

Forestry Division Procedure		
Subject Title: Boundary Line Maintenance	Number	Date: 3/31/2017
Approved by: Steven Sinclair, Director of Forests	Version 1.0	
Signature:		

PURPOSE

The purpose of this document is to provide guidance for the periodic maintenance of Agency of Natural Resources (ANR) parcel boundaries. The goal is boundaries that are highly visible, accurate, enduring and legally correct.

SCOPE

This guideline applies to any individual maintaining the boundaries of ANR parcels. These instructions are for the use of Licensed Foresters or those working under a Licensed Forester employed by the Department of Forests, Parks and Recreation. Forestry staff or designees are directed to prepare a relatively smooth surface for paint-to-bark cohesion and repaint existing blazes. Licensed Foresters can create new blazes on state land where previous blazes are healed over or where previously blazed trees are fallen over, dead or removed.

RECORDS and METRICS

Records and metrics will be stored in the ANR parcel boundary data later. This data can be managed utilizing ArcGIS, Collector, or the Feature Editor. The directions below are related to the Collector App which is available via smart phone or iPad.



Collector App

Currently there are two map projects available for Collector App. The first one is for the collection of the ANR Lands Infrastructure and the second is the State Land Boundary Maintenance mapping project.

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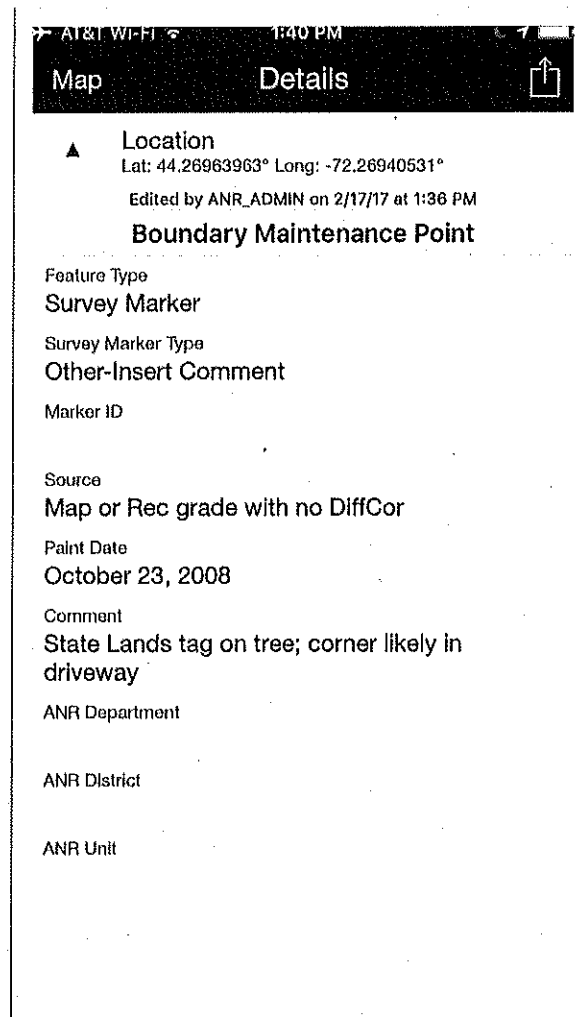
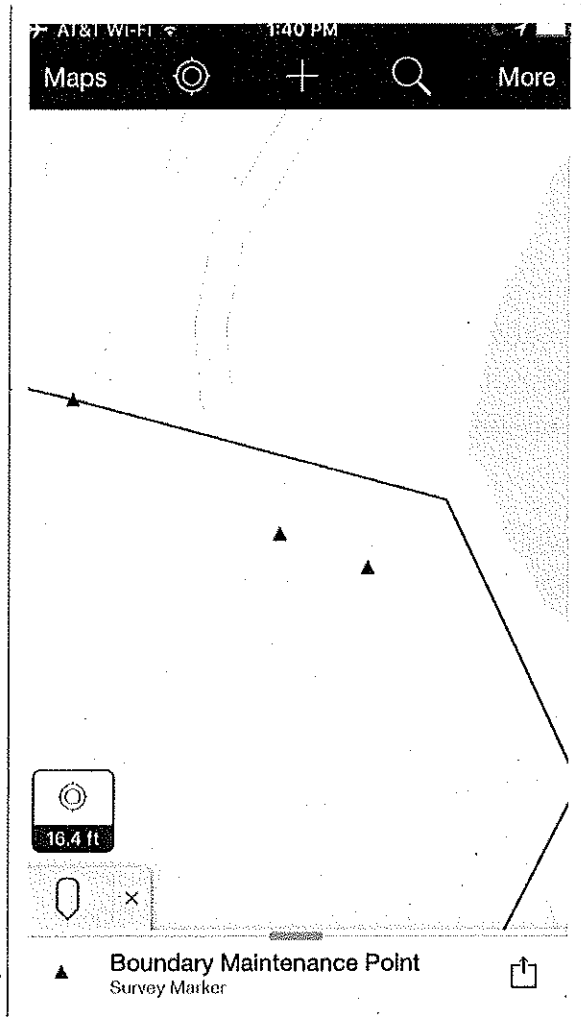


The Boundary Maintenance map provides an opportunity to maintain information relating to parcel boundary line maintenance and also tracking information relating to the location and condition of corner monumentation.

Corner Monumentation Process

In Collector select the appropriate corner or monument on the mapping application and update information in the attribute table.

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Photos should be captured for each corner encountered. If corners are replaced, capture a pre and post photo to document what was completed.

Boundary Line Data Management

The line information available through the Collector App is currently from the parcel boundary GIS information. The lines have been divided into 2000' segments to aid in record keeping. As lines are repainted, blazed or new tags are hung, the GIS data

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should be updated through Collector App. Select the line completed and update the attribute table. Images above show the two screens needed.

Field notes of discrepancies, trespasses, line conditions, and any other information helpful in current work for future staff or in resolving potential boundary disputes should be recorded in the comment sections.

ASSOCIATED DOCUMENTS

The most current survey and parcel information should be used. These documents may or may not be found in district records. District maps should be checked against maps found in the ANR Lands Records found at Y:\ANR Lands\LandRecords.

DEFINITIONS

- **Blaze** – intentional wounds in trees in an oval shape with 3 cross hatches. Typically done with axe, machete, or similar tool. Their position indicates the approximate location of the property boundary (i.e., line). Blazes are typically done anywhere from chest to eye level.
- **Boundaries/boundary line/line** – used interchangeably to reference the border between two parcels. Can refer to both the concept and the physical evidence.
- **Brush(ing)** – clearing undergrowth and/or branches in the line corridor to make monumentation more visible.
- **Center line** – the midpoint of a stream, road or right-of-way. A boundary line can be a center line of a stream or road. In the case of a road, 'center line' can reference the physical road or the road right-of-way.
- **Corners** – the point at which two lines of different bearing meet.
- **Corner markers** – monumentation indicating the physical location of the corner. Typically, post, pipe, pins or stone posts. Sometimes embedded in a pile of stacked stone or cobbles. More recent corner markers are steel pins with plastic caps or fiberglass flat posts. Occasionally a corner is marked with 4 blazes on a single tree at 0°, 90°, 180°, and 270°.
- **Inholdings** – parcels interior to and surrounded by another parcel. They can be private ownerships, other public parcels, or portions of the larger parcel where certain rights, such as timber and/or mineral rights, are held by a second party.
- **Line(thru) blaze** – indicates the line passes through some portion of the tree blazed.

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- **Quarter blaze** – facing into the line indicating the line is 18 inches or closer to the tree blazed. Two blazes at the same height at the approximate 'corners' of the portion of the bole facing the line (approximately 45°).
- **Side blaze** – facing into the line indicating the line is within 1.5 to 6 feet of the tree blazed. One single blaze at 90° to the line.
- **Tags** – plastic tags with script that name the general ownership of the parcel. They are placed on line facing outward from the parcel referenced.
- **Triple blaze** – 3 separate vertical blazes facing into a corner location or corner marker. Historically, for each of these trees distance and bearing to the corner was recorded. Generally done 3' to 5' from the base of the tree with a minimum of 12" between blazes to minimize possibility of wounds coalescing. In ledgy areas with few trees sometimes done on vertical rock. Generally, 3 sets witness a corner. Typically done as close to the corner as feasible.

ROLES and RESPONSIBILITY

Responsibility and Roles of Staff who will implement or supervise this procedure

Role	Staff
Database Management and Scheduling	Stewardship Forester or assigned State Lands Forester
Boundary Marking	District Forestry staff, seasonal employees, others under supervision of FPR
Supply Orders and Storage	Stewardship Forester or assigned State Lands Forester

TOOLS, SPECIAL EQUIPMENT, TRAINING

Tyvek suits, disposable brushes, disposable gloves, axe or similar tool, device for Collector App and/or GPS unit, compass, paint can opener, plastic bags for paint can lid and used brush, etc., topo and survey maps if available, tags, aluminum nails, and flagging.

SAFETY REQUIREMENTS

No specialized safety equipment is required.

MONITORING

n/a

APPROVED: Steven Sinclair, Director DATE: 6/19/17

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Detailed Procedures

Vermont ANR State Lands

Property Boundary Maintenance Methods and Guidelines

Objective: The purpose of boundary *maintenance* is to preserve the evidence that exists and to make the historical evidence easier to find when it is needed.

Property Line Colors and Blazing

Vermont ANR lands boundaries are painted in high visibility orange brush-on boundary paint. Blazed and/or painted trees should be as close to "on-line" as feasible and preferably no more than 3 feet off-line. Where tree density is low, they can be up to 6 feet off-line.

Partially-owned inholdings such as portions where other entities hold timber rights should be painted in the same grade of product in red.

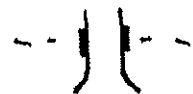
Where acquisitions have made a line obsolete, it is no longer maintained. If it has significance to operations and/or administration, painting it red is an allowed option.

Existing blazes and painting of blazes (illustrated below) should be as follows: Where a line passes thru any portion of a tree- line blaze; up to 18 inches from the side of a tree - 2 quarter blazes; from 1.5 to 6 feet feet-1 side blaze.

Reblazing healed over blazes should be done sparingly due to the tendency to distort the location of the blaze. New blazes installed by Forestry staff should be located directly on line or, if off line, on the state land side. New boundary lines are to be installed by or under the guidance of a licensed land surveyor.

Paint/Blaze Specifications



- If the boundary line goes through a tree (even just an edge), then the tree should be blazed with line(thru) blazes.



- If line within 18 inches of tree, then use quarter blazes facing the line.



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- If the line is within 1.5 to 6 feet of a tree, use a side blaze facing the line. 
- New or refreshed blazes should also receive 3 axe cross hatches at a uniform spacing to distinguish them from natural injuries or logging wounds.
- Corner Witness Trees – 3 blazes facing corner, three trees is the goal. 
- Use state land tags at corners, trail crossings, road crossings, etc. Text on tag faces away from the parcel.
- When reblazing, blaze in a fashion that retains some evidence of the original blaze. Do not put new blazes above, below or next to old blazes. This practice confuses the meaning of the blaze in the longer term.
- Use mostly paint when doing boundary line maintenance where blazes are still highly visible.

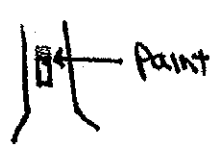
Corners

- Corners should be witnessed with a minimum of three sets of triple blazes and paint facing the corner monument. A one foot gap should separate blazes to minimize wound size. If new witness trees are needed, they will ideally be on state land. If to form good triangulation new witness trees are recruited from adjacent trees, they should be within a maximum of 10 feet of the corner and painted only unless installed by a licensed surveyor. The goal is always to have witness trees as close to the corner and well distributed as possible while not merging them with the lines leaving the corner. If all things are equal, it is preferable to recruit a new witness tree from state land versus adjacent parcels. Where new witness trees are on state land, Forestry staff should blaze and cross-hatch with an axe or similar tool. When new trees are recruited from adjacent land, staff should paint only. Collect GPS data on all corners if not previously collected.

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- If the post has fallen to the ground and the hole which it came out of is obvious:
 1. Photograph the existing corner in its current condition;
 2. Replace the post with a new one (leave old post on site);
 3. Nail one state land tag to the post;
 4. Photograph the new post;
 5. Record replacement information utilizing the Collector App with pre and post photographs, a detailed description of what was completed, and coordinates in the comments section. Notify the Survey Section.
- If a stone pile corner has deteriorated, reconstruct the pile if you are confident of location. Repaint the top surface of key stone.

General Guidance

- Be certain beyond any doubt that the corner or line point you are starting from is state land and is the intended starting point on the map.
- Do not completely cover old boundary evidence with new paint. Leave a portion of the previous paint visible. 
- Older style corner markers such as posts, rods, pipes, and stone should be painted. Modern capped corner markers or fiberglass markers should not be painted.
- Keep all official records in the ANR boundary maintenance GIS database which can be edited utilizing the Collector App.
- Keep notes of key findings such as types of corner markers, evidence of others maintaining or changing the line or problems with the way the line is marked or represented. Notes should be attributed to an individual with a date of discovery and stored in the comments section of the GIS data for the respective line or corner monument.
- Occasionally a blazed tree has multiple types of blazes. In this case, a compass should be used to determine which is correct before painting. Ideally staff can "gray" out incorrect paint. If the line is witnessed grossly wrong, stop painting(!) and request a survey. Maintain a record of the errors and/or corrections in the

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line. This information should be recorded in the comment field for the corresponding boundary line or monument in the boundary GIS database.

- State land tags should be hung using aluminum nails at regular intervals along all boundary lines. Tags should be placed between 200-500 feet apart. Local knowledge may result in closer spacing for some parcels. Tags should be installed with text facing out toward adjoining lands. Where a public road is the boundary, witness with yellow state lands tags at 100' spacing.
 - In areas of heavy public use, increase the number of tags hung, and in remote areas decrease the number.
 - Place a yellow state lands tag where local features create an obvious spot for the public to cross the line onto the parcel.
 - Interior Natural Areas (NA) may be tagged at a 100' spacing with the text facing away from the NA. Where this level of monumentation is impractical, Stewardship Forester will determine what, if any, evidence is required on the ground.
 - Corners and lines near public access points and/or roads should be tagged with the larger metal style signs denoting the specific Department ownership.
- Where the line is along a road but not the centerline, be certain to witness the line versus the road.
- Where the line is the centerline of a small stream and the trees are within 6 feet of the centerline, follow line painting protocol on both sides of the line. Where the distance is greater than 6 feet, use state lands tags at frequent intervals as the land allows. Use more frequent tags as an alternative where frequent public recreational use is known to occur.
- In developed areas, avoid facing excessive paint toward homes. Make the line visible but not unsightly. Increase the number of tags in these areas and avoid blazing yard trees.
- Brushing is not required but should be conducted as needed, for instance where the next blaze can't be seen through the brush. When brushing, consider the need for future stems to blaze as existing blazes fade or fail.

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Questionable Lines and Monumentation

- If the old paint is obvious but seems to be inaccurate, flag the line and inform the Survey Section.
- Missing corner monuments should be replaced by the Survey Section. If this situation is discovered, send report to Survey Section describing what evidence was found, what is missing, and location.

Important Considerations

- Do not blaze lines along town or state roads, railroads, major brooks or ponds (monuments that are easily distinguishable) – use tags instead.
- Do not disturb old axe blazes but cleaning off loose bark before painting is recommended.
- When repainting a boundary line, do not cover over all the existing painted blaze – paint the upper half of the existing blaze and on bark above the existing blaze.
- When a line can't be found, do not paint. Flag the location and request a survey.
- Do not paint on rainy or wet days or when temperature is below 0°F. Do not blaze and paint on the same day if sap is running, or paint above exposed sapwood.
- Do not overdo paint along old roads having trail status which are boundaries. Determine whether the boundary is the centerline or edge of the feature and paint or tag accordingly.
- Do not paint on adjoining owners' land where larger streams (> 6') are bounds.
- Do not blaze small trees heavily. Make size of blaze in proportion to diameter of tree – dead trees make poor line trees.
- Do not overdo painting near dwellings, developed, or scenic areas. Consider additional state lands tags in these areas.
- Do not be confused by color. Many adjoining landowners have painted their (and our) lines differing colors. When repainting, do not paint entirely over their

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paint, but partially above or below it. Do not confuse the type of blaze by painting beside a previous blaze.

- Do not drive nails flush when tagging line – secure point leaving room for cambium growth. Do not use steel nails. Use aluminum.
- Do not be tempted toward graffiti, artistry, or doodling with boundary paint. These renderings could come back to haunt you and/or FPR 30 years hence.
- Do not clean paint pails, bury or throw empty cans or used brushes in the woods. Dispose of all boundary painting waste properly
- Do not continue if physical evidence disagrees with survey. Report to Survey Section.
- Do not argue with irate property abutters, or try to solve a survey problem involving the Agency on your own. Property line problems and surveys are the sole responsibility of Registered Land Surveyors.
- Do not destroy corner monuments on interior parcels when "erasing" lines; leave them intact for reference points.
- Take the time to notice conditions and needs on the parcel as you work. Boundary maintenance is an excellent time to conduct some property and road monitoring.

SOURCES: meeting notes Mike Raboin session 10/13/88

Various un titled historical FPR documents, authors unknown

Do's and Don'ts of property remarking and remonumentation. Department of Forests, Parks and Recreation, Property Administration. Date and author unknown

A novice Engineering Aides # 18 Handbook, VT Forest Service

Personal communications. Brian Lavery, Philo Marcotte Winter 2016/2017

