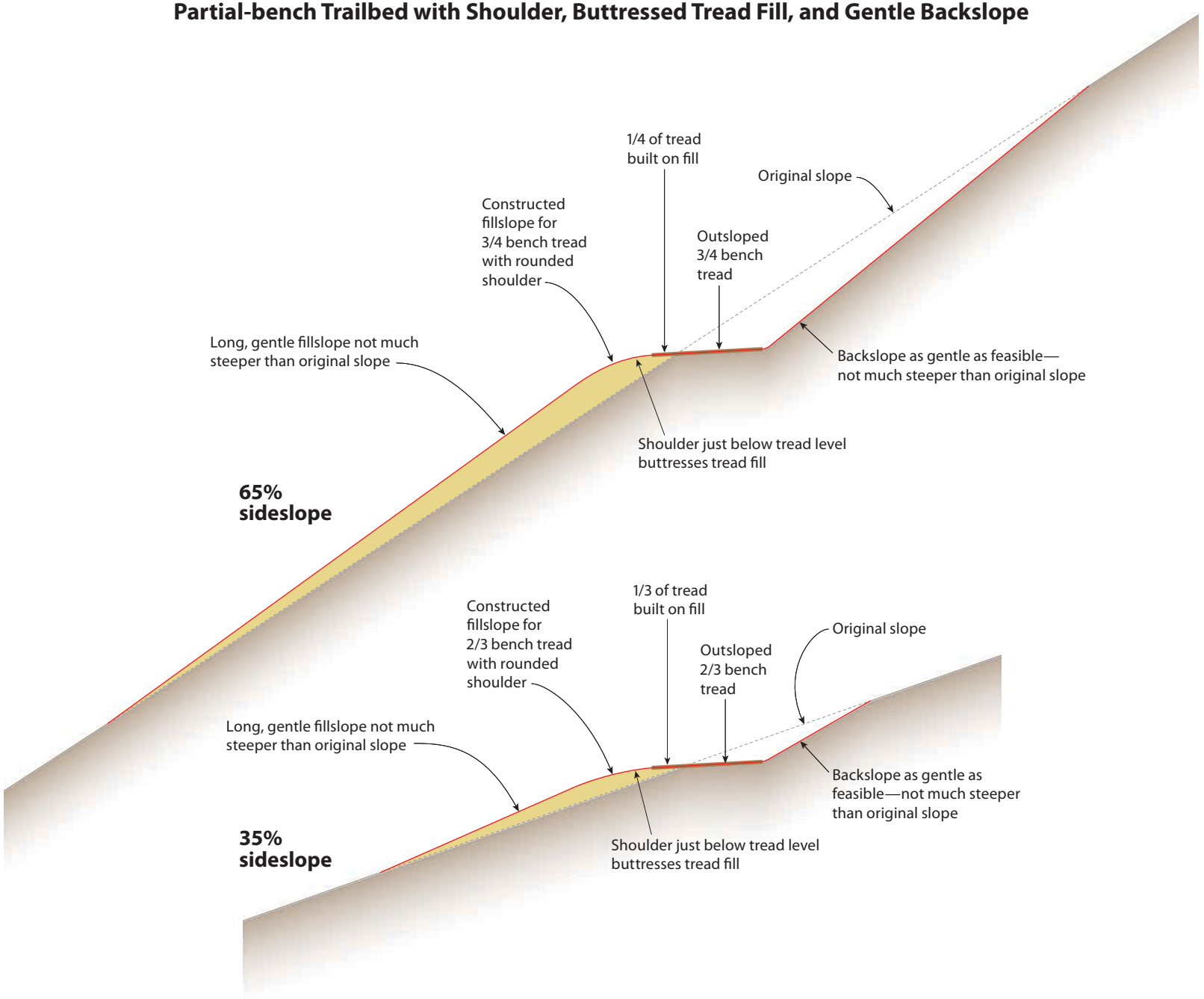
A freshly built partial-bench hiking-biking-equestrian trail with a rounded shoulder described in the diagram on the next page. Note the trees partially buried in the fillslope below the trail; trees don't appear to suffer from this condition.

Rounded shoulder

We use a form of partial-bench construction that forms a rounded shoulder that buttresses the portion of the tread built on fill. The rounded shoulder

- supports the outside edge of the tread fill, preventing the edge of the tread from sliding down the slope.
- becomes increasingly steeper as it extends out across the fillslope, preventing trail users from traveling far from the outside edge of the tread.
- provides some shoulder for user safety and to make it easier for users to pass.
- makes it easier to widen the tread in the future if necessary.
- accommodates "tread creep," a slow process caused by trail users' reaction to compaction and displacement of tread soil. The more that the trail is traveled, the more that soil tends to be displaced (kicked or flicked) out of the tread, causing the tread surface to sink and exposing previously buried roots and rocks. If the tread becomes rough or rutted, users tend to travel on the outside edge where it is still smooth.

Partial-bench Trailbed with Shoulder, Buttressed Tread Fill, and Gentle Backslope



A partial-bench hiking-biking-equestrian trail with a rounded shoulder and creeping tread. Users avoid roots exposed by tread displacement by traveling on the outside edge, which creeps the tread onto the fillslope over time. Soil displaced from the tread lands on the shoulder, building up the shoulder as the tread sinks, enabling the entire tread to creep onto the shoulder over time.

Eventually, that smoother outside edge also displaces and compacts, causing the tread to creep toward the downhill edge. The shoulder gives the tread somewhere to go, supporting the tread as it slowly creeps to the side. And because much of the displaced soil has been landing on the shoulder, the shoulder slowly builds up as the tread sinks and creeps toward it. The process slowly creates a suitable trailbed on top of the fillslope purely through forces exerted by trail users themselves, and the fillslope becomes firmer and more capable of supporting the entire tread with every passing year. Tread on the fillslope is often smoother than excavated tread because it is free of roots and rocks.

Note that tread creep is expected to be minimal in prevailing loams if trail and tread grades are gentle and trail use is light to moderate. But over future decades of trail use, even a small amount of tread creep adds up.

Note that the percentage of tread width that is built on the excavated bench varies with the sideslope (the steepness of the slope). The steeper the sideslope is, the higher the percentage of tread width that is on excavated bench. The upper diagram shows that on a 65% sideslope, 3/4 of the tread is built on the bench cut, aka a 3/4 bench. The lower diagrams shows that on a 35% sideslope, 2/3 of the tread is built on the bench cut, aka a 2/3 bench.

Gentle backslope

The other notable feature of desired partial-bench trails for MWCD is a gentle backslope. Ideally the backslope is not much steeper than the original slope. Compared to steep backslopes, gentle backslopes

- resist soil erosion better;
- slough less;
- accumulate and hold forest litter that visually naturalize the backslope, protect it from splash erosion from raindrops, and slow water flow across the backslope;
- revegetate faster and more thoroughly; and
- blend into the site better.

A partial-bench biking-hiking trail with a gentle backslope resists sloughing, grows plants and moss, holds fallen leaves and sticks, and blends into the site.

For construction specifications, acceptable backslope steepness can be

Good example—gentle backslope: A relatively recently built partial-bench biking-hiking trail with a gentle backslope resists sloughing, grows plants, holds fallen leaves and sticks, and blends into the site. (Also note that the fillslope revegetated.)

Poor example—steep backslope slumped onto the tread and narrowed the tread to half of its constructed width before moss grew on the slumped soil (the lower half of the mossy area that holds fallen leaves). The upper half is too steep to hold any forest litter. This is part of 30-06 Trail in Pleasant Hill.

specified numerically in relation to the steepness of the slope. The exact numbers may depend on soil characteristics and other factors in a particular site or job.

BOLT-LAMINATED TRAIL BRIDGE DESIGNS

Bolt-laminated longitudinal slab bridges are an older, durable, and simple way to span 16-28 feet without using heavy stringers (beams) or a complex truss. These bridges can withstand flooding and are often installed as breakaway bridges over typically low-flow creeks where an exceptional flood may knock them off of their foundations without damaging the bridge itself.

Pros of bolt-laminated bridges

- Bridge structure resists flood damage and can be put back onto its abutments if dislodged by a flood (requires rigging).
- Bridge is relatively thin, enabling it to maximize flow beneath it while minimizing its deck height above the channel.
- Bridge can be installed lower in the creek channel, which creates a more engaging trail experience in undramatic sites.
- Bridge is easy to move if the creek channel changes.
- Bull rails are much faster and easier to build than 42-inch-high railings.
- Bridge is simple and modular enough to build in the shop, disassemble, then reassemble on site.
- Bridge superstructure is easier to transport than heavy timber, steel, or FRC stringers.
- Bridge materials and labor are inexpensive compared to a stringer bridge with safety railings.

Cons of bolt-laminated bridges

- Relatively narrow bridge lacks safety railing, increasing risk when the bridge is slippery, snowy, or icy, especially for users who are less sure on their feet.
- Bridge will visibly sag over time—especially longer spans—because separate bolt-laminated pieces are less stiff than timber stringers.
- Bridge looks relatively inexpensive and utilitarian.

Nine pages of photos of two existing bolt-laminated bridges follow.

Example 1

Location: Boulder County Parks & Open Space (Colorado), Betasso Preserve, Fourmile Link Trail over Fourmile Creek
Dimensions: 28 feet long, 4 feet wide (~33 inches usable between 6×6 rough sawn timber bull rails)
Year constructed, trail type, amount of trail use: 2012, mountain biking and hiking, moderate traffic

Photographed August 2012 in its initial location about one month after this new trail opened to the public. Note the breakaway anchor cable threaded through an eyelet bolted to the end of an all-thread rod (the other end of the cable loosely wraps around a large tree). Abutments are dry-laid stone. While the ends of the span are close to the ground on top of both abutments, the bridge is supported only by lumber sills at its very ends.

Underside shows that there are no gaps between 20-foot-long standard 2×12s. Butt splices are staggered. Bull rails are attached with long zinc-plated bolts with wide pan heads on top of the bull rail and 2-inch ogee washers and nuts below deck.

All wood in the superstructure, sills, end caps, and wearing surface (tread) are standard pressure-treated 2×12s. Only the bull rail and 2×6 spacers are full-dimension, rough-sawn, pressure-treated timber.

Sills are stacked 2×12s resting on compacted fill behind the stone abutment. The anchor cable and its eyelet on the end of one of the all-thread rods are visible.

Note 2×6 block mounted on top of sill to keep the bridge from sliding sideways on the sill. These blocks are at all four corners. The span is not attached to the sills or the blocks. Note the tapered, elevated ends of the bull rails.

2013—before flood: Initial bridge location in winter. Compare the large tree to the left of the far end of the bridge to which the bridge is cabled and the right side of the far side abutment to the "2015—after flood" photo at right.

2015—after flood: A powerful flood occurred. New channel is far wider than before and no longer under the bridge. Just over half of the bridge is visible; the remainder is buried under debris.

2015—after flood: Bridge in the background after a flood cut an entirely new stream channel on the near side of the bridge. The far end of the bridge is still on its original abutment (compare to "before" view).

The near end of the bridge is barely visible at the water's edge beneath flood debris (see yellow arrow). Note the doubled end cap. While one dry-laid stone abutment was destroyed and washed away, the bridge itself is not damaged despite the powerful flood.

2021—second location after the flood: The trail and undamaged bridge were relocated upstream to a place where the creek was still narrow. New dry-laid stone abutments were built. Note how high the span is above the creek with only a bull rail—considerably higher than in its initial location (see page 122), indicating the agency's confidence that users can use the bridge safely. Photographed about 6 years after the reroute was opened. As of late 2025, the bridge—at about 13 years old—shows no problems and has not been subjected to any additional flood events.

While the bridge and the trail beyond it are closed to equestrians, it's partly because of the bridge but mostly because of two steep, long stairways, the first of which is just beyond the bridge.

Detail of diagonal splice in timber bull rail and butt-end splice in the bolt-laminated slab.

Eyelet and ogee washer bolted at the end of an all-thread rod that extends through the entire deck slab.

2023: The bridge has an obvious sag that developed in its first two years. Every long-span slab deck span sags to some degree. The longer the span and the thinner the slab, the more it sags.

Example 2

Location: City of Boulder (Colorado) Open Space next to Bear Mountain Drive, Devil's Thumb Access Trail across Bear Creek. Lat, lon: 39.974394°, -105.267518°
Dimensions: 20 feet long, 5 feet wide (~4-feet usable between 4×6 full-dimension timber toe rails)
Year constructed, trail type, amount of trail use: Late 2013-early 2014, hiking-only, high traffic. Photographed 2021 (at 7 years old).

Deck made of standard pressure-treated 2×8s, 20 feet long. Sills, end caps, and toe rail are rough-sawn, pressure-treated timber. Toe rails are 4×6 timbers bolted through 2×6 spacers. This bridge sags a bit but less than the 28-foot-long Fourmile Creek bridge.

Wearing surface (tread) boards are laid between the toe rails, largely blocking the drainage holes under the toe rail. This placement makes the bridge profile thinner to floodwaters but less visually interesting than the Fourmile Creek bridge. Wear surface boards are standard 2×12s.

Bolt-laminated timber sills are bolted to zinc-plated gabions that are painted dark gray to minimize their appearance. The all-thread rod extending above the sill keeps the bridge from sliding off of the sills unless a flood lifts the bridge over the end of the rod. As of late 2025, this bridge has yet to be moved by a flood.

The bank on the near end of the bridge is lower than the far side. A stone and earth ramp was built and paved with dry-laid stone to ramp up to the raised bridge. The ramp can be rebuilt if damaged in a flood. Note a nearby house in the background at the very top of the photo; this bridge is only 200 feet from the trailhead on a busy city street. It uses extra width to compensate for the lack of safety railing.

Ramp and bridge abutment seen from the side.

Recommended laminate slab component sizes for span lengths for typical trail loads:

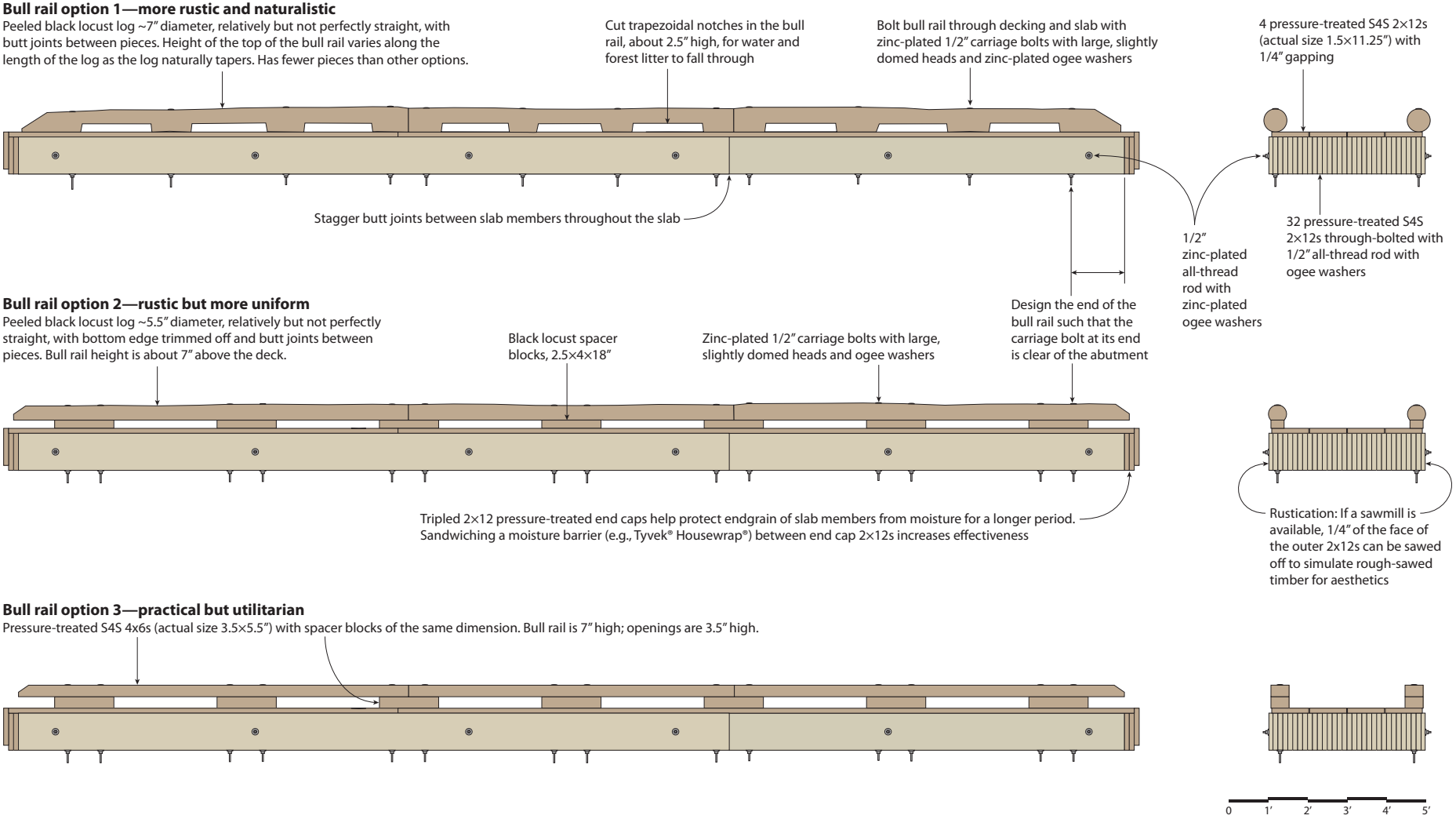
- 2×8s for spans >16 to 20 feet
- 2×10s for spans >20 to 24 feet
- 2×12s for spans >24 to 28 feet

The width of the bridge can vary as needed.

Drawings on the next page are based on the bolt-laminate bridge in Example 1, a 28-foot span, with adaptations for TMP contexts including higher openings in the bull rail at deck level. Structure as drawn is 28'9" long including end caps, 47.5" wide at its widest (usable width ~35.25" to about 37" between bull rails depending on bull rail option), and 13.25" thick from the deck surface to the underside of the deck.

The diagrams show three different, less massive options for bull rails based on relatively less need for TMP trail bridges to withstand floods as large as the Example 1 bridge needs to withstand. In most TMP contexts where bolt-laminate bridges would be used, bridges would likely never be washed off of their abutments. TMP bull rails can also be lower because snow accumulation in the MWCD region is minimal. Larger openings in the bull rail make it easier for forest litter to blow or be kicked off of the deck.

Bolt-Laminated Trail Bridge Slab Details and Bull Rail Options



"S4S"in the drawings stands for surfaced four sides, i.e., smooth, readily available pressure-treated wood from lumberyards (as opposed to rough-sawn or full-dimension lumber).

Most TMP bolt-laminated bridges would rest on gabions. Using large stones to retain the trail tread ramp at the ends of the bridge, as shown on page 123, would visually anchor the bridge in the site. Such stones would usually need to be brought to the site.

FIBERGLASS-REINFORCED COMPOSITE (FRC) TRAIL BRIDGES

The TMP uses FRC trail bridges for spans between 30 and 80 feet, especially in remote sites. These engineer-stamped structures are built to order and shipped as kits with all parts cut, all holes predrilled, and all hardware included. No single part weighs more than two people can comfortably carry. Long top and bottom chords are spliced in longer spans.

These spans are light in weight. The bridge below weighs only about 8,000 pounds (4 tons). Being light in weight makes it easier to transport the components to remote sites accessible only by trail. Bridges can be bolted together onsite, either directly on their foundations (supported by temporary supports until the trusses are assembled) or assembled nearby and hoisted onto the abutments with rigging.

Being lightweight also means that their foundations can be relatively light in weight. Most FRC bridges in the TMP would be installed on gabions.

Being bolted together has an advantage over welded steel structures. If a

A 70-foot long, 4-foot wide FRC bridge on Buckeye Trail at Blue Hen Falls in Cuyahoga Valley National Park. The X-truss used in this bridge is the most attractive truss option offered by bridge manufacturers and is recommended for MWCD FRC bridges.

FRC bridges are very strong, fully capable trail bridges.

tree falls on an FRC bridge, broken components can be replaced in the field without replacing the entire bridge. FRC bridges, however, tend to flex and rebound rather than break under such impacts, minimizing damage.

The composite material in this structures is a polymer that looks and feels like hard plastic, which we notice most in the railings when on the bridge.

FRC bridge with standard FRC mid-rails (the narrower safety railings between the top chord and the deck) looks and feels like a lot of plastic polymer.

Both photos above: A weathering steel truss bridge on the Pony Express Trail in Utah softens its contemporary appearance and looks more historic by using softwood 2×6 mid-rails instead of standard thin steel mid-rails. It works; we process the bridge as being more naturalistic than we would with steel mid-rails.

To make FRC bridges look and feel more naturalistic, MWCD should consider ordering wood mid-rails (the narrower safety railings between the top chord and the deck) instead of FRC mid-rails. Bridge manufacturers can cut, drill, and ship wooden mid-rails as part of the kit.

Mid-rails are not structural. Thinner wood such as ipe 1×4s or 5/4×3s cut from decking could be used. Ipe is a naturally rot-resistant, chemical-free, strong, tropical hardwood that weathers to a soft gray. Other naturally rot-resistant species can also be used. Mid-rails are typically attached to the vertical posts in the truss spaced approximately 5 feet apart.

Wood mid-rails may also save money since FRC mid-rails cost over $1,000 per every 10 linear feet of bridge mostly due to the cost of FRC material. Ipe and similar species, however, are not inexpensive so cost savings may be reduced.

DELIVERING MATERIALS TO REMOTE TRAIL CONSTRUCTION SITES BY BOAT

The lakes create the unusual opportunity to transport materials such as boardwalk and bridge components, concrete mix, stone, gabion panels, and tread surfacing materials by boat. Delivering materials by boat could make it much easier to deliver to remote trail construction sites at Clendening, Leesville, Piedmont, and Tappan, and possibly at Atwood, Charles Mill, and Pleasant Hill. This method is especially useful for delivering boardwalk and bridge materials to trail crossings of bays and inlets near the lakeshore.

Floating docks could be installed temporarily at building sites as a way to minimize site disturbance.

MWCD could also use its boats and staff to provide water transport services to trail contractors as a way to reduce construction time and cost that contractors would otherwise spend transporting such materials by trail or helicopter. Trail contractors would be expected to lower their construction bids to reflect their time and cost savings, thereby saving money for MWCD.

TEMPORARY INTERMEDIATE SUPPORTS FOR LONG-SPAN STRUCTURES

Temporary intermediate supports can strengthen bridges and other long-span structures enough to safely transport heavy trail construction equipment across them. This practice is especially useful for structures that are less than about 12 feet above ground. Used appropriately, this practice could make it unnecessary to engineer such spans to carry such equipment as part of the structure load specification.

A temporary prop under the center of a short, light-duty, pedestrian stringer bridge enables trail equipment, including excavators and power wheelbarrows fully loaded with trail tread surfacing mix, to safely cross the bridge. The prop was screwed to the stringer to anchor it. Plywood was also tacked to the wooden bridge deck to prevent skid-steers from leaving black rubber tracks on the deck.

Temporary supports can be as simple as sections of relatively small diameter tree trunks harvested nearby.

For some structures, it may be possible to stow the props beneath the structure, even perhaps hung under the structure to keep them off the ground and out of sight.

For engineered structures, well-managed use of this technique can be discussed with the engineers as part of the load specifications.

TRAIL ALONG SLOPE HINGE

Trail segments in the TMP are often aligned along what can be called a slope hinge. A slope hinge is a topographic fold—much like a hinge—where the slope below the fold is steeper than the slope above the fold.






Aligning a trail along a slope hinge has several benefits:

- People enjoy being along landscape edges such as slope hinges. The sharper the hinge, the more anchored the trail feels. Being along a slope hinge also feels like being on stage, higher up with a better view as the land drops away below. The photo at top left—a trail on an almost level area above an extremely steep ravine—is the most dramatic case.
- The trail is easier to build and friendlier to users when it is above the hinge because the sideslope is less steep.
- Trails along a slope hinge drain exceptionally well because surface water easily drains down the steeper slope below. Subsurface water also drains faster along a slope hinge as water seeps downward and outward below the trail faster than it would otherwise. Hence trails along slope hinges tend to be drier than trails traversing a more constant slope.

Embankments and partial-bench trail construction also create trail along slope hinge at a small scale, with all of the benefits listed above.

16

Public & Stakeholder Engagement and the TMP

COORDINATION WITH STAKEHOLDER GROUPS

Trail groups such as the Buckeye Trail Association (BTA) and Ohio Horseman's Council (OHC) were consulted early in TMP development, as was MWCD's Development Advisory Committee for trails (DAC trails sub-committee).

Ongoing coordination will be made with user groups that have an interest in MWCD trails, cottage lessees, campers, trail users, and others who have a vested interest in the development of this trail system.

MWCD TRAILS DEVELOPMENT SURVEY

From Sept. 24 through Nov. 4, 2024, while the TMP project was in its early stages, 915 people responded to MWCD's Trails Development Survey. The online survey was extensively marketed in the MWCD region, including public MWCD sites and outreach to regional trail user groups. The survey has 14 questions, two of which are open-ended.

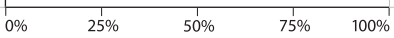
TMP planners at the time studied the survey results. They concluded that most of what respondents said about their activities, preferences, and requests would be supported by the trail systems that the TMP would create.

The following presents the survey responses and discusses how they relate to the TMP.

Question 1 (Q1). What MWCD location do you visit most often?

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
Atwood Lake		28.74%	263
Pleasant Hill Lake		20.77%	190
Seneca Lake		11.48%	105
Tappan Lake		8.42%	77
Leesville Lake		6.89%	63
Charles Mill Lake		6.67%	61
None		5.14%	47
Piedmont Lake		4.92%	45
Other (please specify)		2.40%	22
Clendening Lake		2.19%	20
Wills Creek Reservoir		1.86%	17
Beach City Reservoir		0.55%	5



Responses appear to be shaped by where respondents live and which lakes have existing trails. The response curve seems to correlate with the residential population close to each lake combined with the presence of existing trails: lakes with trails generally rank higher than lakes without trails. Evidence for this theory is that Leesville—with few facilities and almost no trails but surrounded by residents with easy access to the lake—ranks just below Tappan even though Tappan has extensive facilities and extensive existing trails. Pleasant Hill has trails and ranks much higher than Charles Mill which has fewer trails but is much closer to the city of

Mansfield.

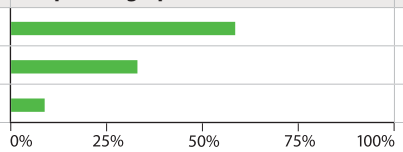
This theory suggests that many survey respondents do in fact live close to a MWCD lake and that the existence of trails is already shaping which lakes they visit.

That Leesville ranked fifth strengthens the case for developing the lake-looping Leesville Trail there.

Q2. How far do you live from the nearest MWCD park or marina?

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
0-25 miles		58.36%	534
25-75 miles		32.90%	301
75+ miles		8.74%	80

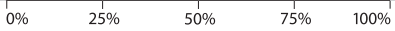


Responses show that 58% of respondents live within 25 miles of an MWCD lake and 91% live within 75 miles. Nearly 9% live further away than 75 miles, demonstrating the appeal of MWCD lakes.

Q3. When planning a trip, are your decisions influenced by the availability of trails?

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
Strongly agree		39.45%	361
Agree		36.94%	338
Neither agree nor disagree		17.70%	162
Disagree		3.93%	36
Strongly disagree		1.97%	18

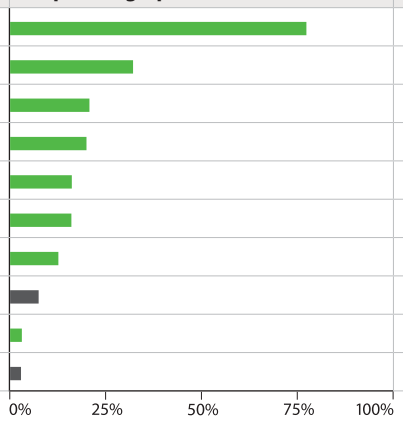


Over 76% of respondents agree that the availability of trails influences their trip planning, which also shows that 76% of respondents are trail users who plan their travels around trails to some degree. Only 6% report that the availability of trails has little influence on their trip planning, which also indicates that only 6% are relatively uninterested in trails in their travels.

Q4. What trail-related activities do you participate in? (Mark all that apply)

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
Hiking		77.16%	706
Biking		32.02%	293
Paddling		20.66%	189
Mountain biking		19.89%	182
Birding		16.07%	147
Equine riding		15.96%	146
Trail running		12.57%	115
Other (please specify)		7.43%	68
Bouldering		3.06%	28
None		2.84%	26



Among respondents, hikers outnumbered bicyclists more than two to one. Mountain biking and paddling virtually tie for third place. These results are consistent with the fact that the MWCD lakes that respondents visit most have hiking trails and bikeable campground-area roads while none of them have mountain biking trails (except for the remote 30-06 Trail at Pleasant Lake). The most-visited lakes—Atwood, Pleasant Hill, Seneca, and Tappan—have existing bikeable paved trails.

The TMP

- expands hiking opportunities with virtually all 297 miles of trails open to hiking.
- increases biking by increasing bikeable paved trail mileage by 16 miles if all proposed paved and bikeable trails are built.
- doesn't address water trails because rivers are outside the scope of the TMP lakes.
- adds 188 miles of mountain biking trails at 8 lakes including over 57 miles at Clendening.
- supports birding as a passive trail activity but doesn't directly address birding or birding trails.
- increases MWCD equestrian trail mileage by 4.5 miles but also reopens the only MWCD trail that links all equestrian trails in Pleasant Hill Lake,

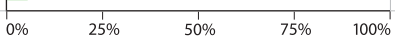
Malabar State Park, Mohican State Park, and Memorial State Forest into a large, continuous trail network for equestrians and hikers.

- expands trail running opportunities with virtually all 297 miles of trails open to trail running.
- doesn't directly address bouldering but puts trails through potential bouldering areas at Beach City Reservoir.

Q5. How many days in a month do you participate in trail-related activities?

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
1-5 days		50.27%	460
5-10 days		25.90%	237
10+ days		18.47%	169
0 days		5.36%	49

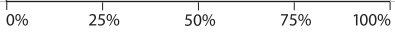


With 297 proposed miles of trails, people in the MWCD region would be able to visit trails more often if they so desire.

Q6. Are you a member or volunteer for any trail organizations (Ex: Buckeye Trail Association (BTA), North Country Trail Association (NCTA), Ohio Horseman's Council (OHC), Mohican Malabar Bike Club (MMBC), Cleveland Area Mountain Bike Association (CAMBA), etc.)?

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
No		75.08%	687
Yes		24.92%	228

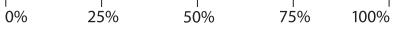


That three-fourths of respondents are not associated with any trail organization shows that a wide range of people responded to this survey.

Q7. What types of trails would you like to see MWCD develop at its facilities? (Mark all that apply)

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
Hiking		61.75%	565
Multi-use		44.15%	404
Water trails		26.67%	244
Mountain biking		24.04%	220
Equestrian		16.83%	154



While the TMP adds a great many hiking and mountain biking trails, virtually all of them are planned and designed as shared-use trails that accommodate both uses and allow two-way travel for both uses. For details, see page 114.

For multi-use (paved) trails, see the preceding commentary for Q4.

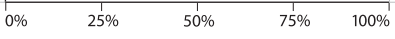
Water trails are not in the TMP because navigable rivers are outside the land area of the TMP lakes.

For equestrian trails, see the preceding commentary for Q4.

Q8. What trail surface material would you prefer for newly constructed trails?

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
Natural surface (soil)		66.23%	606
Asphalt		17.60%	161
Crushed stone		16.17%	148



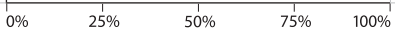
The vast majority of new trails in the TMP are natural surface trails, a category that also includes crushed stone, aggregates, and other naturalistic, unbonded materials.

New asphalt trails extend existing asphalt trails in and near campgrounds.

Q9. What trail width would you prefer for newly constructed trails?

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
3 ft - 6 ft		50.38%	461
Under 3 ft (single track)		28.52%	261
No preference		11.80%	108
6 ft - 10 ft		9.29%	85



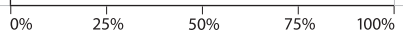
Nearly 79% of respondents prefer new trails to be ≤6 feet wide, reflecting what the TMP proposes.

The TMP leaves trail width for any given trail to be determined in Stage 2. Generally, however, natural surface trails are intended to be built with widths of 3 feet, 5.5 feet, or possibly wider for high-traffic trails. New paved trails would typically be about 10 feet wide but actual width would be determined at the time of detailed field planning.

Q10. What trail amenities would you like to have at MWCD locations? (Mark all that apply)

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
Restrooms		64.59%	591
Parking and access		59.23%	542
Boardwalks/bridges		45.90%	420
Nature play		28.63%	262
Drinking fountains		21.75%	199
Pump tracks/bike skills course		18.03%	165
Storybook trails		15.41%	141
Handicap accessibility		15.30%	140
Hitching posts/highlines (equine)		14.32%	131
Interpretive signage		12.90%	118
Sensory trails		12.35%	113
Archery trails		9.73%	89
Mounting ramps (equine)		9.62%	88



The TMP addresses the following of the above amenities:

- **Restrooms:** Larger trailheads have provisions for restrooms. See page 113.
- **Parking and access:** The TMP includes 58 new trailheads with parking. Many of these trailheads create access at more remote parts of trail systems. Multiple trail connections to campgrounds and individual campground areas invite campers into the trail system. Connector trails extend to cottage areas and residential areas adjacent to MWCD property wherever feasible.
- **Boardwalks and bridges:** Although the TMP strives to minimize the number and length of these structures as a matter of practicality, it adds them wherever necessary. For their numbers, see "The TMP By the Numbers" on page 7.
- **Accessible trails:** The TMP adds a combined 30 miles of accessible trails at all 9 lakes.
- **Archery trails:** The TMP adds an archery trail at Seneca.

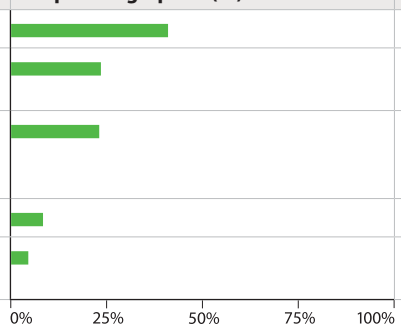
Nature play areas, drinking fountains, pump tracks, bike skills courses, storybook trails, equine hitching posts/highlines, interpretive signage, sensory trails, mounting ramps, and other relatively small features are highly site- and context-dependent. Therefore, such features could be developed through subsequent detailed planning where both need and opportunity exist.

Multiple respondents mentioned benches, better trail signs, trash cans, and primitive camping as desired trail amenities in write-in comments.

Q11. What type of overnight accommodations do you prefer when staying at a trail destination?

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
RV park/campground		40.87%	374
Tent/primitive camping (no electric or water)		23.39%	214
Short-term vacation rentals (Ex: AirBnB, VRBO, cabins, glamping)		22.95%	210
Backcountry camping		8.31%	76
Adirondack-style shelter/ lean-to		4.48%	41

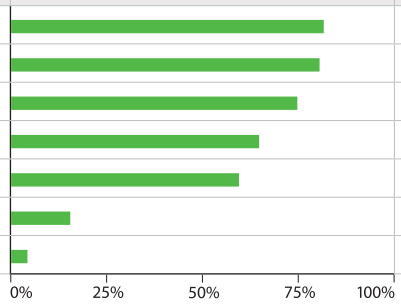


TMP planners expect demand and utilization for the top four choices to increase as trails are constructed, especially tent/primitive camping at the lakes with larger "backcountry"-style trail systems (Clendening, Piedmont, Leesville).

Q12. What are your motivations for using trails? (Mark all that apply)

Number of responses (N): 915 answered, 0 skipped
Responses are ranked from highest to lowest

Answer choices, ranked	Responses graphed (%)	Responses	N
Health and wellness		81.42%	745
Connection to nature		80.33%	735
Relaxation		74.54%	682
Explore new places		64.59%	591
Scenic vistas		59.34%	543
Hunting and fishing access		15.41%	141
Alternative transportation		4.26%	39



For questions 12 and 13, respondents overwhelmingly mention connection to nature, health and wellness, and relaxation as their motivations for using trails—even though respondents represent a wide range of people.

Q12 also included an "Other" write-in category that received the following 41 responses. These responses begin to reveal the wide range of respondents.

1. Revel in God's beauty and grandeur
2. Excitement, Fitness, Play
3. Walking dog
4. Social
5. Enjoying time with my family in the outdoors
6. Trails for golf carts
7. training for marathons
8. Cubscout and boyscout adventures
9. The near death experience that mtb offers
10. Weekend trips with my adult kids. Photography, interpretive hikes, wildflowers,
11. Birding
12. Walking dogs
13. Spending time with my wife and kids in nature.
14. Autistic child enjoys the outdoors
15. Horse Riding
16. Scouting activities.
17. Mountain biking
18. It's fun
19. Boy Scout backpacking
20. Birding, exercising my dogs
21. Social aspect of riding with friends/others
22. Horse back riding
23. Racing and other events in the woods
24. Make trails to connect Cottage Areas
25. Equine health, fitness
26. Trail riding a motorcycle.
27. Equestrian riding
28. The horses love seeing new places
29. Horse riding
30. Exercising my horse
31. Kataking
32. Dog adventures
33. Fun
34. Adrenaline
35. Time together as a family with our children.
36. Usually training for a trail race
37. Connections with my equine
38. Family time
39. Boating, Canoeing and Kayaking
40. None
41. Enjoy the outdoors & the natural beauty it offers

Q13. What experience do you most often seek/enjoy while using trails?

Number of responses (N): 533 answered, 382 skipped
Percentage of responses: 58.25% answered, 41.75% skipped

This open-ended question was worded to focus responses to a simple yet key question without biasing the responses. The question was intended to capture what respondents say in their own words.

Over 58% of respondents took the time to respond. Although this question wasn't intended to duplicate the previous question Q12, the responses are very similar. Here, however, unfiltered responses are far more personal in the respondents' own words, and we see even more about the range of respondents as people.

The entire, unedited list of responses follows, as well as a summary of the list. The summary for Q13 also sheds more light on the previous question Q12.

1. Fun!
2. Fun
3. Prayer
4. Hunting
5. Connecting with nature along with other people.
6. Seeing wildllife
7. Challenging trail features
8. FAMILY TIME
9. Trees! Nature!
10. Just getting away from the noise and busyness of life and enjoying the peacefulness of nature.
11. Connecting with nature, keeping fit (limited noise pollution from roads)
12. Beauty
13. Watching and interacting with nature
14. Nature, solitude.
15. Enjoyment of natural areas, scenery of woods, lakes, rocks. Good exercise and varied terrain.
16. Trees, bird, water ways
17. Connecting with nature and natural systems
18. peace, quiet, calmness
19. Views
20. Seeing un-cut forest.
21. Connection to nature for my toddler and my self
22. Quiet, wooded area with varied skill level, natural soil, and the ability to see various natural, beautiful sites.
23. Connection with nature and enjoying the scenic views of the local landscape.
24. Connecting with nature
25. Exercise
26. Connecting with nature
27. Running in to wild life, seeing the flowers and tress.
28. To connect with nature and find peace from an overstimulating city.
29. Viewing flora and fauna
30. Free range
31. Exercise for myself and my dogs
32. Nature
33. Wildlife
34. The smell of the forest.
35. Trail running
36. Wildlife and scenic views
37. Sounds & sights of nature
38. Quiet, wildlife, fauna
39. Water view
40. Hiking
41. Peace and tranquility , watching birds
42. Nature
43. Enjoy looping trails, trails heading to a scenic destination (waterfall, rock formation, overlook,etc). Mountain biking or riding. Family friendly trails and harder, longer trails.
44. Hunting/Fishing with E-bike access
45. Views and some technical features. Flow trails
46. Hiking and MTB. Love to see great views.
47. Peaceful
48. I love the fresh air and time that can be spent in nature. My children love the outdoors, and trails that can accommodate my family is essential.
49. Nature
50. Peace
51. Nature, wildlife, photography
52. There is no where for golf carts. We would love to use them.
53. Relaxation
54. Wildlife
55. Quiet solitude
56. Peace and quiet. Being in nature
57. Fall colors Winter s energy Birding
58. Seeing the woods,nature
59. Just take in nature it rejuvenates you!
60. Peace quiet and relaxation
61. Something fun, and challenging, as close to natural nature as possible
62. Fresh air and meeting people
63. Walking as a family
64. Nature!
65. quiet time- looking and learning..
66. Relaxation and scenic views.
67. I love seeing fun and interesting natural landmarks like cool rock formations, waterfalls, etc.
68. Nature and fitness
69. Exploring nature and great opportunity for Self Care and relaxation
70. Just being outside in nature.
71. Traditional single track mountain biking, leave the excavator at home and utilize natural terrain that various trail users can all share.
72. Connecting with nature.
73. Mountain biking
74. Being in nature and observing all there is
75. Good weather
76. Outdoor time
77. Being in Nature
78. Just being in nature
79. Fishing
80. Views
81. na
82. A safe one
83. Scenic, wildlife, exercise
84. Joy of walking through nature. Trails that are marked clearly and taken care of.
85. Being out in nature enjoying the quiet of the woods or enjoying a water view
86. Sights and sounds
87. Hiking
88. Views
89. Being outside.
90. Just spending time with my family and disconnecting.
91. Recently it has been to make memories with my young kids. We have been seeking out paved multi-use trails in a scenic / nature location to push a stroller, ride scooters, and ride balance bikes. When using these multi-use trails or hiking trails we like loop trails with the option of an either do a full loop or cut the distance down incase the kids aren't up for a long distance.
92. I like when trails offer varying distances. For example, a trail has a shorter loop and that same trail goes farther. Loops are great! Rather than turning around and retuning the same path.
93. Resetting and reconnecting with myself and nature. Feeling calm and happy.
94. Seeing flora, fauna, birds and unspoiled nature.
95. Hearing the nature
96. Solitude
97. I like trails that are well taken care of that I am able to fit my kiddos stroller down in case they can not make the whole trail. We love seeing all the story book forests.
98. Nature, birding, and being with my family.
99. Exercise, archery, seeing the beautiful views
100. Multiple terrain types. Natural waterways.
101. Just enjoying natural
102. Exercise and exploring nature
103. Views of nature
104. Just being in nature being by water seeking waterfalls
105. Adventure and adrenaline
106. Quiet and remote areas.
107. Seeing animals & plants in nature.
108. Lake view
109. Exercise and views
110. Relaxation and connect with nature
111. Solitude
112. Disconnecting from daily life
113. Serenity
114. Peacefulness
115. Driving our golf cart through the park
116. Mindfulness
117. Nature.
118. Quiet time outside, hiking

119. Escape to nature
120. Trees and wildlife
121. We enjoy finding trails that lead to unexpected finds such as waterfalls, bridges, etc.
122. Explore nature
123. Wildlife sightings
124. Meeting others who enjoy the outdoors
125. Nature, peaceful time out doors
126. Nature and exercise
127. Tranquility
128. Nature and serenity
129. Use the trails at Bark Camp State Park extensionly.
130. Views ..plant identification
131. something with a view and changes in elevation.
132. Wildlife
133. Being in nature
134. Just the nature and memories and fun with family and friends
135. Photography and birding
136. Enjoying nature
137. Sight seeing/wildlife
138. I enjoy getting to see new sights and connecting with nature while getting to ride my bike and exercise
139. a place to enjoy a walk in nature with my dog
140. Nature and seeing wildlife
141. solace of nature while running
142. Nature
143. Nature
144. Nature and fresh air
145. Scenery, water
146. Being in nature and enjoying the beauty
147. Geocaching
148. A physical challenge & solitude.
149. Peace of mind
150. Birding and escaping the crowds.
151. Places to walk my dog
152. Quite, peaceful time to bird watch, observe plants and insects and get access to areas to fish or enjoy nature.
153. Exercise while connecting with nature
154. finding connection with nature
155. Watching wildlife
156. The views
157. I enjoy taking my dog out to get exercise and really connecting with nature.
158. Walking our pups in the peaceful, calming outdoors
159. Family bonding
160. Nature
161. Hunting and Fishing- Nature
162. Views
163. love to relax and enjoy the otdoors, either hiking or biking, occasionally kayaking
164. Places to sit (rocks, logs) to reflect, read, or just sit in silence I like moderately difficult and lengthy trails
165. Hunting
166. Being in nature
167. Paved bike trails are mom's absolute favorites along with pump it tracks. But mountain bike trails would be amazing too
168. Primitive camping
169. Maybe social engagement. Maybe music (in headphones).
170. Non commercialized as close to natural as it can be.
171. Relaxation
172. Good exercise mixed with relaxing scenes.
173. commune with nature
174. Health and relaxation
175. Hiking and mountainbiking
176. Outdoor interaction
177. A beautiful hike in the woods that connects us to nature.
178. Enjoying nature with the family.
179. Scenic, historical
180. Enjoy nature
181. Being in nature
182. We love just being out in nature and enjoying our lake.
183. Immersion in nature
184. Tranquility
185. We enjoy relaxation and fun of biking on trails without traveling 45 minutes to Lisbon, Canfield, etc to ride.
186. Being outdoors in nature, hiking with my dog and family. Being a trail volunteer and working with other volunteers to maintain a small section from Buffalo Hills Camp to Skyline Resort.
187. Mountain biking for fun and fitness in nature.
188. Hiking and enjoying atmosphere
189. Mountain Biking
190. Horse Trails
191. A day on the water or on the bike path.
192. Observing plants and animals
193. Connecting to nature. A spot to have a drink or snack would be appreciated.
194. Mountain Biking
195. Thrill of challenging trails
196. Mountain bike
197. Challenging trails in a beautiful natural setting.
198. Mountain Biking
199. Scenery
200. Being in nature, relaxing, spending time with family
201. new challenges, scenic views
202. mountain bike
203. Fun
204. get out in nature and get some exercise. fun trails with mix of features and elevations. in the warm weather its nice to have a beach to hop into the lake afterward to cool down..
205. Nature, wildlife, nice people
206. My sanctuary place
207. Challenging mountain bike trails
208. Exercise and time in nature.
209. Connection to nature and exercise.
210. Solitude. Challenging MTB trails.
211. Mountain Biking
212. Bagging trail miles & viewing overlooks, waterfalls & rock outcrops.
213. Exercise
214. Tone with family
215. Adventure
216. Connection to Nature
217. Well designed and maintained mountain biking trails
218. Fitness is a by-product of the mental health and stress relief. I have taken many visiting birdwatchers out at Tappan during migration and they are always impressed
219. Enjoying the outdoors while riding mountain bike trails.
220. I most enjoy trails that have a scenic view, waterfall or significant point of interest whether it be natural or historical on the route. I also look for trails with little to no traffic noise.
221. Interacting with nature
222. Well maintained trails
223. ?
224. Connecting with nature and seeking solitude
225. Strong community and infrastructure. Progressive design so I can bring my younger kids out but also to improve my own MTB skills
226. Mountain biking
227. Exercise
228. Getting fit in Nature
229. Mountain biking
230. Downhill mtn bike trails with good flow, features & good amount of climbing & decending
231. I ride my mountain bike often on trails across Ohio.
232. Relaxation
233. Getting away from city life and enjoying peace and quiet.
234. Enjoy friends and family riding together
235. Mountain biking both with and without the family as well as hiking with the family.
236. professionally designed and built trails that are easy to navigate
237. Scenery, easy access
238. Waterfalls
239. Being in nature
240. Enjoying nature with my family
241. Horse back riding
242. Visiting new places
243. Seeing new places while exercising
244. Solitude
245. Peaceful time in nature.
246. new hidden vacation experiences near where I live that are just as cool as happenings out of state.
247. Horse back riding
248. Enjoining a clean park. Visiting nature.
249. Horseback riding
250. scenic views, diverse landscapes, adventure, wildlife, cultural/historical significance, peace, exercise, solitude, trails that are rugged and far from commotion
251. The quietness of the woods and the animals in the trail
252. For safety, separate bike trails from walker/ hikers.
253. 'And into the forest I go, to lose my mind and find my soul" -John Muir
254. Peaceful solitude to enjoy nature!
255. Seeing wildlife and enjoying nature
256. Thrill of riding a motorcycle
257. Riding my horse safely and enjoying nature and the peacefulness of the forest/woods and seeing the wild animals that live there
258. The serene atmosphere with my horses and the natural atmosphere that being on a horse that you can see. My life stresses are released just by riding my

horse in the stillness of nature.
259. Peace and rejuvenation
260. Solitude
261. Nature
262. An enjoyable horseback ride with good friends in interesting places.
263. see wildlife and observe the changing vegetation as the seasons progress
264. Companionship with other riders and my horse
265. Really just looking to connect with nature and find peace while riding our horses.
266. Serenity, scenery
267. Scenery and creek crossing
268. Quiet, viewing nature
269. Distance and mile loop options. So less out and backs. Loops provide an ability to change distances from original plan
270. Seeing wildlife, enjoying the nature
271. Being outdoors, enjoying the wildlife, experiencing nature while maintaining the trais
272. Relaxing trail rides with good footing bridle trails. Easy access to water for horses along the trails
273. No horses
274. New trails to ride . seeing new sights
275. Peace & quiet in nature
276. Just being out in nature in different areas of Ohio
277. Nature and reason ding horses
278. Enjoying God's gift of nature
279. Scenery
280. Quiet, natural nature. Love streams for horse watering.
281. Just being in nature
282. Wildlife, challenges
283. Enjoying nature
284. Nature
285. Quiet, and bird watching
286. Cruising in nature
287. Spending time in nature taking in the beautiful and
288. Peace and quiet
289. Solitude
290. Quiet, scenic, varied elevation and well marked trails
291. Birdwatching Relaxing
292. Enjoying nature while exercising.
293. Catch a glimpse of wildlife.
294. watching nature in it's habitat.
295. Good clear path, signage of routes and distance, nature not disturbed much
296. see #12
297. Being active outside
298. Staying active with wonderful natural views
299. Just viewing nature in a natural setting.
300. Enjoying nature and the peace and quiet.
301. Love being in the woods with wildlife or taking a hike with adults and kids with disabilities.
302. Silence.
303. Views, wildlife, historical landmarks
304. Water views
305. Peace
306. Birding
307. Exercise and walking with the dog and spouse
308. Fitness
309. Scenic sites. Wooded trails bike paths
310. Seeing wildlife and the beautiful outdoors
311. exercise, birdwatching, geocaching
312. just riding and enjoying nature
313. Safe but challenging trails. Separate equine camping areas
314. Nature. Scenery
315. Just being in the woods/ nature is good for the soul!
316. Relaxing in nature as I walk
317. being in nature/exercise
318. All of nature around me
319. Seeing the wildlife and wild flowers
320. A good view or a loop trail
321. Mushroom hunting
322. Viewing nature and exercise for mental health
323. Peace and quiet and connecting with hiking partners. Also good social media content if we're being honest. Good views, cute animals, interesting bugs or plants.
324. We like loop trails with a pretty view/ waterfall/something if interest along the way
325. Exercise, nature
326. connection to my surroundings and the wildlife
327. The beauty of unspoiled nature with natural trails.
328. Freedom
329. Birds especially eagles and scenic stops.
330. Quiet space
331. Being in nature with friends.
332. The wild life
333. Enjoying nature
334. maintained trails
335. That is so hard to pick a single experience. Sometimes I like to take the kids out for an easy hike and to let them explore and learn. Sometimes I use them for hunting access. Sometimes I take a bike ride for leisure and sometimes for adventure. Sometimes I like to camp on the trail. Sometimes I go berry picking or mushroom hunting.
336. Calm - peace
337. Challenging hiking on well maintained trails
338. Nature
339. Enjoying nature
340. Flowy, berms
341. Mountain biking
342. seeing nature bloom and go to winter
343. Beautiful trails, trees, flowers, scenic views
344. Watching nature. Picnicking.
345. Good ride on my horse
346. Peacefulness
347. Being out in nature/woods
348. Quiet, no hurry just at your own pace,
349. Nature and time with my wife and horse.
350. Just having fun with the whole family
351. Relaxation and scenery
352. I like looking for the wild animals while out on the trails.
353. Looking for different insects, trees, wildflowers
354. Nature
355. Fun
356. Scenic views, quiet, or interesting sites.
357. Enjoying nature and friends that I hike with
358. Horse back riding
359. Bird watching & nature photography
360. Camping with my horse and dog
361. Seeing new things, challenges of some harder trails.
362. Challenging hiking
363. Health and wellness, nature and connecting with God.
364. Relaxation
365. calm, movement and the enjoyment of nature
366. Being away from civilization and enjoying the peace of nature
367. Mountain biking
368. Small jumps
369. I most often run on trails and I love how peaceful it is. I appreciate being away from traffic and being out enjoying nature. I also love to take photographs along the way.
370. Seeing new places
371. Meandering through the trees and feeling so lucky to have access to such beautiful things
372. Trail running and hiking.
373. Hiking Forrest bathing Group hiking
374. Technical. I like hills as opposed to all flat.
375. relaxation
376. Peaceful, quiet, nature
377. Falling trees
378. Time with friends on our horses
379. Horseback riding with views of water or water obstacles
380. Exercise and sensory
381. just enjoying peacefulness of nature with no background noise
382. Wildlife and anything nature. I always enjoy waterfalls and wildflowers.
383. Horse riding with 30 plus miles of trails.
384. nature
385. Natural settings and observing local flora and fayns
386. Birding watching other natural wildlife
387. Walking bicycle riding
388. Enjoy the outdoors. Exercise. Meeting people. Mental attitude and just plain enjoyment.
389. Peaceful sounds of nature
390. Hiking with grandchildren. Need things that interest kids under 15.
391. Connection with my horse and nature, to relax and enjoy the peacefulness.
392. Hunting
393. Outdoor recreation and connection to nature
394. Trail riding
395. Horseback riding
396. Surroundings including older, more established trees (especially in our beautiful Ohio autumns!), water including creeks, rivers, falls, etc. Also love to watch the birds and other wildlife.
397. Horseback
398. Equestrian
399. Enjoying nature on horseback.
400. View Nature
401. Equine trails that are safe (no bikes)
402. Peace Watching for wildlife Wildflowers

403. Enjoying the outdoors.
404. Relaxation and exercise
405. Being in nature and the views
406. Wildlife
407. Waterfall, creek, exercise
408. Experience nature.
409. Quiet, solitude
410. Bridle trails
411. Wildlife
412. I seek trails that get the adrenaline going with challenging features. Not only jumps but drops and more technical features.
413. Calm, relaxing safe ride
414. Views and wildlife
415. Peacefulness, appreciation
416. I like the option to hike more than a mile or two. I use the all-trails app to find scenic hikes that are 10-16 miles long because I like to make a day out of it.
417. Exercise and fitness
418. Me time
419. Safe yet challenging riding trails with options for training green horses, group rides, challenges for more experienced horses
420. Horse camping
421. Being close to nature on my horse. Now that I'm older, it's my only way of doing it
422. Keeps me connected to nature
423. Biking
424. Riding horses
425. Enjoying the beauty of nature , including water
426. Good run and cleared woods of shrubs to observe old growth trees and hills. The natural landscape and scenery.
427. Photography, exploring, steep climbs, beautiful vistas.
428. Different scenarios
429. The peace and Tranquility of being on a horse in nature
430. Mostly it is relaxation.
431. Being in nature
432. Time with family. Preference is to hike areas without big crowds.
433. Nature
434. Scenery
435. Relax
436. Enjoying nature
437. Nature
438. Being outside
439. Foraging
440. Nature, quiet, seclusion
441. Love hiking through nature with our dog.
442. Hunting in fall and winter. Biking and hiking in summer and fall
443. Birding, wildlife wsterfals
444. Exercises
445. Visiting different MWCD parks and other trails and observing natural beauty.
446. Seeing new areas.
447. Birding
448. To see different birds, the scenery (animals, caves, trees, etc.).
449. Getting to see different areas of the park, exercise, love walk dog friendly trails when we visit
450. Physical challenges that come with hiking longer distances, tent camping with like-minded people, escapism, foraging, and/or simple day hikes in nature.
451. Solitude
452. Physical training while being out in nature.
453. Relaxing off-leash walks with my dogs
454. Connecting with nature.
455. Just hiking and watching wildlife.
456. Clean, safe, easy to access, electric and water, pavilion.
457. Quet relaxing atmosphere
458. connection to nature
459. Nature it's self
460. Ebiking
461. Historical trails with signs indicating historic areas.
462. Exercise
463. A destination at the end of trail
464. Hearing sounds of nature, seeing birds and other wildlife, seeing natural plants, trees, lakes, rivers
465. Being in nature away from crowds
466. Water views and birds
467. Peace and Quiet
468. Hiking with family
469. Sights
470. Nature wildlife
471. Exploring new areas and and seeing nature's beauty.
472. Wildlife
473. Relaxing
474. Quiet, peace, nature
475. Identifying plant, insect and animal species.
476. Biking observing nature birding
477. Quiet contemplation
478. Solitude
479. Being in nature
480. Birding, exercise, nature
481. See number 12. I just like to be outdoors.
482. Nature sites
483. Relaxation
484. Vista & woodlands viewing
485. Views of lake
486. Family time together
487. None
488. Uncontested areas.
489. Seeing wildlife
490. Fitness and views
491. Walking/Hiking
492. Quiet places, listening to birds
493. Quiet and peace. No motorized vehicles or noise other than nature.
494. Exercise in the great outdoors.
495. Being outside
496. Scenery, hunting, and nature
497. Nature
498. No crowds.
499. We travel a lot and plan our trips around trails available to hike. We were just in Oregon for a quick visit. ran into a couple locals and they asked if Ohio had lakes and trails - when we started looking into this, it really is very limited in MWCD region. Trails would be a fabulous addition to MWCD parks.
500. Just being out in nature.
501. Nature
502. Enjoy being outdoors
503. Relaxation and exercise.
504. Nature
505. Nature
506. New views
507. Getting outdoors, exercise
508. Mountain Biking / Gravel Cycling trails and routes. Camping near trail heads/ bike packing.
509. Relaxation and nature experience.
510. Biking or hiking with the whole family
511. Photography
512. Fresh air, quiet nature sounds, lake views, wildlife
513. Nature
514. Scenery, relaxation
515. Exercise, relaxation, good views
516. Colors nature animal waterfalls fishing hunting
517. Experience nature during the different seasons, wildlife viewing and scenic vistas.
518. Quiet, tree cover, exercise outside in fresh air.
519. Physical challenge
520. Exercise and refuge
521. God's creation.
522. Relaxation
523. Being with nature
524. Health & the outdoors
525. Just being in nature to enjoy the beauty of wildflowers and trees. I also enjoy seeing water views such as streams or waterfalls.
526. Dog walks
527. Taking the time to enjoy being in nature. Enjoying the forest and the water .
528. See 12 above
529. Commune with nature while exercising and enjoying the vistas.
530. Hunting
531. Feelings of serenity, calm, and energized, and also sense of awe of the natural world.
532. Scenery away from roads
533. Teaching others about fungi and flora. I lead families and hikers on mushroom forays

Q13 Summary: Trail User Experience Preferences

The following summary of Q13 was created by Claude AI from the list of responses and the directive to summarize the list in about one page while including percentages of responses in each category. Claude developed the categories on its own. We reproduce the AI summary here because it summarizes the responses well and is potentially less biased than a human would be.

This analysis summarizes 533 responses to the question **"What experience do you most often seek/enjoy while using trails?"** The responses reveal several dominant themes:

Primary categories

- **Connection with nature (68%):** The overwhelming majority of respondents seek to connect with, observe, or immerse themselves in the natural environment. This includes viewing wildlife, observing flora and fauna, experiencing forests and trees, watching birds, seeing waterfalls and water features, and appreciating scenic views and natural landscapes. Respondents frequently used phrases like "connecting with nature," "being in nature," and "enjoying the outdoors."
- **Peace, tranquility, and mental well-being (42%):** A substantial portion of users seek trails for relaxation, solitude, peace and quiet, stress relief, and mental health benefits. Many described trails as a refuge from daily life, noise pollution, and urban environments. Terms like "serenity," "calm," "peaceful," "escape," and "rejuvenation" were common.
- **Physical exercise and fitness (18%):** Nearly one-fifth of respondents specifically mentioned exercise, fitness, physical challenges, or staying active as a primary motivation for trail use.
- **Family and social connection (12%):** Many users value trails as spaces for family time, spending time with children, walking dogs, enjoying companionship with friends, and creating memories together.
- **Specific activities (38%):** Users identified particular recreational pursuits:
  - Horseback riding/equestrian activities (11%)
  - Mountain biking (9%)
  - Hunting and fishing (5%)
  - Trail running (3%)
  - Other activities including photography, birding, geocaching, foraging, and mushroom hunting (10%)

Key insights

Respondents emphasized the importance of well-maintained trails with clear signage, varied difficulty levels, and loop options. Many appreciated trails that lead to destinations like waterfalls, overlooks, or scenic features. The desire for minimal traffic noise and natural, unmanicured environments was frequently mentioned. Several users noted the importance of trails that accommodate families with strollers or young children, while others sought challenging technical features.

Note: Percentages exceed 100% as many responses encompassed multiple themes.

The TMP and Question 13

The TMP either provides or provides opportunities for nearly everything that respondents said they wanted.

The one exception is that the TMP doesn't provide the full range of mountain biking challenges and opportunities desired by respondents. Stage 2 may provide some of these desired mountain biking opportunities, especially in Clendening and Piedmont. Stage 2 can also opportunistically add alternate lines, optional jumps, and similar biking features to regular trails. And Wills Creek Reservoir is intended to provide world-class mountain biking, enabling the TMP to primarily focus on trails for average and family-oriented riders.

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Benefits of New Trails in Rural Areas

Areas that build new trails benefit from boosted local economies, improved public health, stronger communities, and increased environmental awareness.

Benefits, however, are strongest immediately next to trails and diminish with distance from trails. For the MWCD region, the closer that residents, businesses, and communities are to MWCD trails and the entrances to MWCD lakes, the stronger the benefits will be. Nonetheless, benefits ripple outward geographically, especially economic benefits.

Recreation Benefits

- **Unprecedented increase in regional trails:** The TMP adds about 249 miles of mostly new, intentionally planned, and purpose-built walking, hiking, bicycling, mountain biking, equestrian, and accessible trails to the Muskingum Watershed in the next 20 years. Including 49 miles of existing trails on MWCD land and another 5 miles proposed on adjacent lands, the trail systems of the nine lakes would exceed 300 miles. Since the watershed currently has relatively few trails, this increase represents a great expansion of trail-based recreational opportunities in the region. Many more watershed residents will have trails closer to home.
- **All-season recreation:** Trails can be used in all four seasons, unlike the primarily warm-season appeal of lakes. New trails offer widespread new opportunities for enjoying the beauty of spring and fall seasons. During the leaf-off season, many trails will have sweeping views of landscapes unavailable in other seasons.

Economic Benefits

- **Increased MWCD campground and lodging occupancy:** For MWCD, the TMP creates trails as a new, large-scale recreational facility. MWCD expects that the new trails will increase use of its campgrounds, and they will. Since so many more people are trail users compared to the number of boating/lake users, MWCD will attract a new demographic that will increase its appeal and its visitation. MWCD lakes are within 1.5 to 2 hours drive from Cleveland, Columbus, and Pittsburgh.

  Many trail-oriented visitors who travel and camp, however, camp in tents, truckbed-mounted campers, or small towable RVs. MWCD may see a need to build new primitive campgrounds to appeal to this demographic.

  New trail-oriented campers are also more likely to stay for shorter periods, with many staying just one night. Weekend trips will be common for trail-oriented users who travel light and fast.
- **Stimulated local businesses and tourism:** Trails bring in visitors, who then spend money at local restaurants, stores, and lodging, creating jobs. Expect growth in private lodgings such as short-term rental rooms and homes. Private campgrounds may form, especially if MWCD does not provide primitive (non-RV) camping that highly mobile trail-seeking hikers and mountain bikers tend to seek. Expect increased business for food services, stores, and services that cater to the needs of trail-using visitors, especially businesses close to the lakes. Stores that receive business from fishermen and hunters may receive increased business from trail users in other seasons.

  Because the TMP adds close to 200 miles of gentle to moderate

mountain biking trails to a region that currently has few purpose-built mountain biking trails, mountain bike rental and service businesses are likely to form. Regional residents are more likely to buy and ride mountain bikes, leading to increased bike sales and services.

- **Increased year-round economic activity:** On top of increased warm-season visitation, trails will attract more visitors in cooler seasons as well. Autumn leaf-peeping is spectacular from trails, especially since many trails are routed through higher-quality hardwood forests. Winter offers views, quiet, and solitude that create entirely different trail experiences from summer. Spring is lovely as nature greens up with fresh growth and warm but not hot temperatures.

  In summer as well as cooler seasons, expect higher demand for lodging, restaurant and food services, and all other economic activity associated with trails. In particular, cooler season demand for climate-controlled lodging and restaurant services is likely to increase, especially during autumn leaf-peeping season. Some visitors may also be attracted by lower off-season lodging rates and greater peace, quiet, and solitude on the trails. Lack of manmade noise, including boating and road noise, will attract visitors who value quiet soundscapes.
- **Attracted businesses and residents:** The availability of outdoor recreation, like trails, can attract new businesses and residents, boosting the local economy. Companies looking to relocate often consider the quality of life for their employees. MWCD trails are likely to attract new residents such as so-called "digital nomads" who can live anyplace that has high-speed internet and who tend to be attracted to areas with extensive trails and a healthier life. Digital nomads inject money from elsewhere into the local economy. The MWCD region—with its relatively mild climate and lack of devastating hurricanes, floods, extreme heat, wildfires, extreme hailstorms, and powerful tornadoes—is likely to attract future climate refugees, especially from the American south, and trails may attract refugees who value having trails near their homes. If residential and business construction and remodeling increase with an influx of population, all businesses related to real estate, land development, home and apartment construction, and home improvement can benefit. Some older homes and buildings may be restored and renovated.
- **Increased property values and tax revenue:** Properties located near trails often see an increase in value, which in turn increases the community's tax base. For MWCD, this increase in value will be strongest in cottage areas (especially those directly connected to trails) and in communities with direct access to MWCD trails. The tax base increases further if the local economy increases, geographically broadening the tax base increase.
- **New "trail towns":** Communities and towns that border MWCD lakes could become "trail towns" if trail connections can be formed between these communities and MWCD trails. Being a trail town is an excellent way to attract and market trail-related businesses and services as well as residents attracted by quick and easy trail access. The TMP attempted to connect to communities along or near its borders wherever it could, yet it often could not because MWCD doesn't own enough land to make an end-to-end connection. MWCD will still work with local communities to make these connections if future opportunities arise.

Health Benefits

- **Increased physical activity:** Trails provide safe, accessible, and low-cost opportunities for walking, hiking, cycling, and birdwatching, which encourages physical activity, contributing to improved health and well-being for community members. Research has shown that people who live closer to trails get more exercise each week.
- **Improved mental health:** Enjoying and connecting with nature is known to have positive effects on mental health. Spending time in nature on trails is linked to lower levels of stress, anxiety, and depression.
- **Access to nature:** Trails provide residents with the opportunity to enjoy and connect with nature, which can have positive effects on mental health.
- **Lower healthcare costs:** Increased physical activity from trail use can lead to lower rates of chronic diseases, such as heart disease and diabetes, potentially saving large amounts in healthcare costs.
- **Accessible trails:** MWCD's proposed 38 miles of accessible trails create healthy opportunities for disabled users, able-bodied users who prefer smoother and easier trails, families with young children or strollers, and multi-generational families and groups traveling together.

- **Year-round trail access:** Local residents can benefit from trail access all year long. In the cooler seasons, especially winter, local residents will likely be the primary trail users.

Social and Community Benefits

- **Enhanced community pride:** Trails, especially longer or well-known trails, tend to provide a source of identity and pride for residents who live close to them.
- **Preserved local history and culture:** Some MWCD trails, notably at Beach City and Clendening, will be built along or through historic places, such as old rail corridors and stone quarries, which helps preserve and celebrate local heritage.
- **Strengthened social connections:** Trails serve as community gathering spots, providing opportunities for residents to interact and build relationships. Volunteer trail projects, in particular, can bring a diverse group of people together to work toward a common goal. For MWCD, strengthened social connections are likely to come from groups participating in group hikes or rides, birdwatching groups, or formal or informal groups who meet and spend time on the trails.
- **Environmental conservation:** Trail construction can promote awareness and appreciation for natural resources, leading to better stewardship of the local environment. For the MWCD region, trails will enable residents to see and experience MWCD lands they wouldn't visit otherwise. New trails will also increase awareness of and appreciation for MWCD as a regional conservation steward.