SS
Whitman –Studies,
Insect Infestation,
February 13, 1913,
March 24, 1913,
March 27, 1913

1912

Report on

Insect Infestation

Northeast Oregon Project [1]

38

by

W. D. Edmonston

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Report 1912.

Northeastern Oregon Project, No. 38,
Branch of Forest Insects,
Bureau of Entomology.

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Preceding the examination of the Project areas the following instructions were received from Dr. A. D. Hopkins, In Charge of Forest Insect Investigations.

General Instructions for Inspection of Area Covered by
Northeastern Oregon Project 38, Branch of Forest Insects.

Bureau of Entomology.

The purposes of the inspections are as follows:

In the treated area –

1. To determine the number and average size of the 1911-12 infested trees within the area treated in 1910-11. No infested trees below about 4 inches in diameter B. H. should be counted. No tree should be designated as infested unless examined and living broods of Dendroctonus monticolae or Dendroctonus brevicomis are observed in the bark.
2. To determine the number of trees attacked but in which the broods failed to develop.
3. To determine the number of red-topped trees not treated from which broods emerged in 1911.

In the adjacent untreated area –

4. To determine, in a general way, the relative extent of 1911-12 infestation as compared with the red-topped trees of the 1910-11 infestation.

In the check area –

5. To determine the relative amount of 191-12 infestation to the 1910-1 infestation in the southern Wallowa area examined last year by Mr. Edmonston.

Special Instructions.

In all of this inspection work the primary object should be to get the facts and evidence regardless of any preconceived ideas, theories, or conclusions.

The project, on account of the widespread depredations and adjacent infested lodgepole areas, must be considered as a big experiment. If there is increase or decrease of infestation in any section or township of the treated area we want to know it, and we want to have all of the available facts and evidence for thorough study before any opinions are formed or given out as to general or specific results or any reasons for the conditions found. This is important in the interest of the best service.

(Signed) A. D. Hopkins,
June 18, 1912.

Introduction.

The writer with the assistance of the agents detailed to assist in the work has tried to confine the examination strictly to the main object as outlined in the written instructions.

The work of inspection was greatly facilitated from the fact that the agents including the writer had all worked on the original project from its commencement April 5, until its close on June 30, 1911.

It was expected and understood that the Forest Service would cooperate and assist in making the examination. It will be sufficient to state that they did not do so; nor did they render any assistance in any way whatsoever.

The writer was ably assisted in the examination and collection of data on which this report is based by agents J. J. Sullivan and A. C. Angell, who were detailed from Forest Insect Field Station 5, and agents P. D. Sergent and Geo. Hofer of Station 6.

The work was carefully and accurately done, no hap-hazard methods were at any time permitted nor were any attempted. The count was perhaps more carefully made than if the intention had been to cut and treat the trees located. Where two years infestation had to be tallied it prevented any trees being overlooked; the particular tree had to be examined and put in the class where it belonged, either a red-topped tree of 1910-11 or infestation of 1911-12, it had to be counted on one side or the other. With experienced men in this special line of work there was little danger of any serious error due to wrong classification.

In the opinion of the writer the only possible error that could be made would be due to the examiner finding in a tree abandoned by monticolae, a partial brevicomis brood and instead of counting it as a red-top and the infestation of 1910-11 he might under some unusual condition of the tree due to other factors count it as a 1911-12. This did not happen very often so that few errors could have been made.

The writer has tried to keep from forming any conclusions except where it was impossible to do otherwise. In some cases it was found impossible to make the data secured, plain enough to express what was intended without supplying the reason for not being able to do so. In such cases the writer has of course had to supply what was lacking from his own conclusions but as they are in no way connected with the actual facts and figures submitted they should be permissible.

Anthony Cr., Camp No. 2.

Tp.S.	R.E.	Sec.	Area Covered Acres	Infestation 1911--------1912 Treated Y.P.	Treated L.P.	Red Tops Y.P.	Red Tops L.P.	Infestation 1911--------1912 Ave. Y.P. DBH	Ave. L.P. DBH
6	37	1	240	33	0	33	0	50	0
		12	160	17		9		14	
6	38	6	320	55		25		35	
		7	640	177		36		75	
		18	640	26		16		47	
		19	320	15		11		34	
			2320	323	0	130	0	255	21” 0
Big Gulch, Camp No. 5.									
6	37	36	320	24	0	16	0	16	
6	38	29	640	6		4		4	
		30	500	12		10		9	
		31	640	7		13		15	
		32	640	19		15		12	
7	38	5	320	16		28		32	
		6	440	9		28		22	
			3500	93	0	114	110	20”	
Bulger Flat, Camp No. 2.									
7	37	1	400	38	0	0	0	0	
		12	240	8		0		0	
		13	320	55		11		69	
7	38	7	640	145		23		19	
		8	640	48		270	148		
		9	640	65					
		18	480	69		0		0	
			3360	428	0	304	0	236	20”
North Powder Riv., Camp No. 5.									
7	37	13	320	196	0	0		200	
		24	40	18		9		8	
		25	320	661		18		105	
7	38	18	160	11		0		0	
		19	320	139		2		18	
		30	480	232		3		61	
		31	400	353		2		30	
			2040	1610	0	34	0	422	16”

1912---Examination Species Monticolae	Dendroctonus Infesting Brevicomis	1911-12 Number of Infested Saplings Noted Yellow pine	Total Decrease Yellow pine Per cent	Total Decrease Lodge Pole Per cent
		12		
		4		
		47		
		37		
		23		
		59		
203	52	182	29-2/7	00
		21 (1912-13)		
		21	(18-2/7 increase)	
177	33			
		)		
		)—150		
		)		
166	70	150	44 ½	00
198		14		
8	2			
105	0	6		
	0			
16		10		
60	2	21		
30	1	6		
417	5	57	73-7/9	00

Muddy Cr., Camp No. 5.

Tp.S.	R.E.	Sec.	Area Covered Acres	Infestation 1910--------1911 Treated Y.P.	Treated L.P.	Red Tops Y.P.	Red Tops L.P.	Infestation 1911--------1912 Ave. Y.P. DBH	Ave. L.P. DBH
7	38	28	640	23	0	0	0	25	0
		29	320	13					
		30	160	201					
		31	240	74					
		32	640	103	0				
		33	160	19					
8	38	5	480	66		2		35	64
		6	640	133		12		73	
			3280	632	0	24	50	337 17”	112 8”

Pine Cr., Camp No. 2.

8	38	21	640	70	8	0	0	0	
		22	640						
		27	640						
		70	1920	78	8	0	0	0	0

Marble Cr., Camp No. 2

9	38	21	640	113	256	0	0	0	0
		22	640	147	1550	18	24	24	32
		27	320	116	174	4	0	0	0
9	39	6	320	63	0	0	0	0	0
		7	640	390	95	7	0	15	0
			2560	829	2075	29	24	44 17”	32 9”

Hibbard Gulch, Camp No. 2.

9	38	13	320	344	0	0	44	3	28
		24	320	351	183	0	0	0	0
9	39	17	480	113	0	12	0	16	0
		18	40	180	0	11	11	11	12
		19	160	9	0	0	0	0	0
			1920	997	183	23	55	40 16”	40 9”

1912---Examination Species	Dendroctonus Infesting	1911-12 Number of Infested Saplings	Total Decrease Yellow pine	Total Decrease Lodge Pole
Monticolae	Brevicomis	Noted Yellow pine	Per cent	Per cent
337	0	0	44-4/5	00
0	0	0	00	00
		39		
		9		
		56		
35	9	104	82-5/9	98 ½
		41		
		31		
35	5	72	95 ½	78-1/5

Elk Cr., Camp No. 1.

Tp.S.	R.E.	Sec.	Area Covered Acres	Infestation 1910--------1911 Treated Y.P.	Treated L.P.	Red Tops Y.P.	Red Tops L.P.	Infestation 1911--------1912 Ave. Y.P. DBH	Ave. L.P. DBH
9	39	19	480	23	1010	0	60	0	80
		26	400	192				0	
		27	640	2				0	
		28	640	128	5	11	0	4	0
		29	640	242	30	4	280	5	0
		30	640	94	542	2	40	3	0
		32	640	66	111	0	0	0	0
		33	640	267	0	0	0	0	0
		34	640	837	0	0	0	0	0
		35	400	811	0	0	0	0	0
10	39	4	160	126	0	3	0	7	
		5	40	5	86	8	0	10	
			5960	2793	1784	28	380	29 17”	80 9”

Poker Cr., Camp No. 1.

9	39	31	500	33	193		10	18	0
10	39	5	600	70	0			0	
		6	400	101	12			5	0
		7	400	33		8		28	
		8	640	369		2		41	
		9	320	192		8		12	
		16	160	14				1	
		17	640	192		1		109	
		18	450	19		8		33	
		20	320	8				12	
			3930	1031	205	27	10	24 21”	

Union Cr., Camp No. 4.

10	38	11	640	69	0	27	0	106	
		12	320	28		12		32	
		13	320	26		13		36	
		14	640	16		22		91	
		24	220	23		7		4	
		1	640	58		18		26	
		2	640	79		21		75	
			3420	299	0	112	0	370 20”	0

1912---Examination Species Monticolae	Dendroctonus Infesting Brevicomis	1911-12 Number of Infested Saplings Noted Yellow pine	Total Decrease Yellow pine Per cent	Total Decrease Lodge Pole Per cent
	24 99			
	9 22			
25	4	64	98 ½	95-5/6
		53 00 55 155 000 10 129 00 00		
216	25	402	66-7/8	00
		22		
		20	(Increase)	
310	60	42	23-3/4	00

Miners Cr., Camp No. 1.

Tp.S.	R.E.	Sec.	Area Covered Acres	Infestation 1910--------1911 Treated Y.P.	Treated L.P.	Red Tops Y.P.	Red Tops L.P.	Infestation 1911--------1912 Ave. Y.P. DBH	Ave. L.P. DBH
0	38	26	460	6	565	2	100	1	175
		27	468	1	10			7	0
		28	640	32		3		16	
		32	639	23		31		49	
		33	637	60		22		64	
		34	645	73	46	1		70	40
		35	609	67	188		200	36	250
10	38	3	640	67		14		90	
		4	80	8				0	
			4830	337	809	73	300	333 18”	465 8”

Dear Cr., Camp No. 1.

9	37	24	640	21	0	4	0	12	0
		25	640	20			180	16	200
9	38	19	570	18		8		22	25
		20	626	5		1		23	
		21	636	4				0	
		29	628	23		3		16	
		30	630	20				55	60
			4370	111	0	16	180	144 16”	105 8”

Sheep Cr., C. No. 3. White Face, C. No. 3. Snow Ball, C. No. 3. Sumpter, Camp No. 8.

9	36	25	320	0	9	1	2	2	3
		36	640	2	8		0	0	0
9	37	2	640	1	778		21		36
		3	280	4	664		15		25
		4	420	66	500			7	0
		9	410	38	568	3	9	10	25
		10	640	20	1591		8	6	11
		11	640		231				0
		14	640	5	63	0	0	0	0
		15	640	17	216		34	2	39
		16	640	22	4			0	0
		21	640	11	21	8	32	7	30
		22	640	40	288	4	21	7	23
		23	640	89	71	13	23	7	16
		26	640	27	47	6	28	7	14
		27	640	16	160	2	20	7	25
		28	640	10		3	3	2	0
		30	640	38		2	1	9	4
		31	320	0	1	2	5	2	12
		34	200	3	0	0	0	0	0
			10910	490	5220	44	222	69 18”	259 9”

1912---Examination Dendroctonus		1911-12		
Species Monticolae	Infesting Brevicomis	Number of Infested Saplings Noted Yellow pine	Total Decrease Yellow pine Per cent	Total Decrease Lodge Pole Per cent
			.01	42-6/7
		14		
288	45	14	.01	42-6/7
			(Increase)	
120	15	0	27-11/12	00
		8		
		4		
		13		
		9		
		2		
	69	36	83-1/7	95-1/13

Jim Cr., Camp No. 6.

Tp.S.	R.E.	Sec.	Area Covered Acres	Infestation 1910--------1911 Treated Y.P.	Treated L.P.	Red Tops Y.P.	Red Tops L.P.	Infestation 1911--------1912 Ave. Y.P. DBH	Ave. L.P. DBH
9	37	8	320	21	62	4	13	7	22
		17	640	80	13	6	21	17	0
		18	640	23	30	5	3	28	12
		19	50	1	4	7	51	13	0
			1650	125	109	22	88	65 20”	34 9”
Cracker Cr. Camp No. 5.									
8	37	32	200	0	82	0	0	0	0
		33	480		288		7		17
		34	140		99		0		0
9	37	4	220		160		5		40
		5	510	2	430	0	12	0	38
			1550	2	1005	0	34	0	95 9”
Fruit Cr., Camp No. 1.									
8	37	30	0		14		0		0
		31	320	1	948			0	0
		32	240	3	425			0	0
			560	4	1387	0	0	0	0
Fruit Cr., Camp No. 6									
8	36	25	160	0	102		46	0	96
8	37	19	320		159		0	0	0
		29	100		116		0	0	0
		30	600		791		72		76
		31	160		219		0		0
			1340	0	1387	0	201	0	172 9”
Silver Cr., Camp No. 4.									
8	36	26	60	0	107	0	30	0	25
		35	90		457		5		40
		36	640		1074		5		56
8	37	31	60		399		32		100
			850	0	2037	0	72	0	221 9”

1912---Examination Dendroctonus		1911-12		
Species Monticolae	Infesting Brevicomis	Number of Infested Saplings Noted Yellow pine	Total Decrease Yellow pine Per cent	Total Decrease Lodge Pole Per cent
		11		
		29		
		5		
		7		
57	8	52	48	68-9/11
		9		
		4		
		13	00	80 ½
		0	00	00
		0	00	87-4/7
		0	00	89-1/10

Sheep Cr., Camp No. 8.

Tp.S.	R.E.	Sec.	Area Covered Acres	Infestation 1910--------1911 Treated Y.P.	Treated L.P.	Red Tops Y.P.	Red Tops L.P.	Infestation 1911--------1912 Ave. Y.P. DBH	Ave. L.P. DBH
11	38	5	640	33	0	11	0	11	0
		7	480	12		2		19	
		8	640	26		7		18	
		9	320	20		3		8	
		10	80	15		0		0	
		16	160	14		4		5	
		17	640	35		18		7	
		18	640	7		2		0	
		19	640	19		0		5	
		20	320	11		3		5	
		21	320	8		1		3	
		25	480	9		0		4	
		26	640	15		1		4	
		27	100	5		0		0	
			6100	229	0	52		89 19”	0 0
Cold Springs, Camp No. 7.									
11	38	10	320	16	0	1	0	4	0 0
		11	320	176		2		16	
		12	200	106		0		4	
		13	640	329		3		15	
		14	640	171		3		23	
		15	640	75		1		10	
		22	120	16		0		4	
		23	640	17		0		3	
		24	640	71		0		10	
11	39	5	320	124		3		16	0 0
		6	320	92		0		8	
		7	640	228	70	7		40	
		8	640	138		4		35	
		9	320	10		1		6	
		15	160	12		0		9	
		16	640	42		3		24	
		17	640	33		3		18	
		18	640	152		3		23	
		19	320	27		1		7	
		20	320	35		1		6	
		21	320	17		2		14	
		22	120	2		2		4	
			9560	1889	70	40	0	299	14-1/3” 0

1912---Examination Dendroctonus		1911-12		
Species Monticolae	Infesting Brevicomis	Number of Infested Saplings Noted Yellow pine	Total Decrease Yellow pine Per cent	Total Decrease Lodge Pole Per cent
8	3	3		
6	13			
10	8			
6	2			
0	0	3		
3	2			
4	3	5		
0	0	5		
2	3	2		
3	2			
3	0			
1	3			
2	2			
0	0			
48	41	18	61 ½	00
2	2			
12	4	6		
1	3			
6	9			
12	11			
6	4			
3	1			
2	1			
10	0			
11	5			
8	0			
34	6	31		
23	12	11		
3	3	3		
8	1	4		
18	6	6		
9	9			
10	13			
7	0	4		
3	3			
11	3	8		
2	2			
201	98	73	84-1/11	00

Totals for Camp Areas.

Camps.	Area Acres	Treated Y.P.	Treated L.P.	Red Tops Y.P.	Red tops L.P.	Infested Yellow Pine	Infested Lodgepole Pine
Anthony Cr., No. 2.	2320	323	0	130	0	255	0
Big Gulch, No. 5	3500	93	0	114	0	110	0
Bulger Flat, No. 2.	2360	428	0	304	0	236	0
North Powder, No. 5.	2040	1610	0	34	0	422	0
Muddy Cr., No. 5	3280	632	0	24	50	337	112
Marble Cr., No. 2.	2560	829	2075	29	24	44	32
Pine Cr. No. 2	1920	78	8	0	0	0	0
Hibbard Cr., No. 2.	1920	997	183	23	55	40	40
Elk Cr., No. 1	5960	2793	1784	28	380	29	80
Poker Cr., No. 1.	4430	1031	205	27	10	241	0
Union Cr., No. 4.	3420	299	0	112	0	370	0
Miners Cr., No. 1.	4830	337	809	73	300	333	465
Deer Cr., No. 1.	4370	111	0	16	180	144	105
Sheep Cr., No. 3.							
Snowball, No. 3.							
White Face, No. 3.							
Sumpter, No. 8.							
Total for 4 camps	10910	409	5220	44	222	69	259
Slim Cr., No. 6.	1650	125	109	22	88	65	34
Cracker Cr., No. 5.	1550	2	1005	0	34	0	95
Fruit Cr., No. 1	560	4	1387	0	0	0	0
Fruit Cr., No. 6	1340	0	1387	0	201	0	172
Silver Cr., No. 4.	850	0	2037	0	72	0	221
Sheep Rock, No. 8.	6100	229	0	52	0	89	0
Cold Springs, No. 7	9560	1889	70	40	0	299	0
Total	76430	12219	16279	1072	1616	3083	1615
Baker Forest Protective							
Association							
Tp. 11 S. R. 40 E.							
Tp. 11 S. R. 41 E.							
Tp. 12 S. R. 40 E.							
Tp. 12 S. R. 41 E.							
Total	11520	2264	3728	0	0	0	0

	Area Acres	Treated Y.P.	Treated L.P.	Red Tops Y.P.	Red tops L.P.	Infested Yellow Pine	Infested Lodgepole Pine
Totals—Forest Service.	76430	12219	16279	1072	1616	3083	1615
Totals—Baker Forest P.A.	11520	2264	3728	0	0	0	0
Grand Total	87950	14483	20007	1072	1616	3083	1615

Grand Total All species--

Treated
Yellow pine and (14483)
Lodgepole pine (20007)
34490

Found infested
Yellow pine and (3083)
Lodgepole pine (1615)
4698

Totals for District areas, or Units
See Map---Attached

District Camp Areas	Area Acres	Treated Y.P.	Treated L.P.	Red Tops Y.P.	Red tops L.P.	Infested Yellow Pine	Infested Lodgepole Pine	Decrease	
								Y.P.	L.P.
From Anthony Cr., To Elk Cr. (Unit 1)	21860	7783	4050	688	509	1473	264	37 3/7	93 1/3
Deer Cr., to Poker Cr. (Unit 2)	17050	1778	1014	228	490	1088	570	38 2/3	43 6/10
Silver Cr., To Sumpter (Unit 3)	16860	540	11145	66	617	134	781	80 3/7	93 1/3
Sheep Rock And Cold Springs (Unit 4)	15660	2118	70	92	0	388	0	81 ½	00
Baker Forest Service Protective Association (Unit 5)	11520	2264	3728	0	0	0	0	00	00
Grand Totals	87950	14483	20007	1072	1616	3083	1615	78 4/7	91 4/7

This table has been arranged so that the result of the work can be judged in relation to the natural geographical position or grouping of treated areas. In other words, a number of camp areas have been grouped to form a unit where a natural division made this possible.

Unit 1, has a decided eastern exposure and is practically cut off from Unit 2, by a high divide. Unit 2, has a typical southern exposure and is separated to a great extent from Unit 3, by being at a generally lower elevation and the steep canyon north slope type at its junction with Unit 3. Unit 3, is nearly all at a high elevation and lodgepole pine predominates. Unit 4, is separated from Unit 2 by a wide grass valley and non-treated areas. Unit 5, is also surrounded by non-treated areas.

The writer believes that this division into Units will give a much more comprehensive idea of the result of the work than if based on individual camp areas, or even the entire project area.

Resume

Report on Project 38, 1912.

Total acreage covered by Project	87950
Total number of yellow pine trees treated, infestation of 1910-11,	14483
Total number of yellow pine found infested – 1911-12	3083
	Reduction – 11400

A percentage reduction of 78-4/7

Total number of Lodgepole pine trees treated, infestation of 1910-11,	20007
Total number of lodgepole pine found infested – 1911-12,	1615
	Reduction – 18392

A percentage reduction of 91-4/7

The total number of all species treated was 34,490 and the number Found infested 4,698, a reduction in the number of trees of	29792

A percentage reduction of 86 ½

Diameters.

(The average diameter of yellow pine trees treated in 1911 was 17.85 in.
(The average diameter of the 1911-12 infested trees ---18.13 in.

(The average diameter of lodgepole pine treated in 1911 was – 10.44 in.
(The average diameter of the 1911-12 infested trees – 9. In.

The writer believes that as the diameters were taken by the crew foreman in a number of different ways, in and outside the bark, and stump diameter in some camps, the average arrived at can not be depended upon. (For diameter details, see sheet under that heading.)

Heights.

The average heights of the 1911-12 infested trees of both types were much the same as those for 1910-11. The Barnes-Angell report gives the average heights as follows: Yellow pine 74.75 feet, lodgepole pine 71.20. The writer believes that accuracy in diameters is much more important than height measurements, for this reason: that the height has no particular significance in relation to the death of the tree when killed by insects; as it is well known that if a few feet only of the main trunk is entirely infested the tree will succumb, and also in the examination of standing timber the height can only be estimated. In future work all diameters should be taken outside the bark, as this would make the comparison between one year infestation and another very much more accurate and much easier.

Acreage.

The difference in the total acreage given in this report (Association cutting area spring of 1911 not included except in grand total.), and that of former reports on the Project is due to a few corrections in the way of reductions and additions and are confined strictly to the area and in no way affect the tree count.

The Barnes and Angell report gives the total area cruised and treated as 94,890 acres, on the other hand, their report by sections of the treated areas only amounts to a total of 83,690 acres. The following reductions and additions have been made which makes the total acreage in this report 76,430, and this the writer believes to be correct.

	Reduction	Add.
Boundary Creek Camp Area was supposed to cover about 5 sections in Tps. 9 and 10 S. R. 35 ½ E. as only 13 yellow pine and 4 lodgepole were cut on the areas and the area was far removed from the main Project area, It is eliminated. No infestation of any importance was observed on this area	3,760	
Sec. 36, Tp. 7 S. R. 37 E. No trees were treated on this section, those credited to this section were cut on section 31, Tp. 7 S. R. 38 E.	80	
Sec. 18, Tp. 7 S. R. 38 E. 640 acres, reduced to 480,	160	
Sec. 31, Tp. 8 S. R. 37 E. 640 acres reduced to 540,	100	
Sec. 25, Tp. 9 S. R. 36 E. Omitted from former report.		320
Sec. 5, Tp. 9 S. R. 36 E. 640 acres reduced to 510,	130	
Sec. 18, Tp. 9 S. R. 38 E. No cutting done.	160	
Secs. 12, 13, Tp. 10, S. R. 38 E. 1280 A reduced to 640,	640	
Sec. 4, Tp. 10 S. R. 39 E. 560 acres reduced to 400,	160	
Sec. 9, Tp. 10, S. R. 39 E. 480 acres reduced to 320,	160	
Sec. 20, Tp. 11 S. R. 38 E. Omitted from former reports.		320
Sec. 24, Tp. 11 S. R. 38 E. Omitted from former reports.		640
	4350	1280

No consideration is given to the total of 94,890 acres, being impossible to tell how it was arrived at. The difference then between the reports is 2,910 acres and this may be due to duplication of sectional acreage where two camps cut on the same section.

Diameters.

Too much credence should not be placed on the diameter figures. The diameters of the 1911-12 infested trees had of course to be taken outside of the bark. I am inclined to think that the average diameter for the yellow pine trees, taking into consideration the methods used in arriving at them can be safely assumed to be so close that an average diameter for both years would be 18 inches outside the bark. In the Baker Association fall work of 1910, Mr. H. F. Burke kept an accurate table of all yellow pine diameters, D.B.H. outside the bark; over 700 infested trees were calipered. The report gives the average diameter as 21 inches. This area was knows as Cold Springs. On the same area in the spring work of 1911 the average diameter is give as 17.85 inches, or rather we have to assume that this is the diameter for this camp area although based on all the yellow pine cut on the Project between April 5, and June 30, 1911. The Barnes-Angell report does not give the average diameter for camp areas. As Mr. Burke's report is based on actual measurements and for a camp area we can use them in this one camp for a comparison between the infestation of 1910 and that of 1911. In the infestation of Cold Springs camp area of 1910-11 the average diameter of the trees is 21 in. in 1911-12 it is 14 1/3 inches. NIne camp areas show an average diameter of about 1 in. greater and 7 about 2 in. less. Making allowances for the difference in methods of arriving at the diameters, it is fair to assume that if there is a slight difference in the average diameters of the infested trees of the 1910-11 and the 1911-12, it is a very slight reduction in favor of the 1911-12 trees; this however may be more apparent than real; on the other hand we can be perfectly certain there is no increase. In the Lodgepole type there is a reduction of about one inch in the average diameter. The 1910-11 is 10.44 inches and in the 1911-12 it is 9 inches.

Totals for Entire Area.

Dendroctonus Species Infesting.

Number of Saplings Infested.

The yellow pine samplings listed of which there is a total of 1,360 are not deemed of sufficient importance to include in the figures of trees infested. The average diameter of the small trees or saplings was 4 ½ in., the broods infesting were found to be few in number and in an unhealthy state. All infested trees over 6 in. D.B.H. were counted and are included; those below are not, but are listed in the tables under "Saplings noted". As the treated trees listed as peeled standing were from 4 to 12 inches D.B.H., the average diameter being give 7.05 inches, they have been counted in the tables of trees treated. By far the largest number of trees peeled standing was on the Elk Creek Area; 1,967 being the total thus treated. On this camp area only 28 yellow pine were found infested. The combining of trees treated standing and those cut in this camp could have no bearing on the percentage of decrease arrived at, and this will also apply to other camp areas.

Docdrocotonus Species Infesting.

The figures show that 15 1/5 per cent of the 1911-12 infested yellow pine was infested solely by D. brevicomis. In the 1910-11 infestation (Based on Cold Springs and Wind Creek Camps), while a good deal of infestation (Based on Cold Springs and Wind Creek Camps), while a good deal of infestation by brevicomis was noted, it was in nearly all cases confined to a few feet on the base of the main trunk; the average about 8 ft. When the examinations are limited to a few feet of the trunk it is obvious that mistakes might follow; special care was taken in this examination to avoid any hasty decision.

Where the general appearance of an infested tree indicated brevicomis work; special pains were taken to arrive at a correct determination. After a thorough inspection of the trunk as high as could be reached with an ax, field glasses were then used; pitch tubes and exit holes were noted and woodpecker work seldom absent in such trees. When the upper portion of the main trunk shows a flaked off appearance of the bark it is prima facie evidence that the tree is thoroughly infested by brevicomis. On a monticolae tree the woodpeckers dig small round holes; on a brevicomis tree, they strike the bark a glancing blow, first on one side then on the other, in this way the outer layer is partly removed and the young larvae or adults are exposed; in the spring months it is not difficult matter to pick the brevicomis trees from the monticolae infested trees if the woodpeckers have been at all busy. The point the writer wishes to bring out is; that if D. brevicomis was as strong in the infestation of 1910-11 as it has proved to be in that of 1911-12 then the crew foreman and treatment crews neglected to properly treat many of the trees in some of the camp areas, especially those at a low elevation; on the other hand, it is clear that where brevicomis is unquestionably strong a very large number of Red top trees are recorded; such trees were those missed by the cruisers or marked trees passed by the treatment crews. This was specially noticeable in Anthony, Big Gulch and Bulger Flat camp areas, operating in the month of April when at least 70 per cent of the infested trees were still green and the cruisers all new at the work.

Results and Percentages.

In the treated areas where the work was done during the month of June a decided improvement is seen in the results in comparison with work through April and May. For data on April and May work see tree table.

The following is a list of the Camps operating during June; and the percentage of decrease in the number of infested trees for each camp area.

Camp Number. Name	Decrease Yellow pine	Decrease Lodgepole Pine
(Elk Creek	98 ½	95-5/6
1—(		
(Fruit Creek; no infestation 1911-12		
(Marble Creek	82-5/9	98 ½
2—(		
(Hibbard Gulch	95 ½	78-1/5
(		
3—(All combined; May and June	83-1/7	95-1/13
(		
(		
4—(Silver Creek		89-1/10
(		
(North Powder	73-7/9	
5—(		
(Cracker Creek		80 ½
6—(Fruit Creek		87-1/7
7—(Cold Springs	84-1/11	
8—(Sheep Rock	61 ½	

It is quite evident that as the work of locating and treatment proceeded the cruisers and treatment crews and crew foremen became more familiar with their respective duties; the results obtained show this very plainly. Camp 8, Sheep Rock was so late in going onto the area that the brood from the trees recorded under Red Tops had all emerged before they could be reached and treated; in fact from many of the trees that were cut much of the brood had emerged.

Fewer red top trees are recorded on the areas treated in June; this can be accounted for in two ways: The cruisers became more proficient and a higher per cent of the yellow pine had fading foliage, making them easier to locate.

The number of Red top Lodgepole pine recorded from areas which were treated through June; is not due to the fact that such trees were missed by the cruisers or treatment crews; but for the reason that cutting stopped before the trees could receive treatment.

Results and Percentages
Continued.

It will be as well to mention that the record of work of Camp No. 3, has all been included under one unit and includes Sumpter Camp No. 8, while Camp 3, found it necessary to make three moves; this was more on account of reducing the walking distance to and from camp; and not for the reason of there being separate and distinct units. The three units of Camp 3, over lapped one with the other; and Camp 8, Sumpter, also cut over a part of the area.

In making the examination of the 1911-12 infestation it was found impossible to properly divide the areas; therefore, all work on these units has been classed under one head in the tree table.

Work which was done in the fall of 1910 on Wind Creek has been credited to Camp 3, as it could not be properly separated; a unit of Camp 3, covered part of the area. In this connection it is as well to mention that the figures given in the Cold Springs, Camp area, No. 7, also include the trees treated in the fall of 1910.

The work of reexamination and assembling the figures has by no means been a simple matter; but as it has little to do with the actual results of the Project as a whole; the writer will not touch on that phase of the subject.

The percentage of decrease given both in Camp Units and the totals is based entirely on the tree count. No consideration has been given to Camp areas where no new infestation was found nor where an increase has been recorded except in the final percentage totals; and the figures are based entirely on the total number of trees treated in comparison to the number found infested.

No new infestation was recorded from the Baker Forest Protective Association areas, none from Pine Creek area; and none from Fruit Creek area, Camp 1. Where some Camp Areas show an increase it will be noted that a large number of Red top trees are recorded.

	Volume in Feet Board Measure		Reduction FT.B.M.
	1910-11 Treated Trees	Infestation 1911-12	2,143380
Yellow Pine	2,914130 Ft. B.M.	770,750 Ft.B.M.	
			1,199060
Lodgepole pine	1,295960 Ft.B.M.	96,900 Ft.B.M.	
Total	4,210090 Ft.B.M.	867,650 Ft.B.M.	3,342440 Ft.

The reduction in volume is therefore	3,342440 Ft. B.M.
Addition B.F.P. Assn. Volume:	610310 Ft. B.M.
Grand total reduction in Ft.B.M.	3,952750

The above figures are as correct as an estimate not based on actual log scale of the timber can be made.

Lodgepole pine
Estimate of rate of infestation.

The following estimate is based on color of foliage; it covers an area of approximately 4 sections (2,560). The area lies N. W. of the extreme northern limits of the treated area but at a much higher elevation. The location is about central in the S.E. ¼ of Tp. 5 S. R. 37 E. W.Mer. From a point of vantage overlooking the area it was possible to arrive at the extent of each area according to the color of the foliage of the trees.

Infestation Year	Color of Foliage	Per cent of Area
1905-06	Black-top, Broken-top, some down trees.)	
	(Possible 20 per cent died prior to 1905))----	25
1906-07	Black-top no foliage.)	
1907-08	Reddish-black tops; Foliage, some	20
1908-09	Reddish-brown tops; Foliage	25
1909-10	Red-tops. Evidently a migration occurred in the season of 1909.	10
1910-11	Yellowish-red tops. (Sorrel tops)	12
1911-12	Green not infested.	8
		100

It was a difficult matter to determine the area of green timber for the reason that the trees were scattered all though the tract.

Counts on average acres on one of the sections showed that the number of trees per section would be about 240,000, which is close to one million trees for the entire area. An acreage count taken on the same area at intervals of about ¼ of a mile gave the following results:

Area	191—12 Abandoned Red Tops.	Green Not Infested	Area.	Green.	Sorrel.	Red.	Black top.
1 Acre	324	17	1 Acre	172	4	52	136
1 Acre	714	31	1 Acre	424	37	200	00
1 Acre	483	14	1 Acre	240	276	116	00
1 Acre	441	31					
4 Acres	1962	93	3 Acres	836	317	368	136

The writer submits the above figures with the hope that they may prove of some value. The work was carefully done and figures can be relied upon. It would appear to be an almost hopeless task to attempt a count in lodgepole pine and expect to secure data of any value. A small area can not be reliable and a large one to get results would take months to make the count.

Check Area Showing Percentage of Increase in
Number of Infested Trees.

Tp.	S.	R. E.	Sec	No. Acres	Infestation 1910-11 Red Tops Yellow P.	Ave. D.B.H.	Species Infesting Mont.	Brevi.	Infestation of 1911-12 Green Y.P.	Ave. D.B.H.	Species Infesting Mont.	Brevi
11	39		24	640	15	20”	8	7	74	18”	46	28
			25	460	14	20”	8	6	55	15”	45	10
11	40		19	640	25	21”	8	17	63	20”	36	27
			30	460	22	14”	19	3	57	26”	45	12
Totals				2560	76	18.5	43	33	249	17.5	172	77

The figures clearly show that the increase between the number of trees in the infestation of 1910-11 and that of 1911-12 was at the rate of 240-6/7 per cent. 19 trees per section died from the 1910-11 infestation and 62 trees from that of 1911-12. The species infesting, increased in its tree killing power, for Monticolae 300 per cent and Brevicomis 133 1/3 per cent.

This “Check Area” was selected, being considered a fair average area. It is surrounded by non-treated areas except on the east side where it joins two sections on which 15 yellow pine had been treated. There is no lodgepole pine on the area or areas adjacent. It is therefore a typical average yellow pine area within the infested zone.

It is quite evident from the data recorded from this area that the increase on non-treated areas of the 1911-12 infestation within the zone of general infestation is much the same as that recorded from the same locality in 1910 by Mr. H. E. Burke. On special tracts on the Cold Springs area Mr. Burke found after a very careful cruise that the rate of increase in the infestation was 2 to 1 and 3 to 1. On another area the rate of increase was 2 ½ to 1 and 1 to 1.

That there has been a decided increase in the number of infested trees since 1907 cannot be questioned; all examinations go to show that there has always been some increase each year from 1907 to 1912 within the area composing the zone of infestation. While the rate of increase may vary greatly from year to year and also in different parts of the infested area, there has been no decrease until the present time. It is significant that it is confined almost exclusively to the treated area.

Where a higher percentage of lodgepole pine was treated and fewer infested trees were left, it was observed that there was a reduction of the infestation for some distance beyond the treated areas; this however, in the opinion of the writer is problematical. At varying distances from the treated areas the rate of increase in the number of infested lodgepole pine was found to be 1 to 1.

In the yellow pine type we have accurate data covering a period in this one project of at least six seasons of infestation. The lodgepole will be reported under a separate heading.

Lodgepole pine
In the adjacent untreated areas.

The 1911-12 infestation I the lodgepole was decidedly less on the untreated areas adjacent to Unit 3. This was the only unit where it was possible to judge of the effect that the work might have had on adjacent untreated areas. From one half to a mile distant from the outer edge of this unit a decided reduction in the number of the 1911-12 infestation as compared with the red-topped trees of the 1910-11 infestation was noted. Beyond this limit there was not apparent decrease.

The infestation in the lodgepole and also the white bark pine is still tremendously heavy; the shaded uncolored portion on the map covers the affected area.

From careful examinations made on a number of typical lodgepole areas in townships 6-7 and 8 S., R. 37 E. where the infestation is specially heavy the writer would judge that at the least calculation 200,000 trees, lodgepole and white bark pine are infested. This infestation is general between an elevation of 5,000 ft., and 7,000 ft. From Anthony Cr., on the north to Elk Cr., on the south and from the border of the treated area west to the Elk Horn Range; is the heart of the present infestation.

From points of vantage on Anthony, Antone, North Powder, Rock Creek, the head of Marble and Elk Creek Canyons, large areas of red tops were noted. In the month of September extensive areas were noted on which the 1912-13 infestation had every indication of being just as severe as that of previous years. Judged by color of foliage in the Canyons mentioned no reduction could be observed between the infestation of 1910-11 and that of 1911-12. More infestation was noted in the white bark pine than that of previous season.

In the opinion of the writer it will take three more seasons of infestation to destroy the lodgepole in this zone; conditions in this type of timber will then be about the same as those in the northern portion of the Forest where 90 per cent of the stand is now standing dead.

On a portion of the area near Bourne, Ore., treated by Camp 5, Unit 3, 45 lodgepole were noted in which the attack of 1911-12 had not been successful; this was the only camp area where unsuccessful attacks were met with. Scattering trees of course were noted where the attack was not successful but not more than is generally met with. No lodgepole pine was noted in which the broods failed to develop. In the yellow pine sapling growth a high percent would produce no brood, the pupae having died in their pupal cells; this was quite common I the small pine saplings. It is true that very little time could be given to this phase of the subject, at the same time it was always carefully noted whether a brood had emerged from the red top trees or not, and also if the broods found were apparently healthy and likely to mature and emerge. Beyond this point little attention could be given to this side of the subject. In this connection it may be stated that there was little difference to be noted between the infestation of 1910-11 that of 1911-12 and what during August and September could be noted in the new infestation of 1912-13, broods were found emerging and attacking healthy green trees with every prospect in view of just as heavy an infestation on the untreated areas, both in the lodgepole and yellow pine and if anything more in the white bark pine.

The Southern Wallowa.
(Minam National Forest)

Examinations of portions of this Forest and adjacent forested areas was for the purpose of ascertaining in a general way the relative amount of 1911-12 infestation to the 1910-11 infestation.

In 1907 Mr. H. E. Burke found large areas of lodgepole pine infested and dying in the vicinity of Wallowa and Joseph, Ore.

Scattering infestation at that time was also observed in the yellow pine type.

In the Spring of 1910 the writer made an extended reconnaissance along the borders of the Forest in the vicinity of Medical Springs, and southeast to Pine Valley.

Extensive infestation was noted in the lodgepole pine and clumps of infested yellow pine and scattering infested trees were noted.

Other examinations were made in this forest during the summer and fall by Mr. Burke and the writer. Conditions were found to be much the same as those formerly observed and reported. There was no decrease in the infestation. Counts made in the yellow pine showed that there was if anything a slight increase on the yellow pine areas.

In the spring of 1911 areas near Medical Springs were examined by Dr. A. D. Hopkins, Mr. Burke and the writer; no reduction in the infestation was noted, clumps and scattering trees were observed to be infested.

In July, 1911 examinations were made by agents of this Bureau at Medical Springs and South East to Sparta, Ore. The result of this examination brought out the following facts: no reduction in the number of infested trees over previous years was noted. On areas near the large burn in the lodgepole which occurred near Medical Springs, in August, 1910, a slight reduction was noticed, but it appeared to have had little effect on areas beyond a mile from the outer edge of the burn.

It was found that while monticolae attack on the trees near the burn were fewer brevicomis and the flat-head borers were stronger that is to say more trees were found showing attack by those two species than had been observed heretofore in this particular locality. On areas at a reasonable distance from the burn, no falling off in the infestation by monticolae was noticeable. A record was kept of the number of 1910-11 infested yellow pine on an area on Big Creek, the first stream south of Medical Springs. Part of the area was on the Forest and part off; 200 merchantable yellow pine practically in one clump were infested by D. monticolae in 1910, in July 1911 the broods were emerging or had nearly all done so, some 1911 infestation was recorded. When the writer examined this area in 1912 the same number and of about the same diameter were found infested. There was apparently no increase neither was there any decrease. In the country south and east as far as Pine Valley from 12 to 20 trees per section were noted and as a rule D. Monticolae was primary. When this area was again examined in June 1912 there did not appear to be any reduction in the number of infested trees per section and clumps of infested trees were noted as before.

Southern Wallowa
(Continued)

From June 10 to June 16, 1912, the writer accompanied by agent Hofer, made a very thorough examination of the areas both at Medical Springs and between there and Pine Valley. After two days spent in examining the areas adjacent to the Lodgepole burn and the yellow pine areas on Big Creek, there conditions were found to be quite similar to those of 1910 and 1911 with the exceptions already stated where trees were found infested by D. brevicomis. One clump of large yellow pine 28 in number was located on the Forest close to the Rangers Station; quite a number of those trees were badly scorched by fire, the 1910 fire having passed through this belt of pine, but did little damage except in patches where clumps of insect killed trees both standing and down had held the fire for some length of time with the result that it burned a number of nearby trees and badly scorched others; had the ground been free from bug-killed timber little damage would have resulted.

There was some evidence that some of the trees mentioned as infested by brevicomis might also have been infested for some distance in the top by monticolae; in any case they were infested and would die.

On Big Creek no brevicomis work was noted except in a very few trees it was all infestation by monticolae.

The writer and agent Hofer walked from Medical Springs to pine, and from there to Halfway and Newbridge in the Eagle Valley.

This was a heavily timbered region all the way and side trips were made wherever possible.

The distance was 40 miles and four days to make the distance which gave ample time for examinations. The writer formed the impression that there was little difference between the years 1910, 1911, and 1912 in relation to the average number of trees dying each year.

Some counts were made on Little Eagle Cr., also on Paddy Cr., but no great increase was recorded; on some areas more red-tops were noted, on others more fading trees were noted.

The lodgepole areas observed appeared to be less red which would indicate a higher percentage of dead timber. Some patches that were surrounded by yellow pine which we examined showed only about 6 per cent green, the balance all dead. More scattering infestation was noted in the yellow pine fewer clumps seemed to be infested. The writer is inclined to think, however, that there is an increase in the number of single trees infested and about the same number as formerly, in bunches.

There is not the slightest indication of any decrease in the average number of infested trees per section over the whole area.

Examinations were made in the vicinity of Joseph, Ore., during the latter part of September. It was noticed that the large areas of lodgepole on the steep canyon slopes all along the range had now assumed the old dead appearance; few red-topped trees being observed.

Closer inspection on the high hills surrounding Wallowa Lake showed that there was still about 5 per cent infestation and a very heavy per cent of infestation in the Whitebark pine; very much more than had been observed in 1910 when Mr. Burke and the writer made an examination on the same ground. The writer does not believe there is any decrease; everything pointed to increased infestation on the whitebark pine.

In this Forest everything points to a continuation of the infestation for some years to come; there are still large bodies of lodgepole and whitebark pine that are only partially infested and in these the infestation may continue for many years to come.

Conclusion.

The writer had intended to touch on the subject of the insects but as this report has already covered a sufficiently large field, covering the main points directly relating to that side of the work with which the writer is more thoroughly familiar, he deems it best at this time to confine the report to the data requested in the written instructions.

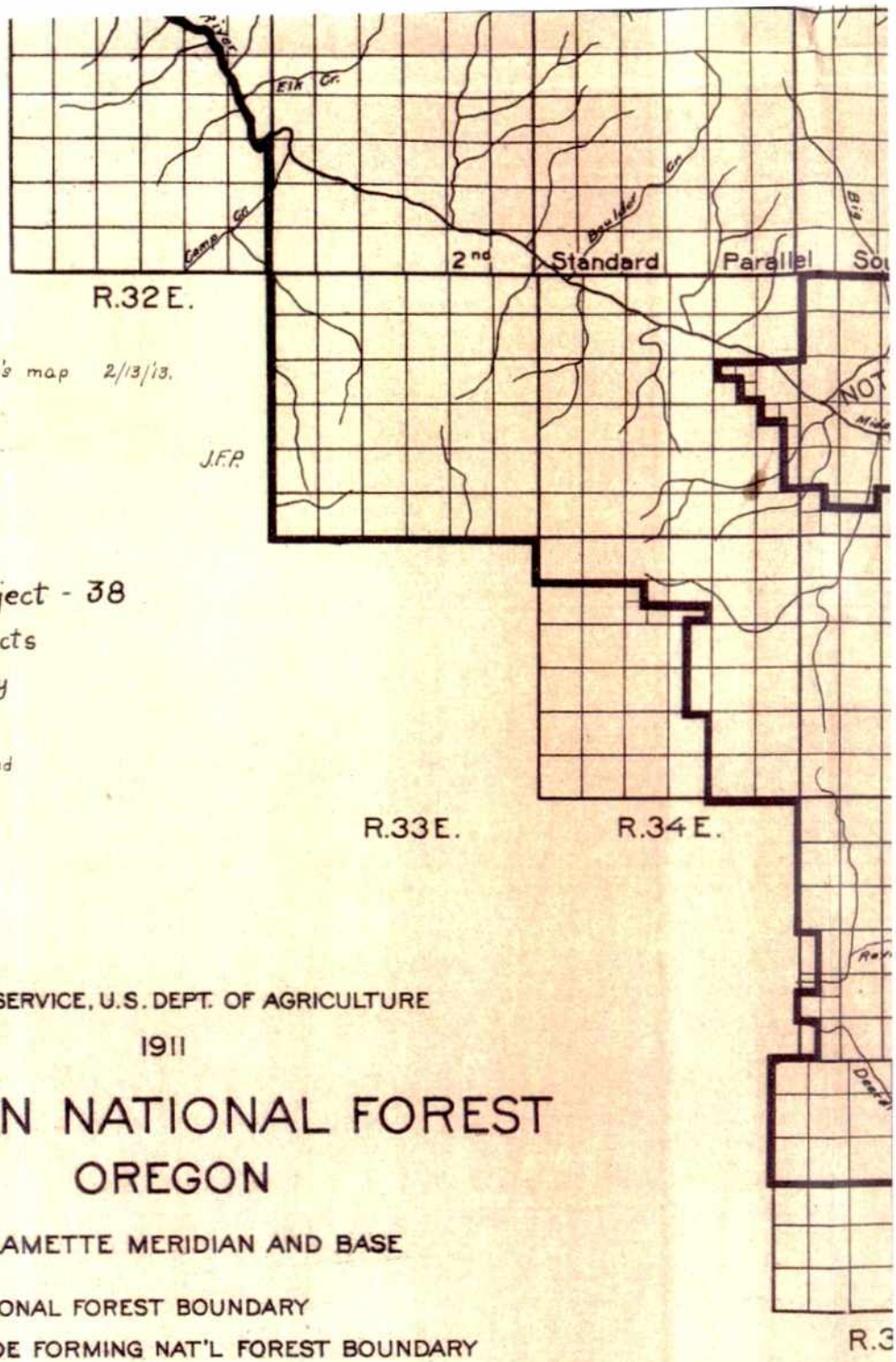
Very respectfully,

W. D. EDMONSTON,

In charge of Station 6.

D-6 Enclosure with letter ss Whitman - Studies
Insect Infestation
3-27-13

Map to accompany "Report on Northeastern Oregon Project for 1912, #38," by F. D. Edmondson



Copy by Elmer B. Mason of W. D. Edmonston's map 2/13/13.

J.F.P.

Sketch Map

Northeastern Oregon Project - 38

Branch of Forest Insects

Bureau of Entomology

1912

Colored portion is area treated and area inspected.

- Unit 1
- " 2
- " 3
- " 4
- " 5
- Area of lodgepole and white-bark pine.

FOREST SERVICE, U.S. DEPT. OF AGRICULTURE

1911

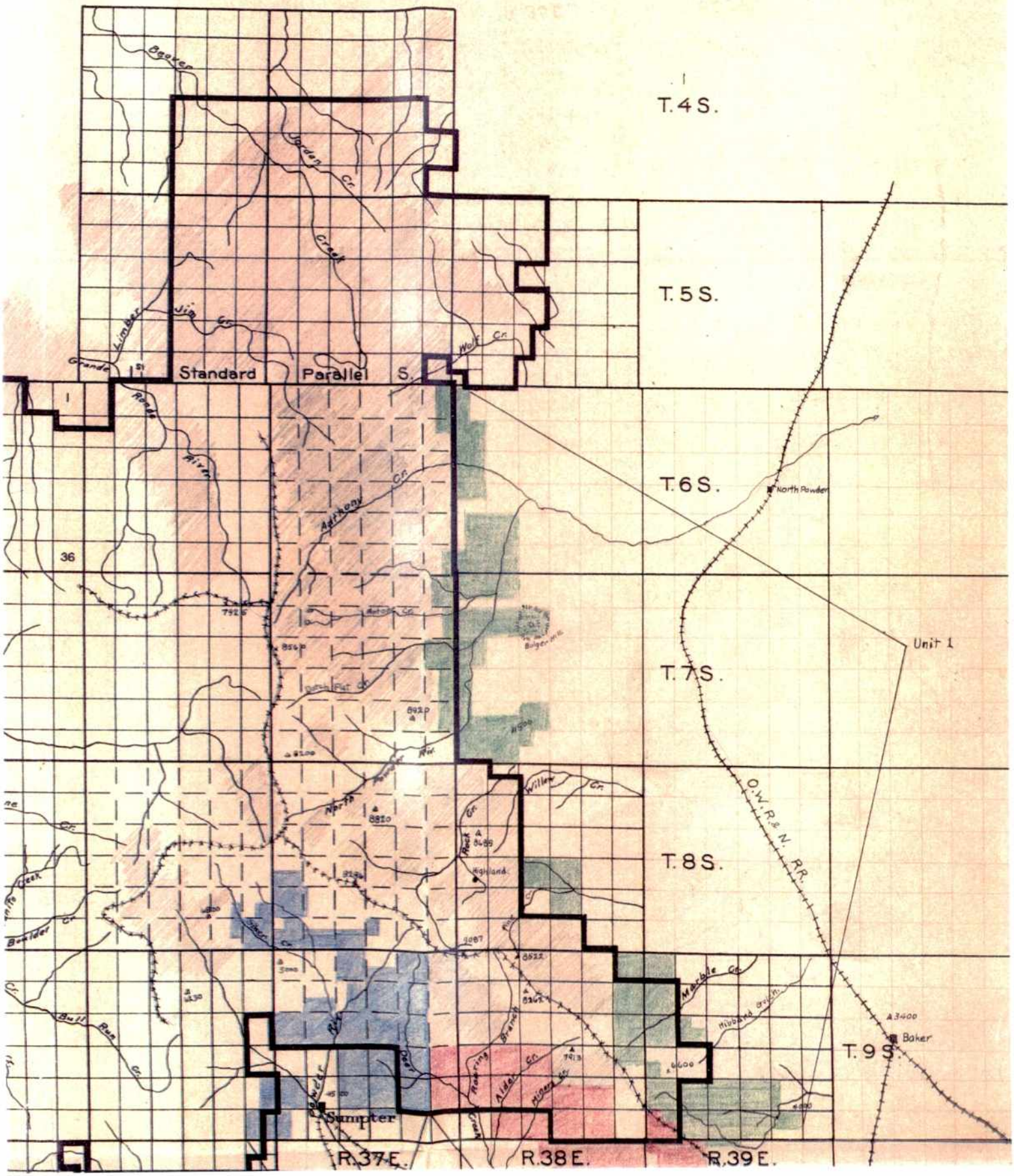
WHITMAN NATIONAL FOREST
OREGON

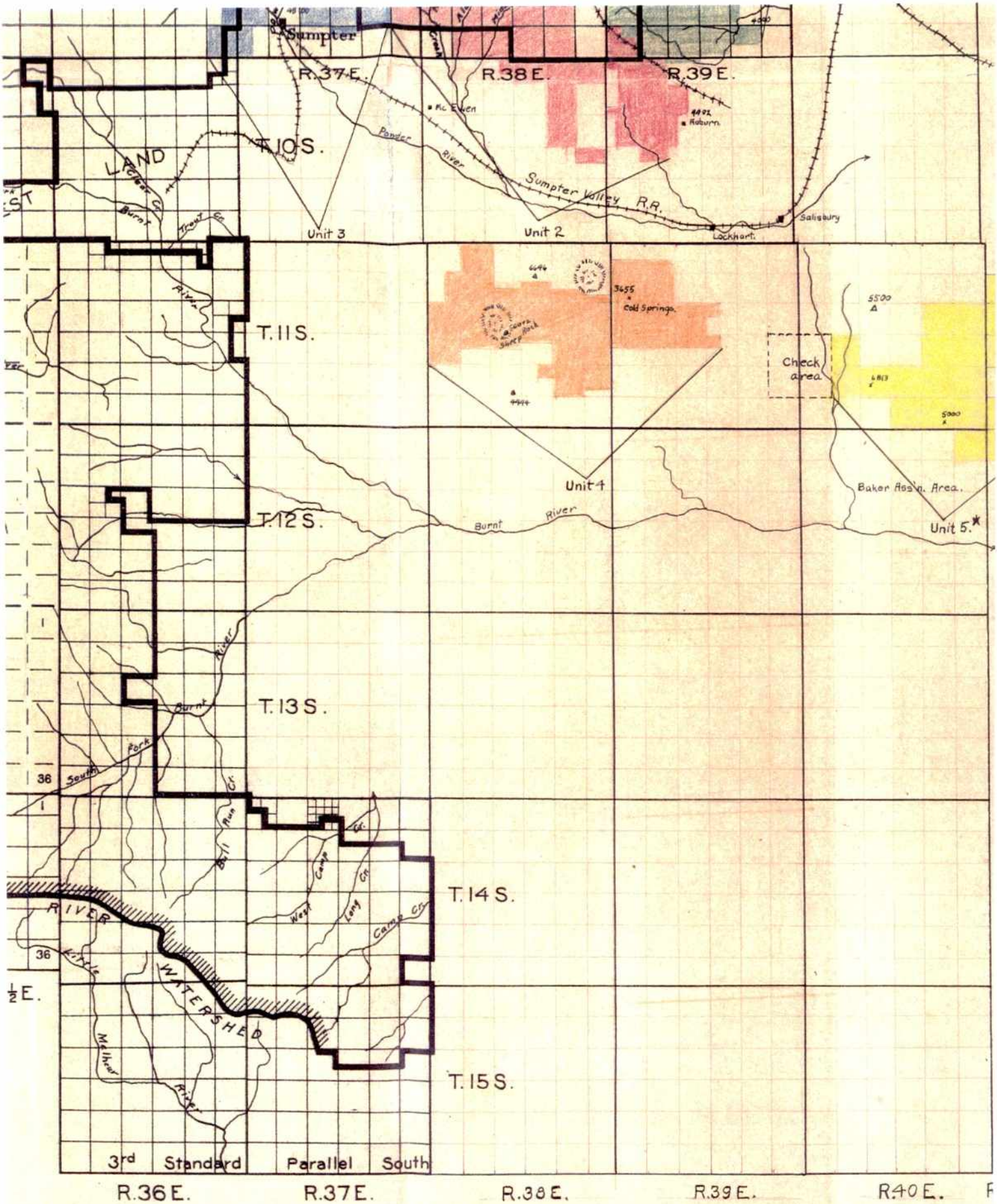
WILLAMETTE MERIDIAN AND BASE

NATIONAL FOREST BOUNDARY

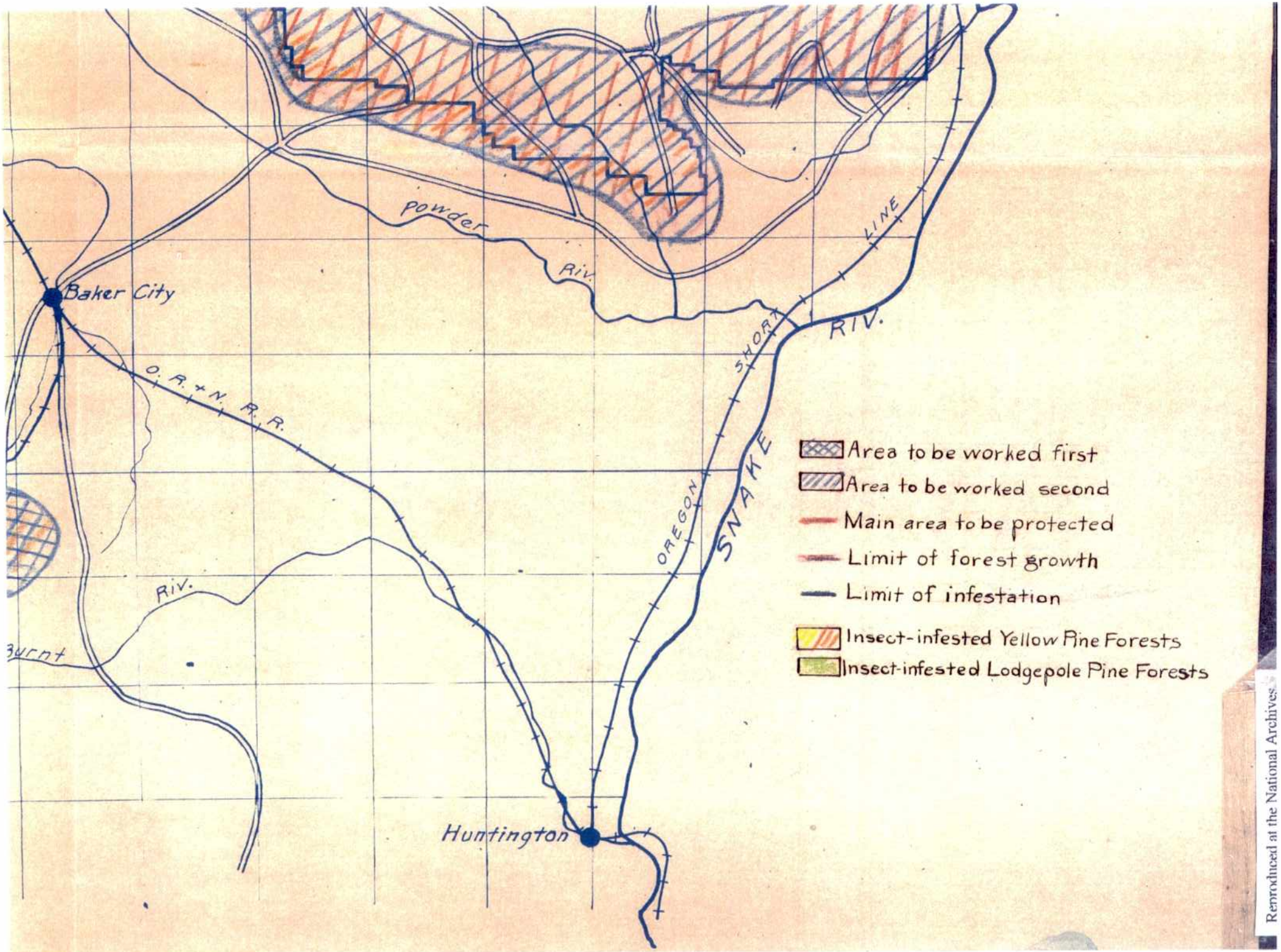
DIVIDE FORMING NAT'L FOREST BOUNDARY

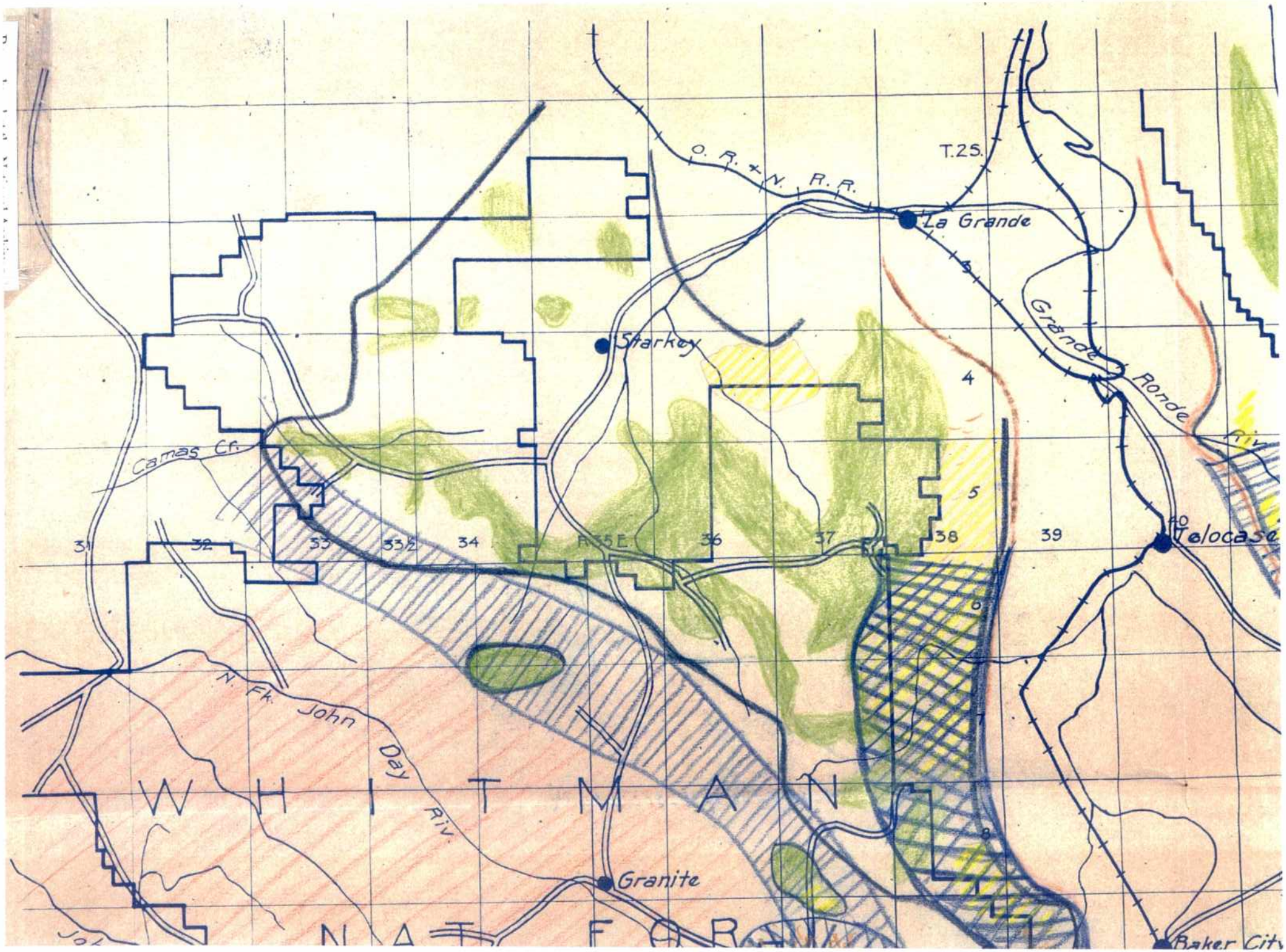
DIAGRAM FORMING PART OF PROCLAMATION DATED JUNE 7, 1911
AND EFFECTIVE JULY 1, 1911





★ Area 5 also includes Sec's. 8-16-17-20, T11S, R41E.




O. R. + N. R. R.
T. 25.
La Grande
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Grande Ronde Riv.
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Elocase
W H I T M A N
N. Fk. John Day Riv.
Granite
Baker City

Grande Ronde R.
Grande Ronde
Elgin
La Grande
T.2S.
O. R. & N. R. R.
Starkey
R.35E.
Granite
N. Fk. John Day Riv.
Camas Cr.
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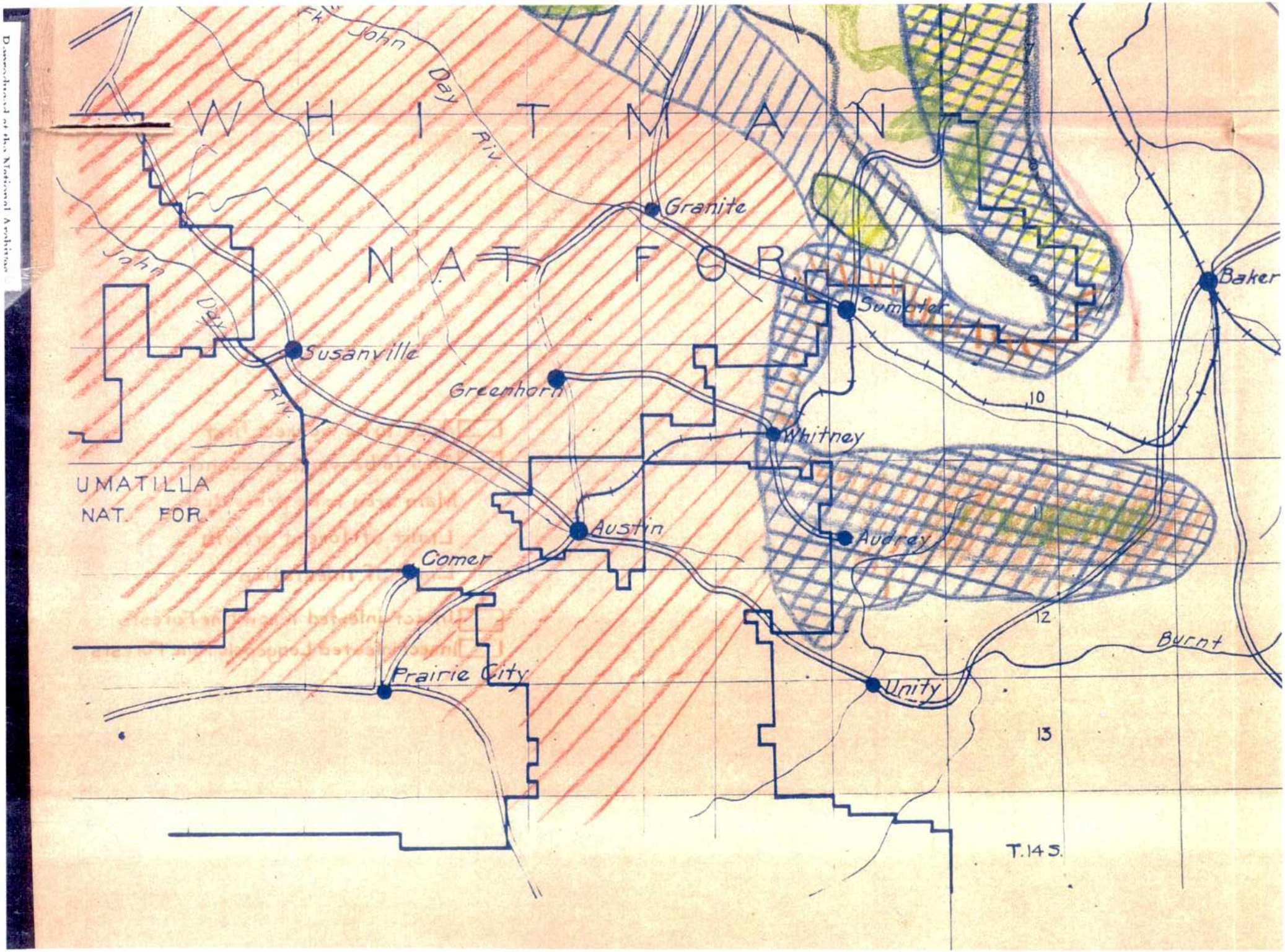
WHITMAN NAT. FOR.
Ft. John Day Riv.
John Day Riv.
Granite
Sumpter
Baker
Susanville
Greenhorn
Whitney
UMATILLA NAT. FOR.
Austin
Audrey
Comer
Prairie City
Unity
Burnt
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