TEXAS HISTORICAL COMMISSION

ANTIQUITIES PERMIT APPLICATION FORM
ARCHEOLOGY

GENERAL INFORMATION

I. PROPERTY TYPE AND LOCATION

Project Name (and/or Site Trinomial) Intensive Archeological Survey for Proposed Ronald Reagan Extension Project, Williamson County, Texas
County (ies) Williamson County
USGS Quadrangle Name and Number Cobbs Cavern (3097-342), Georgetown (3097-313), Jarrell (3097-341), Weir (3097-314), Bartlett (3097-432), Granger (3097-423)
UTM Coordinates (approximate) Zone 14 E 631018-649486 N 3405239-3403409
Location North-central Williamson County, between IH 35 and SH 95 near Bartlett, Williamson County, Texas
Federal Involvement ☐ Yes ☒ No
Name of Federal Agency
Agency Representatives

II. OWNER (OR CONTROLLING AGENCY)

Controlling Agency Williamson County
Representative Bill Gravell, Jr., County Judge
Address 710 South Main Street, Suite 101
City/State/Zip Georgetown, Texas, 78626
Telephone (include area code) 512-943-1550 Email Address

III. PROJECT SPONSOR (IF DIFFERENT FROM OWNER)

Sponsor
Representative
Address
City/State/Zip
Telephone (include area code) Email Address

PROJECT INFORMATION

I. PRINCIPAL INVESTIGATOR (ARCHEOLOGIST)

Name John E. Dockall, PhD, RPA
Affiliation Cox|McLain Environmental Consulting, Inc.
Address 2401 Donley Drive., Ste. 400
City/State/Zip Austin, Texas 78757
Telephone (include area code) (512) 217-4790 Email Address JohnD@coxmclain.com

(OVER)

ANTIQUITIES PERMIT APPLICATION FORM (CONTINUED)

II. PROJECT DESCRIPTION

Proposed Starting Date of Fieldwork February 17, 2022
Requested Permit Duration 5 Years 0 Months (1 year minimum)
Scope of Work (Provided an Outline of Proposed Work) survey with shovel testing and backhoe trenching (see attached research design)

III. CURATION & REPORT

Temporary Curatorial or Laboratory Facility Cox|McLain Environmental Consulting, Inc. (now Stantec)
Permanent Curatorial Facility Center for Archeological Studies (CAS) at Texas State University

IV. OWNER'S CERTIFICATION

I, Bill Gravell, Jr., as legal representative of the Owner, _____, do certify that I have reviewed the plans and research design, and that no investigations will be performed prior to the issuance of a permit by the Texas Historical Commission. Furthermore, I understand that the Owner, Co-owner, and Principal Investigator are responsible for completing the terms of this permit.

Signature _____ Date _____

V. SPONSOR'S CERTIFICATION

I,_____, as legal representative of the Sponsor, _____, do certify that I have reviewed the plans and research design, and that no investigations will be performed prior to the issuance of a permit by the Texas Historical Commission. Furthermore, I understand that the Owner, Sponsor, and Principal Investigator are responsible for completing the terms of the permit.

Signature _____ Date_____

VI. INVESTIGATOR'S CERTIFICATION

I, John Dockall, as Principal Investigator employed by Cox|McLain Environmental Consulting, Inc. (Investigative Firm), do certify that I will execute this project according to the submitted plans and research design, and will not conduct any work prior to the issuance of a permit by the Texas Historical Commission. Furthermore, I understand that the Principal Investigator (and the Investigative Firm), as well as the Owner and Sponsor, are responsible for completing the terms of this permit.

Signature John Dockall Date January 25, 2022

Principal Investigator must attach a research design, a copy of the USGS quadrangle showing project boundaries, and any additional pertinent information. Curriculum vitae must be on file with the Division of Antiquities Protection.

FOR OFFICIAL USE ONLY

Reviewer _____ Date Permit Issues _____
Permit Number _____ Permit Expiration Date _____
Type of Permit _____ Date Received for Data Entry _____

Texas Historical Commission
Archeology Division
P.O. Box 12276, Austin, TX 78711-2276
Phone 512/463-6096
www.thc.state.tx.us

TEXAS HISTORICAL COMMISSION
The State Agency for Historic Preservation

ARCHEOLOGICAL INTENSIVE SURVEY SCOPE

Ronald Reagan Extension Project, Williamson County, Texas

Project Description

The purpose of the investigation described in this document is to identify cultural resources within the construction footprint of proposed transportation improvements. Williamson County proposes the expansion of Ronald Reagan Boulevard between Interstate Highway (IH) 35 and State Highway (SH) 95. The proposed project is located within Williamson County, with the western terminus located near IH 35 just south of Jarrell, Texas. From IH 35 the proposed project crosses undeveloped land before paralleling Farm to Market (FM) 1105 for 1.16 miles (1.86 kilometers), veering south again until it parallels FM 972 for 2.65 miles (4.27 kilometers) before intersecting with SH 95. The entirety of the road expansion is approximately 12 miles (19.31 km) long (**Figure 1**).

The purpose of the proposed project is to increase transportation mobility and safety within northeastern Williamson County to accommodate the area's projected population and economic growth. The proposed facility would satisfy current roadway design standards, thereby improving vehicular safety while facilitating economic development within the region. The expansion will primarily cross through predominantly undeveloped or agricultural land. Between IH 35 and SH 95, existing county roads exist, but there is no east-west through facility. State Farm-to-Market roads exist within the proposed facility that may also be partially utilized for the Reagan Extension. The proposed right-of-way dimensions are unknown, but improvements will likely take place where the proposed facility intersects the following roadways: County Roads (CR) 145, 311, 355, 382, 388, FM 972, FM 1105, Sta (SH) 95, Rae Lane, and Rundberg Drive. The project corridor also intersects the Union Pacific Railroad (UPRR) paralleling SH 95.

The proposed final project would include two-lane mainlanes in each direction and three-lane frontage roads in each direction. The anticipated right-of-way width (ROW) is 350 feet (106.68 meters) but could be less at locations where constraints exist to minimize impacts to the natural, cultural, and human environment and more at interchanges with other facilities. This accounts for an ultimate freeway or expressway section that includes two 12-foot mainlanes in each direction with shoulders, three 12-foot frontage roads, and entrance and exit ramps for access. As needed, additional right-of-way will be required to account for detention and drainage facilities, mitigating floodplain impacts, and at intersections with other arterial or access-controlled corridors to accommodate the ultimate buildout footprint. A grade separation is also proposed at SH 95 and the UPRR crossing.

The archeological area of potential effects (APE) is defined as the entire area of the maximal footprint for the project as designed, which covers approximately 532.12 acres. This project would largely be constructed on new right-of-way but also includes some areas of existing roadway right-of-way although the proportions are not known at this time. The typical depth of impacts from this project is unknown at this time, but deep impacts may extend beyond 1 meter (3.28 feet) below ground surface at the proposed stream crossings at Long Branch, Willis Creek, and Opossum Creek.

The project is owned by Williamson County, a political subdivision of the State of Texas, rendering the project subject to the Antiquities Code of Texas. At present, Williamson County is the sole source of project funding. No federal funding or permitting has been identified for the project at this time; however, it is possible that federal funding could be identified at a later date, as the project could become subject to oversight by the Texas Department of Transportation (TxDOT), or the project may require United States Army Corps of Engineers permits related to Jurisdictional Waters of the U.S. Either of these circumstances would render the project subject to Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Background Information

The APE ranges in elevation from 177 to 292 meters (581 to 961 feet) above mean sea level along the 12-mile proposed alignment in northeast Williamson County, Texas (**Figure 2**). The area is primarily surrounded by undeveloped or agricultural lands, but some areas of the APE are located near residential or infrastructure development. The APE crosses

over two mapped drainages: Opossum Creek near the western edge of the proposed road extension and Willis Creek toward the center of the project area where the APE parallels FM 1105.

Geologically the APE is underlain (west to east) by: Cretaceous-age Austin Chalk and Cretaceous-age Navarro and Taylor Groups (U.S. Geological Survey [USGS] 2021). Austin Chalk consists of interbeds and partings of calcareous clay, thin-bedded marl with interbeds of massive chalk, hard lime mudstone and soft chalk. Navarro and Taylor Groups, undivided consists of mostly silty calcareous clay with sandstone beds and concretionary masses, underlain by fine-grained quartz sand with concretions in discontinuous beds and marine megafossils. High gravel deposits are commonly composed of an upper silty clay unit, which is good for crop production and a lower coarse unit that yields some water; these deposits often contain caliche-cemented cobbles of chert as large as 5 inches in size, pebbles of variegated quartzite, limestone, chert, and quartz (USGS 2021).

The project area is located within the Texas Blackland Prairies and the Northern Blackland Prairies Ecoregion (Griffith et al. 2004). The Texas Blackland Prairie is distinguished from surrounding regions by the dominance of fine-textured clayey soils and prairie adapted vegetation. A predominance of vertisols, alfisols, and mollisols in the region is associated with soil formation processes within Cretaceous-age shales, chalks, and marls. Vegetation is dominated by grasses such as little bluestem, big bluestem, yellow Indiangrass and switchgrass. Typical game species include mourning dove and bobwhite in uplands and eastern fox squirrel along stream bottomlands. Deer are present throughout. The Northern Blackland Prairie ecoregion coincides with the subsurface distribution of Upper Cretaceous limestones, chalks, marls, and shales and the ecoregion boundaries are defined by this close overlay of soil types, vegetation, and geology. The Northern Blackland Prairie was distinctive for its broad regional expanse of tallgrass prairie habitat and abundant clayey soils. Vertisols develop atop Cretaceous deposits and are characterized by a high potential for shrink/swell and deep vertical cracks; alfisols develop atop bedrock that is higher in sand and lower in calcium carbonates; mollisols occur above bedrock associated with the Austin Group where bedrock is just below the surface yielding shallow soils with limited root depth (University of Idaho 2021).

According to Natural Resources Conservation Service (NRCS) data, there are 18 soil types from 14 soil series mapped within the APE (Soil Survey Staff 2021). These soil series include:

- Altoga silty clay loam on 5 to 8 percent slopes, moderately eroded
- Austin silty clay loam on 0 to 1 percent slopes
- Austin silty clay on 1 to 3 percent slopes
- Austin-Whitewright complex on 2 to 6 percent slopes, eroded
- Branyon clay on 1 to 3 percent slopes
- Castephen silty clay on 1 to 3 percent slopes
- Castephen silty clay on 3 to 5 percent slopes
- Eddy very gravelly clay loam on 0 to 3 percent slopes
- Ferris-Heiden complex on 5 to 15 percent slopes, moderately eroded
- Heiden clay on 1 to 3 percent slopes
- Heiden clay on 2 to 5 percent slopes, moderately eroded
- Houston Black clay on 0 to 1 percent slopes
- Houston Black clay on 1 to 3 percent slopes
- Krum silty clay on 1 to 3 percent slopes
- Lewisville-Altoga complex on 2 to 5 percent slopes
- Lewisville-Krum complex on 1 to 3 percent slopes
- Lott silty clay on 1 to 5 percent slopes
- Tinn clay on 0-1 percent slopes, frequently flooded

More than 77.4 percent of the APE contains soils from one of the following series, each of which cover between 4.8 percent and 34.5 percent 12 percent of the APE: Austin silty clay on 1 to 3 percent slopes, Castephen silty clay on 1 to 3 percent

slopes, Ferris-Heiden complex on 5 to 15 percent slopes (moderately eroded), Heiden clay on 1 to 3 percent slopes, Houston Black clay on 1 to 3 percent slopes, or Whitewright silty clay loam on 1 to 5 percent slopes. Austin silty clay developed from calcareous clayey residuum weathered from chalk. Castephen silty clay forms from calcareous loamy residuum weathered from chalk. Ferris-Heiden complex soils form from clayey residuum weathered from mudstone. Heiden clay developed from clayey residuum weathered from mudstone. Houston Black clay formed from clayey residuum weathered from Upper Cretaceous mudstones. Whitewright silty clay loam developed from residuum weathered from the Austin Chalk. Each of these soil series are often found on interfluve ridges and summit settings. Ferris-Heiden complex soils occur on ridges and backslopes with linear gilgai features (Ferris component) and interfluve ridges with some linear gilgai (Heiden component) (Soil Survey Staff 2021; Texas Parks and Wildlife Department [TPWD] 2021). Each of these major soil series vary from moderately well-drained to well-drained.

A review of the Austin Hybrid Potential Archeological Liability Mapping (HPALM) dataset reveals that 98.82 percent of the APE (525.83 acres) falls within Map Units 1, 4, and 5 (Abbott and Pletka 2016, see **Table 1** and **Figures 3a-r**). These map units are considered to have low potential to moderate shallow and moderate potential for archeological resources. A total of 105.79 acres of the project APE has some moderate to high shallow to deep potential for archeological deposits. Much of the APE is almost entirely located within existing rural settings dominated by active farmland situated between the IH 35 corridor and SH 95 midway between Bartlett and Granger, Texas.

Table 1: HPALM Map Units (values) by Acreage

Map Unit	Description of Potential	Acreage	Percentage
0	Negligible Potential	0.76	0.15
1	Low Potential	425.57	79.98
2	Low Shallow Potential, Moderate Deep Potential	1.19	0.22
4	Moderate Shallow Potential, Low Deep Potential	30.16	5.67
5	Moderate Potential	73.71	13.85
7	Moderate Shallow Potential, High Deep Potential	0.55	0.10
9	High Potential	0.18	0.03

A search of the Texas Archeological Sites Atlas (Atlas) maintained by the THC and the Texas Archeological Research Laboratory (TARL) was conducted in order to identify archeological sites, Official Texas Historical Markers (OTHMs), properties or districts listed on the National Register of Historic Places (NRHP), State Antiquities Landmarks (SALs), cemeteries, and previous archeological investigations undertaken within one kilometer (0.6 miles) of the APE (**Figures 2a-e**).

According to Atlas survey coverage data, much of the APE has not been previously surveyed. Several surveys are located adjacent to or intersect with the APE, including:

- A linear survey paralleling the western side of IH 35. No other information listed.
- 2015 linear survey conducted by Antiquities Planning and Consulting for Williamson County/Lone Star Water Authority: and
- 2009 linear survey conducted by PBS&J (now Atkins Global) for Oncor Electric Delivery Company (THC 2021).

One archeological resource is mapped close to the APE. This is site 41WM1232, an historic surface artifact scatter, which is located approximately 200 meters (656 feet) north of the APE (see **Figure 2c**). One cemetery is also located within the

1-kilometer buffer; the Holy Trinity Cemetery located in the Theon community approximately 800 meters (2,624 feet) south of the APE (see **Figure 2b**). Neither of these resources will be impacted by the current project Four previously recorded sites and two cemeteries are mapped beyond but adjacent to the 1-kilometer buffer surrounding the APE (Tipton 2021) (**Table 2**).

Table 2: Resources Within or Near the 1-Kilometer Buffer Area Surrounding the APE

Resource Designation	Trinomial and/or Name	Description/Additional Information	Eligibility Determination	Within APE/ 1-Km Buffer
Cemetery	WM-C132, Holy Trinity Cemetery	In Theon Community, vicinity of Holy Trinity Catholic Church on FM 1105	Undetermined	Yes
Cemetery	WM-C133, Knauth Family Cemetery	Vicinity of Knauth Farm. At least two children graves	Undetermined	Buffer
Cemetery	WM-C219, Ake Family Cemetery	Vicinity of the City of Walburg. Ake Family Cemetery	Undetermined	Buffer
Archeological site (Prehistoric Campsite)	41WM937	Lithic Scatter	Not Eligible	No
19th-20th Century stream crossing	41WM1344	Documented with Windshield Survey Only	Not Eligible	No
Early 20th Century Farmhouse	41WM1345	Deposits related to historical structure	Undetermined	No
Historic Structure	41WM1241	Light Scatter of Historic Artifacts	Undetermined	No
Historic Surface Scatter	41WM1232	Surface Scatter of Historic Artifacts	Undetermined	Yes
Source: THC 2021				

A review of available historic aerial photographs (years 1963, 1981, 1995, 2004, 2008, 2010, 2014, 2016) and topographic maps (years 1925, 1928, 1945, 1951, 1966, 1967, 1974, 1982, 1986, 1987, 1995, 2012, 2013, 2016) on the Nationwide Environmental Title Research (NETR) website was also undertaken to determine how the corridor has been utilized over time (NETR 2021). The earliest topographic maps reviewed from 1893 shows no significant development in the area save the presence of the Corn Hill community south and Jarrell north of the APE (USGS 2021). Although the map scale is too coarse to show small detail. The next earliest maps are from 1954. These maps again are again at a large scale and do not depict fine detail. The highway and county roads appear in the same alignments as today. More recent maps and aerial imagery show that that APE is in a largely rural and agricultural setting (USGS 2021). The only detail worth noting is that in the 1893 map, Willis Creek was labeled as Williamson Creek. It was renamed at some point between the creation of the two maps (USGS 2021). The project area crosses Willis Creek approximately 13 kilometers (8.1 miles) west of the eastern terminus at SH 95 between Bartlett and Granger.

The earliest available historic aerial imagery (from 1963) shows the APE and surrounding area as very similar to later imagery. IH 35 and SH 95 are both present in the photographs as well as the network of county roads between. The dominant land use is rural residential and agricultural. The 1995 photos show the two relatively larger developments with the addition of structures just east of IH 35 and a small housing development south of CR 311 near the bend in FM 1105. All maps after 1995 show no major developments. The most recent image reviewed was from 2016 (NETR 2021).

Research Design

Cox|McLain Environmental Consulting, Inc. (CMEC), will conduct intensive survey of the APE per Category 7 under 13 TAC 26.15 and using the definitions in 13 TAC 26.3. Field methods and strategies will comply with the requirements of 13 TAC 26.15, as established by the Council of Texas Archeologists (CTA) and approved by the THC in April 2020.

This archeological survey would include a pedestrian survey of the entire APE and would be augmented by excavation of shovel test units within areas of proposed right-of-way and easement. The bulk of the APE will consist of new right-of-way extending across agricultural and undeveloped lands that are not known to have been surveyed in the past. CMEC will also

examine the existing right-of-way and conduct pedestrian survey with shovel testing in areas of existing right-of-way that appear to have undergone relatively little disturbance (e.g., along the margins of minor county roads).

Nearly all the APE (99.04 percent) falls within HPALM Map Units 1, 2, 4 and 5 which are considered to have low to moderate potential to contain shallow archeological sites and deep archeological deposits.

Pedestrian survey will require a minimum of three pedestrian transects across the 350-foot anticipated ROW with at least one shovel test every 100 linear meters of each transect. All shovel tests will be excavated in natural levels to the bottom of Holocene deposits in depositional areas or to subsoil in upland areas or 80 centimeters (31.5 inches), whichever is encountered first. Excavated matrix will be screened through 0.635-centimeter (0.25-inch) hardware cloth as allowed by moisture and clay content, which may require that the removed sediment be crumbled/sorted by hand, trowel, and/or shovel point. Deposits will be described using conventional texture classifications and Munsell color designations. Radial shovel tests will be placed at 5-meter (16-foot) intervals around each shovel test containing cultural material until two negative units have been established in each cardinal direction, as allowed by project limits, documented disturbance, and other constraints. Deviations from THC and CTA standards will be explicitly documented and justified in accordance with THC and CTA requirements approved in April 2020. Per the guidelines, "ground surface visibility alone is not justification for excluding sub-surface investigations. All areas must be shovel-tested regardless of surface visibility unless multiple lines of evidence, including both desktop and field observations, can demonstrate no potential for buried deposits. A minimum of one ST must be excavated and photo-documented for each excluded area, regardless of surface visibility, to assess the potential for buried deposits where artifacts may not be visible on the surface and/or demonstrate the nature and extent of significant ground disturbance. Please note that the intent is not to reduce the level of effort (excavating fewer STs than prescribed for the project area), but rather to redistribute STs to areas where there is greater potential for buried cultural materials."

Mechanical trenching will be required around the various drainage crossings in the APE and elsewhere where there is the likelihood of the presence of Holocene deposits deeper than accessible by shovel testing. All mechanical trenching will be conducted following completion of the initial pedestrian survey and shovel testing. For all trenching, CMEC will endeavor to conduct backhoe trenching where HPALM, topography, and soil data indicate deep impacts are anticipated. CMEC expects to perform such trenching (as allowed by access restrictions) within the portions of the APE nearest to Long Branch, Opossum Creek, Willis Creek, and any HPALM map units with high potential to contain deeply buried archeological deposits (HPALM map unit 9). The actual placement and extent of any trenches may be affected by factors such as property access, vegetation, soil moisture content, and other conditions and safety factors.

All trenches will be a minimum length of 4 meters (13 feet) and a minimum depth of 2.0 meters (6.56 feet) using a backhoe with a flat-bladed bucket 61 centimeters (24 inches) wide. Trenches will be excavated in 5-centimeter (1.97-inch) increments; sediment will then be placed in piles to be observed and documented by professional archeologists. At least one five-gallon bucket's worth of matrix from every third excavated bucket load will be screened through 0.635-centimeter (0.25-inch) hardware cloth as allowed by moisture and clay content, which may require that the removed sediment be crumbled/sorted by hand, trowel, and/or shovel point. Trench side walls will be scraped and analyzed by professional archeologists; profiles will be photographed and described using conventional texture, consistency, and color designations. Following the completion of analysis, trenches will be backfilled and compacted.

The project has a low probability of encountering human burials; however, if burials are found, Williamson County and the THC will be notified, and all requirements of 8 THSC 711 will be followed.

The APE is located on both public land and privately-owned land anticipated for acquisition. Artifacts identified in shovel tests and surface contexts will be noted, described, photographed, and returned to their original contexts, except in the case of significant diagnostic artifacts. At this time, landowner permission is being coordinated by the engineering consultant team. If for any reason access is not available at the time of the survey, a reasonable and good-faith effort will be made to document inaccessible areas from accessible areas for the purposes of the present permit. This permit would then be closed (assuming all work products and submittals meet THC/CTA requirements) and, if necessary, an additional permit application would be submitted at a future date when any remaining land becomes accessible.

Any site recorded during the investigation will be identified by a temporary marker placed on the site. The marker will have an identifying number in the form of the initials of the CMEC employee who recorded the site, followed by a consecutively assigned number that will indicate the order in which the sites were discovered (e.g., XX-01, XX-02, etc.). This number is a temporary field number to be superseded by a formal site trinomial obtained following the completion of fieldwork (see below). Site designations will be applied only to features (whether surface or subsurface) that appear to represent occupation or activity areas and/or to clusters of artifacts (whether surface or subsurface) with the minimum threshold of two contiguous positive shovel test units.

CMEC personnel will keep a complete record of field notes with observations including (but not limited to) identified sites, cultural materials, location markers, contextual integrity, estimated time periods of occupations, vegetation, topography, hydrology, land use, soil exposures, general conditions at the time of the survey, and field techniques employed. The field notes will be supplemented by digital photographs.

Reporting and Curation

Relevant field observations for any new sites discovered or previously recorded sites revisited during these investigations will be transferred to TexSite forms and submitted to TARL for official recording and integration into the trinomial system. An analysis of recorded materials and site characteristics will be performed, and the results will be presented in a clear and concise manner. These data will be used to formulate a preliminary evaluation of the NRHP and/or SAL eligibility of each site, as well as a recommendation for further work or no further work, supported by explicit justifications (13 TAC 26.3; 13 TAC 26.10; 13 TAC 26.16). Data, sites recorded, and NRHP/SAL eligibility assessments will be presented in a standard draft survey report to be submitted to the County and THC for review and comment. Comments on the draft report will be incorporated into a final version to be submitted (with the number and format of copies to be determined based on client preferences) to the County and THC. Per 13 TAC 26.16, the final permit closure submittal will include a transmittal letter, abstract form, project area shapefile, tagged PDF files of the report in both restricted (with site locations) and public (without site locations) versions, as applicable.

Upon completion of the fieldwork and reporting, CMEC will make all materials and forms generated by this project available to future researchers through curation at the Center for Archaeological Studies (CAS) at Texas State University in San Marcos, Texas per 13 TAC 26.16 and 26.17. A curation form filed at both CAS and THC will accompany the collections.

References

Abbott, J. T., and S. Pletka
2016 Hybrid Potential Archeological Liability Map for the Texas Department of Transportation Austin District. Available at http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/toolkit/archeological-map.html.

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List of Figures:

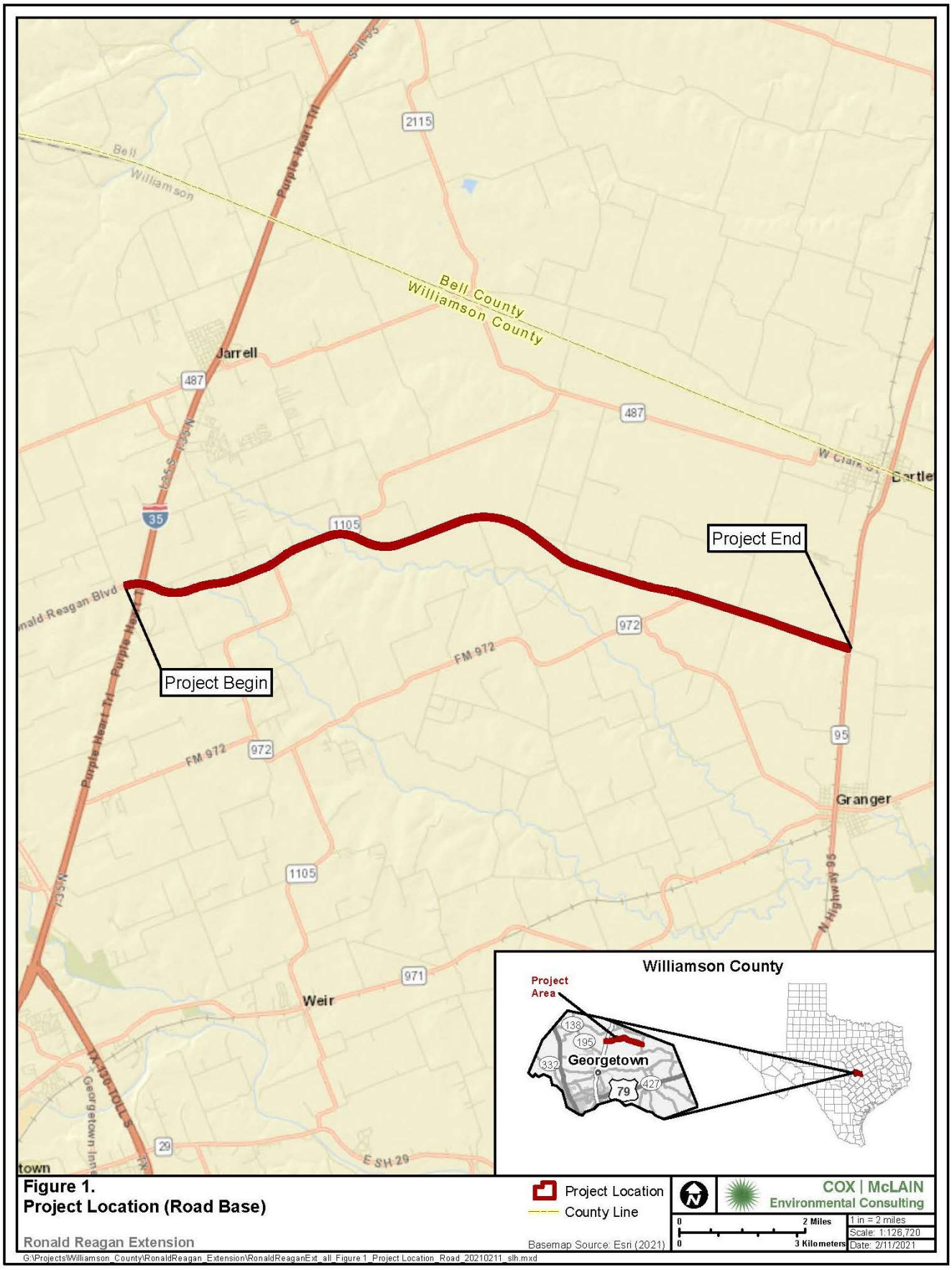

Figure 1.
Project Location (Road Base)

Ronald Reagan Extension

Project Location
County Line

Basemap Source: Esri (2021)

COX | McLAIN
Environmental Consulting

0 2 Miles
0 3 Kilometers

1 in = 2 miles
Scale: 1:126,720
Date: 2/11/2021

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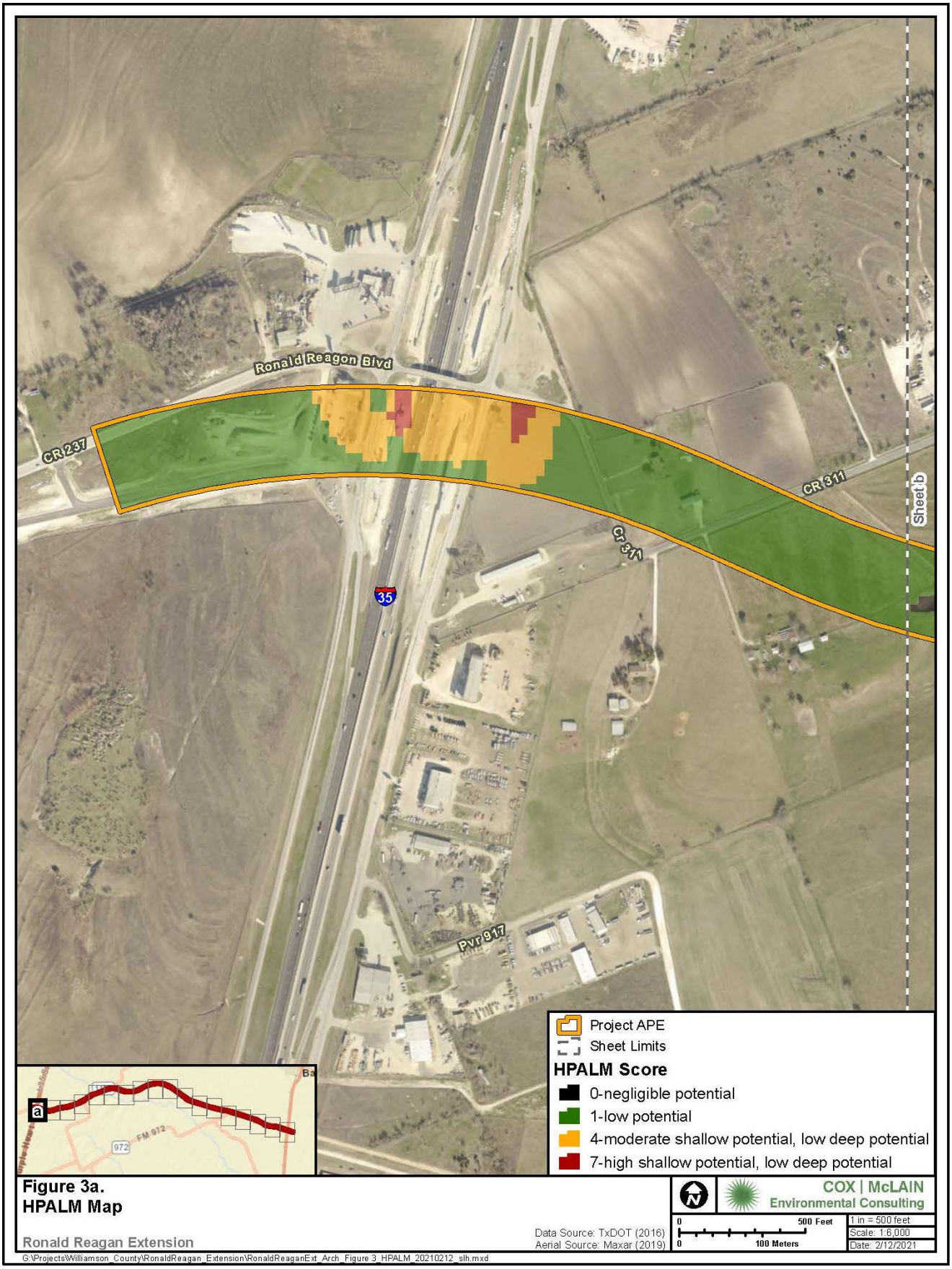
Figure 2 Redacted


Ronald Reagon Blvd
CR 237
CR 311
CR 311
Sheet b
35
Pvr 917
Project APE
Sheet Limits
HPALM Score
0-negligible potential
1-low potential
4-moderate shallow potential, low deep potential
7-high shallow potential, low deep potential
a
FM 972
972
Figure 3a.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0
500 Feet
0
100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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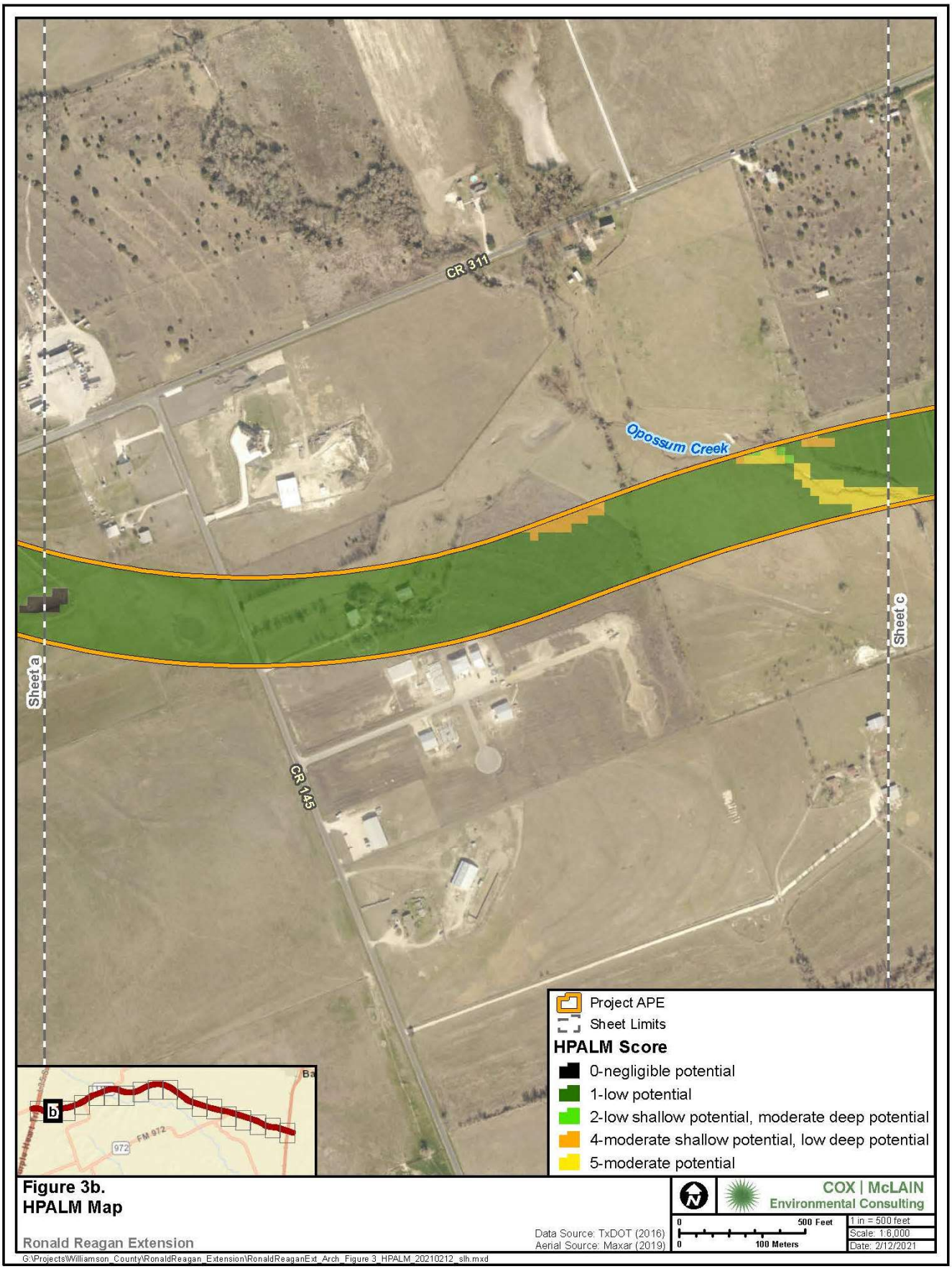
CR 311
Opossum Creek
CR 145
Sheet a
Sheet c
Project APE
Sheet Limits
HPALM Score
0-negligible potential
1-low potential
2-low shallow potential, moderate deep potential
4-moderate shallow potential, low deep potential
5-moderate potential
b
FM 972
972
Figure 3b.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0
500 Feet
0
100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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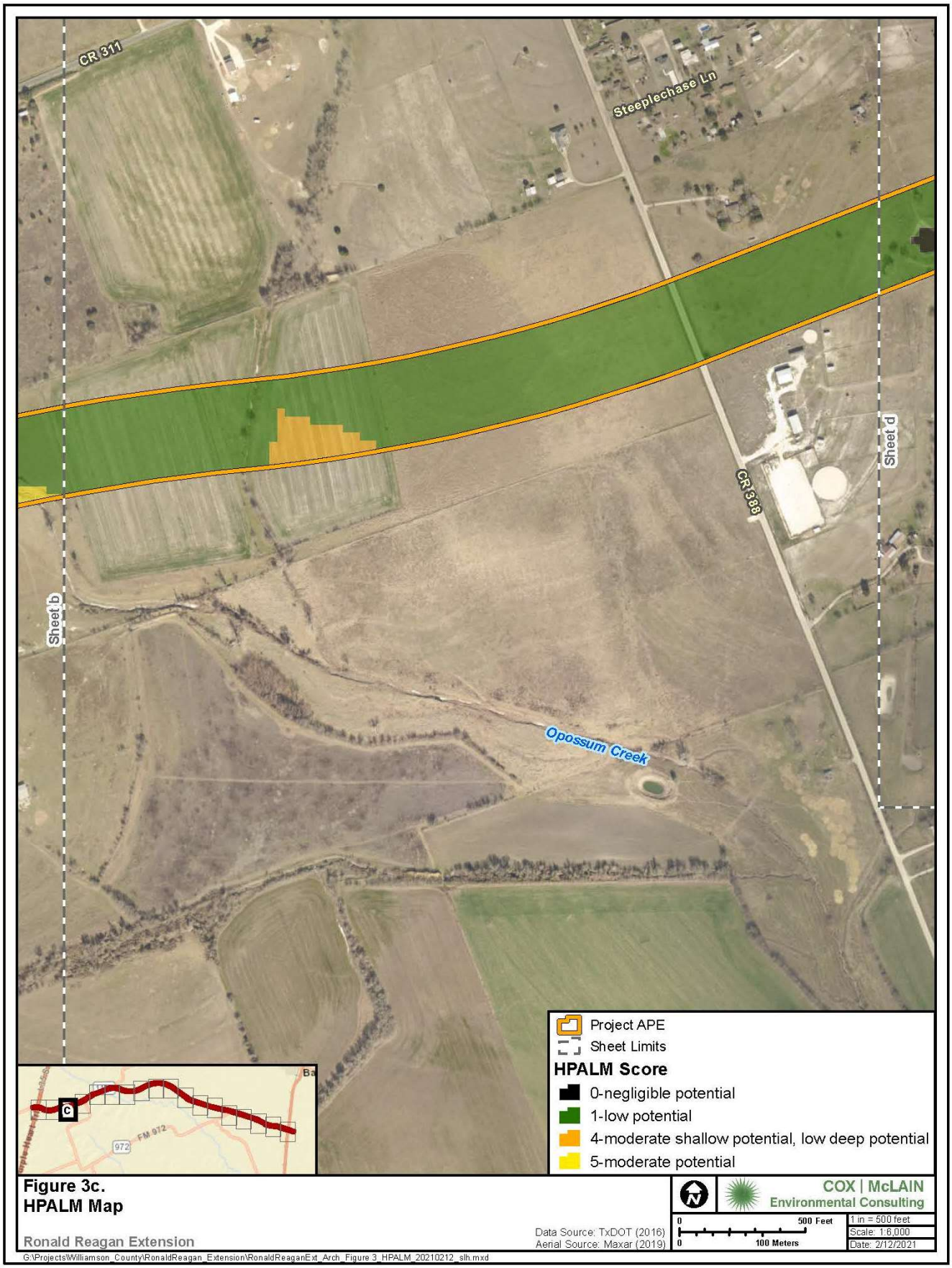
CR 311
Steeplechase Ln
CR 388
Sheet d
Sheet b
Opossum Creek
C
FM 972
972
Project APE
Sheet Limits
HPALM Score
0-negligible potential
1-low potential
4-moderate shallow potential, low deep potential
5-moderate potential
Figure 3c.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0
500 Feet
0
100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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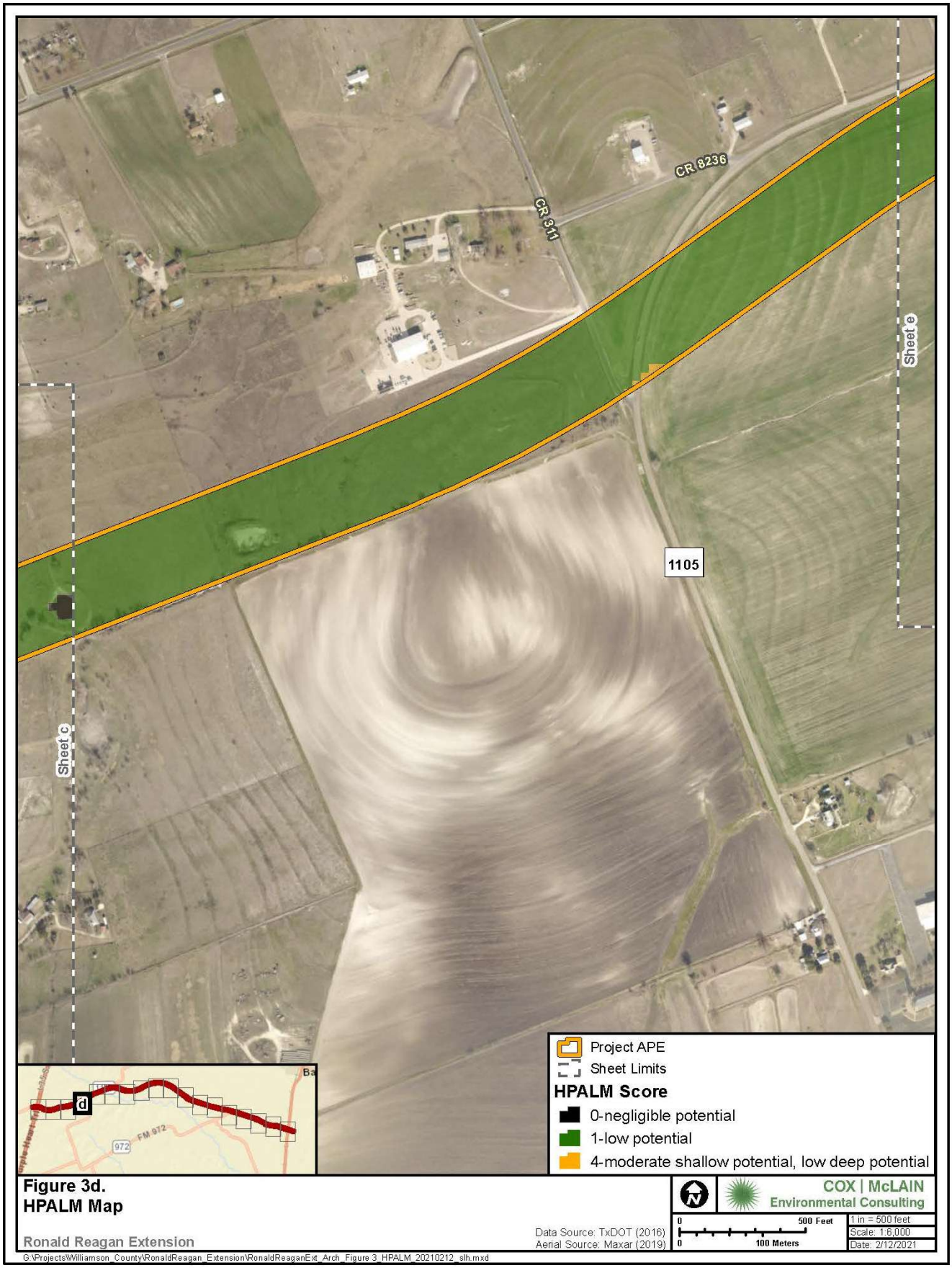
CR 8236
CR 311
Sheet e
Sheet c
1105
Project APE
Sheet Limits
HPALM Score
0-negligible potential
1-low potential
4-moderate shallow potential, low deep potential
d
FM 972
972
Figure 3d.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0
500 Feet
0
100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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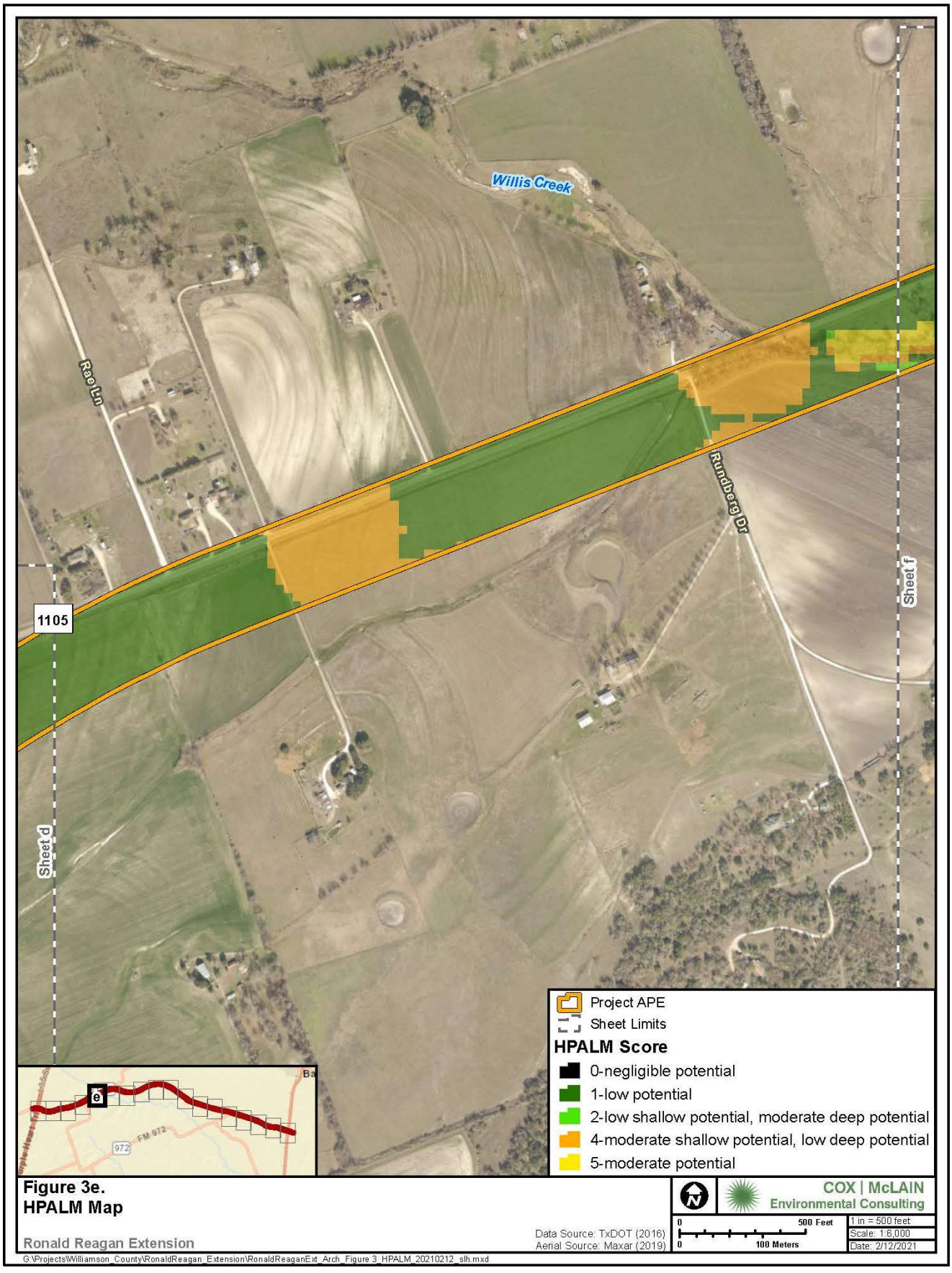
Willis Creek
Rae Ln
Rundberg Dr
1105
Sheet d
Sheet f
Project APE
Sheet Limits
HPALM Score
0-negligible potential
1-low potential
2-low shallow potential, moderate deep potential
4-moderate shallow potential, low deep potential
5-moderate potential
FM 972
972
Figure 3e.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0
500 Feet
0
100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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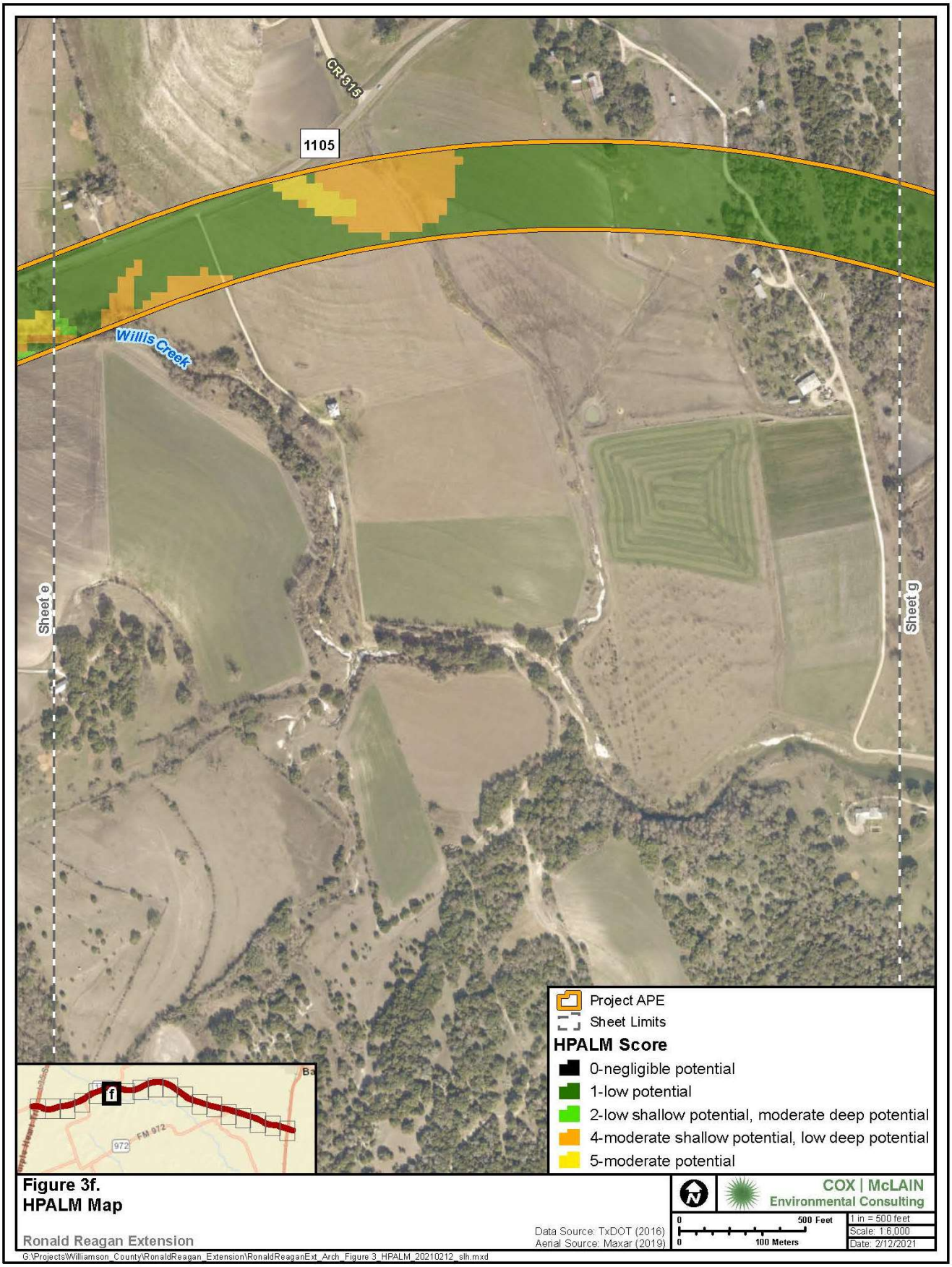
CR 315
1105
Willis Creek
Sheet e
Sheet g
f
FM 972
972
Project APE
Sheet Limits
HPALM Score
0-negligible potential
1-low potential
2-low shallow potential, moderate deep potential
4-moderate shallow potential, low deep potential
5-moderate potential
Figure 3f.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0
500 Feet
0
100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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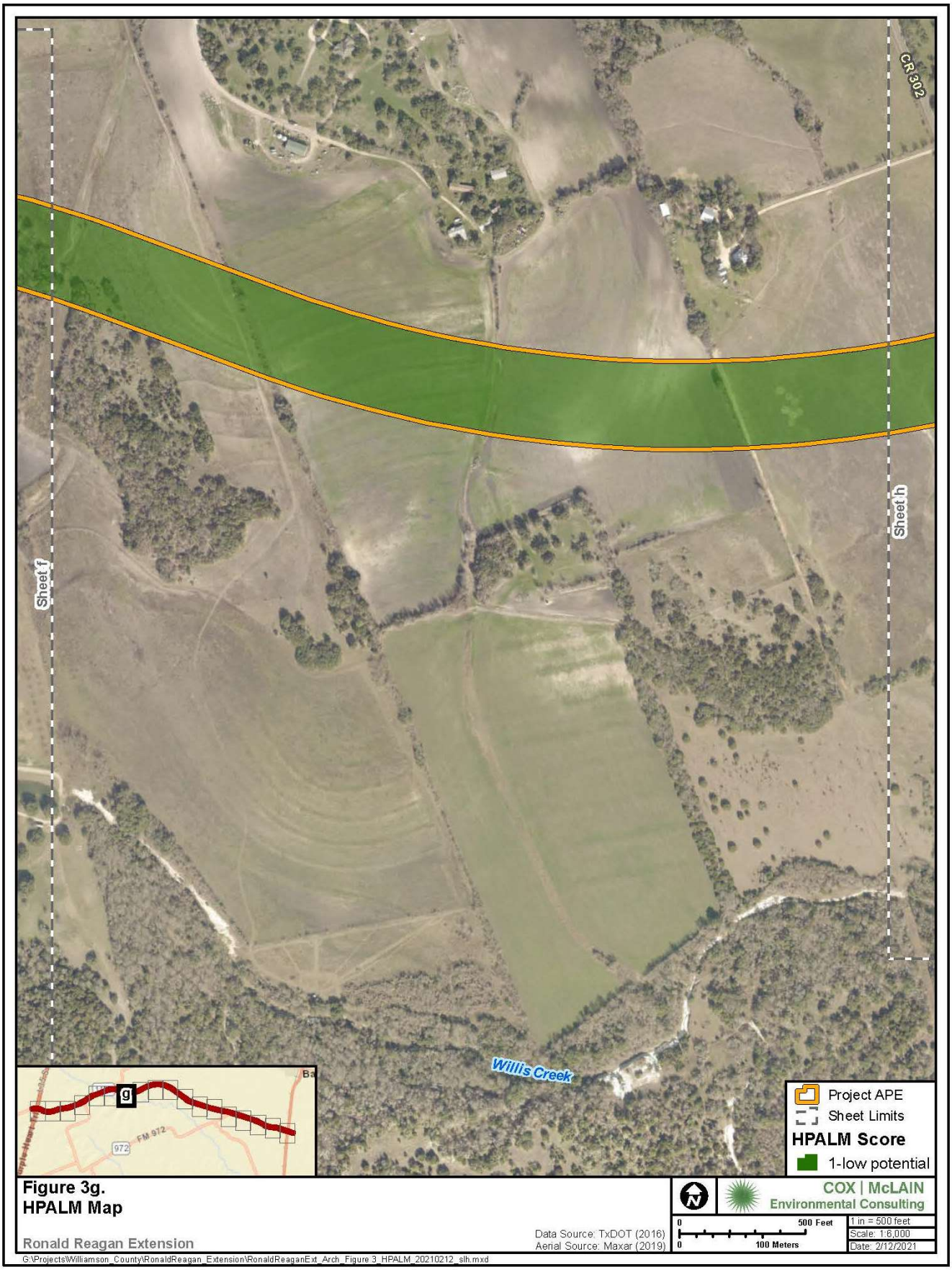
CR 302
Sheet f
Sheet h
Willis Creek
g
FM 972
972
Project APE
Sheet Limits
HPALM Score
1-low potential
Figure 3g.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0 500 Feet
0 100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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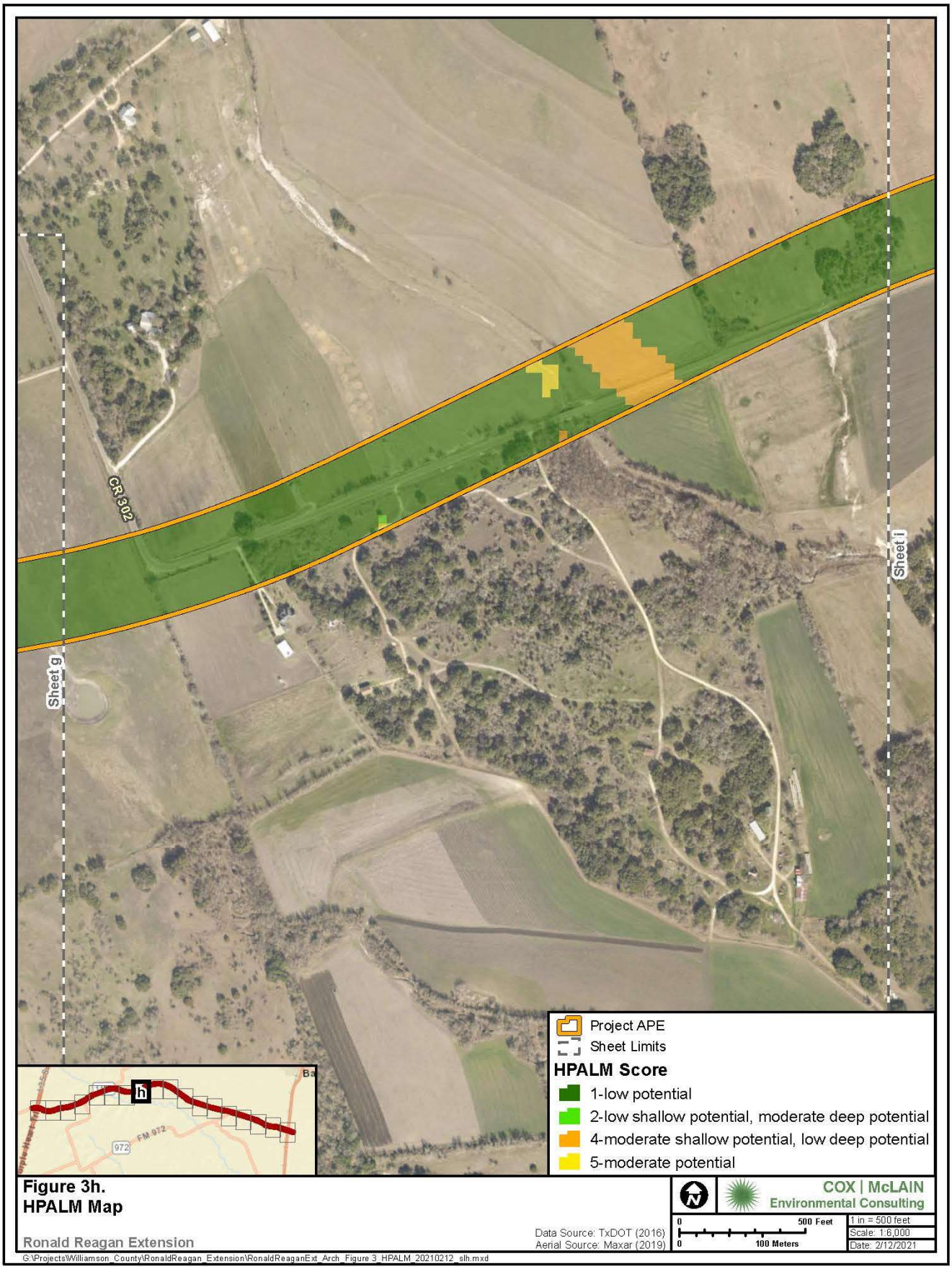

Figure 3h.
HPALM Map

Ronald Reagan Extension

Figure 3i.
HPALM Map

Ronald Reagan Extension

Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)

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CR 322
CR 302
Sheet j
Sheet k
FM 972
972
Project APE
Sheet Limits
HPALM Score
1-low potential
Figure 3j.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0
500 Feet
0
100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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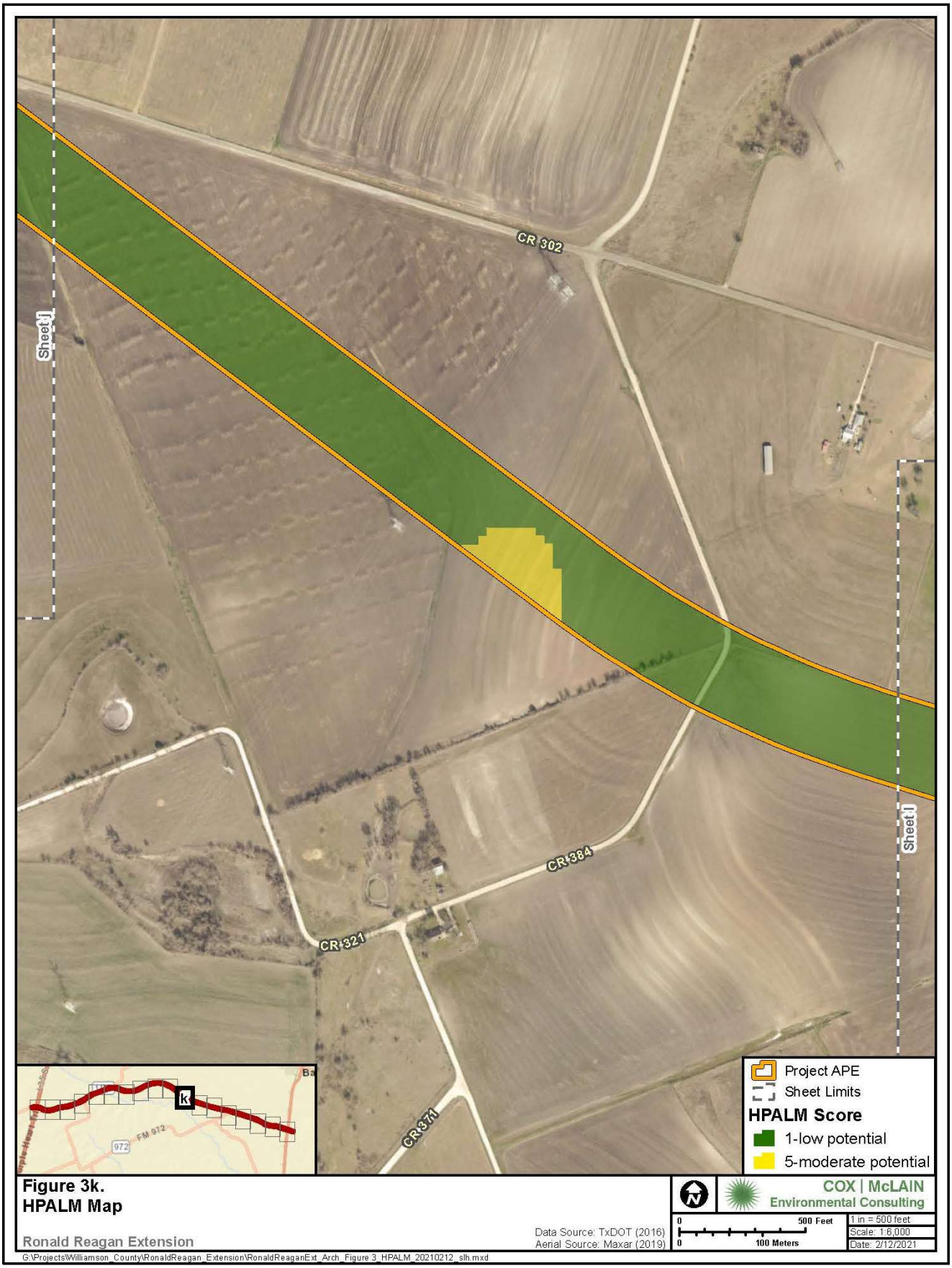
CR 302
Sheet 1
Sheet 1
CR 384
CR 321
CR 371
FM 972
Project APE
Sheet Limits
HPALM Score
1-low potential
5-moderate potential
Figure 3k.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0 500 Feet
0 100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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Long Branch
CR 302
Sheet k
Sheet m
Project APE
Sheet Limits
HPALM Score
1-low potential
2-low shallow potential, moderate deep potential
4-moderate shallow potential, low deep potential
5-moderate potential
FM 972
972
Figure 3l.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0
500 Feet
0
100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
G:\Projects\Williamson_County\RonaldReagan_Extension\RonaldReaganExt_Arch_Figure 3_HPALM_20210212_slh.mxd


CR 302
CR 343
Long Branch
Sheet J
Sheet In
Project APE
Sheet Limits
HPALM Score
1-low potential
4-moderate shallow potential, low deep potential
5-moderate potential
9-high potential
FM 972
Figure 3m.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0 500 Feet
0 100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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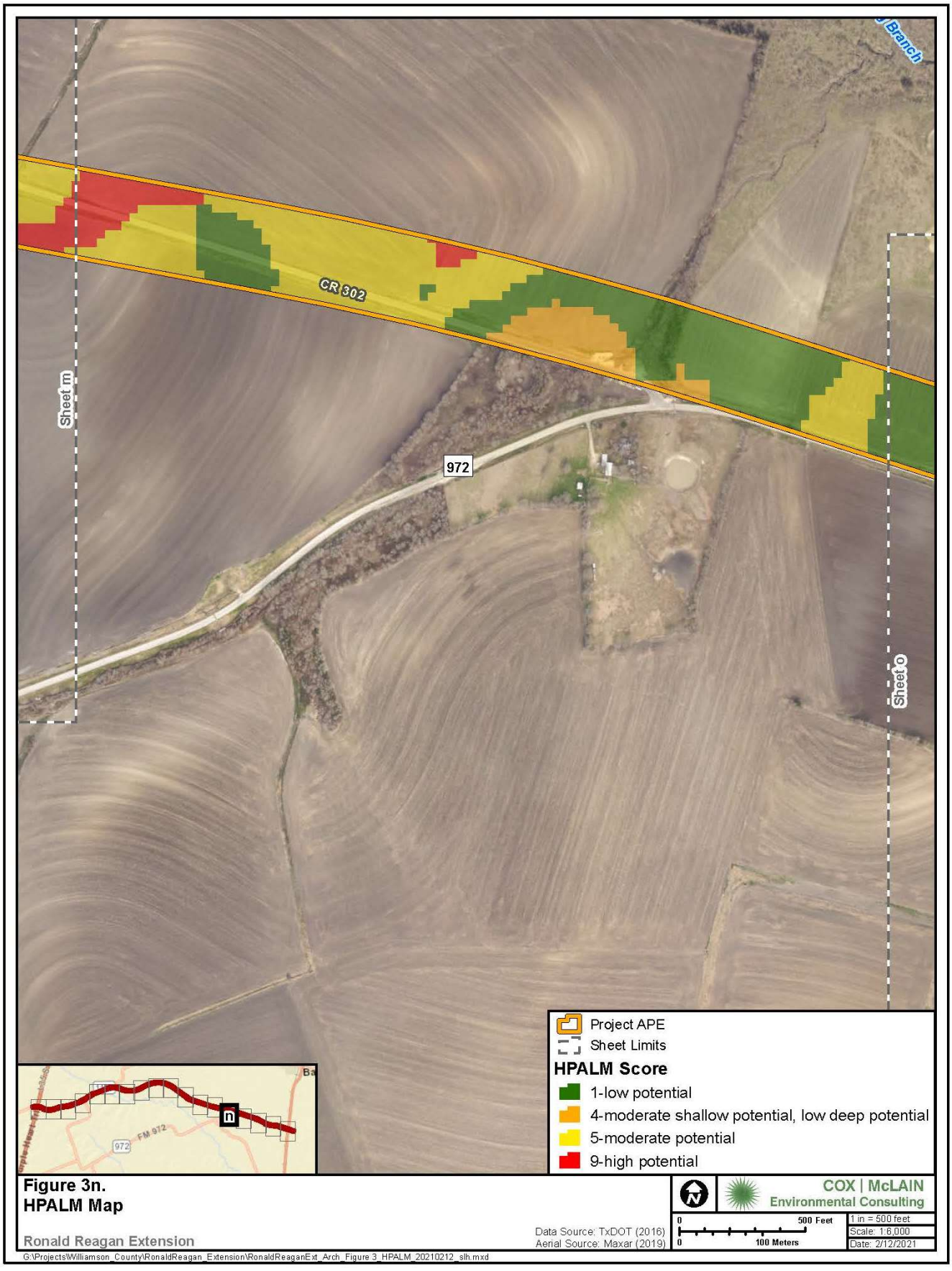

Figure 3n.
HPALM Map

Ronald Reagan Extension

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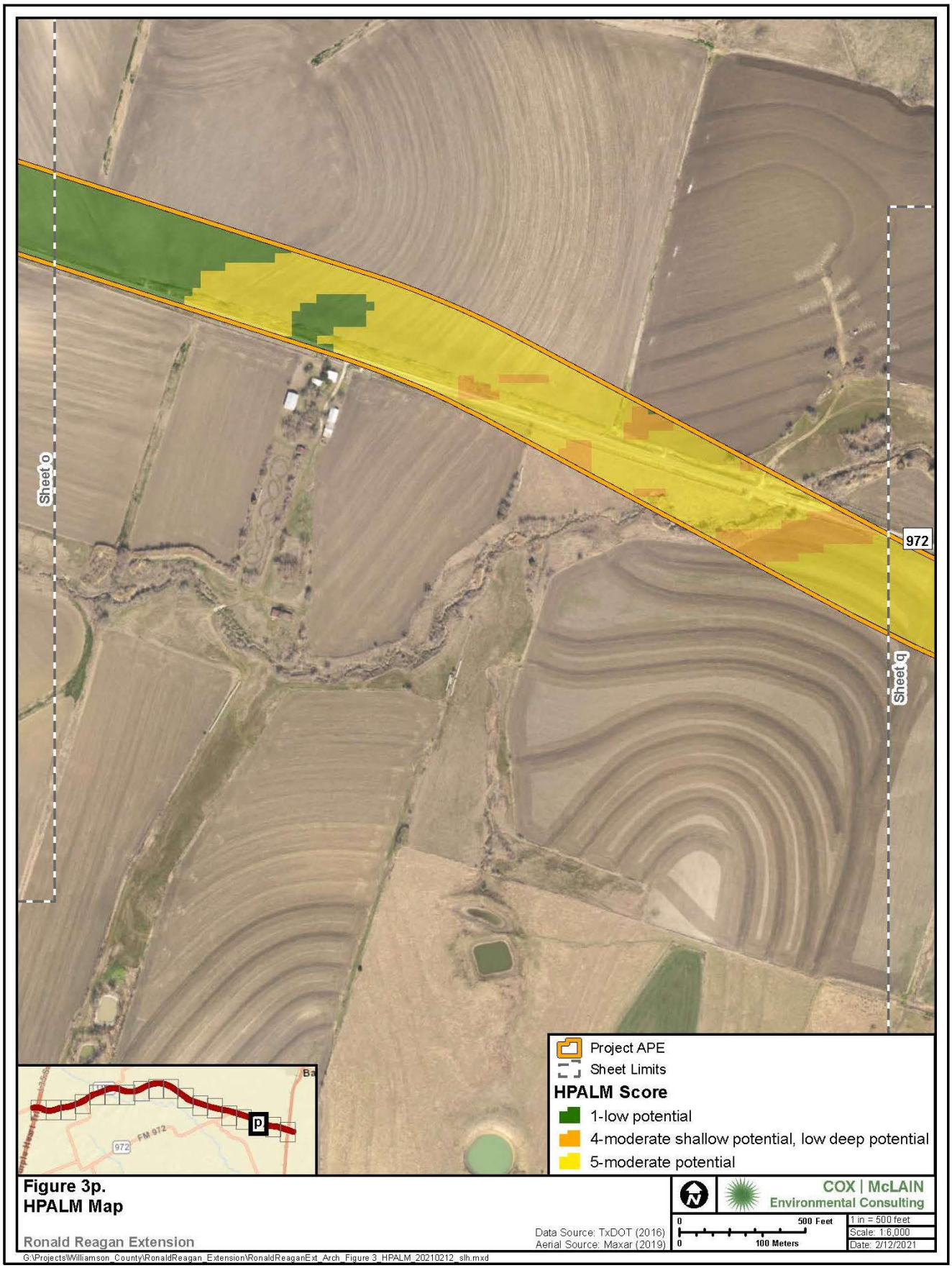
Figure 3o.
HPALM Map


Sheet o
Sheet q
972
Project APE
Sheet Limits
HPALM Score
1-low potential
4-moderate shallow potential, low deep potential
5-moderate potential
FM 972
Figure 3p.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0 500 Feet
0 100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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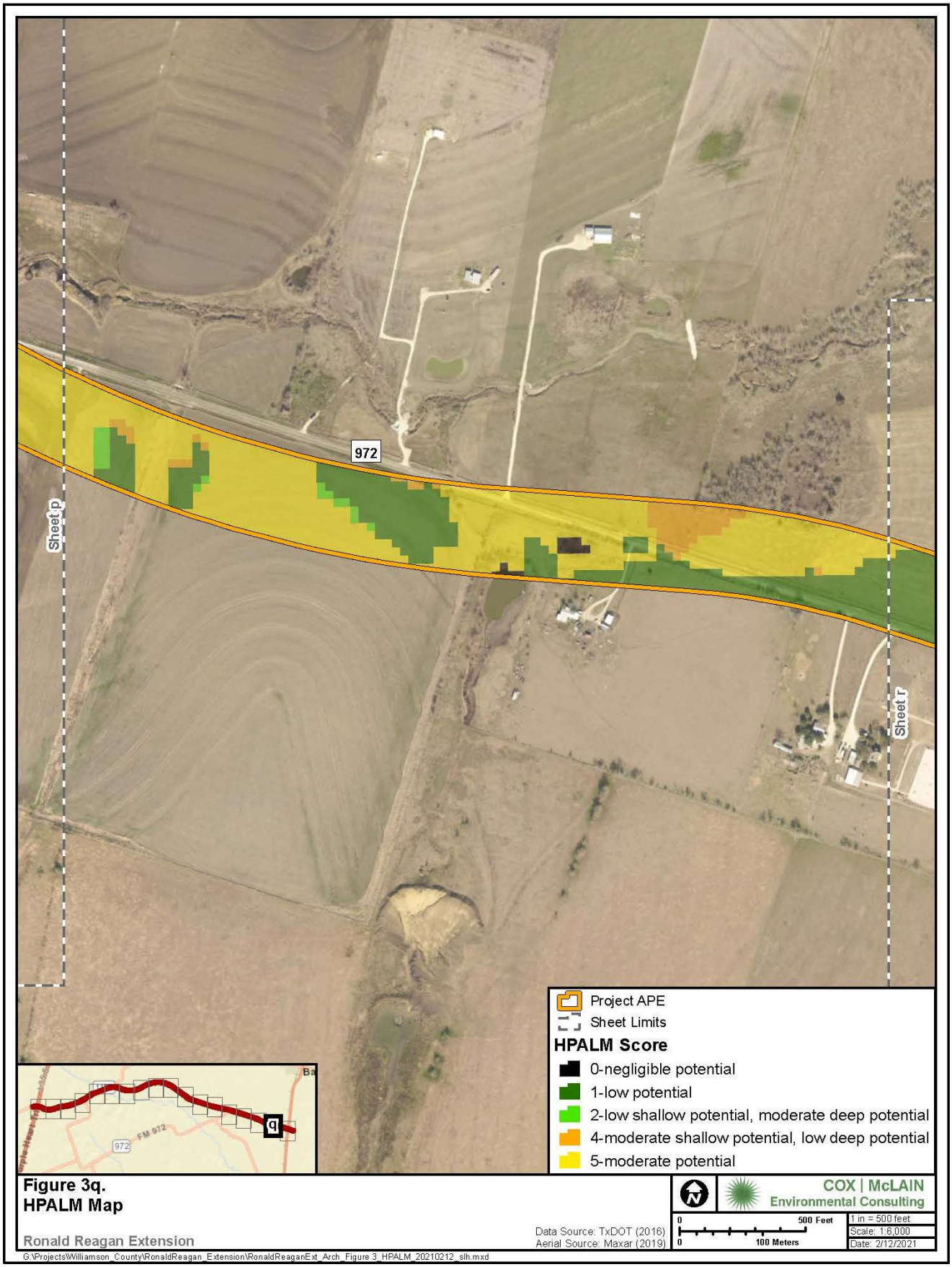
972
Sheet p
Sheet r
Project APE
Sheet Limits
HPALM Score
0-negligible potential
1-low potential
2-low shallow potential, moderate deep potential
4-moderate shallow potential, low deep potential
5-moderate potential
FM 972
q
Figure 3q.
HPALM Map
Ronald Reagan Extension
Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)
COX | McLAIN
Environmental Consulting
0 500 Feet
0 100 Meters
1 in = 500 feet
Scale: 1:6,000
Date: 2/12/2021
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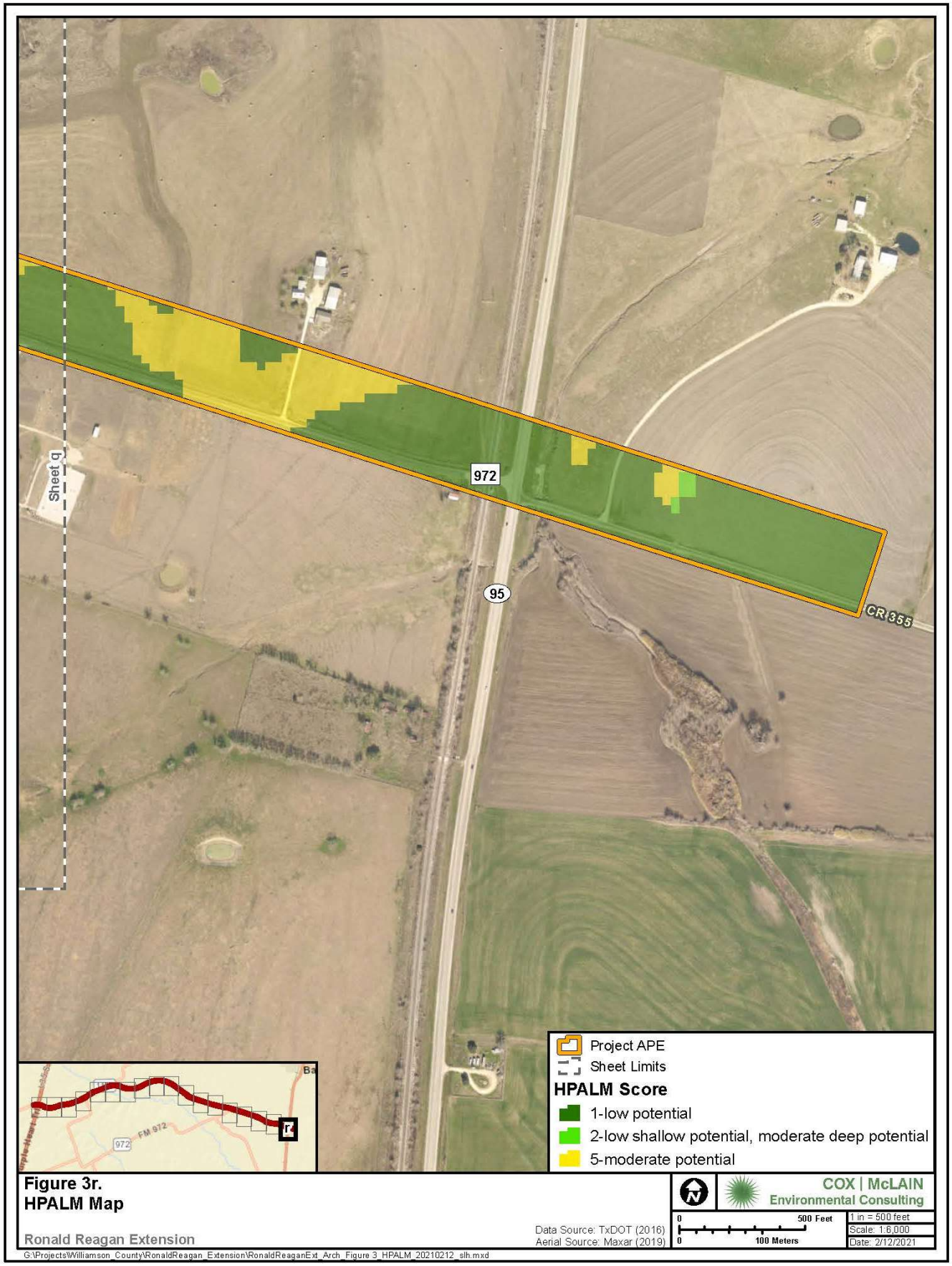

Figure 3r.
HPALM Map

Ronald Reagan Extension

Data Source: TxDOT (2016)
Aerial Source: Maxar (2019)

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