Outdoor Sports Institute – Online Trail Build School

Building Great Trail Experiences

IMBA
INTERNATIONAL MOUNTAIN BICYCLING ASSOCIATION

IN PARTNERSHIP WITH

IMBA UNIVERSITY

- Tuesday 3/9 – Intros
- 3/9 to 3/15 - First take home (Trails Planning)
- Tuesday 3/16 – First webinar
- 3/16 to 3/22 - Second take home (Trails Construction)
- Tuesday 3/23 – Second webinar
- 3/23 to 3/29 - Third take home (Trails Design)
- Tuesday 3/30 – Last webinar

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HOUSEKEEPING

- Download Take Home PDFs – these will provide the learning material for the next webinar
- "Homework" – meant to help you learn and practice ideas, will help you prepare for the next webinar
- Webinar – interactive discussions, bring your challenges and questions

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HOUSEKEEPING

- Slack – download it, we can communicate outside webinars with questions, discussions, etc.
- *We will run a trail during this first webinar.*
- Google Earth – download the desktop application, not mobile or online.
- *We will run a trail during this first webinar.*

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THE INTERNATIONAL MOUNTAIN BICYCLING ASSOCIATION

IMBA's mission is to create, enhance and protect great places to ride mountain bikes.

Sandy Ridge Trail System
Sandy, Oregon

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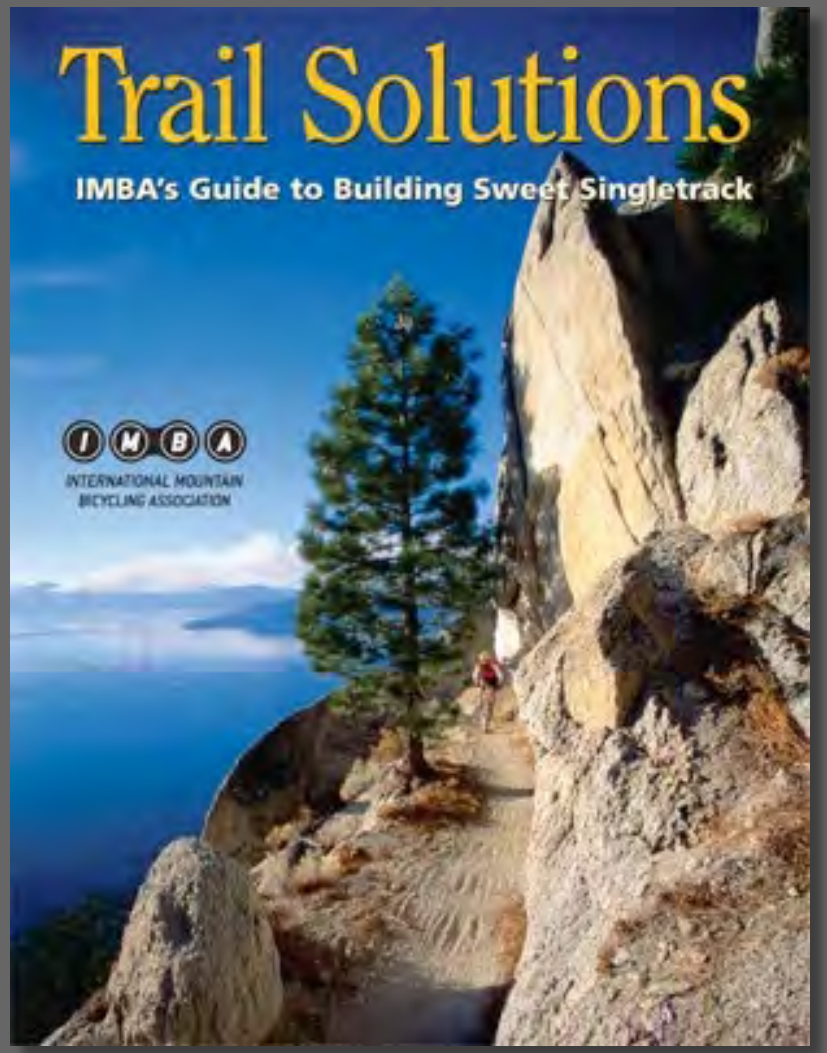

Providing professional trail services including: Planning, Design, Construction, and Education

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Rich Edwards, Outdoor Recreation
Infrastructure Coordinator
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INTERNATIONAL MOUNTAIN BICYCLING ASSOCIATION

WHY TRAILS?

To allow the public to experience and appreciate our public lands, while minimizing the public's impact on the landscape.

By creating a positive recreation experience, trails can help bonds the visitor with the land.

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WHY TRAILS?

Outdoor Recreation is BIG Business

https://outdoorindustry.org/advocacy

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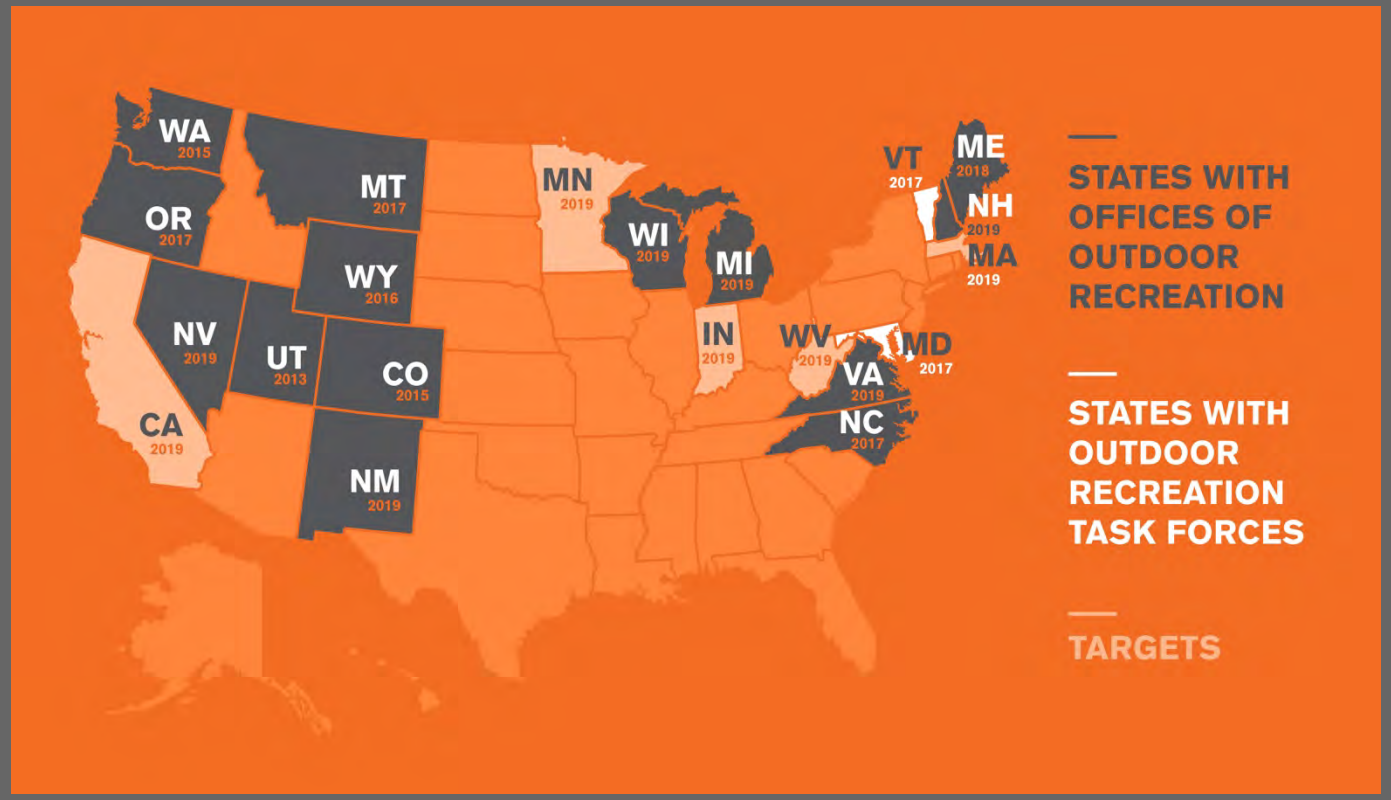
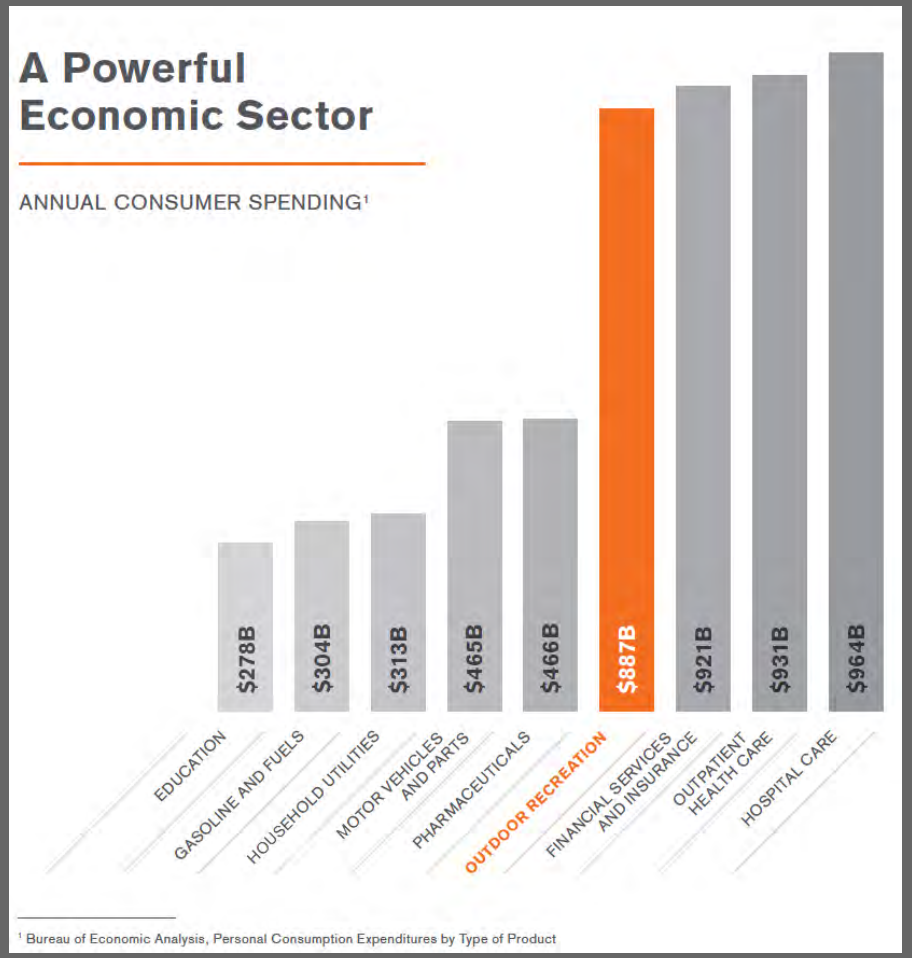
WHY TRAILS?





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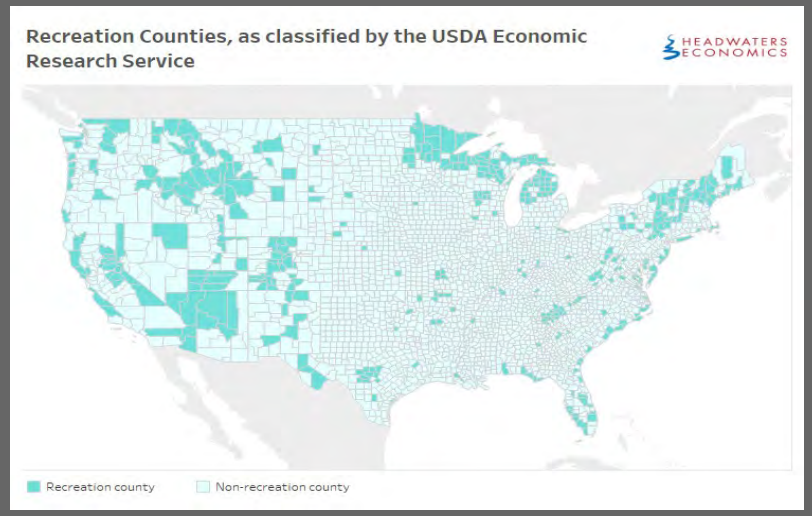
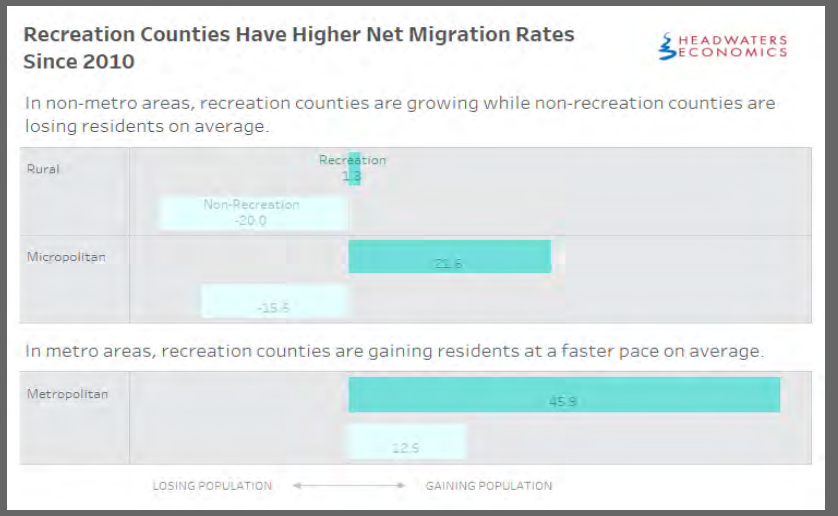
WHY TRAILS?





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WHY TRAILS?

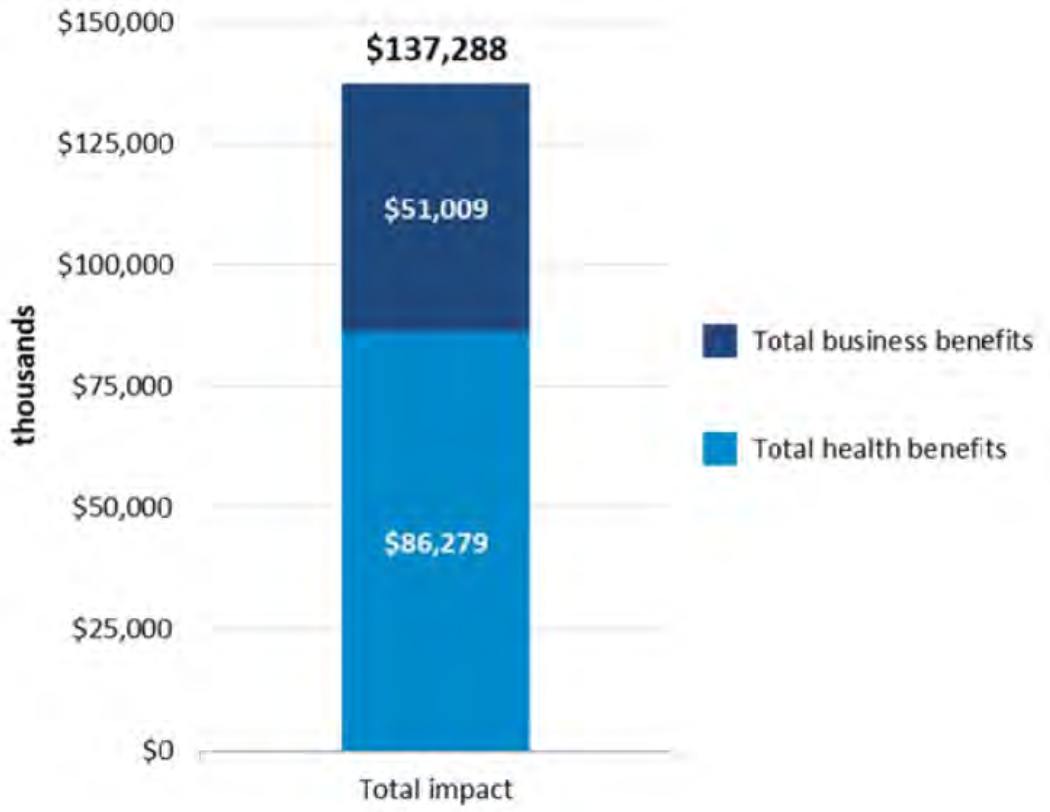
Great trails create great communities!

Health benefits, including reduced health spending

More children outside, engaged in nature

Figure 1.
Total benefits of bicycling in Northwest Arkansas

Source:
BBC Research & Consulting Economic Benefits Model 2017.



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WHAT IS A "HIGH QUALITY TRAIL EXPERIENCE"?

A high quality trail experience is difficult to define but easy to recognize.

In the context of recreation trails, especially mountain bike trails, this is realized when a trail design merges the desired outcomes and difficulty that a rider seeks with the setting in which the outcomes are realized. These variables ultimately equate to an overall level of sustainability that protects resources while simultaneously providing a trail user with the outcomes they seek.

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WHY HIGH QUALITY TRAILS?

Improved long-term cost-effectiveness

Better visitor management tool

Transform communities and spaces

Ensure positive outdoor recreation experiences

Maximize potential economic benefits

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WHY ARE YOU HERE?

- Who you are?
- Where do you live?
- Why are you here?
- What role do you play in the trails world?
- What do you want to learn?
- What is your favorite trail flavor (all of them is not an answer)?
- What is your favorite trail?

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DOES THIS LOOK FUN TO YOU?

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HOW ABOUT THIS?

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FUN?
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WHAT IS A SUSTAINABLE TRAIL?

1. **Environmental Sustainability** — Will the trail provide for resource protection? This is the definition that is commonly used when referring to what does or does not provide for a sustainable trail.

2. **Social Sustainability** — This is frequently overlooked in the trail development process. Evidence of the failure to meet desired user outcomes (experiences and associated benefits) are everywhere: overcrowded trails, trails with little use, trail users who feel "pushed out" by other users, and unauthorized routes.

3. **Economic Sustainability** — Can the land manager and the community bear the long-term costs of maintaining a trail? If it provides a valuable experience, it is likely worth the investment, but it must be weighed against shrinking maintenance budgets.

WHY A SUSTAINABLE TRAIL?

A sustainable trail allows visitors to enjoy a natural area with minimal impact to the ecosystem and continues to meet the management objectives.

- Protects resources.
- Allows visitors to achieve their recreation goals.
- Minimizes maintenance requirements.
- Minimizes conflict between visitors.
- Increases the capacity of the land for enjoyment with minimal negative impacts

CONSEQUENCES

Increased conflicts

Increased maintenance costs

Poor visitor experiences

Increased liability

Resource damage

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Traditional activity-based outdoor recreation management evolved to **outcomes-focused management:**

"...an approach to recreation management that centers on the positive outcomes gained from engaging in recreational experiences."

Trail Project Development Life Cycle

Feasibility Study	- Market & Demand Analysis - Project Area Recon - SWOT Assessment
Concept Plan	- Terrain Analysis - Development Zones - Experience Objectives - Connectivity - Key Control Points (positive and negative)
Master Plan	- Trail Corridors - Trail Specifications - Phasing Plan - Construction Approach - Cost Opinion - Permitting Requirements
Contracting	- RFP Development and Advertising - Statement of Qualifications - Bids - Proposal Evaluations - Award - Signed Contracts
Design Development	- Detailed Trail Alignments - Trail Segment Definitions - Feature Locations/ID
Construction Documents	- Permitting - Engineering - Site Layout - Erosion Control Measures
Construction	- Mobilization - Building - Flow Checking - Project Management - Quality Control - SWPPP Monitoring - Final Inspection
Post Build	- Management - Maintenance - Assessment - Reporting

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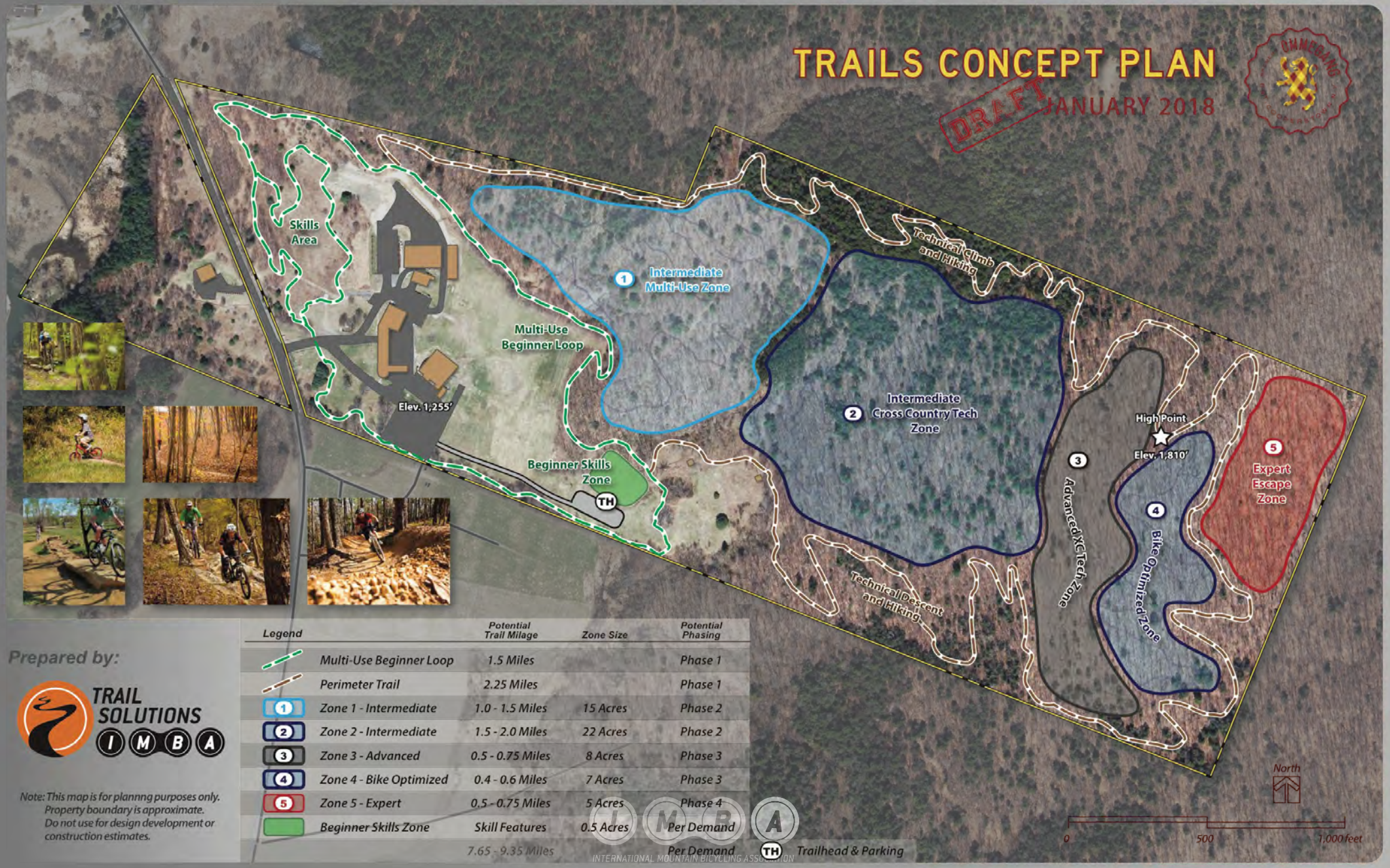
TRAILS CONCEPT PLAN

DRAFT JANUARY 2018



Legend		Potential Trail Milage	Zone Size	Potential Phasing
	Multi-Use Beginner Loop	1.5 Miles		Phase 1
	Perimeter Trail	2.25 Miles		Phase 1
1	Zone 1 - Intermediate	1.0 - 1.5 Miles	15 Acres	Phase 2
2	Zone 2 - Intermediate	1.5 - 2.0 Miles	22 Acres	Phase 2
3	Zone 3 - Advanced	0.5 - 0.75 Miles	8 Acres	Phase 3
4	Zone 4 - Bike Optimized	0.4 - 0.6 Miles	7 Acres	Phase 3
5	Zone 5 - Expert	0.5 - 0.75 Miles	5 Acres	Phase 4
	Beginner Skills Zone	Skill Features	0.5 Acres	Per Demand
		7.65 - 9.35 Miles		Per Demand

TH Trailhead & Parking

Prepared by:

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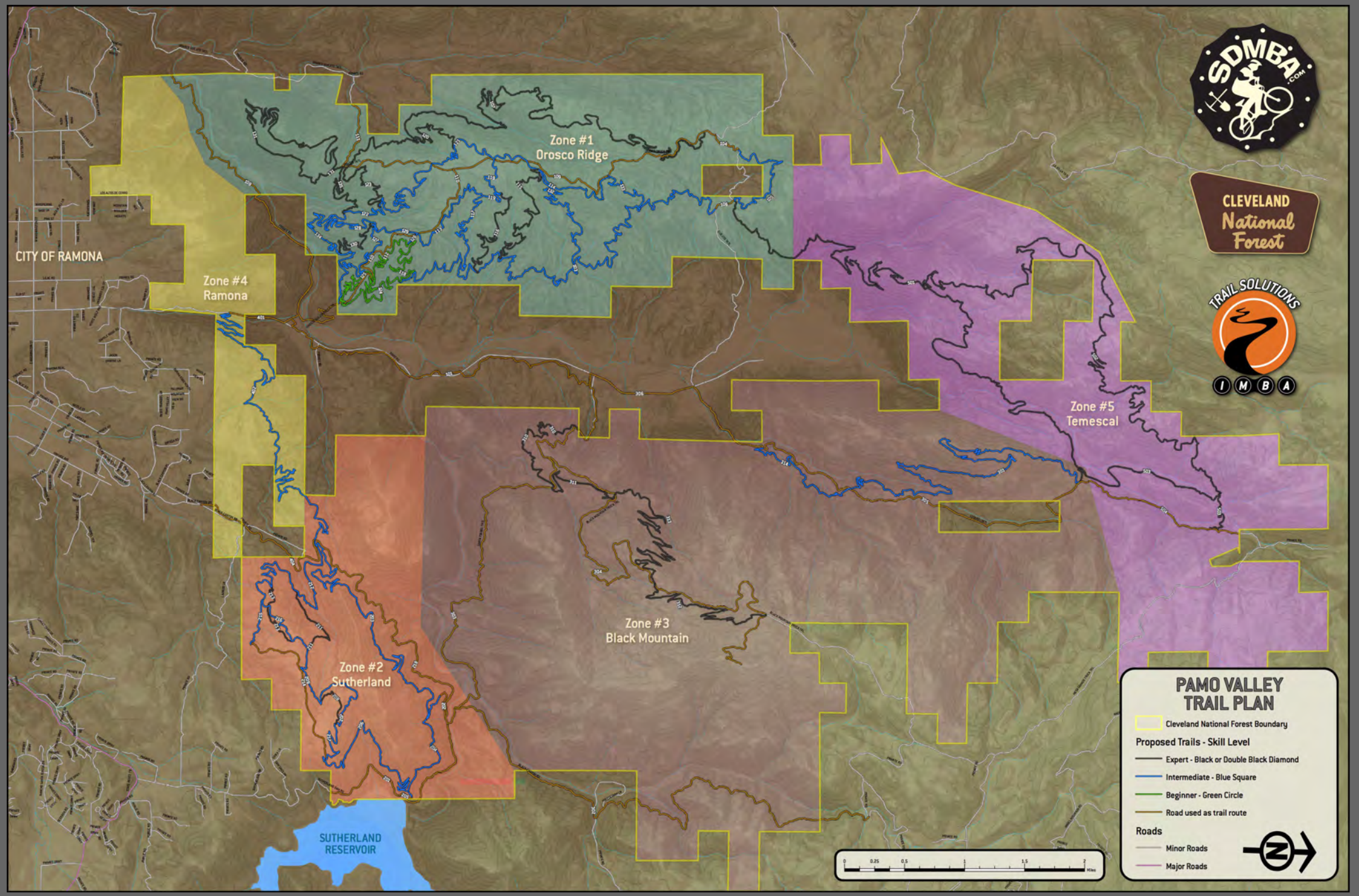
Note: This map is for plannng purposes only. Property boundary is approximate. Do not use for design development or construction estimates.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Zone #1 Orosco Ridge
Zone #4 Ramona
Zone #5 Temescal
Zone #3 Black Mountain
Zone #2 Sutherland
CITY OF RAMONA
SUTHERLAND RESERVOIR
PAMO VALLEY TRAIL PLAN
Cleveland National Forest Boundary
Proposed Trails - Skill Level
Expert - Black or Double Black Diamond
Intermediate - Blue Square
Beginner - Green Circle
Road used as trail route
Roads
Minor Roads
Major Roads
0 0.25 0.5 1 1.5 2 Miles


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TEMP. PARKING
13
12

Trail Specifications

Duluth Traverse Trail System

Version: 1.2 (130220)

Label	Working title	Difficulty Rating	Symbol[1]	Use	Directional	Feature Frequency[2]	Constructed Tread Width[3, 4]	Ave Trail Grade per 1000'	Max Trail Grade: climbing[5]	Max Trail Grade: descending[6]	Min Turn Radius	Max Turnpad Grade[7]	Max Berm/Turn Camber[8]	Corridor Width (4' above tread)	Corridor Height Minimum	Exposure (without railing)	Unavoidable Obstacles	Avoidable Obstacles (over 50% of tread or less)	Rollable Feature Height (jumps, berms, etc.)	Roughasity (surface texture)[9]	Tread and trail features	Notes
Spec 1	Green Singletrack (Traditional shared-use singletrack)	Easier	Green Circle	bike, foot	Two-Way	Low	48"	5%	20%	20%	10'	10%	15%	48"-72"	10-12'	less the 18"	less then 2"	less then 6"	9"	low	Firm trail surface. May include rock armored section.	
Spec 2	Blue Singletrack (Traditional bike-optimized singletrack)	More Difficult	Blue Square	bike, foot	Two-Way	Medium	36"	7%	25%	50% (armored over 25%)	8'	15%	30%	36"-72"	8-12'	less then 48"	less then 8"	less then 24"	24"	med	Modest rough tread is expected. May include steps and terraces.	May include features similar to those on easier "Bump and Pump" or "Jump" trails.
Spec 3	Black Singletrack (Traditional technical singletrack)	Most Difficult	Black Diamond	bike, foot	Preferred	High	18"	10%	50% (armored over 25%)	100% (armored over 25%)	6'	15%	50%	36"-48"	8-12'	no limit	less then 18"	less then 48"	18"	high, some very high	Significant unavoidable obstacles are expected. May include steps, stairs, rock gardens, loose rock, and significantly	Seek out rocky ridges. Selective machine work to create very organic appearing rock strewn tread. Most rock and tread work is aimed at sustainability rather than ease of passage. Trials like
Spec 4	Green Bump Pump	Easier	Green Circle	bike, foot	Preferred	High	48"	3-5%	20%	30% (armor as function of flow)	15'	10%	30%	48-72"	8-10'	less the 36"	less then 2"	less then 6"	12"	low	Firm trail surface. Rollers and berms. May include rock surfaced sections.	
Spec 5	Blue Bump Pump	More Difficult	Blue Square	bike, foot	Preferred	High	36"	7-10%	30%	100% (armor as function of flow)	10'	15%	50%	36"-72"	10'-12'	less then 60"	less then 2"	less then 24"	24"	low	Firm trail surface. Rollers, roller doubles, berms predominate. May include significant armored sections.	Demonstration trail at Spirit Mtn is an example of the upper end of this spectrum.
Spec 6	Black Bump Pump	Most Difficult	Black Diamond	bike	One-Way	High	36"	10-12%	n/a	150% (armor as function of flow)	7'	25%	150%	36"-72"	10'-12'	less then 120"	less then 8"	less then 48"	36"	med	Firm trail surface. Rollers, roller doubles, berms predominate. May also include steps, stairs, rock gardens and exposed	
Spec 7	Green Jump	Easier	Green Circle	bike	One-Way	Medium	48"+	3-5%	n/a	30% (armor as function of flow)	20'	10%	150%	48-72"	10-12'	less the 36"	less then 2"	less then 6"	18"	low	Smooth continuously cambered trail surface. Easily rollable jumps.	A green jump trail could fit within a stacked loop system. Blue and Black are likely best done at a resort.
Spec 8	Blue Jump	More Difficult	Orange Pill, medium	bike	One-Way	Low	48"+	7-10%	n/a	100% (armor as function of flow)	15'	15%	oo%	48-72"	12'-15'	less then 60"	less then 2"	less then 24"	30"	low	Smooth continuously cambered trail surface. May include significant armored sections. More complex jump	Complete berms, plan on extreme drainage solutions - sumps + culverts.
Spec 9	Black Jump	Most Difficult	Orange Pill, large	bike	One-Way	Low	48"+	10-12%	n/a	150% (armor as function of flow)	15'	25%	oo%	48-72"	12'-15'	less then 120"	less then 8"	less then 48"	48"	med	Firm trail surface. May include rock surfaced sections. Some jumps may not be rollable.	Complete berms, plan on extreme drainage solutions - sumps + culverts.
Spec 10	Green Gravity	Easier	Orange Pill, small	bike	One-way	Medium	48"	7-10%	n/a	100% (armor as function of flow)	20'	15%	150%	48-72"	12'	less the 36"	less then 18"	less then 24"	18"	high	Entry level downhill course. Will include rocks, steps, and terraces. Drops will be rollable.	For all DH types, potentially only at Spirit Mtn.
Spec 11	Blue Gravity	More Difficult	Orange Pill, medium	bike	One-way	Medium	36"	10-15%	n/a	oo% (mandatory drops	15'	25%	oo%	36"-72"	12'	less then 60"	less then 48"	n/a	30"	very high	Intermediate level downhill course. Mandatory drops. Will include significant steps, stairs, rock gardens and exposed	
Spec 12	Black Gravity	Most Difficult	Orange Pill, large	bike	One-way	High	24"	15-20%	n/a	oo% (mandatory drops	15'	25%	oo%	36"-72"	12'	less then 120"	less then 72"	n/a	48"	very high	Advanced level downhill course. Significant mandatory drops. Will include extreme terrain that has a high penalty for failure.	
Spec 13	Gateway trail	Easiest	Green Circle	bike, foot, horse	Two-Way	low	48"+	3-5%	10%	15%	12'		10%		10-12'							Very front-country, likely connected to a recreation park. Typically under a mile.
Spec 14	Accessible trail	Easiest		bike, foot, horse	Two-Way	none																AASTHO spec trail.

SUSTAINABLE TRAIL PLAN

Brown Forman Silo Center Bike Park

At The Parklands of Floyds Fork, 8710 Stout Rd. (Turkey Run Pkwy.), Louisville, Kentucky

GENERAL NOTES

A. CONTRACTOR SHALL PROTECT EXISTING PLANT MATERIAL NOT DESIGNATED FOR REMOVAL OR RELOCATION FROM DAMAGE DURING CONSTRUCTION.

B. CONTRACTOR SHALL KEEP ALL SURROUNDING PUBLIC ROADWAYS AND DRAINAGE SYSTEMS FREE FROM DIRT, MUD AND CONSTRUCTION DEBRIS AT ALL TIMES AND SHALL PROVIDE ALL NECESSARY EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) BMP's. ALL BMP'S SHALL BE INSTALLED PER LOCAL AND STATE STANDARDS PRIOR TO ANY SITE CONSTRUCTION ACTIVITY.

C. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY ITEMS DAMAGED DURING CONSTRUCTION.

D. LIMITS OF CONSTRUCTION AND CONTRACTOR STAGING AREAS SHALL BE LIMITED TO AREAS DESIGNATED BY THE OWNER.

E. THERE SHALL BE NO STRUCTURE (PERMANENT OR TEMPORARY) CONSTRUCTED WITHIN ANY PROPOSED OR EXISTING EASEMENT EXCEPT AS INDICATED ON PLAN.

GOOGLE LOCATION MAP
NO SCALE

SHEET INDEX	
SHEET NO.	DESCRIPTION
C0.1	SWPPP COVER SHEET
C1.1	TRAIL PLAN & NARRATIVE
C2.1	SUSTAINABLE TRAIL DETAILS

STORMWATER AND EPSC CONSTRUCTION APPROVAL ONLY
Conditions of Approval

10-17-16
DATE
DEVELOPMENT REVIEW
METROPOLITAN SEWER DISTRICT

Kentucky 811
Know what's below. Call before you dig.

BEFORE YOU DIG

THE CONTRACTOR IS INSTRUCTED TO CALL 1-800-752-6007 TO REACH KY 811, THE ONE-CALL SYSTEM FOR INFORMATION ON THE LOCATION OF EXISTING UNDERGROUND UTILITIES. THE CALL IS TO BE PLACED A MINIMUM OF TWO (2) AND NO MORE THAN TEN (10) BUSINESS DAYS PRIOR TO EXCAVATION. THE CONTRACTOR SHOULD BE AWARE THAT OWNERS OF UNDERGROUND FACILITIES ARE NOT REQUIRED TO BE MEMBERS OF THE KY 811 ONE-CALL BEFORE-U-DIG (BUD) SERVICE. THE CONTRACTOR MUST COORDINATE EXCAVATION WITH THE UTILITY OWNERS, INCLUDING THOSE WHOM DO NOT SUBSCRIBE TO KY 811. IT MAY BE NECESSARY FOR THE CONTRACTOR TO CONTRACTOR TO CONTACT THE COUNTY COURT CLERK TO DETERMINE WHAT UTILITY COMPANIES HAVE FACILITIES IN THE AREA.

MSD WM #9139

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Mountain Bike Park
@ The Parklands of Floyds Fork
8710 Stout Road
21st Century Parks, Inc.
471 W. Main St. Suite 202
Louisville, Kentucky 40202

REV #	DATE	DESCRIPTION

Permit Review Set

Job No:	02315.MBA
Date:	October 10, 2016
Scale:	
Drawn By:	
Checked By:	B. Fuller

Drawing Title:
Brown Forman Silo Center Bike Park
SWPPP Cover Sheet

Drawing No:
C0.1

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mike started a conversation with you in Slack

To be a part of the conversation, join mike@outdoorsi.org and the rest of the **Online IMBA Trail School** team on Slack.

Join the Conversation

What is Slack?

Slack is a messaging app for teams, a place you can collaborate on projects and organize conversations — so you can work together, no matter where you are. Learn more about Slack

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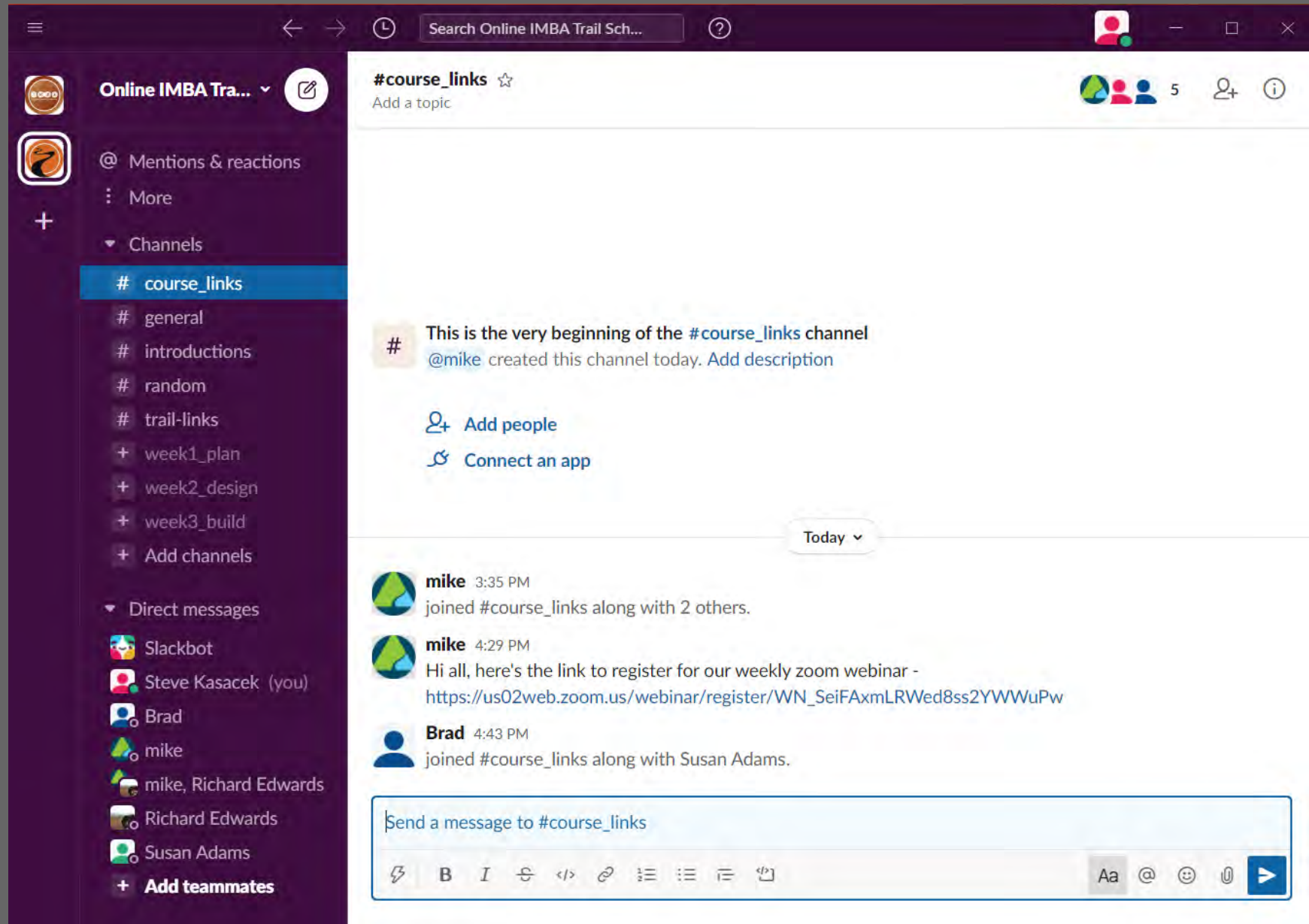

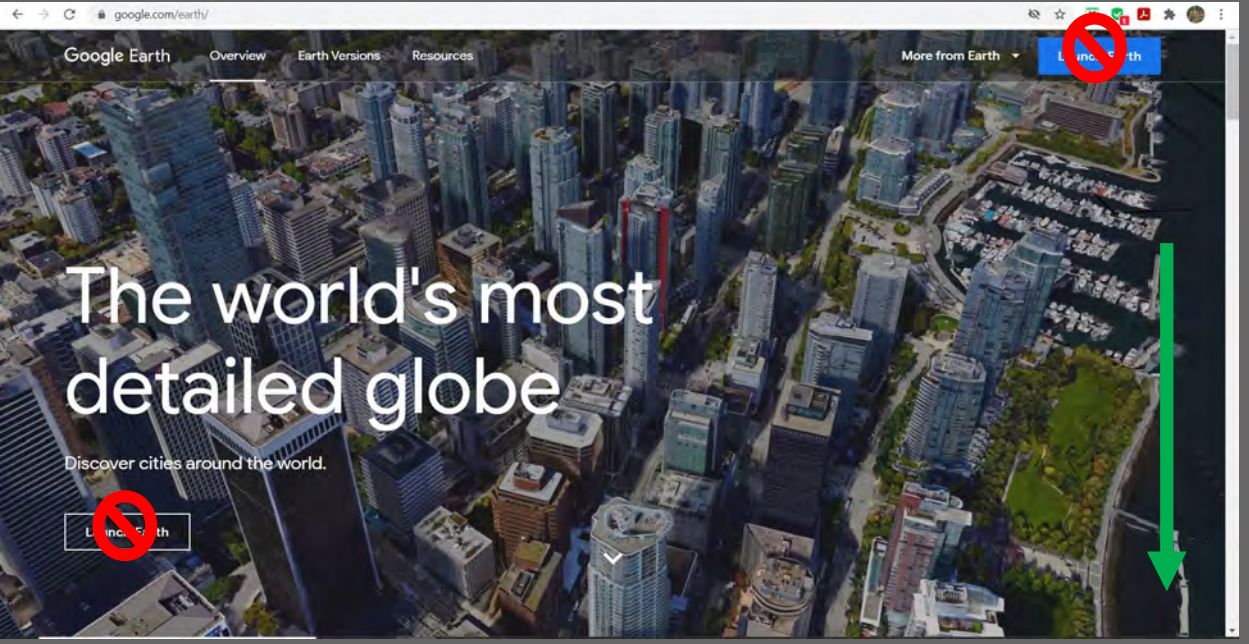
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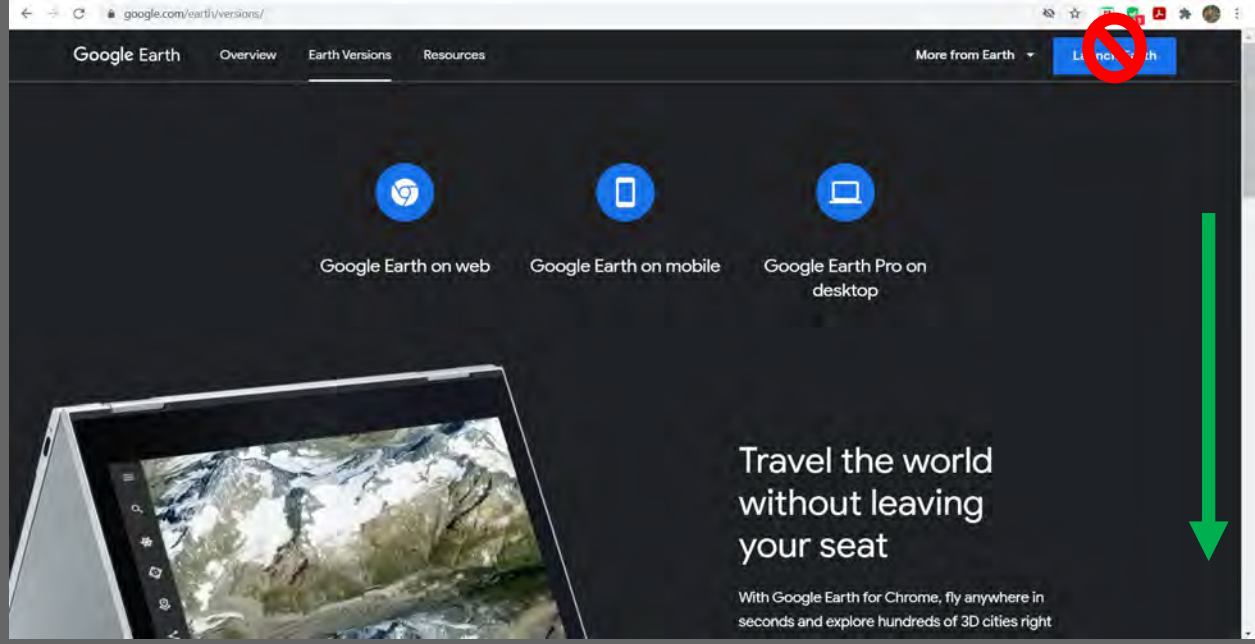
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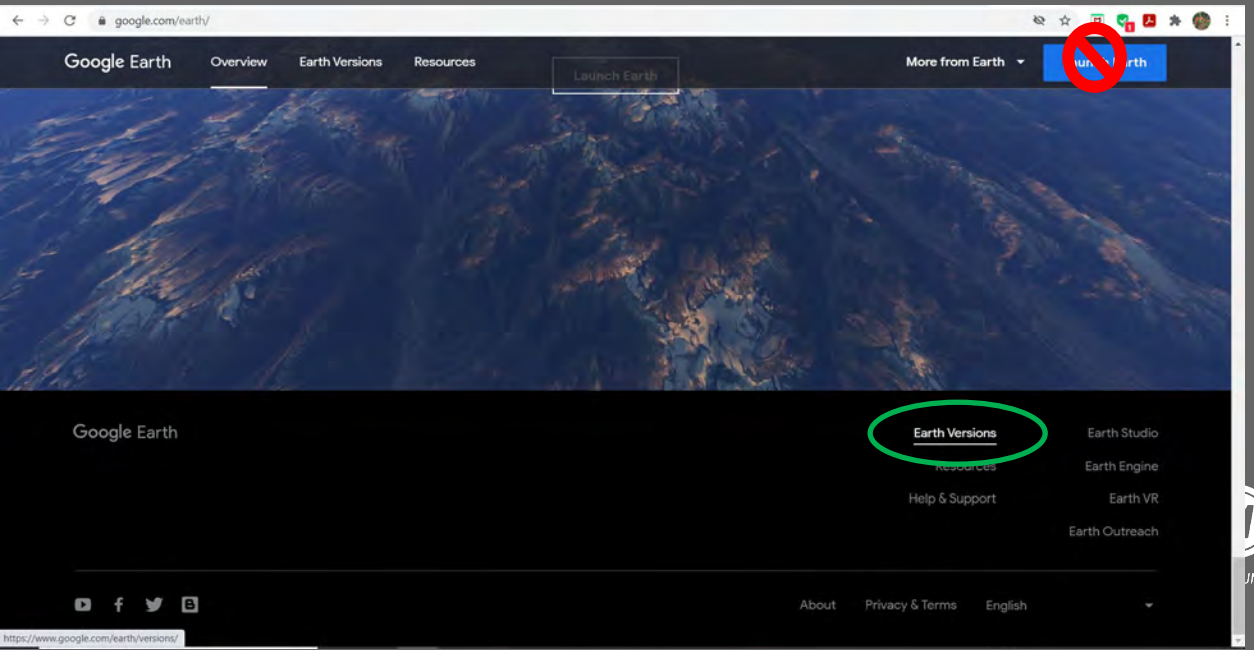
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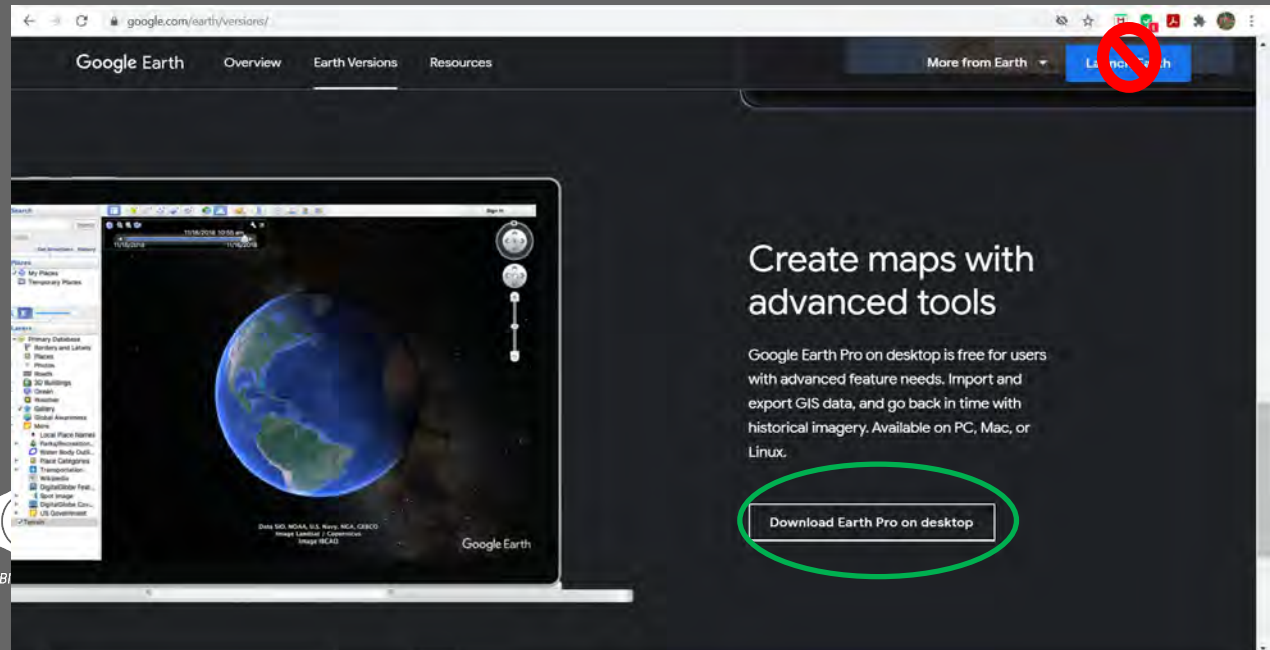
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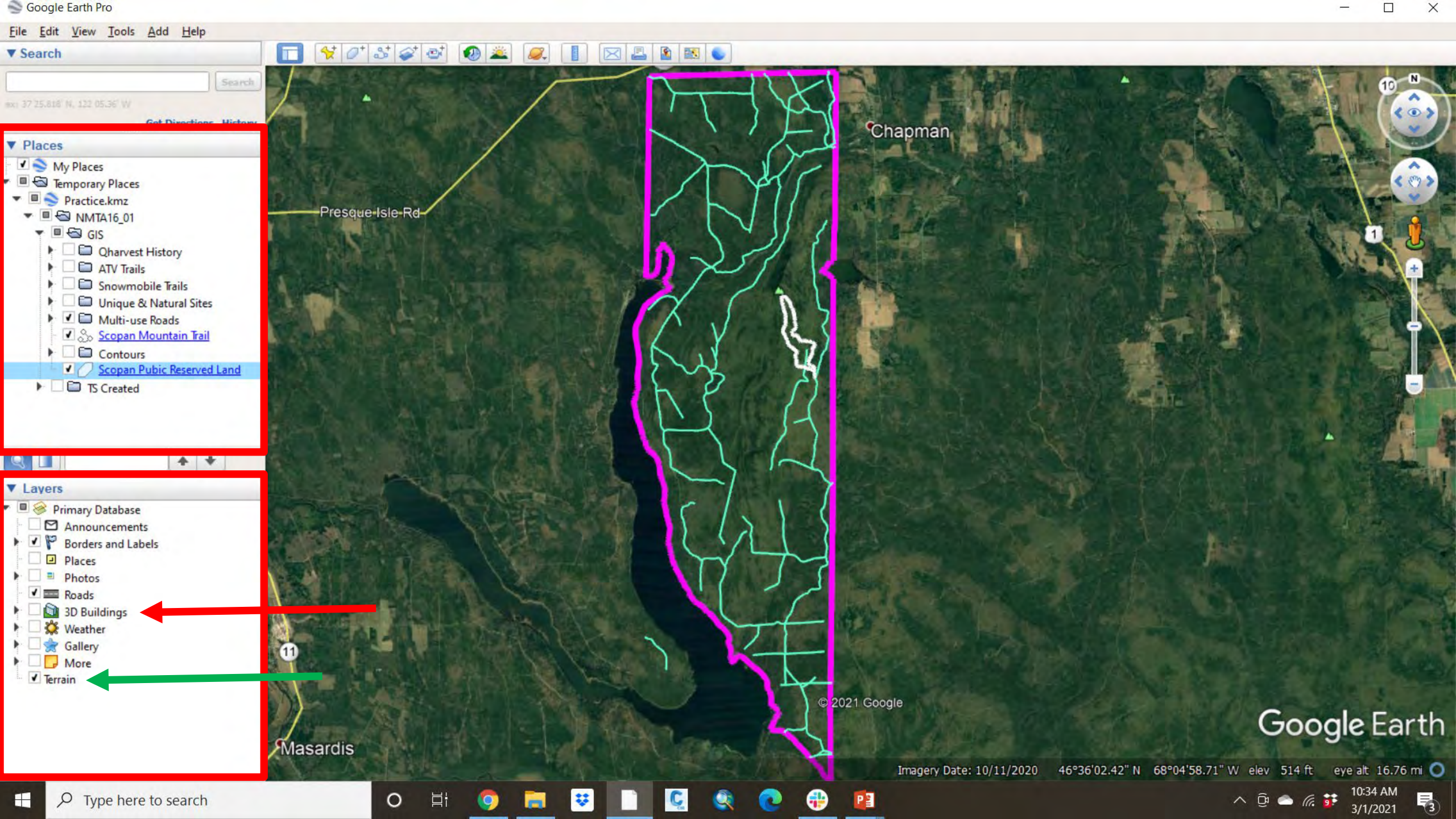
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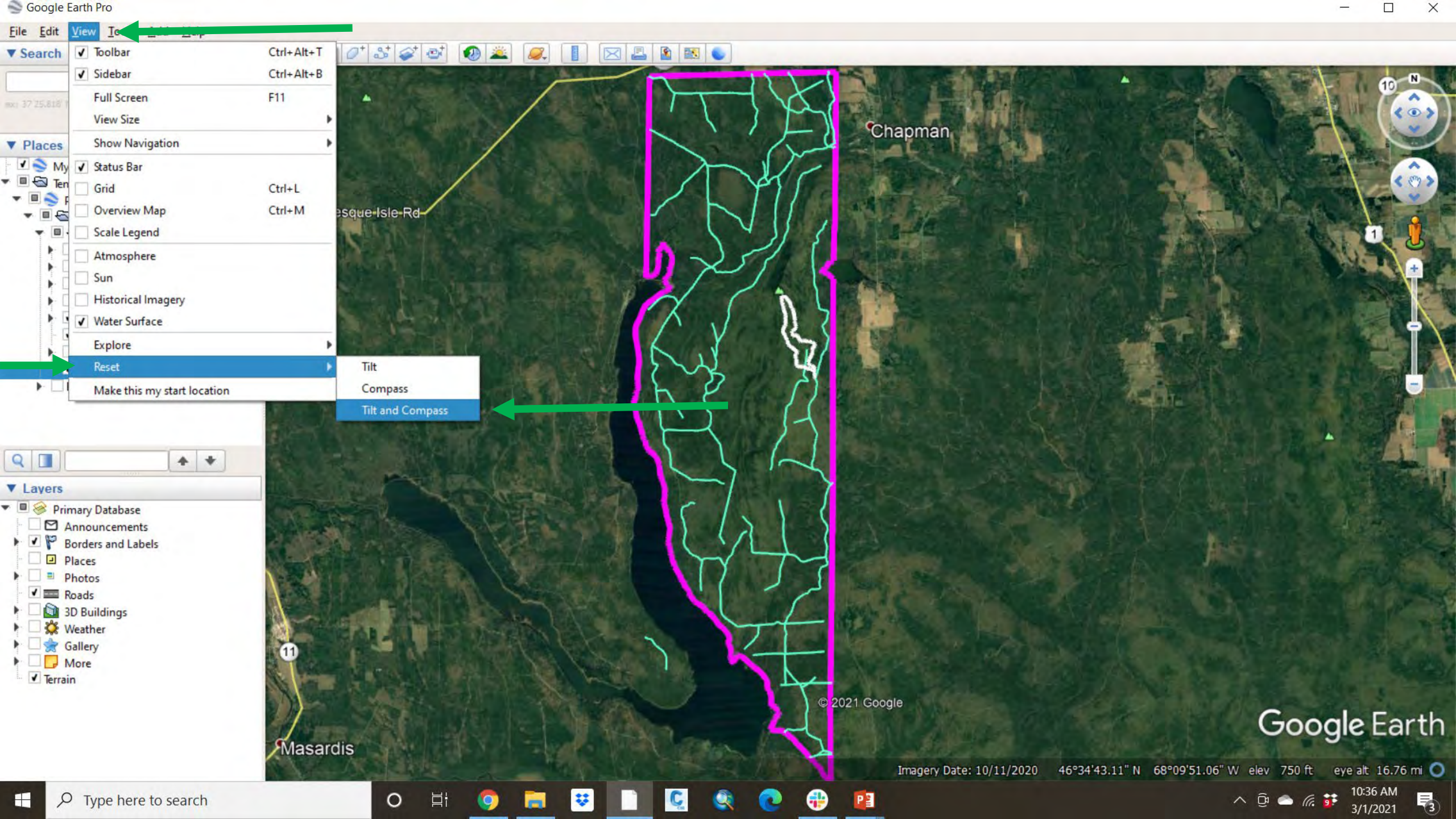
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Announcements
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Roads
3D Buildings
Weather
Gallery
More
Terrain
Chapman
Masardis
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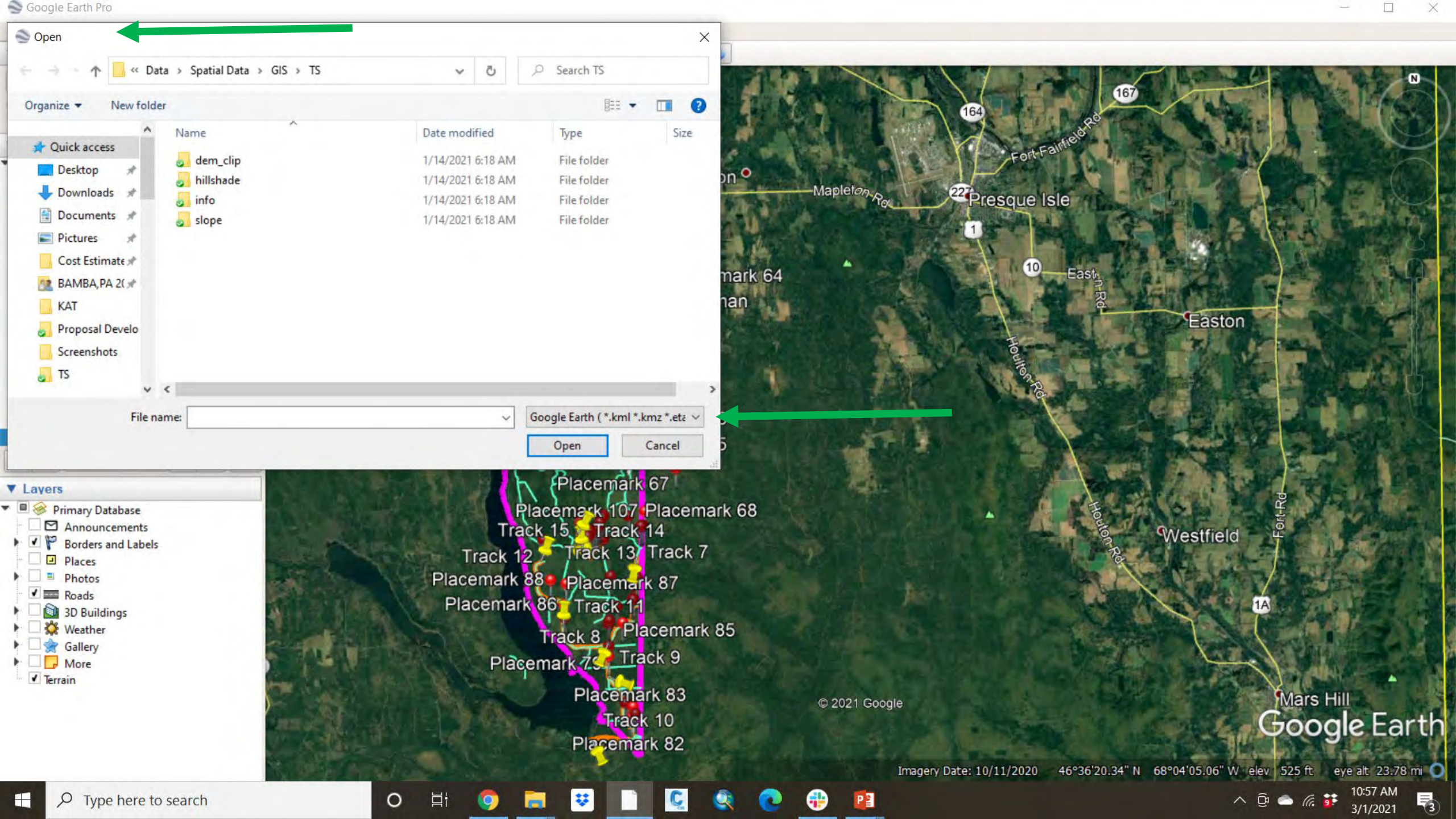
3/1/2021


Google Earth Pro
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Search TS
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Placemark 82
Maple
Presque Isle
Fort Fairfield Rd
Houlton Rd
Easton
Westfield
Mars Hill
© 2021 Google
Google Earth
Imagery Date: 10/11/2020 46°36'20.34" N 68°04'05.06" W elev 525 ft eye alt 23.78 mi
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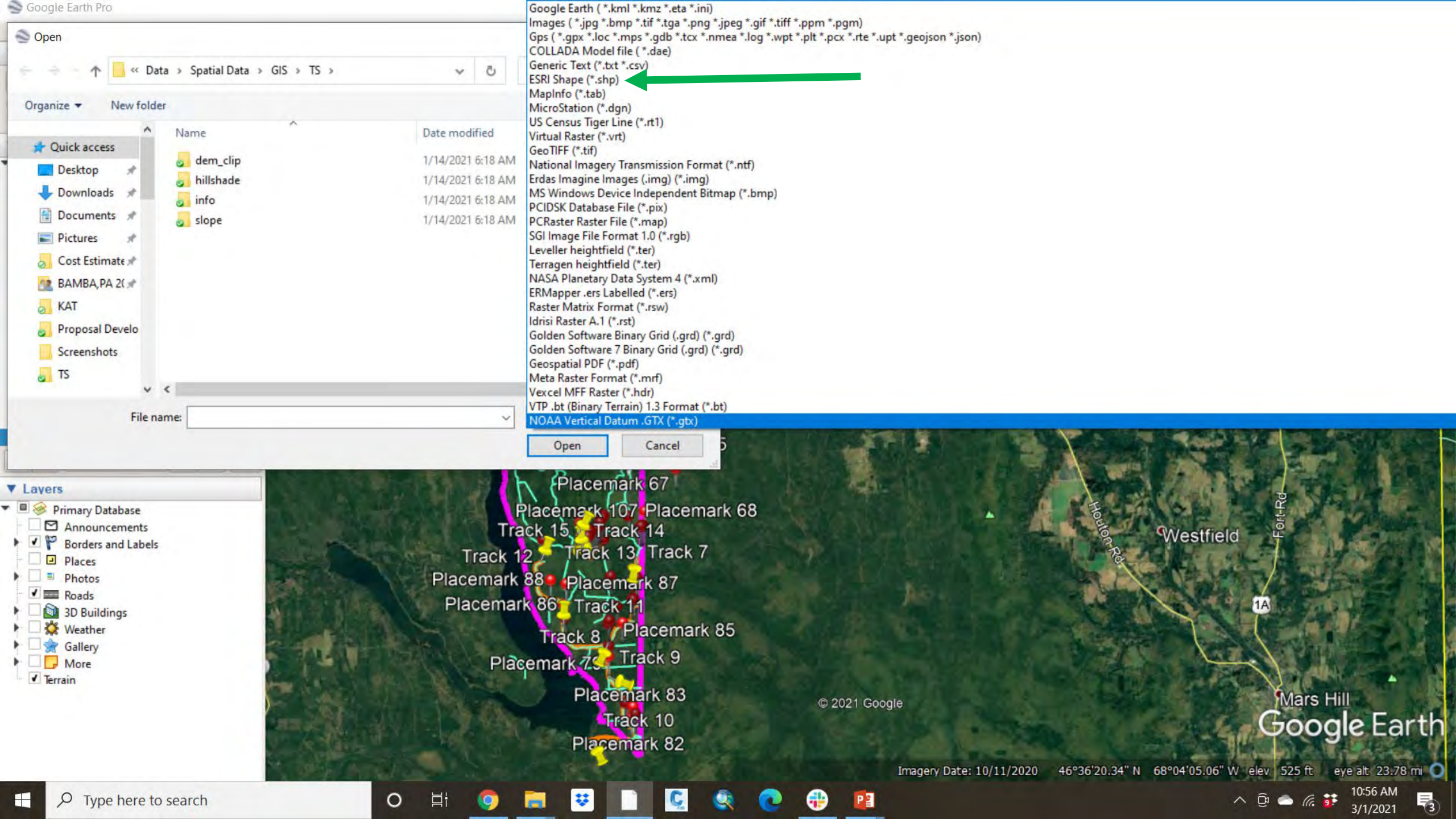
Google Earth Pro
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MicroStation (*.dgn)
US Census Tiger Line (*.rt1)
Virtual Raster (*.vrt)
GeoTIFF (*.tif)
National Imagery Transmission Format (*.ntf)
Erdas Imagine Images (.img) (*.img)
MS Windows Device Independent Bitmap (*.bmp)
PCIDSK Database File (*.pix)
PCRaster Raster File (*.map)
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Terragen heightfield (*.ter)
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ERMapper .ers Labelled (*.ers)
Raster Matrix Format (*.rsw)
Idrisi Raster A.1 (*.rst)
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Meta Raster Format (*.mrf)
Vexcel MFF Raster (*.hdr)
VTP .bt (Binary Terrain) 1.3 Format (*.bt)
NOAA Vertical Datum .GTX (*.gtx)
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Houlton Rd
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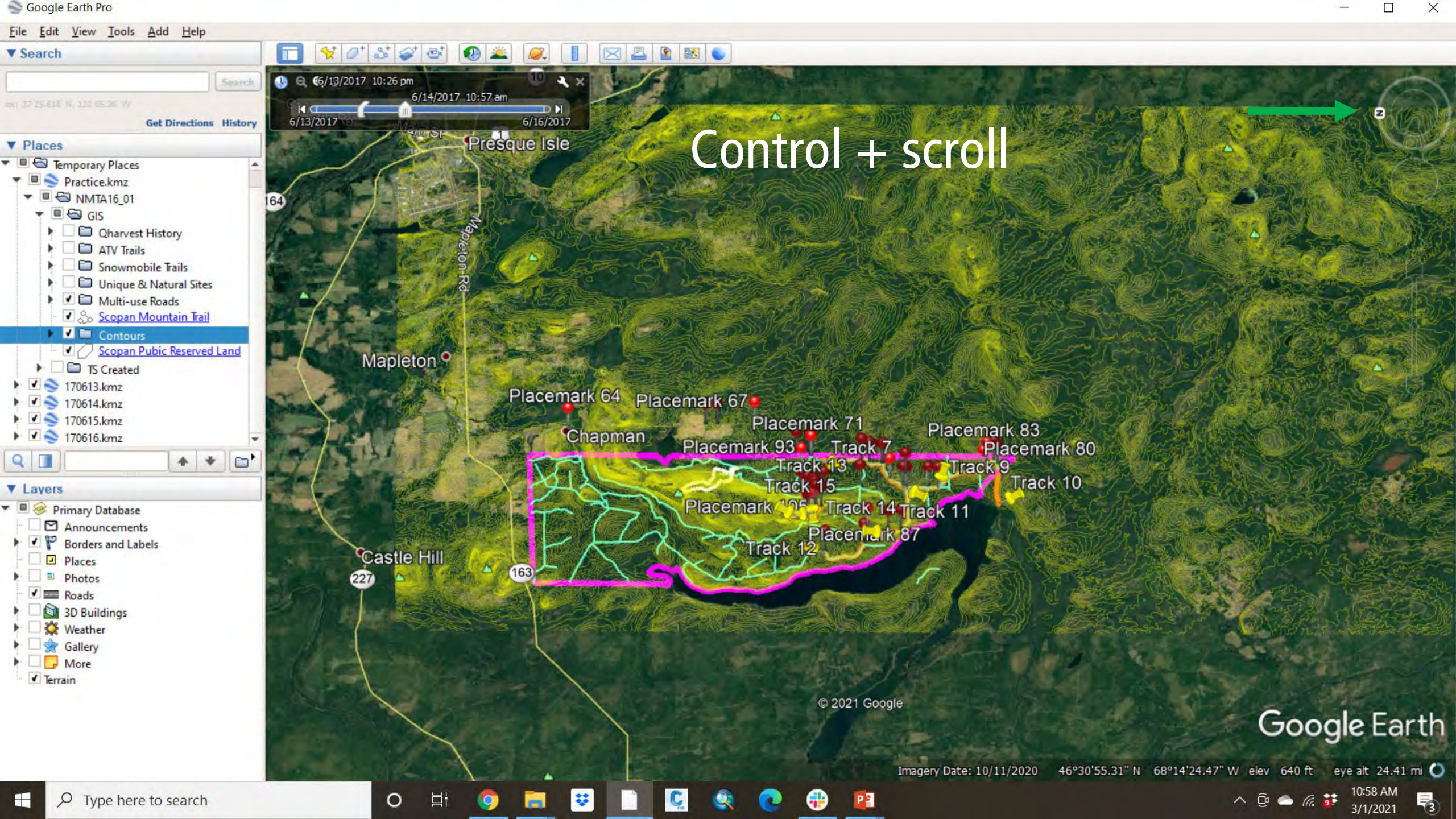
Google Earth Pro
File Edit View Tools Add Help
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ATV Trails
Snowmobile Trails
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Multi-use Roads
Scopan Mountain Trail
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Chapman
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Track 7
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Track 13
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Track 15
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Track 14
Track 11
Placemark 87
Track 12
Castle Hill
164
163
227
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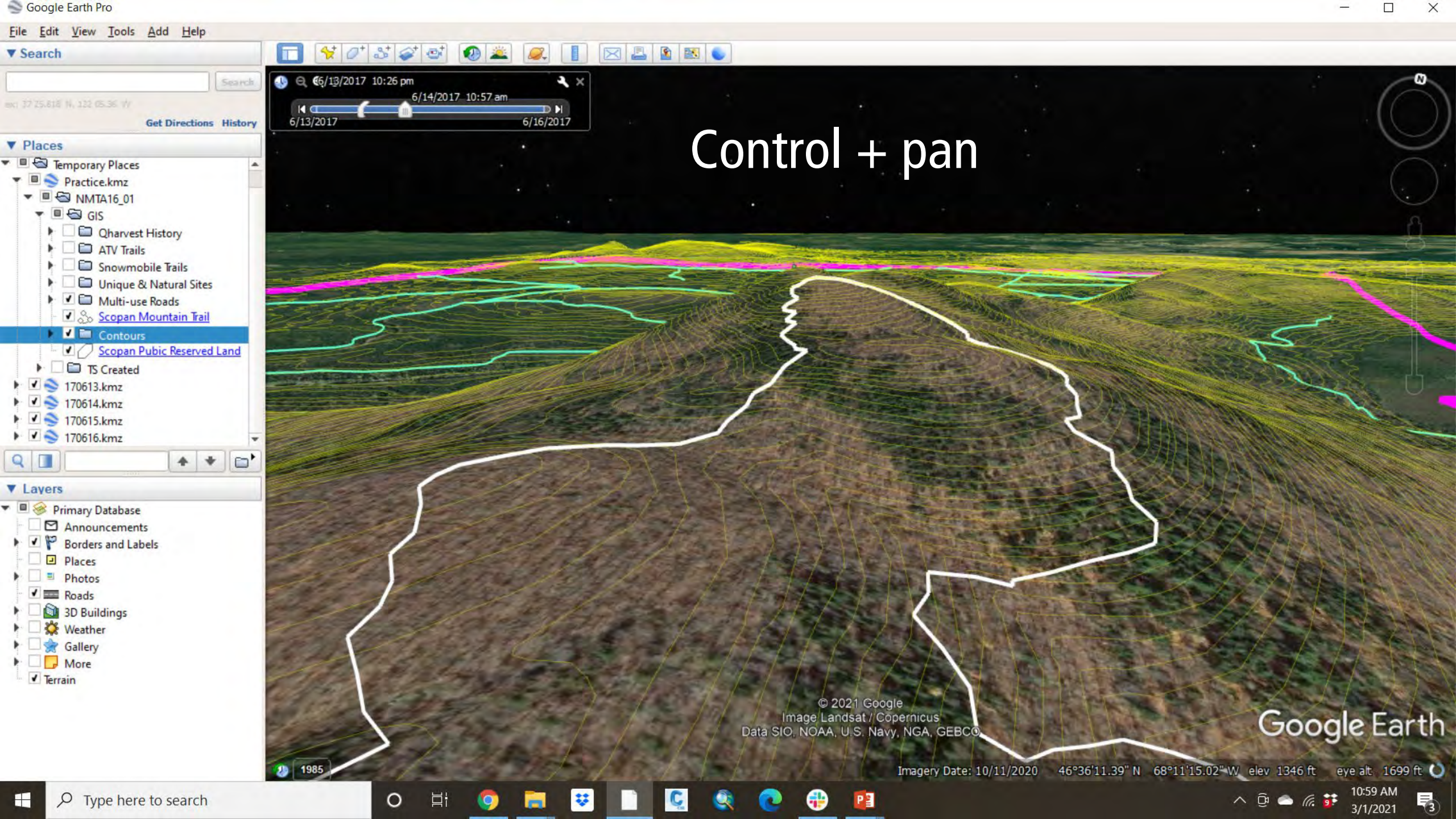
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Image Landsat / Copernicus
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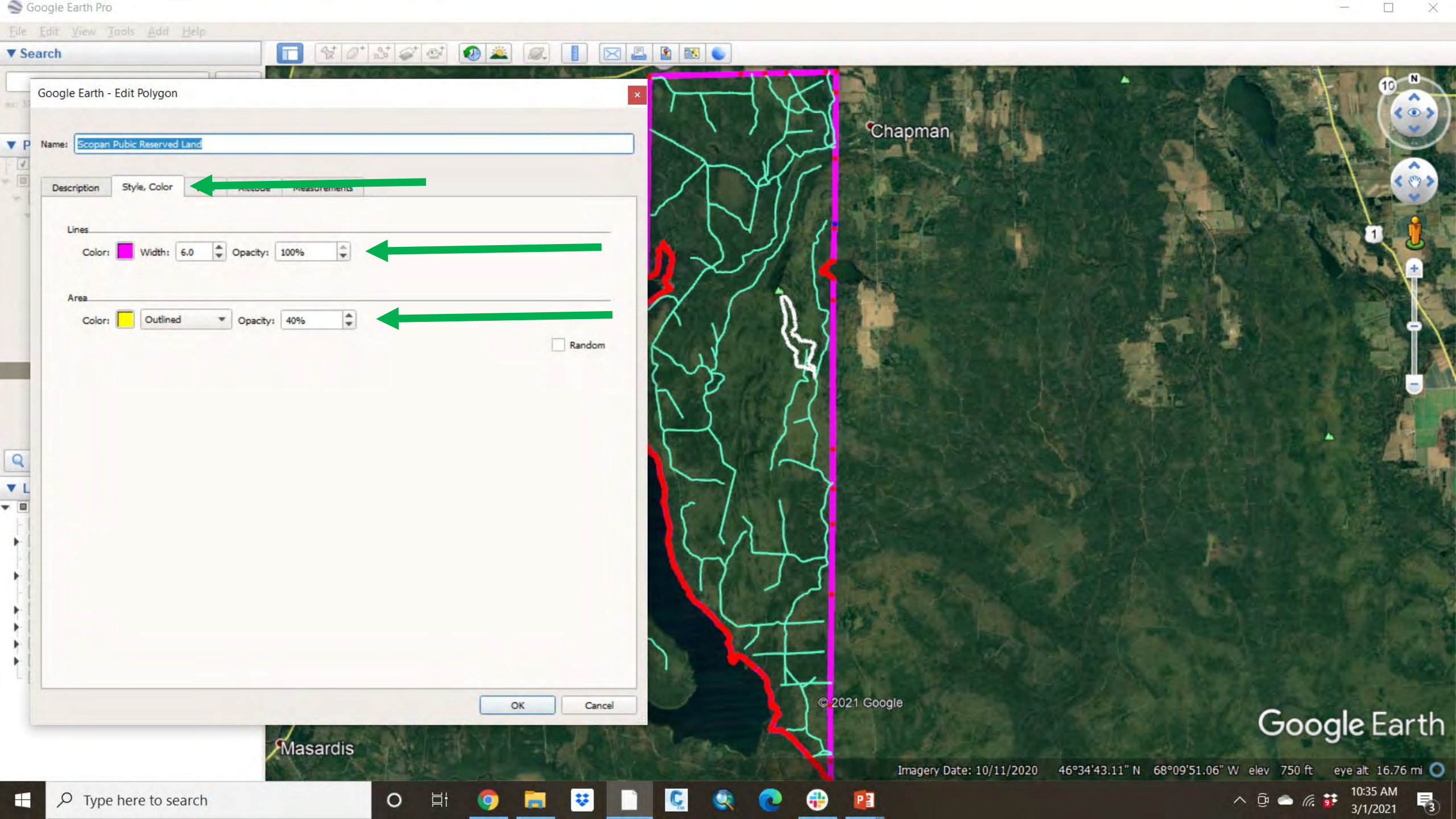
Google Earth Pro
File Edit View Tools Add Help
Search
Google Earth - Edit Polygon
Name: Scopan Pubic Reserved Land
Description
Style, Color
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Color:
Width: 6.0
Opacity: 100%
Area
Color:
Outlined
Opacity: 40%
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Imagery Date: 10/11/2020 46°34'43.11" N 68°09'51.06" W elev 750 ft eye alt 16.76 mi
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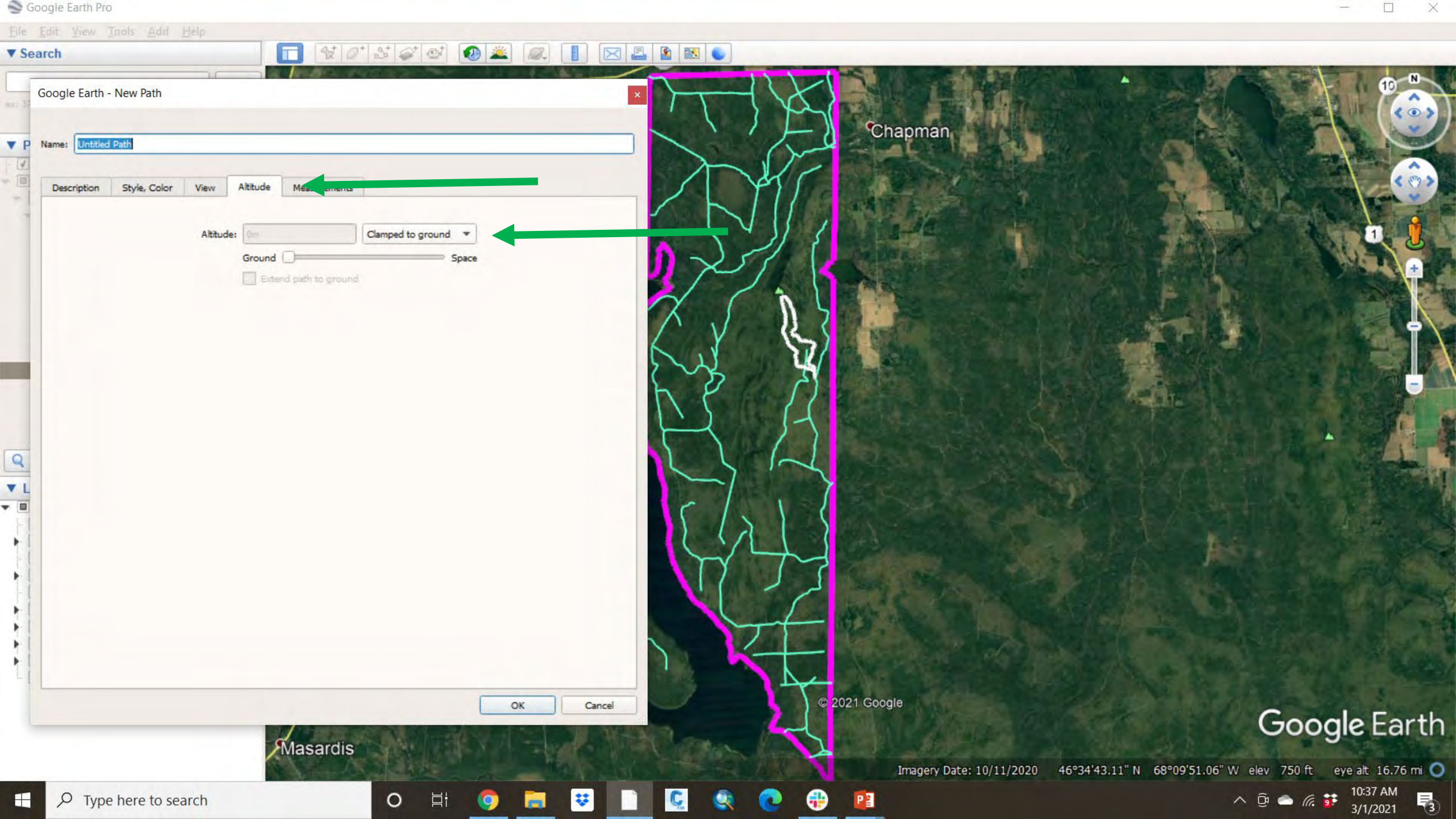
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File Edit View Tools Add Help
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Google Earth - New Path
Name: Untitled Path
Description
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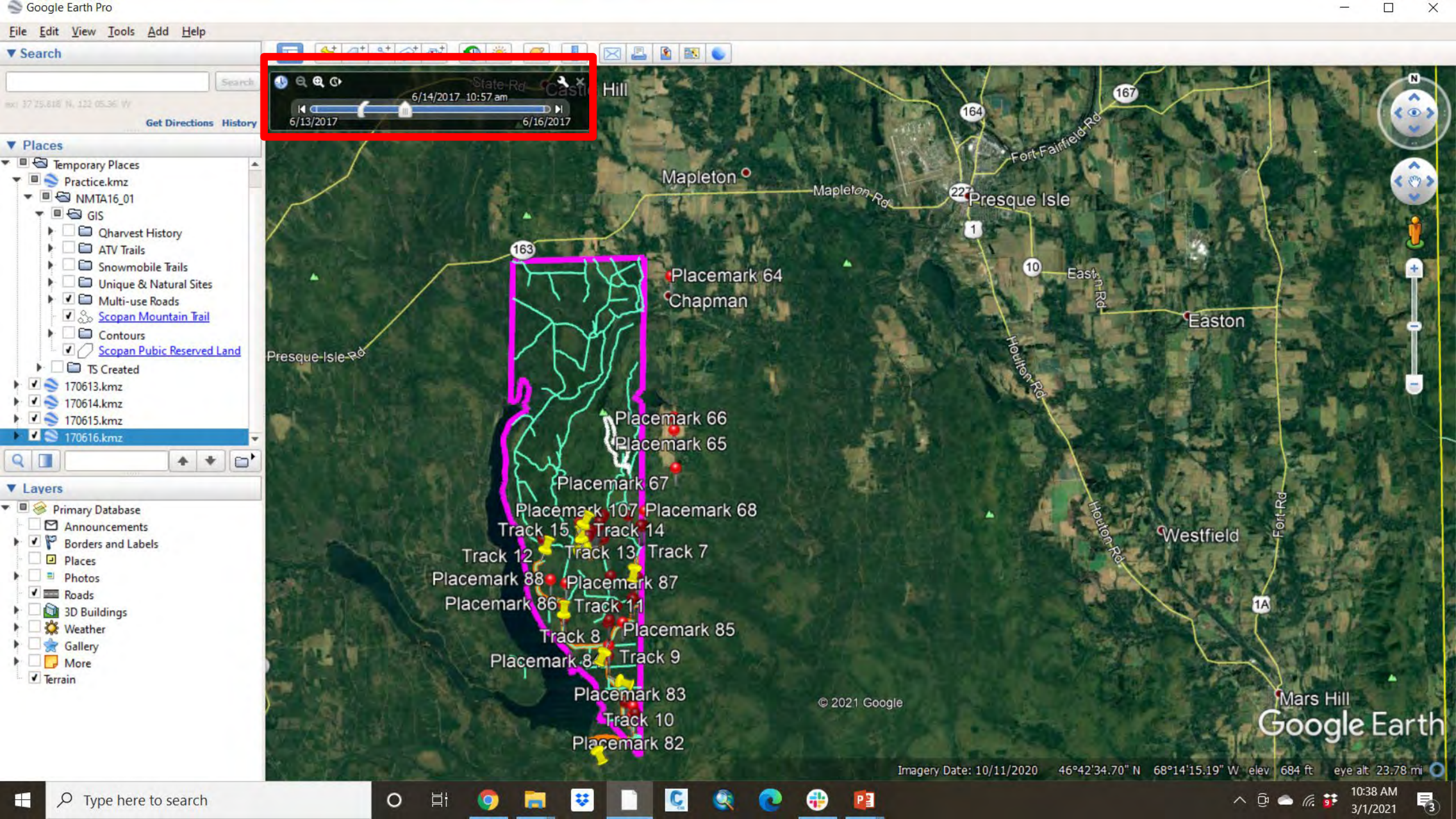
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Placemark 83
Track 10
Placemark 82
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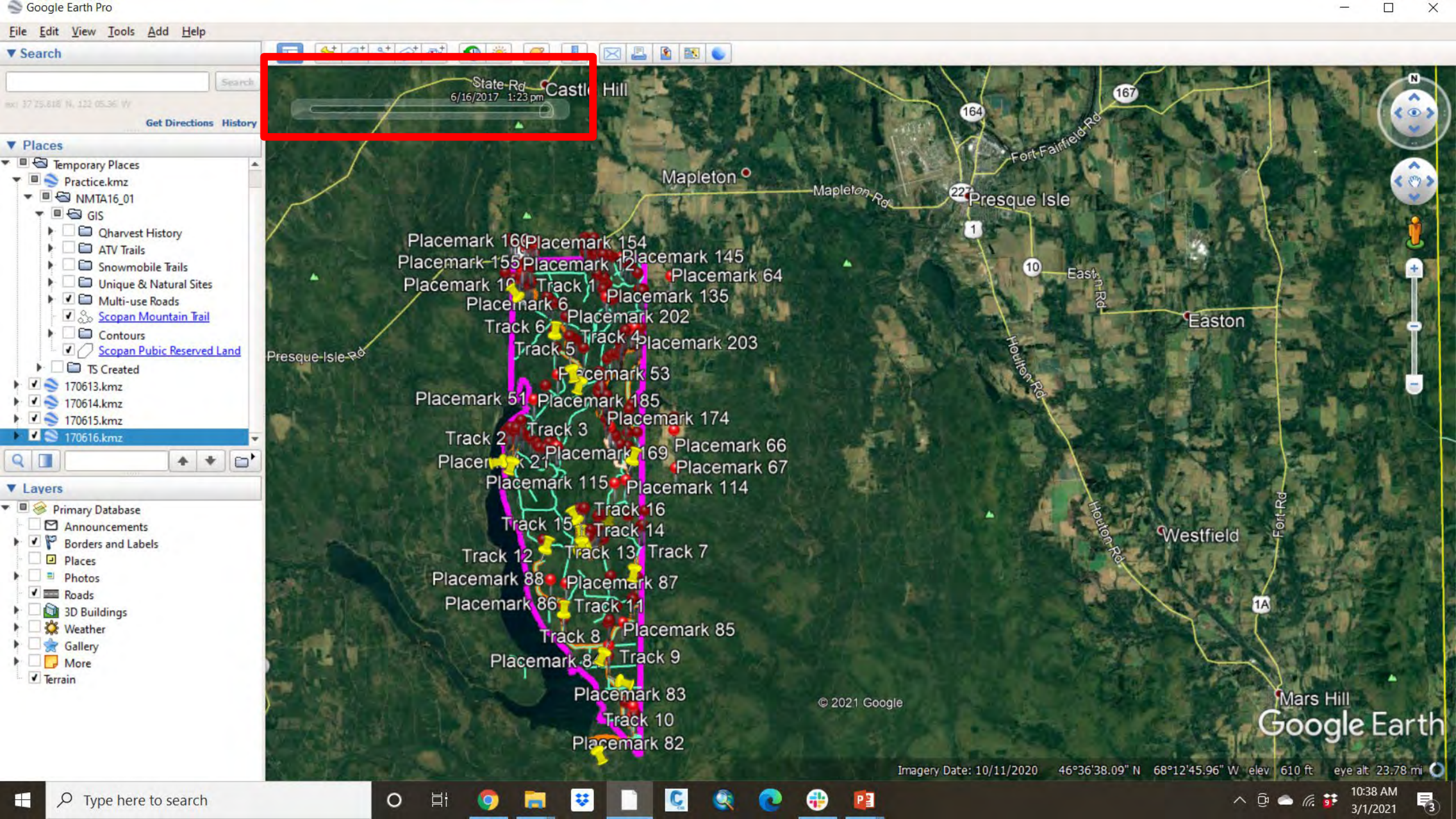
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Imagery Date: 10/11/2020 46°36'38.09" N 68°12'45.96" W elev 610 ft eye alt 23.78 mi
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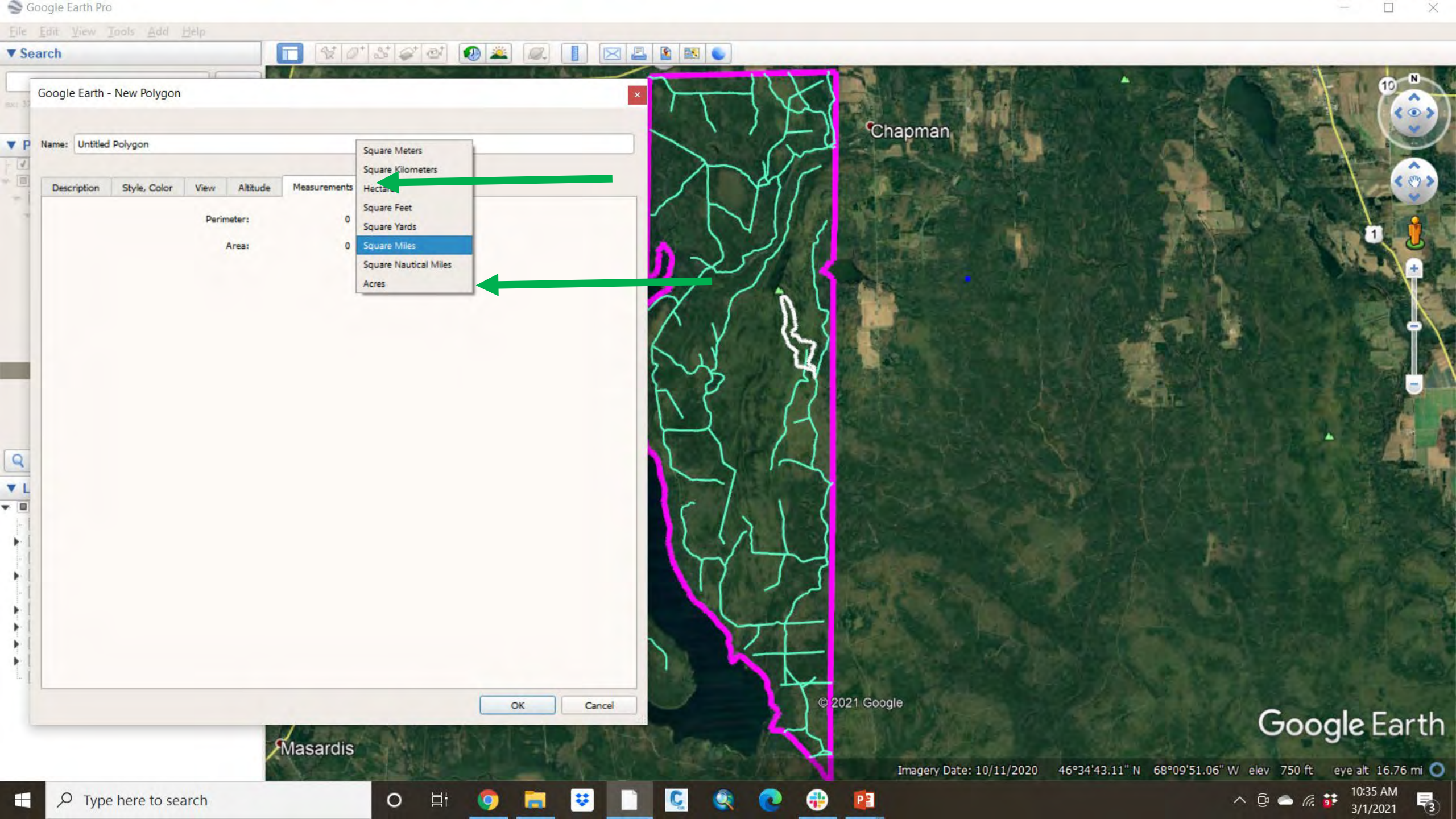
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Description
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Measurements
Perimeter: 0
Area: 0
Square Meters
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Imagery Date: 10/11/2020 46°34'43.11" N 68°09'51.06" W elev 750 ft eye alt 16.76 mi
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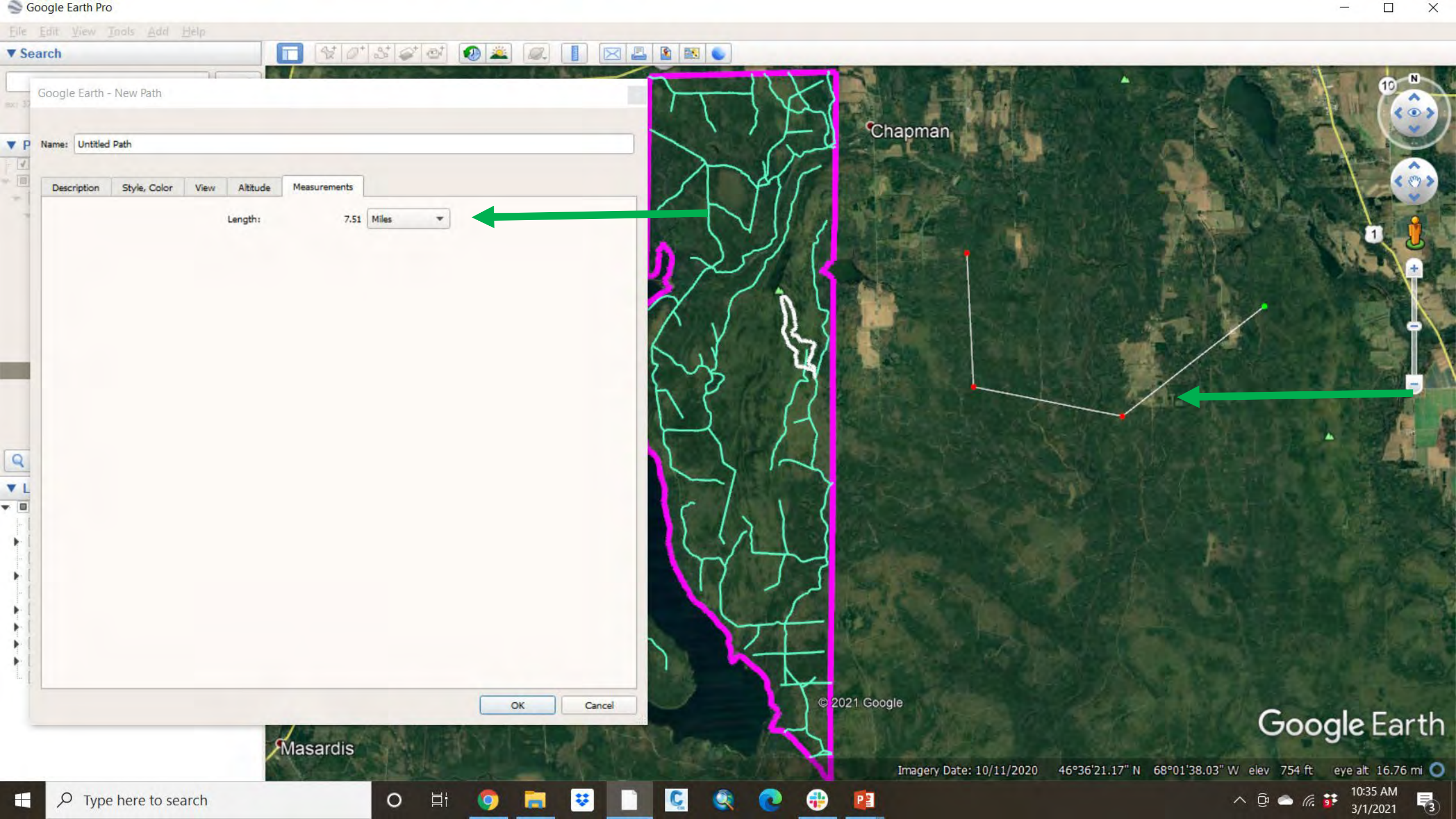
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Length: 7.51 Miles
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Chapman
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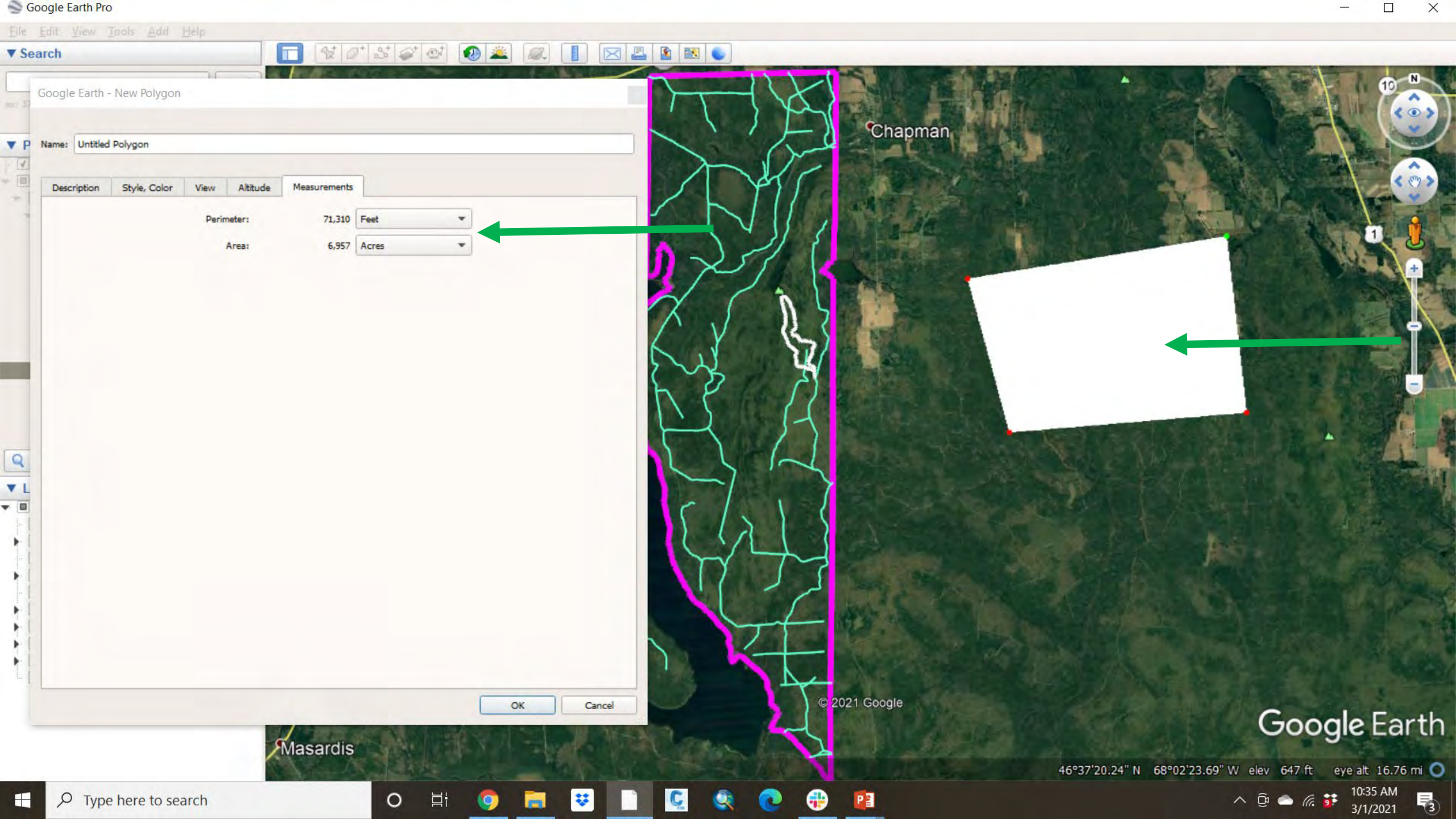
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Altitude
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Chapman
Masardis
© 2021 Google
Google Earth
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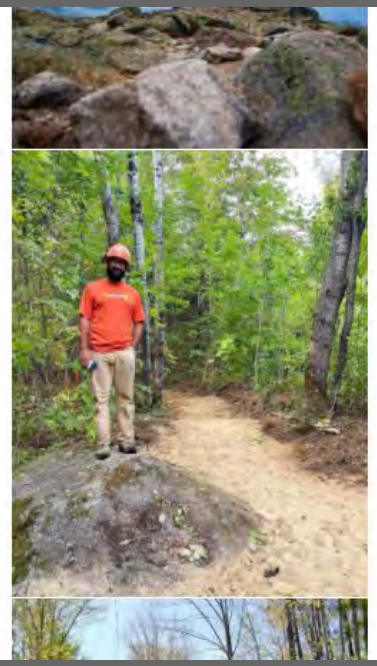

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