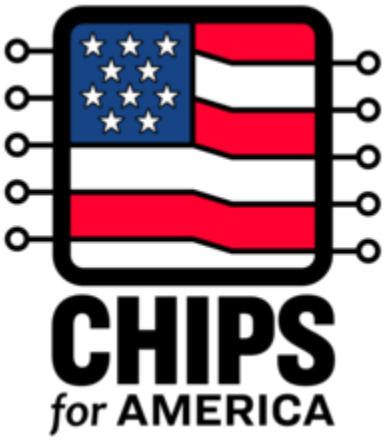
Draft Environmental Assessment for TSMC Arizona

APPENDICES

Volume 2



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May 29, 2024

U.S. Department of Commerce
National Institute of Standards and Technology
CHIPS Program Office
Herbert C. Hoover Building
1401 Constitution Avenue NW
Washington, D.C. 20230

APPENDIX A CAA GENERAL CONFORMITY APPLICABILITY ANALYSIS

Conformity Rule Compliance

Record of Non-Applicability

Project/Action Name: TSMC AZ Phases 1/2/3

Location: Phoenix, Arizona (Maricopa County)

Project/Action Point of Contact: Robert Sandoval or Spencer Leese

Action Duration: 2024 to 2030

Conformity under the Clean Air Act, Section 176, has been evaluated for the above-described project per 40 CFR Part 93. The requirements of this rule are not applicable to this section because:

Total and indirect emission increases from the Proposed Action have been estimated at:

- 9.2 tons per year (tpy) of Volatile Organic Chemicals (VOCs)
- 43.0 tpy of Nitrogen Oxides (NOx)
- 5.3 tpy of Particulate Matter 10 microns and below (PM_{10})

The emission increases from the Proposed Action are below de minimis thresholds established at 40 CFR 93.153(b) of 100 tpy of VOCs, 100 tpy of NOx and 70 tpy of PM_{10}.

The supporting documentation and nonattainment pollutant emission estimates are attached.

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Proposed Action and Emissions Summary

The Clean Air Act requires federal actions in air pollutant nonattainment or maintenance areas to conform to the applicable State Implementation Plan (SIP). The SIP is designed to achieve or maintain an attainment designation of air pollutants as defined by the National Ambient Air Quality Standards (NAAQS). The regulations governing this requirement are found in 40 Code of Federal Regulations part 93, also known as the "General Conformity Rule," which applies to federal actions occurring in regions designated as nonattainment or areas subject to maintenance plans. 40 CFR 93 § 153 defines *de minimis* levels, that is, the minimum threshold for which a conformity determination must be performed, for various criteria pollutants in various areas. A project/action in an area designated as nonattainment/maintenance and exceeding the *de minimis* thresholds must have a general conformity determination prepared to address significant impacts.

CPO's Proposed Action is to provide federal financial incentives to TMSC toward the purchase and installation of semiconductor manufacturing equipment and tools for three semiconductor manufacturing buildings (fabs) at their facility in Phoenix, Arizona. Maricopa County is currently in nonattainment for ozone (moderate) and PM_{10} (serious).

To determine whether a general conformity determination is applicable to the Proposed Action, CPO evaluated direct and indirect emissions of nonattainment pollutants relative to their *de minimis* thresholds.

Direct emissions relate to the operation of the Facility equipment itself, primarily through point or fugitive air emission sources; these are typically covered through the air permitting process with the controlling agency. Indirect emissions are those emissions caused by the federal action and originating in the region of interest, but which can occur later or in a different location from the action itself and are reasonably foreseeable. If the results of the applicability analysis indicate that the total emissions would not exceed the *de minimis* emissions thresholds, then the conformity evaluation process is completed.

Emissions subject to existing operating permits (i.e., direct emissions) are considered to already conform to the state's SIP (governed under 40 CFR 51.372) and would not cause a violation of the NAAQS. The TSMC AZ Facility has an existing air permit to address operations of the first two fabs from the Maricopa County Air Quality Department (MCAQD). Operations of the third fab would be subject to a revised air permit, with provisions to ensure a violation of the NAAQS does not occur.

Non-permitted activities, such as indirect emissions, must be evaluated for conformity. TSMC AZ construction activities and ongoing operations considered included truck deliveries (e.g., transportation of the tools to the Facility, additional truck deliveries related to operations of this equipment), installation emissions of equipment and tools (above and beyond the building emissions already accounted for separately), daily employee travel (for contractors and additional TSMC employees required specifically for this equipment), tool electricity and natural usage. Transportation data presented in Section 3.8.2 of the Environmental Assessment was used as inputs for modeling indirect emissions using the California Emissions Estimator Model (CalEEMod, v2022.1.1.22). The results show that the maximum expected emissions of nonattainment pollutants are below applicable *de minimis* thresholds for Maricopa County (Table 1). Detailed modeling results are provided in Attachment A. Modeling assumptions are provided following Table 1, below.

Table 1. Maximum Annual Emissions compared to de minimis Thresholds for Maricopa County Nonattainment Area

Parameters	De minimis Thresholds, Tons/year *	Maximum Annual Emissions**
Ozone (VOCs or NO_x):		
VOC	100	9.2
NOx	100	43.0
PM_{10}: Serious Nonattainment	70	5.3

* Per 40 CFR 93.153(b)(1)—the following rates apply to Maricopa County

** Maximum of the construction and operational years.

Table 1 emissions assume simultaneous construction and operational indirect emissions occur in the same year, which is conservatively assumed to be 2026. Later years are expected to have similar or less activity, but the emission factors will be lower, due to ongoing reductions of vehicle and equipment emissions. This analysis only includes direct emissions from non-permitted equipment (i.e., equipment to be permitted) and indirect emissions from work vehicles, equipment delivery trucks, equipment used to place the equipment, and vendor trucks for chemical and waste handling.

During construction, equipment funded through the CHIPS Act will be delivered via Class 8 trucks to the site. Each fab will receive an estimated 630 tools installed using the funding. These tools are assumed to be shipped via air or over land from the Port of Los Angeles, conservatively assuming truck travel distances from Sky Harbor Airport in Phoenix or from the California border, along I-10. There will be approximately 700 additional workers onsite for tool installation. The conformity analysis assumptions for construction-related activities are as follows:

- An overall average (consisting of air- and port-delivered tools) of 8 diesel-fueled Class 8 trucks per day for an average 273 miles round trip per truck are assumed for tool delivery.
    - Air delivery assumes 130 tools with 2 trucks required per tool for transport to each fab for an average distance of 132 miles round trip.
    - Port delivery assumes 500 tools using 3 trucks per tool for an in-state round trip distance of 320 miles.
- Receipt of the tools at the site assumes conservatively that diesel-fueled equipment could be used versus electric. Two “Off-road Equipment” (i.e., heavy-duty forklifts or cranes) rated at 250 horsepower each are estimated for each equipment and operated up to 6 hours per day (engine on time) for 6 days per week, year-round during construction.
- Tool installation will require up to 700 additional workers. The average distance traveled from the assignee and local workforce is estimated at 18.75 miles round trip (9.4 miles one way)
    - 55% of the workforce is “assignee” driving 5 miles round trip on average.
    - 45% of the workforce is “local” driving 30 miles round trip on average.

General conformity also accounts for indirect emissions as a result of operations, which consists mainly of vehicle travel, including employee commute and vendor deliveries. Operational emissions of the equipment are generally not included as part of the conformity analysis as they have already been analyzed and accepted as part of the local air permitting process; however, a portion of the funded equipment has not been reviewed through the local permitting process at the time of this analysis. As such, these emissions have been estimated and included for the purposes of determining conformance. The operational emissions for consideration used the following assumptions:

- Vendor deliveries include tanker trucks for chemicals (inbound) and waste (outbound), drum trucks for chemicals and waste (outbound), and compressed gas delivery trucks (inbound and outbound). An estimated 21 daily deliveries with an average of 75 miles travel distance one-way are assumed to run 6 days per week.
- TSMC employees number 3,250 per Table 3-12 in this Environmental Assessment. Assuming the workers in the "gown building" all work with the tools, this amounts to 60% of the workforce, or 1,950 employees. Conservatively assumed at 1 employee per vehicle, this amounts to 3,900 one-way trips per day. Per the estimates in the construction bullets, the one-way distance is estimated to be 9.4 miles.
- Operational emissions for the yet-to-be permitted equipment were estimated from natural gas usage of the entire fab (considers the tooling and associated air pollution control devices as well as space heating, hot water boilers, and other equipment not part of "tooling"). The portion of the emissions assigned to the tooling and air pollution control devices was assumed to be 80% of the total site usage. Modeling inventory estimates were used from building the three fabs, subtracting the permitted equipment modeling inventory (previously-installed equipment in Phases 1 and 2), to determine the remaining emissions to be included in this conformity analysis.

TSMC Arizona - General Conformity Emissions (Non-Permitted Direct and Indirect)
Summary Page

Location	Nonattainment Status Pollutants (ton/yr)		
	VOC	NOx	PM_{10}
Construction			
Equipment Install (2026)			
Off-Road Equipment (Forklift)	0.08	3.18	0.07
Worker	0.46	0.09	0.00
Hauling (Delivery)	0.01	1.11	0.34
Total Construction 2026	0.55	4.38	0.41
Equipment Install (2027)			
Off-Road Equipment (Forklift)	0.08	3.18	0.07
Worker	0.43	0.08	0.00
Hauling (Delivery)	0.01	1.07	0.33
Total Construction 2027	0.52	4.33	0.40
Operational			
Mobile (TSMC Employee)	2.01	1.00	0.00
Vendor (Delivery; 2026)	0.02	0.68	0.22
Vendor (Delivery; 2027)	0.01	0.63	0.22
Natural Gas Use			
General Heavy Industry (total facility)	6.66	60.57	4.60
General Heavy Industry (minus permitted, 2 fabs)*	-	-23.58	-
Subtotal (non-permitted)	6.66	36.99	4.66
Total Operations 2026	8.69	38.67	4.88
Maximum Conformity Emissions (2026 with Construction and Operation Emissions)	**9.24**	**43.05**	**5.29**
De Minimis Thresholds	**100.00**	**100.00**	**70.00**
Conformity Demonstrated?	**Yes**	**Yes**	**Yes**

Emissions calculated using California Emissions Estimator Model (CalEEMod), v2022.1.1.22 (https://caleemod.com/)

[1] Conformity emissions from permited boilers and thermal oxidizers subtracted from to-be-permitted equipment for this evaluation

[2] Maximum case is 2026 emission factors with operational and construction emissions occuring simultaneously

Acronymns

NOx - Oxides of Nitrogen, PM_{10} - particulate matter 10 microns or less, VOC - volatile organic compounds

VOC = Total Organic Gases (TOG), and Reactive Organic Gases (ROG) is a subset of TOG

TSMC AZ Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	TSMC AZ
Construction Start Date	1/1/2026
Operational Year	2027
Lead Agency	EPA
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50
Precipitation (days)	8.40
Location	33.63125070510641, -114.55766140967563
County	Riverside-Mojave Desert MDAQMD
City	Blythe
Air District	Mojave Desert AQMD
Air Basin	Mojave Desert
TAZ	5670
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.22

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

General Heavy Industry	8,400	1000sqft	1,129	8,400,000	10,000	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.26	4.15	31.6	21.2	0.11	0.70	3.30	4.00	0.61	0.87	1.48	1,468,897	1,468,897	90.5	12.8	26.8	1,474,987
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.53	3.43	32.1	20.4	0.11	0.70	3.30	4.00	0.61	0.87	1.48	1,468,897	1,468,897	90.5	12.7	0.69	1,474,956
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.13	3.04	27.7	18.2	0.09	0.60	2.81	3.42	0.52	0.74	1.26	1,259,055	1,259,055	77.5	10.9	9.92	1,264,262
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.57	0.56	5.06	3.32	0.02	0.11	0.51	0.62	0.09	0.14	0.23	208,451	208,451	12.8	1.81	1.64	209,313

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	4.26	4.15	31.6	21.2	0.11	0.70	3.30	4.00	0.61	0.87	1.48	1,468,897	1,468,897	90.5	12.8	26.8	1,474,987
2027	3.97	3.91	31.1	20.5	0.11	0.65	3.30	3.95	0.61	0.87	1.48	14,241	14,241	0.23	1.79	24.9	14,804
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.53	3.43	32.1	20.4	0.11	0.70	3.30	4.00	0.61	0.87	1.48	1,468,897	1,468,897	90.5	12.7	0.69	1,474,956
2027	3.32	3.26	31.5	19.7	0.11	0.65	3.30	3.95	0.61	0.87	1.48	14,241	14,241	0.23	1.77	0.65	14,776
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.13	3.04	27.7	18.2	0.09	0.60	2.81	3.42	0.52	0.74	1.26	1,259,055	1,259,055	77.5	10.9	9.92	1,264,262
2027	2.94	2.88	27.2	17.6	0.09	0.56	2.81	3.38	0.52	0.74	1.26	12,207	12,207	0.21	1.53	9.22	12,678
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.57	0.56	5.06	3.32	0.02	0.11	0.51	0.62	0.09	0.14	0.23	208,451	208,451	12.8	1.81	1.64	209,313
2027	0.54	0.53	4.96	3.21	0.02	0.10	0.51	0.62	0.09	0.14	0.23	2,021	2,021	0.03	0.25	1.53	2,099

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	117	273	341	672	2.02	25.9	0.01	25.9	25.7	< 0.005	25.7	3,366,632	3,375,968	1,261	44.5	0.05	3,420,751
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	49.0	210	338	304	2.00	25.2	0.01	25.3	25.2	< 0.005	25.2	3,365,141	3,374,477	1,261	44.4	< 0.005	3,419,248

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	79.6	238	339	483	2.01	25.6	0.01	25.6	25.5	< 0.005	25.5	3,365,717	3,375,053	1,261	44.4	0.02	3,419,814
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	14.5	43.5	61.9	88.1	0.37	4.66	< 0.005	4.67	4.65	< 0.005	4.65	557,233	558,779	209	7.35	< 0.005	566,189

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	15.4	15.1	6.35	27.4	0.01	0.02	0.01	0.03	0.02	< 0.005	0.02	1,117	1,117	0.50	0.35	0.05	1,233
Area	65.0	240	3.07	365	0.02	0.65	—	0.65	0.49	—	0.49	1,502	1,502	0.06	0.01	—	1,508
Energy	36.5	18.3	332	279	1.99	25.2	—	25.2	25.2	—	25.2	3,355,284	3,355,284	317	34.9	—	3,373,624
Water	—	—	—	—	—	—	—	—	—	—	—	8,729	12,452	383	9.17	—	24,747
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	5,614	561	0.00	—	19,640
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	117	273	341	672	2.02	25.9	0.01	25.9	25.7	< 0.005	25.7	3,366,632	3,375,968	1,261	44.5	0.05	3,420,751
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	12.5	12.2	6.44	25.0	0.01	0.02	0.01	0.03	0.02	< 0.005	0.02	1,127	1,127	0.52	0.33	< 0.005	1,237
Area	—	180	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	36.5	18.3	332	279	1.99	25.2	—	25.2	25.2	—	25.2	3,355,284	3,355,284	317	34.9	—	3,373,624
Water	—	—	—	—	—	—	—	—	—	—	—	8,729	12,452	383	9.17	—	24,747
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	5,614	561	0.00	—	19,640
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

Total	49.0	210	338	304	2.00	25.2	0.01	25.3	25.2	< 0.005	25.2	3,365,141	3,374,477	1,261	44.4	< 0.005	3,419,248
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	11.0	10.7	5.48	23.6	0.01	0.01	0.01	0.03	0.01	< 0.005	0.02	963	963	0.47	0.29	0.02	1,060
Area	32.1	209	1.52	180	0.01	0.32	—	0.32	0.24	—	0.24	741	741	0.03	0.01	—	744
Energy	36.5	18.3	332	279	1.99	25.2	—	25.2	25.2	—	25.2	3,355,284	3,355,284	317	34.9	—	3,373,624
Water	—	—	—	—	—	—	—	—	—	—	—	8,729	12,452	383	9.17	—	24,747
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	5,614	561	0.00	—	19,640
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	79.6	238	339	483	2.01	25.6	0.01	25.6	25.5	< 0.005	25.5	3,365,717	3,375,053	1,261	44.4	0.02	3,419,814
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.01	1.96	1.00	4.31	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	159	159	0.08	0.05	< 0.005	176
Area	5.85	38.2	0.28	32.9	< 0.005	0.06	—	0.06	0.04	—	0.04	123	123	0.01	< 0.005	—	123
Energy	6.66	3.33	60.6	50.9	0.36	4.60	—	4.60	4.60	—	4.60	555,506	555,506	52.5	5.78	—	558,542
Water	—	—	—	—	—	—	—	—	—	—	—	1,445	2,062	63.3	1.52	—	4,097
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	929	92.9	0.00	—	3,252
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	14.5	43.5	61.9	88.1	0.37	4.66	< 0.005	4.67	4.65	< 0.005	4.65	557,233	558,779	209	7.35	< 0.005	566,189

3. Construction Emissions Details

3.1. Equipment Install (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.54	0.54	20.3	12.7	0.02	0.44	—	0.44	0.39	—	0.39	2,585	2,585	0.10	0.02	—	2,594
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	0.54	20.3	12.7	0.02	0.44	—	0.44	0.39	—	0.39	2,585	2,585	0.10	0.02	—	2,594
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.46	0.46	17.4	10.9	0.02	0.38	—	0.38	0.34	—	0.34	2,216	2,216	0.09	0.02	—	2,224
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.08	3.18	1.99	< 0.005	0.07	—	0.07	0.06	—	0.06	367	367	0.01	< 0.005	—	368
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	3.53	3.47	0.59	7.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	125	125	0.14	0.06	0.00	147
Vendor	0.13	0.09	4.05	0.91	0.04	0.07	1.32	1.39	0.07	0.37	0.43	4,726	4,726	< 0.005	0.63	12.7	4,927
Hauling	0.06	0.06	6.68	0.31	0.05	0.19	1.98	2.17	0.14	0.51	0.65	7,113	7,113	< 0.005	1.11	14.0	7,458
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.81	2.75	0.52	6.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	124	124	0.14	0.05	0.00	141

Vendor	0.12	0.09	4.28	0.92	0.04	0.07	1.32	1.39	0.07	0.37	0.43	4,727	4,727	< 0.005	0.63	0.33	4,915
Hauling	0.06	0.06	6.98	0.31	0.05	0.19	1.98	2.17	0.14	0.51	0.65	7,113	7,113	< 0.005	1.11	0.36	7,444
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.51	2.46	0.48	6.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	107	107	0.12	0.05	0.00	126
Vendor	0.11	0.07	3.72	0.78	0.03	0.06	1.13	1.19	0.06	0.31	0.37	4,051	4,051	< 0.005	0.54	4.72	4,217
Hauling	0.05	0.05	6.10	0.27	0.04	0.17	1.69	1.85	0.12	0.43	0.56	6,097	6,097	< 0.005	0.95	5.20	6,386
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.46	0.45	0.09	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.8	17.8	0.02	0.01	0.00	20.9
Vendor	0.02	0.01	0.68	0.14	0.01	0.01	0.21	0.22	0.01	0.06	0.07	671	671	< 0.005	0.09	0.78	698
Hauling	0.01	0.01	1.11	0.05	0.01	0.03	0.31	0.34	0.02	0.08	0.10	1,009	1,009	< 0.005	0.16	0.86	1,057

3.3. Equipment Install (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	0.54	20.3	12.7	0.02	0.44	—	0.44	0.39	—	0.39	2,585	2,585	0.10	0.02	—	2,594
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	0.54	20.3	12.7	0.02	0.44	—	0.44	0.39	—	0.39	2,585	2,585	0.10	0.02	—	2,594
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.46	0.46	17.4	10.9	0.02	0.38	—	0.38	0.34	—	0.34	2,216	2,216	0.09	0.02	—	2,224
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.08	3.18	1.99	< 0.005	0.07	—	0.07	0.06	—	0.06	367	367	0.01	< 0.005	—	368
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	3.29	3.23	0.56	6.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	122	122	0.12	0.06	0.00	144
Vendor	0.09	0.09	3.77	0.76	0.04	0.07	1.32	1.39	0.07	0.37	0.43	4,610	4,610	< 0.005	0.59	11.7	4,799
Hauling	0.06	0.06	6.44	0.31	0.05	0.14	1.98	2.12	0.14	0.51	0.65	6,924	6,924	< 0.005	1.11	13.2	7,268
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.64	2.58	0.49	5.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	121	121	0.12	0.05	0.00	138
Vendor	0.09	0.08	3.96	0.74	0.04	0.07	1.32	1.39	0.07	0.37	0.43	4,610	4,610	< 0.005	0.60	0.30	4,788
Hauling	0.06	0.06	6.74	0.31	0.05	0.14	1.98	2.12	0.14	0.51	0.65	6,924	6,924	< 0.005	1.11	0.34	7,255
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	2.35	2.30	0.45	5.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	105	105	0.12	0.05	0.00	124
Vendor	0.08	0.07	3.45	0.63	0.03	0.06	1.13	1.19	0.06	0.31	0.37	3,951	3,951	< 0.005	0.51	4.34	4,108
Hauling	0.05	0.05	5.86	0.27	0.04	0.12	1.69	1.81	0.12	0.43	0.56	5,935	5,935	< 0.005	0.95	4.88	6,223
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.43	0.42	0.08	1.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.4	17.4	0.02	0.01	0.00	20.5

Vendor	0.01	0.01	0.63	0.12	0.01	0.01	0.21	0.22	0.01	0.06	0.07	654	654	< 0.005	0.08	0.72	680
Hauling	0.01	0.01	1.07	0.05	0.01	0.02	0.31	0.33	0.02	0.08	0.10	983	983	< 0.005	0.16	0.81	1,030

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	2,959,265	2,959,265	282	34.2	—	2,976,506
Total	—	—	—	—	—	—	—	—	—	—	—	2,959,265	2,959,265	282	34.2	—	2,976,506
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	2,959,265	2,959,265	282	34.2	—	2,976,506
Total	—	—	—	—	—	—	—	—	—	—	—	2,959,265	2,959,265	282	34.2	—	2,976,506
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	489,940	489,940	46.7	5.66	—	492,795
Total	—	—	—	—	—	—	—	—	—	—	—	489,940	489,940	46.7	5.66	—	492,795

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	36.5	18.3	332	279	1.99	25.2	—	25.2	25.2	—	25.2	396,019	396,019	35.0	0.75	—	397,117
Total	36.5	18.3	332	279	1.99	25.2	—	25.2	25.2	—	25.2	396,019	396,019	35.0	0.75	—	397,117
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	36.5	18.3	332	279	1.99	25.2	—	25.2	25.2	—	25.2	396,019	396,019	35.0	0.75	—	397,117
Total	36.5	18.3	332	279	1.99	25.2	—	25.2	25.2	—	25.2	396,019	396,019	35.0	0.75	—	397,117
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Heavy Industry	6.66	3.33	60.6	50.9	0.36	4.60	—	4.60	4.60	—	4.60	65,565	65,565	5.80	0.12	—	65,747
Total	6.66	3.33	60.6	50.9	0.36	4.60	—	4.60	4.60	—	4.60	65,565	65,565	5.80	0.12	—	65,747

4.3. Area Emissions by Source

Sections 4.3 through 7.6 not used for this analysis

Sections 4.3 through 7.6 not used for this analysis
[pages 17 -34 intentionally removed from this document]

8. User Changes to Default Data

Screen	Justification
Land Use	client-provided data: 2.8M sqft building x 3, 1,029 acre lot
Construction: Construction Phases	proposed dates for installation of tools purchased as part of the federal action (period covers the installation of tools for 1 fab over a 2-year period; fab tool installation assumed to run consecutively).
Construction: Off-Road Equipment	forklifts used for placing equipment; estimated 2 per equipment, 2 pairs total
Construction: Trips and VMT	Construction Worker: Assume 700 workers per day onsite are associated with tool installation (as defined by client); see Operations for trip length average. Hauling: 132 tools arriving to Phoenix airport, est. 2 trucks per tool for 132 miles RT (average 2 truck per day) 500 tools arriving from out-of-state (oversee ports), est. 3 trucks per tool for 320 miles RT (average 6 trucks per day) Average hauling: 8 trucks per day; 273 miles per RT Avg. Estimated deliveries 6 days/wk, 52 wks/yr Operational Vendor: Truck deliveries related to tool use, including Tankers in (chemicals) and out (waste), drum trucks (chemicals and waste), and gas cylinder delivery total vendor trips; assumed 17 daily vendor one-way trips total per client; estimated maximum 75 mi one-way trip Estimated deliveries 6 days/wk, 52 wks/yr [Operational Worker: 3,250 TSMC employees per day (EA Table 3-12) assignee workforce: 55% within 5 mi RT local workforce: 45% within 30 mi RT Average distance: 18.75 mi RT; 9.4 mi one-way]
Operations: Architectural Coatings	Not Applicable for PMT

Operations: Refrigerants	Not Applicable for PMT
Construction: Electricity	—
Operations: Energy Use	Electricity usage: 8.54 GW-hr/day (EA Table 2-1); 3,120,000,000 kW-hr/yr Natural gas: 42,318 therm/day (EA Table 2-1); 1,544,607,000 kBTU/yr (total estimated facility usage) x 80% (assumed for tooling use, control devices) = 1,235,685,600 kBtu/yr

APPENDIX B FEMA CONDITIONAL LETTER OF MAP REVISION DOCUMENTATION

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Peoria Maricopa County Arizona	BRIDGE CHANNELIZATION CULVERT LEVEE	HYDROLOGIC ANALYSIS HYDRAULIC ANALYSIS LEVEE CERTIFICATION NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 040050		
IDENTIFIER	State Route 303L - Lake Pleasant Parkway To I-17	APPROXIMATE LATITUDE & LONGITUDE: 33.774, -112.224 SOURCE: Other DATUM: NAD 83	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 04013C0840L DATE: October 16, 2013	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: October 16, 2013 PROFILE(S): 802P, 803P, 819P-825P, 822P(A), AND 1729P-1732P (NEW) SUMMARY OF DISCHARGES: TABLE 3

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map

FLOODING SOURCE(S) & REVISED REACH(ES) **See Page 2 for Additional Flooding Sources**

New River – From approximately 1.07 miles downstream of State Route 303L to approximately 1,600 feet downstream of Carefree Highway

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
New River	Zone AE	Zone AE	YES	YES
	BFEs*	BFEs	YES	YES
	Zone X (unshaded)	Zone X (unshaded)	YES	YES
	Zone X (shaded)	Zone X (shaded)	YES	YES

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

OTHER FLOODING SOURCES AFFECTED BY THIS REVISION

FLOODING SOURCE(S) & REVISED REACH(ES)

New River West Tributary 16 - from the New River West Tributary 5 confluence to approximately 3,748 feet upstream of State Route 303L

New River West Tributary 10 - from the New River West Tributary 16 confluence to approximately 1,100 feet upstream of the New River West Tributary16 confluence

New River West Tributary 15 - from the New River West Tributary 16 confluence to approximately 1,250 feet upstream of the New River West Tributary 16 confluence

New River West Tributary 16 East Split - from the New River West Tributary 16 confluence to approximately 50 feet upstream of State Route 303L

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
New River West Tributary 16	Zone AE	Zone AE	YES	NONE
	Zone X (shaded)	Zone X (shaded)	NONE	YES
	Zone X (unshaded)	Zone X (unshaded)	YES	NONE
	No BFEs*	BFEs	YES	NONE
New River West Tributary 10	Zone AE	Zone AE	YES	NONE
	Zone X (shaded)	Zone X (shaded)	NONE	YES
	Zone X (unshaded)	Zone X (unshaded)	YES	NONE
	BFEs	BFEs	YES	YES
New River West Tributary 15	Zone AE	Zone AE	NONE	YES
	Zone X (shaded)	Zone X (shaded)	YES	NONE
	Zone X (unshaded)	Zone X (unshaded)	NONE	YES
	BFEs	BFEs	NONE	YES
New River West Tributary 16 East Split	Zone AE	Zone AE	YES	YES
	Zone X (shaded)	Zone X (shaded)	YES	YES
	Zone X (unshaded)	Zone X (unshaded)	YES	YES
	No BFEs	BFEs	YES	NONE

* BFEs - Base Flood Elevations

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304 4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

OTHER COMMUNITIES AFFECTED BY THIS REVISION

CID Number: 040051 **Name:** City of Phoenix, Arizona

AFFECTED MAP PANELS	AFFECTED PORTIONS OF THE FLOOD INSURANCE STUDY REPORT
TYPE: FIRM* NO.: 04013C0845L DATE: October 16, 2013	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: October 16, 2013 PROFILE(S): 427P, 428P, 802P, AND 803P FLOODWAY DATA TABLE: 5

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304 4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance flood discharges computed in the submitted hydrologic model without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304 4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Sally M. Ziolkowski
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

STATUS OF THE COMMUNITY NFIP MAPS

We are processing a revised FIRM and FIS report for your community which will become effective on October 16, 2013. Because the effective date has already been established, we will not incorporate the modification made by this LOMR into the revised FIRM and FIS report before they become effective. However, this LOMR will become effective after the revised maps and FIS report become effective.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304 4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

PUBLIC NOTIFICATION

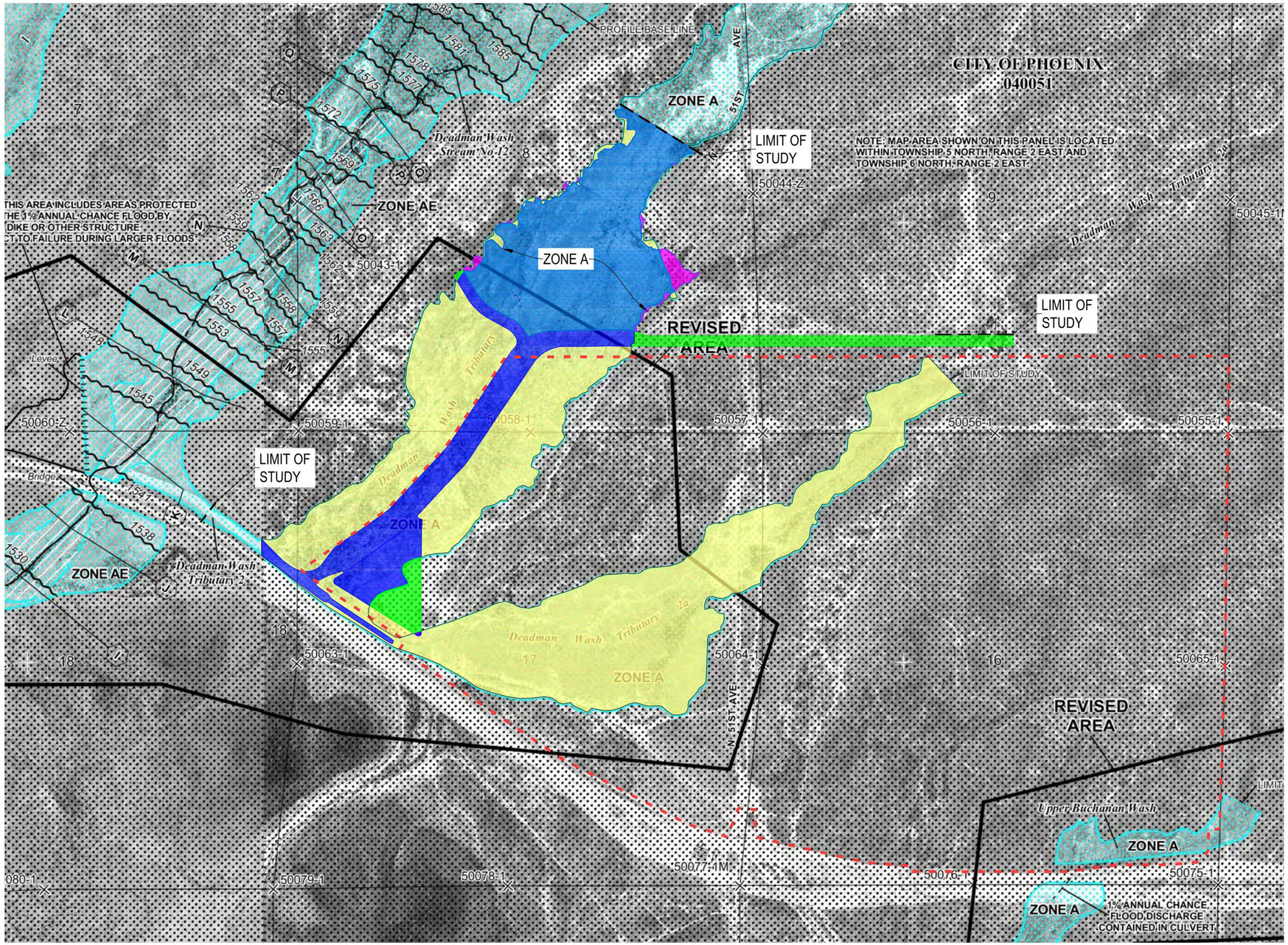
A notice of changes will be published in the Federal Register. This information will be published in your local newspaper on or about the dates listed below and through FEMA's Flood Hazard Mapping website at https://www.floodmaps.fema.gov/fhm/Scripts/bfe_main.asp.

LOCAL NEWSPAPER Name: *The Arizona Business Gazette*
Dates: October 31, 2013 and November 7, 2013

Within 90 days of the second publication in the local newspaper, a citizen may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised flood hazard information presented in this LOMR may be changed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1 877 336 2627 (1 877 FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304 4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration



ANNOTATION LEGEND

- PROJECT BOUNDARY
- FLOODPLAIN AREA CHANGED FROM ZONE A TO ZONE X (SHADED)
- FLOODPLAIN AREA ZONE A CHANGED TO ZONE AE
- FLOODPLAIN AREA ZONE X CHANGED TO ZONE AE
- FLOODPLAIN AREA ZONE X CHANGED TO ZONE A
- LIMIT OF STUDY

LEGEND

PUD BOUNDARY

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0845L

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 845 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	0845	L
PHOENIX, CITY OF	040051	0845	L

REVISED TO REFLECT LOMR EFFECTIVE DATE: MARCH 7, 2014

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 04013C0845L

MAP REVISED OCTOBER 16, 2013

Federal Emergency Management Agency

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0840L

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 840 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PEORIA, CITY OF	040050	0840	L
PHOENIX, CITY OF	040051	0840	L

REVISED TO REFLECT LOMR EFFECTIVE DATE: MARCH 7, 2014

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 04013C0840L

MAP REVISED OCTOBER 16, 2013

Federal Emergency Management Agency

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage area less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 12
- 6000000 M — 5000-foot grid ticks: Arizona State Plane coordinate system, central zone (FIPSZONE 0202), Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
April 15, 1988

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 29, 1989 July 19, 2001 September 30, 2005
October 16, 2013 - to advance suffix, to update corporate limits, to add base flood elevation, to add special flood hazard areas, to incorporate previously issued letters of map revision, to change floodway, to add roads and road names, to add floodway, and to change base flood elevations.

N

600 0 300 600

Horz. 1 in. = 600 ft.

MATTHEW R. PRUITT
REGISTERED PROFESSIONAL ENGINEER
CERTIFICATE NO.
48054
MATTHEW R. PRUITT
DATE SIGNED 6/15/2021
ARIZONA U.S.A.

Expires 6/30/2023

WOOD PATEL

TSMC AZ

EXHIBIT I
ANNOTATED FEMA FIRM

DATE	2/6/2021	SCALE	1" = 600'	SHEET	1 OF 1
JOB NO.	205159.10	DESIGN	JCD	DRAWN	JCD

Z:\2020\205159.10\Project Support\Reports\CLOMR-LOMR\Exhibits\5159.10-Exh I-Annotated FEMA FIRM.dwg

APPENDIX C NATIONAL HISTORIC PRESERVATION ACT SECTION 106 DOCUMENTATION

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
U.S. DEPARTMENT OF COMMERCE

CHIPS for AMERICA

April 11, 2023 **SHPO-2024-0337 (174462)** **Rec: April 11, 2024**

Kathryn Leonard
State Historic Preservation Officer
State Historic Preservation Office
1100 West Washington Street
Phoenix, AZ 85007
Email: azshpo@azstateparks.gov

Re: CHIPS Program Office Initiation of Section 106 Process for Undertaking at Taiwan Semiconductor Manufacturing Company (TSMC) Arizona

Dear Ms. Leonard:

The CHIPS Incentives Program (Program) was authorized by Title XCIX—Creating Helpful Incentives to Produce Semiconductors for America of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (Pub. L. 116-283), as amended by the CHIPS Act of 2022 (Division A of Pub. L. 117-167) (the "CHIPS Act" or "Act"). The CHIPS Incentives Program is administered by the CHIPS Program Office (CPO) within the National Institute of Standards and Technology (NIST), an agency of the Department of Commerce.

TSMC in Phoenix, Arizona (hereafter TSMC AZ) has applied for federal financial assistance under the Program for the purchase and installation of state-of-the-art semiconductor manufacturing equipment and tooling within its existing and to-be-constructed semiconductor fabrication buildings (fabs) (the Project). CPO is considering an action to provide federal financial assistance under the Program for the Proposed Project (the undertaking).

The purpose of this letter is to initiate consultation with the State Historic Preservation Office under Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, 36 C.F.R. Pt. 800, present the CPO undertaking, present the archaeological and architectural area of potential effect (APE), and present CPO's proposed finding of no adverse effect for this project. CPO is coordinating this Section 106 consultation with its review of the Project pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 et seq., and the NEPA implementing regulations (40 C.F.R. Pts. 1500-1508).

Scope of CPO Undertaking

The scope of the CPO undertaking is limited to CPO's provision of federal financial assistance to TSMC AZ for the purchase and installation of semiconductor manufacturing equipment at its existing and to-be-constructed fabs. TSMC acquired land for expansion and construction of the three fabs in 2020. These activities, which are ongoing, do not require federal permits and are proceeding without federal financial assistance. The first fab (Fab 1) is largely completed, the second fab (Fab 2) is approximately 20 percent complete, and construction of the third fab (Fab 3) would commence in mid-2026.

Area of Potential Effect

Arizona State Land Department (ASLD) conducted a public land sale of the subject property in 2020. Prior to this sale, ASLD provided a letter and 2020 cultural resource survey to your office for the parcel identified as 53-121524-00100 encompassing 1,128.47 acres (Attachment 1).

TSMC purchased this parcel on December 9, 2020 for establishment of a new semiconductor manufacturing facility and substantial earthwork, grading, and construction has taken place (and is ongoing) across a significant proportion of the parcel. No federal funds or permits were involved in the completed phases of this work. Built features on the parcel include a completed gowning and office building, Fab 1, the shell of Fab 2, central utility plant, electrical building, warehouse, bulk specialty gas system (BSGS) shelter, lorry chemical building, Water Resource Center, and a 53-acre drainage channel.

CPO has determined this parcel to be the APE for this undertaking. Maps of the APE and limits of Fabs 1, 2, and 3 are provided in Attachments 2 and 3.

Section 106 Next Steps

In accordance with Section 106, CPO seeks to identify potential consulting parties in addition to the SHPO, Native American Indian Tribes that have an interest in the project area, local governments, historical societies, preservation organizations, and the Advisory Council on Historic Preservation (ACHP). On February 29, 2024, CPO initiated government-to-government consultation for the undertaking with sixteen tribes (inclusive of the eleven tribes initially consulted during the ASLD land sale planning effort) (Attachment 4). We would welcome your input on other potential consulting parties that may have an interest in participating in the Section 106 process.

CPO has obtained a copy of the following survey completed by ASLD prior to the land sale for the project site:

> *Class III Cultural Resources Survey of 2,200 Acres at Biscuit Flat in North Phoenix, Maricopa County, Arizona (2020).*

This survey covered 2,200 acres in T5N, R2E, Sections 7, 8, 9, 16, 17, and 18 under Arizona Antiquities Act Permit No. 2020-0766bl. The report addressed:

- An archeological site, AZ T:4:545, which is a historic corral complex associated with Gibson Tank, now removed.
- Twenty-eight (28) isolated occurrences.
- Two other previously recorded sites outside the survey area which were also revisited to assess their condition and eligibility (AZ T:4:456 and AZ T:4:458). Site AZ

T:4:456 was originally recorded by Ryan, et al., 2008.[1] The 2020 survey identified 21 and 17 pieces of flaked stone at each site, respectively. Noting that both sites had low numbers of artifacts that were fully documented with low potential for subsurface cultural deposits, your office concurred that these sites were not eligible for listing on the National Register.

- Four previously recorded sites which could not be relocated: AZ T:4:6; AZ T:4:345; AZ T:4:375 (Luhnow et al., 2002); and AZ T:4:417.
    - AZ T:4:345 was previously recorded during a survey for Interstate 17 and previously determined ineligible (SHPO-2002-1521).
    - AZ T:4:375, low density artifact scatter, was previously recorded during a survey for a transmission right of way (Luhnow, et al., 2002). It was determined ineligible (SHPO-2002-2825).
    - Sites AZ T:4:6 and AZ T:4:417 are intersected by the alignment of State Route 303, an area subject to test excavations prior to construction. The 2020 survey identified no cultural materials associated with these sites.

Based on previous site surveys, non-eligibility determinations of previously surveyed artifacts, and the scope and intensity of ongoing land disturbance at the site, CPO is proposing a finding that the proposed action would have no adverse effect on cultural resources. We respectfully request any additional information or studies your office may have concerning the project site that may affect this determination.

We look forward to consulting with your office throughout the Section 106 process. If you have any questions or would like to discuss this project further, please contact me at [redacted] or by email at [redacted].

Sincerely,

Phillip W. Neuberg

Phillip Neuberg, FAIA
NIST Federal Preservation Officer

cc: CPO Environmental Division

Attachments:
(1) ASLD December 2020 Letter to SHPO
(2) TSMC Project Site and APE Map
(3) TSMC Fabs 1, 2, and 3 Location Map
(4) CPO Tribal Consultation List for the Undertaking

SHPO recommends a finding of No Historic Properties Affected is appropriate for this undertaking. The APE conforms to the scale of the undertaking. We appreciate you consulting the 18 tribes who claim affinity with this area. We recommend that the City of Phoenix Archaeology Office be included as a consulting party, as the City is a Certified Local Government with their own historic preservation ordinance.

Erin Davis
Archaeological Compliance Specialist
Arizona State Historic Preservation Office
May 10, 2024

[1] Ryan, et al., 2008. Lithics and Livestock: A Cultural Resource Inventory of Approximately Five Square Miles at South Biscuit Flat, Maricopa County, Arizona.

Peterson, Dorothy S. (Fed)

From: Laurene Montero [redacted]
Sent: Tuesday, May 14, 2024 5:27 PM
To: Peterson, Dorothy S. (Fed)
Cc: Rebecca Hill
Subject: RE: CHIPS Program Office, Section 106 Consultation for undertaking at TSMC Arizona

Good Afternoon Ms. Peterson

The City Archaeology Office concurs with your finding of no adverse effect on this undertaking.

Thank you

Laurene

Laurene Montero, City Archaeologist
She/Her
Office: [redacted]
Cell: [redacted]

S'edav Va'aki Museum (formerly Pueblo Grande Museum)
City of Phoenix Parks and Recreation
4619 E. Washington St.
Phoenix, AZ 85034
[redacted]
PuebloGrande.com

The Parks and Recreation Department acknowledges the City of Phoenix is located within the homeland of the O'Odham and Piipaash peoples and their ancestors, who have inhabited this landscape from time immemorial to present day.

From: Archaeology PKS <archaeology@phoenix.gov>
Sent: Monday, May 13, 2024 10:04 AM
To: Laurene Montero [redacted]
Cc: Rebecca Hill [redacted]
Subject: FW: CHIPS Program Office, Section 106 Consultation for undertaking at TSMC Arizona

---

From: Peterson, Dorothy S. (Fed) [redacted]
Sent: Monday, May 13, 2024 9:34 AM
To: Archaeology PKS <archaeology@phoenix.gov>
Cc: Neuberg, Phillip W. (Fed) [redacted]; Viola, Peter R. (Fed) [redacted]
Subject: CHIPS Program Office, Section 106 Consultation for undertaking at TSMC Arizona

Good morning Ms. Montero,

On behalf of Phillip Neuberg, National Institute of Standards and Technology (NIST) Federal Preservation Officer, please see the attached Section 106 consultation letter, with copies of previous 106 correspondence with the AZ SHPO, for an undertaking at the TSMC facility in Phoenix.

Sincerely,

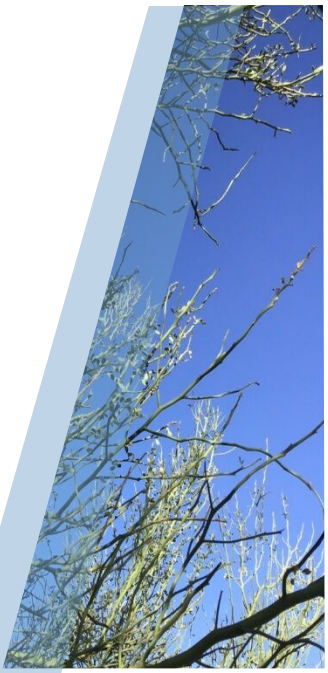
Dorothy Peterson, P.E.
Sr Advisor for Environmental Review and Permitting
CHIPS Program Office
U.S. Department of Commerce
(tel) [redacted]

APPENDIX D ENDANGERED SPECIES ACT DOCUMENTATION

Biological Resources Report

TSMC Phoenix Project
Maricopa County, Arizona

CTCI Americas, Inc.



Document Number: XF30-1000-0001
REV: 0

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List of Acronyms

AAC	Arizona Administrative Code
ADOT	Arizona Department of Transportation
A.R.S.	Arizona Revised Statutes
AZGFD	Arizona Game and Fish Department
BAMVT	Bat Acoustic Monitoring Visualization Tool
BGA	Bald and Golden Eagle Protection Act
BRR	Biological Resources Report
CCA	Candidate Conservation Agreement
CLO	Cornell Lab of Ornithology
ERT	Environmental Review Tool
ESA	Endangered Species Act
ETM	Enhanced Thematic Mapper
F	Fahrenheit
FC	Federal Candidate
GAP	Gap Analysis Program
GRank	Global Rank
HDMS	Heritage Data Management System
IPaC	Information for Planning and Consultation
LE	Listed Endangered
LT	Listed Threatened
MBTA	Migratory Bird Treaty Act
NGEWM	Nongame and Endangered Wildlife Management subprogram
NWI	National Wetlands Inventory
PSB	Project Study Boundary
SC	Species of Concern
SERI	Species of Economic and Recreation Importance
SGCN	Species of Greatest Conservation Need
SHCG	Species and Habitat Conservation Guide
SRank	State Rank
SWReGAP	Southwest Regional Gap Analysis Project
TSMC	Taiwan Semiconductor Manufacturing Company
USFWS	U.S. Fish and Wildlife Service

1. Introduction

The purpose of this Biological Resources Report (BRR) is to document existing biological conditions and investigate and determine which sensitive biological resources (if any, including plant and wildlife species and their habitat), may occur in the footprint or vicinity of the Taiwan Semiconductor Manufacturing Company (TSMC) Project (hereafter "Project," described below). Sensitive species and resources including those listed as endangered or threatened under the federal Endangered Species Act (ESA), designated critical habitat, Arizona Species of Greatest Conservation Need (SGCN), or other special status species and their habitats, are the primary focus of this BRR. Common species without special protections are not considered in this BRR, although all species observed during site visits are listed in the appendices. The purpose of the BRR is to inform Federal and State agencies including U.S. Army Corps of Engineers and Arizona Game and Fish Department (AZGFD) Project review and support Project permit applications.

2. Project Description

TSMC proposes to construct an advanced semiconductor factory on an approximate 1,000-acre parcel near the City of Phoenix, Maricopa County, Arizona. The proposed facility will utilize TSMC's 5-nanometer technology for semiconductor wafer fabrication and will have the capacity to produce 20,000 wafers per month. Construction is proposed to begin in 2021 with production targeted to start in 2024. The proposed facility will enable TSMC to provide enhanced service to customers and partners. It is anticipated that the proposed facility will create more than 1,600 new high-tech jobs and generate thousands of additional jobs in the State of Arizona for suppliers and other companies in the semiconductor industry. Project stakeholders include the U.S. administration, the City of Phoenix, the Arizona Commerce Authority, and the Greater Phoenix Economic Council.

2.1 Proposed Project

The Project is located in Maricopa County, approximately 25 miles north of the City of Phoenix, in an area known as Biscuit Flat (**Appendix A - Figures, Figure 1 - Vicinity**). The Project boundary is approximately 1.25 miles west of Interstate Highway 17, between Arizona State Route 303 (also known as Loop 303 or Bob Stump Memorial Parkway) to the south and Arizona State Route 74 (also known as Carefree Highway) to the north (**Appendix A, Figure 1 - Vicinity**). Deadman Wash, a seasonal stream bed, is located approximately 1.5 miles west of the Project boundary. The properties adjacent to the Project are government-owned, recreational, and residential. The Project Area is located at Township 5 North, Range 2, east of the Gila-Salt River Principal Meridian, in all or parts of sections 8, 9, 10, 15, 16, and 17.

2.2 Project Area History

According to the Phase I Environmental Site Assessment Report (prepared for the Arizona State Lands Department), the Project was utilized for homesteading, farming, and ranching land during the 1800s (Project Engineering Consultants, 2020). More recently, past land use consisted of grazing, livestock watering, recreational hunting, and off-roading. An examination of aerial photography from

Historic Aerials (2020) shows that the Project area has been undeveloped since 1962. GoogleEarth© imagery also revealed that, since 1997, little activity has occurred in the Project area. It currently remains undeveloped. North 51st Avenue (an unimproved two-track road) is located in a north-south orientation in the approximate center of the Project area and other two-track roads are located in the Project area. Between 2007 and 2009, an electric transmission line right-of-way was constructed in an east-west orientation near the northern portion of the Project boundary.

2.3 Definition of the Project Area

The Project Area is defined as the approximately 1,000-acre site boundary shown in **Appendix A, Figure 2 – Project Area**. This is broken out into two parts: the approximately 540-acre initial development area in the eastern half of the Project Area (as of mid-November 2020, and subject to modification) and the remainder of the site.

2.4 Definition of the Project Study Boundary (PSB)

For the purposes of this BRR, the PSB includes the Project Area, as defined in Section 2.3, and immediately surrounding areas, including adjacent roads and a minor buffer of about 100 feet to account for wildlife dispersal movements into the site. Selected additional nearby areas were included in the PSB and documented during the site visit (see Section 4.2) because they may serve as dispersal corridors into, out of, or passing by the site, or because they are identified on HabiMap as areas of potential higher biodiversity (HabiMap, 2015). These supplemental areas include Deadman Wash, a large xeric wash a short distance west of the Project Area; several low hills immediately west-southwest of the Project Area and across Arizona State Route 303; and small ephemeral ponds mapped just southwest and just north of the Project Area (see **Appendix A, Figure 3 – PSB**). This buffer around the Project Area is designed to account for any impacts that may occur outside the immediate Project footprint, including equipment access, auditory or visual disturbance to wildlife or other resources, as well as other potential impacts, such as increased sedimentation from construction or increased dust. It also accounts for potential occasional dispersal into the Project Area of species from nearby unique habitat areas, as described above. Plants were typically evaluated only within the Project Area boundary, while the buffer areas were evaluated primarily for wildlife and habitat. The PSB is somewhat larger than the Project Area, and defines the area which was assessed during field visits and as part of this document.

3. Affected Environment

The following discussion summarizes baseline (pre-Project) conditions within the PSB.

3.1.1 Ecological Overview

Leighty and Huckleberry (1998) described the Biscuit Flat quadrangle, which includes the Project Area, as:

> *"largely a low relief alluvial surface… several relatively small bedrock hills are present across the area, typically having between 100 and 600 feet of relief. The hills south of Deadman Wash and Biscuit Flat are eroded remnants of Proterozoic plutonic rocks that are generally covered by a low-relief, grus-covered pediment surface."*

Within the PSB, elevations range from about 1,620 feet at the extreme northeast corner, to about 1,530 feet at the west end where Deadman Wash crosses Arizona State Route 303; the slope is gradual from northeast to southwest with minimal topographic variation. The three hills in the southwest part of the PSB rise to a maximum elevation of about 1,740 feet, and range from 100 to 200 feet above immediately surrounding terrain. Because some species characteristic of rocky slopes may be present just outside of the Project Area, the nearest hills were included in the PSB to account for potential dispersal into the nearby flats (see **Appendix A, Figure 3 – PSB**) and to capture adjacent habitat variation for purposes of analysis.

3.1.2 Waterbodies

Deadman Wash is located about 2,000 feet west of the Project Area, with several smaller tributary xeric washes flowing across parts of the Project Area. Deadman Wash flows into the New River, which in turn is a tributary of the Agua Fria River. There are no perennial streams or other water bodies within the PSB, and flow is likely present only during and immediately after significant rainfall. Two ephemeral freshwater ponds are present within the PSB: One at the west end, between the Project Area and Deadman Wash; and one just north of the Project Area. Both are associated with small xeric washes (see **Appendix A, Figure 4 – National Wetlands Inventory [NWI]**).

A waters of the United States, including wetlands, delineation was performed concurrent with preparation of this report and is available under separate cover (GHD, 2020).

3.1.3 Land Ownership and Uses

The entire PSB and much of the immediate surrounding area is currently owned by the Arizona State Lands Department.

3.1.4 General Vegetation Communities

HabiMap (HabiMap, 2015) indicates that the PSB is within the Arizona Upland Subdivision of Sonoran Desertscrub biotic community (Brown and Lowe, 1974). Mapped vegetation communities are based on a “modified USGS regional Gap Analysis Program (GAP) land cover” related to the Southwest Regional Gap Analysis Project (SWRegGAP) vegetation classification (Bennett et al., 2004). These communities include Sonora-Mojave Creosotebush-White Bursage Desert Scrub, which covers the majority of the Project Area; Sonoran Paloverde-Mixed Cacti Desert Scrub, generally associated with xeric washes interspersed throughout the Project Area and the hills in the southwest part of the PSB; and incursions of Invasive Perennial Grassland. Deadman Wash, in the western part of the PSB, is mapped as Wash. The hills to the southwest are shown as Sonoran Paloverde Mixed Cacti Desert Scrub (see **Appendix A, Figure 5 – Vegetation Communities**).

3.1.5 Wildlife Corridors

An AZGFD “important connectivity zone” for wildlife extends across the southern edge of the PSB, on both sides of Arizona State Route 303. The majority of the mapped connectivity zone is south and east of the PSB and appears to be mapped at a landscape scale (see **Appendix A, Figure 6 – Wildlife Corridor**).

Deadman Wash and the hills in the southwest of the PSB are mapped as high value by the AZGFD Species and Habitat Conservation Guide (SHGC) model in HabiMap (HabiMap, 2015). The

inclusions of Sonoran Paloverde-Mixed Cacti Desert Scrub within the PSB are also mapped in the high value category. The remainder of the PSB is mapped as intermediate value, while areas along nearby major roads (Interstate Highway 17, Carefree Highway) and inclusions of Invasive Perennial Grassland are mapped as low value. In comparison, the HabiMap SGCN model maps Deadman Wash as high value, the hills and Sonoran Paloverde-Mixed Cacti Desert Scrub as intermediate value, and the remainder of the PSB as low value (HabiMap, 2015).

4. Methods

4.1 Preliminary Investigation

4.1.1 Database Searches (AZGFD Online Environmental Review Tool [ERT], IPaC, HabiMap, iNaturalist, and eBird)

A database search for special status plant and wildlife species that may occur in the Project vicinity was conducted by GHD on October 8 and 9, 2020. Database searches included the AZGFD ERT (AZGFD, 2020a), AZGFD HabiMap (HabiMap, 2015), and U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) tool (USFWS, 2020a). The search encompassed an area of approximately 3 circular miles around the PSB. In addition, citizen science databases were reviewed for additional local wildlife and botanical information (Bat Acoustic Monitoring Visualization Tool [BAMVT], 2020; Bumble Bee Watch, 2020; eBird, 2020; iNaturalist, 2020). Plant species listed under the Arizona Department of Agriculture Native Plant Law (Arizona Revised Statutes [A.R.S.] §§ 3-341 et seq. and 3-3101 et seq.) were also considered for potential presence in the Project Area. Official species lists from the USFWS and AZGFD are included in **Appendix B - ERT Tool (HDMS) and IPaC Database Search Results**.

4.1.2 National Wetlands Inventory (NWI)

A review of NWI mapping was conducted on October 1, 2020, for the immediate Project vicinity. The NWI mapping for the Project Area can be found in **Appendix A, Figure 4**. Mapping results indicate that three seasonal freshwater ponds occur near the Project Area, and two of these are within the edges of the PSB; one seasonal stream extends a short distance into the Project Area, and others enter the west and southwest parts of the PSB, but not the Project Area.

4.2 Field Surveys

Biologists and botanists conducted reconnaissance-level field investigations within the PSB from October 13 through October 16, 2020. Investigations included a broad-scale survey of the site (both pedestrian and vehicle surveys), with a particular focus on the approximate 540-acre area within the PSB proposed for development. Time on-site each day averaged 10 hours (approximately 6:00 a.m. to 4:00 p.m.). Weather each day was clear, in the 90s to low 100s degrees Fahrenheit (F), with a generally light breeze (Beaufort scale 2). On the morning of October 16, 2020, there were high winds (near gale, Beaufort scale 7). Field methods are described in further detail below.

4.2.1 Protected Plants

Arizona regulates four classes of protected native plants under 3 Arizona Administrative Code (AAC) 3: Highly safeguarded native plants, 47 species for which removal is allowed only as provided in R3-3-1105; salvage restricted native plants, which require a permit for removal as described in A.R.S. 3-903(B)(2); salvage assessed native plants, plants have enough value if salvaged to support the cost of salvaging as specified in A.R.S. § 3-903(B)(3); and harvest restricted native plants, or plants that are protected due to the fact that they are subject to excessive harvesting per A.R.S. § 3-903(B)(4).

Field teams surveyed for protected native plants, mapping those in the highly safeguarded category and noting the presence of salvage restricted species. However, no attempt was made to map all protected plant occurrences in the Project Area at this time.

4.2.2 Natural Communities

Field teams worked from existing community classifications and mapping, as described above in Section 3.1.4, to assess vegetation communities within the Project Area. Although no detailed field mapping was done, points were taken in select areas for later comparison with remote sensing-based mapping.

4.2.3 Wildlife Survey and Wildlife Habitat Evaluation Methods

Field teams assessed the PSB across representative habitat types primarily via walking, with additional driving inspections to cover large areas of similar habitat. Survey efforts were concentrated in the washes and the 540-acre area of initial development, including several east-west transect lines across the 540-acre area.

The survey methods were intended to identify potentially sensitive habitat and detect wildlife activity. Where the habitat allowed the surveyor to walk without risk of damaging nests or dens and surrounding vegetation, the survey included a physical search of the area. This included inspecting the ground, culverts, burrows, holes, shrubs, cacti, and trees for the presence of any wildlife species. Where the habitat was dense or otherwise impenetrable or inaccessible, observations were made from fixed locations. Because wildlife surveys occurred in October when daytime highs were generally near 100 degrees F, and surface activity of many species was expected to be limited, surveys relied heavily on characterizing habitat. Habitat structure, including washes, rocks or boulders, debris piles, burrows or other refugia, and other relevant features were noted and in some cases mapped (e.g., saguaros and dead snags). Wildlife or wildlife sign such as burrows, tracks, scat, or other biological indicators were noted. No protocol-level surveys for special status wildlife were conducted at this time.

5. Results

5.1 Vegetation Communities

Based on field surveys, vegetation communities within the PSB are, in general, consistent with 2005 SWReGAP Land Cover Data (Lowry et al., 2005), as viewed in HabiMap (HabiMap, 2015). Much of

the site is Sonora-Mojave Creosotebush-White Bursage Desert Scrub, with Sonoran Paloverde-Mixed Cacti Desert Scrub generally, but not always, associated with washes and hills. Invasive Perennial Grassland is now far more extensive than shown on HabiMap (expected as the SWReGAP land cover data was derived from 1999-2001 Landsat Enhanced Thematic Mapper [ETM]+ imagery) although only the higher cover areas were mapped for this effort (see **Appendix A, Figure 5 – Vegetation Communities**). There are well-worn off road vehicle trails in the flatter areas of the PSB south of Arizona State Route 303. The following discussion of vegetation communities is based on remote sensing and field observations made from October 13 through 16, 2020.

5.1.1 Sonoran Paloverde-Mixed Cacti Desert Scrub

This community is described as "a diverse mixture of evergreen and deciduous leguminous trees, shrubs, and cacti" (Bennett et al., 2004). Within most of the PSB, this series was present as both a mixed cacti scrub and a mesquite scrub with scattered paloverde. The mixed cacti scrub areas were primarily composed of buckhorn cholla (*Cylindropuntia acanthocarpa*) and velvet mesquite (*Prosopis velutina*). These areas were located in uplands in the northeast and southwest corners of the PSB. The hills to the southwest are also dominated by this vegetation community, but on slopes and with small basalt boulders and a few medium-sized plutonic granite boulder piles and with a greater frequency of saguaro (*Carnegiea gigantea*) (see **Appendix A, Figure 5 – Vegetation Communities**).

5.1.2 Sonora-Mojave Creosotebush-Bursage Desert Scrub

This community is described as "very open evenly spaced low diversity stands of microphyll shrubs, containing a few scattered trees and cactus species, with a perennial cover of 10-20 percent" (Bennett et al., 2004). Within the PSB, this vegetation type was dominated by creosotebush (*Larrea tridentata*) with weedy species of globe chamomile (*Oncosiphon piluliferum*; Arizona Department of Agriculture, Noxious Weed Class B), Saharan mustard (*Brassica tournefortii*; Arizona Department of Agriculture, Noxious Weed Class B), woolly plantain (*Plantago patagonica*), and an unidentifiable annual grass (due to drought conditions on-site). These areas were located in the flats across large expanses of the PSB (see **Appendix A, Figure 5 – Vegetation Communities**), with the caveat that globe chamomile is nearly ubiquitous across the Project Area.

5.1.3 Other Habitat Types

Field surveys investigated two ponds outside the Project Area but within the PSB. Both are associated with xeric washes and may be human-modified. One of these ponds, located just south of Arizona State Route 303, is large enough to be named on topographic maps (Aso Tank). At the time of the field surveys (October 2020), the ponds were both dry, but contained hydrophitic vegetation (indicating that the aquatic resources may be seasonal in nature) and were surrounded by large mature mesquite and paloverde trees. There was litter and evidence of human recreational shooting in the area (see photos in **Appendix C - Site Visit Photographs**).

Extensive portions of the PSB included invasive grassland characterized by an absence of shrubs and high cover of grasses. Many of the noxious weeds noted above are common within the invasive grassland.

5.2 Federally Listed Species and Critical Habitat

An IPaC search dated October 8, 2020, identified four federally listed species with potential to occur in or near the PSB. This search also revealed that no federally designated critical habitat occurs within the PSB. The Arizona Online ERT report added two additional species to this list (see **Appendix B** for official species lists). ERT records are based on natural heritage element occurrences or habitat suitability modeling. The ERT generated information on potential sensitive species and resource occurres within 3 miles of the PSB. An additional federally listed avian species occurrence was recorded within 3 miles of the PSB on eBird (citizen science species database). Listed or candidate species identified by IPaC, ERT, and eBird are listed below.

- Ocelot (*Leopardus pardalis*), endangered (ERT)
- Jaguar (*Panthera onca*), endangered (ERT)
- Yellow-billed Cuckoo (*Coccyzus americanus*), threatened (IPaC)
- Southwestern Willow Flycatcher (*Empidonax traillii extimus*), endangered (eBird)
- California Least Tern (*Sterna antillarum browni*), endangered (IPaC)
- Sonoran Desert Tortoise (*Gopherus morafkai*), candidate (IPaC, ERT)
- Gila Topminnow (*Poeciliopsis occidentalis*), endangered (IPaC)

Of these seven species, six are unlikely to be present and the Project would have no effect on those species. Only one (Sonoran Desert Tortoise), a federal candidate also protected under Arizona state law, is considered likely to occur within the PSB based on existing habitat and field surveys. Further analysis is provided below in Section 5.4.2.

5.3 Plants and Habitats

5.3.1 State Protected Native Plants

Table 5.1 summarizes state protected native plants present within the Project Area during October 2020 field surveys. A list of all plants noted in the Project Area (including common, non-protected species) is included in **Appendix D – On-Site Species Lists**.

Table 5.1 Protected Native Plants Present in the Project Area

Scientific Name	Common Name	AZ State Status/SGCN Rank	Presence in the Project Area
Carnegiea gigantea	saguaro	Highly Safeguarded/Salvage Restricted	**Present.** Approximately 19 mapped within the Project Area during October 2020 field surveys.
Echinocereus engelmannii	Engelmann's hedgehog cactus	Salvage Restricted	**Present.** Observed during October 2020 field surveys.
Ferocactus cylindraceus	desert barrel cactus	Salvage Restricted	**Present.** Observed during October 2020 field surveys.
Ferocactus wislizeni	compass barrel cactus	Salvage Restricted	**Present.** Observed during October 2020 field surveys.
Olneya tesota	desert ironwood	Salvage Assessed/Harvest Restricted	**Present.** Observed during October 2020 field surveys.
Opuntia engelmannii (**flavispina* and *engelmannii* varietals have special status)	Engelmann's prickly pear	Salvage Restricted (certain varietals)	**Present.** Observed during October 2020 field surveys.
Prosopis glandulosa	honey mesquite	Salvage Assessed/Harvest Restricted	**Present.** Observed during October 2020 field surveys.
Prosopis velutina	velvet mesquite	Salvage Assessed/Harvest Restricted	**Present.** Observed during October 2020 field surveys.

Key:

Highly Safeguarded: These plants are threatened for survival or are in danger of extinction. Protection includes not only the plants themselves, but their plant parts such as fruits, seeds, and cuttings. A few examples of species in this category are saguaro (*Carnegiea gigantea*), Arizona willow (*Salix arizonica*), and some agave and cacti (Agavaceae and Cactaceae) families.

Salvage Restricted: This large group of plants are subject to damage and vandalism. This is a large list of species with 32 plant families represented, the largest being numerous species of cacti.

Salvage Assessed: This much smaller group of plants have enough value if salvaged to support the cost of salvaging. This list includes desert willow (*Chilopsis linearis*), paloverde (*Cercidium* spp.), ironwood (*Olneya tesota*), smoke tree (*Psorothamnus spinosus*), and several mesquite species (*Prosopis* spp.).

Harvest Restricted: Also a smaller group, these plants are protected due to the fact that they are subject to excessive harvesting because of the intrinsic value of products made with their wood or fiber. Included in this group are bear grass (*Nolina microcarpa*), yucca (*Yucca* spp.), ironwood, and mesquite.

5.4 Wildlife

Numerous wildlife species and wildlife sign (e.g., scat or tracks) were observed during the October 2020 field surveys. A general wildlife habitat summary in the PSB is provided below by taxonomic group. See **Tables 5.2** and **5.3** for Special Status Species and Species of Economic and Recreation Importance (SERI) that were documented as present or that have potential to occur in the PSB. A detailed discussion of sensitive wildlife species present or likely to occur in the PSB is included in Section 5.4.3. Full species lists from field surveys are provided in **Appendix D**.

5.4.1 Wildlife Habitat Evaluation Results

Ample portions of the Project Area consist of friable soils, and evidence of numerous excavations of various ground-dwelling mammalian species was observed, including two state special status species (Harris' Antelope Squirrels [*Ammospermophilus harrisii*] and Kit Foxes [*Vulpes macrotis*]). Numerous potential special status mammalian species burrows were mapped (see **Appendix A, Figure 8 – Sensitive Wildlife Occurrences**). The site likely also provides foraging and dispersal habitat for several Arizona mammalian SERI (see **Table 5.3**). During field surveys, evidence was noted of Javelina (*Pecari tajacu*), Mule Deer (*Odocoileus hemionus*), Pronghorn (*Antilocapra americana*; note that the PSB is outside the range of the federally listed Sonoran Pronghorn), and Bighorn Sheep (*Ovis canadensis*) presence in the PSB.

The October 2020 field surveys were conducted outside of the designated nesting bird season in Arizona (March 1 through August 31; Arizona Department of Transportation [ADOT] 2018). Nonetheless, numerous existing nest structures were discovered. The most common nests encountered (approximately 90 mapped during October 2020 field surveys) belong to Cactus Wrens (*Campylorhynchus brunneicapillus*; species protected under the federal Migratory Bird Treaty Act [MBTA]), primarily located in buckhorn or silver cholla (*Cylindropuntia echinocarpa*) throughout the Project Area. Cactus Wren nests on-site likely number in the hundreds (see **Appendix A, Figure 8 – Sensitive Wildlife Occurrences**).

Saguaros serve as prime nesting substrate for many Arizona Sonoran desertscrub avian obligates. In total, 19 saguaros were mapped within the Project Area (see **Appendix A, Figure 7 – Wildlife Habitat Features**), each having some kind of nest located on or in them, including those belonging to Great Horned Owls (*Bubo virginianus*), Cactus Wrens, and swallows (all protected under the MBTA). Additionally, there were several nest cavities of the appropriate size to be utilized by Gilded Flickers (*Colaptes chrysoides*), an AZGFD SGCN.

Several mesquite and paloverde snags are present in the Project Area, both of which support many Arizona Sonoran desertscrub avian species. However, none of these snags currently contained nest cavities as of the October 2020 field surveys. Only one of substantial size (i.e., large enough to potentially hold a raptor nest) was encountered (see **Appendix A, Figure 7 – Wildlife Habitat Features**).

Deadman Wash near the bridge under Arizona State Route 303 was visited during October 2020 field surveys. Larger mesquite and paloverde trees are present, but no riparian habitat was observed. No potentially suitable habitat for Yellow-billed Cuckoo or Southwestern Willow Flycatcher is present. A total of 30 avian species were observed in or flying over the Project Area (**Appendix D,**

Table 2). Twenty-nine of said species are protected under the MBTA and the remaining, Gambel's Quail (*Callipepla gambelii*), is designated as an AZGFD SERI.

The two closest ponds to the Project Area were investigated during October 2020 field surveys (see **Appendix A, Figure 4 – NWI**). Human litter and evidence of recreational shooting in these areas was observed. These ponds are potential breeding habitat for amphibians, which could disperse into the Project Area, and a water source and potential foraging site for numerous other wildlife species.

There are three underpasses below Arizona State Route 303 that may allow for movement of large and small wildlife species (underpasses run north to south into and out of the Project Area). The largest of these is the bridge over Deadman Wash to the west. Additionally, there is a large box culvert near the southeastern-most corner of the Project and another bridge approximately 2,000 feet west of the box culvert (see **Appendix A, Figure 7 – Wildlife Habitat Features** and **Appendix C)**.

5.4.2 Special Status Wildlife Species

Table 5.2 summarizes the potential for special status wildlife species (documented within the 3-mile search radius around the Project Area) to occur in the Project Area and PSB. Please see Section 5.4.3 for descriptions of special status wildlife documented as present within the PSB or those with a high potential to occur based on existing habitat conditions.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
Mammals							
Ammospermophilus harrisii	Harris' Antelope Squirrel	No Status	1B	G5	S5	Rocky desert habitats dominated by cactus and shrubs in west, central, and southern Arizona.	**Present.** Species detected in the Project Area during October 2020 field surveys.
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	1B	G3G4T3T4	S3S4	Widespread in Arizona. Summer roosts in caves and mines surrounded by desert scrub, woodlands, and coniferous forests. May also roost in abandoned buildings. Winter hibernacula includes caves, lava tubes, and mines around the Grand Canyon and southeastern portion of the state.	**Moderate Potential**. Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020; iNaturalist, 2020). Species may forage in the Project Area and greater PSB. However, field surveys confirm that there is no potential for roosting (no roosting habitat present in the Project Area). Given existing habitat, the subspecies has a moderate potential to forage in the Project Area and PSB.
Euderma maculatum	Spotted Bat	SC	1B	G4	S2S3	Most occurrences from the northwestern portion of the state. Mainly found in xeric desert scrub habitats (including riparian), but occasionally in ponderosa forest. Roosts include crevices in cliff faces. Habitat characterized by available nearby water sources.	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020; iNaturalist, 2020). Species may forage in the Project Area and PSB, although most occurrences are not from this portion of the state, so unlikely. No potential for roosting (no roosting habitat present in the Project Area). Given existing habitat, the

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
							species has a low potential to forage in the Project Area and PSB.
Eumops perotis californicus	Greater Western Bonneted Bat	SC	1B	G4G5T4	S3	Year-round resident and widespread throughout the state. Prefers Sonoran desertscrub with cliff and canyon features. Roosts in small (1-to 2-inch wide) rock crevices.	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020; iNaturalist, 2020). Species may forage in the Project Area and greater PSB. No potential for roosting (no roosting habitat present in the Project Area). Given existing habitat, the species has a moderate potential to forage in the Project Area and greater PSB.
Lasiurus blossevillii	Western Red Bat	No Status	1B	G4	S3	Broad-leaf deciduous riparian forests and wooded areas, generally in the southern portion of the state. Species roosts in tree foliage; primarily cottonwoods (occasionally will use saguaro boots, shrubs, and herbs).	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020; iNaturalist, 2020). Suitable roosting and foraging habitat is not present in the Project Area. Given the lack of suitable habitat, the species has a low potential to occur in the Project Area and PSB.
Lasiurus xanthinus	Western Yellow Bat	No Status	1B	G4G5	S2S3	Generally occurs in the southern and extreme western portions of the state. Habitat preferences not well understood, although have	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD,

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
						been documented in proximity to palm trees and riparian/deciduous forest. Aquatic resources may be important habitat components.	2020a; BAMVT, 2020; iNaturalist, 2020). Suitable roosting and foraging habitat is not present in the Project Area or PSB. Given the lack of suitable habitat, the species has a low potential to in the Project Area and PSB.
Leopardus pardalis	Ocelot	LE	1A	G4	S1	Once believed extirpated from the state, the species has been recently detected in southeastern Arizona. Prefers areas of dense cover (e.g., thornscrub and deciduous forest with canopy cover over 95%) and avoids open environments. High prey density is critical.	**Low Potential.** Potentially present based on predicted range models. HabiMap shows Deadman Wash as a potential habitat (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; iNaturalist, 2020). Suitable habitat is not present (little to no canopy cover in the Project Area or PSB). Given the lack of suitable habitat and no recent records from the Project vicinity, the species has a low potential to occur in the Project Area and PSB.
Macrotus californicus	California Leaf-nosed Bat	SC	1B	G3G4	S3	Occurs south of the Mongollon Plateau in the state. Habitat preferences include Sonoran desertscrub with roost features such as mines and caves (roosts are characterized by large ceilings and areas of flying spaces).	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020; iNaturalist, 2020). Species may forage in the Project Area and PSB. No potential for roosting (no roosting habitat present in the Project Area). Given the presence of potentially suitable habitat, the

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
							species has a moderate potential to forage in the Project Area and PSB.
Myotis occultus	Arizona Myotis	SC	1B	G4G5	S3	Ponderosa pine and oak-pine woodland interspersed with grassland near water features. Maternity colonies and day roosts are frequently found in large snags. Species most common at higher elevations (3,000+ feet) throughout the state, although records from 150 feet as well along the Colorado River.	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020; iNaturalist, 2020). Species may forage in the Project Area and PSB, although potential for this is limited, as few water features are present (seasonal). In addition, site is at a relatively low elevation for the species. No potential for roosting (no roosting habitat present in the Project Area). Given the lack of suitable habitat, the species has a low potential to occur in the Project Area and PSB.
Myotis velifer	Cave Myotis	SC	1B	G4G5	S3S4	Found primarily in the central and southern portions of the state. Roosts colonially in caves, tunnels, mineshafts, under bridges, and in buildings near water. Surrounding habitat characterized by desert scrub (creosote, brittlebrush, paloverde, and cacti). May migrate south of the state in the winter.	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020; iNaturalist, 2020). Species may forage in the Project Area and PSB. No potential for roosting (no roosting habitat present in the Project Area). Given the presence of potentially suitable habitat, the species has a moderate potential

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
							to forage in the Project Area and PSB.
Myotis yumanensis	Yuma Myotis	SC	1B	G5	S3S4	Species present throughout the state during the summer months (majority of population is migratory, wintering in Mexico). Closely associated with areas of water in upland and lowland environments (desert scrub, riparian, as well as moist woodlands and forests). Roost in caves, mines, buildings, and under bridges.	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020; iNaturalist, 2020). Species may forage on-site, although potential for this is limited, as few water features are present (seasonal). No potential for roosting (no roosting habitat present in the Project Area). Given the lack of suitable habitat, the species has a low potential to occur in the Project Area and PSB.
Nyctinomops femorosaccus	Pocketed Free-tailed Bat	No Status	1B	G5	S3	Primarily found in the southern portion of the state. Habitat preferences include desert scrub, arid lowland, and pine-oak forests with roost features such as rock crevices and caves. Frequently detected in association with water.	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020; iNaturalist, 2020). Species may forage in the Project Area and PSB, although potential for this is limited, as few water features are present (seasonal). No potential for roosting (no roosting habitat present on-site). Given the lack of suitable habitat, the species has a low potential to occur in the Project Area and PSB.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
Panthera onca	Jaguar	LE	1A	G3	S1	Occurrences primarily from the southeastern portion of the state. Primarily found in lowland wet and swampy habitats, but may also occur in thornscrub, chaparral, and semi-desert grassland.	**Low Potential.** Potentially present based on predicted range models. HabiMap shows Deadman Wash as a potential habitat (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; iNaturalist, 2020). In addition, no recent occurrences outside of southeastern Arizona. Given the lack of recent records from the Project vicinity (all recent occurrences from the very southeast portion of the state), the species has a low potential to occur in the Project Area and PSB.
Perognathus longimembris	Little Pocket Mouse	No Status	1B	G5	S5	Occurs in the western portion of the state. Habitat preferences include sandy soils in valleys characterized by creosote bush and cactus communities. Species is nocturnal and occupies underground burrows.	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records within 3 miles of the Project Area (AZGFD, 2020a; Naturalist, 2020). Initial 2020 field surveys indicated that soils in the Project Area may be suitable for this species. Given the presence of potentially suitable habitat, the species has a moderate potential to occur in the Project Area and PSB.
Tadarida brasiliensis	Brazilian Free-tailed Bat	No Status	1B	G5	S3S4	Species occurs throughout the state (although limited to the southern half of the state during the winter, due to	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). However, no occurrence records

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
						seasonal migration; winters in southern Arizona and Mexico). Roosts colonially in caves, mines, tunnels, on bridges, in buildings, and parking garages. Habitat generalist found in urban environments as well as desert scrub, coniferous forest, and woodland.	within 3 miles of the Project Area (AZGFD, 2020a; BAMVT, 2020, iNaturalist, 2020). Species may forage in the Project Area and PSB. No potential for roosting (no roosting habitat present on-site). Given the presence of potentially suitable habitat, the species has a moderate potential to forage in the Project Area and PSB.
Vulpes macrotis	Kit Fox	No Status	1B	G4	S3S4	Open, sparsely vegetated flat habitats (scrub, savanna, desert, cresotebush) with soils suitable for digging dens.	**Present.** Inactive Kit Fox burrows detected on-site during October 2020 surveys. Fresh scat and prints also detected. The species is believe to be currently or recently present in the Project Area.
Birds							
Aix sponsa	Wood Duck	No Status	1B	G5	S2BS3N	Generally a winter visitor to the state, although some breeding records along major river systems. Occupies wooded, freshwater aquatic habitats with considerable canopy cover (e.g., riparian corridors, swamps, marshes, etc.). Species nests in tree cavities (also uses man-made nest boxes).	**No Potential.** Potentially present based on predicted range models (HabiMap, 2015). eBird records just over 3 miles from the Project Area (eBird, 2020). Only present in the region during the fall and winter (Witzeman and Corman, 2017). Given the lack of perennial freshwater habitat, this species has no potential to occur in the Project Area or PSB.
Ammodramus savannarum ammolegus *(only listed to genus on eBird)	Arizona Grasshopper Sparrow	No Status	No Status	G5TU	S1S2	Breeds in the southeast portion of the state and winters in the southern part of the state. Occupies large expanses of grassland (intermediate height	**Low Potential.** eBird records just over 3 miles from the Project Area, primarily during the fall/winter (eBird, 2020). Transient and irregular wintering bird in the

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
						grass required; ungrazed cover) interspersed with woody shrubs such as mesquite.	region (Witzeman and Corman, 2017). Given the lack of extensive intermediate height grassland, and only seasonal presence in the region (fall/winter), this species has low potential to occur in the Project Area and PSB.
Aquila chrysaetos	Golden Eagle	BGA	1B	G5	S4	Occurs throughout the state in suitable habitat. Forages in a variety of open habitats (grasslands, high desert, and steppe) and nests on cliff faces (uncommon but occasional tree nester). Requires considerable prey base (e.g., ground squirrels, jack rabbits, marmots, etc.).	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). No eBird (eBird, 2020) or iNaturalist (iNaturalist, 2020) records within 3 miles of the Project Area (although numerous records year-round within 5 miles; clustered around mountainous regions). No suitable nesting habitat (i.e., cliff faces) is present in the Project Area or PSB. However, given open habitat and the presence of numerous ground squirrels, the species has moderate potential for forage in the Project Area and PSB.
Asio otus	Long-eared Owl	No Status	1C	G5	S4	Rare resident throughout the state. Breeds in variety of habitats from desert to pine-oak forests in dense vegetation, typically adjacent to grasslands or shrublands. Highly nomadic species. Communally roosts in winter in wooded areas, including washes, mesquite bosques, and groves.	**Present**. Detected in the Project Area during October 2020 field surveys.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
Athene cunicularia hypugaea	Western Burrowing Owl	SC	1B	S3	G4T4	Occurs in suitable habitat (open areas with ground squirrel burrows) year-round in Arizona (some seasonal movements within some parts of the state, other birds are residents). Preferred habitats are grassland, steppe desert, agricultural areas, and developed areas such as golf courses and airports.	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). eBird records within 3 miles of the Project Area (eBird, 2020). Year-round resident in the region (with additional seasonal influx of wintering migrants from more northern climes). Given the presence of suitable habitat (open habitat with numerous ground squirrel burrows) and nearby records, this species has moderate potential to forage, nest, and winter in the Project Area and PSB.
Botaurus lentiginosus	American Bittern	No Status	1B	S1S2	G5	Historical breeder in the state in marshes north of the Mongollan Rim. Now believed to only be a rare transient and winter visitor to the southern and western portions of the state. Preferred habitat includes marshes, wet meadows, vegetated edges of rivers and lakes. Uses areas of dense vegetative cover.	**No Potential.** eBird records just over 3 miles from the Project Area (eBird, 2020). Given the lack of any perennial aquatic habitat (and dense aquatic/marsh vegetation), this species has no potential to occur in the Project Area or PSB.
Buteo plagiatus	Gray Hawk	No Status	No Status	GNR	S3	Majority of occurrences from the southeast portion of the state, although species is expanding its range north. Associated with major river systems/riparian deciduous	**No Potential.** eBird and iNaturalist records just over 3 miles from the Project Area (eBird, 2020, iNaturalist, 2020). Closest known nesting record in relation to the Project Area is from Hassayampa River near Wickenburg (Witzeman

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
						woodlands (cottonwoods) near mesquite forests.	and Corman, 2017). Given the lack of suitable nesting habitat (riparian woodland associated with water features), this species has no potential to occur in the Project Area or PSB.
Buteo regalis	Ferruginous Hawk	SC	1B	G4	S2BS4N	Occurrences from the northwest and southeast portions of the state. Breeds in northern Arizona on the Colorado Plateau. Occupies suitable habitat (native grasslands, agricultural areas, open scrub lands, plains) throughout the rest of the state in the fall/winter (uncommon but widely distributed). Requires suitable prey base of ground squirrels, prairie dogs, and rabbits. May nest on the ground, in trees, cliffs, and a variety of other substrates.	**Low Potential.** No eBird or iNaturalist records within 10 miles of the Project Area (eBird, 2020; iNaturalist, 2020). Species is not known to nest in the Project vicinity (transient and winter resident only) (Witzeman and Corman, 2017). Suitable habitat (nesting and foraging) is present, but the species is not known to occur in the immediate Project vicinity (closest records from Apache-Sitgreaves National Forest). Given the presence of suitable habitat and no nearby records, the species has low potential to occur in the Project Area and PSB.
Calypte costae	Costa's Hummingbird	No Status	1C	G5	S5	Occurrences from the southern and western portions of the state. Arid-adapted hummingbird that occupies desert scrub communities dominated by cactus, ocotillo (*Fouquieria splendens*), chuparosa (*Justicia californica*), and wolfberry (*Lycium brevipes*). Nesting in early	**High Potential.** eBird records within 3 miles of the Project Area (eBird, 2020). Based on the presence of suitable habitat and nearby recent records, the species has high potential to occur in the Project Area and PSB.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
						spring (after May, species migrates south out of the state). Commonly nests in paloverde.	
Catharus ustulatus	Swainson's Thrush	No Status	1B	G5	S1B	Neotropical migrant. Rare breeder in alder-scrub willow thickets along drainages in northeast portion of state. Also may occupy corkbark fir forests.	**No Potential.** No eBird records within 3 miles from the Project Area (eBird, 2020). One iNaturalist record just over 3 miles from the Project Area. Considered a rare transient in the region (Witzeman and Corman, 2017). Given the lack of suitable nesting or foraging habitat, the species has no potential to occur in the Project Area or PSB.
Cistothorus palustris	Marsh Wren	No Status	1C	G5	S2B,S3S4N	Freshwater and brackish marsh dominated by cattails, bulrush, and reeds. Occurrences throughout the state associated with perennial water bodies.	**No Potential.** iNaturalist records just over 3 miles from the Project Area (eBird, 2020). Given the lack of suitable nesting or foraging habitat, the species has no potential to occur in the Project Area or PSB.
Coccyzus americanus	Yellow-billed Cuckoo, Western DPS	LT	1A	G5	S3	Neotropical migrant. Occurs in the southern, central, and northeast portions of the state. Occurs in riparian cottonwood-willow and occasionally salt cedar forest. Species does not occur in xeric or urban settings.	**No Potential.** eBird records just over 3 miles from the Project Area (eBird, 2020). Uncommon summer resident and fall transient in the region (Witzeman and Corman, 2017). Given the lack of suitable nesting or foraging habitat, the species has no potential to occur in the Project Area or PSB.
Colaptes chrysoides	Gilded Flicker	No Status	1B	G5	S4S5	Majority of occurrences from the southwestern and south-central portions of the state.	**Present.** Detected in the Project Area during 2020 surveys. Suitable nesting habitat present as

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
						Occurs in association with saguaro, riparian forest, and ironwood (i.e., Sonoran desertscrub). Species nests in saguaros.	well (several appropriately-sized cavities in saguaros in the Project Area). Potential for seasonal nesting is high.
Contopus cooperi	Olive-sided Flycatcher	No Status	1C	G4	S2B	Neotropical migrant. Coniferous Forest. Microhabitat preferences include forest openings with standing dead snags near water.	**Low Potential.** eBird and iNaturalist records just over 3 miles from the Project Area (eBird, 2020, iNaturalist, 2020). Uncommon spring and fall transient in the region (Witzeman and Corman, 2017). Given the lack of suitable nesting or foraging habitat, the species has no potential to occur in the Project Area or PSB.
Dumetella carolinensis	Gray Catbird	No Status	1B	G5	S1	Most occurrences from the eastern portion of the state. Nesting records from along the Little Colorado River and upper San Francisco River, with some additional records near Sedona. Breeds in the U.S. and winters in Mexico and Central America. Occurs in a wide variety of habitats including riparian forest, pine forest, and pinyon-juniper forest. Dense vegetation is critical, frequently in association with nearby water sources.	**No Potential.** eBird and iNaturalist records just over 3 miles from the Project Area (eBird, 2020, iNaturalist, 2020). Given the lack of suitable nesting or foraging habitat, the species has no potential to occur in the Project Area or PSB.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE	1A	G5T2	S3B	Neotropical migrant. Breeding records associated with major river systems in Arizona, including the Gila, San Pedro, Colorado, and Little Colorado. The species is a riparian obligate, requiring dense and expansive riparian forest and wet meadows/saturated soils.	**No Potential.** eBird and iNaturalist records just over 3 miles from the Project Area (eBird, 2020; iNaturalist, 2020). Primarily a transient in the region, but rare summer residents may occur (Witzeman and Corman, 2017). Given the lack of suitable nesting or foraging habitat, the subspecies has no potential to occur in the Project Area or PSB.
Falco peregrinus	Peregrine Falcon	SC	1A	G4	S4	Nesting occurrences associated with cliffs along the Mongollon Rim, Grand Canyon, and Colorado Plateau, particularly overlooking woodlands and riparian areas. May also roost on skyscrapers in urban settings. An abundance of prey items (e.g., pigeons, shorebirds, etc.) is key.	**Low Potential.** eBird records within 3 miles of the Project Area (eBird, 2020). No nesting habitat is present in the Project Area or PSB. The site may serve as marginal foraging habitat, but overall presence is unlikely. Given the lack of nesting habitat or high quality foraging habitat, the species has low potential to occur in the Project Area and PSB.
Geothlypis tolmiei	MacGillivray's Warbler	No Status	1B	G5	S2S3B,S4M	Primarily breeds in the northeast portion of the state. Occupies dense thickets, including riparian woodland. Also found in brushy wooded habitats in dry desert washes and urban landscapes.	**Low Potential**. eBird records within 3 miles of the Project Area (eBird, 2020). However, species does not breed in Maricopa County and is considered an uncommon migrant/transient in the region (Witzeman and Corman, 2017). Given the lack of suitable habitat, the species has low potential to occur in the Project Area and PSB.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	1A	various, depending on population	various, depending on population	Resident populations in Central Arizona, wintering populations in the central and northern portions of the state. Species found in association with large water bodies (e.g., estuaries, lakes, rivers, reservoirs, etc.) that support their prey base (fish). Nests on cliffs, in tall trees, and occasionally in Saguaros.	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). eBird records just over 3 miles from the Project Area (eBird, 2020). Some nesting habitat present (saguaros), although lack of nearby perennial water sources overall makes for marginal conditions for the species. Given the lack of suitable foraging habitat, the species has low potential to occur in the Project Area and PSB.
Lanius ludovicianus	Loggerhead Shrike	SC	No Status	G4	S4	Summer resident throughout the state with wintering populations in the lower Sonoran Zone. Occurs in open county (e.g., savanna, desert scrub, and pinyon-juniper woodland). Nests in hedgerows and trees.	**Present.** Detected in the Project Area during October 2020 field surveys. Project Area may serve as a foraging site, less potential for nesting.
Melanerpes uropygialis	Gila Woodpecker	No Status	1B	G5	S5	Occurrences throughout the southern portion of the state. Common resident species that occupies Sonoran desertscrub dominated by saguaros and lowland riparian woodland. Also occurs in urban areas. Nests in cavities in saguaros and cottonwood.	**High Potential.** Potentially present based on predicted range models (HabiMap, 2015). iNaturalist records within 3 miles of the Project Area (iNaturalist, 2020). eBird records within 3 miles of the Project Area (eBird, 2020). Given the presence of suitable habitat and recent nearby records, the species has high potential to occur in the Project Area and PSB.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
Melospiza lincolnii	Lincoln's Sparrow	No Status	1B	G5	S3B, S5N	Breeder in small areas in the northeastern portion of the state. Transient and wintering species throughout the state. Occurs in dry desert washes, urban grassland, and urban neighborhoods. Most common in riparian areas and irrigated agricultural lands.	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). eBird records within 3 miles of the Project Area (eBird, 2020). Species uncommon on the landscape locally, but seasonal presence is possible. Given the presence of suitable habitat and recent nearby records, the species has moderate potential to occur in the Project Area and PSB.
Melozone aberti	Abert's Towhee	No Status	1B	G3G4	S3	Common resident in the state. Found in riparian woodland, irrigated agricultural landscapes, exotic tamarisk thickets, and mesquite woodlands. Found in most locations where significant brushy understory is present.	**Present**. Detected in the Project Area during October 2020 field surveys.
Micrathene whitneyi	Elf Owl	No Status	1C	G5	S5	Species found throughout the southern portion of the state. Resident populations. Occurs in desert scrub with saguaros, wooded washes, mesquite bosques, and riparian woodlands. Nests in tree cavities and abandoned woodpecker holes in deciduous trees and giant cacti.	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). eBird records within 3 miles of the Project Area (eBird, 2020). Some suitable habitat present (saguaro). Given the presence of suitable habitat and recent nearby records, the species has moderate potential to occur in the Project Area and PSB.
Myiarchus tyrannulus	Brown-crested Flycatcher	No Status	1C	G5	S4	Present in the southern portion of the state from late spring through early fall. Occurs in dry	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). eBird

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
						woodlands, riparian habitat along streams, in lowland canyons, and areas of open desert with saguaros. Cavity nester (uses saguaros).	records within 3 miles of the Project Area (eBird, 2020). Given the presence of suitable habitat and recent nearby records, the species has moderate potential to occur in the Project Area and PSB.
Oreoscoptes montanus	Sage Thrasher	No Status	1C	G4	S5	Breeds in the northern portion of the state. Transient and wintering species in the central and southern portions of the state. Occupies open landscapes such as desert scrub, chaparral, foothill grassland, and bare ground.	**Moderate Potential.** Potentially present based on predicted range models (HabiMap. 2015). eBird records within 3 miles of the Project Area (eBird. 2020). This species does not breed in this portion of the state but seasonal presence is possible. Given the presence of suitable habitat and recent nearby records, the species has moderate potential to occur seasonally in the Project Area and PSB.
Oreothlypis luciae	Lucy's Warbler	No Status	1C	G5	S5	Spring and summer resident in riparian woodlands. Also occurs in wooded dry washes. Nests in cottonwood, mesquite bosques, and willow-dominated drainages.	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). eBird records within 3 miles of the Project Area (eBird, 2020). No significant riparian habitat present. Given the lack of suitable habitat, the species has low potential to occur in the Project Area and PSB.
*Passerculus sandwichensis *(rostratus and rufofuscus*	Savannah Sparrow	various, depending on subspecies	1B	various, depending on subspecies	SA or S2S3	Breeds in the northeast portion of the state and winters throughout the rest of the state. Occupies herbaceous wetland, tidal marsh, coastal estuaries,	**Low Potential.** eBird records within 3 miles of the Project Area (eBird, 2020). Species is uncommon in desert scrub, which dominates the area. Given the

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
subspecies special status)						agricultural lands, and arid grasslands. Uncommon in desert scrub.	lack of suitable habitat, the species has low potential to occur in the Project Area and PSB.
Polioptila melanura	Black-tailed Gnatcatcher	No Status	1C	S5	G5	Occurs in the western and southern portions of the state year-round. Occupies arid landscapes such as desert scrub, dry washes, and saltbrush thickets. Uncommon in urban areas.	**Present.** Detected in the Project Area during October 2020 field surveys.
Pooecetes gramineus	Vesper Sparrow	No Status	No Status	S5	G5	Breeds in the northern portion of the state and is a transient or wintering species through the central and southern portions of the state. Occurs in open landscapes such as agricultural areas and arid grasslands. Uncommon in desert scrub.	**Low Potential.** eBird records within 3 miles of the Project Area (eBird, 2020). Given the lack of suitable habitat and only seasonal presence in the region, the species has low potential to occur in the Project Area and PSB.
Progne subis hesperia *(only listed to genus on eBird)	Desert Purple Martin	No Status	1B	G5T4	S2S3B	Patchy distribution, with breeding records from south and northwest portions of the state. Nests in saguaro cavities. Transient on migration throughout the rest of the state. Most commonly detected near water/sources of insect prey.	**Low Potential.** eBird records just over 3 miles from the Project Area (eBird, 2020). Species is not known to breed in this portion of the state. Given the lack of suitable habitat for transients (bodies of water to forage), the species has low potential to occur in the Project Area and PSB.
Setophaga petechia	Yellow Warbler	No Status	1B	G5	S4	Summer resident in the state in riparian woodlands (particularly cottonwoods) and other lowland wooded habitats, thickets, and hedgerows. Migratory and wintering	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). eBird records within 3 miles of the Project Area (eBird, 2020). Given the lack of suitable riparian habitat, the

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
						populations also seasonally present.	species has low potential to occur in the Project Area and PSB.
Sphyrapicus nuchalis	Red-naped Sapsucker	No Status	1C	G5	S4	Breeds throughout the northeastern and central portion of the state (e.g., White Mountains). Winters throughout much of the rest of the state. Occurs in lowland riparian woodlands (particularly sycamore-dominated), oak woodlands, and desert washes.	**Low Potential.** eBird records just over 3 miles from the Project Area (eBird, 2020). Given the lack of suitable habitat, the species has low potential to occur in the Project Area and PSB.
Spizella breweri	Brewer's Sparrow	No Status	1C	G5	S5	Breeds in the northern part of the state in alpine meadows and sagebrush flats. Common transient in most open and shrubby landscapes outside of the breeding season.	**Present.** Detected in the Project Area during October 2020 field surveys.
Sterna antillarum browni	California Least Tern	LE	1A	G4T2T3Q	S2M,SAB	Occupies marine habitats including sandy and gravel beaches during breeding season. May occur on lakes and reservoirs during the winter. Only known nesting record in the state from Maricopa County. Species most common (but still rare) during migration.	**Low Potential.** No AZGFD Heritage Data Management System (HDMS) or eBird records within 3 miles of the Project Area (AZGFD, 2020a; eBird, 2020). Closest known nest at the Glendale Recharge Ponds in 2009 (Witzeman and Corman, 2017). Given the lack of suitable habitat, this species has low potential to occur in the Project Area or PSB.
Toxostoma lecontei	LeConte's Thrasher	No Status	1B	G5	S3	Uncommon resident of salt bush desert habitats (with scattered shrubs and trees or saguaros). Most occurrence	**Moderate Potential.** Potentially present based on predicted range models (HabiMap, 2015). Some habitat features in the Project Area may support this species. Given

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
						records from the southwest portion of the state.	the presence of some suitable habitat, this species has moderate potential to occur in the Project Area and PSB.
Troglodytes pacificus	Pacific Wren	No Status	1B	G5	S1B,S2N	Breeds in central portions of the state. Winters along the southwestern edge. Occurs in riparian woodland, lowlands, and foothill drainages dominated by sycamores.	**Low Potential.** eBird records just over 3 miles from the Project Area (eBird, 2020). Given the lack of suitable habitat, the species has low potential to occur in the Project Area and PSB.
Vireo bellii arizonae	Arizona Bell's Vireo	No Status	1B	G5T4	S4	Breeds in the southern and western portions of the state. Occurs in mesquite thickets, riparian woodland, and dense wooded washes. Potential winter residents as well.	**Low Potential.** Potentially present based on predicted range models (HabiMap, 2015). Given the lack of suitable habitat, the species has low potential to occur in the Project Area and PSB.
Vireo vicinior	Gray Vireo	No Status	1C	G5	S4	Breeds throughout much of the state except for the extreme southern portion (winters there). Occurs in foothills in areas of chaparral and juniper, mesquite shrub, and ironwood.	**Low Potential.** eBird records within 3 miles of the Project Area (eBird, 2020). Habitat in the Project Area would be considered marginal for the species. Given the lack of suitable habitat, the species has low potential to occur in the Project Area and PSB.
Zonotrichia leucophrys	White-crowned Sparrow	No Status	1C	G5	S1B,S5N	Breeder in a small area in north-central portion of the state in the San Francisco Mountains. Transient and wintering species throughout the state. Occurs across a variety of brushy/weedy habitats, including urban and desert areas, riparian edges, chaparral, and grasslands.	**Present.** Detected in the Project Area during October 2020 field surveys.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
Reptiles							
Chilomeniscus stramineus	Variable Sandsnake	No Status	1B	G5	S4	Upland desert scrub; drainages with loose sand or gravel soils.	**Moderate Potential**. Potentially present based on predicted range models (HabiMap, 2015). Given presence of xeric washes with desert scrub habitat, the species has moderate potential to occur in the Project Area and PSB.
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC	1A	G5T3Q	S3	Desert scrub flats and bahadas. Often near sandy washes.	**Moderate Potential**. Potentially present based on predicted range models (HabiMap, 2015). Given presence of xeric washes with desert scrub habitat, the species has moderate potential to occur in the Project Area and PSB.
Coluber bilineatus	Sonoran Whipsnake	No Status	1B	G5	S5	Desert scrub, usually on slopes or in canyons above the flats	**Moderate Potential**. Potentially present based on predicted range models (HabiMap, 2015). Slopes are present only in a small part of the PSB, but the species has good dispersal ability. Presence is possible and the species has moderate potential to occasionally enter the Project Area and PSB.
Crotalus tigris	Tiger Rattlesnake	No Status	1B	G5	S5	Usually in or close to rocky slopes or washes, less frequently on flats.	**Moderate Potential**. iNaturalist occurrences within 3 miles of the Project Area (iNaturalist, 2020). Potentially present based on predicted range models (HabiMap, 2015). Given recent nearby occurrences presence is possible, and the species has moderate

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
							potential to occasionally disperse into the Project Area and PSB.
Heloderma suspectum	Gila Monster	No Status	1A	G4	S4	Desert scrub to woodland; most often found on rocky slopes and bahadas. Utilizes burrows most of the year.	**High Potential**. Potentially present based on predicted range models (HabiMap, 2015). HDMS occurrences within 3 miles of the Project Area (AZGFD, 2020a). iNaturalist occurrence about 0.9 miles north of the Project Area (iNaturalist, 2020). Given recent nearby occurrences and suitable habitat, the species has high potential to occur in the Project Area and PSB.
Gopherus morafkai	Sonoran Desert Tortoise	FC, CCA	1A	G4	S4	Widespread in Sonoran desertscrub, with highest density on slopes > 5% with numerous large boulders. May disperse across flats or other suboptimal habitat. Utilizes burrows for shelter.	**High Potential**. HDMS occurrences within 3 miles of the Project Area. Potentially present based on predicted range models, especially in western/southwestern part of PSB (HabiMap, 2015). During 2020 field surveys in the Project Area, potential Sonoran Desert Tortoise burrows were detected. Given suitable habitat, recent nearby records (1.6 miles), and the presence of potential burrows in the Project Area, the species has high potential to occur in the Project Area and PSB.
Micruroides euryxanthus	Sonoran Coralsnake	No Status	1B	G5	S5	Desert scrub or semi-desert grassland, especially on slopes with rocky washes or canyons.	**Moderate Potential**. Potentially present based on predicted range models (HabiMap, 2015). Although slopes are limited to a

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
							small part of the PSB, there are nearby records and the species has moderate potential to occur in the Project Area and PSB.
Phrynosoma solare	Regal Horned Lizard	No Status	1B	G5	S5	Desert scrub and semi-desert grassland, especially level areas with mixed shrub cover and sunny openings. Occurs from valleys to rocky slopes. Diurnal.	**High Potential**. iNaturalist occurrences within 0.6 miles and within a wash which crosses the PSB (iNaturalist, 2020). Potentially present based on predicted range models (HabiMap, 2015). Given suitable habitat and previous records from the immediate vicinity, the species has high potential to occur in the Project Area and PSB.
Phyllorhynchus browni	Saddled Leaf-nosed Snake	No Status	1B	G5	S5	Sonoran desertscrub, especially on bajadas and lower slopes of hills. Nocturnal and fossorial.	**Low Potential**. Potentially present based on predicted range models (HabiMap, 2015). Given limited availability of slopes, the species has low potential to occur in the Project Area and PSB.
Amphibians							
Anaxyrus microscaphus	Arizona Toad	SC	1B	G3G4	S3S4	Perennial water, especially pools in shallow foothill streams with sand or rock substrates. May also utilize manmade ponds or irrigation canals.	**Moderate Potential**. HDMS occurrences within 3 miles of the Project Area. Nearest HabiMap potential occurrence is approximately 1 mile northwest. Given recent nearby occurrences and the presence of two ephemeral ponds at the edges of the PSB, the species has moderate potential to occasionally

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
							disperse into the Project Area and PSB.
Incilius alvarius	Sonoran Desert Toad	No Status	1B	G5	S3S4	Sonoran desertscrub, semi-desert grasslands, and woodlands below about 5,800 feet. May wander far from water during summer rain events.	**Moderate Potential**. Potentially present based on predicted range models (HabiMap, 2015). Given the presence of two ephemeral ponds at the edges of the PSB and good dispersal ability, the species has moderate potential to occur in the Project Area and PSB.
Lithobates yavapaiensis	Lowland Leopard Frog	SC	1A	G4	S3	A variety of aquatic systems from sea level to 6,000 feet. Originally associated with rivers or streams subject to periodic flooding, but may be associated with agricultural lands and other sources of water.	**Low Potential**. HDMS (AZGFD, 2020a) occurrences within 3 miles of the Project Area. Potentially present based on predicted range models (HabiMap, 2015), however, there is no perennial water in the PSB. Occasional dispersal is possible, however, given the distance to perennial aquatic habitat, the species has low potential to occur in the Project Area and PSB.
Fish							
Poeciliopsis occidentalis	Gila Topminnow (incl. Yaqui)	LE	1A	G3	S1S2	Santa Cruz and Gila River systems in Arizona. Occurs along shallow shorelines and slackwater in perennial streams, springs, and along the edges of rivers. Prefers shallow, warm water with dense aquatic vegetation.	**No Potential.** No occurrences within 3 miles of the Project Area. No perennial aquatic habitat in the Project Area or PSB.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB
Invertebrates							
Maricopella allynsmithi	Squaw Peak Talussnail	SC	1B	G3	S3	Patchily distributed throughout the state. Found at low elevations in extremely xeric environments. Inhabits deep, open talus piles and rock slides. Require source of limestone for shells such as caliches.	**Low Potential.** HDMS occurrences within 3 miles of the Project Area (AZGFD, 2020a). No suitable habitat present in the Project Area, although may be present in the greater PSB.

Key:

Federal Status:

BGA (Bald and Golden Eagle Protection Act): Prohibits take of Bald and Golden Eagles without prior USFWS permit.

CCA (Candidate Conservation Agreement): Formal, voluntary agreements between the USFWS and one or more parties to address the conservation needs of one or more candidate species or species likely to become candidates in the near future. Participants voluntarily commit to implement specific actions designed to remove or reduce threats to the covered species, so that listing may not be necessary. The degree of detail in CCAs can vary widely, and there are no specific permits or assurances associated with them. CCAs are primarily entered into between USFWS and other Federal agencies and States, but local governments, Tribes, private property owners, and other entities may also participate.

SC (Species of Concern): The terms "Species of Concern" or "Species at Risk" should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the USFWS, but neither term has official status (currently includes all former C2 and delisted species).

LE (Listed Endangered): imminent jeopardy of extinction.

LT (Listed Threatened): imminent jeopardy of becoming Endangered.

FC (Federal Candidate): species is a candidate for listing under the ESA

AZ State Status/SCGN Rank:

“Each species in the SGCN list was scored for each of the following vulnerability criteria. If a species ranked as “vulnerable” (i.e., score = “1”) under one or more of the vulnerability criteria it was included in the SGCN. Ranks were not additive. The rank was based on the following criteria:

Extirpated from Arizona, Federal or State status, Declining status, Disjunct status, Demographic status, Concentration status, Fragmentation status, Distribution status.

Tiers

1A - Scored “1” for Vulnerability in at least one of the eight categories and matches at least one of the following: Federally listed as endangered or threatened under the ESA; Candidate species under ESA; Is specifically covered under a signed CCA or a signed CCA with assurances; Recently removed from ESA and currently requires post-delisting monitoring; Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Table 5.2 Special Status Wildlife Species Present or Likely to Occur in the Project Area and PSB

Scientific Name	Common Name	Federal Status	AZ State Status/SGCN Rank	GRank	SRank	General Habitat Requirements in Arizona[1]	Likelihood to Occur in the Project Area and PSB

1B - Scored "1" for Vulnerability in at least one of the eight categories, but match none of the above criteria.

1C - Unknown status species. Scored "0" for Vulnerability in one of the eight categories, meaning there are no data with which to address one or more categories, and vulnerability status cannot be assessed. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated"

GRank: Global Rank from NatureServe's Heritage Methodology (NatureServe, 2020) (ranking according to degree of global imperilment - **G1** = Critically Imperiled—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors; **G2** = Imperiled—At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors; **G3** = Vulnerable—At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors; **G4** = Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors; **G5** = Secure—Common; widespread and abundant. Subspecies/variety level: "Subspecies/varieties receive a T-rank attached to the G-rank. With the subspecies/varieties, the G-rank reflects the condition of the entire species, whereas the **T-rank** reflects the global situation of just the subspecies or variety" (NatureServe, 2020); **?** = " Denotes inexact numeric rank" (NatureServe, 2020); **Q** = " Questionable taxonomy that may reduce conservation priority" (NatureServe, 2020).

SRank:

State Rank from NatureServe's Heritage Methodology (NatureServe 2020) (ranking according to degree of imperilment in the state (California) - S1 = Critically Imperiled—Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state; S2 = Imperiled—Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state; S3 = Vulnerable—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state; S4 = Apparently Secure—Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors; S5 = Secure—Common, widespread, and abundant in the state; SNR = State Not Ranked; ? rank falls between two existing ranks.

Footnotes:

[1] **– Sources for habitat requirements:** (Cornell Lab of Ornithology [CLO], 2020a; CLO, 2020b; DeBardeleben, 2020; Nongame and Endangered Wildlife Management subprogram [NGEWM], 2020; NatureServe, 2020; USFWS, 2020b; Witzeman and Corman, 2017).

Table 5.3 Potential for Species of Economic and Recreation Importance to Occur in the Project Area and PSB

Scientific Name	Common Name	General Habitat Requirements in Arizona[1]	Potential to Occur in the Project Area and PSB
Antilocapra americana	Pronghorn Antelope	Scatted populations throughout the state, with the majority of antelope in the northern plains. Occurs in grasslands with limited shrub cover and rolling hills.	**High Potential.** Skull detected in the Project Area during October 2020 field surveys. Note the Project Area is outside the range of the federally-listed Sonoran Pronghorn (*Antilocapra americana sonoriensis*).
Callipepla gambelii	Gambel's Quail	Resident throughout all but the eastern portion of the state. Occupies lowland desert, chaparral, and juniper woodland. May also occur in urban settings.	**Present.** Detected in the Project Area during October 2020 field surveys.
Odocoileus hemionus	Mule Deer	Foothills and brushy desert canyons, desert scrub, pinyon-juniper forest, and rocky terrain.	**High Potential.** Potentially present based on predicted range models (HabiMap, 2015). Carcasses observed in the PSB during October 2020 field surveys.
Ovis canadensis nelsoni	Bighorn Sheep	Patchily distributed though the western and southern portions of the state. Desert rocky canyons and mountainous terrain.	**High Potential.** Skull detected in the Project Area during October 2020 field surveys.
Pecari tajacu	Javelina	Common throughout the Sonoran desert uplands in Arizona. Occupies most open areas with prickly pear cactus (prime food item). Habitat may include saguaro-paloverde habitat, grassland, and shrubland.	**Present.** Scat, tracks, and a skull was detected in the Project Area during October 2020 field surveys. The species is believe to be currently or recently present in the Project Area.
Puma concolor	Mountain Lion	Occupies brushy canyons, mine shafts, and rocky outcroppings. Can also occasionally be found in riparian canyons and desert uplands. Presence is primarily related to a readily available prey base.	**Low Potential**. Potentially present based on predicted range models (HabiMap, 2015). Habitat would be considered marginal for the species with little to no cover and surrounded on all sides by major, high-use roadways. A prey base is present; however, no suitable den habitat exists. Potential occurrences would be highly transient. Given the lack of suitable habitat, the species has low potential to occur in the Project Area and PSB.
Zenaida asiatica	White-winged Dove	Breeding and resident populations throughout the southern portion of the state. Occurs primarily at lower elevations. Found in a variety of habitats include riparian forest, suburban edges, and paloverde/cactus dominated desert scrub.	**High Potential.** Potentially present based on predicted range models (HabiMap, 2015). eBird occurrences within 3 miles of the Project Area. Given the presence of suitable habitat and recent nearby records, the species has high potential to occur in the Project Area and PSB.
Zenaida macroura	Mourning Dove	Resident throughout the state, although most common at lower elevations. Habitat generalist and found in all desert habitats in the state.	**Present.** Detected in the Project Area during October 2020 field surveys.

Table 5.3 Potential for Species of Economic and Recreation Importance to Occur in the Project Area and PSB

Scientific Name	Common Name	General Habitat Requirements in Arizona[1]	Potential to Occur in the Project Area and PSB

Footnotes:

[1] **– Sources for habitat requirements:** (AZGFD, 2020b; CLO, 2020b; DeBardeleben, 2020; NGEWM, 2020; NatureServe, 2020; USFWS, 2020a; Witzeman and Corman, 2017; Dimmitt et al. 2015).

5.4.3 Species Descriptions

A description of special status wildlife species observed during the October 2020 field surveys or those with a high potential to occur (generally based on recent documented records in similar habitat within 3 miles) is included below.

5.4.3.1 Mammals

Several special status mammal species have a moderate to high probability to occur within the PSB. Most are addressed above in **Table 5.2.** Only two species documented in or very near the Project Area are addressed in further detail below.

Harris' Antelope Squirrel (Ammospermophilus harrisii), SGCN 1B

Harris' Antelope Squirrel is a diurnal ground squirrel that occurs in western, central, and southern Arizona as well as New Mexico and Mexico (Dimmit et al., 2015). Habitat preferences include rocky desert landscapes dominated by cacti and shrubs, such as saltbush-creosote bush-bursage (NatureServe, 2020). The species digs and lives in underground burrows. The squirrels feed on cactus fruits and seeds (Dimmit et al., 2015). Two Harris' Antelope Squirrels were observed on separate occasions during the October 2020 field surveys. Numerous small ground squirrel burrows, likely belonging to Harris' Antelope Squirrels, are nearly ubiquitously present across the Project Area.

Kit Fox (Vulpes macrotis), SGCN 1B

The Kit Fox is a nocturnal canid species that occurs throughout Arizona in areas of suitable habitat (however, most occurrences are clustered in the southern portion of the state) (NGEWM, 2020). The species is found in dry, open habitats including desert, scrubland (e.g., creosote bush), playa and salt flats, and grassland (NatureServe, 2020). Suitable friable soil is required for the species to dig their underground dens. The species occupies these dens year-round (dens may have multiple entrance holes, and multiple dens may be in use at any given time). Kit Foxes prey on kangaroo rats and other small rodents and lagomorphs (Dimmitt et al., 2015). Four Kit Fox dens were found during the October 2020 field surveys, one with as many as 10 entrances (**Appendix A, Figure 8 - Sensitive Wildlife Occurrences**). These were all located in the south-central portion of the 540-acre development area. An additional Kit Fox burrow was observed within the PSB to the south of the Project Area. Kit Fox scat and prints were also detected in the Project Area.

5.4.3.2 Birds

Several special status avian species are present or have a moderate to high probability to occur within the PSB. Most are addressed above in **Table 5.2**; only nine species documented in or very near the Project Area are addressed in further detail below.

Long-eared Owl (Asio otus), SGCN 1B

The Long-eared Owl occurs throughout Arizona, but is generally rare on the landscape. The species is a resident throughout much of the state, with wintering populations in the southwest (CLO, 2020b). Habitat preferences are varied and include coniferous forest, desert scrub, and riparian forest (NatureServe, 2020). The species nests in brushy or dense vegetation, surrounded by open

habitats (Marks et al., 2020). Long-eared Owls roost communally in the winter. In Arizona, roosts may be found in brushy desert washes dominated by paloverde and mesquite bosques (DeBardeleben, 2020; Witzeman and Corman, 2017). This species was observed in the Project Area during October 2020 field surveys.

Costa's Hummingbird (Calypte costae), SGCN 1C

Costa's Hummingbird occurs in the southern and western portions of Arizona (both breeding and resident populations) (CLO, 2020b). This species is an arid-adapted hummingbird that occupies desert scrub communities dominated by cactus, ocotillo, chuparosa, and wolfberry (Witzeman and Corman, 2017; Dimmit et al., 2015). Nesting occurs in early spring in Arizona (after May, the species migrates south out of the state) (Dimmit et al., 2015). There are numerous eBird records of this species within 3 miles of the Project Area (eBird, 2020). Based on the presence of suitable habitat (i.e., desert scrub) and nearby recent records, the species has high potential to occur in the Project Area and PSB.

Gilded Flicker (Colaptes chrysoides), SGCN 1B

Gilded Flickers are year-round residents through southwestern and south-central Arizona (Moore et al., 2020). The species occurs in association with riparian forest and Sonoran desertscrub (occurs primarily at lower elevations). Gilded Flickers primarily nest in saguaros (NatureServe, 2020). This species was detected in the Project Area during 2020 surveys. Suitable nesting habitat is present as well (several appropriately-sized cavities in saguaros in the Project Area). Potential for seasonal nesting is high.

Loggerhead Shrike (Lanius ludovicianus), Arizona State Special Status Species (S4)

The Loggerhead Shrike is a summer resident throughout the state with wintering populations in the lower Sonoran Zone (NGEWM, 2020). Loggerhead Shrikes occur in open county (e.g., savanna, desert scrub, pinyon-juniper woodland, and agricultural areas) (Witzeman and Corman, 2017) and nest in hedgerows and trees (NatureServe, 2020). They feed on a variety of prey items such as lizards, insects, and small mammals. The species is well-known for its behavior of impaling prey on barbed wire fences (CLO, 2020b). The species was detected in the Project Area during October 2020 field surveys. The Project Area may serve as a foraging site, with less potential for nesting.

Gila Woodpecker (Melanerpes uropygialis), SGCN 1B

The Gila Woodpecker is a year-round resident in southern Arizona (Edwards et al., 2020). The species occupies Sonoran desertscrub dominated by saguaros and lowland riparian woodland, but may also occur in urban areas (Witzeman and Corman, 2017). Gila Woodpeckers nest in cavities in saguaros and cottonwoods (NatureServe, 2020). There are eBird and iNaturalist records of this species within 3 miles of the Project Area (eBird, 2020; iNaturalist, 2020). Given the presence of suitable habitat (e.g., Sonoran desertscrub and saguaros) and recent nearby records, the species has high potential to occur in the Project Area and PSB.

Abert's Towhee (Melozone aberti), SGCN 1B

Abert's Towhee is a resident throughout western and southern Arizona (CLO, 2020b). The species may occur in a variety of landscapes, including riparian woodland, irrigated agricultural area, exotic tamarisk thickets, and mesquite woodlands. The towhees are found in most locations where

significant brushy understory is present (Witzeman and Corman, 2020). For nesting, cottonwood-dominated riparian corridors are preferred (Tweit and Finch, 2020). The species was detected in the Project Area during the October 2020 field surveys. Seasonal presence is likely, with a lesser potential for nesting, as the Project Area lacks suitable riparian habitat for the species.

Black-tailed Gnatcatcher (Polioptila melanura), SGCN 1C

Black-tailed Gnatcatchers are year-round residents in the western and southern portions of the state (CLO, 2020b). The species occurs in arid landscapes such as desert thorn scrub, dry washes, and saltbrush thickets (Witzeman and Corman, 2020). Riparian forest and invasive tamarisk is sometimes also used by the species. Black-tailed Gnatcatchers forage by gleaning insects off leaves, and the species is not dependent on an external source of water (CLO, 2020b). The species was detected in the Project Area during the October 2020 field surveys and there is high potential for breeding to occur on-site.

Brewer's Sparrow (Spizella breweri), SGCN 1C

Brewer's Sparrows are considered a sagebrush obligate species and breed in the northern part of the state in alpine meadows and sagebrush flats (CLO, 2020b). The species is a common transient in most open and shrubby landscapes outside of the breeding season, including Sonoran desertscrub (Witzeman and Corman, 2017). The species was detected in the Project Area during the October 2020 field surveys. Seasonal presence is likely, with no potential for nesting, as the Project Area is outside the breeding range and lacks suitable sagebrush habitat for the species.

White-crowned Sparrow (Zonotrichia leucophrys), SGCN 1C

White-crowned Sparrows breed in a small area in the north-central portion of the state in the San Francisco Mountains (Chilton et al., 2020). They are a transient and wintering species throughout the rest of the state. White-crowned Sparrows occur across a variety of brushy/weedy habitats including urban and desert areas, riparian edges, chaparral, and grasslands (Witzeman and Corman, 2017). The species was detected in the Project Area during the October 2020 field surveys. Seasonal presence is likely, with no potential for nesting, as the Project Area is outside the breeding range for the species.

5.4.3.3 Reptiles

Several special status reptiles have a moderate to high probability to occur within the PSB. Most are addressed above in **Table 5.2**; only three species documented in or very near the site are addressed in further detail below.

Sonoran Desert Tortoise (Gopherus morafkai), FC, CCA, SGCN 1A

The Sonoran Desert Tortoise has been a candidate for listing under the ESA since 2010. This large (8 to 15 inches carapace length in adults) terrestrial species occurs in portions of western and southern Arizona and in the northern two-thirds of Sonora, Mexico. Life history is generally divided into three classes: juveniles, up to about age 5 years and a little over 4 inches; large juveniles, with ossified shells measuring up to about 8.7 inches and ages approximately 6 to 15 years; and sexually mature adults, about age 16 to an estimated maximum longevity of 42 to 54 years in the wild (USFWS, 2015). Breeding generally occurs from July through October, with about half the females

in a population breeding each year. One to 12 eggs are deposited around the beginning of the summer monsoon season (Averill-Murray and Averill-Murray, 2005).

Surface activity is usually greatest in early to mid-spring and during the summer monsoon season. Most of the tortoises' time budget, up to 98 percent, is spent in burrows, although rainfall can result in surface activity (Sullivan et al., 2014). Desert tortoises are mostly dormant in their burrows from mid-November through mid-February (Sullivan et al., 2014). The species is diurnal although it may emerge at night during rainfall (Ernst and Lovich, 2009).

Optimal habitat for Sonoran Desert Tortoises is described as 1) between approximately 900 and 4,200 feet elevation; 2) on rocky slopes greater than 5 percent; and 3) most often, in the paloverde-mixed cacti association (USFWS, 2015). Parts of the PSB meet criteria one (1) and three (3), although only the hills to the southwest and outside of the Project Area meet all three. However, tortoises use inter-mountain valleys as part of their home ranges; Averill-Murray and Averill-Murray (2005) found tortoises up to 1 mile from the nearest slope. HabiMap models much of the land south of the PSB, a small buffer around the hills extending into the southwest part of the Project Area (but not the initial 540-acre development area), and Deadman Wash as suitable tortoise habitat.

During the October 2020 field surveys, 18 burrows likely belonging to Sonoran Desert Tortoise were mapped within the Project Area, and eight of these are within the 540-acre initial development area (see **Appendix A, Figure 8 – Sensitive Wildlife Occurrences**). The observed Kit Fox burrows and American Badger (*Taxidea taxus*) burrow on-site may also be opportunistically utilized by Sonoran Desert Tortoises. An additional potential Sonoran Desert Tortoise burrow was observed on the banks of the pond known as Aso Tank, within the PSB to the southwest of the Project Area. A September 5, 2018 observation of what appears to be a juvenile tortoise is mapped 1.6 miles south of the PSB, with additional observations at greater distances to the north (iNaturalist, 2020). Thus, low-density presence in the PSB is assumed based on habitat and observed burrows.

Gila Monster (Heloderma suspectum), SGCN 1A

This lizard occupies desert scrub environments, especially in Sonoran Paloverde-Mixed Cacti Desert Scrub. Peak activity is in spring, with considerable time spent in burrows during all seasons (Lowe et al., 1986). An observation was reported on April 25, 2020, along Carefree Highway about 0.9 miles north of the PSB. Based on the presence of suitable habitat and the proximity of this recent observation, potential presence in the PSB is likely.

Regal Horned Lizard (Phrynosoma solarum), SGCN 1B

Regal Horned Lizards occupy Creosotebush-Bursage Desert Scrub on both flats and slopes, and may use the bases of shrubs for cover (Parker, 1971). The species typically has a small home range. A recent documented occurrence is mapped approximately 0.6 miles north of the PSB, within a xeric wash which crosses part of the site (iNaturalist, 2020). Several additional occurrences are known within a few miles, thus potential for presence within the PSB is high.

5.4.3.4 Amphibians

Two special status amphibians have a moderate probability to occur within the PSB. These are addressed above in **Table 5.2**. There is no suitable breeding habitat within the Project Area, although two seasonal ponds occur just within the PSB boundary (which is larger than the Project

Area) and individual animals could disperse from these ponds into the site during rain events, especially along xeric washes. Because no water was present during the site visit, no amphibian observations were expected or made.

6. Recommendations

Based on regulatory review and the results of the field work described in this document, the following actions are recommended:

- File a Project Review Form with AZGFD, appending this BRR and the wetland delineation report (GHD action, as the client's agent and with client approval). This will initiate resource agency discussions. Suggested timeline: As soon as practical.
- File a Notice of Intent to Clear Land Form with Arizona Department of Agriculture (**Appendix E**). Suggested timeline: At least 60 days prior to start of work, as required by A.R.S. 3-904.
- File an application for Arizona Protected Native Plants and Wood removal with Arizona Department of Agriculture to cover removal or salvage of saguaro and any other highly protected plants (**Appendix F**). Permits are only valid for 30 days from date of issue, so application should be closely tied to start of work.
- It is recommended that vegetation removal occur, to the extent practical, prior to March 1st to minimize the risk of delays related to MBTA compliance (March 1 to August 31; ADOT, 2018). This is also consistent with recommendations to minimize impacts to Sonoran Desert Tortoise.
- A biologist qualified to handle Sonoran Desert Tortoise should apply for a Project-specific Scientific Collecting Permit, to allow handling if it is necessary to relocate one or more tortoises (GHD action). Timeline: 30 days prior to start of work.
- Prepare a mitigation plan for Sonoran Desert Tortoise, following AZGFD published guidance. Because the development area is classified as low quality habitat, it is anticipated that mitigation requirements will not be excessive, and are likely to include relocation of any Sonoran Desert Tortoise encountered and a brief educational presentation for construction personnel (GHD action). The mitigation plan will follow response to the Project Review Form, but must be approved prior to start of work because of the presence of Sonoran Desert Tortoise burrows within the Project Area. Thus, it is suggested that document preparation begin as early as practical to avoid delays.

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8. Personal Communications

Communication between K. Mierzwa (GHD) and Audrey Owens (AZGFD) regarding obtaining a scientific collecting permit and natural heritage data, October 8, 2020.

Communication between G. Rozhon (GHD) and Sabra Tonn (AZGFD) regarding obtaining official Project species list from AZDFG ERT Tool, October 8, 2020.

9. List of Preparers

Prepared by:

Ken Mierzwa, Senior Scientist, GHD Inc. (Wildlife Contact; ken.mierzwa@ghd.com)

Genevieve Rozhon, Wildlife Biologist, GHD Inc.

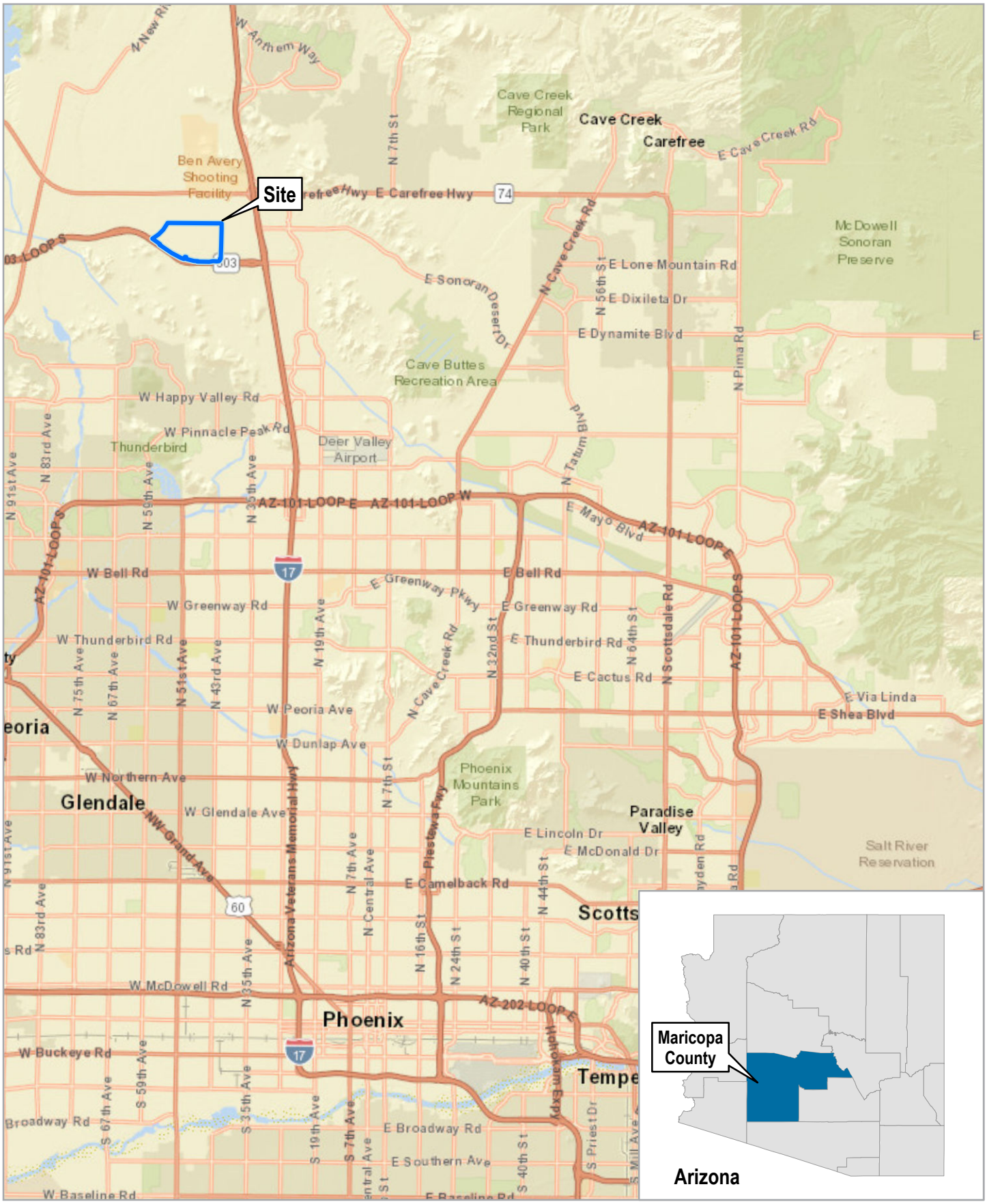
Elizabeth Meisman, Wildlife Biologist, GHD Inc.

Kevin Janni, Wetlands Scientist, GHD Inc. (Waters of the U.S. Contact; kevin.janni@ghd.com)

Joslyn Curtis, Botanist, GHD Inc.

Appendices

Appendix A
Figures



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TSMC PHOENIX PROJECT
BRR REPORT

VICINITY MAP

Project No. **11218799**
Revision No. **-**
Date **11/6/2020**

FIGURE 1

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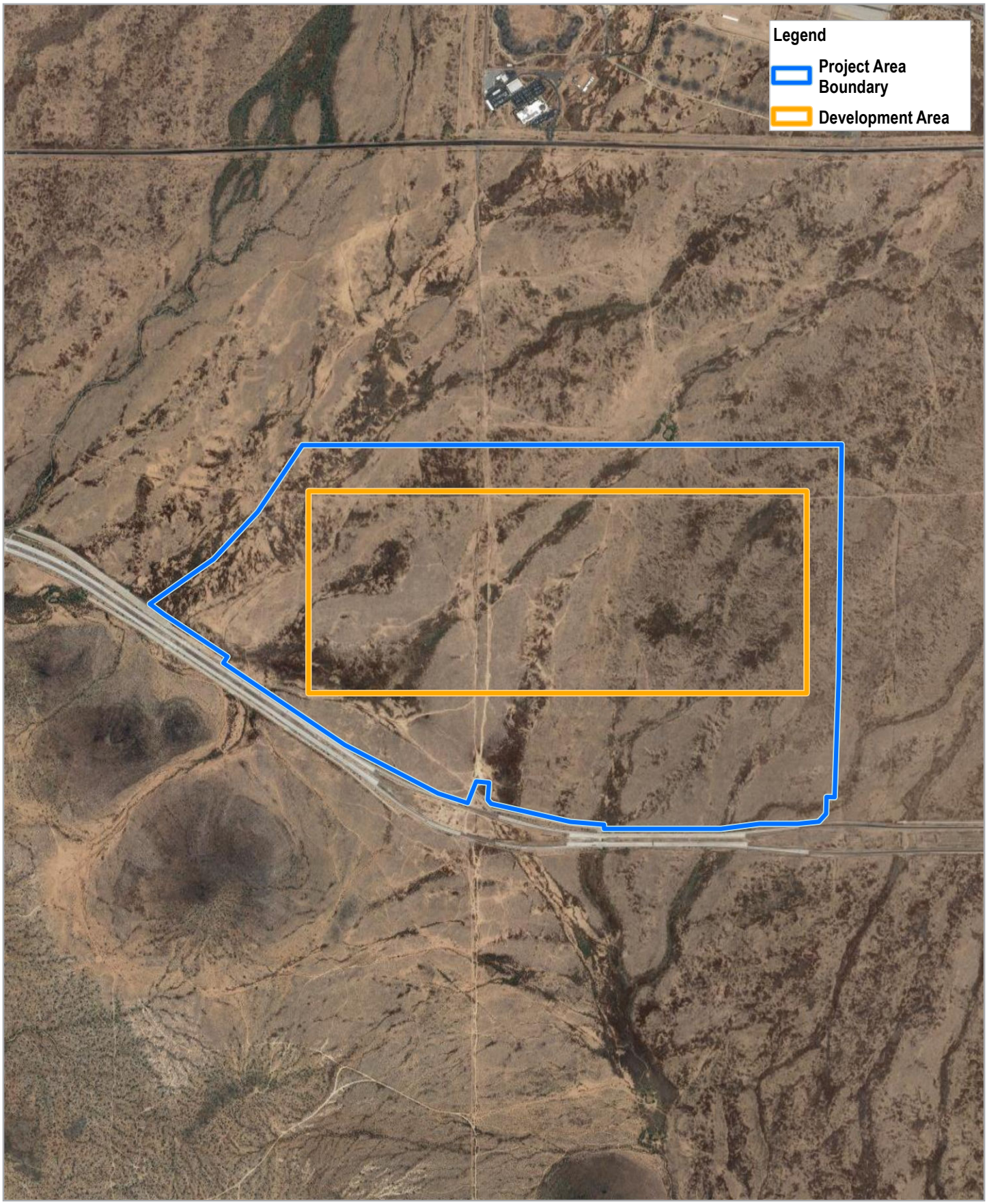

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TSMC PHOENIX PROJECT
BRR REPORT

Project No. **11218799**
Revision No. **-**
Date **11/10/2020**

PROJECT AREA MAP

FIGURE 2

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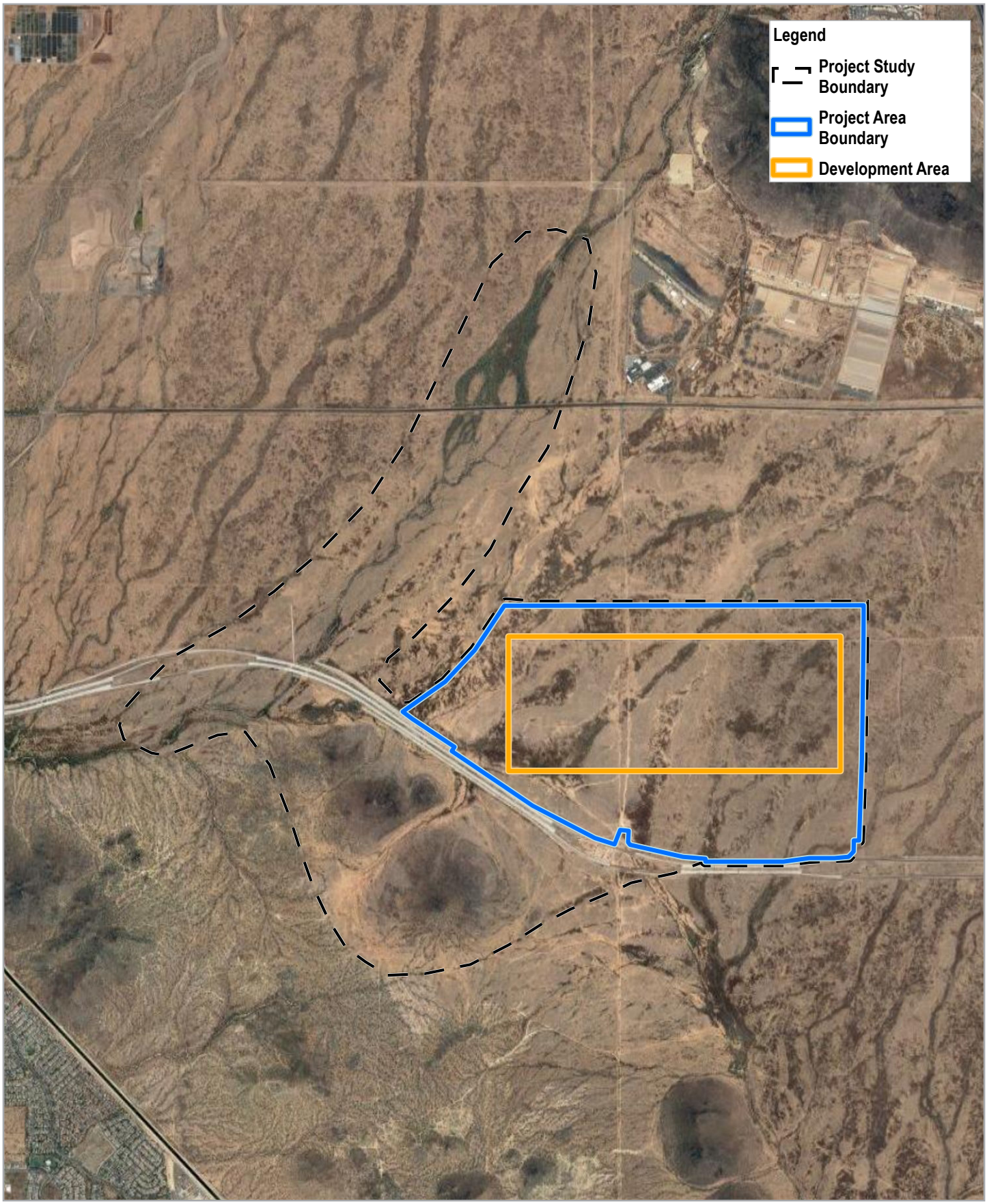

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TSMC PHOENIX PROJECT
BRR REPORT

PROJECT STUDY BOUNDARY

Project No. 11218799
Revision No. -
Date 11/10/2020

FIGURE 3

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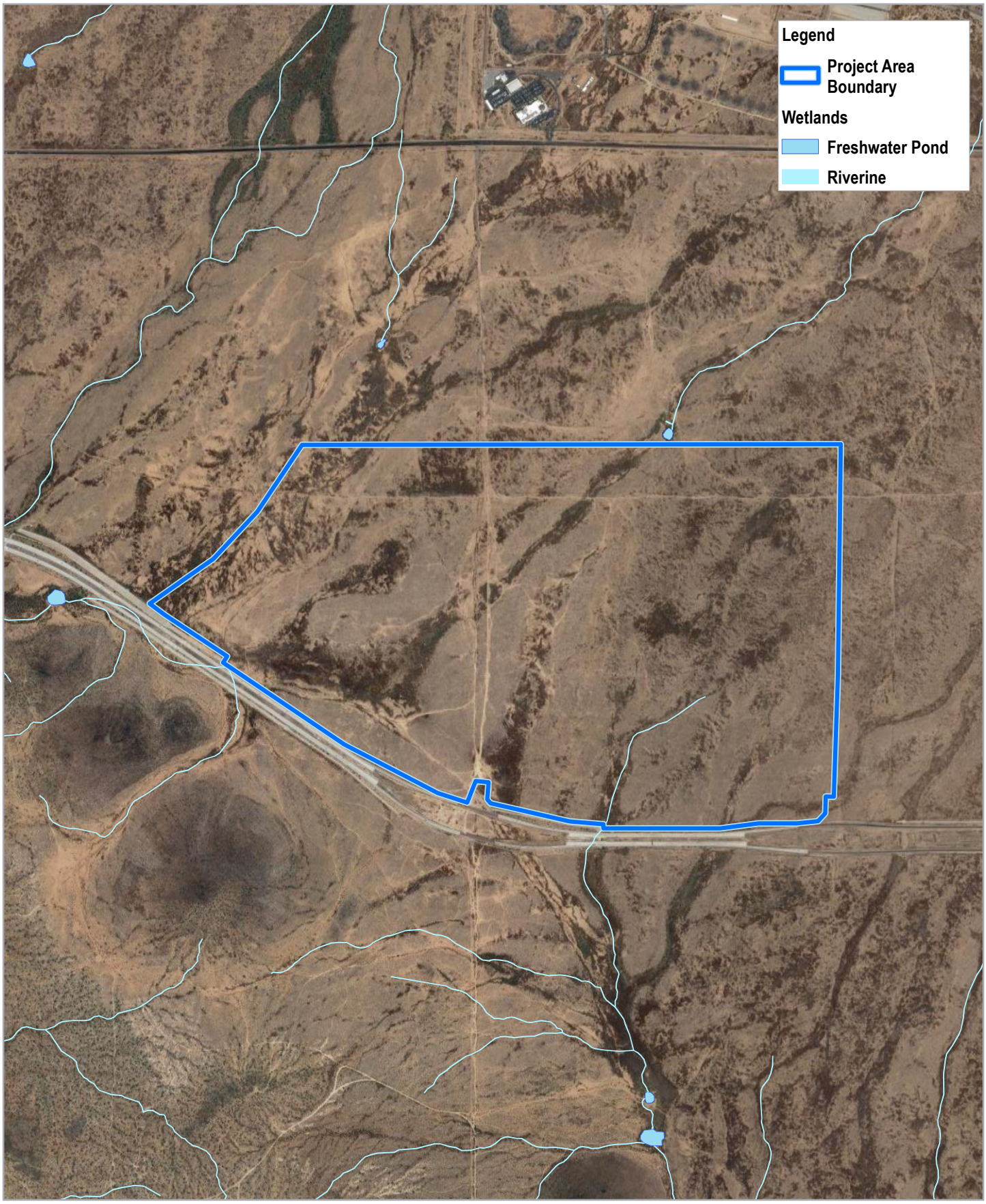

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TSMC PHOENIX PROJECT
BRR REPORT

NATIONAL WETLAND INVENTORY MAP

Project No. 11218799
Revision No. -
Date 11/6/2020

FIGURE 4

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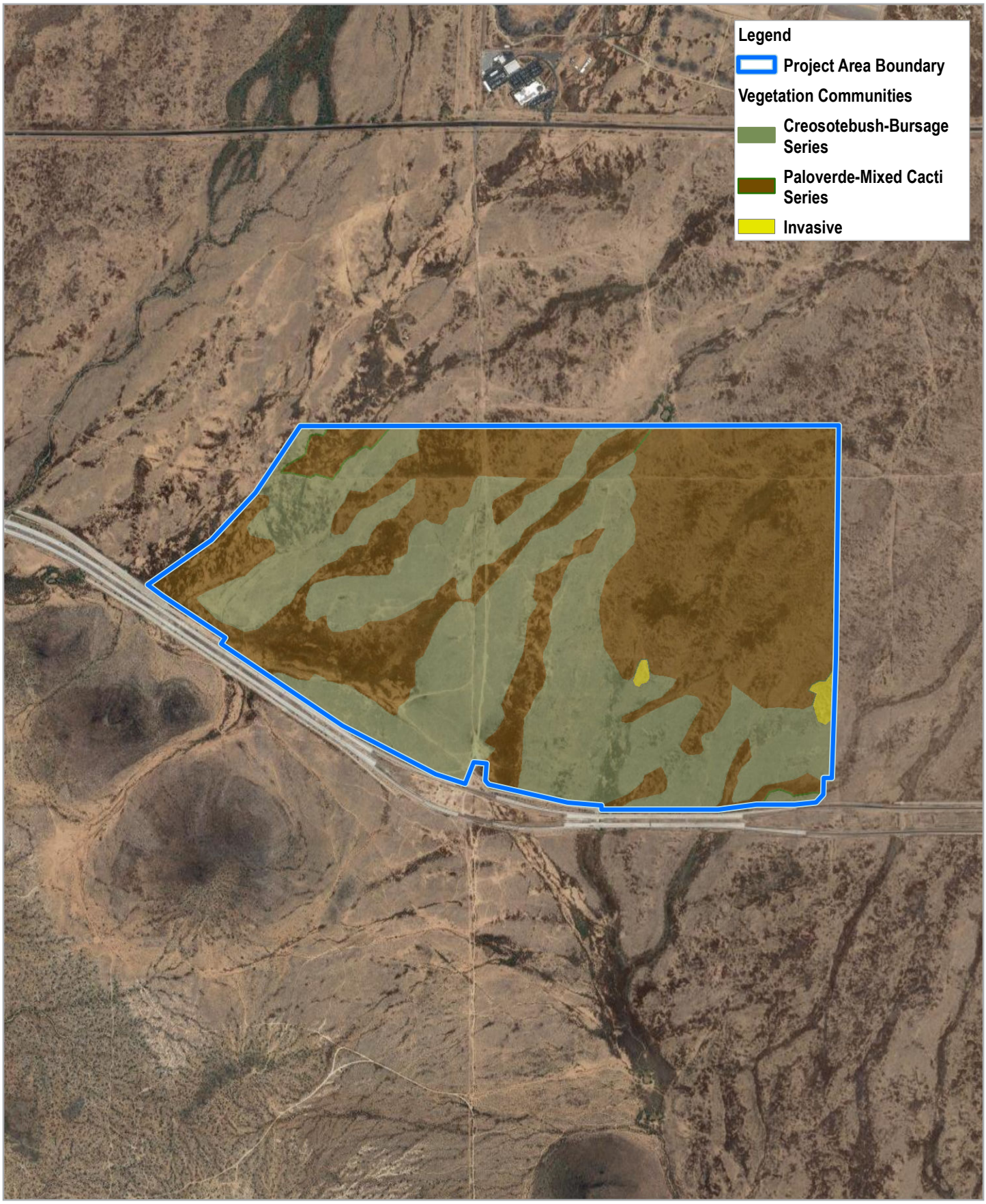

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TSMC PHOENIX PROJECT
BRR REPORT

VEGETATION COMMUNITIES

Project No. **11218799**
Revision No. **-**
Date **11/9/2020**

FIGURE 5

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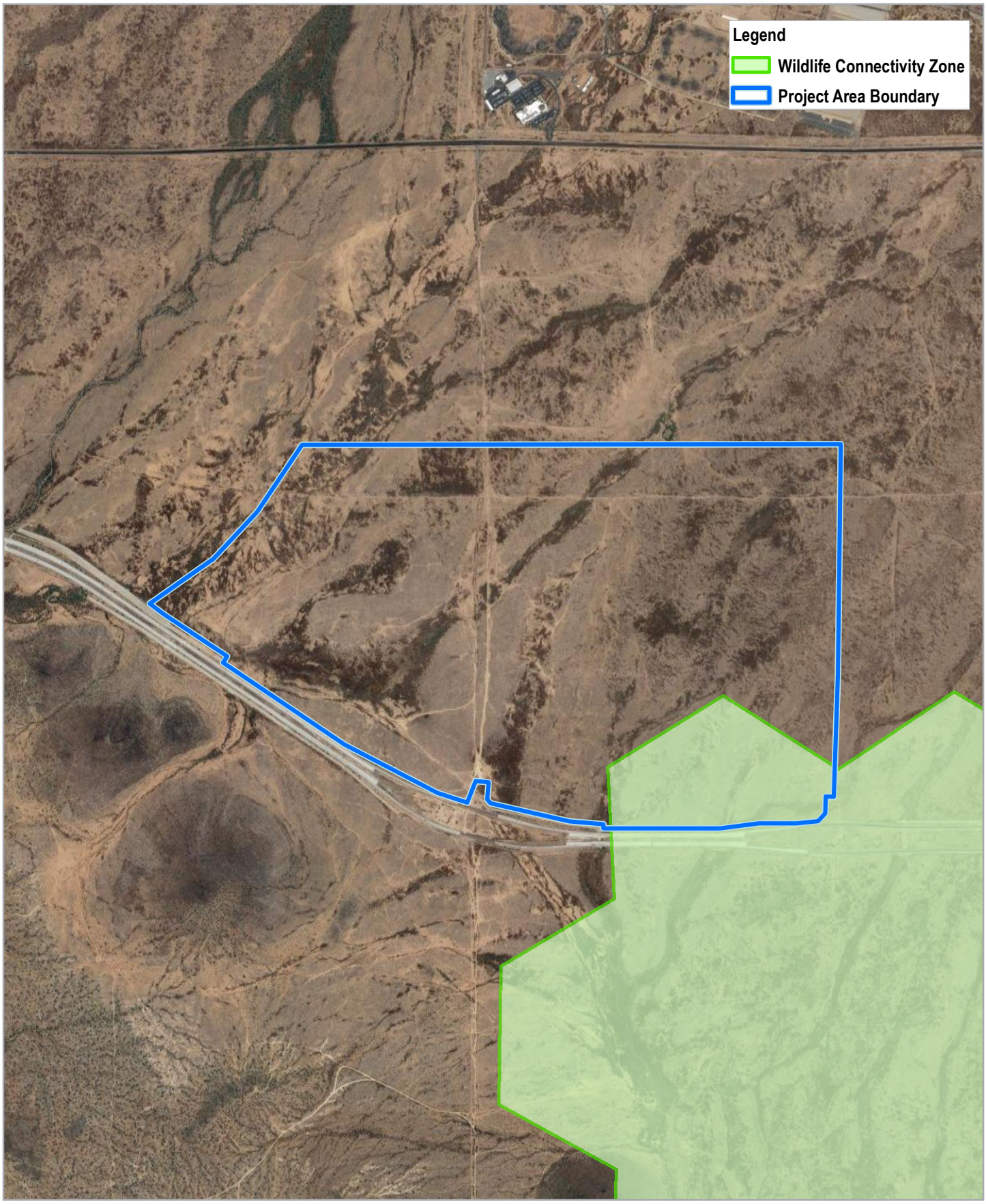

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TSMC PHOENIX PROJECT
BRR REPORT

Project No. **11218799**
Revision No. **-**
Date **11/9/2020**

WILDLIFE CORRIDOR

FIGURE 6

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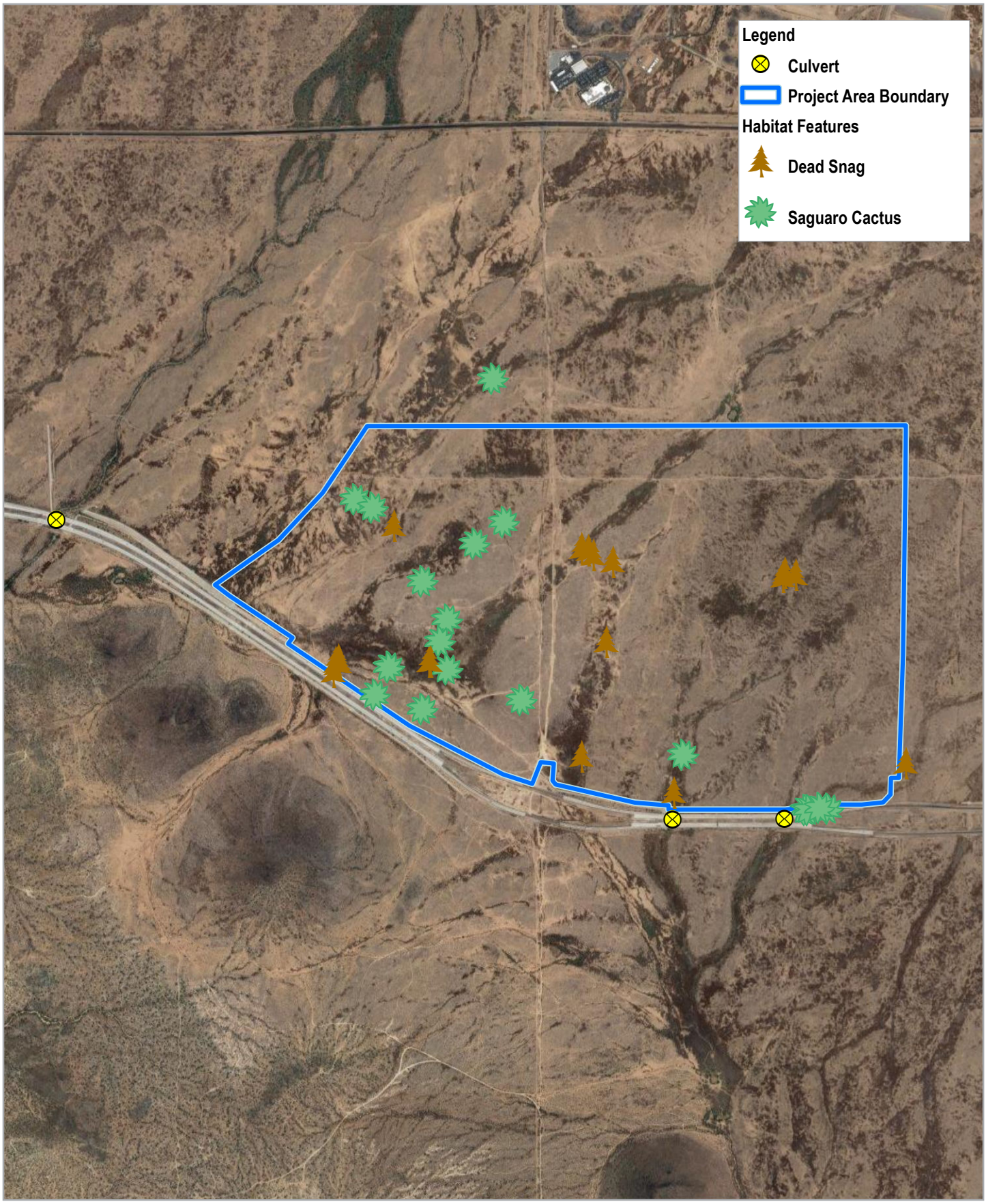

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TSMC PHOENIX PROJECT
BRR REPORT

Project No. **11218799**
Revision No. **-**
Date **11/6/2020**

WILDLIFE HABITAT FEATURES

FIGURE 7

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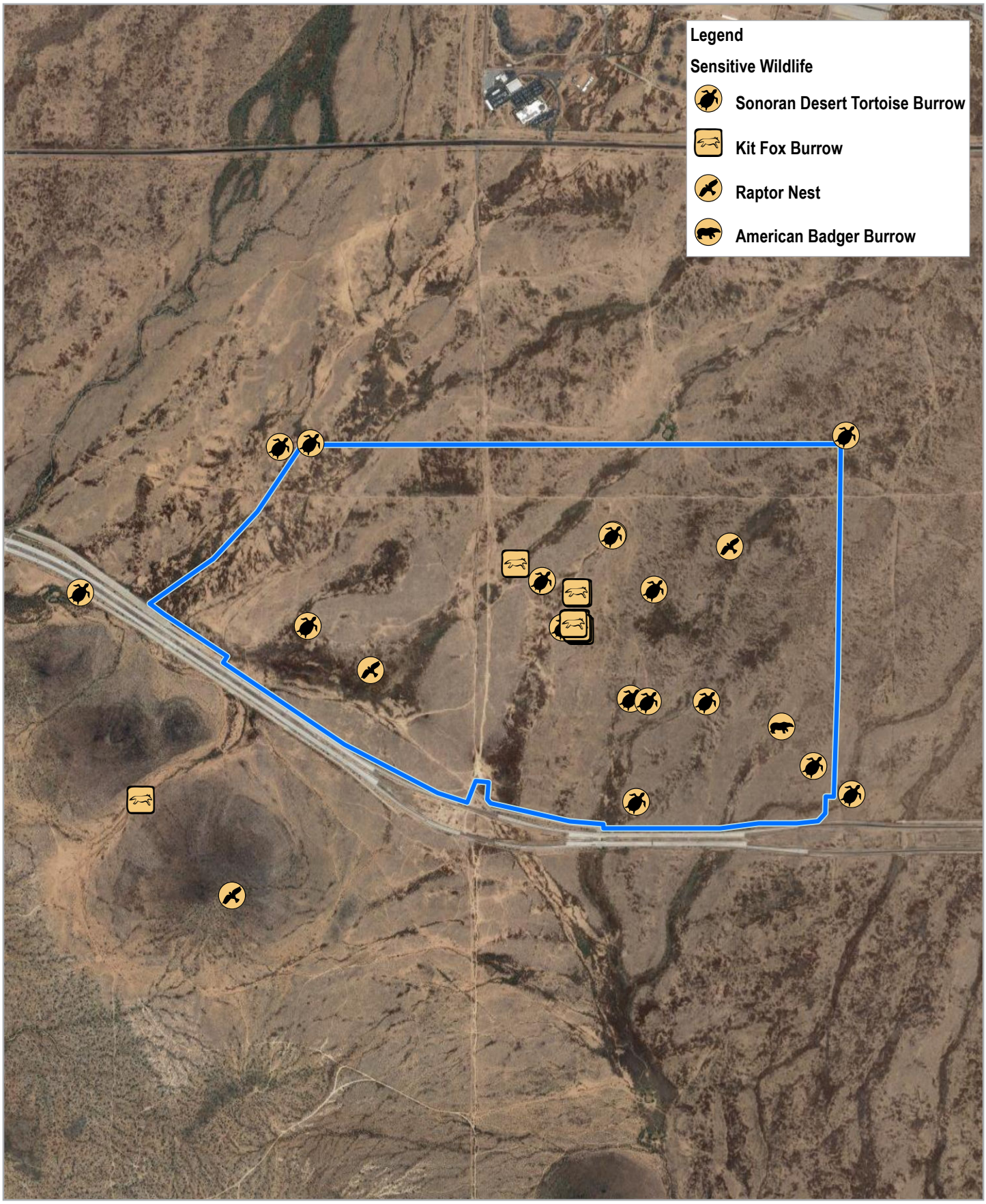

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TSMC PHOENIX PROJECT
BRR REPORT

Project No. **11218799**
Revision No. **-**
Date **11/17/2020**

SENSITIVE WILDLIFE OCCURRENCES

FIGURE 8

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Appendix B
ERT Tool (HDMS) and IPaC Database Search Results

Arizona Environmental Online Review Tool Report

Arizona Game and Fish Department Mission
To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Confidental Communication Project

Project Description:

Confidential communications project slated for development. Further project details are not available at this time.

Project Type:

Communication, Fiber optic cable installation (below ground), New lines or expansion of existing lines

Contact Person:

Genevieve Rozhon

Organization:

GHD

On Behalf Of:

OTHER

Project ID:

HGIS-12154

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

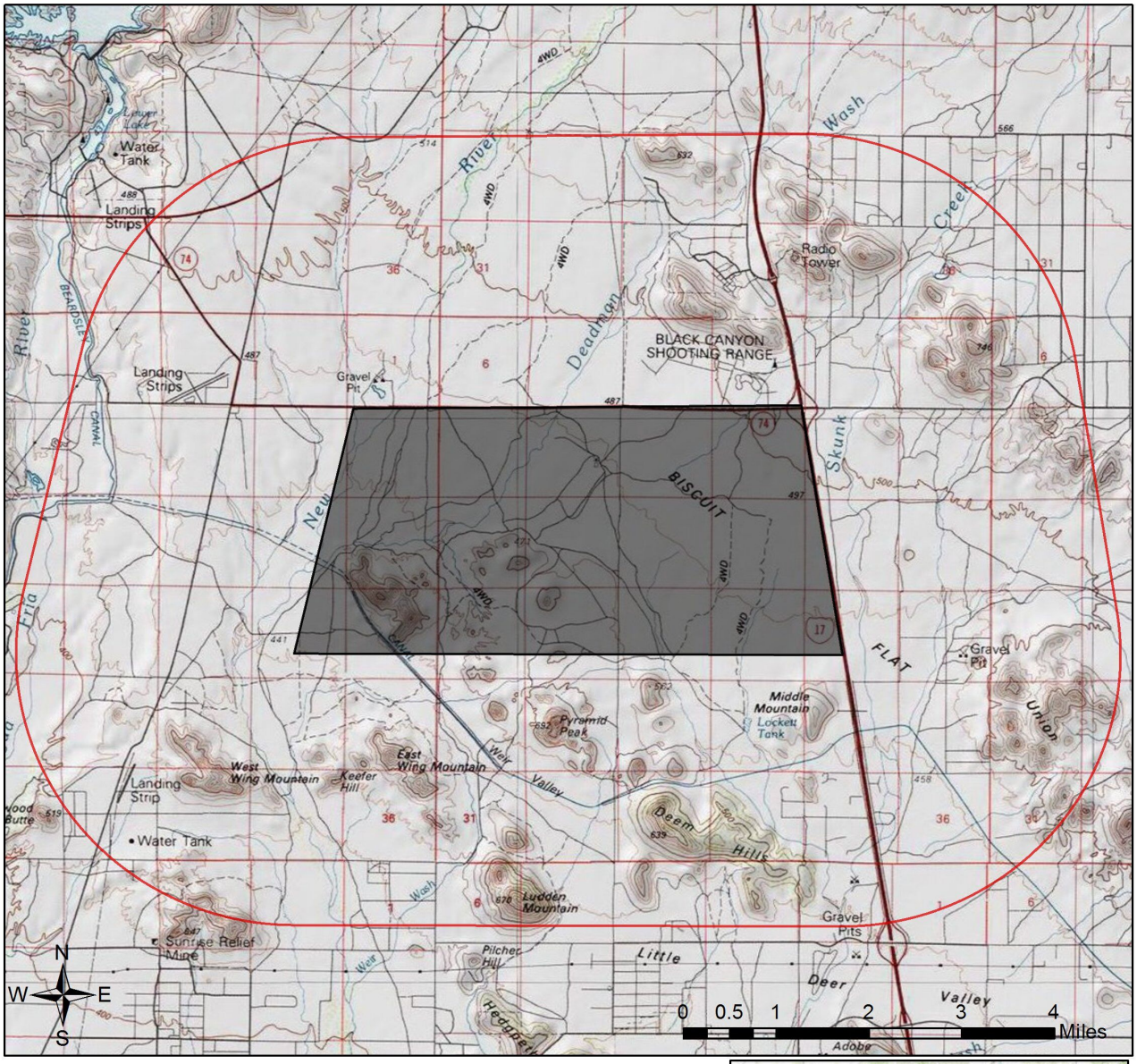
Locations Accuracy Disclaimer:
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
   Project Evaluation Program, Habitat Branch
   Arizona Game and Fish Department
   5000 West Carefree Highway
   Phoenix, Arizona 85086-5000
   Phone Number: (623) 236-7600
   Fax Number: (623) 236-7366
   Or
   PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Confidental Communication Project

USA Topo Basemap With Locator Map



Project Boundary

Buffered Project Boundary

Project Size (acres): 9,395.45

Lat/Long (DD): 33.7775 / -112.1778

County(s): Maricopa

AGFD Region(s): Mesa

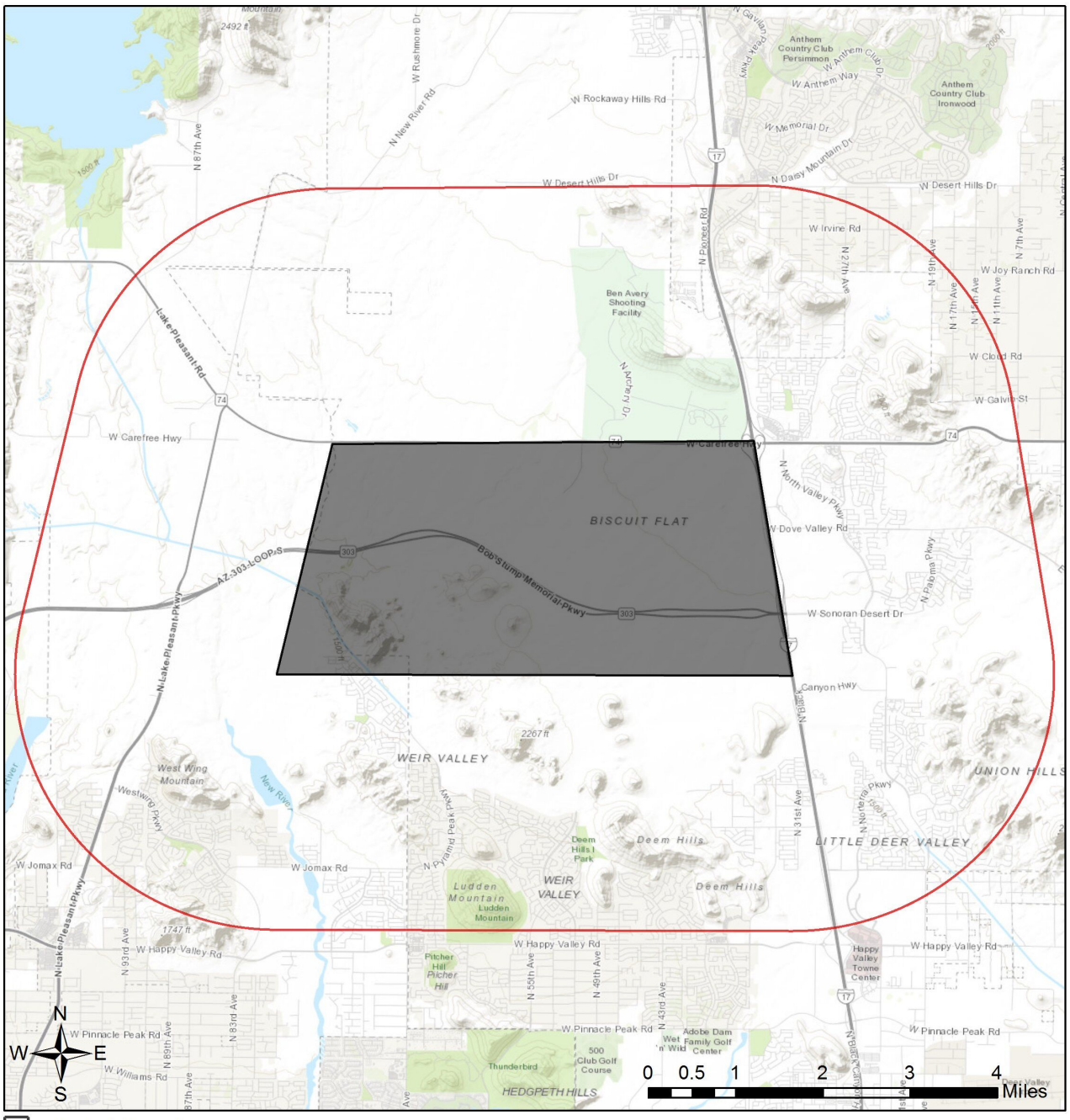
Township/Range(s): T5N, R1E; T5N, R2E

USGS Quad(s): BISCUIT FLAT

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap

Confidental Communication Project

Web Map As Submitted By User



Project Boundary

Buffered Project Boundary

Project Size (acres): 9,395.45

Lat/Long (DD): 33.7775 / -112.1778

County(s): Maricopa

AGFD Region(s): Mesa

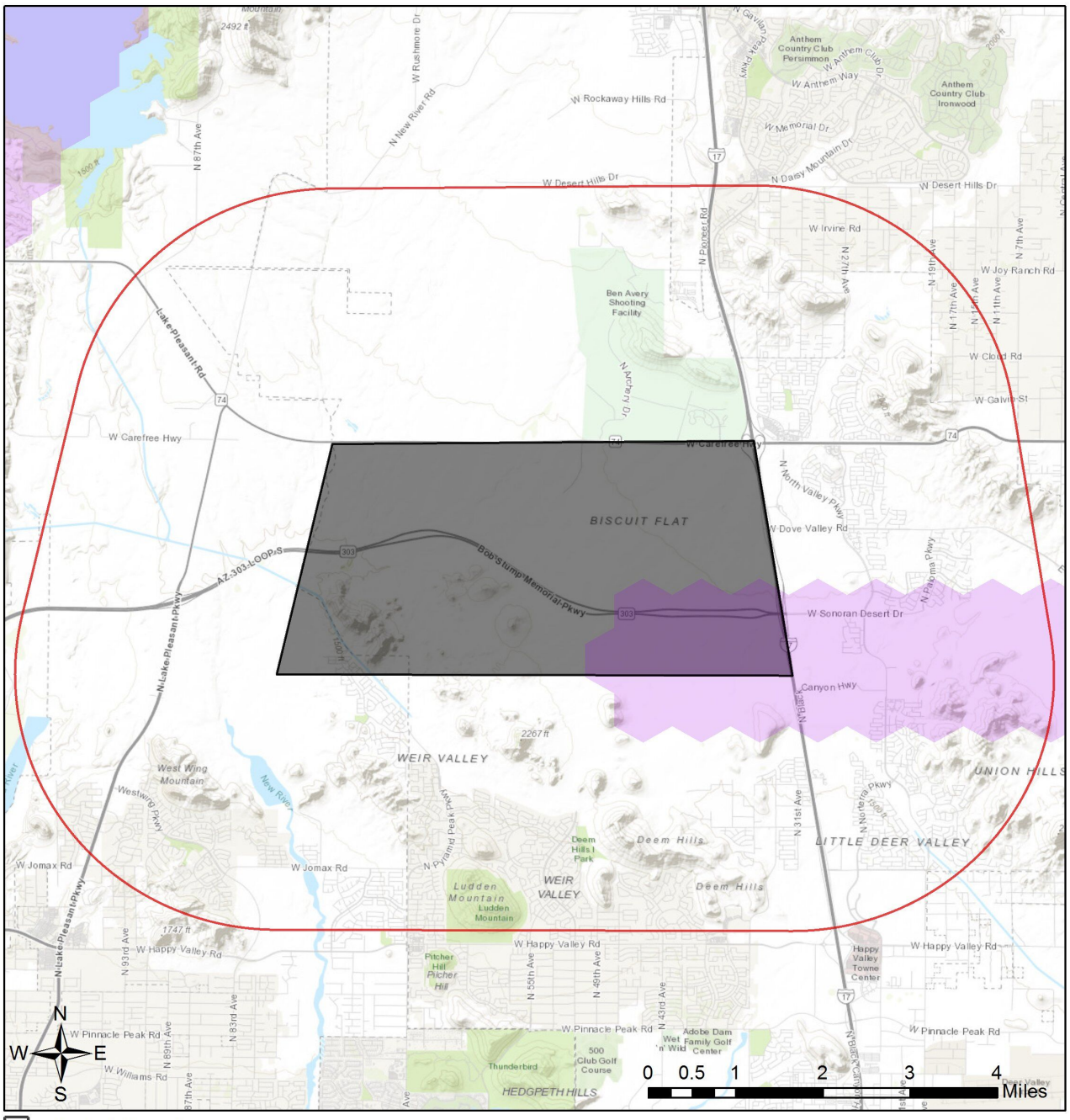
Township/Range(s): T5N, R1E; T5N, R2E

USGS Quad(s): BISCUIT FLAT

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Confidental Communication Project

Important Areas



- Project Boundary
- Buffered Project Boundary
- Wildlife Connectivity
- Important Connectivity Zones
- Pinal County Riparian
- Critical Habitat
- Important Bird Areas

Project Size (acres): 9,395.45

Lat/Long (DD): 33.7775 / -112.1778

County(s): Maricopa

AGFD Region(s): Mesa

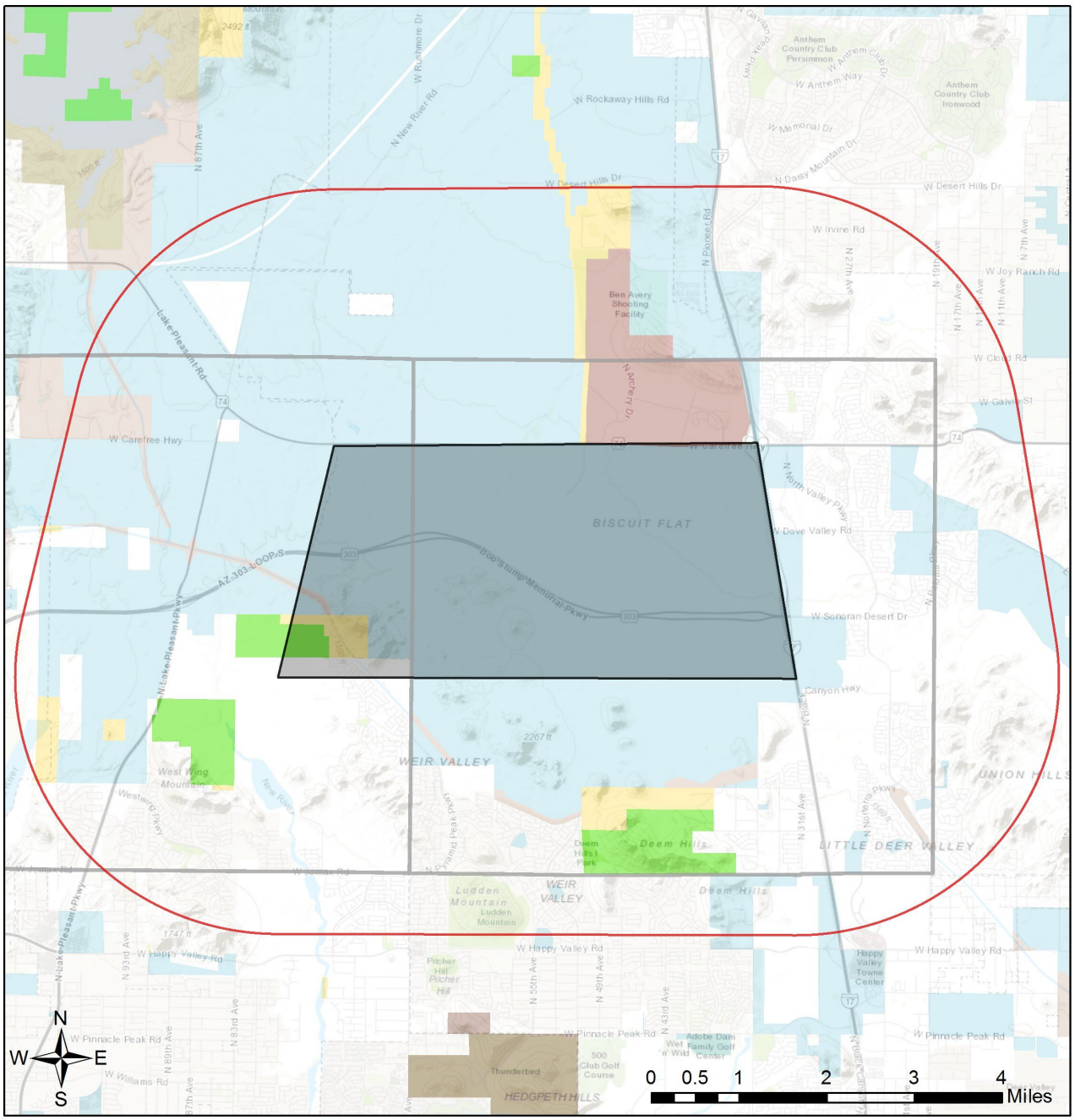
Township/Range(s): T5N, R1E; T5N, R2E

USGS Quad(s): BISCUIT FLAT

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Confidental Communication Project

Township/Ranges and Land Ownership



- Project Boundary
- Buffered Project Boundary
- Township/Ranges

Land Ownership

- AZ Game & Fish Dept.
- BLM
- BOR
- Indian Res.
- Military
- Mixed/Other
- National Park/Mon.
- Private
- State & Regional Parks
- State Trust
- US Forest Service
- Wildlife Area/Refuge

Project Size (acres): 9,395.45

Lat/Long (DD): 33.7775 / -112.1778

County(s): Maricopa

AGFD Region(s): Mesa

Township/Range(s): T5N, R1E; T5N, R2E

USGS Quad(s): BISCUIT FLAT

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Special Status Species Documented within 3 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Anaxyrus microscaphus	Arizona Toad	SC		S		1B
Gopherus morafkai	Sonoran Desert Tortoise	C	S	S		1A
Heloderma suspectum	Gila Monster					1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Maricopella allynsmithi	Squaw Peak Talussnail	SC				1B

Note: Status code definitions can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
.

Special Areas Documented within the Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Black Canyon Trail	Maricopa County Wildlife Movement Area - Landscape					
CAP Canal	Maricopa County Wildlife Movement Area - Landscape					
Important Connectivity Zone	Wildlife Connectivity					
New River - Ganial Peak Wash	Maricopa County Wildlife Movement Area - Riparian/Wash					
Skunk Creek	Maricopa County Wildlife Movement Area - Riparian/Wash					

Note: Status code definitions can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
.

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisii	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC		S		1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Calypte costae	Costa's Hummingbird					1C
Chilomeniscus stramineus	Variable Sandsnake					1B
Chionactis occipitalis klauberi	Tucson Shovel-nosed Snake	SC				1A
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus tigris	Tiger Rattlesnake					1B
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Incilius alvarius	Sonoran Desert Toad					1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leopardus pardalis	Ocelot	LE				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolnii	Lincoln's Sparrow					1B
Melozone aberti	Abert's Towhee		S			1B
Micrathene whitneyi	Elf Owl					1C
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myiarchus tyrannulus	Brown-crested Flycatcher					1C
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Oreoscoptes montanus	Sage Thrasher					1C
Oreothlypis luciae	Lucy's Warbler					1C
Panthera onca	Jaguar	LE				1A
Perognathus longimembris	Little Pocket Mouse	No Status				1B
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Setophaga petechia	Yellow Warbler					1B
Spizella breweri	Brewer's Sparrow					1C
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Toxostoma lecontei	LeConte's Thrasher			S		1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox	No Status				1B

Species of Economic and Recreation Importance Predicted within the Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					

Species of Economic and Recreation Importance Predicted within the Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Communication, Fiber optic cable installation (below ground), New lines or expansion of existing lines

Project Type Recommendations:
Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, https://agriculture.az.gov/. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/quality/?cid=stelprdb1044769 The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information https://www.azgfd.com/hunting/regulations.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with State Historic Preservation Office may be required (http://azstateparks.com/SHPO/index.html).

Trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herptefauna (snakes, lizards, tortoise) from entering ditches.

Project Location and/or Species Recommendations:
HDMS records indicate that one or more **Listed, Proposed, or Candidate** species or **Critical Habitat** (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at http://www.fws.gov/southwest/es/arizona/ or:

Phoenix Main Office
9828 North 31st Avenue #C3
Phoenix, AZ 85051-2517
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office
201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office
SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that **Sonoran Desert Tortoise** have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: https://www.azgfd.com/wildlife/nongamemanagement/tortoise/

Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***. The **County-level Stakeholder Assessments** contain five categories of data (Barrier/Development, Wildlife Crossing Area, Wildlife Movement Area- Diffuse, Wildlife movement Area- Landscape, Wildlife Movement Area- Riparian/Washes) that provide a context of select anthropogenic barriers, and potential connectivity. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://www.azgfd.com/wildlife/planning/habitatconnectivity/identifying-corridors/.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***. The **Statewide Wildlife Connectivity Assessment's Important Connectivity Zones** (ICZs) represent general areas throughout the landscape which contribute the most to permeability of the whole landscape. ICZs may be used to help identify, in part, areas where more discrete corridor modeling ought to occur. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://s3.amazonaws.com/azgfd-portal-wordpress/azgfd.wp/wp-content/uploads/0001/01/23120719/ALIWCA_Final_Report_Perkl_2013_lowres.pdf.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
Phone: (602) 242-0210 Fax: (602) 242-2513
http://www.fws.gov/southwest/es/arizona/
http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

In Reply Refer To: October 09, 2020
Consultation Code: 02EAAZ00-2021-SLI-0035
Event Code: 02EAAZ00-2021-E-00083
Project Name: Confidential Communications Project

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. In some cases, a species does not currently occur within a quadrangle but occurs nearby and could be affected by a project. Please refer to the species information links found at:
http://www.fws.gov/southwest/es/arizona/Docs_Species.htm
http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf .

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 consult with us if their 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, we recommend preparing a biological evaluation similar to a Biological Assessment 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. You should request consultation with us 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." For example, projects that involve streams and river systems should consider downstream effects. 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 considering them 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.

We also 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 (Eagle Act) (16 U.S.C. 668 et seq.). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the Service. The Eagle Act prohibits anyone, without a permit, from taking (including disturbing) eagles, and their parts, nests, or eggs. Currently 1026 species of birds are protected by the MBTA, including species such as the western burrowing owl (Athene cunicularia hypugea). Protected western burrowing owls are often found in urban areas and may use their nest/burrows year-round; destruction of the burrow may result in the unpermitted take of the owl or their eggs.

If a bald eagle (or golden eagle) nest occurs in or near the proposed project area, you should evaluate your project to determine whether it is likely to disturb or harm eagles. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles:
https://www.fws.gov/migratorybirds/pdf/management/
nationalbaldeaglenanagementguidelines.pdf
https://www.fws.gov/birds/management/managed-species/eagle-management.php.

The Division of Migratory Birds (505/248-7882) administers and issues permits under the MBTA and Eagle Act, while our office can provide guidance and Technical Assistance. For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following: https://www.fws.gov/birds/policies-and-regulations/incidental-take.php. Guidance for minimizing impacts to migratory birds for communication tower projects (e.g. cellular, digital television, radio, and emergency broadcast) can be found at:

https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php.

Activities that involve streams (including intermittent 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 tribal 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.

We also recommend you seek additional information and coordinate your project with the Arizona Game and Fish Department. Information on known species detections, special status species, and Arizona species of greatest conservation need, such as the western burrowing owl and the Sonoran desert tortoise (Gopherus morafkai) can be found by using their Online Environmental Review Tool, administered through the Heritage Data Management System and Project Evaluation Program https://www.azgfd.com/Wildlife/HeritageFund/.

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 our following offices for projects in these areas:

Northern Arizona: Flagstaff Office 928/556-2001
Central Arizona: Phoenix office 602/242-0210
Southern Arizona: Tucson Office 520/670-6144

Sincerely,
/s/ Jeff Humphrey Field Supervisor

Attachment

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
(602) 242-0210

Project Summary

Consultation Code: 02EAAZ00-2021-SLI-0035

Event Code: 02EAAZ00-2021-E-00083

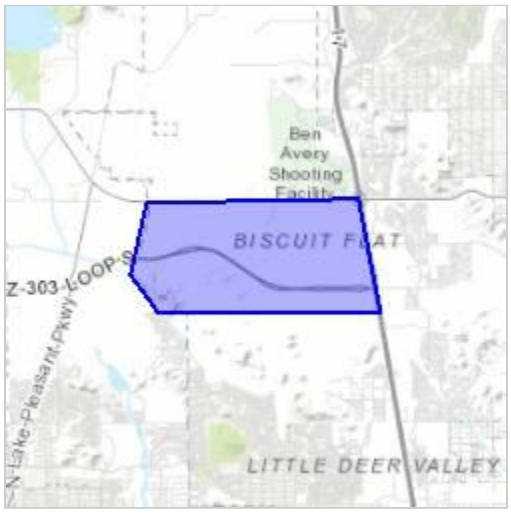
Project Name: Confidential Communications Project

Project Type: ** OTHER **

Project Description: Confidential communications project. No further project details are available at this time.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/33.77978734593634N112.17800168029075W



Counties: Maricopa, AZ

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this 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.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Sonoran Desert Tortoise *Gopherus morafkai* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9289	Candidate

Fishes

NAME	STATUS
Gila Topminnow (incl. Yaqui) *Poeciliopsis occidentalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1116	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix C
Site Visit Photographs

Photo 1 - Kit Fox den with multiple entrances visible within the Project Area.

Photo 2 - Kit Fox den with two visible entrances (more hidden in the grass) within the Project Area.

Photo 3 - Sonoran Desert Tortoise burrow within the Project Area.

Photo 4 - Sonoran Desert Tortoise burrow within the Project Area.

Photo 5 - Saguaro with Great Horned Owl nest within the Project Area.

Photo 6 - Saguaro with cavities within the Project Area.

Photo 7 - Dilapidated nest belonging to unknown raptor species within the Project Area.

Photo 8 - Cactus Wren nest in cholla within the Project Area.

Photo 9 - Ground squirrel burrows; evidence of friable soils within the Project Area.

Photo 10 - Ground squirrel burrows; evidence of friable soils within the Project Area.

Photo 11 - View facing south: Representative example of Sonoran Paloverde-Mixed Cacti Desert Scrub within the Project Area. This is in the northeastern section of the Project Area.

Photo 12 - View facing east: Representative example of Sonoran Paloverde-Mixed Cacti Desert Scrub within the Project Area. This is in the northeastern section of the Project Area.

Photo 13 - View facing north: Representative example of Sonoran Paloverde-Mixed Cacti Desert Scrub within the Project Area. This is in the northeastern section of the Project Area.

Photo 14 - View facing west: Representative example of Sonoran Paloverde-Mixed Cacti Desert Scrub within the Project Area. This is in the northeastern section of the Project Area.

Photo 15 - View facing northeast: Representative example of Sonora-Mohave Creosotebush-White Bursage Desert Scrub within the Project Area. This is in the southeastern section of the Project Area.

Photo 16 - View facing southeast: Representative example of Sonora-Mohave Creosotebush-White Bursage Desert Scrub within the Project Area. This is in the southeastern section of the Project Area.

Photo 17 - View facing southwest: Representative example of Sonora-Mohave Creosotebush-White Bursage Desert Scrub within the Project Area. This is in the southeastern section of the Project Area.

Photo 18 - View facing northwest: Representative example of Sonora-Mohave Creosotebush-White Bursage Desert Scrub within the Project Area. This is in the southeastern section of the Project Area.

Photo 19 - View facing southwest: Representative example of Non-native Grassland-Scrub within the Project Area. This is near the central eastern edge of the Project Area.

Photo 20 - View facing west: Representative example of Non-native Grassland-Scrub within the Project Area. This is near the central eastern edge of the Project Area.

Photo 21 - View facing southeast: Representative example of Non-native Grassland-Scrub within the Project Area. This is near the central eastern edge of the Project Area.

Photo 22 - View facing northwest: Representative example of Non-native Grassland-Scrub within the Project Area. This is near the central eastern edge of the Project Area.

Photo 23 - View of perennial grass species in Grassland-Scrub community within the Project Area.

Photo 24 - View of perennial grass species in Grassland-Scrub community within the Project Area.

Photo 25 - View of wash within the Project Area.

Photo 26 - View of extensive invasive globe chamomile growing within the Project Area.

Photo 27 - View of bridge under Deadman Wash, facing south.

Photo 28 - Drainage ditch immediately to the northwest connecting to Deadman Wash, facing east; wet mud present during October 2020 field surveys and evidence of heavy animal use

Photo 29 - View of Deadman Wash north of Arizona State Route 303, facing north.

Photo 30 - View of Deadman Wash and Arizona State Route 303, facing south.

Photo 31 - View of Deadman Wash and Arizona State Route 303 from berm to northwest, facing south.

Photo 32 - View of ephemeral pond northeast of the PSB, facing northeast; litter visible.

Photo 33 - View of ephemeral pond northeast of the PSB, facing west.

Photo 34 - View of ephemeral pond northeast of the PSB, facing south.

Photo 35 - View of northern wash that drains into ephemeral pond northeast of the PSB.

Photo 36 - View of berm to the south of ephemeral pond northeast of the PSB.

Photo 37 - View of ephemeral pond (Aso Tank) southwest of the PSB.

Photo 38 - Sonoran Desert Tortoise burrow at Aso Tank.

Photo 39 - View of berm on northwest side of Aso Tank.

Photo 40 - View of culvert at southeast corner of PSB.

Photo 41 - View of middle culvert with dumped litter pile (additional piles of dumped plant cuttings, etc. not pictured).

Photo 42 - View of habitat on hills southwest of Project Area (within PSB).

Photo 43 - View atop hill southwest of Project Area (within PSB).

Photo 44 - View atop hill southwest of Project Area (within PSB).

Appendix D
On-site Species Lists

Appendix D Species Detected On-site

Table 1 - Plant Species Detected On-site

Scientific Name	Common Name	Special Status	Nativity
Carnegiea gigantea	saguaro	Highly Safeguarded	Native
Parkinsonia florida (=Cercidium floridum)	blue paloverde	Salvage Assessed	Native
Olneya tesota	desert ironwood	Salvage Assessed/ Harvest Restricted	Native
Echinocereus engelmannii	Engelmann's hedgehog cactus	Salvage Restricted	Native
Ferocactus cylindraceus	desert barrel cactus	Salvage Restricted	Native
Ferocactus wislizeni	compass barrel cactus	Salvage Restricted	Native
Opuntia acanthocarpa (=Cylindropuntia acanthocarpa)	buckhorn cholla	Salvage Restricted	Native
Opuntia arbuscula (=Cylindropuntia arbuscula)	Arizona pencil cholla	Salvage Restricted	Native
Opuntia echinocarpa (=Cylindropuntia echinocarpa)	silver cholla	Salvage Restricted	Native
Opuntia engelmannii	engelmann's prickly pear	Salvage Restricted	Native
Ambrosia deltoidea	triangle bursage	None	Native
Brassica tournefortii	sahara mustard	None	Non-native
Bromus rubens	red brome	None	Non-native
Celtis pallida	spiny hackberry	None	Native
Descurainia sp.	tansy mustard	None	Unknown
Festuca myuros	rattail fescue	None	Non-native
Hilaria mutica	tobosa grass	None	Native
Hordeum murinum ssp. murinum	wall barley	None	Non-native
Larrea tridentata	cresote bush	None	Native
Lepidium (latifolium)	pepperweed	None	Native
Lycium sp.	wolfberry	None	Native
Malva parviflora	cheeseweed mallow	None	Non-native
Matthiola longipetala	night-scented stock	None	Non-native

Scientific Name	Common Name	Special Status	Nativity
Oncosiphon piluliferum	globe chamomile	None	Non-native
Phalaris minor	littleseed canarygrass	None	Non-native
Plantago patagonica	woolly plaintain	None	Non-native
Prosopis velutina	velvet mesquite	None	Native
Senna covesii	desert senna	None	Native
Sphaeralcea ambigua	desert globemallow	None	Native

Table 2 - Mammal Species Detected On-site

Scientific Name	Common Name	Special Status	Type of Observation
Ammospermophilus harrisii	Harris' Antelope Squirrel	SGCN (1B)	Observed on-site, burrows
Antilocapra americana	Pronghorn Antelope	SERI	Skull
Canis latrans	Coyote	None	Scat, tracks, carcass off-site
Equus asinus	Feral Donkey	Non-native	Scat, tracks
Lepus californicus	Black-tailed Jackrabbit	None	Observed off-site, scat
Neotoma albigula or *lepida*	White-throated or Desert Woodrat	None	Nest, burrows, scat
Odocoileus hemionus	Mule Deer	None	Carcasses (three in a dump pile in Arizona State Route-303 culvert)
Ovis canadensis nelsoni	Bighorn Sheep	SERI	Skull
Spermophilus variegatus	Rock Squirrel	None	Burrows, skull
Sylvilagus audubonii	Desert Cottontail	None	Observed on-site, scat
Tayassu tajacu	Javelina	SERI	Scat, tracks, skull
Thomomys bottae	Botta's Pocket Gopher	None	Burrows
Vulpes macrotis	Kit Fox	SGCN (1B)	Burrows, scat, tracks
Peromyscus eremicus	Cactus Mouse	None	Cavities, carcass

Definitions:
SERI = Arizona Game and Fish Department Species of Economic and Recreational Importance
SGCN = Arizona Game and Fish Department Species of Greatest Conservation Need

Table 3 - Avian Species Detected On-site

Alpha Code	Common Name	Latin Name	Protected/Special Status
MODO	Mourning Dove	*Zenaida macroura*	MBTA, SERI
GAQU	Gambel's Quail	*Callipepla gambelii*	SERI
GRRU	Greater Roadrunner	*Geococcyx californianus*	MBTA
SSHA	Sharp-shinned Hawk	*Accipiter striatus*	MBTA
RTHA	Red-tailed Hawk	*Buteo jamaicensis*	MBTA
GHOW	Great Horned Owl[1]	*Bubo virginianus*	MBTA
LEOW	Long-eared Owl	*Asio otus*	MBTA, SGCN (1C)
GIFL	Gilded Flicker	*Colaptes chrysoides*	MBTA, SGCN (1B)
AMKE	American Kestrel	*Falco sparverius*	MBTA
SAPH	Say's Phoebe	*Sayornis saya*	MBTA
LOSH	Loggerhead Shrike	*Lanius ludovicianus*	MBTA, SSS (S4)
CORA	Common Raven	*Corvus corax*	MBTA
CLSW	Cliff Swallow	*Petrochelidon pyrrhonota*	MBTA
VERD	Verdin	*Auriparus flaviceps*	MBTA
ROWR	Rock Wren	*Salpinctes obsoletus*	MBTA
CAWR	Cactus Wren	*Campylorhynchus brunneicapillus*	MBTA
BTGN	Black-tailed Gnatcatcher	*Polioptila melanura*	MBTA, SGCN (1C)
CBTH	Curve-billed Thrasher	*Toxostoma curvirostre*	MBTA
NOMO	Northern Mockingbird	*Mimus polyglottos*	MBTA
BTSP	Black-throated Sparrow	*Amphispiza bilineata*	MBTA
BRSP	Brewer's Sparrow	*Spizella breweri*	MBTA, SGCN (1C)
LASP	Lark Sparrow	*Chondestes grammacus*	MBTA
CHSP	Chipping Sparrow	*Spizella passerina*	MBTA
WCSP	White-crowned Sparrow	*Zonotrichia leucophrys*	MBTA, SGCN (1C)
SABS	Sagebrush Sparrow	*Artemisiospiza nevadensis*	MBTA
AUWA	Audubon's Warbler	*Setophaga coronata auduboni*	MBTA
BTYW	Black-throated Gray Warbler	*Setophaga nigrescens*	MBTA

Alpha Code	Common Name	Latin Name	Protected/Special Status
HOFI	House Finch	*Haemorhous mexicanus*	MBTA
ABTO	Abert's Towhee	*Melozone aberti*	MBTA, SGCN (1B)
WEME	Western Meadowlark	*Sturnella neglecta*	MBTA

Footnotes:
[1] = nest on top of saguaro that was active in 2020 breeding season
Definitions:
MBTA = U.S. Migratory Bird Treaty Act of 1918
SERI = Arizona Game and Fish Department Species of Economic and Recreational Importance
SGCN = Arizona Game and Fish Department Species of Greatest Conservation Need
SSS = Arizona Game and Fish Department Special Status Species (S4)

Table 4 - Reptile Species Detected On-site

Scientific Name	Common Name	Special Status	Type of Observation
Aspidoscelis tigris	Tiger Whiptail	None	Observed on-site, and carcass found
Sceloporus magister	Desert Spiny Lizard	None	Observed on-site
Crotalus sp.	Unknown rattlesnake	None	Heard
Uta stansburiana	Side-blotched Lizard	None	Observed on-site

Table 5 - Arthropod Species Detected On-site

Scientific Name	Common Name	Special Status	Type of Observation
Odonata	Unidentified dragonflies	None	Many observed on-site
Aphonopelma chalcodes	Arizona Blonde Tarantula	None	Carcass found
Eleodes armatus	Pinacate Beetle	None	Carcass found
Calilena arizonica, Hololena hola, Novalena lutzi	Funnel-web Spider	None	Many observed on-site

Appendix E
Arizona Department of Agriculture Native Plant Forms

Print Form

Arizona Department of Agriculture (ADA)
Licensing and Registration Section
1688 West Adams, Phoenix, Arizona 85007
Phone: (602) 542-6408
Fax: (602) 542-0466

Notice of Intent to Clear Land — ARS § 3-904

Pursuant to A.R.S. § 3-904 the undersigned, as Owner of the Property described herein, gives this Notice of Intent to Clear Land of protected native plants.

1. **Owner/landowner's agent.** The owner or landowner's agent of the Property upon which protected native plants will be affected:

   Owner's Name _____ Phone _____

   Address _____

   Agent's Name _____ Phone _____

   Address _____

2. **Property.** The description and location of the Property upon which protected native plants will be affected:

   County

   Name of Property/Project _____

   Address _____

   Physical Location (attach map) _____

   (Note: Map must also show surrounding land for 1/2 mile in each direction)

   Tax Parcel ID Nos. _____

   Legal Description (or attach copy) _____

   Number of Acres to be Cleared _____

3. **Owner's Intent.** Landowner's intentions when clearing private land of protected native plants.

   ☐ Owner intends to allow salvage of the plants, and agrees to be contacted by native plant salvagers.

   ☐ Owner intends to transplant the plants onto the same property, or to another property he also owns.

   ☐ Owner has already arranged for salvage of the plants.

   ☐ Owner does not intend to allow salvage of the plants.

   ☐ Other _____

4. **Approximate starting date.** _____
   (See notice period listed on reverse side)

The information contained in this application is true and accurate to the best of my knowledge. I understand that providing false information is a felony in Arizona

Signature_____ **Date**_____

Notice to salvagers: Consent of the landowner is required before entering any lands described in this notice.

Explanation Of This Form

1. **Notice of Intent to Clear Land.**
   The majority of the desert plants fall into one of four groups specially protected from theft, vandalism or unnecessary destruction. They include all of the cacti, the unique plants like Ocotillo, and trees like Ironwood, Palo Verde and Mesquite. In most cases the destruction of these protected plants may be avoided if the private landowner gives prior notice to the Arizona Department of Agriculture.

2. **Notice Period.**
   When properly completed, this form is to be sent to the Department within the time periods described below. Landowners/ developers are encouraged to salvage protected native plants whenever possible.

3. **Information to Interested Parties.**
   The information in this notice will be posted in the applicable state office of the Department and mailed to those parties (salvage operators, revegetation experts) who have an interest in these plants and may approach the landowner with the possibility of saving the plant(s) from unnecessary destruction.

Notice to Landowner:

1. The owner may not begin destruction of protected native plants until he receives confirmation from the Arizona Department of Agriculture and the time prescribed below has elapsed. The "Confirmed" stamp only verifies that the Notice has been filed.

Size of area over which the Destruction of Plants will occur	**Length of Notice Period**
Less than one acre	20 days, oral or written
One acre or more, but less than 40 acres	30 days, written
40 acres or more	60 days, written

2. If you are clearing land over an area of less than one acre, oral notice may be given by calling the applicable state office at the telephone number given below.
3. If the land clearing or plant salvage does not occur within one year, a new Notice is required.
4. This Notice must be sent to the applicable state office of the Department of Agriculture at the address given below:

Phoenix Office
1688 W. Adams
Phoenix, AZ 85007
(602) 364 -0935

Tucson Office
400 W. Congress Ste.124
Tucson, AZ 85701
(520) 628-6317
M-F 8a.m. - 11:30 a.m.

Notice to salvagers: Consent of the landowner is required before entering any lands described in this notice.

Appendix F
Application for Arizona Protected Native Plants and Wood Removal

Arizona Department of Agriculture (ADA)
Licensing and Registration Section
1688 West Adams, Phoenix, Arizona 85007
Phone: (602) 542-3578
Fax: (602) 542-0466

Application for Arizona Protected Native Plants and Wood Removal

Read all pages carefully before completing application. Never sign a blank application. Fields marked with an * are required.

Information requested must be completely filled out and is subject to verification. All entries must be in ink or typed. It is unlawful to falsify any application which gives any person permission to obtain a permit to take protected native plants. **Permits will expire 30 days from the date of issue, unless specified by owner. Parcel information can be found on your property's deed or tax records.

Originating Property Information:

Tax Parcel Identification*:_____-_____-_____ County*: _____ Total Acres*: _____

Section*: _____ Township*: _____ Range*: _____

Location in Section*: _____ (Lot, MCR or Legal Description)

Physical Location*: _____ (Address of Property, City, Zip Code)

Note: If property has been purchased within the last 18 months, copies of tax assessment or deed records must be presented with this application.

Mover Information:

Cactus Mover/Company Name*: _____ Mover's Phone #*: _____-_____-_____

Mover's Address*: _____ (Address, City, St, Zip Code)

Destination Information:

Address*: _____ (Address, City, St, Zip Code)

Is this the FINAL destination of the plant(s)*: ☐ Yes ☐ No

Purpose of plant movement*: ☐ Commercial ☐ Personal Use ☐ Municipality ☐ Donation

Plant Information:

Type of Plant(s)*	Number of Plants*	Type of Plants(s)*	Number of Plants*

This application was completed by the*: ☐ Land Owner ☐ Owner's Agent ☐ Mover

- Declaration by all undersigned parties: We hereby certify and declare that we have read and understand the instructions. We further certify to the accuracy of the statements appearing on this application under penalty of perjury.
- Declaration by Property Owner: I (we) hereby certify I (we) are the legal owner(s) of the above property and do grant permission to the above named mover to remove the above listed plant(s) protected under A.R.S. Title 3.
- If property is jointly owned, both signatures required.

Signature of Property Owner*:_____ Date*: _____

Signature of Property Co-Owner*:_____ Date*: _____

Print Name(s)*:_____

Address*: _____ Telephone Number*:_____-_____-_____

****Mover is authorized access to property until _____. *(Defaults to 30-days from issue if left blank.)***

Signature of Applicant (person completing this form)*: _____

Agents Title or Position: _____
An agent must submit documentation of authority to act on behalf of the landowner.

As a landowner, you have the right to destroy or remove any plant growing from your land, but if you are going to destroy these plants, you must notify the Arizona Department of Agriculture before you plan to initiate this action. You also have the right to sell or give away any plant growing on your land. However, no person may legally transport protected native plants from any land without first obtaining a permit from the Arizona Department of Agriculture.

State and Federal land leased to you does not give you the authority to remove and transport protected plants unless written permission is given by the land management agency.

Native plant permits are priced at $7.00 PLUS the cost of tags. Tags are priced as follows:

Saguaro	$8.00
Other protected native plants and trees	$6.00
Wood, per cord	$6.00
Pincushion, Coryphantha and Mammillaria (Under 8 inches)	$ .50

Seals are 15¢ each.

The following is a partial list of some of the generally accepted common names of Arizona protected native plants. Please list the plants as accurately as possible. Be sure that the protected native plants that you plan to remove are actually on the land described on this application.

CACTUS	Barrel	Night-Blooming Cereus	Cholla	
	Hedgehog	Prickly Pear	Mammillaria	Saguaro
OTHER PLANTS	Agave (Century Plant)	Palo Verde	Ironwood Tree	
	Joshua Tree	Mesquite	Ocotillo	Yucca

Permits Can Be Obtained From The Following Offices:

Phoenix Office
1688 W. Adams
Phoenix, AZ 8507
(602) 542-3578

Tucson Office
400 W. Congress, Ste. 124
Tucson, AZ 85701
(520) 628-6317
Hours M&F ONLY
8:00 a.m. - 11:30 a.m.

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

Ken Mierzwa (Wildlife Contact)
ken.mierzwa@ghd.com
707.499.5794

Kevin Janni (WOTUS Contact)
kevin.janni@ghd.com
817.470.9709

www.ghd.com

APPENDIX E ENVIRONMENTAL JUSTICE

Methodology:

Individuals who list their race as anything other than white and/or list their ethnicity as either Hispanic or Latino are considered "people of color" or minority (USEPA 2023c).

Potential minority and low-income EJ populations were identified using the following guidelines per CEQ and the Federal Interagency Working Group EJ and NEPA committee:

Racial composition, for the purposes of this EJ analysis, can be defined as:

- Share of nonwhite population is over 50 percent; or
- Share of nonwhite population is at least 10 percent higher than the county or state; or
- Share of nonwhite population is in the 80th percentile or greater compared to the State.

Poverty rate, for the purposes of this EJ analysis, can be defined as:

- Share on population in poverty is in the 80th percentile or greater compared to the state; or
- Share of population experiencing poverty is over 10 percent; or
- Share of households in poverty is equal to or greater than the county (Federal IWG EJ and NEPA Committee 2019; CEQ 1997).

While federal guidelines address race, ethnicity, and income as the key tenets of EJ community identification, they also recommend including additional demographic factors related to both age and language (USEPA 2024b). As previously stated, EJ requires the "fair treatment and meaningful involvement of all people" (USEPA 2024a). Populations that are either under 18 years of age, over 65 years of age, or are "linguistically isolated"—populations in which all members in the household speak a non-English language and have difficulty with English—face barriers to participation and should be thoughtfully engaged in the decision-making process of a proposed activity.

To define an analysis area and identify potential communities with EJ concerns, federal guidelines recommend using an appropriate unit of geographic analysis. Because the project is located in an area that is not densely populated, Census Tracts (CT) were deemed the most appropriate level of geographic analysis for the report. When assessed at the Census Block Group level, the smallest geographic unit used by the US Census Bureau, two of the three Census Block Groups within the 1-mile radius were without population.

Environmental Justice Screening:

Table G-1 includes data on the CT where the project is located (CT 6113) as well as the CT within the 1-mile radius (CT 6100.02), which combined comprise the Study Area for the Proposed Project.

In addition to low-income and minority population status, barriers, such as age and limited English-speaking households, have been included in Table G-1. Age and limited English language ability have been compared to the values for the county to highlight CTs that face additional risk in Table G-2. The population of CT 6113 is significantly younger than the comparative populations.

TABLE G-1 MINORITY POPULATIONS BY RACE AND LOW-INCOME POPULATIONS WITHIN 1 MILE OF THE PROJECT

State/ County/Tract	White (Not Hispanic) (%)	Black or African American (%)	Asian (%)	American Indian and Alaskan Native (%)	Native Hawaiian and OtherPacific Islander (%)	Some other race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority [a] (%)	Total Population Below PovertyLevel (%)
Arizona	53.4	4.2	3.6	3.2	0.2	0.3	3.2	31.9	46.6	12.4
Maricopa County	53.8	5.3	1.4	4.1	0.2	0.3	3.3	31.5	46.2	10.7
CT 6100.02	67.9	3.2	3.2	4.0	0.2	0.0	4.0	17.6	32.1	10.6
CT 6113	72.8	2.4	0.1	2.3	0.2	0.0	5.2	17.0	27.2	2.8

Source: U.S. Census Bureau 2021a; 2021b

[a] "Minority" refers to people who reported their ethnicity and race as something other than non-Hispanic White.

TABLE G-2 AGE GROUPS AND LANGUAGES SPOKEN WITHIN 1 MILE OF THE PROJECT

State/County Tract	Age 5 and under %	Over Age 64 %	Spanish %	Indo-European %	Asian and Pacific Islands %	Other %	Total Limited English %
Arizona	3.3	17.6	5.4	0.3	0.6	0.2	6.5
Maricopa County	6.1	15.2	5.7	0.4	0.7	0.1	6.9
CT 6100.02	3.1	16.0	3.1	1.1	0.6	0.0	4.9
CT 6113	7.7	8.4	1.3	0.3	0.3	0.0	1.9

Source: U.S. Census Bureau 2021c; 2021d

[a] The EPA defines language isolation as any English proficiency less than "very well."

EJScreen also presents socioeconomic and pollution and sources data for CTs compared to State and Nation percentiles. The EPA commonly recommends that factors in the 80th percentile or higher warrant additional analysis and consideration (USEPA 2023c). Per EJScreen, CT 6113 where the project is located does not exceed the 80th percentile for any EJSCREEN factors. CT 6100.02 exceeds the 80th percentile for wastewater discharge (96th percentile compared to the state) (USEPA 2023b). No other values, socioeconomic or pollution and sources, were in the 80th percentile or greater.

This Proposed Project is not part of the Justice40 Initiative and thus the Climate and Economic Justice Screening Tool (CEJST, CEQ 2023a) is not intended to be used to determine any "disadvantaged" or EJ community in relation to this Proposed Action. However, details from CEJST are included below to provide contextual information for the CT. CEJST uses 2010 districting and due to redistricting following the 2020 Census, the Study Area in CEJST is only one CT, CT 6100. CT 6100 is not considered disadvantaged per CEJST as the CT did not exceed the low-income threshold. Notable exceedances of percentile thresholds were wildfire risk (93rd percentile), wastewater discharge (93rd percentile) and less than high school education (10 percent of population over the age of 25) (Federal IWG EJ 2019).

Overall findings indicate that the Study Area does not contain populations that may be facing burdens or have pre-existing vulnerabilities. Using the US Census Bureau data, the area has not met the threshold for low income or minority in either CT. Likewise, there were no exceedances of socioeconomic percentile thresholds in EJSCREEN.

Affected Environment:

There are several schools located just beyond the Study Area including Sunset Ridge School, Ridgeline Academy, and Sonoran Foothills School inside these planned neighborhoods east of I-17. Additionally, these planned neighborhoods to the east of the Facility contain several parks within. As well, the Ben Avery Shooting Facility, located roughly 0.9 mile north of the Facility, is the largest publicly operated shooting facility in the Nation (USEPA 2023b). The Ben Avery facility offers 14 different types of shooting ranges, 3 campground sites, and sees over 120,000 visitors a year (Arizona Game and Fish Department 2023; Arizona Game and Fish Department n.d.). The nearest hospital is the HonorHealth Sonoran Crossing Medical Center, located at the northeast corner of the I-17 and W Dove Valley Road intersection, approximately 1.15 miles east of the Facility. There is one federal prison, FCI Phoenix, roughly 3.15 miles north of the Facility (USEPA 2023b).

Tract 04013610002, ARIZONA, EPA Region 9 (Population: 6,085)							
#	Category	Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
1	EJ Index	EJ Index for Particulate Matter 2.5			27		4
2	EJ Index	EJ Index for Ozone			45		68
3	EJ Index	EJ Index for Diesel Particulate Matter			19		15
4	EJ Index	EJ Index for Air Toxics Cancer Risk			24		30
5	EJ Index	EJ Index for Air Toxics Respiratory HI			18		20
6	EJ Index	EJ Index for Toxic Releases to Air			21		19
7	EJ Index	EJ Index for Traffic Proximity			27		39
8	EJ Index	EJ Index for Lead Paint			50		17
9	EJ Index	EJ Index for Superfund Proximity			16		25
10	EJ Index	EJ Index for RMP Facility Proximity			38		38
11	EJ Index	EJ Index for Hazardous Waste Proximity			23		22
12	EJ Index	EJ Index for Underground Storage Tanks			46		45
13	EJ Index	EJ Index for Wastewater Discharge			72		73
14	Environmental	Particulate Matter (PM 2.5 in ug/m3)	4.67	5.87	24	8.08	2
15	Environmental	Ozone (ppb)	67	66.1	48	61.6	85
16	Environmental	Diesel PM (ug/m3)	0.0819	0.278	16	0.261	<50th
17	Environmental	Air Toxics Cancer Risk (risk per MM)	20	25	13	25	<50th
18	Environmental	Air Toxics Respiratory Hazard Index	0.2	0.31	10	0.31	<50th
19	Environmental	Toxic Releases to Air	49	2800	19	4600	17
20	Environmental	Traffic Proximity and Volume (daily traffic count/distance to road)	46	190	27	210	38
21	Environmental	Lead Paint Indicator (% pre-1960s housing)	0.0083	0.089	49	0.3	0
22	Environmental	Superfund Proximity (site count/km distance)	0.021	0.077	15	0.13	19
23	Environmental	RMP Proximity (facility count/km distance)	0.11	0.38	35	0.43	31
24	Environmental	Hazardous Waste Proximity (facility count/km distance)	0.075	0.71	19	1.9	15
25	Environmental	Underground Storage Tank Indicator	0.52	1.7	43	3.9	40
26	Environmental	Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	16	5.8	96	22	97
27	Demographic	Demographic Index	25%	38%	34	35%	43
28	Demographic	Supplemental Demographic Index	9%	14%	28	14%	26
29	Demographic	People of Color Population	32%	44%	41	39%	51
30	Demographic	Low Income Population	21%	32%	37	31%	39
31	Demographic	Unemployed	2%	6%	31	6%	32
32	Demographic	Limited English Speaking Households	1%	4%	52	5%	57
33	Demographic	Population with Less Than High School Education	9%	12%	58	12%	56

#	Category	Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
34	Demographic	Population under Age 5	3%	5%	35	6%	32
35	Demographic	Population over Age 64	16%	20%	55	17%	52
36	Supplemental Index	Supplemental Indexfor Particulate Matter 2.5			22		2
37	Supplemental Index	Supplemental Index for Ozone			40		63
38	Supplemental Index	Supplemental Index for Diesel Particulate Matter			15		8
39	Supplemental Index	Supplemental Index for Air Toxics Cancer Risk			22		18
40	Supplemental Index	Supplemental Index for Air Toxics Respiratory HI			15		11
41	Supplemental Index	Supplemental Index for Toxic Releases to Air			15		12
42	Supplemental Index	Supplemental Index for Traffic Proximity			24		31
43	Supplemental Index	Supplemental Index for Lead Paint			49		0
44	Supplemental Index	Supplemental Index for Superfund Proximity			12		14
45	Supplemental Index	Supplemental Index for RMP Facility Proximity			34		28
46	Supplemental Index	Supplemental Index for Hazardous Waste Proximity			17		12
47	Supplemental Index	Supplemental Index for Underground Storage Tanks			42		34
48	Supplemental Index	Supplemental Index for Wastewater Discharge			68		67
Tract 04013611300, ARIZONA, EPA Region 9 (Population: 7,100)							
#	Category	Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
1	EJ Index	EJ Index for Particulate Matter 2.5			32		7
2	EJ Index	EJ Index for Ozone			41		62
3	EJ Index	EJ Index for Diesel Particulate Matter			28		35
4	EJ Index	EJ Index for Air Toxics Cancer Risk			21		24
5	EJ Index	EJ Index for Air Toxics Respiratory HI			35		44
6	EJ Index	EJ Index for Toxic Releases to Air			27		32
7	EJ Index	EJ Index for Traffic Proximity			49		52
8	EJ Index	EJ Index for Lead Paint			0		0
9	EJ Index	EJ Index for Superfund Proximity			16		26
10	EJ Index	EJ Index for RMP Facility Proximity			34		34
11	EJ Index	EJ Index for Hazardous Waste Proximity			27		25
12	EJ Index	EJ Index for Underground Storage Tanks			39		41
13	EJ Index	EJ Index for Wastewater Discharge			53		63
14	Environmental	Particulate Matter (PM 2.5 in ug/m3)	5.46	5.87	37	8.08	5
15	Environmental	Ozone (ppb)	67.9	66.1	54	61.6	88
16	Environmental	Diesel PM (ug/m3)	0.161	0.278	31	0.261	<50th

#	Category	Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
17	Environmental	Air Toxics Cancer Risk (risk per MM)	20	25	13	25	<50th
18	Environmental	Air Toxics Respiratory Hazard Index	0.3	0.31	30	0.31	<50th
19	Environmental	Toxic Releases to Air	230	2800	29	4600	33
20	Environmental	Traffic Proximity and Volume (daily traffic count/distance to road)	220	190	72	210	76
21	Environmental	Lead Paint Indicator (% pre-1960s housing)	0	0.089	0	0.3	0
22	Environmental	Superfund Proximity (site count/km distance)	0.026	0.077	18	0.13	24
23	Environmental	RMP Proximity (facility count/km distance)	0.11	0.38	39	0.43	34
24	Environmental	Hazardous Waste Proximity (facility count/km distance)	0.11	0.71	28	1.9	21
25	Environmental	Underground Storage Tank Indicator	0.56	1.7	44	3.9	41
26	Environmental	Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	0.74	5.8	79	22	90
27	Demographic	Demographic Index	20%	38%	24	35%	32
28	Demographic	Supplemental Demographic Index	8%	14%	24	14%	22
29	Demographic	People of Color Population	27%	44%	33	39%	46
30	Demographic	Low Income Population	13%	32%	21	31%	23
31	Demographic	Unemployed	3%	6%	39	6%	40
32	Demographic	Limited English Speaking Households	0%	4%	0	5%	0
33	Demographic	Population with Less Than High School Education	6%	12%	43	12%	39
34	Demographic	Population under Age 5	8%	5%	74	6%	74
35	Demographic	Population over Age 64	8%	20%	28	17%	20
36	Supplemental Index	Supplemental Indexfor Particulate Matter 2.5			30		4
37	Supplemental Index	Supplemental Index for Ozone			41		61
38	Supplemental Index	Supplemental Index for Diesel Particulate Matter			27		27
39	Supplemental Index	Supplemental Index for Air Toxics Cancer Risk			20		16
40	Supplemental Index	Supplemental Index for Air Toxics Respiratory HI			35		40
41	Supplemental Index	Supplemental Index for Toxic Releases to Air			27		26
42	Supplemental Index	Supplemental Index for Traffic Proximity			50		51
43	Supplemental Index	Supplemental Index for Lead Paint			0		0
44	Supplemental Index	Supplemental Index for Superfund Proximity			15		18
45	Supplemental Index	Supplemental Index for RMP Facility Proximity			34		29
46	Supplemental Index	Supplemental Index for Hazardous Waste Proximity			25		18
47	Supplemental Index	Supplemental Index for Underground Storage Tanks			39		34
48	Supplemental Index	Supplemental Index for Wastewater Discharge			55		61