

ENVIRONMENTAL ASSESSMENT

**LAKE PLEASANT REGIONAL PARK
AGUA FRIA CONSERVATION AREA MANAGEMENT PLAN**

Maricopa and Yavapai Counties, Arizona

APPENDIX A

**RECREATION OPPORTUNITY SPECTRUM –
CLASS DESCRIPTION DEFINITIONS and EXAMPLE**

APPENDIX A
RECREATION OPPORTUNITY SPECTRUM CLASSES

Following are the Recreation Opportunity Spectrum (ROS) class descriptions developed and used by the U.S. Department of Agriculture, Forest Service, to inventory and classify National Forest System lands. These classes are used to define recreation opportunities to help recreation managers create and maintain the recreation experiences that suit various types of land and visitors. The ROS continuum characterizes recreation opportunities in terms of setting, activity, and experience. The entire ROS spectrum includes six classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban. The Forest Service ROS Class Descriptions are described in Table 1 (BLM 2008).

Table 1. Recreation Opportunity Spectrum Class Descriptions

ROS	Class Descriptions
Primitive	Opportunity for isolation from man-made sights, sounds, and management controls in an unmodified natural environment. Only facilities essential for resource protection are available. A high degree of challenge and risk are present. Visitors use outdoor skills and have minimal contact with other users or groups. Motorized use is prohibited.
Semi-primitive non-motorized	Some opportunity for isolation from man-made sights, sounds, and management controls in a predominantly unmodified environment. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk and to use outdoor skills. Concentration of visitors is low, but evidence of users is often present. On-site managerial controls are subtle. Facilities are provided for resource protection and the safety of users. Motorized use is prohibited.
Semi-primitive motorized	Some opportunity for isolation from man-made sights, sounds, and management controls in a predominantly unmodified environment. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk and to use outdoor skills. Concentration of visitors is low, but evidence of other area users is present. On-site managerial controls are subtle. Facilities are provided for resource protection and the safety of users. Motorized use is permitted.
Roaded Natural	Mostly equal opportunities to affiliate with other groups or be isolated from sights and sounds of man. The landscape is generally natural with modifications moderately evident. Concentration of users is low to moderate, but facilities for group activities may be present. Challenge and risk opportunities are generally not important in this class. Opportunities for both motorized and non-motorized activities are present. Construction standards and facility design incorporate conventional motorized uses.
Roaded Modified	Similar to the Roaded Natural setting, except this area has been heavily modified (roads or recreation facilities). This class still offers opportunity to have a high degree of interaction with the natural environment and to have moderate challenge and risk and to use outdoor skills.
Rural	Area is characterized by a substantially modified natural environment. Opportunities to affiliate with others are prevalent. The convenience of recreation sites and opportunities are more important than a natural landscape or setting. Sights and sounds of man are readily evident, and the concentration of users is often moderate to high. Developed sites, roads, and trails are designed for moderate to high uses.
Urban	Area is characterized by a substantially urbanized environment, although the background may have natural-appealing elements. High levels of human activity and concentrated development, including recreation opportunities are prevalent. Developed sites, roads and other recreation opportunities are designed for high use.

For each of these classes, the Forest Service has established standards and guidelines for seven indicators that further define the environmental setting and type of experience found or desired within that class . These indicators include: visual quality; access; remoteness; visitor management; on-site recreation development; social encounters; and visitor impacts.

Not all classes may be present within a recreational setting, and the standards and guidelines established by the Forest Service for the indicators within each class description may not be entirely appropriate for a given setting, especially when applied to smaller parcels of Federal land and non-Federal public lands, such as state or county lands set aside for public use. An example of how a ROS can modified for use is found in Appendix D of the Midewin National Tallgrass Prairie Land and Resource Management Plan (Forest Service 2002) (provided on the following pages). Midewin National Tallgrass Prairie is administered by the Forest Service, in cooperation with the Illinois Department of Natural Resources. It is located on the former Joliet Army Ammunition Plant in Will County, Illinois. Midewin, established in 1996, encompasses over 15,000 acres and is the first national tallgrass prairie in the United States. Because it consists mainly of open landscape and is much smaller than typical national forests, several of the standard classes (e.g., primitive) are not applicable. In this situation, Forest Service utilized the overriding concepts and principles of the ROS framework, but tailored the ROS classes to more appropriately address the project area.

Literature Cited:

BLM (Bureau of Land Management). 2007. Butte Proposed Resource Management Plan and Final Environmental Impact Statement. Butte, MT. September. Available at http://www.blm.gov/pqdata/etc/medialib/blm/mt/field_offices/butte/proposed_rmp.Par.69638.File.dat/apph.pdf. Last accessed on December 10, 2009.

Forest Service (U.S. Department of Agriculture, Forest Service). 2002. Midewin National Tallgrass Prairie Land and Resource Management Plan (Prairie Plan). Wilmington, IL. February. Available at <http://www.fs.fed.us/mntp/plan/index.htm>. Last accessed on December 11, 2009.

APPENDIX D

RECREATION OPPORTUNITY SPECTRUM

What is the Recreation Opportunity Spectrum (ROS)?

Nationally the Forest Service uses a system called the Recreation Opportunity Spectrum (ROS) to inventory and classify National Forest System lands. The range of recreational experiences, opportunities, and settings available on a given area of land is classified through the ROS. Classifications include: Primitive, Semiprimitive-Motorized, Semiprimitive Nonmotorized, Roaded Natural, Rural, and Urban. The Forest Service typically plans and manages for recreational experiences through the application of the Recreation Opportunity Spectrum (ROS). The ROS is a framework for inventorying, planning, and managing the recreational experience and setting.

The public perceives recreation as more than just camping, fishing, and hiking. Research has shown that people choose a specific setting for each of these activities in order to realize a desired set of experiences. For example, hiking on a natural-surfaced trail in a remote setting with few facilities may offer some visitors a sense of solitude, challenge, and self-reliance. In contrast, a hard-surfaced, interpretive, loop trail in an area with facilities and amenities may offer more comfort, security, and social opportunities for other visitors. Maintaining a spectrum of these classes is very important to provide people with choices.

Midewin is unique

Midewin is the largest single public land holding in the Chicagoland area. The public anticipates extensive opportunities to recreate in what they perceive to be a large open and natural setting. However, at 15,000+ acres, Midewin is much smaller than a typical national forest which averages 1-2 million acres, and most of Midewin will need extensive restoration and cleanup before it is ready and open for general public use. Forest Service standard definitions for wilderness and primitive lands do not apply to Midewin primarily due to size limitations. However, as Midewin is near a large metropolitan population, with no other public lands of similar magnitude nearby, Midewin may offer a feeling of remoteness in something other than the Primitive (ROS) areas, as restoration progress, and recreation opportunities are developed.

Because the smaller size and open landscape of Midewin is so different from the typical national forest, it would be very difficult to apply the all the standard ROS classes to Midewin. Therefore, the overriding concepts and principles of the existing framework provided the foundation for tailoring three ROS classes to the uniqueness of Midewin: Rural, Roaded Natural, and Semi Primitive. The three classes are categorized by factors such as the physical setting, social experience, level of development, management controls, access, and activities specific to its ROS class. The ROS classes represent a desired future condition

and will function as guidelines to assist in site specific planning. Refer to the ROS matrix, for a more detailed overview of the three ROS classes proposed for Midewin. Following, is a brief description of each of the three classes.

1. Rural

This ROS class represents Midewin's highest level of development, social interaction, and evidence of human influences within the most modified physical setting. New facilities are in harmony with the natural environment and automobile and road access would be acceptable in these areas. Hunting would not be allowed due to the concentration of people. The visitor would likely experience a high feeling of safety with low opportunity for challenge. An example of an area that might fall within this ROS class would be a visitor center or primary access area.

2. Roaded Natural

This ROS class represents a moderate level of development and moderate to high social interaction within a modified physical setting that is not dominated by evidence of humans. New facilities are minimal, subtle and in harmony with the natural environment. The environment may be modified but would appear natural. Automobile and road access would be acceptable in these areas. The visitor would likely experience a moderate-high feeling of safety with relatively low opportunities for challenge. An example of an area that might fall within this ROS class might be a bicycle or equestrian trail system.

3. Semi- Primitive

This ROS class represent an area with the lowest level of development, highest opportunity for solitude, and the greatest opportunity to escape from the sights and sounds of humans. The environment would appear natural. New facility development would be minimal and rarely noticeable. Only foot traffic would be permitted in these areas. The visitor would likely experience a moderate-high feeling of self-reliance with moderate opportunities for challenge. An example of an area that might fall within this ROS class might be a hiking trail or natural area with no trails.

**Recreation Opportunity Spectrum (ROS)
Midewin National Tallgrass Prairie**

Setting Indicators	RURAL	ROADED NATURAL	SEMI-PRIMITIVE
1 Experiences	a. High feeling of safety. b. Many opportunities for facilitated discovery. c. High social interaction. d. Opportunity for solitude unlikely, low feeling of escape from sights and sounds of humans e. Low opportunity for challenge.	a. Moderate - high feeling of safety. b. Some opportunities for facilitated discovery. c. Moderate-high social interaction. d. Low opportunities for solitude, low- feeling of escape from sights and sounds of human. e. Low opportunity for challenge.	a. Moderate - high feeling of self-reliance. b. Discovery is mainly dependent on self, but some opportunities for facilitated discovery may exist. c. Low - moderate social interaction. d. Medium - high opportunity for solitude; moderate feeling of escape from sights and sounds of humans. e. Moderate opportunities for challenge.
2 Physical Setting (remoteness, size, and evidence of humans)	a. Highest level of development. New facilities may be somewhat abundant and visible, but in harmony with the natural environment. b. Evidence of human influence on the landscape is abundant (buildings, roads, farmlands, plantings). c. Noticeably modified environment interspersed with a natural-appearing landscape. d. Adjacent to and/or easy access to/from internal and external roads. e. No minimum or maximum acreage.	a. Moderate level of development. New facility development is minimal, subtle and in harmony with the natural environment. b. Evidence of human influence on the landscape is present, primarily from external land uses. c. Noticeably modified environment within primarily natural-appearing landscape. d. May be adjacent to external roads, adjacent to or including internal roads. e. No minimum or maximum acreage.	a. Lowest level of development. New facility development is very minimal and in harmony with the natural environment. b. Evidence of humans influence on the landscape is primarily historic abandoned structures and does not detract from a natural experience. c. Predominantly natural appearing environment. d. At least ¼ mile from nearest internal auto road and Internal Transportation System; at least 1/2 mile from nearest external public road and railroad; 1/8 mile from bike, equestrian and multi-use trails. e. Minimum of 640 acres.
3 Social Encounters (user density, contact)	High probability of frequent social encounters; high probability of encountering large groups.	Moderate probability of frequent social encounters; moderate probability of encountering large groups.	Low-moderate probability of frequent social encounters; low probability of encountering large groups.
4 Managerial Control (restrictions)	Regimentation and controls are obvious and numerous and largely in harmony with the natural environment.	On-site regimentation and controls are noticeable but harmonize with the natural environment.	On-site regimentation and controls present but subtle.
5 Motorized Administrative Access	Yes	Yes	Yes, but limited
6 Automobile/ Road Access	Yes	Yes	No
7 Shuttle or Tram	Yes	Yes	No

8	Trail Access	Non-motorized	Non-motorized	Foot traffic only
9	Interpretation	Guided and self-guided interpretation with wayside exhibits; Primary interpretive facilities and programs (visitor center complex).	Guided and self-guided interpretation with wayside exhibits; secondary interpretive facilities and/or programs.	Guided and self-guided interpretation with limited wayside exhibits.
10	Natural Resource Management Activities	<ul style="list-style-type: none"> a. Integrated Pest Management b. Prescribed fire c. Seed production d. Restoration e. Row crops and hay. f. Livestock grazing for habitat management only g. Motorized mechanical controls 	<ul style="list-style-type: none"> a. Integrated Pest Management b. Prescribed fire c. Seed production d. Restoration e. Row crops and hay f. Livestock grazing for habitat management only g. Motorized mechanical controls 	<ul style="list-style-type: none"> a. Integrated Pest Management b. Prescribed fire c. No seed production areas d. Restoration e. No row crops, limited hay f. Livestock grazing for habitat management only g. Motorized mechanical controls restricted

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APPENDIX B

AIR EMISSIONS – ASSUMPTIONS and CALCULATIONS

Construction Emissions

Land Disturbing

Operation	Area [acre]	Duration [months]	Disturbance [Acre-months]	Emission Factor ¹ [tons PM ₁₀ /acre-month]	Uncontrolled Emissions [tons]	Control Effectiveness ²	Controlled Emissions [tons]
Road Construction	3.29	2	6.58	0.265	1.74	0.7	0.52
Site Prep / Land development (Main Parking)	2.16	2	4.32	0.11	0.48	0.7	0.14
Site Prep / Land development (Host Site)	1.12	2	2.24	0.11	0.25	0.7	0.07
Site Prep / Land development (Boat Parking)	1.25	2	2.5	0.11	0.28	0.7	0.08
Land Disturbance PM₁₀ Emissions [tons]							0.82

Vehicle Emissions

Equipment type	Quantity	Vehicle Class ³	Emission Factor ⁴ PM ₁₀ [grams/VMT]	Vehicle Miles Traveled ⁵	PM ₁₀ emissions [grams]	PM ₁₀ emissions [lbs] ⁶	PM ₁₀ emissions [tons]
Vehicles based on Trips		Trips					
Heavy Trucks [trips]	20	HDDV8a	0.1105	206	22.763	0.05	0.0000
Service Truck [trips]	25	HDDV7	0.2672	257.5	68.804	0.15	0.0001
Pickup Trucks [trips]	50	LDGT1	0.0266	515	13.699	0.03	0.0000
Vehicles based on Duration		Days					
Water Truck [Duration - days]	40	HDDV8a	0.1105	4800	530.4	1.17	0.0006
Loader/Backhoe [duration - days]	10	HDDV4	0.1531	1200	183.72	0.41	0.0002
Grader [duration - days]	4	HDDV7	0.2672	480	128.256	0.28	0.0001
Excavator [duration - days]	8	HDDV7	0.2672	960	256.512	0.57	0.0003
Construction Vehicle PM₁₀ emissions [tons]					0.0013		

Total Construction PM₁₀ Emissions [tons] 0.823

Construction Duration

- 2 month
- 8 weeks
- 5 workdays/week
- 40 workdays
- 8 hours/workday
- 320 project hours

¹ Table 3.3-18 Average project duration and emission factor by project type. Maricopa County 2005

² per help sheet - Maricopa County allows 70% for regular watering

³ Vehicle class from Mobile 6.2 model EPA

⁴ Table 5.4-1 including Exh, Tire & Brake emissions (Maricopa County 2005 PM10 Inventory)

⁵ Duration assumes vehicle is in motion no standby or idling and traveling at 15 mph,

⁶ Trips assumes travel along Table Mesa to center of construction about 5.15 miles.

⁶ conversion - grams * 0.002205 (lb/gram)

Construction Emissions Ozone

Vehicle Emissions

Equipment type	Quantity	Vehicle Class ¹	Vehicle Miles Traveled [miles] ²	Emission Factor ³ VOC [grams/VMT]	Emission Factor ³ NOx [grams/VMT]	VOC emissions [grams]	NOx emissions [grams]	VOC emissions [tons] ⁴	NOx emissions [tons]
Vehicles based on Trips		Trips							
Heavy Trucks [trips]	20	HDDV8a	206	0.942	12.302	194,052	2534,212	0.0002	0.0028
Service Truck [trips]	25	HDDV7	257.5	0.942	12.302	242,565	3167,765	0.0003	0.0035
Pickup Trucks [trips]	50	LDGT1	515	2.069	1.26	1065,535	648.9	0.0012	0.0007
Vehicles based on Duration		Days							
Water Truck [Duration -days]	40	HDDV8a	4800	0.942	12.302	4521.6	59049.6	0.0050	0.0651
Loader/Backhoe [duration - days]	10	HDDV4	1200	0.942	12.302	1130.4	14762.4	0.0012	0.0163
Grader [duration - days]	4	HDDV7	480	0.942	12.302	452.16	5904.96	0.0005	0.0065
Excavator [duration - days]	8	HDDV7	960	0.942	12.302	904.32	11809.92	0.0010	0.0130
Construction Vehicle VOC emissions [tons]								0.0094	
Construction Vehicle NOx emissions [tons]									0.1079

Construction Duration

- 2 month
- 8 weeks
- 5 workdays/week
- 40 workdays
- 8 hours/workday
- 320 project hours

¹ Vehicle class from Mobile 6.2 model EPA

² Duration assumes vehicle is in motion no standby or idling and traveling at 15 mph.

³ Trips assumes travel along Table Mesa to center of construction about 5.15 miles.

⁴ Appendix 5 (Maricopa County 2005 Ozone precursor Inventory) for vehicles traveling on local roads using the largest monthly value

⁵ Conversion: grams x 0.002205 = lbs, lbs x .0005 = tons

Construction Emissions Ozone

Vehicle Emissions

Equipment type	Quantity	Vehicle Class ¹	Vehicle Miles Traveled [miles] ²	Emission Factor ³ CO [grams/VMT]	CO emissions [grams]	CO emissions [tons] ⁴
Vehicles based on Trips		Trips				
Heavy Trucks [trips]	20	HDDV8a	206	5.301	1092.006	0.0012
Service Truck [trips]	25	HDDV7	257.5	5.301	1365.0075	0.0015
Pickup Trucks [trips]	50	LDGT1	515	13.705	7058.075	0.0078
Vehicles based on Duration		Days				
Water Truck [Duration - days]	40	HDDV8a	4800	5.301	25444.8	0.0281
Loader/Backhoe [duration - days]	10	HDDV4	1200	5.301	6361.2	0.0070
Grader [duration - days]	4	HDDV7	480	5.301	2544.48	0.0028
Excavator [duration - days]	8	HDDV7	960	5.301	5088.96	0.0056

Total Construction CO Emissions [tons] 0.0540

Construction Duration

2 month
 8 weeks
 5 workdays/week
 40 workdays
 8 hours/workday
 320 project hours

¹ Vehicle class from Mobile 6.2 model documentation, EPA

² Duration assumes vehicle is in motion no standby or idling and traveling at 15 mph,

Trips assumes travel along Table Mesa to center of construction about 5.15 miles.

³ Appendix 5 (Maricopa County 2005 Ozone precursor Inventory) for vehicles traveling on local roads using the largest monthly value

⁴ Conversion: grams x 0.002205 = lbs, lbs x .0005 = tons

Recurring Emissions

On Road Sources Fugitive Dust

Source	Average Daily Traffic (ADT) ¹	Vehicle Miles Traveled (VMT) [miles]	Vehicle Class ²	Emission Factor ³ [lbs PM ₁₀ /VMT]	PM ₁₀ Emissions [lbs/day]	PM ₁₀ Emissions [tons/day]	PM ₁₀ Emissions ⁵ [tons/year]
Vehicles Entering (I-17 to Entry Station)	26	121.42	LDGT1	1.03	125.0626	0.06	11.44
Vehicles Exiting (Entry to I-17)	26	121.42	LDGT1	1.03	125.0626	0.06	11.44
Vehicles entering (Entry to Launch A)	20	19.2	LDGT1	0.29	5.568	0.00	0.51
Vehicles exiting (Launch A to Entry)	20	19.2	LDGT1	0.29	5.568	0.00	0.51
Land Disturbance PM₁₀ Emissions [tons/year]							23.91

On Road Sources Vehicle Emissions

Source	Average Daily Traffic (ADT) ¹	Vehicle Miles Traveled (VMT) [miles/day]	Vehicle Class ²	Emission Factor ⁴ PM ₁₀ [grams/VMT]	PM ₁₀ emissions [grams/day]	PM ₁₀ emissions [lbs/day] ⁵	PM ₁₀ emissions ⁵ [tons/year]
Vehicles Entering (I-17 to Entry Station)	26	121.42	LDGT1	0.0266	3.229772	0.01	0.0007
Vehicles Exiting (Entry to I-17)	26	121.42	LDGT1	0.0266	3.229772	0.01	0.0007
Vehicles entering (Entry to Launch A)	20	19.2	LDGT1	0.0266	0.51072	0.00	0.0001
Vehicles exiting (Launch A to Entry)	20	19.2	LDGT1	0.0266	0.51072	0.00	0.0001
Construction Vehicle PM₁₀ emissions [tons/year]							0.0015

Non Road Mobile Sources⁵

Source	Maricopa County (MC) Area of Lakes [acre]	Lake Pleasant Area above Eagle Closure [acre]	Percent of total Maricopa Area	MC Average Daily PM ₁₀ Emissions [lbs/day]	Daily Emissions above Eagle Closure [lbs/day]	Annual Emissions Above Eagle Closure [lbs/year] ⁶	Annual Emissions Above Eagle Closure [ton/year] ⁶
Pleasure Craft	12,525	464	3.70%	152.50	5.65	1033.86	0.52
Land Disturbance PM₁₀ Emissions [tons/year]							0.52

Total Recurring PM₁₀ Emissions [tons/year] 24.42

Travel Distances [miles]	
I-17 to Entry Station	4.67
Entry Station to Launch A	0.96

¹ Assumes traffic occurs during eagle closure (Dec. 15 - June 15) or 6 months (183 days). Assumes traffic based on use during 6 week pilot project. During pilot 453 vehicles total visited the site w/ 74.2% water based and 25.8% land based. Assume aquatic based use Launch area and Land based use main area. Therefore over the six week pilot open Fri., Sat., Sun., total ADT was 453/(6weeks*3days/week) = 26 vehicles/day, further 26*0.742=20 veh./day aquatic and 26*0.258 = 7 veh./day land

² Vehicle class from Mobile 6.2 model documentation EPA. Assume all vehicles LDGT1 (light duty gas truck)

³ Using 0.29 lb/VMT PM10 Emission Factor (EF) traveling at 10 mph (Entry to Launch and back) and 1.03 lb/VMT PM10 Emission Factor (EF) traveling at 35 mph (I-17 to Entry and back) from 2005 Emission Inventory Help Sheet for Vehicle Travel on Unpaved Roads using Light-Duty Vehicles

⁴ Table 5.4-1 including Exh, Tire & Brake emissions (Maricopa County 2005 PM10 Inventory)

⁵ uses method described in section 4.8 of 2005 Maricopa County Periodic inventory by allocating the percent of total emissions to lake area above eagle closer at elev. 1702

⁶ Assumes pleasure craft and vehicles present only during eagle closure (Dec. 15 - June 15) or 6 months (183 days)

Recurring VOC Emissions

On Road Sources VOC

Source	Average Daily Traffic (ADT) ¹	Vehicle Miles Traveled (VMT) [miles/day]	Vehicle Class ²	Emission Factor ³ VOC [grams/VMT]	VOC emissions [grams/day]	VOC emissions [lbs/day]	VOC emissions ⁵ [tons/year]
Vehicles Entering (I-17 to Entry Station)	26	121.42	LDGT1	2.069	251.21798	0.55	0.0507
Vehicles Exiting (Entry to I-17)	26	121.42	LDGT1	2.069	251.21798	0.55	0.0507
Vehicles entering (Entry to Launch A)	20	19.2	LDGT1	2.069	39.7248	0.09	0.0080
Vehicles exiting (Launch A to Entry)	20	19.2	LDGT1	2.069	39.7248	0.09	0.0080
On Road Source VOC Emissions [tons/year]							0.12

Non Road Mobile Sources VOC⁴

Source	Maricopa County (MC) Area of Lakes [acre]	Lake Pleasant Area above Eagle Closure [acre]	Percent of total Maricopa Area	MC Average Annual VOC Emissions [tons/year]	MC Average Daily VOC Emissions [tons/day]	Annual Emissions Above Eagle Closure [tons/day] ⁶	Annual Emissions Above Eagle Closure [ton/year] ⁵
Pleasure Craft	12,525	464	3.70%	809.50	2.22	0.08	15.04
Non Road Mobile Source VOC Emissions [tons/year]							15.04

Total Recurring VOC Emissions [tons/year] 15.15

Travel Distances Calculation

I-17 to Entry Station [miles]	4.67
Entry Station to Launch A [miles]	0.96

¹ Assumes traffic occurs during eagle closure (Dec. 15 - June 15) or 6 months (183 days). Assumes traffic based on use during 6 week pilot project. During pilot 453 vehicles total visited the site w/ 74.2% water based and 25.8% land based. Assume aquatic based use Launch area and Land based use main area. Therefore over the six week pilot open Fri., Sat., Sun., total ADT was 453/(6weeks*3days/week) = 26 vehicles/day, further 26*0.742=20 veh./day aquatic and 26*0.258 = 7 veh/day land

² Vehicle class from Mobile 6.2 model documentation EPA. Assume all vehicles LDGT1 (light duty gas truck).

³ Appendix 5 (Maricopa County 2005 Ozone precursor Inventory) for vehicles traveling on local roads using the largest monthly value

⁴ Table 4.8-1 of (2005 Maricopa County Periodic inventory ozone precursors) by allocating the percent of total emissions to lake area above eagle closer at elev. 1702

⁵ Assumes pleasure craft and vehicles present only during eagle closure (Dec. 15 - June 15) or 6 months (183 days)

Recurring NOx Emissions

On Road Sources NOx

Source	Average Daily Traffic (ADT) ¹	Vehicle Miles Traveled (VMT) [miles/day]	Vehicle Class ²	Emission Factor ³ NOx [grams/VMT]	NOx emissions [grams/day]	NOx emissions [lbs/day]	NOx emissions ⁵ [tons/year]
Vehicles Entering (I-17 to Entry Station)	26	121.42	LDGT1	1.26	152.9892	0.34	0.0309
Vehicles Exiting (Entry to I-17)	26	121.42	LDGT1	1.26	152.9892	0.34	0.0309
Vehicles entering (Entry to Launch A)	20	19.2	LDGT1	1.26	24.192	0.05	0.0049
Vehicles exiting (Launch A to Entry)	20	19.2	LDGT1	1.26	24.192	0.05	0.0049

On Road Source NOx emissions [tons/year] 0.0715

Non Road Mobile Sources NOx⁴

Source	Maricopa County (MC) Area of Lakes [acre]	Lake Pleasant Area above Eagle Closure [acre]	Percent of total Maricopa Area	MC Average Annual NOx Emissions [tons/year]	MC Average Daily NOx Emissions [tons/day]	Annual Emissions Above Eagle Closure [tons/day] ⁴	Annual Emissions Above Eagle Closure [ton/year] ⁵
Pleasure Craft	12,525	464	3.70%	70.58	0.19	0.01	1.31

Non Road Mobile Source NOx Emissions [tons/year] 1.31

Total Recurring NOx Emissions [tons/year] 1.38

Travel Distances Calculation

I-17 to Entry Station [miles]	4.67
Entry Station to Launch A [miles]	0.96

¹ Assumes traffic occurs during eagle closure (Dec. 15 - June 15) for 6 months (183 days). Assumes traffic based on use during 6 week pilot project. During pilot 453 vehicles total visited the site w/ 74.2% water based and 25.8% land based. Assume aquatic based use Launch area and Land based use main area. Therefore over the six week pilot open Fri., Sat., Sun., total ADT was 453/(6weeks*3days/week) = 26 vehicles/day, further 26*0.742=20 veh./day aquatic and 26*0.258 = 7 veh./day land

² Vehicle class from Mobile 6.2 model documentation EPA. Assume all vehicles LDGT1 (light duty gas truck).

³ Appendix 5 (Maricopa County 2005 Ozone precursor Inventory) for vehicles traveling on local roads using the largest monthly value

⁴ Table 4.8-1 of (2005 Maricopa County Periodic inventory ozone precursors) by allocating the percent of total emissions to lake area above eagle closer at elev. 1702

⁵ Assumes pleasure craft and vehicles present only during eagle closure (Dec. 15 - June 15) or 6 months (183 days)

Recurring Emissions

On Road Sources Vehicle Emissions

Source	Average Daily Traffic (ADT) ¹	Vehicle Miles Traveled (VMT) [miles/day]	Vehicle Class ²	Emission Factor ³ CO [grams/VMT]	CO emissions [grams/day]	CO emissions [lbs/day]	CO emissions ⁵ [tons/year]
Vehicles Entering (I-17 to Entry Station)	26	121.42	LDGT1	13.705	1664.0611	3.67	0.3357
Vehicles Exiting (Entry to I-17)	26	121.42	LDGT1	13.705	1664.0611	3.67	0.3357
Vehicles entering (Entry to Launch A)	20	19.2	LDGT1	13.705	263.136	0.58	0.0531
Vehicles exiting (Launch A to Entry)	20	19.2	LDGT1	13.705	263.136	0.58	0.0531

Annual Vehicle CO emissions [tons/year] 0.7777

Non Road Mobile Sources CO⁴

Source	Maricopa County (MC) Area of Lakes [acre]	Lake Pleasant Area above Eagle Closure [acre]	Percent of total Maricopa Area	MC Average Annual CO Emissions [tons/year]	MC Average Daily CO Emissions [tons/day]	Annual Emissions Above Eagle Closure [tons/day] ⁶	Annual Emissions Above Eagle Closure [ton/year] ⁶
Pleasure Craft	12,525	464	3.70%	1748.83	4.79	0.18	32.48

Non Road Mobile Source CO Emissions [tons/year] 32.48

Total Recurring CO Emissions [tons/year] 33.26

Travel Distances [miles]

I-17 to Entry Station	4.67
Entry Station to Launch A	0.96

¹ Assumes traffic occurs during eagle closure (Dec. 15 - June 15) or 6 months (183 days). Assumes traffic based on use during 6 week pilot project.

During pilot 453 vehicles total visited the site w/ 74.2% water based and 25.8% land based. Assume aquatic based use Launch area and Land based use main area. Therefore over the six week pilot open Fri., Sat., Sun., total ADT was 453/(6weeks*3days/week) = 26 vehicles/day, further 26*0.742=20 veh./day aquatic and 26*0.258 = 7 veh/day land

² Vehicle class from Mobile 6.2 model documentation EPA. Assume all vehicles LDGT1 (light duty gas truck)

³ Appendix 5 (Maricopa County 2005 Ozone precursor inventory) for vehicles traveling on local roads using the largest monthly value

⁴ Table 4.8-1 of (2005 Maricopa County Periodic inventory ozone precursors) by allocating the percent of total emissions to lake area above eagle closer at elev. 1702

⁶ Assumes pleasure craft and visitors present only during eagle closure (Dec. 15 - June 15) or 6 months (183 days)

Construction Emissions Summary	
Pollutant	Total Emission
PM ₁₀	0.82 [tons]
VOC	0.01 [tons]
NOx	0.11 [tons]
CO	0.05 [tons]

Recurring Emissions Summary	
Pollutant	Total Emission
PM ₁₀	24.42 [tons/year]
VOC	15.15 [tons/year]
NOx	1.38 [tons/year]
CO	33.26 [tons/year]

ENVIRONMENTAL ASSESSMENT

**LAKE PLEASANT REGIONAL PARK
AGUA FRIA CONSERVATION AREA MANAGEMENT PLAN**

Maricopa and Yavapai Counties, Arizona

APPENDIX C

**COMMON SPECIES FOUND at
LAKE PLEASANT REGIONAL PARK**

Common Plant Species in Lake Pleasant Regional Park

PLANTS			
Red Brome	<u>Bromus rubens</u>	Quailbush	<u>Atriplex lentiformis</u>
Desert Hackberry	<u>Celtis pallida</u>	Canyon Ragweed	<u>Ambrosia ambrosioides</u>
Desert Willow	<u>Chilopsis linearis</u>	Fairy Duster	<u>Calliandra eriophylla</u>
Rigid Spiny Herb	<u>Chorizanthe rigida</u>	White Brittlebush	<u>Encelia farinosa</u>
Longleaf Ephedra	<u>Ephedra trifurca</u>	Wild Buckwheat	<u>Eriogonum</u> sp.
Heron's Bill	<u>Erodium cicutarium</u>	Compass Darrel Cactus	<u>Ferocactus acanthodes</u>
Cheesebrush	<u>Hymenoclea salsola</u>	Strawberry Hedgehog	<u>Echinocereus engelmannii</u>
Bladderpod	<u>Isomeris arborea</u>	Blue Paloverde	<u>Cercidium floridum</u>
Chuparosa	<u>Iusticia californica</u>	Saguaro	<u>Cereus giganteus</u>
White Ratany	<u>Krameria grayi</u>	White-thorn Acacia	<u>Acacia constricta</u>
Pincushion Cactus	<u>Mammillaria</u> sp.	Barrel Cactus	<u>Ferocactus acanthodes</u>
Woolly Plantain	<u>Plantago insularis</u>	Chain-fruit Cholla	<u>Opuntia fulgida</u>
Joboba	<u>Simmondsia chinensis</u>	Bermuda Grass	<u>Cynodon dactylon</u>
Globe Mallow	<u>Sphaeralcea</u> sp.	Burroweed	<u>Haplopappus tenuisecta</u>
Arrowweed	<u>Tessaria sericea</u>	Crucifixion Thorn	<u>Canotia holacantha</u>
Graythorn	<u>Zizyphus obtusifolia</u>	Prickly Pear	<u>Opuntia phaeacantha</u>
Creosote Bush	<u>Larrea tridentata</u>	Engelmann Prickly Pear	<u>Opuntia engelmannii</u>
Triangle-leaf Bursage	<u>Ambrosia deltoidea</u>	Teddy Bear Cholla	<u>Opuntia bigelovii</u>
Foothill Paloverde	<u>Cercidium microphyllum</u>	Salt Cedar	<u>Tamarix pentandra</u>
Velvet Mesquite	<u>Prosopis velutina</u>	Gooding Willow	<u>Salix goodingii</u>
Ironwood	<u>Olneya tesota</u>	Fremont Cottonwood	<u>Populus fremontii</u>
Ocotillo	<u>Fouquieria splendens</u>	Cattail	<u>Typha</u> sp.
Burro Brush	<u>Hymenoclea monogyra</u>	Hohokam Agave	<u>Agave murpheyi</u>
Catclaw Acacia	<u>Acacia greggii</u>	Night Blooming Cereus	<u>Cereus greggii</u>
Fourwing Saltbush	<u>Atriplex canescens</u>	Desert Broom	<u>Baccharis sarothroides</u>

Common Wildlife Species of Lake Pleasant Regional Park

BIRDS

Eared Grebe	<u>Podiceps nigricollis</u>	Costa's Hummingbird	<u>Galypte costae</u>
Western Grebe	<u>Aechmophorus occidentalis</u>	Anna's Hummingbird	<u>Galypte anna</u>
Pied-billed Grebe	<u>Podilymbus podiceps</u>	Black-chinned Hummingbird	<u>Archilochus alexandri</u>
White Pelican	<u>Pelecanus erythrorhynchos</u>	Belted Kingfisher	<u>Ceryle alcyon</u>
Double-crested Cormorant	<u>Phalacrocorax auritus</u>	Northern Flicker	<u>Colaptes auratus</u>
Great Blue Heron	<u>Ardea herodias</u>	Gila Woodpecker	<u>Melanerpes uropygialis</u>
Green-backed Heron	<u>Butorides striatus</u>	Ladder-backed Woodpecker	<u>Picoides scalaris</u>
Black-crowned Night Heron	<u>Nycticorax nycticorax</u>	Vermilion Flycatcher	<u>Pyrocephalus rubinus</u>
Cattle Egret	<u>Bubulcus ibis</u>	Western Kingbird	<u>Tyrannus verticalis</u>
Great Egret	<u>Casmerodius albus</u>	Ash-throated Flycatcher	<u>Myiarchus cinerascens</u>
Mallard	<u>Anas platyrhynchos</u>	Black Phoebe	<u>Sayornis nigricans</u>
Gadwall	<u>Anas strepera</u>	Say's Phoebe	<u>Sayornis saya</u>
American Wigeon	<u>Anas americana</u>	Horned Lark	<u>Eremophila alpestris</u>
Green-winged Teal	<u>Anas crecca</u>	Cliff Swallow	<u>Hirundo pyrrhonota</u>
Cinnamon Teal	<u>Anas cyanoptera</u>	Violet-green Swallow	<u>Tachycineta thalassina</u>
Redhead	<u>Aythya americana</u>	Northern Rough-winged Swallow	<u>Stelgidopteryx serripennis</u>
Ring-necked Duck	<u>Aythya collaris</u>	Tree Swallow	<u>Tyachycineta bicolor</u>
Lesser Scaup	<u>Aythya affinis</u>	Common Raven	<u>Corvus corax</u>
C. Merganser	<u>Mergus merganser</u>	Verdin	<u>Auriparus flaviceps</u>
Turkey Vulture	<u>Cathartes aura</u>	Bewick's Wren	<u>Thryomanes bewickii</u>
Cooper's Hawk	<u>Accipiter cooperii</u>	Cactus Wren	<u>Campylorhynchus brunneicapillus</u>

Harris' Hawk	<u><i>Parabuteo unicinctus</i></u>	Rock Wren	<u><i>Salpinctes obsoletus</i></u>
Red-tailed Hawk	<u><i>Buteo jamaicensis</i></u>	Marsh Wren	<u><i>Cistothorus palustris</i></u>
Osprey	<u><i>Pandion haliaetus</i></u>	Canyon Wren	<u><i>Catherpes mexicanus</i></u>
Golden Eagle	<u><i>Aquila chrysaetos</i></u>	Northern Mockingbird	<u><i>Mimus polyglottos</i></u>
Bald Eagle	<u><i>Haliaeetus leucocephalus</i></u>	Curve-billed Thrasher	<u><i>Toxostoma curvirostre</i></u>
Peregrine Falcon	<u><i>Falco peregrinus</i></u>	Black-tailed Gnatcatcher	<u><i>Poliophtila melanura</i></u>
American Kestrel	<u><i>Falco sparverius</i></u>	Blue-grey Gnatcatcher	<u><i>Poliophtila caerulea</i></u>
Gambel's Quail	<u><i>Callipepla gambelii</i></u>	Ruby-crowned Kinglet	<u><i>Regulus calendula</i></u>
Common Moorhen	<u><i>Gallinula chloropus</i></u>	Water Pipit	<u><i>Anthus spinoletta</i></u>
Sora	<u><i>Porzana carolina</i></u>	Phainopepla	<u><i>Phainopepla nitens</i></u>
American Coot	<u><i>Fulica americana</i></u>	Loggerhead Shrike	<u><i>Lanius ludovicianus</i></u>
Killdeer	<u><i>Charadrius vociferus</i></u>	European Starling	<u><i>Sturnus vulgaris</i></u>
Greater Yellowlegs	<u><i>Tringa melanoleuca</i></u>	Bell's Vireo	<u><i>Vireo bellii</i></u>
Spotted Sandpiper	<u><i>Actitis macularia</i></u>	Black-throated Gray Warbler	<u><i>Dendroica nigrescens</i></u>
Least Sandpiper	<u><i>Calidris minutilla</i></u>	Lucy's Warbler	<u><i>Vermivora luciae</i></u>
Common Snipe	<u><i>Gallinago gallinago</i></u>	Orange-crowned Warbler	<u><i>Vermivora celata</i></u>
Ringed-bill Gull	<u><i>Larus delawarensis</i></u>	Yellow Warbler	<u><i>Dendroica petechia</i></u>
Rock Dove	<u><i>Columba livia</i></u>	Yellow-rumped Warbler	<u><i>Dendroica coronata</i></u>
White-winged Dove	<u><i>Zenaida asiatica</i></u>	Wilson Warbler	<u><i>Wilsonia pusilla</i></u>
Mourning Dove	<u><i>Zenaida macroura</i></u>	Common Yellowthroat	<u><i>Geothlypis trichas</i></u>
Inca Dove	<u><i>Columba inca</i></u>	MacGillivray's Warbler	<u><i>Oporornis tolmiei</i></u>
Greater Roadrunner	<u><i>Geococcyx californianus</i></u>	Western Meadowlark	<u><i>Sturnella neglecta</i></u>
Great Horned Owl	<u><i>Bubo virginianus</i></u>	Red-winged Blackbird	<u><i>Agelaius phoeniceus</i></u>
Barn Owl	<u><i>Tyto alba</i></u>	Brewer's Blackbird	<u><i>Euphagus cyanocephalus</i></u>
Western Screech Owl	<u><i>Otus kennicottii</i></u>	Brown-headed Cowbird	<u><i>Molothrus ater</i></u>
Elf Owl	<u><i>Micrathene whitneyi</i></u>	Hooded Oriole	<u><i>Icterus cucullatus</i></u>
Lesser Nighthawk	<u><i>Chordeiles acutipennis</i></u>	Northern Oriole	<u><i>Icterus galbula</i></u>
Common Poorwill	<u><i>Phalaenoptilus nuttallii</i></u>	Summer Tanager	<u><i>Piranga rubra</i></u>
White-throated Swift	<u><i>Aeronautes saxatalis</i></u>	Northern Cardinal	<u><i>Cardinalis cardinalis</i></u>
Pyrrhuloxia	<u><i>Cardinalis sinuatus</i></u>	Black-throated Sparrow	<u><i>Amphispiza bilineata</i></u>
Blue Grosbeak	<u><i>Guiraca caerulea</i></u>	Chipping Sparrow	<u><i>Spizella passerina</i></u>
Black-headed Grosbeak	<u><i>Pheucticus melanocephalus</i></u>	Brewer's Sparrow	<u><i>Spizella breweri</i></u>
House Finch	<u><i>Carpodacus mexicanus</i></u>	White-crowned Sparrow	<u><i>Zonotrichia leucophrys</i></u>
Lesser Goldfinch	<u><i>Carduelis psaltria</i></u>	Lincoln's Sparrow	<u><i>Melospiza lincolni</i></u>
Green-tailed Towhee	<u><i>Pipilo chlorurus</i></u>	Song Sparrow	<u><i>Melospiza melodia</i></u>
Abert's Towhee	<u><i>Pipilo aberti</i></u>	Rufous-crowned Sparrow	<u><i>Aimophila ruficeps</i></u>
Lark Sparrow	<u><i>Chondestes grammacus</i></u>		
MAMMALS			
Collared Peccary	<u><i>Dicotyles tajacu</i></u>	Arizona Pocket Mouse	<u><i>Perognathus amplus</i></u>
Mule Deer	<u><i>Odocoileus hemionus</i></u>	Bailey's Pocket Mouse	<u><i>Perognathus baileyi</i></u>
Coyote	<u><i>Canis latrans</i></u>	Desert Pocket Mouse	<u><i>Perognathus penicillatus</i></u>
Gray Fox	<u><i>Urocyon cinereoargenteus</i></u>	Merriam's Kangaroo Rat	<u><i>Dipodomys merriami</i></u>
Ringtail	<u><i>Bassariscus astutus</i></u>	Cactus Mouse	<u><i>Peromyscus eremicus</i></u>
Raccoon	<u><i>Procyon lotor</i></u>	Deer Mouse	<u><i>Peromyscus maniculatus</i></u>
Badger	<u><i>Taxidea taxus</i></u>	Southern Grasshopper Mouse	<u><i>Onychomys torridus</i></u>
Striped Skunk	<u><i>Mephitis mephitis</i></u>	White-throated Woodrat	<u><i>Neotoma albigula</i></u>
Mountain Lion	<u><i>Felis concolor</i></u>	Desert Cottontail	<u><i>Sylvilagus audubonii</i></u>
Bobcat	<u><i>Felis rufus</i></u>	Black-tailed Jackrabbit	<u><i>Lepus californicus</i></u>
Harris' Ground Squirrel	<u><i>Amospermophilus harrisi</i></u>	Cave Myotis	<u><i>Myotis velifer</i></u>
Rock Squirrel	<u><i>Spermophilus variegatus</i></u>	Western Pipistrelle	<u><i>Pipistrellus hesperus</i></u>
Round-tailed Ground Squirrel	<u><i>Spermophilus tereticaudus</i></u>	Big Brown Bat	<u><i>Eptesicus fuscus</i></u>
Botta's Pocket Gopher	<u><i>Thomomys bottae</i></u>		

AMPHIBIANS			
Tiger Salamander Sonoran Desert Toad Great Plains Toad Red-spotted Toad Woodhouse's Toad	<u>Ambystoma tigrinum</u> <u>Bufo alvarius</u> <u>Bufo cognatus</u> <u>Bufo punctatus</u> <u>Bufo woodhousei</u>	Couch's Spadefoot Toad Western Spadefoot Toad Canyon Treefrog Leopard Frog Bullfrog	<u>Scaphiopus couchi</u> <u>Scaphiopus hammondi</u> <u>Hyla arenicolor</u> <u>Rana pipiens</u> <u>Rana catesbiana</u>
REPTILES			
Sonora Mud Turtle Spiny Softshell Banded Gecko Chuckwalla Desert Iguana Lesser Earless Lizard Greater Earless Lizard Collard Lizard Long-tailed Brush Lizard Zebra-tailed Lizard Leopard Lizard Desert Spiny Lizard Tree Lizard Side-blotched Lizard Regal Horned Lizard Great Plains Skink Western Whiptail Gila Monster Tiger Rattlesnake Western Diamondback Rattlesnake Sidewinder	<u>Kinosternon sonoriense</u> <u>Trionyx spiniferus</u> <u>Coleonyx variegatus</u> <u>Sauromalus obesus</u> <u>Dipsosaurus dorsalis</u> <u>Holbrookia maculata</u> <u>Holbrookia texana</u> <u>Crotaphytus collaris</u> <u>Urosaurus graciosus</u> <u>Callisaurus draconoides</u> <u>Crotaphytus wislizenii</u> <u>Sceloporus magister</u> <u>Urosaurus ornatus</u> <u>Uta stansburiana</u> <u>Phrynosoma solare</u> <u>Eumeces obsoletus</u> <u>Cnemidophorus tigris</u> <u>Heloderma suspectum</u> <u>Crotalus tigris</u> <u>Crotalus atrox</u> <u>Crotalus cerastes</u>	Western Blindsnake Spotted Leaf-nosed Snake Saddled Leaf-nosed Snake Coachwhip Striped Whipsnake Western Patch-nosed Snake Sonora Gopher Snake Glossy Snake Common Kingsnake Long-nosed Snake Checkered Garter Snake Black-necked Garter Snake Western Ground Snake Western Shovel-nosed Snake Banded Sand Snake Night Snake Arizona Coral Snake Sonora Lyre Snake Black-tailed Rattlesnake Speckled Rattlesnake Mojave Rattlesnake	<u>Leptotyphlops humilis</u> <u>Phyllorhynchus decurtatus</u> <u>Phyllorhynchus browni</u> <u>Masticophis flagellum</u> <u>Masticophis taeniatus</u> <u>Salvadora hexalepis</u> <u>Pituophis melonaleucus</u> <u>Arizona elegans</u> <u>Lampropeltis getulus</u> <u>Rhinocheilus lecontei</u> <u>Thamnophis marcianus</u> <u>Thamnophis cyrtopsis</u> <u>Sonora semiannulata</u> <u>Chionactis occipitalis</u> <u>Chilomeniscus cinctus</u> <u>Hypsiglena torquata</u> <u>Micruroides euryxanthus</u> <u>Trimorphodon lambda</u> <u>Crotalus molossus</u> <u>Crotalus mitchelli</u> <u>Crotalus scutulatus</u>
FISH			
Threadfin Shad Carp Goldfish Golden Shiner Red Shiner Gila Sucker Channel Catfish Yellow Bullhead Mosquitofish	<u>Dorosoma petenense</u> <u>Cyprinus carpio</u> <u>Carassius auratus</u> <u>Notemigonus crysoleucus</u> <u>Notropis lutrensis</u> <u>Catostomis insignis</u> <u>Ictalurus punctatus</u> <u>Ictalurus natalis</u> <u>Gambusia affinis</u>	White Bass Largemouth Bass Green Sunfish Bluegill Redear Sunfish White Crappie Black Crappie Blue Tilapia	<u>Morone chrysops</u> <u>Micropterus salmoides</u> <u>Chaenobryttus cyanelus</u> <u>Lepomis macrochirus</u> <u>Lepomis microlophus</u> <u>Pomoxis annularis</u> <u>Pomoxis nigromaculatus</u> <u>Tilapia aurea</u>

ENVIRONMENTAL ASSESSMENT

**LAKE PLEASANT REGIONAL PARK
AGUA FRIA CONSERVATION AREA MANAGEMENT PLAN**

Maricopa and Yavapai Counties, Arizona

APPENDIX D

**FISH and WILDLIFE SERVICE
CONCURRENCE LETTER**



United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office

2321 West Royal Palm Road, Suite 03
Phoenix, Arizona 85021-4951

Telephone: (602) 242-0210 Fax: (602) 242-2513

Official File Copy stamp with fields for DATE, SURNAME, RETURN TO, CLASSIFICATION, CONTROL NO., PROJECT. Includes 'FILE COPY' stamp.



In Reply Refer to:

AESO/SE
22410-2009-I-0322

June 10, 2009

Memorandum

To: Chief, Environmental Resource Management Division, Phoenix Area Office, U.S. Bureau of Reclamation, Glendale, Arizona

From: Field Supervisor

Subject: Agua Fria Conservation Area: Amendment to Lake Pleasant Regional Park Master Plan

Thank you for your correspondence of April 29, 2009, received on May 4, 2009 with additional clarification provided by your staff on June 2, 2009. This memorandum documents our review of the "Amendment to Lake Pleasant Regional Park Master Plan: Agua Fria Conservation Area" in Maricopa County, in compliance with section 7 of the Endangered Species Act of 1973 (ESA) as amended (16 U.S.C. 1531 et seq.). Your letter concluded that implementation of the proposed amendment "may affect, is not likely to adversely affect" the threatened bald eagle (Haliaeetus leucocephalus) and the endangered southwestern willow flycatcher (Empidonax traillii extimus). We concur with your determinations and provide our rationales below. You also concluded there would be "no effect" to the lesser long-nosed bat (Leptonycteris curasoae yerbabuenae). Species with "no effect" determinations do not require review from the Fish and Wildlife Service, and are not addressed further.

BACKGROUND

Within the Agua Fria Conservation Area (AFCA) at Lake Pleasant Regional Park (LPRP), unmanaged recreational use along the Agua Fria River has degraded cultural and biological resources, and the area has become dangerous due to indiscriminate shooting and illegal trash dumping. Following public meetings, the LPRP Master Plan is being amended to allow for some amenities and a higher level of management within the AFCA to prevent further resource degradation and improve safety.

Implementation of the proposed changes to the Management Plan would include: 1) designating Table Mesa Road a low maintenance road with roadside cabling to prevent off-road use; 2) boat launch areas during times of high lake levels; 3) parking areas to accommodate 30-40 boats; 4) basic recreational amenities (i.e. trash cans, port-a-johns, picnic areas, parking, etc.); 5) day-use only of facilities; and 6) presence of facility hosts. A complete description of the proposed action is found in your April 29, 2009, biological assessment.

Conservation Measures

1. The AFCA proposed day-use facility will only be open to the public when a facility host is present. Based upon current recreational patterns/needs and availability of hosts/funding, it is anticipated that AFCA day-use area will be closed during the summer and fall. If recreational patterns and host availability changes, the facility could be opened in the fall. Watercraft access during the summer and fall is limited because lowered lake levels cause boat ramps to be disconnected from the shoreline. These seasonal gaps in visitation and reduced boat access will limit human activity in the area and possibly minimize or prevent disturbance to southbound migrating southwestern willow flycatchers and bald eagles.
2. The annual seasonal bald eagle breeding closure (December 15 to June 15) will be maintained to prevent land and aquatic based recreation from disturbing nesting bald eagles. The seasonal bald eagle closure is a smaller area than the overall AFCA and different than the proposed day-use facility development areas.
3. Post and cable barriers will protect riparian vegetation from vehicles.
4. The US Bureau of Reclamation and concessionaires for the Scorpion Bay Marina will provide funding to the Arizona Game and Fish Department to monitor and protect nesting bald eagles through the Arizona Bald Eagle Nestwatch Program.
5. Facility hosts will distribute pamphlets delineating eagle closure boundaries and regulations, and also monitor and report destructive/illegal activities to law enforcement.
6. Large signs will be posted at the entry, parking lots, and boat ramps to delineate closure boundaries and regulations.
7. A monofilament recovery and recycling program will be developed with Arizona Game and Fish Department, and will include monofilament recycling receptacles at the proposed facilities.
8. Communication will be established between nestwatchers and facility hosts to be aware of boating density.

DETERMINATION OF EFFECTS

We concur with your "may affect, not likely to adversely affect" determination for the following reasons:

Southwestern willow flycatcher

- Due to the lack of dense and abundant riparian vegetation and continued water regulation and storage by New Waddell Dam, it is unlikely that flycatchers currently nest or will nest in the action area. Therefore, because nesting flycatchers are not believed to exist or

will exist in the future within the action area, we do not anticipate any effects to nesting flycatchers from implementation of the proposed plan amendments.

- Migrating southwestern willow flycatchers could briefly occur within the action area of the proposed facilities. Facility activities such as hiking, boating, vehicle noise, etc. could briefly disrupt a migrant flycatcher's behavior if they occurred together at the same time. We believe however, that the disruption of a migrant flycatcher's behavior would likely be a rare and isolated incident. As a result, the impact to migrant southwestern willow flycatchers is expected to be discountable.
- Currently, no nesting flycatcher habitat is believed to be present and only migrating flycatcher habitat is believed to exist within the action area. Post and cables are expected to keep vehicles from entering riparian areas. Facility hosts, signs, AFCA regulations, and seasonal eagle and AFCA closures are expected to limit, minimize, and/or prevent destructive activities within riparian areas. With these measures in place, impacts to flycatchers from degradation of migratory riparian habitat are expected to be discountable.

Bald eagle

- The nest locations for the Lake Pleasant area have been known annually since the mid-1980s, and are all located over a mile from the proposed facility developments. We do not believe there are appropriate cliffs or trees that bald eagles will use for nesting in areas where the proposed facilities will occur. As a result, we do not anticipate that bald eagles at the nest will be affected by development of or use of the planned facilities.
- Bald eagles could perch and forage near the planned facilities (due to facilities being located adjacent to water) and have their behavior disrupted. Bald eagles are not believed to be dependent on the location of the facilities for food. Eagles have been detected foraging farther downstream within the closure boundaries, near their nest, and within coves and on the body of the lake (G. Beatty, pers. comm.). As a result, bald eagles are not believed to be dependent on the facility locations for perching or foraging, and disruption in their behavior is anticipated to be rare. Therefore, the effect of these rare disturbance events is believed to be insignificant.
- Watercraft activity originating from the proposed facility is anticipated to periodically disrupt eagle behavior (foraging, perching, and nesting) within and outside of the seasonal breeding area closure. The presence of the buoyed eagle closure, signs, facility hosts, brochure information, and nestwatchers are expected to minimize and reduce the amount and extent of these disturbance events. Since water storage increased in 1993, eagles have nested successfully in 13 of 17 seasons. No failures are believed to be as a result of watercraft disturbance. The facility improvements will provide for a relatively small increase in amount of boats (30-40 boats) in the area. The existing and proposed management measures (i.e. closures, nestwatchers, signs, brochures, host, etc.) to control the location of watercraft, educate operators, regulate watercraft, and contact trespass watercraft are anticipated to be able to accommodate this amount. As a result, we anticipate the long history of success of this breeding site will continue and any

disruption of bald eagle behavior from boats originating from this facility will be insignificant.

Thank you for your continued coordination. No further section 7 consultation is required for this project at this time. Should project plans change, or if information on the distribution or abundance of listed species or critical habitat becomes available, these determinations may need to be reconsidered. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department. In all future correspondence on this project, please refer to the consultation number 22410-2009-I-0322. Should you require further assistance or if you have any questions, please contact Greg Beatty (x247) or Debra Bills (x239).

Debra T. Bills
for Steven L. Spangle

cc: Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Chief, Nongame Branch, Arizona Game and Fish Department, Phoenix, AZ

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