

Seattle Wilderness Navigation Field Trip at Discovery Park, Seattle WA

YOU DO NOT NEED TO PRINT ANYTHING FOR THIS FIELD TRIP.

TWO DOUBLE-SIDED 8.5X11 INCH CALTOPO MAPS WILL BE ISSUED TO YOU UPON CHECK-IN. When folded into thirds, the maps will measure about 4x8.5 inches. Please do not remove the maps from their zip lock bags. Please return the maps when done.

Prior to the field trip, PLEASE FIGURE OUT A WAY TO STOW YOUR MAPS SO THAT THEY ARE QUICKLY RETRIEVABLE (LESS THAN 5 SECONDS) HINT: TUCK IT INTO YOUR GATOR OR SIMILAR. YOU WILL BE MUCH HAPPIER IF YOUR HANDS ARE AS FREE AS POSSIBLE. SAME GOES FOR YOUR COMPASS. WE RECOMMEND NOT USING THE LANYARD TO ATTACH THE COMPASS AROUND YOUR NECK. IF YOU OPT TO DO IT THIS WAY, MAKE SURE YOU USE AN EXTRA LONG LANYARD, NOT THE ONE THAT COMES WITH THE COMPASS.

Arrive: No later than 6:45am, **Instructor Brief:** 7:00am, **Start Hike:** 7:15am-7:30 **Finish** between 12-2 pm.

Meet: Discovery Park, Seattle, **SOUTH** parking lot.

Entrance to parking lot at West Emerson St. + 43rd Ave West.

WGS84 UTM Z10 544294E 5278093N, 47.65472, -122.41014.

Students Complete Before Arriving at Field Trip:

1. Install this [Discovery GPX](#) file into Gaia (on phone).
2. Install AltimeterPlus or similar app on phone. iPhone 6 or later is barometric.
3. Review the scenario notes and maps contained in the [Student Packet](#).

What to Bring: "Trail" style food and water. You will be snacking as you move throughout the day, there is no designated "lunch break". Trail shoes, backpack, whistle, head-lamp. Rain gear, gators if you have them for map storage. Hat, **GLOVES, NO MITTENS**, sunglasses, extra layers for cold, wind, fog etc. Compass: MUST BE QUICKLY RETRIEVABLE AND STOWABLE.

BRING GLOVES THAT ARE WARM YET DEXTEROUS ENOUGH TO ALLOW YOU TO MANIPULATE THE COMPASS. YOU WILL BE MISERABLE IF YOU SHOW UP WITHOUT PROPER GLOVES!

Throughout the day, you will be practicing Staying Found. This is predicated on Situational Awareness, it is your most important tool. Mastering how to use and combine the map, compass, altimeter, gps, note taking, chatting with your partner, WHILE AT THE SAME TIME MAINTAINING YOUR SITUATIONAL AWARENESS can be a challenge.

Student learning targets are:

Maintain a high level of situational awareness. HINT: If you are **in motion** on trail or off, and you are **staring at your map or your phone**, you are **NOT** practicing situational awareness, you are zoned out. Resist this temptation! It is excruciatingly bad form.

Use terrain recognition, map, altimeter, compass, and GPS in effective combinations. Measure and plot bearings to locate terrain features, and to deduce your point position. Navigate safely off and on trail, with reasonable confidence, accuracy and time. Develop a feel for estimating time and distance. Become comfortable with the UTM grid. The exact time you finish the field trip is somewhat unpredictable due to party size, weather conditions, etc. **Plan on finishing between 12-2pm.**

Leave No Trace at Discovery Park

- 1) Carry out all garbage, and everything else you brought in.
- 2) If you see trash, please pick it up. Leave things nicer than they were when you arrived.
- 3) There are Honey Bucket bathrooms at the south parking lot and at other points around Discovery Park.
- 4) Please try to avoid stepping on the Woolly Worms!

Regards,

Otto Greule
Day Lead
206-250-3397

Meet: Discovery PARK, SEATTLE, SOUTH PARKING LOT.
Entrance to parking lot at West Emerson St. + 43rd Ave West.
WGS84 UTM Z10 544294E 5278093N, 47.65472, -122.41014.

AT MUSTER AREA, SOUTH PARKING LOT

Group introductions.
Create student pairs by counting one, two, one, two.
Assign first aid person, clarify role.
Check gear, clothing, expectations.
Party separation / Bio break.
Summary of the day ahead.
Set turnaround time to beat sunset.

GENERAL BRIEFING AT PARKING LOT

Calibrate barometric altimeters to **320 feet**.

CONFIRM DATUM IS WGS84!

Coordinate Type: UTM

Units: Imperial; Distance: Personal Preference

Compass: **15°E** dec, Stowed, quickly retrievable.

Distribution of Maps. Do not remove maps from zip bags. Okay to draw line on bag with dry erase pen.

Note the contour interval is 10 feet.

100 Meter UTM grids. Practice using UTM grid to roughly measure distances. Diagonal = 1.4 times any side.

Cell phone + Gaia GPS app, battery full, weatherproof.

Backup battery stowed, protected.

Not in airplane mode. Use cell phone for communication.

Set GPS waypoint at South Parking Lot.

Emergency comm: Use phone or whistle.

Watch: time correct, secure, visible.

Notation: time, temp, sky, wind, rain; secure pencil, dry erase pens.

Attach name-tag.

Student pairs alternate leading throughout the day, with guidance/prompts from instructors. We will stop frequently to practice: Situational Awareness, Terrain Recognition, Orienting the Map, Altimeter + Contour Lines, Compass Bearings, Lines of Position, Distance Estimates, UTM's, GPS.

PREPARE TO HEAD TO WP-D

Which Way is North?

Orient Map, Locate WP-D

Using UTM Grid, estimate distance to WP-D

Follow trail (not road) toward WP-D

Review the "**5 Questions**"

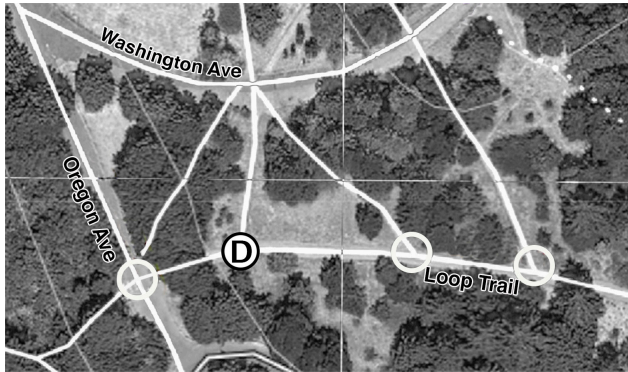
- 1. Where are you?**
- 2. Where do you want to go?**
- 3. What route will you take to get there?**
- 4. How long will it take?**
- 5. What do you expect to see along the way?**

PROCEED TOWARD WP-D

APPROACHING WP-D

Follow the “Loop Trail” (not road) toward WP-D.

Discuss “Handrails” + “Catchlines”, [Pavement of Oregon Ave., just past the crest of the hill, is too far]



AT WP-D: HANDRAILS

Using your compass and the bearing of the four trails, determine when you have reached WP-D rather than one of the white circles. Confirm that you are at WP-D with Gaia GPS. WP-D = 544077E 5278077N

Handrails include (1) any linear landscape feature such as a trail, a ridge, a stream, cliff (2) an elevation (contour line on the map). Similarly, a “**Line of Position**” is a bearing to a visible object that is recognizable on the map. You must be somewhere on this line. Where that line intersects your handrail, is your point position.

Travel roughly north to the front of the Church.

Note that you are at WP-3 ③. Locate WP-6 ⑥ (Fire Hydrant) on the map. Measure bearing from ③ to ⑥ on map, then plot bearing in the field (stand a few feet west of church stairs). **Walk to Hydrant.**

At The Hydrant: Without adjusting the bearing measured at the church, plot the bearing in the field again only this time put **BLACK** in the shed, **NOT RED**. This is called a “**Back Bearing**”. If you did everything correctly, the church should appear along the back bearing line. This helps confirm that you followed the line correctly.

Measure a bearing on the map to WP-8 Bus Shelter (remember to estimate first), then plot in the field to locate.

Next measure a bearing in the field to the **Radar Dome**, plot that bearing on the map. Draw a line (on the zip bag) along the edge of the compass with your dry erase pen. This “**Line of Position**” should cross the **handrail** of Oregon Ave, resulting in a deduced point position. Then measure a second bearing off of the Flag Pole ⑨ to **Triangulate** position. Draw a second line from the Flag Pole. Where the two lines intersect is your point position.

While Still at Fire Hydrant: Determine UTM coordinate from map, compare with GPS. Set waypoint. Review how all 5 tools work together. LOPs, Elevation, Bearings, Landmarks, Terrain Recognition.

Student pairs separate by 10-15 meters along Oregon Ave, on either side of Hydrant. Use Gaia “guide me” to obtain bearing to WP-E, set bearing on compass, plot. Students **IDENTIFY AN OBJECT THAT FALLS ON THE BEARING LINE**, stow the compass and walk to that object.

AT WP-E, UTM 544013E 5278387N

Determine your location. Without using GPS, how do you know you’re at WP-E? How can you prove it?

NEXT: BEARING PRACTICE Also practice estimating distances to targets in meters using UTM grid.

FIRST: MEASURE bearings on the map to a few of the numbered targets, then PLOT bearings in the field to locate and identify targets.

SECOND: After identifying targets, reverse the process and MEASURE a bearing in the field to a target, then PLOT the bearing on the map to obtain a Line of Position, which intersects your HANDRAIL (trail) to yield a point position. Confirm with GPS UTM.

BEARING PRACTICE FROM WP-E

Note that “E” and “N” are now omitted from UTM #s.
Easting is always 6 digits, Northing is always 7 digits.

- ①— 544071 5278424; Radar Dome; 230’, 70M
- ②— 544112 5278320; Chimney on middle of 3 yellow houses 390’, 120M
- ③— 544077 5278215; Steeple on white Post Chapel Bldg. 600’, 180M
- ④— 543967 5278215; Intersection of Oregon Ave + Kansas Ave; 590’, 180M
- ⑤— 543671 5278070; Restroom; 1500’, 460M
- ⑥— 543845 5278385; Fire Hydrant near tree on Oregon Ave; 540’, 165M
- ⑦— 543841 5278601; Red chimney; 900’, 274M
- ⑧— 543917 5278704; Bus Shelter 1100’, 330M
- ⑨— 544029 5278653; Flagpole; 900’, 265M
- ⑩— 489542 5278299; The Brothers North Peak; 34 mi., 54 km. What is a near object on that bearing? (Hydrant). **Bonus:** What is GPS bearing to Mt Rainier at 594497 5189563 [64 mi, 102 km]

LEAPFROG: WP-E TO WP-F

Pairs measure bearing on map to WP-F from:

WP-E (SW corner of fence)

WP-E1 (NW corner of fence)

WP-E2 (Hydrant south of Radar Dome)

WP-E3 (UTM 544062 5278550)

Leapfrog to the **second** paved path, shown as “Kansas Ave” on the map. Where your bearing line intersects the trail is WP-F. Assume the visibility is only 75’. Use **bold hand signals**, no yelling.

Review the Ten Essentials, do not remove from pack. Recite “The Essential Limerick” for extra credit (see end note #4).

AT WP-F FOLLOW BEARING TO WP-G

Working solo, measure the bearing on the map from WPF to WPG. Note that you cannot see WP-G from WP-F. Find a terrain feature on that line. Stow the compass and without losing sight of that feature, hike to it. Hint: check map for trails to the south that may lead to WP-G.

WP-G (Post), UTM 543802 5278587.

From WP-G, Measure a bearing in the field to the Radar Dome ①. Plot the bearing on map for a LOP. Use the Bluff as a handrail, determine location.



MEASURE BEARING TO WP-H, PLOT. Travel WNW along the Loop Trail toward WP-H, but **STOP** at triangle marker (on map) to measure fall line of slope. If you arrive at the picnic table you've gone too far.

MEASURE FALL LINE



Just south of WP-H (roughly at the orange triangle icon on the map), measure **fall line** of slope. Used to deduce which aspect of a peak you are on in low visibility, etc. Show how this indicates you are probably on the loop trail between WP-G and WP-H, and not on any of the trails north of WP-H.

CLINOMETER

Estimate any vertical angle with clinometer (remember to set compass to 270° or 090°. Discuss Avi danger 30 to 45 degrees, plus or minus.

CONTINUE TO WP-H

FINAL PROBLEM: RETURN TO SOUTH PARKING LOT (WP-P)

Stop at picnic table just before WP-H intersection. Instructor issues Route Waypoint names (not coordinates) to student pairs. Starting at WP-H, **students plan a route on the map** back to **WP-B**, hitting the given Waypoints as they go. From WP-B return to the south parking lot through WP-C.

Note that the first Waypoints of each route [X1, X7, X8] are not printed on the map. Students find X1, X7, X8 via UTM coordinates issued by instructor. Students enter UTMs in Gaia, and find the location of either X1, X7, or X8 on the paper map and incorporate into their routes. **Note that none of the final waypoint UTM coordinates are included in the GPX file.** Avoid roads as much as practicable.

Discuss Emergency Response Plan for dealing with injury whenever outside of cell range. Make sure your **phone** is on, not in airplane mode, and that you know your instructor's phone number, and the **deadline** to be back at the South Parking Lot. Students briefly discuss plan with instructor.

In Gaia, turn on "Record a Track". Orient the map. Start hike using the **5 Tools** as appropriate to hit each waypoint. **Closely watch for distant targets (Radar Dome, Flagpole, etc) as you move along the trails.** If target is visible, measure and plot bearing off of target to deduce point position. Each student should **record a Waypoint** in Gaia at each intermediate WP ($\pm 100'$).

FINAL STOP AT SOUTH PARKING LOT WP-P

Students complete self-evaluation grade cards and share/consult with instructor as to what skills they need to work on, students keep cards. Students should note the time and % battery on phone (% per day). Record names and contact info of new friends.

BASIC ROUTE WGS84 UTM:

- WP-A— 544592E 5278462N Visitor Center
- WP-B— 544448E 5278528N
- WP-C— 544468E 5278082N
- WP-D— 544077E 5278077N
- WP-E— 544013E 5278387N
- WP-E1—544015E 5278463N
- WP-E2—544069E 5278360N
- WP-E3—544062E 5278550N
- WP-F— 543802E 5278587N
- WP-G— 543503E 5278330N
- WP-H— 543272E 5278459N
- WP-I — 542356E 5278885N
- WP-P — 544294E 5278093N South Parking Lot

The Mountaineers Ten Essentials Limerick

To **navigate**, **head** for the **sun**
With **first aid** and **knife** on the run
Bring **fire** and **shelter**
Extra food is a helper
But **water** and **clothes** weigh a ton.
-Steve McClure

EMERGENCY RESPONSE PLAN - DISCOVERY PARK

ACCIDENT RESPONSE RESPONSIBILITIES

Field Trip Day Leader/Incident Commander (Instructor #1 or Overall Day Lead):

- 1) Coordinate all response and evacuation needs (actions depending on the severity of the incident). Initiate 911 or beacon SOS signal if needed.
- 2) Coordinate with the First Aid Leader to ensure immediate first aid is given to the injured person(s).
- 3) Continue with the overall responsibility of the field trip. Group will remain at incident until incident is resolved.
- 4) Contact ambulance, hospital, and county sheriff for Search and Rescue as required.
- 5) Contact injured person's emergency contacts.
- 6) Report incident to the club and appropriate committee chair(s).
- 7) Complete accident report with evaluation of seriousness of the injury and type of evacuation recommended. Continually provide status updates.
- 8) Plan and carry out evacuation if needed.

First Aid Leader (Instructor #2 unless more qualified participant):

- 1) Designated for the group, or on the spot based on available skills.
- 2) Designate a communications/site leader if possible to relay communication with the Incident Commander (ideally an instructor).
- 3) Ensure proper assessment, first aid, and stabilization of victim's condition (Steps 1 through 7).
- 4) Stay with the victim until the situation is under control or care is transferred to a higher authority.
- 5) Report status updates to incident commander via the site communications/site leader.

ACCIDENT RESPONSE PROCEDURE:

- 1) Self-evacuation with group support is the rule, except in cases of medical emergencies requiring immediate treatment.
- 2) Incident commander will have sole authority over 911 calls and/or beacon SOS initiations and notify the Day Leader of such an initiation.
- 3) The victim (or First Responders in the case of an unresponsive victim) should make their situation known via cell phone or if needed (three short whistle bursts repeated for a minute, followed by a minute break).
- 4) First responders assure incident scene safety.
- 5) First Aid Leader will initiate assessment, treatment, and stabilization of any injured person(s).
NOTE: Day Leader carries a small group first aid kit (if solo group, full size if multiple groups) stocked to match the inventory.
- 6) Communication will be established by the First Aid Leader (or designated communications/site leader) with the Day Leader/Incident Commander.
- 7) Develop and execute an Evacuation Plan - First Aid Leader (and others as needed) under the direction of the Incident Commander. 911/SOS initiation is at the discretion of the Incident Commander.
- 8) First Aid Leader will remain with the victim throughout the evacuation plan until care is transferred to a higher authority.
- 9) The Day Leader will remain responsible for the overall execution and safety of the field trip. Early termination will be the decision of the Day Leader.
- 10) No later than post evacuation, the Day Leader will contact the injured person's emergency contacts and update them with the current status and plan.
- 11) Following the field trip the Day Leader will submit a report of the incident to the club and appropriate committee chair(s).

LOST HIKER PROCEDURE:

- 1) Lost hikers should stop moving and stay in the same location. Attempt to make their situation known via cell phone or if needed (three short whistle bursts repeated for a minute, followed by a minute break). Wait until assistance arrives.
- 2) For Leaders and Instructors, insure your group is supervised, locate lost hikers, notify the Day Leader of the incident.

CONTACTS:

LAW ENFORCEMENT

King County Sheriff: Dial '911' and ask for the King County Sheriff.

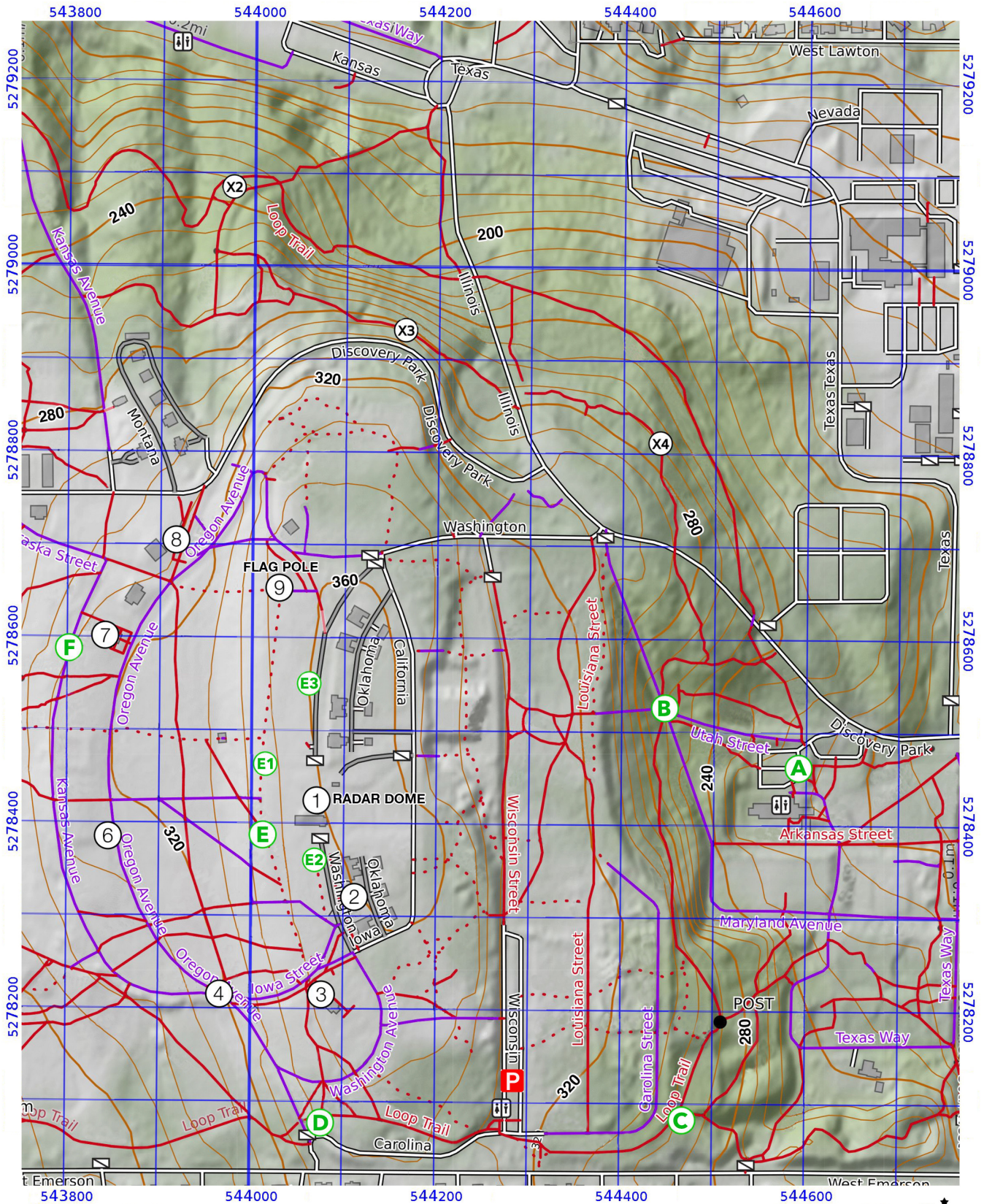
FT Directions: Discovery Park, King County, WA.

MEDICAL EMERGENCY

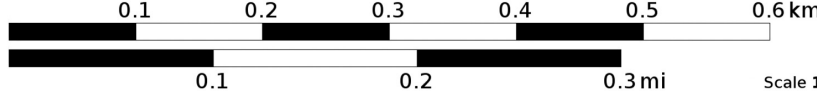
Swedish Emergency Room Ballard ER Phone: 206-781-6341

Address: 5350 Tallman Ave. NW Seattle, WA 98107

Directions: From the Discovery Park Visitor Center east parking lot, head east on Gilman Ave, turn left onto West Emerson Pl. Proceed toward the Ballard Bridge, turn right on W Nickerson just before 15th Ave. Circle over 15th Ave, staying left to merge onto the Ballard Bridge. Turn left on NW Market and proceed to Barnes Ave NW (just past 17th). The Swedish Ballard ER entrance is on Barnes Avenue between NW Market and 17th Ave NW. Parking is available in the adjacent lot, in the nearby garage and on the street.

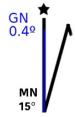


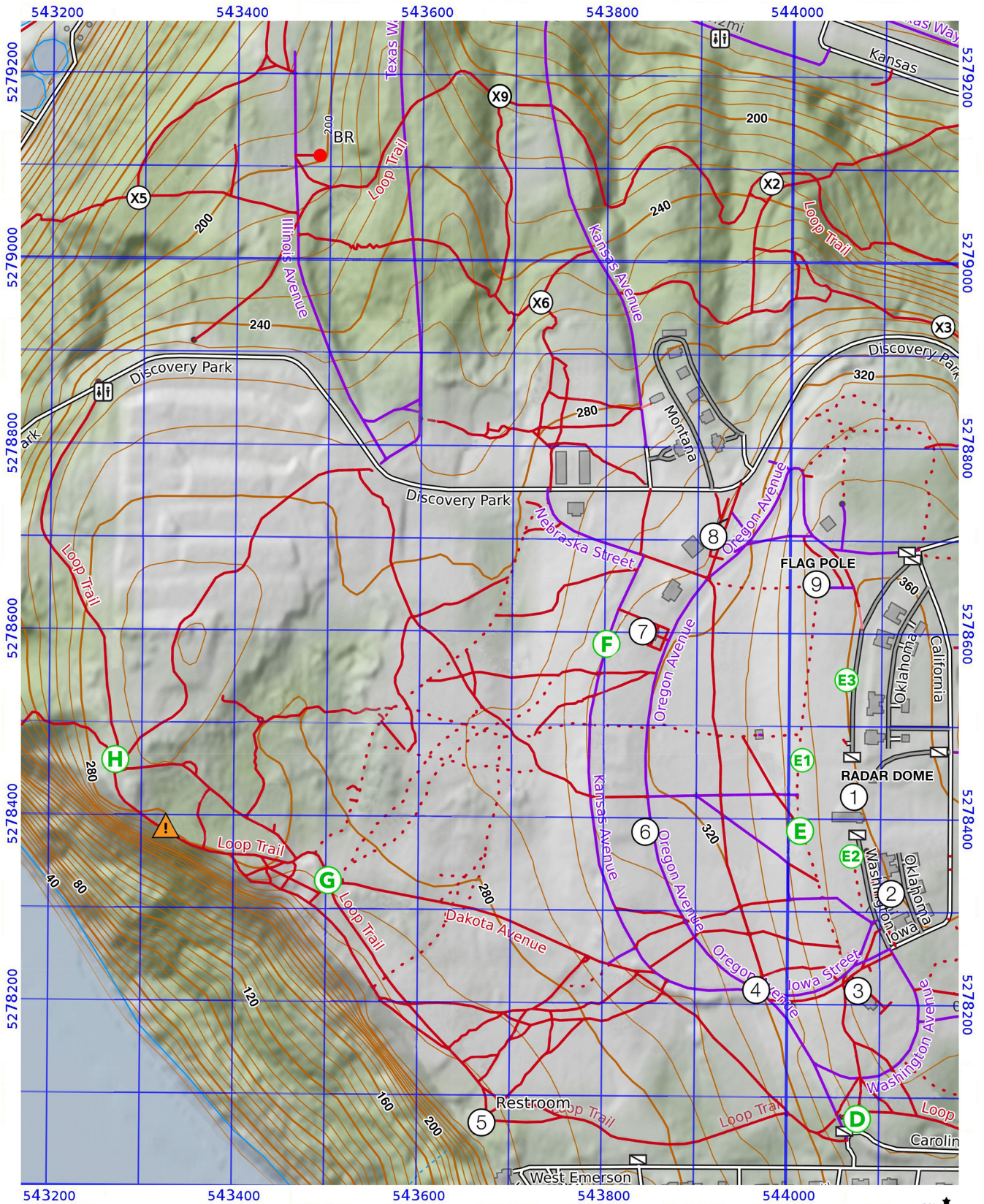
WGS84 UTM Zone 10T
 Contour Interval 10'
 Mercator Projection
 C4LTOPO Rite in the Rain



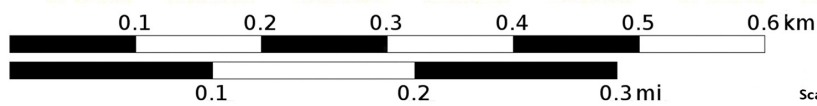
FT4.02_M1

Scale 1:5500 1 inch = 458 feet

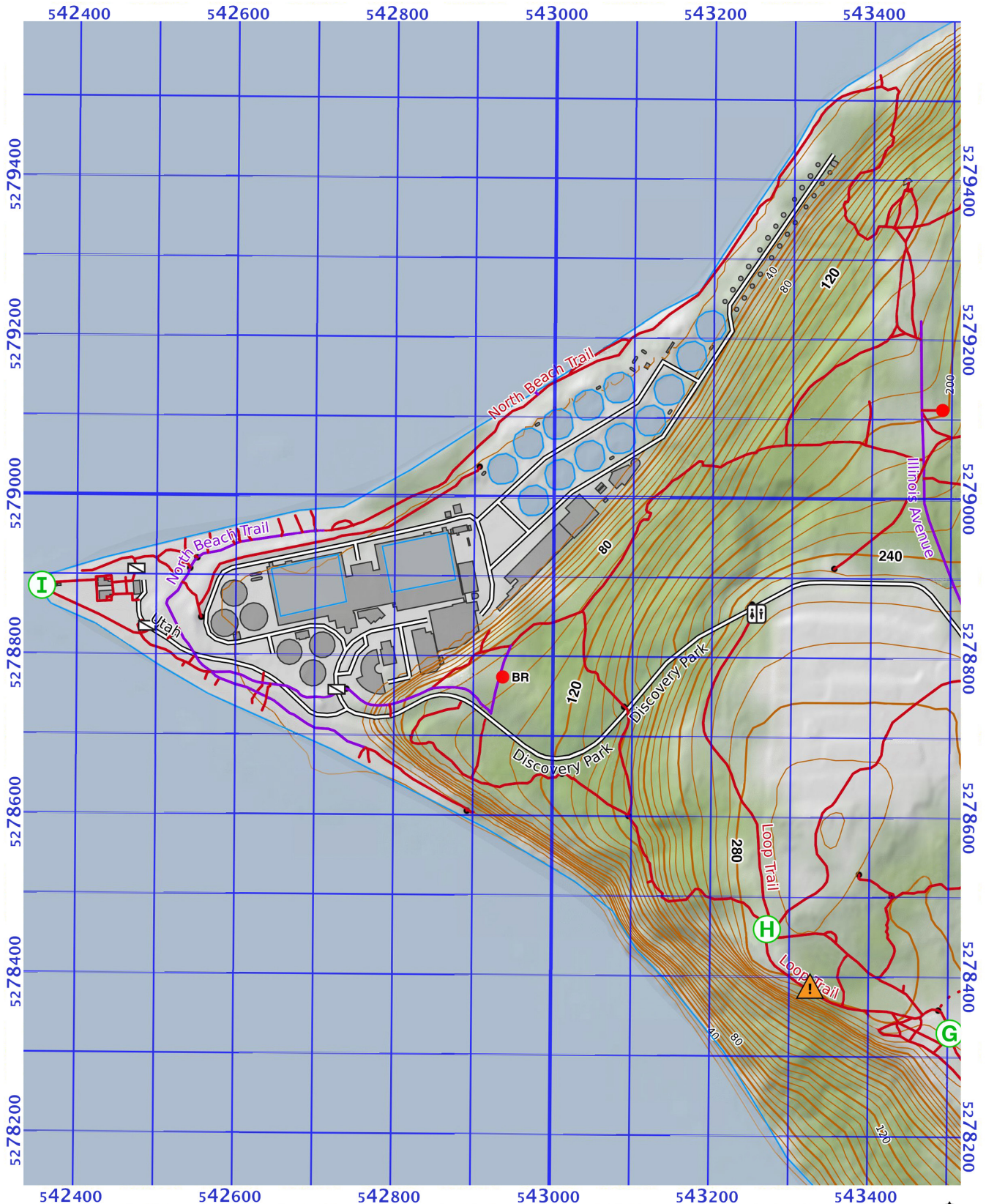




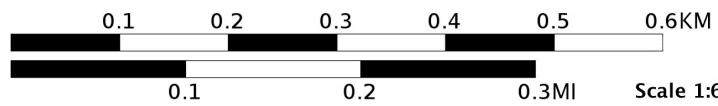
WGS84 UTM Zone 10T
 Contour Interval 10'
 Mercator Projection
 CALTOPO
 Rite in the Rain



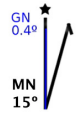
FT4.02_M2
 Scale 1:5500 1 inch = 458 feet
 GN 0.4°
 MN 15°

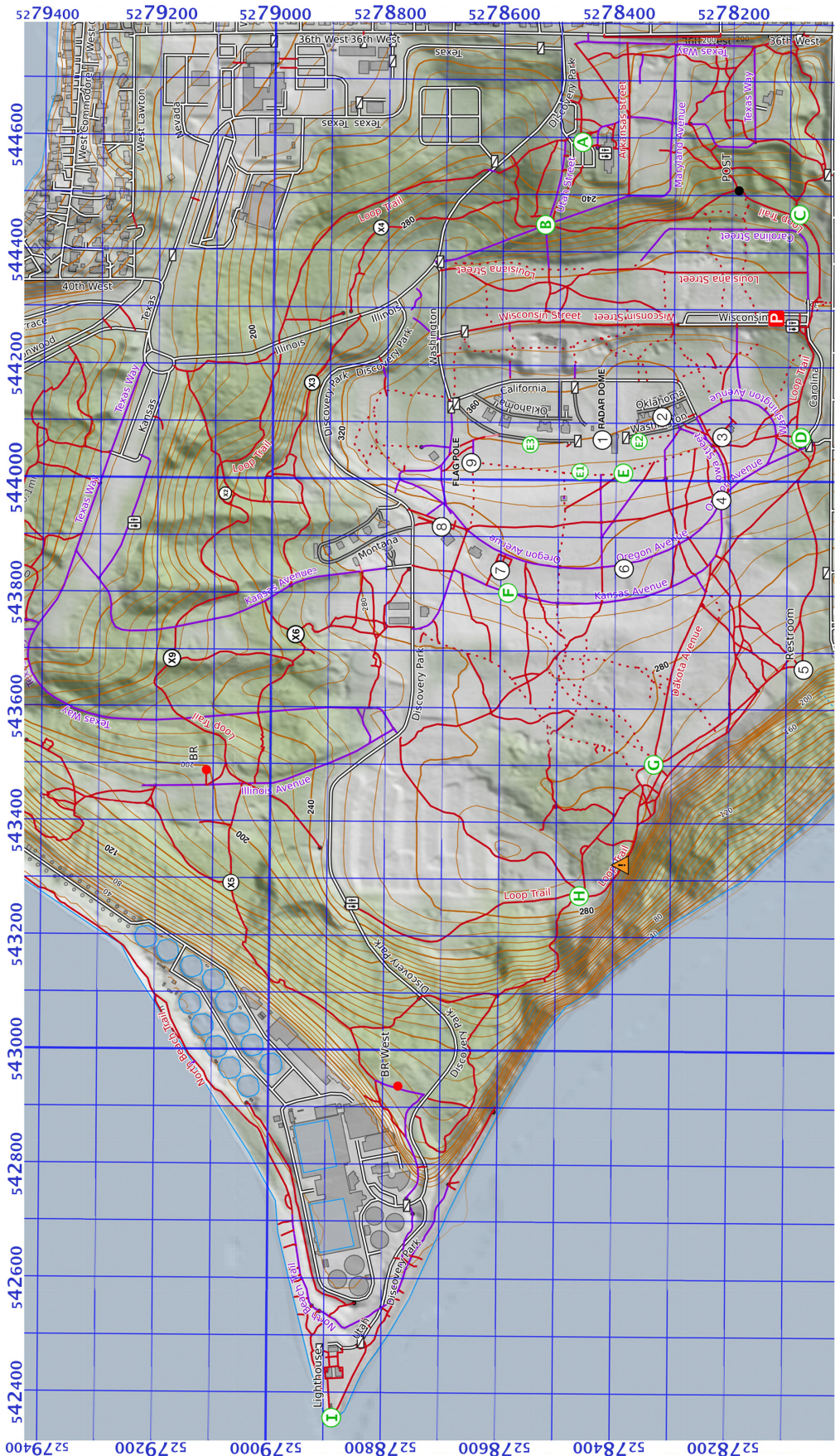


WGS84 UTM Zone 10T
 Contour Interval 10'
 Mercator Projection
 CALTOPO Rite in the Rain

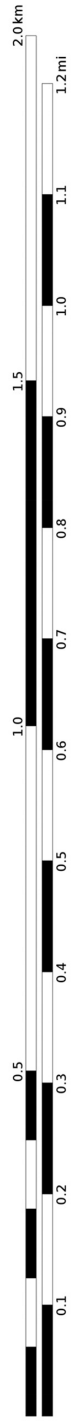


FT4.02_M3
 Scale 1:6400 1 inch = 533 feet





Mercator Projection
 WGS84
 UTM Zone 10T
 © CALTOPO
 Rite in the Rain



Scale 1:6200 1 inch = 517 feet Contour Interval 10 feet

FT4.02_M4