



# Klamath Falls Nonattainment: PM<sub>2.5</sub> Rollback Modeling

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WSU  
Pullman, WA



# Klamath Falls Rollback

- Design Value (DV)
- Concentrations assessment and treatment
- Emissions assessment and adjustment
- Rollback at Peterson School
- Saturation survey and UMAA
- Results



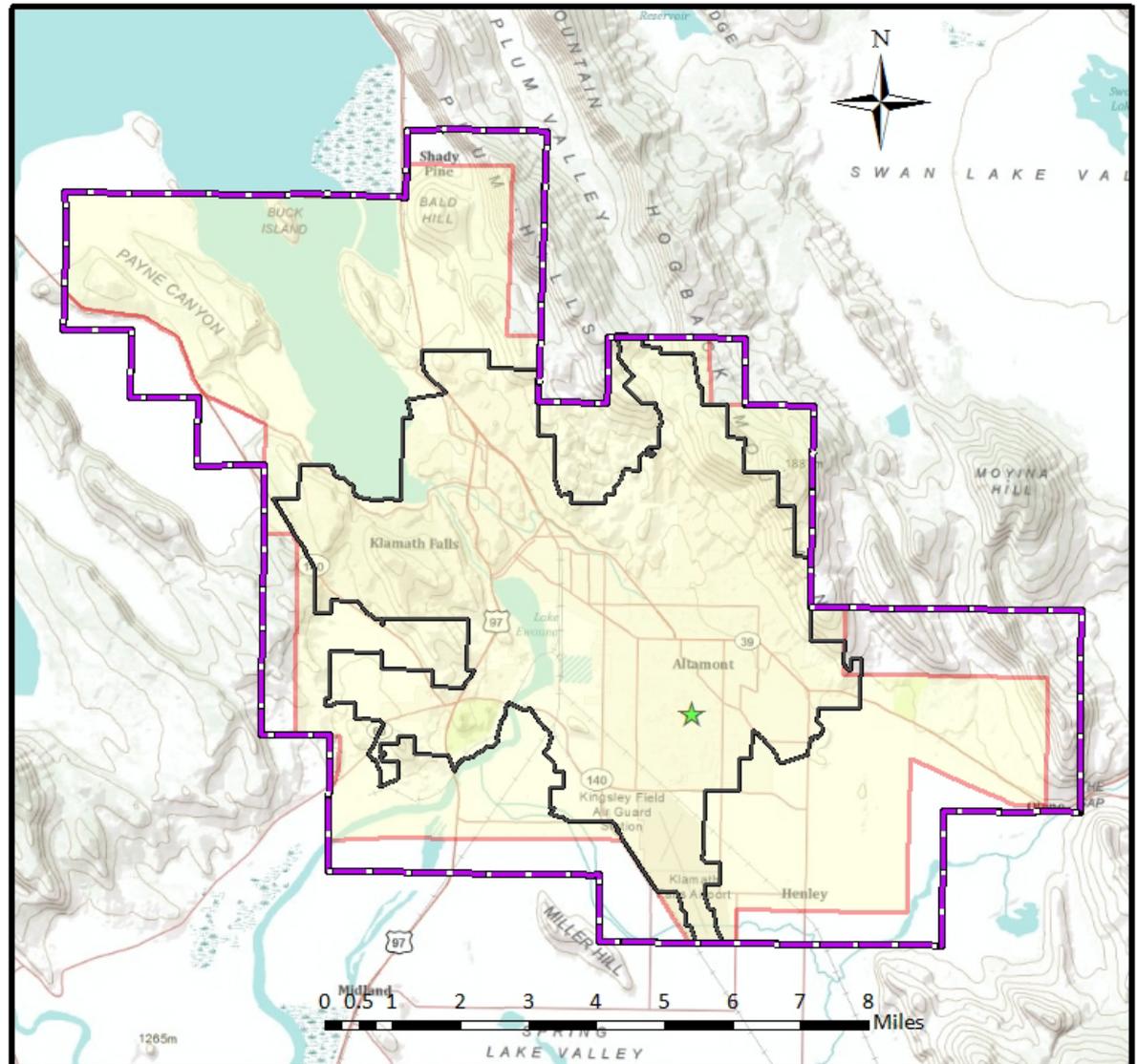
# Klamath Falls NAA and AQZ

## 2008 Klamath Falls PM2.5 SIP

NAA, AQZ, and UGB  
Boundaries

### Legend

-  Nonattainment Area
-  Urban Growth Boundary
-  Air Quality Zone
-  Peterson School Monitor



### Reference:

NAA Shapefile: EPA



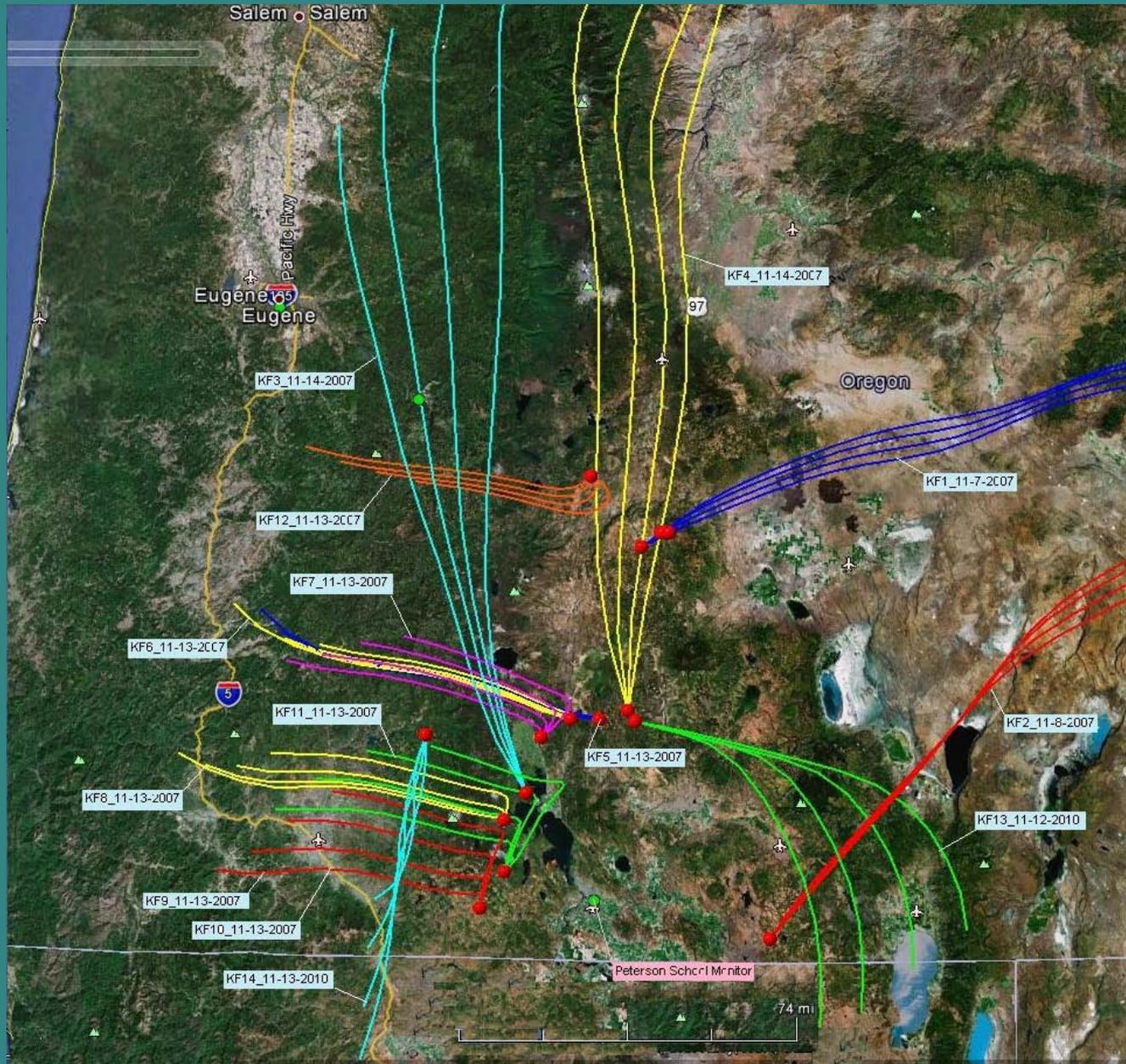


# Klamath Falls: Design Day Concerns

High  $PM_{2.5}$  - High temperature days



# Design Day Fire Trajectories





# Klamath Falls Baseline Design Value

Year	DV ug/m <sup>3</sup>
2006	47.5
2007	39.6
2008	52.2
2009	44.0
2010	34.6
Baseline DV	<b>45.1</b>



# Klamath Falls Rollback

## The rollback model main steps:

1. Calculation of the PM mass available for increases and decreases in the model based on the SANDWICH speciated FRM mass.
2. Calculation of the 2008 Baseline speciated mass for each source category.
3. Calculation of the 2014 Future Year speciated mass for each source category based on emissions changes since the Baseline Year.
4. Calculation of the total RRF for changes between Baseline and Future Year.
5. Calculation of the Future Year DV using the total RRF applied to each 2008 Design Day concentration.

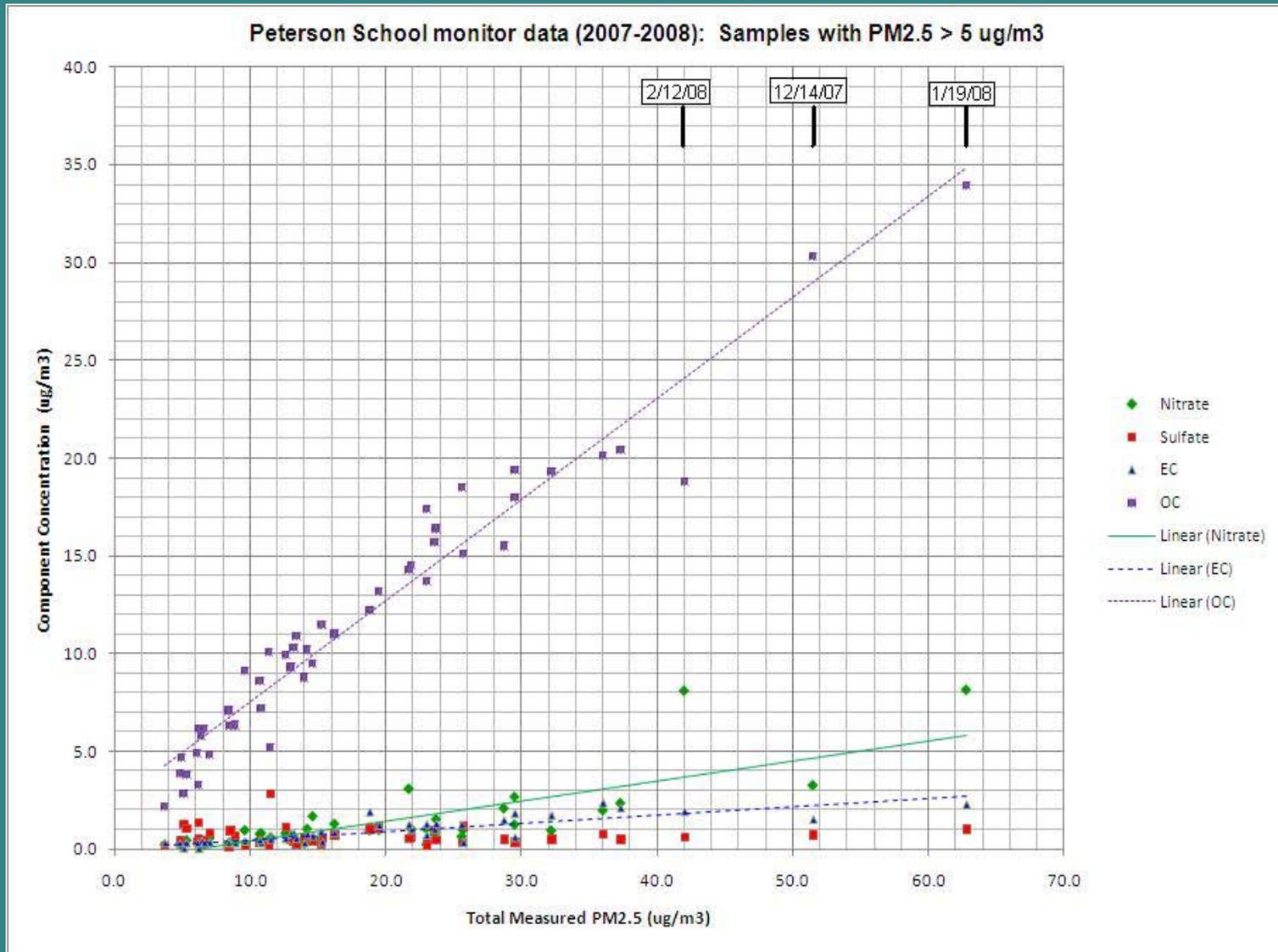


Klamath Falls: Components not modeled

## Concentrations Assessment



# Klamath Falls PM<sub>2.5</sub> – NO<sub>3</sub> – SO<sub>4</sub>

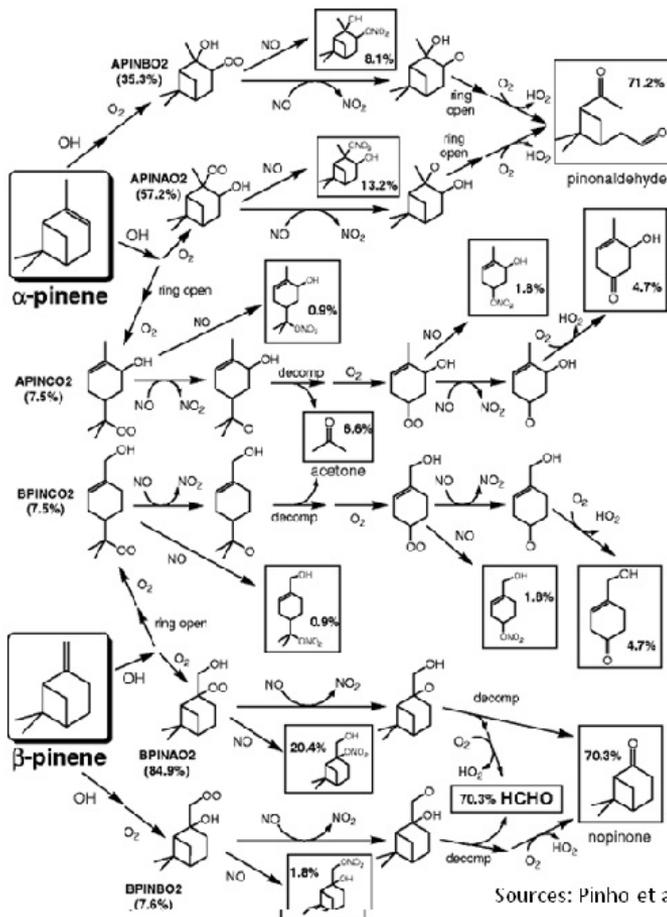




# Klamath Falls SOA analysis

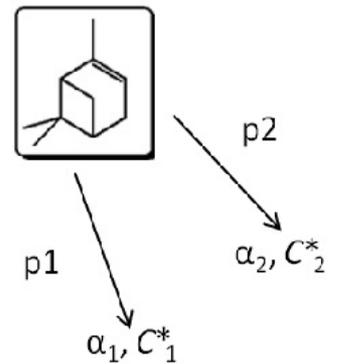
## Overview of SOA Model Approaches: Two-Product (2p) and Volatility Basis Set (VBS)

$\alpha, \beta$ -Pinene + OH (first generation)



$\alpha, \beta$ -Pinene + OH (lumped compounds)

2 products (2p)

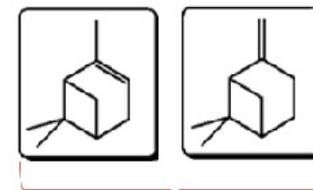


$N$  hydrocarbons (HC)

Products tracked  
=  $2 \times N$

Fit chamber data to obtain  
 $\alpha_{1,2}$  and  $C^*_{1,2}$  values

volatility basis set (VBS)



Products tracked  
=  $j$  or  $j \times N$

bins 1 to  $j$  (usually 4)

$\alpha_1, C^*_1$     $\alpha_2, C^*_2$     $\alpha_3, C^*_3$     $\alpha_4, C^*_4$

Fix  $C^*_i$ , fit chamber data to obtain  $\alpha_i$  values



# Klamath Falls: Components not modeled

- Biogenic SOA = 0.5 ug/m<sup>3</sup>
- Anthropogenic SOA = 1.4 ug/m<sup>3</sup>
- SO<sub>4</sub> = 0.5 ug/m<sup>3</sup>
- NO<sub>3</sub> = 3.0 ug/m<sup>3</sup>
- Background EC = 0.1 ug/m<sup>3</sup>
- Background OC = 0.6 ug/m





# Klamath Falls: Components not modeled

## Emissions Assessment

Prescribed Burning  
Industrial Point Sources  
Road Dust



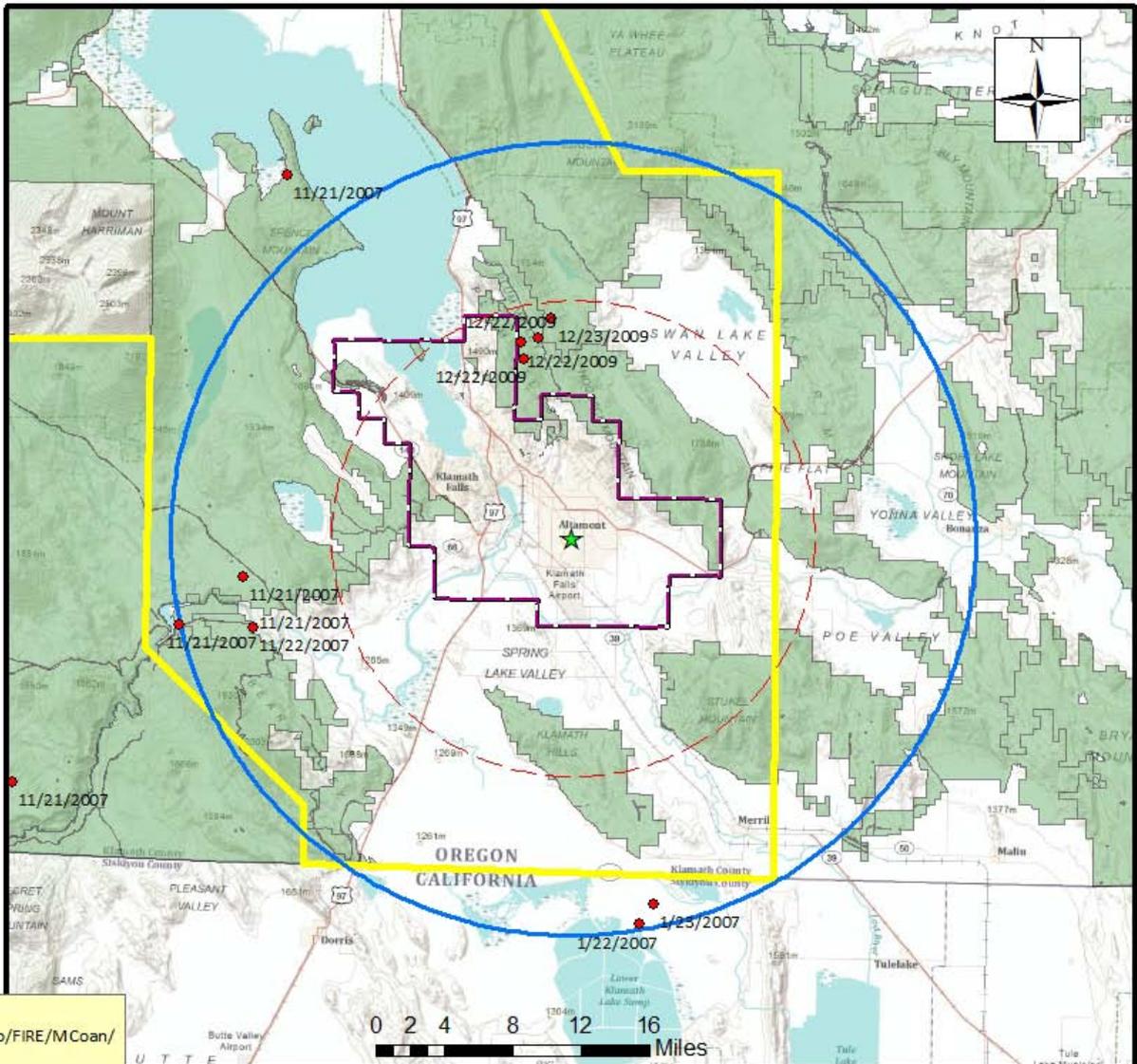
# Klamath Falls: Prescribed Burning

## Klamath Falls PM2.5 SIP

Design Value Day:  
Wildfire/Prescribed Fire  
Locations

**Legend**

- Satellite Detect: DV day
- ★ Peterson School Monitor
- PSM 25 km buffer
- PSM 15 km buffer
- SPZ Boundary
- Non-Attainment Area
- Forested Land



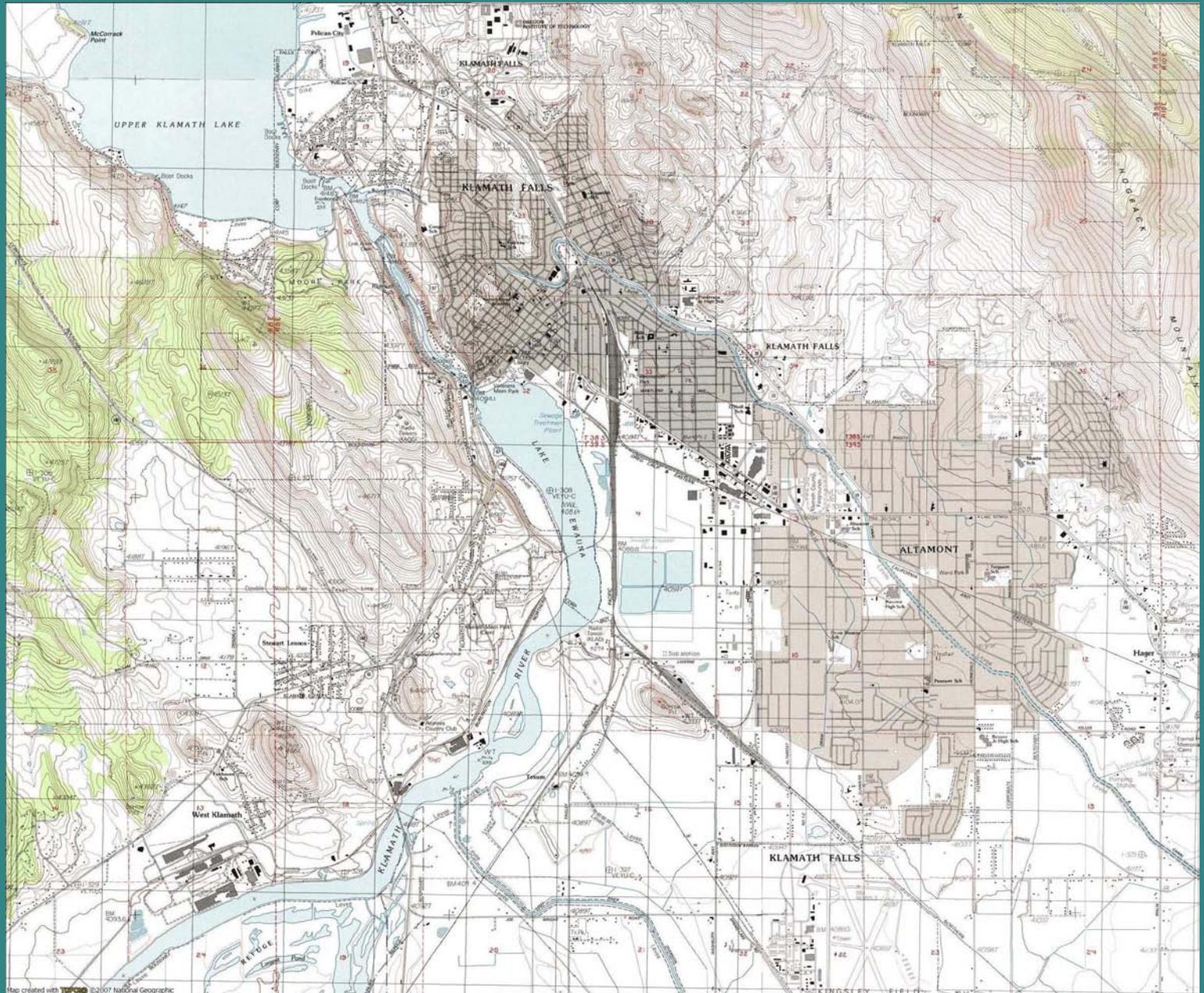
**References:**

- \* Fire data obtained NOAA:  
<ftp://satepsanone.nesdis.noaa.gov/volcano/FIRE/MCoan/>
- \* Forest zoning data from Klamath County

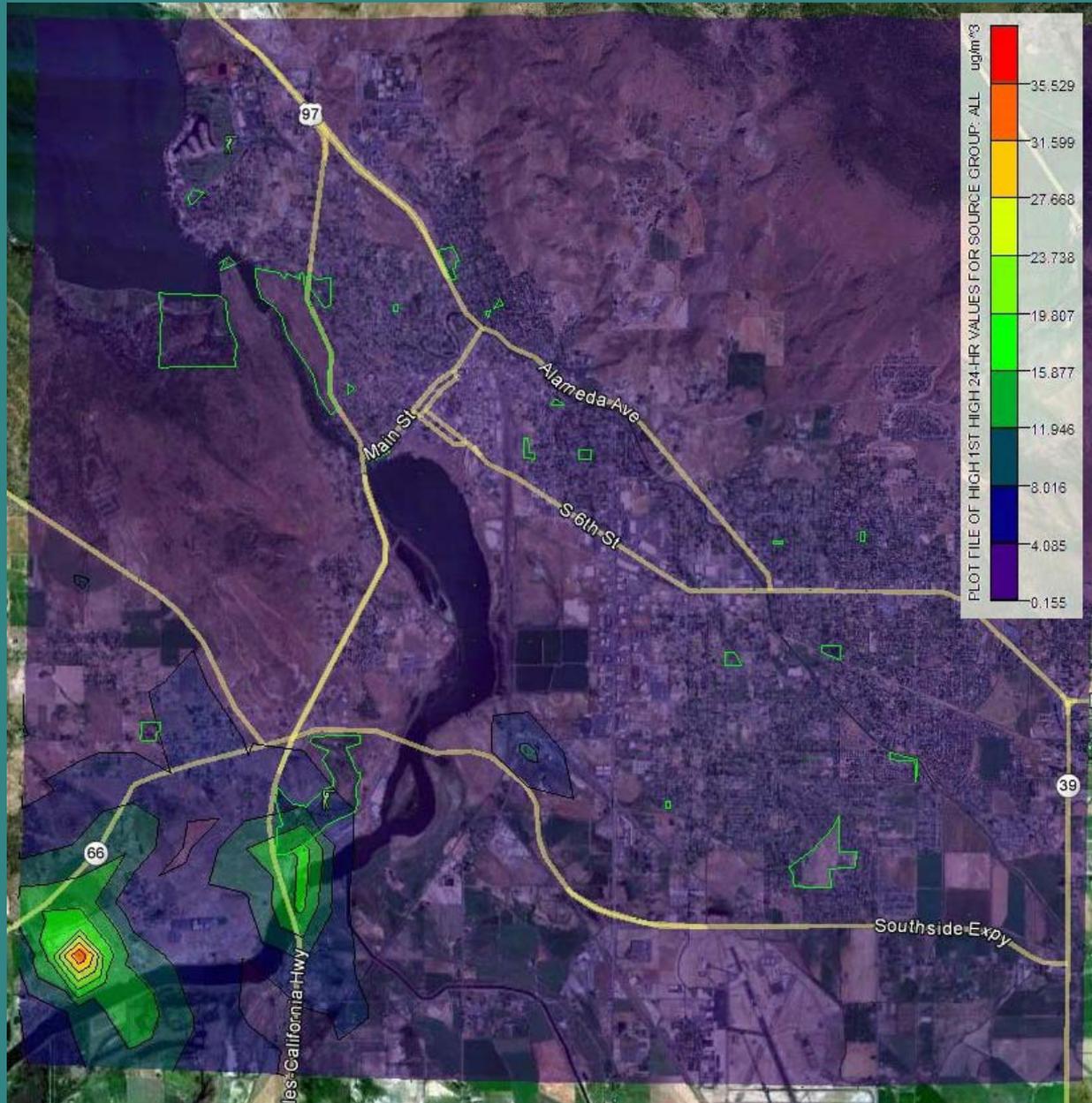




# Klamath Falls: Industrial and central areas



# AERMOD: Industrial Source impacts





# 2008 Effective Emissions

Effective Emissions Calculations				
Baseline Year: 2008				
DEQ		PM2.5	Effective Emissions	Emissions as
ID	Source Category	lbs/day	lbs/day	%
12	<b>Prescribed Burns</b>	458.9	56.5	1.8%
14	<b>Fugitive Dust (road agg piles, sanding, dust)</b>	191.0	113.0	3.5%
22	<b>Points-Actual TSD</b>	754.4	32.3	1.0%



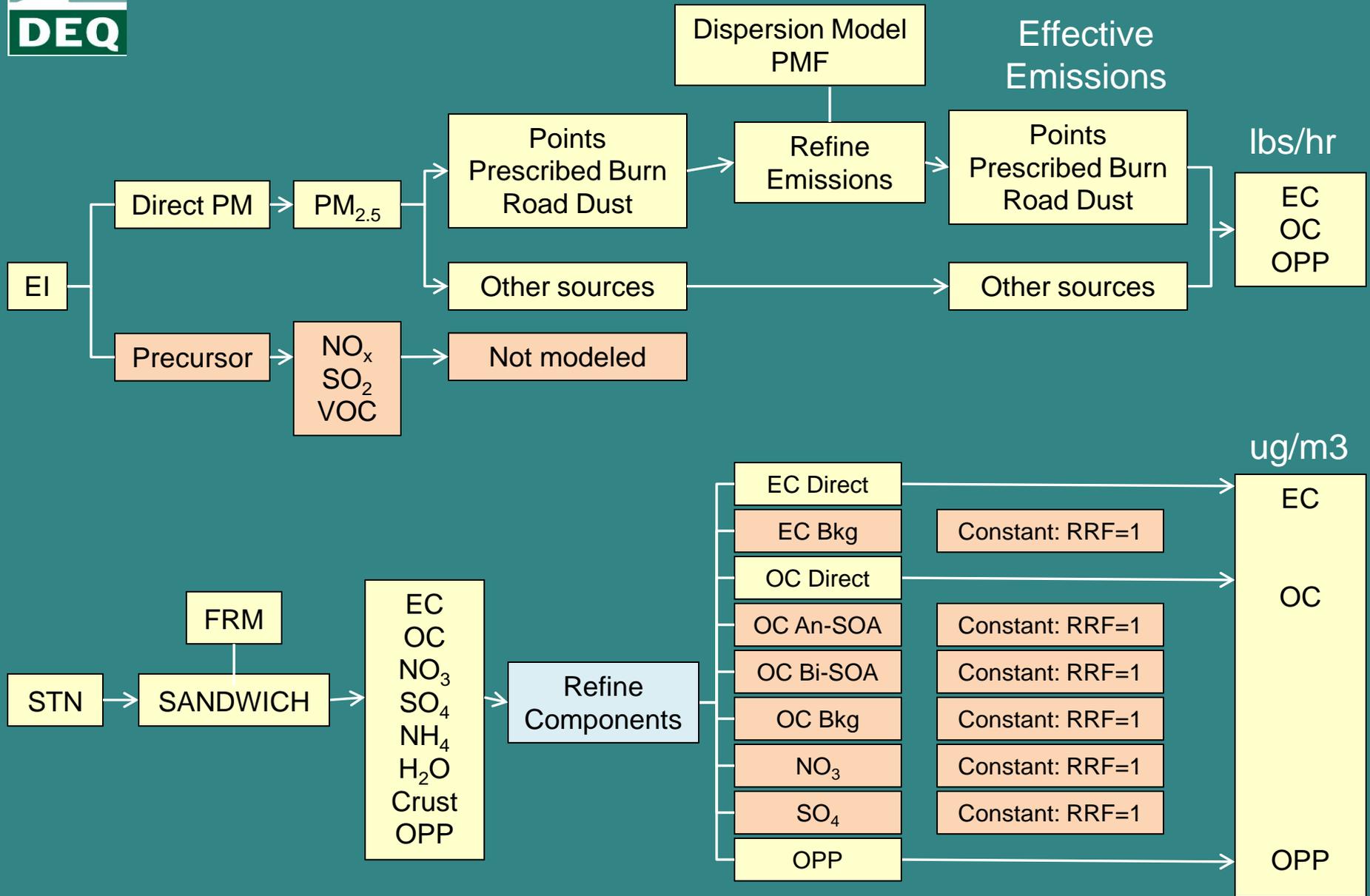
# All Source Categories: Effective Emissions

Effective Emissions Calculations					
Baseline Year: 2008					
			<i>Reconstructed Total<sup>(1)</sup> = 3228</i>		
DEQ ID	Source Category (3)	PM2.5 lbs/day	PM2.5 lbs/day	Effective Emissions lbs/day	Emissions as %
1	Waste Disposal	50.4	50.4	50.4	1.6%
2	Small Non-Permitted Fossil Fuel Combustion	36.3	36.3	36.3	1.1%
3	Fireplace	1093.0	1093.0	1093.0	33.9%
4	Insert Non-Cert	435.9	435.9	435.9	13.5%
5	Insert Cert (Non-Cat)	18.8	18.8	18.8	0.6%
6	Insert Cert (Cat)	105.1	105.1	105.1	3.3%
7	Stove Non-Cert	525.5	525.5	525.5	16.3%
8	Stove Cert (Non-Cat)	117.3	117.3	117.3	3.6%
9	Stove Cert (Cat)	56.4	56.4	56.4	1.7%
10	Pellet /Stove Cert	33.2	33.2	33.2	1.0%
11	Central Furnace	18.8	18.8	18.8	0.6%
12	Prescribed Burns	458.9		<b>56</b>	<b>1.75%</b>
13	Other Burning/Cooking	59.0	59.0	59.0	1.8%
14	Fugitive Dust (road agg piles, sanding, dust)	191.0		<b>113</b>	<b>3.5%</b>
15	Non-Road + Marine	20.6	20.6	20.6	0.6%
16	Aircraft	18.7	18.7	18.7	0.6%
17	Rail (6)	39.9	39.9	39.9	1.2%
18	Passenger Vehicles (5)	134.8	134.8	134.8	4.2%
19	Trucks (4)	219.2	219.2	219.2	6.8%
20	Other On-road (7)	10.0	10.0	10.0	0.3%
21	Misc small point sources	33.1	33.1	33.1	1.0%
22	Points-Actual TSD	754.4		<b>32</b>	<b>1.0%</b>
	Total	4430	3026	<b>3228</b>	100.0%

(1) formula = D\$30/(1-(F\$29+F\$21+F\$19))



# Rollback: "preprocessing"





# Rollback: Baseline Year (2008)

Rollback Baseline Year: 2008

	Sandwich %	7.0%	74.4%	2.6%	1.6%	9.6%	4.2%	0.7%	
	EC	OC	Crust	SO4	NO3	H2O	NH3	Total	
Emission Category	ug/m3								
Total Bkg+SA+Other	<b>0.10</b>	<b>2.38</b>	<b>0.00</b>	<b>0.71</b>	<b>4.28</b>	<b>1.87</b>	<b>0.31</b>	<b>9.66</b>	
Calculated DV Mass	3.13	33.18	1.16						
Net Mass for Rolling	3.03	30.80	1.16						35.00
Total Roll + Non-roll									44.66

DEQ ID	Source Category	PM2.5 Effective Emissions		Speciation Profile			Effective Emissions						Effective Source Concentrations								
		Emissions lbs/day	as %	EC fraction	OCM fraction	PMOther fraction	EC lbs/day	OCM lbs/day	PMOther lbs/day	EC %	OCM %	PMOther %	EC ug/m3	OCM ug/m3	PMOther ug/m3	SO4 ug/m3	NO3 ug/m3	H2O ug/m3	NH3 ug/m3	Total ug/m3	
1	Waste Disposal	50.4	1.6%	0.384	0.346	0.163	19.3	25.6	0.0	4.3%	1.0%	0.0%	0.13	0.31	0.00						
2	Small Non-Permitted Fossil Fuel Combustion	36.3	1.1%	0.384	0.346	0.163	13.9	18.5	0.0	3.1%	0.7%	0.0%	0.09	0.22	0.00						
3	Fireplace	1093.0	33.9%	<b>0.056</b>	<b>0.528</b>	<b>0.409</b>	61.0	1022.0	1.8	13.5%	40.0%	1.0%	0.41	12.32	0.01						
4	Insert Non-Cert	435.9	13.5%	<b>0.056</b>	<b>0.528</b>	<b>0.409</b>	24.3	407.5	0.7	5.4%	15.9%	0.4%	0.16	4.91	0.00						
5	Insert Cert (Non-Cat)	18.8	0.6%	<b>0.056</b>	<b>0.528</b>	<b>0.409</b>	1.0	17.6	0.0	0.2%	0.7%	0.0%	0.01	0.21	0.00						
6	Insert Cert (Cat)	105.1	3.3%	<b>0.056</b>	<b>0.528</b>	<b>0.409</b>	5.9	98.3	0.2	1.3%	3.8%	0.1%	0.04	1.18	0.00						
7	Stove Non-Cert	525.5	16.3%	<b>0.056</b>	<b>0.528</b>	<b>0.409</b>	29.3	491.3	0.9	6.5%	19.2%	0.5%	0.20	5.92	0.01						
8	Stove Cert (Non-Cat)	117.3	3.6%	<b>0.056</b>	<b>0.528</b>	<b>0.409</b>	6.5	109.6	0.2	1.4%	4.3%	0.1%	0.04	1.32	0.00						
9	Stove Cert (Cat)	56.4	1.7%	<b>0.056</b>	<b>0.528</b>	<b>0.409</b>	3.1	29.8	23.0	0.7%	1.2%	12.9%	0.02	0.36	0.15						
10	Pellet /Stove Cert	33.2	1.0%	<b>0.056</b>	<b>0.528</b>	<b>0.409</b>	1.9	17.5	13.6	0.4%	0.7%	7.6%	0.01	0.21	0.09						
11	Central Furnace	18.8	0.6%	<b>0.056</b>	<b>0.528</b>	<b>0.409</b>	1.0	9.9	7.7	0.2%	0.4%	4.3%	0.01	0.12	0.05						
12	Prescribed Burns	56	1.75%	0.109	0.853	0.020	6.2	48.2	1.1	1.4%	1.9%	0.6%	0.04	0.58	0.01						
13	Other Burning/Cooking	59.0	1.8%	0.027	0.893	0.068	1.6	52.7	4.0	0.4%	2.1%	2.2%	0.01	0.64	0.03						
14	Fugitive Dust (road agg piles, sanding, dust)	113	3.5%	0.010	0.136	0.844	1.2	15.4	95.3	0.3%	0.6%	53.4%	0.01	0.19	0.62						
15	Non-Road + Marine	20.6	0.6%	0.609	0.313	0.075	12.5	6.5	1.5	2.8%	0.3%	0.9%	0.08	0.08	0.01						
16	Aircraft	18.7	0.6%	0.631	0.318	0.011	11.8	6.0	0.2	2.6%	0.2%	0.1%	0.08	0.07	0.00						
17	Rail (6)	39.9	1.2%	0.771	0.219	0.005	30.8	8.8	0.2	6.8%	0.3%	0.1%	0.21	0.11	0.00						
18	Passenger Vehicles (5)	134.8	4.2%	0.176	0.687	0.112	23.7	92.5	15.2	5.3%	3.6%	8.5%	0.16	1.12	0.10						
19	Trucks (4)	219.2	6.8%	0.771	0.219	0.005	169.1	48.1	1.1	37.5%	1.9%	0.6%	1.14	0.58	0.01						
20	Other On-road (7)	10.0	0.3%	0.190	0.687	0.097	1.9	6.9	1.0	0.4%	0.3%	0.5%	0.01	0.08	0.01						
21	Misc small point sources	33.1	1.0%	0.384	0.346	0.163	12.7	11.5	5.4	2.8%	0.4%	3.0%	0.09	0.14	0.04						
22	Points-Actual TSD	32	1.0%	0.384	0.346	0.163	12.4	11.2	5.3	2.7%	0.4%	3.0%	0.08	0.13	0.03						
Total		3228	100.0%				451.3	2555.4	178.4	100.0%	100.0%	100.0%	3.03	30.80	1.16						35.00
Total Bkg+SA+Other													0.10	2.38	0.00	0.71	4.28	1.87	0.31	9.66	
Total with Bkg+SA+Other													3.13	33.18	1.16	0.71	4.28	1.87	0.31	44.66	



# Rollback: Future Year (2014)

Rollback Future Year: 2014 with concentrations and total RRF																
					Sandwich %	7.0%	74.4%	2.6%	1.6%	9.6%	4.2%	0.7%				
					EC	OC	Crust	SO4	NO3	H2O	NH3	Total				
Emission Category					ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3			
Total Bkg+SA+Other					0.10	2.38	0.00	0.71	4.28	1.87	0.31	9.66				
Calculated DV Mass					3.13	33.18	1.16									
Net Mass for Rolling					3.03	30.80	1.16									
Total Roll + Non-roll										44.66						
Baseline Year:2008					Future Year: 2014											
					2014	2008/14	Concentrations After Reductions/Increases								Total	
DEQ			2008	Effective Source Concentrations			2014	2008/14	EC	OCM	PMOther	SO4	NO3	H2O	NH3	Total
ID	Source Category	Emissions	lbs/day	EC	OCM	PMOther	lbs/day	ratio	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
1	Waste Disposal	50.4		0.13	0.31	0.00	43.3	0.86	0.11	0.27	0.00					
2	Small Non-Permitted Fossil Fuel Combustion	36.3		0.09	0.22	0.00	38.1	1.05	0.10	0.23	0.00					
3	Fireplace	1093.0		0.41	12.32	0.01	726.5	0.66	0.27	8.19	0.01					
4	Insert Non-Cert	435.9		0.16	4.91	0.00	198.7	0.46	0.07	2.24	0.00					
5	Insert Cert (Non-Cat)	18.8		0.01	0.21	0.00	12.6	0.67	0.00	0.14	0.00					
6	Insert Cert (Cat)	105.1		0.04	1.18	0.00	69.5	0.66	0.03	0.78	0.00					
7	Stove Non-Cert	525.5		0.20	5.92	0.01	197.2	0.38	0.07	2.22	0.00					
8	Stove Cert (Non-Cat)	117.3		0.04	1.32	0.00	74.1	0.63	0.03	0.84	0.00					
9	Stove Cert (Cat)	56.4		0.02	0.36	0.15	35.6	0.63	0.01	0.23	0.09					
10	Pellet /Stove Cert	33.2		0.01	0.21	0.09	21.2	0.64	0.01	0.13	0.06					
11	Central Furnace	18.8		0.01	0.12	0.05	10.6	0.56	0.00	0.07	0.03					
12	Prescribed Burns	56		0.04	0.58	0.01	458.9	1.00	0.04	0.58	0.01					
13	Other Burning/Cooking	59.0		0.01	0.64	0.03	59.0	1.00	0.01	0.64	0.03					
14	Fugitive Dust (road agg piles, sanding, dust)	113		0.01	0.19	0.62	183.2	0.96	0.01	0.18	0.60					
15	Non-Road + Marine	20.6		0.08	0.08	0.01	15.4	0.75	0.06	0.06	0.01					
16	Aircraft	18.7		0.08	0.07	0.00	19.3	1.03	0.08	0.07	0.00					
17	Rail (6)	39.9		0.21	0.11	0.00	30.5	0.77	0.16	0.08	0.00					
18	Passengr Vehicles (5)	134.8		0.16	1.12	0.10	85.5	0.63	0.10	0.71	0.06					
19	Trucks (4)	219.2		1.14	0.58	0.01	105.6	0.48	0.55	0.28	0.00					
20	Other On-road (7)	10.0		0.01	0.08	0.01	7.9	0.79	0.01	0.06	0.00					
21	Misc small point sources	33.1		0.09	0.14	0.04	41.1	1.24	0.11	0.17	0.04					
22	Points-Actual TSD	32		0.08	0.13	0.03	717.7									
	Points-PSEL						1732.1									
	Points-100% capacity						1675.7									
	<b>Point Sources Chosen from Inputs on DV</b>	<b>32</b>		<b>0.08</b>	<b>0.13</b>	<b>0.03</b>	<b>1732.1</b>	<b>2.30</b>	<b>0.19</b>	<b>0.3</b>	<b>0.1</b>					
	Total			3.03	30.80	1.16			2.03	18.48	1.03					
	Total Bkg+SA+Other			0.10	2.38	0.00			0.10	2.38	0.00	0.71	4.28	1.87	0.31	9.66
	Total with Bkg+SA+Other			3.13	33.18	1.16			2.13	20.86	1.03	0.71	4.28	1.87	0.31	31.20
	Species-specific RRF								0.681	0.629	0.882	1	1	1	1	
	RRF multiplied by Sandwich %								0.048	0.468	0.023	0.016	0.096	0.042	0.007	0.698



# Peterson School: 2006-2010 Design Days

Future Year = (Base Year (2008) x Sum of RRF for each modeled species) + 0.5 ug/m3 (blank)

2006 find 98th%tile = 3rd HH						2007						2008						2009						2010					
MM	DD	Base	Future	No Pts	No Pts	MM	DD	Base	Future	No Pts	No Pts	MM	DD	Base	Future	No Pts	No Pts	MM	DD	Base	Future	No Pts	No Pts	MM	DD	Base	Future	No Pts	No Pts
12	31	52.6	37.23	52.35	36.56	1	18	55.6	39.33	55.35	38.62	12	17	74.1	52.24	73.85	51.30	9	25	62.5	62.50	62.50	11	25	52.7	37.30	52.45	36.63	
12	4	51.2	36.25	50.95	35.60	1	15	39.7	28.22	39.45	27.72	1	19	57.3	40.51	57.05	39.78	12	9	53.9	38.14	53.65	37.45	1	2	37.6	26.76	37.35	26.28
1	23	47.5	33.67	47.25	33.23	11	23	39.6	28.15	39.35	27.79	12	23	52.2	36.95	51.95	36.47	11	15	48.3	34.23	48.05	33.61	1	5	34.6	24.66	34.35	24.34
7	4	34	34.00	33.75	23.81	1	24	35.3	25.15	35.05	24.70	2	9	39.4	28.01	39.15	27.51	1	10	44	31.22	43.75	30.82	11	28	33.2	23.68	32.95	23.26
12	19	34	24.24		23.81	11	14	34.2	24.38		23.95	2	12	37	26.34	36.75	25.87	12	24	40.6		40.35	2	1	32.7	23.33		22.92	
12	1	33.9	24.17		23.74	11	8	33.0	23.54		23.12	11	29	36.9	26.27		25.80	1	16	36.3			11	13	30.5	21.80		21.41	
10	29	32.1				11	5	30.0	21.45		21.07	12	5	34	24.24		23.81	11	30	34.6			12	16	28.3				
12	7	30.8				1	21	29.9				12	11	32.6	23.26		22.85	11	9	30			12	22	26.6				
10	26	30				1	30	29.2				7	2	32.5	32.50		32.50	12	3	29.7			11	4	24.2				
1	2	29.2				10	21	28.6				11	23	31				12	30	28.5			12	31	23.8				
12	28	27.8				12	23	25.9				11	14	30.8				1	31	27.2			1	14	23.7				
11	10	26.3				11	26	25.6				2	27	29.1				11	12	26.1			2	28	22.2				
1	5	25.1				10	24	24.3				2	18	28.4				12	12	25.7			11	16	21.5				
11	1	24.5				2	2	24.0				8	7	26.3				10	31	25.2			1	8	20.1				
12	16	23.9				3	10	22.9				12	26	25.9				2	3	24.2			2	22	19.4				
2	25	22.9				11	11	22.9				11	17	25.8				11	18	23.7			1	23	19.1				
2	7	21.3				2	17	22.6				12	8	25.5				12	6	20.5			4	17	18.6				
10	23	20.4				10	27	22.3				6	29	23.1				10	25	20			1	26	18.2				
10	17	18.4				2	5	19.3				10	27	23.1				2	18	19.9			11	10	17.2				
1	26	15.9				11	2	18.8				12	2	22.5				1	13	18.6			12	1	17.2				
12	22	15.5				3	4	18.3				11	20	21.2				11	3	18.5			11	19	17				
3	12	15.4				1	3	17.2				3	10	20.6				1	28	18.1			2	13	16.1				
9	29	14.7				12	26	16.5				10	30	20.4				12	27	18.1			2	10	15.3				
9	11	14.1				3	13	15.6				11	5	20.4				1	4	17.4			10	26	15.2				
11	16	14.1				10	30	15.4				1	25	20.3				10	16	16.2			10	20	15				
1	20	14				10	15	15.1				10	24	20				11	24	15.7			3	24	14.9				
6	28	14				4	3	14.8				1	22	19.6				3	20	15.5			3	27	14.9				
9	8	12.5				7	17	13.9				10	15	19.3				12	18	15.5			11	1	14.8				
11	19	12.4				12	8	13.1				9	12	18.3				8	8	15.3			4	26	13.8				
10	14	12				2	20	12.4				3	31	16.8				10	28	15.3			2	19	13.5				
5	11	11.1				12	20	12.2				7	29	16.5				4	4	14.5			12	10	12.9				
10	2	11				2	23	11.7				9	9	16.3				3	14	14.3			9	17	12.7				



# Peterson School: 2008 & 2014 DVs

Year	Only cut 9/25/2009	Only cut 9/25/2009; leave points out of model
2006	47.5	47.2
2007	39.6	39.3
2008	52.2	51.9
2009	44.0	43.7
2010	34.6	34.3
Baseline DV	<b>45.1</b>	<b>44.8</b>
Year	Only cut 9/25/2009	Only cut 9/25/2009; leave point sources out of model
2006	34.1	33.5
2007	28.5	28.0
2008	37.4	36.8
2009	31.6	31.1
2010	24.9	24.6
Future DV	<b>32.4</b>	<b>31.9</b>

Year	2008 DV ug/m3	2014 DV ug/m3
2006	47.5	34.1
2007	39.6	28.5
2008	52.2	37.4
2009	44.0	31.6
2010	34.6	24.9
DV	<b>45.1</b>	<b>32.4</b>

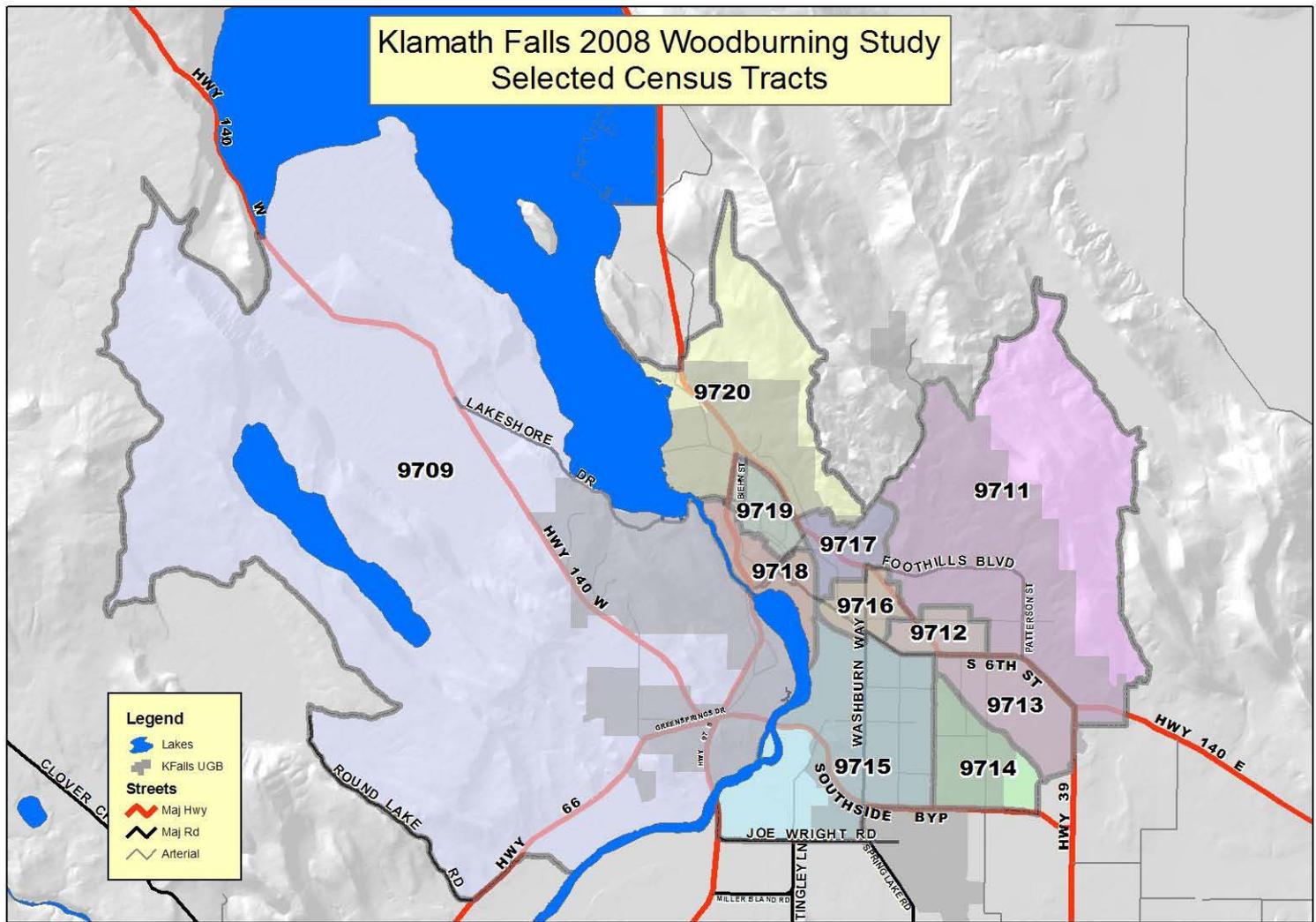


# Klamath Falls PM<sub>2.5</sub> Roll back

## Unmonitored Area Analysis



# Klamath Falls Census Tracts



Klamath Falls 2008 Woodburning Study  
Selected Census Tracts

- Legend**
- Lakes
  - K Falls UGB
  - Streets**
  - Maj Hwy
  - Maj Rd
  - Arterial

Created by:  
Oregon Institute of Technology  
GIS Service Center  
Dec. 30, 2008

0 1 2 4 6 8 Miles

Spatial Reference:  
Lambert Conformal Conic  
NAD 1983 StatePlane, Oregon South, 3602 Ft





# Saturation Survey: Jan 9, 2011

## 2008 Klamath Falls PM2.5 SIP

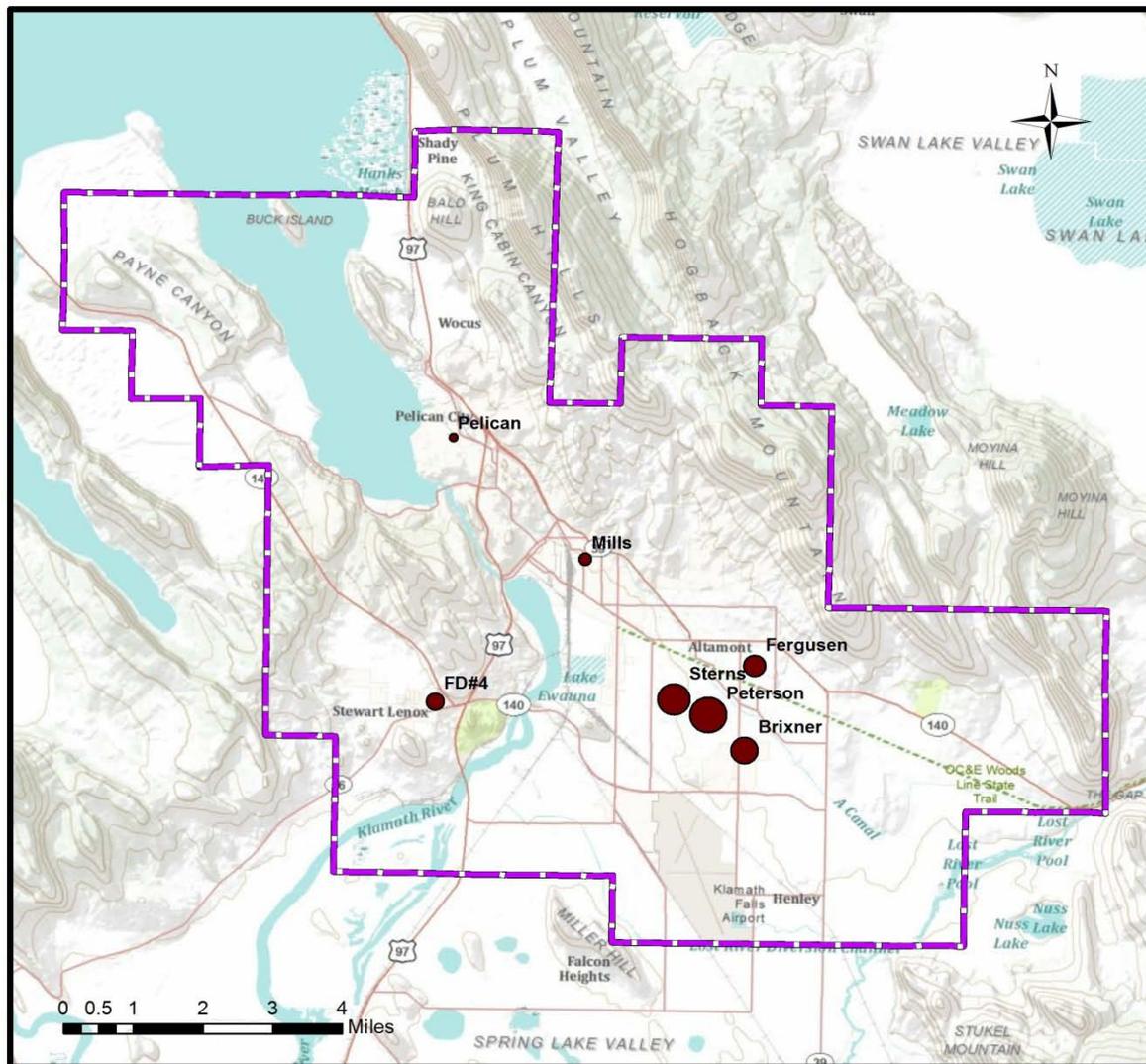


### Klamath Falls Survey Data 24-hour average ug/m3

January 9, 2011

- 1.5
- 7.5
- 10.1
- 17.1
- 19.9
- 26.0
- 29.6

 Non-Attainment Area



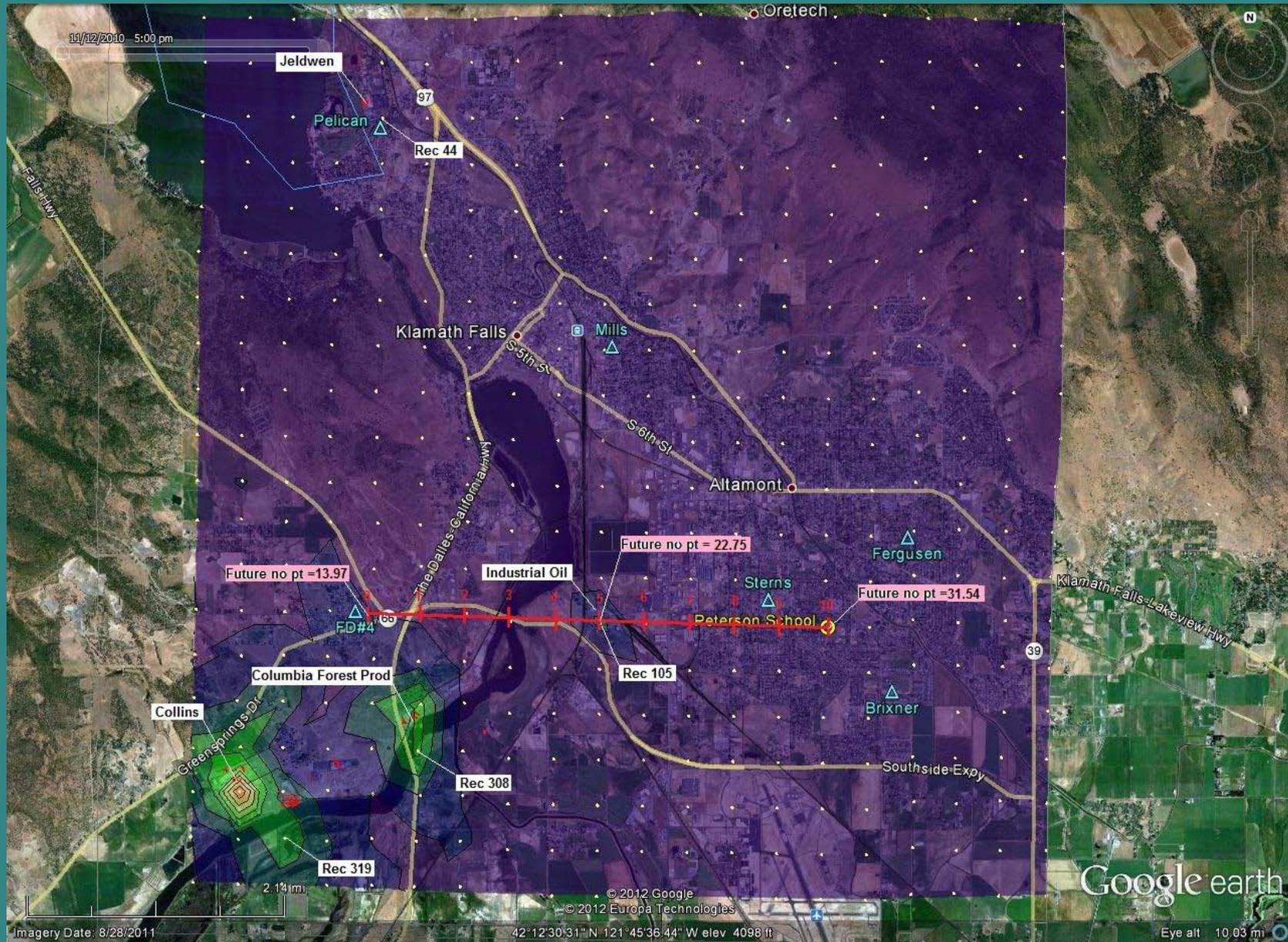


# Saturation Survey

Saturation Survey with DV ratios												
Location	Lat	Lon	Day1 ug/m3	Day2 ug/m3	Day3 ug/m3	Day4 ug/m3	Average ug/m3	Ratio of site to Ptrsn	2008 DV	AERMOD Pts	2008	2014
									using Ratio ug/m3	2008 Actuals 98%tile ug/m3	DV w/o pts ug/m3	DV w/o pts ug/m3
<b>Peterson</b>	42.1902	-121.731	25.1	29.6	22.6	28.0	26.33	1.00	<b>45.1</b>	0.31	44.79	31.54
Brixner	42.1827	-121.721	25.7	19.9	14.6	24.1	21.08	0.80	36.1			
Ferguson	42.201	-121.719	20.3	17.1	14.6	21.1	18.28	0.69	31.3			
FD#4	42.1923	-121.808	12.2	10.1	10.3	19.3	12.98	0.49	22.2	2.38	19.85	13.97
Mills	42.2236	-121.766	11.3	7.5	8.5	14.2	10.38	0.39	17.8			
Pelican	42.2495	-121.804	7.8	1.5	8.7	10.8	7.20	0.27	12.3	1.45	10.89	7.66
Sterns	42.1936	-121.741	25.6	26.0	21.0	9.7	20.58	0.78	35.2			

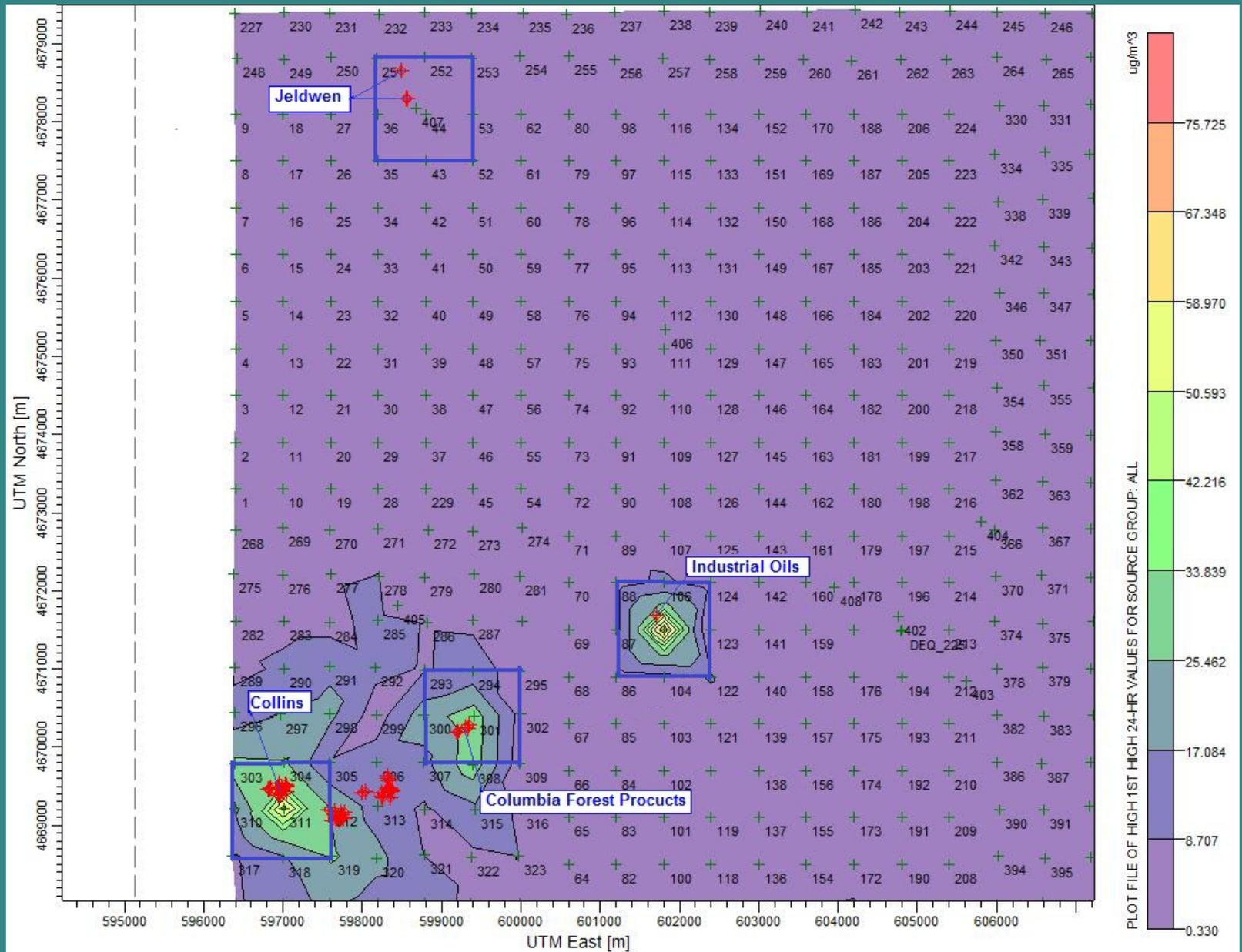


# UMAA: Peterson School – FD#4 trend





# UMAA: Neighborhood Scale concentrations





# UMAA: Neighborhood Scale 2014 DVs

## Neighborhood Scale 2014 DV: model results at 98 %tile

1.2 km grid avg as Neighborhood scale

Industrial Facility	Average modeled points			"Background"	Average "Bkg" plus Points		
	PSE	100% Cap	Actuals	Concentration	PSEL	100% Cap	Actuals
	L ug/m 3	ug/m3	ug/m3	w/o Points ug/m3	ug/m3	ug/m3	ug/m3
Collins	12.2 6	9.08	4.29	13.97	<b>26.24</b>	23.05	18.26
Columbia Forest Products	7.24	11.44	3.78	13.97	21.22	<b>25.41</b>	17.76
Independent Oil (Generic PSEL)	7.36	1.99	1.27	22.75	<b>30.12</b>	24.74	24.02
Jeldwen	1.19	1.14	0.46	7.66	<b>8.85</b>	8.80	8.12



# Rollback Results: Compliance Monitor & UMAA

Location	2008	2014	
	Compliance Monitor DV ug/m3	Compliance Monitor DV ug/m3	UMAA DV ug/m3
<b>Peterson School</b>	<b>45.1</b>	<b>32.4</b>	
Collins			26.2
Columbia Forest Products			25.4
Independent Oil			<b>30.1</b>
Jeldwen			8.9



# Saturation Survey: Jan 9, 2011

