SECTION 5: REFERENCES

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Appendix A:
URBEMIS Output

URBEMIS 2002 For Windows 8.7.0

File Name: E:\URBEMIS\Moon Camp\Moon Camp 2007.urb
Project Name: Moon Camp 2007
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2008 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	69.31	53.38	68.71	0.00	43.51	1.91	41.60
TOTALS (lbs/day, mitigated)	69.31	42.76	68.71	0.00	6.59	0.38	6.21

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	4.45	0.63	2.01	0.02	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	3.48	6.06	43.49	0.03	4.86

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	7.92	6.70	45.50	0.04	4.87

SUMMARY REPORT
(Pounds/Day - Winter)

CONSTRUCTION EMISSION ESTIMATES

*** 2008 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	69.31	53.38	68.71	0.00	43.51	1.91	41.60
TOTALS (lbs/day, mitigated)	69.31	42.76	68.71	0.00	6.59	0.38	6.21

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	32.58	1.61	52.18	0.12	7.74

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	4.23	7.23	52.66	0.03	4.86

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	36.81	8.84	104.83	0.15	12.60

DETAIL REPORT
(Pounds/Day - Winter)

Construction Start Month and Year: January, 2008
Construction Duration: 12
Total Land Use Area to be Developed: 16.67 acres
Maximum Acreage Disturbed Per Day: 4.16 acres
Single Family Units: 50 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	41.60	-	41.60
Off-Road Diesel	8.03	49.74	67.35	-	1.81	1.81	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.06	0.13	1.36	0.00	0.00	0.00	0.00
Maximum lbs/day	8.09	49.87	68.71	0.00	43.41	1.81	41.60
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	4.15	30.14	31.84	-	1.29	1.29	0.00
Bldg Const Worker Trips	0.20	0.12	2.62	0.00	0.04	0.00	0.04
Arch Coatings Off-Gas	60.45	-	-	-	-	-	-
Arch Coatings Worker Trips	0.20	0.12	2.62	0.00	0.04	0.00	0.04
Asphalt Off-Gas	0.60	-	-	-	-	-	-
Asphalt Off-Road Diesel	3.58	20.75	30.41	-	0.57	0.57	0.00
Asphalt On-Road Diesel	0.12	2.23	0.42	0.00	0.05	0.05	0.00
Asphalt Worker Trips	0.02	0.01	0.29	0.00	0.00	0.00	0.00
Maximum lbs/day	69.31	53.38	68.21	0.00	2.00	1.91	0.09
Max lbs/day all phases	69.31	53.38	68.71	0.00	43.51	1.91	41.60

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '08
Phase 2 Duration: 1.3 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Crawler Tractors	143	0.575	8.0
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Feb '08
Phase 3 Duration: 10.7 months
Start Month/Year for SubPhase Building: Feb '08
SubPhase Building Duration: 10.7 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '08
SubPhase Architectural Coatings Duration: 1.1 months
Start Month/Year for SubPhase Asphalt: Dec '08
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 2.5
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Pavers	132	0.590	8.0
2	Rollers	114	0.430	8.0

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	6.21	-	6.21
Off-Road Diesel	8.03	39.79	67.35	-	0.36	0.36	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.06	0.13	1.36	0.00	0.00	0.00	0.00
Maximum lbs/day	8.09	39.92	68.71	0.00	6.57	0.36	6.21
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	4.15	24.11	31.84	-	0.26	0.26	0.00
Bldg Const Worker Trips	0.20	0.12	2.62	0.00	0.04	0.00	0.04
Arch Coatings Off-Gas	60.45	-	-	-	-	-	-
Arch Coatings Worker Trips	0.20	0.12	2.62	0.00	0.04	0.00	0.04
Asphalt Off-Gas	0.60	-	-	-	-	-	-
Asphalt Off-Road Diesel	3.58	16.60	30.41	-	0.11	0.11	0.00
Asphalt On-Road Diesel	0.12	1.78	0.42	0.00	0.01	0.01	0.00
Asphalt Worker Trips	0.02	0.01	0.29	0.00	0.00	0.00	0.00
Maximum lbs/day	69.31	42.76	68.21	0.00	0.47	0.38	0.09
Max lbs/day all phases	69.31	42.76	68.71	0.00	6.59	0.38	6.21

Construction-Related Mitigation Measures

Phase 2: Soil Disturbance: Apply soil stabilizers to inactive areas
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
Phase 2: Soil Disturbance: Replace ground cover in disturbed areas quickly
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 15.0%)
Phase 2: Soil Disturbance: Water exposed surfaces - 2x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 34.0%)
Phase 2: Off-Road Diesel Exhaust: Use diesel particulate filter
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 2: Off-Road Diesel Exhaust: Use diesel oxidation catalyst
Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 2: On-Road Diesel Exhaust: Use diesel particulate filter
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 2: On-Road Diesel Exhaust: Use diesel oxidation catalyst
Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 2: Stockpiles: Cover all stock piles with tarps
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 9.5%)
Phase 2: Unpaved Roads: Water all haul roads 2x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
Phase 3: Off-Road Diesel Exhaust: Use diesel particulate filter
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 3: Off-Road Diesel Exhaust: Use diesel oxidation catalyst
Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 3: Off-Road Diesel Exhaust: Use diesel particulate filter
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 3: Off-Road Diesel Exhaust: Use diesel oxidation catalyst
Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 3: On-Road Diesel Exhaust: Use diesel particulate filter
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 3: On-Road Diesel Exhaust: Use diesel oxidation catalyst
Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '08

Phase 2 Duration: 1.3 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Crawler Tractors	143	0.575	8.0
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Feb '08
Phase 3 Duration: 10.7 months
Start Month/Year for SubPhase Building: Feb '08
SubPhase Building Duration: 10.7 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '08
SubPhase Architectural Coatings Duration: 1.1 months
Start Month/Year for SubPhase Asphalt: Dec '08
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 2.5
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Pavers	132	0.590	8.0
2	Rollers	114	0.430	8.0

AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.05	0.63	0.27	0	0.00
Hearth	28.38	0.98	51.91	0.12	7.74
Landscaping - No winter emissions					
Consumer Prdcts	2.45	-	-	-	-
Architectural Coatings	1.70	-	-	-	-
TOTALS(lbs/day,unmitigated)	32.58	1.61	52.18	0.12	7.74

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	4.23	7.23	52.66	0.03	4.86
TOTAL EMISSIONS (lbs/day)	4.23	7.23	52.66	0.03	4.86

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2008 Temperature (F): 40 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	62.43	9.57 trips/dwelling unit	50.00	478.50
		Sum of Total Trips		478.50
		Total Vehicle Miles Traveled		3,201.40

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.00	1.60	98.00	0.40
Light Truck < 3,750 lbs	15.00	2.70	95.30	2.00
Light Truck 3,751- 5,750	16.20	1.20	97.50	1.30
Med Truck 5,751- 8,500	7.20	1.40	95.80	2.80
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.70	76.50	23.50	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/16.67 to 9.57/62.43

Changes made to the default values for Construction

Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00602
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.0116
Phase 2 mitigation measure Soil Disturbance: Apply soil stabilizers to inactive areas
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Replace ground cover in disturbed areas quickly
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 2x daily
has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Use diesel oxidation catalyst
has been changed from off to on.
Phase 2 mitigation measure On-Road Diesel Exhaust: Use diesel particulate filter
has been changed from off to on.
Phase 2 mitigation measure On-Road Diesel Exhaust: Use diesel oxidation catalyst
has been changed from off to on.
Phase 2 mitigation measure Stockpiles: Cover all stock piles with tarps
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Water all haul roads 2x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel oxidation catalyst
has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel oxidation catalyst
has been changed from off to on.
Phase 3 mitigation measure On-Road Diesel Exhaust: Use diesel particulate filter
has been changed from off to on.
Phase 3 mitigation measure On-Road Diesel Exhaust: Use diesel oxidation catalyst
has been changed from off to on.

Changes made to the default values for Area

The landscape year changed from 2005 to 2007.

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2008.
The operational winter temperature changed from 50 to 40.
The operational winter selection item changed from 3 to 1.
The operational summer temperature changed from 90 to 60.
The operational summer selection item changed from 8 to 3.

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2008
Construction Duration: 12
Total Land Use Area to be Developed: 16.67 acres
Maximum Acreage Disturbed Per Day: 4.16 acres
Single Family Units: 50 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source *** 2008***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	41.60	-	41.60
Off-Road Diesel	8.03	49.74	67.35	-	1.81	1.81	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.06	0.13	1.36	0.00	0.00	0.00	0.00
Maximum lbs/day	8.09	49.87	68.71	0.00	43.41	1.81	41.60
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	4.15	30.14	31.84	-	1.29	1.29	0.00
Bldg Const Worker Trips	0.20	0.12	2.62	0.00	0.04	0.00	0.04
Arch Coatings Off-Gas	60.45	-	-	-	-	-	-
Arch Coatings Worker Trips	0.20	0.12	2.62	0.00	0.04	0.00	0.04
Asphalt Off-Gas	0.60	-	-	-	-	-	-
Asphalt Off-Road Diesel	3.58	20.75	30.41	-	0.57	0.57	0.00
Asphalt On-Road Diesel	0.12	2.23	0.42	0.00	0.05	0.05	0.00
Asphalt Worker Trips	0.02	0.01	0.29	0.00	0.00	0.00	0.00
Maximum lbs/day	69.31	53.38	68.21	0.00	2.00	1.91	0.09
Max lbs/day all phases	69.31	53.38	68.71	0.00	43.51	1.91	41.60

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '08
Phase 2 Duration: 1.3 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Crawler Tractors	143	0.575	8.0
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Feb '08
Phase 3 Duration: 10.7 months
  Start Month/Year for SubPhase Building: Feb '08
  SubPhase Building Duration: 10.7 months
  Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0

  Start Month/Year for SubPhase Architectural Coatings: Nov '08
  SubPhase Architectural Coatings Duration: 1.1 months
  Start Month/Year for SubPhase Asphalt: Dec '08
  SubPhase Asphalt Duration: 0.5 months
  Acres to be Paved: 2.5
  Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Pavers	132	0.590	8.0
2	Rollers	114	0.430	8.0

CONSTRUCTION EMISSION ESTIMATES MITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	6.21	-	6.21
Off-Road Diesel	8.03	39.79	67.35	-	0.36	0.36	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.06	0.13	1.36	0.00	0.00	0.00	0.00
Maximum lbs/day	8.09	39.92	68.71	0.00	6.57	0.36	6.21
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	4.15	24.11	31.84	-	0.26	0.26	0.00
Bldg Const Worker Trips	0.20	0.12	2.62	0.00	0.04	0.00	0.04
Arch Coatings Off-Gas	60.45	-	-	-	-	-	-
Arch Coatings Worker Trips	0.20	0.12	2.62	0.00	0.04	0.00	0.04
Asphalt Off-Gas	0.60	-	-	-	-	-	-
Asphalt Off-Road Diesel	3.58	16.60	30.41	-	0.11	0.11	0.00
Asphalt On-Road Diesel	0.12	1.78	0.42	0.00	0.01	0.01	0.00
Asphalt Worker Trips	0.02	0.01	0.29	0.00	0.00	0.00	0.00
Maximum lbs/day	69.31	42.76	68.21	0.00	0.47	0.38	0.09
Max lbs/day all phases	69.31	42.76	68.71	0.00	6.59	0.38	6.21

Construction-Related Mitigation Measures

Phase 2: Soil Disturbance: Apply soil stabilizers to inactive areas
  Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
Phase 2: Soil Disturbance: Replace ground cover in disturbed areas quickly
  Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 15.0%)
Phase 2: Soil Disturbance: Water exposed surfaces - 2x daily
  Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 34.0%)
Phase 2: Off-Road Diesel Exhaust: Use diesel particulate filter
  Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 2: Off-Road Diesel Exhaust: Use diesel oxidation catalyst
  Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 2: On-Road Diesel Exhaust: Use diesel particulate filter
  Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 2: On-Road Diesel Exhaust: Use diesel oxidation catalyst
  Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 2: Stockpiles: Cover all stock piles with tarps
  Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 9.5%)

Phase 2: Unpaved Roads: Water all haul roads 2x daily
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 30.0%)
Phase 2: Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 40.0%)
Phase 3: Off-Road Diesel Exhaust: Use diesel particulate filter
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 3: Off-Road Diesel Exhaust: Use diesel oxidation catalyst
Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 3: Off-Road Diesel Exhaust: Use diesel particulate filter
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 3: Off-Road Diesel Exhaust: Use diesel oxidation catalyst
Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 3: On-Road Diesel Exhaust: Use diesel particulate filter
Percent Reduction(ROG 0.0% NOx 0.0% CO 0.0% SO2 0.0% PM10 80.0%)
Phase 3: On-Road Diesel Exhaust: Use diesel oxidation catalyst
Percent Reduction(ROG 0.0% NOx 20.0% CO 0.0% SO2 0.0% PM10 0.0%)
Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '08
Phase 2 Duration: 1.3 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Crawler Tractors	143	0.575	8.0
1	Graders	174	0.575	8.0
1	Off Highway Trucks	417	0.490	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Feb '08
Phase 3 Duration: 10.7 months
Start Month/Year for SubPhase Building: Feb '08
SubPhase Building Duration: 10.7 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '08
SubPhase Architectural Coatings Duration: 1.1 months
Start Month/Year for SubPhase Asphalt: Dec '08
SubPhase Asphalt Duration: 0.5 months
Acres to be Paved: 2.5
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Pavers	132	0.590	8.0
2	Rollers	114	0.430	8.0

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.05	0.63	0.27	0	0.00
Hearth - No summer emissions					
Landscaping	0.25	0.01	1.74	0.02	0.01
Consumer Prdcts	2.45	-	-	-	-
Architectural Coatings	1.70	-	-	-	-
TOTALS(lbs/day,unmitigated)	4.45	0.63	2.01	0.02	0.01

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	3.48	6.06	43.49	0.03	4.86
TOTAL EMISSIONS (lbs/day)	3.48	6.06	43.49	0.03	4.86

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2008 Temperature (F): 60 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	62.43	9.57 trips/dwelling unit	50.00	478.50
		Sum of Total Trips		478.50
		Total Vehicle Miles Traveled		3,201.40

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.00	1.60	98.00	0.40
Light Truck < 3,750 lbs	15.00	2.70	95.30	2.00
Light Truck 3,751- 5,750	16.20	1.20	97.50	1.30
Med Truck 5,751- 8,500	7.20	1.40	95.80	2.80
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.70	76.50	23.50	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing
 have changed from the defaults 9.57/16.67 to 9.57/62.43

Changes made to the default values for Construction

Architectural Coatings: # ROG/ft2 (residential) changed from 0.0185 to 0.00602
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.0116
Phase 2 mitigation measure Soil Disturbance: Apply soil stabilizers to inactive areas
     has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Replace ground cover in disturbed areas quickly
     has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 2x daily
     has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
     has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Use diesel oxidation catalyst
     has been changed from off to on.
Phase 2 mitigation measure On-Road Diesel Exhaust: Use diesel particulate filter
     has been changed from off to on.
Phase 2 mitigation measure On-Road Diesel Exhaust: Use diesel oxidation catalyst
     has been changed from off to on.
Phase 2 mitigation measure Stockpiles: Cover all stock piles with tarps
     has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Water all haul roads 2x daily

     has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
     has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
     has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel oxidation catalyst
     has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
     has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel oxidation catalyst
     has been changed from off to on.
Phase 3 mitigation measure On-Road Diesel Exhaust: Use diesel particulate filter
     has been changed from off to on.
Phase 3 mitigation measure On-Road Diesel Exhaust: Use diesel oxidation catalyst
     has been changed from off to on.

Changes made to the default values for Area

The landscape year changed from 2005 to 2007.

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2008.
The operational winter temperature changed from 50 to 40.
The operational winter selection item changed from 3 to 1.
The operational summer temperature changed from 90 to 60.
The operational summer selection item changed from   8 to 3.

Appendix B:
EMFAC Analysis of Technology Groups

2030 Summary

Veh Type	Veh Year	TGP (x1000)
	TOTAL LDA	***0.000***
	TOTAL LDT1	***0.000***
	TOTAL LDT2	***0.000***
	TOTAL MDV	***0.000***
	TOTAL VEHICLES	1,047,886.000
	TOTAL TG 1-7	0.000
	% OF TOTAL	**0.00%**

2007 Summary

Veh Type	Veh Year	TGP (x1000)	TotP (x1000)	% of TotP
LDA	1965	2,127.114	2,129.649	99.9%
LDA	1966	1,054.100	1,055.712	99.8%
LDA	1967	937.481	939.148	99.8%
LDA	1968	910.751	911.422	99.9%
LDA	1969	1,003.926	1,005.247	99.9%
LDA	1970	893.548	895.583	99.8%
LDA	1971	739.652	740.342	99.9%
LDA	1972	872.333	875.737	99.6%
LDA	1973	895.211	897.495	99.7%
LDA	1974	681.231	684.558	99.5%
LDA	1975	406.189	414.556	98.0%
LDA	1976	455.765	463.110	98.4%
LDA	1977	555.996	593.659	93.7%
LDA	1978	732.738	816.530	89.7%
LDA	1979	771.968	948.703	81.4%
LDA	1980	241.385	718.516	33.6%
LDA	1981	149.421	919.534	16.2%
LDA	1982	166.446	1,079.029	15.4%
LDA	1983	180.102	1,406.913	12.8%
LDA	1984	33.823	2,387.082	1.4%
	TOTAL LDA	***13,809.179***		
LDT1	1965	904.890	907.484	99.7%
LDT1	1966	222.413	223.192	99.7%
LDT1	1967	199.522	200.404	99.6%
LDT1	1968	273.651	275.200	99.4%
LDT1	1969	343.665	344.312	99.8%
LDT1	1970	364.708	365.372	99.8%
LDT1	1971	420.192	422.456	99.5%
LDT1	1972	604.163	604.164	100.0%
LDT1	1973	545.358	546.010	99.9%
LDT1	1974	166.056	168.243	98.7%
LDT1	1975	110.031	110.741	99.4%
LDT1	1976	115.987	116.717	99.4%
LDT1	1977	146.099	150.429	97.1%
LDT1	1978	180.474	189.669	95.2%
LDT1	1979	238.247	264.268	90.2%
LDT1	1980	147.882	179.066	82.6%
LDT1	1981	109.117	233.525	46.7%
LDT1	1982	71.595	248.413	28.8%
LDT1	1983	20.562	278.765	7.4%
LDT1	1984	60.277	523.409	11.5%
LDT1	1985	26.775	637.906	4.2%
LDT1	1986	25.913	877.323	3.0%
LDT1	1987	14.738	866.121	1.7%
	TOTAL LDT1	***5,312.315***		

2007 Summary

Veh Type	Veh Year	TGP (x1000)	TotP (x1000)	% of TotP
LDT2	1965	39.487	39.487	100.0%
LDT2	1966	133.292	134.152	99.4%
LDT2	1967	112.417	112.417	100.0%
LDT2	1968	146.344	146.344	100.0%
LDT2	1969	243.119	244.840	99.3%
LDT2	1970	257.403	259.123	99.3%
LDT2	1971	253.366	253.366	100.0%
LDT2	1972	345.455	345.454	100.0%
LDT2	1973	367.132	367.132	100.0%
LDT2	1974	272.309	274.006	99.4%
LDT2	1975	149.987	152.844	98.1%
LDT2	1976	175.004	176.031	99.4%
LDT2	1977	228.003	231.798	98.4%
LDT2	1978	279.084	283.345	98.5%
LDT2	1979	292.667	338.422	86.5%
LDT2	1980	253.411	283.680	89.3%
LDT2	1981	186.685	354.017	52.7%
LDT2	1982	137.460	429.802	32.0%
LDT2	1983	38.697	455.725	8.5%
LDT2	1984	133.001	1,005.232	13.2%
LDT2	1985	69.562	1,473.149	4.7%
LDT2	1986	79.022	2,414.753	3.3%
LDT2	1987	43.141	2,404.837	1.8%
	TOTAL LDT2	***4,236.047***		
MDV	1965	17.103	17.103	100.0%
MDV	1966	9.366	9.366	100.0%
MDV	1967	8.602	9.087	94.7%
MDV	1968	15.797	15.798	100.0%
MDV	1969	17.925	17.925	100.0%
MDV	1970	22.565	22.566	100.0%
MDV	1971	18.638	18.639	100.0%
MDV	1972	30.914	30.916	100.0%
MDV	1973	40.836	41.389	98.7%
MDV	1974	217.067	217.068	100.0%
MDV	1975	225.970	226.665	99.7%
MDV	1976	306.338	306.339	100.0%
MDV	1977	474.019	474.700	99.9%
MDV	1978	408.403	408.405	100.0%
MDV	1979	496.554	497.294	99.9%
MDV	1980	193.758	193.761	100.0%
MDV	1981	180.549	184.238	98.0%
MDV	1982	198.413	214.750	92.4%
MDV	1983	142.619	274.586	51.9%
MDV	1984	418.633	434.835	96.3%
	TOTAL MDV	***3,444.068***		
TOTAL VEHICLES		963,536.400		
TOTAL TG 1-7		26,801.609		
% OF TOTAL		**2.78%**		

2010 Summary

Veh Type	Veh Year	TGP (x1000)	TotP (x1000)	% of TotP
LDA	1966	728.149	729.124	99.9%
LDA	1967	666.324	667.453	99.8%
LDA	1968	646.154	646.503	99.9%
LDA	1969	696.347	696.998	99.9%
LDA	1970	605.605	606.681	99.8%
LDA	1971	496.416	496.834	99.9%
LDA	1972	593.822	596.017	99.6%
LDA	1973	613.049	614.466	99.8%
LDA	1974	471.000	472.843	99.6%
LDA	1975	284.473	288.840	98.5%
LDA	1976	347.733	351.672	98.9%
LDA	1977	459.493	485.760	94.6%
LDA	1978	647.690	710.131	91.2%
LDA	1979	678.873	818.051	83.0%
LDA	1980	209.749	605.396	34.6%
LDA	1981	127.998	769.213	16.6%
LDA	1982	140.614	880.851	16.0%
LDA	1983	149.781	1,144.968	13.1%
LDA	1984	26.331	1,843.312	1.4%
	TOTAL LDA	***8,589.600***		
LDT1	1966	150.962	151.483	99.7%
LDT1	1967	137.079	137.599	99.6%
LDT1	1968	190.132	191.305	99.4%
LDT1	1969	239.112	239.684	99.8%
LDT1	1970	252.259	252.842	99.8%
LDT1	1971	292.306	293.966	99.4%
LDT1	1972	424.511	424.511	100.0%
LDT1	1973	387.946	388.412	99.9%
LDT1	1974	119.660	121.186	98.7%
LDT1	1975	80.816	81.314	99.4%
LDT1	1976	91.065	91.557	99.5%
LDT1	1977	121.103	124.248	97.5%
LDT1	1978	158.142	165.084	95.8%
LDT1	1979	208.044	229.687	90.6%
LDT1	1980	129.042	155.191	83.2%
LDT1	1981	94.796	202.539	46.8%
LDT1	1982	61.873	213.832	28.9%
LDT1	1983	17.427	229.042	7.6%
LDT1	1984	48.350	398.396	12.1%
LDT1	1985	20.355	475.097	4.3%
LDT1	1986	19.188	646.869	3.0%
LDT1	1987	11.031	653.041	1.7%
	TOTAL LDT1	***3,255.199***		

2010 Summary

Veh Type	Veh Year	TGP (x1000)	TotP (x1000)	% of TotP
LDT2	1966	89.585	90.439	99.1%
LDT2	1967	76.740	76.740	100.0%
LDT2	1968	101.683	101.683	100.0%
LDT2	1969	168.791	170.499	99.0%
LDT2	1970	176.806	178.514	99.0%
LDT2	1971	173.313	173.314	100.0%
LDT2	1972	239.237	239.237	100.0%
LDT2	1973	258.503	258.503	100.0%
LDT2	1974	195.013	195.353	99.8%
LDT2	1975	109.197	109.768	99.5%
LDT2	1976	135.786	136.398	99.6%
LDT2	1977	186.101	188.594	98.7%
LDT2	1978	240.544	243.047	99.0%
LDT2	1979	251.307	284.530	88.3%
LDT2	1980	217.352	243.496	89.3%
LDT2	1981	159.004	302.536	52.6%
LDT2	1982	116.658	360.235	32.4%
LDT2	1983	32.264	376.760	8.6%
LDT2	1984	104.820	781.872	13.4%
LDT2	1985	51.974	1,098.812	4.7%
LDT2	1986	57.631	1,759.146	3.3%
LDT2	1987	31.994	1,784.045	1.8%
	TOTAL LDT2	***3,174.304***		
MDV	1966	6.304	6.304	100.0%
MDV	1967	5.823	6.009	96.9%
MDV	1968	10.770	10.770	100.0%
MDV	1969	12.265	12.266	100.0%
MDV	1970	15.412	15.413	100.0%
MDV	1971	12.661	12.662	100.0%
MDV	1972	21.198	21.199	100.0%
MDV	1973	27.996	28.392	98.6%
MDV	1974	150.621	150.622	100.0%
MDV	1975	158.748	159.151	99.7%
MDV	1976	227.250	227.251	100.0%
MDV	1977	367.807	368.280	99.9%
MDV	1978	332.531	332.533	100.0%
MDV	1979	406.800	407.318	99.9%
MDV	1980	159.296	159.299	100.0%
MDV	1981	148.195	151.223	98.0%
MDV	1982	162.622	175.821	92.5%
MDV	1983	117.035	224.813	52.1%
MDV	1984	332.762	344.083	96.7%
	TOTAL MDV	***2,676.098***		
TOTAL VEHICLES		1,047,886.000		
TOTAL TG 1-7		17,695.202		
% OF TOTAL		**1.69%**		

Appendix C:
Summary of Operational Greenhouse Gases

10/1/2008 10:22:13 AM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\mba\Desktop\Moon Camp GHG.urb924

Project Name: Moon Camp 2008

Project Location: San Bernadino County

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
2009 TOTALS (tons/year unmitigated)	0.86	3.10	2.85	0.00	3.80	0.19	3.99	0.79	0.18	0.97	401.22

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.61	0.15	0.70	0.00	0.04	0.04	197.03

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.28	2.18	14.94	0.01	2.33	0.47	1,378.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	1.89	2.33	15.64	0.01	2.37	0.51	1,575.03

Construction Unmitigated Detail Report:

10/1/2008 10:22:13 AM

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
2009	0.86	3.10	2.85	0.00	3.80	0.19	3.99	0.79	0.18	0.97	401.22
Mass Grading 01/01/2009-03/30/2009	0.10	0.84	0.46	0.00	2.63	0.04	2.67	0.55	0.04	0.59	76.15
Mass Grading Dust	0.00	0.00	0.00	0.00	2.63	0.00	2.63	0.55	0.00	0.55	0.00
Mass Grading Off Road Diesel	0.10	0.83	0.41	0.00	0.00	0.04	0.04	0.00	0.04	0.04	70.79
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.36
Fine Grading 02/19/2009-03/30/2009	0.05	0.37	0.20	0.00	1.17	0.02	1.19	0.24	0.02	0.26	33.85
Fine Grading Dust	0.00	0.00	0.00	0.00	1.17	0.00	1.17	0.24	0.00	0.24	0.00
Fine Grading Off Road Diesel	0.04	0.37	0.18	0.00	0.00	0.02	0.02	0.00	0.02	0.02	31.46
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38
Trenching 03/19/2009-03/30/2009	0.01	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.54
Trenching Off Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.86
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68
Asphalt 03/31/2009-04/11/2009	0.02	0.12	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	12.60
Paving Off-Gas	0.01	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	0.05	0.00	0.00	0.01	0.01	0.00	0.01	0.01	6.38
Paving On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.49
Paving Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72

Building 03/31/2009-11/21/2009	0.37	1.69	2.05	0.00	0.01	0.12	0.12	0.00	0.11	0.11	268.64
Building Off Road Diesel	0.33	1.47	0.97	0.00	0.00	0.11	0.11	0.00	0.10	0.10	136.99
Building Vendor Trips	0.01	0.17	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01	28.09
Building Worker Trips	0.03	0.06	0.96	0.00	0.00	0.00	0.01	0.00	0.00	0.00	103.56
Coating 11/21/2009-12/16/2009	0.31	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45
Architectural Coating	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45

Phase Assumptions

Phase: Fine Grading 2/19/2009 - 3/30/2009 - Default Fine Site Grading/Excavation Description

Total Acres Disturbed: 16.67

Maximum Daily Acreage Disturbed: 4.17

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

Phase: Mass Grading 1/1/2009 - 3/30/2009 - Default Mass Site Grading/Excavation Description

Total Acres Disturbed: 16.67

Maximum Daily Acreage Disturbed: 4.17

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

Phase: Trenching 3/19/2009 - 3/30/2009 - Default Trenching Description

Off-Road Equipment:

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

1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 3/31/2009 - 4/11/2009 - Default Paving Description

Acres to be Paved: 4.17

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

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 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 3/31/2009 - 11/21/2009 - Default Building Construction Description

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 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

Phase: Architectural Coating 11/21/2009 - 12/16/2009 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100

10/1/2008 10:22:13 AM

Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50

Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.01	0.15	0.06	0.00	0.00	0.00	189.75
Hearth	0.03	0.00	0.23	0.00	0.04	0.04	6.63
Landscape	0.07	0.00	0.41	0.00	0.00	0.00	0.65
Consumer Products	0.47						
Architectural Coatings	0.03						
TOTALS (tons/year, unmitigated)	0.61	0.15	0.70	0.00	0.04	0.04	197.03

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 12.5%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 87.5%

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	1.28	2.18	14.94	0.01	2.33	0.47	1,378.00
TOTALS (tons/year, unmitigated)	1.28	2.18	14.94	0.01	2.33	0.47	1,378.00

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	16.67	9.57	dwelling units	50.00	478.50	7,313.54
					478.50	7,313.54

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.3	1.3	98.5	0.2
Light Truck < 3750 lbs	9.9	3.0	91.9	5.1
Light Truck 3751-5750 lbs	20.7	1.0	99.0	0.0
Med Truck 5751-8500 lbs	11.1	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.0	0.0	80.0	20.0
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	42.9	57.1

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	1.7	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.1	68.3	31.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.3	7.7	84.6	7.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

Summary of Operational Greenhouse Gases
Unmitigated
Moon Camp
Prepared by Michael Brandman Associates
Buildout Year 2010

	Emissions (tons per year)				
Source	**Carbon Dioxide**	**Nitrous Oxide**	**Methane**	**Other**	**Metric Tons CO2e**
Motor vehicles	1,378.00	0.18	0.39		1309.49
Natural gas	189.75	0.00	0.02		172.67
Indirect electricity	113.17	0.00	0.00		102.83
Hearth	6.63				6.01
Water transport	0	0.00	0.00		0.00
Landscape	0.65				0.59
Aerosols				0.00	0.00
Refrigerants				0.00	0.00
Total	1,688.20	0.19	0.41	0.00	1591.60

Total	1,532	0.17	0.38	0.00	metric tons per year
GWP	1	310	21	varies	
Total	1,532	52	8	0	MTCO2E per year
Total	0.0015	0.0001	0.0000	0.0000	MMTCO2E per year

Total - all gases	1,592	MTCO2e per year
	0.0016	MMTCO2e per year
California emissions in 2004	500	MMTCO2e per year
Project percent of emissions	0.000318%	
U.S. emissions in 2005	7,260.4	
Project percent of emissions	0.000022%	
Global emissions in 2004	20135	
Project percent of emissions	0.000008%	

Emissions converted from tons per year to metric tons of carbon dioxide equivalents (MTCO2e) per year by using the formula: (tons of gas) x (global warming potential) x (0.9072 metric tons)

Emissions converted to million metric tons of carbon dioxide equivalents (MMTCO2E) using the formula: MMTCO2e = (metric tons of gas) / (1,000,000).

Electricity - Indirect Emissions

Project: Moon Camp
Prepared by: Michael Brandman Associates
Prepared on: 10/1/2008

Land Use	Units	Electricity Use (kWh/unit/year)*	Electricity Use (kWh/year)
Single Family Residential	50	5,626.50	281,325.00
Total			281,325.00
			281.33 MWh/year

Greenhouse Gas	Emission Factor (pounds per MWh/year)	Emissions (pounds/year)	Emissions (tons/year)
Carbon dioxide	804.54	226,337	113
Methane	0.0067	2	0.001
Nitrous oxide	0.0037	1	0.001

Emission factor source: California Climate Action Registry. General Reporting Protocol. Reporting Entity-Wide Greenhouse Gas Emissions. Version 2.2, March 2007. www.climateregistry.org

Residential electricity usage rate: 5626.50 kwh/unit/year, from South Coast Air Quality Management 1993 CEQA Handbook, Table 9-11-A

* Table E-1 from California Energy Commission. California Commercial End-Use Survey. Consultant Report. March 2006. CEC-400-2006-005

Table E-1: Overview of Energy Usage in the Statewide Service Area

Building Type	Floor Stock (kft^2)	Annual Energy Intensities			Total Annual Usage	
		Electricity (kWh/ft^2)	Natural Gas (therms/ft^2)	Natural Gas (kBtu/ft^2)	Electricity (GWh)	Natural Gas (Mtherms)
All Commercial	4,920,114	13.63	0.26	25.99	67077	1278.60
Small Office (<30k ft^2)	361,584	13.10	0.11	10.54	4738	38.10
Large Office (>=30k ft^2)	660,429	17.70	0.22	21.93	11691	144.80
Restaurant	148,892	40.20	2.10	209.96	5986	312.60
Retail	702,053	14.06	0.05	4.62	9871	32.50
Food Store	144,209	40.99	0.28	27.60	5911	39.80
Refrigerated Warehouse	95,540	20.02	0.06	5.60	1913	5.30
Unrefrigerated Warehouse	554,166	4.45	0.03	3.07	2467	17.00
School	445,106	7.46	0.16	15.97	3322	71.10
College	205,942	12.26	0.34	34.24	2524	70.50
Health	232,606	19.61	0.76	75.53	4561	175.70
Lodging	270,044	12.13	0.42	42.40	3275	114.50
Miscellaneous	1,099,544	9.84	0.23	23.34	10817	256.60
All Offices	1,022,012	16.08	0.18	17.90	16430	182.90
All Warehouses	649,706	6.74	0.03	3.44	4380	22.40

Appendix B:
Biological Resources Assessment

B.1 - Results of Bald Eagle Survey on Tentative Tract 16136 (Bontera Consulting, 2002)

Bonterra
CONSULTING
An Environmental Planning/Resource Management Corporation

April 16, 2002

Mr. Glenn Lajoie
RBF Consulting
14725 Alton Parkway
Irvine, CA 92618-2027

VIA FACSIMILE AND MAIL
(949) 472-8373

Subject: Results of Bald Eagle surveys on Tentative Tract 16136, Moon Camp, Fawnskin, San Bernardino County, California

Dear Mr. Lajoie:

This letter report presents the results of bald eagle (*Haliaeetus leucocephalus*) surveys performed in February 2002 by William S. La Haye and Brian Kertson on Tentative Tract 16136 in unincorporated San Bernardino County, California (hereafter referred to as the project site). In addition, a summary of a records search of historic sightings of this species on and in the vicinity of the project site is also presented.

Project Location and Description

The project site consists of an approximately 62.5-acre parcel on the north shoreline of Big Bear Lake, San Bernardino County, California. The project site is covered by U.S. Geological Survey's Fawnskin, California Quadrangle at Township 2N, Range 1E and includes portions of Sections 7 and 12. Project regional location and vicinity maps are presented in Exhibits 1 and 2, respectively.

The southwestern portion of the project site includes shoreline of Big Bear Lake and Highway 38 parallels the lakeshore on the property for approximately 1/4 mile. Historically, the project site consisted of Moon Camp, a small cabin resort which existed from the early 1920s through 1951 when a forest fire destroyed most of the buildings. At some later date, most of the remnants of the cabins and foundations were removed from the site.

The project site includes a series of low, rolling hills between approximately 6,940 feet above mean sea level (msl) and 6,740 feet above msl. The vegetation on the site is primarily open Jeffrey pine (*Pinus jeffreyi*) forest near the lake and highway and gradually transitions into mixed-conifer forest towards the northeast portion of the property. Other common trees encountered on the site consist of white fir (*Abies concolor*) and black oak (*Quercus kelloggii*).

Background

The bald eagle is a large raptor which ranges from Alaska to northern Mexico. It typically nests in large trees near lakes and rivers where its prey is plentiful. This species feeds primarily on fish and waterfowl; however, it is also known to

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scavenge large mammal carcasses. The bald eagle population declined dramatically in the 1960s due to the effects of pesticides causing egg shell thinning and reproductive failure. This species is federally-listed as Threatened and state-listed as Endangered.

The bald eagle rarely nests in southern California. However, small wintering populations are found scattered throughout the region. Big Bear Lake supports the largest of these wintering populations and may include as many as 30 individuals in peak years. This species is typically observed at Big Bear Lake between November and March.

Survey Methodology

The project site and the surrounding area was observed on four separate occasions in February 2002 for approximately four hours on each occasion. Trees on the property were visually scanned using binoculars and a spotting scope. Observations were conducted from various vantage points on the property, as well as from Windy Point, approximately 1/2 mile west of the property across Grout Bay. All trees utilized by eagles for perching and/or roosting during these surveys were marked with numbered, circular tree tags. Additionally, the San Bernardino National Forest Service was contacted and a review of their historic records of bald eagle use on the north shore of Big Bear Lake was completed.

Survey Results

Bald eagle observations were performed on February 7, 12, 14, and 21, 2002. Bald eagles were observed on the project site on all four occasions. A minimum of nine, seven, three, and four individual bald eagles were seen on the four observation dates, respectively. Bald eagles were observed perching in three, eight, two, and two separate trees on the project site on the respective observation dates. Nine individual trees were used on the project site by bald eagles during surveys. The sizes and descriptions of the trees used for perching are provided in Table 1. Tree locations on the project site are presented in Exhibit 3.

The best and most reliable data for reviewing historical use of the project site by bald eagles was an unpublished report by Devaud and Devaud in 1990 which presented the findings of surveys conducted during the winter of 1989-1990. The Devauds observed, mapped, and photographed bald eagle perch trees along the north shoreline of Big Bear Lake between December 10 and April 6 of that winter. Eighty of the 176 mapped eagle sightings (45 percent) were located on the project site. The most commonly recorded use of a single perch tree was also on the project site with 51 sightings (i.e., tree number 886). This is clearly the most important eagle perch tree on the project site and potentially the most important on the north shore of Big Bear Lake. The next most commonly recorded use of a single perch tree was off the project site near the east end of the lake with 32 sightings.

Recommendations

The project site contains several trees used extensively by this wintering population of bald eagles. Removal of these trees could restrict access to and/or affect the ability of individual eagles to forage in the vicinity of Big Bear Lake. Removal of important perch trees could be considered a significant impact under the federal and state Endangered Species Acts (ESA). It is recommended that the numbered trees presented in Table 1 are avoided during project construction and preserved in place upon project completion. Additionally, all large trees (i.e., greater than 20-inches diameter at four feet from ground) within approximately 200 yards of the

high water line should be considered potential perch trees, avoided during construction, and preserved in place upon project completion, if possible.

Sincerely,

BONTERRA CONSULTING

Ann M. Johnston
Principal, Biological Services

Samuel C. Stewart IV
Assistant Project Manager

R:\Projects\RBF\J008 Eagle Survey-041602.wpd

Enclosures: Table 1 and Exhibits 1-3

References

Devaud J. & Devaud S. 1990. *Bald Eagle Habitat Use of the North Shore of Big Bear Lake, San Bernardino County, California.* Unpublished Document in San Bernardino National Forest Service Files.

Environmental Planning Consultants. 1988. *Big Bear Lake Bald Eagle Cumulative Impact Study.* Unpublished Document in San Bernardino National Forest Service Files.

B.2 - Bald Eagle Count in Area (U.S. Fish and Wildlife Service, 2009)

US Forest Service
San Bernardino National Forest

602 S. Tippecanoe Ave San Bernardino, CA 92408

FOR IMMEDIATE RELEASE

Big Bear Lake and Lake Arrowhead Contact: Robin Eliason – reliason@fs.fed.us; 909-382-2832(o) or 909-844-4131(c)
Lake Hemet Contact: Heidi Hoggan hhoggan@fs.fed.us; 909-382-2945
Silverwood Lake State Recreation Area Contact: Kathy Williams - khwilliams@parks.ca.gov; 760-389-2303(o); 760-963-7911(c); or Kevin Forester - kforrester@parks.ca.gov

BALD EAGLES SEEN IN LOCAL MOUNTAINS

SAN BERNARINO, Calif. January 10, 2009 - On Saturday January 10th, the first bald eagle count of the winter was conducted by local Federal and State biologists and volunteers around lakes in the San Bernardino and San Jacinto Mountains. Despite extremely windy conditions, large numbers of volunteers turned out for a chance to see one of our magnificent national birds. High wind gusts made standing challenging and kept knocking over some of the spotting scopes. Nonetheless, the effort was successful in tallying the bald eagles spending their winter vacations at local mountain lakes.

A grand total of twelve eagles (8 adults, 4 juveniles) were observed in the four lake areas during the 1- hour count. Six eagles (4 adults, 2 juveniles) were observed in the Big Bear/Baldwin Lake area; 2 eagles (1 adult, 1 juvenile) at Lake Arrowhead; 3 eagles (2 adults, 1 juvenile) at Silverwood Lake; and, 1 adult eagle at Lake Hemet. Juvenile eagles are distinguished by a brown head and tail; adults are recognized by the famous white head and tail - it takes 4-5 years to acquire full adult coloration. Juvenile eagles are the same size as the adults.

The count for Big Bear was a little lower than average; probably due in part to the fact that a large portion of the lake has been frozen over for several weeks. When the lake is frozen, ducks do not stay in the area. Ducks are the main prey for bald eagles; so when there are low numbers of ducks, there are low numbers of bald eagles.

Approximately 140 volunteers participated in the 1-hour eagle census at four lakes (50 at Big Bear area; 15 at Lake Arrowhead; a record 50 at Lake Hemet; and, 25 at Silverwood Lake). The Forest Service and State Recreation Area biologists would like to thank those volunteers!

The U.S. Forest Service and State Recreation Area biologists have coordinated counts of this federally-protected species since 1978. Data from our local count will be added to the nation-wide Mid-Winter Bald Eagle census to assess recovery status of the species. We rely on volunteers to gather information during the monthly winter eagle counts. Counts are conducted

for a 1-hour period from 9-10 a.m. Forest Service volunteers stationed around lakes in Big Bear, Arrowhead, and Idyllwild record all observations of bald eagles. Volunteers at Silverwood Lake State Recreation Area conduct simultaneous counts.

Bald eagles are similar to many southern Californians in that they visit the lakes of our San Bernardino and San Jacinto Mountains for their winter vacations between November and April. Instead of vacationing here for dynamite skiing, eagles come for the plentiful food supplies. As lakes and rivers up north freeze each winter, fish become unavailable under a thick layer of ice and ducks leave the frozen waters. The eagles' "grocery stores" have essentially closed for the winter. So eagles fly south looking for open water stocked with food. The lakes of the San Bernardino and San Jacinto Mountains fit the bill perfectly--they are part of the Pacific Migratory Flyway, a migration freeway for millions of ducks. Eagles like to spend their winters here because of the abundant and tasty ducks and fish.

Our bald eagles normally migrate out of the San Bernardino and San Jacinto Mountains in late March, heading back to summer homes in Montana, Wyoming, Idaho, and Alberta, Canada. In recent years, a pair of bald eagles has remained at Lake Hemet and successfully produced several eaglets.

Catching a glimpse of our breath-taking national bird is relatively easy during the winter months. There are also some fantastic opportunities for excellent close-up photography. Just look in the tallest trees around the lakeshore. Or, if the lake is partially frozen, look for eagles perched on the ice near small groups of ducks using open water pockets.

Remember that human presence may distract or disturb the eagles--so, try to limit your movements and don't make loud noises when nearby. If possible, remain in your car while observing eagles--the car acts as a blind.

Don't forget to mark your calendars now for the remaining Eagle Counts: February 14, and March 14. Volunteers need not have experience--just bring binoculars and a watch (and dress warmly!).

For More Information about Bald Eagle Counts
Big Bear Lake and Lake Arrowhead Contact:
Robin Eliason – reliason@fs.fed.us; 909-382-2832
Lake Hemet Contact: Heidi Hoggan
hhoggan@fs.fed.us; 909-382-2945
Silverwood Lake State Recreation Area Contact:
Kathy Williams - khwilliams@parks.ca.gov; 760-389-2303

For More Information about Discovery Center Eagle Events
Call 909-382-2790 or stop by the Forest Service's Big Bear Discovery Center on the north side of Big Bear Lake
http://www.bigbeardiscoverycenter.com

For information about the San Bernardino National Forest, please visit: http://www.fs.fed.us/r5/sanbernardino

For information about Silverwood State Recreation Area, please visit:

http://www.parks.ca.gov/?page_id=650

BIG BEAR LAKE EAGLE COUNT SUMMARY

(Includes Big Bear and Baldwin Lakes)

1979 - 80	20	22	13	11	3	14	22
1980 - 81	11	19	25			18	25
1981 - 82	15	27	22	6	3	15	27
1982 - 83	7	27	18	11		16	27
1983 - 84	14	28	18	10		18	28
1984 - 85	27	8	3	3		10	27
1985 - 86	20	24		9		18	24
1986 - 87	20	24		9		18	24
1987 - 88	9	17	21	16		16	21
1988 - 89	12	6	4	12		9	12
1989 - 90	15	11	19	17		16	19
1990 - 91	6	16	22	17		15	22
1991 - 92	19	19	13	9		15	19
1992 - 93	6	15	3	3		7	15
1993 - 94	9	17	15	8		12	17
1994 - 95	10	10	20	No Count		13	20
1995 - 96	6	14	15	10		11	15
1996 - 97	10	15	5	9		10	15
1997 - 98	8	14 - 15	15	12		12	15
1998 - 99	8	17	15 - 17	9		11	17
1999 - 00	8	13	3	13		9	13
2000 - 01	13	13	14	12		13	14
2001 - 02	7	9	11	9		9	11
2002-03	6	13	15	9		11	15
2003-04	4	14	11	7		9	14
2004-05	6	1	4	5		4	6
2005-2006	7	4	6	No Count		6	7
2006-2007	4	8	5	5		6	8
2007-2008	4	3	6	3		4	6
2008-2009	No Count	6					
Average	11	15	13	10	5	12.26	18.14
					Maximum	18	28
					Minimum	4	6
					Median	12	17

B.3 - Focused Flying Squirrel Trapping Report (Michael Brandman Associates, 2007)

FOCUSED FLYING SQUIRREL TRAPPING REPORT MOONCAMP PROJECT, FAWNSKIN, SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:

County of San Bernardino
Department of Land Use Services
385 N. Arrowhead Avenue, First Floor
San Bernardino, California 92415-0182

Contact: Matthew W. Slowick, Senior Planner

Prepared by:

Michael Brandman Associates
621 E. Carnegie Drive, Suite 100
San Bernardino, California 92408
909.884.2255

Contact: Mikael Romich, Project Biologist

September 18, 2007

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

SECTION 1: SUMMARY

This report contains the findings of Michael Brandman Associates (MBA) focused trapping survey for the San Bernardino flying squirrel (*Glaucomys sabrinus californicus*) (SBFS) on an approximately 62.5-acre property known as Tentative Tract 16136 (Moon Camp) located in the Community of Fawnskin, San Bernardino County, California. During the trapping period, no SBFS were caught on the project site. This effort provides reasonable evidence (defined by the USFWS (1990) as one week of trapping) that SBFS were absent from the project site during the period trapped. A number of mitigation measures are provided to minimize the potential for indirect and direct impacts, as well as enhancement of adjacent areas to compensate for the removal of suitable habitat.

SECTION 2: INTRODUCTION

At the request of San Bernardino County, MBA conducted a focused SBFS trapping survey with methods modified from survey protocols issued by the US Fish and Wildlife Service (USFWS 1990) and United States Department of Agriculture (USDA 1991) for a 62.5-acre property located in the Community of Fawnskin, San Bernardino County, California. This property is hereinafter referred to as project site or site.

2.1 - Project Location

The site is located in the San Bernardino National Forest, north of Big Bear Lake. State Highway 38 intersects the Site on the southern portion. The site is located south of Flicker Road, east of Oriole lane, and west of Polique Canyon Road, in the unincorporated community of Fawnskin, San Bernardino County, California (Exhibits 1 and 2). The Site consists of Assessor's Parcel Numbers 0304-082-04, 0304-091-12, -13, and -21. It is within sections 7 and 12, Township 2 North and Range 1 East of the Fawnskin U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Exhibit 3).

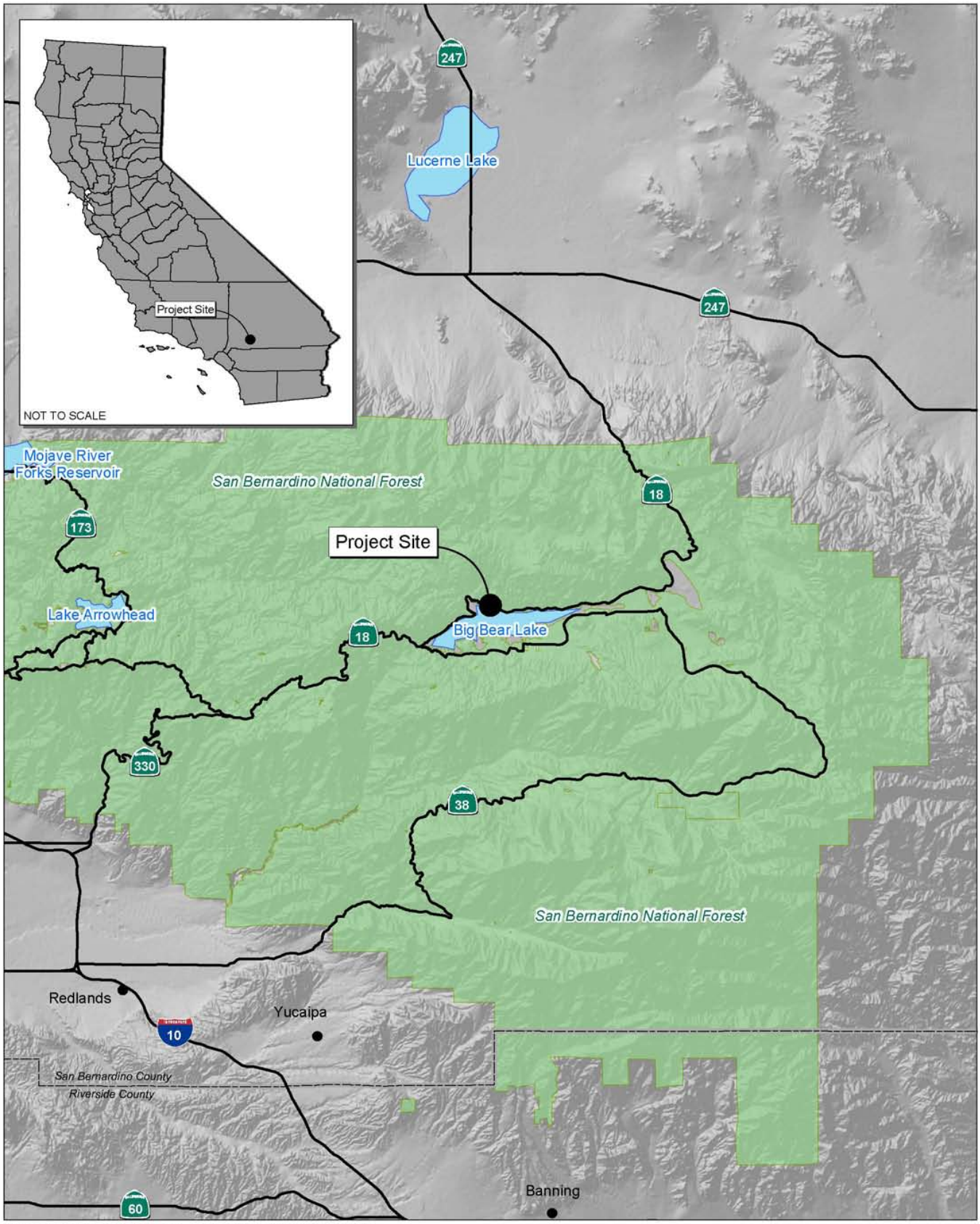
2.2 - Project Description

The proposed project is to subdivide the Site into 53 lots: fifty residential lots to be sold individually and developed into custom homes and 3 lettered lots, two of which would be designated as Open Space/Conservation easements.

2.3 - Environmental setting

Site elevations range from approximately 6,747 feet above mean sea level (msl) at the lakeshore to 6,960 feet above msl at the northeast corner of the Site. Individual slopes onsite range from five percent to forty percent. Slope orientation is generally from north to south toward the lake, except for three natural ravines on the project site that contain eastern and western slopes.

The dominant plant community observed on the site is Jeffrey pine forest (54.91 acres), which includes Jeffrey pine (*Pinus jeffreyi*), white fir (*Abies concolor*), incense cedar (*Calocedrus decurrens*), western juniper (*Juniperus occidentalis*), singleleaf pinyon pine (*Pinus monophylla*), and black oak occurring at lower densities. The Jeffrey pine forest onsite is unevenly aged composed of approximately 85 percent Jeffrey pine, eight percent western juniper, six percent singleleaf pinyon pine, and less than 1 percent of scattered white fir and black oak. The understory is sparse, consisting of scattered chaparral shrubs including greenleaf manzanita (*Arctostaphylos patula*), mountain whitethorn (*Ceanothus cordulatus*), Greg's ceanothus (*Ceanothus greggii*), deer brush (*Ceanothus integerrimus*), California mountain mahogany (*Cercocarpus betuloides*), and curl leaf mountain mahogany (*Cercocarpus ledifolius*).



Source: Census 2000 Data, The CaSIL, MBA GIS 2007.

NORTH

5 2.5 0 5 Miles

Michael Brandman Associates

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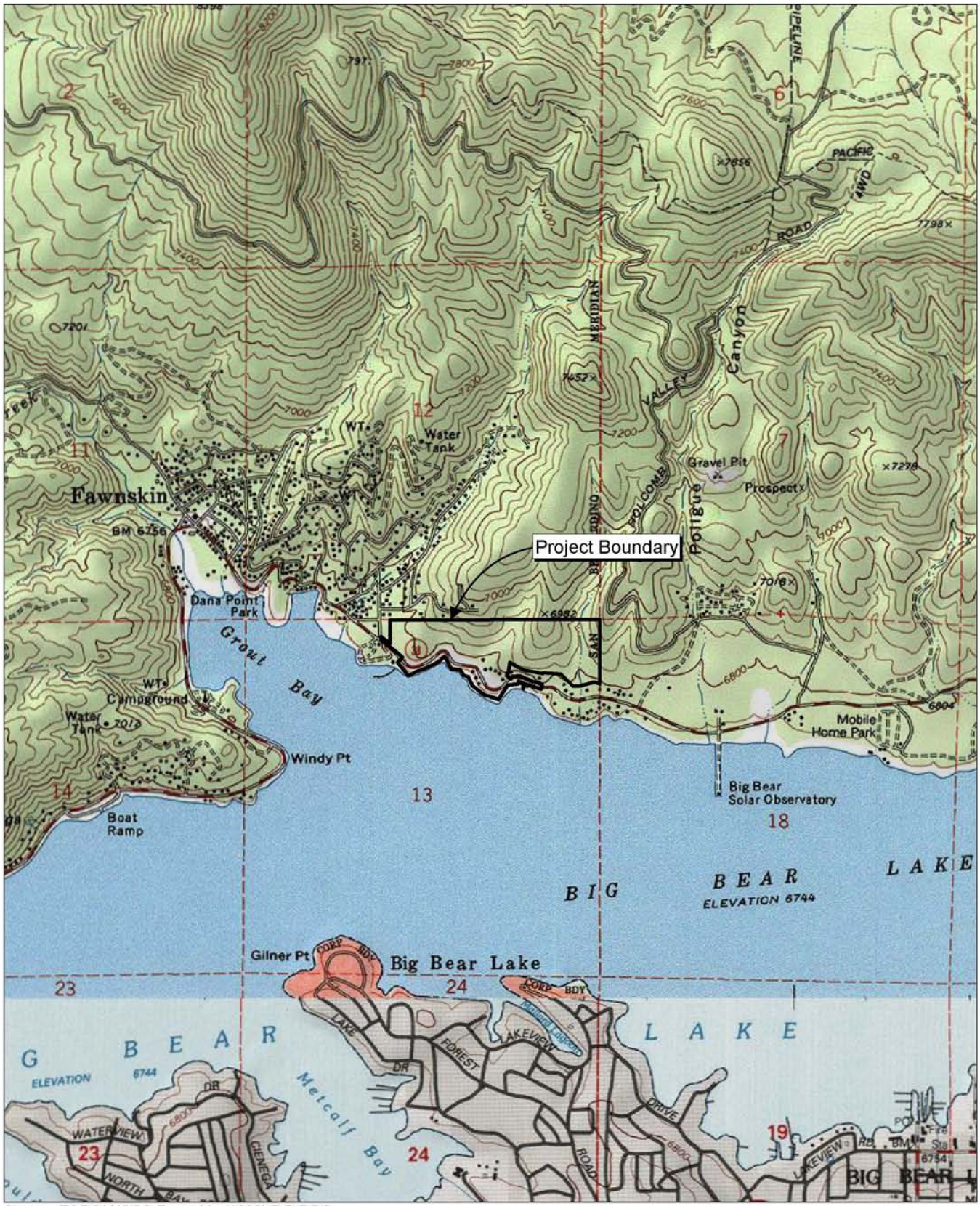
Exhibit 1
Regional Location Map

TT 16136 • FAWSKIN, SAN BERNARDINO COUNTY, CA
FLYING SQUIRREL SURVEY REPORT



Source: TOPO! USGS Fawnskin (1996) 7.5' DRG.

NORTH

2,000 1,000 0 2,000 Feet

Michael Brandman Associates

00520089 • 08/2007 | 2_local_topo.mxd

Exhibit 2
Local Vicinity
Topographic Base

Source: National Agriculutre Imagery Program, San Bernardino County (2005).

Michael Brandman Associates

NORTH

2,000 1,000 0 2,000

Feet

Exhibit 3
Local Vicinity Aerial Base

Herbaceous cover is generally low, consisting of grasses and forbs in scattered patches. Approximately 17.38 acres of the Jeffrey pine forest on the site contain few trees and fairly open canopy. The open Jeffrey pine forest and where Wright's matting buckwheat (*Eriogonum wrightii* ssp. *subscaposum*) occur is suitable habitat for a number of sensitive plant species.

The pebble plain plant community occurs on 0.69 acre of the site north of State Route 38. It appears as a distinct open patch within open Jeffrey pine forest in the western portion of the site. The substrate in this area consists of clay soil mixed with quartzite pebbles and gravel that are continually pushed to the surface through frost action. This substrate supports a high floristic diversity consisting of small cushion-forming plants, tiny annuals, grasses, and succulents that are well spaced, low growing, and sun tolerant. Several sensitive plant species are associated with pebble plain habitat.

Approximately 4.14 acres of the southern boundary of the site is formed by the shore of Big Bear Lake. Plant species along the shore itself consisted primarily of herbaceous native and non-native species of periodically saturated soils, including willowherb (*Epilobium* sp.), wire-grass (*Juncus mexicanus*), cursed buttercup (*Ranunculus sceleratus*), and several cinquefoil species (*Potentilla* spp.). Vegetation is patchy above the high-water level where small areas of Jeffrey pine forest are interspersed among open meadows and grasslands and scattered patches of arroyo willow (*Salix lasiolepis*) and red willow (*Salix laviegata*).

2.4 - Disturbances

Recent activity on the project site includes the removal of trees, which appeared to be either taken offsite or chipped onsite. The greatest disturbance from the tree removal activity would be to cavity-dwelling birds and mammals, and sensitive plant species that have been located on the project site, including the Federally-listed Threatened and California Native Plant Society (CNPS) List 1B species, ash-gray Indian paintbrush (*Castilleja cinerea*); and three CNPS List 1B species, Parish's rock cress (*Arabis parishii*), Big Bear Valley woollypod (*Astragalus leucolobus*), and silver-haired ivesia (*Ivesia argyrocoma*). It is not known if precautions prior to tree removal were made to avoid the known locations of these plants. In addition, the ingress and egress of vehicles involved in the tree removal and the potential dragging of trees offsite has caused the understory vegetation and ground to be heavily disturbed. Finally, there appeared to be direct mechanical removal of some understory shrubs. A number of wildlife trees (or snags) were marked with "WL" and were not removed. Some thinning of trees, including black oak (*Quercus kellogii*), was evident, particularly at the lower portions of the tree trunk.

2.5 - San Bernardino Flying Squirrel

2.5.1 - Status

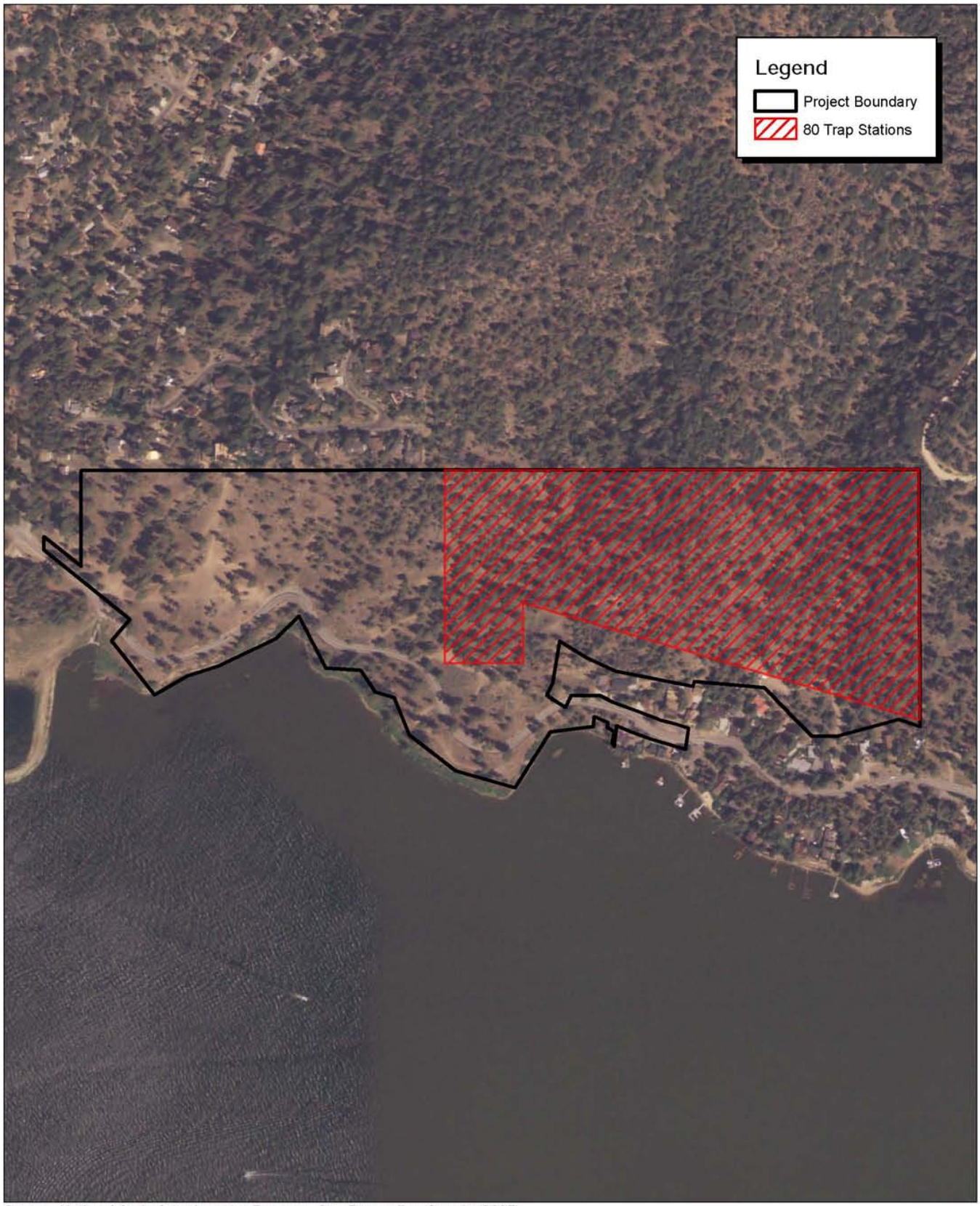
The SBFS is considered a California special concern (CSC) species by the California Department of Fish and Game (CDFG) and is on the Forest Service's sensitive wildlife species list. SBFS is a

sensitive species because of declining population levels, limited ranges, and continuing threats have made them vulnerable to extinction. The goal of designating sensitive species is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long term viability.

2.5.2 - Biology

The SBFS is a subspecies of the northern flying squirrel (*Glaucomys sabrinus*), a small arboreal sciurid found in forested regions over most of North America. They are found typically in habitats dominated by conifers or with a mixed coniferous-deciduous overstory. Stomach and fecal analyses indicate that flying squirrels consume primarily hypogeous fungi (*mycophagists*) during snow-free periods and lichens during winter. A fecal analysis was conducted on SBFS in the San Bernardino Mountains (Butler et al. 1991) showing spores from three genera of hypogeous fungi (*Melanogaster*, *Hymenogastor*, and *Gymnomyces*). Other food items found in descending order of abundance included Jeffrey pine pollen, dicot and monocot plant material, and spores from epigeous fungi (associated with decomposing wood and litter) (Butler et al. 1991). SBFS do not appear to be territorial, and individuals are often seen feeding and denning together. They inhabit two types of nests, those inside tree cavities and those constructed in the canopy of conifers, especially those infected with broom rust (*Chrysomyxa*).

SBFS can occur in Jeffrey pine/white fir mixed conifer forests with some oak components. From the study efforts in the San Bernardino Mountains (Butler et al. 1991; Driessen et al. 1998), habitat at successful trapping sites can be characterized as mature to over-mature mixed conifer forest with relatively high numbers of snags and downed logs. The habitat is relatively open and lacks a dense undergrowth component. The canopy is relatively closed. The dominant species on site were Jeffrey pine and white fir. All sites also had a black oak component in the vegetation mix. The successful trapping sites can also be characterized as having a heavier duff level than surrounding areas. All of the sites also have either ephemeral streams/springs or intermittent streams with some riparian vegetation in close proximity.



Source: National Agriculutre Imagery Program, San Bernardino County (2005).

Michael Brandman Associates

NORTH

500 250 0 500

Feet

Exhibit 4
Flying Squirrel Trapping Grid

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TT 16136 • FAWSKIN, SAN BERNARDINO COUNTY, CA
FLYING SQUIRREL SURVEY REPORT

SECTION 3: METHODOLOGY

MBA biologists Mikael Romich and James Hickman conducted a focused SBFS trapping survey with methods modified from survey protocols issued by the USFWS (1990) and USDA (1991). To evaluate the presence of a SBFS population on the project site, traps were placed within suitable Jeffrey pine forest habitat.

The project site had a live trapping grid consisting of 80 stations located at 40-meter intervals (Exhibit 4). One Tomahawk livetrap (Model 201, Tomahawk Live Trap Company, Tomahawk, Wisconsin) equipped with shelter (plastic container) and batting (polyster fiberfill) was mounted 1.5 meters aboveground on a tree trunk at each trap station. Each trap station was selectively chosen based on the proximity of a suitable tree. The order of preference for trap locations was based on the diameter at breast height (DBH) and the height of the tree: tall dead snag (dead and dying tree) with large DBH, tall alive tree with large DBH, short dead snag with large DBH, and short alive tree with small DBH. Traps were located at each of these categories. Traps were covered with debris, such as pine needles and bark, to break the outline and provide shelter.

Squirrels were live trapped for five nights, from the evening of June 24 when traps were first set to the morning June 29, 2007 when traps were checked and picked up. Traps were set before dark each day and checked the next morning. Traps remained closed during the day. Traps were baited with a mixture of peanut butter, molasses, and whole oats. Prior to the trapping effort, traps were pre-baited with sunflower seeds that were placed on top of the closed trap for a period of three nights (June 21 to June 24, 2007). Pre-baiting allows animals to acclimate to the trap and increases capture success (USFWS 1990). These methods are summarized in Table 1.

Table 1: Summary of 2007 SBFS Trapping Survey at the Moon Camp Project Site

2007 Date	Activity
June 21	Traps placed on site and pre-baited with sunflower seeds in a locked closed position.
June 24	Traps baited with peanut butter mixture and triggered
June 25-June 28	Traps checked in morning and locked shut
June 25-28	Traps opened and triggered each evening
June 29	Traps checked in morning and collected

The timing of this trapping session occurred when SBFS were previously trapped in close proximity to the Site (approximately 0.5 mile north of the northern boundary of the project site); the 1998 survey occurred from June 25 through July 7, 1998 and a total of 6 SBFS were caught, all in Tomahawk traps that were placed on tree trunks (Driessen et al. 1998). Although Carey et al. (1991) recommends a trap placed on the ground, this was not necessary because SBFS were shown to be trappable on tree trunks.

SECTION 4: RESULTS AND DISCUSSION

SBFS was not captured on the project site. Non-target species that were caught included Merriam's chipmunk (*Tamias merriami*) (minimum known to be alive was 10 individuals), two dusky-footed woodrat (*Neotoma fuscipes*), and one Steller's jay (*Cyanocitta stelleri*).

With the presence of a Jeffrey pine/white fir mixed conifer forest, dead and downed woody debris, and snags, the conditions of the site appeared suitable to SBFS. However, the project site had been subject to a disturbance regime (tree and shrub removal activity) that may have affected its suitability for SBFS. Potential impacts of this disturbance regime include: (1) removal of trees with cavities or stick nests needed by SBFS; (2) disturbance of the substrate could reduce the quantity and quality of hypogeous (underground) fungi (truffles), which compose northern flying squirrel diets at this time of the year (Ransome and Sullivan 2004; Butler et al. 1998)). It should be noted that this trapping session occurred during a drought year, which would reduce fungal production (Villa et al. 1999) and result in a lower abundance of SBFS as they are known to be primarily limited by the availability of food resources (Ransome and Sullivan, 1997, 2004). Due to these confounding factors, mitigation measures are proposed in Section 5 that would reduce potential impacts if the survey area becomes occupied by SBFS in the future.

SECTION 5: CONCLUSION

No SBFS were trapped during this focused survey effort, which provides reasonable evidence that SBFS were absent from the project site during the period trapped. Although the USFWS (1990) recommends that an area be trapped during more than one season, it is not mandatory. However, due to the suitability of the habitat and proximity of trapping records approximately 0.5 mile to the north (Driessen et al. 1998), the Site may receive seasonal use by SBFS that would not be detectable with this survey. The following mitigation measures are recommended to minimize potential impacts to SBFS that could be seasonally using the site:

1. Minimizing the number of trees, snags, and downed wood removed for project implementation;

2. Having a biologist qualified with SBFS as a monitor during tree removal;

3. Compensating the removal of snags containing cavities; this would be achieved by constructing and erecting two nest boxes and one aggregate box per snag removed. Appendix B provides the specifications of the nest and aggregate boxes (Flying Squirrels 2007). These boxes should be located on the adjacent USFS land (with their permission) and the locations marked with a global positioning system. This locations of the boxes shall be provided to the USFS so that their biologists could monitor the boxes for occupation by SBFS.

4. Adjacent night lighting shall be reduced to the greatest extent practicable and lights shall be designed with hoods or shields that reduce the amount of light spilling into the adjacent habitat, particularly on the northern edge; and

5. Provide new homeowners with a flyer that would provide information on the biology of SBFS and how they are susceptible to depredation by cats. The flyer would also outline steps that homeowners could take to reduce their urban edge effects.

SECTION 6: CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: September 18, 2007 Signed: _____

Mikael Romich, TE068799-1

SECTION 7: LITERATURE CITED

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Carey, A.B., B.L. Biswell, and J.W. Witt. 1991. Methods for Measuring Populations of Arboreal Rodents. Gen. Tech. Rep. PNW-GTR-273. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 24 p.

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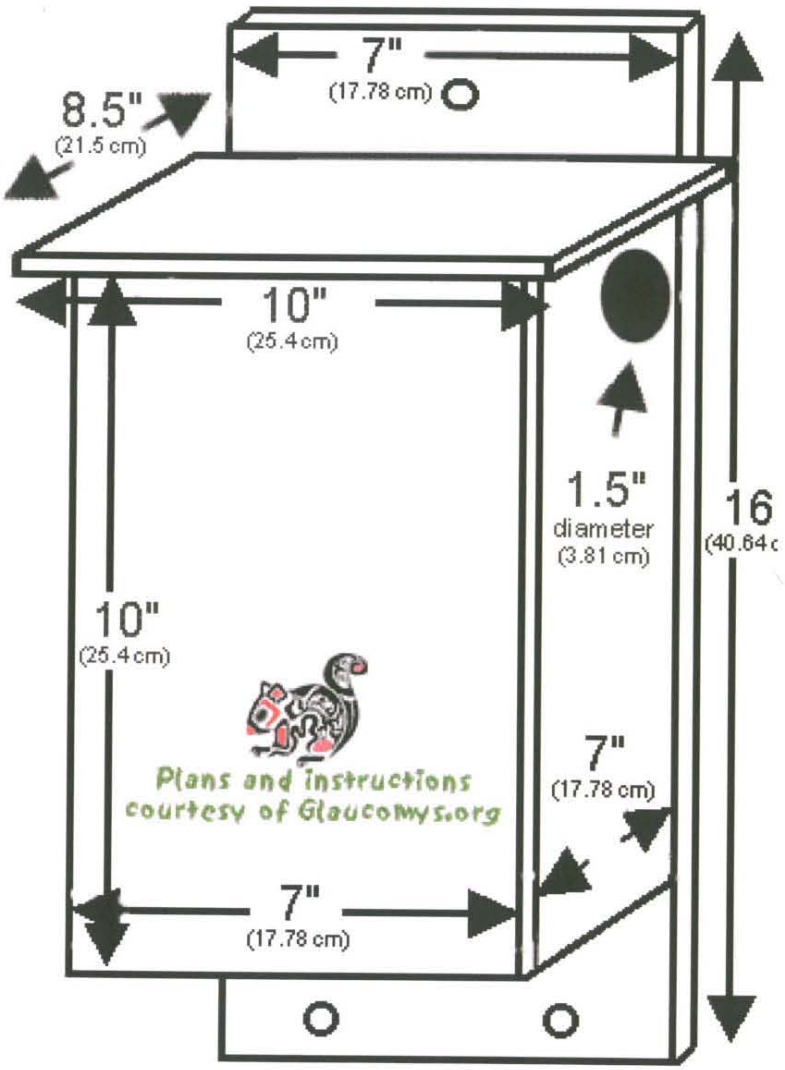
Appendix A: Nest and Aggregate Box Specifications

Simple Nesting Box Plan for the Northern Flying Squirrel

(Glaucomys sabrinus)

[for Southern Flying Squirrel (Glaucomys volans) take one inch off all dimensions. Access hole must be exactly 1.25 in. (3.175 cm). Place in deciduous or mixed forest.]

*Note - before beginning construction of this nesting box, do your research and confirm which species of flying squirrel inhabits your geographic region!



1. Ensure access hole size is no larger than specified. You may wish to install a sheet metal occluder around entrance to prevent hole enlargement by unwanted species. No sharp edges!

2. Run a bead of water-based siliconized caulking along length of top where it meets backing board to prevent water infiltration and seal all cracks and gaps accordingly. Drill (4) 1/2" (12.7mm) holes near corners of bottom and (2) 1/2" (12.7mm) holes on each side near bottom for ventilation purposes.

3. Use natural (untreated) softwood ONLY. Thickness - 3/4" (19mm) to 1" (25mm). DO NOT stain or paint interior or exterior. DO NOT use plywood or chipboard. Wear gloves when handling wood, as salt from sweaty hands will encourage porcupines to chew the box.

4. If the wood you use is smooth-planed, roughen exterior and interior panels with rasp or coarse sandpaper for better "gripability".

5. Though not absolutely necessary, it is advisable to provide a hinged access door for cleaning purposes. Clean ONLY during January or February, as box will be vacant during this period. Front or side door access is preferred over top door access. Only adults should do the cleaning, and always wear leather gardening gloves when performing a clean-out! Some other animals you might find using this nesting box are: birds, tree frogs, spiders, hornets, bumblebees and deer/white-footed mice.

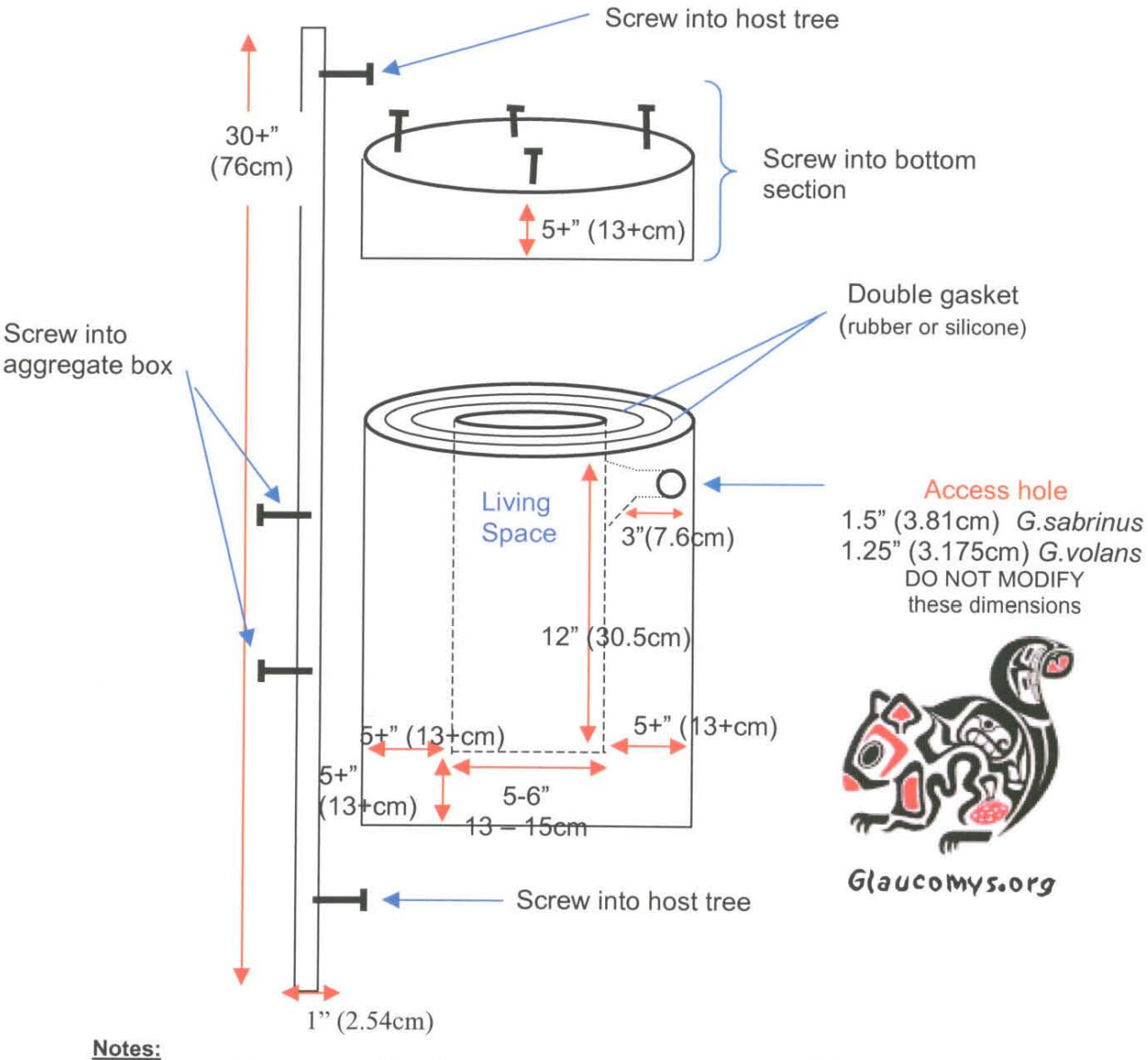
Place nesting boxes in your oldest stands of coniferous (preferred by sabrinus) or mixed forest. Min./Max. placement height is 10'/26' (3m/8m). Place so that access hole faces opposite prevailing wind. Preferably, place so that mammalian predators cannot reach box via limbs of other trees. Should arboreal snakes inhabit the area, drill another access hole at bottom of opposite side. Install within 500m of water (marsh, creek, etc.) or in mesic (wet) forest areas where possible. Install several boxes per 1/2 hectare, as flying squirrels need to have alternate nesting sites available to them for predator/parasite avoidance and rest/elimination purposes.

Monitor occasionally for occupancy by rapping or scratching tree trunk and watching access hole. If you find a flying squirrel has taken up residence, leave it alone. If you bother it too much, it will leave.

The most important feature of your nesting box is that it be waterproof. Please ensure that the inside of the nesting box will remain dry. DO NOT install any nesting boxes if you are aware of house cats (cared-for or feral) in the vicinity.

BUILDING, PLACING AND CLEANING OF NESTING BOXES CAN BE DANGEROUS. ALL WORK DETAILED HERE SHOULD BE PERFORMED ONLY UNDER ADULT SUPERVISION.

Flying Squirrel Aggregate Box Plans



Notes:

1. Unit is made from one section of log, nominally 22" (56cm) in length, 16" (40.5cm) dia.
2. Dimensions given (except access hole diameters) are approximate and are dependant upon source log dimensions - use as a guide only.
3. Softwoods are easier to work with (building and placing). Use chainsaw to create living space. Leave bark on unit, if possible. If not, roughen exterior surface.
4. Place unit between 10' (3m) and 20' (6m) high, away from branches of other trees.
5. Place unit so that entrance hole faces away from prevailing wind.
6. Place unit so that entrance hole faces away from direct sunlight.
7. Clean unit yearly (when unoccupied - watch for active bumblebee and hornet nests!).
8. All screws should be non-rusting; countersunk, Robertson type preferred.
9. Avoid using plywood as backing board; if unavoidable, use exterior grade plywood.

B.4 - Southwestern Willow Flycatcher Focused Survey Report (Michael Brandman Associates, August 2007)

SOUTHWESTERN WILLOW FLYCATCHER FOCUSED SURVEY REPORT MOONCAMP PROJECT, FAWNSKIN, SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for:

County of San Bernardino
Department of Land Use Services
385 N. Arrowhead Avenue, First Floor
San Bernardino, California 92415-0182

Contact: Matthew W. Slowick, Senior Planner

Prepared by:

Michael Brandman Associates
621 E. Carnegie Drive, Suite 100
San Bernardino, California 92408
909.884.2255

Contact: Mikael Romich, Project Biologist

August 15, 2007

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

SECTION 1: SUMMARY

This report contains the findings of Michael Brandman Associates (MBA) focused survey for the southwestern willow flycatcher (*Empidonax traillii extimus*) (SWF) on an approximately 62.5-acre property known as Tentative Tract 16136 (Moon Camp) located in the Community of Fawnskin, San Bernardino County, California. This focused survey determined that the project site is not currently occupied by SWF. However, due to various bird species utilizing the site for nesting, project-related tree removal should occur outside the nesting season (March through July).

SECTION 2: INTRODUCTION

At the request of San Bernardino County, MBA conducted a focused SWF survey consistent with accepted survey protocols issued by the US Fish and Wildlife Service (USFWS 2000) for a 62.5-acre property located in the Community of Fawnskin, San Bernardino County, California. This property is hereinafter referred to as project site or site.

2.1 - Project Location

The project site is located in the San Bernardino National Forest, north of Big Bear Lake. State Highway 38 bisects the site on the southern portion. The project site is located south of Flicker Road, east of Oriole Lane, and west of Polique Canyon Road, in the unincorporated community of Fawnskin, San Bernardino County, California (Exhibits 1 and 2). The site consists of Assessor's Parcel Numbers 0304-082-04, 0304-091-12, -13, and -21. It is within sections 7 and 12, Township 2 North and Range 1 East of the Fawnskin U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Exhibit 3).

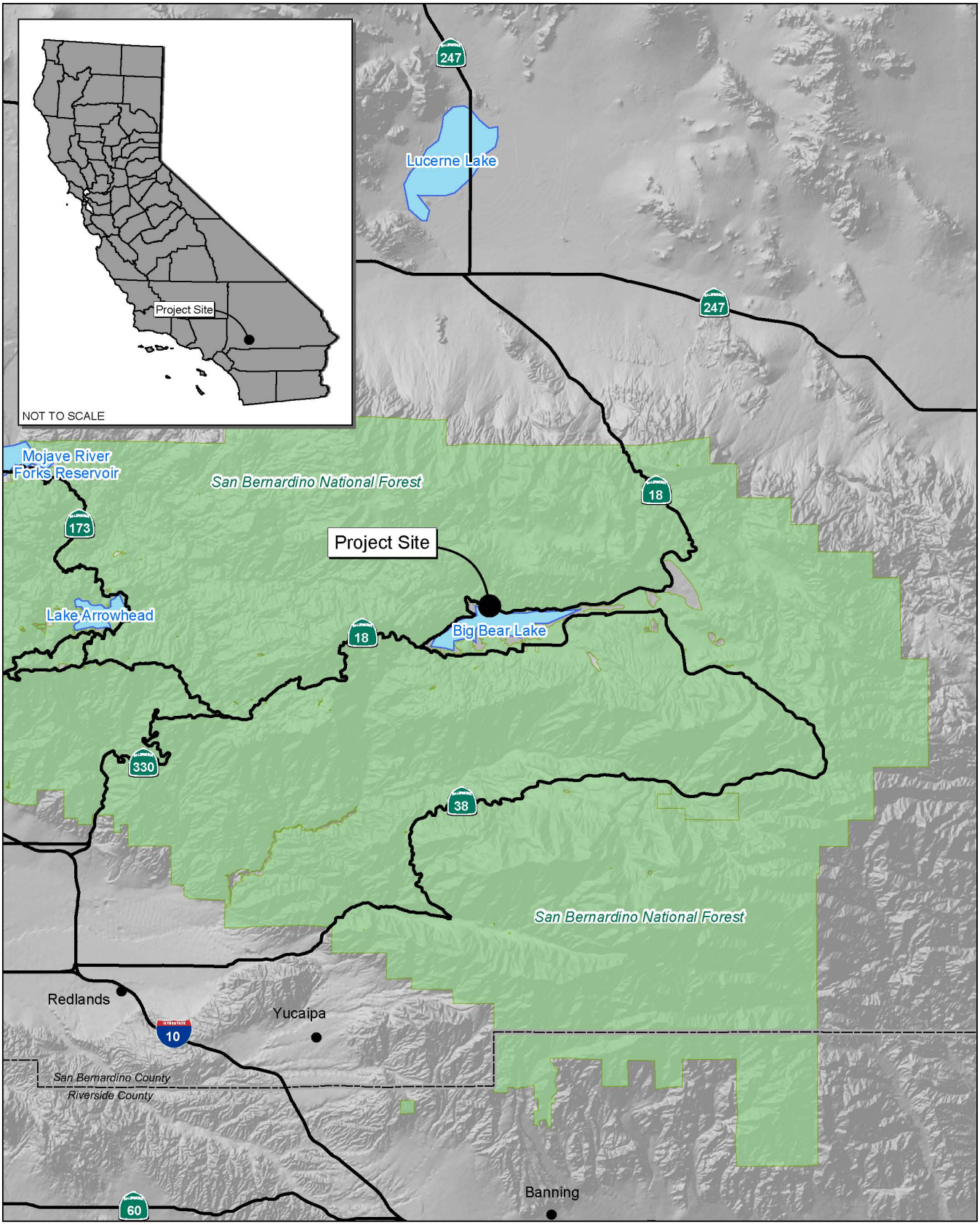
2.2 - Project Description

The proposed project is to subdivide the site into 53 lots: fifty residential lots to be sold individually and developed into custom homes and 3 lettered lots, two of which would be designated as Open Space/Conservation easements.

2.3 - Environmental setting

In addition to SR 38, several dirt roads and trails traverse the project site. Site elevations range from approximately 6,747 feet above mean sea level (msl) at the lakeshore to 6,960 feet above msl at the northeast corner of the site. Individual slopes on-site range from five percent to forty percent. Slope orientation is generally from north to south toward the lake, except for three natural ravines on the project site that contain eastern and western slopes.

The dominant plant community observed on the project site is Jeffrey pine forest (54.91 acres), which includes Jeffrey pine (*Pinus jeffreyi*), white fir (*Abies concolor*), incense cedar (*Calocedrus decurrens*), western juniper (*Juniperus occidentalis*), singleleaf pinyon pine (*Pinus monophylla*), and black oak occurring at lower densities. The Jeffrey pine forest onsite is unevenly aged composed of approximately 85 percent Jeffrey pine, eight percent western juniper, six percent singleleaf pinyon pine, and less than one percent of scattered white fir and black oak. The understory is sparse, consisting of scattered chaparral shrubs including greenleaf manzanita (*Arctostaphylos patula*), mountain whitethorn (*Ceanothus cordulatus*), Greg's ceanothus (*Ceanothus greggii*), deer brush (*Ceanothus integerrimus*), California mountain mahogany (*Cercocarpus betuloides*), and curl leaf mountain mahogany (*Cercocarpus ledifolius*).



Source: Census 2000 Data, The CaSIL, MBA GIS 2007.

NORTH

5 2.5 0 5 Miles

Michael Brandman Associates

Exhibit 1
Regional Location Map

Source: TOPO! USGS Fawnskin (1996) 7.5' DRG.

Exhibit 2
Local Vicinity
Topographic Base

NORTH

2,000 1,000 0 2,000

Feet

Michael Brandman Associates

00520089 • 08/2007 | 2_local_topo.mxd

TT 16136 • FAWSKIN, SAN BERNARDINO COUNTY, CA
SOUTHWESTERN WILLOW FLYCATCHER FOCUSED SURVEY REPORT

Source: National Agriculutre Imagery Program, San Bernardino County (2005).

Michael Brandman Associates

NORTH

2,000 1,000 0 2,000

Feet

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The pebble plain plant community occurs on 0.69 acre of the project site north of State Highway 38. It appears as a distinct open patch within open Jeffrey pine forest in the western portion of the Project site. The substrate in this area consists of clay soil mixed with quartzite pebbles and gravel that are continually pushed to the surface through frost action. This substrate supports a high floristic diversity consisting of small cushion-forming plants, tiny annuals, grasses, and succulents that are well spaced, low growing, and sun tolerant. Several sensitive plant species are associated with pebble plain habitat.

Approximately 4.14 acres of the southern boundary of the project site is formed by the shore of Big Bear Lake. Plant species along the shore itself consist primarily of herbaceous native and non-native species of periodically saturated soils, including willowherb (*Epilobium* sp.), wire-grass (*Juncus mexicanus*), cursed buttercup (*Ranunculus sceleratus*), and several cinquefoil species (*Potentilla* spp.). Vegetation is patchy above the high-water level where small areas of Jeffrey pine forest are interspersed among open meadows and grasslands and scattered patches of arroyo willow (*Salix lasiolepis*) and red willow (*Salix laviegata*). This plant community provided the only potentially suitable habitat on the project site for southwestern willow flycatcher.

2.4 - Disturbances

Recent activity on the project site includes the removal of trees, which appeared to be either taken off-site or chipped onsite. The greatest disturbance from the tree removal activity would be to cavity-dwelling birds and mammals, and sensitive plant species that have been located on the project site, including the Federally-listed Threatened and California Native Plant Society (CNPS) List 1B species, ash-gray Indian paintbrush (*Castilleja cinerea*); and three CNPS List 1B species, Parish's rock cress (*Arabis parishii*), Big Bear Valley woollypod (*Astragalus leucolobus*), and silver-haired ivesia (*Ivesia argyrocoma*). It is not known if precautions prior to tree removal were made to avoid the known locations of these plants. In addition, the ingress and egress of vehicles involved in the tree removal and the potential dragging of trees offsite has caused the understory vegetation and ground to be heavily disturbed. Finally, there appeared to be direct mechanical removal of some understory shrubs. A number of wildlife trees (or snags) were marked with "WL" and were not removed. Some thinning of trees, including black oak (*Quercus kellogii*), was evident, particularly at the lower portions of the tree trunk.

2.5 - Southwestern Willow Flycatcher

The SWF is an insectivorous migratory songbird that nests during the late spring and summer months in dense riparian habitats. The SWF is one of four subspecies of willow flycatcher (WIFL) that occupy relatively distinct breeding ranges in the continental United States. The breeding range of the SWF occurs in the southwestern region of the states (primarily southern California, Arizona, New Mexico, and portions of Nevada, Utah, and Colorado). SWF breeds in dense riparian vegetation near surface water or saturated soil. The other subspecies of WIFL may nest in shrubby habitats away from water. Habitat loss and brood parasitism by the brown-headed cowbird have been attributed to the decline of this species. The SWF is listed as an endangered species by the State of California (2000) and USFWS (1995). The nearest citing of southwestern willow flycatcher occurred in 2001 on Big Bear Lake in the vicinity of Boulder Bay and Metcalf Bay, California Natural Diversity Database (CNDDB 2007). The project site does not overlap designated critical habitat for SWF (USFWS 2005).

SECTION 3: METHODOLOGY

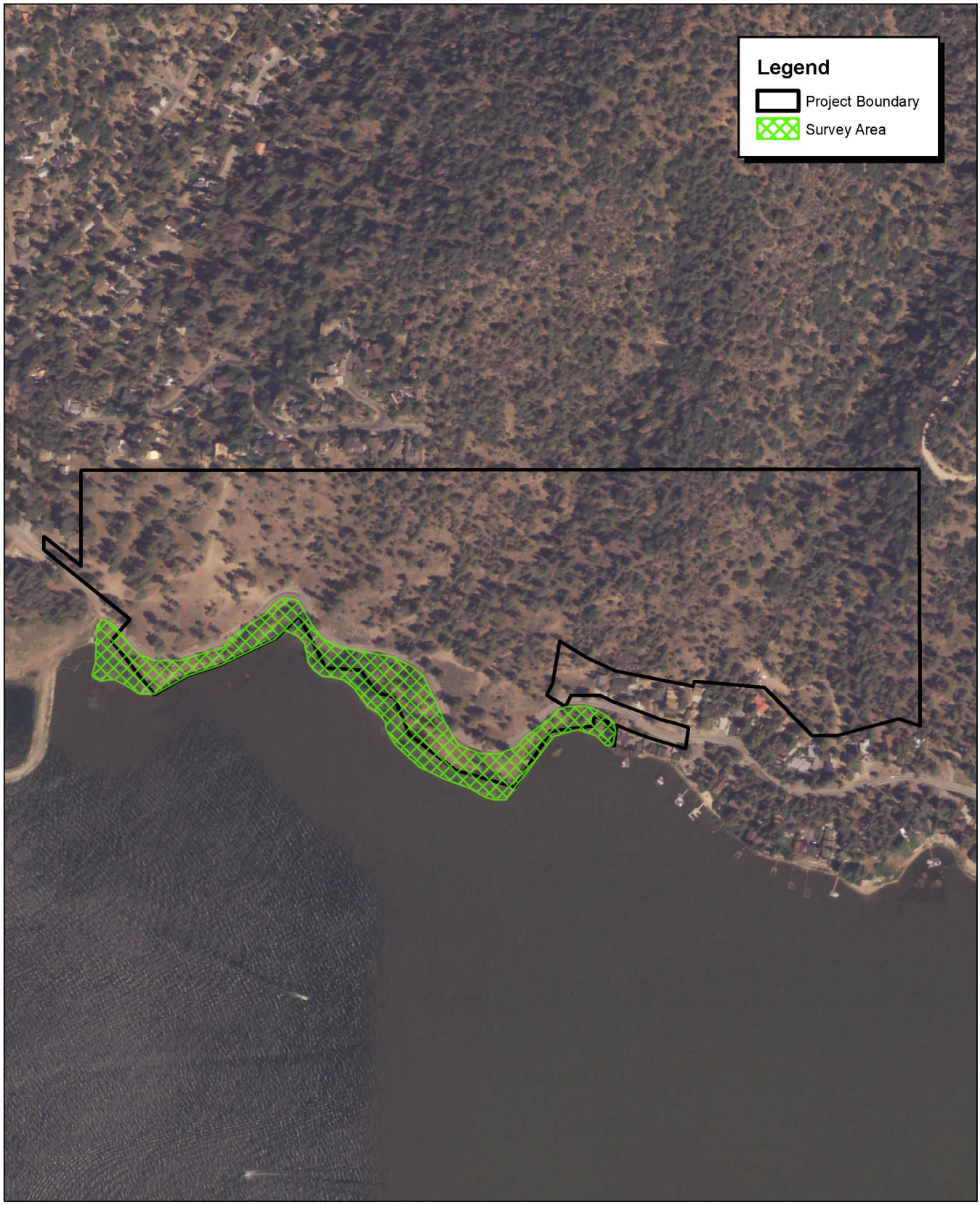
Michael Brandman Associates (MBA) permitted biologist Mikael Romich (TE068799-2) conducted the SWF surveys according to USFWS survey guidelines. To determine the presence/absence of SWF, surveys were conducted within all suitable and potential habitats on the project site. All suitable habitat (see Exhibit 4) occurs along the lakeshore and was surveyed as noted below in Table 1.

Southwestern willow flycatcher protocol requires a total of five (5) surveys between May 15 and July 17. One survey is completed May 15 to May 31; the second survey is completed June 1 to June 21; and three surveys are completed June 22 to July 17. These methods are consistent with the USFWS southwestern willow flycatcher protocol revision (2000). Surveys may begin at dawn and end at approximately 10:30 a.m, as consistent with the SWF protocol developed by Sogge *et al.* (1997).

The surveying biologist methodically moved through the survey area and, when feasible and appropriate, walked within potential habitat patches. The survey protocol included the use of taped recordings of SWF played approximately every 50 feet to elicit responses. If a flycatcher was detected, tape playing was discontinued. All bird species observed during the surveys were noted and are listed in Appendix A. Table 1 summarizes the dates, times, and weather conditions of all SWF surveys.

Table 1: Summary of 2007 SWF Surveys at the Moon Camp Project Site

2007 Date Surveyed	Time	Temperature, wind	Weather
May 31	6:00-8:00	35 F, calm	clear
June 13	7:30-9:00	46 F, calm	clear
June 24	6:30-8:00	42 F, calm	clear
July 3	6:00-7:30	43 F, calm	clear
July 13	5:45-7:15	40 F, calm	clear



Source: National Agriculutre Imagery Program, San Bernardino County (2005).

Michael Brandman Associates

NORTH

500 250 0 500

Feet

Exhibit 4
Focused Survey Area

SECTION 4: RESULTS AND DISCUSSION

4.1 - Southwestern Willow Flycatcher

No detections of SWF or WIFL occurred during the surveys at the Moon Camp project site. In fact, there were no detections of even common riparian obligate species. The lack of riparian bird species suggests that the habitat is not suitable to SWF. In general, the willows along the shoreline are patchy and lack the dense growth or willow thicket favored by this species. In addition, there is little vertical complexity to the riparian habitat on the project site.

4.2 - Bald Eagle

Although not the focus of this survey effort, a sighting of bald eagle (*Haliaeetus leucocephalus*) occurred on June 13, 2007 where an adult was observed flying along the shoreline of the project site in an east to west direction. Bald eagles have recently been delisted as a federally threatened and endangered species by the USFWS (July 9, 2007), but remain a California state endangered species. Bald eagles are known to winter on the project site (Bon Terra Consulting 2002), but breeding records in the Big Bear Lake area are scarce. However, in 2007 two bald eagle nests with potentially two pair of bald eagles were located in the Big Bear Lake area (Forest Service, June 25, 2007). One of these nests was located near Grout Bay, which is just west of the project site. Considering the amount of bald eagle use the project site receives during the winter, it would be conceivable that a nest could be established in one of the larger snags located in the interior of the site, which also affords a view of Big Bear Lake. Future studies should include nesting bald eagle surveys of the project site to ensure they have not established a nest onsite. The two nests in 2007 were discovered on February 9 and April 19, respectively. Copulation between two of the eagles was observed on March 5 and March 12. Therefore, nesting visits should be conducted in March, April, and May to confirm the continued absence of nesting bald eagle on the project site.

SECTION 5: CONCLUSION

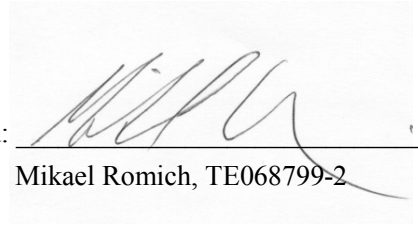
No SWF were detected during this focused survey effort and the site is not occupied by this species. Future short-term occupation of the project site by SWF is unlikely due to the general absence of suitable habitat for this species. Additional focused surveys would not be required unless the habitat becomes more suitable for this species. No impacts to SWF would occur with implementation of the proposed project.

A bald eagle was observed flying over the southern portion of the project site. Due to nesting records from 2007 in the Big Bear Lake area, nesting surveys should be conducted in March, April, and May to confirm the continued absence of nesting bald eagle on the project site.

There are a large number of bird species that were observed to use the project site for nesting. Due to the difficulty locating nests of cavity-nesting and other species of birds, a preconstruction nesting bird survey is not feasible. Therefore, the project should time tree removal to occur outside of the nesting period for birds, generally February through July.

SECTION 6: CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: August 15, 2007 Signed: 

Mikael Romich, TE068799-2

SECTION 7: LITERATURE CITED

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Sawyer, J.O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, CA.

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U.S. Fish and Wildlife Service (USFWS). February 27, 1995. Endangered and Threatened Species: Southwestern Willow Flycatcher; Final Rule. Federal Register 60 (38): 10693-10715.

Appendix A: Avian Species List

APPENDIX A
AVIAN SPECIES LIST

Family/Species Name	Common Name
BIRDS	
Gaviidae	**Divers, Loons**
Gavia immer	common loon
Podicipedidae	**Grebes**
Aechmophorus occidentalis	western grebe
Podiceps nigricollis	eared grebe
Podilymbus podiceps	pie-billed grebe
Ardeidae	**Egrets, Herons & Bitterns**
Ardea herodias	great blue heron
Anatidae	**Swans, Geese & Ducks**
Aix sponsa	wood duck
Anas platyrhynchos	mallard
Anas strepera	gadwall
Rallidae	**Rails and Coots**
Fulica americana	American Coot
Accipitridae	**Kites, Hawks, Eagles & Vultures**
Buteo lineatus	red-shouldered hawk
Haliaeetus leucocephalus	bald eagle
Falconidae	**Falcons**
Falco sparverius	American kestrel
Ciconiidae	**American Vultures**
Cathartes aura	turkey vulture
Phasianidae	**Pheasants, Partridges & Quail**
Oreortyx pictus	mountain quail
Scolopacidae	**Sandpipers**
Actitis macularia	spotted sandpiper
Charadriidae	**Plovers**
Charadrius vociferus	killdeer
Columbidae	**Pigeons & Doves**
Zenaida macroura	mourning dove
Picidae	**Woodpeckers**
Colaptes auratus	northern flicker
Melanerpes formicivorus	acorn woodpecker
Picoides pubescens	downy woodpecker
Picoides villosus	hairy woodpecker

Family/Species Name	Common Name
Tyrannidae	**Tyrant Flycatchers**
Contopus sordidulus	western wood-peewee
Hirundinidae	**Swallows**
Tachycineta thalassina	violet-green swallow
Corvidae	**Crows, Jays**
Corvus corax	common raven
Cyanocitta stelleri	Steller's jay
Paridae	**Titmice**
Poecile gambeli	mountain chickadee
Aegithalidae	**Bushtit**
Psaltriparus minimus	common bushtit
Sittidae	**Nuthatches**
Sitta pygmaea	pygmy nuthatch
Troglodytidae	**Wrens**
Thryomanes bewickii	Bewick's wren
Turdidae	**Thrushes**
Turdus migratorius	American robin
Sialia mexicana	western bluebird
Sturnidae	**Starlings**
**Sturnus vulgaris*	European starling
Vireonidae	**Vireos**
Vireo cassinii	Cassin's vireo
Fringillidae	**Finches, Grosbeaks, Sparrows**
Agelaius phoeniceus	red-winged blackbird
Carpodacus mexicanus	house finch
Euphagus cyanocephalus	Brewer's blackbird
Junco hyemalis	dark-eyed junco
Pipilo chlorurus	green-tailed towhee
Pipilo erythrophthalmus	spotted towhee
Spizella passerina	chipping sparrow

B.5 - Peer Review of Existing Biological Documents (Michael Brandman Associates, January 2007

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 31, 2007

Matthew W. Slowick, Senior Associate Planner
County of San Bernardino Land Use Services Dept.
385 N. Arrowhead Avenue, First Floor
San Bernardino, CA 92415-0182

Subject: Site Assessment and Review of Previously Prepared Biological Documentation of the Proposed Moon Camp Tentative Tract (TT) 16136 Project Site near Fawnskin, San Bernardino County, California

Dear **Mr**. Slowick:

The following is the results of a field assessment and peer review of existing biological documents for the Moon Camp TT 16136 project near Fawnskin in San Bernardino County.

Introduction

As requested by the County of San Bernardino, Michael Brandman Associates (MBA) completed a professional peer review of biological investigations and previously prepared biological documents concerning the approximately 64-acre subject property, known as the Moon Camp TT 16136 in San Bernardino County, California. The purpose of this task was to confirm that the appropriate professional practices were observed and to identify any deficiencies of information that could affect the adequacy of the environmental impact report we are preparing for this project.

Biological studies of the site were conducted by Bonterra Consulting in 2002. An EIR was prepared by RBF Consulting in December 2005.

The following documents were reviewed for consistency with the current conditions of the site as well as for determining the need for additional studies:

- *Results of Bald Eagle surveys on Tentative Tract 16136, Moon Camp, Fawnskin, San Bernardino County, California*. BonTerra Consulting. April 16, 2002.
- *Results of Botanical Surveys on Moon Camp- Tentative Tract 16136, Unincorporated San Bernardino County, California*. BonTerra Consulting. December 17, 2002.
- *Results of Rubber Boa Surveys on Moon Cam-Tentative Tract 16136, Unincorporated San Bernardino County, California*. BonTerra Consulting. December 5, 2002.
- *Results of Southwestern Willow Flycatcher Surveys on Moon Cam- Tentative Tract 16136, Unincorporated San Bernardino County, California*. BonTerra Consulting. August 23, 2002.
- *Results of Spotted Owl Surveys on Moon Camp Tentative Tract 16136, Unincorporated San Bernardino County, California*. BonTerra Consulting. August 23, 2002.

- *Moon Camp-Tentative Tract 16136 Draft Biological Technical Report*. BonTerra Consulting. July 9, 2003.

MBA's review methods, findings, and recommendations are presented below.

Methodology

After reviewing the reports listed above, along with a copy of the proposed tentative tract map, MBA biologist Marnie McKernan conducted a field survey of the site on December 15, 2006. The site was surveyed by vehicle and on foot. The survey was completed to verify conditions at the project site, evaluate habitat for suitability for sensitive species and to better understand potential impacts of the proposed project. The visit was not intended as a focused survey or a comprehensive inventory of the site.

Findings

Habitat Assessment and Peer Review

The site occurs on the north shore of Big Bear Lake near the community of Fawnskin. The project site sits on a south facing slope with an elevation ranging from 6,745 feet above mean sea level (msl) at the shoreline to 6,982 feet msl at the northern boundary.

The biological conditions at the site in December 2006 were consistent with the findings of the 2002 and 2003 reports prepared by BonTerra Consulting. In general, the site has remained undisturbed since the reports were prepared and still reflects the conditions outlined in those studies. The only noticeable physical change to the site is to the continued growth of the willow scrub habitat along the shoreline.

Based on MBA's field observations, we have determined that the previous BonTerra investigations accurately described the vegetation communities found onsite, and accurately identified the species of concern that are known or likely to occur within the habitats found onsite.

MBA concurs with the list of species determined to have a moderate potential to occur on the project site. One additional species that MBA recommends including on the list is the San Bernardino flying squirrel. This species is a State and San Bernardino National Forest (SBNF) Species of Special Concern. During the site assessment, MBA determined that the northern half of the site supports habitat suitable for this species. In researching this species, MBA learned that trapping efforts in 1991 for the flying squirrel by Forest Service biologists in the Fawnskin area showed a relatively high success rate (Butler et al. 1991).

Bald Eagle

The focused bald eagle survey and report by BonnTerra concluded that the project site and vicinity (Grout Bay) are very important to wintering populations of bald eagles. In fact, the report goes on to point out that one particular perch tree onsite is considered the most commonly recorded used perch tree on the north shore of Big Bear Lake. A review of several years of wintering bald eagle counts conducted by the SBNF and volunteers in the Big Bear Valley confirm that wintering bald eagles routinely use the Moon Camp site for perching.

The BonnTerra report indicated that the project site contains several perch trees used by the eagles which are primarily located adjacent to the shoreline and within 100 feet north and south of the highway. After making a site visit and consulting with a Forest Service biologist knowledgeable with the populations of bald eagle in the Big Bear Basin, MBA concluded that the entire project site likely provides suitable perch

trees for the bald eagle. Because the site is located on a moderately steep hill, the trees along the project's northern boundary provide perches with a lake view, one of the requirements of bald eagle perch trees. During the site visit, the MBA biologist, as well as the Forest Service biologist, observed a juvenile bald eagle perched in a tree on the northeast corner of the site.

The BonnTerra report recommended that all known perch trees, and those greater than 20 inches in diameter at 4 feet from the ground and within approximately 200 yards of the high water line, be avoided during construction and preserved in place. This recommendation was used as mitigation in the Draft EIR. This may conflict with the general rule of Caltrans, San Bernardino County and other agencies with jurisdiction in this immediate area to cut down large trees within falling distance to the highway, homes or any structure if there is obvious sign of dying (such as limb loss) to prevent damage to property or life. Many of the perch trees onsite are in the process of dying and their removal could be considered detrimental to the biological value of this area and to the bald eagle.

Because the data documenting the use of the Moon Camp site are fairly robust (SBNF, BonnTerra, and others), additional focused surveys are not recommended.

Sensitive Plants

The focused botanical survey was conducted in May and June of 2002 and a follow up survey in November 2002. Results of the survey indicate that that five special status plant species and one special status vegetation community occur on the project site: Parish's rock-cress (*Arabis parishii*), Big Bear Valley woollypod (*Astragalus leucolobus*), ash-gray Indian paintbrush (*Castilleja cinerea*), Heckards paintbrush (*Castilleja applegateii ssp),* silver-haired ivesia (*Ivesia argyrocoma*), and Pebble Plain. The survey report cautioned however that due to the very dry conditions onsite caused by poor rainfall years, many of the plants with a moderate to high potential to occur onsite could not be conclusively determined to be present or absent from the site during the focused surveys. Additional focused plant surveys are needed to determine whether the following sensitive plants occur onsite.

- Rock sandwort (*Arenaria lanuginosa* ssp. *saxosa*);
- Big Bear Valley sandwort (*Arenaria ursine)*;
- Crested milk-vetch (*Astragalus bicristatus)*;
- Big Bear Valley milk-vetch (*Astragalus lentiginosus* var. *Sierrae*;
- Palmer's mariposa lily (*Calochortus palmeri* var. *Palmeri*);
- San Bernardino Mountain owl's clover (*Castilleja lasiorhyncha)*;
- San Bernardino Mountains dudleya (*Dudleya abramsii* ssp. *affinis*);
- Leafy buckwheat (*Eriogonum foliosum*);
- Jepson's bedstraw (*Galium jepsonii*);
- Johnston's bedstraw (*Galium johnsttonii*);
- Duran's rush (*Juncus duranii*);
- Short-sepaled lewisia (*Lewisia brachycalyx*);
- Baldwin Lake linanthus (*Linanthus killipii*);
- San Bernardino Mountain monkeyflower (*Mimulus exiguous*);
- Purple monkeyflower (*Mimulus purpureus* var. *purpureus*);
- Chickweed oxytheca (*Oxytheca caryophylloides*);
- Parish's yampah (*Perideridia parishii* ssp. *parishii*);
- Transverse Range phacelia (*Phacelia exilis*);

- Mojave phacelia (*Phacelia mohavensis*);
- Bear Valley phlox (*Phlox dolichantha*);
- San Bernardino bluegrass (*Poa atropurpurea*);
- Bear Valley pyrrocoma (*Pyrrocoma uniflora* ssp. *Gossypina*);
- Parish's rupertia (*Rupertia rigida*);
- Bird's foot checkerbloom (*Sidalcea pedata*);
- Prairie wedge grass (*Sphenopholis obtusata*);
- Laguna Mountains jewelflower (*Streptanthus bernardinus*);
- Southern jewelflower (*Streptanthus campestris*);
- Pine green-gentian (*Swertia neglecta*);
- California dandelion (*Taraxacum californicum*); and
- Small-flowered bluecurls (*Trichostema micranthum*).

Two separate days of surveying are recommended; one during the height of flowering and one near the end to capture the full extent of the blooming period

Southern Rubber Boa

Focused southern rubber boa (SRB) surveys were conducted in the suitable habitat within the eastern portion of the Moon Camp project site during May-August 2002 with negative results. The report by BonnTerra concluded that the SRB is not expected to occur onsite for three reasons; because of the negative results of their focused surveys, the lack of historical records for the immediate project area and the lack of rock outcrops that appear to be an important component of occupied habitat.

The draft survey guidelines developed by the CDFG for SRB includes three years of repeated intensive active searches before determination of absence can be made. Intensive active searches of suitable habitat for SRB are similar to the visual encounter survey method described by Crump and Scott (1994) in which a subsample of sites exhibiting high value habitat within the site as a whole are surveyed intensively for presence. The draft guidelines allow for negative finding in less than 3 years (2 years) if trapping is conducted. Trapping consists of the use of a system of pitfall traps connected to drift fences, known as arrays, to capture SRB.

The BonTerra focused surveys consisted of a combination of both survey techniques conducted simultaneously to maximize the probability of detecting SRB. Because the surveys were conducted for just the one season, the negative results cannot conclusively determine that SRB are absent from the project site. MBA concluded during their December assessment that the eastern portion of the Moon Camp site contains suitable habitat (well-developed soils, leaf litter accumulation, downed logs, and large rocks) for SRB. An additional habitat assessment and/or SRB focused surveys are needed to adequately characterize this species' presence or absence from the project site.

Southwestern Willow Flycatcher

Focused willow flycatcher surveys were conducted for the Moon Camp project during the breeding season of 2002 according to the USFWS protocol (USFWS 1997, revised 2000). The surveys were conducted on five separate days between May and July. Surveys were conducted in the willow habitat along the shoreline at the southern edge of the project site. Results of the surveys were negative. The focused survey report concluded that the site did not contain suitable territorial or breeding habitat since "the willows are patchy and lack the dense growth or willow thicket required by the SWF." Focused

surveys for SWF were conducted 5 years ago. Since that time, the willow habitat onsite has grown and matured, thereby providing better opportunities for the SWF to occupy the site. Focused SWF surveys are recommended to determine their presence/absence from the Moon Camp site.

Spotted Owl

Focused surveys for the spotted owl were conducted on the Moon Camp project site and adjacent areas during the breeding season of 2002. Surveys were conducted at night on six occasions by walking predetermined survey routes designed to provide thorough survey coverage of the area. No spotted owls were detected onsite during the focused surveys. One male spotted owl was detected and later observed at its roost approximately 1 mile from the Moon Camp project site during the surveys. In discussions with a Forest Service biologist concerning the need for additional spotted owl surveys, MBA learned that the SBNF has been conducting surveys for spotted owl throughout the forest, including the immediate vicinity of Moon Camp. No known spotted owl nest, home range or activity center occurs on the Moon Camp site. Enough information on this species and their locations is available and is annually updated by the SBNF. Additional surveys for the spotted owl are not needed.

Recommendations

The following additional focused surveys are recommended for the Moon Camp TT 16136 project site for the 2007 survey season.

- San Bernardino flying squirrel;
- Southwestern willow flycatcher;
- Southern rubber boa; and
- Sensitive plants.

Should you have any further questions regarding this project please do not hesitate to contact me at (909) 884-2255.

Sincerely,

Marnie McKernan

Marnie McKernan, Project Manager/Biologist
Michael Brandman Associates
621 E. Carnegie Drive, Suite 100
San Bernardino, CA 92408

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B.6 - Peer Review of Existing Biological Documents (Michael Brandman Associates, February 2007

Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

February 7, 2007

Matthew W. Slowick, Senior Associate Planner
County of San Bernardino Land Use Services Dept.
385 N. Arrowhead Avenue, First Floor
San Bernardino, CA 92415-0182

Subject: Site Assessment and Review of Previously Prepared Biological Documentation of the Proposed Moon Camp Tentative Tract (TT) 16136 Project Site near Fawnskin, San Bernardino County, California

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Based on MBA's field observations, we have determined that the previous BonTerra investigations accurately described the vegetation communities found onsite, and accurately identified the species of concern that are known or likely to occur within the habitats found onsite.

MBA concurs with the list of species determined to have a moderate potential to occur on the project site. One additional species that MBA recommends including on the list is the San Bernardino flying squirrel. This species is a State and San Bernardino National Forest (SBNF) Species of Special Concern. During the site assessment, MBA determined that the northern half of the site supports habitat suitable for this species. In researching this species, MBA learned that trapping efforts in 1991 for the flying squirrel by Forest Service biologists in the Fawnskin area showed a relatively high success rate (Butler et al. 1991).

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The BonTerra report indicated that the project site contains several perch trees used by the eagles which are primarily located adjacent to the shoreline and within 100 feet north and south of the highway. After making a site visit and consulting with a Forest Service biologist knowledgeable with the populations of bald eagle in the Big Bear Basin, MBA concluded that the entire project site likely provides suitable perch

trees for the bald eagle. Because the site is located on a moderately steep hill, the trees along the project's northern boundary provide perches with a lake view, one of the requirements of bald eagle perch trees. During the site visit, the MBA biologist, as well as the Forest Service biologist, observed a juvenile bald eagle perched in a tree on the northeast corner of the site.

The BonTerra report recommended that all known perch trees, and those greater than 20 inches in diameter at 4 feet from the ground and within approximately 200 yards of the high water line, be avoided during construction and preserved in place. This recommendation was used as mitigation in the Draft EIR. This may conflict with the general rule of Caltrans, San Bernardino County and other agencies with jurisdiction in this immediate area to cut down large trees within falling distance to the highway, homes or any structure if there is obvious sign of dying (such as limb loss) to prevent damage to property or life. Many of the perch trees onsite are in the process of dying and their removal could be considered detrimental to the biological value of this area and to the bald eagle.

Because the data documenting the use of the Moon Camp site are fairly robust (SBNF, BonTerra, and others), additional focused surveys are not recommended.

Sensitive Plants

The focused botanical survey was conducted in May and June of 2002 and a follow up survey was conducted in November 2002. Results of the survey indicate that five special status plant species and one special status vegetation community occur on the project site: Parish's rock-cress (*Arabis parishii*), Big Bear Valley woollypod (*Astragalus leucolobus*), ash-gray Indian paintbrush (*Castilleja cinerea*), Heckards paintbrush (*Castilleja applegateii ssp),* silver-haired ivesia (*Ivesia argyrocoma*), and Pebble Plain. The survey report cautioned however that due to the very dry conditions onsite caused by poor rainfall years, many of the plants with a moderate to high potential to occur onsite could not be conclusively determined to be present or absent from the site during the focused surveys. Additional focused plant surveys are needed to determine whether the following sensitive plants occur onsite:

- Rock sandwort (*Arenaria lanuginosa* ssp. *saxosa*);
- Big Bear Valley sandwort (*Arenaria ursine)*;
- Crested milk-vetch (*Astragalus bicristatus)*;
- Big Bear Valley milk-vetch (*Astragalus lentiginosus* var. *Sierrae)*;
- Palmer's mariposa lily (*Calochortus palmeri* var. *Palmeri*);
- San Bernardino Mountain owl's clover (*Castilleja lasiorhyncha)*;
- San Bernardino Mountains dudleya (*Dudleya abramsii* ssp. *affinis*);
- Leafy buckwheat (*Eriogonum foliosum*);
- Jepson's bedstraw (*Galium jepsonii*);
- Johnston's bedstraw (*Galium johnsttonii*);
- Duran's rush (*Juncus duranii*);
- Short-sepaled lewisia (*Lewisia brachycalyx*);
- Baldwin Lake linanthus (*Linanthus killipii*);
- San Bernardino Mountain monkeyflower (*Mimulus exiguous*);
- Purple monkeyflower (*Mimulus purpureus* var. *purpureus*);
- Chickweed oxytheca (*Oxytheca caryophylloides*);
- Parish's yampah (*Perideridia parishii* ssp. *parishii*);
- Transverse Range phacelia (*Phacelia exilis*);

- Mojave phacelia (*Phacelia mohavensis*);
- Bear Valley phlox (*Phlox dolichantha*);
- San Bernardino bluegrass (*Poa atropurpurea*);
- Bear Valley pyrrocoma (*Pyrrocoma uniflora* ssp. *Gossypina*);
- Parish's rupertia (*Rupertia rigida*);
- Bird's foot checkerbloom (*Sidalcea pedata*);
- Prairie wedge grass (*Sphenopholis obtusata*);
- Laguna Mountains jewelflower (*Streptanthus bernardinus*);
- Southern jewelflower (*Streptanthus campestris*);
- Pine green-gentian (*Swertia neglecta*);
- California dandelion (*Taraxacum californicum*); and
- Small-flowered bluecurls (*Trichostema micranthum*).

Two separate days of surveying are recommended; one during the height of flowering and one near the end to capture the full extent of the blooming period.

Southern Rubber Boa

Focused southern rubber boa (SRB) surveys were conducted in the suitable habitat within the eastern portion of the Moon Camp project site during May-August 2002 with negative results. The report by BonTerra concluded that the SRB is not expected to occur onsite for three reasons; because of the negative results of their focused surveys, the lack of historical records for the immediate project area and the lack of rock outcrops that appear to be an important component of occupied habitat.

The draft survey guidelines developed by the CDFG for SRB includes three years of repeated intensive active searches before determination of absence can be made. Intensive active searches of suitable habitat for SRB are similar to the visual encounter survey method described by Crump and Scott (1994) in which a subsample of sites exhibiting high value habitat within the site as a whole are surveyed intensively for presence. The draft guidelines allow for negative finding in less than 3 years (2 years) if trapping is conducted. Trapping consists of the use of a system of pitfall traps connected to drift fences, known as arrays, to capture SRB.

The BonTerra focused surveys consisted of a combination of both survey techniques conducted simultaneously to maximize the probability of detecting SRB. Because the surveys were conducted for just the one season, the negative results cannot conclusively determine that SRB are absent from the project site. MBA concluded during its December assessment that the eastern portion of the Moon Camp site contains suitable habitat (well-developed soils, leaf litter accumulation, downed logs, and large rocks) for SRB. An additional habitat assessment and/or SRB focused surveys are needed to adequately characterize this species' presence or absence from the project site.

Southwestern Willow Flycatcher

Focused willow flycatcher surveys were conducted for the Moon Camp project during the breeding season of 2002 according to the USFWS protocol (USFWS 1997, revised 2000). The surveys were conducted on five separate days between May and July. Surveys were conducted in the willow habitat along the shoreline at the southern edge of the project site. Results of the surveys were negative. The focused survey report concluded that the site did not contain suitable territorial or breeding habitat since "the willows are patchy and lack the dense growth or willow thicket required by the SWF." Focused

surveys for SWF were conducted 5 years ago. Since that time, the willow habitat onsite has grown and matured, thereby providing better opportunities for the SWF to occupy the site. Focused SWF surveys are recommended to determine their presence/absence from the Moon Camp site.

Spotted Owl

Focused surveys for the spotted owl were conducted on the Moon Camp project site and adjacent areas during the breeding season of 2002. Surveys were conducted at night on six occasions by walking predetermined survey routes designed to provide thorough survey coverage of the area. No spotted owls were detected onsite during the focused surveys. One male spotted owl was detected and later observed at its roost approximately 1 mile from the Moon Camp project site during the surveys. In discussions with a Forest Service biologist concerning the need for additional spotted owl surveys, MBA learned that the SBNF has been conducting surveys for spotted owl throughout the forest, including the immediate vicinity of Moon Camp. No known spotted owl nest, home range or activity center occurs on the Moon Camp site. Enough information on this species and its locations is available and is annually updated by the SBNF. Additional surveys for the spotted owl are not needed.

Recommendations

The following additional focused surveys are recommended for the Moon Camp TT 16136 project site for the 2007 survey season.

- San Bernardino flying squirrel;
- Southwestern willow flycatcher;
- Southern rubber boa; and
- Sensitive plants.

Should you have any further questions regarding this project please do not hesitate to contact me at (909) 884-2255.

Sincerely,

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B.7 - Draft Vegetation and Special Status Plants Survey (Scott White Biological Consulting, August 2007)