

Appendix E

Preliminary

Jurisdictional

Delineation

**PRELIMINARY JURISDICTIONAL DELINEATION
FOR THE 12.4 MILE ARIZONA EASTERN RAILWAY PROJECT
IN SAFFORD, GRAHAM COUNTY, ARIZONA**

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Date: October 2, 2006
Project No.: 1378.01 805 805

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INTRODUCTION

WestLand Resources, Inc. (WestLand) was retained by Arizona Eastern Railway (AZER) to complete a delineation of areas that may be considered by the U.S. Army Corps of Engineers (ACOE) as waters of the United States (waters)¹ along the 12.4-mile proposed alignment of the new railroad line, a commercial rail carrier designed to serve the City of Safford and the Phelps-Dodge Corporation (PD). The alignment crosses lands owned by private and public entities in and adjacent to the City of Safford within Graham County, Arizona (Figure 1). An overview of the Project area is depicted in Figure 2.

METHODS

The project site was visited on three occasions in August and September 2006, to identify potentially jurisdictional waters within a 500-foot-wide corridor, 250 feet along either side of the proposed centerline. Methods used to determine jurisdictional waters varied due to the availability of existing data and site conditions along the length of the corridor; therefore, we have identified three portions of the project for consideration in this report. This will facilitate the ACOE's expedited review of the jurisdictional delineation (JD) at the Gila River crossing. The three portions are:

1. The southern 4.7 miles, from the existing railroad north to Airport Road (Figure 3);
2. The Gila River crossing, which is contained within the southern alignment (Figure 4); and,
3. The northern 7.7 miles, occurring on lands owned by the Phelps-Dodge Corporation (Figure 5).

SOUTHERN ALIGNMENT

Aerial photographs of the 4.7-mile southern alignment, dated April 7, 2006 (Lee Harbers), were reviewed in the office, and used to create field maps at a scale of 1:200 for the southern alignment of the project and 1:80 for the Gila River crossing. WestLand used interpretation of aerial photographs to identify drainage systems followed by field reconnaissance to determine the ordinary high water marks (OHWM). OHWM were identified by the presence of one or more of the following characteristics: a well-defined channel as indicated by an incision or scour line, debris line, change in substrate, or the presence of xeroriparian or riparian vegetation. The OHWM defines the lateral limits of the potentially jurisdictional drainages.

GILA RIVER CROSSING

On September 6th and 8th, a Westland biologist and a wetlands specialist visited the AZER proposed crossing over the Gila River located west of Solomon Bridge to determine the OHWM and to evaluate the potential

¹ Because the ACOE is the agency responsible for determining the jurisdictional status of drainages and other areas that may be considered waters of the United States, we refer to the waters delineated in this report as potential jurisdictional waters. WestLand's assessment of jurisdictional status is based upon previous experience with the ACOE and currently accepted protocols for delineating jurisdictional waters and their boundaries.

wetland status of the fringe of riparian vegetation adjacent to the primary flow channel. Guidelines provided in the ACOE 1987 Manual for determining the presence or absence of wetlands were followed and data forms documenting conditions at specific points along the watercourse were completed. The ACOE 1987 Manual also provides diagnostic environmental characteristics of vegetation, soil, and hydrology for non-wetlands. If any one of these characteristics is present, the area is non-wetland. To facilitate our determination of potential wetlands, we took soil samples and listed plants growing at 8 points adjacent to the Gila River. Photographs were taken at each of the data points. Field characteristics noted in the previous section were documented to identify the OHWM. To further assist in this delineation, we reviewed flow data (1916 to the present) collected at the USGS gauging station located upstream at the Solomon Bridge and compared field observations with flow levels.

NORTHERN ALIGNMENT

This portion of the line is 7.7 miles in length. The northern 3.7 miles of the northern portion were included on the JD completed and approved on March 1997 (ACOE File No.964-0202-MB) for Phelps-Dodge 404 permit. The data provided on the approved JD was used to calculate acreage of jurisdictional waters crossed by the northern portion. Approximately four miles of the proposed alignment falls just west of the area approved under the PD JD; therefore, WestLand obtained arials of the area from the on-line Digital Ortho Quarter Quadrangle (DOQQ) database (date, 1992) and, based on the approved JD, extended the alignment of jurisdictional waters west and southwest across the property.

SITE DESCRIPTION

The project area is located on the lower, south-facing slopes and bajada of the Gila Mountains, one of the northwest-trending mountain ranges at the northern margin of the Basin and Range Physiographic Province. The Gila Valley is typical of the intermontane basins that have been created by stream flows and filled with sediments eroded from the adjacent mountains. All drainages within the project area discharge to the Gila River.

SOUTHERN ALIGNMENT

The southern alignment begins at the existing railroad and cuts north through agricultural fields, crosses State Highway 70 (SH 70), runs along an existing dirt farm road parallel to the west side of the San Simon River, curving west at the Gila River to the crossing point. This dirt road is on a berm constructed along the southern bank of the Gila River likely developed to diminish flooding of farm fields during storm events. The Gila River is bordered on the south by agricultural fields and on the north by open desert habitat, and the San Simon River is bordered on all sides by mostly open agricultural lands, with a few scattered houses present. An abandoned hog farm is located west of the San Simon River, north of SH 70. Based on USGS 7.5-minute topographic map, the elevation range along this portion ranges from approximately 2,980 to 2,930 feet above mean sea level. The northern bank of the Gila River is a cliff rising approximately 100 feet above the

riverbed.

The San Simon River has been channelized and is actively being managed to maintain an open channel to remove irrigation run-off from the surrounding cotton fields. The vegetation along the San Simon River is more strongly influenced by the surrounding agricultural fields with numerous non-native species present. The dominate species present include desert broom, (*Baccharis sarothroides*), velvet mesquite (*Prosopis velutina*), salt cedar (*Tamarix ramosissima*), and Goodding willow (*Salix gooddingii*).

The alignment continues north from the Gila River Crossing across privately-owned undeveloped lands with evidence of human activity. There is an unoccupied home and an area where old farm equipment and other trash is present, as well as a motor home and corral. Cattle grazing occurs throughout the area. There is a small earthen tank near Airport Road at the northern end of this portion of the line that contained pooling stagnant water and was abundant with toads at the time of the site visit. There is no outlet structure evident from the tank.

GILA RIVER CROSSING

The alignment crosses the Gila River west of the Solomon Bridge and downstream of its confluence with the San Simon River. The Gila River flood plain is extremely broad (650-1,000 ft [200-300 m] wide) along the survey area. During the site visit, it was noted that flows were much higher than those evident on the aerial (April 2006) due to the heavy rains that had occurred since July 7, 2006. Channels were much wider and new channels were present, which illustrates the dynamic nature of this river system. The broad flood plain area is typified by very sandy soils. Along the northern side of the floodplain the river bank is steep with vertical cliff faces rising approximately 100-130 feet (30-40 m).

Vegetation across the flood plain of the Gila River tends to be open with scattered patches of trees and dense willow strands adjacent to the river. The dominant plant along the Gila River is coyote willow (*Salix exigua*), which creates a hedge of habitat approximately 10-13 feet (3-4 m) in width and 10-40 feet (3-12 m) in height at the waters edge. Beavers have created numerous breaks in vegetation adjacent to the channel. Numerous Fremont cottonwood (*Populus fremontii*) and tamarisk (*Tamarix* sp.) patches are present throughout the flood plain. These are not dependent on surface flows. The cottonwood trees tend to be older, more mature plants. The tamarisk tends to occur in scattered mono-typical patches across the flood plain, and throughout the survey area comprises only a small fraction (approximately ten percent) of the overall vegetation biomass. Saturated soils are present along the beaver pools and extend about two feet (0.6 m) up the bank. Some plants noted along the survey area include nut sedge (*Cyperus* sp), spike rush (*Eleocharis* sp), sweet clover (*Melilotus alba*), rabbitfoot grass (*Polypogon monspeliensis*), bull rush (*Scirpus americanus*), seepwillow (*Baccharis salicifolia*), cockle bur (*Xanthium strumarium*), and sunflower (*Helianthus annuus*).

NORTHERN ALIGNMENT (PD PROPERTY)

The northern alignment crosses undeveloped lands owned by Phelps-Dodge Corporation. There are several ephemeral drainages occurring along the northern portion of the Project area ranging from large named drainages with multiple braided channels to smaller unnamed channels. These drainages convey storm water flows from northeast to southwest, discharging to the Gila River about 6 miles southwest of the alignment. The upland plant community is typical of Sonoran desertscrub and is sparsely vegetated throughout the area. Xeroriparian habitat is found along the ephemeral drainages is typified by velvet mesquite (*Prosopis velutina*), desert broom (*Baccharis sarothroides*), seep-willow (*Baccharis glutinosa*) and desert hackberry (*Celtis pallida*).

RESULTS

Areas determined by WestLand to meet the criteria for jurisdictional waters are delineated on the attached 1"=100' aerial photograph. Red lines, demarcating the OHWM filled with yellow hatching, delineate jurisdictional drainages. Data points are indicated by a black dot that is labeled with the data point number and the width of the wash at that point. Areas which were identified on the aerial photograph as potentially jurisdictional were field checked (southern alignment and Gila River crossings) to determine if there were characteristics of jurisdictional waters present and to evaluate the area on a regional basis.

SOUTHERN ALIGNMENT

The JD for the southern portion is provided with an aerial photo base in Attachment A. It was determined that from the southern terminus at the existing railroad north to the Gila River crossing, no potentially jurisdictional waters are crossed. Between SH 70 and the Gila River, the alignment parallels the west side of the San Simon River. The San Simon River is a constructed, maintained channel that conveys flows north to the Gila River. Although the San Simon River is within the 500-foot-wide corridor evaluated, the project will not cross or affect the channel. Photographs of the San Simon River are provided in Attachment A, but the channel was not delineated. The Gila River crossing is discussed in more detail in the following sections. Three drainage systems were evaluated of which two were determined to be potentially jurisdictional drainages. Wash A did not have characteristics of a jurisdictional drainage. Wash B and Wash C are ephemeral in nature and were delineated.

The natural drainage pattern along Wash B, which conveys flows from the east across the alignment, has been altered by the creation of a manmade earthen tank located along the centerline of the corridor. There was some stagnant water in the tank during our field visit and there is no apparent outlet. The area was evaluated as a potential wetland (as described in the Gila River section). A soil sample was taken and the vegetation was characterized, neither of which supported a wetland determination (Data Sheet - Attachment A). There is minimal evidence of flow along the northeast side of the tank, along a manmade berm, that continues west from the tank. Wash C is a braided channel within the 500-foot-wide corridor. The upstream portions do not

have distinguishable channel characteristics (C1); however, the channel becomes more defined downstream for the confluence of smaller braids.

Table 1. Area of Potentially Jurisdictional Waters identified along the AZER Southern Alignment.

Portion of the Line	Drainage ID	Jurisdictional Area (Acres)
Southern Portion	A	NJD
	B	0.43*
	C	0.09
	TOTAL	0.52

*Includes earthen tank area.

GILA RIVER CROSSING

Attachment B provides the JD for the Gila River Crossing, along with photographs and datasheets completed to determine the presence or absence of wetlands. It was determined that no wetlands are present (see discussion below). The OHWM for the Gila River depicted on the aerial is based on a close evaluation of field conditions and a review of the flow data from the Solomon Bridge gauging stations. The area of jurisdictional waters along the Gila River is estimated to be 9.27 acres.

WestLand's wetland biologist visited the AZER proposed crossing over the Gila River to evaluate the potential wetland status of the fringe of riparian vegetation adjacent to the primary flow channel. This area is dominated by coyote willow (*Salix exigua*) and Goodding willow (*S. gooddingii*), both of which are considered obligate (OBL) wetland indicator species. A species list is provided in Attachment B (Table B-1). Although considered obligate species, both have deep root systems which are capable of reaching saturated conditions far below the surface. The substrate in the area consists primarily of sand; there is no soil development in this area and there is no indication that the substrate is saturated for more than brief periods following storm events. It is our determination that this area does not meet the criteria necessary to be considered wetland.

The ACOE 1987 Manual describes three general conditions that lead to atypical situations or problem areas, which could allow such areas to be designated as wetland without having positive indicators for all three parameters. Atypical situations are defined as unauthorized activities, man-induced wetlands, or natural events. This riparian fringe has had no unauthorized activities, and there have been no human-caused actions to change the conditions in these areas. Examples of natural events include fire, avalanches, volcanic activity, and changing river courses. The latter could potentially apply in this river bottom, and this area is a dynamic system in which the primary flow channel is likely to move across the flood plain over time. The "normal circumstance" for this system is continual change. Any fringe of riparian vegetation is likely to move with alterations in the main flow channel, and changes cannot be considered permanent. Because of the lack of soil development or stratification and the lack of long-term saturation, this does not function as a wetland.

The ACOE 1987 Manual also describes several "problem areas," in which the determination of wetland conditions is complicated by the seasonal lack of indicators for one or more of the three parameters. Specific

conditions within this category include wetlands on drumlins (glacial till features), seasonal wetlands (depressional areas primarily in the arid regions of the west), prairie potholes (shallow depressions in the north-central plains), and vegetated flats (mudflats with seasonal growth of OBL species). The active flow channel of the Gila River does not fit into any of the possible problem area classifications.

Furthermore, the ACOE 1987 Manual provides diagnostic environmental characteristics of vegetation, soil, and hydrology for non-wetlands, which WestLand considered in this delineation. ACOE guidelines state that if any one of these characteristics is present, the area is non-wetland. Specifically, the prevalent vegetation consists of plant species adapted for life only in aerobic soils and that cannot persist in anaerobic soil conditions. Because of the prevalence of OBL wetland species in the riparian fringe, this characteristic does not apply. The second characteristic is that soils, where present, are not classified as hydric and possess characteristics associated with aerobic conditions. No soils are present in the Gila River riparian fringe. The substrate is composed entirely of fine-grained sand and river cobbles. This characteristic should define these areas as non-wetland. Under the hydrology criterion, an area may be periodically inundated or saturated and still not qualify as wetland provided they do not preclude the occurrence of plant adapted for life in aerobic soil conditions. Most data points have at least one or two species in the facultative (FACU) or upland (UPL) categories, indicating that the hydrologic conditions do not preclude their occurrence. This characteristic would also define these riparian fringe areas as non-wetland.

NORTHERN ALIGNMENT (PD PROPERTY)

Attachment C provides the JD for the northern portion of the alignment from the southern boundary of the PD property, running north to the mine site. The northern portion of the northern alignment was included in the approved JD completed for the PD project (ACOE File No. 964-0202-MB, March 1997). This existing data was used to calculate acreage of jurisdictional waters on this portion of the alignment. Jurisdictional waters on the approved JD continue to convey flows to the southwest from the mine project area across the lower approximately 4 miles of the alignment. There are wide, braided named washes, as well as several unnamed washes that have been delineated. No wetlands or special aquatic sites are located along the northern portion. Table 2 summarizes the jurisdictional waters along the northern alignment.

Table 2. Area of Potentially Jurisdictional Waters identified along the AZER Northern Alignment.

Portion of the Line	Drainage ID	Jurisdictional Area (Acres)	Totals
Northern Portion Previously approved JD (ACOE File No. 949-0202-MB); letter designations follow approved JD format. Not all washes approved on the JD cross the AZER alignment.	F8	0.16	
	F9	0.19	
	F11	0.05	
	Total F		0.40
	G (Watson Wash)	0.16	
	G1 (Watson Wash)	5.20	
	Total G		5.36
	I (Talley Wash)	0.09	
	I1 (Talley Wash)	0.23	
	Total I		0.32

Table 2. Area of Potentially Jurisdictional Waters identified along the AZER Northern Alignment.

Portion of the Line	Drainage ID	Jurisdictional Area (Acres)	Totals
Southern Portion Not included on PD Approved JD – delineated on available aerals. Letter designations follow southwest from those shown on the approved JD where possible.	J (Cottonwood Wash)	0.23	
	J1 (Cottonwood Wash)	0.07	
		Total J	0.30
	M	0.08	0.08
	N	0.10	0.10
	O (Peterson Wash)	0.35	0.35
	Q	0.79	
	Q1	0.32	
		Total Q	1.11
	R1 (Wilson Wash)	0.18	
	R2 (Wilson Wash)	0.13	
	R3 (Wilson Wash)	0.19	
		Total R	0.50
	S	0.3	0.30
	T	0.15	0.15
	U	0.17	0.17
	V1 (Lone Star Wash)	0.12	
	V2 (Lone Star Wash)	0.22	
	V3 (Lone Star Wash)	0.20	
		Total V	0.54
		TOTAL	9.68

CONCLUSION

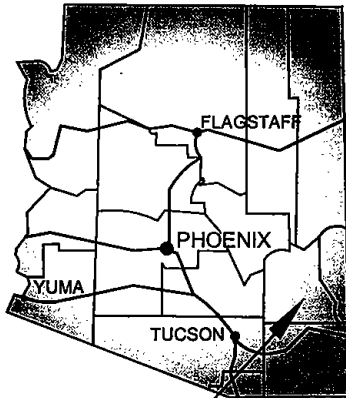
The 12.4-mile long AZER alignment is considered in three segments for ACOE review and consideration. As discussed with Ms. Cindy Lester, this is to allow for ACOE review of the Gila River at this time, while waiting to complete a review of the ephemeral drainages along the northern and southern portions until the interim guidance for these types of drainages is issued from ACOE's headquarters. Ephemeral drainages were identified along the length of the AZER alignment.

Approximately 9.27 acres of jurisdictional waters are associated with the Gila River crossing within the 500-foot-wide corridor considered in this delineation. No wetlands or special aquatic sites were identified.

AZER is currently working with the appropriate landowners to obtain the rights-of-way (ROW) for the railroad. A letter from AZER and a list of landowners involved in the transaction is attached (Attachment D). All landowners have entered into discussions with AZER and are aware of the project. Final ROW agreements will be completed later in the process.

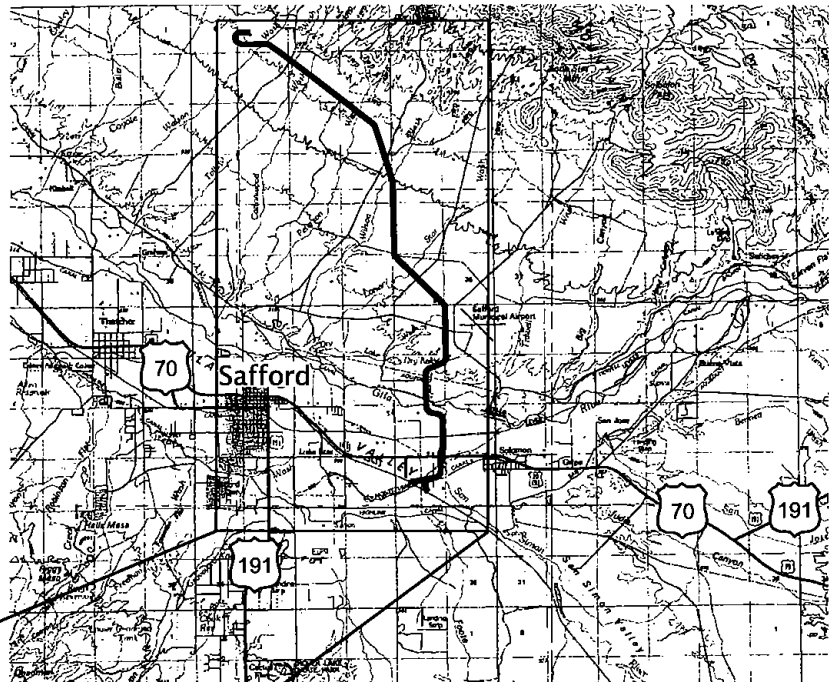
FIGURES

ARIZONA



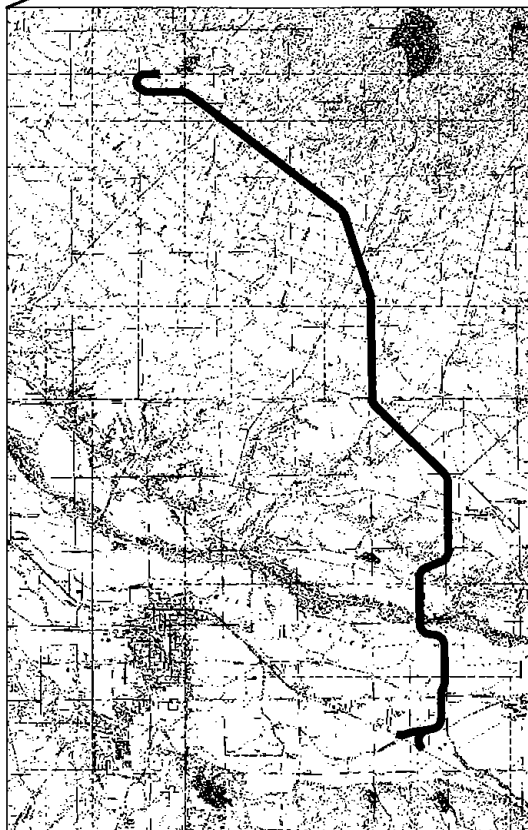
PROJECT
LOCATION

Portion of Graham County



Approximate Scale 1" = 20,000'

Safford 1:100,000 USGS Quadrangle.



T.6S.,R.26E., Portion Sections 5,6,8,9,10,15,22,23,26, & 35.
T.7S.,R.26E., Portion Sections 1,11,12,14, & 23.
Graham County, Arizona,
Weber Peak & Safford 1:24,000 USGS Quadrangles.

0' 6800' 13600'
APPROX. SCALE: 1" = 13600'

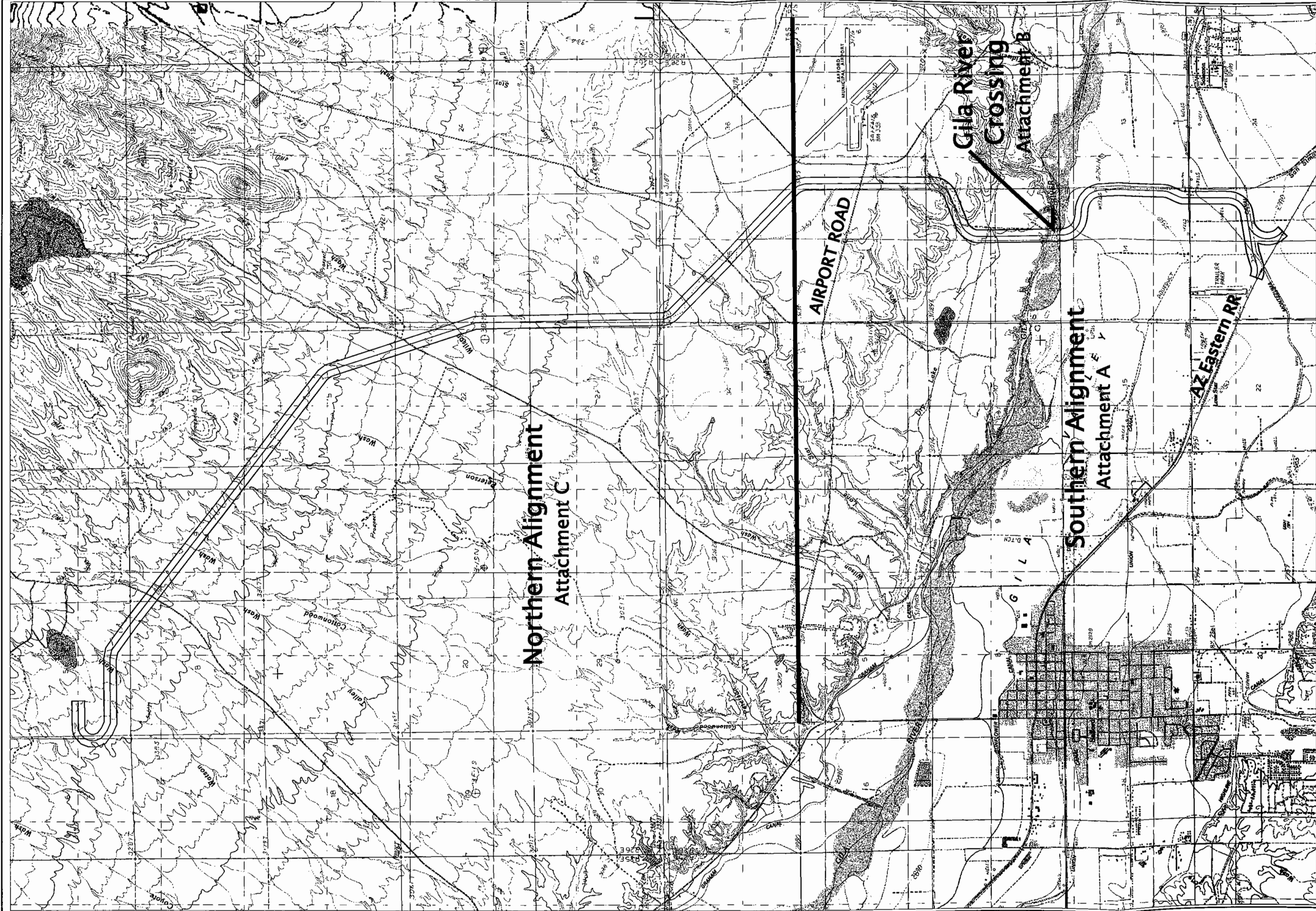


ARIZONA EASTERN RAILWAY SAFFORD BRANCH PROJECT

VICINITY MAP

Figure 1

WestLand Resources Inc.
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T.6S., R.26E., Portion Sections 5, 6, 8, 9, 10, 15, 22, 23, 26, & 35.
T.7S., R.26E., Portion Sections 1, 11, 12, 14, & 23.
Graham County, Arizona,
Weber Peak & Safford 1:24,000 USGS Quadrangles.



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Alignment
500 Foot Corridor

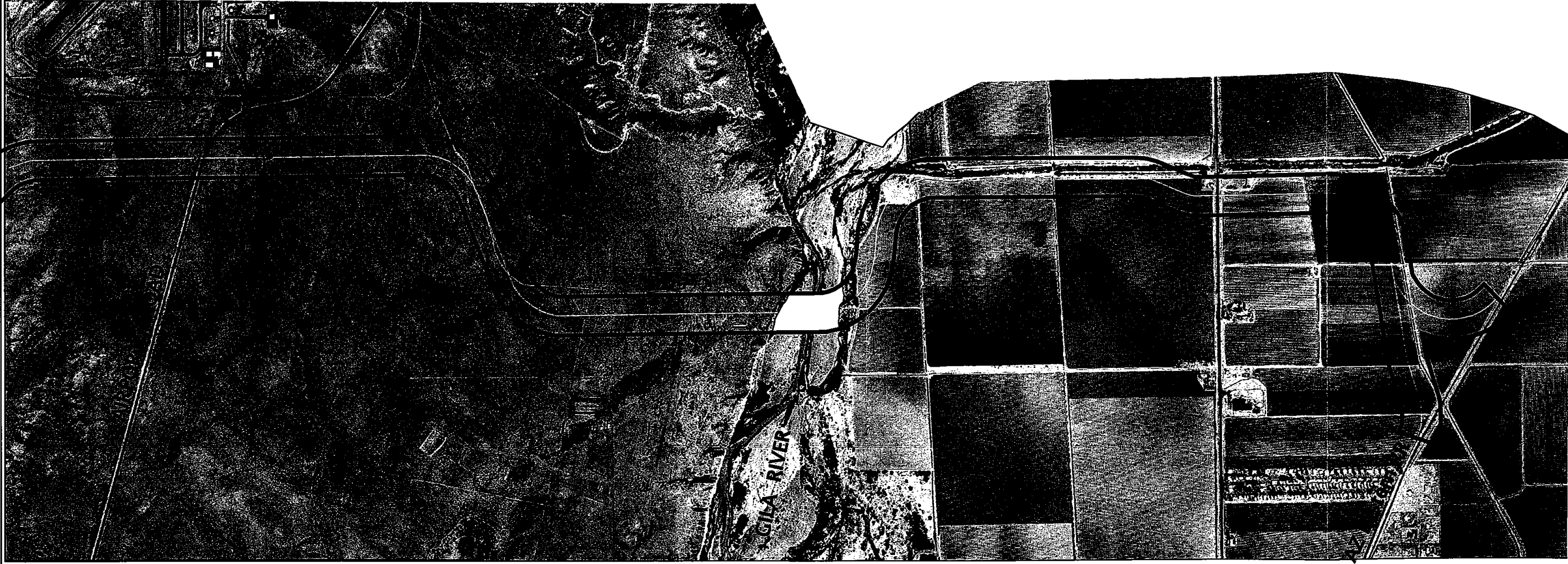
0' 1800' 3600'
SCALE 1" = 3600'



ARIZONA EASTERN RAILWAY
SAFFORD BRANCH PROJECT

Project Overview

Figure 2



T.7S.,R.26E., Portion Sections 1,11,12,14, & 23.
Graham County, Arizona,
Photo Source - Lee Harbers, Consultant
Photo Date - April 7, 2006

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Alignment
— 500 Foot Corridor

0' 700' 1400'
SCALE 1"=1400'

ARIZONA EASTERN RAILWAY
SAFFORD BRANCH PROJECT

Aerial Overview
Southern Alignment

Figure 3

D:\WP FullPath: M:\Projects\1578.01\A\B-south-UTM.dwg



T.7S., R.26E., Portion Sections 11, & 14.

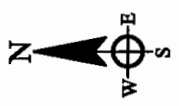
Graham County, Arizona.

Photo Source - Lee Harbers, Consultant

Photo Date - April 7, 2006



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Alignment
—— 500 Foot Corridor

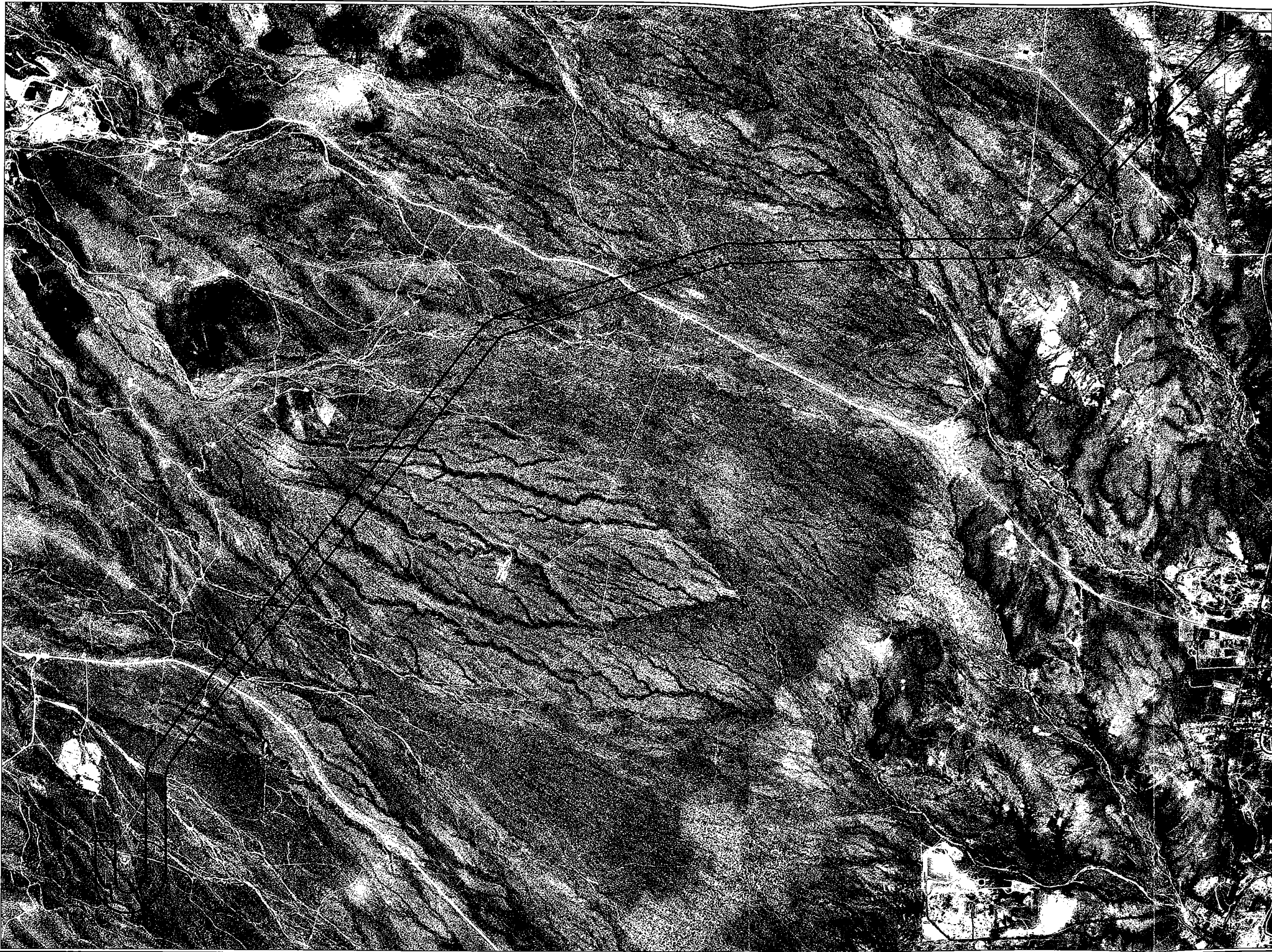
0' 175' 350'
SCALE 1"=350'

ARIZONA EASTERN RAILWAY SAFFORD BRANCH PROJECT

Aerial Overview Gila River Crossing

Figure 4

DWG FullPath: M:\projects\1378.01\A\A-north-quadrant-arizona-jd-with-dwg.dwg



T.6S,R.26E., Portion Sections 5,6,8,9,10,15,22,23,26, & 35.
Graham County, Arizona.
Photo Source - Lee Harbers, Consultant
Photo Date - April 7, 2006


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Alignment
— 500 Foot Corridor

0' 1200' 2400'
SCALE 1" = 2400'



ARIZONA EASTERN RAILWAY
SAFFORD BRANCH PROJECT

Aerial Overview
Northern Alignment

Figure 5