E.7
EXISTING CONDITIONS

	TAG#	SIZE	TYPE	
	217	16"	CEDAR ELM	
	218	10"	HACKBERRY	
	219	10"	HACKBERRY	
	220	10"	HACKBERRY	
	221	17"	MESQUITE: HONEY	
	222	9"	HACKBERRY	
	223	14"	HACKBERRY	
	224	9"	HACKBERRY	
	225	9"	HACKBERRY	
	226	9"	HACKBERRY	
(M)	227	16"	HACKBERRY	(10", 6", 5")
	228	10"	HACKBERRY	
	229	10"	HACKBERRY	
(P)(M)	230	20"	MESQUITE: HONEY	(12", 12", 8")
	231	9"	HACKBERRY	
	232	8"	HACKBERRY	
	233	9"	HACKBERRY	
(M)	235	11"	PECAN	(7", 7")
(M)	236	12"	LIVE OAK	(8", 7")
	237	8"	CEDAR ELM	
	238	10"	HACKBERRY	
	239	9"	HACKBERRY	
	240	9"	HACKBERRY	
	241	8"	HACKBERRY	
	242	9"	HACKBERRY	
	243	12"	HACKBERRY	
	244	8"	HACKBERRY	
(M)	245	13"	HACKBERRY	(9", 7")
	246	9"	HACKBERRY	
(M)	247	14"	HACKBERRY	(10", 8")
	248	13"	HACKBERRY	
	249	12"	HACKBERRY	
	250	8"	HACKBERRY	
(M)	251	15"	HACKBERRY	(8", 7", 6")
	252	9"	HACKBERRY	
	253	8"	HACKBERRY	
(M)	254	12"	HACKBERRY	(8", 8")
(R)(M)	255	12"	MESQUITE: HONEY	(8", 8")
(R)	256	8"	HACKBERRY	
(R)(M)	257	14"	HACKBERRY	(11", 6")
(R)	258	14"	HACKBERRY	
(R)(M)	259	11"	HACKBERRY	(8", 6")
(R)	260	8"	HACKBERRY	
(R)	261	13"	HACKBERRY	
(R)	262	11"	MESQUITE: HONEY	
(R)	263	8"	HACKBERRY	
(R)(M)	264	13"	MESQUITE: HONEY	(10", 6")
(R)(M)	265	12"	MESQUITE: HONEY	(9", 5")
(R)	266	10"	MESQUITE: HONEY	
(M)	269	15"	HACKBERRY	(11", 8")
	270	13"	PECAN	
	271	14"	PECAN	
	272	12"	PECAN	
(M)	273	13"	HACKBERRY	(9", 7")
	274	11"	HACKBERRY	
(P)	275	23"	WILLOW: BLACK	
	276	8"	HACKBERRY	
	277	9"	HACKBERRY	
	278	13"	HACKBERRY	
	279	12"	HACKBERRY	
	280	11"	HACKBERRY	
	281	15"	HACKBERRY	
(M)	282	16"	PECAN	(12", 7")
	283	11"	HACKBERRY	
	284	12"	HACKBERRY	
(R)	285	11"	HACKBERRY	
(R)	286	8"	HACKBERRY	
	287	16"	PECAN	
	288	17"	HACKBERRY	
	289	12"	HACKBERRY	
(M)	290	18"	HACKBERRY	(10", 8", 7")
	291	10"	HACKBERRY	
	292	14"	HACKBERRY	
	293	13"	HACKBERRY	
(M)	294	13"	HACKBERRY	(10", 6")
	295	13"	HACKBERRY	
(R)	318	8"	HACKBERRY	
(R)	319	9"	HACKBERRY	
	320	14"	HACKBERRY	
(M)	1098	12"	MESQUITE: HONEY	2 BOLES
(M)	1099	13"	MESQUITE: HONEY	2 BOLES
(R)(M)	1149	14"	MESQUITE: HONEY	2 BOLES
(R)(P)(M)	1150	25"	MESQUITE: HONEY	6 BOLES
(R)(M)	1151	13"	MESQUITE: HONEY	2 BOLES
(R)(M)	1152	17"	MESQUITE: HONEY	2 BOLES
(R)	1153	8"	MESQUITE: HONEY	
(R)(P)(M)	1154	24"	MESQUITE: HONEY	3 BOLES
(R)(P)(M)	1155	28"	MESQUITE: HONEY	5 BOLES
(M)	1156	11"	MESQUITE: HONEY	2 BOLES
	1157	8"	MESQUITE: HONEY	
(M)	1158	18"	MESQUITE: HONEY	3 BOLES
(M)	1159	16"	MESQUITE: HONEY	3 BOLES
(M)	1160	12"	MESQUITE: HONEY	2 BOLES
(R)(P)(M)	1161	25"	MESQUITE: HONEY	3 BOLES
	1505	11"	HACKBERRY	
	1508	18"	HACKBERRY	
	1509	14"	HACKBERRY	
	1528	8"	HACKBERRY	
(R)	8028	8"	MESQUITE: HONEY	
(R)(P)(M)	8029	27"	MESQUITE: HONEY	2 BOLES
(R)	8030	9"	MESQUITE: HONEY	
(P)(M)	8031	28"	MESQUITE: HONEY	7 BOLES
(P)(M)	8032	19"	MESQUITE: HONEY	4 BOLES
(R)(P)(M)	8033	19"	MESQUITE: HONEY	4 BOLES
(R)	8034	10"	MESQUITE: HONEY	
(R)	8036	12"	MESQUITE: HONEY	
(R)(M)	8037	16"	MESQUITE: HONEY	2 BOLES
	8039	12"	MESQUITE: HONEY	
(R)(P)(M)	8046	27"	MESQUITE: HONEY	5 BOLES
(R)	8047	9"	MESQUITE: HONEY	
(R)(M)	8048	11"	MESQUITE: HONEY	2 BOLES
(R)(P)(M)	8049	25"	MESQUITE: HONEY	4 BOLES
(M)	8050	15"	MESQUITE: HONEY	2 BOLES
(R)(P)(M)	8051	27"	MESQUITE: HONEY	5 BOLES
(R)(M)	8052	18"	MESQUITE: HONEY	2 BOLES
(R)(M)	8053	13"	MESQUITE: HONEY	2 BOLES
(P)	8056	9"	MESQUITE: HONEY	
(R)(M)	8057	18"	MESQUITE: HONEY	4 BOLES
(R)(M)	8058	14"	MESQUITE: HONEY	3 BOLES
(R)(P)(M)	8059	20"	MESQUITE: HONEY	4 BOLES
(R)(M)	8060	14"	MESQUITE: HONEY	3 BOLES
(R)(P)(M)	8061	23"	MESQUITE: HONEY	4 BOLES
(R)(M)	8062	12"	MESQUITE: HONEY	2 BOLES
(R)	8063	8"	MESQUITE: HONEY	
(R)(P)(M)	8064	20"	MESQUITE: HONEY	3 BOLES
(R)	8065	9"	WILLOW: BLACK	
(R)(M)	8066	14"	MESQUITE: HONEY	3 BOLES
(R)	8067	9"	WILLOW: BLACK	
	8068	9"	COTTONWOOD: EASTERN	
	8069	18"	MESQUITE: HONEY	
	8070	13"	MESQUITE: HONEY	
(M)	8071	14"	MESQUITE: HONEY	2 BOLES
	8072	8"	MESQUITE: HONEY	
(P)(M)	8073	25"	MESQUITE: HONEY	6 BOLES
(P)(M)	8074	23"	MESQUITE: HONEY	4 BOLES
(M)	8075	17"	MESQUITE: HONEY	2 BOLES
	8076	13"	MESQUITE: HONEY	
	8077	11"	MESQUITE: HONEY	
(P)(M)	8078	27"	MESQUITE: HONEY	4 BOLES
(P)(M)	8079	27"	MESQUITE: HONEY	4 BOLES
	8080	9"	MESQUITE: HONEY	
(P)(M)	8081	24"	MESQUITE: HONEY	4 BOLES
	8082	8"	MESQUITE: HONEY	
	8083	10"	MESQUITE: HONEY	
(R)(P)(M)	8084	33"	MESQUITE: HONEY	5 BOLES
(M)	8085	11"	MESQUITE: HONEY	2 BOLES
(R)(P)(M)	8086	26"	MESQUITE: HONEY	5 BOLES
(R)(P)(M)	8087	28"	MESQUITE: HONEY	4 BOLES
(R)(M)	8088	17"	MESQUITE: HONEY	2 BOLES
(R)(M)	8089	15"	MESQUITE: HONEY	2 BOLES
(R)(M)	8090	11"	MESQUITE: HONEY	2 BOLES
(R)(M)	8091	17"	MESQUITE: HONEY	2 BOLES
(R)(M)	8092	14"	MESQUITE: HONEY	2 BOLES
	8093	9"	MESQUITE: HONEY	
(M)	8094	15"	MESQUITE: HONEY	2 BOLES
	8095	12"	MESQUITE: HONEY	
(M)	8096	14"	MESQUITE: HONEY	2 BOLES
(R)(M)	8097	13"	MESQUITE: HONEY	2 BOLES
(M)	8098	16"	MESQUITE: HONEY	4 BOLES
	8099	8"	MESQUITE: HONEY	
	8100	9"	MESQUITE: HONEY	
	8101	9"	MESQUITE: HONEY	

LEGEND

— — 500 — —	EXISTING CONTOUR
	CREEK CENTERLINE
	PROPERTY BOUNDARY
	100 YR CLOMR FLOODPLAIN
100YR FP	100 YR COA ULTIMATE FLOODPLAIN
	100 YR FEMA EFFECTIVE FLOODPLAIN
CWQZ	ORIGINAL CRITICAL WATER QUALITY ZONE
+50%	1/2 CRITICAL WATER QUALITY ZONE
HWBZ	HEADWATER BUFFER ZONE
	WATERS OF THE U.S.
OHU	OVERHEAD UTILITY
3353	EXISTING TREE
3353	TREE TO BE REMOVED

	TAG#	SIZE	TYPE	
(M)	8102	13"	MESQUITE: HONEY	2 BOLES
(M)	8103	15"	MESQUITE: HONEY	2 BOLES
(P)(M)	8104	25"	MESQUITE: HONEY	4 BOLES
	8105	8"	MESQUITE: HONEY	
(P)(M)	8106	20"	MESQUITE: HONEY	3 BOLES
	8107	10"	MESQUITE: HONEY	
	8108	8"	MESQUITE: HONEY	
	8109	14"	MESQUITE: HONEY	
	8110	9"	MESQUITE: HONEY	
	8111	8"	MESQUITE: HONEY	
	8112	9"	MESQUITE: HONEY	
(P)(M)	8113	19"	MESQUITE: HONEY	3 BOLES
(M)	8114	17"	MESQUITE: HONEY	2 BOLES
	8115	9"	MESQUITE: HONEY	
(M)	8116	13"	MESQUITE: HONEY	2 BOLES
(R)	8117	8"	MESQUITE: HONEY	
(R)(M)	8118	15"	MESQUITE: HONEY	3 BOLES
	8119	12"	MESQUITE: HONEY	
(R)	8120	10"	MESQUITE: HONEY	
	8121	8"	MESQUITE: HONEY	
	8122	8"	MESQUITE: HONEY	
(R)	8123	16"	MESQUITE: HONEY	
(R)	8124	10"	MESQUITE: HONEY	
(R)	8125	14"	MESQUITE: HONEY	
	8126	12"	MESQUITE: HONEY	
(R)	8127	10"	MESQUITE: HONEY	
(M)	8128	18"	MESQUITE: HONEY	2 BOLES
(R)(P)(M)	8129	34"	MESQUITE: HONEY	5 BOLES
(R)(P)(M)	8130	23"	MESQUITE: HONEY	4 BOLES
(R)(M)	8131	15"	MESQUITE: HONEY	3 BOLES
(R)(M)	8132	17"	MESQUITE: HONEY	2 BOLES
(P)(M)	8133	20"	MESQUITE: HONEY	5 BOLES
(M)	8134	17"	MESQUITE: HONEY	2 BOLES
(M)	8135	18"	MESQUITE: HONEY	3 BOLES
(M)	8136	14"	MESQUITE: HONEY	3 BOLES
	8137	12"	MESQUITE: HONEY	
	8138	8"	MESQUITE: HONEY	
	8139	14"	MESQUITE: HONEY	
(R)	8140	12"	MESQUITE: HONEY	
(M)	8141	18"	DEAD	2 BOLES
(R)(P)(M)	8142	38"	MESQUITE: HONEY	6 BOLES
(R)	8143	11"	MESQUITE: HONEY	
(R)	8144	8"	MESQUITE: HONEY	
(R)(M)	8145	15"	MESQUITE: HONEY	2 BOLES
(R)(M)	8146	18"	MESQUITE: HONEY	4 BOLES
(R)(P)(M)	8147	27"	MESQUITE: HONEY	5 BOLES
(R)	8148	12"	MESQUITE: HONEY	
(R)(M)	8149	13"	MESQUITE: HONEY	2 BOLES
(R)	8150	9"	MESQUITE: HONEY	
(R)(P)(M)	8151	19"	MESQUITE: HONEY	2 BOLES
(R)	8152	9"	MESQUITE: HONEY	
(R)(P)(M)	8153	19"	MESQUITE: HONEY	3 BOLES
(R)	8154	9"	MESQUITE: HONEY	
(R)(M)	8155	12"	MESQUITE: HONEY	2 BOLES
(R)	8156	9"	MESQUITE: HONEY	
(R)(M)	8157	14"	MESQUITE: HONEY	2 BOLES
(P)(M)	8158	21"	MESQUITE: HONEY	3 BOLES
(R)(M)	8159	17"	MESQUITE: HONEY	3 BOLES
(R)	8160	11"	HACKBERRY	
(R)(P)(M)	8161	20"	MESQUITE: HONEY	2 BOLES
(R)(P)(M)	8162	30"	MESQUITE: HONEY	4 BOLES
(R)(P)(M)	8163	22"	MESQUITE: HONEY	2 BOLES
(R)	8164	11"	MESQUITE: HONEY	
	8165	10"	HACKBERRY	
	8166	8"	MESQUITE: HONEY	
	8167	13"	MESQUITE: HONEY	
	8168	10"	MESQUITE: HONEY	
	8169	8"	HACKBERRY	
	8170	9"	HACKBERRY	
	8171	12"	MESQUITE: HONEY	
	8172	12"	MESQUITE: HONEY	
(R)(P)(M)	8173	25"	MESQUITE: HONEY	2 BOLES
(R)	8174	12"	MESQUITE: HONEY	
(R)	8175	10"	MESQUITE: HONEY	
(R)	8176	8"	HACKBERRY	
(R)	8177	11"	MESQUITE: HONEY	
(R)	8178	9"	HACKBERRY	
(R)	8179	14"	MESQUITE: HONEY	
(R)	8180	9"	MESQUITE: HONEY	
(R)(P)(M)	8181	21"	MESQUITE: HONEY	3 BOLES
(R)	8182	14"	MESQUITE: HONEY	
	8183	14"	HACKBERRY	
(R)	8184	12"	MESQUITE: HONEY	
(R)	8185	10"	MESQUITE: HONEY	
(R)(M)	8186	13"	MESQUITE: HONEY	2 BOLES
(R)	8187	10"	MESQUITE: HONEY	
(R)(P)(M)	8188	22"	MESQUITE: HONEY	3 BOLES
(R)	8199	11"	MESQUITE: HONEY	
(R)	8200	10"	MESQUITE: HONEY	
	8201	8"	HACKBERRY	
	8202	9"	HACKBERRY	
	8203	8"	HACKBERRY	
	8204	13"	MESQUITE: HONEY	
(R)(M)	8205	16"	CHINABERRY	3 BOLES
(R)	8206	8"	HACKBERRY	
(R)	8207	8"	HACKBERRY	
(R)	8208	9"	MESQUITE: HONEY	
(R)(M)	8209	14"	CHINABERRY	2 BOLES
(R)(M)	8210	14"	MESQUITE: HONEY	3 BOLES
(R)	8211	8"	HACKBERRY	
(R)	8212	10"	MESQUITE: HONEY	
(R)	8213	12"	MESQUITE: HONEY	
(R)(M)	8214	11"	MESQUITE: HONEY	2 BOLES
(R)	8215	9"	MESQUITE: HONEY	
(R)	8216	13"	MESQUITE: HONEY	
(R)	8217	10"	MESQUITE: HONEY	
(R)	8238	8"	HACKBERRY	
(R)	8239	8"	HACKBERRY	
(R)	8240	12"	MESQUITE: HONEY	
(R)	8242	9"	HACKBERRY	
(R)(P)(M)	8243	19"	MESQUITE: HONEY	2 BOLES
(R)(M)	8244	12"	MESQUITE: HONEY	2 BOLES
(R)	8245	14"	CHINABERRY	
(R)	8246	14"	MESQUITE: HONEY	
(R)	8247	13"	MESQUITE: HONEY	
(R)(P)(M)	8301	21"	MESQUITE: HONEY	3 BOLES
(R)(P)(M)	8302	21"	MESQUITE: HONEY	3 BOLES
(R)	8468	14"	HACKBERRY	
(R)	8469	10"	HACKBERRY	
(R)	8470	10"	HACKBERRY	
(R)	8471	9"	HACKBERRY	
(R)	8472	10"	HACKBERRY	
(R)	8473	9"	HACKBERRY	
(R)	8474	9"	HACKBERRY	
	8475	8"	CHINABERRY	
	8476	8"	HACKBERRY	
	8477	9"	HACKBERRY	
	8478	9"	HACKBERRY	
	8479	8"	HACKBERRY	
	8480	13"	HACKBERRY	
(M)	8481	11"	HACKBERRY	2 BOLES
(P)(M)	8482	19"	MULBERRY	2 BOLES
(P)	8483	25"	CATAWBA	
(H)	8484	30"	ELM: AMERICAN	
(R)(M)	8485	16"	HACKBERRY	3 BOLES
(P)(M)	8486	30"	CHINABERRY	5 BOLES
	8487	8"	HACKBERRY	
(H)	8488	25"	POST OAK	
(P)	8489	24"	CATAWBA	
	8490	17"	MESQUITE: HONEY	

0 200' 400'
SCALE: 1" = 200'

NO.	DATE	REVISION	APPROVAL

PELOTON LAND SOLUTIONS
7004 BEE CAVE ROAD
BUILDING 2, SUITE 100
AUSTIN, TX 78746
PHONE: 512-831-7700
TX FIRM NO 12207

EASTON PARK SECTION 2B PRELIMINARY PLAN

NOT FOR CONSTRUCTION UNTIL APPROVED BY REGULATORY AGENCIES

EXISTING CONDITIONS

EASTON PARK SECTION 2B PRELIMINARY PLAN
AUSTIN, TRAVIS COUNTY, TEXAS

Brookfield Residential

DEVELOPER: BROOKFIELD RESIDENTIAL
DRAWN/DESIGNED BY: KR / RC / ER / FG
EIT/PROJECT MANAGER: OT
SR. PROJECT MANAGER: PC
PROJECT #: BRP15007-02

SHEET
EXH

C8J-2015-0255.SH

E.8
TOPOGRAPHIC MAP

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING RIGHT-OF-WAY
- ADJACENT PROPERTY BOUNDARY
- PROPOSED PROPERTY BOUNDARY
- EROSION HAZARD ZONE
- CRITICAL WATER QUALITY ZONE
- 1/2 CRITICAL WATER QUALITY ZONE
- OVERHEAD POWER LINES
- 100-YR COA ULTIMATE FLOODPLAIN
- 100-YR FEMA EFFECTIVE FLOODPLAIN
- WATERS OF THE U.S.
- PROPOSED RIGHT-OF-WAY
- PROPOSED SIDEWALK
- PROPOSED EASEMENT
- PROPOSED LINE OF SIGHT EASEMENT
- EXISTING TREES (3357)
- TREES TO BE REMOVED (*0F#162)
- PROTECTED TREES (*2F#161)
- HERITAGE TREES (1H#484)
- MULTI POLE TREES (1M#2083)

SCALE: 1" = 200'

NO.	DATE	REVISION	APPROVAL

C8J-2015-0255.1B

SHEET EXH

DEVELOPER: BROOKFIELD RESIDENTIAL	
DRAWN/DESIGNED BY: KR / RC / ER / FG	
EIT/PROJECT MANAGER: OT	
SR. PROJECT MANAGER: PC	
PROJECT #: BRP15007-02	

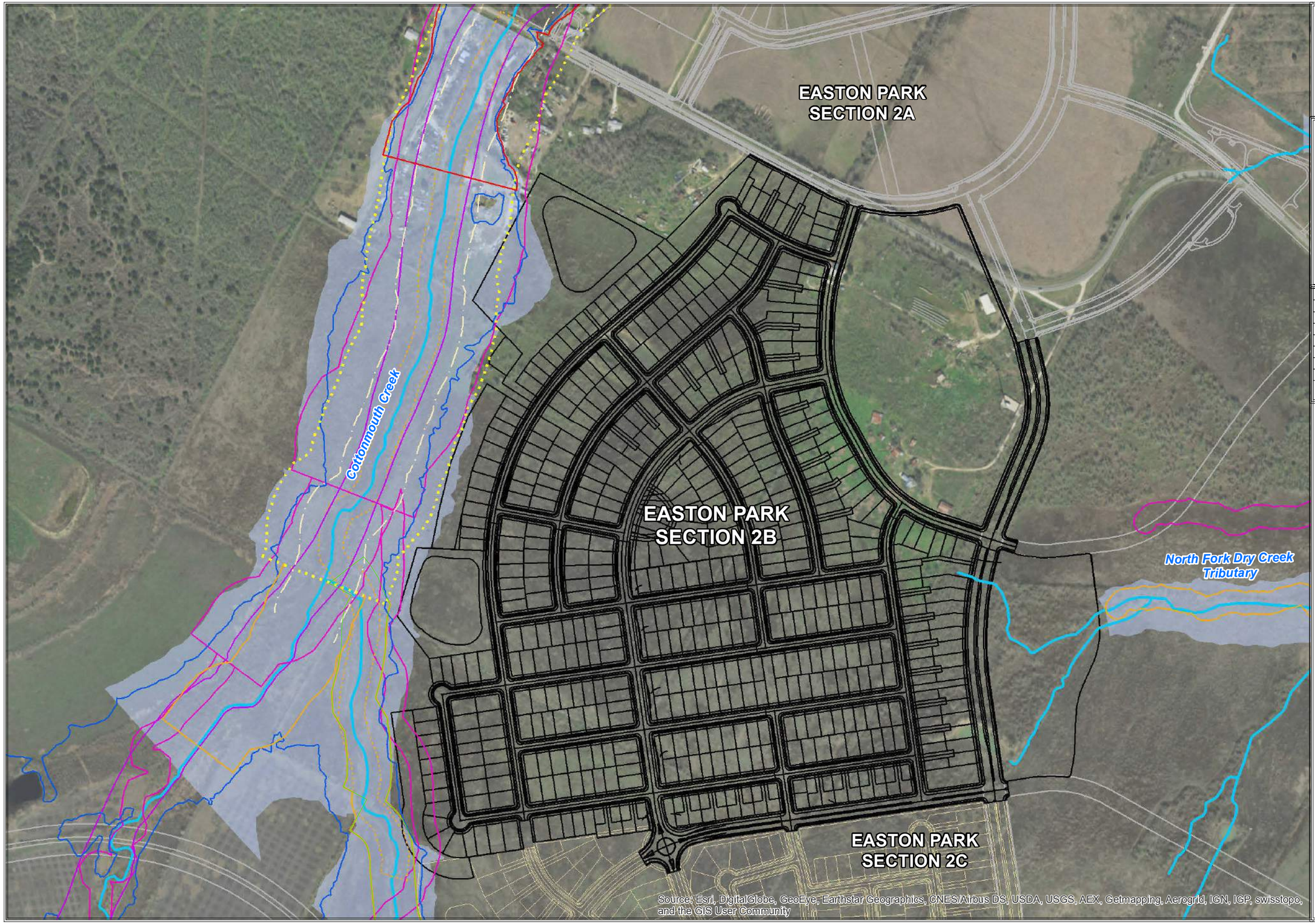
Brookfield Residential

TOPOGRAPHIC EXHIBIT

EASTON PARK SECTION 2B PRELIMINARY PLAN

AUSTIN, TRAVIS COUNTY, TEXAS

PELOTON LAND SOLUTIONS
7004 BEE CAVE ROAD
BUILDING 2, SUITE 100
AUSTIN, TX 78746
PHONE: 512-831-7700
TX FIRM NO 12207



EASTON PARK SECTION 2B

Austin, Travis County, Texas

PELOTON LAND SOLUTIONS

7004 BEE CAVE ROAD
BLDG 2, SUITE 100
AUSTIN, TX 78746
PHONE: 512-831-7700

TEXAS FIRM NO. 12207

PROJECT NO. BRP15007.02
DRAWN BY: RJP
REVIEWED BY: OT
DATE: 12/12/2016
REV:
REV:

FOR EXHIBIT PURPOSES ONLY
NOT FOR CONSTRUCTION

Legend

- Transferred CWQZ
- Existing CWQZ
- Proposed Half CWQZ
- Proposed CWQZ
- Erosion Hazard Zone
- Proposed 100yr CLOMR
- FEMA 100yr Floodplain
- Floodway
- Existing Buffer Zone
- Streamline
- Easton Park Section 2B Layout
- Easton Park Infrastructure
- Easton Park Section 2C
- 100yr Ultimate Floodplain

N

0 250 500
Feet

ENVIRONMENTAL MAP

Path: L:\JOB\Brookfield - Easton\BRP15007.02 - Section 2B Prelim Pla

E.9
ENVIRONMENTAL MAP

F.
ENVIRONMENTAL ASSESSMENT

Pilot Knob PUD: City of Austin Environmental Assessment

Carma Easton: City of Austin Environmental Assessment

October 15, 2012

Prepared for:

Carma Easton Inc.
9737 Great Hills Trail
Suite 260
Austin, Texas 78759

Jacobs Engineering
911 Central Parkway North
Suite 425
San Antonio, Texas 78232
210-494-0088
210-494-4525 (fax)

JACOBS™

October 15, 2012

Carma Easton Inc.
9737 Great Hills Trail, Suite 260
Austin, Texas 78759

Attention: Scott Rogers

Re: City of Austin Environmental Assessment and Threatened and Endangered Species Habitat Assessment

Pilot Knob PUD
Intersection of Colton Bluff Springs Road and McKinney Falls Parkway
Austin, Travis County, Texas

Dear Mr. Rogers

Jacobs Engineering is pleased to provide this City of Austin (COA) Environmental Assessment (EA) and Threatened and Endangered Species Habitat Assessment (HA) prepared for the above referenced site. The results of our consulting services are solely the opinion of Jacobs environmental professionals based on the site conditions documented at the time of the field site visit. Jacob's environmental professionals have incorporated the best data available from federal, state, and local sources to support our professional opinions.

We appreciate the opportunity to provide this EA and HA report. Should you have questions or need additional information, please contact me at 210.494.0088.

Larry M. Allen
Environmental Project Manager

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

This report presents the Critical Environmental Feature (CEF) Assessment and Hydrogeologic report portion of the City of Austin (COA) Environmental Assessment (EA) for Pilot Knob PUD. The purpose of this EA is to satisfy a COA, Land Development Code 25-8-121 Environmental Assessment Requirement, which necessitates that an EA be performed for any development located: (1) over a karst feature; (2) within an area draining to a karst aquifer or reservoir; (3) in a water quality transition zone; (4) in a critical water quality zone; (5) in a flood plain; or (6) on a tract with a gradient of more than 15 percent.

Environmental scientists from Jacob's Engineering Inc. (Jacobs) conducted a field site and surrounding areas (within 150 feet) visit on June 6th and June 7th of 2012. To satisfy the COA- EA requirements, the field site visit was conducted to determine the presence or absence of geologic, natural, or man-made features including: faults, fractures, riparian woodlands, water wells, borings, and excavations, as well as COA CEF's including: bluffs, canyon rimrock, caves, sinkholes, springs, seeps, and wetlands.

A threatened and endangered species habitat assessment (HA) was also performed on-site.

Jacobs completed the assessment process by conducting a review of information received pertaining to Pilot Knob PUD from reasonably ascertainable, publicly available, practically reviewable information sources.

The remaining sections of this report describe the findings of the EA and HA.

2.0 GENERAL SITE DESCRIPTION

2.1 Site Description

Pilot Knob PUD consists of multiple tracts totaling approximately 2,214 acres, located southeast of Austin, Travis County, Texas. The proposed residential development is located east of the intersection of William Cannon Drive and McKinney Falls Parkway and Thaxton Road, south of Dee Gabriel Collins Road, west of State Highway 183, and north of Rodriguez Road. (***Appendix A, Exhibits 1 through 3***).

The site predominately consists of cropland primarily used for hay production, native rangeland, and abandoned cropland with wooded corridors along fence rows (***Appendix B, Photograph 1***). Tributaries of Cottonmouth Creek, North Fork Dry Creek, and Dry Creek (locally named "South Fork Dry Creek") traverse throughout portions of the properties.

2.2 Land Use

Aerial photographs (1951, 1964, 1970, 1980, 1988, 1996, 2004, and 2010) for the subject properties were obtained from GeoSearch, the Texas Natural Resources Information Systems (TNRIS), and the National Agriculture Imagery Program (NAIP). The development site and surrounding land appear to have been composed of agricultural land with associated farmsteads as of the 1951 aerial. Adjacent to the development site, commercial and residential development was not constructed until the 1970's. The 2004 aerials indicate that the properties adjacent to the

development site appear to consist of agricultural land with associated farmsteads and commercial properties to the northeast; residential development, agricultural land with associated farmsteads, and commercial properties to the southeast (***Appendix B, Photograph 2***); residential development and agricultural land with associated farmsteads to the southwest; and commercial properties and residential subdivisions to the northwest.

2.3 Vegetation Communities

The project site is located in the Blackland Prairies vegetation area of Texas as described in the Shinners and Mahler's Flora of North Central Texas (Diggs *et. al* 1999). Vegetation in the area is described as a true tall grass prairie with little bluestem (*Schizachyrium scoparium)* as a climax dominant. Other important grasses were big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans),* hairy grama (*Bouteloua hirsuta)*, silver bluestem (*Bothriochloa saccharoides)*, tall dropseed (*Sporoboulus asper)*, sideoats grama (*Bouteloua curtipendula)*, and switchgrass (*Panicum virgatum)*. Under heavy grazing Texas wintergrass (*Nassella leucotricha)*, buffalograss (*Buchloe dactyloides*), Texas grama (*Bouteloa rigidiseta*), and many annuals have increased or invaded. Mesquite *(Prosopis glandulosa)* has invaded the hardland sites of the southern portion of the Blackland Prairies. Post oak (*Quercus stellata*) and blackjack oak (*Quercus marilandica*) have increased on the medium to little textured soils.

The majority of the project site consisted of upland range vegetation including Japanese brome (*Bromus japonicus*), King Ranch bluestem (*Bothriochloa ischaemum var. songarica*), silver bluestem, horsemint (*Monarda citriodora*), giant ragweed (*Ambrosia trifida)*, sumpweed (*Iva annua*), goldenrod (*Solidago virgaurea*), Texas wintergrass, and Johnson grass (*Sorghum halepense*) (***Appendix B, Photograph 3***). Upland woody vegetation observed consisted of hackberry (*Celtis laevigata)*, Ashe's juniper (*Juniperus ashei*), mesquite, mustang grape (*Vitis mustangensis*), eastern red cedar (*Juniperus virginiana*), and gum bumelia (*Sideroxylon lanuginosum*) (***Appendix B, Photograph 4***). Bottomland vegetation observed consisted of cottonwood (*Populus deltoids*), chinaberry (*Melia azedarach*), black willow (*Salix nigra*), hackberry, boxelder (*Acer negundo*), and giant ragweed (***Appendix B, Photograph 5***).

2.4 Soil Descriptions

Soils in the project site are presented in ***Table 1*** (NRCS Web Soil Survey of Travis County, 2012) (***Appendix A, Exhibit 4***).

Table 1: Soils Located Within the Project Site: Travis County, Texas

Soil Type	Map Symbol	Soil Description
Austin silty clay 1 to 3 percent slopes	AsB	Located on ridges on plains; parent material consists of residuum weathered from chalk. Well drained, water holding capacity is moderate, shrink-swell potential is moderate, soil not flooded.
Austin silty clay 3 to 6 percent slopes, moderately eroded	AsC2	Found on ridges on plains; parent material consists of residuum weathered from chalk. Well drained, water holding capacity is moderate, shrink-swell potential is moderate, soil not flooded.
Eddy gravelly loam, 3 to 6 percent slopes	EdC	Located on ridges and plains; parent material consists of residuum weathered from Austin chalk; well drained, water movement moderately high, low water holding capacity, shrink-swell potential is low.
Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded	FhF3	Located on linear gilgai on ridges on plains; parent material consists of residuum weathered from calcareous shale in Eagleford Shale and Taylor Marl formations of Cretaceous age; well drained, available water holding capacity is moderate, shrink-swell potential is very high, not flooded.
Heiden clay, 1 to 3 percent slopes	HeB	Located on linear gilgai on ridges on plains; parent material consists of clayey residuum weathered from clayey shale of Eagleford Shale or Taylor Marl; well drained, water movement low, available water holding capacity is moderate, shrink-swell potential is very high, not flooded.
Heiden clay, 3 to 5 percent slopes, moderately eroded	HeC2	Located on linear gilgai on ridges on plains; parent material consists of clayey residuum weathered from clayey shale of Eagleford Shale or Taylor Marl; well drained, water movement low, moderate water holding capacity, shrink-swell potential is very high.
Heiden clay, 5 to 8 percent slopes, moderately eroded	HeD2	Located on linear gilgai on ridges on plains; parent material consists of clayey residuum weathered from clayey shale of Eagleford Shale or Taylor Marl; well drained, water movement low, moderate water holding capacity, shrink-swell potential is very high.
Behring clay, 1 to 3 percent slopes	HfB	Located on linear gilgai on ridges on plains; parent material consists of clayey residuum weathered from shale; moderately well drained, water movement is low, moderate water holding capacity; shrink-swell potential is high.
Behring clay, 3 to 5 percent slopes	HfC	Located on linear gilgai on ridges on plains; parent material consists of clayey residuum weathered from shale; moderately well drained, water movement is low, high water holding capacity; shrink-swell potential is high.
Heiden gravelly clay, 8 to 20 percent slopes, moderately eroded	HgF2	Located on linear gilgai on ridges on plains; parent material consists of clayey residuum weathered from clayey shale of Eagleford Shale or Taylor Marl; well drained, water movement is low, available water holding capacity is moderate, shrink- swell potential is very high, not flooded.

Soil Type	Map Symbol	Soil Description
Houston Black clay, 0 to 1 percent slopes	HnA	Located on circular gilgai on plains on plains; parent material consists of residuum weathered from calcareous shale of Taylor Marl and Eagleford Shale; moderately well drained, water movement is low, available water holding capacity is moderate, shrink-swell potential is very high, not flooded.
Houston Black clay, 1 to 3 percent slopes	HnB	Located on circular gilgai on ridges on plains; parent material consists of residuum weathered from calcareous shale of Taylor Marl and Eagleford Shale; moderately well drained, water movement is low, available water holding capacity is moderate, shrink-swell potential is very high, not flooded.
Houston Black clay, 3 to 5 percent slopes, moderately eroded	HnC2	Located on linear gilgai on ridges on plains; parent material consists of residuum weathered from calcareous shale of Taylor Marl and Eagleford Shale; moderately well drained, water movement is low, available water holding capacity is moderate, shrink-swell potential is very high, not flooded.
Houston Black gravelly clay, 2 to 8 percent slopes, moderately eroded	HoD2	Located on linear gilgai on ridges on plains; parent material consists of residuum weathered from calcareous shale of Taylor Marl and Eagleford Shale; moderately well drained, water movement is low, available water holding capacity is moderate, shrink-swell potential is very high, not flooded.
Castephen silty clay loam, 3 to 5 percent slopes	StC	Located on ridges on plains; parent material consists of residuum weathered from Austin chalk formation; well drained, water movement is moderately high, available water holding capacity is very low, shrink-swell potential is moderate, not flooded.
Tinn clay, 0 to 1 percent slopes, frequently flooded	Tw	Located on circular gilgai on flood plains on plains; parent material consists of clayey alluvium of Holocene age derived from mixed sources; moderately well drained, water movement is low, water holding capacity is high, shrink-swell potential is high.

2.5 Topography and Floodplain Data

The site is located within the Cottonmouth Creek, North Fork Dry Creek, and South Fork Dry Creek Watersheds as mapped by the COA Watershed Regulation Area Map. The site is considered outside the Edwards Aquifer Recharge Zone as mapped by the Texas Commission on Environmental Quality (TCEQ) Recharge Zone Boundary Maps. The COA considers this area within the Suburban Desired Development Zone (DDZ).

On the USGS topographic map Montopolis (1988) and Creedmoor (1973) Texas Quadrangles, the project site ranges from approximately 540 feet above mean sea level (msl) to approximately 720 feet above msl (***Appendix A, Exhibit 5***). The topographic map depicts the presence of 34 structures throughout the properties and multiple structures adjacent to the site. The topographic map also depicts the presence of Cottonmouth Creek, located in the center of the properties and flows south to north; the headwaters of Dry Creek, (locally named “South Fork Dry Creek”), located on the southeastern portion of the properties and flows west to east; and the headwaters of North Fork Dry Creek, located due north of Dry Creek, and flows southwest to northeast.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map panel number 48453C0615H dated September 26, 2008, the site is mapped as Zone A, areas with a 1% annual chance of flooding (no base flood elevations determined), Zone AE, areas with a 1% annual chance of flooding (with base flood elevations determined), and Zone X, areas with a 0.2% annual chance of flood (***Appendix A, Exhibit 6***).

2.6 Proposed Waters of the U.S.

Proposed waters of the U.S. (WOUS) were delineated by Jacob's professionals and appear on-site. The location and limits of all proposed waters of the U.S. (i.e. ephemeral streams, ponds, and wetlands) were mapped on the site using a Trimble GeoXH Global Positioning System (GPS). The ordinary high water mark (OHWM) was recorded along each stream. Data collected in the field was interpreted using ArcMap, a Geographic Information Systems (GIS) program.

WOUS included ephemeral tributaries of four stream systems (Cottonmouth Creek- 5 ephemeral tributaries, South Fork Dry Creek- 12 ephemeral tributaries, North Fork Dry Creek- 23 ephemeral tributaries), and their unnamed tributaries (***Appendix A, Exhibit 7 and Appendix B, Photograph 6***). Vegetation within these bottomland corridors consisted of cottonwood, hackberry, chinaberry, black willow, and box elder. These ephemeral streams did not contain water at the time of the site visit.

Wetlands were also evaluated within the site. Wetlands are those "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" as defined by the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency. Wetlands were delineated within the site, as described by the criteria in the 1987 USACE Wetland Delineation Manual (USACE 1987). Five wetlands were identified on site. Vegetation within these wetlands consisted of black willow, yellow nutsedge (*Cyperus esculentus*), bald spikerush (*Eleocharis erythropoda*), bulrush (*Scirpus spp.*), cattail (*Typha spp.*), curly dock (*Rumex crispus*), and sumpweed (***Appendix B, Photograph 7 and 8***).

According to the United States Fish and Wildlife Service National Wetlands Inventory (NWI) map (*Appendix 8*), the on-site tributaries are classified as Cottonmouth Creek, Dry Creek (locally named "South Fork Dry Creek"), and North Fork Dry Creek. Several water features also exists on the property. The USFWS classifies these water features as follows:

- Palustrine, open water/ unknown bottom, permanently flooded, diked/impounded (POWHh)
- Palustrine, emergent, persistent, seasonally flooded, diked/impounded (PEM1Ch)
- Palustrine, emergent, persistent, seasonally flooded (PEM1C)

There were also a total of twenty-six ponds (seventeen upland and nine on-channel) located on the project site (***Appendix B, Photograph 9***). The majority of the ponds were barren in vegetation along the banks; some did consist of black willow, hackberry, and Chinese tallow tree (*Triadica sebifera*) (***Appendix B, Photograph***

10). Although upland ponds are generally not considered jurisdictional by the USACE, the COA considers them important features due to their relationship with associated wetland fringe along their banks (ten total ponds with associated wetland fringe).

There was an upland pond, located north of Colton Bluff Springs Road and west of Cottonmouth creek, that was determined not a CEF (***Appendix B, Photograph 11***). The upland vegetation growing in the pond borrow area and spoil embankment area was similar to vegetation already described in this report, therefore, it is apparent that the pond does not hold water and does not exhibit any wetland features. The nature of the chalky sub soil layers is not conducive to holding water for extended periods of time. **Table 2** provides a summary of all waters within the site.

Table 2: Waters of the U.S. within the Project Area.

Name	Classification	Average OHWM (Feet)*	Approximate Linear Length (Feet)**	Approximate Area (Acre)**
Cottonmouth Creek (and tributaries)	Ephemeral	4.80	15,427	1.990
North Fork Dry Creek (and tributaries)	Ephemeral	3.69	28,557	2.592
South Fork Dry Creek (and tributaries)	Ephemeral	3.17	16,922	1.327
Tributary of Marble Creek	Ephemeral	2	256	0.011
Wetland 1	Herbaceous	--	--	0.046
Wetland 2	Herbaceous	--	--	0.835
Wetland 3	Herbaceous	--	--	0.110
Wetland 4	Herbaceous	--	--	0.095
Wetland 5	Herbaceous	--	--	0.240
Pond 1	On-channel Pond	--	--	1.018
Pond 2	Upland Pond	--	--	0.407
Pond 3	Upland Pond	--	--	0.159
Pond 4	On-channel Pond	--	--	1.464
Pond 5	Upland Pond	--	--	0.366
Pond 6	On-channel Pond	--	--	0.235
Pond 7	Upland Pond	--	--	0.193
Pond 8	Upland Pond	--	--	0.584
Pond 9	On-channel Pond	--	--	0.188
Pond 10	Upland Pond	--	--	0.318
Pond 11	On-channel Pond	--	--	0.981
Pond 12	Upland Pond	--	--	0.105
Pond 13	Upland Pond	--	--	0.206
Pond 14	On-channel Pond	--	--	0.493
Pond 15	On-channel Pond	--	--	0.074
Pond 16	Upland Pond	--	--	0.109
Pond 17	Upland Pond	--	--	0.723
Pond 18	Upland Pond	--	--	0.144
Pond 19	Upland Pond	--	--	0.931
Pond 20	Upland Pond	--	--	0.222
Pond 21	Upland Pond	--	--	0.193
Pond 22	Upland Pond	--	--	0.199
Pond 23	Upland Pond	--	--	0.226

Name	Classification	Average OHWM (Feet)*	Approximate Linear Length (Feet)**	Approximate Area (Acre)**
Pond 24	On-channel Pond	--	--	0.384
Pond 26	Upland Pond	--	--	0.074
Pond 27	On-channel Pond	--	--	0.183
Totals			**61,631**	**17.425**

*Represents an average width at the OHWM. However, actual widths are used for all calculations.
**The length and area of waters of the U.S. were measured in ArcMap, a geographic information system (GIS).

There were no other surface water features identified on the site.

2.7 Geology and Groundwater

A review of the Geologic Atlas of Texas shows that the site is underlain by Cretaceous igneous rocks (Ki), Ozan Formation (Ko), Terraces along streams (Qt), Kemp Clay, Corsicana Marl, Neylandville Formation, and Marlbrook Marl (Kknm), and Pecan Gap Chalk (Kpg).

Cretaceous igneous rocks can be described as; pyroclastics altered to nontronite, basalt intruded into the pyroclastics of Pilot Knob volcano, and flows along the southern flank of the exhumed volcano.

The Ozan Formation (locally named Sprinke Formation, “lower Taylor marl) can be described as: clay, marly, calcareous content decreases upward, montmorillonitic, some glauconite, phosphate pellets, and hematite and pyrite nodules, variable amount of silt-size quartz and calcite fragments, become more abundant upward, blocky with conchoidal fracture, light gray to brown; weathers light gray to grayish orange and white, develops poor fissility, thickness +- 600 ft.

Terraces along streams consist of three or more levels which may correspond to coastal Pleistocene units: gravel, sand, silt, and clay in various proportions with gravel more prominent in the older, higher terraces; gravel along Guadalupe River, siliceous, coarse, along the Colorado River, mostly dolomite, limestone chert, quartz, and various igneous and metamorphic rocks from the Llano region and dolomite, limestone, and chert from the Edwards Plateau; sand mostly quartz.

Kemp Clay, Corsicana Marl, Neylandville Formation, and Marlbrook Marl (locally named Bergstrom Formation, “upper Taylor marl”) can be described as: undivided in the upper part- clay, calcareous, locally silt, massive, thinly laminated, cochoidal fracture, medium dark gray; weathers medium gray. The Neylandville Formation is present only in the northernmost part of map. Lower part clay, dominated by montmorillonitic, silt-size quartz becomes more abundant upward, calcite fragments common, glauconitic, disseminated pyrite, blocky with conchoidal fracture, strikingly uniform throughout, light medium gray, weathers light brown to light gray and becomes slightly fissile. Thickness is +-600 ft.

Pecan Gap Chalk can be described as chalk in lower part grading upward to chalky marl with micro-granular calcite in clay matrix, well-rounded quartz grains in lower part, medium gray, weathers light gray and white, thickness +-200 ft, grades laterally in places to marl.

Refer to ***Appendix A, Exhibit 9*** for the Geologic Map.

Surface exposure on-site was generally obscured by the presence of relatively thick soil cover and vegetation. The surface consisted of soil mixed with scattered cobbles.

There were no geologic features observed on the site.

According to *"Ground Water Quality of Texas"*, a report by the Texas Water Development Board, the site is located in the downdip of the Trinity Group aquifer system and partially in the Edwards Balcones Fault Zone (BFZ) aquifer system. The Trinity Group aquifer system covers all or part of 56 counties and is composed of Paluxy, Glen Rose, and Travis Peak (Twin Mountains) formations. Saturated thickness ranges from approximately 100 feet in the outcrop area to about 1,200 feet near the downdip limit of fresh to slightly saline water. The Edwards BFZ aquifer covers approximately 4,350 square miles in parts of 11 counties. The Edwards aquifer consists of the Georgetown Limestone, formations of the Edwards Group (the primary water-bearing unit) and their equivalents, and the Comanche Peak Limestone where it exists. Thickness ranges from 200 to 600 feet.

The onsite field surface review did not indicate any contact with the Edwards Balcones Fault Zone (BFZ)

2.8 Water Well and other Man-made Excavations

The Water Information Integration and Dissemination (WIID) is a suite of Internet-based applications that allow interaction with water-related databases. Seventeen water wells were reported on these databases within a one-mile search distance of the subject properties. Information regarding these wells is listed below in ***Table 3***:

Table 3: Texas Water Development Board WIID Database Review

Well No.	Location from subject property (mile)	Type	Well Depth (ft)	Date Drilled
5851401	0.32 N	Domestic	24	Unknown
5851402	0.67 N	Unused	246	1970
5851405	0.80 N	Domestic	50	1911
5851406	0.78 N	Public Supply	152	Unknown
5851701	0.04 N	Stock	2,425	1920
5851702	Within property	Unused	32	Unknown
5851703	0.36 W	Unused	28	1900
5851707	0.15 W	Unused	33	Unknown
5851708	Within property	Unused	66	1948
5851802	0.02 E	Unused	18	1948
5851803	Within property	Domestic	19	1938
5851804	0.67 NE	Unknown	40	1971
5851805	0.63 NE	Unknown	21	1971
5851806	0.65 NE	Unknown	60	1971
5851807	0.66 NE	Unknown	40	1971
5851808	0.71 NE	Unknown	200	1971
5851809	Within property	Domestic	35	Unknown

During the site visit, no borings or excavations were observed; however a fire-hydrant and a plugged water well were observed north of Colton Bluff Springs Road on the western edge of Cottonmouth Creek (***Appendix B, Photograph 12***). No other water wells, borings, or excavations were identified within the site by visual reconnaissance.

2.9 Soil Disposal Areas and Existing Roadway Conditions

There is one area of spoil disposal on the site related to the dry pond described in Section 2.6. There are, however, no inappropriate spoil disposal areas or roadway alignments present on the site.

3.0 CRITICAL ENVIRONMENTAL FEATURES

The COA designates wetlands as critical environmental features (CEF's). A total of five wetlands and ten ponds with associated wetland fringe were identified on site at the time of site visit. The COA requires a standard setback of 150 feet around the outside edge of the wetland area (***Appendix A, Exhibit 10)***.

If wetlands are impacted by development, mitigation will occur. The COA has a minimum 1:1 replacement of the same square footage as wetlands identified on site.

There were no canyon rim rocks, bluffs, springs, or seeps (as defined by the COA) identified on the site or within 150 feet of the site boundary.

3.1 Proposed Protective Measures

Based on the requirements of the City of Austin Land Development Code 25-8-92, 25-8-93, and further agreements included within the Consent Agreement between the City of Austin and the Pilot Knob Municipal Utility Districts, critical water quality zones (CWQZ) and/or water quality transition zones (WQTZ) are to be established along each waterway based on the floodplain and drainage basin.

The CWQZ buffer can vary in distance, but will generally be greater than 50 feet and less than 200 feet from the tributary centerline for minor to intermediate waterways, depending on the drainage area. The WQTZ buffer distance can also vary, but will generally be either 100 feet or 200 feet adjacent to the CWQZ, depending on the drainage area. Refer to ***Appendix A, Exhibit 6*** for the approximate distance of each zone.

No other significant features requiring protection were observed on the site.

4.0 THREATENED AND ENDANGERED SPECIES HABITAT ASSESSMENT

The areas within the project boundary were assessed for suitable habitat for state and federally listed candidate, threatened, and endangered species. A description of the results of these assessments is provided in the paragraphs below.

The Endangered Species Act (ESA), passed in 1973, regulates activities affecting endangered and threatened plants and animals. The ESA prohibits the importing and exporting, taking, possessing, delivering, carrying, transporting, shipping, receiving, and selling or offering for sale any endangered flora or fauna.

Information on federal- and state-listed candidate, threatened, or endangered species was obtained from the TPWD and the USFWS. Twenty-seven species were listed as threatened or endangered in Travis County (***Table 4***).

Table 4: Threatened and Endangered Species of Travis County, Texas

Species	State Status	Federal Status	Habitat Description
Austin Blind Salamander *Eurycea waterlooensis*	--	C	mostly restricted to subterranean cavities of the Edwards Aquifer; dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton Springs (Sunken Gardens (Old Mill) Spring, Eliza Spring, and Parthenia (Main) Spring which forms Barton Springs Pool); feeds on amphipods, ostracods, copepods, plant material, and (in captivity) a wide variety of small aquatic invertebrates
Barton Springs Salamander *Eurycea sosorum*	E	LE	dependent upon water flow/quality from the Barton Springs pool of the Edwards Aquifer; known from the outlets of Barton Springs and subterranean water-filled caverns; found under rocks, in gravel, or among aquatic vascular plants and algae, as available; feeds primarily on amphipods
Jollyville Plateau salamander *Eurycea tonkawae*	--	C	Known from springs and water of some caves north of the Colorado River.
Bee Creek Cave harvestman *Texella reddelli*	--	LE	small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties
Bone Cave Harvestman *Texella reyesi*	--	LE	small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties; weakly differentiated from Texella reddelli
Tooth Cave Pseudoscorpion *Tartarocreagris texana*	--	LE	Small, cave-adapted pseudoscorpion known from small limestone caves of the Edwards Plateau.
Tooth Cave Spider *Neoleptoneta myopica*	--	LE	Very small, cave-adapted, sedentary spider.
Warton's Cave Meshweaver *Cicurina wartoni*	--	C	Very small, cave adapted spider.
American Peregrine Falcon *Falco peregrinus anatum*	T	DL	year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Species	State Status	Federal Status	Habitat Description
Arctic Peregrine Falcon *Falco peregrinus tundrius*	--	DL	migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.
Bald Eagle *Haliaeetus leucocephalus*	T	DL	found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds
Black-capped Vireo *Vireo atricapilla*	E	LE	oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer
Golden-cheeked Warbler *Dendroica chrysoparia*	E	LE	juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer
Interior Least Tern *Sterna antillarum athalassos*	E	LE	subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony
Peregine Falcon *Falco peregrinus*	T	DL	both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.

Species	State Status	Federal Status	Habitat Description
Sprague's Pipit *Anthus spragueii*	--	C	only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.
Whooping Crane *Grus americana*	E	LE	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties
Smalleye Shiner *Notropis buccula*	--	C	endemic to upper Brazos River system and its tributaries (Clear Fork and Bosque); apparently introduced into adjacent Colorado River drainage; medium to large prairie streams with sandy substrate and turbid to clear warm water; presumably eats small aquatic invertebrates
Kretschmarr Cave mold beetle *Texamaurops reddelli*	--	LE	small, cave-adapted beetle found under rocks buried in silt; small, Edwards Limestone caves in of the Jollyville Plateau, a division of the Edwards Plateau
Tooth Cave ground beetle *Rhadine persephone*	--	LE	resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties
Red Wolf *Canis rufus*	E	LE	extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies
False spike mussel *Quadrula mitchelli*	T	--	possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at the site; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins
Smooth pimpleback *Quadrula petrina*	T	C	small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel, tolerates very slow to moderate flow rates, appears not to tolerate dramatic water level fluctuations, scoured bedrock substrates, or shifting sand bottoms, lower Trinity (questionable), Brazos, and Colorado River basins
Texas fatmucket *Lampsilis bracteata*	T	C	streams and rivers on sand, mud, and gravel substrates; intolerant of impoundment; broken bedrock and course gravel or sand in moderately flowing water; Colorado and Guadalupe River basins
Texas fawnsfoot *Truncilla macrodon*	T	C	little known; possibly rivers and larger streams, and intolerant of impoundment; flowing rice irrigation canals, possibly sand, gravel, and perhaps sandy-mud bottoms in moderate flows; Brazos and Colorado River basins

Species	State Status	Federal Status	Habitat Description
Texas pimpleback *Quadrula petrina*	T	C	mud, gravel and sand substrates, generally in areas with slow flow rates; Colorado and Guadalupe river basins
Texas horned lizard *Phrynosoma cornutum*	T	--	open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September
DL = Delisted Taxon, , LT = Federally threatened, LE = Federally endangered, C = Candidate species, T = State threatened, E = State Endangered			
Source: TPWD 12/15/2011			

Information was also gathered from the Texas Natural Diversity Database (TNDD). This data is gathered and reviewed by research staff at the Texas Parks and Wildlife Department for the occurrence of threatened, endangered, and rare species sightings within Travis County. Land due north of the project site has had occurrences of the Guadalupe bass (*Micropterus treculi*), Little Bluestem-indiangrass series (*Schizachyrium scoparium-sorghastrum nutans*), Texas garter snake (*Thamnophis sirtalis annectens*), and Correll's false dragon-head (*Physostegia correllii*). The Guadalupe Bass has been spotted within the Colorado River and Onion Creek, both at the Highway 183 crossing. The sighting within the Colorado River was approximately 6.0 miles north-northeast of the project site, and the sighting within Onion Creek was approximately 1.8 miles north-northeast of the project site. This bass is ranked S3 on the State Ranking system. S3 is considered rare or uncommon in state, with typically 21 to 100 viable occurrences. The little bluestem-indiangrass series is a terrestrial grass community that was found approximately 2.0 miles north-northeast of the project site adjacent to Onion Creek. This grass series is ranked S2, which means it is imperiled in state, very rare, vulnerable to extirpation, with typically 6 to 20 viable occurrences. The Texas garter snake has been spotted in two locations northwest of the project site. The first occurrence is located approximately 1.8 miles northwest of the project site, and second occurrence is located north 3.5 miles from the project site. This snake is ranked S3, which means it is rare or uncommon in state, typically 21 to 100 viable occurrences. Correll's false dragon-head was spotted approximately 5.8 miles north of the project site along the Colorado River bank at the Montopolis Bridge. It has a S2 state ranking, meaning it is imperiled in state, very rare, vulnerable to extirpation, with typically 6 to 20 viable occurrences. No documented occurrences of any T&E species were located on-site according to the TNDD.

Neither federal nor state listed threatened, endangered, or candidate species were observed at the project site. Nor was there any designated critical habitat at the project site. The habitat on the site could be suitable for brief use (i.e. transitory feeding, loafing, etc.) by the listed birds. However, it is unlikely that any of these species would use the site for any extended period (i.e. nesting or lengthy roosting). This project, as proposed, is not expected to impact any listed species or critical habitat.

5.0 CONCLUSIONS

A review of site visit information and publicly available data determined that three known creeks and their associated tributaries (5.706 acres), five wetlands (1.326 acres), and twenty-six ponds (10.279 acres) (ten of these ponds had associated wetland fringe) were located within the project site. No other Critical Environmental Features (CEFs) were identified.

Based on the requirements of the City of Austin Land Development Code 25-8-92, 25-8-93, and further agreements included within the Consent Agreement between the City of Austin and the Pilot Knob Municipal Utility Districts, critical water quality zones (CWQZ) and/or water quality transition zones (WQTZ) will be established along each waterway and associated tributary, as appropriate, based on floodplain and contributing drainage basin data.

Based on information gathered from the Texas Parks and Wildlife Department, and the United States Fish and Wildlife Service, there are twenty-seven threatened and endangered species listed for Travis County, Texas. Neither the referenced species nor their critical habitat was observed on site during the field reconnaissance process. Therefore, the proposed development is not expected to have any detrimental effect on these species.

REFERENCES

Aerial Photographs provided by GeoSearch of Austin, Texas, and the Texas Natural Resources Information System, for years 1951, 1964, 1970, 1980, 1988, 1996, and 2004.

Flood Insurance Rate Map for Travis County, Texas and Incorporated Areas, Map Number 48453C0175F, National Flood Insurance Program, January 19, 2000

Geologic Atlas of Texas: Austin Sheet, 1974, Bureau of Economic Geology, The University of Texas at Austin

Groundwater Quality of Texas: An Overview of Natural and Man-Affected Conditions, Texas Water Commission, March 1989

Web Soil Survey of Travis County, Texas, United States Department of Agriculture, Natural Resources Conservation Service

Texas Water Development Board Water Information Integration & Dissemination Database, http://wiiddev.twdb.state.tx.us/

USGS Topographic Maps, Montopolis (1988) and Creedmoor (1973), Texas Quadrangles, 7.5 Minute Series Topographic Map

Texas Parks and Wildlife Department, Rare, Threatened, and Endangered Species of Travis County (12/15/2011)

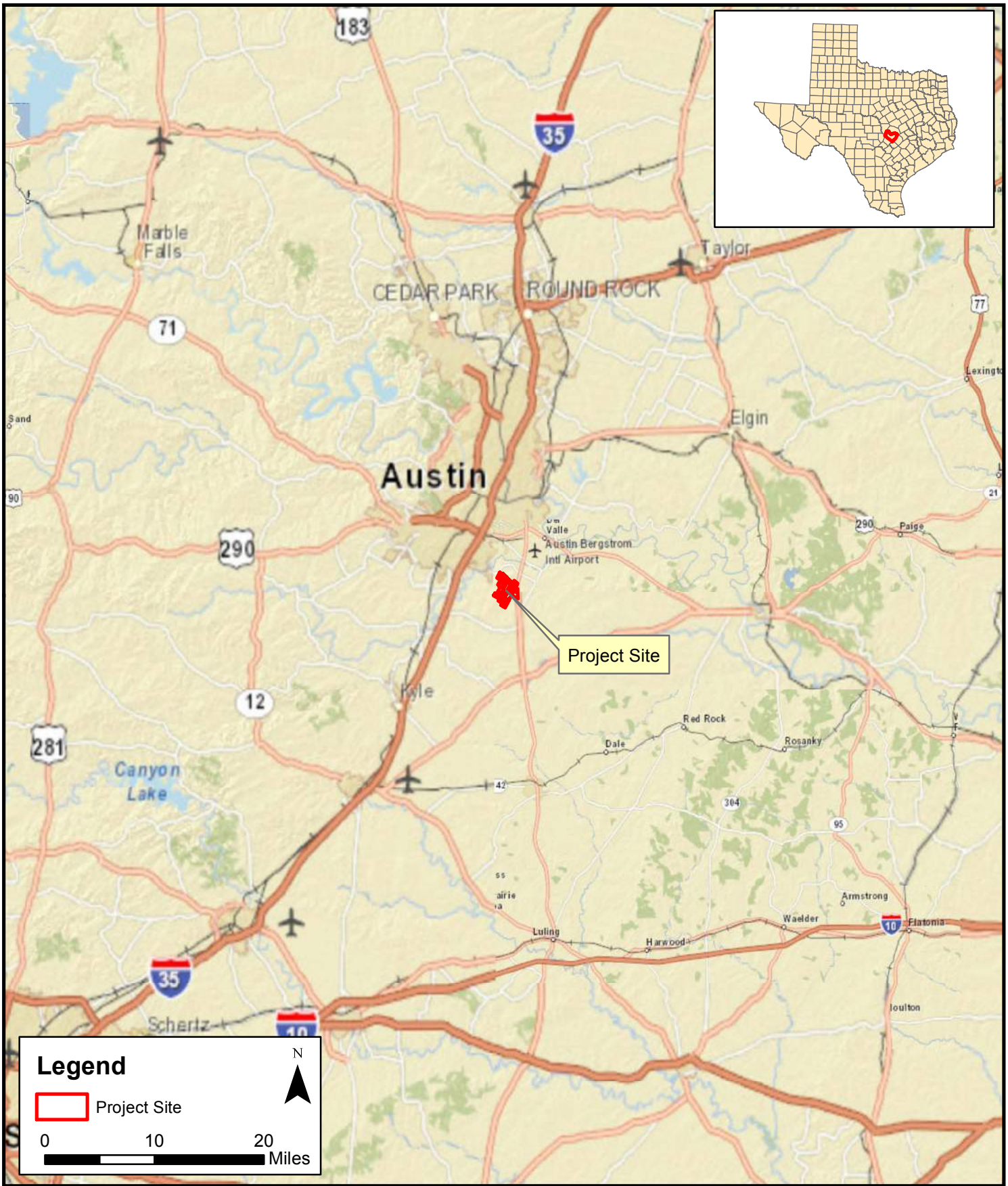
Texas Parks and Wildlife Department, Texas Natural Diversity Database (TNDD) (09/15/2008)

2009 Aerial Photography, Capital Area Council of Governments GIS Data Clearinghouse

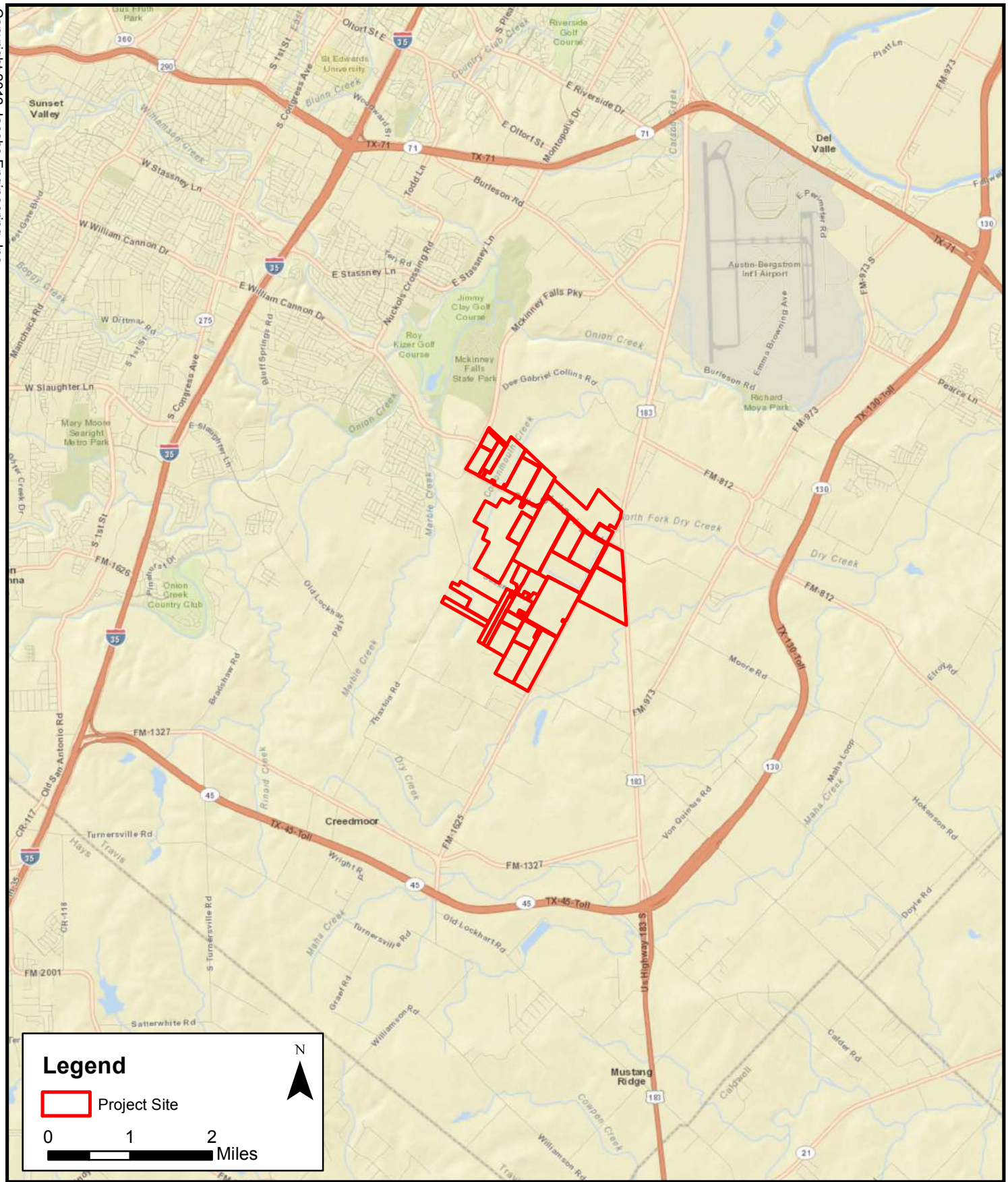
2010 Aerial Imagery, National Agricultural Imagery Program, U.S. Department of Agriculture, Farm Service Agency

APPENDIX A

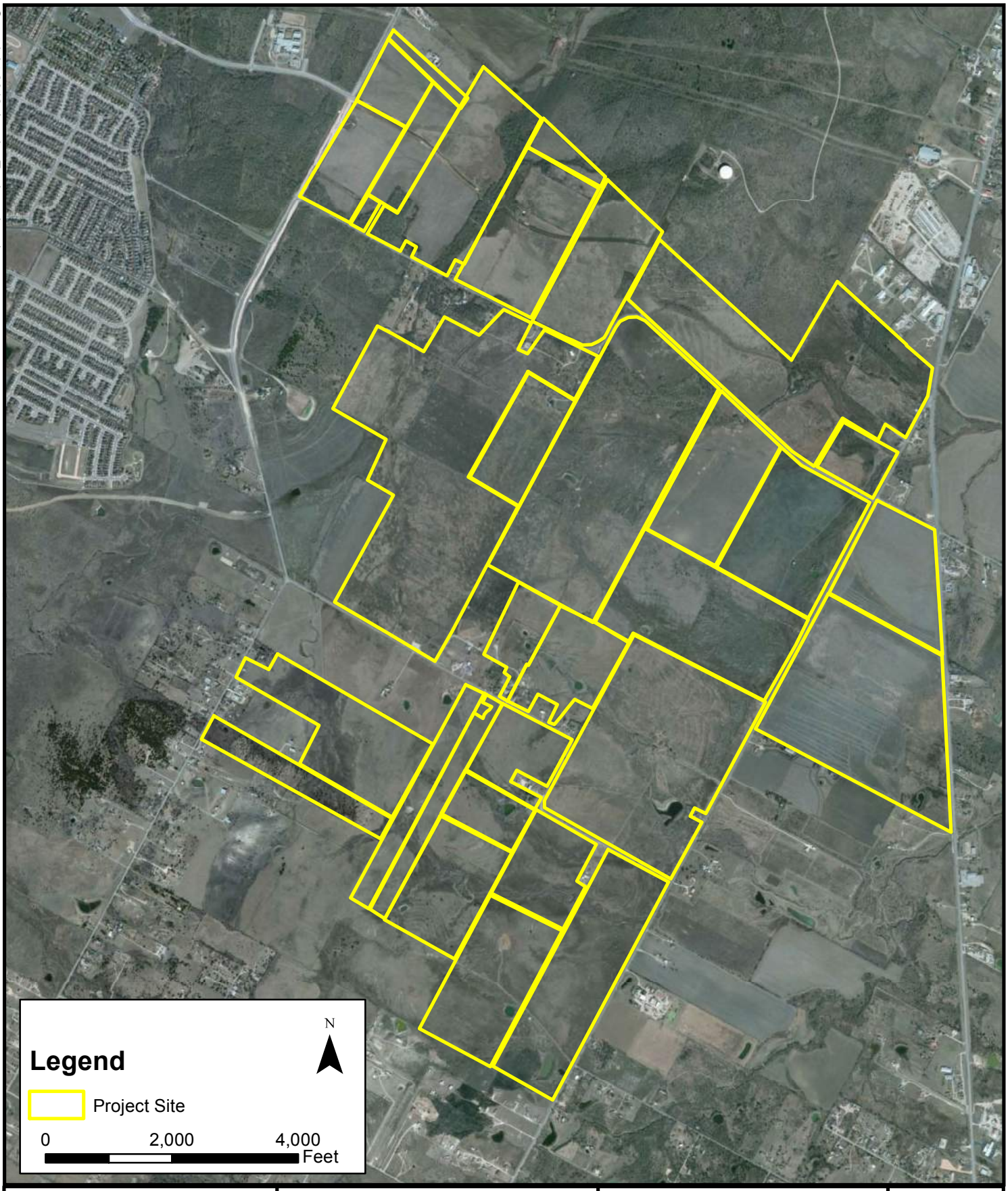
Site Maps



JACOBS 911 Central Parkway North Suite 425 San Antonio, Texas 78232 210.494.0088 Main 210.494.4525 Fax	**Site Vicinity Map** Pilot Knob PUD Austin, Travis County, Texas WJXK2203	Source: ESRI StreetMap World (2009)	**Exhibit** **1**



JACOBS 911 Central Parkway North Suite 425 San Antonio, Texas 78232 210.494.0088 Main 210.494.4525 Fax	**Local Area Map** Pilot Knob PUD Austin, Travis County, Texas WJXK2203	Source: Bing Road Map (2012)	**Exhibit** **2**



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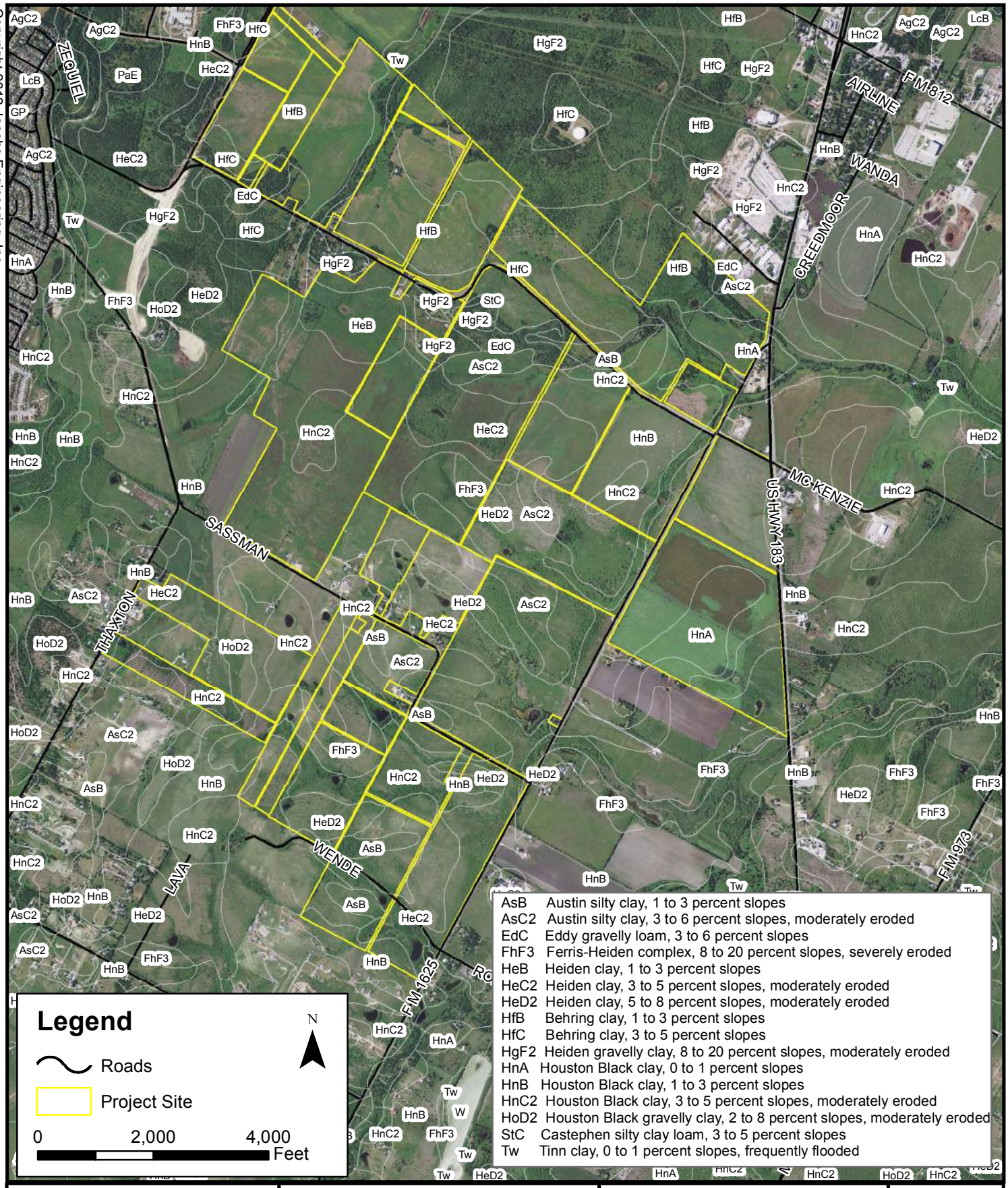
2010 Aerial Map

Pilot Knob PUD
Austin, Travis County, Texas
WJXK2203

Source: Bing Aerial Map (2011)

Exhibit

3



AsB Austin silty clay, 1 to 3 percent slopes
AsC2 Austin silty clay, 3 to 6 percent slopes, moderately eroded
EdC Eddy gravelly loam, 3 to 6 percent slopes
FhF3 Ferris-Heiden complex, 8 to 20 percent slopes, severely eroded
HeB Heiden clay, 1 to 3 percent slopes
HeC2 Heiden clay, 3 to 5 percent slopes, moderately eroded
HeD2 Heiden clay, 5 to 8 percent slopes, moderately eroded
HfB Behring clay, 1 to 3 percent slopes
HfC Behring clay, 3 to 5 percent slopes
HgF2 Heiden gravelly clay, 8 to 20 percent slopes, moderately eroded
HnA Houston Black clay, 0 to 1 percent slopes
HnB Houston Black clay, 1 to 3 percent slopes
HnC2 Houston Black clay, 3 to 5 percent slopes, moderately eroded
HoD2 Houston Black gravelly clay, 2 to 8 percent slopes, moderately eroded
StC Castephen silty clay loam, 3 to 5 percent slopes
Tw Tinn clay, 0 to 1 percent slopes, frequently flooded

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Soil Survey Map

Pilot Knob PUD
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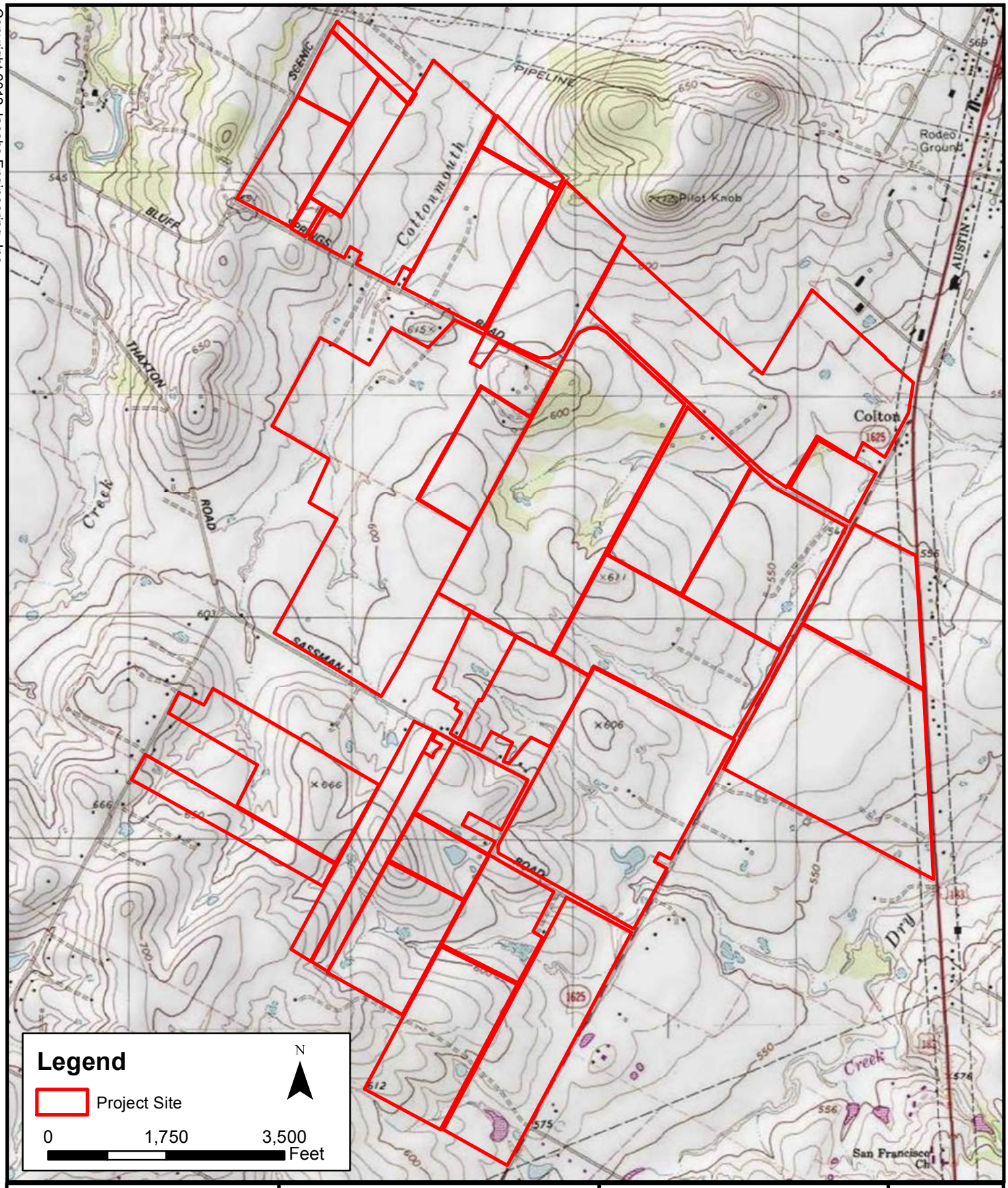
WJXK2203

Source: NRCS Web Soil Survey for Travis County, Texas

Exhibit 4



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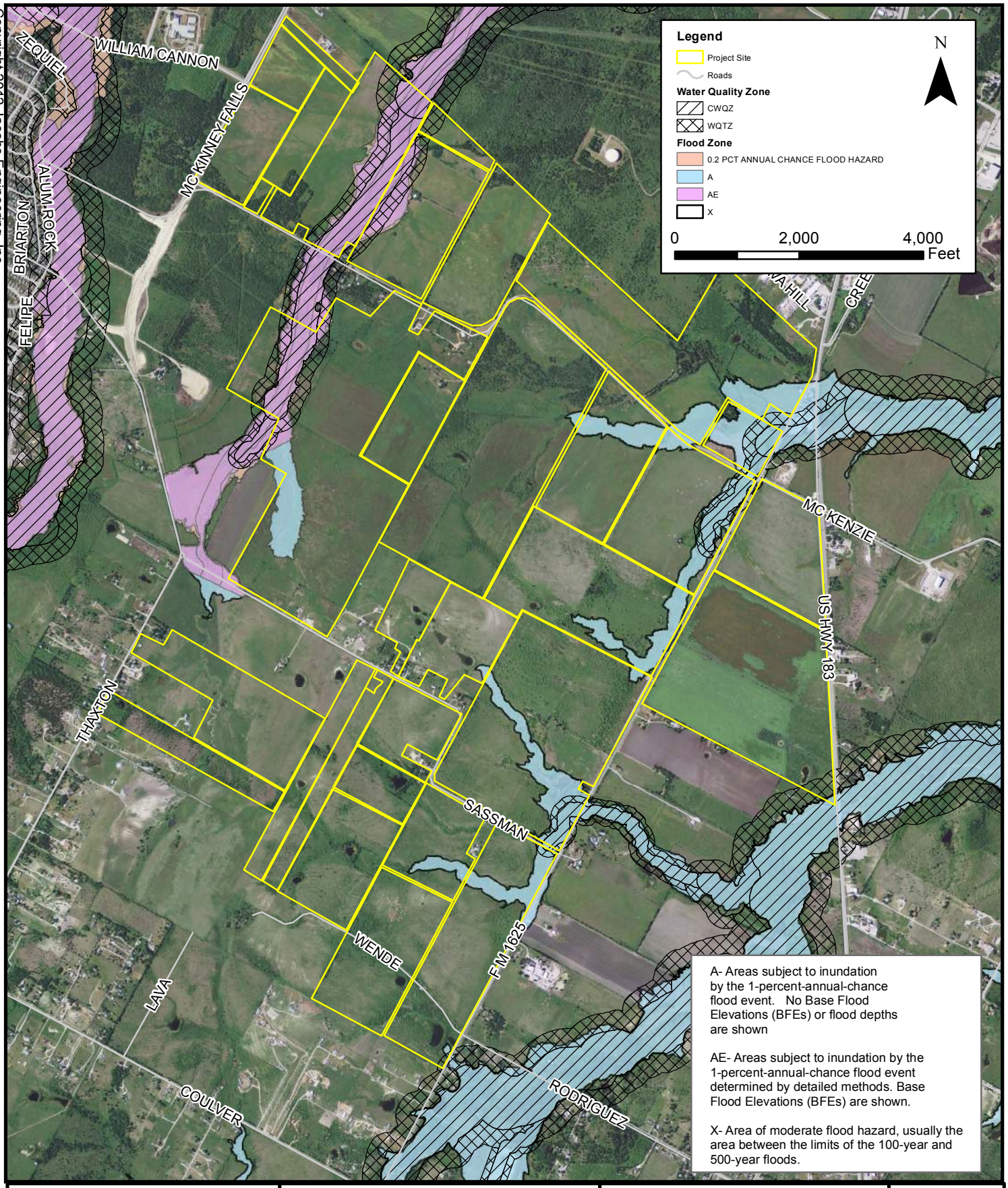
Topographic Map

Pilot Knob PUD
Austin, Travis County, Texas
WJXK2203

Source: Texas Natural Resources Information Systems
Montopolis (1988) and
Creedmoor (1973) USGS Quads

Exhibit

5



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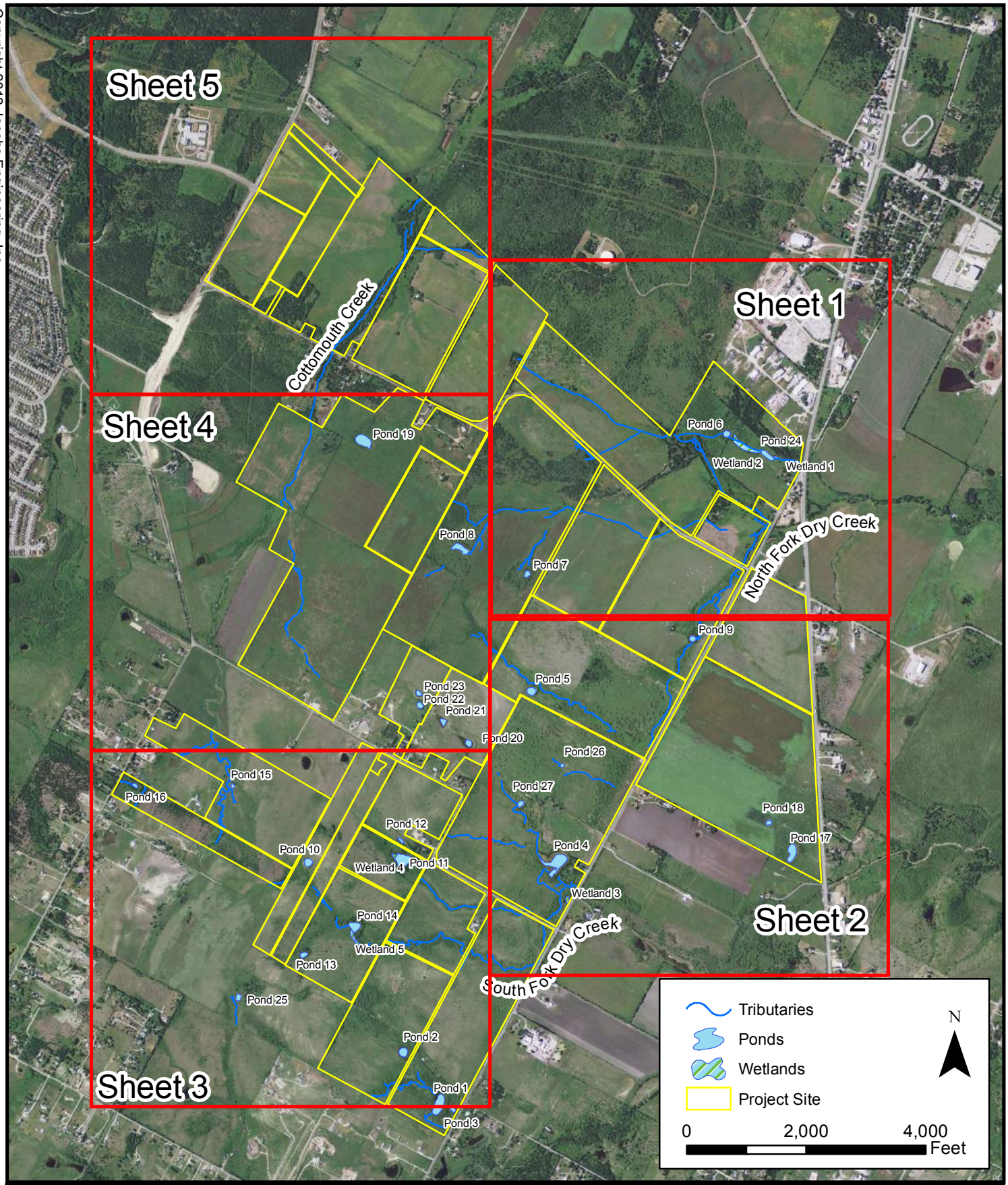
Floodplain, Critical Water Quality Zone, and Water Quality Transition Zone Map

Pilot Knob PUD
Austin, Travis County, Texas
WJXK2203

Source: Federal Emergency Managment Agency and City of Austin Watershed Department

Exhibit

6



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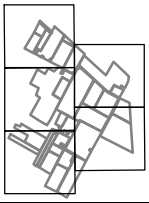

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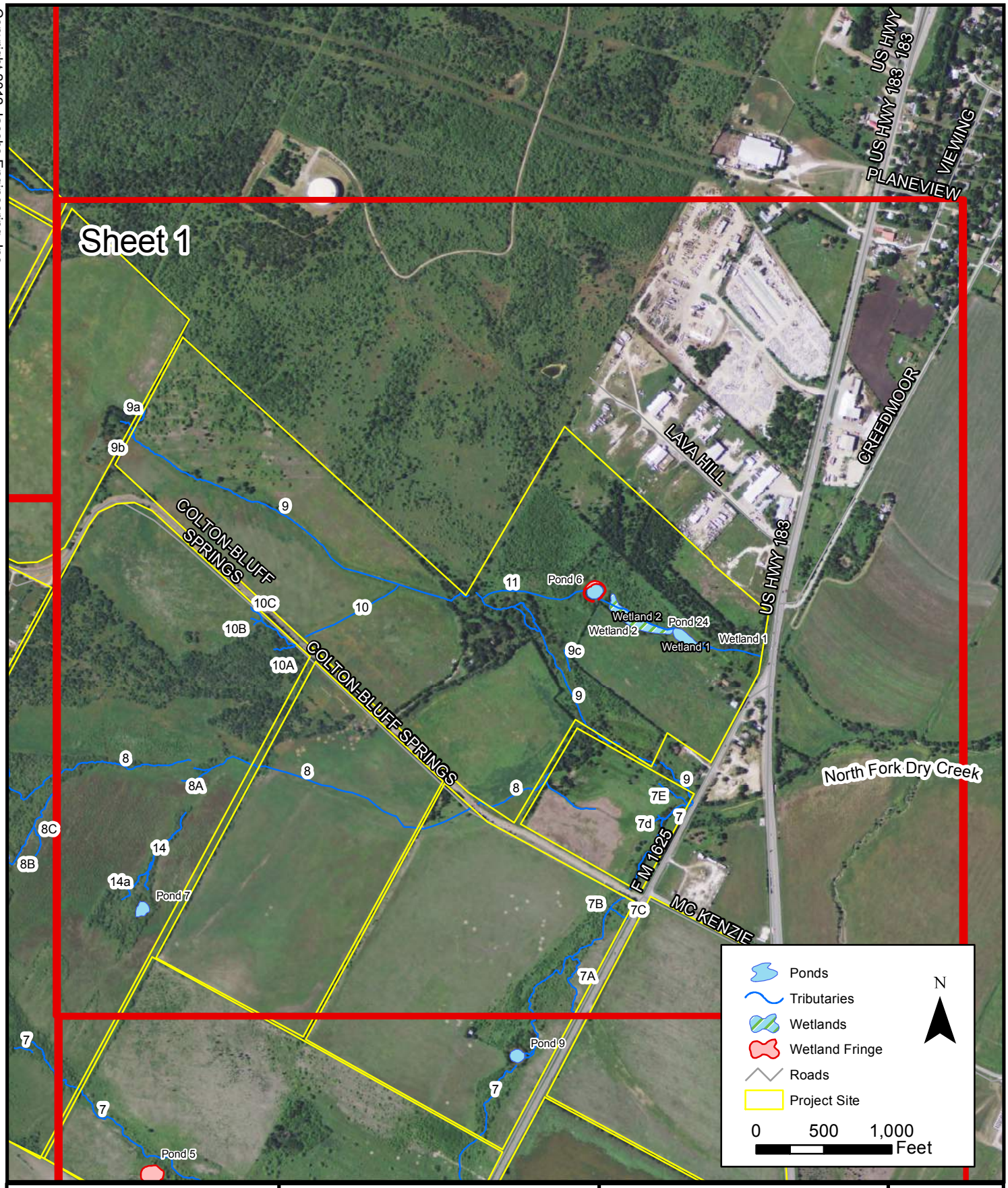

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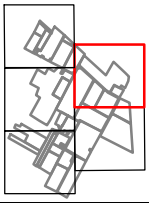
WJXK2203



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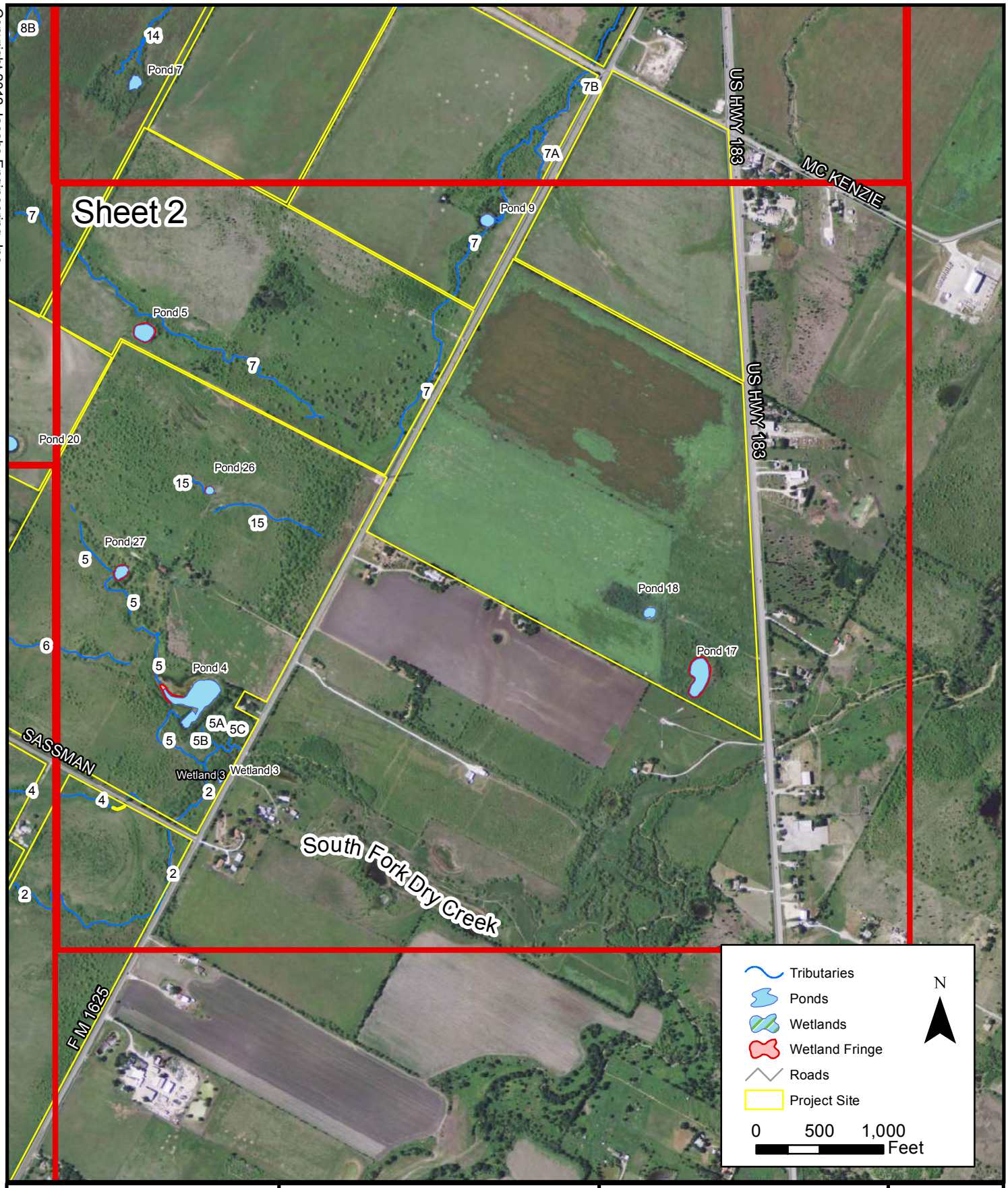

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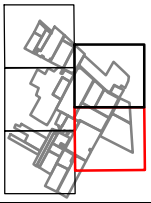

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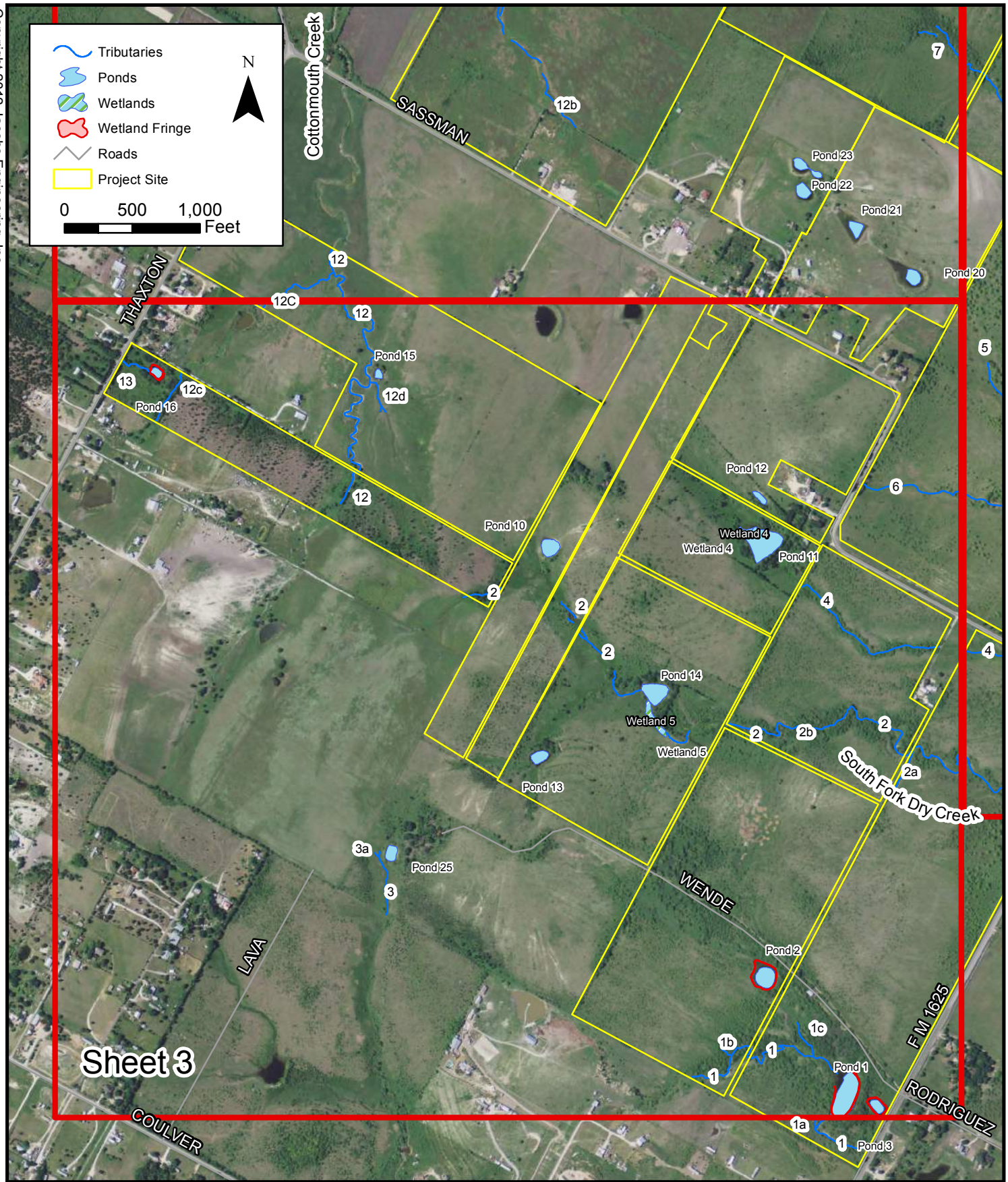

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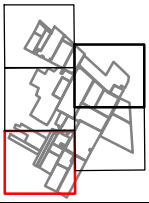

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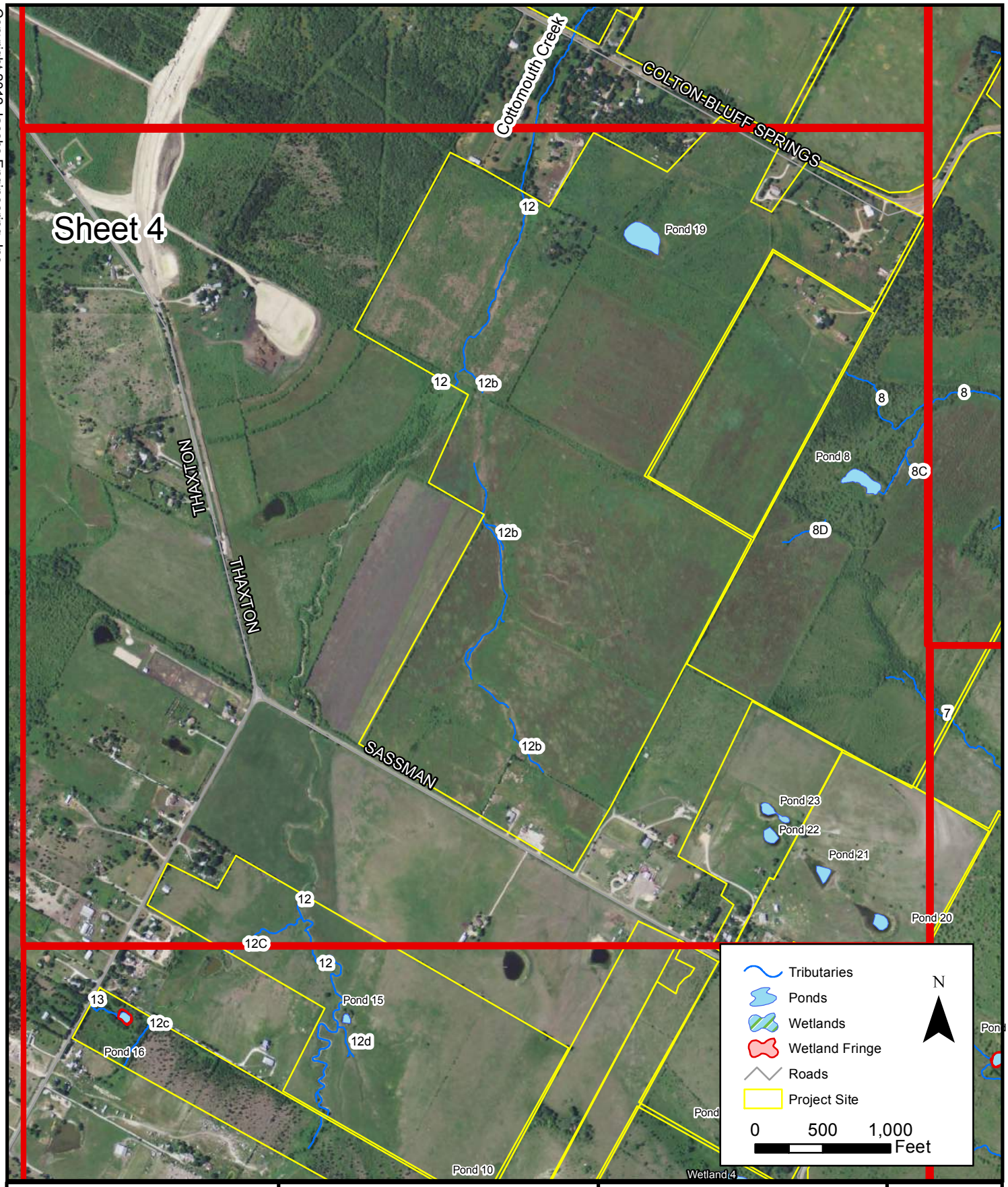

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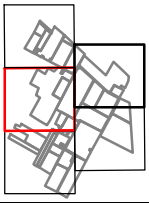
WJXK2203



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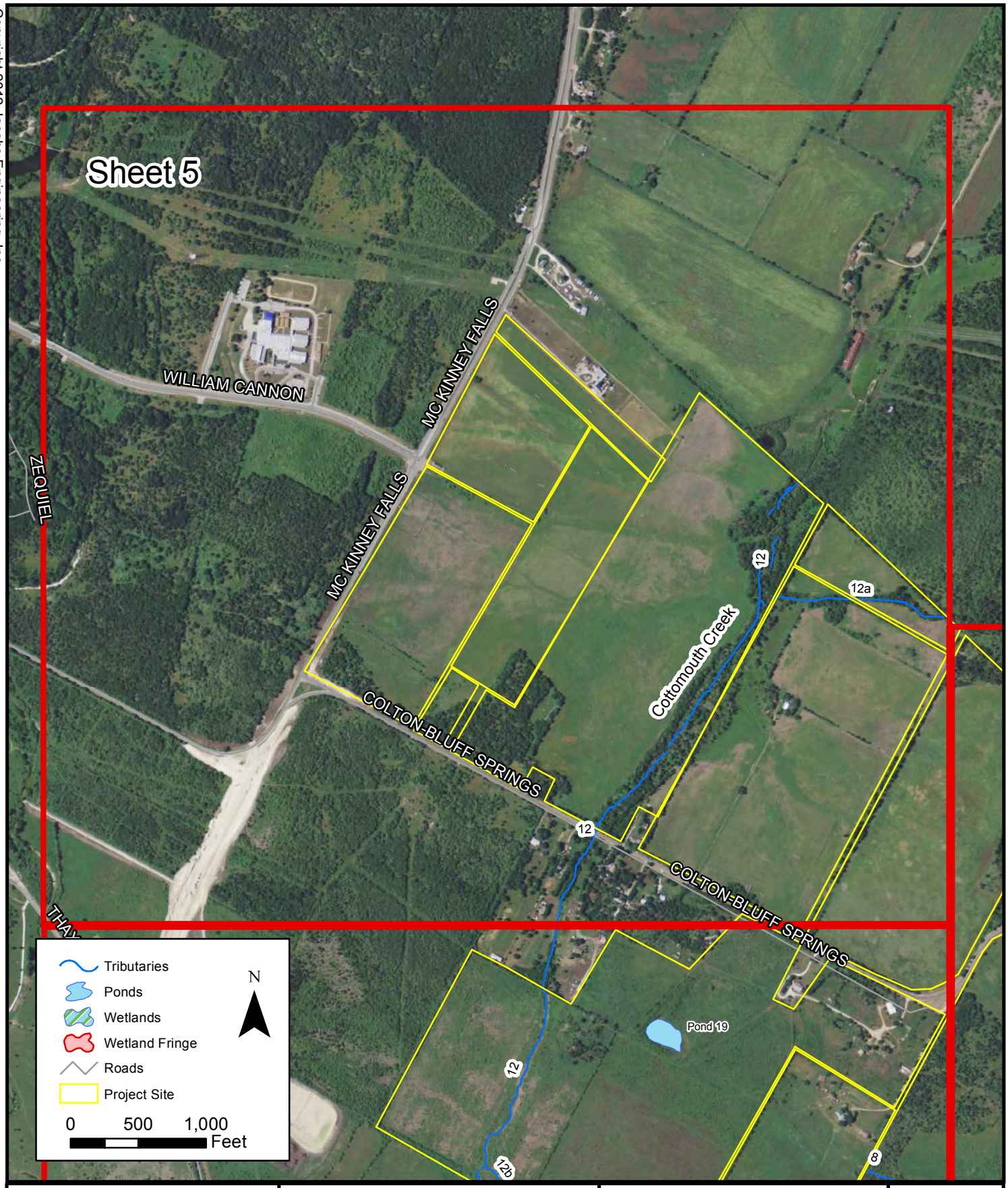
Sheet 4 of 5



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Proposed Waters of the U.S.

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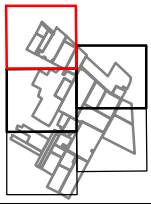
WJXK2203



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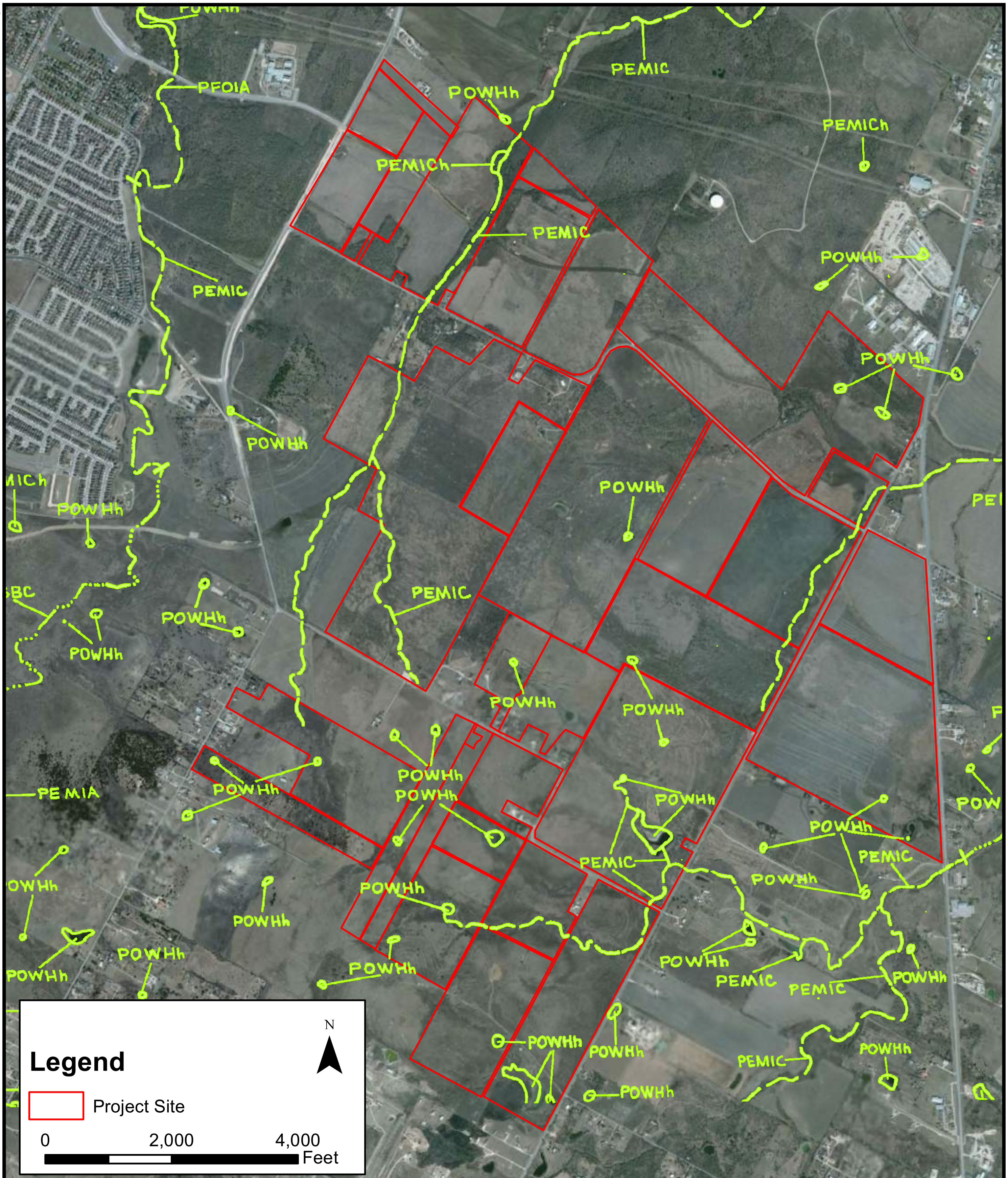

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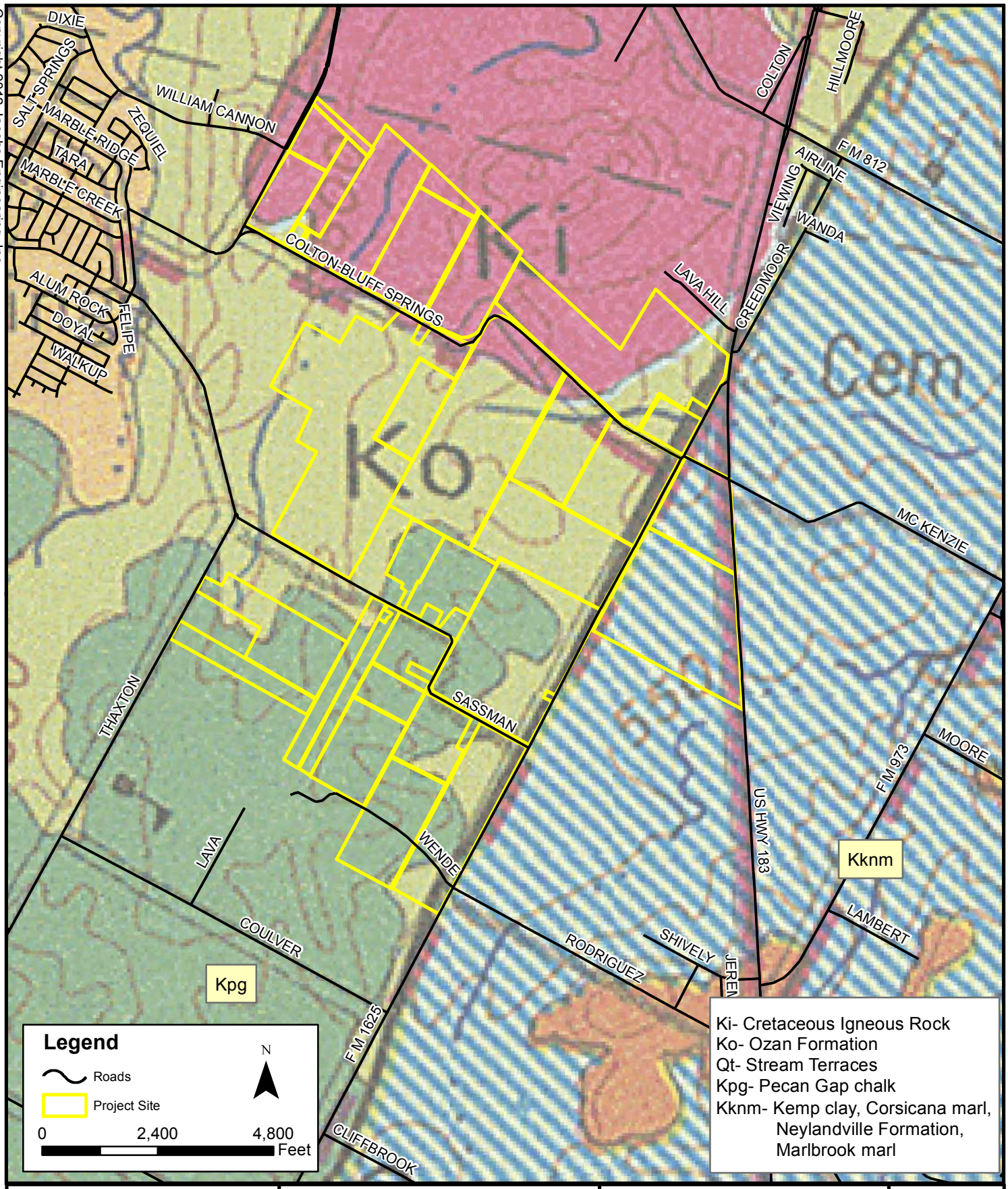
National Wetlands Inventory Map
Pilot Knob PUD
Austin, Travis County, Texas
WJXK2203

Source: Bing Aerial Map (2011)

Exhibit
8



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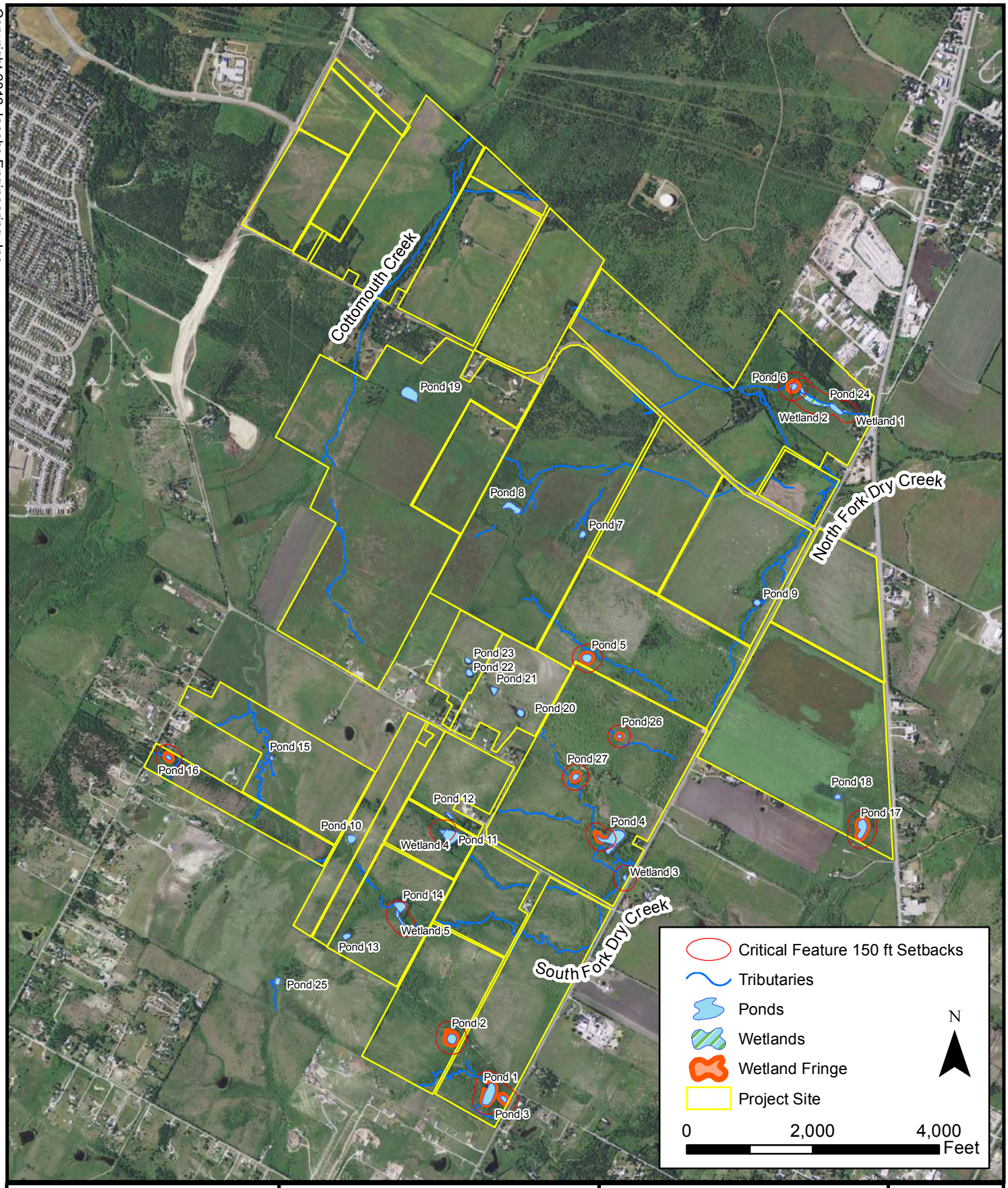
Geologic Map

Pilot Knob PUD
Austin, Travis County, Texas
WJXK2203

Source: Geologic Atlas of Texas

Exhibit

9



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Critical Environmental Features

Pilot Knob PUD
Austin, Travis County, Texas
WJXK2203

Source: NAIP Imagery 2010

Exhibit

10

APPENDIX B

Site Photographs

Photograph 1. Typical view of native rangeland and abandoned cropland with wooded corridors along fencerows.

Photograph 2. View of commercial land to the southeast of the site.

Photograph 3. Typical view of upland rangeland vegetation. View to the east.

Photograph 4. Typical view of upland woody vegetation. View to the south.

Photograph 5. Typical view of bottomland vegetation within North Fork Dry Creek. View to the north.

Photograph 6. Typical view of North Fork Dry Creek. View to the west.

Photograph 7. Typical view of wetland 2 vegetation. View to the north.

Photograph 8. Typical view of wetland fringe around pond 27. View to the west.

Photograph 9. Typical view of an upland pond. View to the northeast.

Photograph 10. Typical view of vegetation along banks of pond. View to the north.

Photograph 11. Typical view of dry upland pond. View to the west.

Photograph 12. Typical view of abandoned fire hydrant and piping. View to the north.

City of Austin Site Review Critical Environmental Feature Worksheet

Project Name:	Pilot Knob Planned Unit Development	5	Primary Contact Name:	Peggy M. Carrasquillo, PE - Jacobs Engineering	
Project Address:	East of intersection of William Cannon at McKinney Falls Pk	6	Phone Number:	512-314-3100	
Date:	2/4/2013	7	Prepared By:	Larry Allen - Jacobs Engineering	
Environmental Assessment Date:	10/15/2012	8	CEFS Located? (yes,no) :	YES	

FEATURE TYPE (Wetland,Rimrock,Recharge Feature,Seep,Spring)	FEATURE ID (eg S-1)	FEATURE LONGITUDE (WGS 1984 in Meters)		FEATURE LATITUDE (WGS 1984 in Meters)		WETLAND DIMENSIONS (ft)		RIMROCK DIMENSIONS (ft)	
		coordinate	*notation*	*coordinate*	*notation*	X	Y	Length	Avg Height
Wetland	Pond 1 - 1.018 acres	-97.71646003	DD	30.12098472	DD				
Wetland	Pond 2 - 0.407 acres	-97.71830839	DD	30.12341842	DD				
Wetland	Pond 3 - 0.159 acres	-97.71572633	DD	30.12079251	DD				
Wetland	Pond 4 - 1.464 acres	-97.70991004	DD	30.13217035	DD				
Wetland	Pond 5 - 0.336 acres	-97.71139191	DD	30.13995409	DD				
Wetland	Pond 6 - 0.235 acres	-97.70095944	DD	30.15171738	DD				
Wetland	Pond 7 - 0.193 acres	-97.7115677	DD	30.14534087	DD				
Wetland	Pond 8 - 0.584 acres	-97.71511697	DD	30.14659657	DD				
Wetland	Pond 9 - 0.188 acres	-97.70284899	DD	30.14231366	DD				
Wetland	Pond 10 - 0.318 acres	-97.72325801	DD	30.1321651	DD				
Wetland	Pond 11 - 0.981 acres	-97.71827698	DD	30.1322229	DD				
Wetland	Pond 12 - 0.105 acres	-97.71828276	DD	30.13308832	DD				
Wetland	Pond 13 - 0.206 acres	-97.72354021	DD	30.12792064	DD				
Wetland	Pond 14 - 0.493 acres	-97.72083234	DD	30.12920653	DD				
Wetland	Pond 15 - 0.074 acres	-97.72722589	DD	30.13570123	DD				
Wetland	Pond 16 - 0.109 acres	-97.73238904	DD	30.13576042	DD				
Wetland	Pond 17 - 0.732 acres	-97.69780859	DD	30.13216536	DD				

City of Austin Use Only WPDRD CASE NUMBER:	

For rimrock, locate the midpoint of the segment that describes the feature.

For wetlands, locate the approximate centroid of the feature and the estimated area.

For a spring or seep, locate the source of groundwater that feeds a pool or stream.

C814-2012-0152

City of Austin Site Review Critical Environmental Feature Worksheet

Project Name:	Pilot Knob Planned Unit Development	5	Primary Contact Name:	Peggy M. Carrasquillo, PE - Jacobs Engineering	
Project Address:	East of intersection of William Cannon at McKinney Falls Pk	6	Phone Number:	512-314-3100	
Date:	2/4/2013	7	Prepared By:	Larry Allen - Jacobs Engineering	
Environmental Assessment Date:	10/15/2012	8	CEFS Located? (yes,no) :	YES	

FEATURE TYPE (Wetland,Rimrock,Recharge Feature,Seep,Spring)	FEATURE ID (eg S-1)	FEATURE LONGITUDE (WGS 1984 in Meters)		FEATURE LATITUDE (WGS 1984 in Meters)		WETLAND DIMENSIONS (ft)		RIMROCK DIMENSIONS (ft)	
		coordinate	notation	coordinate	notation	X	Y	Length	Avg Height
Wetland	Pond 18 - 0.144 acres	-97.69881987	DD	30.13383339	DD				
Wetland	Pond 19 - 0.931 acres	-97.72017339	DD	30.15151366	DD				
Wetland	Pond 20 - 0.222 acres	-97.71474004	DD	30.13758815	DD				
Wetland	Pond 21 - 0.193 acres	-97.71606738	DD	30.13658153	DD				
Wetland	Pond 22 - 0.199 acres	-97.71729678	DD	30.1393503	DD				
Wetland	Pond 23 - 0.226 acres	-97.71734843	DD	30.13989225	DD				
Wetland	Pond 24 - 0.384 acres	-97.69897921	DD	30.15081223	DD				
Wetland	Pond 25 - 0.186 acres	-97.72701032	DD	30.12599167	DD				
Wetland	Pond 26 - 0.074 acres	-97.70979481	DD	30.13653546	DD				
Wetland	Pond 27 - 0.183 acres	-97.71200484	DD	30.13478858	DD				
Wetland	ottonmouth Creek - 1.990 acr	-97.7229579	DD	30.15229498	DD				
Wetland	uth Fork Dry Creek - 1.327 ac	-97.71199212	DD	30.12725276	DD				
Wetland	rth Fork Dry Creek - 2.592 ac	-97.69955805	DD	30.14678286	DD				
Wetland	Wetland 1 - 0.046 acres	-97.6983	DD	30.1506	DD				
Wetland	Wetland 2 - 0.835 acres	-97.7	DD	30.1511	DD				
Wetland	Wetland 3 - 0.110 acres	-97.7096	DD	30.1304	DD				
Wetland	Wetland 4 - 0.095 acres	-97.7187	DD	30.1325	DD				

City of Austin Use Only WPDRD CASE NUMBER:	

For rimrock, locate the midpoint of the segment that describes the feature.

For wetlands, locate the approximate centroid of the feature and the estimated area.

For a spring or seep, locate the source of groundwater that feeds a pool or stream.

C814-2012-0152

City of Austin Site Review Critical Environmental Feature Worksheet

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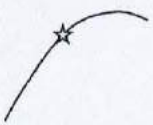
Project Address:	East of intersection of William Cannon at McKinney Falls Pk	6	Phone Number:	512-314-3100	
Date:	2/4/2013	7	Prepared By:	Larry Allen - Jacobs Engineering	
Environmental Assessment Date:	10/15/2012	8	CEFS Located? (yes,no) :	YES	

FEATURE TYPE (Wetland,Rimrock,Recharge Feature,Seep,Spring)	FEATURE ID (eg S-1)	FEATURE LONGITUDE (WGS 1984 in Meters)		FEATURE LATITUDE (WGS 1984 in Meters)		WETLAND DIMENSIONS (ft)		RIMROCK DIMENSIONS (ft)	
		coordinate	notation	coordinate	notation	X	Y	Length	Avg Height
Wetland	Wetland 5 - 0.240 acres	-97.7209	DD	30.1287	DD				

City of Austin Use Only WPDRD CASE NUMBER:	

For rimrock, locate the midpoint of the segment that describes the feature.



For wetlands, locate the approximate centroid of the feature and the estimated area.

For a spring or seep, locate the source of groundwater that feeds a pool or stream.

C814-2012-0152