

**NONINVASIVE CULTURAL RESOURCES DAMAGE
ASSESSMENT FOR [REDACTED] AND
[REDACTED] MESA, MARICOPA COUNTY,
ARIZONA**

**Docket No. FD 36501 – Union Pacific Railroad Company
Construction and Operation Exemption – In Maricopa County, Ariz.**



**Prepared by: Kris Powell, MA, RPA, Jacobs Engineering Group Inc.
Prepared for: Surface Transportation Board, Office of Environmental Analysis
Submitted by: Glennda Gene Luhnnow, MA, RPA, Jacobs Engineering Group Inc.**

Arizona State Museum Accession Number: 2024-0051

Jacobs Project Report No. 2024-001

May 2024

Table of Contents

Acronyms and Abbreviations	vii
State Historic Preservation Office Report Abstract	viii
1. Introduction.....	1
1.1 Project Background.....	1
1.2 Regulatory Context.....	1
1.2.1 Section 110(k) of the National Historic Preservation Act.....	1
1.2.2 Arizona State Regulation	3
1.3 Report Organization.....	3
2. Damage Area Definition and Summary.....	5
2.1 Damage Area Locations and Summary	5
2.1.1 Damage Area Locations	5
2.1.2 Damage Area Summary	5
3. Relevant Environmental Setting and Previous Geomorphological Assessments.....	8
3.1 Environmental Setting	8
3.1.1 Geographical and Physiological Setting	8
3.1.2 Geology	8
3.2 Geomorphology and Cultural Stratigraphy in the Damage Areas	8
3.2.1 Cultural Stratigraphic Comparison for Damage Areas 1, 4 and 5	9
3.2.2 Geomorphological and Cultural Stratigraphic Comparison for Damage Area 2.....	10
3.2.3 Geomorphological and Cultural Stratigraphic Comparison for Damage Area 3.....	11
3.2.4 Geomorphological Summary	11
4. Previous Archaeological Investigations	12
4.1 [REDACTED].....	12
4.1.1 Site Description and Previous Research.....	12
4.1.2 Archaeological Investigations at [REDACTED] within Damage Area 1	12
4.2 [REDACTED].....	16
4.2.1 Site Description and Previous Research.....	16
4.2.2 Archaeological Investigations at [REDACTED] within Damage Area 3.....	16
5. Damage Assessment Survey Methods	18
5.1 Field Methods	18
5.2 Quantification of Damage.....	19

6. Damage Area 1 Assessment.....	20
6.1 Pre-Damage Condition of [REDACTED] Damage Area 1	20
6.2 Type and Extent of Construction Activities in [REDACTED] Damage Area 1	20
6.2.1 [REDACTED]	23
6.2.2 General Grading and Equipment Tracking	23
6.2.3 Material Stockpile	24
6.2.4 [REDACTED] Road	25
6.2.5 Two-track Road.....	26
6.3 Impacts to Cultural Resources in Damage Area 1	27
6.3.1 Surface Artifacts.....	27
6.3.2 AC 1	32
6.3.3 AC 2	35
6.3.4 Feature 1	37
6.3.5 Feature 7	38
6.3.6 [REDACTED]	38
6.4 Damage Area 1 Impact Summary and Implications.....	38
6.4.1 Stratigraphic Observations	38
6.4.2 Summary of Damage and Archaeological Potential	39
7. Damage Area 2 Assessment.....	41
7.1 Pre-Damage Condition of [REDACTED] Damage Area 2	41
7.2 Type and Extent of Construction Activities in [REDACTED] Damage Area 2	41
7.2.1 [REDACTED]	43
7.2.2 Grading and Equipment Tracking	44
7.2.3 Primary Construction Access Road.....	45
7.2.4 Drainage Channel.....	46
7.2.5 Mud Tracking.....	47
7.2.6 Gravel Staging Area	48
7.3 Impacts to Cultural Resources in Damage Area 2	48
7.4 Damage Area 2 Impact Summary and Implications.....	49
7.4.1 Stratigraphic Observations	49
7.4.2 Summary of Damage and Archaeological Potential	49
8. Damage Area 3 Assessment.....	51
8.1 Pre-Damage Condition of [REDACTED] Damage Area 3	51
8.2 Type and Extent of Construction Activities in [REDACTED] Damage Area 3	53
8.2.1 Surface Grading, Equipment Tracking, Equipment Storage/Staging, and Dirt Access Roads	54
8.2.2 Primary Construction Access Road.....	55
8.2.3 Material Stockpiles.....	56

8.2.4	Remnant Fill Piles	57
8.3	Impacts to Cultural Resources in Damage Area 3	58
8.4	Damage Area 3 Impact Summary and Implications	59
8.4.1	Stratigraphic Observations	59
8.4.2	Summary of Damage and Archaeological Potential	59
9.	Damage Area 4 Assessment.....	60
9.1	Pre-Damage Condition of [REDACTED] Damage Area 4	60
9.2	Type and Extent of Construction Activities in [REDACTED] Damage Area 4	60
9.2.1	Grading and Equipment Tracking	61
9.2.2	Silt Deposition	61
9.2.3	Asphalt Pile	62
9.2.4	Two-Track Road	63
9.3	Impacts to Cultural Resources in Damage Area 4	63
9.3.1	Surface Artifacts.....	63
9.3.2	AC 3	64
9.3.3	Feature 1	66
9.4	Damage Area 4 Impact Summary and Implications	66
9.4.1	Stratigraphic Observations	66
9.4.2	Summary of Damage and Archaeological Potential	66
10.	Damage Area 5 Assessment.....	67
10.1	Pre-Damage Condition of [REDACTED] Damage Area 5	67
10.2	Type and Extent of Construction Activities in [REDACTED] Damage Area 5	67
10.2.1	Brush Removal and Equipment Tracking.	68
10.2.2	Vegetation Stockpiles.....	69
10.3	Impacts to Cultural Resources in Damage Area 5	69
10.4	Damage Area 5 Impact Summary and Implications	69
10.4.1	Stratigraphic Observations	69
10.4.2	Summary of Damage and Archaeological Potential	70
11.	Impacts to Tribal Values	71
12.	Summary and Conclusions	72
13.	References	75

Figures

Figure 1.	General project location	2
Figure 2.	Location of the damage areas and UP ROW	7
Figure 3.	Aerial overview of the damage areas	7
Figure 4.	Archaeological investigations within [REDACTED] showing Damage Area 1	13

Figure 5. Overview of archaeological excavations within Damage Area 1	14
Figure 6. Map of Damage Area 1	21
Figure 7. Pre-damage overview of Damage Area 1 in the general location of the [REDACTED] View is to the north.	23
Figure 8. Post-disturbance overview of Damage Area 1 [REDACTED] showing retention basin and staging use. Material stockpile is in photo background. View is to the southwest.....	23
Figure 9. Overview of r [REDACTED] excavation, post-equipment removal. View is to the west-southwest. Material stockpile is in right background of photograph and delineated by orange fencing.....	23
Figure 10. General representative photo of grading and equipment tracking around east side of the [REDACTED] in Damage Area 1. View is to the southwest.....	23
Figure 11. Equipment tracking damage on the north side of the [REDACTED]. View is to the east.	23
Figure 12. Overview of the material stockpile. View is to the west.....	24
Figure 13. Detail of material stockpile in Damage Area 1 showing fill gravels and tracking.....	24
Figure 14. Damage Area 1, access road in 2022 (Rainey and Stubing 2022). View is to the southeast.....	25
Figure 15. Damage Area 1, access road grading and widening and [REDACTED] and [REDACTED] in 2024. View is to the southeast.....	25
Figure 16. Overview of two-track road on eastern side of Damage Area 1. View is to the northwest.....	26
Figure 17. Extent of pin-flagged artifacts in wall of [REDACTED] along removed portion of AC 1 (PL 68). View is to the northwest.....	28
Figure 18. Overview of AC 1, pre-damage. View is to the northwest.	33
Figure 19. Overview of existing conditions in AC 1, post-damage. View is to the west.....	33
Figure 20. Detail of schist cobble in the [REDACTED] at AC 1	34
Figure 21. Pre-damage condition of AC 2. View is to the northeast.	36
Figure 22. Overview of Feature 1 in the vicinity of Damage Area 1. View is to the southeast.	37
Figure 23. Overview of Feature 1 in Damage Area 1, post-damage. View is to the southeast.	37
Figure 24. Overview of Feature 7. No damage to this feature has occurred in Damage Area 1. View is to the north.....	38
Figure 25. Overview of Feature 7, showing current conditions. View is to the north.....	38
Figure 26. Map of Damage Area 2	42
Figure 27. Damage Area 2, pre-disturbance, showing the location of the r [REDACTED] in [REDACTED] as recorded by Rainey and Stubing (2022). View is to east.....	43
Figure 28. Damage Area 2, post-disturbance, showing the [REDACTED] excavated at [REDACTED]. View is to the south.	43

Figure 29. Overview of grading and equipment tracking damage on the east side of the Damage Area 2 [REDACTED] within the boundary of [REDACTED]. View is to north.	44
Figure 30. Overview of the two-track access road observed during the Class III survey. Foreground shows Isolated Occurrence 6 with the road in the background. View is to the northeast.	45
Figure 31. Overview of widened and graveled construction access road south of the [REDACTED] Note depth of disturbance demonstrated by roadway berm. View is to the east.	45
Figure 32. Drainage channel in Damage Area 2, within the boundary of [REDACTED]. View is to the east.	46
Figure 33. Overview of mud tracking damage in southeastern portion of Damage Area 2. View is to the east.	47
Figure 34. Overview of gravel staging area in Damage Area 2, outside the boundary of [REDACTED]. View is to the east.	48
Figure 36. Pre-damage conditions in the vicinity of [REDACTED] at the time of the Class III survey. View looking west-northwest.	54
Figure 37. Damage Area 3, equipment storage and staging within [REDACTED]	54
Figure 38. Overview of Damage Area 3 in the boundary of [REDACTED], showing grading and equipment tracking damage. View is to the west.	54
Figure 39. North-south construction access road in Damage Area 3, pre-disturbance. This is within the boundary of [REDACTED]. View is to the north.	55
Figure 40. Material Stockpile 1 within Damage Area 3, [REDACTED]. View is to the east.	56
Figure 41. Overview of Remnant Fill Pile 1 in Damage Area 3 within the boundary of [REDACTED]. View is to the south.	57
Figure 42. Map of Damage Area 4	61
Figure 43. Overview of general location of Damage Area 4, pre-damage. View is to the southwest.	61
Figure 44. Overview of Damage Area 4 grading and equipment tracking. View is to the northwest.	61
Figure 45. Overview of graded area in Damage Area 4, showing silt deposition from water discharge. View is to the west.	61
Figure 46. Overview of asphalt pile within Damage Area 4 in [REDACTED]. View is to the south.	62
Figure 47. Overview of two-track road through AC 3, within site [REDACTED] View is to the northeast.	63
Figure 48. Overview of Feature 1 as crossed by two-track road in Damage Area 4. View is to the south.	63
Figure 49. Map of Damage Area 5	68
Figure 50. Pre-damage conditions in the general location of Damage Area 5 in [REDACTED]. View is to the southeast.	68

Figure 51. Post-damage overview of Damage Area 5 within [REDACTED] View is to the southeast.....	68
Figure 52. Overview of northwestern vegetation stockpile in Damage Area 5 at [REDACTED]. View is to the northwest.....	69
Figure 53. Overview of southeastern vegetation stockpile in Damage Area 5 at [REDACTED] View is to the southeast.....	69

Tables

Table 2. Overview of disturbance types within Damage Area 1	22
Table 3. Overview of impacts to cultural resources in Damage Area 1 by damage type	27
Table 4. Point-located surface artifacts within [REDACTED] Damage Area 1.....	28
Table 5. Pre-and post-disturbance comparison of recorded artifacts within Damage Area 1, AC 1	33
Table 6. Pre-and post-disturbance comparison of recorded artifacts within Damage Area 1, AC 2	35
Table 7. Overview of the types of disturbance within Damage Area 2	41
Table 8. Artifacts observed within Damage Area 2.....	48
Table 9. Overview of disturbance types within Damage Area 3	53
Table 10. Artifacts observed within Damage Area 3, [REDACTED]	58
Table 11. Disturbances within Damage Area 4 within [REDACTED]	60
Table 12. Artifact summary of Damage Area 4 within [REDACTED]	63
Table 13. Artifacts observed within OU 6 and OU 7 in AC 3, [REDACTED]	65
Table 14. Point-located artifacts observed within AC 3, [REDACTED]	65
Table 15. Disturbances within Damage Area 5 within [REDACTED]	67
Table 16. Artifacts observed within Damage Area 5 at [REDACTED]	69
Table 17. Summary of damage	73

Appendices

Appendix A. Cultural Resources Map	
Appendix B. Civil Survey of [REDACTED], Damage Areas 1 and 2	

Acronyms and Abbreviations

AC	artifact concentration
AD	anno Domini
APE	area of potential effects
ASM	Arizona State Museum
ASU	Arizona State University
BC	before Christ
Board	Surface Transportation Board
cm	centimeter(s)
cmbs	centimeter(s) below surface
ft	foot(feet)
GSRB&M	Gila and Salt River Baseline and Meridian
Jacobs	Jacobs Engineering Group Inc.
m	meter(s)
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OEA	Office of Environmental Analysis
OU	observation unit
Phoenix Subdivision	Phoenix Subdivision main line
PIRATE	Pecos Industrial Rail Access and Train Extension
PL	point-located artifact
R7E	Range 7 East
ROW	right-of-way
T2S	Township 2 South
THPO	Tribal Historic Preservation Officer
UP	Union Pacific Railroad Company

State Historic Preservation Office Report Abstract

Report Title: Noninvasive Cultural Resources Damage Assessment for [REDACTED] and [REDACTED] Mesa, Maricopa County, Arizona

Project Name: Pecos Industrial Rail Access and Train Extension (PIRATE)

Project Location: Mesa, Maricopa County, Arizona

Project Locator Universal Transverse Mercator: [REDACTED] (center of wye, [REDACTED])

Project Sponsor: Union Pacific Railroad Company (UP)

Sponsor Project Number(s): Docket No. FD 36501

Lead Agency: Surface Transportation Board (Board)

Other Involved Agencies: Arizona Department of Environmental Quality, Arizona State Land Department, Arizona State Museum (ASM), City of Mesa, Flood Control District of Maricopa County, Phoenix-Mesa Gateway Airport, Town of Queen Creek, Maricopa County, State Historic Preservation Office, Salt River Project, U.S. Army Corps of Engineers

Applicable Regulations: Section 110(k) of the National Historic Preservation Act of 1966, as amended (54 *United States Code* § 306108, implementing regulations at 36 *Code of Federal Regulations* Part 800.9); Arizona Revised Statute § 41-865

Funding Source: Private

Arizona State Land Department Right-of-Way Application Number: [REDACTED]

Arizona State Museum Accession Number: 2024-0051

Description of the Project/Undertaking: UP is seeking authority from the Board to construct and operate approximately 6.0 miles of new rail line in Maricopa County, Arizona (Docket No. FD 36501). The proposed rail line would connect UP's existing Phoenix Subdivision main line (Phoenix Subdivision) to industrial properties southeast of the Phoenix-Mesa Gateway Airport via a single-track rail line. UP also proposes to construct and operate approximately 2.5 miles of planned support tracks along the Phoenix Subdivision between Power Road and Ellsworth Road. This project is referred to as PIRATE.

On behalf of the Board's Office of Environmental Analysis (OEA), Jacobs Engineering Group Inc. (Jacobs), OEA's third-party contractor, conducted a Class III cultural resources survey of the project's area of potential effects (APE) (Rainey and Stubing 2022). The Class III survey identified 4 previously recorded cultural resources sites [REDACTED]

[REDACTED] 2 in-use historic structures, and 53 isolated occurrences and isolated features within the APE.

The four cultural resources sites were determined eligible for inclusion on the National Register of Historic Places. The four cultural resources sites would not be avoided by construction activities. As a result, OEA determined that a finding of “adverse effects to historic properties” is appropriate for the project and initiated the preparation of a Memorandum of Agreement to mitigate the adverse effects.

Prior to execution of the Memorandum of Agreement and the Board’s decision on whether to authorize construction and operation of PIRATE, significant ground disturbance within the APE was observed. OEA contacted UP via a formal letter requesting immediate action be taken to prevent any further disturbance. OEA also apprised the consulting parties of the situation. Impacts to archaeological sites in the PIRATE APE were identified in five damage areas. This report presents the noninvasive assessment of the damage areas.

The results of the noninvasive damage assessment discussed in this report are intended to assist OEA in understanding the nature, extent, and magnitude of the damage to archaeological sites. This information will be provided to the Board for review as part of their Section 110(k) deliberative process.

Description of Damage Areas:

This report presents the noninvasive assessment conducted under Section 110(k) of the National Historic Preservation Act; therefore, locational information provided is specific to the damage areas. The damage areas are located within the PIRATE APE [REDACTED]

[REDACTED] This report focuses on damage incurred to archaeological sites in UP right-of-way (ROW) within the project APE. For further details on the project APE, the reader is directed to Rainey and Stubing (2022).

- **Damage Area 1.** [REDACTED]
- **Damage Area 2.** [REDACTED]
- **Damage Area 3.** [REDACTED]
- **Damage Area 4.** [REDACTED]

• **Damage Area 5.** [REDACTED]

Consultant Firm/Organization: Jacobs

Consultant Project Number: UPPRCP73

Permit Number(s): N/A

Eligible Sites in the Damage Areas: [REDACTED]

Comments: Jacobs, OEA’s third-party contractor, has prepared this report to address the extent and magnitude of the damage to archaeological sites within the PIRATE APE that are eligible for the National Register of Historic Places. The purpose of this damage assessment is to fully document the damage via noninvasive fieldwork, summarize pre-damage conditions for sites [REDACTED] quantify the extent of the damage to the two sites, and discuss the potential for intact subsurface archaeological deposits within the damage areas (Table AB-1). This noninvasive assessment report is based on current information specific to unauthorized construction activities. The Board continues to gather information specific to Section 110(k) which may identify additional unauthorized construction activities. Any additional information will be provided as it becomes available.

This report presents the magnitude of damage based on the following classification scale:

- **Major Damage.** Damage is classified as major if the surface disturbance is greater than or equal to 2 feet deep (60.96 centimeters [cm]) or [REDACTED].
- **Moderate Damage.** Damage is classified as moderate if the surface disturbance is less than 1 foot deep (30.48 cm) and intersects any previously recorded artifact concentrations (ACs) or features, or if the surface disturbance is between 1 and 2 feet deep (30.48-60.96 cm).
- **Minor Damage.** Damage is classified as minor if the surface disturbance is less than 1 foot deep (30.48 cm) and does not intersect any previously recorded ACs or features.

Using this classification scale, the magnitude of damage for specific unauthorized construction activities, as well as the overall magnitude of damage for each damage area, is presented in Table AB-1. The overall magnitude for each damage area is based on the highest classification score.

As discussed in this report, the disturbance from unauthorized construction activities has resulted in physical damage to these significant archaeological sites, as well as intangible cultural damage to the heritage and traditional values of the O’Odham community. The intangible effects of this

damage on the O’Odham community need to be considered when addressing the overall effects of the site damage.

Recommendations: OEA recommends further assessment fieldwork to fully identify the extent and magnitude of construction damage in the UP ROW and the PIRATE APE. The additional investigation would include invasive (ground-disturbing) techniques, specifically limited geomorphological trenching in the [REDACTED] in Damage Areas 1 and 2, limited facing of retention basin walls in Damage Areas 1 and 2, and screening of a material stockpile in Damage Area 1. The additional fieldwork is anticipated to consist of screening the material stockpile in Damage Area 1, and limited geomorphological trenching within the [REDACTED] in Damage Areas 1 and 2 to identify any remaining potential for intact subsurface deposits. The scope of the additional fieldwork and methods employed will be outlined in a future invasive damage assessment treatment plan. As expressed by the Gila River Indian Community Tribal Historic Preservation Officer, the recovery of potential ancestral remains and belongings is of primary and urgent importance in the consideration of any invasive methods implemented by the future work plan.

While the intangible and irreparable damage to the O’Odham community is beyond the scope of the future invasive damage assessment work plan, this intangible damage should be further addressed in communication and cooperation with the Four Southern Tribes in an ethnographic study.

Table AB-1. Summary of damage

Damage Area	Type of Disturbance (Quantity)	Depth or (Height) of Disturbance ^[1]	Cultural Resources Impacted	Magnitude of Damage	
				Activity	Damage Area
[REDACTED]					
Damage Area 1	[REDACTED]	0.92 m ^[1]	[REDACTED] numerous artifacts identified within basin and along eastern edge	Major	Major
	General grading and equipment tracking	15.20–30.10 cm	[REDACTED]; numerous artifacts observed within graded area	Minor to Moderate	
	Material stockpile ^[2]	(1.50 m)	One plain ware sherd observed on the material stockpile, unknown impacts	Major	
	[REDACTED]oad ^[3]	15.20–30.10 cm	Numerous artifacts within the road	Minor	
	Two-track road	15.20 cm	[REDACTED]	Major	
[REDACTED]					
Damage Area 2	Retention basin and berms	0.60 m	PL 1 in basin, PL 5 in basin side wall	Major	Major
	General grading, equipment tracking, and dirt access road	15.20 cm	PL 2, PL 3, PL 4	Minor	
	Primary construction access road	30.00 cm	None recorded	Not in site boundary	
	Drainage channel	0.66 m	None recorded	Moderate	
	Mud tracking	0.60 cm	None recorded	Minor to Moderate	
	Gravel staging area	7.60 cm	None recorded	Not in site boundary	

Table AB-1. Summary of damage

Damage Area	Type of Disturbance (Quantity)	Depth or (Height) of Disturbance ^[1]	Cultural Resources Impacted	Magnitude of Damage	
				Activity	Damage Area
Damage Area 3	Surface grading, equipment tracking, staging/storing and access roads	15.20 cm	Ceramics and ground stone	Minor	Minor
	Primary construction access road	30.00 cm	None recorded	Minor	
	Material stockpiles (7)	(40.60–91.40 cm)	PL 5, PL 7	Minor	
	Remnant fill piles (3)	(10.00 cm)	None recorded	Minor	
Damage Area 4	Grading and equipment tracking	15.20 cm	PL 1, PL 2, PL 3	Minor	Moderate
	Silt deposition	N/A	None recorded	Minor	
	Asphalt pile	N/A	None recorded	Minor	
	Two-track road	10.00 cm	AC 3, Feature 1	Moderate	
Damage Area 5	Brush removal and equipment tracking	10.10 cm	PL 1, PL 2, PL 3	Minor	Minor
	Vegetation stockpiling	(0.90–1.30 m)	None recorded	Minor	

^[1] Depth = belowground damage. Height = above ground damage (stockpiles, etc.).

^[2] The material stockpile in Damage Area 1 is quantified as major damage given because, while the origin of the constituent soil is unknown, it is likely derived from [REDACTED]

[3] Lowering of an [REDACTED]. [REDACTED].
AC = artifact concentration; cm = centimeter; m = meter; PL = point-located artifact

1. Introduction

1.1 Project Background

Union Pacific Railroad Company (UP) is seeking authority from the Surface Transportation Board (Board) to construct and operate approximately 6.0 miles of new rail line in Maricopa County, Arizona (Docket No. FD 36501). The proposed rail line would connect UP’s existing Phoenix Subdivision main line (Phoenix Subdivision) to industrial properties southeast of the Phoenix-Mesa Gateway Airport via a single-track rail line (Figure 1). UP also proposes to construct and operate approximately 2.5 miles of planned support track along the Phoenix Subdivision between Power Road and Ellsworth Road. This project is referred to as the Pecos Industrial Rail Access and Train Extension (PIRATE).

On behalf of the Board’s Office of Environmental Analysis (OEA), Jacobs Engineering Group Inc. (Jacobs), OEA’s third-party contractor, conducted a Class III cultural resources survey of the project’s area of potential effects (APE) (Rainey and Stubing 2022). The Class III survey identified 4 previously recorded cultural resources sites [REDACTED] 2 in-use historic structures (Old Rittenhouse Road and the Mesa to Winkelman Spur of the Southern Pacific Railroad), and 53 isolated occurrences and isolated features within the APE.

The four cultural resources sites were determined eligible for inclusion on the National Register of Historic Places (NRHP). The four cultural resources sites would not be avoided by construction activities. As a result, OEA determined that a finding of “adverse effects to historic properties” is appropriate for the project and initiated the preparation of a Memorandum of Agreement to mitigate the adverse effects.

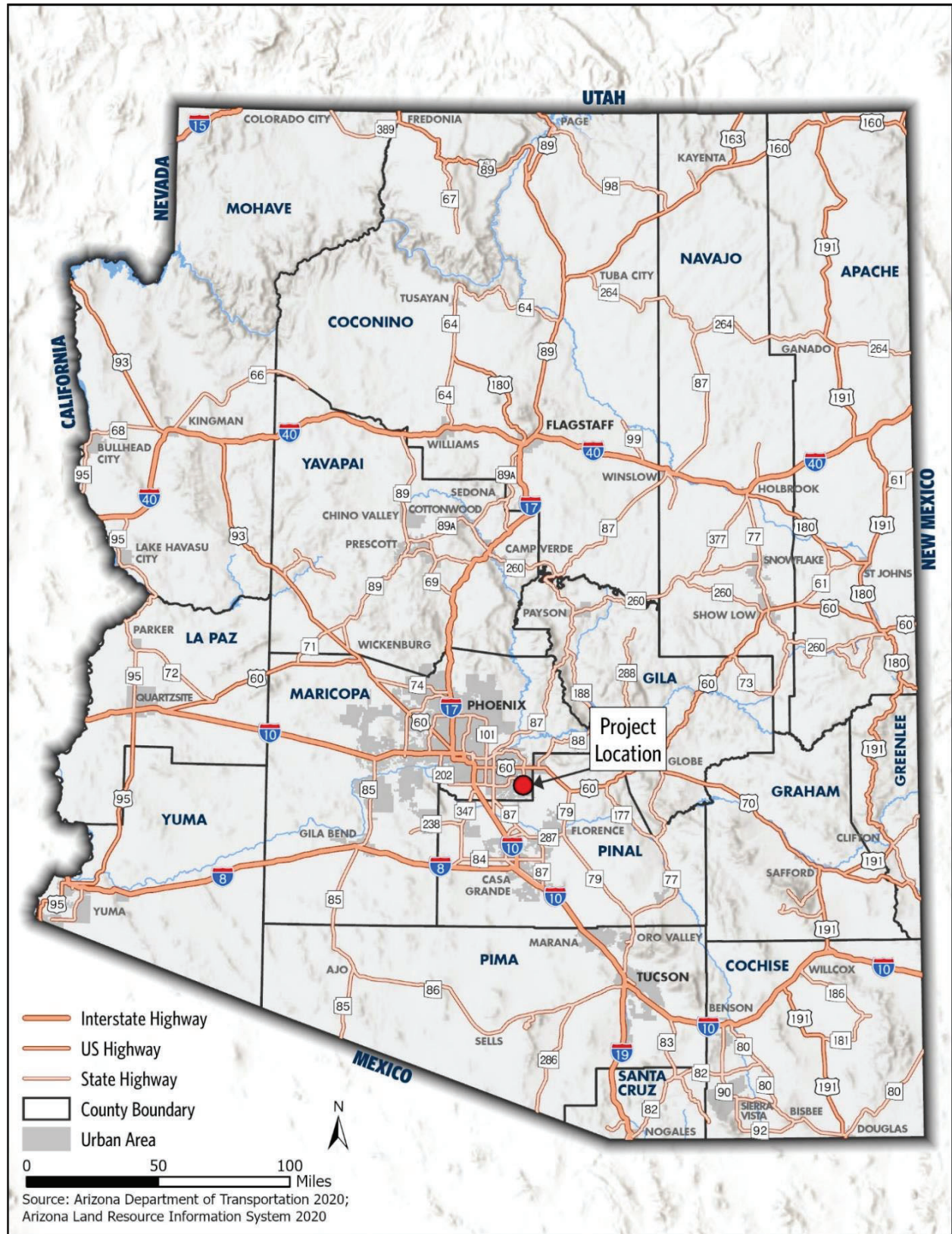
Prior to the Board’s decision on whether to authorize construction and operation of PIRATE, significant damage from unauthorized construction activities was observed within the boundaries of two NRHP-eligible archaeological sites [REDACTED] OEA subsequently prepared a preliminary archaeological site damage summary memo and distributed it to the project’s consulting parties on September 12, 2023. This report augments the findings of the preliminary memo and provides a comprehensive, noninvasive field assessment to fully delineate the extent and magnitude of the construction damage. The assessment was conducted by Jacobs, OEA’s third-party contractor.

1.2 Regulatory Context

1.2.1 Section 110(k) of the National Historic Preservation Act

Section 110(k) of the National Historic Preservation Act (NHPA) relates to “anticipatory demolition.” Section 110(k) states that a federal agency “will not grant a loan, loan guarantee, permit, license, or other assistance to an applicant who, with intent to avoid the requirements of Section 106, has intentionally significantly adversely affected a historic property to which the grant would relate or having legal power to prevent it has allowed the significant adverse effect to occur, unless the agency, after consultation with the [Advisory] Council [on Historic Preservation], determines that circumstances justify granting the assistance despite the adverse effect created or permitted by

Figure 1. General project location



the applicant” (54 *United States Code* § 306108, implementing regulations at 36 *Code of Federal Regulations* Part 800.9).

Due to the substantial damage to the archaeological sites within the PIRATE APE, the Board is conducting a parallel inquiry into the unauthorized construction activities. Specifically, the Board is focusing their inquiry on agreements, authorizations, and other legal matters and concerns associated with Section 110(k) of the NHPA. OEA sent a formal notice on December 11, 2023, to the project’s consulting parties to notify them that the Board decided to pursue an investigation under Section 110(k) of the NHPA. The Board’s inquiries are concurrent with OEA’s documentation of the archaeological site damage.

The results of the noninvasive damage assessment discussed in this report are intended to assist OEA in understanding the nature, extent, and magnitude of the damage to archaeological sites. This information will be provided to the Board for review as part of their Section 110(k) deliberative process.

1.2.2 Arizona State Regulation

The areas of archaeological damage are located on privately owned land and, thus, are subject only to cultural resources compliance with *Arizona Revised Statutes* § 41-865. *Arizona Revised Statutes* § 41-865 contains rules, classifications, and definitions specific to disturbing human remains and funerary objects on private land.

1.3 Report Organization

The purpose of this report is to assess and document the extent and magnitude of the unauthorized construction activity on [REDACTED]. A great deal of varied information is contained in this report. To facilitate review, the content is organized as follows.

- **Section 1** provides the project background, regulatory context, and report organization.
- **Section 2** defines and summarizes the damage areas.
- **Section 3** provides the relevant environmental setting and previous geomorphic assessments of the damage areas.
- **Section 4** summarizes the previous archaeological investigations at [REDACTED].
- **Section 5** contains the field methods implemented for the noninvasive damage assessment and a classification system for assessing the magnitude of damage of individual construction activities and the overall magnitude of damage at each damage area.
- **Sections 6 through 10** summarize and assess the archaeological impacts in Damage Areas 1 through 5.
- **Section 11** includes a statement from the Gila River Indian Community and Salt River Pima-Maricopa Indian Community Tribal Historic Preservation Officers (THPOs).

Section 12 summarizes the damage to archaeological sites

- Section 13 provides the references consulted for this report.

2. Damage Area Definition and Summary

2.1 Damage Area Locations and Summary

Given that this report presents the noninvasive assessment conducted under Section 110(k) of the NHPA, locational information provided is specific to the damage areas. The damage areas are located within the [REDACTED] in the city of Mesa, Maricopa County, Arizona.

This report focuses on damage incurred to archaeological sites in the UP right-of-way (ROW). For further details on the project APE, the reader is directed to Rainey and Stubing (2022).

2.1.1 Damage Area Locations

Unauthorized construction activities damaged archaeological sites in five areas located in the UP ROW (Figures 2 and 3). [REDACTED]

Appendix A provides a map showing these locations relative to the archaeological sites.

2.1.2 Damage Area Summary

Damage Area 1

Damage Area 1 [REDACTED]

Damage documented in this location consists of:

- Excavation of a [REDACTED] also used for equipment storage.
- General grading and equipment tracking.
- Grading, widening, and gravelling of an existing dirt access road along an [REDACTED]
- Material stockpiling in the [REDACTED].
- A two-track road.

Damage Area 2

Damage in this location consists of:

- Excavation of a large [REDACTED].
- General grading, equipment tracking, and a dirt access road (included in this category given that the depth and extent is within the boundaries of the general grading and equipment tracking damage).
- Gravelling and widening of an existing dirt access road for primary construction access.

- Mud tracking (differentiated from general grading and equipment tracking due to the depth of disturbance).
- Excavation of a drainage channel.
- Construction of a gravel staging area.

Damage Area 3

[REDACTED] Damage

in this location consists of:

- General grading and equipment tracking.
- Equipment storage.
- Gravelling and widening of an existing dirt access road for primary construction access.
- Material stockpiling.

Damage Area 4

[REDACTED] Damage in

this area consists of:

- General grading, water discharge, and equipment tracking.
- Asphalt stockpiling.
- Two-track roads.

Damage Area 5

[REDACTED] Damage in this area

consists of:

- Brush removal along an [REDACTED].
- Vegetation stockpiling.

Figure 2. Location of the damage areas and UP ROW

MAP REDACTED

Figure 3. Aerial overview of the damage areas

MAP REDACTED

3. Relevant Environmental Setting and Previous Geomorphological Assessments

Information on the dynamic environment of the [REDACTED] and a description of the area's archaeological research relative to the damage areas are presented in this section. For more detailed information on environmental setting and culture history, refer to Rainey and Stubing (2022) and Powell and Rainey (2023).

3.1 *Environmental Setting*

Sections 3.1.1 and 3.1.2 include a brief review of the environmental setting of the project limits to illustrate the soil conditions of the [REDACTED].

3.1.1 Geographical and Physiological Setting

The project limits are located in a large, level plain in the lower [REDACTED] in the southeastern portion of the Phoenix Basin. The [REDACTED] is defined as the portion of western Queen Creek that transitions from a channelized perennial stream to an alluvial fan.

[REDACTED] is unique in that it is not a continuous river channel, but rather a fragmented ephemeral stream that originates in the southeastern Superstition Mountains and weaves toward the central Phoenix Basin. In the upland area, it starts as a channelized perennial stream, transitions on the desert floor [REDACTED], and back to moderately channelized form (Lone Butte Wash), with little flow in the western portion of the drainage (Schaafsma and Countryman 2018).

3.1.2 Geology

The geological and geomorphic setting of the region is greatly influenced by the Santan Mountains, Queen Creek, and Sonoqui Wash, the predominant landforms in the immediate area. The Santan Mountains primarily consist of granite and schist, with some rhyolitic volcanics also present (Huckleberry 1994). Pleistocene fan deposits at the base of the mountains give way to Holocene deposits on the basin floor near the project limits (Huckleberry 1994).

3.2 *Geomorphology and Cultural Stratigraphy in the Damage Areas*

The project limits are in an alluvial fan with a geomorphology that is complex and continually changing. Both Phillips (2000) and Kerns (1994) have identified the area as composed of Typic Torrifluvents, which do not form soil horizons because of constant deposition and/or their young age. The following discussion relies on the results of previous geomorphological and archaeological studies to provide context for the subsurface stratigraphy of the damaged areas of [REDACTED]. Sections 3.2.1 and 3.2.2 summarize relevant studies of geomorphology and site stratigraphy organized by damage area.

3.2.1 Cultural Stratigraphic Comparison for Damage Areas 1, 4 and 5

Damage Areas 1, 4, and 5 are within the north-central portion of [REDACTED] Two relevant archaeological investigations were completed within Damage Area 1 and adjacent to Damage Area 4 (Hackbarth and Craig 2004) and adjacent to Damage Areas 1 and 5 (Hart and Craig 2003, 2006). While these archaeological investigations did not include formal geomorphological assessments, they do include notes on soil stratigraphy and the depth of cultural deposits.

Hackbarth and Craig (2004)

Hackbarth and Craig (2004) conducted archaeological testing within a portion of Damage Area 1. Approximately 33 trenches were placed within Damage Area 1. Trenching intervals were variable (between 10 and 40 meters [m] apart), with trenches placed at shorter intervals in areas of high artifact density. Given the spacing between some trenches, it is possible that additional undocumented features may have been present between trenches.

Results. As listed in Table 1, [REDACTED]

TABLE 1-REDACTED

Stratigraphic Observations. Soil observations from Hackbarth and Craig (2004:7-8) indicate variability throughout their testing area. Most of the soils noted within the trenches were remnant aeolian deposits of variable thickness, with an upper zone of unconsolidated sand above a slightly more compact stratum. Generally, upper strata (–20 cmbs) are more compact, suggesting an older or more stable environment (Hackbarth and Craig 2004:8).

Within Damage Area 1, the following stratigraphic sequence was identified:

- Stratum I is compact silt or clayey silt overlaying the cultural features.
- Stratum II is light brown, slightly compacted fine-grained sandy silt (cultural horizon).
- Stratum III, the lowest stratum at approximately 1 m deep, is fine silty sand with traces of an orange color (Hackbarth and Craig 2004:7).

East of Damage Area 1, Stratum I consisted of unconsolidated aeolian dune deposits with interbedded water-lain lamina above alternating aeolian and alluvial deposits (Hackbarth and

Craig 2004:8). In the southeastern portion of the [REDACTED], Hackbarth and Craig (2004) identified the presence of a natural wash channel that would have provided water to this area.

Hart and Craig (2003, 2006)

Hart and Craig (2003, 2006) completed archaeological testing and data recovery within a linear corridor across [REDACTED] adjacent to Damage Areas 1 and 5.

Results. [REDACTED]

Stratigraphic Observations. No formal geomorphological assessment was completed but soil descriptions from the soil profile for Feature 1 (just west of Damage Area 1) are similar to those reported by Hackbarth and Craig (2004).

Adjacent to Damage Areas 1 and 5, the following stratigraphic sequence was identified:

- Stratum I (0 to 25 cmbs) is tannish sandy silt overlaying cultural features.
- Stratum II (25 to 90 cmbs) is gray-brown, compact, fine sandy silt (cultural horizon).
- Stratum III (90 cmbs+) is tan-brown, silty sand (Hart and Craig 2003:19).

3.2.2 Geomorphological and Cultural Stratigraphic Comparison for Damage Area 2

Damage Area 2 is located [REDACTED] (Appendix A). One relevant geomorphological study was conducted by Phillips (2000); additional stratigraphic information is provided in Greenwald et al. (1994) as part of data recovery excavations for the [REDACTED].

Phillips (2000) visited [REDACTED] to define its surface expression and site formation processes. At the time of the assessment, Phillips (2000) defined Damage Area 2 as composed of Gilman loam exhibiting relatively large sand dunes across the landscape. Site formation processes included aeolian activities and sand dune erosion resulting in surface ACs (Phillips 2000). [REDACTED]

[REDACTED] identified the following soil sequence:

- Stratum I (0 to 25 cmbs) is a disturbed light brown silt loam.

- Stratum II (25 to 90 cmbs) is a compact light brown silt loam becoming more calcareous with depth (cultural horizon, containing features identified by Greenwald et al. 1994).
- Stratum III (90 to 120 cmbs) is a lightly compact reddish-brown silty clay with caliche accumulation. A burned log identified at a depth of 1 m returned a date of 2455 to 2409 BC (Phillips 2000:51).

3.2.3 Geomorphological and Cultural Stratigraphic Comparison for Damage Area 3

Damage Area 3 is located partially within the [REDACTED]

[REDACTED] Relevant geomorphological studies were conducted by Phillips (2000)

[REDACTED] Kerns (1994) provides additional data for [REDACTED] observed during data recovery efforts conducted for [REDACTED]

As defined by Phillips (2000:54) the stratigraphy at [REDACTED] is virtually identical. While no features were identified by Phillips (2000) at [REDACTED]

[REDACTED] (Kerns 1994:70), [REDACTED] within Stratum II between 20 and 68 cmbs. Of specific note, a flood deposit at 70 cmbs returned a calibrated radiocarbon date range between 1743 and 1612 BC (Kerns 1994:96). The following stratigraphic [REDACTED] (Kerns 1994:245 and Phillips 2000:51):

- Stratum I (0 to 28 cmbs) is dark yellow brown silty clay, platy structure, friable, with roots.
- Stratum II (28 to 40 cmbs) is yellow brown silty clay, friable with some layers of grayish orange silt, massive (cultural horizon).
- Stratum III (40 to 84 cmbs) is light brown silt, subangular block structure, becoming more calcareous with depth (cultural horizon).
- Stratum IV (100 to 120 cmbs) is reddish brown silty clay, weak granular structure, occasional fine calcium carbonate veins.

3.2.4 Geomorphological Summary

These studies suggest that the cultural deposits have some depth [REDACTED]. Although more dynamic portions of the project limits exhibit some stratigraphic variability; for the most part, the soil descriptions are generally consistent. Cultural materials seem to be present within 28 to 90 cmbs. Some chronometric dates have been collected from Huhugam Colonial and Classic period features within Stratum II/III (28 to 90 cmbs). Soils approximately 2 m deep have produced Pleistocene fauna and predate cultural deposits.

4. Previous Archaeological Investigations

Damage Areas 1, 2, 4, and 5 are within [REDACTED] Only a portion of Damage Area 1 has been subject to past archaeological testing and/or data recovery investigations (Figures 4 and 5).

4.1.1 Site Description and Previous Research

██████████ is one of the largest known habitation sites in the northern ██████████. The site measures approximately ██████████

As a whole, [REDACTED] Based on archaeological research, the site was primarily occupied during Preclassic and the Classic periods of Huhugam occupation, although previous researchers have noted an earlier possible Archaic component as well as a later O'Odham component (Greenwald et al. 1994:89). As defined by Henderson (2006), [REDACTED] reflects a zone of settlement with scattered residential compounds and lesser habitation and activity areas rather than a single large, centralized Huhugam site.

Multiple investigations have been conducted in various portions of the site. However, for the purposes of this report, only two are directly relative because they are within Damage Area 1 (Figures 4 and 5).

4.1.2 Archaeological Investigations at [REDACTED] within Damage Area 1

Two previous archaeological testing and data recovery projects have been conducted at [REDACTED] within the project limits. These include Phase I and Phase II data recovery for the [REDACTED] (Hart and Craig 2003, 2006) and archaeological testing for the [REDACTED] (Hackbarth and Craig 2004) (Figures 4 and 5). Rainey and Stubing (2022) also conducted Class III survey for the PIRATE project.

Hart and Craig (2003, 2006)

The **Santan Expansion Project pipeline corridor** extends roughly through the center of **AZ U:10:2(ASM)**. The Phase I investigation of the project included a total of 184 systematic trenches that revealed [REDACTED]. The depth of identified features varied between [REDACTED] and were roughly grouped in four loci (Hart and Craig 2003). [REDACTED] were identified within the project limits. [REDACTED]

These feature loci were interpreted by Hart and Craig (2003) as representing well-bounded habitation and activity areas at the site.

(Hart and Craig 2006).

Figure 4. Archaeological investigations within [REDACTED] showing Damage Area 1

MAP REDACTED

Figure 5. Overview of archaeological excavations within Damage Area 1

MAP REDACTED

The Mound Locus is thought to be a Classic period compound with several habitation features.

Despite being near the edge of the mound, the data recovery efforts did not identify any Classic period compound walls.

Looting was evident in several areas of this locus (Hart and Craig 2006).

Hackbarth and Craig (2004)

(Hackbarth and Craig 2004) (Figures 4 and 5).

Employing a stratified sampling testing strategy based on higher artifact densities, 88 trenches were excavated that . Only a few of these features were subject to further excavation. In addition to these features,

Looting was also present in areas and had damaged multiple features.

Rainey and Stubing (2022)

A Class III cultural resources survey for the PIRATE APE was conducted by Jacobs, OEA's third-party contractor, in May and June 2022 (Rainey and Stubing 2022).

during the 2004 archaeological testing (Hackbarth and Craig 2004). Observation units (OUs) were placed within the ACs to characterize the artifact assemblage.

AC 1 encompasses approximately 2,780 square meters and contained an estimated

Artifacts in AC 1 were categorized as part of a Classic Period assemblage.

AC 2 (Rainey and Stubing 2022). AC 2 encompassed 1,075 square meters and contained an estimated

Artifacts in AC 2 were categorized as part of a Classic Period assemblage.

AC 3 was recorded in [REDACTED] (Rainey and Stubing 2022). AC 3 encompassed 1,670 square meters [REDACTED]

Feature 1 is a modern/historic ditch oriented southeast-northwest that passes [REDACTED] (Rainey and Stubing 2022). At the time of the recording, Feature 1 measured approximately 1.5 to 2.0 m wide by 430 m long, continuing beyond the project limits to the southeast and terminating about 200 m outside [REDACTED]. The ditch was partially overgrown and does not appear to be in use. Within the project limits, the ditch is generally U-shaped in the southeast, becoming less defined to the northwest as sedimentation and vegetation increase. Ceramic sherds and flaked stone artifacts were observed eroding from the banks. [REDACTED]

[REDACTED] This previous damage was associated with flood episodes and potentially mechanical damage from the previous testing conducted by Hackbarth and Craig (2004).

Feature 7 is described by Rainey and Stubing (2022) as an amorphous, slightly deflated area with low berms [REDACTED]. It measures 7 m wide by 23 m long. No artifacts were observed in direct association with the feature. Feature 7 generally conforms to the location [REDACTED]

[REDACTED] Hackbarth and Craig (2004) excavated three trenches in this general vicinity and encountered disturbed subsurface soil. Feature 7 was interpreted by Rainey and Stubing (2022) as possibly representing remnants of Hackbarth and Craig's (2004) investigations.

[REDACTED] Damage Area 3 is within the boundaries [REDACTED] None of Damage Area 3 has been subject to past archaeological testing and/or data recovery investigations (Figure 4).

4.2.1 Site Description and Previous Research

[REDACTED] is a large Huhugam habitation site originally recorded within the [REDACTED] outside of, but immediately adjacent to, the project limits (Greenwald et al. 1994) (Appendix A). The site boundary was expanded to the south by the Class III survey conducted for the PIRATE project (Rainey and Stubing 2022).

4.2.2 Archaeological Investigations at [REDACTED] within Damage Area 3

One previous archaeological testing and data recovery project has been conducted at [REDACTED] within the project limits: data recovery excavations for the [REDACTED] conducted by Greenwald et al. (1994). Rainey and Stubing (2022) also conducted a Class III survey for the PIRATE project.

Greenwald et al. (1994)

[REDACTED] was recorded in 1992 under [REDACTED] as an extensive prehistoric artifact scatter with several concentrated artifact areas thought to reflect prehistoric trash mounds (Greenwald et al. 1994). [REDACTED]

[REDACTED] Ceramics indicated an occupation date between the Huhugam Colonial and Classic periods (Greenwald et al. 1994). [REDACTED] has previously been determined eligible for the NRHP under Criterion D.

Subsequently, Greenwald et al. (1994) conducted archaeological testing at the site and confirmed that the site was a habitation area. The northern portion of the site was asphalt-encased and not included in the testing; nonetheless, Greenwald et al. (1994) included this area within the site boundary. [REDACTED]

[REDACTED] None of these features are adjacent to the project limits. Artifacts recovered during testing confirmed that the site was likely occupied from the Colonial to Classic periods.

Rainey and Stubing (2022)

A Class III survey of the PIRATE APE was conducted in May and June 2022 by Rainey and Stubing (2022). While the site boundary was almost completely confined to a fallow agricultural field, Rainey and Stubing (2022) reported 50 percent surface visibility. At the time of the Class III survey, the previously recorded boundary of [REDACTED] was adjacent to, but outside of, the PIRATE project limits.

[REDACTED]
[REDACTED] in an area measuring 668 m (east-west) by 69 m (north-south) (Rainey and Stubing 2022). The site boundary was expanded to encompass these surface artifacts. Ceramic sherds were reportedly very small, measuring 1 to 2 centimeters (cm) in size, indicating plow disturbance. No ACs or features were identified in Damage Area 3 by Rainey and Stubing (2022).

5. Damage Assessment Survey Methods

The following sections describe the noninvasive field methods used to examine and document the damage within [REDACTED] and the approach used to evaluate the damage based on the data obtained during the fieldwork. General field procedures include mapping protocols, survey transect spacing, soil stratigraphy evaluation, feature and AC documentation, and photographic standards.

5.1 Field Methods

Mapping. Mapping was undertaken to document the various components of the damage areas such as [REDACTED]. Mapping was also conducted to assess any existing or newly identified cultural features, point-located artifacts, and ACs.

The field crew used tablets (Samsung Galaxy TAB A and Apple iPads) paired with Trimble R1 Global Navigation Survey System receivers via Bluetooth, allowing for submeter accuracy to collect and record spatial data. Tablet software used the Environmental Systems Research Institute Field Maps application for geospatial data collection. The field crew uploaded the APE and previously recorded cultural resource information onto the Field Maps application to facilitate accurate identification of previously documented features, ACs, and other spatially relevant features in the field. The field crew then uploaded the collected spatial data to secure Cloud facilities and used the data to generate project and site maps.

Damage Area Maps. Scaled maps have been prepared for each of the damage areas. [REDACTED]

[REDACTED] The site maps show the locations of modern features (roads, berms, modern irrigation ditches, fences, railroad tracks, utility lines, etc.) and archaeological investigation areas. The specific locations of different types of construction damage within the damage areas are noted on the maps. The maps also depict the boundaries of ACs, surface observation units, point-located artifacts, and prehistoric and historic features.

Survey Transect Spacing. The purpose of the damage assessment was to determine the extent of the damage to the archaeological sites. To ensure thoroughness in reviewing the damage areas, a 5-m (16-foot [ft]) wide transect interval was employed to provide overlapping fields of vision. This method provided complete (100 percent) coverage of the damage areas.

Soil Stratigraphy Evaluation. Damage Areas 1 and [REDACTED]

[REDACTED] This information was compared with the soil stratigraphy from previous studies to assess the potential for intact cultural deposits to still be present.

Field Recording. A combination of standardized forms and notes were used to document the post-damage review. Current conditions within the damage areas were documented by photographs, notation, and geospatial recordation.

[REDACTED] were examined during the damage assessment to record the extent of the damage and its specific impacts. This included the comparison of previous recording (Rainey and Stubing 2022) to current post-damage observations. The original 1-m-x-

1-m OUs recorded by Rainey and Stubing (2022) were revisited and rerecorded for comparative purposes. In the case of Damage Area 1, AC 1, where an original OU location was removed by construction, an additional 1-m-x-1-m OU was placed for comparative purposes. Diagnostic artifacts within all damage areas were point-located.

Photography. Digital color photographs were taken of the damage areas, surface collection units, and diagnostic artifacts.

5.2 *Quantification of Damage*

This report presents the magnitude of damage based on the following classification scale:

- **Major Damage.** Damage is classified as major if the surface disturbance is greater than or equal to 2 ft deep (60.96 cm) or [REDACTED] human remains [REDACTED]
- **Moderate Damage.** Damage is classified as moderate if the surface disturbance is less than 1 ft deep (30.48 cm) and intersects any previously recorded ACs or features, or if the surface disturbance is between 1 and 2 ft deep (30.48–60.96 cm).
- **Minor Damage.** Damage is classified as minor if the surface disturbance is less than 1 ft deep (30.48 cm) and does not intersect any previously recorded ACs or features.

Using this classification scale, the magnitude of damage for specific unauthorized construction activities, as well as the overall magnitude of damage for each damage area, is presented in Section 12, Summary and Conclusions. The overall magnitude for each damage area is based on the highest classification score.

6. Damage Area 1 Assessment

6.1 Pre-Damage Condition of [REDACTED] Damage Area 1

Damage Area 1 is [REDACTED]
[REDACTED] Damage Area 1 was documented by Class III survey in May and June 2022 (Rainey and Stubing 2022). [REDACTED]
[REDACTED] were identified within Damage Area 1 (Rainey and Stubing 2022). [REDACTED]
[REDACTED]

- ACs 1 and 2 correspond to Hackbarth and Craig's (2004) [REDACTED]
[REDACTED]
(Hackbarth and Craig 2004).
- Feature 1 is a historic/modern earthen ditch also recorded by Hackbarth and Craig (2004).
- Feature 7 is within AC 2 and may represent mechanical disturbance associated with Hackbarth and Craig's (2004) excavations.

6.2 Type and Extent of Construction Activities in [REDACTED] Damage Area 1

Damage Area 1 exhibits minor to major damage from construction activity in the [REDACTED]
[REDACTED] This area is the most intensively damaged portion of [REDACTED]
[REDACTED] in the UP ROW. Jacobs, OEA's third-party contractor, conducted assessment fieldwork at Damage Area 1 on January 18 and 19, 2024 (Figure 6). Table 2 lists the disturbances documented at Damage Area 1.

Additional discussion of the disturbance components and photographs of each type of disturbance is provided in Sections 6.2.1 through 6.2.5. Because the photo documentation of site and survey area conditions recorded by Rainey and Stubing (2022) do not always show the same directional orientation or overviews as those recorded of the damage areas, the pre-damage photographs should be considered to indicate the general location of the sites and areas shown.

Figure 6. Map of Damage Area 1

MAP REDACTED

Table 1. Overview of disturbance types within Damage Area 1

Type of Disturbance	Relative Location Within Damage Area 1	Measurements of Disturbance ^[1]	Impacts to Cultural Materials
[REDACTED]	[REDACTED]	246.8 m x 102.1 m x 0.92 m	[REDACTED]
[REDACTED]	[REDACTED]	Variable between 3.9 m x 42 m	[REDACTED]
[REDACTED]	[REDACTED]	124 m x 33.5 m x 1.5 m	[REDACTED]
[REDACTED]	[REDACTED]	571.5 m x 19.5 m	[REDACTED]
[REDACTED]	[REDACTED]	94.1 m x 3 m	[REDACTED]

^[1] Measurements are length x width x depth; if two measurements, only length x width.

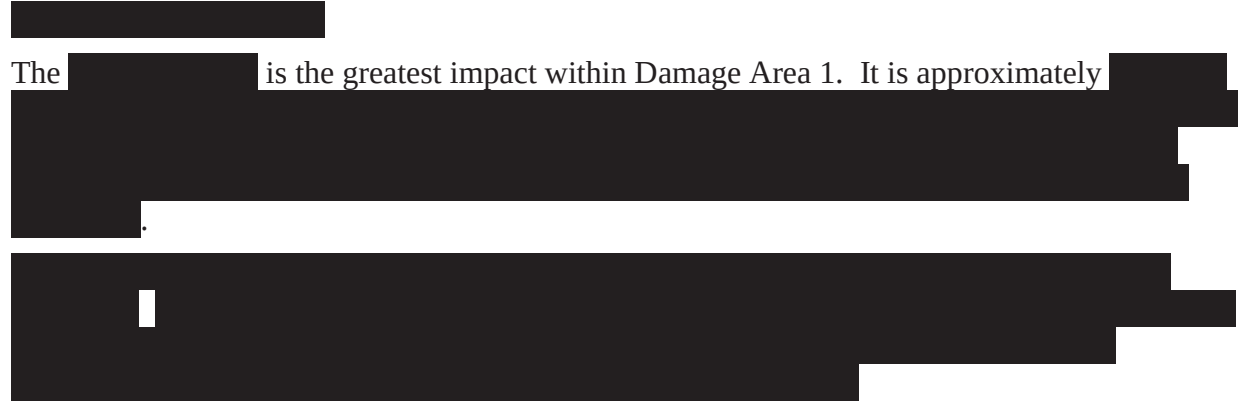


Figure 7. Pre-damage overview of Damage Area 1 in the general location of [REDACTED]. View is to the north.

PHOTO REDACTED

Figure 8. Post-disturbance overview of Damage Area 1 [REDACTED]. View is to the southwest.

PHOTO REDACTED

Figure 9. Overview of [REDACTED]. View is to the west-southwest. [REDACTED] delineated by orange fencing.



6.2.2 General Grading and Equipment Tracking

The northern and eastern sides of [REDACTED] exhibit grading and/or equipment tracking. The damage is estimated to be about 15.2 cm deep. On the eastern side of [REDACTED] grading and equipment tracking damaged portions of AC 1, AC 2, and Feature 1. Figure 10 generally depicts the grading and equipment damage on the eastern margin [REDACTED] in the vicinity of ACs 1 and 2. On the northern side [REDACTED], equipment tracking has displaced artifacts up to 30.4 cm deep. Figure 11 depicts the damaged area adjacent to the northern portion of [REDACTED].

Figure 10. General representative photo of grading and equipment tracking around east side of the [REDACTED] in Damage Area 1. View is to the southwest.

PHOTO REDACTED

Figure 11. Equipment tracking damage on the [REDACTED]. View is to the east.

PHOTO REDACTED

[REDACTED]

The [REDACTED] is located in the southeastern portion of the [REDACTED]. The origin of the [REDACTED] is unknown (Figure 12). The damage assessment surveyed the [REDACTED] with transects spaced 5 m or less. The observable soil consists of compacted angular gravel fill that is not characteristic of the surrounding native soil in Damage Area 1 (Figure 13).

The [REDACTED] is protected with silt fencing. At the time of the damage assessment, disturbance included construction vehicle tire tracks and rills [REDACTED] as a result of recent rain events. Modern construction wood was noted [REDACTED]. The originally recorded boundary of AC 1 extended within the [REDACTED].

Figure 12. Overview of the [REDACTED]. View is to the west.

PHOTO REDACTED

Figure 13. Detail of [REDACTED] in Damage Area 1 showing fill gravels and tracking

PHOTO REDACTED

6.2.4 [REDACTED] Road

At the time of the original 2022 Class III survey, [REDACTED] was along a small dirt access road approximately 15–20 feet wide located [REDACTED] (Rainey and Stubing 2022) (Figure 14). [REDACTED].

This road has now been graded, widened, and partially graveled. [REDACTED]
[REDACTED] (Figure 15). The graded road width is approximately 50 ft. The depth of damage associated with this road is approximately 15.2 cmbs. In some areas, mud was tracked along the [REDACTED] road.

Figure 14. Damage Area 1, access road in 2022 (Rainey and Stubing 2022). View is to the southeast.

PHOTO REDACTED

**Figure 15. Damage Area 1, access road grading and widening and [REDACTED]
[REDACTED] in 2024. View is to the southeast.**

PHOTO REDACTED

6.2.5 Two-track Road

One new two-track road is on the southeast side [REDACTED] Damage Area 1. This road is considered separate from the general grading and equipment damage discussed in Section 6.2.2 because it extends beyond those limits. The depth of damage associated with this road is approximately 15.2 cmbs.

The two-track road resulted from equipment tracking and crosses AC 1, AC 2, Feature 1, and Feature 7. [REDACTED]



Figure 16. Overview of two-track road on eastern side of Damage Area 1. View is to the northwest.

PHOTO REDACTED

6.3 Impacts to Cultural Resources in Damage Area 1

Damage Area 1 was intensively surveyed using pedestrian transects spaced no more than 5 m apart to record surface artifacts and document impacts to cultural resources. Table 3 outlines the impacts to cultural resources specific to damage types within Damage Area 1.

Table 2. Overview of impacts to cultural resources in Damage Area 1 by damage type

Cultural Component	Disturbance Activities				
	Grading and Equipment Tracking	General Grading and Equipment Tracking	Material Stockpile	One-track Road	Two-track Road
Surface Artifacts	Artifacts noted	Artifacts observed	One artifact noted on the surface	Numerous artifacts observed	Artifacts noted in the roadway
AC 1	Removed the northern and western half of AC 1	Damaged the remaining half of AC 1	No direct damage	Damage along the southwestern edge of AC 1	Damaged the central and southwestern portion of AC 1
AC 2	No direct damage	Damaged the northwestern portion of AC 2	No direct damage	No direct damage	Damaged the northwestern portion of AC 2
Feature 1	The northwestern portion of Feature 1 was removed	No direct damage	No direct damage	No direct damage	Damaged a portion of the northwestern extent of Feature 1
Feature 7	No direct damage	No direct damage	No direct damage	No direct damage	Road crosses northwestern extent of feature, but no damage

6.3.1 Surface Artifacts

Surface artifacts were noted in specific locations within Damage Area 1 and documented as point-located artifacts (PLs) (Figure 6; Table 4). Within ACs, only diagnostic artifacts were point-located. Previously recorded OUs were relocated and re-tallied to assess changes between 2022 and 2024. Features 1 and 7 were reassessed to compare existing conditions pre- and post-damage.

General Grading and Equipment Tracking. The PL artifacts in the grading and equipment tracking damage in Damage Area 1 are mostly sand-tempered or schist-tempered Plain wares. Sparse counts of artifacts are assigned to this spatial category, given the overlap with other damage type categories.

Surface artifacts were noted in the . Artifacts observed in the retention basin include sand- and schist-tempered Plain wares, untyped Red wares, and Buff wares. Although most of the artifacts are ceramics, one basalt flake and one granite metate fragment were documented in the .

Excavation of the removed a portion of AC 1. A large concentration of artifacts was noted near the southeastern edge where the remaining ACs are located. These artifacts were documented as PL 68 (Figures 6 and 17; Table 4). Although the context of these artifacts was disturbed as well, it is probable that they are remnant artifacts derived from AC 1. Ceramics dominate the area near the ACs, with a variety of different types including Plain wares, Red wares, Polychromes, untyped Buff wares, and untyped decorated White wares. Other artifacts noted included flaked stone and marine shell.

Figure 17. Extent of pin-flagged artifacts in along removed portion of AC 1 (PL 68). View is to the northwest.

PHOTO REDACTED

The diversity of the surface artifacts near the edge of the ACs are greater than the generally observed artifacts, including more decorated wares and lithic materials.

Road. Surface artifacts were noted along the road. The context of these artifacts maybe mixed. It is unclear whether they were uncovered during the blading and grading of the road or brought in from areas outside of Damage Area 1, but within the boundary of where extensive adjacent construction activities have been completed. Although a few scattered artifacts were noted along the length of the road, definite clusters of surface artifacts are adjacent to AC 1 and AC 3.

As would be expected, the diversity of artifacts near AC 1 is higher and includes both Plain wares and decorated wares. Decorated wares included Red wares, Polychromes, and Buff wares.

Table 3. Point-located surface artifacts within Damage Area 1

Point-Located Artifact	Area	Artifacts	Total
<i>Damage Area 1, Grading and Equipment Tracking</i>			
PL 2	N/A	Ceramic, Plain ware, schist-tempered	1
PL 9	N/A	Ceramic, Plain ware, sand-tempered rim	1
PL 15	N/A	Ceramic, Plain ware, schist-tempered	1
PL 16	N/A	Ceramic, Plain ware, sand-tempered	2

Table 3. Point-located surface artifacts within [REDACTED] Damage Area 1

Point-Located Artifact	Area	Artifacts	Total
<i>Damage Area 1, [REDACTED]</i>			
PL 3	1-m-x-1-m	Ceramic, Plain ware, sand-tempered (1) Ceramic, Red ware, sand-tempered (1)	2
PL 4	N/A	Ceramic, Plain ware, sand-tempered	1
PL 5	N/A	Ceramic, Red-on-buff ware, untyped	1
PL 6	N/A	Ceramic, Red-on-buff ware, untyped	1
PL 7	N/A	Ceramic, Plain ware, sand-tempered	1
PL 8	N/A	Flaked stone, fine-grained basalt flake, noncortical	1
PL 10	N/A	Ceramic, Plain ware, sand-tempered	1
PL 11	3 x 1	Ceramic, Plain ware, sand-tempered (3)	3
PL 12	10 x 5 m	Ceramic, Plain ware, sand-tempered (7)	7
PL 13	N/A	Ceramic, Plain ware, sand-tempered	1
PL 14	N/A	Ceramic, Plain ware, sand-tempered	1
PL 17	N/A	Ground stone, metate, granite	1
PL 18	4 x 2 m	Ceramic, Plain ware, sand-tempered	3
PL 26	N/A	Ceramic, Plain ware, schist-tempered	1
PL 67	2.6 m	Ceramic, Plain ware, sand-tempered (10) Ceramic, Plain ware, schist-tempered (2) Ceramic, Buff ware, untyped (1)	13
PL 66 (may be associated with AC 2), but in retention basin	145 m x 148 m	Ceramic, Plain ware, schist-tempered (12) Ceramic, Plain ware, sand-tempered (28) Ceramic, Red ware, schist-tempered (4) Ceramic, Red ware, sand-tempered (11) Ceramic, Buff ware, untyped (3) Ceramic, Red-on-buff ware, untyped (1) Ceramic, Polychrome, untyped (1) Flaked stone, basalt, multidirectional core (1)	61

Table 3. Point-located surface artifacts within [REDACTED] Damage Area 1

Point-Located Artifact	Area	Artifacts	Total
PL 68 (east wall of retention basin on cut wall of AC 1)	3.4 m x 70 m	Ceramic, Plain ware, schist-tempered (34) Ceramic, Plain ware, sand-tempered (67) Ceramic, Black-on-white, untyped (7) Ceramic, Red ware, sand-tempered (16) Ceramic, Red ware, schist-tempered (3) Ceramic, Polychrome, untyped (6) Flaked stone, fine-grained basalt, noncortical (6) Flaked stone, fine-grained basalt, cortical (1) Marine shell, unworked fragment (1)	141
N/A		Ceramic, Plain ware, sand-tempered	1
<i>Damage Area 1, [REDACTED] Road</i>			
PL 57	60 m x 396 m	Ceramic, Polychrome, untyped (4) Ceramic, Plain ware, sand-tempered (26) Ceramic, Plain ware, schist-tempered (37) Ceramic, Red ware, sand-tempered (19) Ceramic, Red ware, schist-tempered (6) Ceramic, Red-on-buff ware, untyped (2) Flaked stone, basalt, noncortical flake (1)	91
PL 58	N/A	Ceramic, Plain ware, schist-tempered	1
PL 59	N/A	Ceramic, Plain ware, schist-tempered	1
PL 60	N/A	Ceramic, Red-on-buff ware, untyped rim	1
PL 61	N/A	Ceramic, Plain ware, schist-tempered	1
PL 62	N/A	Ceramic, Buff ware, untyped	1
PL 63	N/A	Ceramic, Plain ware, schist-tempered	1
PL 64	N/A	Ceramic, Plain ware, schist-tempered	1
PL 65	N/A	Ceramic, Plain ware, schist-tempered	1
<i>Damage Area 1, AC 1, Diagnostic Artifacts</i>			
PL 1	3 x 1 m	Ceramic, Plain ware, sand-tempered (4) Flaked stone, fine-grained basalt flake (1)	5
PL 19	N/A	Ceramic, Polychrome, untyped	1
PL 20	N/A	Marine shell, unworked fragment	1
PL 21	N/A	Ceramic, Polychrome, untyped	1

Table 3. Point-located surface artifacts within [REDACTED] Damage Area 1

Point-Located Artifact	Area	Artifacts	Total
PL 22	1 x 2 m	Ceramic, Polychrome, untyped (2) Marine shell, unworked fragment (1)	3
PL 23	N/A	Ceramic, Polychrome, untyped	1
PL 24	N/A	Ceramic, Polychrome, untyped	1
PL 25	N/A	Raw schist material	1
PL 27	N/A	Ceramic, Black-on-white, untyped	1
PL 28	N/A	Flaked stone, fine-grained basalt, core	1
PL 29	1 x 1 m	Ceramic, Black-on-white, untyped (2) Marine shell, unworked fragment (1)	3
PL 30	1 x 1 m	Ceramic, Polychrome, untyped (1) Marine shell, unworked fragment (1)	2
PL 31	N/A	Ground stone, metate fragment, granite	1
PL 32	N/A	Marine shell, unworked fragment	1
PL 33	N/A	Ceramic, Polychrome, untyped	1
PL 34	N/A	Ceramic, Polychrome, untyped rim	1
PL 35	N/A	Ceramic, Polychrome, untyped	1
PL 36	N/A	Flaked stone, fine-grained basalt, core/ hammerstone	1
PL 37	N/A	Ceramic, Black-on-white, untyped	1
PL 38	N/A	Ceramic, Polychrome, untyped	3
PL 39	N/A	Flaked stone, fine-grained basalt, core	1
PL 40	N/A	Ceramic, Red-on-buff ware, untyped	1
PL 41	N/A	Ceramic, Black-on-white, untyped	1
<i>Damage Area 1, AC 2, Diagnostic Artifacts</i>			
PL 42	N/A	Ceramic, Black-on-white, untyped	1
PL 43	N/A	Ceramic, Black-on-white, untyped	1
PL 44	N/A	Ceramic, Black-on-white, untyped	2
PL 45	N/A	Ceramics, Polychrome, untyped	1
PL 46	N/A	Ceramic, Black-on-white, untyped	1
PL 47	N/A	Marine shell, unworked fragment	1
PL 48	N/A	Ceramic, Polychrome, untyped	1
PL 49	N/A	Ceramic, Buff ware, untyped	1

Table 3. Point-located surface artifacts within [REDACTED] Damage Area 1

Point-Located Artifact	Area	Artifacts	Total
PL 50	N/A	Ceramic, Black-on-white, untyped	1
N/A	7.4 m x 6.8 m	[REDACTED]	1

6.3.2 AC 1

Approximately 0.46 acres (the northern and western portions) of AC 1 were destroyed by the excavation of the [REDACTED] in Damage Area 1 (Figure 6; Figures 18 and 19). Artifacts were noted along the southeastern [REDACTED] where AC 1 had been located (designated as PL 68, Figure 17; Table 4). Rainey and Stubing (2022) documented the general artifact assemblage using three OUs within AC 1. Two of the original OUs were identified and relocated in 2024 (OU 1 and OU 2). However, OU 3 was removed by construction of the [REDACTED] and a new OU (OU 3a) was created to describe the artifacts still present within AC 1. Table 5 tabulates these artifacts compared to the original recording by Rainey and Stubing (2022).

Diagnostic surface artifacts were recorded in AC 1 as point-located artifacts outside of the OUs. These include decorated ceramic wares including Polychromes, Red wares, Black-on-white, and Red-on-buff wares. While Black-on-white wares were documented, given their quantity, these may represent Polychrome wares that do not show red decorative elements.

Other point-located artifacts noted in AC 1 include a granite metate and unworked marine shell fragments (*Glycymeris* sp.). Raw schist material, used for tempering Plain ware and Red ware ceramics, was also documented. This material occurs to the south of the project limits within the Gila River Indian Community reservation. One schist cobble is present in [REDACTED] at AC 1 (PL 68). At the least, this represents a manuport. It may also indicate an underlying feature element (Figure 20).

Generally, the quantity and diversity of artifacts observed in the AC 1 OUs noticeably decreased between the Rainey and Stubing (2022) survey and the 2024 damage assessment. As demonstrated in Tables 4 and 5, surface artifacts were removed during excavation of the [REDACTED] and also displaced by the disturbance of surface grading and equipment tracking.

Figure 18. Overview of AC 1, pre-damage. View is to the northwest.

PHOTO REDACTED

Figure 19. Overview of existing conditions in AC 1, post-damage. View is to the west.

PHOTO REDACTED

Table 4. Pre-and post-disturbance comparison of recorded artifacts within Damage Area 1, AC 1

Artifacts	OU 1 ^[1]	OU 2 ^[1]	OU 3 ^[1]	OU 3a ^[2]	Total
<i>Ceramics</i>					
Ceramic, Plain ware, sand-tempered	13 (4)	4 (14)	(12)	11	28 (30)
Ceramic, Plain ware, sand-tempered jar rim	0 (0)	0 (0)	(1)	0	0 (1)
Ceramic, Plain ware, schist-tempered	4 (8)	0 (18)	(10)	3	7 (36)
Ceramic, Red ware, sand-tempered	2 (6)	0 (5)	(6)	2	4 (17)
Ceramic, Red ware, sand-tempered, jar rim	0 (0)	0 (1)	(0)	0	0 (1)
Ceramic, Red ware, jar shoulder	0 (0)	0 (0)	(1)	0	0 (1)
Ceramic, Red ware, sand-tempered, bowl rim	0 (0)	0 (1)	(0)	0	0 (1)
Ceramic, Red ware, schist-tempered	0 (3)	0 (0)	(2)	0	0 (5)
Ceramic, Salado Polychrome	0 (1)	0 (3)	(0)	1	1 (4)
Ceramic, Black-on-white, untyped	1 (0)	4 (0)	(0)	1	5 (0)
<i>Flaked Stone</i>					
Flaked stone, basalt, core	0 (1)	0 (1)	(0)	0	0 (2)
Flaked stone, basalt, cortical	0 (0)	0 (0)	(1)	0	0 (1)
Flaked stone, fine-grained basalt, noncortical	1 (1)	0 (2)	(0)	0	1 (3)
<i>Shell</i>					
Marine shell, <i>Glycymeris</i> sp., unworked	0 (0)	0 (0)	(0)	1	1 (0)

Totals	20 (26)	8 (52)	(33)	19	47 (111)
--------	---------	--------	------	----	----------

^[1]The artifact count in parentheses represents the original recording from Rainey and Stubing (2022).

^[2]This is a newly recorded OU, given that the original OU 3 was completely removed by retention basin excavation.

Figure 20. Detail of schist cobble in the [REDACTED] at AC 1
PHOTO REDACTED

6.3.3 AC 2

The construction of the [REDACTED] did not directly impact AC 2. However, damage was noted within AC 2 in the form of grading, equipment tracking, and a two-track road. Rainey and Stubing (2022) documented the general artifact assemblage using two OUs in AC 2. Both OUs were relocated and re-inventoried as part of the current damage assessment. Table 5 tabulates these artifacts compared to the original recording by Rainey and Stubing (2022).

Diagnostic surface artifacts were also recorded in AC 2 as point-located artifacts outside of the OUs. These include decorated ceramic wares including Polychromes, Black-on-white, and Red-on-buff wares, as well as an unworked marine shell fragment. While Black-on-white wares were documented, given their quantity, these may represent Polychrome wares that do not show red decorative elements.

The quantity and diversity of artifacts observed in the AC 2 OUs noticeably decreased between Rainey and Stubing (2022) survey and the 2024 damage assessment. As listed in Table 6, surface artifacts have been displaced by the disturbance of surface grading, equipment tracking, and a two-track road. Figures 10 and 21 provide photographs of pre-and post-damage at AC 2.

Table 5. Pre-and post-disturbance comparison of recorded artifacts within Damage Area 1, AC 2

Artifacts	OU 4 ^[1]	OU 5 ^[1]	Total
<i>Ceramics</i>			
Plain ware, sand-tempered	11 (15)	12 (2)	23 (17)
Plain ware, sand-tempered jar rim	0 (1)	0 (0)	1 (0)
Plain ware, sand-tempered bowl rim	0 (1)	0 (0)	1 (0)
Plain ware, schist-tempered	3 (11)	2 (5)	5 (16)
Red ware, sand-tempered	0 (9)	2 (1)	2 (10)
Red ware, sand-tempered bowl rim	0 (0)	0 (2)	0 (2)
Red ware, schist-tempered	0 (1)	0 (0)	0 (1)
Salado Polychrome	0 (3)	0 (1)	0 (4)
San Carlos Red-on-brown ware	0 (1)	0 (0)	0 (1)
<i>Flaked Stone</i>			
Fine-grained basalt, cortical	0 (1)	0 (0)	0 (1)
Fine-grained basalt, noncortical	0 (4)	0 (0)	0 (4)
Black chert, core fragment	0 (1)	0 (0)	0 (1)
<i>Other</i>			
Fire-cracked rock, vesicular basalt	0 (1)	0 (0)	0 (1)
Total	14 (49)	17 (11)	31 (60)

^[1] The artifact count in parentheses represents the original recording from Rainey and Stubing (2022).

Figure 21. Pre-damage condition of AC 2. View is to the northeast.

PHOTO REDACTED

6.3.4 Feature 1

Feature 1 is a modern/historic ditch that extends across Damage Area 1 (Figure 22). The ditch was recorded both by Hackbarth and Craig (2004) and Rainey and Stubing (2022). The northwestern edge of Feature 1 was removed during excavation of [REDACTED] (Figure 23). Approximately 72.5 m of Feature 1 was removed by the [REDACTED]. Along its extant portion, grading, equipment tracking, and a two-track road have further damaged an additional 7.9 m. Feature 1 was additionally damaged by construction activities in Damage Area 4.

Figure 22. Overview of Feature 1 in the vicinity of Damage Area 1. View is to the southeast.

PHOTO REDACTED

Figure 23. Overview of Feature 1 in Damage Area 1, post-damage. View is to the southeast.

PHOTO REDACTED

6.3.5 Feature 7

Feature 7 was recorded by Rainey and Stubing (2022) as an amorphous, slightly deflated area with low berms within AC 2 (Figure 24). Feature 7 was interpreted by Rainey and Stubing (2022) as possibly representing remnants of Hackbarth and Craig's (2004) investigations. While Feature 7 was crossed by a two-track road in Damage Area 1, no damage to this feature was noted (Figure 25).

Figure 24. Overview of Feature 7. No damage to this feature has occurred in Damage Area 1. View is to the north.

PHOTO REDACTED

Figure 25. Overview of Feature 7, showing current conditions. View is to the north.

PHOTO REDACTED



6.4 Damage Area 1 Impact Summary and Implications

6.4.1 Stratigraphic Observations

The unauthorized construction activities in Damage Area 1 resulted in minor to major surface disturbance in the UP ROW. As discussed in Section 3.2.1, Hackbarth and Craig (2004) and Hart and Craig (2003, 2006) provide stratigraphic observations for [REDACTED] within Damage Area 1. As described by Hart and Craig (2003, 2006), Stratum I at 0 to 25 cmbs is a tannish sandy silt overlaying the cultural horizon. Stratum II at 25 to 90 cmbs is a fine-grained, compact, gray-brown sandy silt and represents the cultural horizon, containing features identified by Hackbarth and Craig (2004) and Hart and Craig (2003, 2006). Stratum III at 90 cmbs+ is a tan-brown silty sand.

The soil recorded at Damage Area 1 includes a brown to gray-brown silty sand to sandy silt with light to moderate amounts of gravel with patches of dense gravel. As exposed in [REDACTED], this stratigraphic horizon extends to a depth of 92 cmbs. A sand-tempered Plain ware sherd, part of PL 1, was identified in [REDACTED] at 8 cmbs. Other

artifacts observed in the [REDACTED] also part of PL 1, were 3 sand-tempered Plain ware and a cortical obsidian primary flake identified from 50 to 58 cmbs.

6.4.2 Summary of Damage and Archaeological Potential

Minor to major damage occurred in Damage Area 1 in the UP ROW. As documented by Rainey and Stubing (2022), several concentrations and features were present in this area prior to damage in this location. Surface soil and the subsurface profile of the retention basin observed by the damage assessment generally conforms to that described by Hackbarth and Craig (2004) and Hart and Craig (2003, 2006) as the cultural horizon (Stratum III).

Damage Area 1 includes the following types of disturbance to [REDACTED]:

- [REDACTED] resulted in major damage to [REDACTED]. The depth of the [REDACTED] is 0.92 m. Large amounts of soil and artifacts, portions of surface features (AC 1 and Feature 1) and known subsurface features (Hackbarth and Craig 2004) were removed by this disturbance.
- **General Grading and Equipment Tracking.** These activities resulted in minor to moderate damage to [REDACTED]. The depth of disturbance associated with these activities is between 15.2 and 30 cmbs and soil generally conforms to exposed Stratum II (cultural horizon) soils. It is likely that artifacts were displaced by these activities. These activities have damaged portions of AC 1, AC 2, and Feature 1.
- [REDACTED] This activity resulted in major damage to [REDACTED]. The disturbance is 1.5 m high and soils are from mixed contexts that most likely include Stratum II (cultural horizon) soils. It is likely artifacts were displaced by the activity. It is unknown if damage to intact cultural deposits occurred.
- [REDACTED] **Road.** The widening and grading of the [REDACTED] road from a smaller two-track to a constructed access road resulted in minor damage to [REDACTED]. The road is associated [REDACTED]. The depth of disturbance associated with the pipeline road is up to 15.2 cmbs and soil generally conforms to exposed Stratum II (cultural horizon) soils. It is likely that artifacts were displaced by these activities. It is unknown if damage to intact cultural deposits occurred.
- **Two-Track Road.** This activity resulted in minor to major damage to [REDACTED]. The depth of disturbance associated with this activity is up to 15.2 cmbs and soil generally conforms to exposed Stratum II (cultural horizon) soils. It is likely that artifacts were displaced by these activities. The activity damaged portions of AC 1, AC 2, Features 1 and 7. [REDACTED]

Major damage occurred to [REDACTED] in Damage Area 1 from the [REDACTED] which removed known subsurface features originally identified, but not excavated by, Hackbarth and Craig (2004) as well as portions of known surface features (AC 1 and Feature 1). Archaeological research has shown that this area had been a habitation area for the Huhugam during the Preclassic and Classic periods. Additionally, [REDACTED]

Based on the examination of cultural stratigraphy noted by other researchers in the vicinity of this portion [REDACTED] (Hackbarth and Craig 2004; Hart and Craig 2003, 2006), it is unlikely that intact subsurface deposits exist below the [REDACTED] within Damage Area 1.

The [REDACTED] within Damage Area 1 is also interpreted as major damage. While the origin of these materials is unknown, the likelihood that at least portions of these materials were derived from [REDACTED] is high.

Beyond the limits of the [REDACTED], minor to moderate damage to cultural resources occurred in Damage Area 1 as a result of grading, equipment tracking, and road construction. However, the potential for intact subsurface deposits still exists in these portions of Damage Area 1.

7. Damage Area 2 Assessment

7.1 Pre-Damage Condition of [REDACTED] Damage Area 2

Damage Area 2 is located on [REDACTED] (Figure 26). The southern portion of Damage Area 2 is within the boundary of [REDACTED]. Damage Area 2 was documented by a Class III survey in May and June 2022 (Rainey and Stubing 2022). At the time of the Class III survey, the area was in a fallow agricultural field, with remnant vegetation causing fair visibility (less than 50 percent) (Rainey and Stubing 2022:40). The Class III survey only observed a few scattered artifacts. These were not individually quantified during the fieldwork given that they were within the [REDACTED] boundary and were not diagnostic.

Because the photo documentation of site and survey area conditions recorded by Rainey and Stubing (2022) do not always show the same directional orientation or overviews as those recorded of the damage areas, the pre-damage photographs should be considered to indicate the general location of the sites and areas shown.

7.2 Type and Extent of Construction Activities in [REDACTED] Damage Area 2

Damage Area 2 exhibits minor to major damage from construction activity in the UP ROW both within and outside of the site boundary of [REDACTED]. Jacobs, OEA's third-party contractor, conducted assessment fieldwork at Damage Area 2 on January 16, 2024. Disturbances documented at Damage Area 2 include construction of a [REDACTED], surface grading and equipment tracking, excavation of a [REDACTED], and road construction. The disturbance area within Damage Area 2 is 10.71 acres. Measurements, locational information, and potential impacts to cultural resources are provided in Table 7. Sections 7.2.1 through 7.2.6 include additional discussion of the disturbance components.

Table 6. Overview of the types of disturbance within Damage Area 2

Type of Disturbance	Relative Location to Boundary of [REDACTED]	Measurements of Disturbance ^[1]	Impacts to Cultural Materials
[REDACTED]	[REDACTED]	[REDACTED] 371.8 m x 207.8 m x 0.6096 m [REDACTED] 80.1 m long [REDACTED] 174.9 m long	PL 1 [REDACTED], PL 5 [REDACTED] [REDACTED]
General grading, dirt access road, and equipment tracking	Within and outside of the northern portion of site boundary in the eastern portion of Damage Area 2	Bladed corridor 155.1 m x 4.5 m	PL 2, PL 3, PL 4

Table 6. Overview of the types of disturbance within Damage Area 2

Type of Disturbance	Relative Location to Boundary of [REDACTED]	Measurements of Disturbance ^[1]	Impacts to Cultural Materials
Graveled, graded, and widened primary construction access road	Outside of site boundary north of Damage Area 2	Northern road segment 207.5 m x 9.1 m	None recorded
Drainage channel	Within northern portion of site boundary in the southeastern portion of Damage Area 2	51.54 m x 2.25 m x 66 cm	None recorded
Mud tracking	Within northern portion of site boundary in the eastern and southeastern portions of Damage Area 2	10.4 m x 8 m 7.25 m x 14.6 m 11.1 m x 30.2 m	None recorded
Gravel staging area	Outside of site boundary to the east of Damage Area 2	160.3 m x 57.9 m	None recorded

^[1] Measurements are length x width x depth, if two measurements only length x width.

Figure 26. Map of Damage Area 2

FIGURE REDACTED

7.2.1 Retention Basin

The excavation of the retention basin resulted in major damage to [REDACTED] within Damage Area 2 (Figures 27 and 28). Appendix B provides a detailed civil survey of the [REDACTED]. The depth of the [REDACTED] is approximately 60.96 cmbs. [REDACTED] are approximately 30 cm higher than the surrounding landscape.

Figure 27. Damage Area 2, pre-disturbance, showing the location of the [REDACTED] as recorded by Rainey and Stubing (2022). View is to east.

PHOTO REDACTED

Figure 28. Damage Area 2, post-disturbance, showing the [REDACTED] View is to the south.

PHOTO REDACTED

7.2.2 Grading and Equipment Tracking

Surface grading is present along the northern and eastern margins of the [REDACTED] with Damage Area 2. At the time of the Class III survey conducted by Rainey and Stubing (2022), this area was in a fallow agricultural field (Figure 27). Figure 29 shows the current conditions of this area.

The depth of disturbance from the surface blading and equipment tracking is approximately 15.2 cmbs. A graded access road also extends along the [REDACTED]; however, given that the footprint and depth of the access road disturbance is consistent with the grading and equipment tracking damage, it is included with the description of this damage type.

Figure 29. Overview of grading and equipment tracking damage on the east side of the Damage Area 2 [REDACTED] View is to north.

PHOTO REDACTED

7.2.3 Primary Construction Access Road

At the time of the Class III survey (Rainey and Stubing 2022), a dirt access road [REDACTED] (Figure 30). In the UP ROW, this road was widened and graveled to serve as a construction access road [REDACTED] (Figure 31). Based on the observance of berms on the south side of the road, approximately 30 cm were removed to construct the road. While this road is north of the boundary [REDACTED] it is included in the discussion of Damage Area 2 given that it demonstrates a continuous damage footprint. Access to this roadway was closed by UP in August 2023 with concrete barricades.

Figure 30. Overview of the two-track access road observed during the Class III survey. Foreground shows Isolated Occurrence 6 with the road in the background. View is to the northeast.

PHOTO REDACTED

Figure 31. Overview of widened and graveled construction access road [REDACTED] [REDACTED] Note depth of disturbance demonstrated by roadway berm. View is to the east.

PHOTO REDACTED

7.2.4 Drainage Channel

At the time of the Class III survey (Rainey and Stubing 2022), this area was in a fallow agricultural field (Figure 27). In the UP ROW, a drainage channel was excavated in the southeastern portion of Damage Area 2 (Figure 32). This is within the boundary of [REDACTED]. The drainage channel is generally V-shaped in cross-section and is up to 66 cm deep. The drainage channel extends beyond the UP ROW to a newly constructed basin located to the east.

**Figure 32. Drainage channel in Damage Area 2, within the boundary [REDACTED]
View is to the east.**

PHOTO REDACTED

7.2.5 Mud Tracking

At the time of the Class III survey (Rainey and Stubing 2022), this area was in a fallow agricultural field (Figure 27). Deep ruts from equipment tracking in wet conditions are present within the boundary of [REDACTED] in the UP ROW. This damage type is separated from grading and equipment tracking damage due to the depth of the disturbance, which extends up to 60.10 cm. Figure 33 shows an overview of the mud tracking damage in the southeastern portion of Damage Area 2.

Figure 33. Overview of mud tracking damage in southeastern portion of Damage Area 2. View is to the east.

PHOTO REDACTED

7.2.6 Gravel Staging Area

At the time of the Class III survey conducted by Rainey and Stubing (2022), the UP ROW [REDACTED] was mostly in a fallow agricultural field (Figure 27). In Damage Area 2, a gravel staging area has been established in the UP ROW (Figure 34). While this gravel staging area is northeast of the boundary [REDACTED] it is included in the discussion of Damage Area 2 given that it demonstrates a continuous damage footprint.

Depth of disturbance associated with this gravel staging area is up to 7.6 cmbs and resulted from grading and gravel spreading. Most of the staging area is located outside of the project limits.

Figure 34. Overview of gravel staging area in Damage Area 2, outside the boundary of [REDACTED] View is to the east.

PHOTO REDACTED

7.3 Impacts to Cultural Resources in Damage Area 2

Damage Area 2 was intensively surveyed using pedestrian transects spaced no more than 5 m apart to document impacts to cultural resources. No ACs or features were observed in Damage Area 2 at the time of the Class III survey (Rainey and Stubing 2022), and none were identified by the damage assessment fieldwork.

At the time of the Class III survey, only a few scattered artifacts were observed in the general location of Damage Area 2. These were not individually quantified during the fieldwork given that they were within the [REDACTED] boundary and were not diagnostic. The findings of the damage assessment are consistent with the original recording. A total of five point-located artifacts were noted within Damage Area 2 (Table 8; Figure 26). These artifacts are consistent with the other artifacts noted within site [REDACTED]

Table 7. Artifacts observed within Damage Area 2

Point Locations (PL)	Artifacts			
	Plain ware, schist-tempered	Plain ware, sand-tempered	Buff ware, untyped	Total
PL 1	-	1	-	1
PL 2	-	-	1	1
PL 3	1	-	-	1
PL 4	-	-	1	1
PL 5	-	1	-	1
Total	1	2	2	5

7.4 Damage Area 2 Impact Summary and Implications

7.4.1 Stratigraphic Observations

The unauthorized construction activities in Damage Area 2 resulted in minor to major surface disturbance in the UP ROW. As detailed in Section 3.2.2, Kerns (1994) and Phillips (2000) provide stratigraphic observations for [REDACTED] west of Damage Area 2. As described by Phillips (2000), Stratum I at 0 to 25 cmbs is a disturbed light brown silt loam overlaying the cultural horizon. Stratum II at 25 to 90 cmbs is a compact light brown silt loam becoming more calcareous with depth and represents the cultural horizon, containing features identified by Greenwald et al. (1994). Stratum III at 90 to 120 cmbs is a lightly compact reddish-brown silty clay with caliche accumulation. A burned log identified at a depth of 1 m returned a date of 2455 to 2409 BC.

The soil recorded at Damage Area 2 includes a compact light tan sandy silt that generally corresponds to Phillip's (2000) Stratum II. As exposed in the [REDACTED], this stratigraphic horizon extends to a depth of 61 cmbs. PL 5, a sand-tempered Plain ware sherd, was identified in the side wall of the retention basin at 3 cmbs.

7.4.2 Summary of Damage and Archaeological Potential

Minor to major disturbance occurred in Damage Area 2 in the UP ROW within and outside of the boundary of [REDACTED]. As documented by Rainey and Stubing (2022), a low-density artifact scatter was present in this area prior to the damage in this location. Surface soil and the subsurface profile of the [REDACTED] observed by the damage assessment generally conforms to that described by Kerns (1994) and Phillips (2000) as the cultural horizon (Stratum II).

Damage Area 2 includes the following types of disturbance to [REDACTED]

- [REDACTED] The construction of the [REDACTED] resulted in major damage to [REDACTED]. The depth of the [REDACTED] is 0.6 m. Large amounts of soil and artifacts and potential intact deposits were likely displaced by this disturbance.
- **General Grading, Equipment Tracking, and Dirt Access Road.** These activities resulted in minor damage to [REDACTED]. The depth of the disturbance associated with these activities is up to 15.2 cmbs and soil generally conforms to exposed Stratum II (cultural horizon) soils. It is likely that artifacts were displaced by these activities. It is unknown if damage to intact cultural deposits occurred.
- **Primary Construction Access Road.** The widening and grading of the construction access road from a smaller two-track road to a fully designed and constructed access road with berms is outside of the boundary of [REDACTED] but was included in this damage assessment because of the continuity of the damage footprint. The depth of the disturbance associated with this road is up to 30 cmbs and soil generally conforms to exposed Stratum II (cultural horizon) soils; however, it is outside of the site boundary and no known damage to the site occurred.
- **Drainage Channel.** The construction of the drainage channel resulted in moderate damage to [REDACTED]. The depth of the disturbance associated with the drainage channel is up to 66 cmbs and soil generally conforms to exposed Stratum II (cultural

horizon) soils. It is likely that artifacts were displaced by these activities. It is unknown if damage to intact cultural deposits occurred.

- **Mud Tracking.** Damage associated with equipment tracking in wet conditions resulted in moderate damage to [REDACTED]. The depth of the disturbance associated with the mud tracking is up to 60 cmbs and soil generally conforms to exposed Stratum II (cultural horizon) soils. It is likely that artifacts were displaced by these activities. It is unknown if damage to intact cultural deposits occurred.
- **Gravel Staging Area.** The construction of the gravel staging area is outside of the boundary of [REDACTED] but was included in this damage assessment given the continuity of the damage footprint. The depth of the disturbance associated with the gravel staging area is up to 7.8 cmbs. No intact surface soil was observed.

Excavation of the [REDACTED] resulted in major damage to [REDACTED] in Damage Area 2. Additionally, Damage Area 2 [REDACTED]

However, based on the examination of cultural stratigraphy noted by other researchers in the vicinity of this portion of [REDACTED] the potential remains for intact subsurface deposits in the [REDACTED] within Damage Area 2.

Beyond the limits of the [REDACTED], minor damage to cultural resources occurred in Damage Area 2 as a result of grading, equipment tracking, and a dirt access road. Moderate damage occurred as result of mud tracking and the excavation of the drainage channel. However, the potential for intact subsurface deposits still exists in these portions of Damage Area 2.

8. Damage Area 3 Assessment

8.1 Pre-Damage Condition of [REDACTED] Damage Area 3

Damage Area 3 is located on [REDACTED]. Damage Area 3 was documented by Class III survey in May and June 2022 (Rainey and Stubing 2022). At the time of the Class III survey, the area was almost completely confined to a fallow agricultural field, with remnant vegetation causing fair visibility (approximately 50 percent) (Rainey and Stubing 2022). The Class III survey resulted in the extension of the boundary of [REDACTED] in the UP ROW, as defined by a sparse number of surface artifacts over an area measuring approximately 688 m (east-west) by 69 m (north-south). Artifacts observed during the survey consisted of 8 schist-tempered Plain wares, 1 sand-tempered Plain ware, 1 untyped Buff ware, and 1 flaked stone tool. All the ceramic sherds observed were small, measuring less than 1 to 2 cm, indicating plow disturbance. Additionally, several historic glass bottle fragments were noted, indicating continued use of the area through time.

Damage Area 3 is shown on Figure 35. Because the photo documentation of site and survey area conditions recorded by Rainey and Stubing (2022) do not always show the same directional orientation or overviews as those recorded of the damage areas, the pre-damage photographs should be considered to indicate the general location of the sites and areas shown.

Figure 35. Map of Damage Area 3

FIGURE REDACTED

FIGURE REDACTED

8.2 Type and Extent of Construction Activities in [REDACTED] Damage Area 3

Minor disturbance occurred in Damage Area 3 in the UP ROW. Jacobs, OEA's third party contractor, conducted assessment fieldwork at Damage Area 3 on January 10, 2024. Disturbance documented at Damage Area 3 includes surface blading and equipment tracking, use of the area for equipment storage, widening and graveling of a primary construction access road (also described in Damage Area 2), material stockpiles, and remnant fill piles. The disturbance area for Damage Area 3 comprises 3.64 acres. Measurements, locational information, and potential impacts to cultural resources are provided in Table 9. Sections 8.2.1 through 8.2.4 include additional discussion of the disturbance elements.

Table 8. Overview of disturbance types within Damage Area 3

Type of Disturbance	Relative Location Within [REDACTED]	Measurements of Disturbance ^[1]	Impacts to Cultural Materials
Surface grading, equipment tracking, equipment staging/storage, and access roads	Throughout Damage Area 3, both within and surrounding the eastern portion of [REDACTED]	724 m x 180 m	Uncovered ceramics and ground stone
Primary construction access road	Within the eastern portion of [REDACTED]	51.8 m x 7.0 m (east-west segment) 42.0 m x 7.0 m (north-south segment)	None identified
Material stockpiles (7)	Within the eastern portion of [REDACTED]	Stockpile 1 – 4.5 m x 3.5 m x 0.6 m Stockpile 2 – 3.9 m x 2.4 m x 0.6 m Stockpile 3 – 4.4 m x 3.3 m x 0.6 m Stockpile 4 – 4.5 m x 3.6 m x 0.9 m Stockpile 5 – 4.4 m x 3.3 m x 0.7 m Stockpile 6 – 4.8 m x 4.4 m x 0.6 m Stockpile 7 – 4.4 m x 3.8 m x 0.4 m	PL 5, PL 7

Table 8. Overview of disturbance types within Damage Area 3

Type of Disturbance	Relative Location Within [REDACTED]	Measurements of Disturbance ^[1]	Impacts to Cultural Materials
Remnant fill piles (3)	Within the eastern portion of [REDACTED]	Remnant Fill Pile 1 – 4.8 m x 12.1 m Remnant Fill Pile 2 – 5.4 m x 15.5 m Remnant Fill Pile 3 – 4.8 m x 12.1 m	None identified

^[1] Measurements are length x width x depth, if two measurements only length x width.

8.2.1 Surface Grading, Equipment Tracking, Equipment Storage/Staging, and Dirt Access Roads

Surface grading and equipment tracking is present throughout Damage Area 3. At the time of the Class III survey conducted by Rainey and Stubing (2022), this area was almost completely confined to a fallow agricultural field (Figure 36). Figures 37 and 38 and show the equipment storage use and current conditions of this area.

The depth of disturbance from the surface blading and equipment tracking is approximately 15.2 cmbs. Graded dirt access roads are within the northern, southern, and eastern margins of Damage Area 3. However, given that the footprint and depth of the road disturbance is consistent with the grading and equipment tracking damage, it is included with the description of this damage type.

In the UP ROW, Damage Area 3 was also subject to equipment storage and staging by adjacent private developers. Equipment was removed under the supervision of a qualified archaeological monitor.

Figure 36. Pre-damage conditions in the vicinity of [REDACTED] at the time of the Class III survey. View looking west-northwest.

PHOTO REDACTED

Figure 37. Damage Area 3, equipment storage and staging within [REDACTED].

PHOTO REDACTED

Figure 38. Overview of Damage Area 3 in the boundary of [REDACTED] showing grading and equipment tracking damage. View is to the west.

PHOTO REDACTED

8.2.2 Primary Construction Access Road

At the time of the Class III survey (Rainey and Stubing 2022), a dirt access road extended along the [REDACTED] (Figure 30, Figure 31, and Figure 39). In the UP ROW, this road was widened and graveled to serve as a construction access road leading to [REDACTED]. Based on the observance of berms on the south side of the road, approximately 30 cm were removed to construct the road. In Damage Area 3, the road extends through the [REDACTED] boundary in two locations: a north-south corridor and an east-west corridor. Access to this roadway was closed by UP in August 2023 with concrete barricades.

Figure 39. North-south construction access road in Damage Area 3, pre-disturbance. This is within the boundary of [REDACTED] View is to the north.

PHOTO REDACTED

8.2.3 Material Stockpiles

A series of seven material stockpiles is present within the boundary of [REDACTED] within Damage Area 3. The origin of the material in these piles is unclear. They may represent bladed soil from the site, or they may have been dumped on the site surface from an external source. They range in height from 40.64 to 91.44 cm. Figure 40 provides a representative photo of one of the material stockpiles.

Figure 40. Material Stockpile 1 within Damage Area 3, [REDACTED] View is to the east.

PHOTO REDACTED

8.2.4 Remnant Fill Piles

Three locations in Damage Area 3 in the boundary of [REDACTED] represent the remnants of imported fill gravels that were stockpiled in this location when it was used for equipment storage and staging. These remnant fill piles are atop the graded surface of Damage Area 3. The boundaries of the gravel areas are diffuse. Figure 41 provides a representative photograph of Remnant Fill Pile 1.

Figure 41. Overview of Remnant Fill Pile 1 in Damage Area 3 within the boundary of [REDACTED] View is to the south.

PHOTO REDACTED

8.3 Impacts to Cultural Resources in Damage Area 3

Damage Area 3 was intensively surveyed using pedestrian transects spaced no more than 5 m apart to document impacts to cultural resources. Damage Area 3 is within [REDACTED] and did not impact any previously recorded ACs or surface features. A total of 22 artifacts were noted during the recent investigation (Table 10).

Rainey and Stubing (2022) identified a sparse number of artifacts (n=11), mostly micaceous schist-tempered Plain ware measuring less than 1 to 2 cm. The current damage assessment fieldwork documented additional artifacts very similar to the 2022 recordation, including the relative proportion of micaceous schist-tempered Plain wares to sand-tempered Plain wares. Buff ware was also noted. A vesicular basalt mano fragment measuring 8 cm x 8 cm x 3 cm was recorded as well, expanding the artifact types observed in this portion of the site. No new features or ACs were noted.

Table 9. Artifacts observed within Damage Area 3, [REDACTED]

Point Locations (PL)	Artifacts				
	Ceramic, Plain ware, schist- tempered	Ceramic, Plain ware, sand- tempered	Ceramic, Buff ware, untyped	Mano Fragment	Total
PL 1 (1 m x 1 m)	1	-	1	-	2
PL 2	-	-	-	1	1
PL 3	1	-	-	-	1
PL 4	-	3	-	-	3
PL 5	1	-	-	-	1
PL 6	4	-	-	-	4
PL 7	1	-	-	-	1
PL 8	-	1	-	-	1
PL 9	1	-	-	-	1
PL 10	-	-	1	-	1
PL 11	1	-	-	-	1
PL 12	-	1	-	-	1
PL 13 (1 m x 1 m)	-	-	2	-	2
PL 14	-	1	-	-	1
PL 15	1	-	-	-	1
Total	11	6	4	1	22

8.4 Damage Area 3 Impact Summary and Implications

8.4.1 Stratigraphic Observations

The unauthorized construction activities in Damage Area 3 resulted in minor surface disturbance in the UP ROW. As detailed in Section 3.2.2, Kerns (1994:70) and Phillips (2000) provide stratigraphic observations for [REDACTED]

[REDACTED] This location is immediately north and east of Damage Area 3. As described by Kerns (1994) and largely verified by Phillips (2000), Stratum I consists of a dark yellow brown silty clay, with platy structure, friable, with roots that extends between 10 and 28 cmbs. Stratum I overlays the cultural horizon (Stratum II). Stratum II extends from 28 to 40 cmbs and consists of a yellow brown silty clay, friable with some layers of grayish orange silt.

Surface soils recorded at Damage Area 3 are tan sandy silt to silty clay with a light amount of gravels and few cobbles. This is generally consistent with Stratum I soils described by Kerns (2004) and Phillips (2000). The depth of disturbance within Damage Area 3 was noted at 15.20 cmbs, which indicates a potential for intact cultural deposits in this location.

8.4.2 Summary of Damage and Archaeological Potential

Minor surface disturbance occurred in Damage Area 3 in the UP ROW within and outside of the boundary of [REDACTED]. As documented by Rainey and Stubing (2022), a low-density artifact scatter was present in this area prior to the damage in this location. Surface soil observed by the damage assessment generally conforms to that described by Kerns (1994) and Phillips (2000) as overlaying the cultural horizon (Stratum II).

As a result of the damage assessment fieldwork, the construction disturbance in Damage Area 3 at [REDACTED] constitutes minor damage. The potential for intact subsurface deposits still exists in this location.

9. Damage Area 4 Assessment

9.1 Pre-Damage Condition of [REDACTED] Damage Area 4

Damage Area 4 is located in the UP ROW [REDACTED]. Damage Area 4 is completely within the boundary of [REDACTED]. Damage Area 4 was documented by a Class III survey in May and June 2022 (Rainey and Stubing 2022). At the time of the Class III survey, ground visibility was excellent (approximately 90 percent) (Rainey and Stubing 2022). The Class III survey documented one AC (AC 3) and one feature (Feature 1) was documented in Damage Area 4. Artifacts observed within AC 3 consist of predominantly schist-tempered Plain wares along with untyped Red-on-buff wares, while flaked stone noted included noncortical fine-grained basalt. Based on the artifacts documented in AC 3, this portion of the site contains a Preclassic component. Feature 1 is a modern/historic ditch that extends through the wye and both Damage Areas 1 and 4.

Figure 42 provides a map of Damage Area 4. Because the photo documentation of site and survey area conditions recorded by Rainey and Stubing (2022) do not always show the same directional orientation or overviews as those recorded of the damage areas, the pre-damage photographs should be considered to indicate the general location of the sites and areas shown.

9.2 Type and Extent of Construction Activities in [REDACTED] Damage Area 4

Damage Area 4 exhibits minor to moderate damaged from construction activity in the UP ROW within the boundary of [REDACTED]. OEA conducted assessment fieldwork at Damage Area 4 on January 16, 2024. Disturbance documented at Damage Area 4 consists of surface grading and equipment tracking, silt discharge, a gravel asphalt pile, and a two-track road (Table 11). The area of disturbance for Damage Area 4 is 0.77 acres. Measurements, locational information, and potential impacts to cultural resources are provided in Table 11. Sections 9.2.1 through 9.2.4 include additional discussion of the disturbance components.

Table 10. Disturbances within Damage Area 4 within [REDACTED]

Type of Disturbance	Relative Location Within Damage Area 4	Measurements of Disturbance ^[1]	Impacts to Cultural Materials
Grading and equipment tracking	Northern and eastern portion of Damage Area 4	62.8 m x 45.1 m	PL 1, PL 2, PL 3
Silt deposition, possible vacuum truck discharge	Northern portion of Damage Area 4	26.8 m x 26.2 m	None
Asphalt pile	Western edge of Damage Area 4	33.2 m x 22.5 m	None
Two-track road	Southern and southwestern portions of Damage Area 4	46.6 m x 21.9 m	AC 3, Feature 1

^[1] Measurements are length x width.

Figure 42. Map of Damage Area 4

FIGURE REDACTED

9.2.1 Grading and Equipment Tracking

Surface grading and equipment tracking is most prevalent in the northern and eastern portions of Damage Area 4. At the time of the Class III survey conducted by Rainey and Stubing (2022), this area was in an open landscape with native vegetation (Figure 43). Figure 44 shows the current conditions of this area. The depth of disturbance from the surface blading and equipment tracking is approximately 15.2 cmbs.

Figure 43. Overview of general location of Damage Area 4, pre-damage. View is to the southwest.

PHOTO REDACTED

Figure 44. Overview of Damage Area 4 grading and equipment tracking. View is to the northwest.

PHOTO REDACTED

9.2.2 Silt Deposition

The watery silty deposition overlays grading damage in the northern and central portions of Damage Area 4. It consists of a thin layer of fine-grained silt and includes a few small dirt and gravel piles. This deposition may be the result of dumping the contents of a vacuum truck that used a water jet (Figure 45).

Figure 45. Overview of graded area in Damage Area 4, showing silt deposition from water discharge. View is to the west.

PHOTO REDACTED

9.2.3 Asphalt Pile

An asphalt pile is present in the northeastern portion of Damage Area 4. It consists of ground-up asphalt gravel and chunks that have been dumped and leveled by blading (Figure 46). The margins of the asphalt pile are diffuse. The association of the asphalt pile with the construction damage is unclear, given that it contains vegetation that is more mature than that regrowing in the surrounding graded area.

Figure 46. Overview of asphalt pile within Damage Area 4 in [REDACTED] View is to the south.

PHOTO REDACTED

9.2.4 Two-Track Road

A branching two-track road runs through the central and southwestern portions of Damage Area 4 (Figure 47). It is discussed separately from the general grading and equipment tracking damage category, given that it extends beyond it. This two-track road extends between the private development adjacent to the north and east of Damage Area 4 and the pipeline road described in Damage Area 1. The depth of disturbance within this two-track road is generally 10 cmbs but extends up to 20 cmbs where it crosses Feature 1 and where it intersects with the pipeline road (Figure 48). The road crosses through AC 3 and has both displaced and exposed artifacts. The road branches to cross Feature 1 in two locations, causing damage to the ditch berms.

Figure 47. Overview of two-track road through AC 3, within [REDACTED] View is to the northeast.

PHOTO REDACTED

Figure 48. Overview of Feature 1 as crossed by two-track road in Damage Area 4. View is to the south.

PHOTO REDACTED

9.3 Impacts to Cultural Resources in Damage Area 4

Damage Area 4 was intensively surveyed using pedestrian transects spaced no more than 5 m apart to document impacts to cultural resources. Damage Area 4 is within [REDACTED] and consists of minor to moderate surface damage. Within ACs, only diagnostic artifacts were point-located. Previously recorded OUs were relocated and re-tallied to assess changes between 2022 and 2024. Feature 1 was reassessed to compare existing conditions pre- and post-damage.

9.3.1 Surface Artifacts

At the time of the Class III survey, surface artifacts were observed in this location, but were not individually quantified during the fieldwork given that they were within the [REDACTED] boundary and were not diagnostic. During the current damage assessment fieldwork, surface artifacts were documented as point-located artifacts (Table 12; Figure 42). These artifacts were identified in the northeastern portion of the grading and equipment tracking disturbance in Damage Area 4.

Table 11. Artifact summary of Damage Area 4 within [REDACTED]

Artifact Type	Point Location 1	Point Location 2	Point Location 3	Total
Ceramic, Plain ware, schist-tempered	15	1	1	17
Ceramic, Plain ware, sand-tempered	9	-	1	10
Ceramic, Buff ware, untyped	9	-	-	9
Ceramic, Red ware, sand-tempered	2	-	-	2

Total	35	1	2	38
--------------	-----------	----------	----------	-----------

Point-located surface artifacts in Damage Area 4 were encountered in three specific locations, designated as PL 1, PL 2, and PL 3. PL 1 measures 16.3 m by 6.8 m and is located within the southern portion of Damage Area 4. A total of 35 artifacts were recorded in this location. While most of them were Plain ware sherds, roughly a third of them were decorated wares, indicating that this area was most likely included a Preclassic occupation. PL 2 included one Plain ware ceramic and is located within the southwest portion of Damage Area 4. PL 3 included two Plain ware ceramics within a 1-m-x-1-m area.

Feature 1, a modern/historic irrigation ditch, extends northwest to southeast through AC 3. The two-track roads noted in Section 9.2.4 have damaged the ditch in two places (Figure 46). The tracks compressed the soil approximately 2.5 cm deep.

9.3.2 AC 3

Within AC 3, only diagnostic artifacts were point-located. Previously recorded OUs (OU 6 and OU 7) were relocated and re-tallied to assess changes between 2022 and 2024 (Table 13). These were not damaged by the two sets of vehicle tracks that traversed AC 3. Other artifacts noted within AC 3, outside of OU 6 and OU 7, are presented in Table 14.

Table 12. Artifacts observed within OU 6 and OU 7 in AC 3, [REDACTED]

Artifacts	OU 6 ^[1]	OU 7 ^[1]	Total
<i>Ceramics</i>			
Ceramic, Plain ware, sand-tempered	30 (1)	9 (10)	39 (11)
Ceramic, Plain ware, sand-tempered, jar rim	-	0 (1)	0 (1)
Ceramic, Plain ware, schist-tempered	9 (6)	5 (7)	14 (13)
Ceramic, Red ware, sand-tempered	5 (0)	2	7 (0)
Ceramic, Red ware, schist-tempered	1 (0)	-	1 (0)
Ceramic, Black-on-white ware, untyped	16 (0)	6	22 (0)
Ceramic, Buff ware	0 (2)	0 (4)	0 (6)
Ceramic, Red-on-buff ware, untyped	0 (17)	-	0 (17)
<i>Flaked Stone</i>			
Fine-grained basalt, core	1 (0)	-	1 (0)
Fine-grained basalt, flake	0 (5)	0 (6)	0 (11)
Greenstone, core	-	1 (0)	1 (0)
Total	62 (31)	23 (28)	85 (59)

^[1] The 2022 data are presented in parentheses for comparison to the 2024 data.

A greater number and diversity of artifacts were observed in OU 6 by the damage assessment fieldwork. Given that the OU 6 is located outside of two-track road disturbance, this is interpreted to be the result of aeolian and other natural processes, such as bioturbation.

The ceramics observed within AC 3 are small, approximately 1 to 2 cm in diameter. The current fieldwork recording of OU 6 indicates an increase in sand-tempered Plain ware, which is different than the 2022 data, which indicated more schist-tempered Plain ware. For OU 7, the artifact types are similar to the 2022 recording. However, more ceramics were identified during the 2024 recording of OU 6. OU 7 was generally consistent with the 2022 data.

Table 13. Point-located artifacts observed within AC 3, [REDACTED]

Point-Located Artifacts	Artifacts		Total
	Ceramic, Red-on-buff ware, untyped	Flaked stone, basalt hammerstone	
PL 51 (1 m x 1m)	2	-	2
PL 52	1	-	1
PL 53	1	-	1
PL 54	-	1	1
PL 55	1	-	1

Table 13. Point-located artifacts observed within AC 3, [REDACTED]

Point-Located Artifacts	Artifacts		Total
	Ceramic, Red-on-buff ware, untyped	Flaked stone, basalt hammerstone	
PL 56	1	-	1
Total	6	1	7

9.3.3 Feature 1

Feature 1 is a modern/historic ditch that extends across Damage Area 4. The ditch was recorded both by Hackbarth and Craig (2004) and Rainey and Stubing (2022). The earthen berms of the ditch were damaged to up 20 cmbs by the two-track road discussed in Section 9.2.4 (Figure 47). Feature 1 was additionally damaged by construction activities in Damage Area 1.

9.4 Damage Area 4 Impact Summary and Implications

9.4.1 Stratigraphic Observations

The unauthorized construction activities in Damage Area 4 resulted in minor to moderate surface disturbance in the UP ROW. As detailed in Section 3.2.1, Hackbarth and Craig (2003) and Hart and Craig (2003) provide stratigraphic observations for this general area of AZ U:10:2(ASM) for Damage Area 4. Hart and Craig (2003) describe Stratum I (0 to 25 cmbs) as a tan sandy silt overlaying cultural features present in Stratum II at 25 to 90 cmbs.

The disturbed soil observed in Damage Area 4 generally conforms to the Stratum I disturbed overburden above the Stratum II cultural horizon. The depth of disturbance within Damage Area 4 was noted at 15.20 cmbs, which indicates a potential for intact cultural deposits in this location.

9.4.2 Summary of Damage and Archaeological Potential

Minor to moderate disturbance occurred in Damage Area 4 in the UP ROW. As documented by Rainey and Stubing (2022), a low-density artifact scatter surrounding AC 3 was present in this area prior to damage. Surface soil observed by the damage assessment generally conforms to that described by Hart and Craig (2003) as overlaying the cultural horizon (Stratum II).

AC 3 and Feature 1 are both crossed by a two-track road. Artifacts in AC 3 have been both displaced by the two-track road and exposed by natural aeolian and bioturbation since the time of the Class III survey. The earthen berms of Feature 1 are crossed by the two-track road in two locations and have been damaged.

As a result of the damage assessment fieldwork, the construction disturbance in Damage Area 4 at [REDACTED] is largely surficial but has resulted in damage to Feature 1 and intersects AC 3 and therefore constitutes minor to moderate damage. However, the potential remains for intact subsurface deposits in this location.

10. Damage Area 5 Assessment

10.1 Pre-Damage Condition of [REDACTED] Damage Area 5

Damage Area 5 is within [REDACTED] in the UP ROW, [REDACTED]. Damage Area 5 was documented by Class III survey in May and June 2022 (Rainey and Stubing 2022). The Class III survey observed a few scattered artifacts in this general location. These were not individually quantified during the fieldwork given that they were within the [REDACTED] boundary and were not diagnostic.

Damage Area 5 is shown on Figure 49. Because the photo documentation of site and survey area conditions recorded by Rainey and Stubing (2022) do not always show the same directional orientation or overviews as those recorded of the damage areas, the pre-damage photographs (Figure 50) should be considered to indicate the general location of the sites and areas shown.

10.2 Type and Extent of Construction Activities in [REDACTED] Damage Area 5

Damage Area 5 exhibits minor damage from unauthorized construction activity in the UP ROW within the boundary of [REDACTED]. Jacobs, OEA’s third-party contractor, conducted assessment fieldwork at Damage Area 5 on January 10, 2024. Disturbances documented at Damage Area 5 consist of brush removal in a corridor parallel to the [REDACTED] and two vegetation stockpiles. Measurements, locational information, and potential impacts to cultural resources are provided in Table 15. Additional discussion of the disturbance components is provided in Sections 10.2.1 and 10.2.2.

Table 14. Disturbances within Damage Area 5 within [REDACTED]

Type of Disturbance	Relative Location Within Damage Area 5	Measurements of Disturbance	Impacts to Cultural Materials
Brush removal and equipment tracking	Entire extent of Damage Area 5	6.1 m (width) x 399.8 m (length) x 10.1 cm (depth)	PL 1, PL 2, PL 3
Vegetation Stockpiling	Northwestern and southeastern extents of Damage Area 5	Northwestern stockpile: 14.17 m (length) x 4.4 m (width) x 1.3 (height) Southeastern stockpile: 5.1 m (length) x 3.6 m (width) x 0.9 m (height)	None observed in stockpiles

Figure 49. Map of Damage Area 5

FIGURE REDACTED

10.2.1 Brush Removal and Equipment Tracking.

Disturbance documented at Damage Area 5 includes a light surface blading for vegetation removal along a corridor on the [REDACTED] (Figure 51). The blading measures approximately 399.8 m long by 6.1 m wide. Blading was no deeper than 10.1 cm and removed all vegetation and some surficial dirt from the corridor. Equipment tracking orange centerline pin flags are present in the graded corridor. The area of disturbance noted within Damage Area 5 comprises 0.68 acre.

Figure 50. Pre-damage conditions in the general location of Damage Area 5 in [REDACTED] View is to the southeast.

PHOTO REDACTED

Figure 51. Post-damage overview of Damage Area 5 within [REDACTED] View is to the southeast.

PHOTO REDACTED

10.2.2 Vegetation Stockpiles

Two vegetation stockpiles are located at the northwestern and southeastern extents of the brushed corridor (Figures 52 and 53). These vegetation stockpiles consist primarily of uprooted vegetation, but also include surficial dirt. The western brush pile measures approximately 4.4 m wide by 14.17 m long by 1.3 m high. The eastern brush pile measures approximately 3.6 m wide by 5.1 m long by 0.9 m high.

Figure 52. Overview of northwestern vegetation stockpile in Damage Area 5 at [REDACTED] View is to the northwest.

PHOTO REDACTED

Figure 53. Overview of southeastern vegetation stockpile in Damage Area 5 at [REDACTED] View is to the southeast.

10.3 Impacts to Cultural Resources in Damage Area 5

Damage Area 5 was intensively surveyed using pedestrian transects spaced no more than 5 m apart to document impacts to cultural resources. Damage Area 5 is within [REDACTED] and consists of minimal surface damage over an [REDACTED].

At the time of the Class III survey, surface artifacts were observed in this location, but were not individually quantified during the fieldwork given that they were within the [REDACTED] boundary and were not diagnostic. No ACs or surface features were identified by Rainey and Stubing (2022) in this location. During the current damage assessment fieldwork, surface artifacts were documented as point-located artifacts (Table 16; Figure 49). These artifacts were identified within the graded corridor of Damage Area 5.

Table 15. Artifacts observed within Damage Area 5 at [REDACTED]

Point-Located Artifacts	Artifacts		Total
	Plain ware, sand-tempered	Red ware, sand-tempered	
PL 1	1	-	1
PL 2	-	1	1
PL 3	1	-	1
Total	2	1	3

10.4 Damage Area 5 Impact Summary and Implications

10.4.1 Stratigraphic Observations

The unauthorized construction activities in Damage Area 5 resulted in minor surface disturbance in the UP ROW. As detailed in Section 3.2.1, Hart and Craig (2003:19) provide stratigraphic observations for this general area of [REDACTED] from their excavations for the [REDACTED] and Damage

Area 5. Hart and Craig (2003) describe Stratum I (0 to 25 cmbs) as a tannish sandy silt overlaying cultural features present in Stratum II at 25 to 90 cmbs.

The disturbed soil observed in Damage Area 5 generally conforms to the Stratum I disturbed overburden above the Stratum II cultural horizon. The depth of disturbance within Damage Area 5 was noted at 10 cmbs. This seems to indicate a potential for intact cultural deposits in this location. However, the subsurface profile in this area may have been previously disturbed by the

10.4.2 Summary of Damage and Archaeological Potential

Minor surface disturbance occurred in Damage Area 5 in the UP ROW. As documented by Rainey and Stubing (2022), a low-density artifact scatter was present in this area prior to the damage in this location. Surface soil observed by the damage assessment generally conforms to that described by Hart and Craig (2003) as overlaying the cultural horizon (Stratum II).

While the disturbance observed in Damage Area 5

the potential remains for intact cultural deposits in this location.

As a result of the damage assessment fieldwork, the construction disturbance in Damage Area 5 at is largely surficial and constitutes minor damage. The potential for intact subsurface deposits still may exist in this location.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

12. Summary and Conclusions

Jacobs, OEA's third-party contractor, has prepared this report to address the extent and magnitude of the damage to NRHP-eligible archaeological sites within the PIRATE APE. The purpose of this damage assessment is to fully document the damage via noninvasive fieldwork, summarize pre-damage conditions for [REDACTED] quantify the extent of the damage to the two sites, and discuss the potential for intact subsurface archaeological deposits within the damage areas (Table 17). This noninvasive assessment report is based on current information specific to unauthorized construction activities. The Board continues to gather information specific to Section 110(k) which may identify additional unauthorized construction activities. Any additional information will be provided as it becomes available.

This report presents the magnitude of damage based on the following classification scale:

- **Major Damage.** Damage is classified as major if the surface disturbance is greater than or equal to 2 ft deep (60.96 cm) [REDACTED]
- **Moderate Damage.** Damage is classified as moderate if the surface disturbance is less than 1 ft deep (30.48 cm) and intersects any previously recorded ACs or features, or if the surface disturbance is between 1 and 2 ft deep (30.48–60.96 cm).
- **Minor Damage.** Damage is classified as minor if the surface disturbance is less than 1 ft deep (30.48 cm) and does not intersect any previously recorded ACs or features.

Using this classification scale, the magnitude of damage for specific unauthorized construction activities, as well as the overall magnitude of damage for each damage area, is presented in Table 17. The overall magnitude for each damage area is based on the highest classification score.

[REDACTED]

Recommendations: OEA recommends further assessment fieldwork to fully identify the extent and magnitude of construction damage in the UP ROW and the PIRATE APE. The additional investigation would include invasive (ground-disturbing) techniques, specifically limited geomorphological trenching in the [REDACTED] in Damage Areas 1 and 2, limited facing of [REDACTED] in Damage Areas 1 and 2, and screening of a material stockpile in Damage Area 1. The scope of the additional fieldwork and methods employed will be outlined in a future invasive damage assessment work plan. As expressed by the Gila River Indian Community THPO, the recovery of potential ancestral remains and belongings is of primary and urgent importance in the consideration of any invasive methods implemented by the future work plan.

[REDACTED]

Table 16. Summary of damage

Damage Area	Type of Disturbance (Quantity)	Depth or (Height) of Disturbance ^[1]	Cultural Resources Impacted	Magnitude of Damage	
				Activity	Damage Area
Damage Area 1			AC 1, Feature 1; numerous artifacts identified	Major	Major
	General grading and equipment tracking	15.20–30.10 cm	AC 1, AC 2, Feature 1; numerous artifacts observed within graded area	Minor to Moderate	
	Material stockpile	(1.50 m)	One plain ware sherd observed on the material stockpile, unknown impacts	Major	
	road ^[2]	15.20–30.10 cm	Numerous artifacts within the road	Minor	
	Two-track road	15.20 cm	AC 1, AC 2, Feature 1, Feature 7,	Major	
Damage Area 2			PL 1, PL 5 in	Major	Major
	General grading, equipment tracking, and dirt access road	15.20 cm	PL 2, PL 3, PL 4	Minor	
	Primary construction access road	30.00 cm	None recorded	Not in site boundary	
	Drainage channel	0.66 m	None recorded	Moderate	
	Mud tracking	0.60 cm	None recorded	Minor to Moderate	
	Gravel staging area	7.60 cm	None recorded	Not in site boundary	

Table 16. Summary of damage

Damage Area	Type of Disturbance (Quantity)	Depth or (Height) of Disturbance ^[1]	Cultural Resources Impacted	Magnitude of Damage	
				Activity	Damage Area
Damage Area 3					
	Surface grading, equipment tracking, staging/storing and access roads	15.20 cm	Ceramics and ground stone	Minor	Minor
	Primary construction access road	30.00 cm	None recorded	Minor	
	Material stockpiles (7)	(40.60–91.40 cm)	PL 5, PL 7	Minor	
	Remnant fill piles (3)	(10.00 cm)	None recorded	Minor	
Damage Area 4					
	Grading and equipment tracking	15.20 cm	PL 1, PL 2, PL 3	Minor	Moderate
	Silt deposition	N/A	None recorded	Minor	
	Asphalt pile	N/A	None recorded	Minor	
	Two-track road	10.00 cm	AC 3, Feature 1	Moderate	
Damage Area 5					
	Brush removal and equipment tracking	10.10 cm	PL 1, PL 2, PL 3	Minor	Minor
	Vegetation stockpiling	(0.90–1.30 m)	None recorded	Minor	

^[1] Depth = belowground damage. Height = above ground damage (stockpiles, etc.).

^[2] [REDACTED]

AC = artifact concentration; cm = centimeter; m = meter; PL = point-located artifact

13. References

Bellavia, Cara, Ronald Ryden, and Douglas R. Mitchell

2006 Archaeological Testing in a Portion of the Germann Site (AZ U:10:10(PG)) in Mesa, Maricopa County, Arizona. SWCA Cultural Resources Report No. 06-508. SWCA Environmental Consultants, Inc., Phoenix, Arizona.

Board (Surface Transportation)

2023 Surface Transportation Board Decision Docket FD 36501 – Union Pacific Railroad Company Construction and Operation Exemption – in Maricopa County, Arizona. December 11, 2023.

Courtright, J. Scott

2004 Phase I Data Recovery for a Portion of the Southwest Germann Site, AZ U:10:2(ASM): The SRP Rohrig Substation, Queen Creek, Maricopa County, Arizona. Technical Report No. 045137a. Logan Simpson Design, Inc. Tempe, Arizona.

Greenwald, David H., Richard A. Anduze, and Mary-Ellen Walsh-Anduze

1994 *Archaeological Survey and Test Excavations at Williams Air Force Base, Arizona*. SWCA Archaeological Report 93-12b. SWCA Environmental Consultants, Inc., Scottsdale, Arizona.

Hackbarth, Mark R., and Douglas B. Craig

2004 *Archaeological Testing at the Southwest Germann Site(AZ U:10:2[ASM])*, Mesa, Maricopa County, Arizona. Report No. 04-132. Northland Research, Inc., Tempe, Arizona.

Hart, David R., and Douglas B. Craig

2003 *Archaeological Test Excavations Along the Santan Expansion Project Pipeline Corridor from Gilbert to Coolidge, Maricopa and Pinal Counties: Investigations at AZ U:10:2(ASM), AZ U:10:116(ASM), AZ U:10:175(ASM), AZ U:10:176(ASM), AZ U:15:248(ASM), AZ U:15:249(ASM), AZ U:14:54(ASM), AZ U:14:361(ASM), AZ U:14:74(ASM), and AZ AA:2:131(ASM)*. Technical Report No. 03-45. Northland Research, Inc., Tempe, Arizona.

2006 *Archaeological Investigations Along the Santan Expansion Project Pipeline Corridor from Gilbert to Coolidge, Maricopa and Pinal Counties: Investigations at AZ U:10:2(ASM), AZ U:10:175(ASM), AZ U:10:176(ASM), AZ U:15:248(ASM), AZ U:14:54(ASM), AZ U:14:361(ASM), AZ U:14:74(ASM), and AZ AA:2:131(ASM)*. Technical Report No. 05-48. Northland Research, Inc., Tempe, Arizona.

Henderson, T. Kathleen

2006 “Prehistoric Ceramics from the Rohrig Substation Locus, Southwest Germann Site, AZ U:10:2(ASM).” In *Archaeological Data Recovery at the Rohrig Substation, Queen Creek, Arizona*, edited by T. Kathleen Henderson, pp. 97-138. Technical Report No. 2005-03. Desert Archaeology, Tucson, Arizona.

Huckleberry, Gary

1994 *Surficial Geology of the Santan Mountains Piedmont Area, Northern Pinal and Eastern Maricopa County Area, Arizona*. Open File Report 94-7. Arizona Geological Survey, Tucson, Arizona.

Kerns, B.K.

- 1994 “Geomorphology and Natural and Cultural Stratigraphy.” In *Archaeological Survey and Test Excavations at Williams Air Force Base, Arizona*, prepared by David Greenwald, Richard Anduze, and Mary-Ellen Wash-Anduze, pp. 63-73. SWCA Archaeological Report 93-12b. SWCA Environmental Consultants, Inc., Scottsdale, Arizona.

Mitchell, Douglas, and Julie Solometo

- 2001 Archaeological Testing at AZ U:10:2(ASM), Queen Creek, Maricopa County, Arizona. SWCA, Inc., Phoenix, Arizona.

Moore, Scotty B.

- 2008 Archaeological Testing of 4.77 Acres within the Southwest Germann Site (AZ U:10:2(ASM)) Located East of Sossamon Road and South of Germann Road, Queen Creek, Maricopa County, Arizona. Technical Report No. 08-20. Northland Research, Inc., Tempe, Arizona.

North, Chris, Douglas Mitchell, and Michael Foster

- 2006 Archaeological Testing in a Portion of the Germann Site (AZ U:10:2(ASM)) in Queen Creek, Maricopa County, Arizona. SWCA Cultural Resources Report No. 06-17. SWCA Environmental Consultants, Phoenix, Arizona.

Phillips, Bruce G.

- 2000 “Geoarchaeology at the Edge of the Queen Creek Delta.” In *Passive Accumulations: Archaeological Investigations in Support of Reconstruction and Extension of Runway 12L – 30R at Williams Gateway Airport, Mesa, Arizona*, prepared by Matthew E. Hill Jr. and J. Simon Bruder, pp. 33-62. Dames and Moore Intermountain Cultural Resources Services Research Paper No. 51. Dames and Moore, Phoenix, Arizona.

Powell, Kris and Pamela J. Rainey

- 2023 *A Historic Properties Treatment Plan for AZ U:10:2(ASM), AZ U:10:69(ASM), AZ U:10:152(ASM), and AZ U:10:275(ASM), Mesa and Queen Creek, Maricopa County, Arizona*. Jacobs Project Report No. 2023-001. Jacobs Engineering Group Inc. Tempe, Arizona. *Draft*.

Rainey, Pamela J., and Michael Stubing

- 2022 *A Class III Cultural Resources Survey for the Union Pacific Railroad Company Pecos Industrial Rail Access and Train Extension (PIRATE) Project, Mesa and Queen Creek, Maricopa County, Arizona*. Jacobs Project Report No. 2022-006. Jacobs Engineering Group Inc., Tempe, Arizona.

Rawson, Paul, and Caitlin F. Hayden

- 2016 Results of Archaeological Testing of a Portion of AZ U:10:2(ASM), The Southwest Germann Site, For the Proposed Rittenhouse Ranch Development, Queen Creek, Maricopa County, Arizona. SWCA Environmental Consultants Phoenix. SWCA Cultural Resources Report No. 2016-103, Phoenix, Arizona.

Schaafsma, Hoski, and Linda I. Countryman

- 2018 “Queen Creek from Fortuna Peak to Gila Crossing: our Missing River.” In *Journal of Arizona Archaeology*, 6(1):13-31, edited by Chris Loendorf and Hoski Schaafsma. Arizona Archaeological Council, Tempe, Arizona.

Shepard, Kristopher S., Glenn P. Darrington, and J. Simon Bruder
1996 William Gateway Airport Authority Phase I Development Project Archaeological Testing
Report. Dames and Moore, Phoenix, Arizona.

Appendix A

Cultural Resources Map

FIGURE REDACTED

Appendix B

Civil Survey of [REDACTED]

FIGURE REDACTED

FIGURE REDACTED

PIRATE Transmittal List 5/22/2024

Advisory Council on Historic Preservation	Emily Choi	echoi@achp.gov
Advisory Council on Historic Preservation	Rachael Mangum	rmangum@achp.gov
Ak-Chin Indian Community	Robert Miguel	rmiguel@ak-chin.nsn.us
Ak-Chin Indian Community	Carmen Narcia	cnarcia@ak-chin.nsn.gov
Arizona Museum of Natural History	Alison Stoltman	Alison.Stoltman@MesaAZ.gov
Arizona State Land Department (ASLD)	Mark Edelman	medelman@azland.gov
Arizona State Land Department (ASLD)	Tiffany Grew	tgrew@azland.gov
Arizona State Land Department (ASLD)	Michael Romero	mromero@azland.gov
Arizona State Museum	Patrick Lyons	plyons@arizona.edu
Arizona State Museum	Shannon Plummer	splummer@arizona.edu
Arizona State Parks, State Historic Preservation Office	Kathryn Leonard	azshpo@azstateparks.gov
Arizona State Parks, State Historic Preservation Office	Mary-Ellen Walsh	mwalsh@azstateparks.gov
Arizona State Parks, State Historic Preservation Office	Caroline Klebacha	cklebacha@azstateparks.gov
Federal Aviation Administration	Mike Williams	mike.n.williams@faa.gov
Flood Control District of Maricopa County	Tom Hanson	tom.hanson@maricopa.gov
Flood Control District of Maricopa County	Edward Raleigh	edward.raleigh@maricopa.gov
Gila River Indian Community (Community)	Stephen Roe Lewis	executivemail@gric.nsn.us
Gila River Indian Community (Community)	Barnaby Lewis	barnaby.lewis@gric.nsn.us
Gila River Indian Community (Community)	Larry Benallie, Jr.	Larry.BenallieJr@gric.nsn.us
Gila River Indian Community (Community)	Reylynne Williams	reylynne.williams@gric.nsn.us
Gila River Indian Community (Community)	Darius Enos	darius.enos@gric.nsn.us
Hopi Tribe	Timothy L. Nuvangyaoma	tnuvangyaoma@hopi.nsn.us
Hopi Tribe	Stewart B. Koyiyumptewa	skoyiyumptewa@hopi.nsn.us
Mesa Historic Preservation Office	Mary Kopaskie-Brown	Mary.Kopaskie-Brown@mesaaz.gov
Mesa Historic Preservation Office	Kellie Rorex	kellie.rorex@mesaaz.gov
Mesa Historic Preservation Office	Maura Jackson	
Mesa Historical Museum	Susan Ricci	exec@mesamuseum.org
Mescalero Apache Tribe	Eddie Martinez	
Mescalero Apache Tribe	Holly Houghten	holly@mathpo.org
Mesa Office of Economic Development	Maria Laughner	maria.laughner@mesaaz.gov

Mesa Office of Economic Development	Nick Juszczak	nick.juszczak@mesaaz.gov
Pascua Yaqui Tribe	Peter Yucupicio	peter.s.yucupicio@pascuayaqui-nsn.gov
Pascua Yaqui Tribe	Dr. Karl Hoerig	Karl.Hoerig@pascuayaqui-nsn.gov
Phoenix-Mesa Gateway Airport	Carl D'Acosta	CD'Acosta@gatewayairport.com
Phoenix-Mesa Gateway Airport	Bob Draper	bdraper@gatewayairport.com
Pueblo of Zuni	Arden Kucate	arden.kucate@ashiwi.org
Pueblo of Zuni	Kurt Dongoske	kdongoske@gmail.com
Salt River Pima Maricopa Indian Community	Martin Harvier	Gary.Bohnee@SRPMIC-nsn.gov
Salt River Pima Maricopa Indian Community	Shane Anton	Shane.Anton@SRPMIC-nsn.gov
Salt River Pima Maricopa Indian Community	Martha Martinez	Martha.Martinez@SRPMIC-nsn.gov
Salt River Pima Maricopa Indian Community	Angela D. Garcia-Lewis	Angela.Garcia-Lewis@SRPMIC-nsn.gov
Salt River Pima Maricopa Indian Community	Sunday Eiselt	Sunday.Eiselt@srpmic-nsn.gov
Salt River Project (SRP)	David Rousseau	david.rousseau@srpnet.com
Salt River Project (SRP)	Dan Garcia	dan.garcia@srpnet.com
San Tan Historical Society	Keith Johanson	santanhistoricalmuseum@gmail.com
Tohono O'odham Nation	Verlon Jose	verlon.jose@tonation-nsn.gov
Tohono O'odham Nation	Jefford Francisco	jefford.francisco@tonation-nsn.gov
Tohono O'odham Nation	Peter Steere	peter.steere@tonation-nsn.gov
Tonto Apache Tribe	Calvin Johnson	cjohnson@tontoapache.org
Tonto Apache Tribe	Jeri DeCola	jdecola@tontoapache.org
Town of Queen Creek	Heather Wilkey	heather.wilkey@queencreekaz.gov
Town of Queen Creek	Dave Lipinski	dave.lipinski@queencreekaz.gov
UPRR	K. P. Rice	kprice@up.com
Desert Archaeology	Sarah Herr	sherr@desert.com
U.S. Army Corps of Engineers	Sallie Diebolt	spregulatoryaz@usace.army.mil
U.S. Army Corps of Engineers	Shannon Morgan	shannon.r.morgan@usace.army.mil
Yavapai-Apache Nation	Chris Coder	ccoder@yan-tribe.org