Appendix K. Hazardous Materials Information

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Initial Site Assessment

North-South Corridor Study

Federal-aid Project No. STP-999-A(365)X
ADOT Project No. 999 PN 000 H7454 01L
Pinal County, Arizona

Arizona Department of Transportation
Federal Highway Administration

in cooperation with

U.S. Army Corps of Engineers
U.S. Bureau of Reclamation
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Western Area Power Administration

June 1, 2016

Approved
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03 Jun 16

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ADOT

U.S. Department of Transportation
Federal Highway Administration

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Initial Site Assessment

North-South Corridor Study

Prepared for
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June 1, 2016

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U.S. Department of Transportation
Federal Highway Administration

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Executive Summary

The Arizona Department of Transportation (ADOT), in partnership with the Federal Highway Administration, is studying the 45-mile-long North-South Corridor (Corridor) in Pinal County, Arizona. The Corridor is bound by United States Highway 60 (US 60) in the city of Apache Junction to the north and by Interstate 10 (I-10) near the city of Eloy to the south. The city of Coolidge, town of Florence, and Gila River Indian Community are within the Corridor.

The proposed action would provide a new north-to-south transportation facility that connects the growing communities within central Pinal County to US 60 and I-10, as well as the extension of Arizona State Route (SR) 24, which currently connects to the Santan Freeway (SR 202L) to the west of the Corridor. Two action alternatives, a Western Alternative and Eastern Alternative, each of which consists of three travel lanes in each direction, are evaluated as part of the Draft Environmental Impact Statement for the project. Each alternative is divided into seven segments that allow shifts from the west to the east, or east to the west, with the addition of a number of transition areas. The project limits, segments, and transition areas are shown in Figure ES-1.

Action Alternatives

From north to south, the Western Alternative starts at the US 60/Ironwood Drive interchange in the city of Apache Junction and generally follows the Ironwood Drive alignment for approximately 3 miles and then follows its own alignment between the developed areas of unincorporated San Tan Valley and the Central Arizona Project (CAP) Canal. Near the Germann Road alignment, the SR 24 extension would tie into the Corridor. The alignment for the Western Alternative continues south and east, crossing the Magma Arizona Railroad and Copper Basin Railroad tracks and the Gila River before entering the western part of the town of Florence. The alignment continues south through the eastern part of the city of Coolidge and, just north of the Picacho Reservoir, the Western Alternative heads west across the Union Pacific Railroad tracks. The alignment then runs concurrently with SR 87 south to I-10.

The Eastern Alternative begins east of Goldfield Road in the city of Apache Junction, following a southerly alignment concurrent with the planned US 60 bypass for approximately 1.5 miles before continuing in a new alignment in mostly undeveloped, unincorporated Pinal County. Two options exist for a connection to the SR 24 extension—one just north of the Germann Road alignment (not currently constructed) and one at the Ocotillo Road alignment (not currently constructed). South of the SR 24 connection, the Eastern Alternative crosses the Magma Arizona Railroad tracks and the CAP Canal and continues south and east to the town of Florence. Two alignment options allow the Eastern Alternative to avoid the Poston Butte in western Florence; however, both options cross the Copper Basin Railroad tracks. The options converge just north of SR 287, and the alignment continues south and west to the Picacho Reservoir where it then follows the Fast Track Road alignment south along a new alignment to I-10.

Corridor Segments

The Corridor is divided into seven segments that incorporate transition areas to allow an alternative to shift east to west or west to east and to facilitate the evaluation of project-related impacts. Table ES-1 identifies the approximate limits of the seven segments, the proposed interchanges within the segment, and the options for transitioning from one alternative to the other.

Figure ES-1. North-South Corridor location

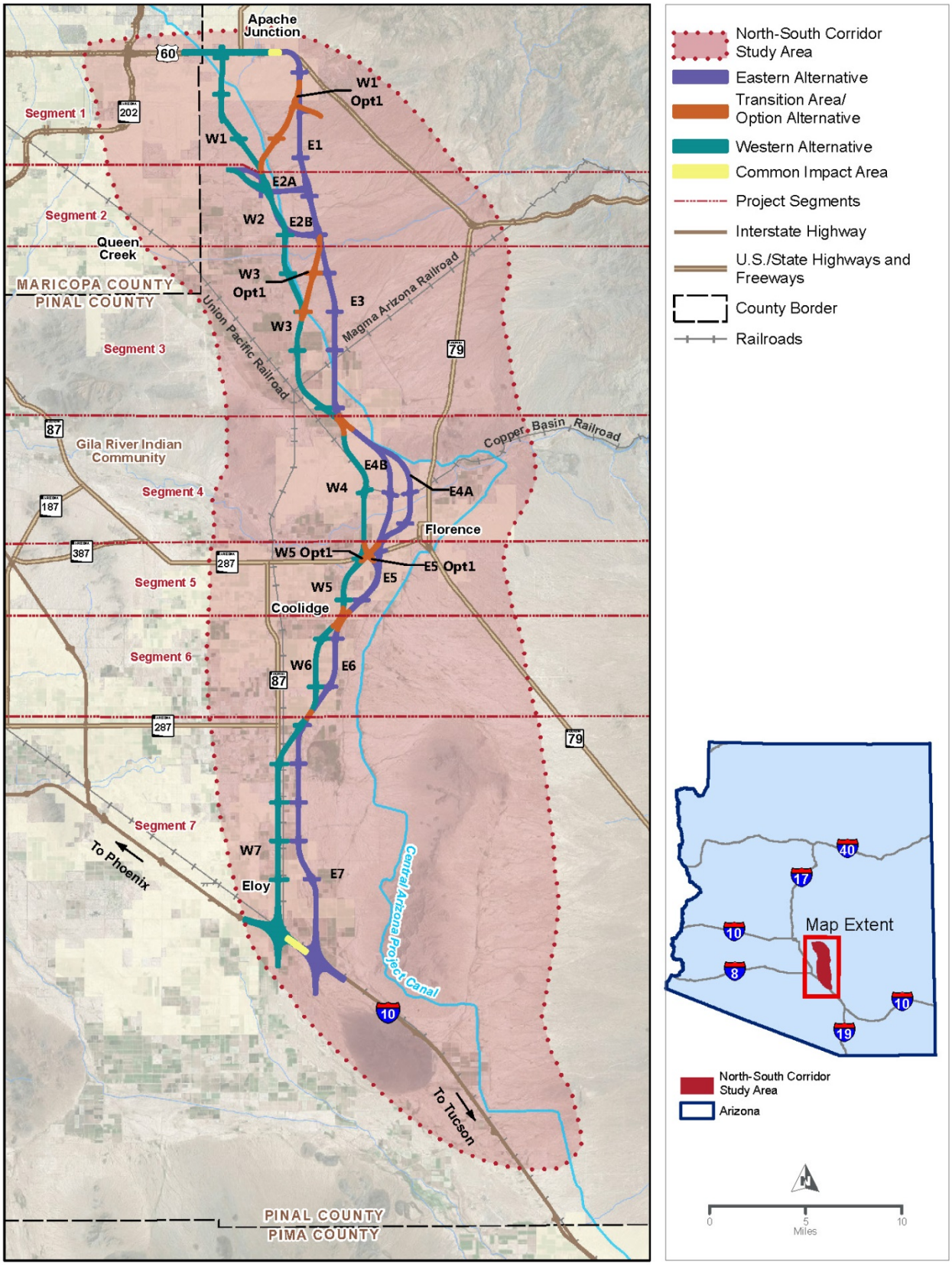

Table ES-1. North-South Corridor segments

Segment	Approximate segment location		Proposed interchanges		Transition options
	Northern limit	Southern limit	Western Alternative	Eastern Alternative	
1	US 60	North of SR 24	*W1*: US 60, Elliot Road, Ray Road	*E1*: US 60, Elliot Road, US 60 Bypass, Ray Road	*W1 Option 1*: Southbound East to West/Northbound West to East
2	North of SR 24	South of Ocotillo Road	*W2*: SR 24, Ocotillo Road	*E2A*: SR 24, Ocotillo Road *E2B*: Schnepf Road (off SR 24), Germann Road, SR 24	None
3	South of Ocotillo Road	South of Arizona Farms Road	*W3*: Combs/Riggs Road, Skyline Road, Bella Vista Road, Arizona Farms Road	*E3*: Combs/Riggs Road, Skyline Road, Bella Vista Road, Arizona Farms Road	*W3 Option 1*: Southbound East to West/Northbound West to East
4	South of Arizona Farms Road	North of SR 287	*W4*: Hunt Highway	*E4A*: Hunt Highway, Butte Avenue *E4B*: Hunt Highway	Two-way transition between Segments 4 and 5
5	North of SR 287	North of Martin Road	*W5*: SR 287, Kenilworth Road	*E5*: SR 287, Kenilworth Road	*E5 Option 1*: Southbound West to East/Northbound East to West *W5 Option 1*: Southbound East to West/Northbound West to East
6	North of Martin Road	North of Steele Road	*W6*: Bartlett Road, Kleck Road	*E6*: Bartlett Road, Kleck Road	Two-way transition between Segments 5 and 6
7	North of Steele Road	I-10	*W7*: Steele Road, Selma Highway, Hanna Road, Shedd Road, Battaglia Road, I-10	*E7*: Steele Road, Selma Highway, Hanna Road, Shedd Road, Battaglia Road, I-10	Two-way transition between Segments 6 and 7

Notes: I-10 = Interstate 10, SR = State Route, US 60 = United States Highway 60

As shown in Table ES-1, the Western Alternative would include 20 interchanges, three of which would be system interchanges (US 60, SR 24, and I-10). The Eastern Alternative would include between 21 and 23 interchanges, depending on the selection of Segment E2A or B and E4A or B, three of which for both options being system interchanges (US 60, SR 24, and I-10). With the availability of the transition areas, a preferred action alternative may include a combination of Western and Eastern Alternative segments.

Initial Site Assessment

This corridor-level Initial Site Assessment (ISA) documents potential hazardous materials release issues with the potential to negatively affect the subsurface. The goals of the ISA are to (1) establish existing conditions as an information baseline for site acquisition “due diligence” (Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] liability protection) and (2) identify the possible location of suspected hazardous materials that may have been released to the subsurface. If these hazardous materials are present in concentrations above regulatory action levels and are encountered during construction, they may pose health risks to workers and the public, and/or disposal liabilities for ADOT. This ISA will present a determination of whether further investigation is warranted regarding the presence or absence of regulated hazardous materials at suspect locations. If additional investigation were to be required, it may be conducted in the form of a site-specific ISA, a Preliminary Site Investigation (PSI), or during construction within the requirements of an identified process known as environmental construction monitoring (ECM).

The field investigation portion of this ISA was performed between June and September 2015. The investigative methods generally conform to the ASTM International (ASTM) E1527 - 13 guidance

document for the preparation of Phase I site assessments (ISA, in ADOT vernacular). The information presented in this Executive Summary is a synopsis, and the reader should refer to the other sections of this report for complete and detailed information.

Findings

- Geologic setting – The geology of almost the entire Corridor is characterized by unconsolidated to strongly-consolidated alluvial and eolian deposits from the Quaternary Period. The deposits include coarse, poorly sorted alluvial fan and terrace deposits in the middle to upper piedmonts, to sand, silt, and clay on the alluvial plains and playas. Based on 2003 to 2004 measurements collected by the Arizona Department of Water Resources, depth to groundwater ranges from as deep as 490 feet near Apache Junction to around 100 feet between Coolidge and Eloy. In general, depth to water is around 300 feet. Groundwater flow across the Corridor is generally to the northwest.
- Regulatory database results – Environmental Data Resources Inc. (EDR) of Southport, Connecticut, was subcontracted to perform an environmental records search of federal, state, and local files for sites in the Corridor. ASTM guidance defines specific radii of concern for different databases, ranging up to a distance of 1 mile from the centerline of each individual corridor. HDR assessed the listings and determined “sites of concern” based on the type of listing (could it indicate subsurface contamination), location of the listing, and consideration of multiple listings for one location. The Western Alternative had 13 listed sites of concern. The Eastern Alternative had 8 sites of concern. The “Options” (transitions and spurs) had 4 sites of concern. None of the listed “sites of concern” indicated conditions that would be considered “fatal flaws” for any of the project alignments; rather they indicated sites with the potential to have issues that might affect project cost or schedule.
- Historical data review – The objective of reviewing historical use information is to develop a history of previous land uses in the vicinity of the Corridor and to assess these uses for potential hazardous materials impacts that may affect the Corridor. Those historical sources that were readily available and reviewable and likely to provide useful information were reviewed for this ISA. Given the large and primarily rural nature of the study area, historical aerial photographs were the primary investigative tool used to assess potential past uses of properties within the Corridor. Aerial photographs from 1937 to the present were reviewed, with good coverage of the Corridor, in terms of geographical and chronological coverage. The aerial photography review indicated that the study area has been primarily undeveloped desert or agricultural use land since the 1930s, with increasing agricultural and urban/suburban development over time. No land uses were found that would indicate a past land use that would be considered significant for contamination of a large area.
- Site reconnaissance – HDR reviewed the study area by car and by helicopter between June and September 2015. The aerial reconnaissance was most useful, in that much of the Corridor is inaccessible by car (no roads). The aerial and ground reconnaissance served to verify locations of sites listed in the regulatory database report, and also to provide a good understanding of current land uses and potential issues regarding the potential for significant contamination from those uses. The four general categories of land use included undeveloped desert (with a minor amount of wildcat dumping), agricultural uses (with the attendant issues of long-term agricultural chemical application), urban land use (with the typical gas station/dry cleaner sites and urban stormwater quality issues), and landfills (generally not a hazardous waste concern, but landfills do pose constructibility issues). Some of the issues identified in the site reconnaissance (wildcat dumping, agricultural operations, and stormwater runoff) are not captured in a regulatory database review, which focuses on specific sites that are known by regulatory agencies to have had a regulated contaminant issue.

Conclusions

The data gathered for this corridor-level ISA support general conclusions regarding potential for contamination within the Corridor. The data gathered support the following conclusions:

- The Corridor has potential contamination issues from point-source locations and nonpoint-source areas.
- Point-source locations include specific, listed sites (such as gas stations, landfills, etc.) with an identifiable source of contamination.
- Nonpoint-source areas include agricultural properties, urban areas (stormwater runoff), and areas where wildcat dumping may include hazardous wastes.
- Comparison of the Western Alternative, Eastern Alternative, and Options found 13, 8, and 4 point-source listings (respectively), and all corridor locations had the potential for nonpoint-source areas. The difference between the corridors is not significant regarding the potential for encountering hazardous materials, and the type of materials expected are typical of highway construction projects (no large or “fatal flaw” type sites).

Recommendations

The findings included in this report are the result of investigative procedures outlined in the *Initial Site Assessment Methodology* section. These findings should be reviewed within the context of the limitations outlined in the *Limitations* section. Further investigation should be performed in the form of a targeted Corridor ISA (once a preferred alternative is selected), which would “clear” many sites without issues, and limit the number of parcels where a parcel-specific Phase I is indicated. Parcel-specific Phase I investigations should be performed at properties slated for acquisition (in accordance with ADOT Right-of-Way policies and procedures).

Additional studies could also include Phase II drilling and sampling projects (also known as PSIs) to verify or refute the actual concentrations and locations of subsurface impacts, prior to construction. If contaminated areas are identified in Phase I/ISA efforts, and PSI work verifies that contamination is present in actionable concentrations, an identified process known as ECM may be implemented during construction as a proper method of handling waste material and providing protection for construction workers.

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1 Introduction

An Initial Site Assessment (ISA, a Phase I Environmental Site Assessment equivalent) was performed for two action alternatives, with options, within the defined North-South Corridor (Corridor) in Pinal County, Arizona. The action alternatives are referred as the Western and Eastern Alternatives. The project alignment is broken into seven segments, each containing a portion of the Western and Eastern Alternatives, as well as any transition or option alignments. At the time of this ISA, a range of environmental factors is being considered to compare the alternatives, with this ISA being one of the factors.

1.1 Purpose and Scope of Investigation

This ISA documents potential hazardous materials release issues within the Corridor and, specifically, along the action alternatives. The goals of the ISA are to (1) establish existing conditions as a baseline of information for site acquisition "due diligence" and (2) identify the possible location of suspected hazardous materials that may have been released to the subsurface. If these hazardous materials are present in concentrations above regulatory action levels and are encountered during construction, they may pose health risks to workers and/or liabilities for the Arizona Department of Transportation (ADOT).

This ISA presents a determination of whether further investigation is warranted to determine the presence or absence of regulated hazardous materials at suspect locations. If additional investigation were to be required, it may be conducted in the form of site-specific ISAs. Additional studies would take place as Preliminary Site Investigations (PSIs) or, during construction, as an identified process known as environmental construction monitoring (ECM).

The scope of the ISA included the following tasks:

- review of published documentation
- review of public records, documents, and engineering plans (if available and applicable)
- review of local, state, and federal environmental files pertaining to known regulated environmental sites within the Corridor
- physical inspection and documentation of the Corridor by qualified environmental professionals, as defined by ASTM International (ASTM) E1527 - 13

1.2 Initial Site Assessment Methodology

A relative risk ranking system that includes several investigation elements was employed in preparing the ISA. Each element of the investigation process uses a different set of data sources to assess the risk of hazardous materials being present in association with a specific site or location.

The ISA was designed to generally comply with the level of documentation recommended in the ASTM standard (ASTM E1527 - 13) for the performance of ISAs. Deviations from the ASTM standard included deletion of certain records sources determined to be inapplicable or of limited value to the specific needs of this study. Because of the preliminary nature of the study, interviews with specific site property owners or business operators were not conducted for this ISA.

Four primary activities taken from ASTM guidance (conforming to the U.S. Environmental Protection Agency's [EPA's] All Appropriate Inquiry [AAI] requirements) were applied: (1) regulatory records review, (2) site reconnaissance, (3) review of historical information regarding land use, and (4) report preparation.

Once the elements of the investigation process were completed, sites (or site types) were categorized using a subjective risk ranking system, classifying the sites as low-risk, moderate-risk, or high-risk. The following paragraphs provide general descriptions of each category.

Low-risk sites are those having few indications of potential for release of hazardous materials. On some occasions, sites that have had a hazardous materials issue in the past but have been remediated with approval of the local state environmental agency (or EPA) may qualify as low-risk. Examples of low-risk sites include undeveloped or agricultural property, residential property, or benign commercial properties such as office buildings, warehouses, distribution facilities, or municipal facilities with no listed violation.

Moderate-risk sites are those having some indications of possible hazardous materials issues. A moderate-risk site may appear on a database as having a permit to handle hazardous materials, but has recorded no violations to date. Another way that a site could be interpreted as a moderate risk would be if the environmental records search indicated no listing, but the site is an auto repair facility with visible surface staining. Examples of moderate-risk sites include auto repair garages, welding shops, or manufacturing facilities with minor listings in the environmental database.

High-risk sites are those with high potential for releasing hazardous materials to the soil or groundwater, or have a recorded release issue. Examples of high-risk sites include current service stations, bulk fueling terminals, sites listed in the environmental database, or a known release that has not been remediated.

Sites are assessed for both on-site and off-site risk for contamination. On-site contamination is considered to be releases to soil and/or groundwater that are limited laterally to within the boundaries of the source property. Off-site contamination is considered to be likely releases that have exceeded the boundary of the source property.

1.3 Limitations

This ISA has been prepared for use by ADOT. The information presented in this report is based on the project scope of work, which included a review of regulatory listings, review of historical information (primarily historic aerial photographs), and a site reconnaissance by qualified environmental professionals. HDR has relied on information provided by others in its description of historic conditions and its review of regulatory databases and files. However, HDR makes no warranties or guarantees regarding the accuracy or completeness of the information provided or compiled by others.

No ISA can completely eliminate uncertainty regarding the potential for recognized environmental conditions (RECs) associated with a property. This ISA is intended to reduce, but not eliminate, uncertainty regarding the presence of RECs. Site contamination that was not identified during this ISA is possible, but cannot be adequately assessed without additional research beyond the stated scope of work. Further evaluation of these types of risks could include subsurface exploration, sampling, and/or other forms of sampling and analysis.

2 Description of Corridor

2.1 Corridor Development Characteristics

The Corridor is in Pinal County and abuts the southeastern quadrant of the Phoenix metropolitan area. Based on 2014 population estimates, the United States Census Bureau deems the “Valley of the Sun” as the 12th largest metropolitan area in the nation. It is also considered one of the fastest-growing metropolitan areas, with an increase in population of over 1 million between 2000 and 2010.

Development in the Corridor varies and is a combination of private and State Trust lands. Most of the Corridor is farmland and desert, but residential and commercial land uses are also present, concentrated in the vicinity of the northern terminus near Apache Junction and where the Corridor passes through or near the cities/unincorporated areas of Queen Creek, San Tan Valley, Florence, Coolidge, Picacho, and Eloy. The Central Arizona Project (CAP) Canal flows through the entire length of the Corridor, with a slight meander to the east where it meets up with the Gila River (general east-to-west orientation) midway through the Corridor.

The Union Pacific Railroad (UPRR), Magma Arizona Railroad, and Copper Basin Railroad are all present in the northern portion of the Corridor. These rail lines have varying orientations that eventually merge approximately 8 miles northwest of Florence and continue directly south as a UPRR line before merging with another UPRR line that parallels I-10.

2.2 Area Geology and Hydrogeology

Topography within the Corridor is characterized by broad valleys located to the west of north-to-northwest trending fault-block mountains of the Basin and Range physiographic province. The valley is relatively flat, but rises gradually to the east toward the mountain range. Elevations within the Corridor range from approximately 1,170 to 1,990 feet above mean sea level in the valleys. Surface drainage trends from topographically high areas to lower areas, and toward major drainage features in and around the Corridor, such as the Gila River, Queen Creek, and the Santa Cruz River.

The geology of almost the entire Corridor is characterized by unconsolidated to strongly-consolidated alluvial and eolian deposits from the Quaternary Period. The deposits include coarse, poorly sorted alluvial fan and terrace deposits in the middle to upper piedmonts, to sand, silt, and clay on the alluvial plains and playas. The northern portion of the Corridor is characterized by more recent deposits from the Holocene Epoch, related to modern fluvial systems. These deposits consist primarily of fine-grained, well-sorted sediment in the alluvial plain and more gravelly deposits on the middle and upper piedmonts. The valley deposits are interrupted by small pockets of granitic volcanic rocks that make up the San Tan Mountains south of Queen Creek and Picacho Mountains and Picacho Peak near the southern terminus of the Corridor (Arizona Geological Survey 2015).

The Corridor is in both the Phoenix and Pinal Active Management Areas, designated by the Arizona Department of Water Resources (ADWR). Annual precipitation is on the order of 8 to 12 inches per year. Major aquifers underlying the Corridor are within the recent stream alluvium and basin fill. Based on 2003 to 2004 measurements collected by ADWR, depth to groundwater ranges from as deep as 490 feet near Apache Junction to around 100 feet between Coolidge and Eloy. In general, depth to water is around 300 feet. Groundwater flow across the Corridor is generally to the northwest (ADWR 2010).

3 Environmental Database and Historical Information Source Review

The ASTM Phase I ESA standard (E1527 - 13) requires a review of the regulatory and site use history of a subject site and surrounding properties. This requirement was met by using an automated database search service and reviewing selected historic information sources. The following sections describe the results of the environmental database and historic information source review.

3.1 Regulatory Database Search Results

Environmental Data Resources Inc. (EDR) of Southport, Connecticut, was subcontracted to perform an environmental records search of federal, state, and local files for sites in the Corridor. ASTM guidance defines specific radii of concern for different databases, ranging up to a distance of 1 mile from the centerline of each individual corridor. The EDR information was received on May 28, 2015.

The EDR records search reports—including a full list of databases searched and a full list of acronyms used for the various databases and regulatory agencies—are provided in Appendix A. The listings include facilities that have environmental histories ranging from active Superfund sites to service stations.

The EDR report also includes “orphan” sites, or sites with insufficient address information for mapping. The orphan sites list for each corridor was reviewed and, when possible, the data were correlated to sites identified during the site reconnaissance.

Table 1 displays the results of the regulatory database search for the Western Alternative and the Eastern Alternative (including options) in the seven segments.

Table 1. Summary of results for the alternatives, by segment

Alternative	Database[a]	Description[a]	Number of listings	Listings of concern
Segment 1				
E1	FINDS	The Facility Index System contains both facility information and “pointers” to other sources of information that contain more detail.	1	0
W1	AZ UST	The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of RCRA. The data come from the AZDEQ UST-DMS Facility and Tank Data Listing by City database.	1	1
	AZ Dry Well	A drywell is a bored, drilled, or driven shaft or hole whose depth is greater than its width and is designed and constructed specifically for the disposal of stormwater. The source is AZDEQ.	1	0
	AZ WWFAC	Statewide list of wastewater treatment facilities.	2	0
	AZ Aquifer List	The aquifer protection permitted facilities database comes from AZDEQ.	1	0
	AZ EMAP	A listing of all places of interest to AZDEQ, including air, waste, and water sites.	7	1
W1 Option 1	Not applicable	Not applicable	—	—
Segment 2				
E2A	Not applicable	Not applicable	—	—
E2B	Not applicable	Not applicable	—	—

Table 1. Summary of results for the alternatives, by segment

Alternative	Database[a]	Description[a]	Number of listings	Listings of concern
W2	AZ UST	The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of RCRA. The data come from the AZDEQ UST-DMS Facility and Tank Data Listing by City database.	1	0
Segment 3				
E3	FINDS	The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail.	1	0
	AZ UST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	1	1
W3	FINDS	The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail.	2	0
	AZ LUST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	1	1
	AZ UST	The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of RCRA. The data come from the AZDEQ UST-DMS Facility and Tank Data Listing by City database.	1	1
	AZ SPILLS	The AZDEQ Emergency Response unit documents chemical spills and incidents that are referred to the Unit.	2	2
	AZ EMAP	A listing of all places of interest to AZDEQ, including air, waste, and water sites.	1	0
W3 Option 1	Not applicable	Not applicable	—	—
Segment 4				
E4	Not applicable	Not applicable	—	—
E4A	AZ UST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	1	1
	AZ WWFAC	Statewide list of wastewater treatment facilities.	2	1
	AZ Aquifer List	The aquifer protection permitted facilities database comes from AZDEQ.	1	0
	AZ EMAP	A listing of all places of interest to AZDEQ, including air, waste, and water sites.	2	1
	FINDS	The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail.	2	1

Table 1. Summary of results for the alternatives, by segment

Alternative	Database[a]	Description[a]	Number of listings	Listings of concern
E4B	FUDS	The Listing includes locations of Formerly Used Defense Sites Properties where the U.S. Army Corps Of Engineers is actively working or will take necessary cleanup actions.	1	0
	AZ UST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	2	1
	AZ WWFAC	Statewide list of wastewater treatment facilities.	2	1
	AZ Aquifer List	The aquifer protection permitted facilities database comes from AZDEQ.	1	0
	AZ EMAP	A listing of all places of interest to AZDEQ, including air, waste, and water sites.	2	1
	Indian ODI	Location of open dumps on Indian Land	1	1
	FINDS	The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail.	2	1
W4	Not applicable	Not applicable	—	—
Segment 5				
E5	Not applicable	Not applicable	—	—
E5 Option 1	RCRA NonGen	RCRA Non-Generators do not presently generate hazardous waste.	2	1
	FINDS	The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail.	7	3
	AZ SWF/LF	The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from AZDEQ's Municipal Solid Waste Landfills/Closed Solid Waste Landfills database.	2	2
	AZ LUST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	1	1
	AZ UST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	2	1
	AZ AST	The Aboveground Storage Tank database contains registered ASTs. The data come from the AZDEQ UST-DMS Facility and Tank Data Listing by City database.	1	0
	AZ SWTIRE	A waste tire "facility" means a solid waste facility at which tires are stored outdoors on any day.	1	1
	CA HAZNET	The data are extracted from the copies of hazardous waste manifests received each year by the DTSC.	1	1
	AZ EMAP	A listing of all places of interest to the AZDEQ, including air, waste, and water sites.	5	4
W5	Not applicable	Not applicable	—	—

Table 1. Summary of results for the alternatives, by segment

Alternative	Database[a]	Description[a]	Number of listings	Listings of concern
W5 Option 1	RCRA NonGen	RCRA Non-Generators do not presently generate hazardous waste.	2	1
	FINDS	The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail.	7	3
	AZ SWF/LF	The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from AZDEQ's Municipal Solid Waste Landfills/Closed Solid Waste Landfills database.	2	2
	AZ LUST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	1	1
	AZ UST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	2	1
	AZ AST	The Aboveground Storage Tank database contains registered ASTs. The data come from the AZDEQ UST-DMS Facility and Tank Data Listing by City database.	1	0
	AZ SWTIRE	A waste tire "facility" means a solid waste facility at which tires are stored outdoors on any day.	1	1
	CA HAZNET	The data are extracted from the copies of hazardous waste manifests received each year by the DTSC.	1	1
	AZ EMAP	A listing of all places of interest to the AZDEQ, including air, waste, and water sites.	5	4
Segment 6				
E6	ICIS	The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.	1	0
	FINDS	The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail.	2	0
	AZ UST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	1	1
	AZ EMAP	A listing of all places of interest to AZDEQ, including air, waste, and water sites.	1	1
	AZ WWFAC	Statewide list of wastewater treatment facilities.	1	0
W6	FINDS	The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail.	2	0
	AZ UST	The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of RCRA. The data come from the AZDEQ UST-DMS Facility and Tank Data Listing by City database.	1	0

Table 1. Summary of results for the alternatives, by segment

Alternative	Database[a]	Description[a]	Number of listings	Listings of concern
	AZ AST	The Aboveground Storage Tank database contains registered ASTs. The data come from the AZDEQ UST-DMS Facility and Tank Data Listing by City database.	1	0
	AZ WWFAC	Statewide list of wastewater treatment facilities.	2	0
	AZ EMAP	A listing of all places of interest to AZDEQ, including air, waste, and water sites.	3	1
	AZ UST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	1	1
Segment 7				
E7	AZ UST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	2	1
	US Hist Cleaners	EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments.	1	0
W7	RCRA-TSDF	Resource Conservation and Recovery Act (RCRA) Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.	1	1
	RCRA NonGen	RCRA Non-Generators do not presently generate hazardous waste.	1	1
	FINDS	The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail.	1	1
	US Airs	AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies.	1	1
	AZ LUST	The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the AZDEQ LUST File Listing by Zip Code.	1	1
	AZ UST	The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of RCRA. The data come from the AZDEQ UST-DMS Facility and Tank Data Listing by City database.	3	2
	AZ WWFAC	Statewide list of wastewater treatment facilities.	1	0
	AZ Aquifer List	The aquifer protection permitted facilities database comes from AZDEQ.	1	0
	AZ EMAP	A listing of all places of interest to the AZDEQ, including air, waste, and water sites.	2	0

Source: Environmental Data Resources Inc., May 28, 2015

[a] Definitions of abbreviations and acronyms used in this table are provided in the reports in Appendix A.

3.1.1 Summary of Sites of Concern for Segment 1

Table 1 lists 13 records identified by EDR within the search area for Segment 1, but only 2 listings were linked to sites of potential concern.

Only one potential site of concern, with multiple database listings, was identified in Alternative W1. Details regarding the site are discussed below. Subsections within the segments are provided in parentheses following the listing name.

Alternative W1

AJ's Mini Mart (A) is at 3940 South Ironwood Drive in Apache Junction. It is listed in the FINDS, UST, and EMAP databases as an active gas station with two tanks. No additional details were provided by EDR regarding the content, capacity, and age of the tanks.

3.1.2 Summary of Sites of Concern for Segment 2

Table 1 lists 1 record identified by EDR within the search area for Segment 2, and no listing linked to sites of potential concern.

3.1.3 Summary of Sites of Concern for Segment 3

Table 1 lists 9 records identified by EDR within the search area for Segment 3, but only 5 listings were linked to sites of potential concern.

A total of four separate potential sites of concern, some with multiple database listings, were identified in Alternatives W3 and E3. Details regarding the sites are discussed in the paragraphs below. Subsections within the segments are provided in parentheses following the listing name.

Alternative W3

LR Johnson Settlement (L2) is near Arizona Farm Road and Attaway in Magma. The site is listed in the UST and LUST databases. Two leaking USTs were permanently removed in 1992. Site closure was granted in February 1995.

Two spill sites were reported at the following locations:

- Arizona Farm Road and Attaway in Magma (10): 20-gallon release of diesel from a truck that occurred in October 1992.
- Skyline Road and Quail Run Lane (6): A release of five 55-gallon drums containing unknown liquid was reported in September 1999.

Alternative E3

The LR Johnson Settlement (L2) is a potential site of concern for the Eastern Alternative. This site was already discussed above in Segment W3 of the Western Alternative.

3.1.4 Summary of Sites of Concern for Segment 4

Table 1 lists 19 records identified by EDR within the search area for Segment 4, but only 9 listings were linked to sites of potential concern.

A total of two separate potential sites of concern, some with multiple database listings, were identified in Alternative E4A/E4B. Details regarding the sites are discussed in the paragraphs below. Subsections within the segments are provided in parentheses following the listing name.

Alternative E4A/E4B

Florence Copper (X1/X2) is at 14605 East Hunt Highway in Florence. This site is an *in situ* (in place) recovery project that seeks to dissolve copper minerals from an underground deposit by introducing a low-pH, water-based solution. This site is listed in the UST, WWFAC, Aquifer, and EMAP databases. Three tanks were removed from the site (owners listed as Conoco) in 1989 and 1990. This property is currently an active mine with a wastewater discharge permit.

An open dump on tribal land was identified just outside the corridor for X2. This location is approximate, and may be closer or farther from the segment than what was mapped. The dump was listed as containing municipal waste.

3.1.5 Summary of Sites of Concern for Segment 5

Table 1 lists 40 records identified by EDR within the search area for Segment 5, 28 of which were linked to sites of potential concern.

A total of three separate potential sites of concern, some with multiple database listings, were identified in Alternative W5 Option 1/E5 Option 1. Details regarding the sites are discussed below.

Alternative W5 Option 1/E5 Option1

The Ironwood Landfill is the primary feature in this option, covering approximately 60 acres. It is at 12720 East Highway 287 in Florence. This site is listed in the RCRA NonGen, FINDS, AZ SWF/LF, and CA Haznet databases. It is an active landfill site with a current solid waste permit. Adjacent to the northeast is the Pinal County Waste Tire Collection Site and the Pinal County Hazardous Waste Collection Site (12725 East Adamsville Road), which is listed in the AZ SWTire and EMAP databases.

The AT&T property at Valley Farm Road and Highway 287 was listed in the UST and LUST database. A UST was permanently removed in November 1991. The LUST listing was closed in June 1996 with residual soil contamination meeting Tier 1 standards.

3.1.6 Summary of Sites of Concern for Segment 6

Table 1 lists 16 records identified by EDR within the search area for Segment 6, but only 4 listings were linked to sites of potential concern.

Only one potential site of concern, with multiple database listings, was identified in Alternative W6/E6, as discussed below.

Alternative W6/E6

Coolidge Farm is at 8830 North Clemans Road, within the proposed option. A UST was permanently removed from the property in 1988. No listings were identified relating to a leak or release, but tanks removed during the 1980s have a potential for undocumented releases.

3.1.7 Summary of Sites of Concern for Segment 7

Table 1 lists 15 records identified by EDR within the search area for Segment 7, but only 8 listings were linked to sites of potential concern.

A total of two separate potential sites of concern, some with multiple database listings, were identified in Alternative W7. The following details regarding the sites are discussed in the paragraphs below. Subsections within the segments are provided in parentheses following the listing name.

Alternative W7

Miller Delinting Inc. (AA) is at 15790 South Highway 87 in Eloy. This site is listed in the RCRA-TSDF, RCRA NonGen, FINDS, UST, and US AIRS databases. No RCRA violations were reported. Two USTs were permanently removed from the site in 1988.

Picacho Exxon (AL) is at 7060 Eisenhower Street in Picacho. This site is listed in the UST, LUST, and EMAP databases. Three tanks were removed from the site in 2012 and one in 1999. Site closure was granted in 2013 with residual contaminated soils meeting Arizona Department of Environmental Quality Tier 1 cleanup standards.

3.2 Historical Source Research Results

This ISA includes a review of a variety of historical data sources depending on the applicability of the data to the Corridor. The objective of reviewing historical use information is to develop a history of previous land uses in the vicinity of the Corridor and to assess these uses for potential hazardous materials impacts that may affect the Corridor. Those historical sources that were readily available and reviewable and likely to provide useful information were reviewed for this ISA.

3.2.1 Fire Insurance Maps

Fire insurance maps were produced by private fire insurance companies for decades to indicate site development features relative to fire risk. Fire insurance maps prepared before World War II provide excellent information regarding site use and potential hazardous materials issues, and are often the only such source of this kind of information for that time period. Archives of fire insurance maps were searched (by EDR) for each of the action alternatives. Considering that fire insurance maps were prepared for urbanized areas, and the study area is primarily rural, map coverage did not exist for any of the action alternatives.

3.2.2 City Directory Information

City directories are a useful source of historic land use information as a guidepost for land use by facility name. Considering that City directories are prepared for urbanized areas, and the study area is primarily rural, City directory coverage did not exist for any of the action alternatives.

3.2.3 Historical Aerial Photographs

Historical aerial photographs are valuable for the environmental assessor to review features of the subject property and surrounding properties over a long period of time. HDR reviewed historical aerial photographs provided by the following sources:

- Maricopa County, Office of Enterprise
- Historical Aerials by NETROnline (http://www.historicaerials.com/)

Tables 2 and 3 summarize the aerial photographs for the Western and Eastern Alternatives, respectively. Table 4 summarizes the aerial photographs for the associated options.

Table 2. Western Alternative aerial photograph summary

Year	Description
Segment 1	
1937	The section and its vicinity consisted of undeveloped desert.
1953	A circular structure was located approximately 1,200 feet west of Ironwood Drive, in the location of a parcel currently used for the storage of debris, drums, and soil stockpiles. No other significant changes had occurred in the section since 1937.
1961	No significant changes in the section were noted since 1953.
1992	The CAP Canal had been constructed, and intersected the section in its central portion. A vacant lot containing a concrete foundation was located along Ironwood Drive, just north of the CAP Canal. Dwellings were located to the west of Ironwood Drive between US 60 and 36th Avenue. Two small structures were located northwest and adjacent to the intersection of Ironwood Drive and Baseline Road.
2000, 2001	High-voltage power transmission lines had been constructed in the southern portion of the section, and intersected the sections in an east-to-west direction. A wastewater facility was located approximately 500 feet east of Ironwood Drive along the CAP Canal. A golf course was located between US 60 and West Baseline Road, east and adjacent to Ironwood Drive. Dwellings, a vacant lot, and a gas station were located to the west of Ironwood Drive between US 60 and West Baseline Road.
2002–2007	The photograph extends to only approximately 200 feet south of the power transmission lines. No significant changes had occurred in the section since 2001.
2008–2013	Ironwood Drive had been realigned to cross the CAP Canal over a new bridge, approximately 50 feet to the southeast of the former crossing. Ironwood Drive was located approximately 200 feet east, just north of the new crossing. No other significant changes had occurred in the section since 2007.
Segments 2 and 3 (Part)	
1937	The section and its vicinity consisted of undeveloped desert.
1953, 1961, 1992, 2000–2005	An airport was located in the central portion. No significant changes had occurred in the section since 1937.
2006	The southern portion of the section consisted of farmland, dwellings, and undeveloped desert. A substation was under construction in the vicinity of the northern portion of the section. No other significant changes had occurred since 2004.
2007–2013	No significant changes had occurred in the section since 2006.
Segment 3	
1937	The sections consisted of undeveloped desert.
1953, 1961, 1963, 1992, 2005, 2007, 2008, 2010–2013	The vicinity of the sections included undeveloped desert and farmland. No other significant changes had occurred to the sections since 1937.
Segment 4	
1937	This section and the vicinity consisted of undeveloped desert. The northern portion of Subsection Q was located along a rail line. A river ran through the southern portions of Subsection Q in a westerly direction.
1953	This section and the vicinity consisted of undeveloped desert and farmland. No other significant changes had occurred since 1953.
2007, 2009, 2010, 2013	Residential housing developments had been constructed in the northern portion of the transition area. No other significant changes had occurred since 1953.
Segment 5	
1953, 1961, 1963, 1992, 2005, 2007, 2009, 2010, 2013	The sections and their vicinities consisted of undeveloped desert, farmland, and dwellings.

Table 2. Western Alternative aerial photograph summary

Year	Description
Segment 6	
1961, 1963, 1992, 1996, 2005, 2007, 2009, 2010, 2013	The sections and their vicinities consisted primarily of farmland.
Segment 7	
1961, 1963	The sections and their vicinities consisted primarily of farmland and cattle farms.
1996, 1992, 2007, 2010, 2013	The sections and their vicinities consisted primarily of farmland and cattle farms, and included some residential housing, and a detention center (prison) near the central portion of Subsection ZZ. A facility currently operated by Monsanto was located in the southern portion of Subsection AA.

Notes: CAP = Central Arizona Project, US 60 = United States Highway 60

Table 3. Eastern Alternative aerial photograph summary

Year	Description
Segments 1 and 2	
1937, 1953, 2000–2004, 2006–2013	The northern portion followed the alignment of US 60. The remainder of the section consisted of undeveloped desert.
Segment 3	
1937	The section and its vicinity consisted of undeveloped desert.
2001, 2006–2013	The area of the section south of the CAP Canal consisted of farmland. The area north of the CAP Canal consisted of undeveloped desert and cattle farms.
Segment 4	
1937	The sections and their vicinities consisted of undeveloped desert. A river ran through the southern portions of Subsections X1 and X2 in a westerly direction.
1953	The sections and their vicinities consisted of undeveloped desert and farmland. No other significant changes had occurred since 1953.
2007, 2009, 2010, 2013	Residential housing developments had been constructed in the northern portion of Subsection P. Several dwellings were constructed along the highways in Subsection X2. A mine/quarry was located south of Hunt Highway. Two facilities containing pools of water were located in the northern and central portions of Subsections X1 and X2.
Segment 5	
1953, 1961, 1963, 1992, 2005, 2007, 2009, 2010, 2013	This section and vicinity consisted of undeveloped desert, farmland, and dwellings.
Segment 6	
1961, 1963, 1992, 1996, 2005, 2007, 2009, 2010, 2013	This section and vicinity consisted primarily of farmland.
Segment 7	
1961, 1963	The sections and their vicinities consisted primarily of farmland and cattle farms.
1996, 1992, 2007, 2010, 2013	The sections and their vicinities consisted primarily of farmland and cattle farms. A drainage ditch was located along Sections AJ and AL.

Notes: CAP = Central Arizona Project, US 60 = United States Highway 60

Table 4. Options aerial photograph summary

Year	Description
W1 Option1	
1937, 1953, 1961	The section and its vicinity consisted of undeveloped desert.
2000–2001, 2003, 2004, 2006–2013	The CAP Canal had been constructed and intersected the section's southern portion.
W3 Option 1	
1937, 2000–2003, 2006, 2009–2013	The section and its vicinity consisted of undeveloped desert and land used for cattle farming. A river flowed to the west, through the central portion of the section.
W5 Option 1/E5 Option 1	
1937, 1953, 1961, 1963	The northern and southern portions consisted of farmland and cattle farms. The central portion consisted of undeveloped desert.
1992, 2005, 2007, 2009, 2010, 2013	A landfill was located in the southeastern portion of Transition 1. A substation was constructed at or in the vicinity of the southern portion of Transition T2.

Note: CAP = Central Arizona Project

3.3 Environmental Liens and Additional Information

No information regarding the chain-of-title ownership history or environmental liens recorded against the alternatives was provided for review. Environmental lien searches were not part of the scope of work for this study and were not conducted. Environmental lien reviews should be included as part of the scope of work for any future site-specific Phase I investigations.

4 Site Reconnaissance Summary

A site reconnaissance provides assessors site-specific, current information that would otherwise not be available through a records review or aerial photography review alone. Interviews were not conducted for this study at the client's request. Parcel-specific interviews with persons familiar with individual sites provide detailed information about the physical attributes and history of individual properties within a given area, and will be performed during later investigative efforts, once a preferred alternative is selected.

4.1 Site Reconnaissance Results

The ASTM E 1527 - 13-required site reconnaissance for this large study area was accomplished using two methods—ground reconnaissance of sites that could be seen from public rights-of-way and the use of a helicopter to provide a vantage point for the entire study area. The helicopter overflight was performed on June 10, 2015, and the ground reconnaissance was performed during several mobilizations between June and September 2015. The helicopter overflight was recorded (without sound) and is available to the study team. Appendix B contains a photographic record of certain representative sites, using photographs taken during the ground reconnaissance. Appendix C is a video of the aerial reconnaissance (provided on a DVD) flown on June 10, 2015, which depicts conditions along the Corridor on that day.

The study area includes a variety of land uses, from undeveloped desert to farmland to urban developments. Each type of property has certain characteristics and types of contaminant sources that are common to that type of land use. The sites identified in the regulatory database review are emblematic of the kind of sites found in the various development types. The following sections discuss observations made during the site reconnaissance, by land use type.

4.1.1 Undeveloped Desert

In general, undeveloped desert lands have the lowest potential for hazardous wastes/hazardous materials releases. The main exception is "wildcat dumping," a common colloquialism for the illegal dumping of trash or waste in remote areas. Wildcat dumping can occur anywhere, but is driven by proximity (to source areas such as urbanized populations) and opportunity (availability of roads for the transport of the waste material). The northern segments in both alternative corridors in the study area are good examples of this phenomenon. Numerous wildcat dumps were present in Segments 1, 2, and 3 (northern portions of the Corridor), primarily just off of roads, or near roads along washes. Washes are particularly prevalent as wildcat dumping locations, because they provide some visual cover for the person committing the crime of illegal dumping.

HDR saw many wildcat dumps in the northern part of the study area during the helicopter overflight. Most of these contained fairly benign materials such as household trash, building materials, landscaping waste, and white goods. A small number of dumps contained drums or barrels. It is not possible to ascertain whether these drums contained anything (especially hazardous wastes) without individual assessment and sampling, which is beyond the scope of this ISA. ADOT should be aware that these wildcat dumps exist, and this issue should be addressed once a final corridor is selected.

4.1.2 Agricultural Land

The practice of agriculture, in and of itself, is not considered a common generator of hazardous waste. However, long-term use of agricultural chemicals (pesticides and herbicides) can result in an aggregate effect of residual chemicals in tailwater ditches or drainageways. Of particular concern are areas where Pima cotton has been farmed in the past. During the 1950s to 1970s, weevils and other agricultural pests could devastate farm yields, and many highly toxic agricultural chemicals were used on Pima cotton crops in an attempt to eradicate the pests. Some of these chemicals are long-lived in the environment—

detectable even decades after application. It is also impossible to track whether farmers used agricultural chemicals appropriately, so even chemicals with less toxicity could create a longer-term issue in soils if misapplied.

Another issue on agricultural property is the location of “batch plants,” or locations on a farm where agricultural chemicals were stored, mixed, or loaded onto distribution equipment (spreaders, sprayers, etc.). These facilities were and are operated by the local farmer or a cooperative of farmers, and spill prevention techniques can be lacking, particularly in operations that have been in use for decades. These batch plant locations can also be a location where aggregation/concentration of chemicals in soil can be an issue.

HDR saw many batch plants/ fertilizer storage tanks on the agricultural properties within the Corridor. Some were near barns or sheds that apparently store the farm’s distribution equipment. Others were aboveground storage tanks near irrigation ditches—these were most likely for liquid fertilizer that can be released into the irrigation ditches for passive distribution. ADOT should consider the location of agricultural chemical facilities, once a corridor is selected, and include these facilities in site-specific Phase I efforts.

4.1.3 Urbanized Property

Urbanized property has the highest potential for encountering actionable hazardous waste/hazardous materials in the subsurface. Releases from gas stations, dry cleaners, and other business operations, plus storm runoff that transports lawn chemicals, automotive residue on roads, and other chemicals, typically makes urban areas more impacted by hazardous wastes in the subsurface than other kinds of land use. The regulatory listings described in Section 3 are predominantly located in urbanized areas. HDR saw several facilities during the site reconnaissance that fit this category of sites. Although the project’s alternatives are generally outside of urban development within the study area, the termini of the project (northern and southern ends) as well as the Eastern Alternative (which skirts the town of Florence) could certainly encounter locations where urban site types could impact the subsurface. Notably, one of the “transition” sections near Florence crosses a landfill. Landfills may or may not contain hazardous wastes, but this possibility should be considered during planning of any construction of a roadway through or over a landfill.

4.2 Interviews

For this study, no site-specific interviews were performed. Interviews are conducted during a Corridor ISA once the final corridor is selected, or during parcel-specific Phase I investigations for property acquisition.

5 Data Gaps and Data Failures

The ASTM E1527 - 13 standard requires a listing of “data gaps” encountered during the investigative process that may affect the validity of the conclusions drawn by the environmental professional. The ASTM E1527 - 13 standard also requires that the environmental professional estimate the relative importance of the data gaps. Generally, gaps are related to the availability of historic data sources for specific sites of concern. The environmental professional uses multiple historic data sources as a method to provide coverage for data gaps. Historic information is collected on a recurring basis, and the passage of time between data sets may or may not constitute a significant gap in data coverage. For this study, the following items may constitute a data gap as defined by ASTM:

- lack of Sanborn maps or City directories for the study area
- lack of aerial photography prior to 1937
- lack of interviews during this stage of investigation

These data gaps are not considered to be significant for the planning-level information provided in this Corridor ISA. The limited availability of historical sources such as Sanborn fire insurance maps, City directories, and aerial photography prior to 1937 are not significant given the generally undeveloped nature of most of the study area and the presence of good aerial photograph coverage. The absence of site-specific interviews is not significant for this corridor-level ISA. However, interviews with site representatives will be required for site-specific ISAs (to be completed prior to acquisition).

6 Findings, Conclusions, and Recommendations

6.1 Findings

An ISA was conducted in support of the North-South Corridor Study Draft Environmental Impact Statement that is evaluating project alternatives along the Corridor in Pinal County, Arizona. The alternatives are referred to as the Western and Eastern Alternatives, including options.

6.1.1 Corridor Physical Setting

Topography within the Corridor is characterized by broad valleys located to the west of north-to-northwest trending fault-block mountains. The valley is relatively flat, but rises gradually to the east toward the mountain range. Elevations within the Corridor range from approximately 1,170 to 1,990 feet above mean sea level in the valleys. Surface drainage trends from topographically high areas to low areas, and toward major drainage features in and around the Corridor, such as the Gila River, Queen Creek, and the Santa Cruz River. The geology of almost the entire Corridor is characterized by unconsolidated to strongly-consolidated alluvial and eolian deposits from the Quaternary Period. The valley deposits are interrupted by small pockets of granitic and volcanic rocks that make up the San Tan Mountains located south of Queen Creek, and the Picacho Mountains and Picacho Peak located near the southern terminus of the Corridor. Depth to groundwater ranges from 100 to 500 feet, but is generally around 300 feet across the Corridor.

6.1.2 Current Development Characteristics

The Corridor is in Pinal County and abuts the southeastern quadrant of the Phoenix metropolitan area. Based on 2014 population estimates, the United States Census Bureau deems the “Valley of the Sun” as the 12th largest metropolitan area in the nation. It is also considered one of the fastest-growing metropolitan areas, with an increase in population of over 1 million between 2000 and 2010.

Land ownership in the Corridor varies, and is a combination of private and State Trust lands. Most of the Corridor is farmland and desert, but residential and commercial land uses are also present, concentrated in the vicinity of the northern terminus near Apache Junction, and where the Corridor passes through or near the cities/unincorporated areas of Queen Creek, San Tan Valley, Florence, Coolidge, Picacho, and Eloy. The CAP Canal flows through the entire length of the Corridor, with a slight meander to the east where it meets up with the Gila River (general east-to-west orientation) midway through the Corridor.

The UPRR, Magma Arizona Railroad, and Copper Basin Railroad are all present in the northern portion of the Corridor. These rail lines have varying orientations that eventually merge approximately 8 miles northwest of Florence and continue directly south as a UPRR line before merging with another UPRR line that parallels I-10.

6.1.3 Recognized Environmental Conditions

Table 5 summarizes the location of general types of REC issues by Corridor segment. The RECs fall into four general categories, as described in the body of the report:

1. Undeveloped desert (primary issue – wildcat dumping)
2. Agricultural land (primary issue – agricultural chemical use, batch plants)
3. Urbanized property (primary issues include underground storage tanks, dry cleaners, stormwater runoff)
4. Landfills (primary issue with engineered landfills is constructibility)

Undeveloped Desert

HDR saw many wildcat dumps in the northern part of the study area during the helicopter overflight. Most of these contained fairly benign materials such as household trash, building materials, landscaping waste, and white goods. A small number of dumps contained drums or barrels.

Agricultural Land

HDR saw many batch plants/fertilizer storage tanks on the agricultural properties within the Corridor. Some were near barns or sheds that apparently store the farm's distribution equipment. Others were aboveground storage tanks located near irrigation ditches—these were most likely for liquid fertilizer that can be released into the irrigation ditches for passive distribution.

Urbanized Property

HDR saw several facilities during the site reconnaissance that fit this category of sites. Although the project's alternatives are generally outside of urban development within the study area, the termini of the project (northern and southern ends) as well as the Eastern Alternative (which skirts the town of Florence) could certainly encounter locations where urban site types could impact the subsurface.

Landfill

Notably, one of the "transition" sections near Florence crosses a landfill. Landfills may or may not contain hazardous wastes, but this possibility should be considered during planning of any construction of a roadway through or over a landfill.

Table 5. Summary of recognized environmental conditions

Recognized environmental condition	Alternative		
	Western	Eastern	Options
Former gas stations	Segment 1	Segment 7	—
Wildcat dumps	Segments 1, 2, 3, 4, 5	Segments 1, 2, 3, 4, 5	W1 Option1, W3 Option1, W5 Option 1, E5 Option 1
Farmland/Agricultural chemical use	Segments 3, 4, 5, 6, 7	Segments 3, 4, 5, 6, 7	—
Landfill	—	—	W5 Option1, E5 Option 1

6.1.4 Comparison of RECs and Alternatives

The various types of RECs were distributed throughout the study area, with a concentration of wildcat dumping sites in the northern half and agricultural sites in the southern half of the study area. The urban sites and the one landfill site were at the northern and southern ends, and on the eastern middle of the study area, near the town of Florence.

Since the two alternatives parallel each other from north to south, no significant difference exists between the two alternatives for wildcat dumping and agricultural site issues. Regarding urban site issues and the landfill, the Eastern Alternative has more of these sites, primarily because of the closer proximity of the Eastern Alternative to the town of Florence. The number of urban sites, however, is not a large number, and is not considered to be a significant differentiator between the Western and Eastern Alternatives.

6.2 Conclusions

The following statement is required by ASTM E1527 - 13 as a positive declaration of whether RECs were found:

> HDR has performed a Phase I Environmental Site Assessment/ISA in general conformance with the scope and limitations of ASTM E1527 - 13 of the Corridor (as defined elsewhere in this report). Any exceptions to or deletions from these practices are described in the report. This report has revealed evidence of RECs in connection with the Corridor alternatives.

6.3 Initial Site Assessment Recommendations

The findings in this report are the result of investigative procedures outlined in the *Initial Site Assessment Methodology* section. These findings should be reviewed within the context of the limitations outlined in the *Limitations* section. Further investigation should be performed in the form of a targeted Corridor ISA (once a preferred alternative is selected), which would "clear" many sites without issues and limit the number of parcels where a parcel-specific Phase I is indicated. Parcel-specific Phase I investigations should be performed at properties slated for acquisition (in accordance with ADOT Right-of-Way policies and procedures).

Additional studies could include Phase II drilling and sampling projects (also known as PSIs) to verify or refute the actual concentrations and locations of subsurface impacts, prior to construction. If contaminated areas are identified in Phase I/ISA efforts, and PSI work verifies that contamination is present in actionable concentrations, an identified process known as EC) may be implemented during construction as a proper method of handling waste material and providing protection for construction workers.

7 Signatures and Qualifications

HDR makes the following statement regarding qualifications of its personnel, as required by the ASTM E1527 - 13 guidance, parts 12.13.1 and 12.13.2. We declare that, to the best of our professional knowledge and belief, we meet the definition of environmental professional as defined in subsection 312.10 of 40 Code of Federal Regulations § 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 Code of Federal Regulations § 312.

The preceding report has been prepared in general conformance with standard industry practice for performance of environmental site assessments and includes the applicable portions of the investigation procedures codified in ASTM E1527 - 13, *Standard Practice for Environmental Site Assessments: Environmental Site Assessment Process*. The end user of this report (ADOT) may rely on the contents, findings, and conclusions to be accurate within the limitations stated in this report and in the ASTM standard.

Hong T Spores, CPG
Hydrogeologist

Kelly W. Kading, CPG
Senior Hazardous Waste Project Manager

7.1.1 Qualifications of Environmental Professional of Record

Mr. Kelly W. Kading, CPG, HDR's environmental professional for this study as defined by ASTM and AAI, has more than 28 years of experience in assessment and remediation of adversely affected properties and compliance with environmental regulations. He has a B.S. in geology from Colorado State University and is a Certified Professional Geologist (#9173). He specializes in forensic investigation of hazardous materials-affected properties for municipal and state agencies as well as for commercial clients. His experience covers assessment of more than 4,000 properties, ranging from agricultural land to multigenerational industrial properties in 34 states and two foreign countries. He is highly knowledgeable of federal, state, and local environmental regulations and standards, and has served on the National Board of Directors of the Academy of Certified Hazardous Materials Managers.

8 References

Arizona Department of Water Resources. 2010. *Arizona Water Atlas Volume 8, Active Management Area Planning Area.*

Arizona Geological Survey. 2015. “Geologic Map of Arizona.” Accessed October 28, 2015. http://www.azgs.az.gov/.

EDR Datamap Environmental Atlas, ADOT North/South Corridor Study, May 28, 2015.

Appendix A. EDR Data Report

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Appendix B. Photographic Documentation

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Appendix C. Aerial Photography

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