



Compartment Review Presentation

Traverse City Forest Management Unit

Compartment 61117

Entry Year 2024

Acreage: 1,898

County Kalkaska

Management Area: Grayling Ice Contact

Stand Examiner: Katie Armstrong

Legal Description:

T27N R5W Sections 25, 26, 27 and 28

Identified Planning Goals:

Management in the Grayling Ice Contact management area will emphasize continuing to balance the age class of aspen on suitable sites and thinning the northern hardwoods, balancing age classes of red pine and jack pine and regenerating the aging oak resource. Management will strive to sustainably produce various forest products; enhance game and non-game wildlife habitat; protect areas of unique character, such as the historic Deward Tract; and provide for forest-based recreational uses. With about 3% of the management area being lowland, management activities will be minimally constrained. Expected trends within this 10-year planning period are increased recreational pressure, managing oil and gas development, introduced pests and diseases and the difficulty in regenerating oak.

Soil and topography:

Generally well-drained sandy soils. Some hills but mostly rolling to flat terrain.

Ownership Patterns, Development, and Land Use in and Around the Compartment:

The compartment is mostly state-owned land with a few private parcels in Sections 26 and 28. Section 25 is part of the lease of lands to the Department of Military and Veterans Affairs for use as a training area for the National Guard. Consumers Energy has a pipeline that runs east-west through most of the compartment and a major Great Lakes Energy pipeline bisects Section 25 north to south.

Unique Natural Features:

None identified.

Archeological, Historical, and Cultural Features:

There are archeology concerns in Section 35. This compartment dips into this section.

Special Management Designations or Considerations:

Section 25 is leased for National Guard training. As a tributary of the Manistee River, Black Creek is protected by the Natural Rivers vegetative buffer, but it runs through private land in this area.

Watershed and Fisheries Considerations:

Black Creek, a tributary to the Manistee River, runs near Compartment 117 on the west side of the compartment. Black Creek is a Designated Trout Stream with a naturally reproducing population of brook trout.

Wildlife Habitat Considerations:

Past management in compartment 117 was aimed at mixed use with an emphasis on maintaining a variety of cover types and age classes for game and non-game wildlife. The bulk of this compartment lies on a large ice contact ridge. This land type association (LTA) is typically characterized by broken topography. Presettlement vegetation over this LTA consisted of nearly 75% beech/maple forests with the rest consisting of beech/hemlock or mixed conifer stands. Today, northern hardwoods remain dominant on about 70% of the LTA. However, the coniferous component from many of these stands has been largely eliminated. Natural openings within this LTA are normally the result of frost pockets and typically need little maintenance. However, several of these openings have been scheduled for maintenance activities to promote their forage and edge components. Oak treatments should be designed to leave a component of white pine, mature mast producing oak, and standing dead timber for structural diversity within the stands. Jack pine harvests should protect any oak regeneration along with promoting pockets of aspen and other deciduous species. This will result in mixed deciduous/coniferous stands more reminiscent of historical habitats associated with this land type. Aspen harvests incorporate snags, leave trees, and downed logs in cuts to replicate a wildfire-altered forest and ill encourage wildlife use by species like grouse, woodcock, golden-winged warbler, turkey, and deer. Harvest operations should be utilized to create some (approximately 1-2 trees per acre) coarse woody debris (CWD), preferably via timber sale specs.

A strip of flat, poorly drained outwash plain enters the compartment from the southwest and terminates here as the land rises and transitions to ice contact ridges. This could explain the fact that most of this normally wet land type is in fact dry

uplands in this compartment. In presettlement times this LTA was dominated by coniferous wetlands with small occurrences of upland coniferous and northern hardwood forests. Present vegetation leans more towards early successional communities. Maintaining early successional communities, including upland brush, on a portion of this LTA is appropriate as natural disturbances such as windfalls and wildfires do occasionally occur here. Mixed coniferous/deciduous forests of this type can provide habitat for northern goshawks, box turtles, ovenbirds, eastern gray squirrels, and bears.

One final LTA, a broad flat outwash plain is found here on the eastern edge of section 25 with one strip extending north along the boundary of sections 25 and 26.

This LTA is a fire driven ecosystem which historically supported a variety of forest types. The dominant cover types were fire dependant conifers like jack pine. In this compartment this LTA supports several contiguous stands of pine. This LTA should be managed for a variety of forest age classes, successional stages, and patch sizes. Species benefiting from this habitat type include Kirtland's warbler, upland sandpiper, whitetailed deer, and hog-nosed snakes.

Mineral Resource and Development Concerns and/or Restrictions

No active sand/gravel pits occur in the area, but there is good potential for sand and gravel within the compartment. Several wells have been drilled in the compartment in the past to test Devonian formations. All were dry holes. An isolated Antrim well was completed in Section 28, just outside the compartment, but it never produced, and the compartment is unlikely to see future Antrim development. There is no other known oil and gas potential from known producing formations beneath the compartment. There is no known metallic mineral potential in this part of the state.

Vehicle Access:

There is sufficient vehicular access throughout the compartment. Unauthorized off road use is a problem in some areas.

Survey Needs:

Survey might be need if corners in Section 26 cannot be located.

Recreational Facilities and Opportunities:

The Kalkaska ORV Trail runs throughout the compartment.

Fire Protection:

Fire protection for this compartment is covered by the DNR Kalkaska Field Office with support available from the Grayling Field Office. Road access is good. Bear Lake Fire Department is also located a few miles to the west on M72 and there are several nearby water sources.

Additional Compartment Information:

The following reports from the Inventory are attached:

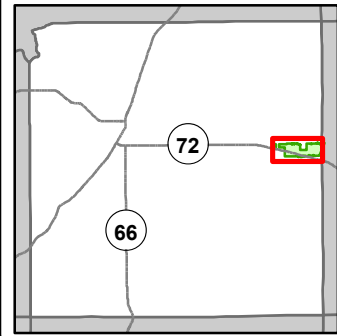
- Total Acres by Cover Type and Age Class**
- Cover Type by Harvest Method**
- Proposed Treatments – No Limiting Factors**
- Proposed Treatments – With Limiting Factors**
- Stand Details (Forested and Nonforested)**
- Dedicated and Proposed Special Conservation Areas**
- Site Condition Details**

The following information is displayed, where pertinent, on the attached compartment maps:

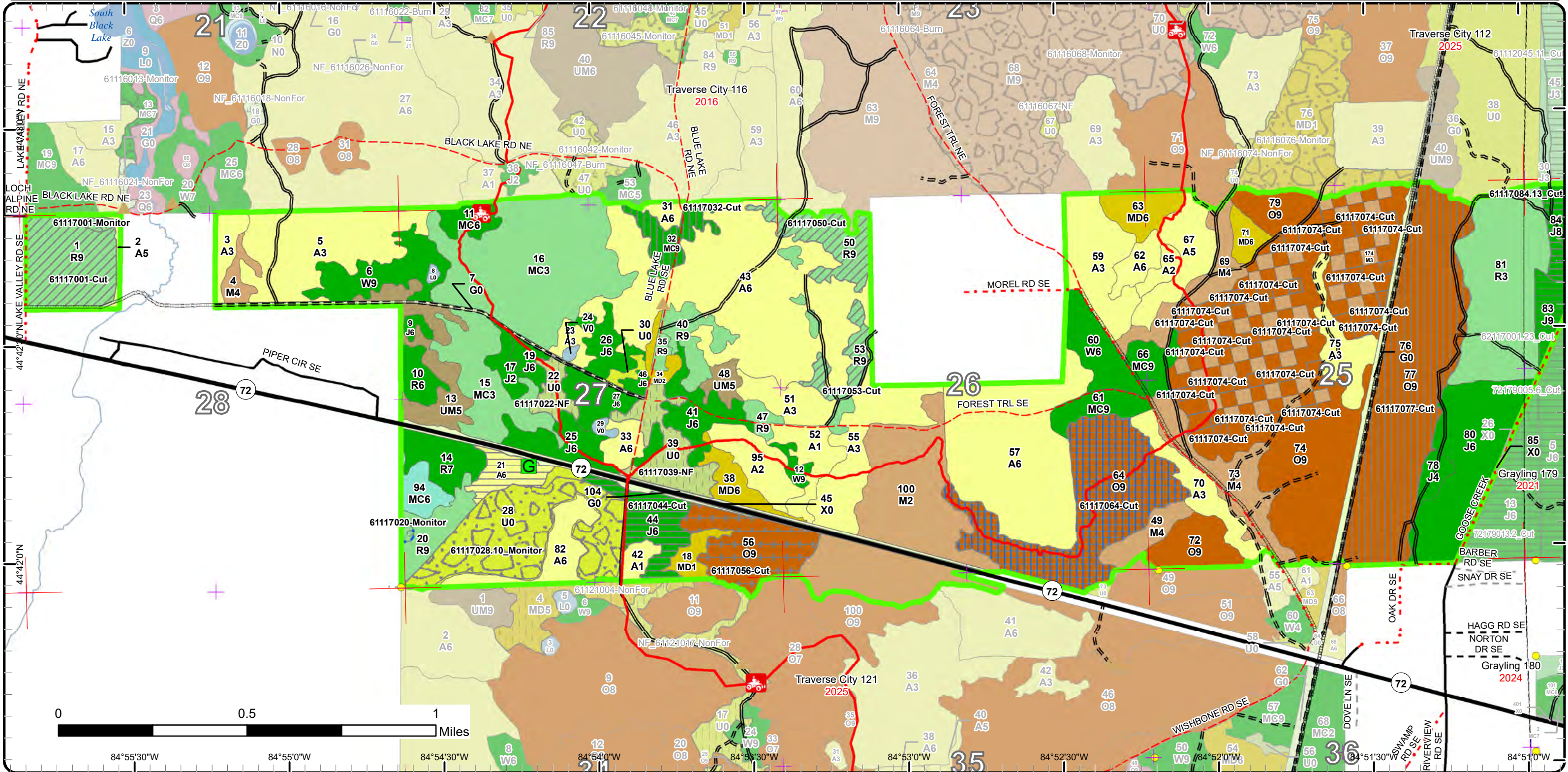
- Base feature information, stand boundaries, cover types, and numbers**
- Proposed treatments**
- Site condition boundaries**
- Details on the road access system**

Cover Type & Treatments Map

Compartment: 117
 T27N, R05W, Sec. 25-28, 34, 35
 County: Kalkaska
 Unit: Traverse City
 Mgmt Area: Grayling Ice Contact
 YOE: 2024
 Acres: 1898.4 GIS Calculated
 Examiner: Katie Armstrong
 Map Revised: 10/17/2022
 Map Phase: Post Review



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|--|-------------------------------------|--------------------------------|
| — Miris Corners | ▲ Berms | □ Opening Maintenance |
| ✚ Remonumented Section Corners | ⬢ Gate | □ Monitoring |
| ● Survey Grade Corners | — Lake/Pond | ■ 411 - Northern Hardwood |
| ⊠ Counties | — Perennial River | ■ 412 - Oak Types |
| — DNR - Secondary Forest Road | — Lakes and Rivers | ■ 413 - Aspen |
| == DNR - Forest Access Route | — Pipeline | ■ 419 - Mixed Upland Deciduous |
| — Federal / State Highway | ▭ Compartment Boundary | ■ 421 - Planted Pines |
| — Federal / State / County - Paved Road | ▭ Treatments with Site Conditions | ■ 422 - Natural Pines |
| - - Federal / State - Dirt / Gravel Road | ▭ Clearcut (w/Reserves) | ■ 429 - Mixed Upland Conifers |
| - · - County - Gravel Road | ▭ Harvest, Overstory Removal | ■ 430 - Upland Mixed Forest |
| - - - County - Dirt Road (Seasonal) | ▭ Patch/Strip Cut (Femelschlag) | ■ 122 - Roads/Parking Lot |
| - - - Private - Dirt / Gravel Road | ▭ Seed Tree (w/Reserves) | ■ 310 - Herbaceous Openland |
| 🚙 ORV Trails | ▭ Thinning (Crown, Low, Systematic) | ■ 320 - Upland Shrub |
| — Designated ATV Trails | ▭ Regeneration Survey | ■ 330 - Low Density Trees |
| | ▭ Shelter Wood (w/Reserves) | ■ 622 - Lowland Shrub |



Report 1 – Total Acres by Cover Type and Age Class



Age Class

	Non-Forest	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	150+	Uneven-Aged	Total
Aspen	0	105	33	49	25	283	0	0	0	0	0	0	0	0	0	0	0	0	494
Bog	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Herbaceous Openland	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
Jack Pine	0	0	0	0	0	120	20	0	42	0	0	0	0	0	0	0	0	0	182
Low-Density Trees	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64
Lowland Shrub	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Mixed Upland Deciduous	0	4	0	6	6	0	23	0	0	0	0	0	0	0	0	0	0	0	39
Natural Mixed Pines	0	0	0	0	0	8	0	10	0	13	0	11	0	0	0	0	0	0	42
Northern Hardwood	0	87	0	40	27	0	35	0	0	0	0	0	0	0	0	0	0	0	188
Oak	0	0	0	0	0	0	0	0	0	0	330	0	92	0	0	0	0	0	422
Planted Mixed Pines	0	0	119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	119
Red Pine	0	65	0	0	0	0	0	15	8	106	0	0	0	0	0	0	0	0	194
Upland Conifers	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	9
Upland Mixed Forest	0	0	0	0	24	5	0	0	0	0	0	0	0	0	0	0	0	0	29
Upland Shrub	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
Urban	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
White Pine	0	0	0	0	0	0	0	20	22	0	0	0	0	0	0	0	0	0	42
Total	138	261	152	95	82	416	78	54	72	119	330	11	92	0	0	0	0	0	1898



Report 2 – Treatment Summary

Traverse City Mgt. Unit
Year of Entry: 2024

Acres of Harvest

Compartment 117
Total Compartment Acres: 1,898

Commercial Harvest - 391
Harvests with Site Condition - 0
Next Step Harvest - 0
Habitat Cut - 0

Cover Type by Harvest Method

	Clearcut	Selection	Patch Clearcut	Seed Tree	Shelterwood	Thinning	Overstory Removal	Salvage	Other	Total Acres
Aspen	11	0	0	0	0	0	0	0	0	11
Jack Pine	51	0	0	0	0	0	0	0	0	51
Natural Mixed Pines	0	0	0	0	13	0	0	0	0	13
Oak	0	0	31	75	113	0	32	0	0	251
Red Pine	0	0	0	0	0	65	0	0	0	65
Total	62	0	31	75	126	65	32	0	0	391

Proposed and Next Step Treatments by Method

	Harvest	Site Prep	Planting	Seeding	Burning	Pesticide	Monitoring	Other	Non-Forest Mgt.	Total Acres
Current	391	0	0	0	0	0	61	0	28	479
Next Step	0	62	31	0	28	31	414	0	0	566
Total	391	62	31	0	28	31	475	0	28	1045



S t a n d	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
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Proposed Treatments:

1	61117001-Cut	35.0	42110 - Planted Red Pine	Sawtimber Well	82	141- 170	Harvest	Crown Thinning	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Light thin to remove largest red pine and trees with defect. Target residual BA will be ~90-100 sf/acre. Evaluate forest health concern in NE corner and include that area in treatment, as appropriate. Future management objective will probably be something other than planted red pine so leave other species for future diversity. Goal to thin one more time before final harvest.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u></p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition</u></p> <p><u>Proposed Start Date:</u> 10/1 /2023</p>											
1	61117001-Monitor	1.6	42110 - Planted Red Pine	Sawtimber Well	82	141- 170	Monitoring	Forest Health	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Identify issue causing thin crowns and treat appropriately.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u></p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition</u></p> <p><u>Proposed Start Date:</u> 10/1 /2023</p>											
20	61117020-Monitor	1.0	42110 - Planted Red Pine	Sawtimber Well	82	111- 140	Monitoring	Forest Health	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> Try to identify cause of red pine mortality in small pocket along private boundary.</p> <p><u>Specs:</u></p> <p><u>Next Step</u></p> <p><u>Treatments:</u></p> <p><u>Acceptable</u></p> <p><u>Regen:</u></p> <p><u>Other</u></p> <p><u>Comment:</u></p> <p><u>Site Condition</u> Age-Class or Site Quality</p> <p><u>Proposed Start Date:</u> 9 /1 /2022</p>											



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	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
21	61117021-Cut	10.5	4133 - Aspen, Mixed Pine	Poletimber Well	47	111-140	Harvest	Clearcut with Retention	413 - Aspen	Even-Aged	No
<p><u>Prescription</u> Final harvest 2" dbh and greater. Leave minimal area retention along M72, preferably longer-lived species. Note that eastern boundary is retention.</p> <p><u>Specs:</u></p> <p><u>Next Step</u> Monitoring, Natural Regen (Re-Inventory)</p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u> Aspen, white pine, red pine, jack pine, red maple, oak, cherry.</p> <p><u>Other Comment:</u></p> <p><u>Site Condition</u></p> <p><u>Proposed Start Date:</u> 10/1 /2023</p>											
22	61117022-NF	7.0	3205 - Mixed Upland Shrub	Nonstocked			NonForestMgt	Brush Cutting	3204 - Mast Producing Shrub		No
<p><u>Prescription</u> Selectively hand fell woody encroachment to maintain upland brush/grassland community. Leave scattered mast-producing trees, shrubs and/or conifers for wildlife food and cover.</p> <p><u>Specs:</u></p> <p><u>Next Step</u> Burn, Opening</p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u></p> <p><u>Other Comment:</u> Ideally it would be nice to burn this stand with stand 39, but it probably would not rank high enough for funding. Could mow.</p> <p><u>Site Condition</u></p> <p><u>Proposed Start Date:</u> 10/1 /2023</p>											
32	61117032-Cut	13.3	42290 - Natural Mixed Pine	Sawtimber Well	83	111-140	Harvest	Shelterwood	429 - Mixed Upland Conifers	Even-Aged	No
<p><u>Prescription</u> Shelterwood harvest to try to push this towards white pine while retaining some of the visual and habitat considerations of the older red and white pine. Cut all jack pine and aspen and mark to cut the red pine and white pine. Leave some intact pockets of red pine around legacy trees. Residual BA ~0-50 sf/acre.</p> <p><u>Specs:</u></p> <p><u>Next Step</u> Monitoring, Natural Regen (Re-Inventory)</p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u> White pine, red pine, jack pine, aspen, oak.</p> <p><u>Other Comment:</u></p> <p><u>Site Condition</u></p> <p><u>Proposed Start Date:</u> 10/1 /2023</p>											
39	61117039-NF	20.5	3205 - Mixed Upland Shrub	Nonstocked			NonForestMgt	Brush Cutting	3204 - Mast Producing Shrub		No
<p><u>Prescription</u> Brush hog (or hand fell) around select leave trees and/or patches . Leave scattered mast producing trees and shrubs and/or conifers for wildlife food and cover. Could plant site appropriate native shrubs and/or mast producing trees for wildlife food and cover. Fertilize plantings and protect with wire cages or tubex.</p> <p><u>Specs:</u></p> <p><u>Next Step</u> Burn, Opening</p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u></p> <p><u>Other Comment:</u> Ideally would be nice to burn this stand along with stand 22.</p> <p><u>Site Condition</u></p> <p><u>Proposed Start Date:</u> 10/1 /2023</p>											



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Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
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44	61117044-Cut	19.8	42220 - Natural Jack Pine	Poletimber Well	50	51-80	Harvest	Clearcut with Retention	42221 - Natural Jack Pine, Mixed Deciduous	Even-Aged	No
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Prescription Final harvest > 4" dbh. Protect as much oak advanced regeneration as possible. Expand treatment into small pine pockets in 61121004 to help achieve opening maintenance objective. Retention could be along M72 and/or in red pine at south end.

Next Step Monitoring, Natural Regen (Re-Inventory)

Treatments:

Acceptable Jack pine, white pine, red pine, aspen, oak, red maple, black cherry.

Regen:

Other

Comment:

Site Condition

Proposed Start Date: 10/1 /2023

50	61117050-Cut	20.5	42111 - Planted Red Pine, Mixed Deciduous	Sawtimber Well	82	141- 170	Harvest	Crown Thinning	4211 - Planted Red Pine	Even-Aged	No
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Prescription Light thin to remove largest red pine and trees with defect. Target residual BA will be ~90-100 sf/acre. Future management objective will probably be something other than planted red pine so leave most other species for future diversity. Leave disjunct pockets for retention/diversity within surrounding stands. Will try to thin one more time before final harvest.

Next Step

Treatments:

Acceptable

Regen:

Other

Comment:

Site Condition

Proposed Start Date: 10/1 /2023

53	61117053-Cut	9.9	42110 - Planted Red Pine	Sawtimber Well	82	141- 170	Harvest	Crown Thinning	4211 - Planted Red Pine	Even-Aged	No
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Prescription Light thin to remove largest red pine and trees with defect. Target residual BA will be ~90-100 sf/acre. Future management objective will probably be something other than planted red pine so leave most other species for future diversity. Southern part of stand was left as retention for a different sale and needs to be excluded from this treatment. Will try to thin one more time before final harvest.

Next Step

Treatments:

Acceptable

Regen:

Other

Comment:

Site Condition

Proposed Start Date: 10/1 /2023



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Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
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56	61117056-Cut	31.7	4125 - Black, N. Pin Oak	Sawtimber Well	93	81-110	Harvest	Overstory Removal	4199 - Other Mixed Upland Deciduous	Even-Aged	No
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Prescription Overstory removal/final harvest with area retention of oak. SE corner has some smaller single-stemmed trees and might be a good spot to leave. Leave all white pine and red pine except cut trees greater than 14" dbh. Protect as much advanced regeneration as possible.

Specs:
Next Step
Treatments:

Acceptable Oak, white pine, red pine, aspen, red maple, jack pine.
Regen:

Other
Comment:

Site Condition

Proposed Start Date: 10/1 /2023

64	61117064-Cut	75.0	4123 - Red Oak	Sawtimber Well	117	51-80	Harvest	Seed Tree with Retention	4310 - Pine, Oak Mix	Even-Aged	No
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Prescription Final harvest will be an overstory removal in some areas and a seedtree in others. Generally cut all merchantable oak, aspen and pine. Leave 5-6 areas of retention (0.5-1 acre each) scattered throughout sale plus green tree 1 oak per acre. Leave white pine and red pine less than 8" dbh. Protect advanced regeneration as much as possible. Protect ORV trail corridor with leave trees and/or sale specification.

Specs:
Next Step Monitoring, Natural Regen (Re-Inventory)
Treatments:

Acceptable Red oak, white oak, red pine, white pine, aspen, red maple.
Regen:

Other
Comment:

Site Condition

Proposed Start Date: 10/1 /2023

74	61117074-Cut	31.2	4123 - Red Oak	Sawtimber Well	94	111-140	Harvest	Strip/Patch/Gap Cut (Femelschlag)	4191 - Mixed Upland Deciduous with Conifer	Even-Aged	No
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Prescription Continue 5-spot cutting regime. Clearcut these patches leaving white pine and red pine < 6" DBH if that amount will not affect regeneration. There might be usable skid routes in small valleys or from earlier harvest. Protect ORV trail with appropriate sale specs.

Specs:
Next Step Monitoring, Natural Regen (Re-Inventory)
Treatments:

Acceptable Red oak, white oak, white pine, red pine, aspen, red maple.
Regen:

Other Actual location of patches may need to be adjusted based on skid routes, logistics, topography etc.
Comment:

Site Condition

Proposed Start Date: 10/1 /2023



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Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Habitat Cut
77 61117077-Cut	112.6	4124 - Red with White Oak	Sawtimber Well	94	81-110	Harvest	Shelterwood with Retention	4310 - Pine, Oak Mix	Even-Aged	No
<p><u>Prescription</u> Final harvest stand while oak might be young/small enough to sprout. Cut all aspen, red maple and jack pine. Cut most red and white oak except for scattered individual trees (for mast) and 5-10 retention areas (0.5-1 acre each). Leave all white and red pine and protect advanced regeneration.</p> <p><u>Specs:</u></p> <p><u>Next Step</u> Monitoring, Natural Regen (Re-Inventory)</p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u> White pine, red pine, red oak, white oak, aspen, red maple, jack pine,</p> <p><u>Other Comment:</u> Access will be from Goose Creek Rd through adjacent stands. Stand includes advanced oak regeneration which we want to preserve so oak wilt spec with no exceptions.</p> <p><u>Site Condition</u></p> <p><u>Proposed Start Date:</u> 10/1 /2023</p>										

Approved Treatments:

28 61117028.10_Monitor	58.0	330 - Low-Density Trees	Nonstocked	0		Monitoring	Artificial Regen(3yr)	4211 - Planted Red Pine	Even-Aged	No
<p><u>Prescription</u> 3rd year regen check and/or confirm effectiveness of herbicide?</p> <p><u>Specs:</u> Try to find regen records.</p> <p><u>Next Step</u> Monitoring, Herbicide Use</p> <p><u>Treatments:</u></p> <p><u>Acceptable Regen:</u> red pine, fully stocked</p> <p><u>Other Comment:</u> Percent to Treat = 100%</p> <p><u>Site Condition</u></p> <p><u>Proposed Start Date:</u> 1 /1 /2022</p>										
84 61117084.13_Cut	21.9	42220 - Natural Jack Pine	Sawtimber Medium	72	111-140	Harvest	Clearcut with Retention	42220 - Natural Jack Pine	Even-Aged	No
<p><u>Prescription</u> KW clear cut with retention. Add some retention in the form of vortex strips. Leave tops and limbs for cones. Scarify for natural regen.</p> <p><u>Specs:</u></p> <p><u>Next Step</u> Monitoring, Natural Regen (Intermediate); SitePrep, Scarification; SitePrep, Trenching; Pesticide, Aerial - Site Prep; Planting, Initial</p> <p><u>Treatments:</u> Plant; Monitoring, Artificial Regen(1yr); Monitoring, Artificial Regen(3yr)</p> <p><u>Acceptable Regen:</u> Jack pine and red pine are desired species. Any combination of the two that meet minimum stocking for KW habitat will be acceptable. If natural regen fails, site prep as needed and plant a mix of jack pine (75%) and red pine (25%).</p> <p><u>Other Comment:</u></p> <p><u>Site Condition</u></p> <p><u>Proposed Start Date:</u> 10/1 /2020</p>										

Total Treatment Acreage Proposed: 469.5

Report 4 – Site Conditions

Traverse City Mgt. Unit
Katie Armstrong : Examiner

Compartment: 117
Year of Entry: 2024

Availability for Management

Total Acres	Acres Available	Acres Avail			Dominant Site Conditions					
		With Condition	Not Available		5B	5C	2G	3A	3J	5E
494	488	0	6	Aspen					2	4
2	0	0	2	Bog					2	
30	30	0	0	Herbaceous Openland					0	
182	177	0	5	Jack Pine					1	4
63	61	0	2	Low-Density Trees						2
	0	0	0	Lowland Shrub						
39	39	0	0	Mixed Upland Deciduous						
42	31	0	11	Natural Mixed Pines				11		
189	189	0	0	Northern Hardwood						
422	251	171	0	Oak	109	62				
119	119	0	0	Planted Mixed Pines					0	
194	152	34	9	Red Pine		34				9
9	7	0	2	Upland Conifers			2			
30	30	0	0	Upland Mixed Forest					0	
27	27	0	0	Upland Shrub					0	
13	13	0	0	Urban						
42	38	0	4	White Pine					2	2
1,898	1,651	205	41	Total Forested Acres	109	96	2	11	8	20
	87%	11%	2%	Relative Percent						

**Due to limitations in the current Site Conditions Analysis tool, all nonforested acres are considered available. Future development will enable analysis of nonforested types.*

Site No.	Dominant Site Cond Availability	Dominant Site Condition	Acres	Other Site Condition	Other Site Condition	Other Site Condition	Other Site Condition
1	Unavailable	3A: Conservation Values incompatible with harvest at this time	11	5A: Not able to obtain desirable regeneration	Unspecified	Unspecified	Unspecified
Comments: Unusual stand with habitat value. Would be impossible to recreate from natural regeneration.							
2	Unavailable	5E: Long-Term Retention	2	Unspecified	Unspecified	Unspecified	Unspecified
Comments:							

Report 4 – Site Conditions

Traverse City Mgt. Unit
Katie Armstrong : Examiner

Compartment: 117
Year of Entry: 2024

3	Unavailable	5E: Long-Term Retention	2	Unspecified	Unspecified	Unspecified	Unspecified
Comments:							
4	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	2	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Not a good candidate for future red pine MO so hold past typical rotation age.							
5	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	4	Unspecified	Unspecified	Unspecified	Unspecified
Comments:							
6	Unavailable	5E: Long-Term Retention	2	Unspecified	Unspecified	Unspecified	Unspecified
Comments:							
7	Available	5B: Maintain for regeneration purposes	17	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Hold until 2025 YOE and maybe treat with 61121049.							
8	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	13	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Was just thinned in 2014 YOE.							

Report 4 – Site Conditions

Traverse City Mgt. Unit
Katie Armstrong : Examiner

Compartment: 117
Year of Entry: 2024

9	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	15	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Stand was just thinned in 2014 YOE.							
10	Unavailable	5E: Long-Term Retention	4	Unspecified	Unspecified	Unspecified	Unspecified
Comments:							
11	Unavailable	5E: Long-Term Retention	3	Unspecified	Unspecified	Unspecified	Unspecified
Comments: From sale 61-062-14, Forest Trail Aspen							
12	Unavailable	5E: Long-Term Retention	3	Unspecified	Unspecified	Unspecified	Unspecified
Comments:							
13	Unavailable	5E: Long-Term Retention	2	Unspecified	Unspecified	Unspecified	Unspecified
Comments: With sale #61-048-14-01							
14	Unavailable	5E: Long-Term Retention	1	Unspecified	Unspecified	Unspecified	Unspecified
Comments:							
15	Unavailable	5E: Long-Term Retention	2	Unspecified	Unspecified	Unspecified	Unspecified
Comments:							

Report 4 – Site Conditions

Traverse City Mgt. Unit
Katie Armstrong : Examiner

Compartment: 117
Year of Entry: 2024

16	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	13	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Will be cutting a lot of oak in this compartment in 2024. Hold this and evaluate success of treatment on 116076.							
17	Unavailable	5E: Long-Term Retention	0	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Small ephemeral wet area.							
18	Unavailable	2G: Too wet (sensitive soils, does not include access issues)	2	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Drainage/tag alder swale.							
19	Available	5B: Maintain for regeneration purposes	92	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Continue future patch clearcuts in this area as appropriate.							
20	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	50	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Hold this to consider treatment in 2034 YOY.							
21	Unavailable	3J: Water quality / BMPs (stream, river, or lake)	3	3A: Conservation Values incompatible with harvest at this time	Unspecified	Unspecified	Unspecified
Comments: Tree length buffer around vernal pond.							

Report 4 – Site Conditions

Traverse City Mgt. Unit
Katie Armstrong : Examiner

Compartment: 117
Year of Entry: 2024

22	Unavailable	3J: Water quality / BMPs (stream, river, or lake)	2	3A: Conservation Values incompatible with harvest at this time	Unspecified	Unspecified	Unspecified
<p>Comments: Tree length buffer around bog.</p>							
23	Unavailable	3J: Water quality / BMPs (stream, river, or lake)	4	3A: Conservation Values incompatible with harvest at this time	Unspecified	Unspecified	Unspecified
<p>Comments: Tree length buffer around bog.</p>							

Mgt. Unit

Compartment: #Type!

Year of Entry:



Report 5 – PROPOSED SPECIAL CONSERVATION AREA* (SCA) DETAILS

* This is a partial list of SCAs for this compartment. Not included are those areas identified under other Department initiatives (Natural Rivers, Deer Wintering Areas, etc.). Those will be identified in separate, future map and report products.

SCA Name	SCA Category	Detail Type	Recommendation	Acres
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Comments



Report 6 – EXISTING SPECIAL CONSERVATION AREA DETAILS

* This is a list of SCA's for this compartment along with a 1/4 mile buffer surrounding the compartment. Refer to the Special Conservation Area Map for locations of the below listed Conservation Areas.

ERA = Ecological Reference Area
 HCVA = High Conservation Value Area
 SCA = Special Conservation Area

Conservation Area	Type	Description
SCA	Cold Water Stream	A coldwater stream has temperature and dissolved oxygen conditions that allow naturally-reproduced or stocked trout populations and those of other coldwater fish species (e.g., slimy sculpin) to persist from year to year. Coldwater streams in Michigan typically provide these conditions due to substantial contributions of groundwater to their stream flows. Such streams are established by Director's action and designated as trout resources by Fisheries Order 210.
SCA	Research and Military Areas	These areas provide facilities and lands specifically dedicated for research, or other purposes. They include the 5,847 acre Forest Fire Experiment Station, the 12,000 acre Houghton Lake Wildlife Research Area, the Beaver Islands Archipelago Wildlife Research Area (that includes most of Garden Island, all of High and Hog Islands, all state owned land on Beaver, South Fox and North Fox Islands), the Cusino Wildlife Research Area, the 3,000 acre Hunt Creek Fisheries Research Station, the 125 acre Wyman Nursery, and over 144,000 acres of Military Lands.
HCVA	Designated Critical Habitat	Critical habitat areas are established via a consultative and cooperative process between the DNR and the U.S. Fish and Wildlife service for the recovery of threatened and endangered species, as governed by Part 365, Endangered Species Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, and the Federal Endangered Species Act of 1973. This is an active program, with proposed species plans in various stages of review. As of now only two exist, Kirtland Warbler Habitat and Piping Plover Habitat.
HCVA	Natural Rivers	There are two Natural Rivers datasets which are derived from spatial buffers set from an established and approved distance from the river centerlines. The Natural Rivers Zoning District is a 400 foot buffer for most Natural Rivers. The Vegetative Buffer ranges from 25 to 100 feet.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																																										
1	42110 - Planted Red Pine	Sawtimber Well	36.6	82	141-170	N/A	Planted 1939. Thinned in 1996. Lake Valley Road Red Pine, 61-043-94. Also cut all jack pine, aspen, oak and red maple. 1996 sale was described as a row thinning but it seems to have been thinned more than once. Perhaps removal of jack pine would account for the current spacing.																																										
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2	4132 - Aspen, Jack Pine	Poletimber Medium	2.5	25		N/A	East side is narrow sliver between plantation and private land. South side is pipeline.																																										
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3	4130 - Aspen	Sapling Well	7.5	5	Immature	N/A	Cut 2017/18 with Honeymoon Cabin sale in comp 116. Small ephemeral pool in NW corner.																																										
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4	4110 - Sugar Maple Association	Poletimber Poor	5.7	50	1-50	N/A	Semi-open area.																																										
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5	4133 - Aspen, Mixed Pine	Sapling Well	51.7	45	1-50	N/A	Variable stand with generally poor quality aspen. Probably cut in the '70s so it should be larger but it really is a lot of sapling-sized aspen. Some white pine and jack pine in the canopy, especially in the central and eastern parts.																																										
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6	42200 - Natural White Pine	Sawtimber Well	21.5	75	81-110	N/A	Variable stand of mostly uneven aged white pine with some areas of mostly red pine. A few areas of small aspen especially in the eastern end. White pine understory is heavy in places.																																														
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7	310 - Herbaceous Openland	Nonstocked	6.8	0			Underground gas pipeline.																																														
8	622 - Lowland Shrub	Nonstocked	0.8			No																																															
9	42220 - Natural Jack Pine	Poletimber Well	2.3	77	81-110	N/A	Small pocket of denser jack pine. Originally part of stand 15 and was left for retention when that was cut. Relatively open understory.																																														
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10	42210 - Natural Red Pine	Poletimber Well	8.1	77	51-80	N/A	Cut and chipped all jack pine (and only jack pine) in 2008: Moving Blue Line, 61-055-07. Is now veins of relatively dense jack pine saplings between pockets of red pine. Not sure what the future of this stand will be. Would have been nice to thin red pine during last harvest. OI records suggest that this was planted as a mixed red pine/jack pine stand. Older prescriptions were hoping oak would eventually take over but there isn't a lot of it.																																														
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11	42260 - Natural Pine, Mixed Deciduous	Poletimber Well	7.8	45	81-110	N/A	2012 inventory described as being left as retention for cut to the south (stand 16).																																														
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12	42201 - Natural White Pine, Mixed Deciduous	Sawtimber Well	3.3	65	81-110	N/A	This was not treated with Stand 52. Mostly white pine with with some XL oak and red maple. Pretty good white pine understory. On a little ridge with ORV trail so maybe this was left in consideration of that.																																														
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13	4311 - Pine, Aspen Mix	Poletimber Medium	24.3	38	1-50	N/A	Variable stand with scattered red pine which is probably a remnant of a mixed plantation from 1939-1940, some jack pine and younger aspen. Pockets of log/pole jack pine surrounded by sapling/pole jack pine and aspen. Generally poor quality with multiple size classes per species and small openings with bracken fern. May have had some noncommercial treatment to stimulate regen ~1984. Includes a strip of denser jack pine along M72 and a sliver south of the pipeline in Section 28.																																						
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14	42210 - Natural Red Pine	Sawtimber Poor	14.6	64	1-50	N/A	Stand was harvested in spring of 2016 (117 Blue Lake aspen 61-048-14-01). All of the aspen, red maple and jack pine was removed leaving scattered red and white pine. Variable residual BA with some small dense pockets of red pine (80-100 sf/ac) surrounded by A3. Mifi does not let me accurately describe this 2-aged stand. There are definitely pockets of A3 in the canopy. Found old FTP for discing in 1958 to provide tops for deer feed adjacent to Black Creek deeryard and promote natural red pine regeneration.																																						
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15	42141 - Planted Mixed Pine, Mixed Deciduous	Sapling Well	31.3	13	Immature	N/A	Ice Skater Pine, 61-097-04. Was a mostly jack pine stand, cut in 2008. Cut all red pine and jack pine trees and left ALL aspen and oak. Oak appears to have been scattered mature trees and aspen was probably young and along the edges and a few interior pockets. FTP C62-786. Planted in 2009. Some natural regeneration of jack pine has occurred. Red pine looks surprisingly good given the overstory and competition. Might turn out to be a nice, mixed stand. 2018, M. Machusko: This stand has been updated from a field evaluation for a project on free to grow red pine. 2022: Added supercanopy species to canopy data.																																						
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16	42141 - Planted Mixed Pine, Mixed Deciduous	Sapling Well	87.8	14	Immature	N/A	Black Lake Red Pine, 61-073-04. Cut everything except aspen and oak in 2007. Was a J6 stand and some pockets of aspen were left along with scattered oak. FTP C61-727. Planted in 2008. Some natural regeneration of jack pine has occurred. Red pine looks surprisingly good given the overstory and competition. This might turn out to be a nice mixed stand. 2018, M. Machusko: This stand has been updated from a field evaluation for a project on free to grow red pine. 2022: Added supercanopy aspen and oak to canopy table.																																						
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17	42221 - Natural Jack Pine, Mixed Deciduous	Sapling Medium	6.0	47	1-50	N/A	Semi-open and poor quality. Alternates between jack pine and aspen with jack pine diameters being larger.																																						
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18 4191 - Mixed Upland Deciduous with Conifer Sapling Poor 6.4 25 Immature N/A Semi-open area filling in with cherry, oak and jack pine.

Canopy Species	% Cover	Size Class	DBH	Age
Jack Pine	32	Pole/Sapling	5	
Black Cherry	40	Sapling	3	25
Black/Red (Hybrid) Oak	25	Sapling	1	
Quaking Aspen	3	Sapling/Pole	3	

19 42220 - Natural Jack Pine Poletimber Well 5.0 77 51-80 N/A Mostly jack pine with scattered red pine and small gaps. Old white pine stumps.

Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density	Avg. Height	Size
Quaking Aspen	3	Pole/Sapling	6		Jack Pine	Low	Variable	Sapling
Jack Pine	95	Pole/Sap/Log	7	77	Black Cherry	Low	10 - 20 feet	Sapling
Red Pine	2	Log/Pole	12					

20 42110 - Planted Red Pine Sawtimber Well 14.7 82 111-140 N/A Cherry, aspen and jack pine were removed in 1996. Thinned pine in 2015. South 72 Red Pine, 61-061-14. 2022: BA: 120,110, 110. Relatively open understory with scattered oak. Pocket mortality along west private line. Would be a good stand to carry red pine longer. Probably not a good candidate for a long term red pine objective. Kotar PARVVb/AFO. Oak is 20-30 feet tall in dead pocket, which might be a good indicator of the next stand.

Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density	Avg. Height	Size
Red Pine	100	Log/Pole	12	82	Jack Pine	Trace	Variable	Sapling
					Black/Red (Hybrid) Oak	Low	Variable	Sapling
					Balsam Fir	Low	Variable	Sapling

21 4133 - Aspen, Mixed Pine Poletimber Well 10.5 47 111-140 N/A Along M-72. Used to be part of the stand to the west and not sure why this wasn't cut last YO. Variable stand now with slightly more pine to the east. Relatively dense and variable understory.

Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density	Avg. Height	Size
Balsam Fir	2	Pole/Sapling	8		Red Maple	Low	Variable	Sapling
Black Cherry	3	Pole	6		White Pine	Low	Variable	Sapling
Red Pine	15	Log/Pole	12		Red Pine	Low	Variable	Sapling
Jack Pine	10	Pole	8		Jack Pine	Low	Variable	Sapling
Quaking Aspen	70	Pole/Log	9	47	Black/Red (Hybrid) Oak	Low	Variable	Sapling
					Black Cherry	Medium	10 - 20 feet	Sapling

22 3205 - Mixed Upland Shrub Nonstocked 7.0 Managed Opening Mostly open stand with cherry sprouts, red maple, oak and jack pine. Sweet fern. ORV trail runs through this opening.

23 4130 - Aspen Sapling Well 4.7 37 1-50 N/A Small diameter trees and poor quality. Barely a pole stand.

Canopy Species	% Cover	Size Class	DBH	Age	Sub-Canopy Species	Density	Avg. Height	Size
Quaking Aspen	95	Sapling/Pole	4	37	Black Cherry	Low	5 - 10 feet	Sapling
Jack Pine	5	Sapling/Pole	4		White Oak	Low	5 - 10 feet	Sapling

24 6225 - Bog Nonstocked 0.8 No



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																																										
25	42220 - Natural Jack Pine	Poletimber Well	14.3	45	51-80	N/A	Significant frontage along M72. Variable stand of mostly pole sized jack pine with some mostly sapling areas and some semi-open areas. Old white pine stumps.																																										
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26	42220 - Natural Jack Pine	Poletimber Well	10.9	47	81-110	N/A	Was called an aspen stand in 2002, but this is heavier to jack pine. 2-4 stick jack pine with generally open understory. Old white pine stumps.																																										
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27	42221 - Natural Jack Pine, Mixed Deciduous	Poletimber Well	11.2	47		N/A	Originally called an aspen stand, this area came back heavier to jack pine. Generally poor quality and small diameters with semi-open areas. Old white pine stumps.																																										
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28	330 - Low-Density Trees	Nonstocked	61.4	0		No	This stand was cut in 2006, Red Gate Red Pine, 61-089-04. Chopped and trenched October 2016. FTP C62-858. Planted May 2017. 3-0 RP, 861 TPA. Regen survey 2018, recommended release. Sprayed 9/24/2020. Red pine is about 2' tall. Scattered overstory white pine and oak. Small retention pockets in middle of stand and along M72																																										
29	6225 - Bog	Nonstocked	1.4	0		No	Small depressions. Probably have year-round water and scattered trees.																																										
30	330 - Low-Density Trees	Nonstocked	2.1	0		No	Semi-open area.																																										
31	4133 - Aspen, Mixed Pine	Poletimber Well	3.6	47	1-50	N/A	Poor quality. Mostly aspen but more white pine than other stands in this area. Manage with 43.																																										
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32	42290 - Natural Mixed Pine	Sawtimber Well	13.3	83	111-140	N/A	Probably a remnant of the 1939 plantation but red pine has good diameter distribution and more of natural look. Some legacy trees. More white pine here. Variable BA with some areas of mostly aspen and white pine saplings. Average BA 120 sf/ac (130, 160, 100, 100).				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Jack Pine		15	Log/Pole	9		White Oak		Trace	Variable	Sapling	
Quaking Aspen		15	Pole/Sapling	5		Black Cherry		Low	Variable	Sapling	
White Pine		20	Log/Pole/XLog	12		White Pine		High	Variable	Sapling	
Red Pine		50	Log/XLog/Pole	16	83						
33	4132 - Aspen, Jack Pine	Poletimber Well	7.1	47	51-80	N/A	Originally called an aspen stand, this area came back heavier to jack pine. Generally poor quality and small diameters with semi-open areas. Old white pine stumps. Probably similar to 27 but more aspen.				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Red Pine		10	Log	14		Quaking Aspen		Medium	Variable	Sapling	
Jack Pine		20	Pole/Sap/Log	8		Jack Pine		Medium	Variable	Sapling	
Quaking Aspen		70	Pole/Sap/Log	7	47	Witch Hazel		Low	Variable	Tall Shrub	
						Black/Red (Hybrid) Oak		Low	10 - 20 feet	Sapling	
						Black Cherry		Low	10 - 20 feet	Sapling	
34	4199 - Other Mixed Upland Deciduous	Sapling Medium	4.2	5	Immature	N/A	Stand had all the jack pine cut out in 2017. Blue Lake Road Red-Jack 61-063-14-01. They left a decent amount of the younger/smaller jack pine and a fair amount of small pole-sized aspen. Not sure why but maybe this will be a good test case to see how the other species far against the declining aspen. Southern end of this area was cleared and used as a staging area for construction on M72 in summer 2021.				
Canopy Species		% Cover	Size Class	DBH	Age						
Black/Red (Hybrid) Oak		30	Sapling	1							
Black Cherry		23	Sapling	1							
Jack Pine		10	Sapling	3							
Quaking Aspen		30	Pole/Sapling	5	5						
Red Pine		7	Log	10	82						
35	42110 - Planted Red Pine	Sawtimber Well	2.4	82	51-80	N/A	Small remnant of old plantation. 3rd row and jack pine removed in 1996. Stand was thinned and also had all the jack pine removed in 2017. Blue Lake Road Red-Jack, 61-063-14-01. Less BA than Stand 40 but could be managed with that in the future.				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Red Pine		100	Log/Pole	14	82	Jack Pine		Low	Variable	Sapling	
						Black/Red (Hybrid) Oak		Medium	Variable	Sapling	
38	4191 - Mixed Upland Deciduous with Conifer	Poletimber Well	10.0	50	51-80	N/A	Stand is a remnant of 95 that wasn't treated. A lot of small red maple with more log oak and pine along edge that was already cut				
Canopy Species		% Cover	Size Class	DBH	Age	Sub-Canopy Species		Density	Avg. Height	Size	
Red Oak		15	XLog/Log	18		White Pine		Medium	Variable	Sapling	
White Oak		5	XLog/Log	18		Black/Red (Hybrid) Oak		Low	Variable	Sapling	
Red Pine		3	Log	14							
Bigtooth Aspen		5	Pole/Sapling	6							
Jack Pine		10	Pole	7							
Red Maple		55	Pole/Sapling	7	50						
White Pine		7	Log/Pole	14							



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																																																				
39	3205 - Mixed Upland Shrub	Nonstocked	20.5			Managed Opening	Stand was chip harvested in the spring of 2018. Blue Lake Road Red-Jack 61-063-14-01. This was done to set back woody vegetation to maintain a wildlife opening. Scattered cherry sprouts and jack pine volunteers. Sweet fern. A few clumps of mature pine and about an acre of small diameter A6 near M72.																																																				
40	42110 - Planted Red Pine	Sawtimber Well	12.9	82	81-110	N/A	Stand was thinned in 2017 and also had all the jack pine removed. Blue Lake Road Red-Jack 61-063-14-01. Jack pine was removed in 1996, Blue Lake Road Pines, 61-049-94.																																																				
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41	42220 - Natural Jack Pine	Poletimber Well	18.9	47		N/A	Typical jack pine for this compartment. Smaller diameter jack pine in northernmost finger but closer to this than adjacent stands.																																																				
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42	4132 - Aspen, Jack Pine	Sapling Poor	4.9	20	1-50	N/A	Former county dump site has slowly starting to fill in with aspen and cherry. Some unusual landforms are evidence of dump.																																																				
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43	4133 - Aspen, Mixed Pine	Poletimber Well	127.1	47		N/A	Large stand but not ready for harvest so I didn't spend a lot of time on this stand. The west side of Blue Lake Rd is variable but generally poor quality. Some pole sized trees but a lot of areas are still saplings only. Some small areas of jack pine or areas of white pine under aspen. Nicer bigtooth at eastern edge and a few small pockets of the remnant planted red pine along road. Some might be merchantable but think it's better to wait.																																																				
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44	42220 - Natural Jack Pine	Poletimber Well	20.2	50	51-80	N/A	Variable basal area with semi-open area in the north-central part of the stand. Jack pine is declining with moderate windthrow levels. More red pine at the south end. Evidence of old fireline or trenches? Old white pine stumps.																																																							
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45	122 - Road/Parking Lot	Nonstocked	11.5			No	M-72																																																							
46	42221 - Natural Jack Pine, Mixed Deciduous	Poletimber Well	2.0	47		N/A	Originally called an aspen stand, this area came back heavier to jack pine. Generally poor quality and small diameters with semi-open areas. Old white pine stumps.																																																							
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47	42110 - Planted Red Pine	Sawtimber Well	3.9	82	81-110	N/A	Third row thinned in 1996. Thinned and removed all jack pine in 2017, Blue Lake Rd Red-Jack 61-063-14-01. Relatively thick oak understory. Future MO can probably be oak. Stand was row-thinned and jack pine removed in 1996, Blue Lake Road Pines, 61-049-94.																																																							
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48	4319 - Mixed Upland Forest	Poletimber Medium	5.3	47	51-80	N/A	Kind of a hodge podge. Some larger red pine and jack pine along the north edge, but a lot is semi-open with scrubby cherry. Might have been trenched at some point?																																																							
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49	4119 - Mixed Northern Hardwoods	Poletimber Poor	10.2	50	1-50	N/A	Semi-open area.																																																							
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50	42111 - Planted Red Pine, Mixed Deciduous	Sawtimber Well	23.5	82	141-170	N/A	Variable stand with denser BA along SW edge. Probably remnant of a 1939 plantation but it has a nice natural pine feel with uneven spacing and a variety of diameters. Understory is more oak in the south and more maple/northern hardwood in the north. Understory is relatively dense throughout. Pine diameters a little larger in isolated pockets. Probably not a good candidate for replanting. (MM data attached but didn't take enough plots for low CI, BA ~150 sf/ac +/- 50). Kotar Habitat Type PARVVb/AFO or PARVHa/PArVVb. Stand was thinned in 1996, Blue Lake Road Pines, 61-049-94.																																														
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51	4130 - Aspen	Sapling Well	13.7	5	Immature	N/A	Stand was final harvested in the May of 2017 (117 Blue Lake Aspen 61-048-14-01). Marked a few oak trees to leave and all of the pine was saved. 1.5 acres on south side was not treated.																																														
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52	4133 - Aspen, Mixed Pine	Sapling Poor	13.7	4	Immature	N/A	Stand was harvested in spring of 2018, 117 Blue Lake Aspen 61-048-14. Cut with 2" spec except for red pine and white pine greater than 12" dbh and oak. (Somehow this was typed as an MC7 in 2014 yoe but got a nonforested treatment to remove woody encroachment.) Nonforested objective?																																														
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55	4131 - Aspen, Oak	Sapling Well	33.2	13	Immature	N/A	Cell Tower M-72, 61-048-07. Scattered oak logs were left. Cut ~2008. Good regeneration with a variety of species.																																														
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56	4125 - Black, N. Pin Oak	Sawtimber Well	31.7	93	81-110	N/A	2012: Stand was treated with adjacent compartment in 2001-02. All aspen and red maple were removed. Variable BA with fair amount of dead oak and some windthrow. Some areas of 2-5" saplings to protect. Old white pine stumps.																																																		
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59	4130 - Aspen	Sapling Well	31.1	6	Immature	N/A	Cut 2016 with Forest Trail Aspen, 61-062-14. Scattered overstory oak and white pine. Good aspen regen in most places although it gets a little thinner on top of the hill. Aspen is 10-20 feet tall with shorter red maple underneath.																																																		
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60	42201 - Natural White Pine, Mixed Deciduous	Poletimber Well	17.1	66	1-50	N/A	Stand was treated in 2008, Cell Tower M-72 61-48-07. Cut everything except red and white pine. Nice regeneration of aspen in places. Original goal was to let white pine take over. White pine is denser at south end.																																																		
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61	42290 - Natural Mixed Pine	Sawtimber Well	11.0	107	81-110	N/A	Surprising pocket of tall, stately pines. Relatively well-developed understory of red maple and smaller white pine. Would be impossible to re-create this stand through harvest and natural regeneration. Might have had some pine and oak removed in 1985.																																																		
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Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
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62	4130 - Aspen	Poletimber Well	7.5	27	Immature	N/A	Clearcut except for oak in June 1995, Forest Trail Aspen, 61-073-94. Aspen is just reaching pole size.
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Canopy Species	% Cover	Size Class	DBH	Age
Red Pine	2	Log	14	
Red Oak	3	Pole/Log	10	
Red Maple	10	Sapling	2	
Bigtooth Aspen	73	Pole/Sapling	5	27
White Pine	10	Log	12	
White Oak	2	Log/Pole	12	

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Medium	Variable	Sapling
White Pine	Low	5 - 10 feet	Sapling

63	4199 - Other Mixed Upland Deciduous	Poletimber Well	12.7	55	81-110	N/A	K. Rouston noted atypical pockets of birch here in 2002 inventory. It was shelterwood cut in 2008, Cell Tower M72, 61-048-07, cutting some oak, quaking aspen and some paper birch. Variable now with some O8 but lots of M6. Understory is even pole-sized in places. Manage with 61116071.
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Canopy Species	% Cover	Size Class	DBH	Age
White Oak	10	Log/Pole	14	
Beech	2	Pole/Log	8	
Red Maple	55	Pole/Log	8	55
Red Oak	28	Log/XLog/Pole	16	90
White Pine	5	Log/XLog	14	

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Medium	Variable	Sapling
White Pine	Medium	Variable	Sapling
Witch Hazel	Low	5 - 10 feet	Tall Shrub
Beech	Low	Variable	Sapling
Paper Birch	Low	Variable	Sapling
White Oak	Low	5 - 10 feet	Sapling

64	4123 - Red Oak	Sawtimber Well	75.0	117	51-80	N/A	All aspen and maple and some oak were removed from this stand in 1994, M72 Oak Salvage, 61-059-93. Areas of heavy oak regeneration. Heavy gypsy moth infestation noted in 2002, but with little defoliation. Now a variable stand with two age classes: areas with sparser canopy have a well-developed A3/M3 understory but areas with heavier oak canopy have little underneath. Mature aspen seems concentrated along M72 corridor so perhaps aspen regeneration will help with visual concerns. Heavy browse will be a challenge for regeneration. Scattered oak mortality.
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Canopy Species	% Cover	Size Class	DBH	Age
Red Maple	5	Pole/Sapling	5	
White Pine	15	Log/Pole	11	
Bigtooth Aspen	8	Log/Pole	10	
Red Oak	58	Log/XLog	14	117
White Oak	14	Log/Pole	12	

Sub-Canopy Species	Density	Avg. Height	Size
Red Oak	Low	< 5 feet	Sapling
Bigtooth Aspen	Medium	>20 feet	Sapling
White Oak	Low	5 - 10 feet	Sapling
White Pine	Low	Variable	Sapling
Witch Hazel	Low	5 - 10 feet	Tall Shrub
Red Maple	Medium	>20 feet	Sapling

65	4131 - Aspen, Oak	Sapling Medium	4.6	6	1-50	N/A	Cut 2016 with Forest Trail Aspen, 61-062-14. Scattered overstory oak and white pine. More overstory here than stand 59. This is O7 over M2.
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Canopy Species	% Cover	Size Class	DBH	Age
Bigtooth Aspen	50	Sapling	1	6
White Oak	10	Log/XLog	16	
Red Maple	25	Sapling	1	6
Red Oak	15	Log/XLog	16	94

Sub-Canopy Species	Density	Avg. Height	Size
Red Maple	Low	Variable	Sapling
Witch Hazel	Low	Variable	Tall Shrub
Red Oak	Low	Variable	Sapling



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments																																										
66	42260 - Natural Pine, Mixed Deciduous	Sawtimber Well	9.9	60	81-110	N/A	Variable stand. Used to be called a U-type as recently as 2004 inventory. Some parts have filled in with aspen and smaller white pine but there is a decent clump of older red pine in the central part.																																										
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67	4131 - Aspen, Oak	Poletimber Medium	20.1	36	1-50	N/A	This is a very strange stand. It was probably cut in some way around 1986 and then had a prescribed burn in 2009 to encourage oak regeneration. It is mostly on a steep slope. Now varies from A3 to A5 with some large supercanopy oak. Significant blowdown or old mortality. Just wait and see what happens.																																										
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69	4110 - Sugar Maple Association	Poletimber Poor	18.6	50	1-50	N/A	Semi-open area.																																										
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71	4199 - Other Mixed Upland Deciduous	Poletimber Well	6.2	36	1-50	N/A	Couldn't find records for this but appears to have been split from oak stand and cut between 1984 and 1994 inventories, so maybe cut around 1986. Seems like mostly stump-sprouted red maple and oak with lesser amounts of aspen than earlier A3 call would suggest.																																										
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72	4123 - Red Oak	Sawtimber Well	16.8	117	51-80	N/A	117 Oak, 61-073-14. Removed all red maple and marked oak in 2016 (goal BA 40-50 sf/ac). All aspen and maple and some oak were removed from this stand in 1994, M72 Oak Salvage, 61-059-93. Mostly maple regeneration since 2016. Some patches of oak but heavily browsed.																																														
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73	4119 - Mixed Northern Hardwoods	Poletimber Poor	27.4	37	1-50	N/A	Semi-open stand. Had aspen, maple, white birch and jack pine removed in 1985, 61-026-83. Gas pipeline along Forest Trail.																																														
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74	4123 - Red Oak	Sawtimber Well	173.3	94	111-140	N/A	Interior 5-spot patches were started in 1996. The surrounding areas were thinned and all aspen removed in 2006 as Oak Witch, 61-007-04. Residual BA at that time ~80 sf/ac. Average BA = 136 sf/acre. Average diameters seem slightly smaller than stand across pipeline. Heavy browse and high deer traffic. Rolling hills. Would like to figure out best spatial arrangement for another round of 1-acre clearcuts. Would like to leave white pine <6" dbh within the clearcuts if that would not hinder oak regen. More pine especially in the understory south of the southernmost row of clearcuts. Manage this part differently.																																														
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75	4131 - Aspen, Oak	Sapling Well	16.3	26	Immature	N/A	Clearcut in 1996 with Tanline Oak, 61-045-94. Pretty good regeneration with oak stems larger than aspen.																																														
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76	310 - Herbaceous Openland	Nonstocked	12.7	0			Underground pipeline.																																														



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77	4124 - Red with White Oak	Sawtimber Well	112.6	94	81-110	N/A	Oak was thinned and aspen removed in 2006-07. Sideslope Oak, 61-005-04. Looks like it took BA from ~100 to 76 sf/acre. Sale cut less than 1 cord/acre aspen so that explains why there is little aspen regen.																																															
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78	42220 - Natural Jack Pine	Poletimber Poor	5.5	46	1-50	N/A	Semi-open stand with scattered jack pine.																																															
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79	4123 - Red Oak	Sawtimber Well	12.5	95	81-110	N/A	Used to be part of the adjacent stand, but this was not treated when that received the 5-spot cutting in the mid-1990s. More white pine in the understory at the west end.																																															
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80	42220 - Natural Jack Pine	Poletimber Well	51.1	46	51-80	N/A	Smallish J6 stand. A few dead oak. This stand is NOT part of a KW management block.																																															
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81	42110 - Planted Red Pine	Sapling Well	65.0	7	Immature	N/A	Southern ~2/3 cut 2016 with Goose Creek Jack, 61-046-14. Variance to change MO from JP to RP approved 7/2016. Chopped and trenched August 2016. FTP C62-861. Planted in the spring of 2017. 3-year regen survey 6/2018 by Anna Ellis. Noted high jack pine. 750 TPA RP. 2022: moderate amount of deciduous competition and JP seems to be the primary issue. Northern 1/3 was cut in 1996 but no cultivation work occurred and included in same FTP. Retention in SE corner.																																															
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82	4130 - Aspen	Poletimber Well	16.9	26	1-50	N/A	This was originally part of what is now Stand 28 but didn't get cut (maybe too small at the time) and trees were too large to roller chop. Just starting to be a pole stand.																																														
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83	42220 - Natural Jack Pine	Sawtimber Well	10.4	78	51-80	N/A	Changed stand age feom 61 to 75. New red pine/jack pine plantation adjacent on Kalkaska side.Old comment- (Variable jp stand. Poor understory. A couple big rp.)																																														
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84	42220 - Natural Jack Pine	Sawtimber Medium	24.3	72	111-140	N/A	Red pine rows are not apparent in most places. Gets more open and heavier jack towards the north. Similar composition to stand 2.Old comment- (Ownership/update cards say that area was used for military artillery use in the 60's Limby. Not much of an understory. Open areas w/ poor jp and cherry brush.)																																														
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85	122 - Road/Parking Lot	Nonstocked	1.4	0		No	Goose Creek Road.																																														
94	429 - Mixed Upland Conifers	Poletimber Well	8.6	60	51-80	N/A	Aspen, red maple and jack pine were cut in 2016 with Blue Lake Aspen, 61-048-14, but some was too wet to cut and/or included species not included in cutting specs. Linear drain runs east-west through middle of stand. More spruce north of this and mostly mature aspen south of it. USGS topo maps identifies "ruins" but I didn't see anything with snow on the ground.																																														
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95	4139 - Aspen, Mixed Deciduous	Sapling Medium	16.9	5	Immature	N/A	Cut with 2" spec except for red pine and white pine and scattered oak. 117 Blue Lake Aspen, 61-048-14. Might have left a little too much overstory. Some patches of good aspen regen but also some bare areas.																																														
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Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	Managed Site	General Comments
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100	4116 - Mixed N. Hardwood - Aspen	Sapling Medium	87.3	3	Immature	N/A	<p>Regen looks pretty good. Final harvested the overstory in winter 2017 (S of 72) and winter 2019 (N of 72), 117 Rollin Oak, 61-102-17, cut everything except red pine and white pine. KJS: Did an excellent job of protecting understory (some M3, some A3 and some more open with stumps). Expect at least 90% of the site to come back great to mixed, oak, maple, aspen, cherry and pine.</p> <p>This stand was treated in 2008, Sale # 048-07. All aspen and red maple were removed. Overstory oak had a lot of mortality from decline related to defoliation, old age, and drought.</p>																													
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104	310 - Herbaceous Openland	Nonstocked	10.4	0		No	M72 right-of-way
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174	4119 - Mixed Northern Hardwoods	Sapling Well	39.6	26	Immature	N/A	<p>Treated by 5-spot cutting in 1996, Tanline Oak, 61-045-94. 40 1-acre blocks. Mostly maple but oak stems are larger. Digitized 1-acre cuts from a georeferenced aerial photo so the lines may not be exactly right.</p>																													
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