APPENDIX D

Construction Workers and Equipment for Action Alternatives

Appendix ' Construction Workers and Equipment for Action Alternatives					
Activities/Engineered Feature	Construction Workers (#)				Construction Equipment
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	
Year 1					
Mobilization (**Alt. 1–4)**	5	5	5	5	20 ton Dump Truck (Multiple); Cat 120H Motor Grader; Cat D6 Dozer; Cat D9 Dozer; Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
Re-contoured Existing Channel **(Alt. 1, 3)**	6	-	6	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Lowered Floodplain **(Alt. 1–4)**	5	5	6	6	**Alt. 1–3:** 20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator (2); Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2) **Alt. 4:** same as Alt. 1–3, except 20 ton Dump Truck(3)
Inset Floodplain **(Alt. 4)**	-	-	-	8	20 ton Dump Truck(6); Cat D6 Dozer; Cat D9 Dozer(2); Cat 330 Excavator (2); Cat 420E Backhoe Loader; Aquadam Water-Filled Berm; Water Truck; 1 Ton Pickup Truck (2)
Existing Secondary Channel **(Alt. 1–4)**	3	3	3	3	**Alt. 1 and 2:** 21 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator (2); Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2) **Alt. 3 and 4:** 20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
New Channel (**Alt. 1)**	10	-	-	-	20 ton Dump Truck (Multiple); Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator (3); Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
New Channel and River Mouth Modification (**Alt. 2)**	-	10	-	-	20 ton Dump Truck (Multiple); Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator (3); Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)

Appendix ' Construction Workers and Equipment for Action Alternatives					
Activities/Engineered Feature	Construction Workers (#)				Construction Equipment
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	
New Channel and Vertical and Lateral Grade Controls **(Alt. 3)**	-	-	10	-	20 ton Dump Truck (Multiple); Cat D6 Dozer (2); Cat D9 Dozer (2); Cat 330 Excavator (3); Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12" and 10" Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Revegetation/Irrigation **(Alt. 1–4)**	8	8	4	8	Cat D6 Dozer w/scarifier; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Truck Mounted Hydroseeder; Trailer Mounted Straw Mulcher; Bobcat Trencher; Water Truck; 1 Ton Pickup Truck (2)
Winterization **(Alt. 1–4)**	4	4	4	4	20 ton Dump Truck (Multiple); Cat D6 Dozer; Cat D9 Dozer; Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
Year 2					
Mobilization **(Alt. 1–4)**	4	4	4	4	20 ton Dump Truck (Multiple); Cat 120H Motor Grader; Cat D6 Dozer; Cat D9 Dozer; Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
New Channel and Lowered Floodplain **(Alt. 1)**	3	-	-	-	Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
New Channel, River Mouth Modification, and Lowered Floodplain **(Alt. 2)**	-	3	-	-	Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
New Channel, Recontoured Existing Channel, Existing Secondary Channel, and Lowered Floodplain **(Alt. 3)**	-	-	3	-	Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
Existing Secondary Channel, Inset Floodplain and Lowered Floodplain **(Alt. 4)**	-	-	-	4	Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
Bank Protection **(Alt. 1–4)**	7	7	7	7	20 ton Dump Truck; Cat D6 Dozer; Cat 330 Excavator (2); Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12" and 10" Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Overflow culverts **(Alt. 3)**	-	-	5	-	Cat D6 Dozer; Cat 420E Backhoe Loader; Cat TL642 Forklift; Jack and Bore Drill Rig; Water Truck; 1 Ton Pickup Truck (2)

Appendix ' Construction Workers and Equipment for Action Alternatives					
Activities/Engineered Feature	Construction Workers (#)				Construction Equipment
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	
Vertical Grade Controls **(Alt. 1)**	6	-	-	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Vertical grade controls and River Mouth Modification **(Alt. 3)**	-	-	6	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Restored Floodplain **(Alt. 4)**	-	-	-	6	20 ton Dump Truck (Multiple); Cat D6 Dozer (3); Cat D9 Dozer (3); Cat 330 Excavator (3); Cat 420E Backhoe Loader; Cat TL642 Forklift; Aquadam Water-Filled Berm; Water Truck; 1 Ton Pickup Truck (2)
Recontoured Existing Channel **(Alt. 4)**	-	-	-	8	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Bulkhead and Levee **(Alt. 1–3)**	5	5	5	-	Barge Mounted Pile Driver; 20 ton Dump Truck (multiple); Cat D6 Dozer (2); Cat D9 Dozer; Cat 330 Excavator (2); Cat 825 Compactor; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (3); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Restored Lagoon **(Alt. 1–3)**	4	4	4	-	Cat D6 Dozer w/scarifier; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Truck Mounted Hydroseeder; Trailer Mounted Straw Mulcher; Water Truck; 1 Ton Pickup Truck (2)
Revegetation/Irrigation **(Alt. 1–4)**	8	8	8	8	Cat D6 Dozer w/scarifier; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Truck Mounted Hydroseeder; Trailer Mounted Straw Mulcher; Bobcat Trencher; Water Truck; 1 Ton Pickup Truck (2)
Winterization **(Alt. 1–4)**	4	4	4	4	20 ton Dump Truck (Multiple); Cat D6 Dozer; Cat D9 Dozer; Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)

Appendix ' Construction Workers and Equipment for Action Alternatives					
Activities/Engineered Feature	Construction Workers (#)				Construction Equipment
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	
Year 3					
Mobilization **(Alt. 1–4)**	4	4	4	4	20 ton Dump Truck (Multiple); Cat 120H Motor Grader; Cat D6 Dozer; Cat D9 Dozer; Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
New Channel, Re-contoured Existing Channel, and Lowered Floodplain **(Alt. 1)**	4	-	-	-	Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
New Channel, River Mouth Modification, and Lowered Floodplain **(Alt. 2)**	-	4	-	-	Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
Re-contoured Existing Channel, Existing Secondary Channel, and Lowered Floodplain **(Alt. 3)**	-	-	4	-	Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
Existing Secondary Channel, Inset Floodplain, Lowered Floodplain, and Re-contoured Existing Channel **(Alt. 4)**	-	-	-	4	Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
Excavation of Reserve Fill at Lower West Side and fill at TKPOA yard **(Alt. 1, 2, and 3)**	6	6	6	-	20 ton Dump Truck (Multiple); Cat D6 Dozer (3); Cat D9 Dozer (3); Cat 330 Excavator (3); Cat 420E Backhoe Loader; Cat TL642 Forklift; Aquadam Water-Filled Berm; Water Truck; 1 Ton Pickup Truck (2)
Public Access and Habitat Protection Features **(Alt. 1, 2, and 4)**	15	15	15	15	20 ton Dump Truck; Cat D6 Dozer (2); Cat D9 Dozer(2); Cat 330 Excavator (3); Cat 120H Motor Grader; Cat 825 Compactor; Cat BG-225 Asphalt Paver; Cat 420E Backhoe Loader; Cat TL642 Forklift; Water Truck; 1 Ton Pickup Truck (2)
Restored Lagoon **(Alt. 1 and 2)**	4	4	-	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); 12” and 10” Dewatering hose/pipe; Truck Mounted Hydroseeder; Trailer Mounted Straw Mulcher; Water Truck; 1 Ton Pickup Truck (2)
River Mouth Modification **(Alt. 1)**	5	-	-	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)

Appendix D Construction Workers and Equipment for Action Alternatives					
Activities/Engineered Feature	Construction Workers (#)				Construction Equipment
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	
Restored Dunes **(Alt. 1 and 2)**	3	3	-	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Truck Mounted Hydroseeder; Trailer Mounted Straw Mulcher; Water Truck; 1 Ton Pickup Truck (2)
New Channel and Re-contoured Existing Channel **(Alt. 1)**	8	-	-	-	Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator (2); Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (3); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
New Channel and River Mouth Modification **(Alt. 2)**	-	10	-	-	Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator (2); Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (3); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Vertical and Lateral Grade Controls **(Alt. 1, 2, and 3)**	6	6	6	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Partial Backfill and Complete Backfill Old Channel **(Alt. 1, 2, and 3)**	8	8	8	-	20 ton Dump Truck (Multiple); Cat D6 Dozer (2); Cat D9 Dozer (2); Cat 330 Excavator (2); Cat 420E Backhoe Loader; Cat TL642 Forklift; Cat 825 Compactor; Truck Mounted Hydroseeder; Trailer Mounted Straw Mulcher; Rain for Rent DV-300 5000 GPM Electric Pump (3); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Restored Lagoon **(Alt. 1, 2, and 3)**	3	3	3	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Rain for Rent DV-300 5000 GPM Electric Pump (2); Aquadam Water-Filled Berm; 12” and 10” Dewatering hose/pipe; Water Truck; 1 Ton Pickup Truck (2)
Restored Floodplain **(Alt. 1, 2, and 3)**	6	6	6	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Truck Mounted Hydroseeder; Trailer Mounted Straw Mulcher; Water Truck; 1 Ton Pickup Truck (2)
Stormwater Treatment Basins **(Alt. 2 and 3)**	-	4	4	-	20 ton Dump Truck; Cat D6 Dozer; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)

Appendix D Construction Workers and Equipment for Action Alternatives					
Activities/Engineered Feature	Construction Workers (#)				Construction Equipment
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	
Revegetation/Irrigation **(Alt. 1–4)**	8	8	8	8	Cat D6 Dozer w/scarifier; Cat D9 Dozer; Cat 330 Excavator; Cat 420E Backhoe Loader; Cat TL642 Forklift; Truck Mounted Hydroseeder; Trailer Mounted Straw Mulcher; Bobcat Trencher; Water Truck; 1 Ton Pickup Truck (2)
Winterization **(Alt. 1–4)**	4	4	4	4	20 ton Dump Truck (Multiple); Cat D6 Dozer; Cat D9 Dozer; Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
Year 4					
Mobilization **(Alt. 1–4)**	4	4	4	4	20 ton Dump Truck (Multiple); Cat 120H Motor Grader; Cat D6 Dozer; Cat D9 Dozer; Cat TL642 Forklift; Cat 420E Backhoe Loader; Water Truck; 1 Ton Pickup Truck (2)
Revegetation/Irrigation **(Alt. 1–4)**	4	4	4	4	Cat TL642 Forklift; Cat 420E Backhoe Loader; Bobcat Trencher; Water Truck; 1 Ton Pickup Truck (2)
Winterization and Project Shutdown **(Alt. 1–4)**	4	4	4	4	20 ton Dump Truck (Multiple); Cat D6 Dozer; Cat D9 Dozer; Cat TL642 Forklift; Cat 420E Backhoe Loader; Truck Mounted Hydroseeder; Trailer Mounted Straw Mulcher; Water Truck; 1 Ton Pickup Truck (2)

APPENDIX E

Alternative Cost Estimates

INITIAL COST ANALYSIS

In 2006, estimated costs for each Alternative were developed using standard cost estimating practices for civil engineering and environmental restoration projects. This information was created for the Concept Plan Report prepared for the project in 2006 and represents the alternatives at this stage in some instances features have been added or deleted and therefore do not represent the most current alternatives. The purpose of this section was simply to provide a relative representation of the costs of the various alternatives. A summary of the results are presented in the following table. Table 1 provides estimated costs based on estimated quantities and information available at that time. They were developed for planning purposes only and based on best available information.

In order to evaluate the four alternatives, general assumptions were made and applied similarly to each alternative. These included typical cross-sections of new channel, typical cross-sections of existing channel to be filled, spacing of habitat improvement features, construction access road width and length, etc. Unit costs were derived using a combination of actual costs from LWS and Trout Creek Restoration projects, cost publications like RSMeans Site Work and Landscape Cost Data, data provided by resource agencies like Washington State Department of Fish and Wildlife and Alaska Department of Fish and Wildlife, and the design teams extensive knowledge of the site and professional experience. Design and permitting costs were included as 40% of construction.

Based on total cost, Alternative 3 is least expensive, followed by Alternative 2, 1, and 4. Total costs range from $5.9M for Alternative 3 to $19.7M for Alternative 4. This large range is due primarily to the differences in earthwork volumes and level of recreation infrastructure. If only site work, contractor costs, design and permitting costs are considered, since the three levels of recreation infrastructure, maximum, moderate and minimum, could be easily applied to any of the 4 alternatives, the only change in the resulting ranking is that Alternative 1 and 2 are switched.

Description		Alternative 1	Alternative 2	Alternative 3	Alternative 4
Recreation/Public Access					
	Visitor Center	$900,000	$0	$100,000	$100,000
	Boardwalk	$500,000	$0	$287,500	$262,500
	Public Access Trails	$45,000	$13,800	$31,050	$23,100
	Overlook/Viewing Platform	$67,500	$45,000	$60,000	$45,000
	Signage	$31,500	$21,000	$28,000	$21,000
	Decorative Fencing	$600,000	$200,000	$400,000	$400,000
	Subtotal	**$2,144,000**	**$279,800**	**$906,550**	**$851,600**
Site Work					
	Site Preparation/ Clearing	$5,875	$13,750	$6,150	$22,335
	Access Roads/Channel Crossings	$150,900	$186,000	$94,500	$9,000
	Channel Construction	$1,200,220	$1,615,075	$155,540	$10,067,540
	Channel Backfill (off-site borrow, in-basin)	$0	$644,125	$285,000	$0
	Channel Backfill (on-site borrow)	$325,330	$350,000	$350,000	$70,000
	Bank Stabilization/Protection	$900,000	$900,000	$900,000	$900,000
	Habitat Structures (200 ft spacing)	$32,000	$43,000	$10,000	$47,000
	Lateral Grade Controls	$12,500	$15,000	$2,500	$0
	Vertical Grade Controls	$180,000	$60,000	$60,000	$0
	Irrigation System	$255,000	$255,000	$255,000	$255,000
	Revegetation/Erosion Control	$150,000	$150,000	$150,000	$150,000
	Dewatering	$250,000	$250,000	$250,000	$250,000
	Bulkhead	$250,000	$250,000	$250,000	$0
	Construction Fencing	$80,000	$80,000	$80,000	$80,000
	Subtotal	**$3,791,825**	**$4,811,950**	**$2,848,690**	**$11,850,875**
Contractor Costs					
	Mobilization/Demobilization	$379,183	$481,195	$284,869	$1,185,088
	Surveying	$10,000	$10,000	$10,000	$10,000
	Road Repair	$100,000	$100,000	$100,000	$100,000
	Staging/Laydown	$50,000	$50,000	$50,000	$50,000
	Subtotal	**$539,183**	**$641,195**	**$444,869**	**$1,345,088**
Design and Permitting					
	Design (20%)	$1,295,002	$1,146,589	$840,022	$2,809,513
	Permitting (20%)	$1,295,002	$1,146,589	$840,022	$2,809,513
	Subtotal	**$2,590,003**	**$2,293,178**	**$1,680,044**	**$5,619,025**
	Total	**$9,065,011**	**$8,026,123**	**$5,880,153**	**$19,666,588**

APPENDIX F

Air Quality Modeling Results

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: H:\PROJECTS\Misc\Jason\Upper Truckee River\URBEMIS\UTR Construction Alternative 1.urb924

Project Name: Upper Truckee River - Alternative 1

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2015 TOTALS (lbs/day unmitigated)	4.57	33.31	25.28	0.00	85.30	1.79	87.09	17.82	1.64	19.46	4,599.35
2016 TOTALS (lbs/day unmitigated)	4.30	30.39	24.71	0.00	85.30	1.61	86.91	17.82	1.48	19.29	4,598.11
2017 TOTALS (lbs/day unmitigated)	8.41	60.32	46.54	0.01	93.81	3.03	96.85	19.60	2.79	22.39	10,746.37
2018 TOTALS (lbs/day unmitigated)	3.75	24.75	23.58	0.00	85.30	1.30	86.60	17.82	1.19	19.01	4,480.60

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

Time Slice 5/1/2015-10/15/2015 Active Days: 120	4.57	33.31	25.28	0.00	85.30	1.79	87.09	17.82	1.64	19.46	4,599.35
Mass Grading 05/01/2015-10/15/2015	4.57	33.31	25.28	0.00	85.30	1.79	87.09	17.82	1.64	19.46	4,599.35
Mass Grading Dust	0.00	0.00	0.00	0.00	85.28	0.00	85.28	17.81	0.00	17.81	0.00
Mass Grading Off Road Diesel	4.42	32.51	22.36	0.00	0.00	1.76	1.76	0.00	1.62	1.62	4,206.55
Mass Grading On Road Diesel	0.05	0.64	0.23	0.00	0.01	0.02	0.03	0.00	0.02	0.02	163.12
Mass Grading Worker Trips	0.10	0.16	2.69	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.68
Time Slice 5/2/2016-10/14/2016 Active Days: 120	4.30	30.39	24.71	0.00	85.30	1.61	86.91	17.82	1.48	19.29	4,598.11
Mass Grading 05/01/2016-10/15/2016	4.30	30.39	24.71	0.00	85.30	1.61	86.91	17.82	1.48	19.29	4,598.11
Mass Grading Dust	0.00	0.00	0.00	0.00	85.28	0.00	85.28	17.81	0.00	17.81	0.00
Mass Grading Off Road Diesel	4.17	29.69	22.04	0.00	0.00	1.58	1.58	0.00	1.45	1.45	4,206.55
Mass Grading On Road Diesel	0.04	0.55	0.20	0.00	0.01	0.02	0.03	0.00	0.02	0.02	161.77
Mass Grading Worker Trips	0.09	0.15	2.47	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.78
Time Slice 5/1/2017-6/30/2017 Active Days: 45	7.04	52.34	38.15	0.01	93.81	2.45	96.25	19.59	2.25	21.85	9,562.41
Building 05/01/2017-08/01/2017	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Off Road Diesel	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	4.15	28.66	24.56	0.01	93.81	1.50	95.31	19.59	1.38	20.97	4,946.62
Mass Grading Dust	0.00	0.00	0.00	0.00	93.78	0.00	93.78	19.58	0.00	19.58	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.13	1.54	0.58	0.00	0.02	0.05	0.07	0.01	0.05	0.06	510.20
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87

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Time Slice 7/3/2017-8/1/2017 Active Days: 22	**8.41**	**60.32**	**46.54**	**0.01**	**93.81**	**3.03**	**96.85**	**19.60**	**2.79**	**22.39**	**10,746.37**
Asphalt 07/01/2017-08/01/2017	1.37	7.98	8.40	0.00	0.01	0.58	0.59	0.00	0.54	0.54	1,183.96
Paving Off-Gas	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.24	7.79	6.61	0.00	0.00	0.58	0.58	0.00	0.53	0.53	979.23
Paving On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.95
Paving Worker Trips	0.06	0.11	1.76	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.79
Building 05/01/2017-08/01/2017	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Off Road Diesel	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	4.15	28.66	24.56	0.01	93.81	1.50	95.31	19.59	1.38	20.97	4,946.62
Mass Grading Dust	0.00	0.00	0.00	0.00	93.78	0.00	93.78	19.58	0.00	19.58	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.13	1.54	0.58	0.00	0.02	0.05	0.07	0.01	0.05	0.06	510.20
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87
Time Slice 8/2/2017-10/13/2017 Active Days: 53	4.15	28.66	24.56	0.01	93.81	1.50	95.31	19.59	1.38	20.97	4,946.62
Mass Grading 05/01/2017-10/15/2017	4.15	28.66	24.56	0.01	93.81	1.50	95.31	19.59	1.38	20.97	4,946.62
Mass Grading Dust	0.00	0.00	0.00	0.00	93.78	0.00	93.78	19.58	0.00	19.58	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.13	1.54	0.58	0.00	0.02	0.05	0.07	0.01	0.05	0.06	510.20
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87

Time Slice 5/1/2018-10/15/2018 Active Days: 120	3.75	24.75	23.58	0.00	85.30	1.30	86.60	17.82	1.19	19.01	4,480.60
Mass Grading 05/01/2018-10/15/2018	3.75	24.75	23.58	0.00	85.30	1.30	86.60	17.82	1.19	19.01	4,480.60
Mass Grading Dust	0.00	0.00	0.00	0.00	85.28	0.00	85.28	17.81	0.00	17.81	0.00
Mass Grading Off Road Diesel	3.67	24.50	21.47	0.00	0.00	1.29	1.29	0.00	1.19	1.19	4,206.55
Mass Grading On Road Diesel	0.01	0.12	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.00	44.08
Mass Grading Worker Trips	0.07	0.12	2.07	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.96

Phase Assumptions

Phase: Mass Grading 5/1/2015 - 10/15/2015 - Phase 1

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 40.52

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2016 - 10/15/2016 - Phase 2

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

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On Road Truck Travel (VMT): 40.18

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2017 - 10/15/2017 - Phase 3

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 30.3 cubic yards/day

On Road Truck Travel (VMT): 126.72

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2018 - 10/15/2018 - Phase 4

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

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On Road Truck Travel (VMT): 10.95

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2017 - 8/1/2017 - Phase 3 (Paving)

Acres to be Paved: 0.5

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 5/1/2017 - 8/1/2017 - Phase 3 (Construction)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (549 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: H:\PROJECTS\Misc\Jason\Upper Truckee River\URBEMIS\UTR Construction Alternative 2.urb924

Project Name: Upper Truckee River - Alternative 2

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2015 TOTALS (lbs/day unmitigated)	4.74	35.56	26.08	0.01	146.09	1.87	147.96	30.51	1.72	32.23	5,174.83
2016 TOTALS (lbs/day unmitigated)	4.45	32.34	25.43	0.01	146.09	1.68	147.77	30.51	1.54	32.06	5,168.83
2017 TOTALS (lbs/day unmitigated)	7.12	53.32	38.52	0.01	146.09	2.48	148.58	30.52	2.29	32.80	9,889.35
2018 TOTALS (lbs/day unmitigated)	3.79	25.16	23.75	0.00	146.07	1.31	147.38	30.51	1.21	31.72	4,636.14

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

Time Slice 5/1/2015-10/15/2015 Active Days: 120	4.74	35.56	26.08	0.01	146.09	1.87	147.96	30.51	1.72	32.23	5,174.83
Mass Grading 05/01/2015-10/15/2015	4.74	35.56	26.08	0.01	146.09	1.87	147.96	30.51	1.72	32.23	5,174.83
Mass Grading Dust	0.00	0.00	0.00	0.00	146.05	0.00	146.05	30.50	0.00	30.50	0.00
Mass Grading Off Road Diesel	4.42	32.51	22.36	0.00	0.00	1.76	1.76	0.00	1.62	1.62	4,206.55
Mass Grading On Road Diesel	0.22	2.89	1.03	0.01	0.03	0.10	0.13	0.01	0.10	0.10	738.60
Mass Grading Worker Trips	0.10	0.16	2.69	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.68
Time Slice 5/2/2016-10/14/2016 Active Days: 120	4.45	32.34	25.43	0.01	146.09	1.68	147.77	30.51	1.54	32.06	5,168.83
Mass Grading 05/01/2016-10/15/2016	4.45	32.34	25.43	0.01	146.09	1.68	147.77	30.51	1.54	32.06	5,168.83
Mass Grading Dust	0.00	0.00	0.00	0.00	146.05	0.00	146.05	30.50	0.00	30.50	0.00
Mass Grading Off Road Diesel	4.17	29.69	22.04	0.00	0.00	1.58	1.58	0.00	1.45	1.45	4,206.55
Mass Grading On Road Diesel	0.20	2.51	0.92	0.01	0.03	0.09	0.12	0.01	0.08	0.09	732.50
Mass Grading Worker Trips	0.09	0.15	2.47	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.78
Time Slice 5/1/2017-8/1/2017 Active Days: 67	7.12	53.32	38.52	**0.01**	**146.09**	2.48	**148.58**	**30.52**	2.29	**32.80**	9,889.35
Building 05/01/2017-08/01/2017	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Off Road Diesel	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	4.23	29.65	24.93	0.01	146.09	1.54	147.63	30.52	1.41	31.93	5,273.57
Mass Grading Dust	0.00	0.00	0.00	0.00	146.05	0.00	146.05	30.50	0.00	30.50	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.21	2.52	0.95	0.01	0.03	0.09	0.12	0.01	0.08	0.09	837.14
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87

Time Slice 8/2/2017-10/13/2017 Active Days: 53	4.23	29.65	24.93	**0.01**	**146.09**	1.54	147.63	**30.52**	1.41	31.93	5,273.57
Mass Grading 05/01/2017-10/15/2017	4.23	29.65	24.93	0.01	146.09	1.54	147.63	30.52	1.41	31.93	5,273.57
Mass Grading Dust	0.00	0.00	0.00	0.00	146.05	0.00	146.05	30.50	0.00	30.50	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.21	2.52	0.95	0.01	0.03	0.09	0.12	0.01	0.08	0.09	837.14
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87
Time Slice 5/1/2018-10/15/2018 Active Days: 120	3.79	25.16	23.75	0.00	146.07	1.31	147.38	30.51	1.21	31.72	4,636.14
Mass Grading 05/01/2018-10/15/2018	3.79	25.16	23.75	0.00	146.07	1.31	147.38	30.51	1.21	31.72	4,636.14
Mass Grading Dust	0.00	0.00	0.00	0.00	146.05	0.00	146.05	30.50	0.00	30.50	0.00
Mass Grading Off Road Diesel	3.67	24.50	21.47	0.00	0.00	1.29	1.29	0.00	1.19	1.19	4,206.55
Mass Grading On Road Diesel	0.05	0.53	0.21	0.00	0.01	0.02	0.03	0.00	0.02	0.02	199.62
Mass Grading Worker Trips	0.07	0.12	2.07	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.96

Phase Assumptions

Phase: Mass Grading 5/1/2015 - 10/15/2015 - Phase 1

Total Acres Disturbed: 31

Maximum Daily Acreage Disturbed: 7.75

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 396 cubic yards/day; Offsite Cut/Fill: 49.6 cubic yards/day

On Road Truck Travel (VMT): 183.46

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2016 - 10/15/2016 - Phase 2

Total Acres Disturbed: 31

Maximum Daily Acreage Disturbed: 7.75

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 396 cubic yards/day; Offsite Cut/Fill: 49.6 cubic yards/day

On Road Truck Travel (VMT): 181.94

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2017 - 10/15/2017 - Phase 3

Total Acres Disturbed: 31

Maximum Daily Acreage Disturbed: 7.75

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 396 cubic yards/day; Offsite Cut/Fill: 49.6 cubic yards/day

On Road Truck Travel (VMT): 207.93

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2018 - 10/15/2018 - Phase 4

Total Acres Disturbed: 31

Maximum Daily Acreage Disturbed: 7.75

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 396 cubic yards/day; Offsite Cut/Fill: 49.6 cubic yards/day

On Road Truck Travel (VMT): 49.58

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 5/1/2017 - 8/1/2017 - Phase 3 (Construction)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (549 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: H:\PROJECTS\Misc\Jason\Upper Truckee River\URBEMIS\UTR Construction Alternative 3.urb924

Project Name: Upper Truckee River - Alternative 3

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2015 TOTALS (lbs/day unmitigated)	4.59	33.50	25.35	0.00	95.06	1.79	96.85	19.85	1.65	21.50	4,647.26
2016 TOTALS (lbs/day unmitigated)	4.31	30.55	24.77	0.00	95.06	1.61	96.67	19.85	1.48	21.34	4,645.62
2017 TOTALS (lbs/day unmitigated)	8.36	59.71	46.32	0.01	96.92	3.01	99.93	20.25	2.77	23.02	10,545.68
2018 TOTALS (lbs/day unmitigated)	3.75	24.78	23.60	0.00	95.05	1.30	96.35	19.85	1.20	21.05	4,493.55

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

Time Slice 5/1/2015-10/15/2015 Active Days: 120	4.59	33.50	25.35	0.00	95.06	1.79	96.85	19.85	1.65	21.50	4,647.26
Mass Grading 05/01/2015-10/15/2015	4.59	33.50	25.35	0.00	95.06	1.79	96.85	19.85	1.65	21.50	4,647.26
Mass Grading Dust	0.00	0.00	0.00	0.00	95.04	0.00	95.04	19.85	0.00	19.85	0.00
Mass Grading Off Road Diesel	4.42	32.51	22.36	0.00	0.00	1.76	1.76	0.00	1.62	1.62	4,206.55
Mass Grading On Road Diesel	0.06	0.82	0.30	0.00	0.01	0.03	0.04	0.00	0.03	0.03	211.03
Mass Grading Worker Trips	0.10	0.16	2.69	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.68
Time Slice 5/2/2016-10/14/2016 Active Days: 120	4.31	30.55	24.77	0.00	95.06	1.61	96.67	19.85	1.48	21.34	4,645.62
Mass Grading 05/01/2016-10/15/2016	4.31	30.55	24.77	0.00	95.06	1.61	96.67	19.85	1.48	21.34	4,645.62
Mass Grading Dust	0.00	0.00	0.00	0.00	95.04	0.00	95.04	19.85	0.00	19.85	0.00
Mass Grading Off Road Diesel	4.17	29.69	22.04	0.00	0.00	1.58	1.58	0.00	1.45	1.45	4,206.55
Mass Grading On Road Diesel	0.06	0.72	0.26	0.00	0.01	0.03	0.03	0.00	0.02	0.03	209.29
Mass Grading Worker Trips	0.09	0.15	2.47	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.78
Time Slice 5/1/2017-6/30/2017 Active Days: 45	6.99	51.73	37.92	0.01	96.91	2.43	99.34	20.24	2.23	22.47	9,361.71
Building 05/01/2017-08/01/2017	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Off Road Diesel	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	4.10	28.06	24.33	0.01	96.91	1.48	98.39	20.24	1.36	21.60	4,745.93
Mass Grading Dust	0.00	0.00	0.00	0.00	96.89	0.00	96.89	20.23	0.00	20.23	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.08	0.93	0.35	0.00	0.01	0.03	0.04	0.00	0.03	0.03	309.50
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87

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Time Slice 7/3/2017-8/1/2017 Active Days: 22	**8.36**	**59.71**	**46.32**	**0.01**	**96.92**	**3.01**	**99.93**	**20.25**	**2.77**	**23.02**	**10,545.68**
Asphalt 07/01/2017-08/01/2017	1.37	7.98	8.40	0.00	0.01	0.58	0.59	0.00	0.54	0.54	1,183.96
Paving Off-Gas	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.24	7.79	6.61	0.00	0.00	0.58	0.58	0.00	0.53	0.53	979.23
Paving On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.95
Paving Worker Trips	0.06	0.11	1.76	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.79
Building 05/01/2017-08/01/2017	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Off Road Diesel	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	4.10	28.06	24.33	0.01	96.91	1.48	98.39	20.24	1.36	21.60	4,745.93
Mass Grading Dust	0.00	0.00	0.00	0.00	96.89	0.00	96.89	20.23	0.00	20.23	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.08	0.93	0.35	0.00	0.01	0.03	0.04	0.00	0.03	0.03	309.50
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87
Time Slice 8/2/2017-10/13/2017 Active Days: 53	4.10	28.06	24.33	0.01	96.91	1.48	98.39	20.24	1.36	21.60	4,745.93
Mass Grading 05/01/2017-10/15/2017	4.10	28.06	24.33	0.01	96.91	1.48	98.39	20.24	1.36	21.60	4,745.93
Mass Grading Dust	0.00	0.00	0.00	0.00	96.89	0.00	96.89	20.23	0.00	20.23	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.08	0.93	0.35	0.00	0.01	0.03	0.04	0.00	0.03	0.03	309.50
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87

Time Slice 5/1/2018-10/15/2018 Active Days: 120	3.75	24.78	23.60	0.00	95.05	1.30	96.35	19.85	1.20	21.05	4,493.55
Mass Grading 05/01/2018-10/15/2018	3.75	24.78	23.60	0.00	95.05	1.30	96.35	19.85	1.20	21.05	4,493.55
Mass Grading Dust	0.00	0.00	0.00	0.00	95.04	0.00	95.04	19.85	0.00	19.85	0.00
Mass Grading Off Road Diesel	3.67	24.50	21.47	0.00	0.00	1.29	1.29	0.00	1.19	1.19	4,206.55
Mass Grading On Road Diesel	0.01	0.15	0.06	0.00	0.00	0.01	0.01	0.00	0.00	0.01	57.04
Mass Grading Worker Trips	0.07	0.12	2.07	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.96

Phase Assumptions

Phase: Mass Grading 5/1/2015 - 10/15/2015 - Phase 1

Total Acres Disturbed: 24

Maximum Daily Acreage Disturbed: 6

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 244 cubic yards/day; Offsite Cut/Fill: 14.2 cubic yards/day

On Road Truck Travel (VMT): 52.42

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2016 - 10/15/2016 - Phase 2

Total Acres Disturbed: 24

Maximum Daily Acreage Disturbed: 6

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 244 cubic yards/day; Offsite Cut/Fill: 14.2 cubic yards/day

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On Road Truck Travel (VMT): 51.98

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2017 - 10/15/2017 - Phase 3

Total Acres Disturbed: 24

Maximum Daily Acreage Disturbed: 6

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 244 cubic yards/day; Offsite Cut/Fill: 18.4 cubic yards/day

On Road Truck Travel (VMT): 76.88

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2018 - 10/15/2018 - Phase 4

Total Acres Disturbed: 24

Maximum Daily Acreage Disturbed: 6

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 244 cubic yards/day; Offsite Cut/Fill: 14.2 cubic yards/day

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On Road Truck Travel (VMT): 14.17

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2017 - 8/1/2017 - Phase 3 (Paving)

Acres to be Paved: 0.5

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 5/1/2017 - 8/1/2017 - Phase 3 (Construction)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (549 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: H:\PROJECTS\Misc\Jason\Upper Truckee River\URBEMIS\UTR Construction Alternative 4.urb924

Project Name: Upper Truckee River - Alternative 4

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2015 TOTALS (lbs/day unmitigated)	4.82	36.63	26.47	0.01	382.27	1.91	384.17	79.84	1.75	81.59	5,448.45
2016 TOTALS (lbs/day unmitigated)	4.53	33.27	25.77	0.01	382.27	1.71	383.98	79.84	1.57	81.41	5,440.19
2017 TOTALS (lbs/day unmitigated)	8.53	61.85	47.12	0.01	383.73	3.09	386.82	80.15	2.84	82.99	11,254.11
2018 TOTALS (lbs/day unmitigated)	3.97	27.33	24.59	0.01	382.27	1.39	383.66	79.84	1.28	81.12	5,448.74

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

Time Slice 5/1/2015-10/15/2015 Active Days: 120	4.82	36.63	26.47	0.01	382.27	1.91	384.17	79.84	1.75	81.59	5,448.45
Mass Grading 05/01/2015-10/15/2015	4.82	36.63	26.47	0.01	382.27	1.91	384.17	79.84	1.75	81.59	5,448.45
Mass Grading Dust	0.00	0.00	0.00	0.00	382.22	0.00	382.22	79.82	0.00	79.82	0.00
Mass Grading Off Road Diesel	4.42	32.51	22.36	0.00	0.00	1.76	1.76	0.00	1.62	1.62	4,206.55
Mass Grading On Road Diesel	0.30	3.96	1.42	0.01	0.04	0.14	0.18	0.01	0.13	0.14	1,012.22
Mass Grading Worker Trips	0.10	0.16	2.69	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.68
Time Slice 5/2/2016-10/14/2016 Active Days: 120	4.53	33.27	25.77	0.01	382.27	1.71	383.98	79.84	1.57	81.41	5,440.19
Mass Grading 05/01/2016-10/15/2016	4.53	33.27	25.77	0.01	382.27	1.71	383.98	79.84	1.57	81.41	5,440.19
Mass Grading Dust	0.00	0.00	0.00	0.00	382.22	0.00	382.22	79.82	0.00	79.82	0.00
Mass Grading Off Road Diesel	4.17	29.69	22.04	0.00	0.00	1.58	1.58	0.00	1.45	1.45	4,206.55
Mass Grading On Road Diesel	0.27	3.43	1.26	0.01	0.04	0.12	0.16	0.01	0.11	0.13	1,003.86
Mass Grading Worker Trips	0.09	0.15	2.47	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.78
Time Slice 5/1/2017-6/30/2017 Active Days: 45	7.17	53.87	38.73	0.01	383.72	2.50	386.22	80.14	2.30	82.45	10,070.15
Building 05/01/2017-08/01/2017	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Off Road Diesel	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	4.27	30.19	25.14	0.01	383.72	1.56	385.27	80.14	1.43	81.57	5,454.36
Mass Grading Dust	0.00	0.00	0.00	0.00	383.67	0.00	383.67	80.13	0.00	80.13	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.25	3.07	1.16	0.01	0.04	0.11	0.15	0.01	0.10	0.11	1,017.94
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87

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Time Slice 7/3/2017-8/1/2017 Active Days: 22	**8.53**	**61.85**	**47.12**	**0.01**	**383.73**	**3.09**	**386.82**	**80.15**	**2.84**	**82.99**	**11,254.11**
Asphalt 07/01/2017-08/01/2017	1.37	7.98	8.40	0.00	0.01	0.58	0.59	0.00	0.54	0.54	1,183.96
Paving Off-Gas	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.24	7.79	6.61	0.00	0.00	0.58	0.58	0.00	0.53	0.53	979.23
Paving On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.95
Paving Worker Trips	0.06	0.11	1.76	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.79
Building 05/01/2017-08/01/2017	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Off Road Diesel	2.90	23.68	13.59	0.00	0.00	0.95	0.95	0.00	0.87	0.87	4,615.79
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	4.27	30.19	25.14	0.01	383.72	1.56	385.27	80.14	1.43	81.57	5,454.36
Mass Grading Dust	0.00	0.00	0.00	0.00	383.67	0.00	383.67	80.13	0.00	80.13	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.25	3.07	1.16	0.01	0.04	0.11	0.15	0.01	0.10	0.11	1,017.94
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87
Time Slice 8/2/2017-10/13/2017 Active Days: 53	4.27	30.19	25.14	0.01	383.72	1.56	385.27	80.14	1.43	81.57	5,454.36
Mass Grading 05/01/2017-10/15/2017	4.27	30.19	25.14	0.01	383.72	1.56	385.27	80.14	1.43	81.57	5,454.36
Mass Grading Dust	0.00	0.00	0.00	0.00	383.67	0.00	383.67	80.13	0.00	80.13	0.00
Mass Grading Off Road Diesel	3.94	26.99	21.72	0.00	0.00	1.44	1.44	0.00	1.32	1.32	4,206.55
Mass Grading On Road Diesel	0.25	3.07	1.16	0.01	0.04	0.11	0.15	0.01	0.10	0.11	1,017.94
Mass Grading Worker Trips	0.08	0.14	2.26	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.87

Time Slice 5/1/2018-10/15/2018 Active Days: 120	3.97	27.33	24.59	0.01	382.27	1.39	383.66	79.84	1.28	81.12	5,448.74
Mass Grading 05/01/2018-10/15/2018	3.97	27.33	24.59	0.01	382.27	1.39	383.66	79.84	1.28	81.12	5,448.74
Mass Grading Dust	0.00	0.00	0.00	0.00	382.22	0.00	382.22	79.82	0.00	79.82	0.00
Mass Grading Off Road Diesel	3.67	24.50	21.47	0.00	0.00	1.29	1.29	0.00	1.19	1.19	4,206.55
Mass Grading On Road Diesel	0.23	2.71	1.05	0.01	0.04	0.10	0.13	0.01	0.09	0.10	1,012.22
Mass Grading Worker Trips	0.07	0.12	2.07	0.00	0.01	0.01	0.02	0.00	0.00	0.01	229.96

Phase Assumptions

Phase: Mass Grading 5/1/2015 - 10/15/2015 - Phase 1

Total Acres Disturbed: 21

Maximum Daily Acreage Disturbed: 5.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 614 cubic yards/day; Offsite Cut/Fill: 584.7 cubic yards/day

On Road Truck Travel (VMT): 251.42

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2016 - 10/15/2016 - Phase 2

Total Acres Disturbed: 21

Maximum Daily Acreage Disturbed: 5.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 614 cubic yards/day; Offsite Cut/Fill: 584.7 cubic yards/day

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On Road Truck Travel (VMT): 249.34

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2017 - 10/15/2017 - Phase 3

Total Acres Disturbed: 21

Maximum Daily Acreage Disturbed: 5.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 614 cubic yards/day; Offsite Cut/Fill: 588 cubic yards/day

On Road Truck Travel (VMT): 252.84

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2018 - 10/15/2018 - Phase 4

Total Acres Disturbed: 21

Maximum Daily Acreage Disturbed: 5.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 614 cubic yards/day; Offsite Cut/Fill: 584.7 cubic yards/day

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On Road Truck Travel (VMT): 251.42

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2017 - 8/1/2017 - Phase 3 (Paving)

Acres to be Paved: 0.5

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 5/1/2017 - 8/1/2017 - Phase 3 (Construction)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (549 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: H:\PROJECTS\Misc\Jason\Upper Truckee River\URBEMIS\UTR Construction Alternative 1.urb924

Project Name: Upper Truckee River - Alternative 1

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2015 TOTALS (tons/year unmitigated)	0.27	2.00	1.52	0.00	5.12	0.11	5.23	1.07	0.10	1.17	275.96
2016 TOTALS (tons/year unmitigated)	0.26	1.82	1.48	0.00	5.12	0.10	5.21	1.07	0.09	1.16	275.89
2017 TOTALS (tons/year unmitigated)	0.36	2.60	2.02	0.00	5.63	0.13	5.76	1.18	0.12	1.29	464.45
2018 TOTALS (tons/year unmitigated)	0.22	1.48	1.42	0.00	5.12	0.08	5.20	1.07	0.07	1.14	268.84

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2015	0.27	2.00	1.52	0.00	5.12	0.11	5.23	1.07	0.10	1.17	275.96
Mass Grading 05/01/2015-10/15/2015	0.27	2.00	1.52	0.00	5.12	0.11	5.23	1.07	0.10	1.17	275.96
Mass Grading Dust	0.00	0.00	0.00	0.00	5.12	0.00	5.12	1.07	0.00	1.07	0.00
Mass Grading Off Road Diesel	0.27	1.95	1.34	0.00	0.00	0.11	0.11	0.00	0.10	0.10	252.39
Mass Grading On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.79
Mass Grading Worker Trips	0.01	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.78
2016	0.26	1.82	1.48	0.00	5.12	0.10	5.21	1.07	0.09	1.16	275.89
Mass Grading 05/01/2016-10/15/2016	0.26	1.82	1.48	0.00	5.12	0.10	5.21	1.07	0.09	1.16	275.89
Mass Grading Dust	0.00	0.00	0.00	0.00	5.12	0.00	5.12	1.07	0.00	1.07	0.00
Mass Grading Off Road Diesel	0.25	1.78	1.32	0.00	0.00	0.09	0.09	0.00	0.09	0.09	252.39
Mass Grading On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.71
Mass Grading Worker Trips	0.01	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79

2017	0.36	2.60	2.02	0.00	5.63	0.13	5.76	1.18	0.12	1.29	464.45
Building 05/01/2017-08/01/2017	0.10	0.79	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03	154.63
Building Off Road Diesel	0.10	0.79	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03	154.63
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	0.25	1.72	1.47	0.00	5.63	0.09	5.72	1.18	0.08	1.26	296.80
Mass Grading Dust	0.00	0.00	0.00	0.00	5.63	0.00	5.63	1.18	0.00	1.18	0.00
Mass Grading Off Road Diesel	0.24	1.62	1.30	0.00	0.00	0.09	0.09	0.00	0.08	0.08	252.39
Mass Grading On Road Diesel	0.01	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.61
Mass Grading Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79
Asphalt 07/01/2017-08/01/2017	0.02	0.09	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	13.02
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.01	0.09	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	10.77
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
Paving Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.97
2018	0.22	1.48	1.42	0.00	5.12	0.08	5.20	1.07	0.07	1.14	268.84
Mass Grading 05/01/2018-10/15/2018	0.22	1.48	1.42	0.00	5.12	0.08	5.20	1.07	0.07	1.14	268.84
Mass Grading Dust	0.00	0.00	0.00	0.00	5.12	0.00	5.12	1.07	0.00	1.07	0.00
Mass Grading Off Road Diesel	0.22	1.47	1.29	0.00	0.00	0.08	0.08	0.00	0.07	0.07	252.39
Mass Grading On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.65
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80

Phase Assumptions

Phase: Mass Grading 5/1/2015 - 10/15/2015 - Phase 1

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Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 40.52

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2016 - 10/15/2016 - Phase 2

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 40.18

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2017 - 10/15/2017 - Phase 3

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Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 30.3 cubic yards/day

On Road Truck Travel (VMT): 126.72

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2018 - 10/15/2018 - Phase 4

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 258 cubic yards/day; Offsite Cut/Fill: 11 cubic yards/day

On Road Truck Travel (VMT): 10.95

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2017 - 8/1/2017 - Phase 3 (Paving)

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Acres to be Paved: 0.5

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 5/1/2017 - 8/1/2017 - Phase 3 (Construction)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (549 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: H:\PROJECTS\Misc\Jason\Upper Truckee River\URBEMIS\UTR Construction Alternative 2.urb924

Project Name: Upper Truckee River - Alternative 2

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2015 TOTALS (tons/year unmitigated)	0.28	2.13	1.57	0.00	8.77	0.11	8.88	1.83	0.10	1.93	310.49
2016 TOTALS (tons/year unmitigated)	0.27	1.94	1.53	0.00	8.77	0.10	8.87	1.83	0.09	1.92	310.13
2017 TOTALS (tons/year unmitigated)	0.35	2.57	1.95	0.00	8.77	0.12	8.89	1.83	0.11	1.94	471.04
2018 TOTALS (tons/year unmitigated)	0.23	1.51	1.42	0.00	8.76	0.08	8.84	1.83	0.07	1.90	278.17

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2015	0.28	2.13	1.57	0.00	8.77	0.11	8.88	1.83	0.10	1.93	310.49
Mass Grading 05/01/2015-10/15/2015	0.28	2.13	1.57	0.00	8.77	0.11	8.88	1.83	0.10	1.93	310.49
Mass Grading Dust	0.00	0.00	0.00	0.00	8.76	0.00	8.76	1.83	0.00	1.83	0.00
Mass Grading Off Road Diesel	0.27	1.95	1.34	0.00	0.00	0.11	0.11	0.00	0.10	0.10	252.39
Mass Grading On Road Diesel	0.01	0.17	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	44.32
Mass Grading Worker Trips	0.01	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.78
2016	0.27	1.94	1.53	0.00	8.77	0.10	8.87	1.83	0.09	1.92	310.13
Mass Grading 05/01/2016-10/15/2016	0.27	1.94	1.53	0.00	8.77	0.10	8.87	1.83	0.09	1.92	310.13
Mass Grading Dust	0.00	0.00	0.00	0.00	8.76	0.00	8.76	1.83	0.00	1.83	0.00
Mass Grading Off Road Diesel	0.25	1.78	1.32	0.00	0.00	0.09	0.09	0.00	0.09	0.09	252.39
Mass Grading On Road Diesel	0.01	0.15	0.06	0.00	0.00	0.01	0.01	0.00	0.00	0.01	43.95
Mass Grading Worker Trips	0.01	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79
2017	0.35	2.57	1.95	0.00	8.77	0.12	8.89	1.83	0.11	1.94	471.04
Building 05/01/2017-08/01/2017	0.10	0.79	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03	154.63
Building Off Road Diesel	0.10	0.79	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03	154.63
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	0.25	1.78	1.50	0.00	8.77	0.09	8.86	1.83	0.08	1.92	316.41
Mass Grading Dust	0.00	0.00	0.00	0.00	8.76	0.00	8.76	1.83	0.00	1.83	0.00
Mass Grading Off Road Diesel	0.24	1.62	1.30	0.00	0.00	0.09	0.09	0.00	0.08	0.08	252.39
Mass Grading On Road Diesel	0.01	0.15	0.06	0.00	0.00	0.01	0.01	0.00	0.00	0.01	50.23
Mass Grading Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79

2018	0.23	1.51	1.42	0.00	8.76	0.08	8.84	1.83	0.07	1.90	278.17
Mass Grading 05/01/2018-10/15/2018	0.23	1.51	1.42	0.00	8.76	0.08	8.84	1.83	0.07	1.90	278.17
Mass Grading Dust	0.00	0.00	0.00	0.00	8.76	0.00	8.76	1.83	0.00	1.83	0.00
Mass Grading Off Road Diesel	0.22	1.47	1.29	0.00	0.00	0.08	0.08	0.00	0.07	0.07	252.39
Mass Grading On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.98
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80

Phase Assumptions

Phase: Mass Grading 5/1/2015 - 10/15/2015 - Phase 1

Total Acres Disturbed: 31

Maximum Daily Acreage Disturbed: 7.75

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 396 cubic yards/day; Offsite Cut/Fill: 49.6 cubic yards/day

On Road Truck Travel (VMT): 183.46

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2016 - 10/15/2016 - Phase 2

Total Acres Disturbed: 31

Maximum Daily Acreage Disturbed: 7.75

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 396 cubic yards/day; Offsite Cut/Fill: 49.6 cubic yards/day

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On Road Truck Travel (VMT): 181.94

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2017 - 10/15/2017 - Phase 3

Total Acres Disturbed: 31

Maximum Daily Acreage Disturbed: 7.75

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 396 cubic yards/day; Offsite Cut/Fill: 49.6 cubic yards/day

On Road Truck Travel (VMT): 207.93

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2018 - 10/15/2018 - Phase 4

Total Acres Disturbed: 31

Maximum Daily Acreage Disturbed: 7.75

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 396 cubic yards/day; Offsite Cut/Fill: 49.6 cubic yards/day

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On Road Truck Travel (VMT): 49.58

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 5/1/2017 - 8/1/2017 - Phase 3 (Construction)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (549 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: H:\PROJECTS\Misc\Jason\Upper Truckee River\URBEMIS\UTR Construction Alternative 3.urb924

Project Name: Upper Truckee River - Alternative 3

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2015 TOTALS (tons/year unmitigated)	0.28	2.01	1.52	0.00	5.70	0.11	5.81	1.19	0.10	1.29	278.84
2016 TOTALS (tons/year unmitigated)	0.26	1.83	1.49	0.00	5.70	0.10	5.80	1.19	0.09	1.28	278.74
2017 TOTALS (tons/year unmitigated)	0.36	2.56	2.01	0.00	5.81	0.13	5.94	1.21	0.12	1.33	452.41
2018 TOTALS (tons/year unmitigated)	0.23	1.49	1.42	0.00	5.70	0.08	5.78	1.19	0.07	1.26	269.61

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2015	0.28	2.01	1.52	0.00	5.70	0.11	5.81	1.19	0.10	1.29	278.84
Mass Grading 05/01/2015-10/15/2015	0.28	2.01	1.52	0.00	5.70	0.11	5.81	1.19	0.10	1.29	278.84
Mass Grading Dust	0.00	0.00	0.00	0.00	5.70	0.00	5.70	1.19	0.00	1.19	0.00
Mass Grading Off Road Diesel	0.27	1.95	1.34	0.00	0.00	0.11	0.11	0.00	0.10	0.10	252.39
Mass Grading On Road Diesel	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.66
Mass Grading Worker Trips	0.01	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.78
2016	0.26	1.83	1.49	0.00	5.70	0.10	5.80	1.19	0.09	1.28	278.74
Mass Grading 05/01/2016-10/15/2016	0.26	1.83	1.49	0.00	5.70	0.10	5.80	1.19	0.09	1.28	278.74
Mass Grading Dust	0.00	0.00	0.00	0.00	5.70	0.00	5.70	1.19	0.00	1.19	0.00
Mass Grading Off Road Diesel	0.25	1.78	1.32	0.00	0.00	0.09	0.09	0.00	0.09	0.09	252.39
Mass Grading On Road Diesel	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.56
Mass Grading Worker Trips	0.01	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79

2017	0.36	2.56	2.01	0.00	5.81	0.13	5.94	1.21	0.12	1.33	452.41
Building 05/01/2017-08/01/2017	0.10	0.79	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03	154.63
Building Off Road Diesel	0.10	0.79	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03	154.63
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	0.25	1.68	1.46	0.00	5.81	0.09	5.90	1.21	0.08	1.30	284.76
Mass Grading Dust	0.00	0.00	0.00	0.00	5.81	0.00	5.81	1.21	0.00	1.21	0.00
Mass Grading Off Road Diesel	0.24	1.62	1.30	0.00	0.00	0.09	0.09	0.00	0.08	0.08	252.39
Mass Grading On Road Diesel	0.00	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.57
Mass Grading Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79
Asphalt 07/01/2017-08/01/2017	0.02	0.09	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	13.02
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.01	0.09	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	10.77
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
Paving Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.97
2018	0.23	1.49	1.42	0.00	5.70	0.08	5.78	1.19	0.07	1.26	269.61
Mass Grading 05/01/2018-10/15/2018	0.23	1.49	1.42	0.00	5.70	0.08	5.78	1.19	0.07	1.26	269.61
Mass Grading Dust	0.00	0.00	0.00	0.00	5.70	0.00	5.70	1.19	0.00	1.19	0.00
Mass Grading Off Road Diesel	0.22	1.47	1.29	0.00	0.00	0.08	0.08	0.00	0.07	0.07	252.39
Mass Grading On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.42
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80

Phase Assumptions

Phase: Mass Grading 5/1/2015 - 10/15/2015 - Phase 1

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Total Acres Disturbed: 24

Maximum Daily Acreage Disturbed: 6

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 244 cubic yards/day; Offsite Cut/Fill: 14.2 cubic yards/day

On Road Truck Travel (VMT): 52.42

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2016 - 10/15/2016 - Phase 2

Total Acres Disturbed: 24

Maximum Daily Acreage Disturbed: 6

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 244 cubic yards/day; Offsite Cut/Fill: 14.2 cubic yards/day

On Road Truck Travel (VMT): 51.98

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2017 - 10/15/2017 - Phase 3

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Total Acres Disturbed: 24

Maximum Daily Acreage Disturbed: 6

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 244 cubic yards/day; Offsite Cut/Fill: 18.4 cubic yards/day

On Road Truck Travel (VMT): 76.88

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2018 - 10/15/2018 - Phase 4

Total Acres Disturbed: 24

Maximum Daily Acreage Disturbed: 6

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 244 cubic yards/day; Offsite Cut/Fill: 14.2 cubic yards/day

On Road Truck Travel (VMT): 14.17

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2017 - 8/1/2017 - Phase 3 (Paving)

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Acres to be Paved: 0.5

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 5/1/2017 - 8/1/2017 - Phase 3 (Construction)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (549 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: H:\PROJECTS\Misc\Jason\Upper Truckee River\URBEMIS\UTR Construction Alternative 4.urb924

Project Name: Upper Truckee River - Alternative 4

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2015 TOTALS (tons/year unmitigated)	0.29	2.20	1.59	0.00	22.94	0.11	23.05	4.79	0.11	4.90	326.91
2016 TOTALS (tons/year unmitigated)	0.27	2.00	1.55	0.00	22.94	0.10	23.04	4.79	0.09	4.88	326.41
2017 TOTALS (tons/year unmitigated)	0.37	2.69	2.06	0.00	23.02	0.13	23.15	4.81	0.12	4.93	494.91
2018 TOTALS (tons/year unmitigated)	0.24	1.64	1.48	0.00	22.94	0.08	23.02	4.79	0.08	4.87	326.92

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

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2015	0.29	2.20	1.59	0.00	22.94	0.11	23.05	4.79	0.11	4.90	326.91
Mass Grading 05/01/2015-10/15/2015	0.29	2.20	1.59	0.00	22.94	0.11	23.05	4.79	0.11	4.90	326.91
Mass Grading Dust	0.00	0.00	0.00	0.00	22.93	0.00	22.93	4.79	0.00	4.79	0.00
Mass Grading Off Road Diesel	0.27	1.95	1.34	0.00	0.00	0.11	0.11	0.00	0.10	0.10	252.39
Mass Grading On Road Diesel	0.02	0.24	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	60.73
Mass Grading Worker Trips	0.01	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.78
2016	0.27	2.00	1.55	0.00	22.94	0.10	23.04	4.79	0.09	4.88	326.41
Mass Grading 05/01/2016-10/15/2016	0.27	2.00	1.55	0.00	22.94	0.10	23.04	4.79	0.09	4.88	326.41
Mass Grading Dust	0.00	0.00	0.00	0.00	22.93	0.00	22.93	4.79	0.00	4.79	0.00
Mass Grading Off Road Diesel	0.25	1.78	1.32	0.00	0.00	0.09	0.09	0.00	0.09	0.09	252.39
Mass Grading On Road Diesel	0.02	0.21	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	60.23
Mass Grading Worker Trips	0.01	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79

2017	0.37	2.69	2.06	0.00	23.02	0.13	23.15	4.81	0.12	4.93	494.91
Building 05/01/2017-08/01/2017	0.10	0.79	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03	154.63
Building Off Road Diesel	0.10	0.79	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03	154.63
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2017-10/15/2017	0.26	1.81	1.51	0.00	23.02	0.09	23.12	4.81	0.09	4.89	327.26
Mass Grading Dust	0.00	0.00	0.00	0.00	23.02	0.00	23.02	4.81	0.00	4.81	0.00
Mass Grading Off Road Diesel	0.24	1.62	1.30	0.00	0.00	0.09	0.09	0.00	0.08	0.08	252.39
Mass Grading On Road Diesel	0.02	0.18	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	61.08
Mass Grading Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79
Asphalt 07/01/2017-08/01/2017	0.02	0.09	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	13.02
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.01	0.09	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	10.77
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
Paving Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.97
2018	0.24	1.64	1.48	0.00	22.94	0.08	23.02	4.79	0.08	4.87	326.92
Mass Grading 05/01/2018-10/15/2018	0.24	1.64	1.48	0.00	22.94	0.08	23.02	4.79	0.08	4.87	326.92
Mass Grading Dust	0.00	0.00	0.00	0.00	22.93	0.00	22.93	4.79	0.00	4.79	0.00
Mass Grading Off Road Diesel	0.22	1.47	1.29	0.00	0.00	0.08	0.08	0.00	0.07	0.07	252.39
Mass Grading On Road Diesel	0.01	0.16	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	60.73
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80

Phase Assumptions

Phase: Mass Grading 5/1/2015 - 10/15/2015 - Phase 1

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Total Acres Disturbed: 21

Maximum Daily Acreage Disturbed: 5.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 614 cubic yards/day; Offsite Cut/Fill: 584.7 cubic yards/day

On Road Truck Travel (VMT): 251.42

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2016 - 10/15/2016 - Phase 2

Total Acres Disturbed: 21

Maximum Daily Acreage Disturbed: 5.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 614 cubic yards/day; Offsite Cut/Fill: 584.7 cubic yards/day

On Road Truck Travel (VMT): 249.34

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2017 - 10/15/2017 - Phase 3

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Total Acres Disturbed: 21

Maximum Daily Acreage Disturbed: 5.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 614 cubic yards/day; Offsite Cut/Fill: 588 cubic yards/day

On Road Truck Travel (VMT): 252.84

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 5/1/2018 - 10/15/2018 - Phase 4

Total Acres Disturbed: 21

Maximum Daily Acreage Disturbed: 5.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 614 cubic yards/day; Offsite Cut/Fill: 584.7 cubic yards/day

On Road Truck Travel (VMT): 251.42

Off-Road Equipment:

1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2017 - 8/1/2017 - Phase 3 (Paving)

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Acres to be Paved: 0.5

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 5/1/2017 - 8/1/2017 - Phase 3 (Construction)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (549 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

APPENDIX G

Letter Report Discussing Findings of Special-Status Plant Survey

EDAW Inc
2022 J Street, Sacramento, California 95814
T 916.414.5800 F 916.414.5850 www.edaw.com

September 19, 2007

Rick Robinson
Natural Resources Program Manager
California Tahoe Conservancy
1061 Third Avenue
South Lake Tahoe, CA 96150

Subject: Results of Special-Status Plant Survey for the Upper Truckee River and Marsh Restoration Project

Dear Mr. Robinson:

This letter report provides the methods and results of a special-status plant survey of the Upper Truckee River and Marsh Restoration Project site. This survey was conducted in support of review of the project under the California Environmental Quality Act (CEQA) and to provide baseline information on the occurrence of special-status plants on the project site. The study area for this survey is approximately 592 acres in size, and includes parcels owned by the California Tahoe Conservancy (Conservancy), other public agencies, and private landowners (Exhibit 1). It includes the downstream reaches of Trout Creek and the Upper Truckee River, adjacent wetland and uplands habitats, and the Lower West Side (LWS) Wetlands Restoration Project site located in the northwest portion of the study area, just east of the Tahoe Keys Marina. The special-status plant survey excluded areas of Barton Beach and Cove East Beach where populations of Tahoe Yellow Cress (*Rorippa subumbellata*) are known to occur and are the subject of an ongoing adaptive management plan (EDAW 2006).

The purpose of this special-status plant survey was to identify occurrences of additional special-status plants that occur in the study area and could potentially be disturbed as a result of implementation of the proposed restoration activities. In summary, a single population of American mannagrass (*Glyceria grandis*), a CNPS List 2 was identified near the outlet of Trout Creek in the study area. The methods and results of the survey are discussed in detail below.

METHODS

Pre-field Investigation

Before conducting the field survey, EDAW botanists conducted database searches and research to compile a target list of plant species that are considered special-status species or are otherwise considered sensitive by local resource agencies with potential to occur in the study area. Special-status plants are defined as plants that are legally protected or that are otherwise considered sensitive by federal, state or local resource conservation agencies and organizations. Special-status plant taxa are species, subspecies or varieties that fall into one or more of the following categories:

- officially listed by the state of California or the federal government as Endangered, Threatened or Rare;
- a candidate for state or federal listing as Endangered, Threatened or Rare;

- taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- designated as a sensitive, special interest, or threshold species by TRPA;
- designated as sensitive by the USFS Regional Forester in Region 5; and
- taxa considered by the CNPS to be "rare, threatened or endangered in California" (Lists 1B and 2).

The CNPS Inventory includes five lists for categorizing plant species of concern, which are summarized below. The plants listed on CNPS lists 1A, 1B, and 2 meet the definitions of Section 1901, Chapter 10 of the Native Plant Protection Act (NPPA) or Sections 2062 and 2067 (California Endangered Species Act [CESA]) of the California Department of Fish and Game Code and may quality for state listing. Therefore, they are considered rare plants pursuant to Section 15380 of CEQA. DFG recommends and local government agencies may require that they be fully considered during preparation of environmental documents pursuant to CEQA. Some of the plants constituting CNPS Lists 3 and 4 meet the definitions of Section 1901, Chapter 10 or Sections 2062 and 2067 of the DFG Code and are eligible for state listing, and many are also listed as sensitive species by the USFS. The CNPS lists are categorized as follows:

- List 1A - Plants presumed extinct in California;
- List 1B - Plants rare, threatened, or endangered in California and elsewhere;
- List 2 - Plants rare, threatened, or endangered in California but more common elsewhere;
- List 3 - Plants about which we need more information - a review list
- List 4 - Plants of limited distribution - a watch list

The primary sources of information in generating the target list of special-status plant species included the California Native Plant Society's (CNPS) *Electronic Inventory of Rare and Endangered Vascular Plants* (CNPS 2007), the California Department of Fish and Game (DFG) California Natural Diversity Database (CNDDB 2007), the TRPA threshold list of sensitive species, and the U.S. Forest Service, Lake Tahoe Basin Management Unit's (LTBMU) list of sensitive species. The South Lake Tahoe, Meeks Bay, Emerald Bay, Echo Lake, Freel Peak, and Woodsford U.S. Geological Survey (USGS) 7.5-minute quadrangles were included in the CNPS and CNDDB database searches. In addition to these sources, information was obtained by reviewing previously prepared environmental reports for the project including, *Upper Truckee River and Wetland Restoration Project: Processes and Functions of the Upper Truckee Marsh* (EDAW and ENTRIX 2003) and *Upper Truckee River and Wetland Restoration Final Concept Plan* (EDAW 2006), and by consulting with a US Forest Service botanist (Gross pers. comm.).

Table 1 contains information on all special-status plant species with potential to occur in the vicinity of the project site. Based on a review of existing documentation, habitat types present, and the elevation of the project site, twenty-four of these special-status plant species have potential to occur or are known from the study area. The other twenty species identified in Table 1 are unlikely to occur because suitable habitat for these species is not present in the study area. In preparation for the field surveys, a survey package including photographs or line drawings of each of the target special-status plant species was prepared to familiarize the field botanists conducting the surveys with the characteristics of these species.

Field Surveys

EDAW botanists scheduled surveys to coincide with the blooming periods of the target plant species. Field surveys on the project site were conducted by EDAW botanists Mark Bibbo and Richard

Dwerlkotte on July 24, 25, 26, and 27, 2007, for a total of 57 person-hours. Field surveys were conducted by walking meandering transects throughout the entire study area. The protocol for the special-status plant surveys followed DFG's "*Guidelines for Assessing the Effects of Proposed Development on Rare, Threatened, and Endangered Plants and Plant Communities"* (DFG 2000b) and U.S. Fish and Wildlife Service's (USFWS) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 2000), which involve using systematic field techniques in all habitats in the study area to ensure thorough coverage of potential impact areas. All plants encountered during the surveys were identified to the highest taxonomic level necessary for a rare plant determination. Nomenclature used follows the Jepson Manual Higher Plants of California (Hickman 1993).

The locations of all special-status plants encountered were mapped by hand as either points or polygons onto aerial photographs of the study area (scale 1" = 400'). In addition, GIS coordinates were recorded for each location while in the field. These location points and polygons were later digitized onto a GIS overlay to produce a map of the distribution of special-status plants in the study area. Notes on habitat, topography, aspect, phenology, and associated species of the special-status plant species identified were recorded on California Native Species Field Survey Forms to be submitted to the CNDDB upon completion of the plant survey.

RESULTS

The Upper Truckee Marsh study area consists of a continuum of plant associations, ranging from predominantly forested areas on the highest elevations of the site to wet meadow and riparian areas to lagoon and sandy barrier beach at the northern end of the marsh near the shore of Lake Tahoe. The distribution and extent of these plant communities on the project site is shown in Exhibit 2. Detailed description of these plant communities can be found in the aforementioned report *Upper Truckee River and Wetland Restoration Project: Processes and Functions of the Upper Truckee Marsh* (EDAW and ENTRIX 2003).

A comprehensive list of all plant species observed during the survey is included in Table 2. One special-status plant species (American mannagrass, *Glyceria grandis*) was documented within the study area during the survey. A CNDDB data form for this occurrence is provided in Appendix A and is cross-referenced to the location mapped in Exhibit 2. Representative photographs of American mannagrass are provided in Appendix B. A description of American mannagrass is provided below.

The known locations of Tahoe Yellow Cress within the study area were visited, however, further documentation of these populations is not provided as part of this report. The Barton Beach and Cove East populations have previously been well documented and will be assessed again this year as part of an annual multi-agency monitoring effort of known occurrences of Tahoe Yellow Cress around the lake (EDAW 2006).

RESULTS BY SPECIES

American mannagrass

American manna grass (*Glyceria grandis*), is a rhizomatous grass that is on the California Native Plant Society list 2.3 (rare, threatened, or endangered in California but common elsewhere). Outside of California the species is much more common and is found from Alaska to Newfoundland in the north (including all of the northwestern, midwestern, mid-Atlantic, and northeastern states), in the mountains of Arizona and New Mexico in the southwest, and north of North Carolina and Tennessee in the southeastern United States. In California it is known from Fresno, Humboldt, Mendocino, Mono, Placer,

and Tuolumne counties. There are no previously documented occurrences of American manna grass in El Dorado County.

American manna grass grows in riparian habitats, on streambanks, lake-margins, meadows, and in bogs and fens. It grows to a height of 3 feet tall and has a 7 to 15 inch long ovoid inflorescence bearing small spikelets. The grass flowers between June and August. It is similar in overall appearance to fowl mannagrass (*Glyceria elata*), which is much more common in California. It differs from fowl mannagrass in having acute glumes with long veins, more evenly dark florets, flatter lemma apices, and paleal keel tips that do not point towards each other. It can also be confused with pale fake mannagrass (*Torreyochloa pallida*). It differs from this species in its closed leaf sheaths and 1-veined glumes (see photos in Appendix B).

In the study area, American mannagrass was found in only one location growing on a low mud bench within one of the active distributary channels of Trout Creek just above the surface water. Associated species on the mud bench were pale fake mannagrass (*Torreyochloa pallida*), beaked sedge (*Carex utriculata*), Baltic rush (*Juncus balticus*), fringed willow herb (*Epilobium ciliatum*), and wild mint (*Mentha arvense*). Approximately 35 flowering stems were observed in a 10 square foot area. Nearby mannagrass species, thought to be fowl mannagrass (*Glyceria elata*), had a very different appearance characterized by much greener lemmas and inflorescence, a slightly smaller inflorescence, and smaller, more rounded glumes.

If you have any questions regarding the methods and results of this special-status plant survey or require additional information, please do not hesitate to call us at (916) 414-5800.

Sincerely,

Petra Unger
Senior Botanist

Mark Bibbo
Botanist

cc: 00110066.04/chron

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Attachments:
Table 1: Special-status Plant Species with Potential to Occur on the Upper Truckee River and Marsh Restoration Project Site
Table 2: Plant Species Observed on the Upper Truckee River and Marsh Restoration Project Site
Exhibit 1: Survey Area Map
Exhibit 2: Extent of Plant Communities and Location of American Mannagrass on the Project Site
Appendix A: CNDDB data form
Appendix B: Representative Photographs

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PERSONAL COMMUNICATIONS

Gross, Shana. Rare plant coordinator. U.S. Forest Service Lake Tahoe Basin Management Unit, South Lake Tahoe, CA. July 11, 2007—telephone conversation with Mark Bibbo of EDAW regarding surveying for potential sensitive species in the Upper Truckee Marsh study area.

Table 1
Special-Status Plant Species Known from the Upper Truckee River and Wetlands Restoration Project Study Area or with Potential to Occur

Scientific and Common Name	Listing Status1			Habitat and Flowering Period	Potential for Occurrence
	Federal	State	Local/CNPS		
Arabis rectissima var. *simulans* Washoe tall rockcress	I			Dry, sandy granitic or andesitic soils on gentle slopes within open mature Jeffery pine dominated forests, often on recovering lightly disturbed soils; 6,033 to 7,349 ft. Blooming period: May-July	***Unlikely to occur***. Suitable habitat is on the site is highly disturbed.
Arabis rigidissima var. *demota* Galena Creek rockcress	S		TRPA/1B	Fir- pine-quaking aspen associations, meadow edges, usually on north-facing slopes and rocky outcrops; 7,021–10,019 ft. Blooms August.	***Unlikely to occur.*** Suitable habitat is on the site is highly disturbed. Closest occurrences are along the north shore of Lake Tahoe.
Arabis tiehmii Tiehm's rock cress	S		1B	Granitic alpine boulder and rock fields; 9,744 to 11,778 ft. Blooming period: July-August	***Unlikely to occur.*** Typically found at higher elevations than the study area.
Botrychium ascendens Upswept moonwort	S		2	Grows in mesic lower montane coniferous forest; 4,921 to 7,496 ft. Blooming period: July-August	***Could occur***. Suitable mesic habitat occurs in the study area.
Botrychium crenulatum Scalloped moonwort	S		2	Freshwater marshes and swamps, meadows and seeps, bogs and fens, and lower montane coniferous forest; 4,921 to 10,761 ft. Blooming period: June-September	***Could occur***. Suitable mesic habitat occurs in the study area.
Botrychium lineare Slender moonwort	S		1B	Often disturbed upper montane coniferous forest; 8,530 ft. Blooming period: unknown	***Unlikely to occur.*** Typically found at higher elevations than the study area.
Botrychium lunaria Common moonwort	S		2	Upper montane coniferous forest, subalpine coniferous forest, and meadows and seeps; 7,480 to 11,154 ft. Blooming period: August	***Unlikely to occur.*** Typically found at higher elevations than the study area.
Botrychium minganense Mingan moonwort	S		2	Lower and mesic upper montane coniferous forest and bogs and fens; 4,921 to 6,742 ft. Blooming period: July-September	***Could occur***. Suitable mesic habitat occurs in the study area.
Botrychium montanum Western goblin	S		2	Lower and mesic upper montane coniferous forest; 4,921 to 6,988 ft. Blooming period: July-September	***Could occur***. Suitable mesic habitat occurs in the study area.
Carex limosa Shore sedge			2	Grows in upper and lower montane coniferous forest, meadows and seeps, and bogs and fens; 3,937 to 8,858 ft. Blooming period: June-August	***Could occur***. Suitable mesic habitat occurs in the study area.
Carex mariposana Mariposa sedge (name changed from *C. paucifructus*)			TRPA	Red fir and subalpine coniferous fores, montane meadows; 3,960 to 10,560 ft. Blooming period unknown.	***Unlikely to occur.*** Where it occurs in the Tahoe Basin it is typically found at higher elevations than the study area.
Chaenactis douglasii var. *alpine* Alpine dusty maidens			2	Granitic alpine boulder and rock fields; 9,842 to 11,154 ft. Blooming period: July-September	***Unlikely to occur.*** Typically found at higher elevations than the study area.
Cryptantha crymophila Subalpine cryptantha			1B	Volcanic and rocky subalpine coniferous forest; 8,530 to 10,498 ft. Blooming period: July-August	***Unlikely to occur.*** Typically found at higher elevations than the study area.

Table 1
Special-Status Plant Species Known from the Upper Truckee River and Wetlands Restoration Project Study Area or with Potential to Occur

Scientific and Common Name	Listing Status1			Habitat and Flowering Period	Potential for Occurrence
	Federal	State	Local/CNPS		
Draba asterophora var. *asterophora* Tahoe draba	S		TRPA/1B	Grows in subalpine coniferous forest and alpine boulder and rock fields; 8,250 to 11,499 ft. Blooming period: July-August(September)	***Unlikely to occur*.** Typically found at higher elevations than the study area.
Draba asterophora var. *macrocarpa* Cup Lake draba	S		TRPA/1B	Grows in rocky subalpine coniferous forest; 8,202 to 9,235 ft. Blooming period: July-August	***Unlikely to occur*.** Typically found at higher elevations than the study area.
Epilobium howellii Subalpine fireweed	S		1B	Mesic subalpine coniferous forest and meadows and seeps; 6,561 to 8,858 ft. Blooming period: July-August	***Could occur***. Suitable mesic habitat occurs in the study area.
Epilobium oreganum Oregon fireweed			1B	Mesic upper and lower montane coniferous forest and bogs and fens; 1,640 to 7,349 ft. Blooming period: June-September	***Could occur***. Suitable mesic habitat occurs in the study area.
Epilobium palustre Marsh willowherb			2	Meadows and seeps and bogs and fens; 7,217 ft. Blooming period: July-August	***Could occur***. Suitable mesic habitat occurs in the study area.
Erigeron miser Starved daisy	S		1B	Rocky upper montane coniferous forest; 6,036 to 8,595 ft. Blooming period: June-October	***Unlikely to occur***. Suitable habitat is on the site is highly disturbed and typically found at higher elevations in the Tahoe Basin
Eriogonum umbellatum var. *torreyanum* Donner Pass buckwheat	S		1B	Volcanic, rocky upper montane coniferous forest and meadows and seeps; 6,085 to 8,595 ft. Blooming period: July-September	***Unlikely to occur***. Minimal suitable habitat in the study area.
Glyceria grandis American mannagrass			2	Bogs and fens, meadows and seeps, and streambanks and lake margins of marshes and swamps; 49 to 6,496 ft. Blooming period: June-August	***Known to occur.*** Observed at Upper Truckee Marsh (EDAW and ENTRIX 2003).
Hulsea brevifolia Short-leaved hulsea	S		1B	Granitic or volcanic, gravelly or sandy upper montane coniferous forest and lower montane coniferous forest; 4,921 to 10,498 ft. Blooming period: May-August	***Unlikely to occur***. Suitable habitat is on the site is highly disturbed.
Lewisia kelloggii ssp. *hutchisonii* Hutchison's lewisia	S		3	Openings and slate in upper montane coniferous forest; 4,799 to 7,004 ft. Blooming period: (June)July-August	***Unlikely to occur***. Suitable habitat is on the site is highly disturbed.
Lewisia kelloggii ssp. *kelloggii* Kellogg's lewisia	S			Sandy or gravelly, usually granitic or volcanic substrates; 4,265 to 7,874 ft. Blooming period:	***Unlikely to occur***. Suitable habitat is on the site is highly disturbed.
Lewisia longipetala Long-petaled lewisia	S		TRPA/1B	Grows in granitic subalpine coniferous forest and alpine boulder and rock fields; 8,202 to 9,596 ft. Blooming period: July-August	***Unlikely to occur*.** Typically found at higher elevations than the study area.
Polystichum lonchitis Holly fern			3	Grows in granitic or carbonate upper montane coniferous forest and subalpine coniferous forest; 5,905 to 8,530 ft. Blooming period: June-September	***Could occur***. Suitable habitat occurs in the study area.
Potamogeton filiformis Slender-leaved pondweed			2	Grows in assorted shallow freshwater marshes and swamps; 984 to 7,053 ft. Blooming period: May-July	***Could occur***. Suitable mesic habitat occurs in the study area.

Table 1
Special-Status Plant Species Known from the Upper Truckee River and Wetlands Restoration Project Study Area or with Potential to Occur

Scientific and Common Name	Listing Status1			Habitat and Flowering Period	Potential for Occurrence
	Federal	State	Local/CNPS		
Rorippa subumbellata Tahoe yellow cress	C/S	E	TRPA/1B	Grows in decomposed granitic beaches of meadows and seeps and in lower montane coniferous forests; 6,217 to 6,233 ft. Blooming period: May-September	***Known to occur***. Suitable habitat present. Observed at the Upper Truckee Marsh (EDAW 2003) Barton Beach and Cove East populations are monitored annually.
Scirpus subterminalis Water bulrush			2	Grows in montane lake margins of marshes and swamps and in bogs and fens; 2,460 to 7,381 ft. Blooming period: July- August	***Could occur***. Suitable mesic habitat occurs in the study area.
Scutellaria galericulata Marsh skullcap			2	Lower montane coniferous forest, meadows and seeps, and marshes and swamps; 0 to 6,889 ft. Blooming period: June-September	***Could occur***. Suitable mesic habitat occurs in the study area.
Utricularia ochroleuca Cream-flowered bladderwort			2	Lake margins of marshes and swamps and mesic meadows and seeps; 4,708 to 4,724 ft. Blooming period: June-July	***Could occur***. Suitable mesic habitat occurs in the study area.
Moss					
Bruchia bolanderi Bolander's candle moss	S		2	Damp soil in upper montane coniferous forest, meadows and seeps, and lower montane coniferous forest; 5,577 to 9,186 ft.	***Could occur***. Suitable habitat occurs in the study area.
Helodium blandowii Blandow's bog moss	S		2	Meadows and seeps and damp soil in subalpine coniferous forests; 6,108 to 8,858 ft.	***Could occur***. Suitable habitat occurs in the study area.
Meesia longiseta Long-stalked hump-moss	I			Usually in fens, but sometimes along freshwater streams at high elevations.	***Could occur***. Suitable mesic habitat occurs in the study area.
Meesia triquetra Three-ranked hump-moss	S		4	Grows in mesic and soil upper montane coniferous forest, subalpine coniferous forest, meadows and seeps, and bogs and fens; 4,265 to 9,688 ft.	***Could occur***. Suitable mesic habitat occurs in the study area.
Meesia uliginosa Broad-nerved hump-moss	S		2	Grows in damp soil of upper montane coniferous forest, subalpine coniferous forest, meadows and seeps, and bogs and fens; 4,265 to 9,199 ft.	***Could occur***. Suitable mesic habitat occurs in the study area.
Myurella julacea Myurella moss	I		2	Alpine boulder and rock fields and damp rock and soil of subalpine coniferous forest; 8,858 to 9,842 ft.	***Unlikely to occur***. Typically found at higher elevations than the study area.
Orthotrichum praemorsum Orthotrichum moss	I			Shaded, moist habitats of Eastern Sierra Nevada rock outcrops; up to 8,202 ft.	***Unlikely to occur***. Typically found at higher elevations than the study area.
Orthotrichum shevockii Shevock's moss	I		1B	Lower montane coniferous forest, pinyon and juniper woodland, subalpine coniferous forest, and granitic and rock of upper montane coniferous forest; 6,889 to 7,874 ft.	***Unlikely to occur***. Typically found at higher elevations than the study area.

Table 1
Special-Status Plant Species Known from the Upper Truckee River and Wetlands Restoration Project Study Area or with Potential to Occur

Scientific and Common Name	Listing Status[1]			Habitat and Flowering Period	Potential for Occurrence
	Federal	State	Local/CNPS		
Orthotrichum spjuttii Spjut's bristlemoss	I		1B	Lower montane coniferous forest, pinyon and juniper woodland, subalpine coniferous forest, and granitic and rock of upper montane coniferous forest; 6,889 to 7,874 ft..	***Unlikely to occur***. Typically found at higher elevations than the study area.
Pohlia tundrae Tundrae pohlia moss	I		2	Gravelly, damp soil of alpine boulder and rock fields; 8,858 to 9,842 ft.	***Could occur***. Precise microhabitat required are unknown (Gross pers. comm.) Suitable habitat unlikely.
Sphagnum spp. Sphagnum mosses	I			Usually in fens and bogs; sometimes very wet, nonacidic habitats that remain saturated.	***Could occur***. Suitable mesic habitat occurs in the study area.
Lichen					
Veined water lichen *Peltigera hydrothyria*	S			Lower to mid-montane elevations in small, fresh water, perennial streams with little fluctuation in water level and scouring.	***Could occur***; suitable habitat occurs in the study area.
Fungi					
Branched collybia *Dendrocollybia racemosa*	S			Older mixed coniferous forest.	***Could occur***; suitable habitat present in the study area.

[1]Legal Status Definitions

U.S. Fish and Wildlife Service (USFWS):

T Federal Threatened

E Federal Endangered

C Candidate

California Department of Fish and Game (DFG):

R Rare

T Threatened

E Endangered

California Native Plant Society (CNPS) Listing Categories:

1B Plants rare, threatened, or endangered in California and elsewhere

2 Plants rare, threatened, or endangered in California but more common elsewhere

3 Plants for which more information is needed – a review list

4 Plants of limited distribution – a watch list

Lake Tahoe Basin Management Unit

S Sensitive Species

I Species of Interest

Table 2
Plant Species Observed on the Upper Truckee River and Marsh Restoration Project Site

Scientific Name	Common Name	Plant Community[1]
Apiaceae		
Heracleum lanatum	cow parsnip	LP, WS, MM
Osmorhiza chilensis	mountain sweet-cicely	JP
Perideridia parishii	Parish's yampah	JP,MM
Sphenosciadium capitellatum	ranger's buttons	JP,LP
Asteraceae		
Achillea millefolium	yarrow	JP, LP,WS, MM, DS, RU
Agoseris glauca var. *monticola*	pale dandelion	MM
Agoseris heterophylla	annual mountain dandelion	MM
Anaphalis margaritacea	pearly everlasting	JP, BD, RU
Antennaria corymbosa	meadow pussy-toes	JP, MM
Arnica chamissonis var. *foliosa*	arnica	JP, LP, WS, MM
Artemisia ludoviciana var. *ludoviciana*	silver wormwood	LP,WS, MM
Artemisia tridentata var. *vaseyana*	mountain sagebrush	JP, RU
Aster occidentalis	western mountain aster	LP, WS, MM, BD
Bidens laevis	bur-marigold	BD
*Chamomilla suaveolens**	pineapple weed	MM,DS,RU
Chrysothamnus nauseosus	rubber rabbitbrush	DS,RU
*Cirsium arvense**	Canada thistle	JP, LP, WS, MM, DS
*Cirsium vulgare**	bull thistle	JP, LP, WS, MM, DS
Conyza canadensis	horseweed	MM, DS, RU
Erigeron divergens	spreading fleabane	MM
Erigeron pumilus var. *intermedius*	fleabane daisy	MM, BD
Gnaphalium palustre	cudweed	WS, MM, BD
*Lactuca serriola**	prickly lettuce	DS, RU
Madia glomerata	mountain tarweed	DS, RU
*Picris echioides**	bristly ox-tongue	MM, RU
Senecio integerrimus	forest groundsel	JP, LP, MM
Senecio hydrophilus	water groundsel	WS,MM
*Senecio vulgaris**	common groundsel	RU
Solidago canadensis ssp. *elongata*	Canada golden rod	JP,LP,MM
*Tanacetum vulgare**	tansy	DS,RU
*Taraxacum officinale**	common dandelion	JP,LP,WS,MM,DS
*Tragopogon dubius**	goat's beard	JP,MM,DS
Berberidaceae		
Berberis aquifolium var. *repens*	Oregon grape	JP
Betulaceae		
Alnus incana ssp. *tenuifolia*	mountain alder	LP,WS
Betula occidentalis	water birch	LP,WS
Boraginaceae		
Amsinckia tessellata	checker fiddleneck	RU
Cryptantha affinis	cryptantha	MM
Plagiobothrys leptocladus	alkali plagiobothrys	MM, RU
Plagiobothrys cognatus	cognate popcornflower	MM
Brassicaceae		
*Capsella bursa-pastoris**	shepherd's purse	MM,DS
Descurainia pinnata var. *halictorum*	tansy mustard	JP,DS,RU

Table 2 Plant Species Observed on the Upper Truckee River and Marsh Restoration Project Site		
Scientific Name	Common Name	Plant Community[1]
Lepidium densiflorum	peppergrass	JP, LP
*Lepidium latifolium**	perennial pepperweed	MM,DS,RU
Lepidium virginicum var. *pubescens*	hairy pepperweed	RU
Rorippa curvisiliqua	yellow cress	MM
Rorippa nasturtium-aquaticum	water cress	MM, LG
Rorippa subumbellata[2]	Tahoe water cress	BD
*Sisymbrium altissimum**	tumble mustard	JP, DS, RU
Callitrichaceae		
Callitriche heterophylla var. *bolanderi*	water-starwort	MM
Callitriche verna	water-starwort	WS, MM, LG
Campanulaceae		
Downingia montana	Sierra downingia	MM
Caprifoliaceae		
Lonicera conjugialis	double honeysuckle	JP
Caryophyllaceae		
Cerastium fontanum ssp. *vulgare**	mouse-ear chickweed	RU
Stellaria longipes var. *longipes*	starwort chickweed	JP, LP, WS, MM
*Spergularia rubra**	purple sand spurry	RU
Chenopodiaceae		
*Chenopodium album**	lamb's quarters pigweed	JP, DS, RU
Convolvulaceae		
*Convolvulus arvensis**	bindweed	MM, DS, RU
Cyperaceae		
Carex aquatilis	water sedge	LP, WS, MM, LG, BD
Carex athrostachya	slender-beak sedge	MM
Carex douglasii	Douglas' sedge	JP, MM, DS
Carex fracta	fragile sheath sedge	LP, MM
Carex lanuginosa	woolly sedge	LP, MM
Carex lenticularis	lakeshore sedge	LP. MM
Carex nebrascensis	Nebraska sedge	LP, WS, MM, LG, BD
Carex praegracilis	field sedge	JP, LP, WS, MM, BD
Carex simulata	short beaked sedge	WS, MM
Carex utriculata	beaked sedge	WS, MM, LG
Carex vesicaria	blister sedge	WS, MM
Eleocharis acicularis var. *bella*	beautiful spikerush	WS, MM, LG
Eleocharis macrostachya	common spikerush	WS, MM, LG
Eleocharis pauciflora	few-flowered spikerush	WS, MM, LG
Scirpus acutus	tule	MM
Scirpus microcarpus	Small-head bulrush	LG, MM
Scirpus validus	soft-stemmed bulrush	LG
Equisetaceae		
Equisetum arvense	scouring rush horsetail	
Ericaceae		
Arctostaphylos patula	green leaf manzanita	
Fabaceae		
Astragalus ciser	milk-vetch	DS, RU
Lathyrus lanszwertii var. *lanszwertii*	wild pea	JP, LP, MM

Table 2
Plant Species Observed on the Upper Truckee River and Marsh Restoration Project Site

Scientific Name	Common Name	Plant Community[1]
*Lotus corniculatus**	bird's foot trefoil	RU
Lotus purshianus var. *purshianus*	Spanish clover	MM, DS, RU
Lupinus breweri	Brewer's lupine	JP, DS, RU
Lupinus latifolius	broadleaf lupine	LP, WS, MM
Lupinus lepidus var. *confertus*	clustered tidy lupine	JP, DS, RU
Lupinus polyphyllus	lupine	LP, WS, MM
*Melilotus alba**	white sweetclover	DS, RU
Trifolium cyathiferum	bowl clover	MM, WS
Trifolium longipes	long stalked clover	MM, WS
*Trifolium pratense**	red clover	MM, WS, RU
Gentianaceae		
Gentiana newberryi var. *tiogana*	gentian	MM
Geraniaceae		
*Erodium cicutarium**	redstem filaree	DS, RU
Grossulariaceae		
Ribes cereum	wax currant	JP
Ribes inerme	white-stemmed gooseberry	
Ribes lacustre	swamp currant	JP, LP, WS
Ribes roezlii var. *roezlii*	Sierra gooseberry	JP
Ribes viscosissimum	sticky currant	JP, LP
Halogoraceae		
Myriophyllum sibericum	myriophyllum	LG
Hippuridaceae		
Hippuris vulgaris	mare's tail	LG
Hydrocharitaceae		
Elodea canadensis	common waterweed	LG
Hydrophyllaceae		
Hesperochiron pumilus	dwarf hesperochiron	MM
Phacelia hastata	silverleaf phacelia	JP, BD, DS, RU
Hypericaceae		
Hypericum anagalloides	tinker's penny	MM
Hypericum formosum var. *scouleri*	Scouler's St. John's wort	MM, BD, DS
*Hypericum perforatum**	Klamath weed	MM, BD, DS, RU
Juncaceae		
Juncus balticus	wiregrass, Baltic rush	LP, WS, MM, LG, BD, DS, RU
Juncus effusus	common rush	MM, LG, WS
Juncus ensifolius	sword-leaved rush	WS, MM
Juncus nevadensis	Nevada rush	WS, MM, LG
Juncus orthophyllus	straight-leaved rush	WS, MM, LG
Lamiaceae		
Mentha arvensis	field mint	LP, WS, MM
Prunella vulgaris	self-heal	WS, MM
Pycnanthemum californicum	Sierra mint	MM
Stachys ajugoides var. *rigida*	hedge nettle	LP, WS, MM
Lentibulariaceae		
Utricularia vulgaris	common bladderwort	MM, LG

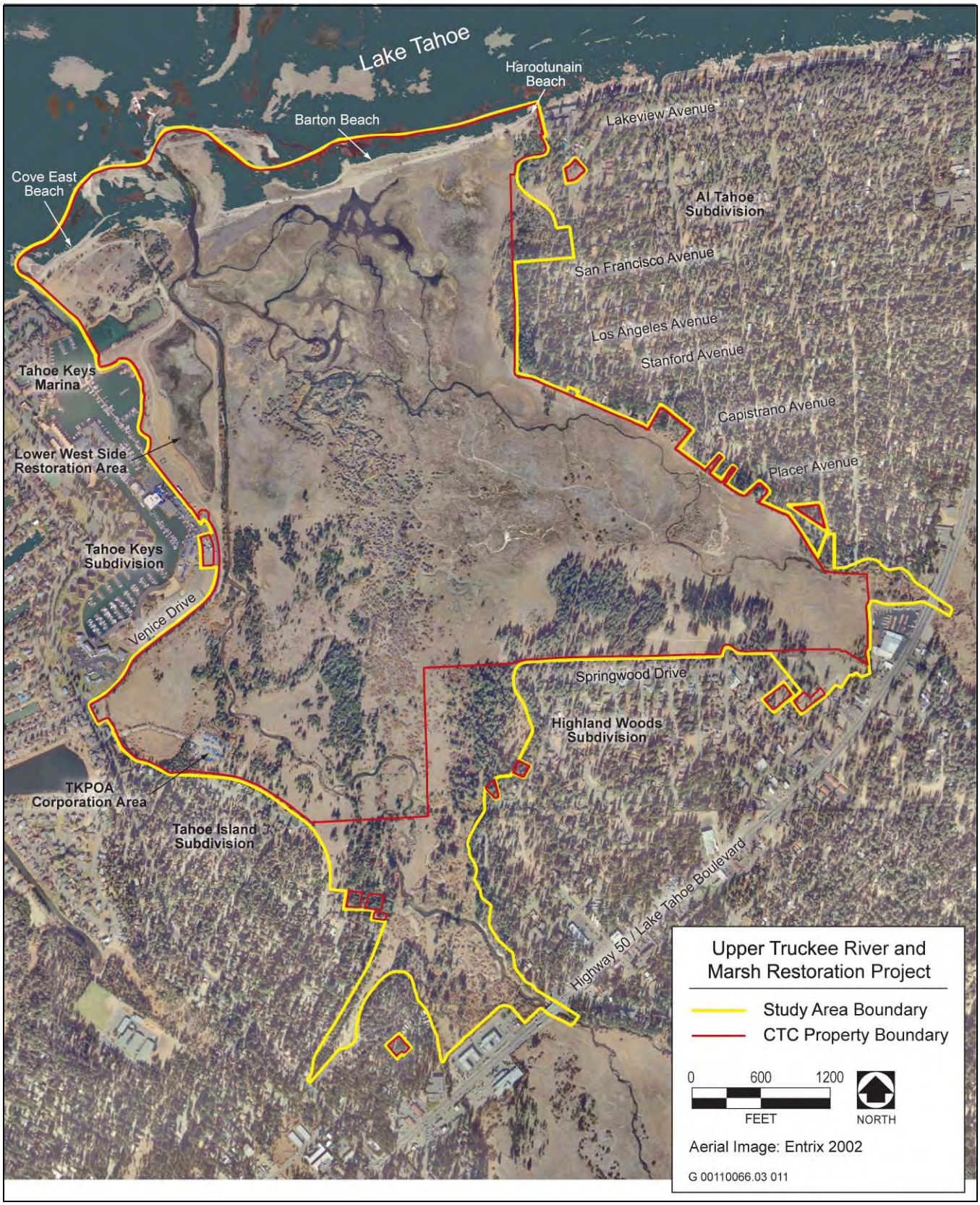
Table 2
Plant Species Observed on the Upper Truckee River and Marsh Restoration Project Site

Scientific Name	Common Name	Plant Community[1]
Liliaceae		
Smilacina stellata	false Solomon's seal	LP, WS, MM
Triteleia hyacinthina	white brodiaea	LP, MM
Linaceae		
Linum lewisii	flax	MM, RU
Malvaceae		
Sidalcea oregana ssp. spicata	checker mallow	JP, LP, WS, MM
Nymphaeaceae		
Nuphar luteum var. *polysepalum*	yellow pond-lily	LG
Onagraceae		
Epilobium angustifolium var. *circumvagum*	fireweed	JP, LP, MM
Epilobium brachycarpum	willow-herb	RU
Epilobium ciliatum var. *ciliatum*	slender willow-herb	LP, WS, MM, DS, RU
Epilobium densiflorum	dense flowered boisduvalia	MM, RU
Gayophytum diffusum var. *parviflorum*	ground smoke	JP, BD, DS, RU
Oenothera elata var. *hookeri*	evening primrose	DS, RU
Orchidaceae		
Spiranthes romanzoffiana	ladies' tresses	MM
Platanthera leucostachys	white-flowered bog-orchid	MM
Paeoniaceae		
Paeonia brownii	western peony	JP
Pinaceae		
Abies concolor	white fir	JP
Pinus contorta var. *rnurrayana*	lodgepole pine	JP, LP
Pinus jeffreyi	Jeffrey pine	JP
Plantaginaceae		
*Plantago lanceolata**	English plantain	JP, LP, MM, DS, RU
Plantago major	common plantain	JP, LP, MM, DS, RU
Poaceae		
Achnatherum lemmonii	Lemmon's needlegrass	JP, LP, MM
Achnatherum lettermanii	Letterman's needlegrass	JP, LP, MM
Achnatherum occidentalis	western needlegrass	JP, LP, MM
Agrostis exarata	spike bent grass	WS, MM
Agrostis scabra	rough bent grass	LP, WS, MM
*Agrostis stolonifera**	creeping bent grass	LP, WS, MM
Alopecurus aequalis	short-awn foxtail	LP, WS, MM
Alopecurus pratensis	meadow foxtail	MM
Bromus carinatus	California brome	RU
Bromus inermis var. *inermis**	smooth brome	DS, RU
*Bromus tectorum**	cheatgrass	BD, DS, RU
Calamagrostis rubescens	pine grass	MM
Calamagrostis strict var. inexpansa	strict reedgrass	MM
*Dactylis glomerata**	orchard grass	MM, DS, RU
Deschampsia cespitosa var. *cespitosa*	tufted hairgrass	LP, WS, MM
Deschampsia danthonioides	annual hairgrass	LP, WS, MM, RU
Elymus elymoides var. *elymoides*	squirreltail	JP, MM, DS, RU

Table 2 Plant Species Observed on the Upper Truckee River and Marsh Restoration Project Site		
Scientific Name	Common Name	Plant Community[1]
Elymus glaucus	blue wildrye	LP, WS, MM, RU
Elymus trachycaulus var. *trachycaulus*	slender wheatgrass	MM, DS
Elytrigia intermedia var. *intermedia**	intermediate wheatgrass	MM
*Festuca arundinacea**	tall fescue	MM
Festuca rubra	red fescue	MM, DS
Festuca idahoensis	Idaho fescue	LP, MM
Glyceria borealis	northern mannagrass	WS, MM, LG
Glyceria elata	fowl mannagrass	WS, MM, LG
Glyceria grandis[3]	American mannagrass	MM, LG
*Holcus lanatus**	velvet grass	MM
Hordeum brachyantherum	meadow barley	MM, BD
Hordeum jubatum	foxtail barley	MM, BD, DS
Leymus triticoides	creeping wildrye	JP, LP, WS, MM, BD
*Lolium multiflorum**	italian ryegrass	MM, DS
Melica aristata	awned melic	MM, DS
Muhlenbergia filiformis	slender muhly	MM
Muhlenbergia richardsonis	mat muhly	MM
Phalaris arundinacea	reed canary grass	MM
Phleum alpinum	mountain timothy	MM
*Phleum pratense**	domestic timothy	MM
*Poa bulbosa**	bulbous bluegrass	DS, RU
*Poa compressa**	Canadian bluegrass	MM
*Poa palustris**	fowl bluegrass	LP, MM
Poa pratensis var. *pratensis**	Kentucky bluegrass	JP, LP, WS, MM
Poa secunda var. *nevadensis*	bluegrass	JP, MM
Torreyochloa pallida	pale false mannagrass	MM, LG, WS
Ventenata dubia	ventenata	MM
Vulpia octoflora	six weeks fescue	RU
Polemoniaceae		
Allophyllum gilioides var. *violaceum*	dense false gilia	MM, RU
Collomia grandiflora	mountain collomia	JP, LP, MM, RU
Collomia linearis	slenderleaf collomia	JP, MM
Gilia leptalea	blue gilia	LP, MM
Ipomopsis aggregata	scarlet gilia	LP, MM, RU
Navarretia intertexta ssp. *propinqua*	needleleaf navarretia	MM, RU
Navarretia leucocephala ssp. *minima*	white-headed navarretia	LP, MM
Phlox gracilis	slender phlox	LP, MM, RU
Polygonaceae		
Eriogonum umbellatum	sulphur flower	JP, MM, RU
Polygonum amphibium	water smartweed	LP, WS, MM, LG
*Polygonum arenastrum**	common knotweed	MM, DS, RU
Polygonum bistortoides	Western bistort	WS, MM, LG
Polygonum douglasii var. *douglasii*	Douglas' knotweed	LP, MM, BD, DS
Polygonum hydropiperoides	waterpepper	LP, WS, MM, LG
Polygonum polygaloides ssp. *kelloggii*	Kellogg's knotweed	MM, RU
*Rumex acetosella**	sheep sorrel	LP, MM, RU
*Rumex crispus**	curly dock	LP, WS, MM

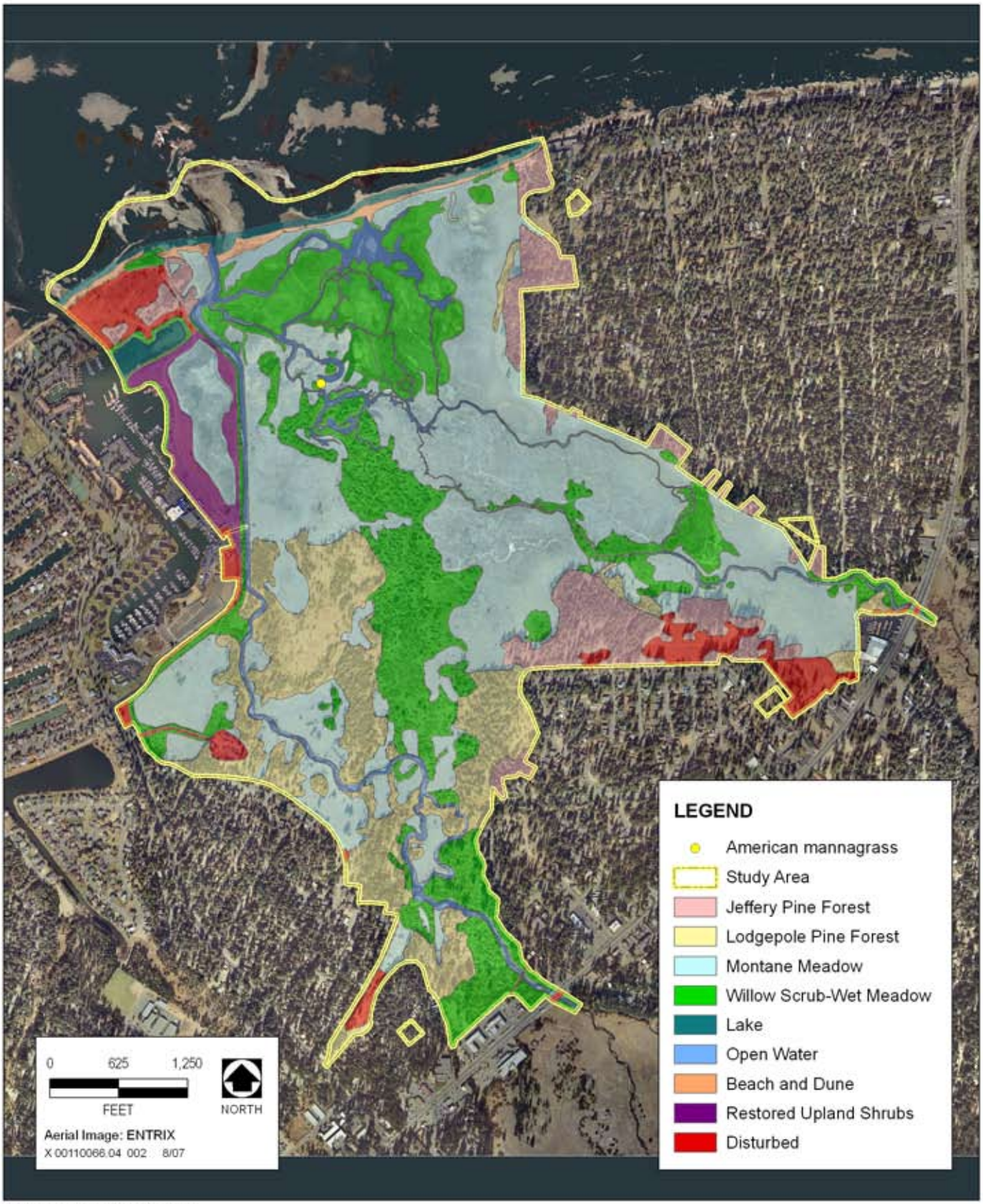
Table 2 Plant Species Observed on the Upper Truckee River and Marsh Restoration Project Site		
Scientific Name	Common Name	Plant Community[1]
Rumex salicifolius	willow-leaved dock	MM
Portulacaceae		
Calyptridium umbellatum	pussy paws	MM
Claytonia perfoliata	miner's lettuce	LP, MM, RU
Lewisia nevadensis	Nevada bitterroot	MM
Montia chamissoi	toad lily	MM
Montia linearis	narrowleaf miner's lettuce	MM
Potamogetonaceae		
Potamogeton amphibium	marsh pondweed	
Potamogeton foliosus	leafy pondweed	LG
Potamogeton gramineus	various-leaved pondweed	LG
Potamogeton natans	jointed pondweed	LG
Potamogeton pusillus	pondweed	LG
Ranunculaceae		
Ranunculus aquatilis var. *capillaceus*	threadleaf crowfoot	LG, WA
Ranunculus aquatilis var.*hispidulus*	white water-buttercup	LG, WA
Ranunculus flabellaris	yellow water-buttercup	LG
Ranunculus flammula	buttercup	LG
Ranunculus occidentalis	western buttercup	LP, MM
Thalictrum fendleri	meadowrue	JP, LP, MM
Rhamnaceae		
Ceanothus cordulatus	white thorn	JP
Ceanothus prostratus	Squaw carpet	JP
Ceanothus velutinus	California-lilac	JP
Rosaceae		
Amelanchier alnifolia	serviceberry	LP
Fragaria virginiana	mountain strawberry	LP, MM
Geum macrophyllum	bigleaf avens	LP, WS, MM
Potentilla biennis	cinquefoil	LP, MM
Potentilla drummondii var. bruceae	Bruce's cinquefoil	MM
Potentilla glandulosa	cinquefoil	LP, MM
Potentilla gracilis	cinquefoil	LP, MM
*Potentilla norvegica**	Norwegian cinquefoil	MM, BD
Rosa woodsii var. *ultramontana*	wood rose, interior rose	JP, LP
Sorbus californica	mountain ash	LP
Rubiaceae		
Galium trifidum var. *pusillum*	bedstraw, cleavers	LP, WS, MM
Salicaceae		
*Populus balsamifera*spp. *trichocarpa*	black cottonwood	WS
Salix exigua	narrow-leaved willow	WS, MM, BD, RU
Salix geyeriana	Geyer's willow	LP, WS, MM, LG
Salix lemmonii	Lemmon's willow	LP, WS, MM, LG, BD
Salix lucida var. *lasiandra*	shining willow	LP, WS, MM, LG, BD
Salix scouleriana	Scouler's willow	LP, WS, MM
Scrophulariaceae		
Castilleja applegatei	Indian paintbrush	LP, MM
Collinsia parviflora	blue-eyed Mary	MM, RU

Table 2 Plant Species Observed on the Upper Truckee River and Marsh Restoration Project Site		
Scientific Name	Common Name	Plant Community[1]
Gratiola ebracteata	bractless hedge-hyssop	MM
Gratiola neglecta	American hedge-hyssop	MM
Limosella acaulis	broad leaved mudwort	MM, LG
*Linaria vulgaris**	butter-and-eggs	MM
Mimulus guttatus	yellow monkeyflower	LP, MM
Mimulus lewisii	Lewis monkeyflower	MM, WS
Mimulus primuloides var. *primuloides*	monkeyflower	LP, WS, MM
Penstemon rydbergii var. *oreocharis*	meadow beardtongue	JP, LP, MM
Penstemon speciosus	showy penstemon	MM, DS, RU
*Verbascum thapsus**	woolly mullein	MM, DS, RU
Veronica americana	American speedwell	WS, MM
Veronica peregrina var. *xalapensis*	purselane speedwell	LP, MM
Veronica scutellata	marsh speedwell	WS, MM
Typhaceae		
Sparganium emersum ssp. *emersum*	emersed bur-reed	MM
Typha angustifolium	cattail	LG
Urticaceae		
Urtica dioica	stinging nettle	LP, WS, MM
Violaceae		
Viola purpurea	mountain violet	JP, LP



Study Area Map

Exhibit 1



Source: EDAW Survey 2007

Extent of Plant Communities and Location of American mannagrass in Study Area

Exhibit 2

APPENDIX A

CNDDB Data Form

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 07/24/2007

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Glyceria grandis*

Common Name: American mannagrass

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 35 Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: yes Number Not yet deposited - likely DAV Museum / Herbarium

Reporter: Mark Bibbo/EDAW
Address: 2022 J St.
Sacramento, CA 95811
E-mail Address: mark.bibbo@edaw.com
Phone: (916) 414-5800

Plant Information

Phenology: _____% vegetative 100 % flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: El Dorado Landowner / Mgr.: Calif. Tahoe Conservancy
Quad Name: South Lake Tahoe Elevation: 6224 ft.
T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): GPS
T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ GPS Make & Model Thales Mobile Mapper
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☑ Horizontal Accuracy 1 m meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ ***OR*** Geographic (Latitude & Longitude) ☑
Coordinates: 38.9378°
-119.998°

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

The population was found growing on a low mud bench within one of the active distributary channels of Trout Creek just above the surface water. Associated species on the mud bench were Torreyochloa pallida, Carex utriculata, Juncus balticus, Epilobium ciliatum, and Mentha arvense. There were ca. 35 flowering stems in a 10 feet diameter area. Nearby Glyceria species, thought to be Glyceria elata had a very different appearance: much greener lemmas and inflorescence, a slightly smaller inflorescence, and smaller, more rounded glumes.

Other rare taxa seen at THIS site on THIS date:
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): ☑ Excellent ☐ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Residential and Recreational

Visible disturbances: None

Threats: None. Potential threat from "drying-down" of the marsh, from lowering lake levels.

Comments: The entire marsh area is protected as a preserve and public open space. The particular location that GLGR is growing is so wet that visitors to the marsh are unlikely to disturb it.

Determination: *(check one or more, and fill in blanks)*

☑ Keyed (cite reference): Jepson manual, Munz, Abrahms
☐ Compared with specimen housed at: _____
☑ Compared with photo / drawing in: USU Herb. utc.usu.edu/keys/support/factsheets.htm
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

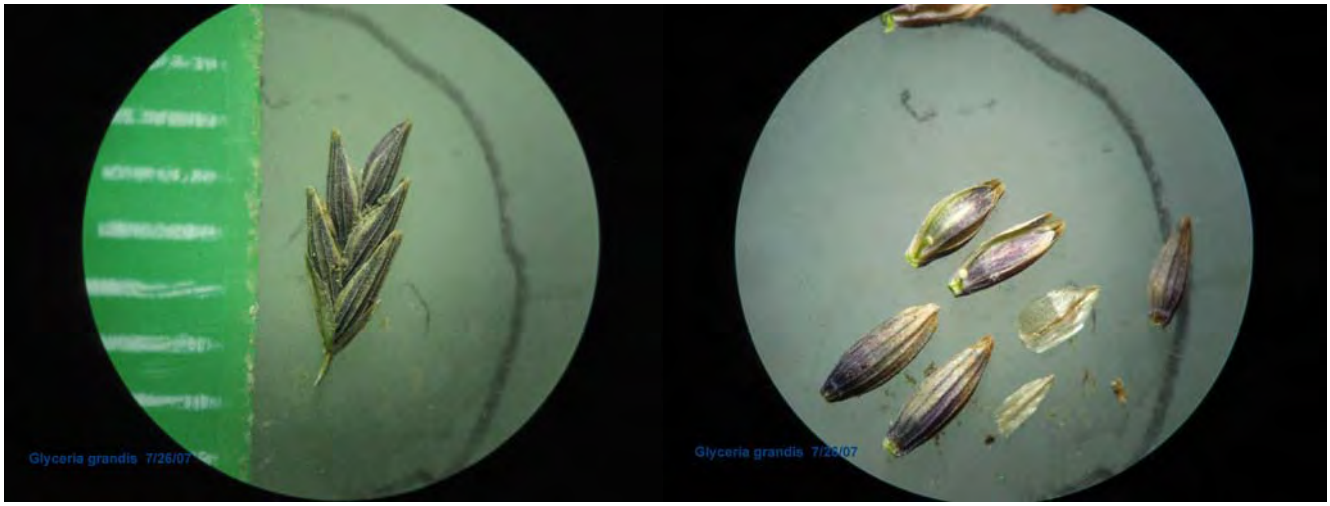
	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☑

May we obtain duplicates at our expense? yes ☑ no ☐

APPENDIX B

Representative Photographs

American manna grass growing alongside a channel of Trout Creek at the north end of the marsh



Close-ups of the spikelets and florets of American mannagrass, illustrating the acute glume tip as a distinguishing character of the species

APPENDIX H

Wildlife Species and Associated Plant Communities and Aquatic Ecosystems at the Upper Truckee Marsh

Appendix H: Wildlife species and associated plant communities and aquatic ecosystems at the Upper Truckee Marsh. Species in bold have been observed at the site during recent surveys. Other species may potentially occur. List compiled from TRPA surveys from 1999-2002 (TRPA 2001, TRPA 2002), CTC surveys from 2002 (CTC 2002), and S. Fox suveys from 1994-1996 (Global 1997).

Scientific Name	Common Name	Community Associations[1]	Breeder?[2]
AMPHIBIANS			
Ambystoma macrodactylum	**Long-toed Salamander**	**WS, MM, ST, LG**	**M**
Bufo boreas	Western Toad	WS, MM, ST, LG	
Hyla regilla	**Pacific Treefrog**	**WS, MM, ST, LG**	**B**
Rana catesbeiana	**Bullfrog**	**WS, MM, ST, LG**	**M**
Rana muscosa	Mountain Yellow-legged Frog	WS, MM, ST, LG	
REPTILES			
Chanina bottae	Rubber Boa	JP, LP, MM	
Elgaria coerulea	Northern Alligator Lizard	JP, LP, MM	
Sceloporus occidentalis	**Western Fence Lizard**	**JP, LP, MM**	
Thamnophis couchii	Western Aquatic Garter Snake	WS, MM, ST, LG	
Thamnophis elegans	Western Terrestrial Garter	WS, MM, ST, LG	
Thamnophis sirtalis	Common Garter Snake	WS, MM, ST, LG	
BIRDS			
Accipiter cooperii	**Cooper's Hawk**	**JP, LP, WS**	
Accipiter gentilis	**Northern Goshawk**	**JP**	
Accipiter striatus	**Sharp-shinned Hawk**	**JP, LP, WS**	
Actitis macularia	**Spotted Sandpiper**	**MM, BD, ST**	**B**
Aechmophorus occidentalis	**Western/Clark's Grebe**	**LG, LK**	**M**
Agelaius phoeniceus	**Red-winged Blackbird**	**WS, MM**	**B**
Anas acuta	**Northern Pintail**	**MM, ST, LG**	**M**
Anas americana	**American Wigeon**	**MM, ST, LG**	**M**
Anas clypeata	**Northern Shoveler**	**MM, ST, LG**	**M**
Anas crecca	**Green-winged Teal**	**ST, LG**	**M**
Anas cyanoptera	**Cinnamon Teal**	**MM, ST, LG**	**M**
Anas platyrhynchos	**Mallard**	**MM, ST, LG**	**B**
Anas strepera	**Gadwall**	**MM, ST, LG**	**B**
Anser albifrons	**Greater White-fronted Goose**	**MM, LG**	
Anthus rubescens	American Pipit	WS, MM	
Aphelocoma coerulescens	**Western Scrub-jay**	**JP, LP, WS, DA**	
Ardea herodias	**Great-blue Heron**	**WS, MM, ST, LG**	
Aythya affinis	Lesser Scaup	ST, LG, LK	
Aythya americana	Redhead	ST, LG, LK	
Aythya collaris	**Ring-necked Duck**	**MM, ST, LG, LK**	**M**
Aythya marila	Greater Scaup	ST, LG, LK	
Aythya valisineria	Canvasback	ST, LG, LK	
Bombycilla cedrorum	Cedar Waxwing	WS, DA	
Botaurus lentiginosus	American Bittern	WS, MM, ST, LG	
Branta canadensis	**Canada Goose**	**MM, BD, LG, LK, DA**	**B**
Bubo virginianus	**Great-horned Owl**	**JP**	
Bucephala albeola	**Bufflehead**	**ST, LG, LK**	
Bucephala clangula	**Common Goldeneye**	**ST, LG, LK**	

Scientific Name	Common Name	Community Associations[1]	Breeder?[2]
Bucephala islandica	**Barrow's Goldeneye**	**ST, LG, LK**	
Buteo jamaicensis	**Red-tailed Hawk**	**JP, LP, MM**	
Buteo lagopus	**Rough-legged Hawk**	**JP, LP, MM**	
Butorides virescens	Green Heron	WS, MM, ST, LG	
Calidris mauri	**Western Sandpiper**	**BD, ST**	
Calidris minutilla	Least Sandpiper	BD, ST	
Carduelis pinus	Pine Siskin	JP, LP, WS, MM	M
Carduelis psaltria	Lesser Goldfinch	LP, WS, MM	
Carduelis tristis	American Goldfinch	LP, WS, MM	M
Carpodacus cassinii	**Cassin's Finch**	**JP, LP, WS**	**B**
Carpodacus mexicanus	**House Finch**	**JP, LP, WS, DA**	**M**
Carpodacus purpureus	Purple Finch	JP, LP, WS	
Carthartes aura	**Turkey Vulture**	**LP, MM**	
Casmerodius albus	Great Egret	WS, MM, ST, LG	
Catharus guttatus	Hermit Thrush	JP, LP, WS	
Catharus ustulatus	Swainson's Thrush	JP, LP, WS	
Catoptrophorus semipalmatus	**Willet**	**MM, BD, ST**	
Certhia americana	**Brown Creeper**	**JP, LP**	**M**
Ceryle alcyon	**Belted Kingfisher**	**WS, ST**	**M**
Charadrius alexandrinus	Snowy Plover	BD	
Charadrius semipalmatus	Semipalmated Plover	BD	
Charadrius vociferus	**Killdeer**	**MM, BD, ST**	**B**
Chen caerulescens	Snow Goose	MM, LG	
Chlidonias niger	Black Tern	BD, LG, LK	M
Chondestes grammacus	**Lark Sparrow**	**MM**	**M**
Chordeiles minor	**Common Nighthawk**	**JP, LP, MM**	
Cinclus mexicanus	**American Dipper**	**ST**	
Circus cyaneus	**Northern Harrier**	**LP, MM**	**M**
Cistothorus palustris	Marsh Wren	WS, ST, LG	
Coccothraustes vespertinus	**Evening Grosbeak**	**JP, LP**	**M**
Colaptes auratus	**Northern Flicker**	**JP, LP**	**B**
Columbia fasciata	**Band-tailed Pigeon**	**JP, LP**	
Columbia livia	**Rock Dove**	**DA**	
Contopus sordidulus	**Western Wood-pewee**	**JP, LP, WS, MM**	**B**
Corvus corax	**Common Raven**	**JP, LP, DA**	**M**
Cyanocitta stelleri	**Steller's Jay**	**JP, LP, WS, DA**	**B**
Cygnus columbianus	Tundra Swan	MM, LG	
Dendroica coronata	**Yellow-rumped Warbler**	**JP, LP, WS**	**B**
Dendroica nigrescens	**Black-throated Gray Warbler**	**JP, LP, WS**	**M**
Dendroica occidentalis	**Hermit Warbler**	**JP, LP, WS**	**M**
Dendroica petechia	**Yellow Warbler**	**WS**	**B**
Dendroica townsendi	Townsend's Warbler	JP, LP, WS	
Egretta thula	**Snowy Egret**	**WS, MM, ST, LG**	
Empidonax traillii	**Willow Flycatcher**	**WS, MM**	**M**
Euphagus cyanocephalus	**Brewer's Blackbird**	**LP, WS, MM, DA**	**B**
Falco columbarius	**Merlin**	**JP, LP**	
Falco sparverius	**American Kestrel**	**LP, MM**	**M**
Fulica americana	**American Coot**	**ST, LG**	**M**
Gallinago gallinago	**Wilson's Snipe**	**MM, BD, ST**	**M**
Gavia immer	Common Loon	LK	
Geothlypis trichas	Common Yellowthroat	WS, LG	M

Scientific Name	Common Name	Community Associations[1]	Breeder?[2]
Gymnorhinus cyanocephalus	**Pinyon Jay**	**JP, LP**	
Haliaeetus leucocephalus	**Bald Eagle**	**JP, LK**	
Himantopus mexicanus	Black-necked Stilt	MM, BD	M
Hirundo pyrrhonota	**Cliff Swallow**	**LP, WS, MM, ST, LG, DA**	**B**
Hirundo rustica	**Barn Swallow**	**LP, WS, MM, ST, LG, DA**	**B**
Ixobrychus exilis	Least Bittern	WS, MM, ST, LG	
Junco hyemalis	**Oregon Junco**	**JP, LP, WS, MM**	**B**
Lanius ludovicianus	Loggerhead Shrike	LP, MM	
Larus argentatus	Herring Gull	BD, LG, LK	
Larus californicus	**California Gull**	**BD, LG, LK**	
Larus delawarensis	**Ring-billed Gull**	**BD, LG, LK**	
Larus philadelphia	**Bonaparte's Gull**	**BD, LG, LK**	
Larus thayeri	Thayer's Gull	BD, LG, LK	
Limnodromus scolopaceus	**Long-billed Dowitcher**	**MM, BD, ST**	
Limosa fedoa	**Marbled Godwit**	**MM, BD, ST**	
Lophodytes cucullatus	Hooded Merganser	ST, LG, LK	
Loxia curvirostra	Red Crossbill	JP	
Melospiza lincolnii	**Lincoln's Sparrow**	**LP, WS, MM**	**M**
Melospiza melodia	**Song Sparrow**	**LP, WS, MM**	**B**
Mergus merganser	**Common Merganser**	**MM, ST, LG, LK**	**B**
Molothrus ater	**Brown-headed Cowbird**	**JP, LP, WS, MM, DA**	**B**
Nucifraga columbiana	**Clark's Nutcracker**	**JP, LP**	
Numenius americanus	**Long-billed Curlew**	**MM, BD, ST**	
Nycticorax nycticorax	**Black-crowned Night-heron**	**WS, MM, ST, LG**	**M**
Oporornis tolmiei	**MacGillivray's Warbler**	**WS**	**B**
Otus kennicottii	**Western Screech-owl**	**JP**	
Oxyura jamaicensis	**Ruddy Duck**	**MM, ST, LG, LK**	**M**
Palacrocorax auritus	**Double-crested Cormorant**	**LG, LK**	
Pandion haliaetus	**Osprey**	**JP, LP, MM, LG, LK**	
Passer domesticus	House Sparrow	DA	
Passerculus sandwichensis	**Savannah Sparrow**	**LP, WS, MM**	**B**
Passerella iliaca	Fox Sparrow	JP, WS	
Phalaropus tricolor	**Wilson's Phalarope**	**MM, BD, ST**	**M**
Pheucticus malanocephalus	**Black-headed Grosbeak**	**WS**	**M**
Pica hudsonia	**Black-billed Magpie**	**JP, LP, WS, DA**	**B**
Picoides albolarvatus	**White-headed Woodpecker**	**JP, LP**	**M**
Picoides arcticus	**Black-backed Woodpecker**	**JP, LP**	**M**
Picoides villosus	**Hairy Woodpecker**	**JP, LP**	**M**
Pipilo chlorurus	**Green-tailed Towhee**	**LP**	
Pipilo maculatus	**Spotted Towhee**	**WS**	**M**
Piranga ludoviciana	**Western Tanager**	**JP, LP**	**M**
Pluvialis squatarola	Black-bellied Plover	BD	
Podiceps auritus	Horned Grebe	LG, LK	
Podiceps grisegena	**Red-necked Grebe**	**LG, LK**	
Podiceps nigricollis	Eared Grebe	LG, LK	
Podilymbus podiceps	**Pied-billed Grebe**	**LG, LK**	**M**
Poecile gambeli	**Mountain Chickadee**	**JP, LP, WS**	**B**
Pooecetes gramineus	**Vesper Sparrow**	**LP, MM**	
Porzana carolina	**Sora**	**WS, MM, ST, LG**	**B**
Rallus limicola	Virginia Rail	WS, MM,ST, LG	
Recurvirostra americana	**American Avocet**	**MM, BD**	**M**

Scientific Name	Common Name	Community Associations[1]	Breeder?[2]
Regulus calendula	Ruby-crowned Kinglet	JP, LP, WS	M
Regulus satrapa	**Golden-crowned Kinglet**	**JP, LP, WS**	**B**
Sayornis nigricans	**Black Phoebe**	**WS, MM**	**M**
Sayornis saya	**Say's Phoebe**	**LP, WS, MM**	
Sialia currucoides	Mountain Bluebird	LP, WS, MM	
Sialia mexicana	**Western Bluebird**	**LP, WS, MM**	
Sitta canadensis	**Red-breasted Nuthatch**	**JP, LP**	**B**
Sitta carolinensis	**White-breasted Nuthatch**	**JP, LP, WS**	**B**
Sitta pygmaea	**Pygmy Nuthatch**	**JP, LP**	**B**
Sphyrapicus ruber	**Red-breasted Sapsucker**	**JP, LP**	**M**
Spizella breweri	**Brewer's Sparrow**	**JP, LP, MM**	
Spizella passerina	Chipping Sparrow	JP, LP, MM	M
Stellula calliope	**Calliope Hummingbird**	**LP, MM**	
Sterna caspia	**Caspian Tern**	**BD, LG, LK**	
Sterna forsteri	**Forster's Tern**	**BD, LG, LK**	**M**
Sterna hirundo	Common Tern	BD, LG, LK	
Sturnella neglecta	**Western Meadowlark**	**MM**	**B**
Sturnus vulgaris	**European Starling**	**LP, WS, DA**	**B**
Tachycineta bicolor	**Tree Swallow**	**LP, WS, MM, ST, LG, DA**	**M**
Tachycineta thalassina	**Violet-green Swallow**	**LP, WS, MM, ST, LG, DA**	**M**
Tringa flavipes	Lesser Yellowlegs	MM, BD, ST	
Tringa melanoleuca	**Greater Yellowlegs**	**MM, BD, ST**	
Turdus migratorius	**American Robin**	**JP, LP, WS, MM**	**B**
Tyrannus verticalis	**Western Kingbird**	**LP, WS, MM**	**M**
Vermivora celata	**Orange-crowned Warbler**	**JP, LP, WS**	**M**
Vermivora ruficapilla	**Nashville Warbler**	**JP, LP, WS**	**M**
Vireo cassinii	**Cassin's Vireo**	**JP, LP, WS**	**M**
Vireo gilvus	**Warbling Vireo**	**JP, LP, WS**	**M**
Wilsonia pusilla	**Wilson's Warbler**	**WS**	**B**
Xanthocephalus xanthocephalus	**Yellow-headed Blackbird**	**WS, MM, LG**	**B**
Zenaida macroura	**Mourning Dove**	**JP, LP, WS, MM, DA**	**M**
Zonotrichia atricapilla	Golden-crowned Sparrow	JP, LP, WS, MM	
Zonotrichia leucophrys	**White-crowned Sparrow**	**JP, LP, WS, MM**	**B**
MAMMALS			
Canis latrans	**Coyote**	**JP, LP, WS, MM**	
Castor canadensis	**Beaver**	**ST, LG**	**M**
Erithizon dorsatum	**Porcupine**	**JP, LP**	
Eustamius spp.	**Chipmunk species**	**JP, LP**	**M**
Glaucomys sabrinus	Northern Flying Squirrel	JP, LP	
Lutra canadensis	River Otter	ST, LG	
Microtus longicaudus	Long-tailed Vole	JP, LP, WS	M
Microtus montanus	**Mountain Vole**	**WS, MM**	**M**
Mustela erminea	Ermine	JP, LP, WS, MM	
Mustela frenata	Long-tailed Weasel	JP, LP, WS, MM	
Mustela vison	Mink	ST, LG	
Odocoileus hemionus	Mule deer	JP, LP, WS, MM	
Ondatra zibethicus	**Muskrat**	**ST, LG**	**M**
Peromyscus maniculatus	Deer Mouse	JP, LP, WS, MM	M
Procyon lotor	**Raccoon**	**JP, LP, WS, DA**	

Scientific Name	Common Name	Community Associations[1]	Breeder?[2]
Reithrodontomys megalotis	Western Harvest Mouse	JP, LP, WS, MM	M
Scapanus latimanus	**Broad-footed Mole**	**MM**	**M**
Sciurus griseus	**Western Gray Squirrel**	**JP, LP**	**M**
Sorex obscurus	Dusky Shrew	JP, LP, MM	M
Sorex vagrans	**Vagrant Shrew**	**JP, LP, MM**	**M**
Tamiascuirus douglasii	**Douglas Squirrel**	**JP, LP**	**M**
Thomomys monticola	**Sierran pocket gopher**	**JP, LP, WS, MM**	**M**
Ursus americana	Black bear	JP	
Various	Bat species	JP, LP, MM, ST, LG	
Zapus princeps	Western Jumping Mouse	WS, MM	M

[1]JP=Jeffrey pine; LP=Lodgepole pine, WS=Willow scrub/wet meadow, MM=Montane meadow, BD=Beach and dune, ST=Stream, LG=Lagoon, LK=Lake; DA=Disturbed area

[2] B=Confirmed breeder on site, M=May breed on site. If blank, species does not breed on site or the status is unknown.

APPENDIX I

Stream Channel Bank Erosion Data

	TMDL Results:	Channel Restoration	MIXED Treatment	Bank Protection	
river station (ft)	Existing Load of fines (CUBIC YARSDS)	Maximum Treatment Bank Erosion of Fines (CUBIC YARDS)	Maximum Treatment Bank Erosion of Fines (CUBIC YARDS)	Maximum Treatment Bank Erosion of Fines (CUBIC YARDS)	No Action/ No Project
	No treatments	All reaches treated	All reaches treated	All reaches treated	Subtotals
79,364					
75,492	3.83	1.77	3.83	0.60	887.14
73,950	2.18	1.01	2.18	0.34	
71,424	2.56	1.18	2.56	0.40	
70,210	0.75	0.35	0.75	0.12	
68,077	2.23	1.03	2.23	0.35	
65,420	145.26	67.11	57.02	22.81	
63,189	178.99	82.69	70.25	28.10	
60,925	181.62	83.91	71.29	28.51	
59,022	10.73	4.96	10.73	1.68	
58,333	30.76	14.21	4.83	4.83	
55,446	12.42	5.74	12.42	1.95	
53,806	6.31	2.92	6.31	0.99	
51,772	6.10	2.82	6.10	0.96	
50,121	57.02	26.34	8.95	8.95	
48,458	246.38	113.83	90.91	38.68	
46,260	23.22	10.73	23.22	3.65	2,894.47
44,357	413.30	190.94	64.89	64.89	
43,143	173.71	80.25	64.10	27.27	
39,600	24.77	11.44	24.77	3.89	
36,778	197.22	91.12	72.78	30.96	
35,564	149.16	68.91	70.55	23.42	
32,940	19.01	8.78	19.01	2.99	
27,756	982.33	453.84	362.48	154.23	
23,425	718.37	331.89	265.08	112.78	
19,160	24.95	11.52	24.95	3.92	
16,601	149.39	69.02	58.64	23.45	
13,451	19.05	8.80	19.05	2.99	
9,646	333.43	154.05	52.35	52.35	538.13
6,414	197.72	91.35	72.96	31.04	
5,344	3.88	1.79	3.88	0.61	
-	3.11	1.43	3.11	0.49	
Totals	4319.74	1995.72	1552.15	678.20	4319.74
79,364	4,319.74	1,995.72	1,552.15	678.20	**4,319.74**

	Upper Truckee Marsh Project (other reaches remain as Existing)					Cumulative Upper Truckee River Projects				Marsh Only	Other Projects ONLY	ALL
river station (ft)	UTMarsh ONLY Alt 1	UTMarsh ONLY Alt 2	UTMarsh ONLY Alt 3	UTMarsh ONLY Alt 4	UTMarsh ONLY	Cumulative Projects + UTMarsh NO Action		Cumulative Projects + UTMarsh ALTS		Reduction	Reduction	Reduction
					Subtotals	Complete treat all proposed projects	Subtotals	Complete Treat other projects AND UTMarsh	Subtotals			
79,364												
75,492	3.83	3.83	3.83	3.83	887.14	3.83	887.14	4	887.14	-	-	-
73,950	2.18	2.18	2.18	2.18		2.18		2				
71,424	2.56	2.56	2.56	2.56		2.56		3				
70,210	0.75	0.75	0.75	0.75		0.75		1				
68,077	2.23	2.23	2.23	2.23		2.23		2				
65,420	145.26	145.26	145.26	145.26		145.26		145				
63,189	178.99	178.99	178.99	178.99		178.99		179				
60,925	181.62	181.62	181.62	181.62		181.62		182				
59,022	10.73	10.73	10.73	10.73		10.73		11				
58,333	30.76	30.76	30.76	30.76		30.76		31				
55,446	12.42	12.42	12.42	12.42		12.42		12				
53,806	6.31	6.31	6.31	6.31		6.31		6				
51,772	6.10	6.10	6.10	6.10		6.10		6				
50,121	57.02	57.02	57.02	57.02		57.02		57				
48,458	246.38	246.38	246.38	246.38		246.38		246				
46,260	23.22	23.22	23.22	23.22	2,894.47	10.73	1,337.25	11	1,337.25	-	0.538	0.538
44,357	413.30	413.30	413.30	413.30		190.94		191				
43,143	173.71	173.71	173.71	173.71		80.25		80				
39,600	24.77	24.77	24.77	24.77		11.44		11				
36,778	197.22	197.22	197.22	197.22		91.12		91				
35,564	149.16	149.16	149.16	149.16		68.91		69				
32,940	19.01	19.01	19.01	19.01		8.78		9				
27,756	982.33	982.33	982.33	982.33		453.84		454				
23,425	718.37	718.37	718.37	718.37		331.89		332				
19,160	24.95	24.95	24.95	24.95		11.52		12				
16,601	149.39	149.39	149.39	149.39		69.02		69				
13,451	19.05	19.05	19.05	19.05		8.80		9				
9,646	123.04	123.04	123.04	130.87	220.55	333.43	538.13	123	220.55	0.590	-	0.590
6,414	93.52	91.35	91.35	93.52		197.72		94				
5,344	2.56	1.79	1.79	1.83		3.88		3				
-	1.43	1.43	1.47	1.47		3.11		1				
Totals	4002.16	3999.22	3999.25	4009.31	4002.16	2762.52	2762.52	2,445	2444.94	0.074	0.360	0.434
79,364					**4,002.16**		**2,762.52**		**2,444.94**			

APPENDIX J

Noise Modeling Results

Appendix J

Traffic Noise Prediction Model, (FWHA RD-77-108)

Model Input Sheet

Project Name : UTR Marsh
Project Number : 110066.04
Modeling Condition : Existing
Ground Type : Soft
Metric (L_{eq}, L_{dn}, CNEL) : CNEL

K Factor :
Traffic Desc. (Peak or ADT) : ADT

EDAW | AECOM

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	San Francisco Ave	Riverside Ave	US 50	1,000	25	16	98	1	1	85	10	5	0
2	Lakeview Avenue	Riverside Ave	US 50	2,100	25	20	97	2	1	85	10	5	0
3	East Venice Drive	Tahoe Keyes Blvd	Marina	1,500	25	24	96	3	1	85	10	5	0
4	Silver Dollar Ave	Ponderosa Street	US 50	1,250	25	12	98	1	1	85	10	5	0
5	Sunset Drive	Ponderosa Street	Conestoga St	85	25	12	98	1	1	85	10	5	0
6	US Highway 50	US 89 North	Up Truckee Brd	33000	35	34	96	3	1	77.9	12.6	9.5	
7	US Highway 50	Up Truckee Brd	Rufus Allen Blvd	32000	35	34	96	3	1	77.9	12.6	9.5	

Appendix J

Traffic Noise Prediction Model, (FWHA RD-77-108)

Predicted Noise Levels

Project Name : UTR Marsh
Project Number : 110066.04
Modeling Condition : Existing
Metric (Leq, Ldn, CNEL) : CNEL

EDAW | AECOM

		Segment		Noise Levels, dB CNEL				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	San Francisco Ave	Riverside Ave	US 50	54.6	46.3	53.9	57.6	2	5	11	24	51
2	Lakeview Avenue	Riverside Ave	US 50	56.3	51.1	55.7	59.7	4	9	19	41	88
3	East Venice Drive	Tahoe Keyes Blvd	Marina	53.6	50.2	53.0	57.3	3	7	16	34	73
4	Silver Dollar Ave	Ponderosa Street	US 50	57.4	49.1	56.8	60.4	3	6	13	28	60
5	Sunset Drive	Ponderosa Street	Conestoga St	45.7	37.5	45.1	48.8	0	1	2	5	10
6	US Highway 50	US 89 North	Up Truckee Brd	70.0	64.7	65.1	72.1	47	101	218	470	1012
7	US Highway 50	Up Truckee Brd	Rufus Allen Blvd	69.9	64.5	65.0	72.0	46	99	214	460	991

Appendix J

Traffic Noise Prediction Model, (FWHA RD-77-108)

Model Input Sheet

Project Name : UTR Marsh
Project Number : 110066.04
Modeling Condition : Alt 1 Existing Plus Project
Ground Type : Soft
K Factor :
Metric (L_{eq}, L_{dn}, CNEL) : CNEL
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	San Francisco Ave	Riverside Ave	US 50	1,020	25	16	98	1	1	85	10	5	0
2	Lakeview Avenue	Riverside Ave	US 50	2,125	25	20	97	2	1	85	10	5	0
3	East Venice Drive	Tahoe Keyes Blvd	Marina	1,540	25	24	96	3	1	85	10	5	0
4	Silver Dollar Ave	Ponderosa Street	US 50	1,260	25	12	98	1	1	85	10	5	0
5	Sunset Drive	Ponderosa Street	Conestoga St	90	25	12	98	1	1	85	10	5	0
6	US Highway 50	US 89 North	Up Truckee Brd	33100	35	34	96	3	1	77.9	12.6	9.5	0
7	US Highway 50	Up Truckee Brd	Rufus Allen Blvd	32100	35	34	96	3	1	77.9	12.6	9.5	0

Appendix J

Traffic Noise Prediction Model, (FWHA RD-77-108)

Predicted Noise Levels

Project Name : UTR Marsh
Project Number : 110066.04
Modeling Condition : Alt 1 Existing Plus Project
Metric (Leq, Ldn, CNEL) : CNEL

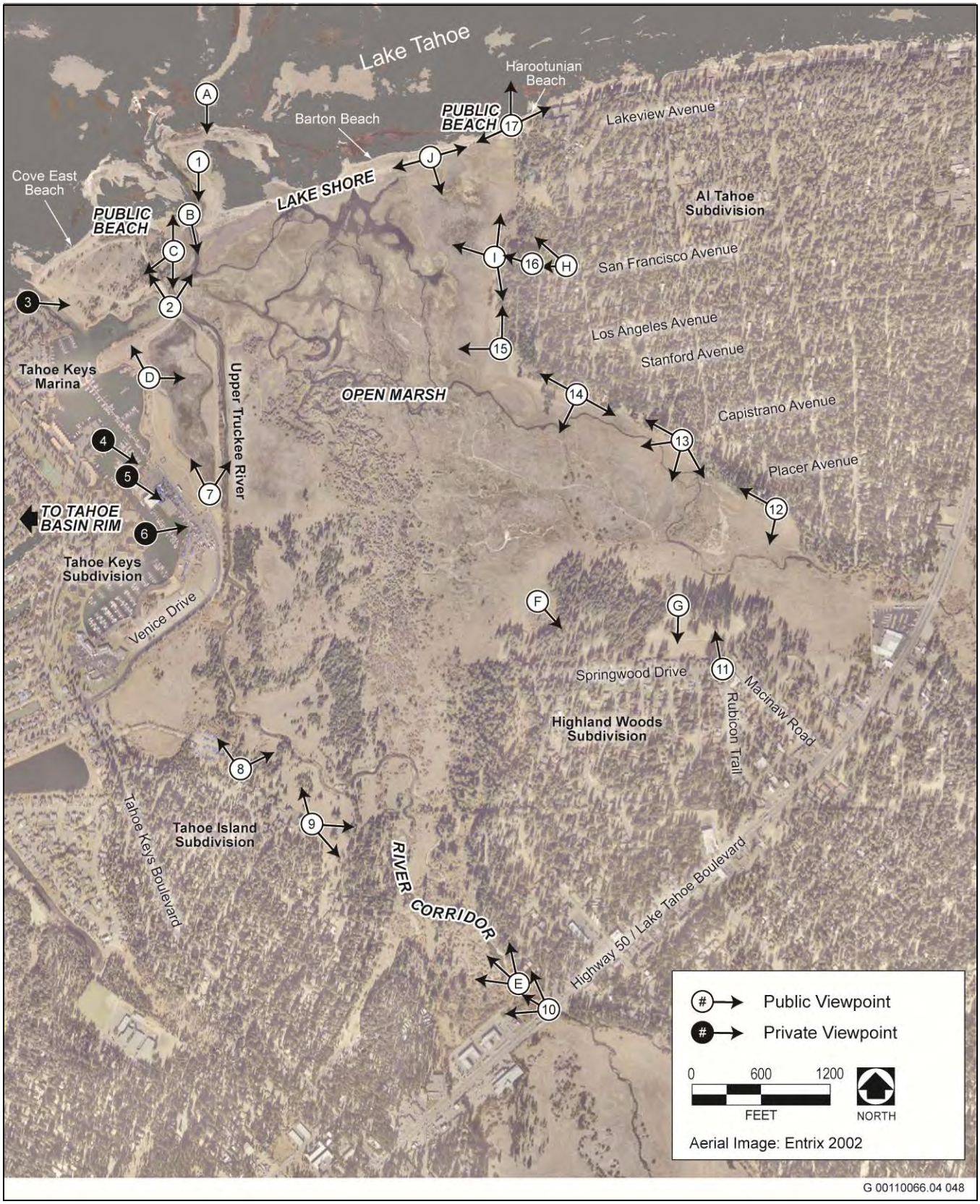
		Segment		Noise Levels, dB CNEL				Distance to Traffic Noise Contours, Feet				
Segment	Roadway	From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	San Francisco Ave	Riverside Ave	US 50	54.7	46.4	54.0	57.7	2	5	11	24	52
2	Lakeview Avenue	Riverside Ave	US 50	56.4	51.1	55.7	59.7	4	9	19	41	89
3	East Venice Drive	Tahoe Keyes Blvd	Marina	53.7	50.3	53.1	57.4	3	7	16	35	75
4	Silver Dollar Ave	Ponderosa Street	US 50	57.5	49.2	56.8	60.5	3	6	13	28	60
5	Sunset Drive	Ponderosa Street	Conestoga St	46.0	37.7	45.3	49.0	0	1	2	5	10
6	US Highway 50	US 89 North	Up Truckee Brd	70.0	64.7	65.1	72.1	47	101	218	471	1014
7	US Highway 50	Up Truckee Brd	Rufus Allen Blvd	69.9	64.5	65.0	72.0	46	99	214	461	993

APPENDIX K

Photo Viewpoints

APPENDIX K
PHOTO VIEWPOINTS

This appendix includes a complete index of the viewpoints from which photographs were taken for the project. Because of the large number of photographs and the similarities between many of them, a representative set of photographs was selected for inclusion in Section 3.14, "Scenic Resources." The selected set of photographs in the scenic resources section is representative of the existing views of the study area. Photographs are identified by letters or numbers. The numbered viewpoints shown below are shown in the scenic resources section and follow the same numbering sequence used in that section. Lettered viewpoints shown below are in addition to those included in Section 3.14, "Scenic Resources." Exhibit 1 provides an overview of the locations of the photo viewpoints.



Source: Data provided by ENTRIX 2002 and EDAW (now AECOM) in 2008

Photo Viewpoints of the Study Area **Exhibit 1**

View to the South toward the Mouth of the Truckee River, 0.25 Mile from the Shoreline (Viewpoint A)
(Source: Photograph taken by EDAW [now AECOM] in 2007)

View to the South at the Mouth of the Truckee River, 300 Feet from the Shoreline (Viewpoint 1)
(Source: Photograph taken by EDAW [now AECOM] in 2007)

View to the South at the Mouth of the Truckee River from the Lake Tahoe Shoreline (Viewpoint B)
(Source: Photograph taken by EDAW [now AECOM] in 2007)

View to the North toward Lake Tahoe from North of the Lower West Side Restoration Area (Viewpoint C)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the South of the Truckee River from North of the Lower West Side Restoration Area (Viewpoint C)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Southwest toward the Sailing Lagoon from North of the Lower West Side Restoration Site (Viewpoint C)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Northeast toward Lake Tahoe from Just East of the Sailing Lagoon (Viewpoint D)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Northwest toward Lake Tahoe from Just West of the Sailing Lagoon (Viewpoint D)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the East toward the Mouth of the Truckee River from Condominiums near Lake Tahoe Shoreline (Viewpoint E)
(Source: Photograph taken by EDAW [now AECOM] in 2007)

View to the East toward the Lower West Side Restoration Area from the West Edge of the Tahoe Keys Marina (Viewpoint F)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Northwest toward Lake Tahoe from the West Edge of the Tahoe Keys Marina (Viewpoint F)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Southeast toward the Proposed Self-Service Visitor Center Site from Condominiums along the Tahoe Keys Marina (Viewpoint G) ***(Source: Photograph taken by EDAW [now AECOM] in 2007)***

View to the Southeast toward the Proposed Self-Service Visitor Center Site from the Restaurant along the Tahoe Keys Marina (Viewpoint H) ***(Source: Photograph taken by EDAW [now AECOM] in 2007)***

View to the East toward the Proposed Self-Service Visitor Center Site from Condominiums along Tahoe Keys Marina (Viewpoint 2)
(Source: Photograph taken by EDAW [now AECOM] in 2007)

View to the Northeast toward the Truckee River from Venice Drive (Viewpoint I) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the Northwest toward Tahoe Keys Marina from Venice Drive (Viewpoint I)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the East toward the Truckee River from an Informal Trail near the TKPOA Corporation Yard (Viewpoint J) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the Northwest toward Venice Drive from an Informal Trail near the TKPOA Corporation Yard (Viewpoint J) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the East toward the Truckee River from East of Tahoe Island Subdivision (Viewpoint 3) ***(Source: Photograph taken by AECOM in 2008)***

View to the Southeast toward the Truckee River from East of the Tahoe Island Subdivision (Viewpoint 3) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the Northwest toward the Truckee River from East of the Tahoe Island Subdivision (Viewpoint 3)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the North of the Truckee River Corridor from the Footbridge across the River (Viewpoint K)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the West of Dense Vegetation from the Footbridge across the River (Viewpoint K)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Northwest of the Truckee River Corridor from the Footbridge across the River (Viewpoint K)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the North of the Truckee River Corridor from U.S. 50 (Viewpoint 4) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the West of Dense Vegetation from U.S. 50 (Viewpoint 4) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the Northwest of the Truckee River Corridor from U.S. 50 (Viewpoint 4) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the Southeast toward Existing Trails and Residences (Viewpoint L) ***(Source: Photograph taken by EDAW [now AECOM] in 2007)***

View to South toward Houses and Existing Trails from Open Marsh (Viewpoint M) ***(Source: Photograph taken by EDAW [now AECOM] in 2007)***

View to South toward Houses and Existing Trails from Open Marsh (Viewpoint M) ***(Source: Photograph taken by EDAW [now AECOM] in 2007)***

View to the North toward the Existing Bike Trail Entrance from the end of Macinaw Road (Viewpoint N)
(Source: Photograph taken by EDAW [now AECOM] in 2007)

View to the Northwest toward the Open Marsh from El Dorado Avenue (Viewpoint O)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Southwest toward U.S. 50 from El Dorado Avenue (Viewpoint O) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the Northwest toward the Open Marsh from Capistrano Avenue (Viewpoint P) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the South toward U.S. 50 from Capistrano Avenue (Viewpoint P) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the Southwest toward the Highland Woods Subdivision from Capistrano Avenue (Viewpoint P)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the West toward the Open Marsh from Capistrano Avenue (Viewpoint P)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Northwest toward the Open Marsh from Stanford Avenue (Viewpoint 5)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Southeast toward El Dorado Avenue from Stanford Avenue (Viewpoint 5)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Southwest toward the Truckee River from Stanford Avenue (Viewpoint 5)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the North toward Harootunian Beach from Los Angeles Avenue (Viewpoint Q) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the West toward the Open Marsh from Los Angeles Avenue (Viewpoint Q) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the Northwest toward Lake Tahoe from the End of San Francisco Avenue (Viewpoint R) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the West toward the Open Marsh from the End of San Francisco Avenue (Viewpoint R) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the West toward the Open Marsh from San Francisco Avenue (Viewpoint S) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the South toward the Highland Woods Subdivision from the Edge of the Open Marsh near San Francisco Avenue (Viewpoint T) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the North toward Harootunian Beach from the Edge of the Open Marsh near San Francisco Avenue (Viewpoint T)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the Northwest toward Barton Beach from the Edge of the Open Marsh near San Francisco Avenue (Viewpoint T)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the North toward Lake Tahoe from Harootunian Beach (Viewpoint 6) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the East toward the Al Tahoe Subdivision from Harootunian Beach (Viewpoint 6)
(Source: Photograph taken by EDAW [now AECOM] in 2008)

View to the West toward Barton Beach from Harootunian Beach (Viewpoint 6) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the East toward Harootunian Beach from the Lakeshore (Viewpoint U) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the South toward the Open Marsh from the Lakeshore (Viewpoint U) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

View to the West toward Barton Beach from the Lakeshore (Viewpoint U) ***(Source: Photograph taken by EDAW [now AECOM] in 2008)***

APPENDIX L

Distribution List

EIR/EIS/EIS DISTRIBUTION LIST

Elected Officials and Representatives

U.S. House of Representatives - Tom McClintock

U.S. Government Departments and Agencies

U.S. Army Corps of Engineers
U.S. Department of Agriculture, Natural Resources Conservation Service
U.S. Environmental Protection Agency – Region 9
U.S. Fish and Wildlife Services
U.S. Forest Service – Lake Tahoe Basin Management Unit
U.S. Geological Survey

Washoe Tribe of Nevada and California

Environmental Department

State of California Government Agencies

State Assembly- Franklin E. Bigelow
State Senate - Ted Gaines
Department of Boating & Waterways
Department of Fish and Game
Department of General Services, Office of Real Estate Services Division
Department of Transportation, District 3 – Tahoe
Lahontan Regional Water Quality Control Board
Office of the Attorney General
Sierra Nevada Conservancy
State Lands Commission

State of Nevada Government Agency

State of Nevada, Department of Environmental Protection

Local Government & Agencies

City of South Lake Tahoe
El Dorado County
Board of Supervisors, District 5
South Tahoe Public Utility District
Lake Tahoe Unified School District
Tahoe Resource Conservation District

Organizations

Caltrout
El Dorado County Vector Control District
League to Save Lake Tahoe
SBC California
Sierra Nevada Alliance
Sierra Sun
South Tahoe Chamber of Commerce
Tahoe Area Sierra Club
Tahoe Daily Tribune
Tahoe Keys Property Owners Association
Tahoe Keys Marina
Tahoe Mountain News
Tahoe Science Consortium

Individuals

Names withheld for privacy.