

Forest Resource Analysis System Software

Generated By	William Schlosser	Date Generated	8/9/2018				
Parcel Number	16N04E0416283001	Acres	40.1				
Township	16N	Jack Rogers Washington State University Department of Forest Pathology Pullman, WA 99164					
Range	04E						
Section	28						
County	Pierce County	Legal Description	NE¼ NW¼, Sec. 28, T16N R04E WM				
New Road Construction		--	--	--	--		
Total Value based on Operable Commercial Timber Land Acres:			34.9 Acres	\$633,626	\$18,178/Acre		
Value per Acres (Forested Acres):			34.9 Acres			\$18,178/Acre	
Value per Acres (Entire Parcel):			40.1 Acres			\$15,816/Acre	
Bare Land Value (Entire Parcel):			40.1 Acres	\$335,926	\$8,385/Acre		
Market Model Name	RPA Portfolio Name	Rate of Inflation	Landowner Discount Rate	Reforestation Cost	Access Fee (Timber)	Maintenance Fee	New Logging Road Construction
PSDL201808b	PSRPA20180116	3.00%	1.55%	\$375/Acre	\$0.50/MBF/Mile	\$1.33/MBF/Mile	\$19,500/Mile

Values in this Report represent the Income Capitalization Approach to generating a parcel appraisal value, with Timber Production as the Highest and Best Use.

FRASS Parcel Report Demonstration

**Forest
Econometrics**

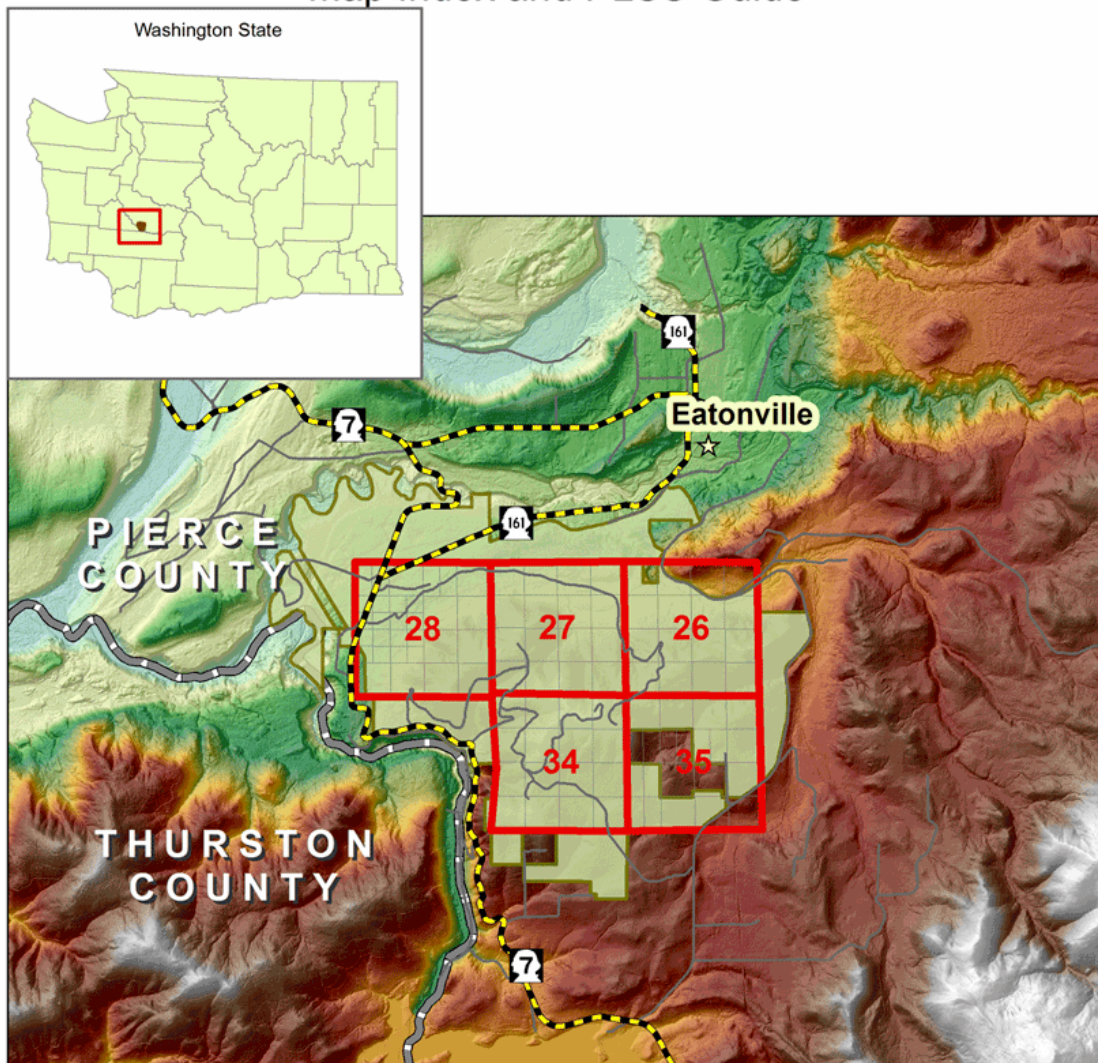
<http://www.Forest-Econometrics.com>

Forest Resource Analysis System Software: Report Table of Contents

- Cover Page with summary
- Area Locator Map (1 page)
- Parcel status report - current conditions (2 to 3 pages)
- Market Portfolio Settings (1 page)
- Parcel Status report - for Timber Production as the Highest and Best Use (1 Page)
- Market Value Report (Parcel value and Bare Land Value)
- Harvest Reports by Timber Stand (1 to many pages)
- Parcel Maps (17 to 20 pages)
- Timber Stand representative photographs based on Vegetation Labels (1 to many pages)
- Forest Resource Analysis System Software: Data Sources (1 page & Last Page of Report)

Forest Resource Analysis System Software

Map Index and PLSS Guide



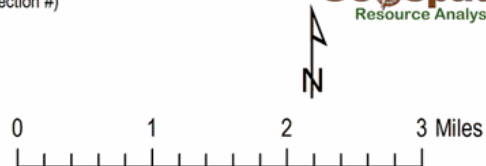
The Center of Sustainable Forestry at Pack Forest

Local Road Network **Boundaries** **Mapping (Township 16N Range 4E)**

Paved
 Pack Forest
 Map Index (PLSS Section #)

Main Haul
 County
 Parcels

Projection: NAD 83 UTM10N
 © 2013 **Geospatial**
 Resource Analysis



Forest Resource Analysis System Software Reporting System			
Generated By	William Schlosser	Date Generated	8/9/2018
Parcel Number	16N04E0416283001	Acres	40.1
Township	16N	Jack Rogers Washington State University Department of Forest Pathology Pullman, WA 99164	
Range	04E		
Section	28		
County	Pierce County	Legal Description	NE¼ NW¼, Sec. 28, T16N R04E WM
Soils Derived Data on Parcel			
MUKEY	MUSYM	Acres	Description
74702	3C	35.8	Barneston gravelly coarse sandy loam, 6 to 15 percent slopes
74704	3E	4.0	Barneston gravelly coarse sandy loam, 30 to 45 percent slopes
74711	46C	0.3	Wilkeson gravelly silt loam, 6 to 15 percent slopes
MUKEY (Soil Survey)			
MUKEY	74711	74704	74702
MUSYM	46C	3E	3C
Acres	0.3	4.0	35.8
Fire Damage Susceptibility	Slightly susceptible	Moderately susceptible	Moderately susceptible
Potential for Damage by Fire	Low	Moderate	Moderate
Soil Rutting Hazard	Severe	Moderate	Moderate
Suitability for Roads (Natural Surface) (WA)	Moderately suited	Poorly suited	Moderately suited
Suitability for Log Landings (WA)	Moderately suited	Poorly suited	Moderately suited
Construction Limitations for Haul Roads and Log Landings	Moderate	Severe	Slight
Harvest Equipment Operability	Moderately suited	Poorly suited	Well suited
Mechanical Site Preparation (Surface)	Well suited	Unsuited	Well suited
Mechanical Site Preparation (Deep)	Well suited	Unsuited	Well suited
Suitability for Hand Planting	Well suited	Moderately suited	Well suited
Suitability for Mechanical Planting	Moderately suited	Unsuited	Moderately suited
Potential for Seedling Mortality	Moderate	Low	Moderate
Tree Site Index Douglas-fir	122	118	118
Tree Site Index Western Red Alder	--	--	--
Threatened, Endangered & Sensitive Species Habitat			
Species		Acres	
Marbled Murrelet, (<i>Brachyramphus marmoratus</i>)		13.13 Non-Characteristic Habitat 26.93 Core Habitat	
Northern Spotted Owl, (<i>Strix occidentalis caurina</i>)		40.06 Unsuitable Habitat	
American Bald Eagle, (<i>Haliaeetus leucocephalus</i>)		40.06 Unsuitable Habitat	

Physical Site Characteristics							
	Min	Max	Mean				
Elevation (feet)	768	925	792				
Slope (degrees)	0	45	6				
Existing Roads on Parcel							
Road Type	Feet	Miles					
Surface Roads:	2,066	0.4					
Main Haul Roads:	1,738	0.3					
Paved Haul Roads:	1,135	0.2					
Distance of Travel to Reach Paved Haul Road							
Road Type	Meters	Feet	Miles	Nearest Road is			
If Parcel has no road, then straight-line distance to nearest road is (Construction Required):	0	0	0.0				
Travel distance along Surface Roads:	0	0	0.0				
Travel distance along Main Haul Roads	0	0	0.0				
Timber Stand Statistics (current)							
Stand ID Number	Vegetation Label	Site Index	Riparian Zone Non-Operable Acres	Operable Commercial Timber Land Acres	BF/Acre per Stand	Total Forested Acres on Parcel	Total BF on Each Stand
19258640	WH23	85	0.00	10.45	9,770	10.45	102,067
19308750	WH43	105	0.00	0.63	60,432	0.63	38,203
19328200	WH33	85	0.00	0.87	59,285	0.87	51,597
19359340	WH33	120	0.00	3.85	25,309	3.85	97,456
19798920	WH23	105	0.00	14.49	15,899	14.49	230,423
19928680	RC23	85	0.00	1.30	936	1.30	1,214
19948880	WH12	85	0.00	3.27	0	3.27	0
Totals:			0.00	34.86		34.86	520,960
Current Parcel Timber Summary (Operable Acres Only)							
Total BF							
Douglas-fir			64,736				
Lodgepole Pine			2,960				
Mountain Hemlock			20,544				
Western Hemlock			398,755				
Western Red Alder			17,323				
Western Redcedar			15,533				
Western White Pine			1,107				
Totals			520,960				

Market Model Name	RPA Portfolio Name	Rate of Inflation	Landowner Discount Rate	Reforestation Cost	Access Fee (Timber)	Maintenance Fee	New Logging Road Construction
PSDL201808b	PSRPA20180116	3.00%	1.55%	\$375/Acre	\$0.50/MBF/Mile	\$1.33/MBF/Mile	\$19,500/Mile

Sort	Current Market Value	RPA	Longevity Term	Profit & Risk	Overhead & Administration	Logging Cost	Hauling Cost	Beginning Date	Turning Point
Black Cottonwood									
2 Saw	\$525	-0.1896	1.75	0.020	\$30	\$60	\$60	1/1/2010	10/1/2011
3 Saw	\$484	-0.1082	2.91	0.020	\$30	\$60	\$60	1/1/2010	12/1/2012
4 Saw/CNS	\$378	-0.0665	2.16	0.020	\$5	\$60	\$60	1/1/2010	3/1/2012
Pulp	\$342	-0.0509	11.25	0.020	\$5	\$20	\$60	4/1/1994	7/1/2005
Douglas-fir									
Export 12"+	\$938	-0.1972	2.16	0.020	\$30	\$90	\$60	4/1/2007	6/1/2009
Export 8-12"	\$877	-0.2564	2.16	0.020	\$30	\$90	\$60	4/1/2007	6/1/2009
SM and Better	\$880	-0.1752	3.83	0.020	\$30	\$90	\$60	8/1/2005	6/1/2009
2 Saw	\$772	-0.1451	3.83	0.020	\$30	\$90	\$60	8/1/2005	6/1/2009
3 Saw	\$741	-0.1334	3.83	0.020	\$30	\$90	\$60	8/1/2005	6/1/2009
4 Saw	\$781	-0.1136	3.83	0.020	\$30	\$90	\$60	8/1/2005	6/1/2009
Chip-n-Saw	\$558	-0.1254	3.83	0.020	\$30	\$90	\$60	8/1/2005	6/1/2009
Pulp	\$307	-0.2059	3.08	0.020	\$5	\$20	\$60	12/1/1998	1/1/2002
Western Hemlock									
Export 12"+	\$788	-0.1360	4.08	0.020	\$30	\$90	\$60	1/1/2000	2/1/2004
Export 8-12"	\$674	-0.1473	4.08	0.020	\$30	\$90	\$60	1/1/2000	2/1/2004
SM and Better	\$638	-0.1481	3.83	0.020	\$30	\$90	\$60	8/1/2005	6/1/2009
2 Saw	\$663	-0.1249	3.83	0.020	\$30	\$90	\$60	8/1/2005	6/1/2009
3 Saw	\$655	-0.1178	3.83	0.020	\$30	\$90	\$60	8/1/2005	6/1/2009
4 Saw	\$585	-0.1362	3.83	0.020	\$30	\$90	\$60	8/1/2005	6/1/2009
Pulp	\$307	-0.1574	4.50	0.020	\$5	\$20	\$60	8/1/1999	2/1/2004
Western Red Alder									
2 Saw	\$914	0.0882	10.91	0.020	\$30	\$90	\$60	1/1/1993	12/1/2003
3 Saw	\$885	0.0664	10.91	0.020	\$30	\$90	\$60	1/1/1993	12/1/2003
4 Saw	\$725	0.0740	10.91	0.020	\$30	\$90	\$60	1/1/1993	12/1/2003
Pulp	\$305	-0.0524	9.75	0.020	\$5	\$20	\$60	3/1/1994	12/1/2003
Western Redcedar									
Camprun	\$1,075	-0.1037	4.91	0.020	\$30	\$90	\$60	7/1/2004	6/1/2009

**Forest Resource Analysis System Software Reporting System:
Delivered Log Market Model - PSDL201808b**

Generated By	William Schlosser	Date Generated	8/9/2018
Parcel Number	16N04E0416283001	Acres	40.1
	This parcel appears to meet the size requirements for a valid commercial timber production parcel.		
Township	16N		
Range	04E		
Section	28		
County	Pierce County	Legal Description	NE¼ NW¼, Sec. 28, T16N R04E WM

Threatened, Endangered & Sensitive Species Habitat

Marbled Murrelet, (Brachyramphus marmoratus)	Caution: Timber harvest timing may be restricted to times when the species is not nesting.
Northern Spotted Owl, (Stix occidentalis caurina)	No restrictions apply
American Bald Eagle, (Haliaeetus leucocephalus)	No restrictions apply

Existing Roads on Parcel

Road Type	Feet	Miles
Surface Roads:	2,066	0.4
Main Haul Roads:	1,738	0.3
Paved Haul Roads:	1,135	0.2

Distance of Travel to Reach Paved Haul Road

Road Type	Meters	Feet	Miles	Nearest Road is
If Parcel has no road, then straight-line distance to nearest road is (Construction Required):	0	0	0.0	
Travel distance along Surface Roads:	0	0	0.0	
Travel distance along Main Haul Roads	0	0	0.0	

Harvest Volumes & Value Summary										
Stand Info		Current Rotation		Next Rotation		Third Rotation Into Perpetuity		Total Present Value		
Stand ID Number	Operable Commercial Timber Land Acres	Harvest Year	Net Present Value	Rotation Length (Years)	Net Present Value	Rotation Length	Soil Expectation Value (Present Value)	Stand	Per Acre	
19258640	10.45	2035	\$78,059	65	\$45,013	75	\$22,182	\$145,255	\$13,904	
19308750	0.63	2018	\$17,216	60	\$4,117	70	\$2,410	\$23,744	\$37,559	
19328200	0.87	2018	\$22,149	65	\$5,101	75	\$2,514	\$29,764	\$34,198	
19359340	3.85	2040	\$67,232	65	\$22,020	70	\$10,345	\$99,597	\$25,865	
19798920	14.49	2035	\$184,070	60	\$69,387	70	\$40,624	\$294,081	\$20,292	
19928680	1.30	2055	\$11,631	65	\$4,109	75	\$2,025	\$17,766	\$13,695	
19948880	3.27	2075	\$12,067	65	\$7,606	75	\$3,748	\$23,421	\$7,171	
New Road Construction		Scheduled In		Current Cost		Future Cost		Discounted Road Cost		
			--		--		--		--	
		Total Value based on Operable Commercial Timber Land Acres:						34.9 Acres	\$633,626	\$18,178/Acre
		Value per Acres (Forested Acres):						34.9 Acres		\$18,178/Acre
		Value per Acres (Entire Parcel):						40.1 Acres		\$15,816/Acre
Bare Land Value (Entire Parcel):						40.1 Acres	\$335,926	\$8,385/Acre		

Harvest Reports
Based on Operable Commercial Timber Land Acres
Values Represent Future Values

Stand ID Number: 19258640

Current Rotation

Next Rotation

**Third Rotation Into
Perpetuity**

Species & Sort

Volume at
Harvest

Value/MBF in
2035

Sort Value in
2035

Volume at Harvest (2100)

Volume at First Entry (2175)

Douglas-fir

Export 12"+	629	\$1,515	\$953
Export 8-12"	1,389	\$1,416	\$1,967
3 Saw	6,532	\$1,136	\$7,421
4 Saw	2,364	\$1,207	\$2,854
Pulp	1,149	\$483	\$555

Lodgepole Pine

2 Saw	789	\$1,020	\$805	5,716	6,856
3 Saw	3,218	\$1,011	\$3,253	36,782	43,634
Pulp	495	\$436	\$216	5,492	6,293

Mountain Hemlock

2 Saw	2,509	\$1,020	\$2,560
3 Saw	4,014	\$1,011	\$4,057
Pulp	923	\$436	\$403

Western Hemlock

Export 12"+				23,207	56,663
Export 8-12"	5,704	\$1,007	\$5,744	56,242	55,638
2 Saw	24,051	\$1,020	\$24,534		
3 Saw	71,706	\$1,011	\$72,478	71,864	85,475
4 Saw	27,964	\$896	\$25,049	40,861	29,490
Pulp	13,624	\$436	\$5,945	21,294	25,182

Western Red Alder

2 Saw	1,462	\$2,415	\$3,531
3 Saw	4,138	\$2,115	\$8,752
4 Saw	11,227	\$1,796	\$20,167
Pulp	1,771	\$340	\$602

Western Redcedar

Camprun	24,604	\$1,549	\$38,105	74,281	85,876
---------	--------	---------	----------	--------	--------

Western White Pine

2 Saw				5,737	18,329
3 Saw	1,239	\$1,011	\$1,252	56,956	59,544
Pulp	130	\$436	\$57	7,790	9,318

Harvest Reports
Based on Operable Commercial Timber Land Acres
Values Represent Future Values

Stand ID Number: 19308750

Current Rotation

Next Rotation

**Third Rotation Into
Perpetuity**

Species & Sort

Volume at
Harvest

Value/MBF in
2018

Sort Value in
2018

Volume at Harvest (2078)

Volume at First Entry (2148)

Douglas-fir

Export 12"+	391	\$919	\$359	1,080	1,748
Export 8-12"	224	\$859	\$193	2,290	2,664
3 Saw	346	\$726	\$251	5,827	6,759
4 Saw	147	\$765	\$113	1,896	1,386
Pulp	117	\$301	\$35	1,229	1,391

Mountain Hemlock

2 Saw	411	\$650	\$267		
3 Saw	92	\$642	\$59		
Pulp	62	\$301	\$19		

Western Hemlock

Export 12"+	2,780	\$772	\$2,147	4,847	6,475
Export 8-12"	361	\$661	\$239	3,541	6,383
SM and Better	767	\$625	\$479		
2 Saw	10,227	\$650	\$6,645		
3 Saw	14,174	\$642	\$9,098	7,020	6,590
4 Saw	3,552	\$573	\$2,037	1,605	1,759
Pulp	3,354	\$301	\$1,009	1,885	2,350

Western Red Alder

2 Saw	79	\$896	\$71		
3 Saw	151	\$867	\$131		
4 Saw	332	\$711	\$236		
Pulp	59	\$299	\$18		

Western Redcedar

Camprun	491	\$1,054	\$517	823	1,021
---------	-----	---------	-------	-----	-------

Harvest Reports
Based on Operable Commercial Timber Land Acres
Values Represent Future Values

Stand ID Number: 19328200

Current Rotation

Next Rotation

**Third Rotation Into
Perpetuity**

Species & Sort

Volume at
Harvest

Value/MBF in
2018

Sort Value in
2018

Volume at Harvest (2083)

Volume at First Entry (2158)

Lodgepole Pine

2 Saw

476

571

3 Saw

3,064

3,635

Pulp

458

524

Western Hemlock

Export 12"+

378

\$772

\$292

1,933

4,721

Export 8-12"

613

\$661

\$405

4,685

4,635

2 Saw

15,237

\$650

\$9,900

3 Saw

24,385

\$642

\$15,653

5,987

7,121

4 Saw

5,706

\$573

\$3,271

3,404

2,457

Pulp

4,876

\$301

\$1,467

1,774

2,098

Western Red Alder

2 Saw

208

\$896

\$187

4 Saw

156

\$711

\$111

Pulp

38

\$299

\$11

Western Redcedar

Camprun

6,188

7,154

Western White Pine

2 Saw

478

1,527

3 Saw

4,745

4,960

Pulp

649

776

Harvest Reports
Based on Operable Commercial Timber Land Acres
Values Represent Future Values

Stand ID Number: 19359340

Current Rotation

Next Rotation

**Third Rotation Into
Perpetuity**

Species & Sort

Volume at
Harvest

Value/MBF in
2040

Sort Value in
2040

Volume at Harvest (2105)

Volume at First Entry (2175)

Douglas-fir

Export 12"+	15,756	\$1,761	\$27,742	21,056	21,535
Export 8-12"	7,358	\$1,646	\$12,113	40,253	45,472
2 Saw	5,424	\$1,420	\$7,702		
3 Saw	3,080	\$1,365	\$4,205	41,523	46,250
4 Saw	6,502	\$1,443	\$9,383	11,397	9,673
Pulp	4,013	\$572	\$2,297	12,657	13,621

Grand Fir

2 Saw				2,023	2,016
3 Saw				11,941	14,547
Pulp				2,191	2,342

Mountain Hemlock

2 Saw	7,143	\$1,223	\$8,736		
Pulp	813	\$546	\$444		

Western Hemlock

Export 12"+	34,552	\$1,439	\$49,734	19,401	20,072
Export 8-12"	38,156	\$1,228	\$46,867	20,855	22,806
2 Saw	23,590	\$1,223	\$28,852		
3 Saw	24,704	\$1,210	\$29,880	19,977	24,809
4 Saw	10,559	\$1,077	\$11,377	6,489	5,916
Pulp	14,762	\$546	\$8,066	7,393	8,155

Western Redcedar

Camprun				8,294	9,835
---------	--	--	--	-------	-------

Harvest Reports
Based on Operable Commercial Timber Land Acres
Values Represent Future Values

Stand ID Number: 19798920

Current Rotation

Next Rotation

**Third Rotation Into
Perpetuity**

Species & Sort

Volume at
Harvest

Value/MBF in
2035

Sort Value in
2035

Volume at Harvest (2095)

Volume at First Entry (2165)

Douglas-fir

Export 12"+

24,752

40,068

Export 8-12"

6,043

\$1,416

\$8,556

52,487

61,063

2 Saw

3,257

\$1,178

\$3,836

3 Saw

33,854

\$1,136

\$38,456

133,582

154,955

4 Saw

15,397

\$1,207

\$18,589

43,466

31,773

Pulp

6,163

\$483

\$2,979

28,176

31,896

Lodgepole Pine

3 Saw

491

\$1,011

\$496

Pulp

52

\$436

\$23

Mountain Hemlock

2 Saw

5,070

\$1,020

\$5,172

3 Saw

5,296

\$1,011

\$5,353

Pulp

1,563

\$436

\$682

Western Hemlock

Export 12"+

58,165

\$1,185

\$68,919

111,111

148,446

Export 8-12"

73,300

\$1,007

\$73,811

81,176

146,325

2 Saw

8,036

\$1,020

\$8,198

3 Saw

158,397

\$1,011

\$160,103

160,943

151,083

4 Saw

68,359

\$896

\$61,232

36,800

40,320

Pulp

38,553

\$436

\$16,825

43,217

53,870

Western Red Alder

3 Saw

2,550

\$2,115

\$5,393

4 Saw

8,473

\$1,796

\$15,220

Pulp

1,160

\$340

\$395

Western Redcedar

Camprun

25,880

\$1,549

\$40,083

18,877

23,397

Western White Pine

3 Saw

1,525

\$1,011

\$1,541

Pulp

161

\$436

\$70

Harvest Reports
Based on Operable Commercial Timber Land Acres
Values Represent Future Values

Stand ID Number: 19928680

Current Rotation

Next Rotation

**Third Rotation Into
Perpetuity**

Species & Sort

Volume at
Harvest

Value/MBF in
2055

Sort Value in
2055

Volume at Harvest (2120)

Volume at First Entry (2195)

Douglas-fir

Export 8-12"

188

\$2,566

\$482

3 Saw

1,182

\$2,166

\$2,560

4 Saw

732

\$2,284

\$1,672

Pulp

221

\$898

\$199

Lodgepole Pine

2 Saw

33

\$1,938

\$63

710

851

3 Saw

587

\$1,915

\$1,125

4,567

5,418

Pulp

69

\$895

\$62

682

781

Mountain Hemlock

2 Saw

101

\$1,938

\$196

3 Saw

69

\$1,915

\$131

Pulp

22

\$895

\$20

Western Hemlock

Export 12"+

341

\$2,303

\$784

2,882

7,036

Export 8-12"

348

\$1,969

\$686

6,984

6,909

2 Saw

1,064

\$1,938

\$2,062

3 Saw

2,607

\$1,915

\$4,992

8,924

10,614

4 Saw

1,396

\$1,710

\$2,387

5,074

3,662

Pulp

606

\$895

\$542

2,644

3,127

Western Red Alder

3 Saw

58

\$3,017

\$175

4 Saw

72

\$2,512

\$181

Pulp

14

\$814

\$11

Western Redcedar

Camprun

12,105

\$3,132

\$37,915

9,224

10,664

Western White Pine

2 Saw

712

2,276

3 Saw

279

\$1,915

\$534

7,072

7,394

Pulp

29

\$895

\$26

967

1,157

Harvest Reports
Based on Operable Commercial Timber Land Acres
Values Represent Future Values

Stand ID Number: 19948880

Current Rotation

Next Rotation

**Third Rotation Into
Perpetuity**

Species & Sort

Volume at
Harvest

Value/MBF in
2075

Sort Value in
2075

Volume at Harvest (2140)

Volume at First Entry (2215)

Lodgepole Pine

2 Saw

1,787

2,143

3 Saw

11,499

13,641

Pulp

1,717

1,967

Western Hemlock

Export 12"+

7,255

17,714

Export 8-12"

17,583

17,394

3 Saw

72,186

\$3,461

\$249,828

22,466

26,721

4 Saw

12,774

9,219

Pulp

7,599

\$1,622

\$12,325

6,657

7,872

Western Redcedar

Camprun

240

\$5,679

\$1,364

23,222

26,847

Western White Pine

2 Saw

1,794

5,730

3 Saw

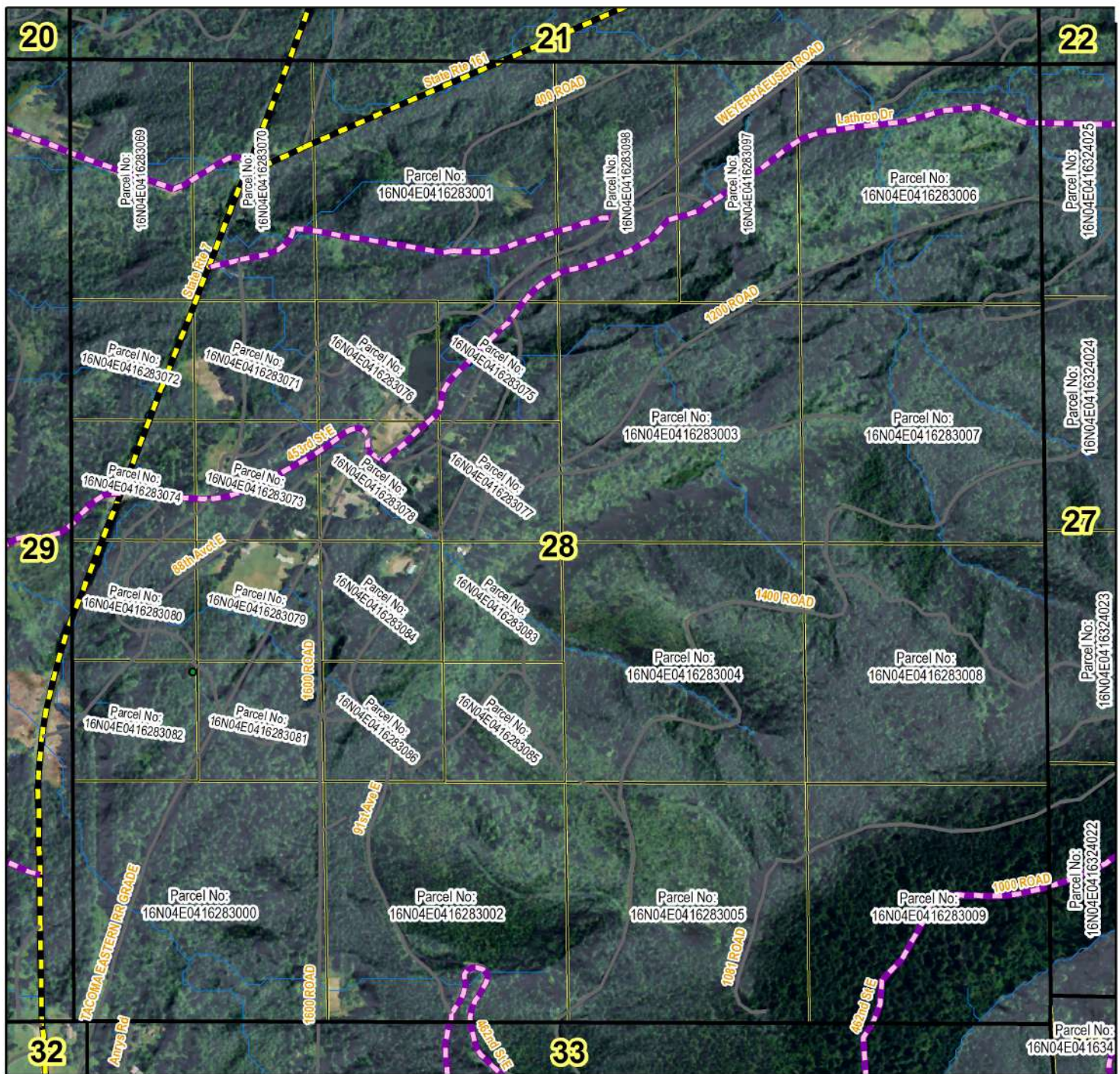
17,806

18,615

Pulp





2,435


2,913




Township 16 North, Range 4 East, Section 28


Road Network

-  Paved
-  Main Haul
-  Surface
-  Streams

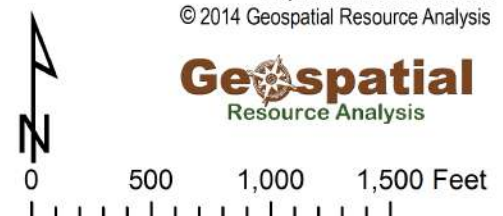
 PLSS (Sections)

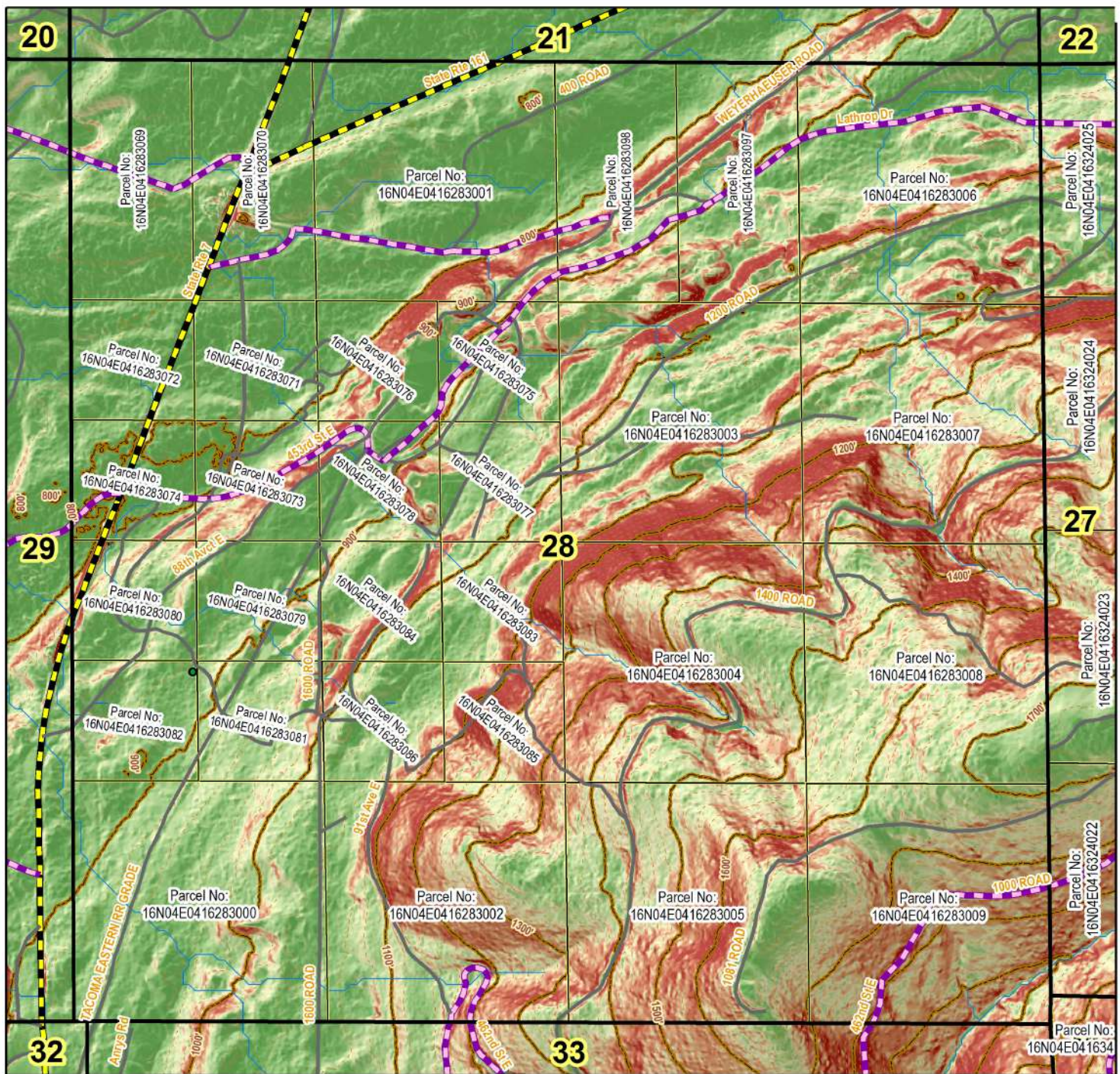
 Parcels

NAIP Imagery 2013

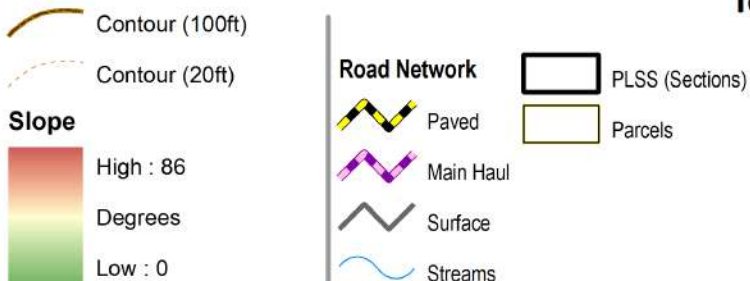
 **NRCS**
Natural Resources
Conservation Service

Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis



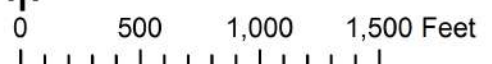


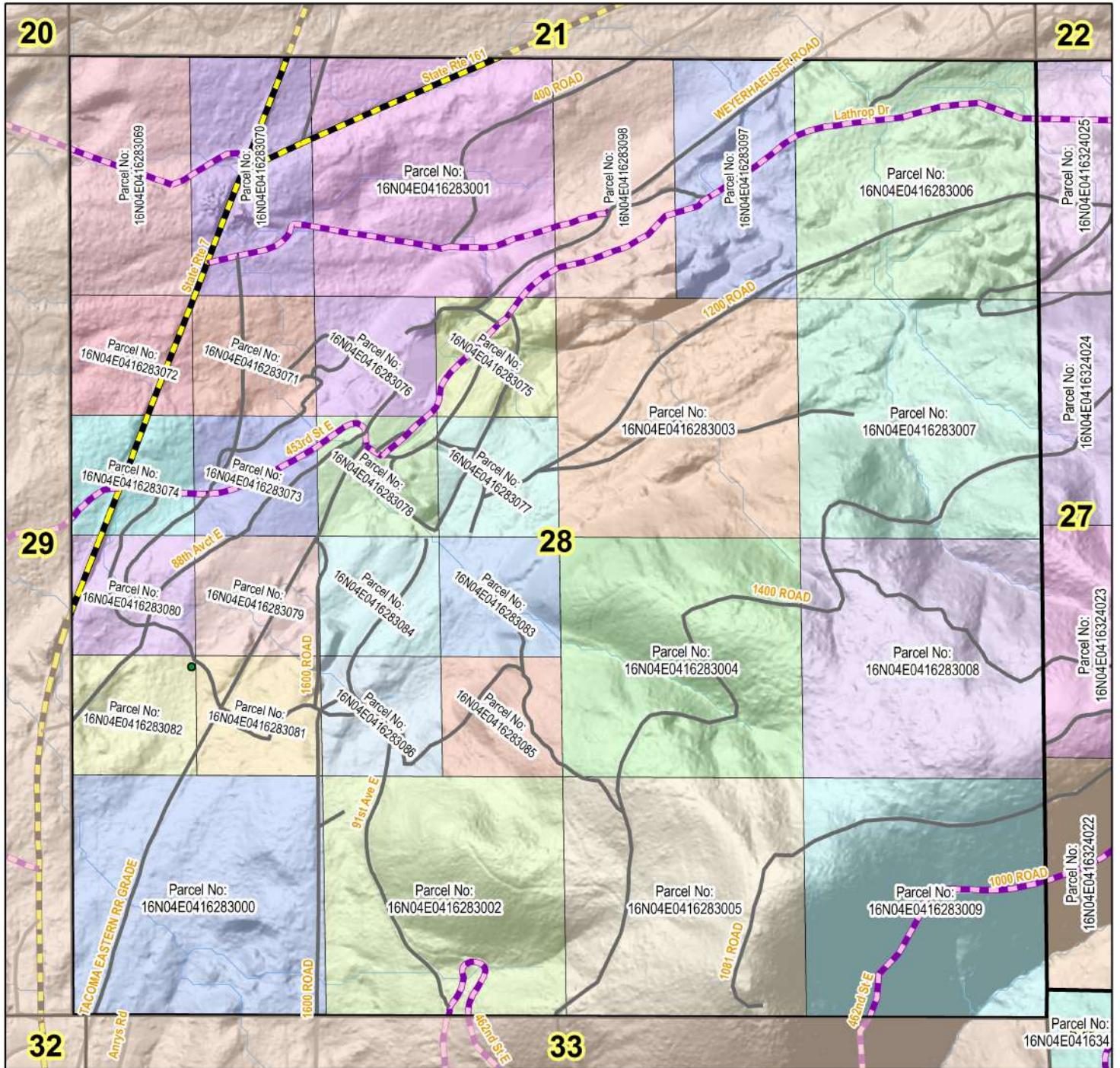
Township 16 North, Range 4 East, Section 28



Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis





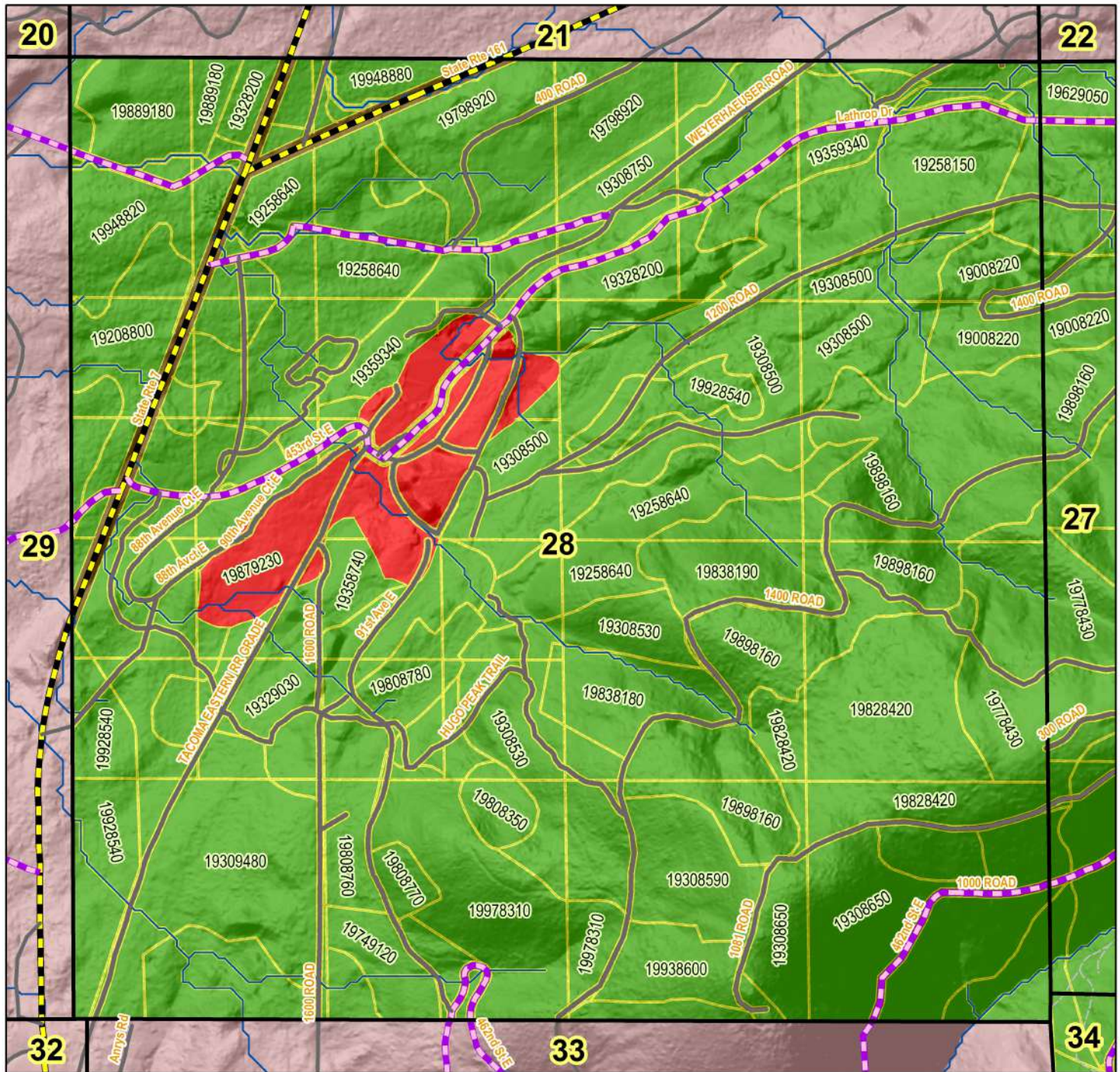
Township 16 North, Range 4 East, Section 28

- Road Network**
- Paved
 - Main Haul
 - Surface
 - Streams
- PLSS (Sections)**
- Parcels

Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis





Township 16 North, Range 4 East, Section 28

Timber Stands

Land Classification

- Active River Channel
- Road ROW
- Operable Timberland

- Riparian
- Agriculture
- Commercial
- Residential

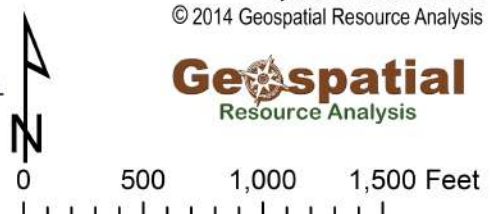
- PLSS (Sections)
- Streams

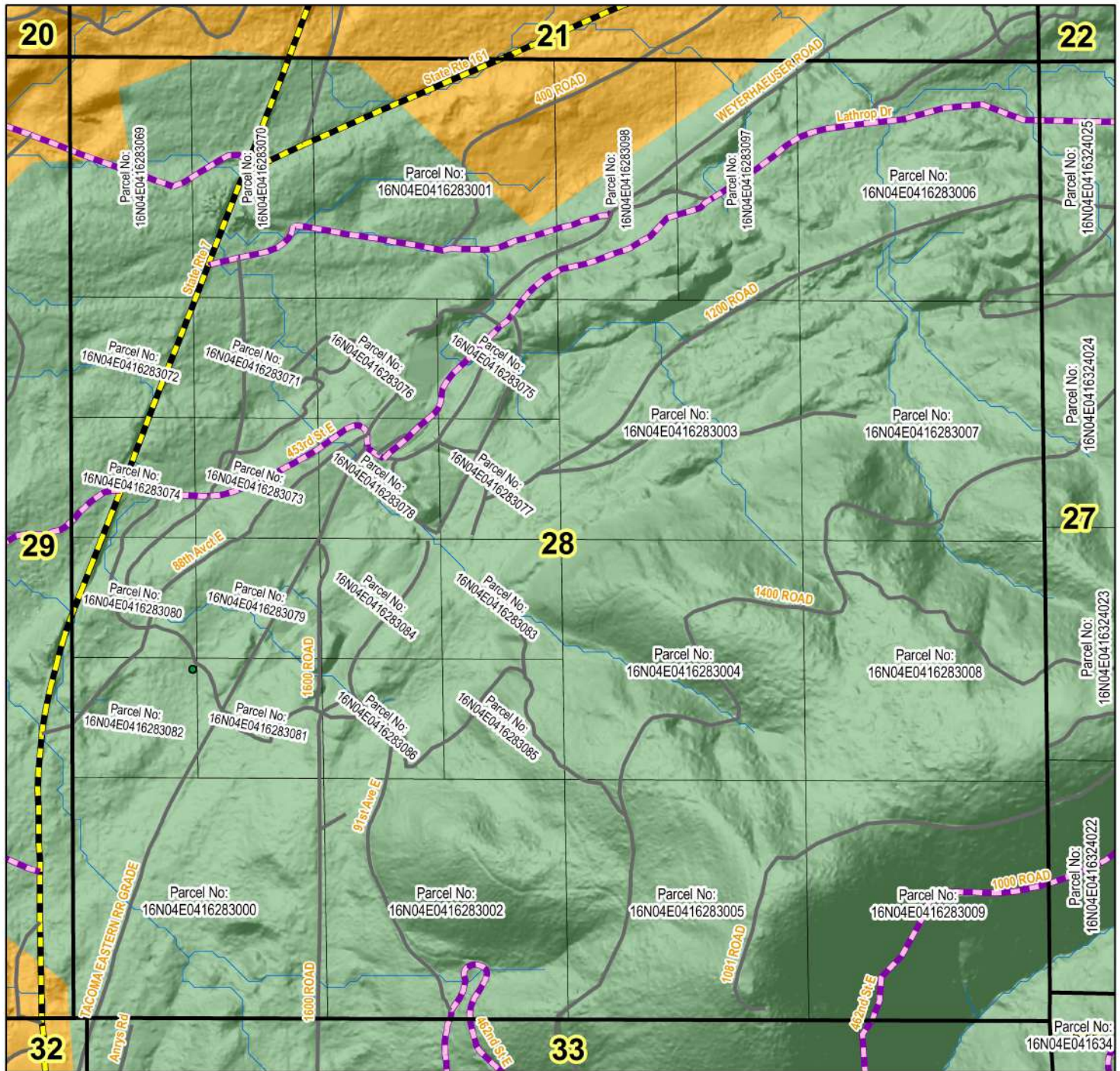
Road Network

- PAVED
- MAIN HAUL
- SURFACE
- TRAIL

Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis





Township 16 North, Range 4 East, Section 28

Marbled Murrelet Habitat

- Core
- Non-Characteristic
- Peripheral
- Not Suitable

Road Network

- Paved
- Main Haul
- Surface
- Streams

- PLSS (Sections)
- Parcels

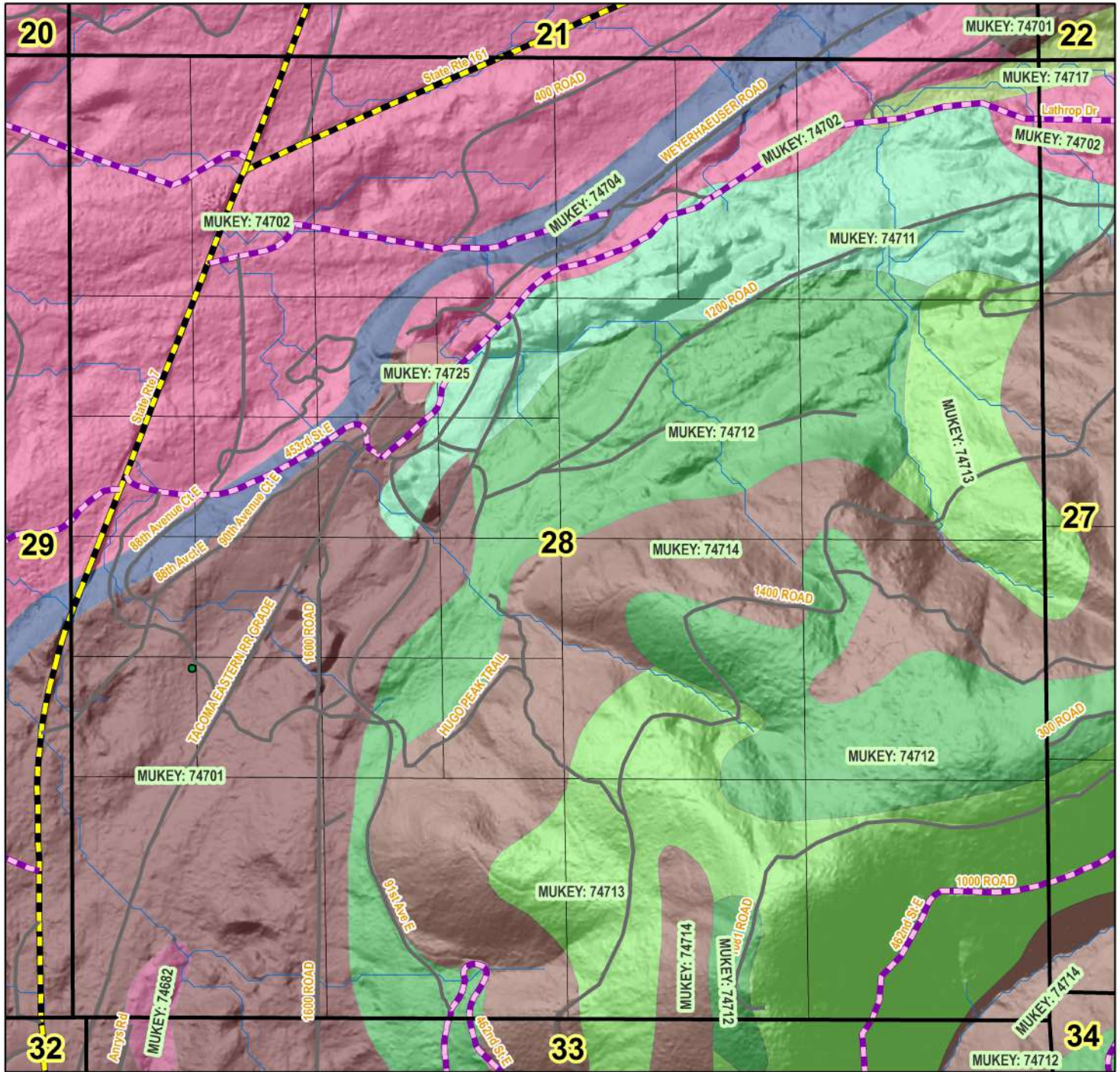
Projection: NAD83 UTM10N

© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis



0 500 1,000 1,500 Feet



Township 16 North, Range 4 East, Section 28

* NRCS MUKEY located on map



Road Network

- Paved
- Main Haul
- Surface
- Streams

- PLSS (Sections)
- Parcels

Projection: NAD83 UTM10N

© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis







0 500 1,000 1,500 Feet



Fire Damage Susceptibility

-  PLSS (Sections)
 Parcels

Road Network

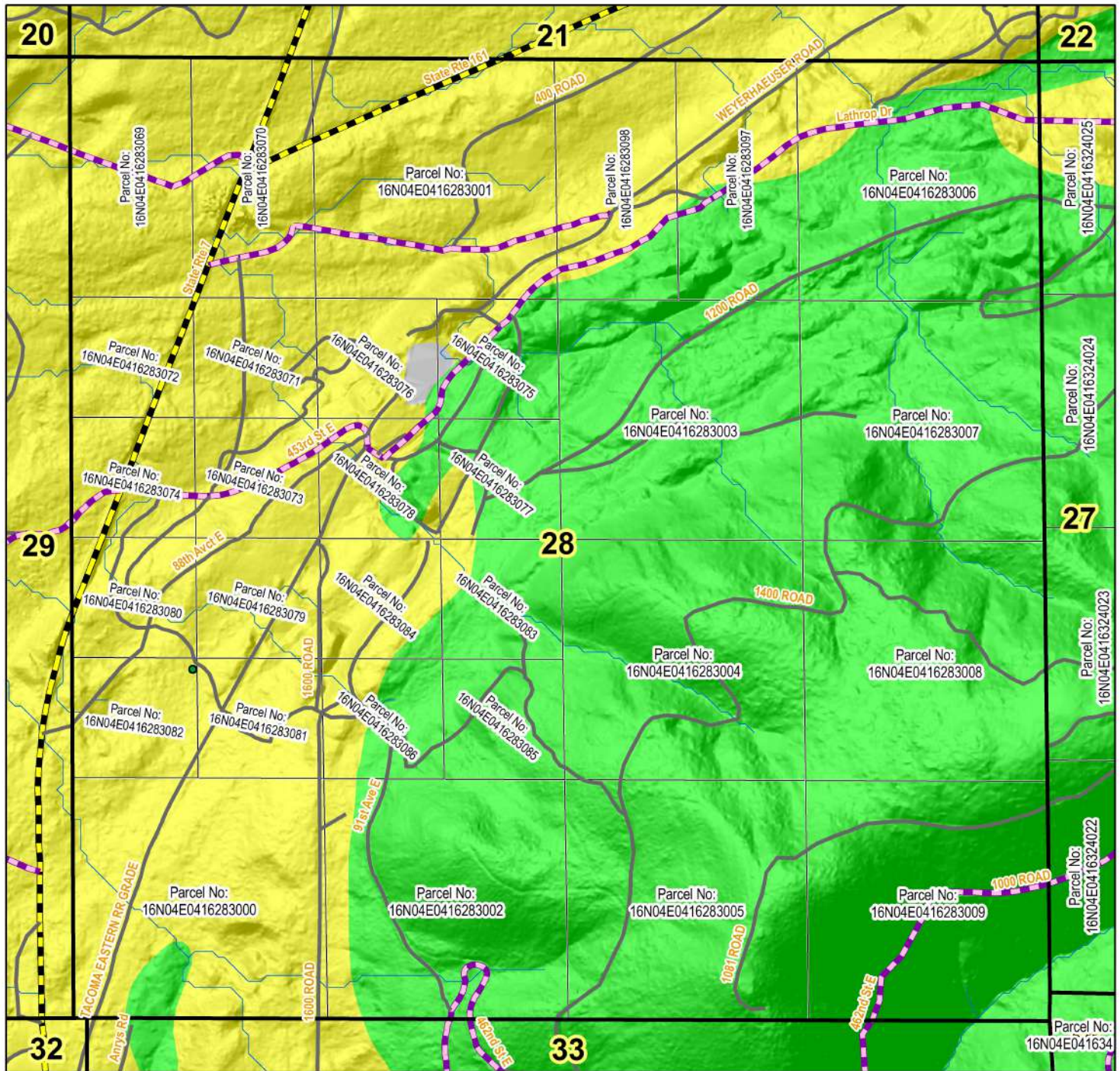
-
-  Paved
 Main Haul
 Surface
 Streams

Projection: NAD83 UTM10N

© 2014 Geospatial Resource Analysis

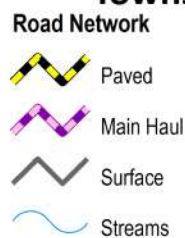
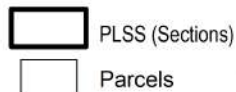
Geospatial
Resource Analysis





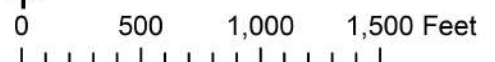
Township 16 North, Range 4 East, Section 28

Potential for Damage by Fire



Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis









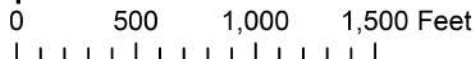
	Severe
	Moderate
	Slight
	Not rated or not available

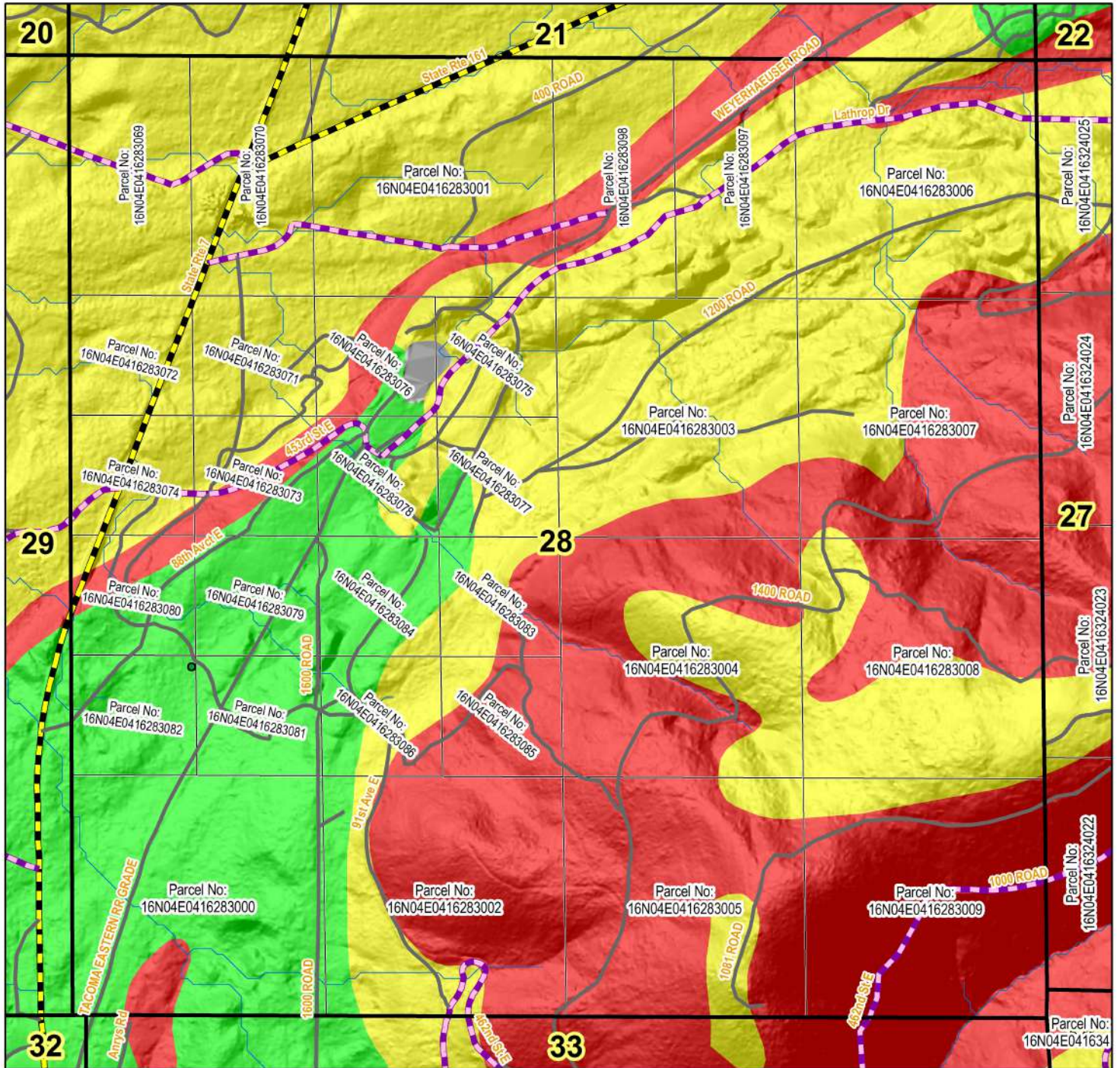


NRCS
Natural Resources
Conservation Service

 Paved
 Main Haul
 Surface
 Streams

Geospatial
Resource Analysis



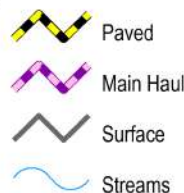


Township 16 North, Range 4 East, Section 28

Suitability for Roads (Natural Surface) (WA)

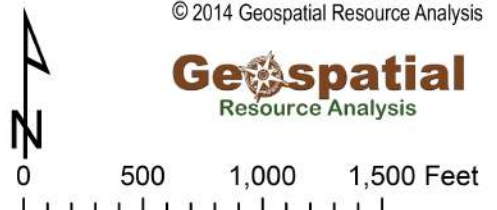


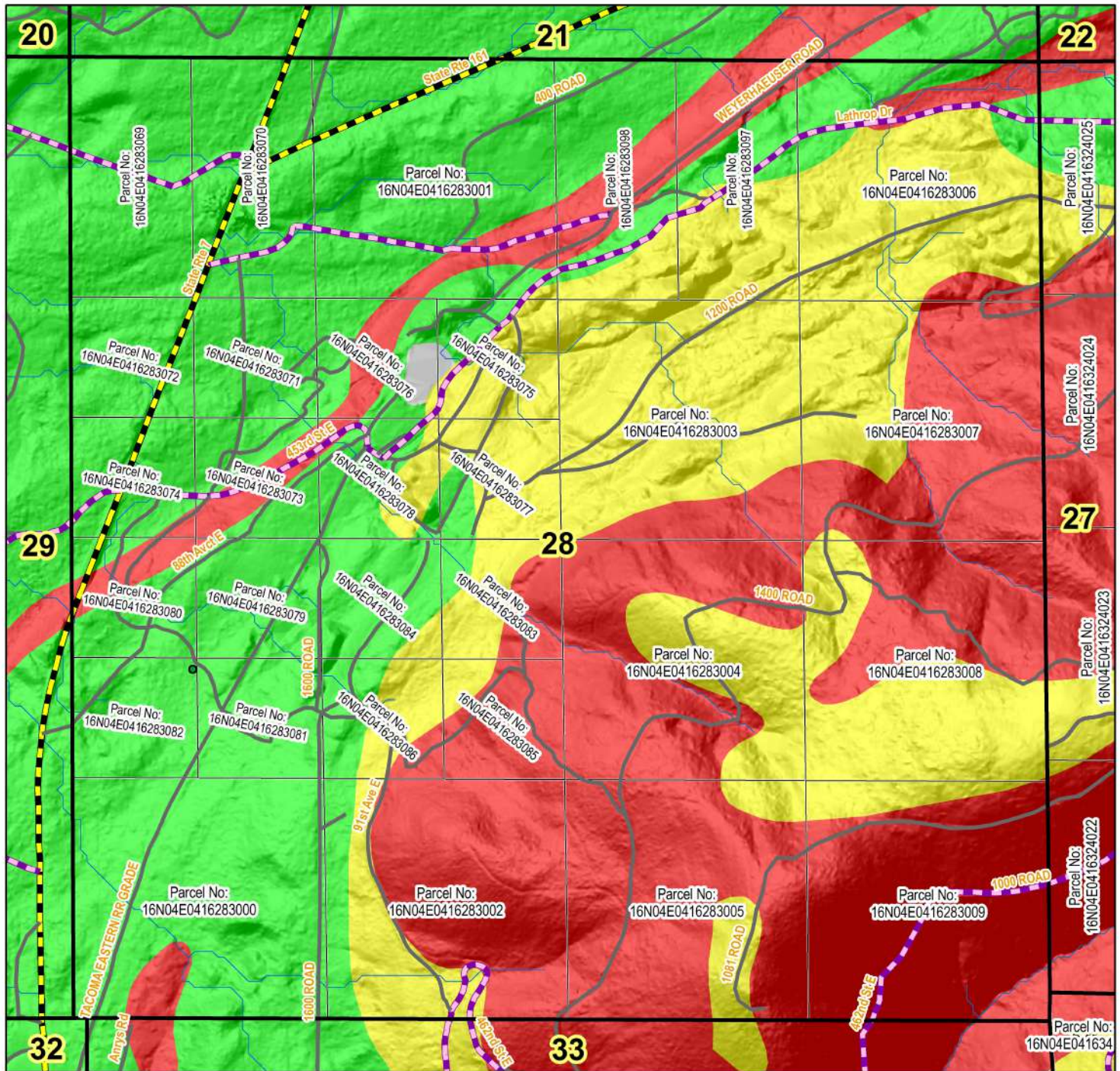
Road Network



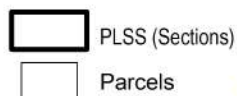
Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis

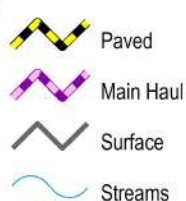




Construction Limitations for Haul Roads and Log Landings



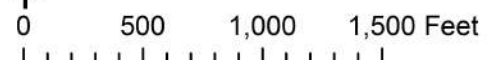
Road Network

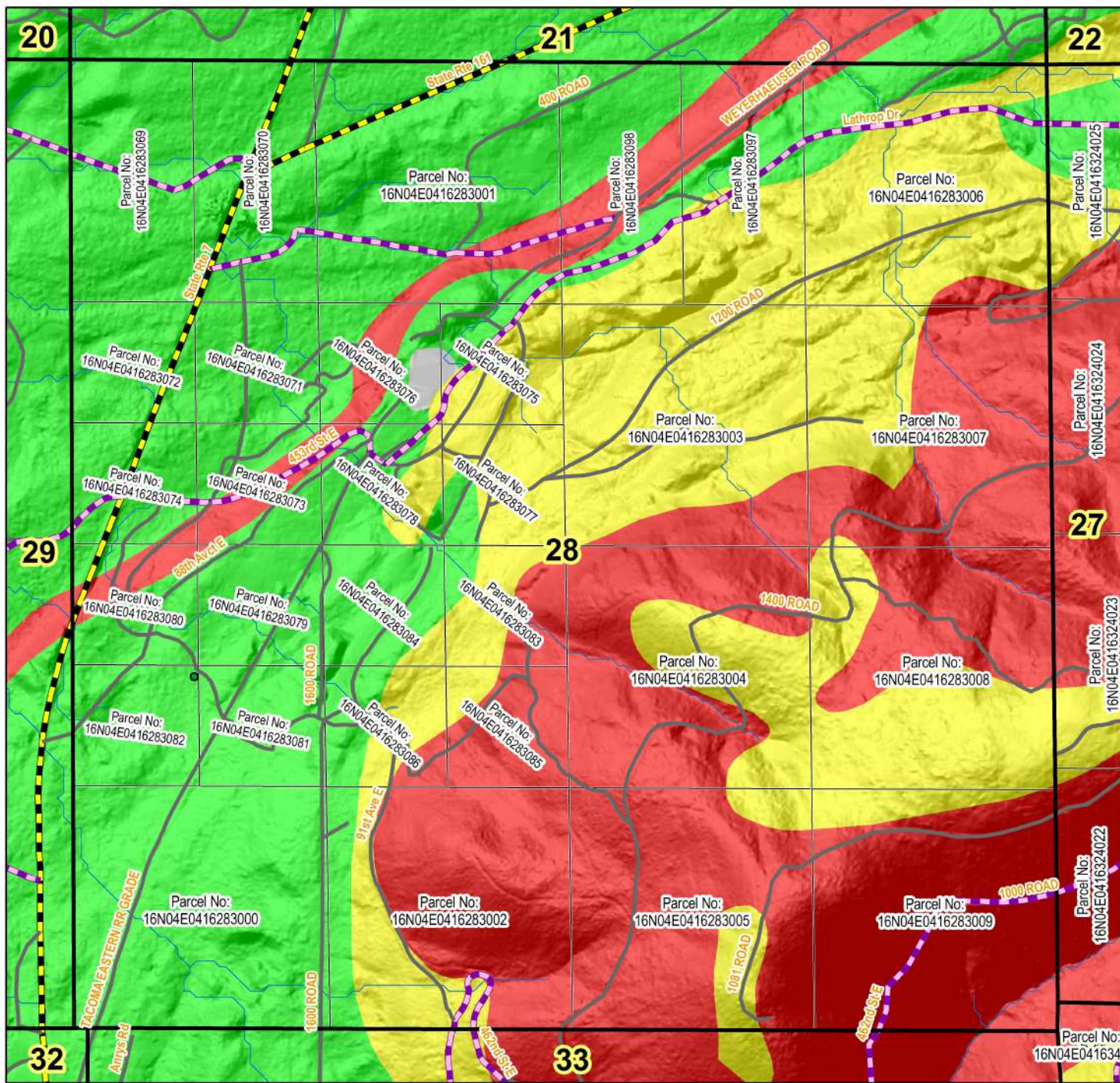


Township 16 North, Range 4 East, Section 28

Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis





Township 16 North, Range 4 East, Section 28

Harvest Equipment

Operability



Poorly suited

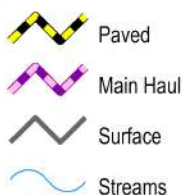
Moderately suited

Well suited

Not rated or not available



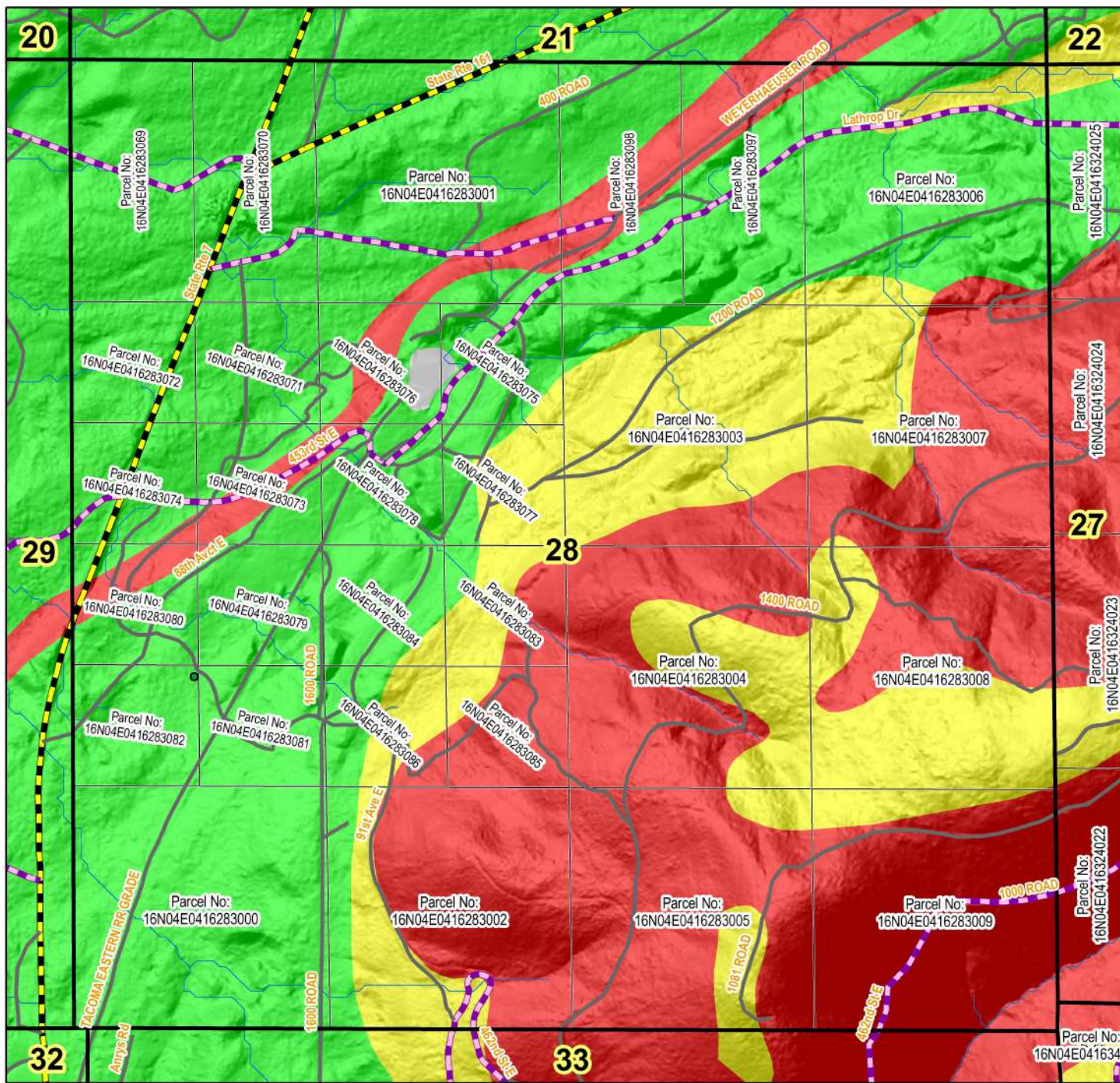
Road Network



Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis

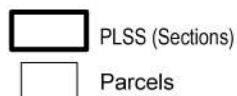




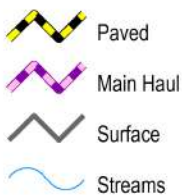
Township 16 North, Range 4 East, Section 28

Mechanical Site

Preparation (Surface)



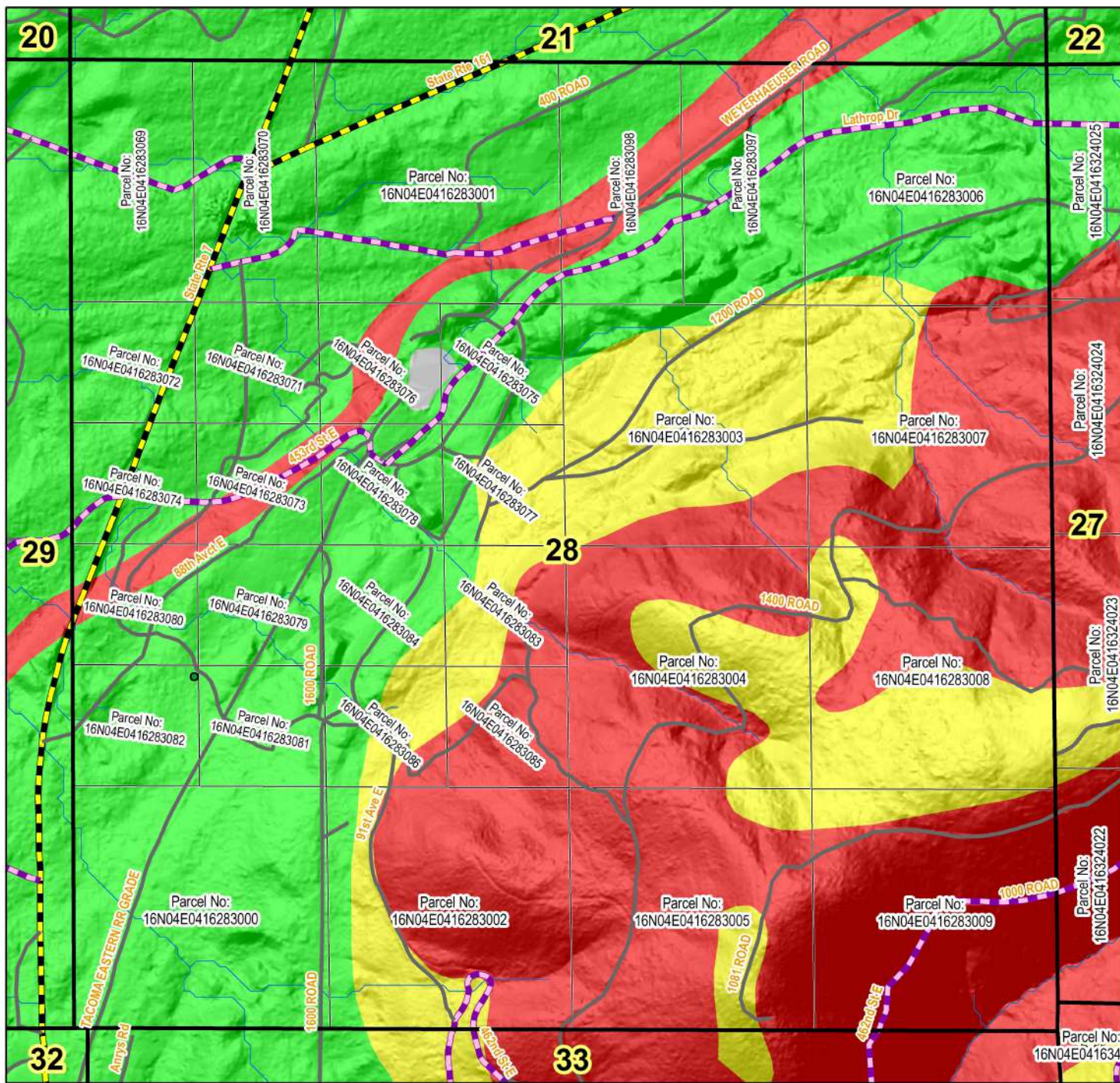
Road Network



Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis

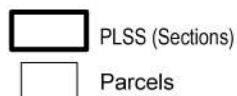




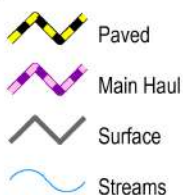
Township 16 North, Range 4 East, Section 28

Mechanical Site

Preparation (Deep)



Road Network

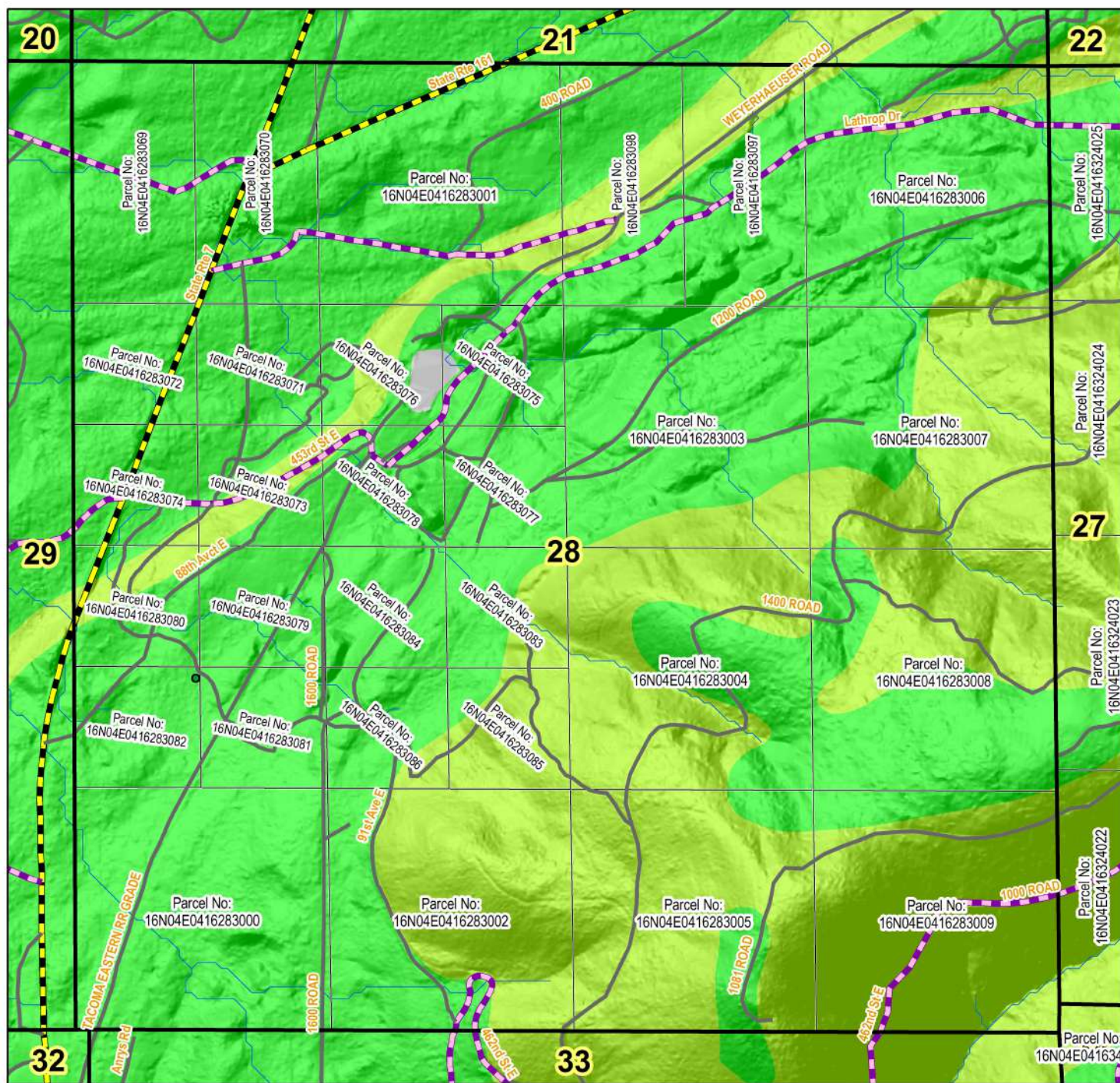


Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis

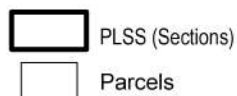


0 500 1,000 1,500 Feet

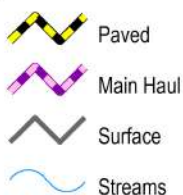


Township 16 North, Range 4 East, Section 28

Suitability for Hand Planting

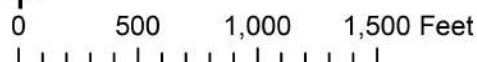


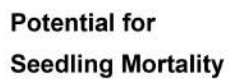
Road Network



Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis





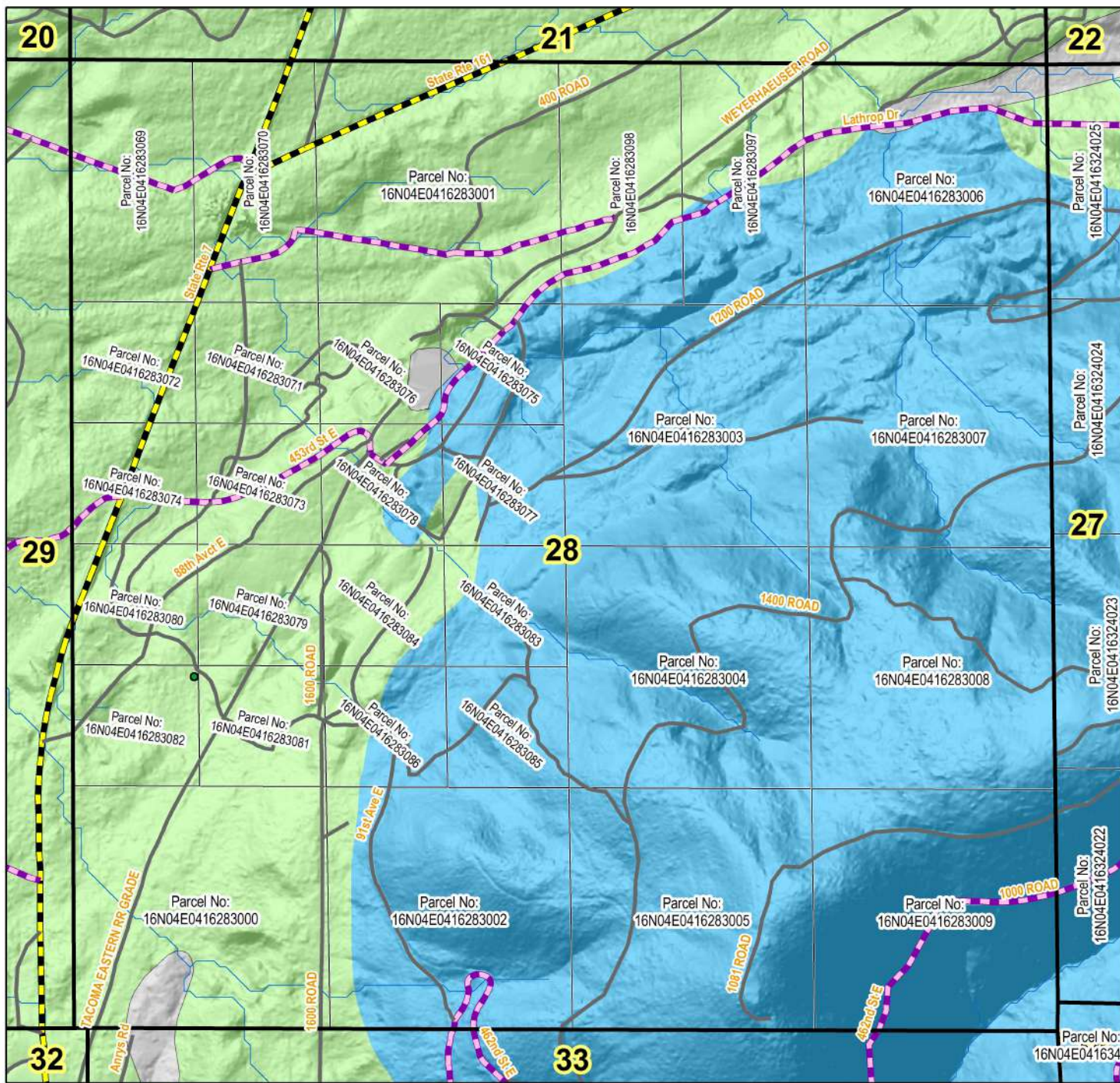
Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis

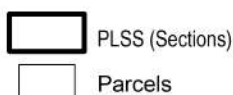
Road Network

Projection: NAD83 UTM10N

© 2014 Geospatial Resource Analysis

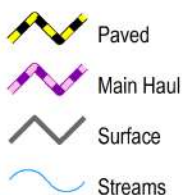


Site Index Douglas-fir



Township 16 North, Range 4 East, Section 28

Road Network



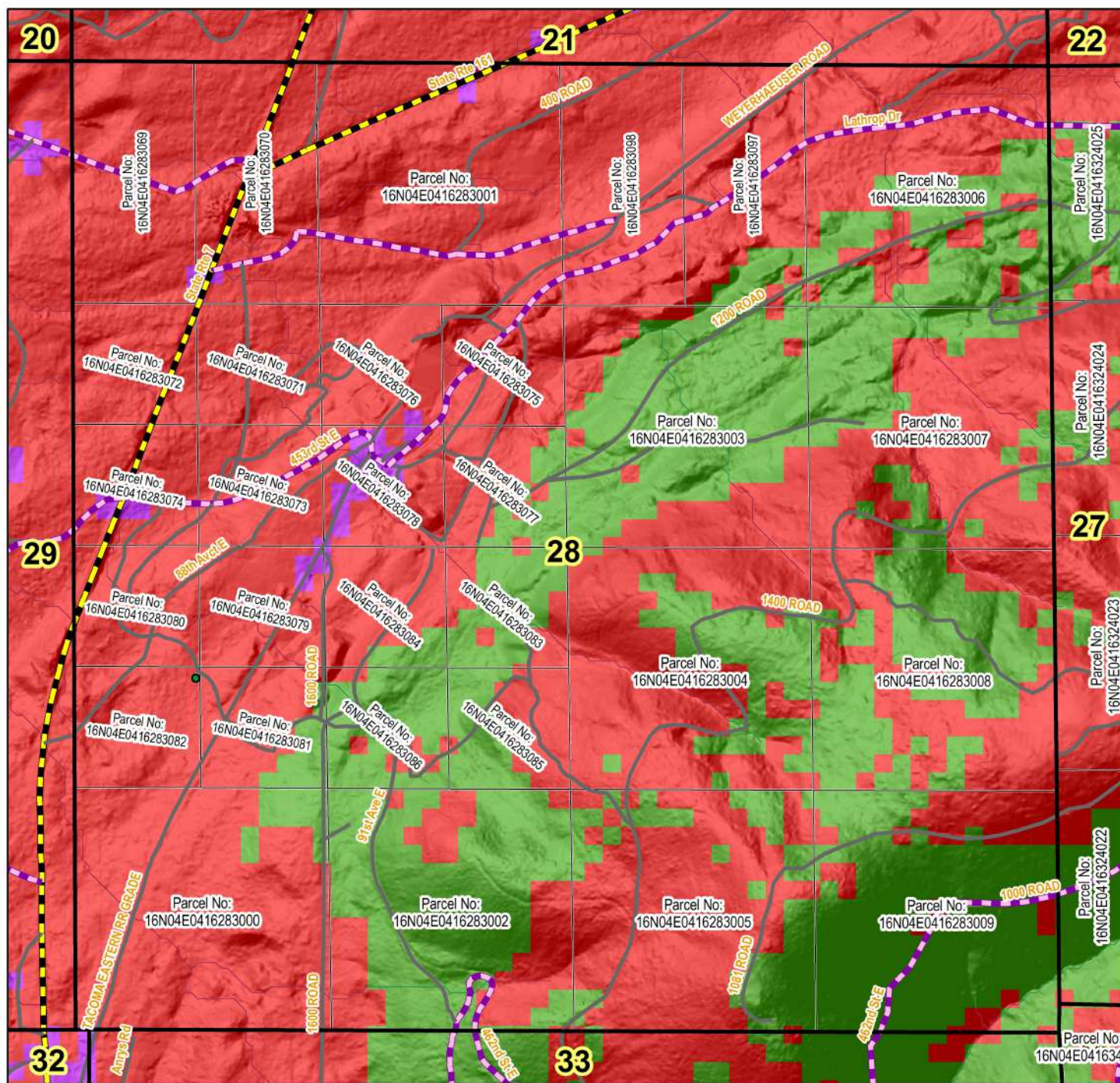
Projection: NAD83 UTM10N

© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis



0 500 1,000 1,500 Feet



Township 16 North, Range 4 East, Section 28

Vegetation Condition Class

- Condition Class I
- Condition Class II
- Condition Class III
- Water

Urban

- Barren
- Sparcely Vegetated
- Agriculture

PLSS (Sections)

- PLSS (Sections)
- Parcels



Road Network

- Paved
- Main Haul
- Surface
- Streams

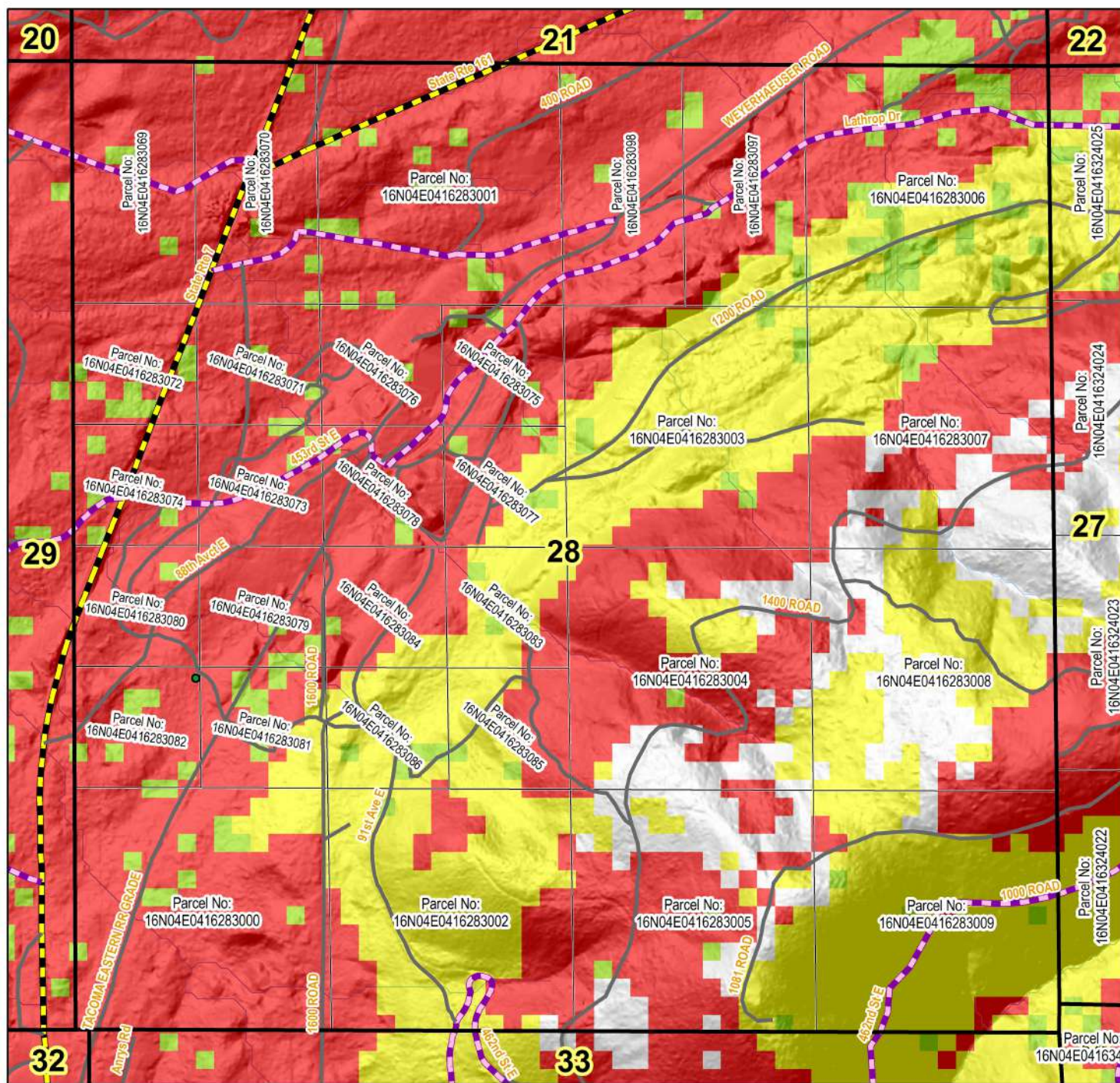


0 500 1,000 1,500 Feet

Projection: NAD83 UTM10N

© 2014 Geospatial Resource Analysis

Geospatial
Resource Analysis



Township 16 North, Range 4 East, Section 28

Fire Regime Group

- Fire Regime Group I
- Fire Regime Group III
- Fire Regime Group V

- Water
- Barren
- Indeterminate



- PLSS (Sections)
- Parcels

Road Network

- Paved
- Main Haul
- Surface
- Streams

Projection: NAD83 UTM10N
© 2014 Geospatial Resource Analysis





Geospatial
Resource Analysis



0 500 1,000 1,500 Feet



 PLSS (Sections)
 Parcels

 Paved
 Main Haul
 Surface
 Streams

Geospatial
Resource Analysis





WH23_SI105_WES201210a.jpg



WH23_SI105_WES201210aa.jpg



WH23_SI105_WES201210K.jpg



WH33_SI120_WES200908A.jpg



WH33_SI120_WES200908C.jpg



WH43_SI105_SOTI.jpg



WH43_SI105_WES200909A.jpg

Forest Resource Analysis System Software: Data Sources

Input data for this reporting system has brought together information from several sources, all arranged to evaluate the parcel's optimal financial value. Parcels include timber stands, are accessed by road networks, and are crossed by rivers. All of these attributes are compiled into a holistic representation of the parcel's characteristics. Values are derived from these characteristics using standard economic analysis practices.

Data	Source
Parcel Data and Identification	These used the PLSS framework for Townships, Ranges, and Sections, but all of the parcel lines were created by Geospatial Resource Analysis, for demonstration purposes. They are NOT real parcels for this property.
Parcel Size and Location	Determined in GIS with property lines projected in NAD83UTM10N
Soil Survey Data	USDA Natural Resource Conservation Service (NRCS), analyzed through the NRCS Soil Data Viewer in GIS.
Threatened, Endangered, and Sensitive Species Habitat	Washington GAP Analysis completed by USGS, 1997. Cassidy, K. M., C. E. Grue, M. R. Smith, and K. M. Dvornich, eds. 1997. Washington State Gap Analysis - Final Report. Washington Cooperative Fish and Wildlife Research Unit, University of Washington, Seattle, Volumes 1-5.
Digital Elevation Data	U.S. Geological Survey (USGS), and distributed by the EROS Data Center Road Network Washington State Department of Natural Resources (WaDNR). Geospatial Resource Analysis completed a Road Network solution to the Pack Forest area.
Road Network	Washington State Department of Natural Resources (WaDNR). Geospatial Resource Analysis (a Division of Forest Econometrics) completed a Road Network solution to the Pack Forest area.
Forest Mensuration Data	Original site characteristics (stand inventories) were identified in sample data provided in the Landscape Management System (LMS) ver. 3.1. All stands simulated a clearcut then were regenerated to the age consistent with current status using the Organon growth model in LMS. Each timber stand was projected in 5 year intervals for 200 years in each projection (current stand). Regeneration on each stand was accomplished with a uniform Site Index reforestation profile for each identified site index rating (by Pack Forest). Log merchandising for each stand was completed in R! using tree bole taper by species and crown height estimated in LMS software.
Parcel Maps	Data from listed sources, mapped by Geospatial Resource Analysis.
Timber Stand Photographs	William E. Schlosser, Geospatial Resource Analysis.
Global Economic Parameters (inflation and discount rates)	Bureau of Labor Statistics (BLS 1900-current, updated monthly)
Reforestation Costs	Estimated default values
Road Use and Construction Costs	Estimated default values
Delivered Log Market Real Price Appreciation	Historic Delivered Log Market Data combined with Bureau of Labor Statistics data, calculated by Users
Logging Cost Real Price Appreciation	Bureau of Labor Statistics 'Receipts for contract logging of timber owned by others'
Delivered Log Market Data	Washington DNR and RISI (Log Lines market reporting), delivered log market data is updated monthly to the FRASS database.
Logging Costs	User estimated and entered
Hauling Costs	User estimated and entered
Overhead & Administration	User estimated and entered
Profit and Risk	User estimated and entered
Inflation Rate	User identified rate of inflation from BLS records, used to project future values from current
Discount Rate	User identified discount rate from BLS records, used to discount future values to current values, used in combination with Inflation rate.
Real Price Appreciation and Longevity	RPA – User identified rate applied to specific log sorts for rates of increase greater than, or less than, the rate of inflation for a period of time (Longevity) when the Appreciation rate will peak, or when the Devaluation rate will trough. The effects of the RPA will continue for a period at least twice as long as Longevity to exhaust the RPA influence.

**Last Page of Report
Remainder Intentionally Left Blank**