FNF CONSTRUCTION, INC.
115 SOUTH 48TH STREET • TEMPE, ARIZONA 85281
PHONE: 480 784 2910
FAX: 480 829 8607

February 15, 2017

U.S. EPA Region 9
Air Division (AIR-3)
75 Hawthorne St
San Francisco, CA 94105

Attention: Ms. Lisa Beckham

Reference: Request for Coverage Under a General Air Quality Permit For a New or Modified Minor Source Hot Mix Asphalt Plant in Indian Country

Subject: FNF 96-00 Almix Asphalt Mixing Plant
To be Located near Ganado, Arizona on the Navajo Nation

Dear Ms. Beckham,

FNF Construction, Inc. (FNF) is requesting coverage under the referenced General Permit to temporarily operate our 96-00 Almix asphalt mixing plant to be located near Ganado, Arizona, in Apache County on the Navajo Nation lands.

FNF has been awarded an Arizona Department of Transportation (ADOT) roadway construction project located on State Route 264 that extends from Fish Wash to Burnside. This project includes providing 50,000 tons of asphalt to repave SR 264. Our current schedule for starting paving is April 24, 2017.

FNF has been granted approval from the Navajo Nation and the Bureau of Indian Affairs to utilize the Ganado Borrow Material Source to obtain borrow material for the ADOT project. FNF is currently obtaining authorization to locate our asphalt mixing plant at the same site. We expect to have this authority within a couple of weeks. The Biological Evaluation and Archaeological Survey which has already been approved by the NN and the BIA for this site have been included to show compliance with the Threatened or Endangered Species requirements and the Historic Property screening process.

The required application form and emission calculations have been enclosed for your review. We hope this request meets with your approval. If you should require any further information or have any questions please contact me ASAP at 480-929-6733 or e-mail Tressia@fnfinc.com. Thank you in advance for your help in obtaining this permit prior to our start up date of April 24, 2017.

Sincerely,
FNF CONSTRUCTION, INC.

Tressia Contreras

Tressia Contreras
Environmental Manager

Enclosures

Pc: EPA Permit File

(Ltr-1693)

Application for
General Air Quality Permit in Indian Country

FNF Construction, Inc. (FNF)
Ganado Material Source
Navajo Nation – Ganado, AZ
Apache County

Request for Coverage under the General Air Quality Permit for New or Modified Minor Source Hot Mix Asphalt Plans in Indian country

Prepared By:
Tressia Contreras, Environmental Manager
FNF Construction, Inc.
115 S. 48th St.
Tempe, AZ 85281
480-929-6733 tressia@fnfinc.com

February 15, 2017

Table of Contents:

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Portable Asphalt Mixing Plant Operation:

Processed aggregates (sand, gravel, rock) will be transported to the asphalt hot plant for use in the manufacturing of asphalt (about 2,800 tons/day of finished product). The manufacturing plant feed hoppers will be filled by a rubber tired front end loader, utilizing previously crushed and screened aggregates and recycled asphalt pavement (RAP).

The asphaltic concrete product is manufactured by the mixing plant utilizing a preheated bitumen component pumped into the mixing plant from heated storage. The heated storage tank is held at approximately 325 degrees Fahrenheit, while the aggregates (about 95% of the total) are introduced at ambient temperature. Since the target product temperature is approximately 290 degrees Fahrenheit, heat is applied during the mixing process by a natural gas fired burner. This burner has a heat capacity of 106 million BTU. There will be a 1.5 MMBTU burner to heat the AC oil, a 4.2 MMBTU burner to heat the asphalt rubber mixture and a 1.8 MMBTU burner to heat the extra asphalt rubber mixture tank.

The asphaltic concrete material processing and manufacturing plant will require the above ground storage of 10,000 gallons of diesel fuel and 30,000 gallons of heated asphalt oil, also associated with this project will be two heated 30,000 gallon tanks of asphalt rubber mixture. To mitigate potential impacts to groundwater from the possibility of spills or accidental releases of petroleum hydrocarbon fuel, lined earthen impoundments will be constructed for all fuel storage. These impoundments will be designed to have a minimum capacity of 150 percent of the capacity of the fuel tanks being protected. These impoundments will be so constructed as to accept a 20 mil thick flexible polyethylene liner which will be extended entirely over the exterior of the protective berm. The berms will be a minimum of 18 inches in height. The liner will be anchored with heavy aggregates and protected by a suitable layer of bedding sand. This will both assure that the impervious lining will remain securely in place and protect its integrity from the load imposed by the storage tank. The mixing plant itself will not require such protection because of the absence of unburned fuel in the plant.

Electrical power to support the mixing plant is generated by a diesel powered generator which meets the definition of "nonroad engine" in 40 CFR 49.123(a) as the unit is designed to be portable, are not regulated by a federal new source performance standard promulgated under section 111 of the Clean Air Act, and will not remain at a location for more than 12 consecutive months. As a nonroad engine the unit meets the definition of a "mobile source" under 40 CFR 49.123(a). Per 40 CFR 49.153(c)(1), the Federal Minor New Source Review Program in Indian country does not apply to mobile sources. Emissions and fuel usage data was not accounted for as this unit is exempt. The paving asphalt and fuel for the plant and generator will be stored in portable tanks, and filled periodically by an off-site vendor.

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It is anticipated employees will generate solid wastes at a rate of about a 3 cubic yard dumpster load per month. These wastes will be removed from the site and disposed of at a facility designated for such use. Bottled water will be used for drinking. Chemical toilets will be used on site and no telephone service is proposed. This site has adequate area to accommodate any parking demands generated by this project. Aggregate, asphalt and sand & gravel processing plants are not known to require a significant amount of police protection. This combined with the site's remote location, results in a very slight potential for significant police protection impacts and results in no need for new or altered services.

EPA Form No. 5900-342
EPA ICR No. 1230.27
OMB Control No. 2060-0003
Approval expires 4/30/2017

United States Environmental Protection Agency
General Air Quality Permit for New or Modified Minor Sources of Air Pollution in Indian Country
https://www.epa.gov/tribal-air/tribal-minor-new-source-review

Request for Coverage under the General Air Quality Permit for New or Modified Minor Source Hot Mix Asphalt Plants in Indian Country

Last Modified: January 4, 2017
Version 1.0

Prior to construction or modification, complete this application and submit it to your reviewing authority. A list of reviewing authorities, their areas of coverage, and contact information can be found in Attachment D to the General Air Quality Permit for Minor Source Hot Mix Asphalt Facilities or visit: https://www.epa.gov/tribal-air/5-source-categories-hot-mix-asphalt-plants-final-rule .

For assistance with this application please contact your reviewing authority.

For instructions on completing this application please see the document "Instructions for Requesting Coverage under the General Air Quality Permit for New or Modified Minor Source Hot Mix Asphalt Plants in Indian Country."

Section 1: Contact Information

1. Business Name: FNF Construction, Inc.	2. Date: 2-15-17
3. Site Address: Township 27 N SE 1/4 section 13, Range 26 E	4. County: Ganado, AZ 86505 Apache
5. Name of Operator at Site (if different from owner): Same	6. Phone of Operator or Contact at Site (if different from owner):
7. Owner: FNF Construction, Inc.	8. Telephone Number of Owner: 480-929-6733
9. Owner's Mailing Address: 115 S. 48th St, Tempe, AZ 85281	10. Send all correspondence regarding this application to: Company Name: FNF Construction, Inc c/o: Tressia Contreras Address: 115 S. 48th St. Tempe, AZ 85281
11. Authorized contact regarding this permit application: Name: Tressia Contreras Title: Environmental Manager Phone: 480-929-6733	Email: Tressia@FNFinc.com FAX: 480.921-8720

Section 2: Facility Information for Requesting Coverage under the General Air Quality Permit for New or Modified Minor Source Hot Mix Asphalt Plants

12. Please list all of the site locations for which you want approval to locate your hot mix asphalt plant. Include the site name (if any), street address, city, state, and name of the Indian Reservation. If needed, use additional paper. You may seek approval for additional locations in the future.

Site Name	Street Address	City/Town	Area of Indian Country
GANADO MATERIAL SOURCE	- NO STREET ADDRESS	GANADO, AZ	NAVAJO
	SE¼ Section 13		
	Township 27 N Range 26 E		
	LAT: 35 44 13.94		
	LON: 109 30 42.76		
	See Attached MAP		

13. This application is for (check all that apply):

☒ Construction/Relocation of a new hot mix asphalt facility in Indian country – no current general permit (please describe the proposed new source or location).
AIMIX 350 TPH HOT MIX PLANT TO BE TEMPORIARLY LOCATED ON THE NAVAJO RESERVATION AT THE GANADO MATERIAL SOURCE. SEE ATTACHED MAPS

☐ Add a new location for your hot mix asphalt facility already covered by the General Permit (please describe the proposed new location).

☐ Modification of an existing hot mix asphalt facility. Please describe the modification below. The definition of "modification" can be found at 40 CFR 49.152(d), and in the "Instructions" document.

☐ A hot mix asphalt operation co-located with a stone quarrying, crushing, and screening operation and seeking to limit combined PTE to less than 100 tpy for NSR-regulated pollutants. You must comply with Conditions 17. and 20.b. in the General Permit. This option is not available in serious, severe and extreme ozone nonattainment areas and serious CO nonattainment areas (please describe the proposed source).

14. North American Industry Classification System/Standard Industrial Classification Code and/or description of the facility:
SIC 2951, AIMIX 350TPH DRUM MIXER, ASPHALT MIXING PLANT

15. Type of Asphalt Plant: (check all that apply):

☐ Stationary ☒ Portable ☐ Batch Mix ☐ Parallel Flow Drum Mix ☒ Counterflow Drum Mix

16. Will your new or modified facility be located in an ozone nonattainment area? Information on the ozone attainment status of the area where your facility is/will be located can be found at: https://www.epa.gov/green-book.

☐ Yes ☒ No

If you answered **'Yes,'** specify the classification of the ozone nonattainment area:

☐ Marginal ☐ Moderate ☐ Serious ☐ Severe ☐ Extreme

Note: If your facility will be located in severe or extreme ozone nonattainment area, it does not qualify for this General Permit and you must obtain a site-specific permit from the reviewing authority.

17. Will your new or modified facility be located in a particulate matter (PM_{10}) nonattainment area? Information on the attainment status of the area where your facility is or will be located can be found at: https://www.epa.gov/green-book.

☐ Yes ☒ No

If you answered **'Yes,'** specify the classification of the PM_{10} nonattainment area:

☐ Moderate ☐ Serious

18. Will your new or modified facility be located in a particulate matter ($PM_{2.5}$) nonattainment area? Information on the attainment status of the area where your facility is or will be located can be found at: https://www.epa.gov/green-book.

☐ Yes ☒ No

19. Will your new or modified facility be located in a carbon monoxide (CO) nonattainment area? Information on the attainment status of the area where your facility is or will be located can be found at: https://www.epa.gov/green-book.

☐ Yes ☒ No

If you answered **'Yes,'** specify the classification of the CO nonattainment area:

☐ Moderate ☐ Serious

20. Will the PTE of your new facility, or the increase in potential emissions from your modified existing facility, be equal to or above the applicable minor NSR thresholds listed below for ANY of the listed pollutants, both in tpy? Emissions from your facility may be calculated using the calculator available online at: https://www.epa.gov/tribal-air/5-source-categories-hot-mix-asphalt-plants-final-rule. Be sure to include all new or modified emission units at your facility.

Pollutant	Attainment Area	Nonattainment Area
CO	10 tpy	5 tpy
Particulate Matter (PM)	10 tpy	5 tpy
Particulate Matter (PM_{10})	5 tpy	1 tpy
Particulate Matter ($PM_{2.5}$)	3 tpy	0.6 tpy
Sulfur Dioxide (SO_2)	10 tpy	5 tpy
Nitrogen Oxides (NO_x)	10 tpy	5 tpy
Volatile Organic Compounds (VOC)	5 tpy	2 tpy

☒ Yes ☐ No

If you answered **'No,'** your source is likely exempt from the minor NSR program. Please contact your reviewing authority to confirm that your facility will not need a permit. If you answered **'Yes,'** continue on to the next question.

21. If located in an attainment, attainment/unclassifiable or unclassifiable area, will the PTE of your facility be less than 250 tpy for PM, PM_{10}, $PM_{2.5}$, VOC, NO_x, CO, and SO_2, each individually? Be sure to include all existing, new, and modified emission units at the facility.

☒ Yes ☐ No

If you answered **'No,'** your source does not qualify for the General Permit. Please contact your reviewing authority to apply for a site-specific permit. If you answered **'Yes,'** continue on to the next question.

22. If located in a nonattainment area, will the PTE of your facility for the particular nonattainment pollutant be less than the NSR major source thresholds below for ALL pollutants? Be sure to include all existing, new, and modified emission units at the facility.

Pollutant	Nonattainment Classification	NSR Major Source Threshold
Ozone	Marginal	100 tpy of VOC or NO_x
	Moderate	100 tpy of VOC or NO_x
	Serious	50 tpy of VOC or NO_x
	Severe	25 tpy of VOC or NO_x
	Extreme	10 tpy of VOC or NO_x
PM_{10}	Moderate	100 tpy
	Serious	70 tpy
CO	Moderate	100 tpy
	Serious	50 tpy
SO_2, NO_2, $PM_{2.5}$	No nonattainment classification	100 tpy

☐ Yes ☐ No ☒ N/A - Not located in any nonattainment area

If you answered **'No,'** your source does not qualify for the General Permit. Please contact reviewing authority to apply for a site-specific permit. If you answered **'Yes' or 'N/A,'** continue on to the next question.

23. Projected asphalt production rate after construction/modification/relocation:
Tons/month: 56,000

24. Does or will this facility perform contaminated soil remediation?

☐ Yes ☒ No

If you answered **'Yes'** to this question, your facility does not qualify for a general permit and you must obtain a site-specific permit from your reviewing authority.

Section 3: Technical Information for Requesting Coverage under the General Air Quality Permit for New or Modified Minor Source Hot Mix Asphalt Plants

Information regarding the emission units at your facility is required by 40 CFR 49.154 and 40.160. Please provide the information below for all equipment at your facility. For each emissions unit, include supporting documentation for the PTE of the unit with your Request for Coverage. In addition, for existing emissions units, include the most recent actual annual emissions. See 40 CFR 49.154(a)(2). (For more information on how to calculate actual emissions, you may go to: https://www.epa.gov/tribal-air/registration-existing-true-minor-sources-air-pollution-indian-country.) As needed, please include other relevant information with your Request for Coverage (including any equipment not identified below).

Dryer

25. Dryer ID: 96-01

26. Construction/Modification Date of the Dryer (mm/dd/yyyy; actual or anticipated): 2/1/2013

27. Dryer Burner Capacity (MMBtu/hour): 106

28. Fuel(s) Used in the Dryer:

☒ Natural Gas ☐ Propane ☐ Distillate Fuel ☐ Biodiesel

29. Is the dryer/mixer controlled by a baghouse (fabric filter) or venturi scrubber?

☒ Yes ☐ No

If you answered No to this question, your facility does not qualify for a general permit and you must obtain a site-specific permit from reviewing authority.

30. **Internal Combustion Engines** (including emergency generators)

Unit ID #	Unit Description	Maximum Rated Capacity (HP)	Types of Fuel(s) Used[1]	Manufactured Date (mm/dd/yyyy)	Model Year

* A NON-ROAD Engine will Be USED.

[1] Only diesel fuel or biodiesel are allowed in this General Permit.

31. **Auxiliary Heaters**

Unit ID #	Unit Description	Maximum Heat Input Capacity (MMBtu/hour)	Types of Fuel(s) Used[2]	Construction Date (mm/dd/yyyy)
96-09	Oil Heater	1.5	Distillate	2/1/2013
62-01	Asphalt Rubber Oil heater	4.2	"	1/10/1993
62-36	Oil Heater	1.8	"	1/1/1986
Total Heat Input Capacity:[3]		7.5		

32. **Material Handling, Transferring, Loading, and Storage Equipment**

Unit ID #	Unit Description	Maximum Capacity (ton/hour)	Construction Date (mm/dd/yyyy)	Type of Control (if any)
96-01	Drum Mixer	350	2/1/2013	Baghouse
96-03	Load out Silo w/ Slat conveyor	350	"	N/A
96-05	Cold Feed Bins	350	"	N/A
96-06	Screen/ Pugmill	350	"	Water Spray Bar
96-07	Lime Silo	350	"	Baghoose
96-08	Incline weigh conveyor	350	"	N/A
96-09	Hot oil Storage Tank	30,000 gal	"	N/A
96-10	Fuel Tank	18,000 gal	"	N/A
96-11	Recycled Asphalt Bins RAP	350	"	N/A
96-12	RAP Screen	100	"	water spray bar
62-01	Asphalt Rubber Oil Heater	30,000gal	1/10/1993	N/A
62-36	Oil Heater	30,000 gal	1/1/1986	N/A
Rental	Natural Gas Tank	11,000 gal	unk	N/A
Rental	Natural Gas Tank	11,000 gal	unk	N/A

[2] Only natural gas, propane, distillate fuel and biodiesel are allowed in this General Permit.

[3] In order to qualify for this General Permit, the total heat input capacity of the auxiliary heaters cannot exceed 10 MMBtu/hour.

33. **Volatile Liquid Storage Tanks**

This section applies to storage tanks used to store liquid materials. Please provide the following information for each storage tank.

Unit ID#	Type of Liquid	Capacity (gallons)	Vapor pressure of Liquid (psi)	Is the tank above or underground?	Date of Installation (if existing)
96-09	AC oil	30,000	Ambient	yes	N/A
96-10	Diesel	18,000	Ambient	yes	"
62-01	Asphalt Rubber	30,000	Ambient	yes	"
62-36	AC oil	30,000	Ambient	yes	"
Rental	Natural gas	11,000	125 mwAP	yes	"
Rental	Natural gas	11,000	125 mwAP	yes	

Section 4: Information on Completing Screening Processes that Have to Be Satisfied to Request Coverage under the General Air Quality Permit for New or Modified Minor Source Hot Mix Asphalt Plants

34. **Threatened or Endangered Species**

Have you demonstrated that you meet one of the criteria listed in Appendix A with respect to the protection of any and all species that are federally listed as threatened or endangered under the ESA or of habitat that is federally designated as "critical habitat" under the ESA? If you answered **'No,'** you cannot request coverage under this permit.

☒ Yes ☐ No

If you answered **'Yes,'** then you need to provide the appropriate documentation to the EPA to qualify for coverage under this permit. Please indicate under which criterion in Appendix A you are satisfying this requirement:

☒ A ☐ B ☐ C ☐ D ☐ E

35. **Historic Properties**

Have you completed the screening process in Appendix B to determine if the construction, modification or operation of your new or modified minor source of air pollutants has the potential to cause effects to historic properties (pursuant to the NHPA)? If you answered **'No,'** you cannot request coverage under this permit.

☒ Yes ☐ No

If you answered **'Yes,'** then provide the appropriate documentation to the EPA to qualify for coverage under this permit.

Section 5: Additional Information about this General Air Quality Permit for New or Modified Minor Source Hot Mix Asphalt Plants

This section provides information on the sizes of sources in terms of emissions that are eligible for the General Permit. The emission limitations and standards in this permit are expected to ensure that source-wide emissions are below the rates shown in the following table:

Pollutant of Concern	Attainment, Unclassifiable or Attainment/Unclassifiable Areas	Nonattainment Areas
CO	80 tpy	80 tpy (moderate areas)
		40 tpy (serious areas)
PM_{10}	26 tpy	26 tpy (moderate areas)
		26 tpy (serious areas)
$PM_{2.5}$	14 tpy	14 tpy
SO_2	18 tpy	18 tpy
NO_X	71 tpy	71 tpy (marginal and moderate ozone areas) 45 tpy (serious ozone areas)
VOC	28 tpy	28 tpy (marginal and moderate ozone areas) 18 tpy (serious ozone areas)

For a hot mix asphalt operation co-located with a stone quarrying, crushing, and screening operation, the emission limitations and standards in Conditions 17. and 20.b of the General Permit are expected to ensure the source-wide emissions are below the rates shown in the following table:

Pollutant of Concern	Attainment, Unclassifiable or Attainment/Unclassifiable Areas	Nonattainment Areas
CO	78 tpy	78 tpy (moderate
		Not applicable (serious areas)
PM	86 tpy	Not applicable
PM_{10}	63 tpy	63 tpy (moderate
		63 tpy (serious
$PM_{2.5}$	30 tpy	30 tpy
SO_2	18 tpy	18 tpy
NO_X	90 tpy	Not applicable (serious and above ozone areas)
		90 tpy (marginal and moderate ozone areas)
VOC	27 tpy	Not applicable (serious and above ozone areas)
		27 tpy (marginal and moderate ozone areas)

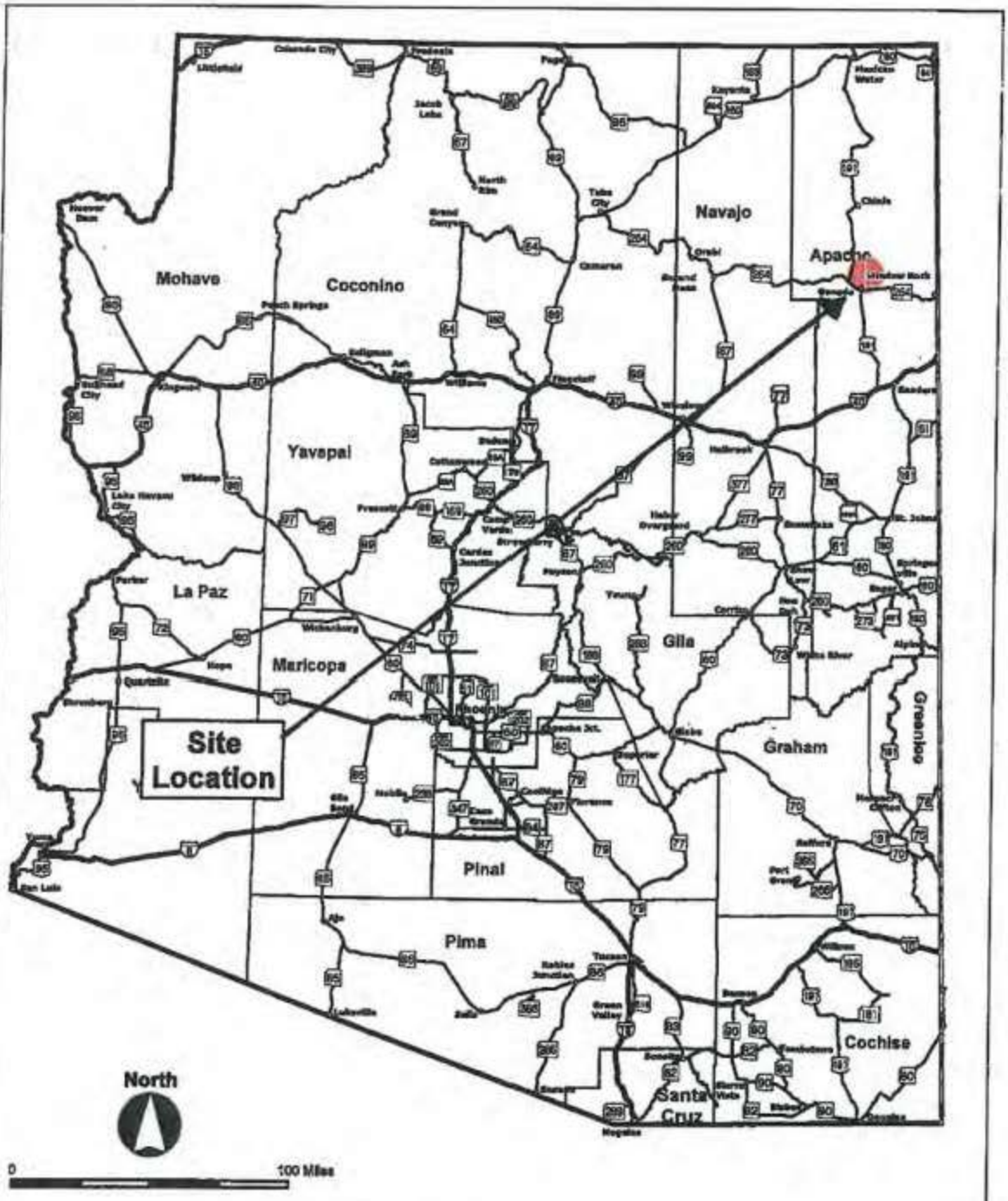
You should contact your reviewing authority if you intend to rely on the emission limitations and standards in this General Permit to prevent having to obtain a Title V permit.

Applicant's Statement (to be signed by the applicant)

I certify that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Name: Tressia Contreras (Signature) Name: TRESSIA CONTRERAS (Print or Type) Date: 2-15-17

Title: ENVIRONMENTAL MANAGER



FNF HOT PLANT Site
AT The GANADO BORROW SOURCE

Ganado Borrow Source
FNF Asphalt Plant Site

Google Earth

feet 1000
meters 500

Potential To Emit Calculator for Hot Mix Asphalt Plants

3/23/2015

Type of Mixer: Drum Mix

PTE (ton/yr)

Process	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC
Dryer/Mixer	50.6	35.3	4.45	16.86	58.3	199.3	49.1
Load-out/Silo Filling	1.70	1.70	1.70	-	-	3.77	24.68
Conveying	23.00	8.43	8.43	-	-	-	-
Screening	3.37	1.13	0.06	-	-	-	-
Storage Piles	4.29	2.03	0.31	-	-	-	-
Lime Silo Loading	4.82	4.82	4.82	-	-	-	-
Auxiliary Heater	0.47	0.77	0.60	0.0	4.69	1.17	0.08
Engine/Generator	0.00	0.00	0.00	0.00	0.0	0.0	0.00
Total PTE	**88.23**	**54.15**	**20.38**	**16.91**	**62.95**	**204.23**	**73.81**

Maximum Fuel Usage		
Operation Description	gal/year	gal/month
Diesel Engine	0	0

Potential To Emit Calculator for Hot Mix Asphalt Plants

3/23/2015

This spreadsheet helps estimate a facility's potential to emit. It is provided for the convenience of the permitted community. EPA does not guarantee the accuracy or appropriateness of this information. Emission factor sources are subject to revision or correction. It is the permittee's responsibility to verify the accuracy of the information. EPA is not liable for errors or omissions.

Directions - Enter the facility's information below.
Write the letter "Y" or "N" next to each fuel type to indicate that the facility does or does not burn that type of fuel.

The potential emissions of criteria pollutants for the facility will be displayed under the "Output - Criteria" tab.

This PTE calculator is only applicable to the asphalt plants subject to NSPS, Subpart I (i.e. all PM emission units are controlled) and only applicable to the asphalt plants with the dryers controlled by dry filters. The emission factors for the dryers controlled by scrubbers are not included in this spreadsheet since the use of scrubbers to control asphalt plants are rare.

If you are NOT subject to NSPS, Subpart I, the PM/PM10/PM2.5 emission factors in this spreadsheet need to be revised to be based on the uncontrolled emission factors.

Facility Profile

Type of Plant-		Drum			Select "Drum" or "Batch" from the drop-down menu.
Plant Capacity-	360.00	(tons/hr)		255500	
Burner Size-	106	(MMBtu/hr)			
Fuels Used in Dryer					
Natural Gas-	Y	(Y or N)			
Liquid Fuel (distillate, diesel, etc.)	N	(Y or N)			
Max Lime Usage-	1%	(weight %)	Default = 1%		
Max Hourly Lime Loading-	25	(ton)	Default = 25		
Bin Vent Efficiency-	98%	(%)	Default = 98%		
Aggregate					
Max. RAP Used-	12%	(%)	Default = 50%		RAP = Reclaimed Asphalt Pavement
# of Virgin Agg. Conveyors-	3	(#)			
# of Virgin Agg. Screens-	1	(#)			
# of RAP Conveyors-	2	(#)			
# of RAP Screens-	1	(#)			
Aggregate Moisture-	3	(%)	Default = 1.8%		
Auxiliary Heaters Capacity -	7.5	(MMBtu/hr)	Total		
Fuels Used					
Natural Gas-	N	(Y or N)			
Propane-	N	(Y or N)	Sulfur %		
Liquid Fuel (distillate, diesel, etc.)	Y	(Y or N)	0.0015	Default = 0.0015	
Generator/Engine Size-	0	(hp)			Note: Engines that are considered portable nonroad engines do not need to be included (see 40 CFR 1068.30)
Fuels Used			Sulfur %		
Diesel-	N	(Y or N)	0.0015	Default = 0.0015	

Other Parameters

Asphalt Properties				
Temperature-	325	(F)	Default = 325	
Volatility-	-0.5	(unitless)	Default = -0.5	
Weather				
Mean Wind Speed-	15	(MPH)	Worse Case = 15	

Potential To Emit Calculator for Hot Mix Asphalt Plants

3/23/2015

Emissions from Drum Mix Hot Mix Asphalt Production - Criteria Pollutants

Facility Capacity: 350 ton/hr

Purple values are pulled from other worksheet
Blue values are results

Worst Case Totals

Pollutant	PTE (lb/hr)	PTE (ton/yr)
PM	11.55	50.59
PM_{10}	8.25	35.26
$PM_{2.5}$	1.02	4.45
SO_2	1.19	16.86
NO_x	9.10	58.25
CO	45.50	199.29
VOC	11.20	49.06

PTE of PM/PM_{10}

Pollutant	Emission Factor (lb/ton)	PTE Emissions (lb/hr)	PTE Emissions (ton/yr)
PM	0.033	11.55	50.59
PM_{10}	0.023	8.25	35.26

Note: These are the emission factors for the dryers controlled by dry filters.

PTE of $PM_{2.5}$

Pollutant	Emission Factor (lb/ton)	PTE Emissions (lb/hr)	PTE Emissions (ton/yr)
$PM_{2.5}$	0.0029	1.02	4.45

Note: This is the emission factor for the dryers controlled by dry filters.

$SO_2/NO_X/CO$

PTE – Natural Gas: Pollutant	Emission Factor (lb/ton)	Emissions (lb/hr)	Emissions (ton/yr)	PTE – Liquid Fuel: Pollutant	Emission Factor (lb/ton)	Emissions (lb/hr)	Emissions (ton/yr)
SO_2	0.0034	1.19	5.21	SO_2	0.011	0.00	16.86
NO_X	0.026	9.10	39.86	NO_X	0.038	0.00	58.25
CO	0.13	45.50	199.29	CO	0.13	0.00	199.29

VOC

Pollutant	Emission Factor (lb/ton)	PTE Emissions (lb/hr)	PTE Emissions (ton/yr)
VOC	0.032	11.20	49.06

Note:

1. Emission factors are from AP-42, Chapter 11.1, Tables 11.1-3, 11.1-4, 11.1-7, and 11.1-8 for Hot Mix Asphalt Plants (updated 03/2004), except for NOx -see Note 2.
2. NOx emission factor for liquid fuel based on Technical Support Document for Asphalt Plants by Washington's Department of Ecology (updated 01/2011). Value based on 20 sets of performance test data - 75th percentile plus 10%.

Methodology

PTE (lb/hr) = Facility Capacity (ton/hr) x EF (lb/ton)
PTE (ton/yr) = PTE (lbs/hr) x 8760 hr/yr x 1 ton/2000 lb

Potential To Emit Calculator for Hot Mix Asphalt Plants

3/23/2015

Emissions from Load-Out and Silo Filling Operations - Criteria Pollutants

350 Facility Capacity (ton/hr)
325 Temp (used to calculate EF)
-0.5 Volatility (used to calculate EF)

Purple values are pulled from other worksheet
Blue values are results

Totals

Pollutant	PTE (lb/hr)	PTE (ton/yr)
PM	0.3877	1.70
PM_{10}	0.3877	1.70
$PM_{2.5}$	0.3877	1.70
VOC	5.6336	24.68
CO	0.8604	3.77

Load-Out	Pollutant	Emission Factor[1] (lb/ton)	PTE (lb/hr)	PTE (ton/yr)
	Total PM	0.000522	0.1827	0.80
	PM_{10}[2]	0.000522	0.1827	0.80
	$PM_{2.5}$[2]	0.000522	0.1827	0.80
	VOC[3]	0.003909	1.3683	5.99
	CO	0.001349	0.4722	2.07

Silo Filling	Pollutant	Emission Factor[1] (lb/ton)	PTE (lb/hr)	PTE (ton/yr)
	Total PM	0.000586	0.2051	0.90
	PM_{10}[2]	0.000586	0.2051	0.90
	$PM_{2.5}$[2]	0.000586	0.2051	0.90
	VOC[3]	0.012187	4.2653	18.68
	CO	0.001109	0.3882	1.70

Note:

1. Emission factors are from AP-42, Chapter 11.1, Tables 11.1-14 and 11.1-16 for Hot Mix Asphalt Plants (Updated 03/04).
2. Assume PM_{10} and $PM_{2.5}$ emissions are equal to PM emissions.
3. According to AP-42, Table 11.1-16, 94% of the TOC emissions from load-out operations are VOC. 100% of the TOC emissions from silo filling operations are VOC.

Methodology

PTE (lb/hr) = Facility Capacity (ton/hr) x EF (lb/ton)
PTE (ton/hr) = PTE (lbs/hr) x 8760 hr/yr x 1 ton/2000 lb

Potential To Emit Calculator for Hot Mix Asphalt Plants

3/23/2015

Emissions from Aggregate Handling Operations

350	Facility Capacity (tons/hr)
12%	Max. RAP Used (%)
3	# of Virgin Agg. Conveyors (#)
1	# of Virgin Agg. Screens (#)
2	# of RAP Conveyors (#)
1	# of RAP Screens (#)

Purple values are pulled from other worksheet
Blue values are inputs

	Pollutant	PTE (tons/yr)
Conveying Total	PM	23.00
	PM_{10}	8.40
	$PM_{2.5}$	8.40
Screening Total	PM	3.37
	PM_{10}	1.13
	$PM_{2.5}$	0.06

Conveying				PM			Controlled PM_{10}			$PM_{2.5}$[2]		
Table 11.19.2-2 (8/04)	Source	Number of Units	Max. Capacity (ton/hr/unit)	Emission Factor[1] (lbs/ton)	PTE (lbs/hr/unit)	PTE (tons/yr)	Emission Factor[1] (lbs/ton)	PTE (lbs/hr/unit)	PTE (tons/yr)	Emission Factor[1] (lbs/ton)	PTE (lbs/hr/unit)	PTE (tons/yr)
	Virgin Agg. Conveyors	3	300	0.0030	0.924	13.50	0.0011	0.330	5.06	0.0011	0.330	5.06
	RAP Conveyors	2	42	0.0030	0.126	9.20	0.0011	0.046	3.37	0.0011	0.046	3.37

Screening				PM			Controlled PM_{10}			$PM_{2.5}$		
Table 11.19.2-2 (8/04)	Source	Number of Units	Max. Capacity (ton/hr/unit)	Emission Factor[1] (lbs/ton)	Limited PTE (lbs/hr/unit)	Limited PTE (tons/yr)	Emission Factor[1] (lbs/ton)	Limited PTE (lbs/hr/unit)	Limited PTE (tons/yr)	Emission Factor[1] (lbs/ton)	Limited PTE (lbs/hr/unit)	Limited PTE (tons/yr)
	Virgin Agg. Screens	1	300	0.0011	0.330	1.69	0.00037	0.114	0.57	0.000025	0.008	0.04
	RAP Screens	1	42	0.0011	0.046	1.69	0.00037	0.016	0.57	0.000025	0.001	0.04

Note:

1. Emission factors are from AP-42, Chapter 11.19, Table 11.19.2-2 for Crushed Stone Processing and Pulverized Mineral Processing (Updated 08/04).
   The emission factors selected are the ones with controlled since this facility is subject to NSPS, Subpart I.
2. Assume $PM_{2.5}$ emissions are equal to PM_{10} emissions.

Methodology

PTE (lb/hr/unit) = Max. Capacity (ton/hr/unit) x EF (lb/ton)

PTE (ton/yr) = PTE (lbs/hr/unit) x 8760 (hr/yr) x 1 ton/2000 lb x Number of Units

Potential To Emit Calculator for Hot Mix Asphalt Plants

3/23/2015

Emissions from Storage Piles

350	Facility Capacity (tons/hr)	
3,000,000	Max. Annual Production (ton/yr), based on the operation of *8760* hr/yr.	
3	Agg. Moisture (%)	Purple values are pulled from other worksheet
15	Mean Wind Speed (MPH)	Blue values are results

According to AP42, Chapter 13.2.4 - Aggregate Handling and Storage Piles (updated 11/06), the particulate emission factors for storage piles can be estimated from the following equation:

$$EF = \frac{k \times 0.0032 \times (U/5)^{1.3}}{(M/2)^{1.4}}$$

where:

EF = Emission Factor (lbs/ton)	
k = Particle size multipliers =	0.74 for PM, 0.35 for PM_{10}, and 0.053 for $PM_{2.5}$
U = Mean wind speed (MPH) =	15 MPH (provided by the facility)
M = Moisture content (%) =	3 % (provided by the facility)

Pollutant	Emission Factor (lb/ton)	Control Efficiency[1] (%)	PTE (tons/yr)
PM	0.00560	50%	4.20
PM_{10}	0.00265	50%	2.03
$PM_{2.5}$	0.00040	50%	0.31

Note:
1. Since this facility is subject to NSPS, Subpart I, the particulate emissions control efficiency for storage piles is assumed to be 50%.

Methodology
PTE (ton/yr) = Max. Annual Production (ton/yr) x EF (lb/ton) x 1 ton/2000 lb x (1-Control Efficiency)

Potential To Emit Calculator for Hot Mix Asphalt Plants

3/23/2015

Lime Silo Loading

25 Max. Hourly Load (ton/hr)

98% Bin Vent Control Efficiency (%)

Purple values are pulled from other worksheet

Blue values are results

Lime Silo Loading	Controlled (8,760 hr/yr)				
	Pollutant	Emission Factor (lb/ton)	Control Eff. %	PTE (lb/hr)	PTE (ton/yr)
	PM	2.2	98%	1.100	4.82
	PM_{10}[2]	2.2	98%	1.100	4.82
	$PM_{2.5}$[2]	2.2	98%	1.100	4.82

Note:

1. Emission factors are from AP-42, Chapter 11.17, Table 11.17-4 for Lime Manufacturing (Updated 02/98)(SCC 3-05-016-15).
2. Assume PM_{10} and $PM_{2.5}$ emissions are equal to PM emissions.

Methodology

PTE (lb/hr) = Max. Hourly Load (ton/hr) x EF (lb/ton) x (1-Control Eff.)

PTE (ton/hr) = PTE (lb/hr) x 8760 hr/yr x 1 ton/2000 lbs

Potential To Emit Calculator for Hot Mix Asphalt Plants

3/23/2015

Emissions from Auxiliary Heaters - Criteria Pollutants

7.5 Heat Input (MMBtu/hr)

Purple values are pulled from other worksheet
Blue values are results

Worst Case PTE (ton/yr)

PM	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC
0.47	0.77	0.60	0.05	4.69	1.17	0.08

Fuel Type: **Natural Gas** Used: N

	Pollutant						
	PM	PM_{10}[2]	$PM_{2.5}$[3]	SO_2	NO_X	CO	VOC
Emission Factor[1] (lb/MMSCF)	1.9	7.6	7.6	0.6	100	84	5.5
PTE (ton/yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note:

1. Emission factors are from AP-42, Chapter 1.4, Tables 1.4-1 and 1.4-2 (updated 07/98).
2. PM_{10} emission factor is condensable and filterable PM combined. PM emission factor is for filterable PM only.
3. Assume $PM_{2.5}$ emissions are equal to PM_{10} emissions.

Methodology

PTE (ton/yr) = Heat Input (MMBtu/hr) x 1 MMSCF/1,020 MMBtu x EF (lb/MMSCF) x 8760 hr/yr x 1 ton/2000 lb

Fuel Type: **Propane** Used: N Sulfur Content: 0.00 %

	Pollutant						
	PM	PM_{10}[2]	$PM_{2.5}$[3]	SO_2	NO_X	CO	VOC
Emission Factor[1] (lbs/kgal)	0.2	0.7	0.7	0	13	7.5	1.0
PTE (ton/yr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note:

1. Emission factors are from AP-42, Chapter 1.5, Tables 1.5 (updated 07/08).
2. PM_{10} emission factor is condensable and filterable PM combined. PM emission factor is for filterable PM only.
3. Assume $PM_{2.5}$ emissions are equal to PM_{10} emissions.

Methodology

PTE (ton/yr) = Heat Input (MMBtu/hr) x 1 kgal/91.5 MMBtu x EF (lb/kgal) x 8760 hr/yr x 1 ton/2000 lb

Fuel Type: **Liquid Fuel** Used: Y Sulfur Content: 0.002 %

	Pollutant						
	PM	PM_{10}[2]	$PM_{2.5}$	SO_2	NO_X	CO	VOC
Emission Factor[1] (lb/kgal)	2.0	3.3	2.55	0.213	20	5.0	0.34
PTE (ton/yr)	0.47	0.77	0.60	0.05	4.69	1.17	0.08

Note:

1. Emission factors are from AP-42, Chapter 1.3, Tables 1.3-1, 1.3-2, and 1.3-3 for Fuel Oil Combustion (updated 05/10).
2. PM_{10} emission factor is condensable and filterable PM combined. PM emission factor is for filterable PM only.

Methodology

PTE (ton/yr) = Heat Input (MMBtu/hr) x 1 kgal/140 MMBtu x EF (lb/kgal) x 8760 hr/yr x 1 ton/2000 lb

Document No. 003982 Date Issued 05/20/2015

EXECUTIVE OFFICIAL REVIEW

Title of Document: FNF Construction Inc for Borrow Lease Contact Name: DRAPER, HOWARD

Program/Division: DIVISION OF NATURAL RESOURCES

Email: howarddraper@frontiernet.net Phone Number: 928/871-6447

☐ **Business Site Lease**

			Sufficient	Insufficient
1. Division:		Date:	☐	☐
2. Office of the Controller:		Date:	☐	☐
(only if Procurement Clearance is not issued within 30 days of the initiation of the E.O. review)				
3. Office of the Attorney General:		Date:	☐	☐

☐ **Business and Industrial Development Financing, Veteran Loans, (i.e. Loan, Loan Guarantee and Investment) or Delegation of Approving and/or Management Authority of Leasing transactions**

1. Division:		Date:	☐	☐
2. Office of the Attorney General:		Date:	☐	☐

☐ **Fund Management Plan, Expenditure Plans, Carry Over Requests, Budget Modifications**

1. Office of Management and Budget:		Date:	☐	☐
2. Office of the Controller:		Date:	☐	☐
3. Office of the Attorney General:		Date:	☐	☐

☐ **Navajo Housing Authority Request for Release of Funds**

1. NNEPA:		Date:	☐	☐
2. Office of the Attorney General:		Date:	☐	☐

☐ **Lease Purchase Agreements**

1. Office of the Controller: (recommendation only)		Date:	☐	☐
2. Office of the Attorney General:		Date:	☐	☐

☐ **Grant Applications**

1. Office of Management and Budget:		Date:	☐	☐
2. Office of the Controller:		Date:	☐	☐
3. Office of the Attorney General:		Date:	☐	☐

☐ **Five Management Plan of the Local Governance Act, Delegation of an Approving Authority from a Standing Committee, Local Ordinances (Local Government Units), or Plans of Operation/Division Policies Requiring Committee Approval**

1. Division:		Date:	☐	☐
2. Office of the Attorney General:		Date:	☐	☐

☐ **Relinquishment of Navajo Membership**

1. Land Department:		Date:	☐	☐
2. Elections:		Date:	☐	☐
3. Office of the Attorney General:		Date:	☐	☐

☐ **Land Withdrawal or Relinquishment for Commercial Purposes**

			Sufficient	Insufficient
1. Division:		Date:	☐	☐
2. Office of the Attorney General:		Date:	☐	☐

☐ **Land Withdrawals for Non-Commercial Purposes, General Land Leases and Resource Leases**

1. NLD		Date:	☐	☐
2. F&W		Date:	☐	☐
3. HPD		Date:	☐	☐
4. Minerals		Date:	☐	☐
5. NNEPA		Date:	☐	☐
6. DNR		Date:	☐	☐
7. DOJ		Date:	☐	☐

☒ ~~Rights-of-Way~~ Borrow Lease

1. NLD		Date: 27 May 15	☒	☐
2. F&W See Hr-t 6/4/15		Date: 6/10/15	☒ 8/5/14	☒
3. HPD		Date: 10/15/15	☒	☐
4. Minerals Subject to proposed change		Date: 7/1/15	☒	☐
5. NNEPA		Date: 7-8-2015	☒	☐
6. Office of the Attorney General (IC)		Date: 8/11/15	☒	☐
7. OPVP		Date: 8-12-15	☒	☐

☐ **Oil and Gas Prospecting Permits, Drilling and Exploration Permits, Mining Permit, Mining Lease**

1. Minerals		Date:	☐	☐
2. OPVP		Date:	☐	☐
3. NLD		Date:	☐	☐

☐ **Assignment of Mineral Lease**

1. Minerals		Date:	☐	☐
2. DNR		Date:	☐	☐
3. DOJ		Date:	☐	☐

☐ **ROW (where there has been no delegation of authority to the Navajo Land Department to grant the Nation's consent to a ROW)**

1. NLD		Date:	☐	☐
2. F&W		Date:	☐	☐
3. HPD		Date:	☐	☐
4. Minerals		Date:	☐	☐
5. NNEPA		Date:	☐	☐
6. DNR		Date:	☐	☐
7. DOJ		Date:	☐	☐
8. OPVP		Date:	☐	☐

☐ **OTHER:**

1.		Date:	☐	☐
2.		Date:	☐	☐
3.		Date:	☐	☐
4.		Date:	☐	☐
5.		Date:	☐	☐

NNDFW Review No. EOR-003982A

BIOLOGICAL RESOURCES COMPLIANCE FORM
NAVAJO NATION DEPARTMENT OF FISH AND WILDLIFE
P.O. BOX 1480, WINDOW ROCK, ARIZONA 86515-1480

It is the Department's opinion the project described below, with applicable conditions, is in compliance with Tribal and Federal laws protecting biological resources including the Navajo Endangered Species and Environmental Policy Codes, U.S. Endangered Species, Migratory Bird Treaty, Eagle Protection and National Environmental Policy Acts. This form does not preclude or replace consultation with the U.S. Fish and Wildlife Service if a Federally-listed species is affected.

PROJECT NAME & NO.: Ganado Borrow Pit

DESCRIPTION: FNF proposes to obtain a mine lease consisting of 28.474 acres for borrow extraction and processing. An existing access road would be used for ingress/egress to the site. It is estimated that only 10.7 acres of the total lease area will be disturbed by mining activity.

LOCATION: SE¼ of Section 13, T27N, R26E, G&SRBM, Ganado, Apache County, Arizona

REPRESENTATIVE: Tressia Contreras, FNF Construction, Inc. (FNF)

ACTION AGENCY: Navajo Nation and Bureau of Indian Affairs

B.R. REPORT TITLE / DATE / PREPARER: The Ganado Borrow Pit/APR 2015/Rocky Mountain Ecology, LLC.

SIGNIFICANT BIOLOGICAL RESOURCES FOUND: Area 5. Approved by S. Diswood (date unknown).

POTENTIAL IMPACTS

NESL SPECIES POTENTIALLY IMPACTED: NA

FEDERALLY-LISTED SPECIES AFFECTED: NA

OTHER SIGNIFICANT IMPACTS TO BIOLOGICAL RESOURCES: NA

AVOIDANCE / MITIGATION MEASURES: In addition to the mitigation measures outlined in Section 9.0, FNF will also construct a berm between the borrow site and Ganado Lake to prevent contaminant leaching and surface runoff into the lake.

CONDITIONS OF COMPLIANCE*: NA

FORM PREPARED BY / DATE: Pamela A. Kyselka/12 OCT 2015; amended on 15 OCT 2015

COPIES TO: (add categories as necessary)

☐ _____ ☐ _____

2 NTC § 164 Recommendation:	Signature	Date
☒Approval ☐Conditional Approval (with memo) ☐Disapproval (with memo) ☐Categorical Exclusion (with request letter) ☐None (with memo)	Gloria M. Tom, Director, Navajo Nation Department of Fish and Wildlife	10/16/15

*I understand and accept the conditions of compliance, and acknowledge that lack of signature may be grounds for the Department not recommending the above described project for approval to the Tribal Decision-maker.

Representative's signature Date

Biological Evaluation & Assessment
of
The Ganado Borrow Pit – Section 13, T27N, R26E, Apache County, Arizona

Prepared By:
Rocky Mountain Ecology, LLC
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knox@rockymountainecology.com

Prepared for:
FNF Construction, Inc.
Tressia Contreras
115 S. 48th St. Tempe, AZ 85281

October 2015

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of
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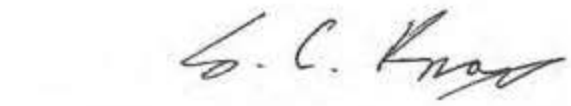
October 2015

Investigator:

Shawn C. Knox
Co-Owner, Rocky Mountain Ecology, LLC



Signature

Table of Contents

1.0 INTRODUCTION

1.1 Summary

FNF Construction, Inc. (FNF) proposes to expand an existing borrow pit near Ganado Lake in Apache County, Arizona (From here on "Ganado Borrow Pit"). The project is located in the SE1/4 of Section 13, Township 27 North, Range 26 East of the Gila and Salt River Base and Meridian (Figure 1; Appendix A. Photographs). The proposed Ganado Borrow Pit lease is for 28.474 acres, though it is estimated that vegetation clearance and mining of borrow material would occur on only 10.7 acres (Figure 2). The material would be used for reconstruction of Arizona State Route 264 (SR 264) between mileposts (MP) 450 and 459.02. The Project is located on Tribal Trust Land. The project (#HSIP-STP-264-A(217)T) is funded by the Federal Highway Administration (FHWA), though it is administered by the Arizona Department of Transportation (ADOT). The total funding amount is $12,308,985.00.

Rocky Mountain Ecology, LLC (RME) was contracted to prepare this Biological Evaluation and Assessment (BE/BA) in compliance with Section 7 of the Endangered Species Act (ESA) (19 U.S.C. 1536 (c), 50 CFR 402.12 (F) and 402.14 (c)) and other relevant Federal, State and Tribal laws and regulations. This BE/BA discloses and analyzes impacts associated with the disturbance activities related to mining borrow material at the project location.

1.2 Purpose & Need

The purpose of the Proposed Action is to allow FNF to mine borrow material from the Ganado Borrow Pit, in support of SR 264 reconstruction activities between MP 450 and 459.02 (Fish Wash to Cross Canyon).

The need for the action is to mine the borrow material, which would be used to support highway rehabilitation, widening and bridge replacement work. The highway within the project corridor has deteriorated in numerous locales, including Fish Wash Bridge, which poses safety concerns at present.

This BE/BA has been prepared to analyze impacts and determine effects of the Proposed Action on federally proposed, threatened, endangered, candidate, and species of concern, and on species listed on the Navajo Endangered Species List (NESL). Specifically, this BE/BA would provide knowledge regarding protected, and assist the proponent in determining if formal consultation with the U.S. Fish and Wildlife Service (USFWS) is prudent. This document would also aid in determining if the Proposed Action would lead

toward the federal listing of any candidate species on the Endangered Species Act of 1973 as amended. This BE/BA adheres to requirements specified in Section 7 of the Endangered Species Act (ESA) (19 U.S.C. 1536 (c), 50 CFR 402.12 (F) and 402.14 (c)).

2.0 Methods & Consultation

The USFWS list of proposed, threatened, endangered and candidate species was evaluated prior to fieldwork using the USFWS Information, Planning and Conservation (IPaC) System website (ecos.fws.gov/ipac) (Table 2). Moreover, NESL species were evaluated and reviewed in correspondence with the Navajo Nation Department of Fish and Wildlife (NNDFW) (Appendix B. Consultation Responses/ Master Species Lists). Effect Determinations were made for federally listed species based on analysis of habitat requirements, and field verification (Table 2). A Determination of Impacts was made for NESL species, also based on analysis of habitat requirements, and field verification (Table 3).

RME staff conducted field reconnaissance of the project area on 1 April 2015. All global positioning system (GPS) coordinates were collected using the Universal Transverse Mercator (UTM) system in the North American Datum 1983 (NAD 83) projection. The area surveyed totaled approximately 28.474 acres (Figures 3 & 4), which included the haul road. Habitat suitability for all species listed within Tables 2 and 3 was ascertained in the field. Dominant vegetation communities and common plant and animal species noted within the project area are described in Section 3.0. Photographs of the area are included in Appendix A.

3.0 Description of Analysis Area

The project area is located on the Colorado Plateau in Apache County, Arizona. Elevations within the project area range from 6,460 to 6,503 feet above sea level (southwest and northeast corners, respectively), with annual precipitation of 11.06 inches. Mean annual temperatures are approximately 17° to 89° degrees Fahrenheit (US Climate Data 2015). The average slope across the site ranges from 3 to 8 percent.

The project area is located within the Dinetah Tablelands Subregion of the Arizona-New Mexico Plateau Ecoregion (USEPA 2013). Specifically, the site is located just east of Ganado Lake. Drainage through the project area flows southwest, and historically flowed into the Pueblo Colorado Wash, located below Ganado Lake Dam. Pueblo Colorado Wash eventually flows into the Little Colorado River, over 60 miles southwest of the Project Area.

The project area is located just east of Ganado Lake, which had standing water at the time of the survey. The project area occurs within a zone that harbors plant species indicative of the Great Basin Desert Scrub (Brown 1980). The site is dominated by a blue grama (*Bouteloua gracilis*) – sand dropseed (*Sporobolus cryptandrus*) – shadscale saltbush (*Atriplex confertifolia*) – green rabbitbrush (*Chrysothamnus greenei*) – big sagebrush (*Artemesia tridentata*) – one-seed juniper (*Juniperus monosperma*) - Utah juniper (*Juniperus utahensis*) association. Pinyon pine (*Pinus edulis*), snakeweed (*Gutterrezia sarothrae*), prickly pear (*Opuntia polyacantha*), Mormon tea (*Ephedra cutleri*), narrowleaf yucca (*Yucca angustissima*), Indian ricegrass (*Achnatherum hymenoides*), black grama (*Bouteloua eriopoda*) and sandhill muhly (*Muhlenbergia pungens*) are also present throughout. Disturbed areas are dominated by species such as Russian thistle (*Salsola kali*) and globemallow (*Sphaeralcea parvifolia*). Salt cedar (*Tamarix* spp.) is present near the western project boundary. Russian olive (*Elaeagnus angustifolia*) is present within the historic Ganado Lake Borrow pit area. No standing water was observed within the survey area, nor was any evidence of wetland vegetation.

Soils within the project area include the Penistaja family-Betonnie complex (80%), common on 1 to 10 percent slopes; and the Aquima-Hawaikuh complex (20%), common on 1 to 5 percent slopes. Penistaja family-Betonnie complex soils are located on fan terraces with parent material from eolian deposits and fan alluvium derived from sandstone, and/or eolian deposits and fan alluvium derived from sandstone and shale. These are well-drained soils with no frequency of flooding or ponding and surface horizons dominated by fine sandy loams (NRCS 2015). Aquima-Hawaikuh complex soils are located on fan remnants and stream terraces with parent material from fan alluvium over stream alluvium derived from sandstone and shale. These are well-drained soils with no frequency of flooding or ponding (NRCS 2015), and surface horizons dominated by silty clay loams.

No hydric soils are present, nor do prime or unique farmlands occur within the project area (NRCS 2015). Range production on this site averages between 700 and 800 pounds of forage per acre, per year (NRCS 2015).

Wildlife in the vicinity of the project area includes various small mammals, diverse avifauna, reptiles, amphibians, and big game species (Brown and Lowe 1980). Wildlife typical of the general area include coyotes (*Canis latrans*), desert cottontails (*Sylvilagus audubonii*), kangaroo rats (*Dipodomys* spp.), common ravens (*Corvus corax*), turkey vultures (*Cathartes aura*), mourning doves (*Zenaida macroura*), red-tailed hawks (*Buteo jamaicensis*), bull snakes (*Pituophis catenifer*), and whiptail lizards (*Cnemidophorus* spp.). Other small mammals with potential to occur on the project site that could serve as prey for raptor species include the dwarf shrew (*Sorex nanus*), pocket mice (*Perognathus* spp.), kangaroo rats (*Dipodomys* spp.), pocket gophers (*Thomomys* spp.), various mice

(*Peromyscus* spp.), and woodrats (*Neotoma* spp.). Small mammal burrows were distributed throughout the project area, though no prairie dog (*Cynomys gunnisoni*) burrows were observed throughout. Moreover, no burrowing owls (*Athene cunicularia*) or their burrows were observed during the field survey.

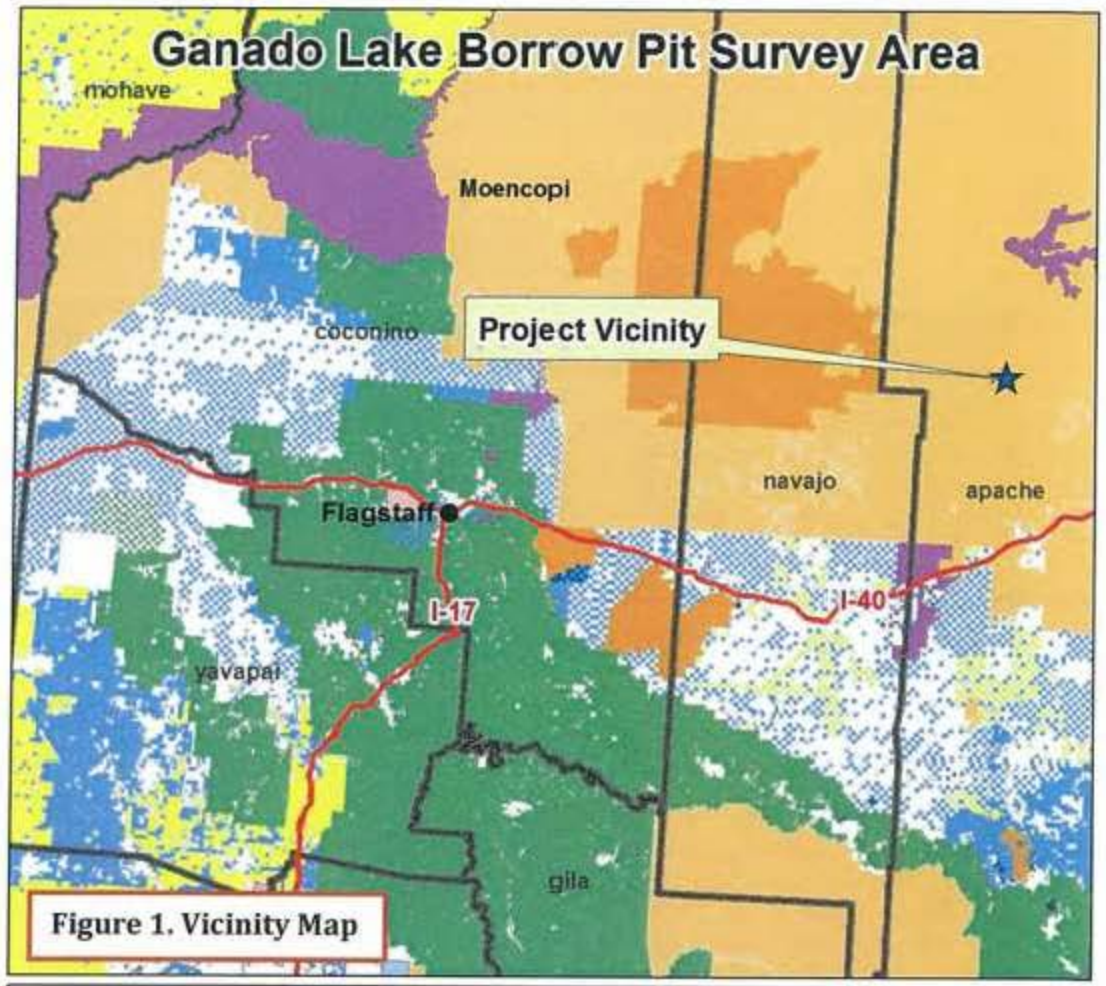
Wildlife observed within the survey area include fence lizards (*Sceloporus undulatus*), coyote, black-tailed jackrabbits (*Lepus californicus*) and common ravens. American white pelicans (*Pelecanus erythrorhynchos*), Canada geese (*Branta canadensis*), mallard ducks (*Anas platyrhynchos*) and other undetectable waterfowl were observed outside of the survey area, within Ganado Lake.

According to the Navajo Natural Heritage Program, no raptor nests are known within three miles of the project area (Appendix B – Consultation Responses/ Master Species Lists).

4.0 Description of Proposed Project

4.1 Project Location

The project is located just northeast of Ganado, AZ within the SE1/4 of Section 13, in Township 27 North, Range 26 East, on Navajo Tribal Trust lands in Apache County, AZ. Access to the site would be from Bureau of Indian Affairs (BIA) Route 27. Center coordinates are provided in the Universal Transverse Mercator system, in North American Datum 1983, Zone 13: 91883 E, 3964332 N. The project is mapped on the Ganado, AZ USGS 7.5 minute quadrangle (Figure 3).


Ganado Lake Borrow Pit Survey Area
mohave
Moencopi
coconino
Project Vicinity
navajo
apache
Flagstaff
I-17
I-40
yavapai
gila
Figure 1. Vicinity Map
Legend
Interstates
Counties
Hopi Reservation
Ownership
BLM
Babbit Ranch
Navajo Nation
Local or State Parks
Military
NPS
Other
Private
State
State Wildlife Area
USFS
USFWS
Map created by Rocky Mountain Ecology LLC, 4/2015
Project Location
N
W
E
S
0
20
40
80 Miles

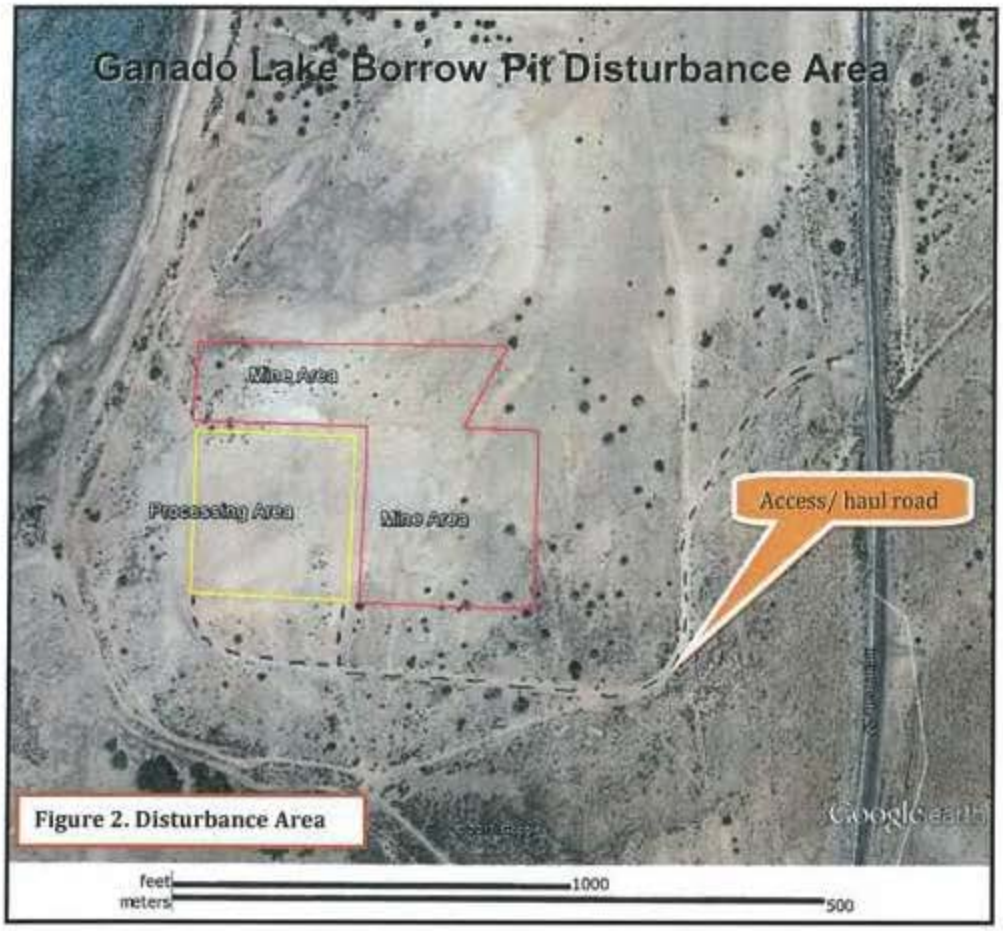


Figure 2. Disturbance Area

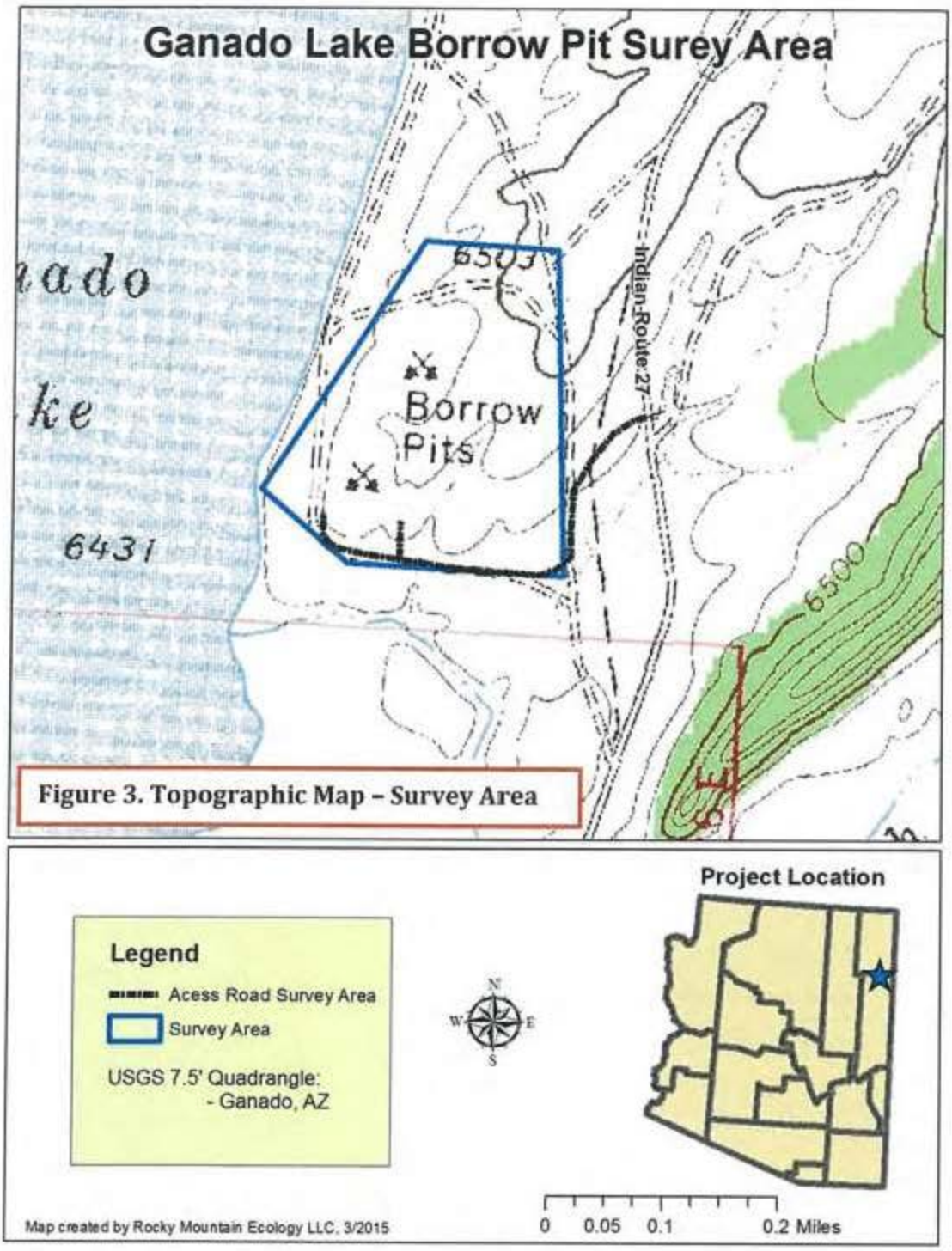


Figure 3. Topographic Map – Survey Area

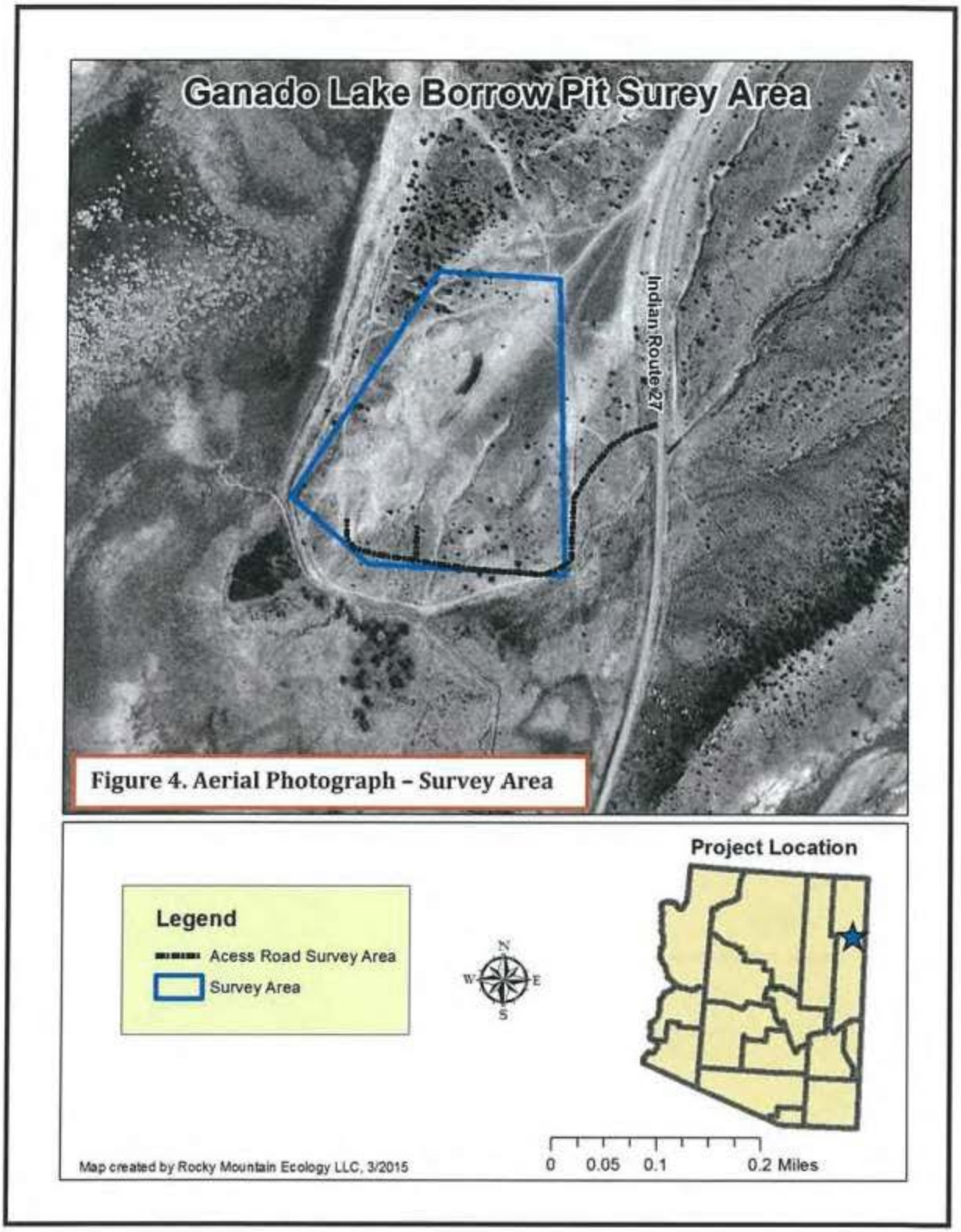


Figure 4. Aerial Photograph – Survey Area

4.2 Proposed Action

Expansion of an existing borrow pit by the proponent – FNF, is proposed near Ganado Lake in Apache County, Arizona. The project is located in the SE1/4 of Section 13, Township 27 North, Range 26 East of the Gila and Salt River Base and Meridian (Figures 1 – 3; Appendix A. Photographs). The proposed Ganado Borrow Pit would require an estimated clearance of 10.7 acres (9.7 for the pit and 1.0 for the access road), though the actual mine lease is for 28.474 acres. The Project is located on Tribal Trust Land. The project would occur approximately between 1 July and 31 December 2015.

The material would support reconstruction of SR 264 between MP 450 and 459.02. The material would be used for rehabilitation, widening and bridge replacement. Specifically, the work would include overlaying the existing pavement with asphaltic concrete, shoulder widening with asphaltic concrete aggregate base, placing asphalt-rubber/ asphalt-concrete friction coarse (AR-ACFC), and construction of a new Fish Wash Bridge to replace the existing bridge. Further, the work would include construction of guardrail, installation of new pipes, extension of the existing pipes, installation of barbed wire fence and cattle guards, pavement markings and other related work.

Up to 39,000 cubic yards of material would be excavated from the project area. Excavation of the material would entail the use of bulldozers, front-end loaders, trackhoes, backhoes and other heavy equipment as necessary. Upon site closure, it would be reclaimed and reseeded with a native seed mix approved by the ADOT.

5.0 Federal Proposed, Threatened, Endangered and Candidate Species Evaluated

Based on the field survey and verification with the master species list for Apache County (Table 2), no suitable habitat exists for federal proposed, endangered, threatened, or candidate species within the project area. All species listed on the USFWS IPAC consultation letter (Appendix B) for Apache County were analyzed in Table 2, below.

Table 1. Federal Threatened, Endangered, Proposed and Candidate Species List for the Project Area, Apache County, Arizona *(Source: http://ecos.fws.gov/ipac/wizard/trustResourceList!prepare.action; Appendix B)*

Birds	Status	Critical Habitat	Habitat Present	Habitat Requirements	Affected Habitat Description & Effects (Indirect, Direct, Cumulative)	Effect Determination
California condor (*Gymnogyps californianus*); Population: Entire, except where listed as an experimental population	E	Final designated critical habitat	No	"Nests within walls of major river canyons or tall, steep cliffs within desertscrub and grasslands. (Mikesic and Roth 2008). Only two extant populations are currently known: Southern Californian and Northern Arizona. Condors have not been documented breeding on the Navajo Nation, but are known to roost in Marble Canyon (Mikesic and Roth 2008).	The project area does not have significant cliffs that could support California condors. The nearest marginally suitable cliffs are over three miles east near Round Top. The closest Critical Habitat is hundreds of miles away. No direct, indirect or cumulative effects to populations or individuals of this species are anticipated from the Proposed Action, due to the lack of nesting habitat.	No effect – The Proposed Action would have no effect on the California condor, or on Critical Habitat.
Southwestern Willow flycatcher (*Empidonax traillii extimus*) Population: Entire	E	Final designated critical habitat	No	This species prefers multi-layered riparian zones (BISON-M 2015). Flycatchers are known to form territories and nest in very dense riparian vegetation ranging in height from about 12 to 29 feet. These habitats are most frequently dominated by willow but may also contain cottonwood, Russian olive and/or saltcedar. The primary habitat requirement is for very dense twig structure at the 12- to 29-foot height, plus proximity to water.	The project area does not contain any of the habitat structural or functional features. Specifically, there is no riparian habitat component within the project area. The Ganado lakeshore habitat does not harbor any of the structural features required. The closest Critical Habitat is 40 miles away north in the San Juan River valley. No indirect, direct or cumulative effects would be incurred from the Proposed	No effect – The Proposed Action is would have no effect on the Southwestern Willow Flycatcher, or on Critical Habitat.

					Action, due to the lack of habitat.	
Yellow-Billed Cuckoo (*Coccyzus americanus*) Population: Western U.S. DPS	T	Proposed	No	Western cuckoos breed in large blocks of riparian habitats, particularly woodlands with cottonwoods (*Populus fremontii*) and wouldows (*Salix* sp.). Dense understory foliage appears to be an important factor in nest site selection. This species occurs along waterways in lowland deciduous woods and thickets throughout New Mexico (BISON-M 2015).	The project area does not contain any of the habitat structural or functional features. Specifically, there is no riparian habitat component within the project area. The Ganado lakeshore habitat does not harbor any of the structural features required. The closest Critical Habitat is over 100 miles away in Northwestern New Mexico. No indirect, direct or cumulative effects would be incurred from the Proposed Action, due to the lack of habitat.	No effect – The Proposed Action is would have no effect on the yellow-billed cuckoo, or on Proposed Critical Habitat
Fishes						
Zuni bluehead sucker (*Castostomus discobolus yarrowi*)	E	Proposed	No	Zuni bluehead suckers occur within perennial streams of the Southwestern U.S. They utilize stream reaches with shade and pool and riffle habitats with coarse substrates. This species is generally found between 2,000 and 6,760 ft in elevation. They are known to occur in Kin Li Chee Creek in Arizona. (AZDGD 2015).	The project area does not contain any of the habitat structural or functional features described above (i.e., perennial water). The proposed disturbance would occur > 300 ft from the Ganado lakeshore (Figure 2), and thus would not impact it. The closest Proposed Critical Habitat is less than ten miles away to the Southeast in the Kinlichee Creek Unit. No indirect, direct or cumulative effects would be incurred from the Proposed	No effect – The Proposed Action would have no effect on the Zuni bluehead sucker, or on Proposed Critical Habitat.

					Action, due to the lack of habitat.	
Roundtail chub (Gila robusta); Population: Lower Colorado River Basin	C	No	No	This species occurs within the Little Colorado River,, the Bill Williams river basin, the Salt River, the Verde River, Arivaipa Creek and Eagle Creek within Arizona (AZDGF 2015). It breeds in spring and early summer. "Adults inhabit the most permanent water in cool to warm water mid-elevation streams, typically using pools and eddies, adjacent to rapids and boulders" (Mikesic and Roth 2008).	The project area does not contain any of the habitat structural or functional features described above (i.e., perennial water). The proposed disturbance would occur > 300 ft from the Ganado lakeshore (Figure 2), and thus would not impact it. No indirect, direct or cumulative effects would be incurred from the Proposed Action, due to the lack of habitat.	Not Likely to Jeopardize – The Proposed Action is not likely to jeopardize the continued existence of the roundtail chub.
Mammals						
Black-footed ferret (*Mustela nigripes*)	Exp	No	No	"Medium to large active prairie dog towns (> 197ac) or complex of towns. Prairie dogs are their main food source and burrows are used for denning and rearing young." The species historically utilized plains, desert grassland and desertscrub habitats" (Mikesic and Roth 2008). However, the species has been extirpated across its range.	No prairie dogs or prairie dog burrows were located during the field survey. No indirect, direct or cumulative effects would be incurred from the Proposed Action, due to the lack of prey base, and thus, suitable habitat.	No effect – The Proposed Action would have no effect on the black-footed ferret.
Reptiles						
Northern Mexican gartersnake (*Thamnophis eques megalops*)	T	Proposed	No	The species is found in both lotic and lentic habitats and occurs up to 8,500 ft in elevation. It forages along the banks of waterbodies and feeds primarily upon fish and leopard frogs (USFWS	The project area does not contain any of the habitat structural or functional features described above (i.e., lotic or lentic habitats). The closest Proposed	No effect – The Proposed Action would have no effect on the Northern Mexican gartersnake

				2015b).	Critical Habitat is approximately 120 miles away to the South. No indirect, direct or cumulative effects would be incurred from the Proposed Action, due to the lack of habitat.	

E = US Endangered PE = US Proposed C = US Candidate
T = US Threatened PT = US Proposed Exp: Experimental Population

6.0 Navajo-Listed Species

NESL species data for land-use actions was furnished by NNDFW (Appendix B). The NESL contains taxa from the entire Navajo Nation. NESL species whose distribution includes the project area were analyzed for impacts in Table 3, below.

Table 2. Navajo-Listed Species from the Navajo Endangered Species List
(Source : Consultation Responses – Appendix B)

Birds	Status	Critical Habitat	Habitat Present	Habitat Requirements	Affected Habitat Description & Impacts (Indirect, Direct, Cumulative)	Determination of Impacts
Clark's grebe (*Aechmophorus clarkii*)	G4	NA	No	"Nests on fresh-water lakes and marshes with extensive areas of open water bordered by emergent vegetation; uses lakes and occasionally small ponds during migration" (Mikesic and Roth 2008)	The project area does not contain any of the habitat structural or functional features described previously (i.e., perennial water). No lakeshore habitat or perennial water would be impacted by the Proposed Action. The proposed disturbance would occur > 300 ft from the Ganado lakeshore (Figure 2), and thus would not impact it. Thus, no indirect, direct or cumulative effects would be incurred from the Proposed	Individuals of this species would not be negatively impacted, and the Proposed Action is not likely to result in a trend toward federal listing or loss of population viability

					Action, due to the lack of habitat.	
Burrowing owl (*Athene cunicularia*)	G4	NA	Yes	This species inhabits both grassland and scrubland habitat types from elevations of 3,000 to 9,000 ft in elevation (BISON-M 2015). Specifically, burrowing owls inhabit dry, open, shortgrass, treeless plains, often associated with burrowing mammals.	Marginal habitat exists within the scrub habitat at the project area; however no burrows or burrowing owls were located during the field surveys. Potential direct effects: No direct impacts are expected. Potential indirect effects: Indirect impacts could include loss of up to 28.474 acres of habitat for owls that could otherwise inhabitat the landscape in the future. Potential cumulative effects: Cumulative effects could consist of habitat degradation from other mining projects, road construction projects, or livestock grazing activities in the surrounding area. However, suitable foraging habitat exists adjacent to the project area and burrowing owls in the vicinity are expected to forage in those locales. Moreover, Environmental Commitments discussed in Section 9.0 would be implemented to avoid or minimize any potential effects.	Individuals of this species would not be negatively impacted, and the Proposed Action is not likely to result in a trend toward federal listing or loss of population viability.
Golden eagle (*Aquila chrysaetos*)	G3	NA	Yes	"During the breeding season, golden eagles occur primarily in areas of mountain cliffs or canyons. In the West, it is often associated with	Marginal habitat exists within the scrub habitat at the project area; however no steep cliffs exist within or near then project area that would provide nesting	Individuals of this species would not be negatively impacted, and the Proposed Action is not likely to result in

				rimrock terrain adjacent to open desert or grassland areas. Suitable nesting sites may exist within a variety of surrounding habitats, from desert to mountain areas, although dense forests tend to be avoided. In Utah, Golden Eagles nest in grass, shrub, pinyon-juniper, and aspen-conifer habitats. In Arizona, the species prefers desert grasslands and chaparral habitats. Most common nesting areas in New Mexico are steep-walled mountain canyons. Although cliffs are the most common nesting substrate, trees or man-made structures are also sometimes used. Many nests have a wide view of surrounding area or are on prominent escarpments. Proximity to hunting grounds is an important factor in nest-site selection. Golden Eagles typically forage in open grassland or shrubland habitat, and tend to avoid agricultural areas. Although capable of killing large prey, including small ungulates and young domestic livestock, this species subsists primarily on rabbits, hares, ground squirrels, and prairie dogs", (New Mexico Avian Conservation Partners (NMACP) 2014).	habitat. The nearest marginally suitable cliffs are over three miles west near Round Top. No eagles were observed during the field surveys. Potential direct effects: No direct impacts are expected. Potential indirect effects: Indirect impacts could include loss of up to 28.474 acres of foraging habitat for eagles that could otherwise inhabitat the landscape in the future. Potential cumulative effects: Cumulative effects could consist of foraging habitat degradation from other mining projects, road construction projects, or livestock grazing activities in the surrounding area. However, suitable foraging habitat exists adjacent to the project area and golden eagles in the vicinity are expected to forage in those locales. Moreover, Environmental Commitments discussed in Section 9.0 would be implemented to avoid or minimize any potential effects.	a trend toward federal listing or loss of population viability.

Mountain Plover (*Charadius montanus*)	G4	NA	Yes	The breeding range of the Mountain Plover includes prairie grassland and open mesa portions of southern Canada, Montana, Wyoming, Colorado, and the northern half of New Mexico. The range may have formerly extended into southern New Mexico, and isolated breeding records exist for west Texas and the central Mexican Plateau. Most of the species population winters in central and southern California, but some birds winter in northern and central Mexico and southern Arizona. The species prefers grassland, semi-desert or badlands with short, sparse vegetation and significant bare areas for nesting. The species is known to breed on the Navajo Nation in New Mexico. Mountain plovers tend to be strongly associated with prairie dog colonies" (NMACP 2014).	Marginal foraging and nesting habitat exists within the grassland habitat components of the project area; however no mountain plovers were located during the field surveys. Potential direct effects: No direct impacts are expected. Potential indirect effects: Indirect impacts could include loss of up to 28.474 acres of habitat for mountain plovers that could otherwise inhabitat the landscape in the future. Potential cumulative effects: Cumulative effects could consist of habitat degradation from other mining projects, road construction projects, or livestock grazing activities in the surrounding area. However, suitable foraging habitat exists adjacent to the project area and mountain plovers in the vicinity are expected to forage in those locales. Moreover, Environmental Commitments discussed in Section 9.0 would be implemented to avoid or minimize any potential effects.	Individuals of this species would not be negatively impacted, and the Proposed Action is not likely to result in a trend toward federal listing or loss of population viability.
American Peregrine Falcon (*Falco peregrinus anatum*)	G4	NA	Yes	"Peregrine Falcons inhabit open spaces usually associated with high cliffs and bluffs overlooking rivers and coasts. Recently, many cities with tall buildings have become	Suitable foraging habitat does occur within the project area; suitable nesting habitat does not. The nearest marginally suitable cliffs are over three miles west near Round Top. No falcons were	Individuals of this species would not be negatively impacted, and the Proposed Action is not likely to result in a trend toward federal listing

				home to some peregrines. Some populations are migratory and travel great distances (as their Latin name implies)" (BISON-M 2015).	observed during the field surveys. Potential direct effects: No direct impacts are expected. Potential indirect effects: Indirect impacts could include loss of up to 28.474 acres of foraging habitat for falcons that could otherwise inhabitat the landscape in the future. Potential cumulative effects: Cumulative effects could consist of foraging habitat degradation from other mining projects, road construction projects, or livestock grazing activities in the surrounding area. However, suitable foraging habitat exists adjacent to the project area and peregrine falcons in the vicinity are expected to forage in those locales. Moreover, Environmental Commitments discussed in Section 9.0 would be implemented to avoid or minimize any potential effects.	or loss of population viability.
Bald eagle (*Haliaeetus leucocephalus*)	G2	NA	No	"Typically nest within trees in forested areas, especially mature and old-growth stands, adjacent to large bodies of water with suitable forage of waterfowl and fish" (Mikesic and Roth 2008). "Winter roost in large trees in forests, river bottoms or near canyon rimes	The project area does not contain any of the habitat structural or functional features described previously (i.e., perennial water). No lakeshore habitat or perennial water would be impacted by the Proposed Action. The proposed disturbance would occur > 300 ft from the Ganado lakeshore (Figure 2), and	Individuals of this species would not be negatively impacted, and the Proposed Action is not likely to result in a trend toward federal listing or loss of population viability.

				usually within a few miles of ponds, lakes and rivers with adequate prey" (Mikesic and Roth 2008).	thus would not impact it. Thus, no indirect, direct or cumulative effects would be incurred from the Proposed Action, due to the lack of habitat.	
Southwestern Willow flycatcher (*Empidonax traillii extimus*)	G2	Final designated critical habitat	No	See Table 2, above	See Table 2, above	See Table 2, above
Mammals						
Black-footed ferret (*Mustela nigripes*)	G2	NA	No	See Table 2, above	See Table 2, above	See Table 2, above
Reptiles and Amphibians						
Northern leopard frog (*Lithobates pipiens*)	G2	NA	No	This species occurs from 3280 - 8530 ft in elevation, and in a variety of permanent aquatic habitats where adequate depth provides escape from predators. These habitats include montane springs, streams, ponds, lakes, marshes, stock ponds, and plunge pools of canyon streams (BISON-M 2015).	The project area does not contain any of the habitat structural or functional features described previously (i.e., perennial water). No lakeshore habitat or perennial water would be impacted by the Proposed Action. The proposed disturbance would occur > 300 ft from the Ganado lakeshore (Figure 2), and thus would not impact it. Thus, no indirect, direct or cumulative effects would be incurred from the Proposed Action, due to the lack of habitat.	This species would not be negatively impacted, and the Proposed Action is not likely to result in a trend toward federal listing of loss or population viability

G1 = No longer occur on Navajo Nation, G2 "Endangered" = prospects of survival and recruitment unlikely, G3 "Endangered" = prospects of survival and recruitment likely in jeopardy in future, G4 = NNDFWL lacks sufficient data to make determination of listing in G2 or G3.

7.0 Migratory Birds

Due to the Executive Order 13186, signed on January 10, 2001 by President Clinton, emphasis has been placed on conservation of migratory birds, as defined by the Migratory Bird Treaty Act of 1918. Should vegetation clearance activities be proposed between 1 April and 31 August (i.e., during the avian breeding and nesting period), a migratory bird survey may be required by the Navajo Nation or ADOT within one week of vegetation clearance activities to identify and flag bird nests for avoidance.

8.0 Bald and Golden Eagles

The 1940 Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668c), prohibits "take" without a permit, of bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Disturbance means: "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." Other impacts covered under the Act include human-induced alterations around a previously used nest when eagles are not present. If these alterations agitate or bother an eagle (upon its return) such that breeding, feeding or sheltering habitats are disturbed or interrupted, and injury, death or nest abandonment occur, this shall be considered "take."

No eagles were observed within the project area during the field surveys. The closest cliffs that could provide marginally suitable nesting sites are more than three miles away.

9.0 Environmental Commitments

1) Impacts to terrestrial habitats would be minimized by limiting heavy equipment operation to the most open area available, and all efforts would be made to minimize damage to native vegetation.
2) To avoid direct impacts to migratory birds protected by the Migratory Bird Treaty Act (16 United States Code [USC] 703, et seq.), if deemed necessary by the Navajo Nation or the ADOT, a migratory/ nesting bird survey would be conducted within one week of commencing vegetation clearance (should work occur during the avian nesting period of 1 April – 31 August) to locate and flag any active birds nests for avoidance.

Construction would cease in the location if migratory bird nesting, is observed during the survey and the USFWS and/or Navajo Nation would be notified.

3) All stormwater discharges would be evaluated for compliance with National Pollutant Discharge Elimination System (NPDES) guidance, an NPDES permit, and/or a Stormwater Pollution Prevention Plan.
7) Existing roads would be used for access (where feasible) to minimize disturbance to vegetation.

10.0 Personnel

Shawn C. Knox

- Principal – Rocky Mountain Ecology, LLC
- Eighteen years of experience in natural resource surveys, environmental compliance and management

Clayton P. Bowers

- Senior Project Manager – Rocky Mountain Ecology, LLC
- Nine years of experience in natural resource surveys, environmental compliance and management

11.0 Consultation/ Coordination

This section includes individuals from the interdisciplinary team that were consulted during the development of this document.

Table 3 - Summary of agencies contacted during preparation of this document.

Organization
Navajo Natural Heritage Program
US Fish and Wildlife Service, Albuquerque Ecological Services
FNF Construction

11.0 References

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APPENDICES

Appendix A. Photographs

Photo 1. View from southeast corner facing northwest.

Photo 2. Road on the west boundary facing south.

Photo 3. View from the west boundary facing east.

Photo 4. Road on the south boundary.

Photo 5. View from the east boundary facing west.

Appendix B. Consultation Responses/ Master Species Lists

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arizona Ecological Services Field Office
2321 WEST ROYAL PALM ROAD, SUITE 103
PHOENIX, AZ 85021
PHONE: (602)242-0210 FAX: (602)242-2513
URL: www.fws.gov/southwest/es/arizona/;
www.fws.gov/southwest/es/EndangeredSpecies/lists/

Consultation Code: 02EAAZ00-2015-SLI-0426 April 16, 2015
Event Code: 02EAAZ00-2015-E-00452
Project Name: Ganado Lake Borrow Pit

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The Fish and Wildlife Service (Service) is providing this list under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The list you have generated identifies threatened, endangered, proposed, and candidate species, and designated and proposed critical habitat, that *may* occur within one or more delineated United States Geological Survey 7.5 minute quadrangles with which your project polygon intersects. Each quadrangle covers, at minimum, 49 square miles. Please refer to the species information links found at http://www.fws.gov/southwest/es/arizona/Docs_Species.htm or http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf for a quick reference, to determine if suitable habitat for the species on your list occurs in your project area.

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to determine whether projects may affect federally listed species and/or designated critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If the Federal action agency determines that listed species or critical habitat *may be affected* by a federally funded, permitted or authorized activity, the agency must consult with us pursuant to 50 CFR 402. Note that a "may affect" determination includes effects that may not be adverse and that may be beneficial, insignificant, or discountable. An effect exists even if only one individual or habitat segment may be affected. The effects analysis should include the entire action area, which often extends well outside the project boundary or "footprint" (e.g., downstream). If the Federal action agency determines that the action may jeopardize a *proposed* species or adversely modify *proposed* critical habitat, the agency must enter into a section 7 conference. The agency may choose to confer with us on an action that may affect proposed species or critical habitat.

Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend that they be considered in the planning process in the event they become proposed or listed prior to project completion. More information on the regulations (50 CFR 402) and procedures for section 7 consultation, including the role of permit or license applicants, can be found in our Endangered Species Consultation Handbook at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

In addition to species listed under the Act, we advise you to consider species protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668 *et seq.*). Both laws prohibit the take of covered species. The list of MBTA-protected birds is in 50 CFR 10.13 (for an alphabetical list see http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/MBTANDX.HTML). The Service's Division of Migratory Birds is the lead for consultations under these laws (Southwest Regional Office phone number: 505/248-7882). For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following web site: http://www.fws.gov/migratorybirds/mbpermits.html. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g. cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/southwest/es/arizona/CellTower.htm

Although bald eagles (*Haliaeetus leucocephalus*) are no longer listed under the Act, they are protected under both the BGEPA and the MBTA. If a bald eagle nest occurs in or near the proposed project area, our office should be contacted. An evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles (see http://www.fws.gov/southeast/es/baldeagle/) and the Division of Migratory Birds consulted if necessary. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles (see http://www.fws.gov/midwest/eagle/pdf/NationalBaldEagleManagementGuidelines.pdf).

Activities that involve streams and/or wetlands are regulated by the U.S. Army Corps of Engineers (Corps). We recommend that you contact the Corps to determine their interest in proposed projects in these areas. For activities within a National Wildlife Refuge, we recommend that you contact refuge staff for specific information about refuge resources.

If your action is on Indian land or has implications for off-reservation tribal interests, we encourage you to contact the tribe(s) and the Bureau of Indian Affairs (BIA) to discuss potential

tribal concerns, and to invite any affected tribe and the BIA to participate in the section 7 consultation. In keeping with our tribal trust responsibility, we will notify tribes that may be affected by proposed actions when section 7 consultation is initiated. For more information, please contact our tribal coordinator, John Nystedt, at (928) 556-2160 or John_Nystedt@fws.gov.

The State of Arizona protects some species not protected by Federal law. We recommend you contact the Arizona Game and Fish Department (AGFD) for animals and Arizona Department of Agriculture for plants to determine if species protected by or of concern to the State may occur in your action area. The AGFD has an Environmental Review On-Line Tool that can be accessed at http://www.azgfd.gov/hgis/. We also recommend that you coordinate with the AGFD regarding your project.

For additional communications regarding this project, please refer to the consultation Tracking Number in the header of this letter. We appreciate your concern for threatened and endangered species. If we may be of further assistance, please contact Brenda Smith at 928/556-2157 for projects in Northern Arizona, our general Phoenix number (602/242-0210) for central Arizona, or Jean Calhoun at 520/670-6150 (x223) for projects in southern Arizona.

Sincerely,

/s/

Steven L. Spangle

Field Supervisor

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Ganado Lake Borrow Pit

Official Species List

Provided by:

Arizona Ecological Services Field Office
2321 WEST ROYAL PALM ROAD, SUITE 103
PHOENIX, AZ 85021
(602) 242-0210
http://www.fws.gov/southwest/es/arizona/
http://www.fws.gov/southwest/es/EndangeredSpecies/lists/

Consultation Code: 02EAAZ00-2015-SLI-0426
Event Code: 02EAAZ00-2015-E-00452

Project Type: Mining

Project Name: Ganado Lake Borrow Pit
Project Description: The proponent proposed to mine 10.7 acres of borrow material to support SR 264 Reconstruction.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

United States Department of Interior
Fish and Wildlife Service

Project name: Ganado Lake Borrow Pit

Project Location Map:

Project Coordinates: MULTIPOLYGON (((-109.5145038 35.7364822, -109.5121863 35.7406623, -109.5100406 35.740314, -109.5097831 35.7359249, -109.5102981 35.7356114, -109.5134309 35.7355069, -109.5145038 35.7364822)))

Project Counties: Apache, AZ

Endangered Species Act Species List

There are a total of 7 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	Status	Has Critical Habitat	Condition(s)
California condor *(Gymnogyps californianus)* Population: Entire, except where listed as an experimental population	Endangered	Final designated	
Southwestern Willow flycatcher *(Empidonax traillii extimus)* Population: Entire	Endangered	Final designated	
Yellow-Billed Cuckoo *(Coccyzus americanus)* Population: Western U.S. DPS	Threatened	Proposed	
Fishes			
Roundtail chub *(Gila robusta)* Population: Lower Colorado River Basin DPS	Candidate		
Zuni Bluehead Sucker *(Catostomus discobolus yarrowi)*	Endangered	Proposed	
Mammals			
Black-Footed ferret *(Mustela nigripes)*	Experimental		

Population: U.S.A. (specific portions of AZ, CO, MT, SD, UT, and WY)	Population, Non-Essential		
Reptiles			
Northern Mexican gartersnake *(Thamnophis eques megalops)*	Threatened	Proposed	

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Document No. 003982 Date Issued 05/20/2015

EXECUTIVE OFFICIAL REVIEW

Title of Document: FNF Construction Inc for Borrow Lease Contact Name: DRAPER, HOWARD

Program/Division: DIVISION OF NATURAL RESOURCES

Email: howarddraper@frontiernet.net Phone Number: 928/871-6447

☐ **Business Site Lease** — Sufficient / Insufficient

1. Division: _____ Date: _____ ☐ ☐
2. Office of the Controller: _____ Date: _____ ☐ ☐
(only if Procurement Clearance is not issued within 30 days of the initiation of the E.O. review)
3. Office of the Attorney General: _____ Date: _____ ☐ ☐

☐ **Business and Industrial Development Financing, Veteran Loans, (i.e. Loan, Loan Guarantee and Investment) or Delegation of Approving and/or Management Authority of Leasing transactions**

1. Division: _____ Date: _____ ☐ ☐
2. Office of the Attorney General: _____ Date: _____ ☐ ☐

☐ **Fund Management Plan, Expenditure Plans, Carry Over Requests, Budget Modifications**

1. Office of Management and Budget: _____ Date: _____ ☐ ☐
2. Office of the Controller: _____ Date: _____ ☐ ☐
3. Office of the Attorney General: _____ Date: _____ ☐ ☐

☐ **Navajo Housing Authority Request for Release of Funds**

1. NNEPA: _____ Date: _____ ☐ ☐
2. Office of the Attorney General: _____ Date: _____ ☐ ☐

☐ **Lease Purchase Agreements**

1. Office of the Controller: _____ Date: _____ ☐ ☐
(recommendation only)
2. Office of the Attorney General: _____ Date: _____ ☐ ☐

☐ **Grant Applications**

1. Office of Management and Budget: _____ Date: _____ ☐ ☐
2. Office of the Controller: _____ Date: _____ ☐ ☐
3. Office of the Attorney General: _____ Date: _____ ☐ ☐

☐ **Five Management Plan of the Local Governance Act, Delegation of an Approving Authority from a Standing Committee, Local Ordinances (Local Government Units), or Plans of Operation/Division Policies Requiring Committee Approval**

1. Division: _____ Date: _____ ☐ ☐
2. Office of the Attorney General: _____ Date: _____ ☐ ☐

☐ **Relinquishment of Navajo Membership**

1. Land Department: _____ Date: _____ ☐ ☐
2. Elections: _____ Date: _____ ☐ ☐
3. Office of the Attorney General: _____ Date: _____ ☐ ☐

Pursuant to 2 N.N.C. § 164 and Executive Order Number 07-2013

☐ **Land Withdrawal or Relinquishment for Commercial Purposes**

			Sufficient	Insufficient
1. Division:		Date:	☐	☐
2. Office of the Attorney General:		Date:	☐	☐

☐ **Land Withdrawals for Non-Commercial Purposes, General Land Leases and Resource Leases**

1. NLD		Date:	☐	☐
2. F&W		Date:	☐	☐
3. HPD		Date:	☐	☐
4. Minerals		Date:	☐	☐
5. NNEPA		Date:	☐	☐
6. DNR		Date:	☐	☐
7. DOJ		Date:	☐	☐

☒ ~~Rights-of-Way~~ Borrow Lease

1. NLD		Date: 27 May 15	☒	☐
2. F&W See Ltr of 6/4/15		Date: 6/10/15	☒ 8/5/15	☒
3. HPD		Date: 10/15/15	☒	☐
4. Minerals Subject to proposed change		Date: 7/1/15	☒	☐
5. NNEPA		Date: 7-8-2015	☒	☐
6. Office of the Attorney General (IC)		Date: 8/11/15	☒	☐
7. OPVP		Date: 8-12-15	☒	☐

☐ **Oil and Gas Prospecting Permits, Drilling and Exploration Permits, Mining Permit, Mining Lease**

1. Minerals		Date:	☐	☐
2. OPVP		Date:	☐	☐
3. NLD		Date:	☐	☐

☐ **Assignment of Mineral Lease**

1. Minerals		Date:	☐	☐
2. DNR		Date:	☐	☐
3. DOJ		Date:	☐	☐

☐ **ROW (where there has been no delegation of authority to the Navajo Land Department to grant the Nation's consent to a ROW)**

1. NLD		Date:	☐	☐
2. F&W		Date:	☐	☐
3. HPD		Date:	☐	☐
4. Minerals		Date:	☐	☐
5. NNEPA		Date:	☐	☐
6. DNR		Date:	☐	☐
7. DOJ		Date:	☐	☐
8. OPVP		Date:	☐	☐

☐ **OTHER:**

1.		Date:	☐	☐
2.		Date:	☐	☐
3.		Date:	☐	☐
4.		Date:	☐	☐
5.		Date:	☐	☐

THE NAVAJO NATION
HISTORIC PRESERVATION DEPARTMENT
PO Box 4950, Window Rock, Arizona 86515
TEL: (928) 871-7198 FAX: (928) 871-7886

CULTURAL RESOURCE COMPLIANCE FORM

ROUTE COPIES TO:
☑ CASA

NNHPD NO.: HPD-15-262
OTHER PROJECT NO.: CASA 15-16

PROJECT TITLE: Cultural Resource Inventory, FNF Construction Inc.'s Proposed Ganado Borrow Pit and Access Road, ADOT Project ASIP-STP-264-A(217)T, Apache County, Arizona

LEAD AGENCY: BIA/NR

SPONSOR: Tressia Contreras, FNF Construction, Inc., 115 S. 48th St., PO Box 5005, Tempe, Arizona 85281

PROJECT DESCRIPTION: The proposed undertaking will involve the reuse and expansion of an existing borrow pit and access road for the SR 264 road construction. The gravel pit measures 26.436-acres the access road measures0.92-mile with a 20-ft wide right-of-way. The total area of effect is 28.474-acres. Ground disturbance will be intensive and extensive with the use of heavy equipment.

LAND STATUS: Navajo Tribal Trust
CHAPTER: Ganado
LOCATIONS: T. 27N, R. 26 E – Sec. 13; Ganado Quadrangle, Apache County, Arizona G&SRPM

PROJECT ARCHAEOLOGIST: Mary Errickson
NAVAJO ANTIQUITIES PERMIT NO.: B15162
DATE INSPECTED: 03/30/15 – 04/06/15
DATE OF REPORT: 04/10/15
TOTAL ACREAGE INSPECTED: 43.049- ac

METHOD OF INVESTIGATION: Class III pedestrian inventory with transects spaced 15_ m apart.

LIST OF CULTURAL RESOURCES FOUND: (3) Sites (AZ-P-20-70; AZ-P-20-82; AZ-P-20-177); (1) Isolated Occurrence (IO)
LIST OF ELIGIBLE PROPERTIES: (3) Sites (AZ-P-20-70; AZ-P-20-82; AZ-P-20-177)
LIST OF NON-ELIGIBLE PROPERTIES: (1) IO
LIST OF ARCHAEOLOGICAL RESOURCES: (3) Sites (AZ-P-20-70; AZ-P-20-82; AZ-P-20-177)

EFFECT/CONDITIONS OF COMPLIANCE: No Historic Properties will be affected with the following conditions:

Sites AZ-P-20-70; AZ-P-20-82; AZ-P-20-177:
1.) Site boundaries must be flagged & fenced under the direction of a qualified archaeologist PRIOR to all construction.
2.) Fences will remain in place for the duration of the project.
3.) All construction/ground disturbing activities will avoid the sites by a minimum of 50-ft from the fenced site boundaries.

In the event of a discovery ["discovery" means any previously unidentified or incorrectly identified cultural resources including but not limited to archaeological deposits, human remains, or locations reportedly associated with Native American religious/traditional beliefs or practices], all operations in the immediate vicinity of the discovery must cease, and the Navajo Nation Historic Preservation Department must be notified at (928) 871-7198.

FORM PREPARED BY: Tamara Billie
FINALIZED: May 15, 2015

Notification to Proceed Recommended ☑ Yes ☐ No
Conditions: ☑ Yes ☐ No

Tamara Billie 5/15/15
The Navajo Nation Historic Preservation Office — Date

Navajo Region Approval ☑ Yes ☐ No

Acting BIA – Navajo Regional Office — 6/1/15 Date

TLM 6/1/15

COMPLETE ARCHAEOLOGICAL SERVICE ASSOCIATES
P.O. Box 1777 • Cortez, Colorado 81321 • (970) 565-9229

April 13, 2015

Tamara Billie
CRCS, NNHPD
P.O. Box 4950
Window Rock, AZ 86515

RE: Permit B15162 - FNF Construction Inc.'s Proposed Ganado Borrow Pit and Access Road - CASA 15-16

Dear Tamara,

Enclosed are two copies of an inventory report for a borrow pit expansion and access road in Ganado, Arizona for FNF Construction, Inc. Three sites were identified during the project. It is recommended that all sites be fenced for the duration of the undertaking.

The NNHPD permit fee of $ 110.00 (B15162) has been sent directly to the Tribal Accounting Office.

Please review and give me a call if you have any questions.

Sincerely,

Mary Errickson

Mary Errickson
CASA

Enclosures: 2 copies report
2 copies of 3 site forms
1 copy AIRS Form
2 copies of Burial Form

cc: √Tressia Contreras, FNF Construction, Inc.

Cultural Resource Inventory

FNF Construction Inc's
Proposed Ganado Borrow Pit and Access Road
ADOT project HSIP-STP-264-A(217)T
Apache County, Arizona

Prepared by:

Mary Errickson
Complete Archaeological Service Associates
P.O. Box 1777
Cortez, Colorado 81321

CASA 15-16

Prepared for:

FNF Construction, Inc
P.O. Box 5005
115 South 48th Street
Tempe, Arizona 85281

Submitted to:

Navajo Nation Historic Preservation Department
P.O. Box 4950
Window Rock, Arizona 86515

Permit:
NNCRIP B15162

April 10, 2015

Cultural Resource Inventory

FNF Construction Inc's
Proposed Ganado Borrow Pit and Access Road
ADOT project HSIP-STP-264-A(217)T
Apache County, Arizona

Prepared by:

Mary Errickson
Complete Archaeological Service Associates
P.O. Box 1777
Cortez, Colorado 81321

CASA 15-16

Prepared for:

FNF Construction, Inc.
P.O. Box 5005
115 South 48th Street
Tempe, Arizona 85281

Submitted to:

Navajo Nation Historic Preservation Department
P.O. Box 4950
Window Rock, Arizona 86515

Permit:
NNCRIP B15162

April 10, 2015

Abstract

A cultural resource inventory was carried out for a proposed 26.436 acre materials pit and 0.92 mile access road in Ganado, Arizona. FNF Construction, Inc. proposes to re-open and expand a borrow pit for use in construction along State Road 264 between mileposts 450 - 459.02 for ADOT project HSIP-STP-264-A(217)T. The inventory was conducted by Mary Errickson of Complete Archaeological Service Associates (CASA) between March 30 and April 6, 2015. The project areas are located on Navajo Tribal Trust lands within the Ganado Chapter of the Fort Defiance Agency. The project was carried out under the provisions of Navajo Nation Cultural Resource Inventory Permit B15162, issued to CASA.

A total of 43.049 acres was inventoried for the project in Apache County, Arizona. A 31.832 acre tract, including the staked pit and a 50 foot buffer zone, was inventoried for the 26.436 acre gravel pit. A 100 foot-wide corridor (11.217 ac) was inventoried for a 20 foot-wide ROW (2.038 ac) along the access road. The portion of the access road between Curves 11 and 12 (Attachment B) will not be used due to avoidance fencing stipulations around site AZ-P-20-82. Total area of potential effect is 28.474 acres for the gravel pit and access road.

Two previously recorded sites, AZ-P-20-70 and AZ-P-20-82, one new site, AZ-P-20-177, and one Isolated Occurrence (IO) were identified during the project. All sites are considered significant and are recommended as eligible for nomination to the NRHP under criterion d and for protection under ARPA. Site AZ-P-20-70 is eligible for protection under AIRFA and NAGPRA. A determination of "No Historic Properties Affected" is recommended for FNF Construction Inc.'s proposed Ganado Borrow Pit and access road with the following stipulations for avoidance: 1) under the direction of a qualified archaeologist, a 100 foot-wide buffer zone should be fenced around site AZ-P-20-70 for the duration of the project and 2) under the direction of a qualified archaeologist, 50 foot-wide buffer zones should be fenced around sites AZ-P-20-82 and AZ-P-20-177 for the duration of the project.

INTRODUCTION

A cultural resource inventory was carried out for FNF Construction Inc. for a proposed sand borrow pit and access road near Ganado Lake, Arizona. (Figures 1-2; Attachment B). Materials obtained from the pit will be utilized in construction along U.S. 264 between MP 450 and 459.2 under ADOT Project HSIP-STP-264-A(217)A. The fieldwork was conducted by Mary Errickson of Complete Archaeological Service Associates (CASA) between March 30 and April 6, 2015. The project areas are located on Navajo Tribal Trust lands within the Ganado Chapter of the Ft. Defiance Agency. The project was carried out under the provisions of Navajo Nation Cultural Resource Inventory Permit B15162, issued to CASA.

PROJECT LOCATION AND DESCRIPTION

The project area is located approximately two miles northeast of Ganado and two miles north of U.S. 264 in Apache County, Arizona. FNF Construction, Inc. will re-open and expand an existing borrow pit located between BIA 27 and Ganado Lake. Approximately half of the proposed borrow pit has been previously mined and most of the access road has been previously bladed, levelled, and partially graveled. The 7.5 minute USGS quadrangle map for the project is Ganado, Arizona dated 1973. A complete legal description of the proposed project is presented below.

Legal Location: **T 27N, R 26E:**

Pit / Access Road: **Section 13:** portions of the SE 1/4

UTM Location:
NAD 83

Pit:
NW Corner Pt. a - Zone 12, 634559mE / 3956139mN
SW Corner Pt. b - Zone 12, 634410mE / 3955708mN
SE Corner Pt. c - Zone 12, 634751mE / 3955507mN
NE Corner Pt. d - Zone 12, 634719mE / 3956074mN

Road:
BOL at BIA 27 - Zone 12, 634872mE / 3955888mN
Curve 1 - Zone 12, 634762mE / 3955908mN
Curve 4 - Zone 12, 634751mE / 3955507mN
Curve 7 - Zone 12, 634405mE / 3955885mN
EOL Curve 11 - Zone 12, 634709mE / 3956108mN

The project area lies within the general physiographic province of the Colorado Plateau along the southwestern slopes of the Defiance Plateau. The Defiance Plateau is an uplifted oval area characterized by rolling-to-flat topography, with rock outcrops and steep canyons along the periphery of the plateau. This portion of the Plateau is comprised primarily of De Chelly Sandstone. Soils, predominantly sandy and sandy clay loams, are derived from the underlying sandstone. Vegetation zones include pine forest, pinyon-juniper woodland, shrubland, and grassland. An overview of the environment and physical setting of the general project area has been published as a result of the Transwestern Pipeline Project (Eck 1994).

The proposed pit area encompasses the southern slopes of a prominent, north-south trending dunal ridge overlooking the alluvial flats of the Pueblo Colorado Wash valley. The western half of the pit, which has been previously mined numerous times, lies just east of Ganado Lake. Several track roads cross the proposed pit expansion area. The access road was constructed and used during previous borrow projects and is presently used by local residents and hikers as access to the eastern shore of Ganado Lake. The proposed access road commences at BIA Route 27 at MP 2, bends southward, and continues around the periphery of the pit. The portion of the road between Curves 11 and 12 (Attachment B) will not be used due to avoidance fencing around site AZ-P-20-82.

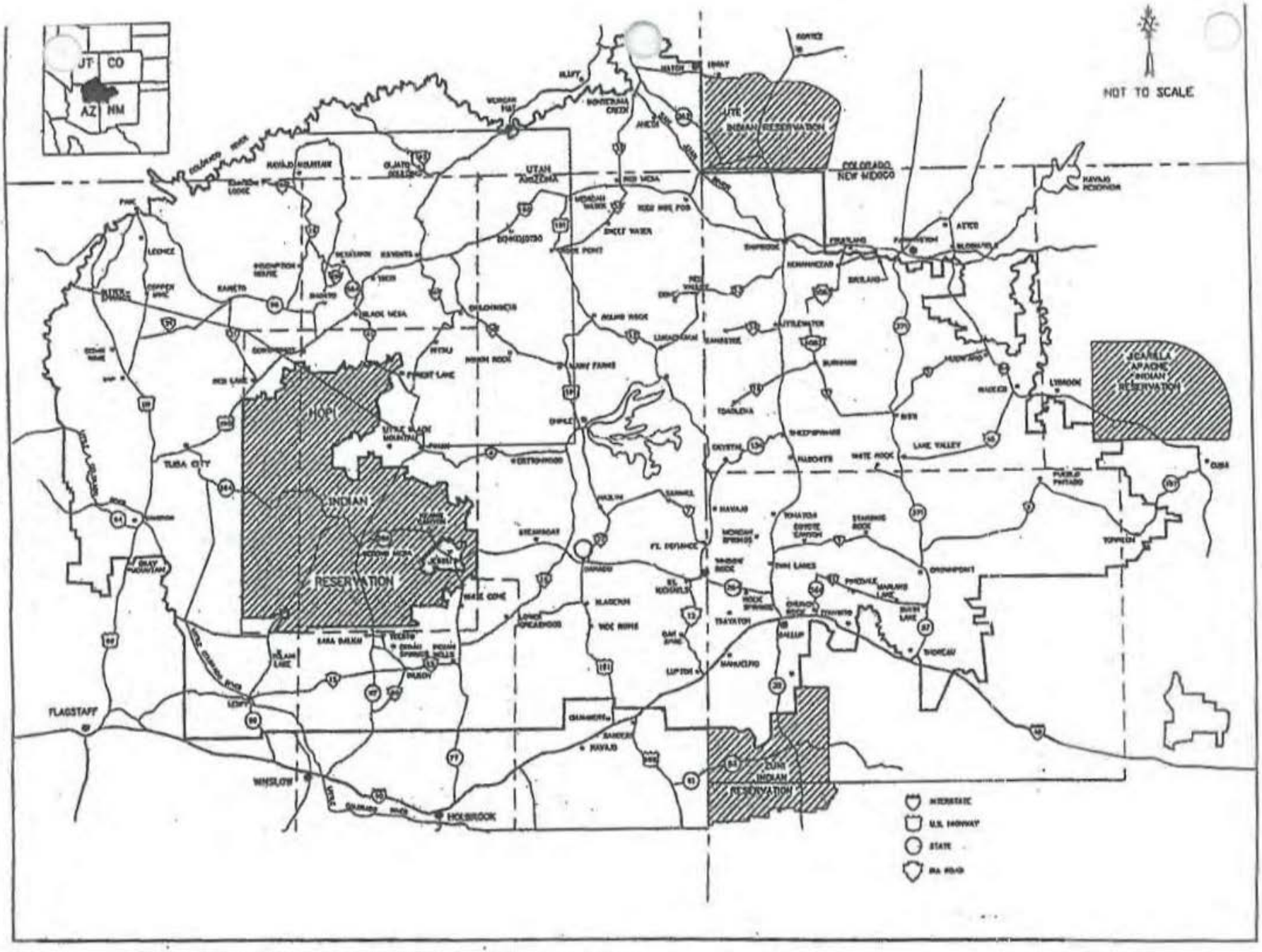

Figure 1. Location map, project area in northeastern Arizona.

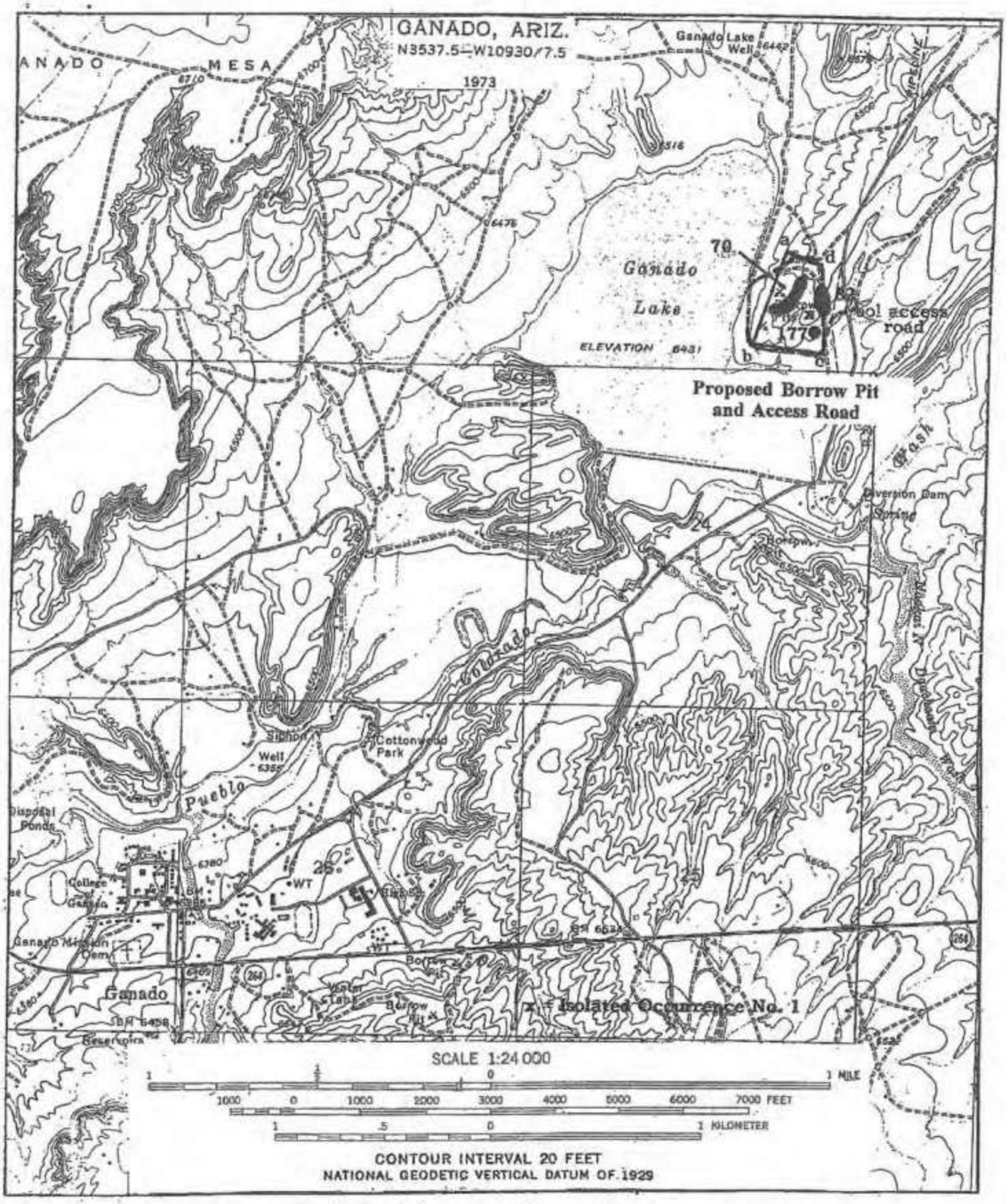

Figure 2. Location map, proposed borrow pit, access road, sites AZ-P-20-70, AZ-P-20-82, and AZ-P-20-177, and IO #1.

Elevation of the undisturbed pit area varies slightly between 6500 feet on the north side to 6460 on the south side. The project area is located within the Upper Sonoran Life Zone. The dominant plant community is a scrub-grassland. Vegetation within the undisturbed pit area includes sagebrush, rabbitbrush, snakeweed, bunch grasses, prickly pear, and wolfberry.

PREVIOUS RESEARCH AND CULTURE HISTORY

A record search was conducted at the offices of the Cultural Resource Compliance Section and the Traditional Cultural Program of the Navajo Nation Historic Preservation Department in Window Rock on March 30, 2015. Previously recorded sites located within 100 m of project areas are listed in Table 1. The entire pit and access road areas were previously inventoried under three projects in the early 1990s (HPD 91-065; HPD 93-302; HPD 93-594). The original reference for sites AZ-K-6-19 and AZ-K-6-20 was not readily available at NNHPD but the sites were re-recorded as AZ-P-20-70 (HPD 93-302).

Table 1. Previously recorded sites within 100 m of project areas.

Site No.	Affiliation	Site Type	Reference
AZ-P-20-70	Basketmaker III-Pueblo I	Habitation	93-302
AZ-P-20-71	Re-recorded as part of AZ-P-20-70		93-302
AZ-P-20-81	Unknown	Lithic Scatter	91-065
AZ-P-20-82	Basketmaker III-Pueblo I	Artifact Scatter	91-065
AZ-K-6-19	No information		
AZ-K-6-20	No information		

Excavations by Fuller and Chang (1978) and Mount and others (1993) at Wide Reed Ruin indicate that the Ganado area was occupied continuously from BMIII through PIII. Excavation of the Sand Dune Site (Jones 1988) places the historic occupation of the Ganado area as early as the mid-eighteenth century. According to Van Valkenburgh (1941) Ganado is named after Ganado Mucho, the last peace chief of the Navajo in the late 1800s. Trading posts were established in Ganado in the 1870s, of which the most famous is the Hubbell Trading Post.

One Traditional Cultural Property (TCP) is located in the vicinity of the project area. *Be' ek' id Hatsoh* / Big Lake / Ganado Lake (#43) lies on the western side of the project area. Mr. Tim Begay of the TCP Department indicated that the TCP refers to the channel which feeds the lake and determined that the present undertaking will have no adverse impacts to the TCP (Attachment A).

SURVEY METHODOLOGY

The Class III inventory was conducted by Mary Errickson between March 30 and April 6, 2015. The project area was inventoried by the archaeologist walking multiple, parallel, zig-zag, pedestrian transects spaced no more than 15 m apart within the staked pit and a 50 foot buffer zone. A 100 foot-wide corridor was inventoried for a 20 foot-wide easement for the access road.

Sites are defined as cultural manifestations containing ten or more artifacts in a 10 square meter area and/or the location of an event, a prehistoric or historic activity, or a building or structure, whether standing, ruined, or vanished, where the location itself maintains historic, archaeological, or traditional cultural value regardless of the value of the existing structure. Isolated occurrences (IOs) are any non-architectural feature or assemblage of less than 10 artifacts in an area

10 square meters or less.

During the inventory, a discussion was conducted with the Ganado Community Service Coordinator, Harry J. Yazzie, concerning TCPs, graves, or other concerns within or near the project area. Mr. Yazzie was aware of the project area and the location of AZ-P-20-70. Mr. Yazzie stated that the Chapter had no concerns about re-using the pit as long as the cultural resources were adequately protected.

INVENTORY RESULTS

Two previously recorded sites, AZ-P-20-70 and AZ-P-20-82, one new site, AZ-P-20-177, and one IO were identified during the project.

SITE DESCRIPTIONS

Site Number:	**AZ-P-20-70**
USGS Map:	Ganado, AZ 1973
Legal Location:	NE, SW, SE and the SE, NE, SE of Sec. 13, T 27N, R 26E, G&SRPM, Apache County, Arizona
UTM:	Zone 12, 634570mE / 3955950mN (NAD 83)
Site Type:	Habitation
Affiliation:	Basketmaker III - middle Pueblo I, A.D. 550 - 800
Site Size:	250 m x 62 m = 15,500 m ^{2}
Setting:	The site is situated on the crest of a north-south trending dunal slope. The site has been partially disturbed by erosion along the steep, upper eastern slope of a borrow pit and by a track road. Vegetation is sparse and includes snakeweed, various grasses, dropseed, narrow leaf yucca, and prickly pear.
Description:	The site was previously recorded during an earlier borrow pit project (HPD 93-302 - 93-302.2). The site (Figure 3) is a Basketmaker III or early-middle Pueblo I habitation which is exposed along the upper eastern edge of a borrow pit and within a track road. Erosion along the upper edge of the borrow pit wall and on-going local use of the track road are heavily impacting the western edge of the site. Feature 1 contains the remnants of a small roomblock and a probable pithouse associated with two prehistoric burials. A roomblock of 2-3 rooms is indicated by upright slab wall lines and rubble which are collapsing downslope into the borrow pit. The roomblock extends approximately 5 m x 2 m and is cut by a small erosional channel. A squarish ash stain suggestive of a burned pithouse lies east of the roomblock. During flagging and re-evaluation of the site in 2002, two burials were observed eroding out of the roomblock area. Subsequently, Ron Maldonaldo of NNHPD assessed the condition of the burials but it was not noted in NNHPD files whether the burials were stabilized or re-interred elsewhere within the site boundaries. Feature 2 is a large, faint stain which may represent a structure or large feature. A continuous artifact and burned rock scatter extends along the upper eastern edge of the pit to the south and southwest of Features 1 and 2. A bulldozed dirt pile containing artifacts lies just east of the road. Approximately 500 sherds of Lino Gray and lesser amounts of La Plata B/w are present within the site. Flaked lithics (100+) are limited to items of petrified wood, primarily shatter and secondary and tertiary flakes.

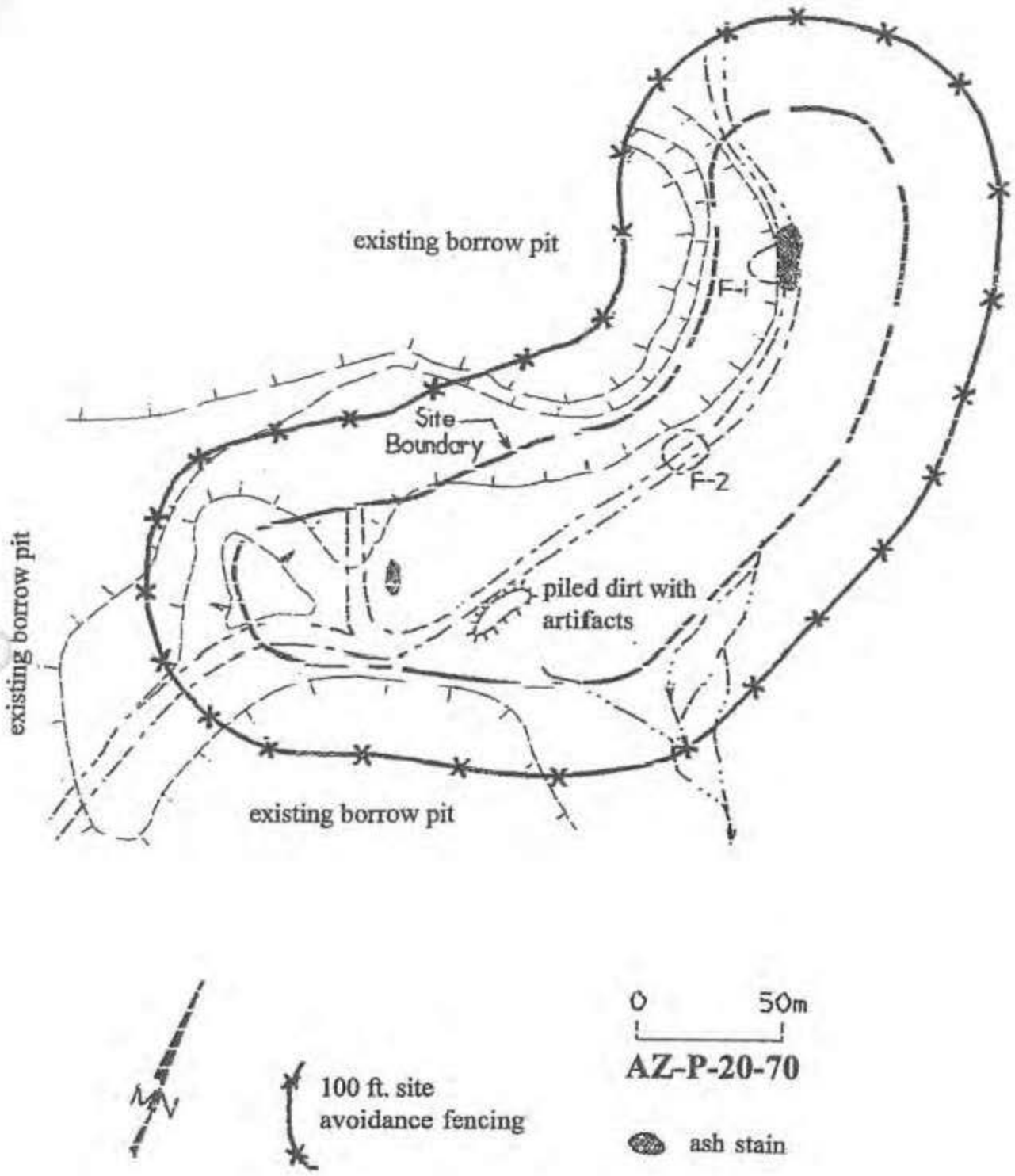

Figure 3. Plan map, AZ-P-20-70 and avoidance fencing.

Although the condition of Features 1 and 2 is poor due to on-going erosion of the upper borrow pit wall, it is likely that substantial, buried midden deposits and possibly architectural features are present within the site.

Significance: The site is over 100 years of age and is recommended as eligible for nomination the NRHP under criterion d and for protection under ARPA. The site has known qualities meriting protection under AIRFA and NAGPRA.

Project Effect: The site is located within the proposed pit expansion area.

Recommendations: A determination of "no historic properties affected is recommended with the stipulations that the site and a 100 foot-wide buffer zone be temporarily fenced as shown in Figure 3 under the direction of a qualified archaeologist for the duration of the project.

Site Number: **AZ-P-20-82**
USGS Map: Ganado, AZ 1973
Legal Location: NW, SE, SE of Sec. 13, T 27N, R 26E, G&SRPM, Apache County, Arizona
UTM: Zone 12, 634726mE / 3955813mN (NAD 83)
Site Type: Artifact Scatter
Affiliation: Basketmaker III - middle Pueblo I, A.D. 550 - 800
Site Size: 70 m x 50 m = 3,500 m ^{2}

Setting: The site is situated on the crest and east-facing slope of a north-south trending dunal ridge overlooking the Pueblo Colorado Wash valley to the south. Occasional juniper is present within a shrubland of rabbitbrush, snakeweed, prickly pear, wolfberry, prickly pear, and bunch grasses. A bladed gas pipeline ROW borders the site to the east.

Description: The site was originally recorded during an inventory around Ganado Lake (HPD 91-065) and was misplotted slightly to the south on the Ganado, AZ USGS map. The site (Figure 4) is an extensive artifact and burned rock scatter exposed within and along a deep, wide track road. There is no evidence of architecture, but the size of the site and quantities of artifacts suggests that a habitation is present. Ceramics (200+) are limited to Lino Gray and small quantities of La Plata B/w. Flaked lithics (200+) include various colors of petrified wood and chalcedony. Flaked items are secondary and tertiary flakes and shatter. A one-hand, sandstone, unifacial mano lies along the southern edge of the site.

Significance: The site is over 100 years of age and is recommended as eligible for nomination the NRHP under criterion d and for protection under ARPA. The site has no known qualities meriting protection under AIRFA.

Project Effect: The site is located within the proposed pit expansion area and within the proposed access road between Curves 11 and 12 (Attachment B). The portion of the access road through the site and within 50 feet of the site will be not be used due to avoidance fencing around site AZ-P-20-82.

Recommendations: A determination of "no historic properties affected is recommended with the stipulations that the site and a 50 foot-wide buffer zone be temporarily fenced as shown in Figure 4 under the direction of a qualified archaeologist for the duration of the project.

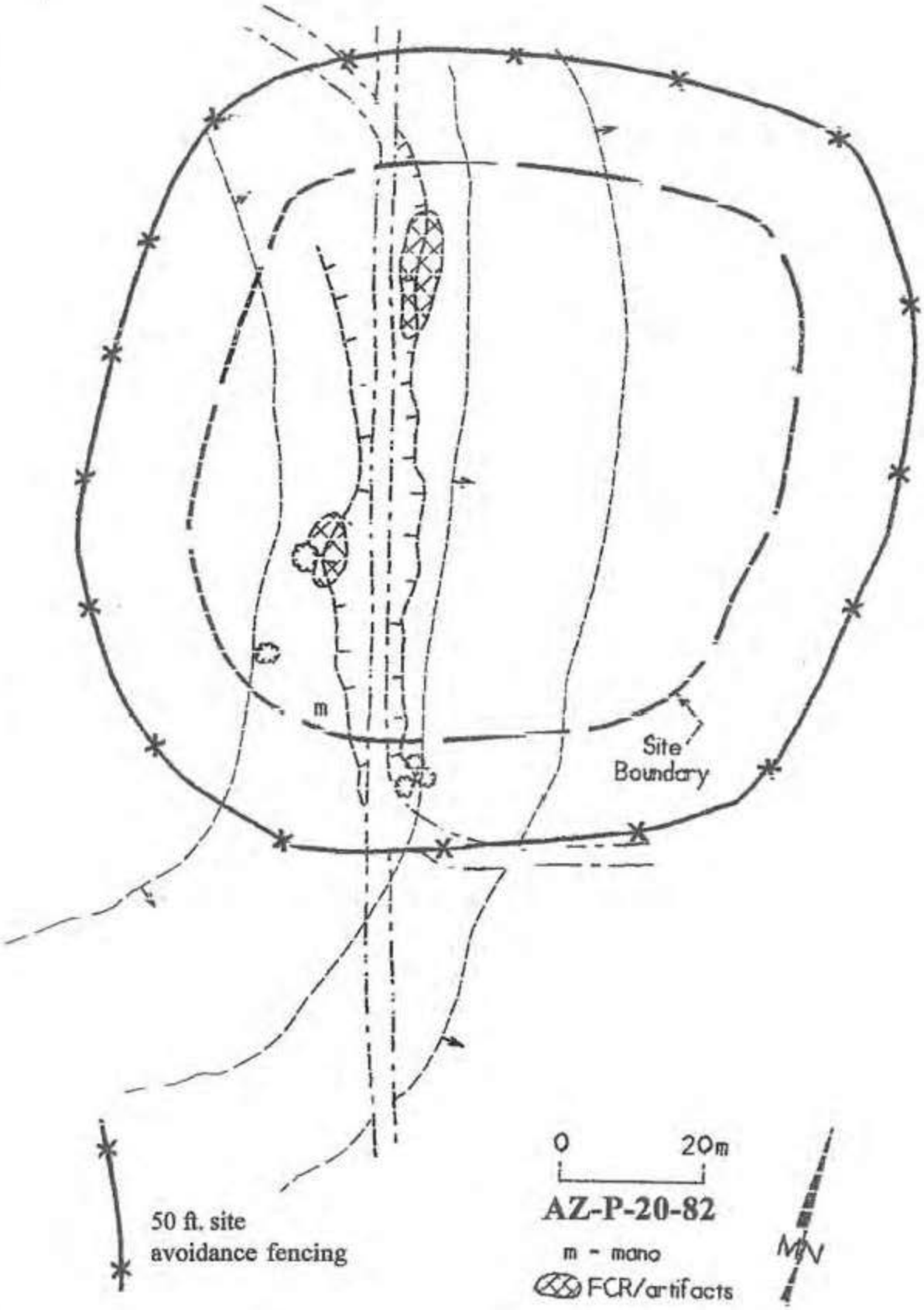

Figure 4. Plan map, AZ-P-20-82 and avoidance fencing.

Site Number:	**AZ-P-20-177**
USGS Map:	Ganado, AZ 1973
Legal Location:	SW, SE, SE of Sec. 13, T 27N, R 26E, G&SRPM, Apache County, Arizona
UTM:	Zone 12, 634726mE / 3955813mN (NAD 83)
Site Type:	Activity Area
Affiliation:	Basketmaker III - Pueblo I, A.D. 550 - 900
Site Size:	32 m x 33 m = 1,056 m ^{2}

Setting: The site is situated on the east-facing slope of a north-south trending dunal ridge along the north side of the Pueblo Colorado Wash valley. Vegetation includes a few scattered juniper, sagebrush, snakeweed, rabbitbrush, and prickly pear.

Description: The site (Figure 5) is a small activity area containing 1-2 burned features and an artifact scatter. Feature 1 is a scatter of twelve, medium-sized, burned sandstone rocks which may represent a hearth or roasting pit. The feature is deflated and a small erosional channel cuts through the scatter. One upright, burned slab located 18 m to the southeast of Feature 1 may indicate a hearth. Artifacts include 3 Lino Gray sherds, 1 expedient, bifacial, white chert scraper, and 13 secondary and tertiary flakes and pieces of shatter of petrified wood. The site may be an activity area associated with AZ-P-20-70 or AZ-P-20-82.

Significance: The site is over 100 years of age and is recommended as eligible for nomination the NRHP under criterion d and for protection under ARPA. The site has no known qualities meriting protection under AIRFA.

Project Effect: The site is located within the proposed pit expansion area.

Recommendations: A determination of "no historic properties affected is recommended with the stipulations that the site and a 50 foot-wide buffer zone be temporarily fenced as shown in Figure 5 under the direction of a qualified archaeologist for the duration of the project.

ISOLATED OCCURRENCE

IO No. 1:

USGS Map:	Ganado, AZ 1973
UTM Location:	Zone 12, 634730mE / 3955856mN (NAD 83)
Description:	A recent hearth located on east-facing ridge slope

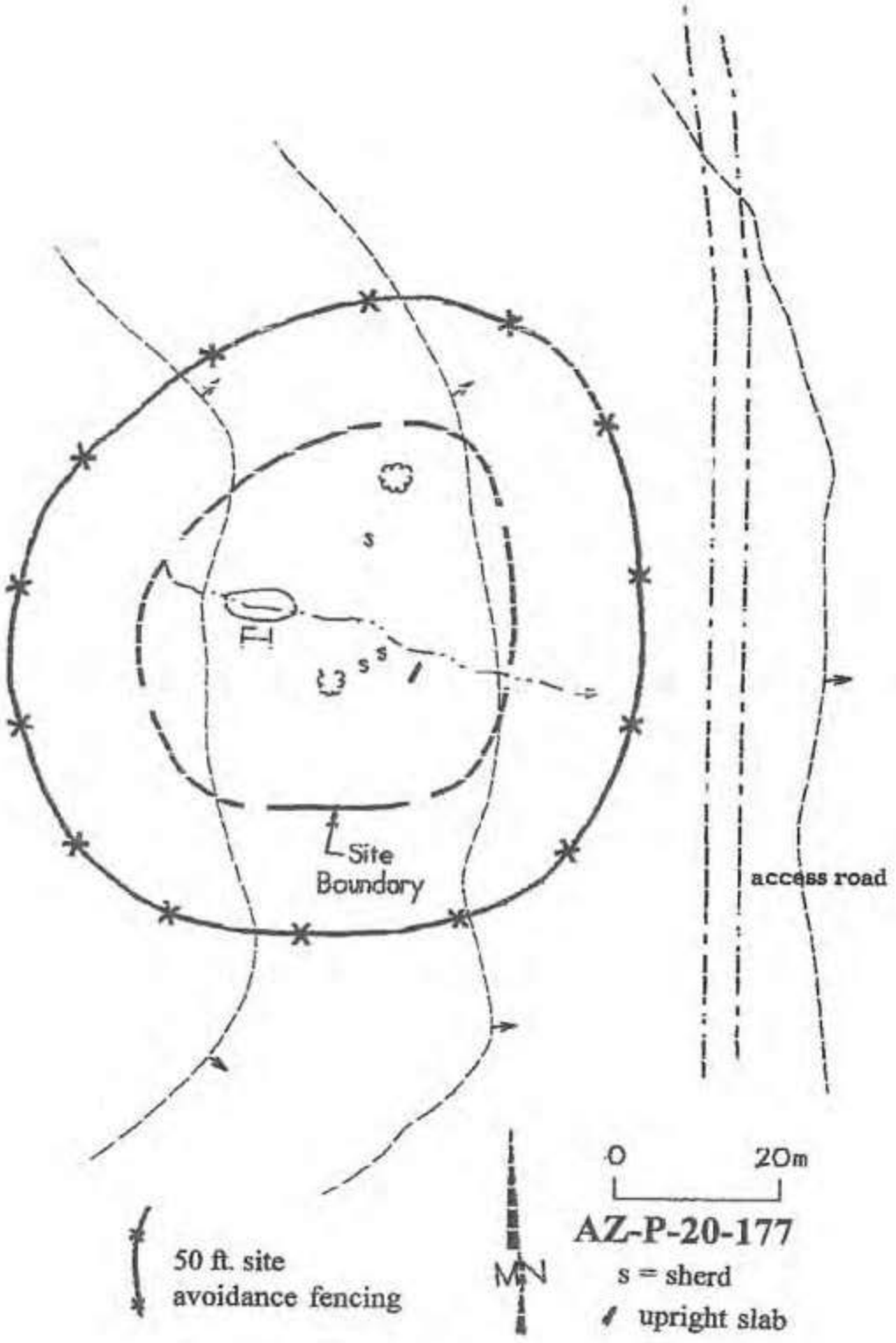

Figure 5. Plan map, AZ-P-20-177 and avoidance fencing.

EVALUATION OF SIGNIFICANCE

Significance and eligibility recommendations for the three sites are summarized in Table 2. The IO is not considered significant and is not eligible for nomination to the NRHP or for protection under ARPA. The IO does not exhibit qualities meriting consideration under AIRFA.

Table 2. Significance and eligibility of sites.

AZ-P-20-70	BMIII-PI Habitation	36 CFR 60.4:	Site is eligible for nomination to the NRHP because it is over 50 years old
		Integrity:	Site does retain integrity.
		Criteria a-d:	Site does meet Criterion d.
		Exclusions:	None.
		ARPA:	Site is over 100 years old and is of archaeological interest.
		AIRFA:	Site has known qualities meriting protection.
		NAGPRA:	Site has known qualities meriting protection.
AZ-P-20-82	BMIII-PI Artifact Scatter	36 CFR 60.4:	Site is eligible for nomination to the NRHP because it is over 50 years old
		Integrity:	Site does retain integrity.
		Criteria a-d:	Site does meet Criterion d.
		Exclusions:	None.
		ARPA:	Site is over 100 years old and is of archaeological interest.
		AIRFA:	Site has no known qualities meriting protection.
AZ-P-20-177	BMIII-PI Activity Area	36 CFR 60.4:	Site is eligible for nomination to the NRHP because it is over 50 years old
		Integrity:	Site does retain integrity.
		Criteria a-d:	Site does meet Criterion d.
		Exclusions:	None.
		ARPA:	Site is over 100 years old and is of archaeological interest.
		AIRFA:	Site has no known qualities meriting protection.

RECOMMENDATIONS

A determination of "No Historic Properties Affected" is recommended for FNF Construction Inc.'s proposed Ganado Borrow Pit and access road with the following stipulations for avoidance: 1) under the direction of a qualified archaeologist, a 100 foot-wide buffer zone should be fenced around site AZ-P-20-70 for the duration of the project and 2) under the direction of a qualified archaeologist, 50 foot-wide buffer zones should be fenced around sites AZ-P-20-82 and AZ-P-20-177 for the duration of the project.

REFERENCES

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Mount, James E., Stanley J. Olsen, George A. Teague, John W. Olsen, and B. Dean Treadwell
1993 Wide Reed Ruin, Hubbell Trading Post National Historic Site. *Southwest Cultural Resources Center Professional Paper No.* 51. National Park Service, Dept. of the Interior.

Olson, Alan P.
1971 Archaeology of the Arizona Public Service Company's 345 Kv Line. *Museum of Northern Arizona Bulletin No.* 46, Flagstaff.

Van Valkenburgh, Richard
1974 Navajo Sacred Places. In *Navajo Indians III,* edited by Clyde Kluckholn, pp. 9-99. Garland Press, New York.

Cultural Resource Inventory

Proposed FNF Construction Inc's
Ganado Borrow Pit/Hot Plant Site and Access Road
Apache County, Arizona

Prepared by

Mary Errickson
Complete Archaeological Service Associates
P.O. Box 1777
Cortez, Colorado 81321

CASA 15-16

ATTACHMENT A

TCP RECORD SEARCH

Permit

NNCRIP B15162

April 10, 2015

THE NAVAJO NATION
Historic Preservation Department
PO Box 4950, Window Rock, AZ 86515
TEL: (928) 871-7198 / 7134 FAX: (928) 871-7886

TRADITIONAL CULTURAL PROPERTY (TCP) RECORD SEARCH VERIFICATION FORM

TCP WILL NOT SIGN/APPROVE IF THIS PORTION IS LEFT BLANK

DATE	03/30/15
RESEARCHER & COMPANY	Mary Errickson - CASA
PROJECT NAME	FNF Construction Ganado Lake Borrow Pit
PROJECT/PERMIT NUMBER	CASA 15-16
PROJECT LOCATION	Ganado, Arizona

TO BE FILLED OUT & SIGNED BY AUTHORIZED NNHPD STAFF ONLY

	There are no TCP(s) present within the project area and/or buffer zone. The project may proceed as proposed.
	TCP(s) are present within the project area and/or buffer zone. Project may have the potential to adversely affect TCP(s). *Please document TCP(s) as a summary (with only general location information) in the body of reports submitted for review to HPD/CRCS. Give full detail on the TCP Documentation Forms in a separate, and clearly labeled, confidential appendix.*
✓	Project may proceed with the following stipulations:
	Note TCP# 43 in Report & Findings.
	Further consultation is required. Consult with the following:
	There are no mitigative measures. Project may not proceed.

NNHPD/TCP Program Reviewer:	Timothy C. Begay	Date: 3/23/15

Return this form along with report to the NNHPD/Compliance Section

Note: In addition to the TCP Record search, the consultant must demonstrate that a good-faith effort to consult with 1.) Surface user(s): grazing-permit holder(s) (individuals whose consents for right-of-way have been sought by developer); any other residents in or within view of the proposed project area. 2. Chapter(s) within which the proposed project is located: chapter officers and/or delegate(s) of the Navajo Nation Council; at the request of any of these individuals, the developer's consulting anthropologist will also make a presentation at a meeting of general chapter membership. 3. Other knowledgeable people recommended by the present surface user(s), chapter officials, and chapter members.

ATTACHMENT B

PLAT MAPS

Prepared by
Atwell Land Development and Real Estate

BORROW PIT

LEGAL DESCRIPTION

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 13, TOWNSHIP 27 NORTH, RANGE 26 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, APACHE COUNTY, ARIZONA. BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A FOUND BRASS CAP MARKING THE NORTH QUARTER CORNER OF SAID SECTION 13 FOR WHICH A FOUND BRASS CAP MARKING THE NORTHWEST CORNER OF SAID SECTION 13 LIES SOUTH 89°44'53" WEST, 2638.93 FEET;

THENCE SOUTH 19°29'51" EAST, ALONG A TIE LINE, 3661.87 FEET TO THE **POINT OF BEGINNING;**

THENCE SOUTH 67°23'02" EAST, 560.17 FEET;

THENCE SOUTH 05°16'15" EAST, 1311.59 FEET;

THENCE NORTH 84°29'27" WEST, 1137.99 FEET;

THENCE NORTH 19°19'19" EAST, 1496.49 FEET TO THE **POINT OF BEGINNING.**

CONTAINING 26.436 ACRES MORE OR LESS.

TOGETHER WITH:
A 20 FEET WIDE STRIP OF LAND TO BE USED AS AN INGRESS-EGRESS EASEMENT 10 FEET EITHER SIDE OF THE FOLLOWING DESCRIBED CENTERLINE;

COMMENCING AT A FOUND BRASS CAP MARKING THE NORTH QUARTER CORNER OF SAID SECTION 13 FOR WHICH A FOUND BRASS CAP MARKING THE NORTHWEST CORNER OF SAID SECTION 13 LIES SOUTH 89°44'53" WEST, 2638.93 FEET;

THENCE SOUTH 28°17'37" EAST, ALONG A TIE LINE, 4835.38 FEET TO A POINT AT THE WESTERLY EDGE OF PAVEMENT OF B.I.A. ROUTE 27 AND THE **POINT OF BEGINNING**

THENCE SOUTH 87°10'31" WEST, 125.87 FEET TO THE BEGINNING OF A CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 89.69 FEET, THROUGH A CENTRAL ANGLE OF 35°23'46", AN ARC DISTANCE OF 55.41 FEET;

THENCE SOUTH 51°46'53" WEST, 34.54 FEET TO THE BEGINNING OF A CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 319.80 FEET, THROUGH A CENTRAL ANGLE OF 22°31'50", AN ARC DISTANCE OF 125.76 FEET;

THENCE SOUTH 29°14'52" WEST, 183.59 FEET TO THE BEGINNING OF A CURVE, CONCAVE EASTERLY, HAVING A RADIUS OF 296.61 FEET, THROUGH A CENTRAL ANGLE OF 31°01'22", AN ARC DISTANCE OF 160.60 FEET;

THENCE SOUTH 1°46'30" EAST, 96.91 FEET TO THE BEGINNING OF A CURVE, CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 204.75 FEET, THROUGH A CENTRAL ANGLE OF 100°49'13", AN ARC DISTANCE OF 360.29 FEET TO A POINT OF REVERSE CURVATURE, CONCAVE SOUTHERLY, HAVING A RADIUS OF 4536.98 FEET, THROUGH A CENTRAL ANGLE OF 5°01'17 AN ARC DISTANCE OF 397.62 FEET;

THENCE NORTH 85°58'34" WEST, 334.77 FEET TO THE BEGINNING OF A CURVE, CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 235.40 FEET, THROUGH A CENTRAL ANGLE OF 78°06'00", AN ARC DISTANCE OF 320.88 FEET;

THENCE NORTH 1°05'00" WEST, 412.56 FEET TO THE BEGINNING OF A CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 293.64 FEET, THROUGH A CENTRAL ANGLE OF 47°37'26", AN ARC DISTANCE OF 244.07 FEET;

THENCE NORTH 46°32'28" EAST, 99.18 FEET TO THE BEGINNING OF A CURVE CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 1593.13 FEET, THROUGH A CENTRAL ANGLE OF 15°52'48", AN ARC DISTANCE OF 441.55 FEET TO A POINT OF REVERSE CURVATURE, CONCAVE SOUTHEASTERLY WITH A RADIUS OF 207.90 FEET, THROUGH A CENTRAL ANGLE OF 37°18'38", AN ARC DISTANCE OF 135.39 FEET TO A POINT OF COMPOUND CURVATURE, CONCAVE SOUTHERLY, HAVING A RADIUS OF 692.06 FEET, THROUGH A CENTRAL ANGLE OF 34°34'31", AN ARC DISTANCE OF 417.63 FEET TO A POINT OF COMPOUND CURVATURE, CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 234.16 FEET, THROUGH A CENTRAL ANGLE OF 59°03'11", AN ARC DISTANCE OF 241.34 FEET;

THENCE SOUTH 18°24'22" EAST, 415.60 FEET TO THE BEGINNING OF A CURVE, CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 210.41 FEET, THROUGH A CENTRAL ANGLE OF 74°25'08", AN ARC DISTANCE OF 273.30 FEET TO A POINT OF TERMINUS, ALSO BEING A POINT ON DESCRIBED CENTERLINE, LYING SOUTH 87°10'31" WEST, 125.67 FEET FROM THE POINT OF BEGINNING.

THE SIDELINES ON THE ABOVE DESCRIBED STRIP OF LAND SHALL BE EXTENDED OR SHORTENED TO MEET AT ANGLE AND END POINTS TO FORM A CONTINUOUS 20.00 FEET WIDE STRIP OF LAND THROUGH THE GRANTOR'S PROPERTY.

CONTAINING 88,796.83 SQUARE FEET OR 2.038 ACRES MORE OR LESS.

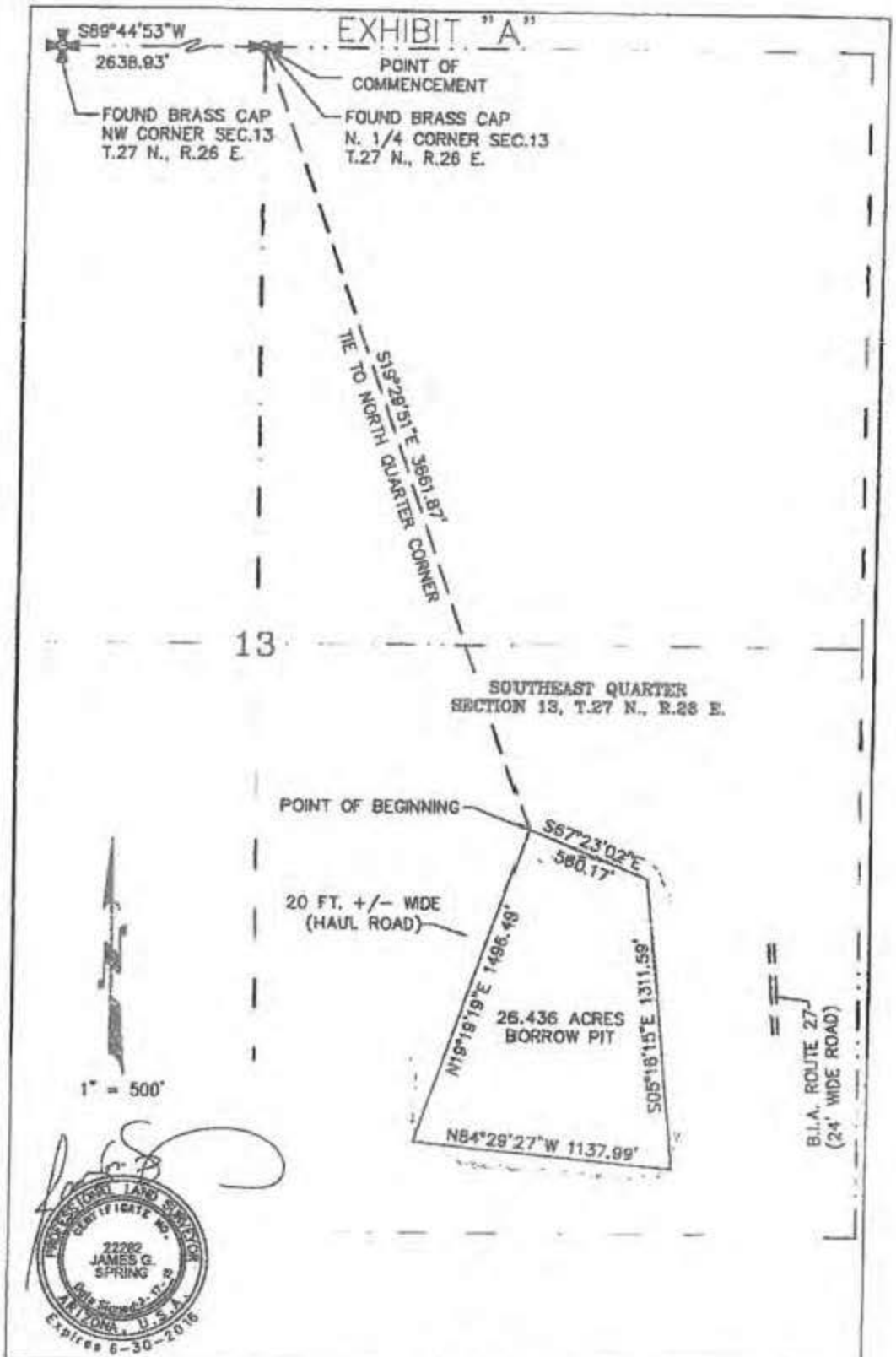
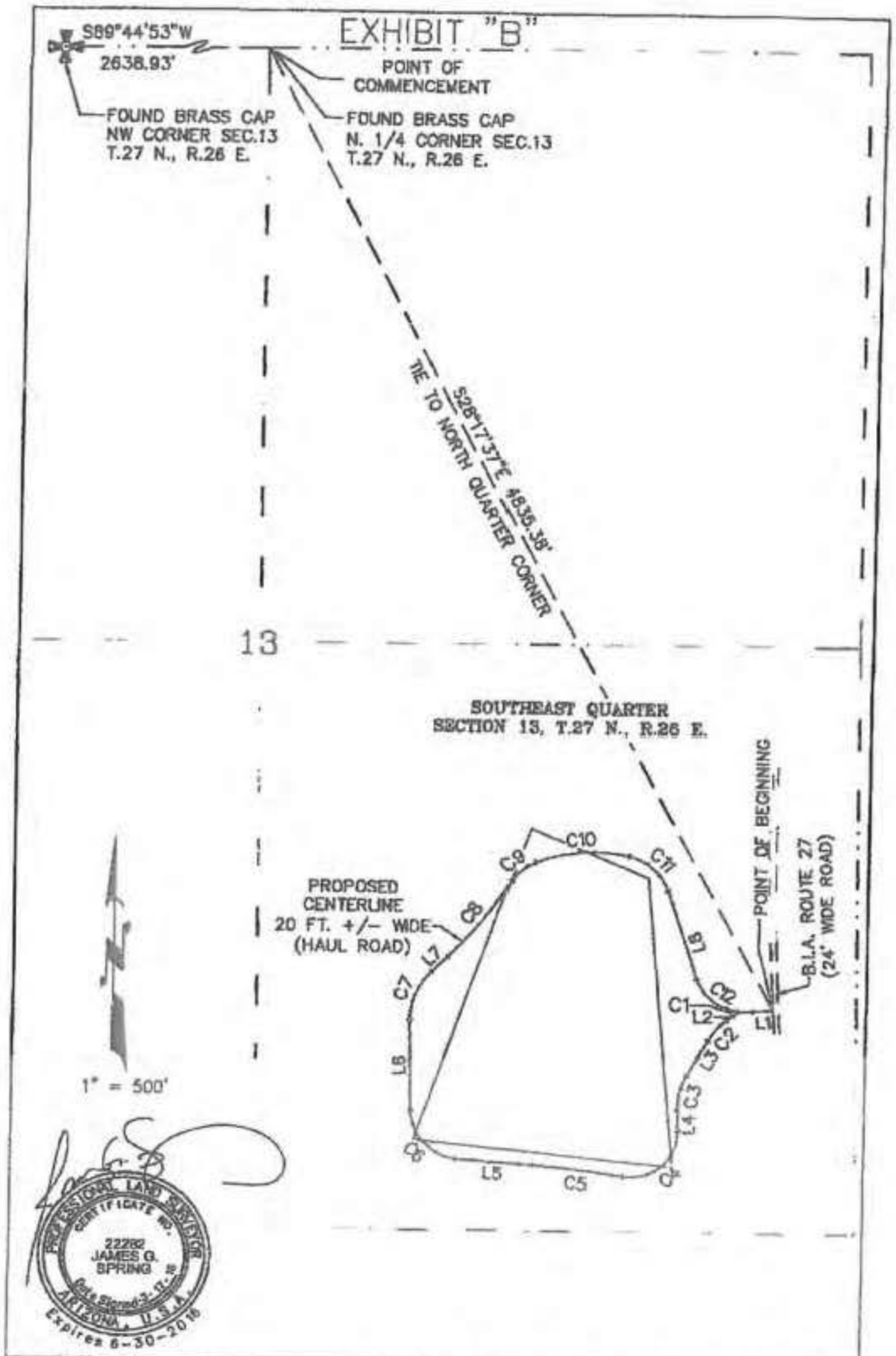


EXHIBIT "A"
S89°44'53"W
2638.93'
POINT OF COMMENCEMENT
FOUND BRASS CAP
NW CORNER SEC.13
T.27 N., R.26 E.
FOUND BRASS CAP
N. 1/4 CORNER SEC.13
T.27 N., R.26 E.
S19°29'51"E 3661.87'
TIE TO NORTH QUARTER CORNER
13
SOUTHEAST QUARTER
SECTION 13, T.27 N., R.26 E.
POINT OF BEGINNING
S67°23'02"E
560.17'
20 FT. +/- WIDE
(HAUL ROAD)
N19°19'19"E 1496.49'
S05°16'15"E 1311.59'
26.436 ACRES
BORROW PIT
N84°29'27"W 1137.99'
B.I.A. ROUTE 27
(24' WIDE ROAD)
1" = 500'
PROFESSIONAL LAND SURVEYOR
CERTIFICATE NO.
22262
JAMES G.
SPRING
Date Signed 3-17-15
ARIZONA, U.S.A.
Expires 6-30-2016
ATWELL
JOB #15000456 – Sheet 1 of 1 DATE 3/17/2015
GANADO BORROW PIT
LEGAL EXHIBIT "A"



ATWELL

JOB #15000456 - Sheet 1 of 2 DATE 3/17/2015

GANADO 20 FT WIDE ACCESS EASEMENT

LEGAL EXHIBIT "B"

h:\15000456 bd-ganado access plt\dwg\survey\legal exhibit.dwg SAVE DATE: 3/17/2015 12:54 PM PLOT DATE: 3/17/2015
1:38 PM

EXHIBIT "B"

LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	S87°10'31"W	125.87'
L2	S51°46'53"W	34.54'
L3	S29°14'52"W	183.59'
L4	S01°46'30"E	96.91'
L5	N85°58'34"W	334.77'
L6	N01°05'00"W	412.56'
L7	N46°32'28"E	99.18'
L8	S18°24'22"E	415.60'

CURVE TABLE			
CURVE #	LENGTH	RADIUS	DELTA
C1	55.41'	89.69'	35°23'46"
C2	125.76'	319.80'	22°31'50"
C3	160.60'	296.61'	31°01'22"
C4	360.29'	204.75'	100°49'13"
C5	397.62'	4536.98'	5°01'17"
C6	320.88'	235.40'	78°06'00"
C7	244.07'	293.64'	47°37'26"
C8	441.55'	1593.13'	15°52'48"
C9	135.39'	207.90'	37°18'38"
C10	417.63'	692.06'	34°34'31"
C11	241.34'	234.16'	59°03'11"
C12	273.30'	210.41'	74°25'08"

1" = 500'

PROFESSIONAL LAND SURVEYOR
CERTIFICATE NO.
22262
JAMES G. SPRING
Date Signed 3-17-15
ARIZONA, U.S.A.
Expires 6-30-2016

ATWELL

JOB #15000456 – Sheet 2 of 2 DATE 3/17/2015

GANADO 20 FT WIDE ACCESS EASEMENT

LEGAL EXHIBIT "A"