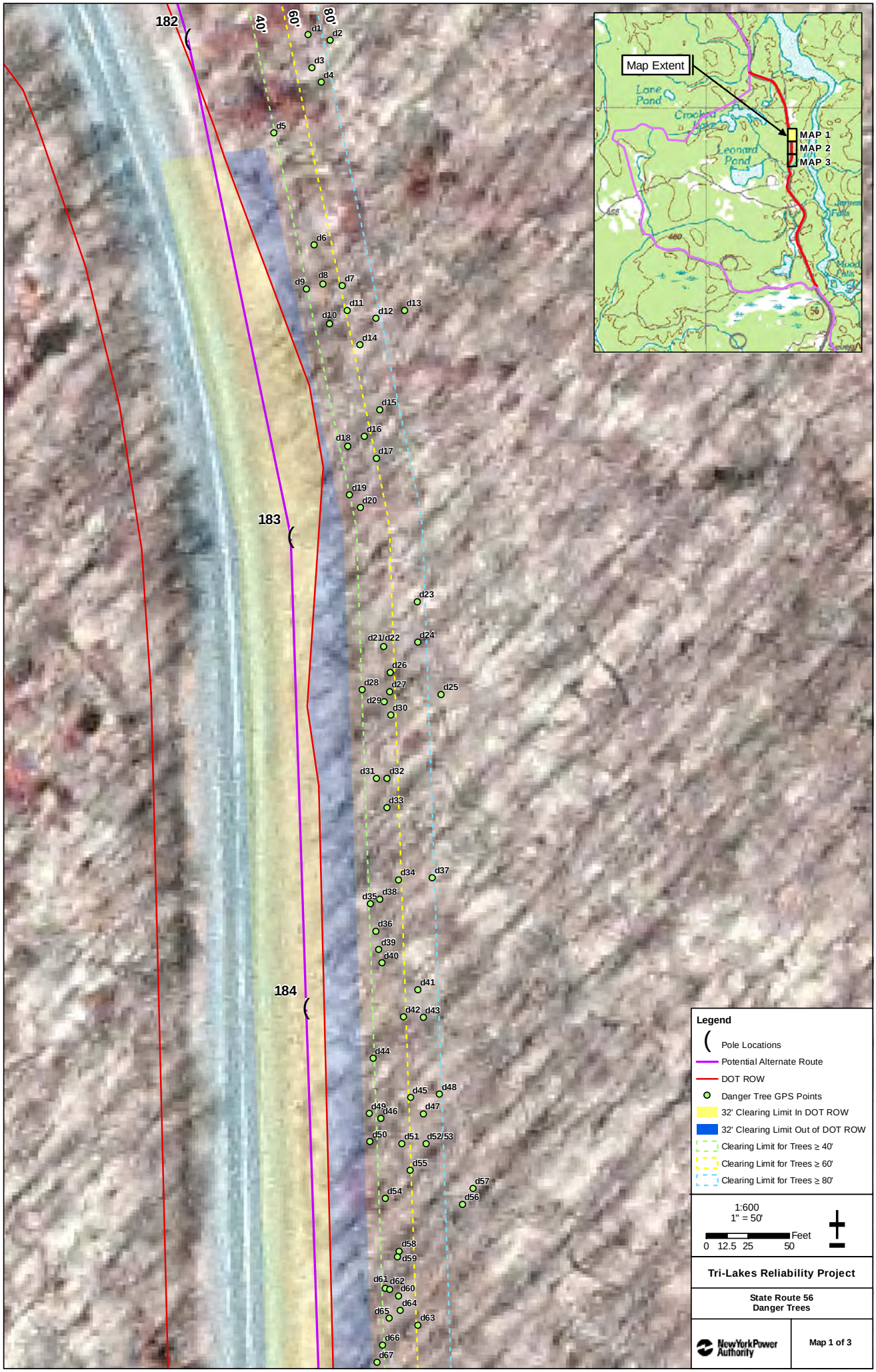
APPENDIX E

Tree Counts

June


182
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40'
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d10
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d52/53
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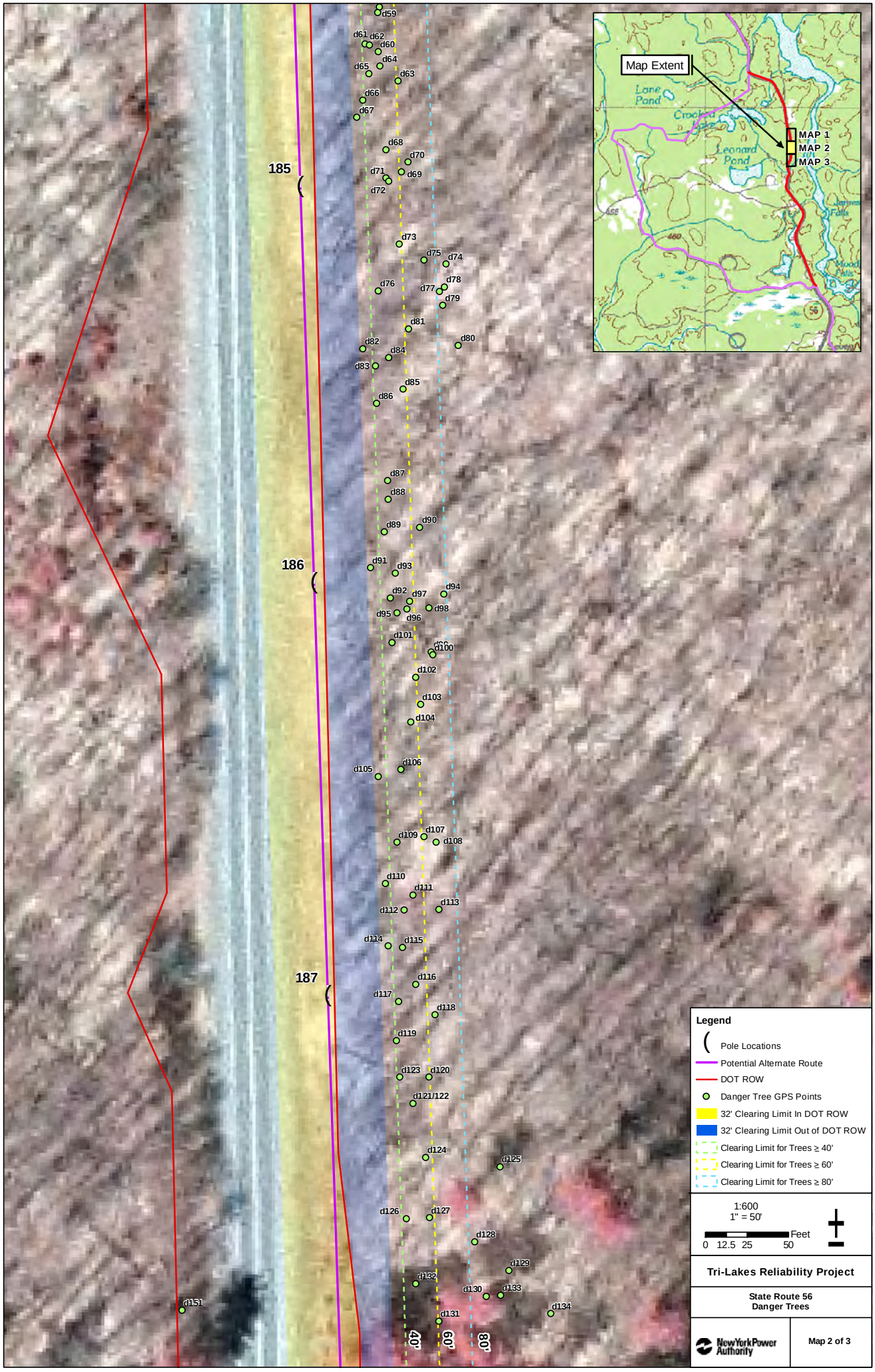
d64
d65
d66
d67
Map Extent
Lane Pond
Crooked Lake
Leonard Pond
MAP 1
MAP 2
MAP 3
Legend
Pole Locations
Potential Alternate Route
DOT ROW
Danger Tree GPS Points
32' Clearing Limit In DOT ROW
32' Clearing Limit Out of DOT ROW
Clearing Limit for Trees ≥ 40'
Clearing Limit for Trees ≥ 60'
Clearing Limit for Trees ≥ 80'
1:600
1" = 50'
0 12.5 25 50
Feet
Tri-Lakes Reliability Project
State Route 56
Danger Trees
NewYorkPower Authority
Map 1 of 3


Map Extent
Lane Pond
Crooked Lake
Leonard Pond
MAP 1
MAP 2
MAP 3
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40'
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80'
Legend
Pole Locations
Potential Alternate Route
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32' Clearing Limit In DOT ROW
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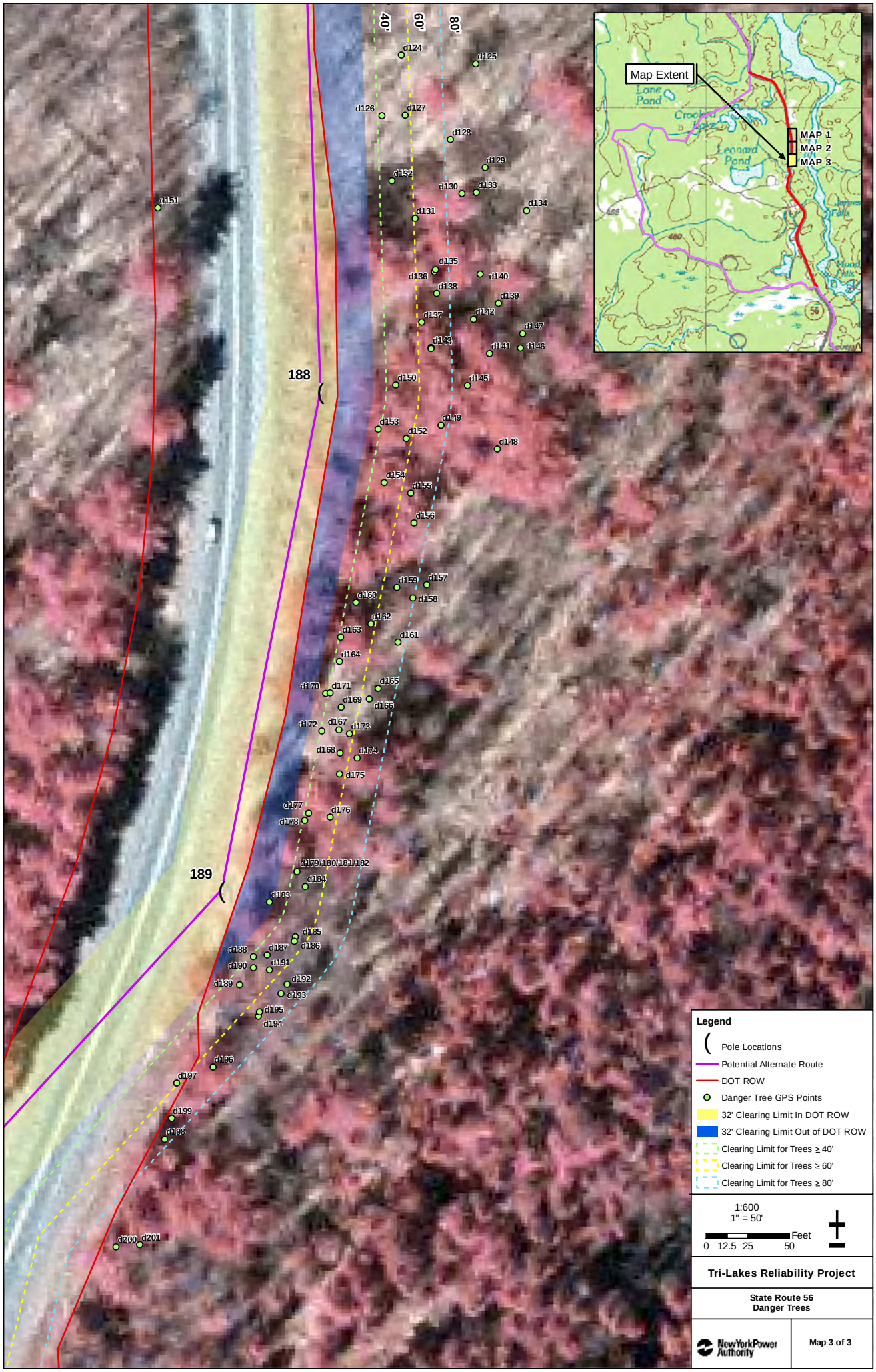
Clearing Limit for Trees ≥ 80'
1:600
1" = 50'
0 12.5 25 50 Feet
Tri-Lakes Reliability Project
State Route 56
Danger Trees
NewYorkPower Authority
Map 2 of 3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Map Extent
Lane Pond
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Clearing Limit for Trees ≥ 80'
1:600
1" = 50'
0 12.5 25 50 Feet
Tri-Lakes Reliability Project
State Route 56
Danger Trees
NewYorkPower Authority
Map 3 of 3

Draft for Discussion

MEMO

To: Dean Long

From: Rich Futyma

Date: June 21, 2007

Re: Counting trees to be cleared within the 64-foot-wide right-of-way and danger trees along the Tri-Lakes transmission line route through state forest preserve lands

Last week, on June 13th through 15th, Will Buetow and I conducted counts of trees that would be cleared on state forest preserve lands if the transmission line were to be installed along NYS Route 56. This included the task of identifying danger trees, i.e., trees standing outside of the transmission line right-of-way that are tall enough to be capable of falling onto the transmission line.

Tree Clearing in Transmission Line Right-of-Way

To locate the bounds of the area to be cleared of trees (i.e., the 64-foot-wide right-of-way, 32 ft on either side of the transmission line centerline), we used a Trimble GeoXm® GPS receiver, which had been pre-programmed with a map of the proposed transmission line. This map also included the boundaries of the NYSDOT right-of-way, the centerline of the transmission line, and locations of poles. The pole locations had also been staked out by surveyors, which helped us confirm the accuracy of the locations indicated by the GPS receiver. Because we wanted to distinguish between clearing that would take place within the NYSDOT right-of-way and clearing outside that right-of-way (but still within the 64-foot-wide powerline r.o.w.), we used flagging tape (pink with black stripes) to mark the boundary of the DOT right-of-way. Then, starting at one pole site and walking toward the next, we counted the number of trees within the DOT right-of-way that had a diameter at breast height (dhb) of 3 inches or greater. After reaching the pole site at the end of the segment being counted, we walked back to the starting point, counting trees ≥3 inches dbh standing in the clearing zone but outside the DOT right-of-way, while using the GPS receiver to keep us within the transmission line r.o.w.

To start, each transmission line route segment that we counted comprised two inter-pole spans (e.g., from pole 182 to 184). Later, we also counted some single-span segments. We found that it took approximately 30 to 45 minutes to count all of the trees in two inter-pole spans. During our three days on the site, we were able to count all of the trees in 22 of the 40 inter-pole spans lying within the forest preserve. Although the census of trees in the clearing zone goes quickly, we were not able to count all 40 spans due to the length of time it took to identify and measure danger trees (see below).

Table 1 lists the number of trees within each route segment counted. Each "Plot" in Table 1 comprises one or two inter-pole spans, and is either inside or outside the DOT right-of-way. Within the 22 inter-pole segments of the route that we counted, there was a

total of 1,305 trees having diameters of 3 inches or greater, or an average of 59 trees per segment. Applying this number to all 40 segments yields an estimate of 2,360 trees to be cut.

Alternatively, we can look at each inter-pole segment where tree counts were not taken, and assign it to one of the several plant communities found in this area, as determined during field studies in the spring of 2006. An estimate of the tree count in that segment is derived by finding counted segments in the same plant community and determining the average number of trees in those segments. Doing so yields an estimate of 1,239 trees in the uncounted segments. Adding that to the total for the counted segments produces a total of 2,544 trees having diameters of three inches or greater.

Danger Trees

The way that we identified and recorded the danger trees is as follows. We used the GPS receiver to locate the outer edge of the area within which complete clearing would take place (the 64-foot-wide r.o.w.). We then looked for trees in the adjacent forest that might be tall enough to be danger trees. To confirm that a tree was indeed tall enough to reach the center of the transmission line right-of-way if it were to fall, one of us would stand approximately on the line between proposed transmission line pole locations, and sight the candidate trees with an inclinometer. If the angle between the horizontal and line of site to the top of the tree exceeded 45°, it was classified as a danger tree. The species of each danger tree was identified and its location was recorded using the GPS receiver. After its position was recorded, each danger tree was marked with blue chalk dust on the side of its trunk facing away from the road.

Also, a measurement of the height of each tree was made using an Opti-Logic® laser rangefinder/hypsometer. To make a height measurement using this device, it is necessary to first sight the trunk of the tree to get a horizontal distance, then sight the top of its canopy, and its base, both of which measure angles. When doing this in the forest, it can be difficult to determine the exact spot to sight for the canopy top due to intervening branches of other trees. Therefore, the tree height measurements are only approximate, and it may not be unusual for them to be off by 10 feet or more.

We found that it took approximately one hour to locate and measure all the danger trees adjacent to one inter-pole span. In the first two days of our work, we located the danger trees from pole 182 south to the point where the transmission line crosses to the west side of Route 56, just before pole 190. This is approximately 8 inter-pole segments, or about 20% of the route through the forest preserve. Due to the length of time required to take these measurements, we decided not to continue taking them on the third day.

Table 2 lists the danger trees that were found in that segment between poles 182 and 190, including their height and species. Maps 1, 2, and 3 show the locations of the danger trees in relation to the transmission line and 64-foot-wide zone to be cleared of all trees. There were 201 danger trees found in this area, or an average of 25 danger trees adjacent to each inter-pole span.

Using these counts to estimate the total number of danger trees along the entire route within the forest preserve yields a total of about 1,005 danger trees. I believe that this is an under-estimate of the number of danger trees that we would identify using the method. A large portion of the route that was not evaluated for danger trees has areas where hillsides rise steeply above the proposed location of the transmission line. In these areas, most of which are covered with plantations of tall white pines and red pines, a large number of trees would rise above the 45° sighting line for identifying danger trees. In many cases, such trees may be too short to reach the transmission line right-of-way if they were to fall over, but they are intercepted by the 45° line due to the rise of the hillside. Therefore, completion of an accurate inventory of danger trees may require a method that takes topography into account.

Completion of the Work

As discussed above, the measurements we collected allows us to estimate the number of trees that would need to be cleared in order to construct the transmission line through the forest preserve. It appears that between 2,400 and 2,600 trees with diameters of 3 inches or greater would have to be cleared in the 64-foot-wide right-of-way. If an exact count of these trees is required, it should be possible to complete those counts in one full day of work.

The completion of danger tree identification will take longer, approximately 4 days of effort for two people. It appears likely that more than 1,000 danger trees would be identified if we were to continue using the technique described here.

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Table 1. Numbers of Trees 3 inches in Diameter or Greater

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8
Pole interval	**182-184**	**182-184**	**184-186**	**186-188**	**186-188**	**188-Rt56**	**188-Rt56**	**Rt56-192**
Located Inside DOT r.o.w. (Y/N)	**Y**	**N**	**N**	**Y**	**N**	**Y**	**N**	**Y**
Abies balsamea					2		26	13
Acer rubrum	6	10	5	2	12		15	
Acer saccharum	13	36	52	2	60		7	
Betula alleghaniensis		2	2		3			
Betula papyrifera								
Betula populifolia								1
Fagus grandifolia	3	16	23	1	13		2	
Larix laricina								10
Ostrya virginiana		1	2	1	5			
Picea mariana								
Picea rubens		2	2					4
Pinus resinosa								
Pinus strobus				2	2	1	14	11
Populus balsamifera								
Populus grandidentata							6	
Populus tremuloides								
Prunus serotina	3	3	4		15		4	3
Totals	**25**	**70**	**90**	**8**	**112**	**1**	**74**	**42**
Community Type‡	BMF	BMF	BMF	BMF	BMF	FWP	FWP	FWP

‡Community Type: BMF = beech-maple forest, FWP = balsam fir-white pine forest, RPP = red pine plantation, TFS = tamarack-fir swamp, WPP = white pine plantation.

Table 1 (continued).

	Plot 9	**Plot 10**	**Plot 11**	**Plot 12**	**Plot 13**	**Plot 14**	**Plot 15**	**Plot 16**
Pole interval	**Rt56-192**	**199-200**	**201-202**	**202-203**	**204-205**	**206-207**	**208-210**	**208-210**
Located Inside DOT r.o.w. (Y/N)	**N**	**N**	**N**	**N**	**N**	**Y**	**Y**	**N**
Abies balsamea	30	26	38	13	3	8	4	47
Acer rubrum	1	3		17	11	12		2
Acer saccharum								
Betula alleghaniensis					1			
Betula papyrifera			4			1		
Betula populifolia								1
Fagus grandifolia					8			
Larix laricina	8	7				3	3	22
Ostrya virginiana								
Picea mariana								
Picea rubens		3	1			1	2	3
Pinus resinosa					43	9		
Pinus strobus	15	2	7	4	2	5	1	3
Populus balsamifera			18					
Populus grandidentata			7	5				
Populus tremuloides			21	16		9		1
Prunus serotina	8	3	3	7		2		
Totals	**62**	**44**	**99**	**62**	**68**	**50**	**10**	**79**
Community Type	FWP	FWP	FWP	FWP	RPP	RPP	TFS	TFS

Table 1 (continued).

	Plot 18	**Plot 19**	**Plot 20**	**Plot 21**	**Plot 22**	**Totals**
Pole interval	**214-215**	**218-219**	**222-224**	**222-224**	**225-226**	
Located Inside DOT r.o.w. (Y/N)	**N**	**N**	**Y**	**N**	**N**	
Abies balsamea	2	3		19	9	**244**
Acer rubrum				16	1	**113**
Acer saccharum						**170**
Betula alleghaniensis						**8**
Betula papyrifera				3		**8**
Betula populifolia						**2**
Fagus grandifolia				8	9	**83**
Larix laricina				71		**124**
Ostrya virginiana						**9**
Picea mariana				5		**5**
Picea rubens				9		**27**
Pinus resinosa	21					**128**
Pinus strobus	3	53	1	35	66	**230**
Populus balsamifera						**18**
Populus grandidentata		1		1		**25**
Populus tremuloides		2		1		**52**
Prunus serotina				1	3	**59**
Totals	**26**	**59**	**1**	**169**	**88**	**1305**
Community Type	RPP	WPP	TFS	TFS	WPP	

Table 2. Danger Trees in Part of the Alternate Route through Forest Preserve Lands

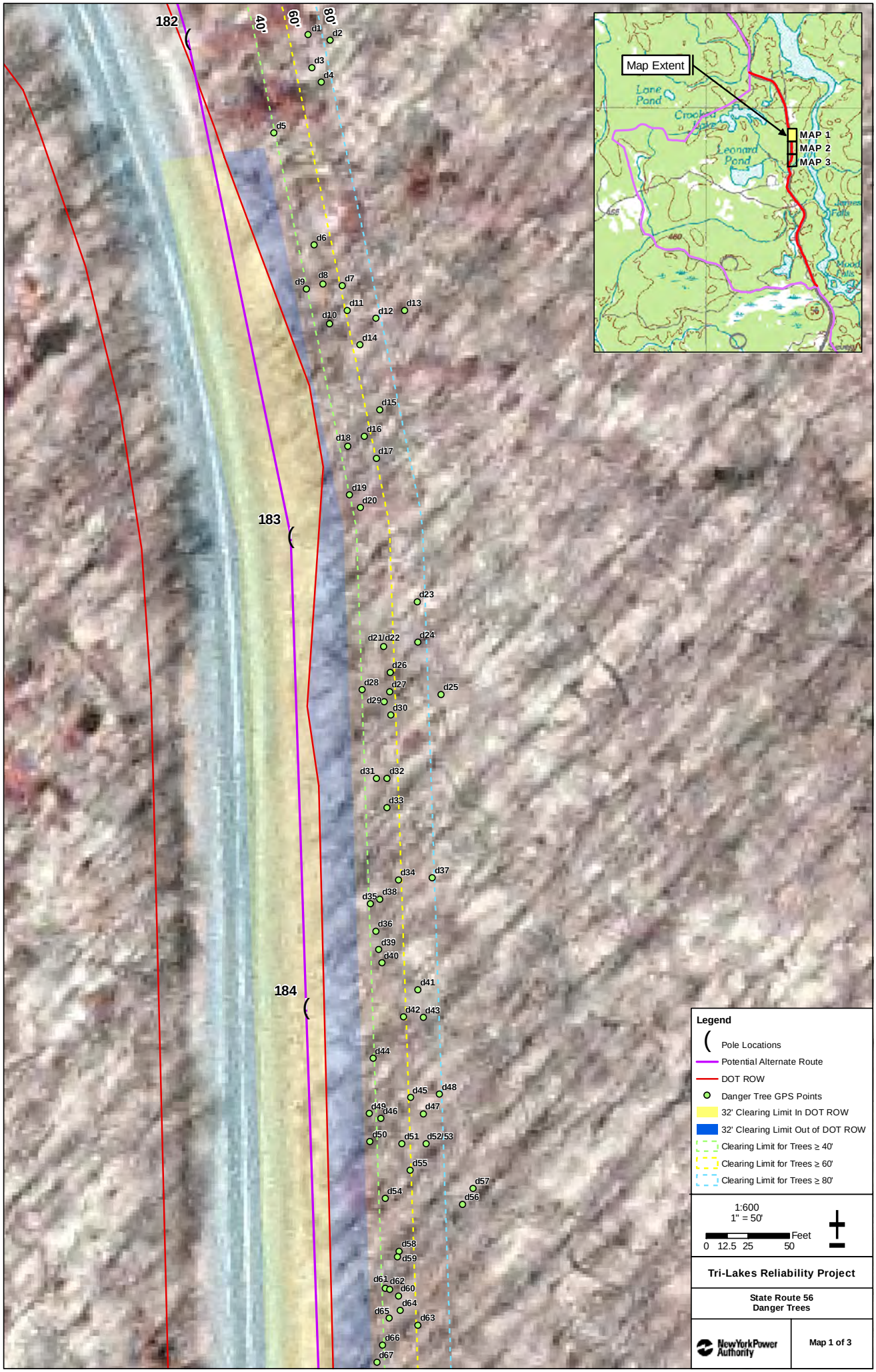
Pole Segment	Tree ID	Species	Height (ft)	Notes
182-184	D1	*Acer rubrum*	67	
182-184	D2	*Prunus serotina*	67	
182-184	D3	*Prunus serotina*	80	
182-184	D4	*Prunus serotina*	85	
182-184	D5	*Prunus serotina*	72	
182-184	D6	*Acer saccharum*	84	
182-184	D7	*Prunus serotina*	90	
182-184	D8	*Prunus serotina*	82	
182-184	D9	*Prunus serotina*	83	
182-184	D10	*Prunus serotina*	106	
182-184	D11	*Prunus serotina*	92	
182-184	D12	*Acer rubrum*	69	
182-184	D13	*Acer rubrum*	98	
182-184	D14	*Acer saccharum*	81	
182-184	D15	*Acer rubrum*	67	
182-184	D16	*Acer rubrum*	77	
182-184	D17	*Acer saccharum*	85	
182-184	D18	*Acer saccharum*	82	
182-184	D19	*Prunus serotina*	66	
182-184	D20	*Acer saccharum*	74	
182-184	D21	*Acer saccharum*	45	
182-184	D22	*Acer saccharum*	44	
182-184	D23	*Acer saccharum*	76	
182-184	D24	*Acer rubrum*	58	
182-184	D25	*Acer saccharum*	102	tree has two trunks
182-184	D26	*Fagus grandifolia*	64	
182-184	D27	*Prunus serotina*	73	half of the tree is dead
182-184	D28	*Fagus grandifolia*	77	
182-184	D29	*Acer saccharum*	94	
182-184	D30	*Fagus grandifolia*	66	
182-184	D31	*Acer saccharum*	72	
182-184	D32	*Acer saccharum*	75	
182-184	D33	*Acer rubrum*	81	
182-184	D34	*Prunus serotina*	72	
182-184	D35	*Acer saccharum*	78	
182-184	D36	*Acer saccharum*	86	
182-184	D37	*Prunus serotina*	77	
182-184	D38	*Acer saccharum*	83	
182-184	D39	*Prunus serotina*	81	
182-184	D40	*Fagus grandifolia*	55	
182-184	D41	*Acer saccharum*	85	

Pole Segment	Tree ID	Species	Height (ft)	Notes
184-186	D42	*Prunus serotina*	82	
184-186	D43	*Acer rubrum*	80	
184-186	D44	*Acer saccharum*	66	
184-186	D45	*Fagus grandifolia*	85	
184-186	D46	*Acer saccharum*	63	
184-186	D47	*Betula alleghaniensis*	82	
184-186	D48	*Acer rubrum*	73	
184-186	D49	*Acer saccharum*	63	
184-186	D50	*Acer saccharum*	47	
184-186	D51	*Fagus grandifolia*	56	
184-186	D52	*Acer saccharum*	88	
184-186	D53	*Acer saccharum*	88	D52 and D53 are next to each other.
184-186	D54	*Prunus serotina*	70	tree has three large trunks
184-186	D55	*Acer rubrum*	75	tree has two trunks
184-186	D56	*Acer saccharum*	74	this tree is dying
184-186	D57	*Acer saccharum*	87	
184-186	D58	*Prunus serotina*	83	
184-186	D59	*Acer saccharum*	74	
184-186	D60	*Acer saccharum*	74	
184-186	D61	*Acer saccharum*	48	
184-186	D62	*Betula alleghaniensis*	52	
184-186	D63	*Acer saccharum*	60	
184-186	D64	*Acer saccharum*	54	
184-186	D65	*Acer saccharum*	41	
184-186	D66	*Acer saccharum*	42	
184-186	D67	*Acer saccharum*	61	
184-186	D68	*Fagus grandifolia*	68	
184-186	D69	*Fagus grandifolia*	53	
184-186	D70	*Prunus serotina*	59	
184-186	D71	*Prunus serotina*	53	
184-186	D72	*Fagus grandifolia*	37	
184-186	D73	*Acer saccharum*	61	
184-186	D74	*Acer saccharum*	46	
184-186	D75	*Acer saccharum*	40	
184-186	D76	*Acer saccharum*	41	
184-186	D77	*Acer saccharum*	58	
184-186	D78	*Prunus serotina*	74	
184-186	D79	*Acer saccharum*	62	
184-186	D80	*Acer rubrum*	57	
184-186	D81	*Acer saccharum*	72	
184-186	D82	*Fagus grandifolia*	51	
184-186	D83	*Prunus serotina*	50	

Pole Segment	Tree ID	Species	Height (ft)	Notes
184-186	D84	*Acer saccharum*	46	
184-186	D85	*Acer saccharum*	55	
184-186	D86	*Acer saccharum*	45	
184-186	D87	*Acer saccharum*	55	
184-186	D88	*Acer saccharum*	61	
184-186	D89	*Acer rubrum*	57	
184-186	D90	*Acer saccharum*	83	
184-186	D91	*Acer saccharum*	46	
184-186	D92	*Prunus serotina*	66	
184-186	D93	*Acer rubrum*	60	
184-186	D94	*Betula alleghaniensis*	63	
186-188	D95	*Acer saccharum*	47	
186-188	D96	*Prunus serotina*	72	
186-188	D97	*Acer saccharum*	64	
186-188	D98	*Acer saccharum*	62	
186-188	D99	*Prunus serotina*	70	
186-188	D100	*Acer saccharum*	66	
186-188	D101	*Prunus serotina*	68	
186-188	D102	*Acer saccharum*	57	
186-188	D103	*Acer saccharum*	54	
186-188	D104	*Acer saccharum*	68	
186-188	D105	*Acer saccharum*	56	
186-188	D106	*Acer saccharum*	64	
186-188	D107	*Prunus serotina*	80	This tree has two tall trunks
186-188	D108	*Acer saccharum*	63	
186-188	D109	*Prunus serotina*	84	
186-188	D110	*Acer saccharum*	44	
186-188	D111	*Acer rubrum*	56	
186-188	D112	*Acer saccharum*	66	
186-188	D113	*Betula alleghaniensis*	77	
186-188	D114	*Acer saccharum*	63	
186-188	D115	*Acer rubrum*	59	
186-188	D116	*Acer rubrum*	57	
186-188	D117	*Prunus serotina*	68	
186-188	D118	*Acer saccharum*	69	
186-188	D119	*Acer saccharum*	52	
186-188	D120	*Prunus serotina*	64	
186-188	D121	*Acer saccharum*	51	
186-188	D122	*Prunus serotina*	64	
186-188	D123	*Acer saccharum*	48	
186-188	D124	*Prunus serotina*	62	
186-188	D125	*Prunus serotina*	83	

Pole Segment	Tree ID	Species	Height (ft)	Notes
186-188	D126	*Acer rubrum*	59	This tree has two tall trunks
186-188	D127	*Acer rubrum*	54	
186-188	D128	*Prunus serotina*	75	This tree has three trunks
186-188	D129	*Pinus strobus*	77	
186-188	D130	*Pinus strobus*	65	
186-188	D131	*Prunus serotina*	58	
186-188	D132	*Acer rubrum*	59	
186-188	D133	*Pinus strobus*	62	
186-188	D134	*Pinus strobus*	73	
186-188	D135	*Pinus strobus*	75	
186-188	D136	*Abies balsamea*	77	
186-188	D137	*Acer saccharum*	59	
186-188	D138	*Abies balsamea*	60	
186-188	D139	*Pinus strobus*	72	
186-188	D140	*Pinus strobus*	75	
186-188	D141	*Pinus strobus*	74	
186-188	D142	*Pinus strobus*	96	
186-188	D143	*Pinus strobus*	75	
186-188	D144	*Pinus strobus*	102	
186-188	D145	*Pinus strobus*	81	
186-188	D146	*Pinus strobus*	96	
186-188	D147	*Pinus strobus*	91	
186-188	D148	*Pinus strobus*	75	
186-188	D149	*Pinus strobus*	86	
186-188	D150	*Pinus strobus*	100	
186-188	D151	*Pinus strobus*	96	This tree is on the west side of the road.
Pole 188 - Rte 56	D152	*Prunus serotina*	66	
Pole 188 - Rte 56	D153	*Pinus strobus*	74	
Pole 188 - Rte 56	D154	*Prunus serotina*	55	
Pole 188 - Rte 56	D155	*Pinus strobus*	92	
Pole 188 - Rte 56	D156	*Pinus strobus*	90	
Pole 188 - Rte 56	D157	*Prunus serotina*	63	
Pole 188 - Rte 56	D158	*Prunus serotina*	76	
Pole 188 - Rte 56	D159	*Acer saccharum*	59	
Pole 188 - Rte 56	D160	*Abies balsamea*	44	Top of tree was difficult to see; height approx.
Pole 188 - Rte 56	D161	*Populus grandidentata*	67	
Pole 188 - Rte 56	D162	*Pinus strobus*	70	
Pole 188 - Rte 56	D163	*Prunus serotina*	51	
Pole 188 - Rte 56	D164	*Acer saccharum*	49	
Pole 188 - Rte 56	D165	*Populus grandidentata*	67	

Pole Segment	Tree ID	Species	Height (ft)	Notes
Pole 188 - Rte 56	D166	*Populus grandidentata*	65	
Pole 188 - Rte 56	D167	*Populus grandidentata*	60	
Pole 188 - Rte 56	D168	*Pinus strobus*	91	
Pole 188 - Rte 56	D169	*Fagus grandifolia*	38	
Pole 188 - Rte 56	D170	*Prunus serotina*	48	
Pole 188 - Rte 56	D171	*Acer saccharum*	44	
Pole 188 - Rte 56	D172	*Acer rubrum*	54	
Pole 188 - Rte 56	D173	*Pinus strobus*	69	
Pole 188 - Rte 56	D174	*Populus grandidentata*	60	
Pole 188 - Rte 56	D175	*Pinus strobus*	93	
Pole 188 - Rte 56	D176	*Populus grandidentata*	65	
Pole 188 - Rte 56	D177	*Populus grandidentata*	67	
Pole 188 - Rte 56	D178	*Pinus strobus*	60	
Pole 188 - Rte 56	D179	*Populus grandidentata*	62	This and the next 3 trees are in a group, all approximately the same size.
Pole 188 - Rte 56	D180	*Populus grandidentata*	62	
Pole 188 - Rte 56	D181	*Populus grandidentata*	62	
Pole 188 - Rte 56	D182	*Populus grandidentata*	62	
Pole 188 - Rte 56	D183	*Populus grandidentata*	54	
Pole 188 - Rte 56	D184	*Populus grandidentata*	52	
Pole 188 - Rte 56	D185	*Populus grandidentata*	80	
Pole 188 - Rte 56	D186	*Populus grandidentata*	88	
Pole 188 - Rte 56	D187	*Populus grandidentata*	71	
Pole 188 - Rte 56	D188	*Pinus strobus*	61	
Pole 188 - Rte 56	D189	*Populus grandidentata*	67	
Pole 188 - Rte 56	D190	*Pinus strobus*	69	
Pole 188 - Rte 56	D191	*Populus grandidentata*	79	
Pole 188 - Rte 56	D192	*Populus grandidentata*	68	
Pole 188 - Rte 56	D193	*Populus grandidentata*	61	
Pole 188 - Rte 56	D194	*Populus grandidentata*	65	
Pole 188 - Rte 56	D195	*Populus grandidentata*	77	
Pole 188 - Rte 56	D196	*Pinus strobus*	102	
Pole 188 - Rte 56	D197	*Pinus strobus*	86	
Pole 188 - Rte 56	D198	*Pinus strobus*	82	
Pole 188 - Rte 56	D199	*Pinus strobus*	75	
Pole 188 - Rte 56	D200	*Pinus strobus*	89	
Pole 188 - Rte 56	D201	*Pinus strobus*	94	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Map Extent
Lane Pond
Crooked Lake
Leonard Pond
MAP 1
MAP 2
MAP 3
Legend
Pole Locations
Potential Alternate Route
DOT ROW
Danger Tree GPS Points
32' Clearing Limit In DOT ROW
32' Clearing Limit Out of DOT ROW
Clearing Limit for Trees ≥ 40'
Clearing Limit for Trees ≥ 60'
Clearing Limit for Trees ≥ 80'
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1" = 50'
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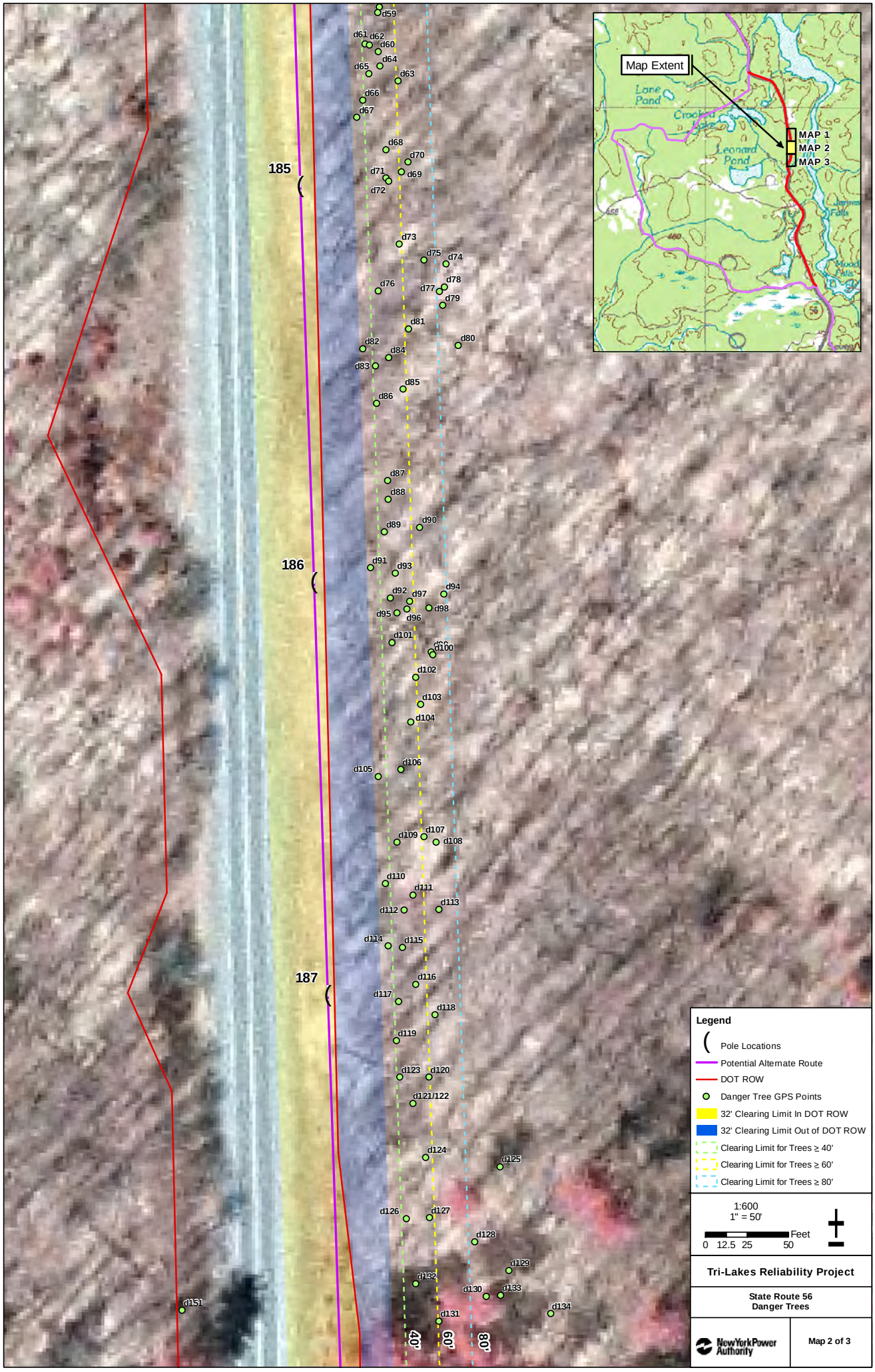
Feet
Tri-Lakes Reliability Project
State Route 56
Danger Trees
NewYorkPower Authority
Map 1 of 3


Map Extent
Lane Pond
Crooked Lake
Leonard Pond
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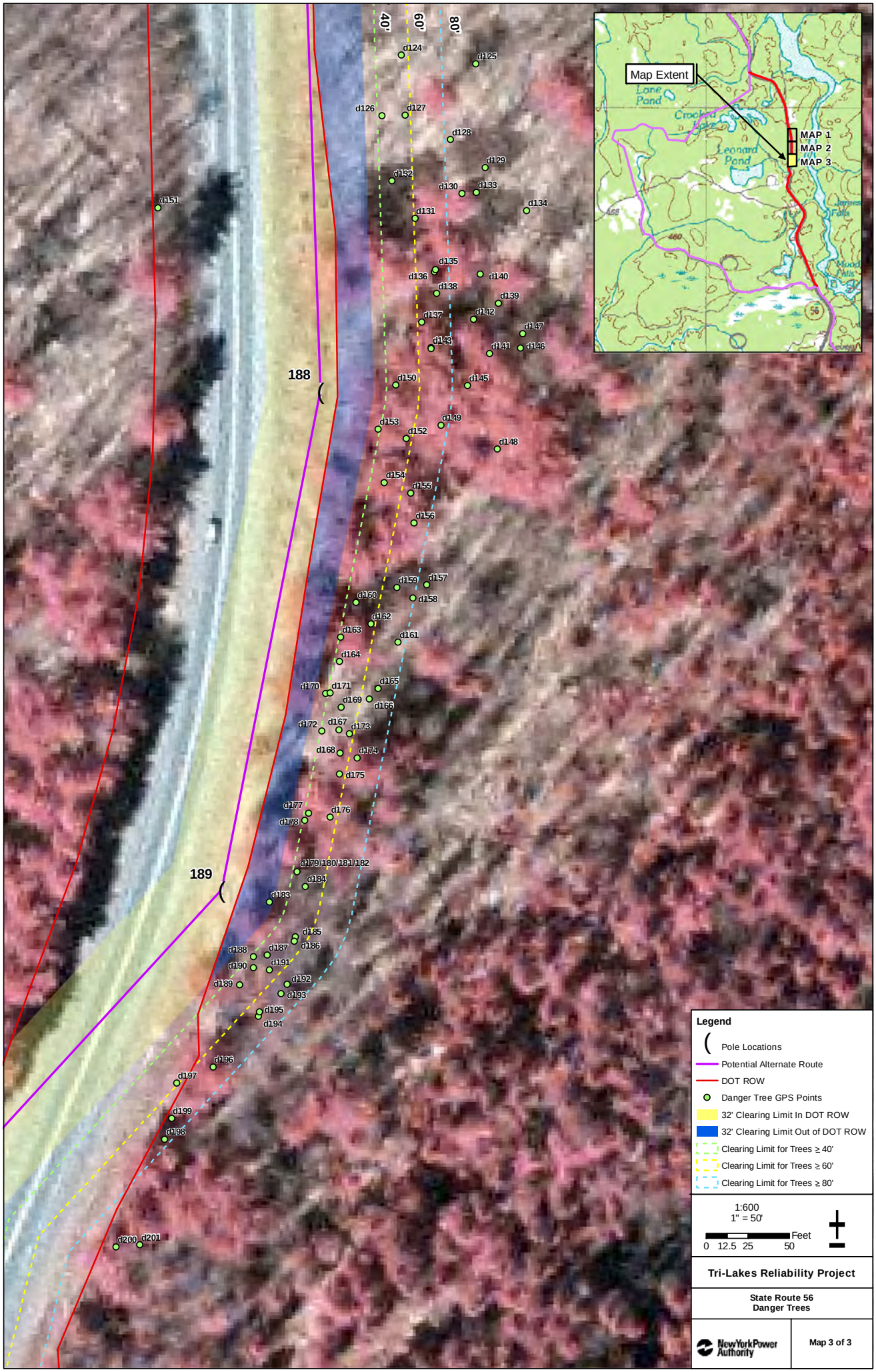
Legend
Pole Locations
Potential Alternate Route
DOT ROW
Danger Tree GPS Points
32' Clearing Limit In DOT ROW
32' Clearing Limit Out of DOT ROW
Clearing Limit for Trees ≥ 40'
Clearing Limit for Trees ≥ 60'
Clearing Limit for Trees ≥ 80'
1:600
1" = 50'
0 12.5 25 50 Feet
Tri-Lakes Reliability Project
State Route 56
Danger Trees
NewYorkPower Authority
Map 2 of 3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Map Extent
Lane Pond
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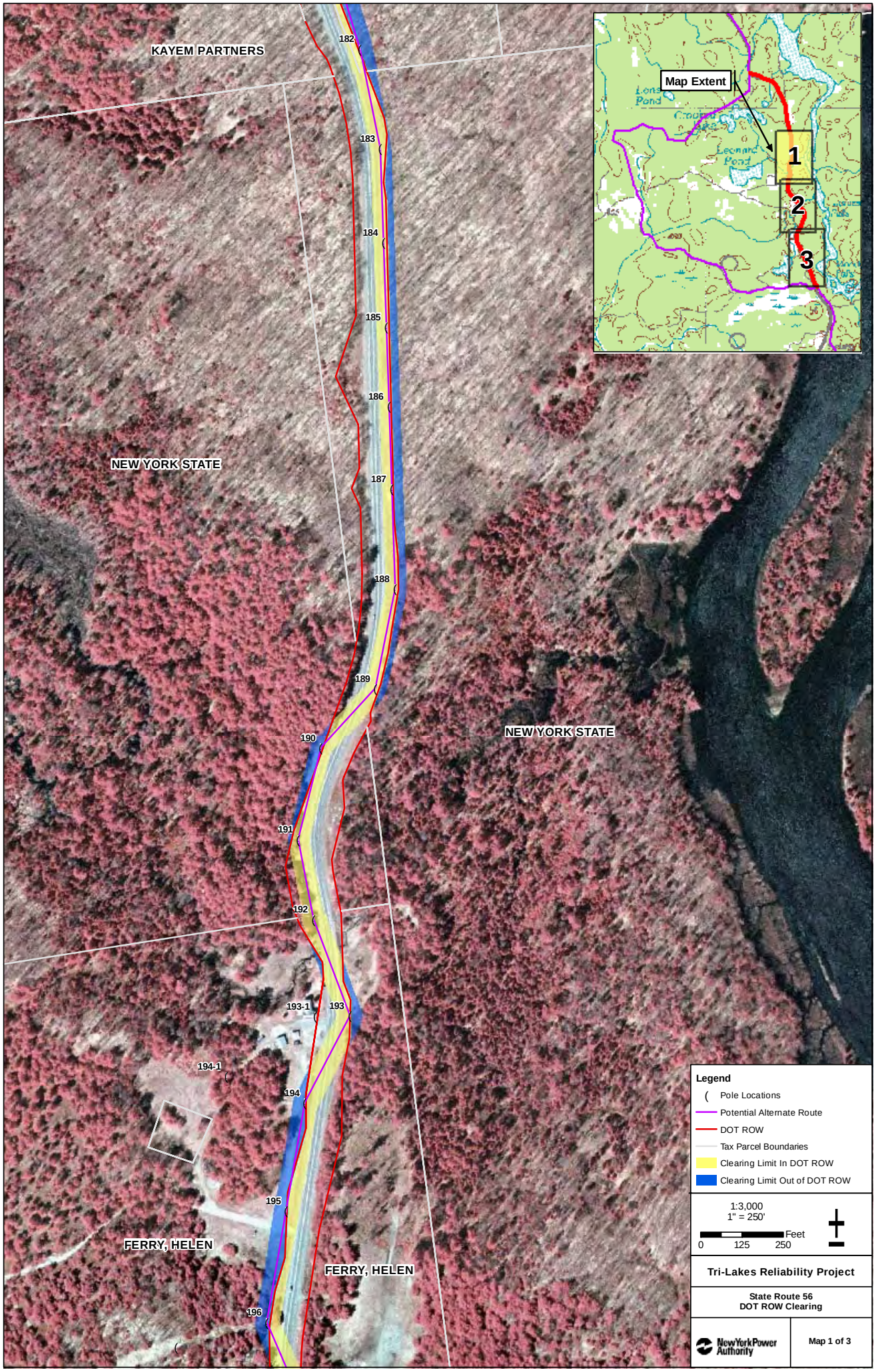
Clearing Limit for Trees ≥ 40'
Clearing Limit for Trees ≥ 60'
Clearing Limit for Trees ≥ 80'
1:600
1" = 50'
0 12.5 25 50 Feet
Tri-Lakes Reliability Project
State Route 56
Danger Trees
NewYorkPower Authority
Map 3 of 3

July

Trees to be Cleared Adjacent to Forest Preserve Lands Along NYS Route 56 (the proposed transmission line ROW)
(Number of trees ≥3 inches dbh)

Tree Species	Number Counted	Trees within DOT r.o.w.	Trees outside DOT r.o.w.
Abies balsamea (Balsam Fir)	401	68	333
Acer rubrum (Red Maple)	241	39	202
Acer saccharum (Sugar Maple)	173	16	157
Amelanchier sp. (Shadbush)	3	-	3
Betula alleghaniensis (Yellow birch)	9	-	9
Betula papyrifera (Paper Birch)	21	6	15
Betula populifolia (Gray Birch)	10	1	9
Fagus grandifolia (American Beech)	85	5	80
Larix laricina (Tamarack)	170	21	149
Malus sylvestris (Wild Apple)	1	-	1
Ostrya virginiana (Hop Hornbeam)	9	1	8
Picea mariana (Black Spruce)	7	2	5
Picea rubens (Red Spruce)	64	15	49
Pinus resinosa (Red Pine)	464	254	210
Pinus strobus (White Pine)	540	83	457
Pinus sylvestris (Scotch Pine)	96	96	-
Populus balsamifera (Balsam Poplar)	18	-	18
Populus grandidentata (Bigtooth Aspen)	67	18	49
Populus tremuloides (Quaking Aspen)	96	17	79
Prunus serotina (Black Cherry)	107	16	91
Thuja occidentalis (Eastern White Cedar)	2	-	2
Totals	**2,584**	**658**	**1,926**

Tree count data were collected by Richard Futyma and William Buetow on June 13-15 and July 24 & 25, 2007.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Pole Locations
Potential Alternate Route
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Clearing Limit Out of DOT ROW
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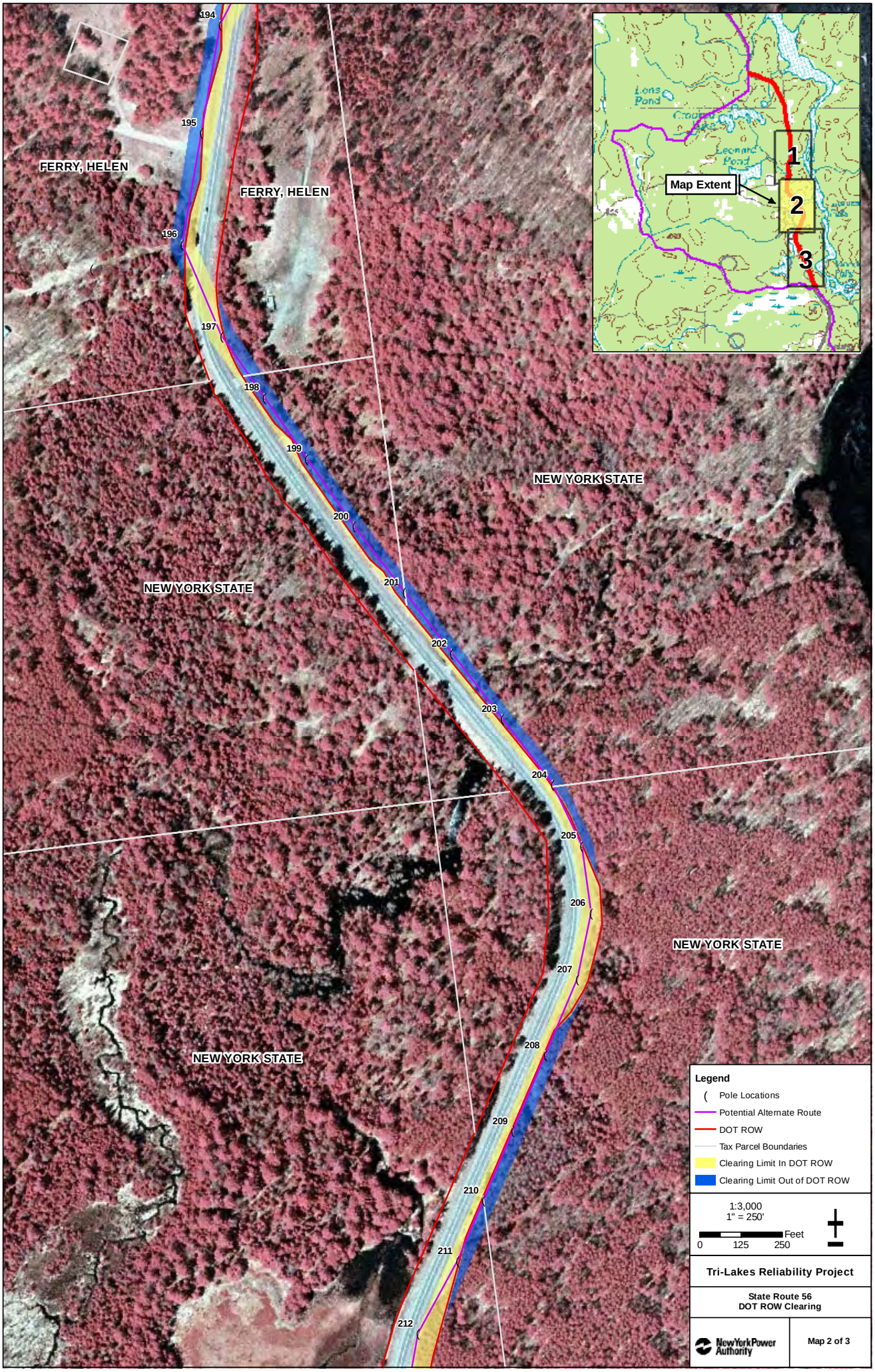
Tri-Lakes Reliability Project
State Route 56
DOT ROW Clearing
NewYorkPower Authority
Map 1 of 3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Pole Locations
Potential Alternate Route
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Tax Parcel Boundaries
Clearing Limit In DOT ROW
Clearing Limit Out of DOT ROW
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1" = 250'
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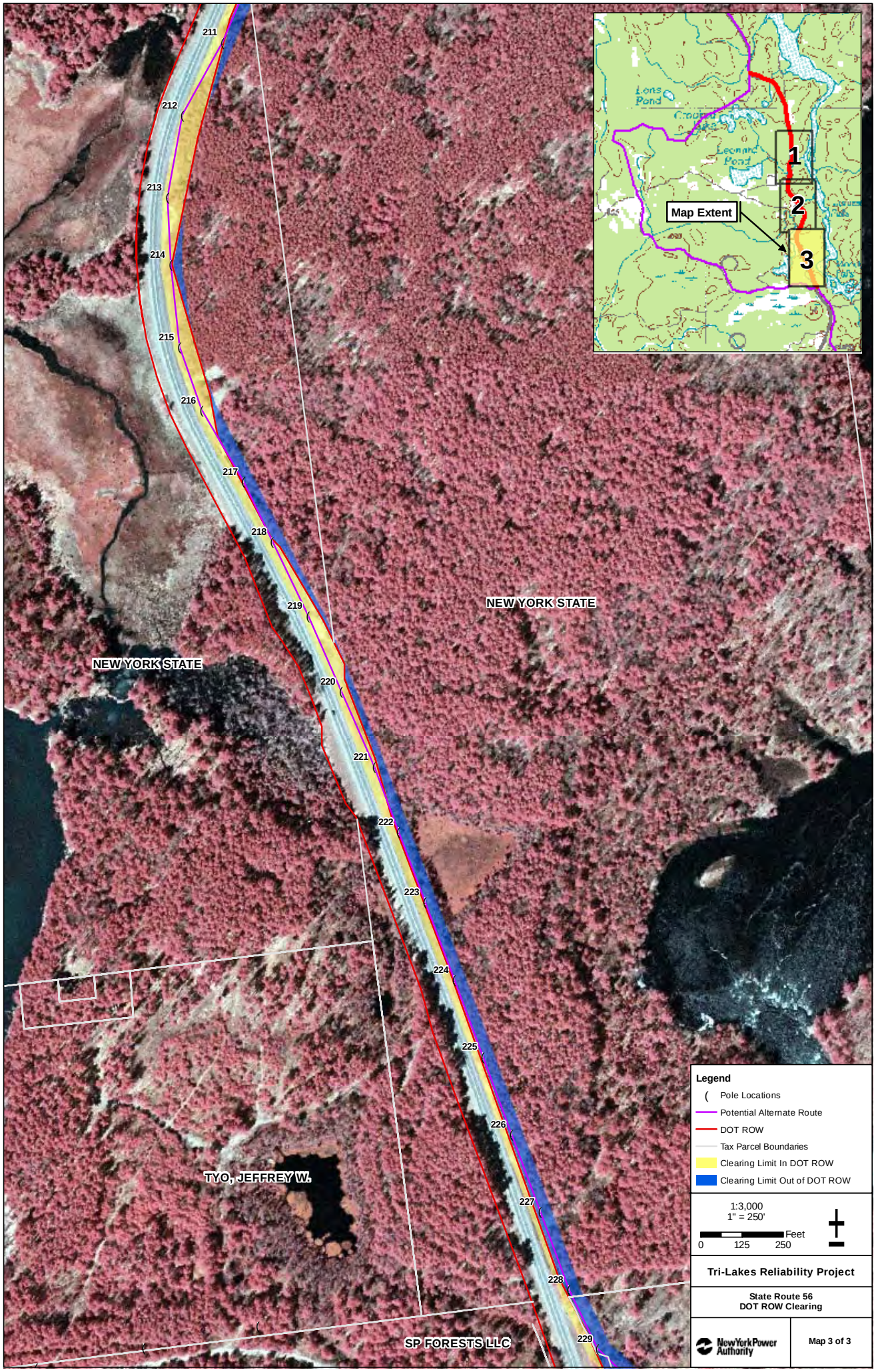
Feet
Tri-Lakes Reliability Project
State Route 56
DOT ROW Clearing
NewYorkPower Authority
Map 2 of 3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NEW YORK STATE
TYO, JEFFREY W.
SP FORESTS LLC
Lons Pond
Leonard Pond
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Map Extent
Legend
Pole Locations
Potential Alternate Route
DOT ROW
Tax Parcel Boundaries
Clearing Limit In DOT ROW
Clearing Limit Out of DOT ROW
1:3,000
1" = 250'
0
125
250
Feet
Tri-Lakes Reliability Project
State Route 56
DOT ROW Clearing
NewYorkPower Authority
Map 3 of 3

October

the LA group
Landscape Architecture
and Engineering, P.C.

40 Long Alley
Saratoga Springs
New York 12866

P 518/587-8100
F 518/587-0180
www.thelagroup.com

MEMO

TO: **DEAN LONG**

FROM: **WILL BUETOW**

DATE: **October 15, 2007**

RE: **TRI-LAKES BYPASS ROUTE TREE COUNTS**

From October 8 through October 12 of 2007, Rich Futyma, Robert Fraser and I went to the Tri-Lakes Bypass Route to record the different vegetative cover types in the permitted route, and to estimate the number of trees >3" dbh that would be removed for the installation of the line and right-of-way. This data was collected by walking the proposed bypass route located with a GPS unit, and recording the vegetative cover type boundaries. The boundary of the cover types was noted by recording the UTM coordinates of the upper and lower boundaries of that specific covertype. The dominant tree species were noted within the cover type.

Within the noted cover types, representative sample plots were taken either 50' x 50' or 50' x 75' in size. Within the sample plots, the trees were counted that were >3" dbh and the tree species were identified. The pole interval that the sample plot is within was also recorded along with the vegetative cover type. Photographs were taken from the northwest corner of the sample plot and a point was recorded with the GPS unit in the same corner. Some notes were made in the sample plot such as the other species smaller than 3" dbh that were not recorded because of their size, and if the area was disturbed from past logging.

The recorded data was entered into a spreadsheet, and the total trees for each representative sample plot was calculated. The number of trees was divided by the plot size (50'x50' or 50'x75') and then multiplied by 43,560 square feet to determine the number of trees per acre. This number was representative of the specific covertype in which they were taken.

Next, a covertype map was created by utilizing the UTM coordinates of the covertype boundaries that were recorded. These points were plotted on the Bypass Route layout, and these boundaries were drawn for the width of the right-of-way. Within the boundaries of the different covertypes, open areas such as roads and visible clearings were subtracted from the covertype areas. Then, the area of the different covertypes was determined in acres. Finally, the covertype tree density (trees per acre) was multiplied by the area of the corresponding covertype segment, and an estimated number of trees was calculated for each covertype segment. All of the covertype segments were summed together to get a total of trees estimated to be cut. This value is 22,114 trees to be removed for the proposed Bypass Route during construction of the 75 foot ROW.