



Final Environmental Assessment
National Memorial Cemetery of Arizona
April 2016

PHOENIX, ARIZONA

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EXECUTIVE SUMMARY AND CONCLUSIONS

The U.S. Department of Veterans Affairs (VA), National Cemetery Administration (NCA) prepared this Final Environmental Assessment (FEA) to identify, analyze, and document the potential physical, , cultural, socioeconomic, and other applicable resources impacts associated with expanding and improving the National Memorial Cemetery of Arizona (NMCA), Phoenix, Arizona. The Proposed Action would cover approximately 104 acres within the boundary of the NMCA and provide 60 to 100 years of burial construction and operations including casket, columbarium, and in-ground cremation sites, as well as provide an Honor Guard Lounge, supporting infrastructure, parking, irrigation, landscaping, visitor amenities, signage, and operational facility improvements. Proposed construction would occur over the next 60 to 100 years in approximately 9 phases, subject to availability of funding.

The *purpose* of the Proposed Action is to expand and improve the existing national cemetery within the adjacent land acquired for this purpose to continue to meet the burial needs of veterans in the Phoenix area.

The Proposed Action is *needed* to meet the NCA goal of providing reasonable access to burial options for veterans.

Two alternatives are analyzed in this Environmental Assessment (EA):

1. The *Proposed Action* to implement the expansion by developing, operating and maintaining the undeveloped 104 acres adjacent to and east of the existing cemetery site and implement the improvements to the existing cemetery facilities identified in the Master Plan.
2. Under the *No Action* Alternative, the Proposed Action would not be implemented. The remaining interment facilities within the existing 121 acres would be used. Thereafter, interments would be required to be located elsewhere. Veterans and their families residing in Phoenix, Arizona would be underserved in the future.

Impacts associated with the Proposed Action are less than significant and further reduced by incorporating key mitigation measures. The following table summarizes the potential environmental impacts of the Proposed Action and No Action.

Table ES.1: Summary of Impact Analysis

Resource	Proposed Action	No Action
Meets Purpose of and Need for Action	Yes	No
Aesthetics	Minor short term impacts during construction phases.	None
Air Quality	Negligible adverse impacts on air quality.	No air quality impacts locally. However, at a regional scale, the No Action may result in increased vehicle emissions, as veterans and their families would be required to travel greater distances to other national cemeteries in the region.
Cultural Resources	No adverse impacts.	None
Geology and Soils	Low shrink swell potential for soils onsite. Potential impacts to new NMCA facilities reduced through minimization and best management practices.	None
Hydrology and Water Quality	Compliance with regulations will reduce potential impacts to water quality during construction. Proposed improvements will be designed to address existing sediment issues. No Impacts to groundwater.	None
Wildlife and Habitat	Landscape palette of developed areas will include native shrub, tree and cactus species. Minimization and Best Management Practices during construction will reduce potential impacts to sensitive birds, Sonoran desert tortoise, and drainages to less than significant levels.	None
Noise	No substantial increase in noise.	None

Resource	Proposed Action	No Action
Land Use	No adverse impacts. Consistent with the general land use plan for the area.	Adverse impact since VA National Cemetery Administration's goal of providing reasonable access to burial benefits would not be met.
Floodplains, Wetlands, and Coastal Management	New facilities in the expansion area will not be located in the floodplain. No impacts to wetlands. Not in Coastal Management Zone.	None
Socioeconomics	No adverse impact. Possible short-term localized beneficial impact to employment during construction.	No beneficial impact from construction employment. In addition, families of future veterans in Phoenix would have to either pay for interment at private cemeteries in the Phoenix area or would have to drive farther to the only other available national cemetery in Prescott, Arizona.
Community Services	No substantial adverse impacts.	None
Solid and Hazardous Materials	Minor increase in solid waste during construction phases and similar ongoing generation as current levels from cemetery operations.	None
Transportation and Parking	Minor short-term adverse impact during construction phasing on local roadways near the project site. No substantial increases in visitor or employee trips.	At a regional scale, the No Action Alternative may result in increased vehicle miles travelled, as veterans and their families are required to travel greater distances to other national cemeteries in the region.
Utilities	No substantial adverse impacts.	None
Environmental Justice	No substantial adverse impacts.	None
Cumulative Impacts	No substantial adverse impacts.	None
Potential for Generating Substantial Controversy	None	None

1.0 INTRODUCTION

1.1 INTRODUCTION

VA NCA currently maintains 131 national cemeteries to honor and pay tribute to veterans and their families by providing a final resting place. This FEA has been prepared pursuant to the National Environmental Policy Act of 1969 ((NEPA); 42 United States Code (USC) 4321 et seq.), the President’s Council on Environmental Quality (CEQ) Regulations implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) 1500-1508), and 38 CFR Part 26 (Environmental Effects of the Department of Veterans Affairs Actions). This EA also has been prepared following VA NEPA Interim Guidance for Projects (VA, 2010).

The FEA evaluates the Gravesite Expansion and Cemetery Improvements for the NMCA. The 104-acre expansion site is located adjacent to the existing 121-acre cemetery in the City of Phoenix (City), Maricopa County, Arizona (AZ). Specifically, the Proposed Action is to construct and expand operations on an additional 104 acres for all burial options (casket, columbarium, and in-ground cremation sites). The expansion will include supporting infrastructure, parking, irrigation, landscaping, visitor amenities, signage, as well as improvements to existing facilities at the existing NMCA site. It is estimated that expansion within the 104 acres would occur within nine phases and may be completed within the next 60 to 100 years, dependent on funding availability. The analysis for Phase I consists approximately 35 acres to assess the worst case scenario for a phase. The estimated schedule is provided in Table 2.1. This FEA covers impacts related to the 104-acre expansion. The EA also analyzes the No Action Alternative, which would not implement the expansion but would continue to operate the existing NMCA.

The purpose of the Proposed Action for the EA is to continue to enable VA to provide eligible veterans and their families in the Phoenix, Arizona area with a national cemetery of adequate size and capacity to serve the projected needs in this region over the next 60 to 100 years.

The FEA identifies, analyzes, and documents the potential physical, cultural, socioeconomic and applicable environmental resources effects associated with the implementation of VA’s Master Plan shown on Exhibit 2.1 (a copy of the Master Plan is located at the VA Office). Resource areas that were evaluated in the FEA include: aesthetics; air quality; cultural resources; geology and soils; hydrology and water quality; wildlife and habitat; noise; land use; floodplains; socioeconomics; community services;

solid and hazardous materials; transportation and parking; utilities; environmental justice; and cumulative impacts.

1.2 BACKGROUND

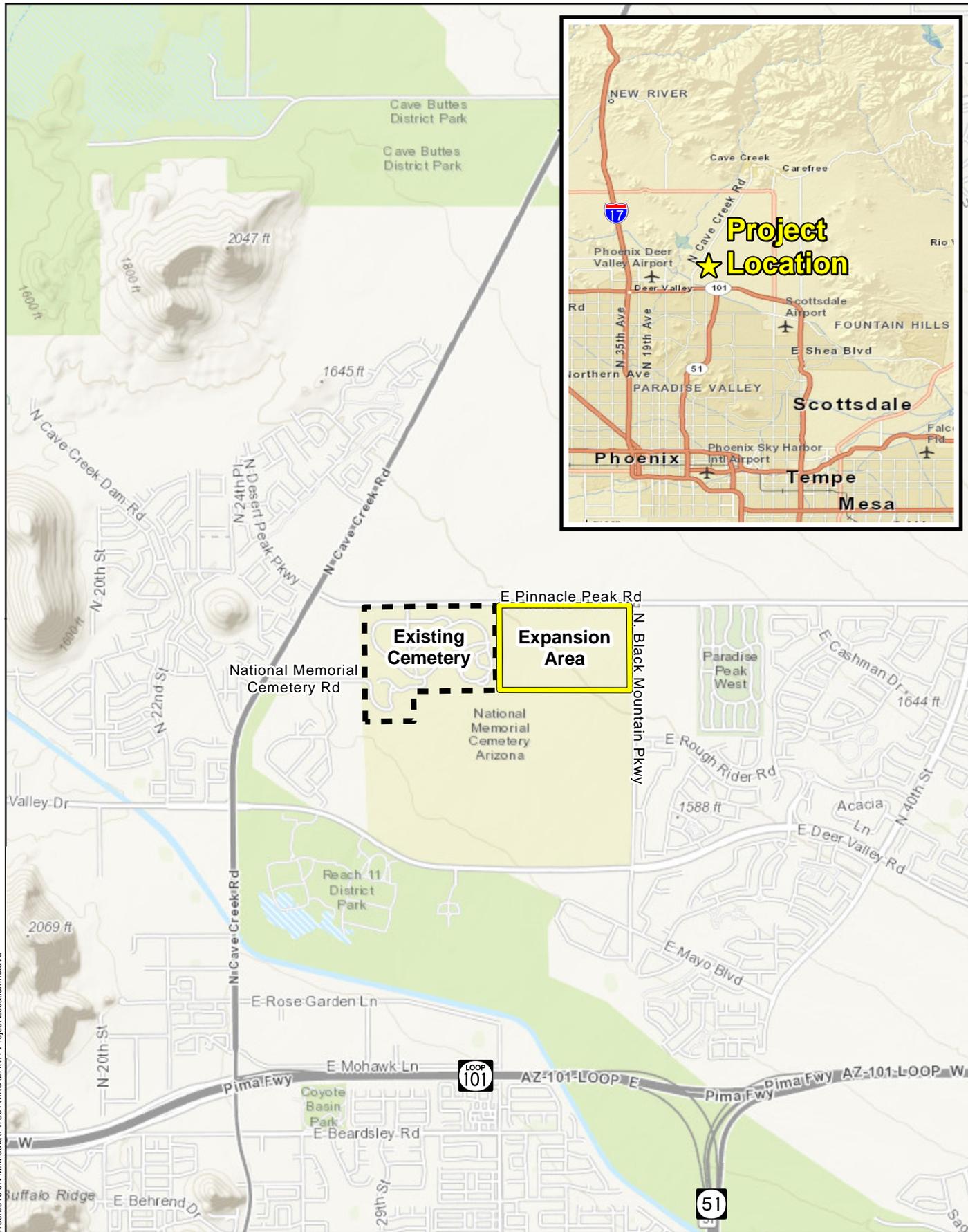
NMCA is located in the City of Phoenix, Maricopa County, Arizona, on Pinnacle Peak Road. It is approximately 2 miles north of U.S. Highway 101 (Exit 28 toward Cave Creek Road) and 22 miles north of downtown Phoenix (Exhibit 1.1, Site Vicinity).

Undeveloped State land is located north of NMCA. A private horse ranch (Joni Fitts School of Horsemanship) is located east of the site, east of North Black Mountain Parkway. Undeveloped land located south of the site is State Trust Lands of Arizona. The State may auction off the property, and if so, a portion may be planned for residential development. The Cave Creek Water Reclamation Plant is located to the southeast and, a private cemetery, the Holy Redeemer Cemetery, and undeveloped land are located directly west of the site (Exhibit 1.2, Site Boundary).

The City of Phoenix and VA adjusted the real property boundaries of the cemetery through a Memorandum of Agreement (MOA), which is located at the VA office. VA allowed the widening of North Black Mountain Parkway along the easterly boundary of the cemetery by granting an easement to the City. In return, the City abandoned its 32nd Street right-of-way (ROW), a platted undeveloped road that bisects the cemetery property, between the currently developed portion to the west and undeveloped portion to the east.

NMCA in Phoenix, Arizona was established as a state veteran's cemetery in 1979. Many states have established state veterans cemeteries. Although they may have been established or improved with Government funds through VA's Veterans Cemetery Grants Program, state veterans cemeteries are run solely by the states. The cemetery was transferred to the U.S. Department of Veterans Affairs in 1989 and became a national cemetery run by the National Cemetery Administration (NCA). The cemetery site totals 225 acres, of which 121 acres are developed and include more than 56,000 gravesites. The remaining 104 acres on the east side of the site are undeveloped (Exhibit 1.2). NMCA ranks 14th in interment workload of VA national cemeteries. In fiscal year 2014 they conducted nearly 3,400 interments, two-thirds (2,253) were cremains. A burial rate consistency at this level will exhaust all available burial sites in the existing 121 developed acres of the cemetery in the next several years. Based on this burial rate, the depletion dates for available burial sites are projected as follows: columbarium niches in August 2018, crypt sites in April 2019, and in-ground cremains sites in June 2020. Therefore,

expansion and improving the existing cemetery is essential to continue to meet the burial needs of veterans in the Phoenix area.



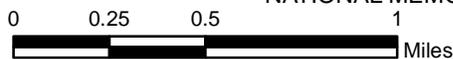
7/30/2015 JN M:\Data\147391\MXD\EA\1.1 Project Location.mxd AP

FINAL ENVIRONMENTAL ASSESSMENT
 NEW MASTER PLAN AND GRAVESITE EXPANSION PROJECT
 NATIONAL MEMORIAL CEMETERY OF ARIZONA, PHOENIX

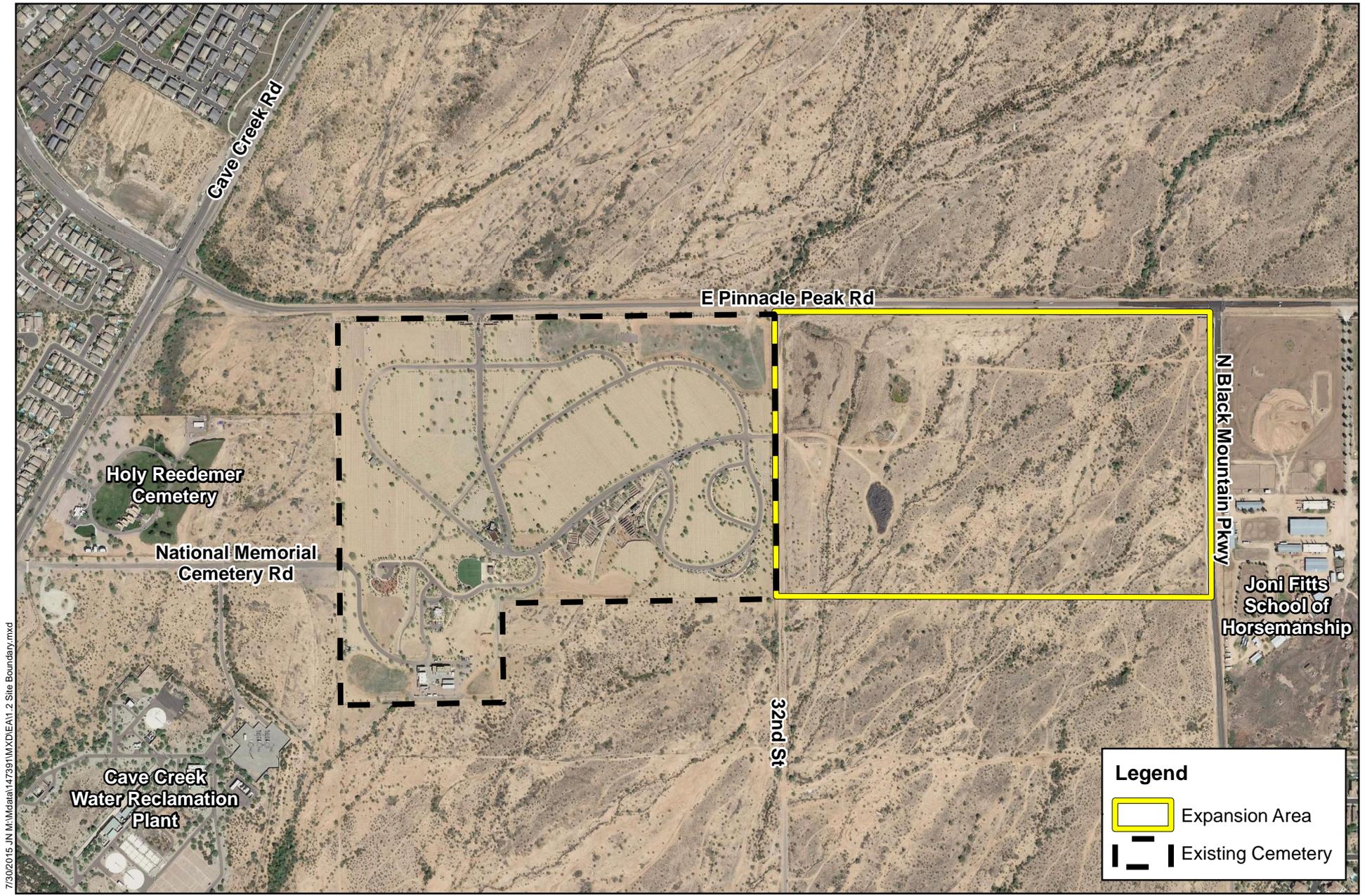
Site Vicinity



Michael Baker
INTERNATIONAL



Source: ESRI World Topographic Basemap, ESRI World Street Basemap



7/30/2015 JN.M:\data\147391\MXD\EA11.2 Site Boundary.mxd

FINAL ENVIRONMENTAL ASSESSMENT
 NEW MASTER PLAN AND GRAVESITE EXPANSION PROJECT
 NATIONAL MEMORIAL CEMETERY OF ARIZONA, PHOENIX
Site Boundary



Michael Baker
INTERNATIONAL



Source: Google Earth 2015

1.3 PURPOSE AND NEED

The **purpose** of the Proposed Action is to expand and improve the existing national cemetery within the land acquired for this purpose to continue to meet the burial needs of veterans in the Phoenix area.

The Proposed Action is **needed** to meet VA National Cemetery Administration goal of providing reasonable access to burial benefits for eligible veterans. NCA defines reasonable access to burial benefits as follows: “a first interment option, for casketed or cremated remains in national or state Veteran’s cemetery, is available within 75 miles of the Veterans’ home” (VA, 2015). According to the United States Census Bureau, “in 2013, approximately 78,300 Veterans reside in Phoenix and 522,000 in the state of Arizona” (U.S. Census Bureau). This figure is significantly higher in comparison to other U.S. cities and states. Since NMCA’s available burial space is declining, while the demand for reasonable burial options for veterans in Phoenix is expected to continue to rise, expansion and improvement of the existing cemetery are appropriate and necessary to accommodate future burials. Furthermore, for the veterans living in Phoenix, NMCA is the only national cemetery available within a reasonable distance. The next nearest national cemetery is the Prescott National Cemetery, in Prescott, Arizona, approximately 85 miles to the northwest. The Proposed Action is needed to meet the NCA goal of providing reasonable access to VA burial options for veterans in the Phoenix area.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

NEPA requires federal agencies to analyze alternatives to address the purpose and need. A No Action Alternative must also be described to inform the public what actions would be taken and the effects of those actions should the Proposed Action not be implemented. Because the cemetery expansion area was acquired for the purpose of expansion of the facilities, the only alternatives to the Proposed Action would involve the same number and types of facilities as identified in the Master Plan (Exhibit 2.1) or there may be minor variations in the arrangement of the various facilities for each phase, identified in paragraph 1.1 of this FEA. The arrangements of various activities would be similar and would result in the same impacts as the Proposed Action, and therefore, further analysis for each phase would not be needed. The Proposed Action and No Action alternatives are described below.

2.1 PROPOSED ACTION

Brief Description

VA's Proposed Action, analyzed in this FEA, is to implement the expansion by developing, operating and maintaining the undeveloped 104 acres adjacent to and east of the existing cemetery site and implement the improvements to the existing cemetery facilities identified in the Master Plan, Exhibit 2.1. As part of the master planning process VA evaluated the physical, operational, and site-specific requirements of the Proposed Action, as well as costs, environmental issues, and other factors. The Proposed Action would provide approximately 185,760 additional interment sites for NMCA, consisting of approximately 43,930 preplaced casket crypts, 1,320 casket interments (direct bury traditional), 94,400 columbarium niches, and 46,110 in-ground cremains. Per the Master Plan, buildout of the expansion area is anticipated to occur over approximately nine phases, subject to the availability of funding. The number and type of interment sites in each phase are outlined in Table 2.1: Interments by Phase, below. Services would continue to take place at five existing committal service shelters on the existing site. Up to 30 ceremonies would occur on Mondays and Fridays and about 5 to 10 services per day on Tuesdays, Wednesdays, and Thursdays between the hours of 9:00 am and 3:00 pm, with occasional services on the weekends. There would be no new service shelters, where ceremonies would be conducted in the expansion area.

Table 2.1: Interments by Phase

Phase	Direct Bury Traditional		Pre-Placed Crypts		In-Ground Cremains		Columbarium Niches		Total Interments		Approx. Expiration Date
	Proposed	Projected	Proposed	Projected	Proposed	Projected	Proposed	Projected	Proposed	Projected	
1A	0	0	2,260	2,160	1,910	1,144	2,760	4,600	6,930	7,904	2022
1B	0	N/A	0	N/A	0	N/A	1,840	N/A	1,840	N/A	2022
2	0	0	6,550	6,254	6,770	6,668	15,000	15,261	28,320	28,183	2032
3	220	220	5,820	5,821	6,930	6,570	15,000	15,460	27,970	28,071	2042
4	220	220	5,410	5,100	6,520	5,761	12,700	13,547	24,850	24,628	2052
5	220	220	5,850	5,090	5,590	5,750	15,100	13,520	26,760	24,580	2062
6	220	220	5,120	5,090	6,500	5,750	14,000	13,520	25,840	24,580	2072
7	220	220	5,100	5,090	5,500	5,750	13,900	13,520	24,720	24,580	2082
8	220	220	7,820	5,090	6,390	5,750	4,100	13,520	18,530	24,580	2092
Total	1,320	1,320	43,930	39,695	46,110	43,143	94,400	102,948	185,760	187,106	

The number of “proposed” interments in Table 2.1 above are those that will be constructed as part of the Master Plan. The number of “projected” interments are those that are projected to be needed based on current and historic demands for each type. The

approximate expiration dates represent the year in which the total interment sites would be expected to deplete based on current exhaustion rates. These are estimated dates and are subject to change based on any changes in trends of demand for different types of interments.

The Proposed Action would include construction of access roads, site drainage, utilities, signage, site furnishings, fencing, landscaping, and irrigation consistent with the existing cemetery (Exhibit 2.1). The Proposed Action includes renovation and expansion of the existing Administration Building, improvements to the existing Maintenance Complex, and improvements to the existing drainage channels and basins.

Construction Schedule and Duration

Buildout of the 104-acre expansion area will not occur at one time, rather it will be developed in multiple phases. Each phase could be eight to ten years apart. Each phase can vary in overall size but is anticipated to include an area of up to 35 acres. The first phase is anticipated to start in 2016 to 2018. Due to funding, mechanical or weather constraints, construction may be delayed to later years. Duration of each phase of construction is anticipated to take approximately 12-24 months. Hours of construction will typically be 8:00 am to 4:30 pm, Monday through Friday, excluding federal holidays. Upon request from the contractor, VA will consider other hours (within local restrictions). Earlier start times are more commonly requested during hot-weather months. Occasional exceptions to work on Saturday, Sunday and certain federal holidays will be considered on a case-by-case basis. Buildout of the expansion area would not occur at the same time, it may be spread in about 9 phases or more than nine phases, each phase could be eight to ten years apart. Total duration could be 60 to 100 years.

Equipment and Material

The expansion area improvements are designed to balance all cut and fill from earthwork (grading). Earthwork for the entire 104-acre expansion area would involve 83,383 cubic yards of balanced cut and fill. Therefore, an offsite location for source of fill or disposal location for excess fill, and associated offsite truck trips is not required. The types of construction equipment anticipated to be used for each phase of construction include: 4 graders, 2 scrapers, 1 tractor, 1 loader, 1 backhoe, 1 excavator. The anticipated number of construction workers for each phase could range from 20-30. Staging areas for future phases of Master Plan development would occur adjacent to the current phase of developed, generally west and in undeveloped portions of the expansion area. Staging areas would be used for staging equipment and supplies and stockpiling of excavated

soils. Portions of the expansion area are currently used by cemetery staff for stockpiling of green waste (landscape cuttings and flowers), soils, and excess cemetery materials.

MASTER PLAN INTERMENTS BY PHASE

Phase	Color	Linear Feet of 24' Road	Projected Direct Bury Traditional	Proposed Direct Bury Traditional	Projected Pre-Placed Crypts	Proposed Pre-Placed Crypts	Projected In-Ground Cremains	Proposed In-Ground Cremains	Projected Columbarium Niches	Proposed Columbarium Niches	Projected Total Interments	Proposed Total Interments	Approx. Expiration Date
Phase 1A		700	0	0	2,160	2,260	1,144	1,910	4,600	2,760	7,904	6,930	2022
Phase 1B		0	N/A	0	N/A	0	N/A	0	N/A	1,840	N/A	1,840	
Cumulative Total		700	0	0	2,160	2,260	1,144	1,910	4,600	4,600	7,904	8,770	2032
Phase 2		2,900	0	0	6,254	6,550	6,668	6,770	15,261	15,000	28,183	28,320	
Cumulative Total		3,600	0	0	8,414	8,810	7,812	8,680	19,861	19,600	36,087	37,090	2042
Phase 3		2,550	220	220	5,821	5,820	6,570	6,930	15,460	15,000	28,071	27,970	
Cumulative Total		6,150	220	220	14,235	14,630	14,382	15,610	34,600	34,600	64,158	65,060	2052
Phase 4		2,425	220	220	5,100	5,410	5,761	6,520	13,547	12,700	24,628	24,850	
Cumulative Total		8,575	440	440	19,335	20,040	20,143	22,130	48,868	47,300	88,786	89,910	2062
Phase 5		2,950	220	220	5,090	5,850	5,750	5,590	13,520	15,100	24,580	26,760	
Cumulative Total		11,525	660	660	24,425	25,890	25,893	27,720	62,388	62,400	113,366	116,670	2072
Phase 6		575	220	220	5,090	5,120	5,750	5,500	13,520	14,000	24,580	25,840	
Cumulative Total		12,100	880	880	29,515	31,010	31,643	34,220	75,908	76,400	137,946	142,510	2082
Phase 7		0	220	220	5,090	5,100	5,750	5,500	13,520	13,900	24,580	24,720	
Cumulative Total		12,100	1,100	1,100	34,605	36,110	37,393	39,720	89,428	90,300	162,526	167,230	2092
Phase 8		925	220	220	5,090	7,820	5,750	6,390	13,520	4,100	24,580	18,530	
Grand Total		13,025	1,320	1,320	39,695	43,930	43,143	46,110	102,948	94,400	187,106	185,760	

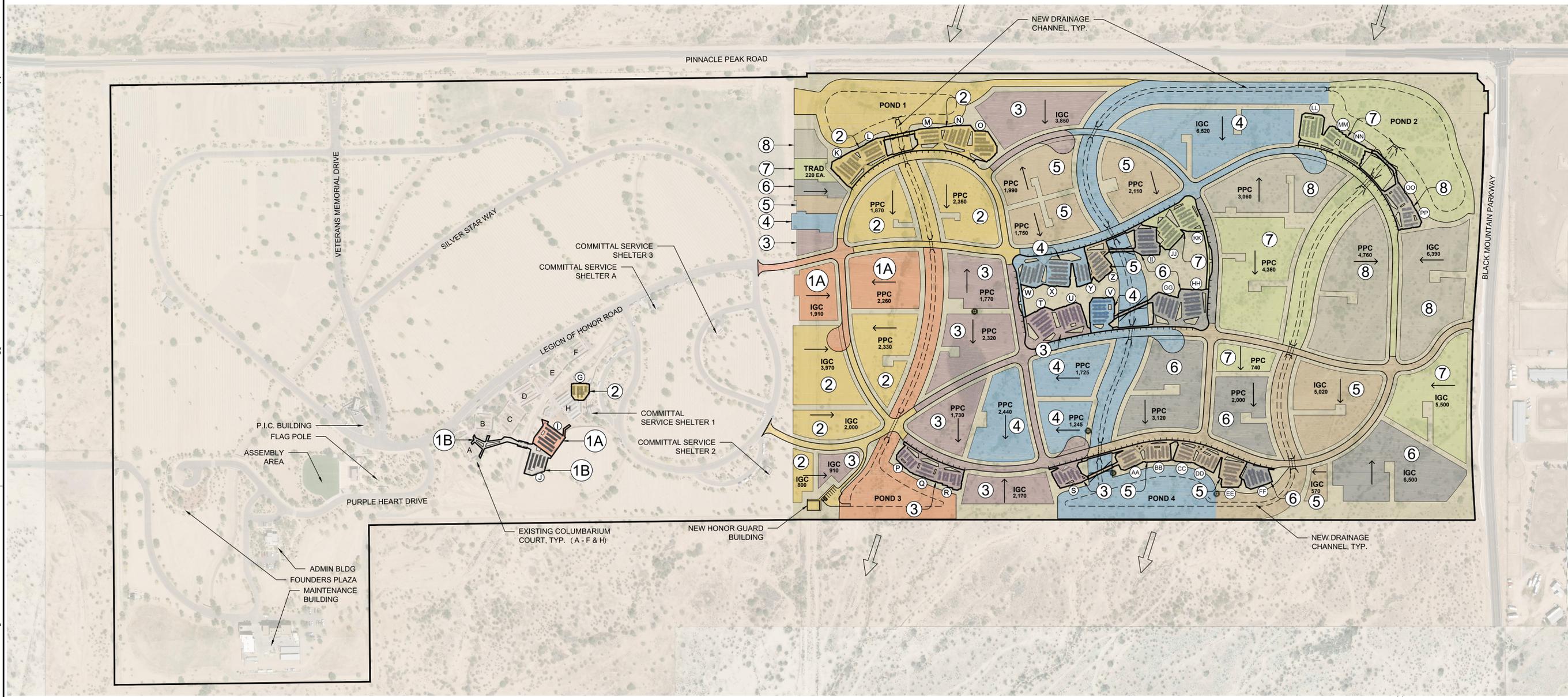
BURIAL LEGEND

- IGC IN-GROUND CREMINS (4' X 4')
- PPC PRE-PLACED CRYPTS (3' X 8')
- TRAD DIRECT BURY TRADITIONAL (5' X 10')
- Ⓢ, Ⓣ - Ⓜ COLUMBARIUM COURT (3 TO 5 HIGH)
- ② INTERMENT PHASE

SITE LEGEND

- ← HEADSTONE MARKER DIRECTION
- ↖ MAIN WASH DRAINAGE
- ≡ VEHICULAR BRIDGE
- ≡ PEDESTRIAN BRIDGE
- ≡ BOX CULVERT ROAD CROSSING

SYMBOL	DESCRIPTIONS	DATE	APPROVAL



NATIONAL MEMORIAL CEMETERY OF ARIZONA
 DISTRICT 3
 PHOENIX, ARIZONA

MASTER PLAN - PHASING
 01/1/2016

DESIGNED BY: JDL
 DRAWN BY: JAF
 CHECKED BY: CHC

U.S. ARMY ENGINEER DISTRICT, LOS ANGELES CORPS OF ENGINEERS

ARTHUR Y. JUNG, PE
 CHIEF, DESIGN BRANCH

Scale: AS SHOWN
 SHEET
L-2.3

1 MASTER PLAN - PHASING
 SCALE: 1" = 200'



2.1.1 Access Roads

Existing roadways would be prioritized for repair and re-sealing, and would be extended into the 104 undeveloped acres to provide vehicular and pedestrian access to new interment sites. The accessible two-lane asphalt roads would be wide enough for parallel parking at burial sections. Parallel parking pull-offs would be provided at new buildings and columbaria. An additional gated entrance would be provided off North Black Mountain Parkway approximately 1,000 feet south of the intersection of Pinnacle Peak Road and North Black Mountain Parkway.

Utilities

As identified in the Master Plan, existing utilities, which include electric and phone would be extended for the development of the 104 acres. Electricity provided by Arizona Public Services and telecommunications provided by Century Link enter the site from the west via National Memorial Cemetery Road. There is an existing well with a 40,000-gallon potable water tank with three 90 GPM (gallon per minute) electric motor driven water pumps located on the northeast corner of the property that currently supports the existing cemetery. From the water tank, a 6-inch main line runs across the expansion area site to the intersection of Silver Star Way and Legion of Honor Road, then increases in size to a 12-inch line. The 12-inch water main line runs on the north side of Silver Star Way and distributes to all of the existing site amenities including the Administration Building, the Maintenance Yard and the restroom off of Legion of Honor Way. An onsite propane tank is used for the Eternal Flame Monument.

Signage

Sign panels throughout the cemetery would be replaced as and where needed. With implementation of the Master Plan, some revisions to existing signs are necessary. New signage would be included throughout the proposed expansion area for directional support for visitors of the 104-acre development.

Site Furnishings

New site furnishings, consistent with those existing at NMCA, would be located throughout the 104 acres to support the new development. The furnishings would include benches, trash receptacles, flower vase receptacles, and water spigots.

Fencing

Perimeter fencing along Pinnacle Peak Road and N. Black Mountain Parkway will be ornamental with masonry columns matching the existing fencing. The perimeter fencing along the south property line will be consistent with the chain link fencing that is present at the existing cemetery. Automated gates will be provided at the existing main cemetery entrance on Pinnacle Peak Road as well as an additional entrance off of North Black Mountain Parkway.

Irrigation

New micro irrigation circuits would be provided as necessary to new planting areas that must provide sufficient water to promote healthy plant life. The irrigation water used would be provided by an onsite well.

Renovation and Expansion of Administration Building

A renovation and expansion for the existing Administration Building would be completed to meet operational and space requirements. The building expansion would address the space deficiencies in the existing Administration Building with respect to having a cemetery with a full administrative staff of seven individuals to support an average of fourteen interments per day. VA identified roof leaks, interior finishes for floors, walls and ceilings, casework, and other finishes or improvements that are needed to bring the structure within current codes, NCA operational standards, and VA or Federal mandates for sustainability and energy and water consumption.

Maintenance Complex Improvements

Improvements would be made to the existing Maintenance Complex to address square foot requirements and space deficiencies by functional area. The expansion and renovation would consist with the following: adding office space, cantilevered roof structure over the above-ground fuel storage tanks, replacing the pre-engineered metal buildings and bringing structure(s) in compliance with current codes and VA or Federal mandates for sustainability, energy, and water consumption. The improvements also address environmental regulatory requirements by plugging a drain in the Maintenance Complex to prevent discharge into drainage channels and provide an oil and water separator for the wash bay.

Honor Guard Building

An approximately 1,000 square-foot Honor Guard Building would be constructed as a free-standing structure in the expansion area, just east of the developed cemetery site

near the southern boundary. The primary function of the Honor Guard Building is to provide a place for the Honor Guard to assemble, prepare for the day's duties, relax between ceremonies and obtain nourishment and refreshments. The Honor Guard Building will contain Women's and Men's restrooms, locker area, gun storage, kitchenette and dining/snack area and a sheltered exterior rest area. The proposed form of the building is based on the existing Administration Building and the southwestern United States style. By providing building materials and a style similar to the existing Administration Building, the Honor Guard Building would look like a staff building rather than the more publically used facilities within the cemetery.

Vehicle Barriers, Parking, and Roads

Vehicle standoff distances would be set to 25 feet for the Honor Guard Building. Automated gates would be provided at the existing main cemetery entrance and ornamental swing gates with a pad lock at the new maintenance access. New road design, widths and pull-off parking spaces would follow the NCA design guide standards. The Honor Guard Building would be supported with seven parking spaces; one stall would be designated for van accessible Americans with Disabilities Act (ADA) use.

Future Operation and Maintenance (O&M)

Operations and maintenance (O&M) would be included as part of the Proposed Action and would consist of similar activities as those currently conducted for the existing developed cemetery. Maintenance activities include trimming and replanting of trees, shrubs, or cacti as needed, trash and debris removal, cleaning and repainting of buildings and structures/amenities as needed, irrigation repair, cleaning and repair of storm drain basins, channels, and maintenance of oil water separator and septic tanks, as well as maintenance of roads, parking and fencing. Each national cemetery is managed by VA NCA personnel in conformance with national and regional policies, priorities, goals, and objectives. Typical operation activities include burial or inurnment of veterans and eligible family members and the placement and maintenance of a grave marker or niche cover. Cemetery operations include conducting Memorial Day and other special ceremonies, as well as the care of the graves, structures and grounds. Operating hours for the cemetery are Monday through Friday, 8:00 am – 4:30 pm. Currently there are approximately 30 employees at NMCA.

2.2 EVALUATED ALTERNATIVES

No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. The remaining interment facilities within the existing 121 acres would be used. Thereafter, interments would be required to be located elsewhere. Veterans and their families residing in Phoenix, Arizona would be underserved in the future; which would require veterans and their families to travel further to the only other available national cemetery in Arizona, located approximately 85 miles northwest of Phoenix in Prescott. Prescott National Cemetery is open only for inurnment of cremated remains in the columbarium; no casket gravesites are available. The nearest state cemetery is Arizona Veterans Memorial Cemetery located in Marana, AZ, approximately 113 miles from Phoenix. Under the No Action Alternative, NCA's goal of providing reasonable access to burial benefits (within 75 miles of the veteran's home) for eligible veterans would not be met.

Furthermore, the No Action Alternative would create hardships for the survivors of deceased veterans to attend the funerals and for grave visitations because of the longer distances between homes and burial sites. Resorting to private burials would deprive veterans and their families of the honor and privilege bestowed upon them for their service to their grateful nation.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 AESTHETICS

3.1.1 Affected Environment

The NMCA site consists of the developed western portion and the undeveloped eastern portion. The areas surrounding the NMCA contribute to the visual character and scenic quality of the area. The areas to the north and south are undeveloped and are generally in a natural state with naturally occurring topography, soils, and vegetation. The areas to the east contain a private ranch with a horsemanship school and developed residential areas. The area to the west is a private cemetery and developed residential areas west of North Cave Creek Road. Visible in the distant view from the cemetery are mountains in the Cave Buttes Recreation Area to the northwest and in the Phoenix Mountains Preserve to the south. The NMCA site and surrounding areas are relatively flat but gently slope from northeast to southwest with the undeveloped areas having naturally occurring drainage features that also generally run northeast to southwest. The native vegetation in the surrounding undeveloped areas is Sonoran desert scrub.

The developed portion of NMCA has been graded and has a very even surface but slopes gently northeast to southwest, consistent with the surrounding undeveloped areas. The developed site largely consists of the native soils, which are consistent in color and texture with the surrounding areas. The developed site contains the Administration Building, Maintenance Complex, committal shelters, visitor center, founder's plaza, various memorials, crypt and cremation gravesite sections and columbarium niches. The developed site is landscaped with primarily desert native trees, cacti and plants including palo verde and mesquite trees, saguaro, ocotillo, as well as various other shrubs and rocks. Refer to site photographs contained in Appendix A, Site Photographs and Index.

The developed site contains two excavated basins along the northern boundary. There are two storm drain channels that convey stormwater runoff across the site, generally in a northeast to southwest direction, to three additional basins along the southern boundary. The channels are open trapezoidal channels constructed of native soils and soil cement so they seamlessly blend into the surrounding area. The basin side slopes and bottom are also native soils consistent with surrounding areas.

The eastern undeveloped portion of the site is generally undisturbed and contains natural soils, topography, drainage features, and vegetation. The naturally occurring vegetation community in the expansion area is Sonoran desert scrub. The expansion area immediately east of the developed site and the western boundary fence are disturbed from vegetation clearing and soil disturbances, as well as stockpiling materials and landscape trimmings/waste. The undeveloped site also contains an above ground water storage tank located directly west of N. Black Mountain Parkway and south of E. Pinnacle Peak Road.

Sources of nighttime light at the cemetery are a spot light on the flagpole and at the entrance and security lights for the administration and maintenance buildings.

The NMCA is visible to drivers on E. Pinnacle Peak Road and N. Black Mountain Parkway. There are no federally designated wild and scenic rivers or Arizona Department of Transportation designated scenic roads in the project vicinity. However, Pinnacle Peak Road and Cave Creek Road are designated as scenic corridors in the Phoenix General Plan.

3.1.2 Environmental Consequences

This FEA analyses impacts related to expansion of 104 acres, it is estimated that construction would occur within nine phases, however, due to funding constraints it may

take more than 9 phases. Activities are very similar in each phase and impacts associated with each phase would be very similar. Furthermore, all phases would not be constructed at the same time. It is estimated that it could take 60 to 100 years to complete expansion of the 104 acres. The Proposed Action supports minimum biological and water resources.

Aesthetics

3.1.2.1 Proposed Action

The Proposed Action would affect the aesthetics of the site. Construction activities would result in minor adverse impacts associated with aesthetics of the site. However, these impacts are temporary and short term and therefore are not significant. The renovation and expansion of the Administration Building and improvements to the Maintenance Complex would not result in significant aesthetic changes as they include minor changes to the existing buildings and will retain the existing architectural style and similar paint palette.

The Master Plan includes findings and recommendations for site development. The development of the expansion area includes architectural elements consistent with the design vernacular or style of the existing cemetery. These architectural elements include an honor guard building, columbarium and additional site elements including ornamental fencing. A component and design element which is the backbone to the expansion area are the gravesites. The architectural elements are positioned to maintain the importance and hierarchy of the gravesites to maintain consistent open space and to pay tribute to the veterans and their families. The development of the expansion area will mimic the existing organic and encircling vehicular layout as well as similar varying full casket burial and cremain burial areas and the irregular form of Columbarium layouts. All design and general guidance within this update to the Master Plan is following VA Program Guide PG-18-13, Guiding Principles Checklist for Green Globes-New Construction, Handbook H-18-8 Seismic Design Requirements, NCA Facilities Design Guide Section 5 Design Criteria and VA Signage Design Guide Chapter 12 National Cemetery Signs.

The appearance of the expansion area would change from undisturbed and disturbed natural landscape (more randomly spaced understory of shrubs, cactus, and creosote shrubs within a tree canopy of palo verde and mesquite) to a more open and planned landscape pattern of development. The design of NMCA expansion area would be compatible with the surrounding undeveloped areas by incorporating existing native soils and vegetation. The development of the expansion area will include facilities with

similar architectural style, color palette, and layout of the existing cemetery site. Development of the expansion area does not include large or tall structures that would obstruct views of mountains in the Cave Buttes Recreation Area to the northwest and to the south in the Phoenix Mountains Preserve from NMCA or surrounding areas and roads. Therefore, the Proposed Action will not result in significant aesthetic impacts.

Construction related impacts would be short term and negligible, future maintenance related impacts would be short term and negligible.

3.1.2.2 **No Action**

Under the No Action Alternative, no impact on aesthetics would occur, as the property would remain in its current condition with ongoing maintenance.

3.2 **AIR QUALITY**

3.2.1 **Existing Environment**

The U.S. Environmental Protection Agency (EPA) evaluates air quality compliance with the National Ambient Air Quality Standards (NAAQS), which measure seven criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), particulate matter measuring less than 10 microns in diameter (PM₁₀), particulate matter measuring less than 2.5 microns in diameter (PM_{2.5}), and lead (Pb). These criteria pollutants are those for which the USEPA has placed the greatest emphasis and has developed health-based concentrations for ambient air.

Air Quality Control Regions (AQCR) that are in violation of NAAQS are designated as nonattainment areas; AQCRs with levels below NAAQS are designated as attainment areas. An area may also be classified as a maintenance area if it was once classified as nonattainment but has since reached attainment of NAAQS for a probationary period through implementation of maintenance plans.

Maricopa County, the county in which the NMCA is located, is under the jurisdiction of the Arizona Department of Environmental Quality (ADEQ), Maricopa County Air Quality Department, and EPA Region 9. The EPA defines AQCRs, which are used to evaluate compliance with the NAAQS per the Clean Air Act (CAA). Arizona has developed an Air Quality State Implementation Plans (SIP) that outlines regulations, control measures, and strategies to achieve compliance with NAAQS.

Ambient air monitoring stations collect data that are used to determine compliance with NAAQS. In cooperation with the USEPA and other governmental agencies, the Maricopa County Air Quality Department operates 23 air quality sites. Maricopa County is designated as in compliance for all criteria pollutants except O₃ and PM₁₀. Therefore, the USEPA has designated the AQCR to be in nonattainment for O₃ and PM₁₀ (EPA 2015). The O₃ and PM₁₀ emissions are likely attributed to vehicle emissions, fugitive dust, and other industrial processes within the AQCR.

Given the current and proposed use of the site, no large sources of regulated air emissions occur at NMCA (e.g., boilers and generators). Thus, VA, as the owner of the site, is not required to have a Title V operating permit, based on current conditions.

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action

The construction and operation of improvements in the expansion area would be expected to have minor direct and indirect, short- and long-term adverse impacts on existing air quality around the site. Construction activities such as land clearing, grading, excavation, continuation of cemetery operations involving excavation and temporarily stockpiling of soils, and roadwork and maintenance activities could generate fugitive dust emissions and exhaust emissions from equipment. These emissions could cause localized, temporary impacts on air quality and nuisance concerns. In addition, the Proposed Action would likely increase the number of vehicles traveling to the site during construction and operation of the national cemetery, resulting in increased air emissions. Table 3.1 presents the emissions generated due to implementation of the Proposed Action which reveals that construction related emissions for all the pollutants would be below the Federal threshold level. Future maintenance is short term and generally ranges from a day to a week. Therefore, it is expected that emission associated with the future maintenance would be well below the Federal Standards.

With respect to compliance with the CAA, federal actions in air pollutant nonattainment or maintenance areas, such as this project site, are required to conform to the applicable SIP. The SIP is designed to achieve or maintain an attainment designation of air pollutants, as defined by the NAAQS. The regulations governing this requirement are found in 40 CFR Part 93, also known as the General Conformity Rule (GCR), which applies to federal actions occurring in regions designated as nonattainment, or areas subject to maintenance plans. The threshold (de minimis) emission rates have been established for actions that have the potential to have significant air quality impacts that

are not otherwise exempt. In addition, exemptions to the GCR have been established for actions that are clearly below de minimis thresholds. As specified in 40 CFR 93.153(c)(2), Conformity Determination regulations for federal actions shall not apply for “actions which would result in no emissions increase or an increase in emissions that is clearly de minimis.” As specified in 40 CFR 93.153(c)(2), projects that are clearly de minimis, and for which exemptions apply include:

- (ii) continuing and recurring activities such as permit renewals, where activities conducted will be similar in scope and operation to activities currently being conducted;
- (iv) routine maintenance and repair activities, including repair and maintenance of administrative sites, roads, trails, and facilities;
- (vii) routine, recurring transportation of material and personnel;
- (x) actions, such as the following, with respect to existing structures, properties, facilities, and lands where future activities conducted will be similar in scope and operation to activities currently being conducted at the existing structures, properties, facilities, and lands; and
- (xiii) routine operation of facilities, mobile assets, and equipment.

Construction Emissions

The Proposed Action includes improvements to the existing national cemetery site and expansion to provide additional burial capacity. Construction emissions of criteria pollutants were modeled using the EPA NONROAD emissions model. Cemetery construction phasing information was based on the Master Plan. The total expansion area is approximately 104 acres; however, buildout of the expansion area will not occur at one time, rather it will be developed in multiple phases. Each phase could be eight to ten years apart. Assuming a worst case scenario, the first phase is assumed to disturb up to 35 acres. Earthwork would involve 83,383 cubic yards of balanced cut and fill and would occur over a 12 to 24 month period for each phase of up to 35 acres each.

As noted above, construction of subsequent phases of the cemetery could occur eight to ten years after the first phase and is anticipated to be equal to or smaller in size than the initial phase. Accordingly, to account for all emissions-generating scenarios under the Proposed Action, it was assumed that emissions from subsequent cemetery phase construction activities would be comparable to the annual emissions from the initial phase of construction. However, subsequent cemetery phase annual emissions likely would be less than the average annual emissions from initial construction, for the

following reasons. The intensity of construction activities for subsequent cemetery phases would be equal to or less than that for initial construction and construction emission rates from vehicles and heavy-duty construction equipment would decrease with time because of fleet turnover and new emissions technology.

No indirect construction emissions of criteria pollutants would occur other than those associated with incidental electricity use during project construction; however, emissions associated with grid-based power would already be accounted for within the Maricopa County State Implementation Plan (SIP).

General Conformity Review

As identified above, the AQCR is nonattainment for O₃ and PM₁₀. Therefore, since construction associated with the Proposed Action would result in the emission of these nonattainment or area criteria air pollutants, a review has been conducted to determine if the Proposed Action is subject to the General Conformity Rule.

A federal action is exempt from the General Conformity Rule requirements if the action’s total net emissions are below the de minimis threshold or are otherwise exempt per 40 CFR 51.153. If net emissions exceed the relevant de minimis value, or if a project is regionally significant, a formal conformity determination process must be followed.

Air quality impacts would occur from combustive emissions due to the use of fossil fuel-fired construction equipment and on-road trucks and fugitive dust (PM₁₀/PM_{2.5}) emissions from earth-moving activities as well as driving vehicles on bare soils. Construction related emissions would be short-term and primarily occur within the boundaries of the NMCA site. The average annual emissions projected from construction under the Proposed Action are shown in Table 3.1: Construction Emissions.

Table 3.1: Construction Emissions

Emissions Source	Average Annual Emissions (tons/year) ¹				
	CO	NO _x	VOC	PM ₁₀	PM _{2.5}
Construction Activities	41.6	14.4	0.13	23.2	2.5
de minimis Threshold	-	100	100	70	-
CO = carbon monoxide; NO _x = oxides of nitrogen; PM _{2.5} = fine particulate matter 2.5 micrometers or less; PM ₁₀ = respirable particulate matter 10 micrometers or less; VOC = volatile organic compounds					
Notes:					
1. Emissions modeled with the EPA NONROAD Emissions Model.					

As noted above, construction of the Proposed Action would occur in phases, of which the timing of implementation will be based on need. The emissions depicted in Table 3.1 represent the worst case scenario, as construction equipment used in subsequent phases would likely have newer emissions technology and the future phases would likely be smaller in size than 35 acres. Therefore, during each of the subsequent phases of cemetery expansion, the extent of emissions of criteria pollutants related to construction would be similar to or less than the amounts identified above.

All construction activities would meet applicable state and federal air quality regulations and pollution control requirements to prevent exceedance of air quality standards during construction. In addition, to minimize any potential air quality effects during construction, VA or selected Construction Contractor would implement best management practices and agency environmental controls, including VA's *Section 01 57 19: Temporary Environmental Controls*. These include:

- Fugitive dust associated with construction could be greatly minimized by using appropriate dust control measures such as applying water, dust palliative, soil stabilizers, enclosures, covers, and silt fences on disturbed areas as soon as possible.
- Suspending earth-moving activities during periods of high wind and having vehicles and equipment moving across unpaved surfaces maintain an appropriate speed, can minimize the amount of ambient dust that is generated.
- Upon completion of construction activities re-vegetate, hardscape, or apply other appropriate soil stabilizer as soon as possible.

These are also outlined in Section 5.0, *Avoidance and Best Management Practices*.

Construction-related emissions of criteria air pollutants from the Proposed Action would be less than de minimis thresholds. Therefore, there would be no significant construction-related impact on criteria air pollutants. Additionally, operational activities fall within the scope of projects listed in 40 CFR 93.153(c)(2) (ii), (iv), (vii), (x), and (xiii). The Proposed Action would not be regionally significant and is exempt from the GCR, as emissions are below the applicable de minimis requirements. As analyzed, the Proposed Action would not:

- 1) cause or contribute to any new violation of any standard in any area;
- 2) increase the frequency or severity of any existing violation of any standard in any area; or

- 3) delay timely attainment of any standard, required interim emission reductions, or other milestones in any area. Therefore, this Proposed Action is exempt from the GCR requirement to prepare a full Conformity Determination, and a detailed analysis of emissions is not warranted. Thus, a Record of Non-Applicability is prepared and is presented in Appendix B.

3.2.2.2 No Action

The No Action Alternative would result in negligible adverse impacts on air quality. At NMCA expansion would not occur and operations would generally remain at their current level, resulting in no change in air emissions. However, at a regional scale, the No Action Alternative may result in increased vehicles emissions, as veterans and their families would be required to travel greater distances to other national cemeteries in the region.

3.3 CULTURAL RESOURCES

The information provided in this section is based on a Cultural Resources Assessment Report prepared for the site by BCR Consulting in November 20, 2015 (Appendix C).

3.3.1 Existing Environment

Section 106 of the National Historic Preservation Act of 1966 (Section 106 of the NHPA) mandates Federal agencies to consider the effects of their undertakings on historic properties. VA has determined that the Area of Potential Effect (APE) is the Proposed Action's site area. The Proposed Action's APE includes the entire existing NMCA site as well as the planned expansion east of the NMCA.

An archaeological pedestrian field survey of the APE was conducted on July 1, 2015. The survey was conducted by walking parallel transects spaced approximately 15-20 meters apart across 100 percent of the APE. Soil exposures, including natural and artificial clearings were carefully inspected for evidence of cultural resources. Prior to fieldwork, a cultural resources records search was conducted for the Proposed Action at the Arizona State Museum, Arizona State University. This included a review of all recorded historic and prehistoric cultural resources, as well as a review of known cultural resources, and field survey and excavation reports generated from projects located within one mile of the APE. Data from the Arizona State Museum revealed that 16 cultural resource studies have taken place resulting in the recording of eight cultural resources within one-mile of the APE. Of these resources, five were historic-period refuse scatters, one was a historic-

period road, one was a historic-period canal, and one was a prehistoric artifact scatter. The nearest cultural resource is a 1940s refuse scatter ¼ mile north of the APE's northern boundary. Of the 16 previous studies, none have assessed the APE and no cultural resources have been recorded within the APE's boundaries.

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

The records search and field survey did not identify any cultural resources including prehistoric, historic archaeological sites, or historic-period buildings within the APE. Furthermore, research results combined with surface conditions have failed to indicate sensitivity for buried cultural resources at NMCA or in the area. As a result, no historic properties under Section 106 of the NHPA would be affected. It is also recommended that no additional cultural resources work is necessary during implementation of the Proposed Action. VA has determined that the Proposed Action will result in no historic properties affected. A letter dated February 18, 2016, indicating of "No Affect" has been sent to SHPO for review and concurrence. As the NMCA existing cemetery and expansion area do not contain known cultural resources including prehistoric and historic archaeological sites, or historic-period buildings, expansion and improvements at NMCA implemented for the Proposed Action would be expected to have no significant impacts to cultural resources. Consultation letters have been sent to sixteen different tribal contacts as identified in Section 4.0, *Agency Coordination and Public Involvement*, Table 4.1: Tribal Consultation. A letter dated December 17, 2015 was received from Gila River Indian Community Tribal Historic Preservation Office (GRIC-THPO) indicating that no religious or culturally significant sites are located within the project area, however, they recommend that a Class I (records review) assessment be conducted prior to any ground disturbance occurring for the proposed undertaking (Appendix C). As mentioned above, the records search and pedestrian survey were conducted for the site. Any additional letters received were considered in this Final EA.

Although significant cultural resources are not anticipated to occur in the expansion area, in the event that previously unidentified cultural resources or human remains are found during development of the APE, work should stop immediately at that location and reasonable steps should be taken to secure the preservation of those resources. VA, as the responsible federal agency, should be notified so that the find can be addressed as a post-review discovery in accordance with Title 36, Code of Federal Regulations, Part 800.13. If the discovery includes human remains, the landowner should also notify the director of the Arizona State Museum in accordance with the Arizona Burial Law

(Arizona Revised Statutes 41-865). This is also outlined Section 5.0, *Avoidance and Best Management Practices*.

3.3.2.2 **No Action**

Under the No Action Alternative, improvements to the existing NMCA would not occur. The eastern 104 acres of the NMCA site would not be developed and would remain undeveloped land. As NMCA does not contain prehistoric, historic archaeological sites, or historic-period buildings cultural resources would remain unaffected consistent with the Proposed Action.

3.4 **GEOLOGY AND SOILS**

3.4.1 **Existing Environment**

The information provided in this section is based on the information discussed with the HDR, Inc. geotechnical engineer and websites.

NMCA is located within the Basin and Range Physiographic Province of the southwestern United States. The Basin and Range providence is characterized by a northwest to southeast inclining rocky mountain system with extensive alluvial valleys created by high angle normal faulting. The valleys received sediments from the up-thrown distant mountains through weathering and erosion over millions of years, which also created the present landforms.

Locally, NMCA is situated within the East Salt River Valley Sub-basin of the Phoenix Active Management Area of the Salt River Valley. NMCA is found in the Paradise Valley portion of the sub-basin and is bounded by several mountains. To the north is Black Mountain, to the east are the McDowell Mountains, to the south are the Phoenix Mountains, and Union Hills are to the west. The topography at NMCA is relatively flat with a slight southwestern downward gradient at about 40 feet per mile.

The superficial geology at NMCA consists of Holocene-age (up to 10,000 years before present) unconsolidated alluvium (material deposited by rivers), including fine grained sediments on alluvial plains and gravelly channel deposits in drainages which were brought up in place by recent channels and Paleo-Channels of Cave Creek and its tributary drainages.

The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) on-line Web Soil Survey (WSS) was accessed to obtain soil data for NMCA. According to the WSS, seven soil types exist across the existing NMCA cemetery

and expansion area: Estrella Loams, Gilman Loams, Glenbar Loams, Momoli Gravelly Sandy Loam, Tremant-Rillito complex, Tremant Gravelly Sandy Loams, and Valencia Sandy Loams. Only three of the seven soil types from the existing NMCA were discovered in the expansion area: Gilman loams, Mamoli gravelly sandy loams, and Tremant-Rillito loams. Exhibit 3.1 depicts the NRCS Mapped Soil Types for the Project Site. Table 3.2 presents the acreage associated with each soil type in the expansion site and suitability for improvements. The three soils: Gilman loams, Mamoli gravelly sandy loams, and Tremant-Rillito loams were evaluated by the NRCS relative to suitability for the proposed site improvements based on three characteristics: linear extensibility (shrink-swell potential); limitations for construction of small commercial buildings; and limitations for construction of local roads and streets.

Table 3.2: NRCS Web Soil Survey - Soil Types and Evaluation Criteria

NRCS Soil Type	Approximate Percentage of Project Site Area	NRCS WSS Evaluation Criteria		
		Linear Extensibility (Shrink-Swell Potential)	Limitations for Small Commercial Buildings	Limitations for Local Roads and Streets
Gilman loams	6.2	Low	Not Limited	Not Limited
Momoli gravelly sandy loam	91.5	Low	Not Limited	Not Limited
Tremant-Rillito loam	2.3	Low	Not Limited	Not Limited

Approximately 91.5 % (94.8 acres) of the NMCA expansion area is Momoli gravelly sandy loams, 6.2% (6.2 acres) is Gilman loams, and the remaining 2.3% (2.4 acres) is Tremant-Rillito loams. All three-soil types were evaluated and indicate a low shrink-swell potential with no limitations for small commercial buildings and local roads and streets.

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

The Proposed Action would predominately occur in the eastern portion of NMCA, in an area of minimal northeast to southwest sloping towards natural site drainages. There are no signs of areas with severe sloping on the site, therefore no limitations on cut and fill actions are anticipated. Similarly, erosion would not have a significant adverse impact due to minimal sloping. The soils generated during excavation would be reutilized in areas requiring fill material, creating balance throughout the site. Therefore, an offsite location for source of fill or disposal location for excess fill, and associated offsite truck trips is not required. Site topography would not be substantially altered. Drainage changes are anticipated to be minimal and the drainage facilities (basins and open channels) will be designed to account for the existing sediment issue.

The topsoil at the site were described as low density and capable of post-construction settlement when subjected to wetting and inundation. Geological engineering experts recommend over-excavation and re-compaction of bearing soils to minimize the potential for excessive settlement or soil collapse beneath structures. The native soils possess moderately low bearing capacity with low compressibility at present soil moisture contents. However, a slight increase in soil compressibility would be expected when

wetted. The swell potential of the soil indicated is of minor concern for the Proposed Action.

The type of soil found at NMCA would not be of concern for implementation of the Proposed Action. The evaluations including the findings of low shrink swell potential for all three soils indicate they would provide a suitable foundation for constructing small facilities and new roads on the expansion site, with the condition of improving topsoil to ensure adequate support for the proposed structures (Honor Guard Lounge, Public Restroom Building). Furthermore, the existing NMCA cemetery site indicates that soil characteristics have not negatively impacted current cemetery operations. As identified in Section 5.0, *Avoidance and Best Management Practices*, potential impacts to new NMCA facilities could be minimized through over-excavation and re-compaction of sufficient thickness below foundations and slabs as determined by a qualified geologist or soils engineer.

Minor short-term adverse erosion and sedimentation impacts would be possible during both the construction and operational phases of the project. Construction activities (including vegetative clearing/relocating, adjustments to site grading, new roadway construction, and construction of small facilities) would disturb and expose subsurface soils, increasing susceptibility to wind and stormwater erosion. The potential for wind and stormwater erosion are discussed in more detail in Section 3.2, *Air Quality* and 3.5, *Hydrology and Water Quality* including applicable minimization and best management practices.

3.4.2.2 **No Action**

Under the No Action Alternative, cemetery expansion would not occur and no impacts to new facilities from unstable geologic units or soils would result.

3.5 **HYDROLOGY AND WATER QUALITY**

Information provided in this section is largely based on information provided by the consulting drainage team, HDR, in the Final Drainage Master Plan Report, January 2016 (Appendix F).

3.5.1 **Existing Environment**

Discussion on the drainage and water is derived from the technical report prepared by the study team in January 2016. Methods utilized for the drainage analysis and design were conducted in accordance with the four criteria, 1) City of Phoenix, Storm Water

Policies and Standards (SWPS), dated December 2013, 2) Flood Control District of Maricopa County (FCDMC) Drainage Design Manual – Hydrology, dated August 2013, 3) FCDMC Drainage Design Manual – Hydraulics, dated August 2013, and 4) Maricopa County Drainage Policies and Standards (MCDPS). The hydrological report was generated following methods identified in the USACE Hydrologic Engineering Center (HEC)-1 (version 4.1, June 1998) and the FCDMC Drainage Design Management Software (DDMSW) computer program.

Storm water runoff is primarily from northeast to southwest. Water drains from the watershed area from northeast to southwest and it is about 4.3 square miles. However, there is newly constructed residential development that has occurred since the 1994 NMCA Report.

This project is planned to be constructed in phases. The Hydrological Report provides an overall master drainage plan for all the improvements to the expansion area; and not to include a separate drainage phasing design. A drainage plan needs to be developed for each phase in the future.

Surface Water

Stormwater runoff contributing to the Project area flows primarily in a northeast to southwest direction. Offsite flows from the north are generated from four major offsite sub-basins. The watersheds drain from northeast to southwest with a slope of approximately one to two percent. The majority of the watershed is undeveloped desert; however, there is constructed residential development that has occurred over the past decade. The southern boundary of the watershed is the Bureau of Reclamation (BOR) Reach 11 Dike embankment on the north side of the Central Arizona Project (CAP) canal and the northern boundary is Bartlett Dam Road defined by the Pinnacle Peak West Area Drainage Master Study. The watershed is approximately 99 square miles and consists of undeveloped land, commercial areas, large-lot residential areas, and master planned residential communities.

The watershed is generally shallow depth sheet flow with incised washes that intermingle within the watershed. Site reconnaissance and historical photographs indicate very active geomorphology within the watershed. Sediment transport, in the form of bed and wash load, is contributing to the reoccurring sediment deposit at the upstream basins and throughout the existing drainage features at NMCA.

Pinnacle Peak Road is constructed close to existing grades, such that there are several dip crossings along the roadway corridor which allow developing offsite flow to be conveyed from the northern right-of-way (ROW) limits to the southern ROW. Additionally, the existing roadway section contains variable width roadside ditches which convey offsite discharge due east and west, following the roadway vertical profile. Approximately 1,100 feet west of the Pinnacle Peak Road/ Black Mountain Parkway intersection is a 24-inch corrugated metal pipe constructed for conveying offsite discharge to the southwest, directly into NMCA expansion area. At the time the Drainage Master Plan Report was prepared the pipe was plugged with sediment and was therefore not functioning as intended. This corrugated metal pipe is located within City of Phoenix ROW for Pinnacle Peak Road and maintenance of the road and this metal pipe are the City's responsibility. The drainage facilities for the expansion area will be designed with the assumption that this pipe will remain blocked as there is no certainty that it will be regularly maintained by the City.

Offsite discharge enters the existing NMCA cemetery site through two large openings located along the northern fence line. Rip rap and shotcrete lined spillways discharge the water into two large detention facilities located within the NMCA site just south of Pinnacle Peak Road. Collected runoff is routed through the site with dual shotcrete lined trapezoidal shaped channels. The channels outlet to a large detention pond on the southwest corner of the site which meters flows out to existing State Trust lands just south of the site.

N. Black Mountain Parkway, a recently improved roadway along the eastern limits of the NMCA expansion area, included construction of a roadway section with 6-inch vertical curb and gutter for improved drainage capacity. No offsite flows will impact the site from the west or south sides, as they are downstream of storm water patterns.

Based on the initial assessment of the boundary limits of NMCA all discharge north of fence line is identified as the contributing offsite discharge to both the existing and the expansion area of NMCA. Drainage patterns identified as east or west of the Project site are considered non-contributory.

The field survey was completed to identify washes and other watercourses or drainage features on site that may be considered jurisdictional by the United States Army Corps of Engineers (USACE) under Section 404 of the CWA. The waters of the U.S. observed on site consist entirely of ephemeral drainage features (desert washes); there are no perennial or intermittent streams, wetlands, or other special aquatic resources in the expansion area.

There are four unnamed ephemeral drainage features that generally run from northeast to southwest across the expansion area (Exhibit 3.3, Corps Jurisdiction). These ephemeral drainage features exhibited an earthen streambed consisting of fine sediment and gravel. Evidence of a USACE Ordinary High Water Mark (OHWM) and surface hydrology was observed via the following indicators: scour, drift/debris, sediment deposition, changes in terrestrial vegetation, and drainage patterns.

All four expansion area drainage features are tributary to the Hayden-Rhodes Aqueduct and ultimately the Salt and Gila Rivers. Therefore, expansion area drainage features possess a surface hydrologic connection to downstream traditional navigable waters and qualify as waters of the U.S. Approximately 0.27 acres (5,531 linear feet) of USACE non-wetland waters were identified in the expansion area. The four drainages parameters are summarized in the Table 3.5 of this FEA.

During the site visit eight (8) detention basins were identified, they are located at the existing NMCA site. Based on initial hydraulic analysis results, several basins are overtopped during the 100- year event. Currently the 10-year event indicates no overtopping of the existing features. Therefore, four (4) detention basins would need to be constructed within the expansion area to store the difference in the additional 100-year runoff volume. Within the proposed expansion area, one detention basin would be constructed at the northwest corner, another at northeast corners and two additional basins would be constructed along the southern area. The northern basins allow entering offsite discharge into the naturally lined channels at a controlled rate to promote mitigation of the pervasive flooding which occurs in existing conditions. The discharge is proposed to be conveyed through three on-site channels to the southern limits of the expansion area. Detention basins would have 6:1 side slopes and will vary in depth. The 6:1 side slopes are adequate slope that allows maintenance staff to enter the basins at any location; eliminating the need for dedicated vehicular ramps. The detention basins would be designed with emergency outfalls, in the case that the design storm is exceeded or back to back storms occur. In the event that the detention basins are exceeded, they would spill over and continue in their historic flow patterns to the south. According to City and FCDMC requirements, the basins must drain within 36 hours after the runoff event has ended. The purpose for the 36-hour drain time is vector control and to allow for storage volume if back to back storm events were to occur.

Storm water runoff will sheet flow across the site and be directed to the detention basins located throughout the site. Natural-lined drainage channels will traverse the site in a generally north-south direction in order to convey peak off-site flows through the site.

The channels will be natural-lined and traverse the site in a generally north-south direction in order to convey peak off-site flows through the site. The channels will additionally serve to collect on-site drainage and route it to on-site detention basins. Where channels pass through roadways, reinforced concrete boxes (10-ft x 3-ft) will be constructed beneath the roadway. The channels will have 6:1 side slopes and range in depth from 3 to 6 feet deep.

Based on the hydraulic results, Pinnacle Peak Road is overtopped by a maximum of approximately 1.5 feet of water during the 100-year storm event. Overtopping occurs along the expansion area approximately 460 feet and 1,600 feet east of the Black Mountain Parkway. Results indicate overtopping of the roadway along the expansion area of approximately 0.5 feet to 1.0 feet deep.

Sediment deposition in the onsite and offsite channels, ditches, and onsite cross culverts is an existing issue. Sediment yield within a watershed is dependent upon the total rate of erosion experienced within the watershed and its ability to transport that material. The watersheds contributing to the sediment deposition and erosion within the NMCA are described as natural desert landscape with meandering, well incised channels. Field observations indicate sloughing along the banks of the existing streams, which would contribute sediment load to the system. Additionally, the streambeds contain a sandy/gravelly loam material. The material appears to be a combination of both onsite and offsite sediment transport occurring. As material is deposited within the onsite facilities it reduces the capacity due to the sediment build up.

Groundwater

The Arizona Water Atlas was prepared by the Arizona Department of Water Resources. Volume 8, the Active Management Area (AMA) Planning Area, is eight in a series of nine volumes that comprise the Arizona Water Atlas. The primary objectives in assembling the Atlas was to present an overview of water supply and demand conditions in Arizona, to provide water resource information for planning and resource development purposes, and to help identify needs of communities. Five AMAs, Phoenix, Pinal, Prescott, Santa Cruz, and Tucson, have been designated in the state as requiring specific, mandatory management practices to preserve and protect groundwater supplies for the future. NMCA is located in the Phoenix AMA. (AZDWR April 2010).

According to the Phoenix AMA the major aquifers in the AMA are recent stream alluvium and basin fill. Groundwater is also found in sedimentary rock in some areas. The NMCA site is located in the East Salt River Valley Sub-basin. Groundwater flow in

this sub-basin is toward cones of depression near Scottsdale, Mesa, and Queen Creek. The Arizona Department of Water Resources annually measures 442 index wells in the AMA. The deepest water level for wells measures in 2002-2003 is 866 feet in the vicinity of Cave Creek and the shallowest is 10 feet in the vicinity of Superior. The natural recharge in the Phoenix AMA is 24,100 acre-feet per year. Mountain front and streambed recharge are the principal sources of natural recharge. (AZDWR April 2010).

There is an existing well with a 40,000-gallon potable water tank with three 90 gallon per minute electric motor driven water pumps located on the northeast corner of the property that currently supports the existing cemetery. From the water tank, a 6-inch main line runs across the expansion area site to the intersection of Silver Star Way and Legion of Honor Road, then increases in size to a 12-inch line. The 12-inch water main line runs on the north side of Silver Star Way and distributes to all the existing cemetery site amenities including the Administration Building the Maintenance Complex and existing restroom and drinking fountains.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

Surface Water

The Proposed Action will result in the construction and operation of the next phase of the Master Plan on an area of up to 35 acres and subsequent phases of construction until buildout of the entire 104-acre expansion area is achieved. Each phase of construction will result in grading and then backfill with compacted dirt. Short term adverse erosion and sedimentation impacts associated with construction activities are possible if large storm events occur during construction activities. Operators of construction sites disturbing one or more acres of land or smaller sites that are part of a common plan of development or sale are required to obtain Arizona Pollutant Discharge Elimination System (AZPDES) permit coverage for stormwater discharges. The Arizona Department of Environmental Quality (ADEQ) is authorized to administer the NPDES program in Arizona from the USEPA. The Construction Contractor would obtain NPDES permit from the ADEQ as applicable for each phase. As part of this permit operators of construction sites must control stormwater volume and velocity within the site to minimize soil erosion. The permit also requires construction operators to design, install, and maintain effective pollution prevention measures in order to minimize or prohibit the discharge of pollutants (i.e., construction and demolition waste, solid waste, trash,

fuels, chemicals and other pollutants) in stormwater. The permit also requires preparation of a Stormwater Pollution Prevention Plan (SWPPP). The overall objective of the SWPPP is to provide a written plan for implementing, assessing and improving stormwater control measures that minimize erosion and sedimentation and implementing pollution prevention, inspections and monitoring requirements (ADEQ 2013). Prior to construction, the Construction Contractor would prepare a SWPPP to provide erosion control measures, and it would be available on site, a requirement of the AZPDES General Construction Permit. With implementation of all the SWPPP measures to prevent soil erosion and discharge of pollutants in stormwater during construction of each phase in the expansion area will ensure that the Proposed Action will not result in adverse impacts to water quality.

The drainage approach is to provide on-site detention basins to store the difference in the additional 100-year runoff volume produced by the proposed cemetery expansion area. Stormwater runoff will sheet flow across the site and be directed via berms or channel to the detention basins located throughout the site. There will be two earthen detention basins at the northern portion of the expansion area, just south of Pinnacle Peak Road, which will collect and retain stormwater from the north. Sediment that is transported in the stormwater from the north will be captured in these two detention basins and will be removed as a part of routine maintenance of these basins. Detention basins are anticipated to have 6:1 side slopes and will vary in depth, no deeper than 3 feet. The 6:1 side slopes are adequate slope that allows maintenance staff to enter the basins at any location; eliminating the need for dedicated vehicular ramps. Three earthen bottom drainage channels will traverse the site in a generally north-south direction in order to convey offsite flows through the site. The channels will additionally serve to collect onsite drainage and route it to two onsite detention basins located along the southern boundary of the expansion area. The channels are open trapezoidal channels with side slopes of 6:1. The channel side slopes may need additional armoring, i.e. with a geotextile fabric to prevent erosion and resulting sediment transport to areas downstream. The channels will have check dams in order to prevent erosion of the channel bottoms and sediment transport. The detention basins along the southern expansion area will retain and release stormwater flows from the site, at or below existing conditions peak discharge rates. The concentration points on the downstream side of the site will be consistent with historic locations. Detention basins will be designed with an emergency outfall, in case that the design storm is exceeded or back-to-back storms occur. In the event the detention basins capacity is exceeded, flows would spill over and continue in their historic flow patterns to the south. The southern detention basins will also collect

some sediment that will be removed as part of as needed maintenance for these basins. For each phase of future development, the drainage infrastructure required to protect that phase will be constructed concurrently with development of that phase.

A field investigation was performed to identify any washes or any watercourses, or drainage features which may be considered by the USACE under Section 404 of CWA. Drainages located within the proposed expansion area, tributary to the Hayden-Rhodes Aqueduct and ultimately the Salt and Gila Rivers. Therefore, expansion area drainage features possess a surface hydrologic connection to downstream traditional navigable waters and qualify as waters of the U.S. Approximately 0.27 acres (5,531 linear feet) of USACE non-wetland waters were identified in the expansion area.

The use of subsurface crypts rather than direct burial of caskets in the soil and use of cremain interment and columbaria provide protection of groundwater from cemetery operations. Pesticide and chemical (fuels, oil products, paints, solvents) applications are conducted to the minimum extent necessary and in accordance with manufacturer specifications, resulting in minimal impacts to surface water and groundwater resources. Therefore, the Proposed Action is not anticipated to result in adverse impacts to the water quality of surface water and groundwater resources from construction activities or ongoing operation and maintenance activities.

If any work would be performed in the Waters of U.S., to comply with the Section 404 of the CWA, the appropriate Section 404 permit from the USACE, Regulatory Branch would need to be obtained prior to implementation of any phases affecting the watercourses. The Proposed Action would result in the permanent loss of less than 0.5 acres of USACE non-wetland waters, it is anticipated that it would qualify with the criteria identified in a Nationwide Permit (NWP), 39: *Commercial and Institutional Developments*. VA would submit an application to the USACE for obtaining a required permit prior to the construction of the Proposed Action. Coordination with the USACE, Regulatory Branch was initiated in June 2015 and it would be continued during construction of each phase. Appropriate mitigation would be provided to off-set project related impacts. In addition, the environmental commitments that would be followed by the Construction Contractor during the construction and routine operation and maintenance are outlined below.

Implementation of the Proposed Action would also require a Section 401 Water Quality Certification (WQC) from the State. VA would submit an application to obtain a Section 401 WQC from the ADEQ for the construction and future operation and maintenance. Each phase of the project is anticipated to be about 8 to 10 years apart therefore, prior to each phase a Section 401 WQC need to be obtained to comply with the CWA.

Conditions identified in the Section 404 permit and WQC would be followed by the selected Construction Contractor.

- No Construction would be performed during a rain or storm event.
- No pollutant would be discharged in the Waters of the U.S.
- No construction material would be discharged in the water bodies.
- No work would be performed in the Waters of U.S. (the watercourses). If proposed activities result in impacting or loss of the Waters of U.S., Section 404 permit and 401 WQC would be obtained prior to construction of any proposed phase within 104 acres.
- Conditions identified in the Section USACE Section 404 permit and Section 401 WQC would be followed during construction as well as for the future operation and maintenance.
- SWPPP would be prepared by the Construction Contractor to minimize erosion and discharge of eroded material in the Waters of U.S., and the SWPPP would be available at the site. The ADEQ would be notified of preparation of the SWPPP. Best Management Practices and erosion control methods identified in the SWPPP would be implemented.

Groundwater

The existing peak season water use occurs during the summer months with water usage up to 375,000 gallons in July 2015, while off peak season occurs during the winter months with a near 130,000 gallons of water use in February 2015. As of August 2015, the well has been operating effectively and meets the current demand for potable water and irrigation water use. Typically, irrigation lines are shut-off during the off-peak seasons. All plant materials throughout the site are irrigated using drip irrigation with shrubs and trees being irrigated in separate zones. The volume of water used during off-peak times (130,000 gallons on average) is used in restrooms, Administration and Maintenance Complex buildings, and for dust control during burial operations. It is anticipated that the use of water from the private well would increase during peak and off-peak seasons in order to supply the expansion area. The private well and aboveground storage tank on site is expected to supply enough water for future demands of development of the expansion area. Therefore, the Proposed Action is not anticipated to result in adverse impacts associated with water supply. Future operation and maintenance is very short in duration and minor in nature so it would not result in any significant impacts to water resources.

3.5.2.2 No Action

Under the No Action Alternative, cemetery expansion would not occur, and no impacts to water quality from construction or operation and maintenance activities would occur. However, as the Proposed Action includes improvements to the existing drainage facilities to address sediment loading, this issue would not be addressed under the No Action and would be an ongoing maintenance problem.

3.6 WILDLIFE AND HABITAT

The information below is a summary of findings from the Habitat Assessment dated November 2015 (Appendix D) and Jurisdictional Delineation (JD) dated September 2015 (Appendix E) to verify existing site conditions and assess the probability of occurrence for sensitive plant and wildlife species in the NMCA expansion area.

3.6.1 Existing Environment

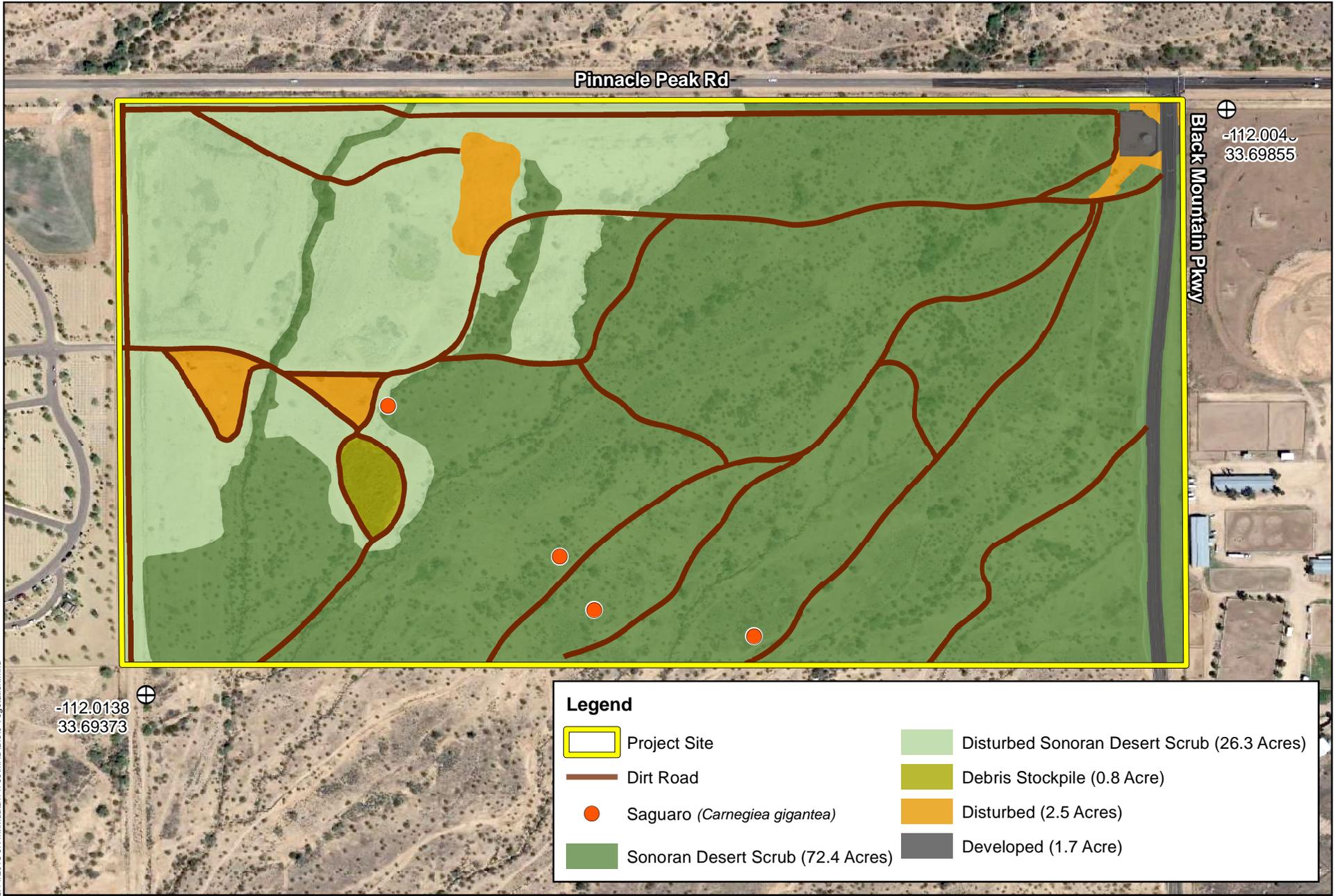
Vegetation

The NMCA expansion area primarily supports one naturally occurring vegetation community, Sonoran desert scrub, in varying degrees of disturbance (Exhibit 3.2, Vegetation). This overall plant community can be separated into three sub-communities: Sonoran desert scrub, disturbed Sonoran desert scrub, and ephemeral drainage features. In addition, there are two areas that were classified as disturbed and developed. These areas are not vegetation classifications, but rather are considered to be land cover types. A vegetation debris stockpile is present in the southwest quadrant of the site.

Sonoran desert scrub plant community is dominated by creosote bush (*Larrea tridentata*) and triangleleaf bursage (*Ambrosia deltoidea*). Other plant species observed with this plant community include broom baccharis (*Baccharis sarothroides*) and apricot mallow (*Sphaeralcea ambigua*). Various species of cacti, including saguaro, barrel cactus (*Ferocactus* spp.), and buckhorn cholla (*Cylindropuntia acanthocarpa*) are present but scarce on-site. The locations of healthy saguaros in the expansion area are shown on Exhibit 3.2, Vegetation. Based on historical aerial imagery, portions of this plant community, specifically in the northwestern section of the NMCA expansion area, have been subject to occasional clearing and disturbance by NMCA from stockpiling of vegetative refuse and other cemetery materials, resulting in very patchy native vegetation separated by swaths of non-native vegetation, particularly Arabian grass (*Schismus arabicus*) and Russian thistle (*Salsola tragus*).

The ephemeral drainage features generally flow from northeast to southwest across the expansion area and continue south of NMCA, beyond NMCA boundaries. Plant species observed within the ephemeral drainage features include desert ironwood (*Olneya tesota*), blue palo verde (*Parkinsonia florida*), and honey mesquite (*Prosopis glandulosa*).

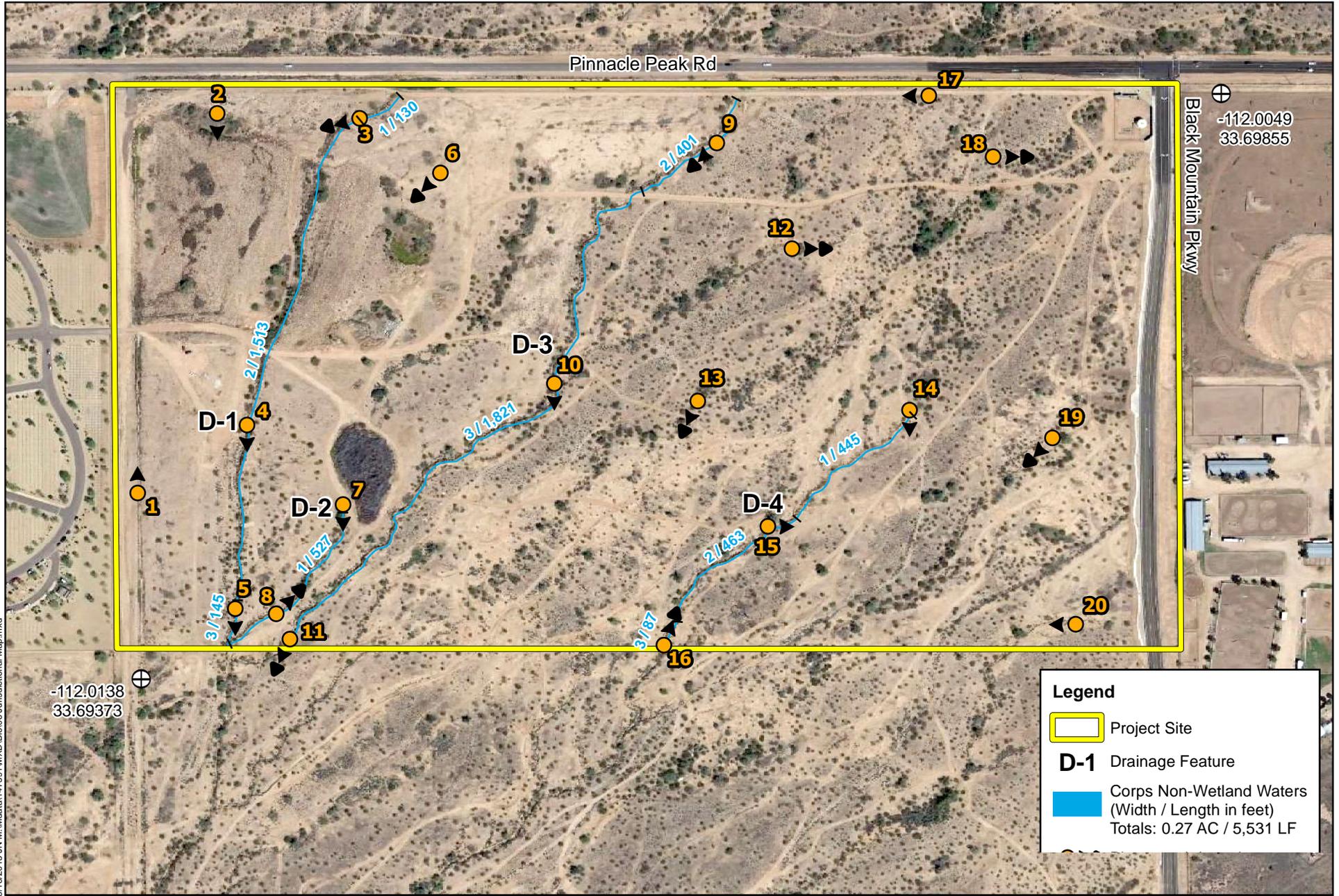
Disturbance of NMCA expansion area includes areas where vegetation has usually been cleared, such as for dirt roads. Within the expansion area, disturbed areas consist of unimproved dirt paths and areas that show evidence of extensive and potentially frequent mechanical disturbance and, as a result, only now contain low-growing exotic vegetation such as Arabian grass and Russian thistle.



Legend

Project Site	Disturbed Sonoran Desert Scrub (26.3 Acres)
Dirt Road	Debris Stockpile (0.8 Acre)
Saguaro (<i>Carnegiea gigantea</i>)	Disturbed (2.5 Acres)
Sonoran Desert Scrub (72.4 Acres)	Developed (1.7 Acre)

8/11/2015 JIN M:\Data\14739\MXD\BIO\0_Vegetation.mxd



8/19/2015 JN M:\Mdata\147391\MXD\Bic06 Jurisdictional Map.mxd

Legend

- Project Site
- D-1** Drainage Feature
- Corps Non-Wetland Waters
(Width / Length in feet)
Totals: 0.27 AC / 5,531 LF

Wildlife

The NMCA expansion area has the potential to support various species of reptiles. Due to the open and mostly undisturbed desert scrub habitat, the expansion area has the potential to support common species such as long-nosed leopard lizard (*Gambelia wislizenii*), desert iguana (*Dipsosaurus dorsalis*), desert spiny lizard (*Sceloporus magister*), Arizona glossy snake (*Arizona elegans noctivaga*), red racer (*Coluber flagellum piceus*), desert nightsnake (*Hypsiglena chlorophaea*), western diamond back (*Crotalus atrox*), and Sonoran gophersnake (*Pituophis catenifer affinis*).

The NMCA expansion area provides suitable foraging habitat for a limited variety of avian species. A total of nineteen avian species were identified during the Habitat Assessment. The species identified included Gambel's quail (*Callipepla gambelii*), turkey vulture (*Cathartes aura*), redtailed hawk (*Buteo jamaicensis*), Eurasian collared-dove (*Streptopelia decaocto*), whitewinged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), lesser nighthawk (*Chordeiles acutipennis*), Gila woodpecker (*Melanerpes uropygialis*), gilded flicker (*Colaptes chrysoides*), American kestrel (*Falco sparverius*), Say's phoebe (*Sayornis saya*), ash-throated flycatcher (*Myiarchus cinerascens*), horned lark (*Eremophila alpestris*), verdin (*Auriparus flaviceps*), cactus wren (*Campylorhynchus brunneicapillus*), black-tailed gnatcatcher (*Polioptila melanura*), Abert's towhee (*Melospiza aberti*), brown-headed cowbird (*Molothrus ater*), and house finch (*Haemorhous mexicanus*). On-site avian activity was heavily dominated by Gambel's quail, white-winged dove, mourning dove, lesser nighthawk, and cactus wren.

Threatened and Endangered Species

Federally listed threatened and endangered species and their habitats are protected under provisions of the Federal Endangered Species Act (ESA). Section 9 of the ESA prohibits "take" of threatened or endangered species. "Take" under the ESA is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct." The presence of any federally threatened or endangered species that are in a expansion area generally would impose severe constraints on development, particularly if development would result in "take" of the species or its habitat. Under the regulations of the ESA, the United States Fish and Wildlife Service (USFWS) may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act.

Sensitive Plants

According to the Habitat Assessment literature search, seventeen (17) sensitive plant species have been reported in the Union Hills and Currys Corner quadrangles (refer to Table 3.3). Based on the results of the Habitat Assessment, habitat requirements for specific species, and the availability and quality of habitats needed by each sensitive plant species, it was determined that all sensitive plant species that have been reported in these two quadrangles have a low potential to occur or are presumed absent from the expansion area. No sensitive plant species were observed onsite during the June 2015 site investigation. Several species protected under the Arizona Native Plant Law were positively identified onsite, including saguaro, honey mesquite, both blue palo verde and foothill palo verde (*Parkinsonia microphylla*), crucifixion thorn (*Castela emoryi*), desert ironwood, and honey mesquite. No Highly Safeguarded species were found onsite.

Table 3.3. Sensitive Plant Species with a Potential to Occur On Site

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Abutilon parishii</i> Parish's indian mallow	Fed: None NPL: SR	Found on rocky slopes and canyon bottoms in desert scrub, and up into semidesert grassland. Found at elevations ranging from 2,500 to 4,900 feet. Flowers in the spring followed by a longer, late summer to fall bloom.	No	Presumed absent. The project site is well outside of the known elevation range for this species.
<i>Agave arizonica</i> Arizona century plant	Fed: None NPL: HS	Sonoran desert scrub, chaparral, or juniper grassland; known only from the New River Mountains of central Arizona. Found at elevations ranging from 3,600 to 5,800 feet. Blooming period is from May to July.	No	Presumed absent. The project site is well outside of the known elevation range for this species.
<i>Agave delamateri</i> Tonto Basin century plant	Fed: None NPL: HS	Grows in open, hilly slopes of the Sonoran Desert adjacent to major drainages. Populations are associated with prehistoric agave cultivation in central Arizona. Found at elevations ranging from 2,190 to 5,100 feet. Blooming period is from May to July.	No	Presumed absent. The project site is well outside of the known elevation range for this species.

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Agave murpheyi</i> Murphey's century plant	Fed: None NPL: HS	In central Arizona, it is usually found on benches or alluvial terraces on gentle bajada slopes above major drainages in desert scrub. Can also be found near rock piles. Found at elevations ranging from 1,300 to 3,200 feet. Blooming period is from March to July.	No	Presumed absent. No suitable habitat is present on site.
<i>Argemone pleiacantha</i> southwestern pricklypoppy	Fed: END NPL: None	Occurs on gravelly soils of open or disturbed ground. Also found on slopes or canyon bottoms. Found at elevations ranging from 4,200 to 7,100 feet.	No	Presumed absent. The project site is well outside of the known elevation range for this species.
<i>Astragalus corbrensis</i> var. <i>maguirei</i> coppermine milkvetch	Fed: None NPL: SR	Grows in Pinon-juniper or pine-oak woodlands in the Chiricahua and Peloncillo mountains. Found at elevations ranging from 5,500 to 7,000 feet. Blooming period is from March to April.	No	Presumed absent. The project site is well outside of the known elevation range for this species.
<i>Carnegiea gigantea</i> Saguaro (crested form)	Fed: None NPL: HS	Occurs throughout the Sonoran Desert; generally in rocky soils and low mountains. Crested plants are a very small proportion of the population. Found at elevations ranging from 590 to 6,496 feet. Blooming period is from May to June.	No	Absent. Saguaro are present on-site, but are not of the crested form.
<i>Echinomastus erectocentrus</i> var. <i>acuñensis</i> Acuña cactus	Fed: Proposed NPL: HS	Grows in low hills and gravel ridges in Sonoran desert scrub habitat. Found at elevations ranging from 1,300 to 2,000 feet. Blooming period is from March to April.	No	Presumed absent. No suitable habitat is present on site. Few cacti were found on-site, and this species was not observed.
<i>Erigeron lemmonii</i> Lemmon's fleabane	Fed: Candidate NPL: HS	Known only from the Huachuca Mountains at 6,300 to 7,300 feet in elevation. Blooming period is from August to October.	No	Presumed absent. The project site is well outside of the known elevation range for this species.

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Erigeron piscaticus</i> Fish Creek fleabane	Fed: None NPL: SR	Grows in alluvial soils in shady canyon bottoms between 2,250 and 3,500 feet in elevation. Found in moist, sandy canyon bottoms associated with perennial streams. Blooming period is from May to August, probably continuing until October.	No	Presumed absent. The project site is well outside of the known elevation range for this species.
<i>Fremontodendron californicum</i> Flannel bush	Fed: None NPL: SR	Found in well-drained rocky slopes in chaparral or oak-pine woodland habitats. Blooming period is from May to June.	No	Presumed absent. No suitable habitat is present on site.
<i>Purshia (Cowanina) subintegra</i> Arizona cliffrose	Fed: END NPL: HS	Occurs on Tertiary limestone lake bed deposits of the Verde Valley Formation in Sonoran desert scrub habitat to 4,000 feet.	No	Presumed absent. No suitable habitat is present on site.
<i>Tumamoca macdougalii</i> Tumamoc globeberry	Fed: None NPL: SR	Found on undisturbed soils along washes below 3,000 feet. Blooming period is August to September.	No	Low. There is marginal habitat on-site.
U.S. Fish and Wildlife Service (Fed) END- Federal Endangered Proposed- Proposed for listing Candidate- Candidate for listing		Arizona Native Plant Law (NPL) HS- Highly Safeguarded SR- Salvage Restricted		

Sensitive Wildlife

According to the Habitat Assessment literature search, forty-nine (49) sensitive wildlife species have been reported in the Union Hills and Currys Corner quadrangles (refer to Table 3.4 below). Based on the results of the Habitat Assessment, habitat requirements for specific species, and the availability and quality of habitats needed by each sensitive wildlife species, it was determined that the expansion area has a moderate potential to provide suitable foraging habitat for golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*), American peregrine falcon (*Falco peregrinus anatum*), Sonoran desert toad, and regal horned lizard (*Phrynosoma solare*). Gila woodpecker, gilded flicker, and Albert's towhee were all documented on-site during Michael Baker's June 2015 survey. All other sensitive wildlife species are expected to have a low potential to occur or are presumed absent from the expansion area.

Table 3.4. Sensitive Wildlife Species with a Potential to Occur On Site

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Aix sponsa</i> wood duck	Fed: None AZ: SGCN 1b	Prefers wooded, freshwater habitats with an abundance of cover. Common of riparian habitats, wooded swamps and freshwater marshes, where its slim body allows of use of woodpecker cavities. In Arizona, wood ducks are attracted to permanent ponds, marshes, and lakes as well as slower sections of streams and rivers lined by large trees for nesting.	No	Presumed absent. No suitable habitat is present on-site.
<i>Ammospermophilus harrisi</i> Harris' antelope squirrel	Fed: None AZ: SGCN 1b	Can be found in western, central, and southern Arizona. Also found in extreme southwest New Mexico and northwestern Sonora, Mexico. Prefers rocky desert habitats that contain cactus and shrubs.	No	Low. There is marginal habitat on-site.
<i>Anaxyrus microscaphus</i> Arizona toad	Fed: None AZ: SGCN 1b	Rocky streams and canyons in the pine-oak belt. Also occurs in lower deserts e.g. Agua Fria River area.	No	Presumed absent. No suitable habitat is present. There is no permanent water on-site.
<i>Aquila chrysaetos</i> golden eagle	Fed: None AZ: SGCN 1b	Usually found in open country, in prairies, arctic and alpine tundra, open wooded country and barren areas, especially in hilly or mountainous regions. They nest on rock ledges, cliffs, or in large trees. In Arizona, they are found in mountainous areas and are virtually vacant after breeding in some desert areas.	No	Moderate. There is suitable foraging habitat throughout the project site. No nesting habitat is present.

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Athene cunicularia hypugaea</i> western burrowing owl	Fed: None AZ: SGCN 1b	Primarily a grassland species, but it persists and even thrives in some landscapes highly altered by human activity. Occurs in open, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. The overriding characteristics of suitable habitat appear to be burrows for roosting and nesting and relatively short vegetation with only sparse shrubs and taller vegetation.	No	Low. There is marginal habitat on-site. Despite a systematic search, no burrowing owl burrows or sign were found on-site.
<i>Botaurus lentiginosus</i> American bittern	Fed: None AZ: WSC; SGCN 1b	Marshlands and very wet meadows. Rarely seen away from dense reeds, rushes, cordgrass, cattails, and other emergent vegetation. Occurs along rivers, lakes, and ponds where marshy habitat is well developed. Nest sometimes in upland cover surrounding a wetland basin.	No	Presumed absent. No suitable habitat is present on-site.
<i>Buteo regalis</i> ferruginous hawk	Fed: None AZ: WSC; SGCN 1b	In Arizona, the open scrublands and woodlands, grasslands, and semidesert grassland in the northern and southeastern parts of the state are the potential areas of breeding ferruginous hawks. Avoids high elevation, forest interior, and narrow canyons.	No	Moderate. There is suitable foraging and nesting habitat throughout the project site.
<i>Castor canadensis</i> American beaver	Fed: None AZ: SGCN 1b	Commonly inhabit riparian areas of mixed coniferous-deciduous forests and deciduous forests containing abundant food and lodge building material such as quaking aspen (<i>Populus tremuloides</i>), willows (<i>Salix</i> sp.), alders (<i>Alnus</i> sp.), red-osier dogwood (<i>Cornus sericea</i>), and cottonwoods (<i>Populus</i> sp.).	No	Presumed absent. No suitable habitat is present.

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Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Chilomeniscus stramineus</i> variable sandsnake	Fed: None AZ: SGCN 1b	Found primarily in the Arizona upland subdivision of the Sonoran desertscrub community. It is usually encountered above the flats in or near drainages and canyons with loose gravel or sand substrates.	No	Low. There is marginal habitat on-site.
<i>Chionactis occipitalis klauberi</i> Tucson shovel-nosed snake	Fed: None AZ: SGCN 1a	Found on more productive creosote-mesquite floodplain habitats, with soils described as soft, sandy loams with sparse gravel.	No	Moderate. There is suitable habitat throughout the project site.
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo	Fed: THR AZ: WSC; SGCN 1a	Limited to marrow and often widely separated, riparian cottonwood-willow galleries; salt cedar is also used by cuckoos. Dense understory foliage appears to be an important factor in nest site selection. Can be found in larger mesquite bosques in Arizona.	No	Presumed absent. No suitable habitat is present on site.
<i>Colaptes chrysoides</i> gilded flicker	Fed: None AZ: SGCN 1b	Strongly associated with, but not completely restricted to, giant cactus forests of southwestern deserts.	Yes	Present. This species was observed on-site.
<i>Coluber bilineatus</i> Sonoran whipsnake	Fed: None AZ: SGCN 1b	Commonly found in rocky canyons, riparian areas, foothills and mountains with dense vegetation at elevations up to 6,100 feet. Also found in open creosote bush flats.	No	Low. May forage on-site but no roosting habitat is present on-site.
<i>Corynorhinus townsendii pallescens</i> pale Townsend's big-eared bat	Fed: None AZ: SGCN 1b	In Arizona, summer day roosts are found in caves and mines from desertscrub up to woodlands and coniferous forests. Night roosts may often be in abandoned buildings. In the winter, they hibernate in cold caves, lava tubes, and mines mostly in uplands and mountains from the vicinity of the Grand Canyon to the southeastern part of the state.	No	Low. May forage on-site but no roosting habitat is present on-site.

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Crotalus tigris</i> tiger rattlesnake	Fed: None AZ: SGCN 1b	Found in Arizona upland Sonoran desertscrub, Chihuahuan desertscrub, interior chaparral, and madrean evergreen woodland communities, usually on rocky slopes or in washes within rocky mountains and foothills. It is occasionally found in the desert flatlands, but rarely strays more than a mile from foothills, mountains, or rocky habitat.	No	Low. There is marginal habitat on-site. This species tends to avoid flatlands.
<i>Dendroica petechial</i> yellow warbler	Fed: None AZ: SGCN 1b	Occurs in riparian woodland or forest dominated by cottonwoods and willows.	No	Presumed absent. No suitable habitat is present on-site.
<i>Euderma maculatum</i> spotted bat	Fed: None AZ: WSC; SGCN 1b	Most are captured in dry, rough desertscrub with a few captured or heard in ponderosa pine forest. Also has been found from low desert in southwestern Arizona to high desert and riparian habitats in northwestern Arizona and Utah and conifer forests in northern Arizona.	No	Low. There is marginal habitat on-site. This species may forage on-site but there is no roosting habitat.
<i>Eumops perotis californicus</i> greater mastiff bat	Fed: None AZ: SGCN 1b	Lower and upper Sonoran desertscrub near cliffs, preferring the rugged rocky canyons with abundant crevices. They prefer crowding into tight crevices a foot or more deep and two inches or more wide. Colonies prefer crevices even deeper, to ten or more feet.	No	Presumed absent. No suitable habitat is present on-site.
<i>Falco peregrinus anatum</i> American peregrine falcon	Fed: None AZ: WSC; SGCN 1a	Found in Arizona near cliffs that support sufficient abundance of prey. Optimum peregrine habitat is generally considered to be steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance.	No	Moderate. There is suitable foraging habitat throughout the site but no nesting habitat.

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Gopherus morafkai</i> (= <i>G. agassizii</i> [Sonoran Population]) Sonoran desert tortoise	Fed: None ¹ AZ: WSC; SGCN 1a	The Sonoran population of the desert tortoise occurs primarily on rocky slopes and bajadas of Mojave and Sonoran desert scrub.	No	Low. There is marginal habitat throughout the project site. The site is located in the lowlands, where this species is generally scarce. Some burrows of suitable tortoise size were identified on-site, but no tortoises or tortoise sign were observed inside or in the vicinity of them.
<i>Haliaeetus leucocephalus</i> bald eagle	Fed: Delisted AZ: WSC; SGCN 1a	Inhabit coastal areas, estuaries, unfrozen inland waters, and some arid areas of the western interior and southwestern portion of the U.S. Prefers areas with high water-to-land edge and areas with unimpeded views including both horizontal and vertical aspects.	No	Presumed absent. No suitable habitat is present on-site.
<i>Heloderma suspectum</i> gila monster	Fed: None AZ: SGCN 1a	Primarily in Sonoran Desert and extreme western edge of Mohave Desert, less frequent in desert-grassland and rare in oak woodland. Most common in undulating rocky foothills, bajadas and canyons.	No	Presumed absent. No suitable habitat is present on site.

¹ Formerly a Candidate species. However, in October 2015 USFWS determined listing the Sonoran desert tortoise as threatened or endangered under the Endangered Species Act is not warranted at this time (Volume 80 of the Federal Register, pages 60321-60335).

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Incilius alvarius</i> Sonoran desert toad	Fed: None AZ: SGCN 1b	Common in the Sonoran Desert. Occurs in a variety of habitats including creosote bush desertscrub, grasslands up into oak-pine woodlands, and thornscrub and tropical deciduous forest in Mexico.	No	Moderate. There is suitable habitat throughout the project site. Rodent burrows suitable for aestivation are scattered throughout the entire site, and during monsoon season the on-site drainages may provide suitable aquatic habitat.
<i>Kinosternon sonoriense</i> Sonora mud turtle	Fed: None AZ: SGCN 1b	Occurs in pond and stream habitats. Known from a pond and limited stream habitat at	No	Presumed absent. No suitable habitat is present on site.
<i>Lasiurus blossevillii</i> western red bat	Fed: None AZ: WSC; SGCN 1b	Preferred habitat includes riparian and wooded areas. They roost during the day in trees. Summer roosts occur in tree foliage, sometimes in leafy shrubs or herbs. Often found in fruit orchards.	No	Presumed absent. No suitable habitat is present on-site.
<i>Lasiurus xanthinus</i> western yellow bat	Fed: None AZ: WSC; SGCN 1b	May be associated with Washington fan palm trees, or other palms or other leafy vegetation such as sycamores, hackberries and cottonwoods, which provide roost sites.	No	Presumed absent. No suitable habitat is present on-site.
<i>Leopardus (Felis) pardalis</i> ocelot	Fed: END AZ: WSC; SGCN 1a	Lives in areas of dense cover or vegetation, and high prey populations. Avoids open country.	No	Presumed absent. No suitable habitat is present on-site.
<i>Leptonycteris curasoae yerbabuena</i> lesser long-nosed bat	Fed: END AZ: WSC; SGCN 1a	Desert grassland and shrubland up to the oak transition. Roosts in caves, mine tunnels, and occasionally in old buildings. Forages in areas of saguaro, ocotillo, paloverde, prickly pear, and organ pipe cactus and later in the summer among agaves.	No	Low. May forage on-site but no roosting habitat is present on-site.

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Lithobates yavapaiensis</i> lowland leopard frog	Fed: None AZ: WSC; SGCN 1a	Inhabit aquatic systems in desert grasslands to pinyon-juniper. This species is considered to be a habitat generalist and breed in a variety of natural and man-made aquatic systems. In semi-permanent aquatic systems, may survive the loss of water by retreating into deep mud cracks, mammal burrows, or rock fissures.	No	Presumed absent. No suitable habitat is present. There is no permanent water on-site.
<i>Macrotus californicus</i> California leaf-nosed bat	Fed: None AZ: WSC; SGCN 1b	Mostly found in the Sonoran desert scub roosting in caves, mines, and rock shelters. Prefer roost sites with large areas of ceiling and flying space.	No	Low. May forage on-site but no roosting habitat is present on-site.
<i>Melanerpes uropygialis</i> Gila woodpecker	Fed: None AZ: SGCN 1b	Require cacti or trees with large trunks that are used for nesting sites. Suitable habitats include riparian woodlands, uplands with concentrations of large columnar cacti, old-growth xeric-riparian was woodlands, and urban or suburban residential areas.	Yes	Present. This species was observed nesting on-site.
<i>Melospiza lincolnii</i> Lincoln's sparrow	Fed: None AZ: SGCN 1b	Riparian-willow habitat surrounded by large, contiguous tracts of upland forest. Forest types include lodgepole pine (<i>Pinus contorta</i>), spruce (<i>Picea</i> sp.), fir (<i>Abies</i> sp.), aspen, and cottonwoods (<i>Populus</i> sp.).	No	Presumed absent. No suitable habitat is present on-site.
<i>Melozone aberti</i> Abert's towhee	Fed: None AZ: SGCN 1b	Frequents dense riparian vegetation; thickets of willow, cottonwood, mesquite, saltcedar.	Yes	Present. This species was observed on-site.
<i>Micruroides euryxanthus</i> Sonoran coralsnake	Fed: None AZ: SGCN 1b	Found in communities ranging from Sonoran, Mohave, and Chihuahuan desertscrubs, through semidesert grassland, and into the lower reaches of the woodlands. It is usually encountered about the flats in or near rocky or gravelly drainages, mesquite lined washes, and canyons.	No	Low. There is marginal habitat on-site.

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Myotis lucifugus</i> <i>occultus</i> Arizona myotis	Fed: None AZ: SGCN 1b	During the summer, it is usually found in ponderosa pine and oak-pine woodland near water. Also found along permanent water or in riparian forests in some desert areas such as along the lower Colorado and Verde rivers.	No	Presumed absent. No suitable habitat is present on-site.
<i>Myotis velifer</i> cave myotis	Fed: None AZ: SGCN 1b	Desertscrub of creosote, brittlebush, palo verde, and cacti. Roosts in caves, tunnels, mineshafts, under bridges, and sometimes buildings within a few miles of water.	No	Low. There is marginal habitat on-site. This species may forage on-site but there is no roosting habitat.
<i>Myotis yumanensis</i> Yuma myotis	Fed: None AZ: SGCN 1b	Roosts in buildings, mines, caves, or crevices and also has been observed roosting in abandoned swallow nests and under bridges. Distribution is closely tied to bodies of water, which it uses as foraging sites and sources of drinking water. Open forest and woodlands are optimal habitat.	No	Presumed absent. No suitable habitat is present on-site.
<i>Nyctinomops</i> <i>femorosaccus</i> pocketed free-tailed bat	Fed: None AZ: SGCN 1b	Reaches the northern limits of its distribution in desert scrub and arid lowland habitats in southern Arizona and southern California. Roosts in crevices high on cliff faces in rugged canyons. Roosts in rock crevices and caves during the day and may roost in buildings or under roof tiles.	No	Low. There is marginal habitat on-site. This species may forage on-site but there is no roosting habitat.
<i>Panthera onca</i> jaguar	Fed: END AZ: WSC; SGCN 1a	Known for a variety of habitats, showing a high affinity to lowland wet habitats, typically swampy savannas or tropical rain forests. In the northern and southern periphery, they may occur in warmer, more arid habitat types, including oak-pine woodland.	No	Presumed absent. No suitable habitat is present on site.

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Passerculus sandwichensis</i> savannah sparrow	Fed: None AZ: SGCN 1b	Habitat consists of open country, grassy meadows, agricultural fields, sedge bogs, edges of salt marshes, and tundra. Typically avoid areas with extensive tree cover.	No	Presumed absent. No suitable habitat is present on-site.
<i>Perognathus amplus</i> Arizona pocket mouse	Fed: None AZ: SGCN 1b	Range includes southwestern half of AZ and extreme northwestern Mexico. Occupies great basin desertscrub habitat usually with sparse ground cover of greasewood, snakeweed, rabbitbrush, ephedra, shortgrass, and short junipers.	No	Low. There is marginal habitat on-site.
<i>Perognathus longimembris</i> little pocket mouse	Fed: None AZ: SGCN 1b	Inhabits arid plains and desert-like country. This species is nocturnal, spending daylight hours in burrows and emerging at night to feed on a variety of vegetation and insect species.	No	Low. There is marginal habitat on-site.
<i>Phrynosoma solare</i> regal horned lizard	Fed: None AZ: SGCN 1b	Found within Arizona upland Sonoran desertscrub, Chihuahuan desertscrub, and semidesert grassland communities. It inhabits valleys, rocky bajadas, and low foothills. It is usually encountered in relatively level areas with low shrubs and open, sunny patches.	No	Moderate. There is suitable habitat throughout the project site.
<i>Phyllorhynchus browni</i> saddled leaf-nosed snake	Fed: None AZ: SGCN 1b	Primarily an inhabitant of the Arizona upland subdivision of the Sonoran desertscrub community, but it extends into the lower Colorado River subdivision near Gila Bend and Florence. It is usually found above the flats in foothills and on moderate bajadas.	No	Presumed absent. No suitable habitat is present on site.

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Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Sonorella allynsmithi</i> Phoenix talussnail	Fed: None AZ: SGCN 1b	Reside in deep talus slopes, boulder outcrops and rocky wash embankments above the flood zone. The snails often use vegetated areas along the edge of talus because the vegetation provides food, reduces soil temperature and helps stabilize the talus slope.	No	Presumed absent. No suitable habitat is present on site.
<i>Tadarida brasiliensis</i> Mexican free-tailed bat	Fed: None AZ: SGCN 1b	In the spring, these migratory bats move northward from southern Arizona and Mexico, to the lower Sonoran and upper Sonoran life zones. Considered primarily a lowland species, they do sometimes range into the highlands.	No	Presumed absent. No suitable habitat is present on-site.
<i>Troglodytes pacificus</i> pacific wren	Fed: None AZ: SGCN 1b	Highest breeding densities are found in conifer forests. Frequently associated with water.	No	Presumed absent. No suitable habitat is present on site.
<i>Vireo bellii arizonae</i> Arizona Bell's vireo	Fed: None AZ: SGCN 1b	Relies heavily on cotton-willow forests at low elevations, possibly due to high midsummer temperatures that exist outside of the forests. At higher elevations (above 1,400 feet), this species uses tamarisk (<i>Tamarix</i> sp.) and honey mesquite (<i>Prosopis glandulosa</i>), as well as cottonwood-willow forest.	No	Presumed absent. No suitable habitat is present on-site.

Scientific Name Common Name	Status	Habitat	Observed On-site	Potential to Occur on the Project Site
<i>Vulpes macrotis</i> kit fox	Fed: None AZ: SGCN 1b	Primarily associated with desert shrub or shrub-grass habitats. They appear not to need free-standing water, meeting their needs through metabolic processes instead. Dens are important to kit foxes, providing more moderate habitat temperatures in both the summer and winter.	No	Presumed absent. While the site contains suitable habitat to support this species, kit fox dens are conspicuous and distinctive and none were found on-site. May pass through the site but based on the lack of observed dens is not believed to currently inhabit it as a resident.
U.S. Fish and Wildlife Service (Fed) END- Federal Endangered THR- Federal Threatened	Arizona Game and Fish Department (AZ) WSC- Wildlife Species of Concern SGCN- Species of Greatest Conservation Need. These species are ranked as "vulnerable" under one or more of the following categories: Extirpated from Arizona, Federal or State status, Declining status, Disjunct status, Demographic status, Concentration status, Fragmentation status, Distribution status	SGCN Tiers 1a- Ranked "vulnerable" in at least one of the SGCN categories and in addition matches at least one of the following subsequent criteria: Federally listed as endangered or threatened under the Endangered Species Act (ESA); Candidate species under ESA; Is specifically covered under a signed conservation agreement or a signed conservation agreement 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. 1b- Ranked "vulnerable" in at least one of the SGCN categories but does not meet any of the subsequent criteria		

Critical Habitat

Under the ESA, "Critical Habitat" for a species is designated at the time of listing or within one year of listing. "Critical Habitat" refers to habitat or a specific geographic area that contains the elements and features that are essential for the survival and recovery of the species. The project site is not located within any designated Critical Habitat. The

nearest Critical Habitat unit is the proposed yellow-billed cuckoo (*Coccyzus americanus*) Unit 42: AZ-34 Lower Verde River, located approximately 19 miles east of the site on the Verde River downstream of Bartlett Dam. It should also be noted that designated Critical Habitat for the southwestern willow flycatcher (*Empidonax traillii extimus*), specifically the Verde Management Unit, is located approximately 25 miles northeast of NMCA.

Jurisdictional Areas

This section summarizes the results of the field investigation completed to identify washes and other watercourses or drainage features on site that may be considered jurisdictional by the United States Army Corps of Engineers (USACE) under Section 404 of the CWA. The waters of the U.S. observed on site consist entirely of ephemeral drainage features (desert washes); there are no perennial or intermittent streams, wetlands, or other special aquatic resources in the expansion area.

Drainage of the NMCA expansion area is accomplished via overland sheet flow and follows onsite topography to the southwest. There are four unnamed ephemeral drainage features that generally run from northeast to southwest across the expansion area (Exhibit 3.3, Corps Jurisdiction). These ephemeral drainage features exhibited an earthen streambed consisting of fine sediment and gravel. Evidence of a USACE Ordinary High Water Mark (OHWM) and surface hydrology was observed via the following indicators: scour, drift/debris, sediment deposition, changes in terrestrial vegetation, and drainage patterns.

All four expansion area drainage features are tributary to the Hayden-Rhodes Aqueduct and ultimately the Salt and Gila Rivers. Therefore, expansion area drainage features possess a surface hydrologic connection to downstream traditional navigable waters and qualify as waters of the U.S. Approximately 0.27 acres (5,531 linear feet) of USACE non-wetland waters were identified in the expansion area. The four drainages parameters are summarized in the Table 3.5 below.

Table 3.5: USACE/ADEQ Jurisdictional Drainages and Impact Summary

USACE/ADEQ Jurisdictional Drainage Feature	Non-Wetland Waters		Permanent Impact	
	Acreage	Linear Feet	Acreage	Linear Feet
Drainage 1 (D-1)	0.08	1,788	0.08	1,788
Drainage 2 (D-2)	0.01	527	0.01	527
Drainage 3 (D-3)	0.14	2,222	0.14	2,222
Drainage 4 (D-4)	0.04	995	0.04	995
TOTALS	0.27	5,531	0.27	5,531

3.6.2 Environmental Consequences

3.6.2.1 [Proposed Action](#)

Sensitive Plants

Based on habitat requirements for specific sensitive plant species along with the availability and quality of habitats needed by each sensitive species, the Habitat Assessment determined that the NMCA expansion area does not contain suitable habitat to support sensitive plant species. The expansion area is located well outside of the known elevation range for most sensitive plant species that have been recorded in the general project vicinity (per the Arizona Department of Game and Fish’s HabiMap database), and on-site habitat is only marginally suitable or is unsuitable for most remaining sensitive plant species that are known to occur in the area. As a result, the Proposed Action is not anticipated to have an adverse effect on sensitive plant species.

Arizona Department of Agriculture (ADA) Plant Species

The ADA regulates Arizona agriculture by protecting consumers and natural resources. The ADA requires that all ADA-listed plant species acquire a Blue Seal Permit for any plant removed by the property owner whether it be a government agency or a private citizen. ADA-listed plants found onsite include Saguaro, ironwood, palo verde, mesquite trees along with all of the cacti and many other smaller plants. Much of the ADA-listed plants would be removed during construction of the NMCA expansion area. However, much of the landscape design for the NMCA expansion area includes Arizona desert native plants. The plant palette includes blue palo verde (*Cercidium floridum*), foothill palo verde (*Cercidium microphyllum*), ironwood (*Olneya tesota*), tiangleleaf bursage (*Ambrosia deltoidea*), brittlebush (*Encelia farinosa*), creosote bush (*Larrea*

tridentata), Saguaro cactus (*Carnegiea gigantea*), fishhook barrel cactus (*Ferocactus wislizeni*), and ocotillo (*Fouquieria splendens*). Existing healthy saguaros will be preserved in place to the greatest extent feasible. To minimize any potential wildlife and habitat effects during construction, VA would implement the following best management practices:

- All categories of ADA-listed plants shall acquire a permit from the ADA.
- Prior to each phase of development in the expansion area, applicable permits will be obtained for ADA-listed plants that must be removed and cannot be preserved and incorporated into the site design.
- These measures are also outlined in Section 5.0, *Minimization and Best Management Practices*. As a result, the Proposed Action is expected to have less than significant impacts to ADA-listed plants.

Sensitive Wildlife

Based on habitat requirements for specific sensitive wildlife species along with the availability and quality of habitats needed by each sensitive species, the NMCA expansion area has a moderate potential to support golden eagle, ferruginous hawk, Tucson shovel-nosed snake, American peregrine falcon, Sonoran desert toad, and regal horned lizard. Gila woodpecker, gilded flicker, and Albert's towhee were all documented onsite during Michael Baker's June 2015 survey. All other known sensitive plants and wildlife species are expected to have a low potential to occur or are presumed absent.

Construction activities would displace wildlife that inhabit or use the expansion area for nesting, foraging, or cover and potentially cause direct mortality of less mobile subterranean species, such as Tucson shovel-nosed snake, Sonoran desert toad, and regal horned lizard. Some wildlife, birds in particular, would be expected to disperse to remaining undeveloped parts of the expansion area or undeveloped areas to the north and south. The typical terrestrial wildlife species that could be impacted are widely distributed; thus, loss of some individuals and habitat would not measurably impact population abundance or distribution throughout their range. As there are undeveloped areas to the north and south that could continue to provide foraging habitat for golden eagles, ferruginous hawks, American peregrine falcons, Gila woodpecker, gilded flicker, and Albert's towhee, development of the expansion area would not result in a substantial loss of foraging habitat in the region.

- In order to minimize impacts to nesting birds, vegetation clearing and grading for future phases of development should be constructed outside the nesting season, generally from early February through August. If vegetation clearing and grading cannot occur outside of the nesting season, then a pre-construction nesting bird survey should be conducted.
- Pursuant to the Migratory Bird Treaty Act (MBTA) and Arizona Game and Fish Law, removal of any trees, shrubs, or any other potential nesting habitat should be conducted outside the avian nesting season to avoid impacts to nesting birds. The nesting season generally extends from early February through August, but can vary slightly from year to year based upon seasonal weather conditions and individual species, which may nest earlier or later depending largely on food availability. Some birds may nest later than this due to renewed vegetation and prey during the summer monsoon season. If ground disturbance and vegetation removal cannot occur outside of the nesting season, a preconstruction clearance survey for nesting birds should be conducted within three days of the start of any ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey should document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities should stay outside of a 300-foot buffer around the active nest. For raptor species, this buffer is expanded to 500 feet. A biological monitor will be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young has fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, normal construction activities can proceed.
- Prior to start of construction on future phases a qualified biologist shall conduct a Worker Education and Awareness Program (WEAP) with the contractor and construction crew to identify daily avoidance and minimization activities that shall be implemented to minimize impacts to biological resources.

This measure is also outlined in Section 5.0, *Minimization and Best Management Practices*. In addition, it is anticipated that the expansion area, even once fully developed will still provide foraging and nesting opportunities for birds as the design incorporates native trees and cacti (palo verde, mesquite, and saguaro).

Sonoran Desert Tortoise

Based on the Habitat Assessment, Sonoran desert tortoise has a low potential to occur. This species was previously a federal candidate but was removed from the candidate list by USFWS in October 2015, citing that listing of the species is not warranted at this time (80 FR 60321-60335). This species is typically associated with slopes, rocky hillsides, and bajadas, landscape features which are not present on the project site. However, low density populations may sometimes be found in washes and valley bottoms. While two burrows capable of supporting tortoises were observed on-site, no tortoises or tortoise sign were observed in the burrows, in the area surrounding the burrows, or in the expansion area. Although Sonoran desert tortoise is not anticipated to be found on-site, in order to ensure that future construction activities do not directly impact this sensitive species, a 30-day pre-construction desert tortoise clearance survey shall be conducted as follows:

- Although Sonoran desert tortoise is not anticipated to be found on site, in order to ensure that future construction activities do not directly impact this sensitive species, a 30-day pre-construction desert tortoise clearance survey shall be conducted by a qualified biologist prior to construction for each phase. If any tortoises are found, they will be relocated by a qualified biologist to another part of the expansion area or an offsite location as approved by Arizona Department of Game and Fish.

This measure is also outlined in Section 5.0, *Minimization and Best Management Practices*. As a result, the Proposed Action is unlikely to have an adverse effect on the Sonoran desert tortoise.

Jurisdictional Features

The USACE regulates discharges of dredged or fill materials into waters of the United States, including wetlands, pursuant to Section 404 of the CWA. Based on a review of conceptual layout plans, it will be necessary for VA to acquire applicable CWA Section 404 Individual or Nationwide permit prior to impacts occurring within USACE jurisdictional areas. As the NMCA expansion area is anticipated to result in the permanent loss of less than 0.5 acre of USACE non-wetland waters, it is anticipated that the proposed expansion can be authorized via a Nationwide Permit (NWP), specifically NWP No. 39: *Commercial and Institutional Developments*. The USACE requires the formal submittal of a pre-construction notification to review the Proposed Action for consistency and ensure coverage under this NWP. It should also be noted that NWP No. 39 has a linear foot impact threshold of 300 linear feet for all intermittent and ephemeral streams.

However, the USACE can waive this threshold through the submittal of a pre-construction notification.

CWA Section 404 permits will be obtained from the USACE, as applicable, for each phase of development in the expansion area. Coordination with USACE Regulatory Branch, Phoenix has been initiated. Communication to date includes two meetings at the USACE’s Phoenix office in June and October of 2015 as well as several phone calls and emails. Mitigation will include creation of jurisdictional areas and habitat within the drainage plan for the site or purchase of credits in a Mitigation Bank, an In Lieu Fee Program, or a combination of the three, as deemed appropriate by the USACE. This measure is also outlined in Section 5.0, *Avoidance and Best Management Practices*.

3.6.2.2 No Action

Under the No Action Alternative impacts to biological resources would not occur because the expansion area would remain in the existing condition.

3.7 NOISE

3.7.1 Existing Environment

NMCA is located in a quiet rural area with low-to-medium density residential and vacant land uses predominating the immediate surrounding area. Sensitive noise receptors in the vicinity include schools, places of worship, and residential uses to the north, west, and east (refer to Table 3.6, Sensitive Receptors).

Table 3.6: Sensitive Receptors

Category	Name	Address	Distance from Project Site (miles)
School	Mountain Trail Middle School	2323 E Mountain Gate Pass	1.12
	Boulder Creek Elementary School	22801 N 22nd Street	1.25
	Pinnacle High School	3535 E Mayo Boulevard	0.98
	Fireside Elementary School	3725 E Lone Cactus Drive	0.95
	Wildfire Elementary School	3997 E Lockwood Drive	1.15
	Explorer Middle School	22401 N 40th Street	1.15
	Desert Trails Elementary School	4315 E Cashman Drive	1.50

Category	Name	Address	Distance from Project Site (miles)
Places of Worship	Genesis Church	13625 North 32 nd Street	1.30
	Exaltation of the Holy Cross Orthodox Church	10030 North 32 nd Street	1.50
Residential	N/A	N/A	0.75
	N/A	N/A	0.25
	N/A	N/A	0.20

Source: Google Earth, 2015.

The area is relatively quiet, and sounds are typical of rural land that is in the early stages of residential development. The principal source of noise in the area includes traffic along nearby roads (Pinnacle Peak Road, North Cave Creek Road, East Deer Valley Road, and the Interstate 101). In addition, current operations at the NMCA generate some noise, including visitor traffic, periodic construction and maintenance activities, and ceremonial M-16 rifle salutes. In any event, the overall noise levels reflect the quiet and rural sounds of a rural setting or park environment, as would be expected at a national cemetery site.

3.7.2 Environmental Consequences

3.7.2.1 [Proposed Action](#)

The Proposed Action would result in minor, short-term adverse noise impacts. During new construction, noise from construction vehicles entering and exiting NMCA is likely to temporarily increase noise levels. Land preparation, grading, and other construction work will further contribute to temporary noise impacts. These noises would primarily be associated with the construction of new columbarium courts and interment areas within the existing NMCA boundaries, modifications to the existing Administration and Maintenance buildings, improvements to existing roadways, installation of irrigation systems, and construction of restrooms and other onsite facilities.

Normal cemetery operations, which include noises associated with the operation and maintenance of the cemetery as well as regular committal services and other ceremonial activities, would result in minor, long-term adverse impacts. NMCA operations would also include the inclusion of rifle salutes during committal services. The M-16 rifle (5.56 caliber) blank round rifle salutes used during committal services is the most substantial long-term source of noise at the NMCA. Salutes range in number from three to five at a

target distance of 50 meters, and last less than 10 seconds. It should be noted that rifle salutes would continue to occur on the existing developed part of the cemetery. Ceremonies would not occur within the expansion area. Up to 30 ceremonies would occur per day on Mondays and Fridays and about 5 to 10 services on Tuesdays, Wednesdays, and Thursdays between the hours of 9:00 am and 3:00 pm, with occasional services on weekends. Therefore, noise associated with the committal services and other ceremonial activities would remain the same.

The Proposed Action would also include routine cemetery grounds maintenance and upkeep operations that involve the use of leaf blowers, lawn mowers, golf carts, small bobcat, and other equipment that may contribute additional noise between the hours of 8:00 a.m. and 4:30 p.m. However, these activities and associated noise are consistent with operation and maintenance of the existing site and would be similar to existing ambient conditions. In addition, visitor vehicular traffic would increase commensurately with the increase in cemetery operations associated with NMCA expansion. These noise impacts would not substantially increase the overall, minor noise effects from the Proposed Action. Furthermore, the EPA indicates that even doubling the source of sound intensity may not make it noticeable or significant, because noise energy is measured on a logarithmic scale (i.e., double noise intensity only increases the noise level by 3 dB).² Future operation and maintenance would occur in short time frames and would not result in any significant impacts to the sensitive receptors or biological resources.

3.7.2.2 [No Action](#)

The No Action Alternative would result in no impact on noise relative to current operational conditions, because expansion would not occur and operations would remain at their current levels. Thus, noise impacts associated with the daily upkeep, maintenance, and operation of the cemetery would continue.

3.8 **LAND USE**

3.8.1 **Existing Environment**

The Proposed Action area of 104 acres is designated for the cemetery use, and is currently undeveloped open land. The existing uses of land surrounding the proposed expansion of 104 acres of the NMCA include: the Joni Fitts School of Horsemanship, a private-

² USEPA, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, Report 500/9-74-004*, March 1974 and USEPA, *Public Health and Welfare Criteria for Noise, Report 550/9-73-002*, July 1973.

owned riding school located to the east; residential neighborhoods to the southeast; State Trust lands, natural and undeveloped to the south; the Cave Creek Water Reclamation Plant located southwest; the Holy Redeemer Cemetery, a private Catholic cemetery, and residential neighborhoods to the west; and State Trust lands, natural and undeveloped land to the north.

The City of Phoenix’s General Plan Land Use Designations within and surrounding NMCA are as follows: public/ quasi-public on the existing NMCA site; residential (2 – 3.5 du/acre³ or optional use 3.5 – 5 du/acre) to the east and south; public/ quasi-public, parks/open space publicly owned and residential (2 – 3.5 du/acre or optional use 3.5 – 5 du/acre) to the west; commercial and residential (2 – 5 du/acre or optional use 3.5 – 5 du/acre) to the north. Refer to Exhibit 3.4, Land Use Designations.

Zoning Districts within and surrounding NMCA are primarily Ranch or Farm (S-1) with overlays of Intermediate Commercial (C-2) and Residential (R-1-8) to the northwest. Refer to Exhibit 3.5, Zoning Classifications.

Table 3.7: Existing Uses, Land Use Designations, and zoning districts within and surrounding NMCA

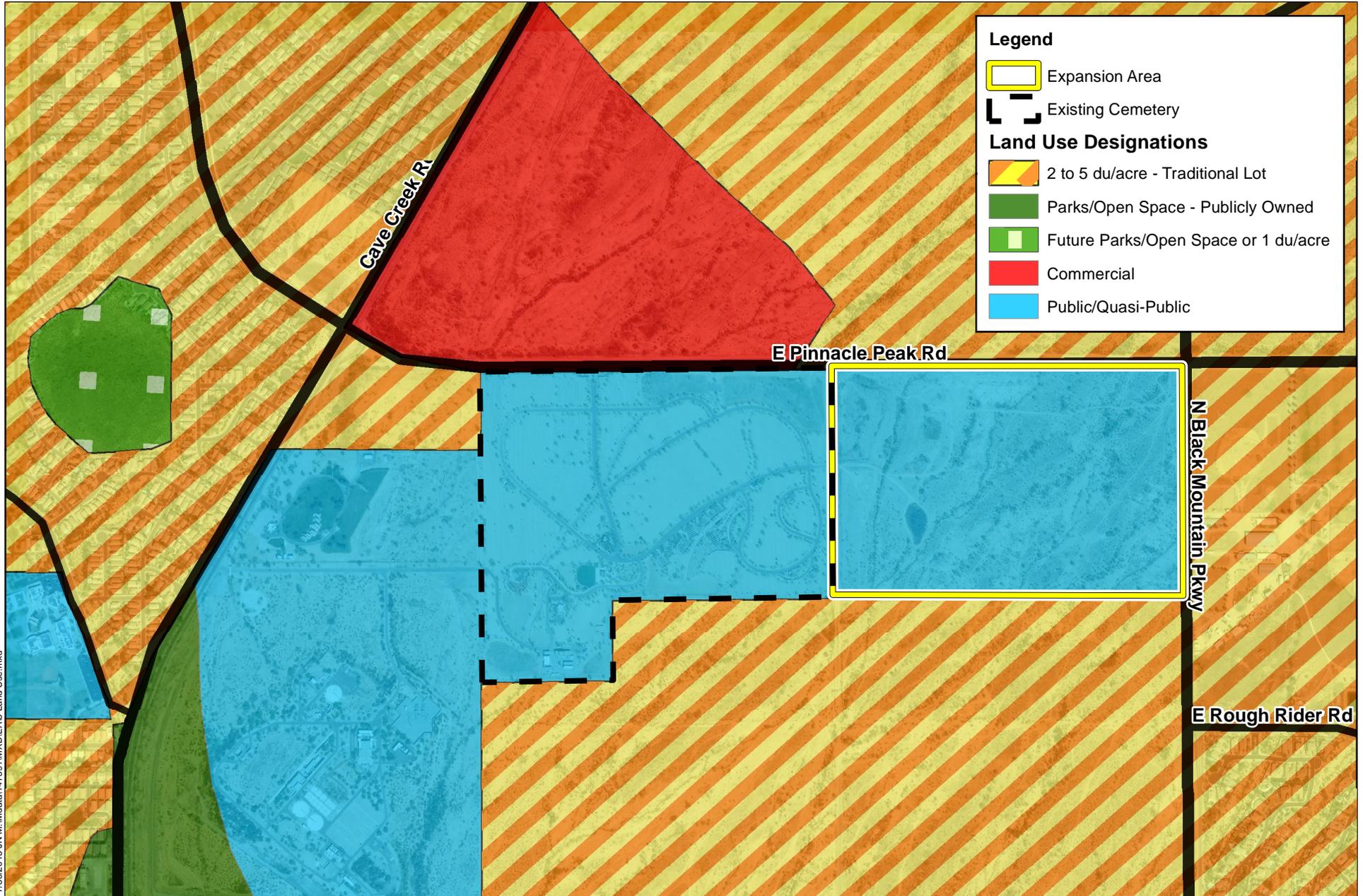
	NMCA Site	North	East	South	West
Existing Use	Cemetery and undeveloped land	Undeveloped land	Undeveloped land, private horse ranch, Joni Fitts School of Horsemanship, Residential (2 – 3.5 du/acre)	Natural undeveloped lands	Natural undeveloped land, private cemetery, and water treatment plant
General Plan Land Use Designations	Public/Quasi-Public	Commercial Residential (2 – 3.5 /acre), optional use 3.5 – 5 du/acre	Residential (2 – 3.5 du/acre), optional use 3.5 – 5 du/acre	Natural undeveloped land	Public/ Quasi-Pubic and Residential (2 – 3.5 du/acre), optional use 3.5 – 5 du/acre

³ Dwelling units per acre (du/acre).

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	NMCA Site	North	East	South	West
Zoning	S-1	S-1 C-2 overlay R-1-8 overlay	S-1	S-1	S-1

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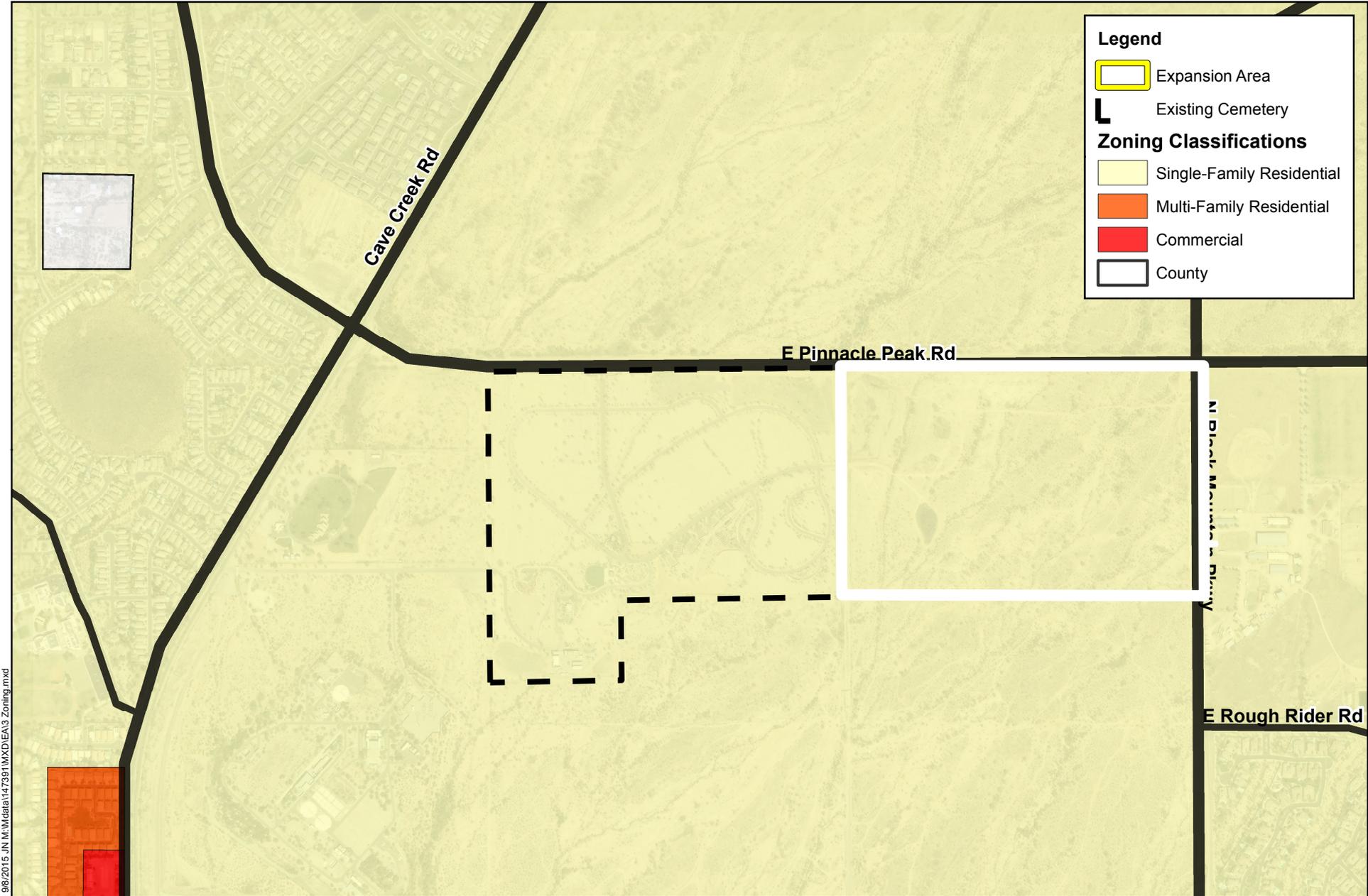


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Source: City of Phoenix General Plan - Land Use

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Land Use Designations



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Source: City of Phoenix Zoning Classification 2014

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Zoning Classifications

3.8.2 Environmental Consequences

3.8.2.1 Proposed Action

The expansion of the NMCA would not produce impacts to existing or planned uses of the surrounding properties. The proposed use of the site for expansion of the cemetery is compatible with the existing land use because it incorporates landscaping similar to the surrounding natural areas, including native soils and vegetation. NMCA is also comparable in intensity of use to a park, and is compatible with the existing uses including residential areas, adjacent riding school and private cemetery, and General Plan land use designations for future uses.

There are no communities surrounding NMCA, therefore, it will not divide any established communities.

Based on the above analysis, the Proposed Action would not have a significant impact on existing or planned land uses on or its surrounding area.

3.8.2.2 No Action

Under the No Action Alternative, the eastern 104 acres of NMCA would remain undeveloped. The Master Plan would not be implemented and VA NCA goal of providing reasonable access to burial benefits would not be met.

3.9 FLOODPLAINS, WETLANDS, AND COASTAL ZONE MANAGEMENT

Information provided in this section is based on information provided by the consulting drainage team, HDR, in the Final Drainage Master Plan Report, January 2016 (Appendix F).

3.9.1 Existing Environment

Floodplain

The Project site is located on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 04013C1285L effective October 16, 2013. The site is located within Zone X, which is defined as “Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% chance flood.” According to the City of Phoenix Storm Water Policies and Standards dated December 2013 on site storm water storage facilities shall be designed for 100-year, 2-hour event. According to the Flood Control District of Maricopa County Drainage Design Manuals for Hydrology

and Hydraulics, dated August 2013 has similar design criteria with regard to the 100-year, 2-hour storage volume.

Wetlands

Although the site contains four unnamed, ephemeral drainage features (as outlined in the Jurisdictional Delineation Report prepared for the expansion area, Appendix E) no areas or portions of these onsite drainage features meet all three of the wetland parameters described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0*. Therefore, the resource issue of wetlands is not discussed further in this EA.

Coastal Zone Management

Arizona is not a coastal state that participates in the National Coastal Zone Management Program outlined by the Coastal Zone Management Act of 1972. Therefore, the resource issue of coastal zone management is not discussed further in this EA.

3.9.2 Environmental Consequences

3.9.2.1 Proposed Action

The drainage approach is to provide onsite detention basins to store the difference in the additional 100-year runoff volume produced by the proposed cemetery expansion area. The drainage facilities in the expansion area will be designed in accordance with the City of Phoenix Storm Water Policies and Standards and the Flood Control District of Maricopa County Drainage Design Manuals for Hydrology and Hydraulics. The drainage improvements will provide 100-year protection for onsite development of the expansion area.

3.9.2.2 No Action

Under the No Action Alternative the existing drainage pattern within the expansion area would not be modified and would continue to function as it does currently. No modification to the floodplain would occur with the No Action Alternative.

3.10 SOCIOECONOMICS

3.10.1 Existing Environment

The socioeconomic data presented below is from the U.S. Census 2010, U.S. Census Bureau’s 2009-2013 American Community Survey (ACS) five-year summary and the U.S. Department of Labor, Bureau of Labor Statistics (BLS). The total population, number of veterans, the largest employment sectors, and the unemployment rate for the City of Phoenix and the entire state of Arizona are presented in Table 3.8.

Table 3.8: Socio-Economic Data for State of Arizona and City of Phoenix

Area	Total Population	Veterans	Largest Employment Sectors	Unemployment Rate
State of Arizona	6,392,310	522,382	Educational services, and health care and social assistance (22.2%)	6.3%
City of Phoenix	1,447,626	78,323	Educational services, and health care and social assistance (19.7%)	7.0%

The total population of the State of Arizona is 6,392,310 of which 522,382 are veterans. The largest employment sector for the State of Arizona is educational services, health care and social assistance, at 22.2%. The unemployment rate for the State of Arizona is 6.3%. The population of the City of Phoenix is 1,447,626 of which 78,323 are veterans. The largest employment sector for Phoenix is also educational services, health care and social assistance at 19.7%. The unemployment rate for City of Phoenix is 7.0%.

3.10.2 Environmental Consequences

3.10.2.1 Proposed Action

Expansion of the NMCA would produce no significant direct impact on socioeconomics. Construction of the cemetery expansion would result in short-term positive effects on the local economy. Both skilled and unskilled labor employment would result in a slight increase of local income and revenue. A slight increase of labor force would be required to maintain and operate the expansion, however, as the NMCA is not a substantial employment center in Phoenix, the proposed action would not produce significant long-term direct socioeconomic impacts. The proposed action would not result in changes to

population, housing, or local tax revenue and would not significantly change unemployment or income levels.

3.10.2.2 **No Action**

Under the No Action Alternative, expansion of the NMCA would not occur. The slight increase in revenue and employment from construction and operations of the cemetery expansion would not occur and thus would not result in any economic benefits. VA would not be able to provide sufficient burial benefits for the expected future needs of US veterans residing in the area, and would create a slight adverse economic impact as families of future veterans in Phoenix would have to either pay for interment at a separate private cemetery in the Phoenix area or would have to drive farther to the only other available national cemetery in Arizona located 85 miles northwest in Prescott.

3.11 **COMMUNITY SERVICES**

3.11.1 **Existing Environment**

The City of Phoenix provides police security, fire protection, libraries, and parks for its residents. The City of Phoenix provides police protection services to the communities surrounding NMCA. The nearest Phoenix Police Department is located at 302 E. Union Hills Drive in Phoenix, approximately 5.7 miles southwest of NMCA. The City also provides fire protection services. The nearest fire department station to NMCA is Phoenix Fire Department Station 45, located at 2545 E Beardsley Road in Phoenix, approximately 3 miles south. The nearest local library is Desert Broom Library located at 29710 North Cave Creek Road in Cave Creek, Arizona. The library lies approximately 5.8 miles north of the site. Residents are able to enjoy traditional city parks, playgrounds, walking paths, athletic fields, and open green spaces located throughout Phoenix. The nearest park to NMCA is the Reach 11 Sports Complex, located approximately 1.9 miles south of the site. (Refer to Exhibit 3.7, Public Services).

The nearest hospital, Paradise Valley, is located at 3929 E. Bell Road in Phoenix, approximately 6.6 miles south of NMCA. School services for students in the vicinity of NMCA are provided by the Paradise Valley Unified School District. Both Boulder Creek Elementary and Mountain Trail Middle School are approximately 1.5 miles west of NMCA. (Refer to Exhibit 3.7, Public Services)



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FEMA 100-Year Floodplain

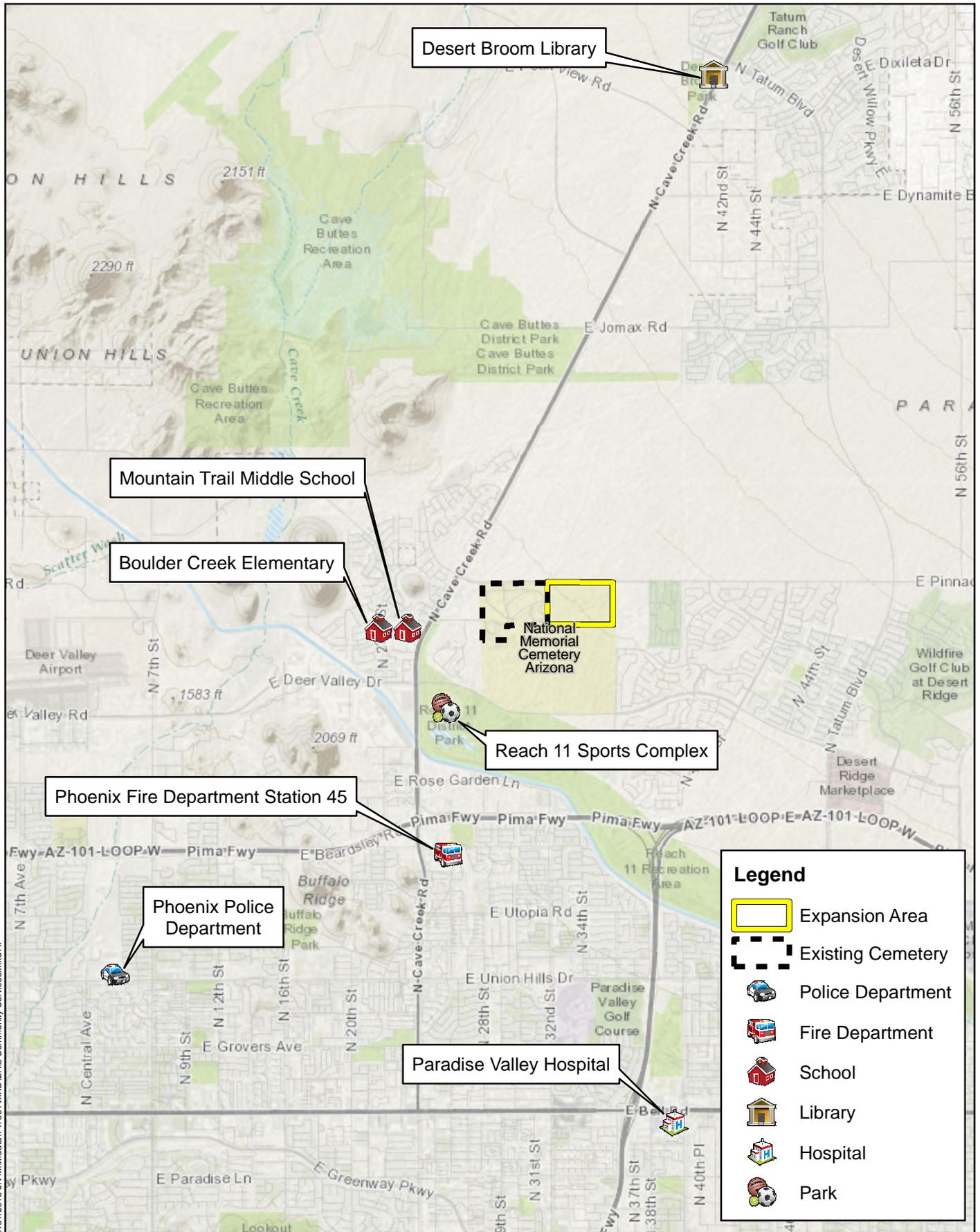


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0 0.25 0.5
Miles

Source: ArcGIS Online 100 Year FEMA Flood Zones, ESRI World Topographic Basemap



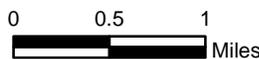
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 NATIONAL MEMORIAL CEMETERY OF ARIZONA, PHOENIX

Public Services



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Source: ESRI World Topographic Basemap, ESRI World Street Basemap

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action

The Proposed Action would not result in substantial physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities. Population growth generally increases the use of facilities such as libraries and parks, increases enrollment in schools, and increases demand on police and fire service. Since the Proposed Action would not result in population growth in the area, it will not increase the use of facilities such as libraries and parks or increase the demand on police and fire service, enrollment in schools or admittance at Paradise Valley Hospital. Thus, the Proposed Action would not be expected to have impacts on the local community services.

3.11.2.2 No Action

Under the No Action Alternative, new interments would cease when existing burial sites are no longer available, projected to be as soon as 2018 for some burial options. The NMCA serves veterans throughout the Phoenix metropolitan area. In order for veterans to be provided the honor and earned privilege of burial in a national cemetery, families and friends would have to travel to Prescott, AZ (85 miles northwest of Phoenix). For families to visit the cemeteries after a burial, a round-trip distance of 170 or more miles can prove to be prohibitive. No Action would have an adverse effect on veteran burial services.

3.12 SOLID AND HAZARDOUS MATERIALS

3.12.1 Existing Environment

Solid waste is generated by cemetery operations on a routine basis. Solid waste generally consists of routine office waste, flowers, balloons and other items left behind at burial sites. Solid waste and recyclables are collected weekly by Waste Management of Arizona. Waste Management's closest facility to NMCA is the Deer Valley Transfer Station located approximately 4 miles east at 2120 W. Adobe, Phoenix.

Minimal quantities of hazardous materials are stored at the cemetery. Typically, hazardous materials are brought onsite by contractors on an as needed basis for activities such as pest control and weed management. The cemetery properly disposes routinely generated used oils, paint and chemicals and spent vehicle batteries are exchanged and recycled.

The hazardous waste database from Arizona’s Department of Environmental Quality (ADEQ) was searched for any historical solid or hazardous incidents near NMCA. Based on ADEQ database searches there are no solid and/or hazardous incidents that have occurred at NMCA. The nearest incident on record was approximately 3 miles south of NMCA, and dates back to April 7, 1998 (ADEQ). Table 3.9 provides further information about this incident.

Table 3.9: Historic Hazardous Incident Near NMCA

Incident #	Incident Date	City, County	Address	Type	Chemical Material	Structure	Quantity
98-129-D	04/07/1998	Phoenix, Maricopa	230039 N. Cave Creek Rd. Phoenix, AZ	Release	Diesel	Truck	50 gals.

3.12.2 Environmental Consequences

3.12.2.1 [Proposed Action](#)

Continuation of cemetery operations under the Proposed Action would generate similar amounts of solid waste as current operations. Current and future solid waste generations would be a minor contributor to overall solid waste generation in the area and therefore would not result in substantial adverse impacts.

Hazardous materials are properly stored and disposed of at the cemetery. Continuation of cemetery operations under the Proposed Action would expand the use of activities such as pest control, weed management, and road maintenance to a larger area. Pesticide application and road maintenance would be expanded to the new operational areas, but would continue to be applied in accordance with material specifications and would not result in adverse impacts.

The only historic hazardous incident near NMCA would not result in any adverse impacts on cemetery operations or construction in the expansion area or in surrounding areas. The diesel spill that occurred in 1998 was 3 miles south of the NMCA and was properly remediated by specialists. There would be no significant adverse impacts anticipated from this spill in 1998.

Staging and operation of construction equipment carries an increased potential for incidental releases of vehicle fluids. Proper vehicle maintenance and inspection would reduce this potential, and adverse impacts would not be expected.

Construction of the cemetery expansion would result in short term, less than significant adverse impacts due to the use of solid and hazardous materials. It is anticipated that during the construction phase, activities may generate hazardous waste and expose workers to small quantities of hazardous materials. NMCA employees will conduct these activities in strict compliance with federal statutes and other applicable regulations to minimize potential adverse effects, and ensure good health and safety practices. The NMCA employees will handle and dispose all solid and hazardous material generated during construction and operations according to applicable regulations. Operation of the cemetery would not result in significant adverse long-term impacts, or changes in the amount and type of solid waste generated.

3.12.2.2 No Action

Under the No Action Alternative, cemetery expansion would not occur and no additional construction related solid waste and hazardous material generation would occur. As cemetery interments are reduced and eventually ended once the cemetery has reached capacity, solid waste generation would decrease.

3.13 TRANSPORTATION AND PARKING

3.13.1 Existing Environment

This section describes the existing transportation systems and traffic conditions in the vicinity of NMCA. Information contained in this section is derived from the *City of Phoenix General Plan Circulation Element*, the *Maricopa Association of Governments 2035 Regional Transportation Plan*, and the *Maricopa Association of Governments Transportation Improvement Program*.

NMCA is located in the City of Phoenix, Maricopa County, Arizona, on E. Pinnacle Peak Road. An additional access is provided to the site on the western side from National Memorial Cemetery Road off of Cave Creek Road. There is a service entry gate at this access point. It is approximately 2 miles north of State Route (SR) 101 (Exit 28 toward Cave Creek Road) and 22 miles north of downtown Phoenix; refer to Exhibit 1.1, Site Vicinity. The following discussion identifies roadways within the vicinity of NMCA.

Regional Access

SR 101

Also referred to as “Loop 101,” the SR 101 is a semi-beltway encompassing much of the Phoenix Metropolitan Area. It connects several suburbs of Phoenix, including Tolleson, Glendale, Peoria, Scottsdale, Mesa, Tempe, and Chandler.

Local Access

E. Pinnacle Peak Road

Access to the site is provided via E. Pinnacle Peak Road. This is the primary public entrance and is centered along the developed cemetery property line. Pinnacle Peak Road is a two lane arterial road according to the Phoenix General Plan. A future extension of Pinnacle Peak Road is proposed west of Cave Creek Road to 19th Street. Pinnacle Peak Road is also designated as a scenic corridor per the Phoenix General Plan.

Cave Creek Road

Freeway access to the site is provided via Cave Creek Road. Cave Creek Road is designated as an arterial road according to the Phoenix General Plan. Cave Creek Road is also designated as a scenic corridor per the Phoenix General Plan. A secondary entrance is located on the south west side of the developed cemetery via National Memorial Cemetery Road which connects to Cave Creek Road.

Black Mountain Boulevard

Black Mountain Boulevard is designated an arterial roadway according to the Phoenix General Plan. A proposed improvement in the Circulation Element of the Phoenix General Plan is to add connections to the Black Mountain Parkway from State Route 101 and SR 51. The expansion area currently has one access onto the site located near the intersection of Silver Star Way and Legion of Honor Road. Recent construction of N. Black Mountain Parkway has provided a curb cut and driveway access for a potential future entrance. This new potential entrance is located approximately 1,000 feet south of the intersection of N. Black Mountain Parkway and E. Pinnacle Peak Road.

NMCA Site Circulation

Currently, the primary entrance has a divided landscaped median with two roadways, a 20-foot one-way in and 20-foot one-way out. The primary asphalt roadway is 36-feet wide with 6-inch concrete edge restrains on both sides and extends south to the Public Information Center. The primary road extends east to the intersection of Silver Star Way

and Legion of Honor Road. The remaining roads are secondary roads with standard widths of 24-feet with and without a concrete edge treatment.

Parking

Throughout the existing cemetery site space along roadways is available for parallel parking. Seventeen parking spaces are provided at the Public Information Center and restroom building, of which two are designated for van accessible ADA use. Pull off parking is also available at the Public Information Center. Pull-off parking is provided adjacent to the columbarium. Parking spaces are provided for visitors as well as employees at the Administration Building and parking spaces are provided for employees and NMCA vehicles at the Maintenance Complex.

Public Transportation

No light rail and/or bus routes are located in the vicinity of NMCA.

3.13.2 Environmental Consequences

3.13.2.1 [Proposed Action](#)

Construction Activity

Future construction within the expansion area will require construction equipment and construction worker vehicle trips on the local roadway network, including Cave Creek Road, Pinnacle Peak Road, Black Mountain Parkway, and SR 101. These additional construction trips would temporarily increase the volume on the local roadway network during construction periods. Development of the expansion area would not be constructed all at once. Rather, it would be developed in numerous phases, ranging in size up to 35 acres with construction of phases estimated at 8-10 years apart depending on demand and availability of funding. Therefore, as development of the expansion area will be developed in smaller phases it is not anticipated to require a large number of construction equipment and construction worker trips per phase of development that would adversely affect the local roadway network or traffic conditions.

Short-term transportation impacts during construction activities shall be minimized through implementation of the following:

- Schedule construction activities such that traffic increases do not coincide with typical morning and evening periods of increased traffic.

- Route transportation of construction equipment to minimize impacts on neighboring communities.

These minimization opportunities are outlined in Section 5.0, *Minimization and Best Management Practices*.

Operation

Services would continue to take place at five existing committal service shelters on the existing site. Up to 30 ceremonies would occur on Mondays and Fridays and about 5 to 10 services per day on Tuesdays, Wednesdays, and Thursdays between the hours of 9:00 am and 3:00 pm, with occasional services on the weekends. In fiscal year 2014, the NMCA conducted nearly 3,400 interments. The Proposed Action would provide approximately 231,510 additional interment sites for NMCA at full build out. Although the Proposed Action would provide additional interment sites and therefore ability to accept interments over a longer period of time, it is not anticipated that the rate of interment throughout the year and total per year would change significantly. Therefore, the number of visitors attending services and the associated trips on the local roadway network is not anticipated to increase significantly. In addition there will not be a substantial increase in the number of employees needed to operate and maintain NMCA at full build out or once completely developed. Therefore, substantial increases in traffic from employee trips are not expected. The Proposed Action would not result in substantial operational-related increases in traffic, which could result in significant adverse impacts to the local roadway network or traffic conditions.

NMCA Site Circulation

In the expansion area road design and widths will be designed consistent with the current cemetery road dimensions. Automated gates will be provided at the existing main cemetery entrance along E. Pinnacle Peak Road as well as the new secondary entrance off of N. Black Mountain Parkway. As the expansion area roadway network will be developed consistent with the existing site and a secondary entrance will be provided, the Proposed Action would not adversely affect circulation at NMCA.

Parking

Pull-off parking near the columbarium will maintain the current NMCA standard of 16-foot wide without bollards. Parking for the Public Restroom Building will be designed to allow for up to four parallel or pull through parking stalls, one stall will be designated for van accessible ADA use. The Honor Guard Building will be supported with eight parking spaces; one stall will be designed for van accessible ADA use. The expansion

area will be developed to include adequate parking and the Proposed Action is not expected to result in adverse impacts associated with parking.

3.13.2.2 **No Action**

The No Action Alternative would result in negligible adverse impacts on transportation. At NMCA, expansion would not occur and operations would remain at their current level, resulting in no change in traffic impacts. However, at a regional scale, the No Action Alternative may result in increased vehicle miles travelled, as veterans and their families are required to travel greater distances to other national cemeteries in the region.

3.14 UTILITIES

3.14.1 Existing Environment

Electricity

The existing cemetery electrical service is provided by Arizona Public Services (APS). The utility connection starts from N. Cave Creek Road and extends through National Memorial Cemetery Road to the southwest portion of the existing cemetery and splits to each building. Both heating and cooling are powered by electricity in the existing buildings. A point of connection for future expansion may be tapped into a pedestal near the existing Public Information Center building and extended east, towards the expansion area.

The main entrance and flag assembly area are the only illuminated cemetery elements. Additional exterior illumination is not expected within the expansion area other than security requirements at the Honor Guard Lounge and Public Restroom Building.

Natural Gas

The existing cemetery is not connected to a natural gas pipeline. The local provider of natural gas is Southwest Gas, and the nearest pipeline is located at approximately 0.3 miles west of the site along N. Cave Creek Road. It is unlikely any natural gas will be required for any expansion at the cemetery.

Propane Gas

The Eternal Flame Monument near Founder's Plaza on the western side of the property is fueled by propane. Shadow Mountain Mortuary, approximately 5.7 miles south from the site, provides the propane gas. The propane tank is located near the Maintenance

Complex and holds approximately 200 gallons of propane gas and is refilled as needed. It is unlikely any propane gas will be required for any expansion at the cemetery.

Sewer

The existing cemetery has three individual septic tanks and seepage pit systems at the Administration Building, Public Information Center, and Maintenance Complex sites. The Cemetery staff maintains the septic tanks annually by using pumping equipment to empty them out. The three existing sanitary systems are working properly and have minimal maintenance issues. The existing cemetery does not have a connection to the City of Phoenix Public Sewer System. It is unlikely a city service connection will be required for any expansion at the cemetery, as similar septic fields would likely be installed for the Public Restroom Building and Honor Guard Lounge to keep the expansion area consistent with the existing cemetery facilities.

Drainage

The existing cemetery has minimal underground storm water piping. A majority of rainfall run-off is directed towards man-made channels to and from onsite drainage basins. It is unlikely that a city service connection will be required for any expansion at the cemetery, since similar drainage channels are proposed to being constructed.

Telecommunications

The existing cemetery has telephone communication service provided by Century Link. The connection is provided from N. Cave Creek Road and enters into the existing cemetery from the west. A point of connection for the future may be tapped into a pedestal near the existing Public Information Center building and extended east, towards the expansion area. An alternative local telecommunication and cable provider is Cox Communication. However, it is not anticipated that another service provider would be required for any expansion at the cemetery.

Water Distribution

An existing well on the northeast corner of the property provides the cemetery with potable water. The well is registered under the Arizona Department of Water Resources with Reg. No. 503959, and the Groundwater Site Inventory (GWSI) Site ID 334154112001401. The construction of the well was completed in October 1983. The well casing is 16-inches in diameter with a depth of 1,200 ft. The pump capacity is 1,507 gallons per minute (GPM) using a 125 horsepower motor. The existing well site (40,000 gallon above-ground potable water tank with three 90 GPM electric motor driven water

booster pumps) was relocated slightly west in 2014 to allow the construction of N. Black Mountain Parkway. However, the existing wellhead remained in place and was not relocated during the road construction. The water tank and booster pumps have a 6-inch water main that extends across the expansion area to the intersection of Silver Star Way and Legion of Honor Road. Around 1998, an extension to the water main was completed using a 12-inch polyvinyl chloride (PVC) pipe that continues along Legion of Honor Road to supply to the existing site amenities, including the restroom, Administration Building, and Maintenance Complex. Along the water main there are several 1-inch and 2-inch connections allow for irrigation services, watering stations, and drinking water fountains.

Water usage is metered monthly and documented by cemetery maintenance staff. The water use at the existing site is outlined in Table 3.10, Water Used from September 2014 – July 2015.

Table 3.10: Water Used from September 2014 – July 2015

Year	Month	Water Use (Gallons)
2014	September	161,947
2014	October	254,815
2014	November	213,432
2014	December	184,106
2015	January	131,644
2015	February	130,015
2015	March	268,175
2015	April	336,604
2015	May	352,245
2015	June	725,018*
2015	July	375,055

* A water line break occurred during June 2015, which caused an excess of water use. The break was repaired.

The table above shows that peak season water use occurs during the summer months with water usage up to 375,000 gallons in July 2015, while off peak season occurs during the winter months with a near 130,000 gallons of water use in February 2015. As of August 2015, the well has been operating effectively and meets the current demand for potable water and irrigation water use. Typically, irrigation lines are shut-off during the off-peak seasons. All plant materials throughout the site are irrigated using drip irrigation with shrubs and trees being irrigated in separate zones. The volume of water used during off-peak times (130,000 gallons on average) is used in restrooms,

Administration, and Maintenance Complex buildings, and for dust control during burial operations.

The existing cemetery is not connected to the City of Phoenix water distribution system. The newest existing City of Phoenix water pipeline is a 10-inch pipeline located along the east side of Cave Creek Road. It is unlikely that a city service connection would be made for any expansion at the cemetery.

Reclaimed water is water that is treated and used for non-potable purposes, such as agriculture and irrigation. The existing cemetery is not connected to the City of Phoenix reclaimed water distribution system, and it is not anticipated that a connection would be made.

3.14.2 Environmental Consequences

3.14.2.1 Proposed Action

The Proposed Action includes extending existing utility services to the expansion area. New amenities (Public Restroom Building and Honor Guard Lounge) would be served by existing electric utilities to provide lighting and small electric heating and cooling inside the structure, and telephone/internet service would be extended to this area.

Utility usage at the new amenities would constitute a small incremental increase from use at existing cemetery and would be minimal compared to regional usage and would not be expected to have adverse impacts on the current utility suppliers (APS: electric, Shadow Mountain Mortuary: propane gas, and Century Link: telephone and internet).

It is anticipated that the use of water from the private well would increase during peak and off peak seasons in order to supply the expansion area. The private well and aboveground storage tank on site is expected to supply enough water for future demands of development of the expansion area. Therefore, the Proposed Action is not anticipated to result in adverse impacts associated with water supply.

3.14.2.2 No Action

Under the No Action Alternative, cemetery expansion would not occur, and no impacts to utilities would result. As cemetery interments are reduced and eventually end once the cemetery has reached maximum capacity, cemetery staff may be reduced, and utility usage could also decrease slightly.

3.15 ENVIRONMENTAL JUSTICE

3.15.1 Existing Environment

Executive Order 12898 “Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations” was enacted in 1994 to focus Federal agencies attention on the environmental and human health conditions in minority communities and low-income communities with the goal of achieving environmental justice. Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The EPA has this goal for all communities and individuals across the nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work. Under the Executive Order, Federal agencies must identify and address the human health or environmental effects of its actions on minority and low-income populations.

The EPA’s Office of Environmental Justice has defined the term “minority” for environmental justice purposes to include Hispanics, Asian-Americans and Pacific Islanders, African-Americans, and American Indians and Alaskan Natives. For environmental justice purposes, the term ‘minority’ does not address religion or people who might be distinguished by sex, age, culture, sexual orientation, or any type of handicap. The U.S. Census Bureau does not provide a specific definition for “low-income.” Rather, the term is used interchangeably with “poverty.” In this regard, the Census Bureau established a set of income cutoffs/thresholds to determine the poverty status of families. The Census Bureau determines poverty by comparing the total income of each family against its corresponding threshold. If the total family income is less than the corresponding cutoff, the family is classified as “below the poverty level” (EPA, 2010).

According to the 2010 US Census Bureau, the population of Phoenix in 2010 was 1,447,626. Approximately 18.0% lived at or below the poverty line. The median household income was \$47,139. The racial profile for the City of Phoenix in 2010 was: Black/ African American 6.8%; Asian 3.2%; Native American 1.9%; Native Hawaiian/ Pacific Islander 0.2%; Hispanic or Latino 40.3%; and Caucasian/White 47.6%. The total minority population of Phoenix in 2010 was 758,556, making up 52.4% of the total.

The total population in the State of Arizona in 2010 was 6,392,310. Approximately 13% lived at or near the poverty line. The racial profile of the State in 2010 was: Black/ African American 4.1%; Asian 2.8%; Native American 4.6%; Native Hawaiian/ Pacific Islander

0.2%; Hispanic or Latino 29.6%; and Caucasian/White 58.7%. The total minority population of Arizona in 2010 was 2,640,024 making up 41.3% of the total (US Census 2010). This data is presented in Table 3.11.

Table 3.11: Minority and Low-Income Population

Area	Total Population	Minority Population Total	Minority Population %	Population Below Poverty Level
State of Arizona	6,392,310	2,640,024	41.3%	13.0%
City of Phoenix	1,447,626	758,556	52.4%	18.0%

The site is located in an area with a reasonably low concentration of minority and low-income populations, and there is no low-income housing located at or near the site.

3.15.2 Environmental Consequences

3.15.2.1 [Proposed Action](#)

NMCA situated in an area comprised primarily of non-minority middle class families with a relatively low concentration of minority and low-income population. The Proposed Action would not result in health hazards to nearby residences and therefore would not result in impacts related to environmental justice and/or the intent of Executive Order 12898.

3.15.2.2 [No Action](#)

Under the No Action Alternative, expansion of the NMCA would not proceed. Thus, local residents would not experience any direct or indirect impacts with regards to environmental justice.

3.16 CUMULATIVE IMPACTS

The CEQA regulations for implementing NEPA define cumulative effects as “the impact on the environment which results from incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). This EA considers past, present, and reasonably

foreseeable short-term and long-term future effects from implementing the Proposed Action and other projects that coincide with the location and timetable of the Proposed Action.

The City of Phoenix envisions land directly north, south, and east from the site to be developed as single-family residential housing, as reflected in the General Plan Land Use designations for residential. Although the land to the south of NMCA is State Trust land, it is anticipated to be auctioned and has the potential to be developed as residential. As discussed in Sections 3.1 through 3.15, the Proposed Action is not anticipated to result in any substantial adverse impacts. As discussed in Section 3.8, *Land Use*, NMCA is compatible with the existing surrounding uses including residential, open space and public quasi-public as well as potential future residential.

Even with build out of residential development in accordance with the City of Phoenix General Plan on land directly north, south, and east from the site, the Proposed Action would not result in cumulatively adverse impacts.

3.17 POTENTIAL FOR GENERATING SUBSTANTIAL CONTROVERSY

NCA has solicited input from various federal, state and local government agencies regarding the Proposed Action. No scoping meeting was held. The agencies had an opportunity to comment on the Draft EA. The comment letters (see Appendix F, *Comments on Draft Environmental Assessment*) received did not express opposition or concerns regarding the Proposed Action. No areas of controversy were raised.

4.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

4.1 AGENCY AND TRIBAL COORDINATION

During development and review of the FEA for expansion and improvements at NMCA, NCA contacted federal, state and local agencies with oversight responsibilities related to the Proposed Action. These agencies include the Arizona Department of Game and Fish, the Arizona Department of Environmental Quality, the USACE Regulatory, Phoenix, as outlined in Section 3.0 above and Native American Tribes. Coordination is summarized briefly in the following paragraphs.

The USACE Regulatory Division (Phoenix Office)

Coordination with the USACE, Regulatory Branch was initiated in June 2015 and is continuing. Coordination has been performed via phone call as well as scheduled meetings. To off-set project related impacts mitigation would be provided, which includes creation of jurisdictional areas and habitat within the drainage plan for the site or purchase of credits in a Mitigation Bank, an In Lieu Fee Program, or a combination of the three. Coordination with the Regulatory Branch would continue throughout the construction of the Proposed Action.

Native American Consultation Summary

Native American Consultation invitation letters and maps were sent via email and Certified U.S. Mail to all entities listed on the Native American Consultation Database maintained by the National Park Service on November 20, 2015 (see Table 4.1 for groups contacted). All communications are summarized, and individual letters and U.S. Postal Service Certified Mail Receipts are attached in the *Cultural Resources Assessment Report* (see Appendix C from the Cultural Resources Assessment Report prepared for the site by BCR Consulting, found in Appendix C of this EA). By letter dated December 17, 2015 a response was received from the GRIC-THPO indicating that no religious or culturally significant sites are located within the project area. They recommended that Class I (record review) assessment be performed prior to disturbance of the ground (Appendix C). Tribes and the public had a thirty-day response time period in which to submit comments on the DEA. All responses were taken into consideration in this Final EA.

Table 4.1: Tribal Consultation

Groups Contacted	Letter/Email Date	Response from Tribes
Ak Chin Indian Community of the Maricopa Indian Reservation Louis J. Manuel Jr.	Letter: 11/20/15 Email: 11/20/15	None
Ak Chin Indian Community of the Maricopa Indian Reservation Caroline Antone	Letter: 11/20/15 Email: 11/20/15	None
Fort McDowell Yavapai Nation	Letter: 11/20/15	None

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Groups Contacted	Letter/Email Date	Response from Tribes
Karen Ray	Email: 11/20/15	
Fort McDowell Yavapai Nation Ruben Balderas	Letter: 11/20/15 Email: 11/20/15	None
Gila River Indian Community of Gila River Indian Reservation Stephen Roe Lewis	Letter: 11/20/15 Email: 11/20/15	None
Gila River Indian Community of Gila River Indian Reservation Reylynne Williams	Letter: 11/20/15 Email: 11/20/15	Letter: 12/17/15
Salt River Pima-Maricopa Indian Community, Salt Riv. Reservation Delbert Ray Sr.	Letter: 11/20/15 Email: 11/20/15	None
Salt River Pima-Maricopa Indian Community, Salt Riv. Reservation Matthew Garza	Letter: 11/20/15 Email: 11/20/15	None
San Carlos Apache Tribe of the San Carlos Reservation Vernalda Grant	Letter: N/A Email: 11/20/15	Only sent email. Address invalid per post office
San Carlos Apache Tribe of the San Carlos Reservation Terry Rambler	Letter: N/A Email: 11/20/15	Only sent email. Address invalid per post office

Groups Contacted	Letter/Email Date	Response from Tribes
Tohono O'odham Nation of Arizona Ned Norris Jr.	Letter: 11/20/15 Email: 11/20/15	None
Tohono O'odham Nation of Arizona Joseph Juaquin	Letter: 11/20/15 Email: 11/20/15	None
White Mountain Apache Tribe of the Fort Apache Reservation Ronnie Lupe	Letter: 11/20/15 Email: 11/20/15	None
White Mountain Apache Tribe of the Fort Apache Reservation Ramon Riley	Letter: 11/20/15 Email: 11/20/15	None
Yavapai-Apache Nation of the Camp Verde Indian Reservation Thomas Beauty	Letter: 11/20/15 Email: 11/20/15	None
Yavapai-Apache Nation of the Camp Verde Indian Reservation Vincent Randall	Letter: 11/20/15 Email: 11/20/15	None

4.2 Public Involvement

As stated in VA's NEPA Interim Guidance for Projects (VA, 2010), public involvement for an EA may include public engagement during scoping and drafting and finalizing the EA through publication of notices or public meetings. A public scoping meeting was not conducted for the Proposed Action. The public involvement process for this EA has consisted of publication of Notice of Availability (NOA) for the Draft EA (DEA) and a 30-day public comment period on the DEA.

The NOA for the DEA release for public comments was published in the Phoenix New Times newspaper. The EA was posted at public libraries, local Post Office, City Offices, etc. on February 29, 2016. In addition, letters notifying the public, concerned resource agencies, and tribes listed in Section 4.1 of the availability of the DEA were mailed. The DEA appeared on the VA website on March 8, 2016, therefore, the comment period ended on April 7, 2016. Comments were to be submitted by email to Ms. Margaret Jensen at Margaret.Jensen@va.gov, or by fax to (202)495-5602, or by U.S. Postal Service mail to Ms. Margaret B. Jensen, U.S. Department of Veterans Affairs, National Cemetery Administration, Design and Construction Service, 810 Vermont Avenue NW (43B), Washington, DC 20420. Notices requested commenters to include “National Memorial Cemetery of Arizona, Phoenix” in the subject line or on the fax or letter. Two letters and two emails commenting on the DEA were received and considered in this FEA (see Appendix F).

5.0 BEST MANAGEMENT PRACTICES AND MONITORING

The best management practices, impact minimization techniques, and monitoring opportunities to maintain the impacts of the Proposed Action at acceptable levels are described below.

Air Quality

Fugitive dust associated with construction could be minimized by using appropriate dust control measures such as applying water, dust palliative, soil stabilizers, enclosures, covers, and silt fences on disturbed areas as soon as possible. In addition, suspending earth-moving activities during periods of high wind and having vehicles and equipment moving across unpaved surfaces maintain an appropriate speed, can minimize the amount of ambient dust that is generated. Upon completion of construction activities re-vegetate, hardscape, or apply other appropriate soil stabilizer as soon as possible.

Cultural Resources

In the event that previously unidentified cultural resources or human remains are found during development of the expansion area, work should stop immediately at that location and reasonable steps should be taken to identify the items and secure the preservation of those resources. The VA, as the responsible federal agency, should be notified so that the find can be addressed as a post-review discovery in accordance with Title 36, Code of Federal Regulation, Part 800.13.

If the discovery includes human remains, the landowner should also notify the director of the Arizona State Museum in accordance with the Arizona Burial Law (Arizona Revised Statutes 41-865).

Geology and Soils

Potential impacts to new NMCA facilities could be minimized through over-excavation and re-compaction of sufficient thickness below foundations and slabs as determined by a qualified geologist or soils engineer.

Water Resources

No work would be performed during a rain or storm event. No pollutant would be discharged directly in the Waters of the U.S. The Construction Contractor would prepare SWPPP prior to implementation of the construction to identify erosion control devices and applicable best management practices to avoid impacts to the Waters of the U.S.

Wildlife and Habitat

Arizona Native Plant Law

All categories of ADA-listed plants shall acquire a permit from the ADA,

Prior to each phase of development in the expansion area, applicable permits will be obtained for ADA-listed plants that must be removed and cannot be preserved and incorporated into the site design.

Sonoran Desert Tortoise

Although Sonoran desert tortoise is not anticipated to be found on site, in order to ensure that future construction activities do not directly impact this sensitive species, a 30-day pre-construction desert tortoise clearance survey shall be conducted by a qualified biologist prior to the construction start for each phase. If any tortoises are found, they will be relocated by a qualified biologist to another part of the expansion area or an offsite location as approved by Arizona Department of Game and Fish.

Nesting Birds

Pursuant to the Migratory Bird Treaty Act (MBTA) and Arizona Game and Fish Law, removal of any trees, shrubs, or any other potential nesting habitat should be conducted outside the avian nesting season to avoid impacts to nesting birds. The nesting season generally extends from early February through August, but can vary slightly from year to year based upon seasonal weather conditions and individual species, which may nest

earlier or later depending largely on food availability. Some birds may nest later than this due to renewed vegetation and prey during the summer monsoon season. If ground disturbance and vegetation removal cannot occur outside of the nesting season, a preconstruction clearance survey for nesting birds should be conducted within three days of the start of any ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey should document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities should stay outside of a 300-foot buffer around the active nest. For raptor species, this buffer is expanded to 500 feet. A biological monitor will be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, normal construction activities can proceed.

Prior to start of construction on future phases a qualified biologist shall conduct a Worker Education and Awareness Program (WEAP) with the contractor and construction crew to identify daily avoidance and minimization activities that shall be implemented to minimize impacts to biological resources.

Jurisdictional Areas

Mitigation will include creation of jurisdictional areas and habitat within the drainage plan for the site or purchase of credits in a Mitigation Bank, an In Lieu Fee Program, or a combination of the three, as deemed appropriate by the USACE.

Transportation and Parking

Short-term transportation impacts during construction activities shall be minimized through implementation of the following:

- Schedule construction activities such that traffic increases do not coincide with typical morning and evening periods of increased traffic.
- Route transportation of construction equipment to minimize impacts on neighboring communities.

6.0 ENVIRONMENTAL COMPLIANCE

The National Memorial Cemetery of Arizona gravesite expansion project would comply with the following state and federal laws, as described below.

6.1 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) OF 1969, as amended

NEPA requires that environmental consequences of the project alternatives be considered before a decision is made to implement a federal project. NEPA establishes requirements for preparation of an EIS for projects potentially having significant environmental impacts. This FEA has been prepared in accordance with the requirements set forth in section 102 of NEPA, the CEQ Regulations for implementing the procedural provisions of NEPA (40 CFR 1500 et seq.), and the VA Interim Guidance for Projects (VA, 2010), Procedures for Implementing NEPA. Reasonable alternatives have been considered during the planning process. Potential environmental effects have been included in the evaluation of the Proposed Action actions, and all procedural review requirements of the aforementioned rules and regulations would have been met as part of the NEPA process.

6.2 CLEAN AIR ACT, as amended, 1990

The US Environmental Protection Agency (EPA) is involved in local air quality planning through the federal Clean Air Act, as amended in 1990. Air quality impacts of each alternative considered at the National Memorial Cemetery of Arizona project fall under both federal and state conformity regulations. In Arizona, the federal conformity regulation in 40 CFR Part 93, Subpart B has been adopted by reference in the Arizona Administrative Code, Section R-18-2-1438. Based on the air quality analysis described in the EA, the total emissions of each applicable criteria pollutant are below de minimus levels as described in 40 CFR 93.153(b). As a result, the General Conformity Rule does not apply and no further analysis or determination is required. This project is expected to comply with the Clean Air Act, as amended in 1990. A RONA is prepared and located in Appendix B.

6.3 CLEAN WATER ACT OF 1977

The Clean Water Act is the principal law governing pollution control and water quality of the Nation's waterways. The objective of the Act is to restore and maintain chemical, physical, and biological integrity of the Nation's waters (33 U.S.C 1251). Each action alternative would require the discharge of dredged or fill material into waters of the

United States. A jurisdictional delineation of Waters of the U.S. has been performed for the project implementation area. As the NMCA expansion area is anticipated to result in the permanent loss of less than 0.5 acre of USACE non-wetland waters, it is anticipated that the proposed expansion can be authorized via a Nationwide Permit (NWP), specifically NWP No. 39: Commercial and Institutional Developments. Or depending upon review of an application the Regulatory Branch may issue a Section 404 general/individual permit valid for 10 or more years. Coordination with the Regulatory Branch (Phoenix Office) has been initiated and would continue throughout development of each phase. The USACE requires the formal submittal of a pre-construction notification to review the Proposed Action for consistency and ensure coverage under this NWP. It should also be noted that NWP No. 39 has a linear foot impact threshold of 300 linear feet for all intermittent and ephemeral streams. However, the USACE can waive this threshold through the submittal of a pre-construction notification. CWA Section 404 permits will be obtained from the USACE, as applicable, for each phase of development in the expansion area. Section 401 of the CWA requires Federal agencies to obtain a state Water Quality Certification (WQC) from the state in which the proposed action would take place if impacts to these resources occur. VA would submit an application for the Section 401 WQC to the ADEQ. Conditions identified in the Section 404 permit and Section 401 WQC would be followed by the selected Construction Contractor. The selected Construction Contractor would prepare a SWPPP, prior to implementation of the project, identifying erosion control devices and applicable Best Management practices to avoid discharge of the particles in the Waters of the U.S.

6.4 ENDANGERED SPECIES ACT (ESA) OF 1973, as amended

The project is in compliance with the Endangered Species Act (ESA). The ESA states that various species of fish, wildlife, and plants in the United States have been rendered extinct or depleted in numbers so that they are in danger or threatened with extinction, or are of aesthetic, ecological, educational, historical, recreational, and scientific value to the United States. The purpose of the Act is to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved and to provide a program for the conservation of such endangered species and threatened species. As the project site is not located within any designated Critical Habitat, does not contain plant or wildlife species that are listed as candidate, threatened or endangered under the ESA or habitat that supports them, the Proposed Action is unlikely to have an adverse effect on these resources. Thus, the expansion project is in compliance with the ESA.

6.5 BALD AND GOLDEN EAGLE PROTECTION ACT OF 1940, as amended (16 U.S.C. 668)

This FEA addresses the potential for this project to affect the bald eagle. No take of bald or golden eagles, alive or dead, or any part, nest or egg thereof, is anticipated. The Proposed Action is in compliance with the Bald and Golden Eagle Protection Act.

6.6 MIGRATORY BIRD TREATY ACT OF 1994, as amended

This project complies with the Migratory Bird Treaty Act, which provides legal protection for almost all breeding bird species occurring in the United States. The intent of the Act is to eliminate any commercial market for migratory birds, feathers, or bird parts. This document addresses the potential of the alternatives of the project components to affect migratory birds. The alternatives would not include the taking, killing, or possession of any migratory birds. In addition, the project would not facilitate the commercial market for any bird species. If construction occurs during nesting season, surveys would be conducted prior to the implementation of the construction to avoid impacts to the Migratory Birds.

6.7 NATIONAL HISTORIC PRESERVATION ACT

An archaeological records search and field survey of the Area of Potential Effect (APE) would need to be conducted in accordance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800). If cultural resources were to be discovered during construction and could not be avoided, work would be suspended in that area until the finds are evaluated for eligibility for listing in the National Register of Historic Places (NRHP) in consultation with the State Historic Preservation Officer (SHPO). If resources were determined to be NRHP-eligible and avoidance is not feasible, further mitigation measures would be detailed in a Memorandum of Agreement (MOA) between all necessary parties, including the SHPO and the tribes. These mitigation measures would include field surveys, testing, and data recovery. The Advisory Council on Historic Preservation would be provided the opportunity to comment in accordance with 36 CFR 800.11. Cultural resources surveys revealed that no cultural resources would be affected within the proposed expansion and improvement of the cemetery. Thus, the Proposed Action is in compliance with the Act.

6.8 EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT, MAY 24, 1977, as amended

Under this Executive Order, VA must take action to manage the risk and/or impacts of floods on human safety, health, and welfare and restore and preserve natural and beneficial values served by the floodplains. Executive Order 11988 was modified by Executive Order 13690 on January 30, 2015. Each agency also has the responsibility to evaluate potential effects of Federal actions that may be made within floodplains. The VA must avoid development in the base floodplain (100-year) unless it is the only practicable alternative to reduce hazards and risks associated with floods; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial value of the base floodplain. The proposed drainage improvements of the Proposed Action will provide 100-year flood protection for the additional NMCA facilities. The project is in compliance with this Executive Order.

6.9 EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS, 1977

In developing alternatives, the VA considered the effect of the project on the survival and quality wetlands. Projects are to "...avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative..." Since there are no wetlands on the project site, avoidance of wetlands is practicable. Therefore, there would be no overall effect of this project on wetlands, and the project is in compliance with this Executive Order.

6.10 EXECUTIVE ORDER 12898, ENVIRONMENTAL JUSTICE

On February 11, 1974, President Clinton signed an "Executive Order on Federal Action to address Environmental Justice in Minority Population and Low-Income Populations. This order is designed to focus federal attention on actions that affect environmental and human health conditions in minority and low-income communities. The Proposed Action would not adversely affect minority populations or low-income populations. This project would be in compliance with this Executive Order.

6.11 ARIZONA GROUNDWATER MANAGEMENT ACT

The Arizona Groundwater Management Act was passed by the Arizona Legislature in 1980. This Act created Active Management Areas (AMAs) overseen by Arizona Department of Water Resources (ADWR). The Proposed Action is not anticipated to result in adverse impacts to the groundwater resources construction activities or ongoing operation and maintenance activities associated with the proposed expansion. Therefore, the project will be in compliance with this Act.

6.12 AQUIFER PROTECTION PERMITS

The Arizona Department of Environmental Quality (ADEQ) administers an Aquifer Protection Permit (APP) program to safeguard the groundwater supply from pollutants that come from an identifiable source. Organizations or individuals may be required to obtain APP if they own or operate a facility that discharges a pollutant directly to an aquifer, to the land surface, or to the area between an aquifer and the land surface (the vadose zone) when it is likely that the pollutant will reach an aquifer (ADEQ, 2006). The APP program includes provisions for exemptions or non-applicability. The project is not anticipated to result in discharges of pollutants directly to an aquifer or land surfaces. The project will be in compliance with this permit program.

6.13 ARIZONA NATIVE PLANT LAW

The Arizona Department of Agriculture enforces the Arizona Native Plant Law. The law provides varying levels of protection for most of the plants native to the state. Landowners have the right to destroy or remove native plants growing on their land, but 20 to 60 days prior to the removal of any protected native plants, landowners are required to notify the Arizona Department of Agriculture and to obtain permits or tags where applicable. All categories of ADA-listed plants require a permit from the ADA. Prior to each phase of development in the expansion area, applicable permits will be obtained for ADA-listed plants that must be removed and cannot be preserved and incorporated into the site design. The project will be compliance with this Law.

6.14 ARIZONA EXECUTIVE ORDER 91-6, PROTECTION OF RIPARIAN AREAS

Under this Executive Order, the Governor of Arizona has established state policy:

- To recognize that the protection and restoration of riparian areas are of critical importance to the state;

- To actively encourage and develop management practices that will result in maintenance of existing riparian areas and restoration of degraded riparian areas;
- To promote public awareness through the development of educational programs of the benefit and values of riparian areas and the need for their protection and careful management;
- To seek and support cooperative efforts and local group and citizen involvement in the protection, maintenance and restoration of riparian areas;
- To actively encourage the preservation, maintenance, and restoration of instream flows throughout the state; and that any loss or degradation of riparian areas will be balanced by restoration or enhancement of other riparian areas of equal values and functions.

The Proposed Action will impact some riparian habitat and will mitigate by revegetation of native species on the project site, contribution to an approved Mitigation Bank, payment into an In-Lieu Fee program, or a combination of these measures. This would result in compliance with this Executive Order.

7.0 LIST OF PREPARERS

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8.0 REFERENCES

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9.0 LIST OF ACRONYMS AND ABBREVIATIONS

ACS	American Community Survey
ADA	Arizona Department of Agriculture
ADA	Americans with Disabilities Act
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
APE	Area of Potential Effect
APP	Aquifer Protection Permit
AQCR	Air Quality Control Regions
AZ	Arizona
BLS	Bureau of Labor Statistics
BMPs	Best Management Practices
CAA	Clean Air Act
CO	Carbon Monoxide
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
dBA	A-weighted decibel
du	Dwelling Units
EA	Environmental Assessment
EPA	U.S Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FWS	U.S. Fish and Wildlife
GCR	General Conformity Rule
GPM	Gallons per Minute
MLD	Most Likely Descendant
MOA	Memorandum of Agreement

NAAQS	National Ambient Air Quality Standards
NCA	VA National Cemetery Administration
NEPA	National Environmental Policy Act
NAHC	National American Heritage Commission
NMCA	National Memorial Cemetery of Arizona
NO ₂	Nitrogen Dioxide
NOA	Notice of Availability
NRCS	National Resources Conservation Service
O ₃	Ozone
O&M	Operations and Maintenance
Pb	Lead
PM	Particulate Matter; PM _{2.5} and PM ₁₀ Have Average Diameters Less than 2.5 and 10 Micrometers, Respectively
ROW	Right-of-Way
SIP	State Implementation Plans
SO ₂	Sulfur Dioxide
SR	State Route
SWPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
VA	U.S. Department of Veterans Affairs
VOC	Volatile Organic Compounds
WSS	Web Soil Survey