

BIOLOGICAL SURVEY REPORT TUCSON FENCE REPLACEMENT PROJECT

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Bio-Studies



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Tucson Fence Replacement Project
Biological Survey Report

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Abbreviations

amsl	Above mean sea level
AZGFD	Arizona Game and Fish Department
BMPs	Best management practices
BLM	Bureau of Land Management
BSR	Biological Study Report
CPNWR	Cabeza Prieta National Wildlife Refuge
CWA	Clean Water Act
CFR	Code of Federal Regulations
CBP	Customs and Border Protection
DHS	Department of Homeland Security
ESA	Endangered Species Act
ESP	Environmental Stewardship Plan
°F	Fahrenheit
mph	Miles per hour
NPS	National Park Service
ohwm	Ordinary high water mark
POE	Port of Entry
SBNWR	San Bernardino National Wildlife Refuge
SSURGO	Soil Survey Geographic Database
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SWPPP	Storm Water Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
USNVC	U.S. National Vegetation Classification

1. Introduction

Bio-Studies has prepared this Biological Survey Report (BSR) in support of Northland Research Inc. to provide the Department of Homeland Security (DHS) and Customs and Border Protection (CBP) with a summary of information collected from a variety of literature sources and field surveys. The BSR describes the biological resources present and potentially present along approximately 63 miles of the U.S./Mexico international border immediately north of the existing primary border fence (Survey Area) in the Tucson Sector in Cochise and Pima Counties, Arizona. This report provides current conditions for evaluation of the potential impacts on biological resources of a proposed fence replacement project and associated activities (Project). Recommendations for avoidance or reduction of these impacts, including best management practices (BMPs), are provided within.

The Survey Area is located in southern Cochise and Pima Counties near the Lukeville, Naco, and Douglas Ports of Entry (POE) (**Appendix A, Figure 1**). The Survey Area is bordered to the south by the international boundary line between Mexico and the U.S., and to the north by public and private lands. Portions of the Survey Area have been disturbed by previous border activities; these areas are managed as CBP access roads and other associated infrastructure. The remainder of the Survey Area support mainly natural environments.

In August of 2017, the Secretary of Defense (Secretary) issued a waiver to the Department of Homeland Security (DHS) covering the replacement of approximately 63 miles of primary pedestrian and vehicle barrier in the CBP Tucson Sector. Under the Secretary's waiver, CBP is no longer obligated to undergo regulatory and environmental reviews for specific projects. However, DHS and CBP are committed to responsible environmental stewardship of valuable natural and cultural resources. In keeping with this commitment, CBP has completed environmental resource surveys and prepared associated survey reports, including this Biological Survey Report.

2. Project Description

Customs and Border Protection proposes to improve and maintain 63 miles of fence along the U.S./Mexico International Border in Cochise and Pima Counties, Arizona. CBP is proposing to install and maintain tactical infrastructure consisting of a new primary pedestrian fence and associated staging yards within CBP's Tucson West and East Sectors (Sections 1A, 2, 1B, 3A, 3B, and 3C; **Appendix A, Figure 2**).

The westernmost three segments of the Survey Area (1A, 2, and 1B) occur within Tucson West Sector in Pima County, Arizona. Segment 1 includes the replacement of two subsections of vehicle barrier with the first (Subsection 1A), beginning approximately 2 miles west of the Lukeville POE and continuing west approximately 30 miles. Subsection 1B begins approximately 3 miles east of the Lukeville POE and continues east approximately 8 miles. Segment 2 includes approximately 5 miles of primary pedestrian fence replacement from the Lukeville POE, extending from approximately 2 miles to the west and approximately 3 miles to the east.

The easternmost segment includes subsections 3A, 3B, and 3C of the Tucson East Sector, east of the city of Nogales, in Cochise County, Arizona. Section 3 includes three segments of vehicle barrier replacement beginning approximately 18 miles west of the Naco POE, and continuing to approximately 25 miles east of the Douglas POE (or approximately 5 miles west of the Arizona/New Mexico state line), for a total of 20 miles of non-contiguous vehicle barrier replacement.

The Project may result in impacts to several biological resource categories; however, BMPs are recommended to minimize or eliminate impacts. Specific BMPs, as well as a native plant salvage

operation, would be implemented to ensure minimal disturbance to biological resources within the Survey Area.

3. Survey Methods

3.1. Literature Search

The potential for occurrence of special-status species in the Survey Area was first evaluated through a literature and database search. Special-status species include species that are listed under the U.S. Fish and Wildlife Service (USFWS) Endangered Species Act (ESA), the AZGFD State Wildlife Action Plan; Wildlife Species of Greatest Conservation Need (SGCN), the Bald and Golden Eagle Protection Act, United States Forest Service (USFS) sensitive, or as Bureau of Land Management (BLM) sensitive. The Arizona Game and Fish Department (AZGFD) HabiMap Arizona online environmental review tool was used to query all special-status plant and wildlife species with potential to occur within two miles of the Survey Area. The following sources were reviewed to determine which special-status plant and wildlife species have been documented to occur near the Survey Area:

- AZGFD HabiMap Arizona environmental review online tool (AZGFD 2019; HabiMap Arizona);
- USFWS Endangered Species by County Database (USFWS 2019a);
- Arizona Rare Plant Advisory Group Sensitive Plant List (ANPS014);
- NatureServe (NatureServe 2019);
- Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Cochise and Pima County, Arizona (Soil Survey Staff 2019a);
- Environmental Stewardship Plan for Construction, Operation, and Maintenance of Vehicle Fence and Related Tactical Infrastructure U.S. Border Patrol, Tucson Sector, Arizona. (CBP 2008a);
- Environmental Stewardship Plan for Construction, Operation, And Maintenance of Tactical Infrastructure, Segments Dv-2, Dv-3b, And Dv-4c, U.S. Border Patrol Tucson Sector Ajo And Casa Grande Stations, Arizona (CBP 2008b); and
- Customs and Border Protection. 2012. Biological Assessment Addressing Proposed Tactical Infrastructure Maintenance and Repair Along the U.S./Mexico international border in Arizona (CBP 2012).

The literature search identified 145 special-status species requiring potential evaluation within the Survey Area. Site visits were conducted in July of 2019 to identify suitable habitats for special-status species. Habitat conditions observed in the Survey Area were used to evaluate the potential for occurrence of special-status species based on these searches and the professional expertise of the investigating biologists. The potential for each special-status species to occur in the Survey Area was then evaluated according to the following criteria:

No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements. For wildlife, this is based on a lack of one or more essential habitat elements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime). Species surveys are not considered necessary.

Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site. Species surveys are not considered necessary but may be performed to confirm species absence.

Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site. Species surveys may be necessary to determine presence, extent, density, and details of species distribution.

High Potential. All the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is considered highly suitable. The species has high probability of being found on the site. If species surveys are not conducted, then it is recommended the species is assumed present. Species surveys may be necessary to determine extent, density, and details of species distribution.

Present. Species was observed on the site or have been documented recently as being on the site. Focused species surveys may still be needed to determine extent, density, and details of species distribution.

4. Site Assessments

General biological surveys were conducted between July 12 and 21, 2019. Vegetation mapping was conducted with the use of aerial photographs and all plant and wildlife species observed incidentally were documented. The jurisdictional assessment was conducted by Natural Channel Design, Inc. in the summer of 2019 and details of the survey are found in the draft report: *U.S. Customs and Border Protection, Tucson Sector – Environmental Surveys Fence Replacement Projects. DRAFT Waters of the U.S. Delineation Report* (NCD 2019). Additional surveys focused on small portions of the Survey Area were conducted in the late Fall and Winter of 2019 and details of those surveys are found in the draft report: *Survey Report for Black Draw, Silver Creek, and San Pedro River for the Tucson Fence Replacement Project*, February 2020 (Bio-Studies 2020).

The site assessment is intended to identify the presence or absence of suitable habitat for each special-status species known to occur in the vicinity, in order to determine its potential to occur in the Survey Area. For many of the species, the visits were not done at the ideal time of year to identify the species or potential habitat. Biologists used their best professional judgement using the information and conditions available to make an assessment. The site visits do not constitute protocol-level surveys and are not intended to determine the actual presence or absence of a species; however, if a special-status species is observed during the site visit, its presence was recorded and discussed.

In cases where little information is known about species occurrences and habitat requirements, the species evaluation is based on the best professional judgment of biologists with experience working with the species and habitats. For some species, a site assessment visit at the level conducted for this report may not be sufficient to determine presence or absence of a species. In these cases, a species may be assumed to be present, or further species surveys may be completed to refine the determination.

5. Environmental Setting

The Survey Area includes the U.S./Mexico international border and the Roosevelt Reservation. The Roosevelt Reservation is a 60-foot wide U.S. Federal Government property located immediately north of the international border providing CBP access to protect against smuggling of goods between the U.S. and Mexico. Overall land use north and south of the Survey Area are a mix of public and urban land uses, including Mexico to the south. More than half of the Survey Area includes public lands owned by the

USFWS, the NPS, and the BLM. The Survey Area is split into three main segments and subsegments where necessary for Project planning purposes. The Project segments are listed below in geographic order from west to east, Segments 1A, 2, 1B, 3A, 3B, and 3C:

- Segment 1A is a 30-mile section of the alignment, including approximately 15.2 miles along the southern edge of Cabeza Prieta National Wildlife Refuge and approximately 14.8 miles of border area along Organ Pipe Cactus National Monument. This segment is approximately 2 miles west of the Lukeville POE.
- Segment 2 is a 5-mile section within the Organ Pipe Cactus National Monument, 2 miles to the west of the Lukeville POE and 3 miles to the east. The 30-acre staging yard is located on private lands immediately east of the Lukeville POE.
- Segment 1B is an 8-mile section within Organ Pipe Cactus National Monument approximately 3 miles to the east of the Lukeville POE.
- Segment 3A is a 0.2-mile section located approximately 18 miles west of the Naco POE within the Coronado National Memorial, a property of the National Park Service (NPS).
- Segment 3B is a 0.3-mile section approximately 12 miles west of the Naco POE and within the San Pedro Riparian National Conservation Area, a property managed by the BLM. The San Pedro River flows northward from the U.S./Mexico international border and enters the Survey Area at the eastern end of segment 3B.
- Section 3C is a 19.2-mile section approximately 6.3 miles east of the Douglas POE. The land use across this segment includes BLM and USFWS properties (2.6 miles in the San Bernardino National Wildlife Refuge) and includes a small portion of private and state trust lands.

The regional climate for the western segments of the Project (Segments 1A, 2, and 1B) include hot, arid summers, and variable summer precipitation ranging between 8 inches and 23 inches annually. Monsoonal activity is extremely variable spatially and year to year. Annual low temperatures range between 45 degrees Fahrenheit (°F) and 75°F with high temperatures range between 65°F and 105°F.

The regional climate for the eastern segments of the Project (Segments 3A, 3B, and 3C) include hot, arid summers leading into late summer monsoonal (precipitation average of 14 inches annually) activity. This is followed by a moderate winter season with most of the annual precipitation falling as snow at higher elevations. Southeastern Arizona receives the highest precipitation rates across the state due to its proximity to the core of monsoonal region is Mexico. Annual low temperatures range between 32°F and 68°F with high temperatures range between 65°F and 100°F (ADWR 2019a; U.S. Climate Data 2019).

Elevations across the Project are dynamic with all segments lacking a general trend in slope aspect. Segments 1A, 2, and 1B range in elevation from 750 feet to 1,850 feet above average mean sea level (amsl). Segment 3 ranges between 3,700 feet to 5,450 feet amsl (Google Earth 2019).

There is one significant spring system immediately adjacent the Survey Area and two large drainages systems that cross the Survey Area; all of which hold habitat value for special-status species:

- Quitobaquito Spring within the Organ Pipe Cactus National Monument is in the middle portion of Segment 1A.
- Black Draw is a large drainage with perennial surface flow in the San Bernardino Basin and a tributary to the Bavispe River, which flows into the Gulf of California in Mexico. Black Draw

flows south across the international border within the San Bernardino National Wildlife Refuge in the middle portion of Segment 3C (NAU 2019; ADWR 2019b).

- The San Pedro River flows north from the international border into the U.S. This desert riparian ecosystem is within the boundary of the San Pedro Riparian National Conservation Area and supports a variety of special-status wildlife and plant species.

The Soil Survey Geographic (SSURGO) Database was used to research soil types occurring within the Survey Area. The western portion of Segment 1A falls in an area where soil surveys have not been published and there is no data to present. Thirty soil phases have been mapped within the remaining Survey Area segments (Soil Survey Staff 2019a; Soil Survey Staff 2019b, **Appendix A, Figure 3**) and include the following:

1. Ajo very gravelly loam, 1 to 5 percent slopes
2. Antho fine sandy loam, Antho soils, very gravelly variants
3. Barkerville-Gaddes association, steep
4. Blakeney-Luckyhills complex, 3 to 15 percent slopes
5. Bodecker-Riverwash complex, 0 to 5 percent slopes
6. Brookline-Fluvaquents-Riverwash complex, 0 to 3 percent slopes
7. Brunkcow-Chiricahua-Andrada complex, 3 to 20 percent slopes
8. Chorro-Guest complex, 0 to 3 percent slopes
9. Elgin-Outlaw complex, 1 to 10 percent slopes
10. Elgin-Stronghold complex, 3 to 20 percent slopes
11. Faraway-Rock outcrop complex, 10 to 30 percent slopes
12. Gilman very fine sandy loam and very fine sandy loam, saline
13. Growler-Antho complex
14. Guest-Riverroad association, 0 to 1 percent slopes
15. Gunsight very gravelly loam, 0 to 15 percent slopes
16. Harqua very cobbly loam, 0 to 8 percent slopes
17. Harqua very gravelly loam, 0 to 3 percent slopes
18. Harqua-Gunsight complex
19. Kahn-Zapolote complex, 1 to 15 percent slopes
20. Lomitas extremely stony loam, 8 to 40 percent slopes
21. Luckyhills-McNeal complex, 3 to 15 percent slopes
22. Mabray-Chiricahua-Rock outcrop complex, 3 to 45 percent slopes
23. Outlaw-Epitaph-Paramore complex, 0 to 15 percent slopes
24. Perryville very cobbly fine sandy loam, 0 to 8 percent slopes
25. Riverroad and Ubik soils, 0 to 5 percent slopes
26. Rock outcrop
27. Stronghold-Bernardino complex, 10 to 30 percent slopes
28. Sutherland-Mule complex, 3 to 15 percent slopes
29. Torrifluents
30. Ubik complex, 0 to 3 percent slopes

6. Biological Resources

6.1. Vegetation Community Classification

Prior to the general biological survey effort, data from the Web Soil Survey (Soil Survey Staff 2019b) were examined to determine whether any unique soil types that could support sensitive plant communities and/or aquatic features were present. Vegetation communities observed in the Survey Area during July 2019 general surveys were classified using the U.S. National Vegetation Classification (USNVC) and were mapped to the alliance level (USNVC 2019; **Appendix A, Figure 4**). In some cases, it was necessary to describe a community in the Survey Area that was not described in the literature. Mixed desert scrub, for example, is a broad category plant community with a diverse plant species palette which does not fit into any specific USNVC classification. Vegetation communities within the Survey Area vary in species composition and levels of disturbance.

6.1.1. Vegetation Community Descriptions

Acacia constricta - Acacia neovernicosa Thornscrub Alliance

Approximately 5.92 acres of *Acacia constricta* - *Acacia neovernicosa* Thornscrub Alliance was mapped, in the west to middle portion of Segment 3C. In general, the alliance is characterized by whitethorn acacia (*Vachellia* [= *Acacia*] *constricta*), viscid acacia (*Vachellia* [= *Acacia*] *neovernicosa*), dominant or codominant in the shrub layer, with subdominant shrubs or subshrubs such as burweed (*Ambrosia* sp.), boxthorn (*Lycium* sp.), and mesquite (*Prosopis* sp.). Shrubs are typically less than two meters tall; cover is open to intermittent. The herbaceous layer is variable, and grasses may grow dense at high elevations. Desert scrub species intermix at lower elevations.

Brassica tournefortii - Malcolmia africana Ruderal Desert Forbs Alliance

Approximately 33.12 acres of *Brassica tournefortii* - *Malcolmia africana* Ruderal Desert Forbs Alliance was mapped in a small patch west of Lukeville POE in Segment 2 and found more extensively throughout Segment 3C. In Segment 3C this alliance was mapped in a long linear strip immediately adjacent the northern road edge. Areas mapped as this alliance were typically dominated by mixed herbaceous annuals such as desert Indianwheat (*Plantago ovata*) and ruderal non-native plant species including prickly Russian thistle (*Salsola tragus*). Other co-dominant species included Mediterranean grass (*Schismus* sp.), stork's bill (*Erodium* sp.), and popcorn flower (*Cryptantha* sp.).

Cylindropuntia bigelovii Cacti Scrub Alliance

Approximately 0.44 acres of *Cylindropuntia bigelovii* Cacti Scrub Alliance was mapped within the western portion of Segment 1A. The alliance is associated with well-drained soils within rocky upland slopes and alluvial fans. Areas mapped as this alliance were typically dominated by teddybear cholla (*Cylindropuntia bigelovii*). Other co-dominant plants species included creosote bush (*Larrea tridentata*) and brittlebush (*Encelia farinosa*).

Dasyliion spp. - Bouteloua curtipendula - Muhlenbergia setifolia Foothill Desert Grassland Alliance

Approximately 2.89 acres of *Dasyliion* spp. - *Bouteloua curtipendula* - *Muhlenbergia setifolia* Foothill Desert Grassland Alliance was mapped across Segment 3C. The alliance is associated semi-desert grasslands found across the foothills of the Chihuahuan Desert. Areas mapped as this alliance were typically dominated by sotol (*Dasyliion* spp.) and perennial grasses including grama grass (*Bouteloua* spp.), curlyleaf muhly (*Muhlenbergia setifolia*), and bluestem (*Schizachyrium* sp.).

Developed/Bare Ground

Approximately 216.35 acres of Developed/Bare Ground was mapped across the entire Survey Area. The existing access road running parallel the international border is included in this landcover type as well as buildings and extensive areas of anthropogenic disturbance.

Eleocharis palustris - Eleocharis macrostachya Marsh Alliance

Approximately 0.48 acres of *Eleocharis palustris* - *Eleocharis macrostachya* Marsh Alliance was mapped within the middle portion of Segment 3C. The herbaceous wetland alliance surrounds the southern edge of an open water feature north of the Survey Area within the San Bernardino National Wildlife Refuge (SBNWR). Areas mapped as this alliance were typically dominated by spikerush (*Eleocharis* spp.), sedge (*Carex* spp.), and rush (*Juncus* spp.).

Encelia farinosa Desert Scrub Alliance

Approximately 38.69 acres of *Encelia farinosa* Desert Scrub Alliance was mapped throughout Segments 1A, 2, and 1B. This shrub dominated alliance is typically found at lower elevations (less than 3,000 ft amsl) and found on various landforms within rocky substrate. Areas mapped as this alliance were typically dominated with variable density of brittlebush (*Encelia farinosa*) with sparse cover of creosote bush, ocotillo (*Fouquieria splendens*), buffelgrass (*Pennisetum ciliare*), and chainfruit cholla (*Cylindropuntia fulgida*).

Flourensia cernua Lowland Basin Desert Scrub Alliance

Approximately 0.92 acres of *Flourensia cernua* Lowland Basin Desert Scrub Alliance was mapped throughout Segment 3C. This open canopy shrub dominated alliance is found on lowland landforms with saline soils. Areas mapped as this alliance were typically dominated by American tarwort (*Flourensia cernua*) with sparse cover of creosote bush, mesquite (*Prosopis* spp.), and saltbush (*Atriplex* spp.)

Fouquieria splendens Chihuahuan Desert Succulent Scrub Alliance

Approximately 0.14 acres of *Fouquieria splendens* Chihuahuan Desert Succulent Scrub Alliance was mapped at the western end of Segment 3C. This succulent shrub dominated alliance is typically found at elevations between 4,500 and 6,500 ft amsl within rocky limestone slopes. Areas mapped as this alliance were typically dominated with variable density of ocotillo with sparse cover of mixed low growing shrubs and succulents.

Larrea tridentata - Ambrosia dumosa Bajada & Valley Desert Scrub Alliance

Approximately 78.15 acres of *Larrea tridentata* - *Ambrosia dumosa* Bajada & Valley Desert Scrub Alliance was mapped extensively throughout Segments 1A, 2, and 1B. This shrub dominated alliance is found on various landforms within well drained soils. Areas mapped as this alliance were typically dominated with variable density of creosote bush and burrobush (*Ambrosia dumosa*). Other co-dominant plants species included saltbush (*Atriplex* spp.), desert Indianwheat, baccharis (*Baccharis* spp.), London rocket (*Sisymbrium* spp.), chainfruit cholla, prickly Russian thistle, saguaro (*Carnegiea gigantea*), ocotillo, senita (*Pachycereus schottii*), palo verde (*Parkinsonia* spp.), and buffelgrass.

Larrea tridentata Chihuahuan Desert Scrub Alliance

Approximately 17.28 acres of *Larrea tridentata* Chihuahuan Desert Scrub Alliance was mapped extensively throughout Segments 3C. This shrub dominated alliance is found on various landforms within well drained soils. Areas mapped as this alliance were typically dominated with variable density of creosote bush and burrobush. Other co-dominant plants species included saltbush (*Atriplex* spp.), desert

Indianwheat, baccharis (*Baccharis* spp.), London rocket (*Sisymbrium* spp.), chainfruit cholla, prickly Russian thistle, saguaro, ocotillo, senita, palo verde (*Parkinsonia* spp.), and buffelgrass.

Mixed Desert Scrub

Approximately 27.96 acres of Mixed Desert Scrub was mapped extensively throughout Segments 1A and 1B. This mixed shrub and tree land cover type was found on various landforms throughout the Survey Area and had high diversity of various shrub and tree species without a clear dominant canopy cover. Areas mapped as this alliance were covered with a variable density of creosote bush, burrobush, saltbush (*Atriplex* spp.), chainfruit cholla, prickly Russian thistle, saguaro, ocotillo, palo verde (*Parkinsonia* spp.), and buffelgrass.

Parkinsonia florida - Olneya tesota Desert Wash Scrub Alliance

Approximately 21.40 acres of *Parkinsonia florida* - *Olneya tesota* Desert Wash Scrub Alliance was mapped throughout in Segments 1A and 1B. This mixed tree and shrub land cover type was found within drainage systems. Areas mapped as this alliance were covered with a variable density of palo verde (*Parkinsonia* spp.), ironwood (*Olneya tesota*), creosote bush, chainfruit cholla, and mesquite (*Prosopis* spp.).

Populus fremontii Great Basin Riparian Forest Alliance

Approximately 0.61 acres of *Populus fremontii* Great Basin Riparian Forest Alliance was mapped within Segments 3B. This tree dominated land cover type was found within the San Pedro River corridor exclusively. Areas mapped as this alliance were dominated by Fremont's cottonwood (*Populus fremontii*) with scattered small trees including ash (*Fraxinus* sp.), and willow (*Salix* spp.).

Prosopis glandulosa - Prosopis velutina - Prosopis pubescens Wet Scrub Alliance

Approximately 29.17 acres of *Prosopis glandulosa* - *Prosopis velutina* - *Prosopis pubescens* Wet Scrub Alliance was mapped throughout Segments 1A and 1B. This mixed shrub land cover type was found within drainage systems throughout the Survey Area. Areas mapped as this alliance were covered with a variable density of mesquite (*Prosopis* spp.), creosote bush, and saltbush (*Atriplex* spp.).

Prosopis glandulosa Lowland Basin Chihuahuan Desert Scrub Alliance

Approximately 16.18 acres of *Prosopis glandulosa* Lowland Basin Chihuahuan Desert Scrub Alliance was mapped throughout Segment 3C. This mixed shrub land cover type was found within drainage systems throughout the Survey Area. Areas mapped as this alliance were covered with a variable density of mesquite (*Prosopis* spp.) and boxthorn (*Lycium* sp.) with subdominants covering including ocotillo and creosote bush.

6.2. Special-Status Plants Species

A total of 68 species of plants were documented within the Survey Area during the general biological survey. Many were only identified to genus as the seasonal timing of the surveys did not allow for presence of floral and herbaceous plant parts for proper identification to species. A total of ten special-status plant species have been documented to occur within two miles of the Survey Area, defined by the AZGFD HabiMap Arizona (AZGFD 2019). For the entire Project, this analysis included two special-species plant species which are federally listed as endangered or threatened species under the ESA: Huachuca water-umbel (*Lilaeopsis schaffneriana* ssp. *recurva*) and Cochise pincushion cactus (*Escobaria robbinsiorum* [= *Coryphantha robbinsiorum*]). The above special-status plant species are discussed in **Appendix Band**

all species found within the literature search and observed during survey efforts are discussed briefly in **Appendix D**. Special-Status Species locations are shown in **Appendix A, Figure 5**.

The Huachuca water-umbel is listed as a federally endangered species and is associated with perennial springs and slow-moving stream headwaters that have permanently or seasonally saturated soils between 2,000 and 6,500 feet amsl. This species occurs within the upper reaches of the San Pedro River basin and within the San Bernardino National Wildlife Refuge in aquatic and semi-aquatic environments. Huachuca water-umbel was not observed during general and focused biological surveys throughout the Survey Area within appropriate habitats. At the time of the survey, the main channel of the San Pedro River flowing within the Survey Area (Segment 3B) was fast moving and did support suitable habitat for this plant species. This species has moderate potential to occur within Segment 3B, as elemental occurrences are known within this river corridor north and south of the Survey Area. This species is unlikely to occur within the ephemeral Silver Creek in the SBNWR (Segment 3C) as aquatic resources are not consistent enough to provide suitable habitat. This species was not observed during focused surveys in Silver Creek. The Black Draw drainage system within SBNWR (Segment 3C) has moderate potential for this species to occur as suitable aquatic conditions are present although the species was not observed during focused survey efforts.

The Cochise pincushion cactus is listed as federally threatened and is known to occur in limestone soil types occurring within Segment 3C within SBNWR. This species was not observed during general biological survey efforts but has high potential to occur within Segment 3C as appropriate soil types, elevation requirements (4,000 feet amsl), and Chihuahuan Desert scrub habitat are present.

6.3. Special-Status Wildlife Species

The below special-status wildlife species are discussed in **Appendix C** and all species found within the literature search and observed during survey efforts are discussed briefly in **Appendix E**. Special-Status Species locations are shown in **Appendix A, Figure 5**.

6.3.1. Invertebrates

No invertebrate species were documented within the Survey Area during the general biological survey efforts. A total of four special-status invertebrate species have been documented to occur within two miles of the Survey Area, defined by the AZGFD HabiMap Arizona (AZGFD 2019). For the entire Project, this analysis included one special-species invertebrate species listed as federally endangered under the ESA: San Bernardino springsnail (*Pyrgulopsis bernardina*).

The San Bernardino springsnail has high potential to occur within the Survey Area as the occupied drainage system bisects the international border. This species is known from a small spring system within the privately owned Slaughter Ranch adjacent to the SBNWR.

One additional special-status invertebrate species, monarch (*Danaus plexippus*), has high potential to occur within the Survey Area. Presence of larval host plants within the milkweed family are found throughout each segment of the Survey Area.

6.3.2. Vertebrates

6.3.2.1. Fish

Three fish species were documented within the Survey Area during the focused species surveys. A total of nine special-status fish species have been documented to occur within two miles of the Survey Area, as indicated by the AZGFD HabiMap Arizona (AZGFD 2019). This analysis includes four federally listed

endangered or threatened species: Yaqui chub (*Gila purpurea*), Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*), Yaqui catfish (*Ictalurus pricei*), and beautiful shiner (*Cyprinella formosa*).

Federally listed Yaqui chub and Yaqui topminnow were found during focused species surveys within the SBNWR in Black Draw Creek (Bio-Studies 2020). Federally threatened Yaqui catfish and beautiful shiner were found to have a moderate potential to occur within the Survey Area. The Yaqui catfish is only known from the Rio Yaqui within and adjacent to the SBNWR and was not observed during focused survey efforts. There is moderate potential for this species to occur in Segment 3C within SBNWR, as appropriate riverine streams and substrates are present. The beautiful shiner is only known from small to medium streams within SBNWR and was not observed during focused survey efforts. There is moderate potential for this species to occur Segment 3C within the SBNWR as appropriate low flowing streams and substrates are present.

6.3.2.2. Amphibians

A total of two species of amphibian were documented within the Survey Area during the general biological and focused species surveys. A total of seven special-status amphibian species have been documented to occur within two miles of the Survey Area, as indicated by the AZGFD HabiMap Arizona (AZGFD 2019). This analysis includes one federally threatened amphibian species: Chiricahua leopard frog (*Lithobates chiricahuensis*).

This species was not detected during focused species surveys at the San Pedro River within in Segment 3B but is considered to have high potential to occur in the Survey Area. One leopard frog tadpole was detected within the Survey Area during focused species survey in Segment 3C (Bio-Studies 2020). The identification of this individual to species was not possible as there is potential for hybridization with other cooccurring *Lithobates* species. Suitable habitat occurs within Segment 3C for Chiricahua leopard frog and the species is known to occur in suitable habitat south of the international border (SWAT 2019).

6.3.2.3. Reptiles

A total of thirteen species of reptile were documented within the Survey Area during the general biological surveys. A total of twenty-nine special-status reptile species have been documented to occur within two miles of the Survey Area, identified by the AZGFD HabiMap Arizona (AZGFD 2019). This analysis included three federally endangered or threatened reptile species: Northern Mexican gartersnake (*Thamnophis eques megalops*), Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*), and Sonoran desert tortoise (*Gopherus morafkai*).

The federally threatened Northern Mexican gartersnake occurs in riparian corridors. Suitable habitat for this species occurs with Segments 3B and 3C within the Survey Area. Northern Mexican gartersnake has high potential to occur as elemental occurrences of this species have been documented near or within the Survey Area (AZGFD 2019). The federally endangered Sonoyta mud turtle is restricted to Quitobaquito Springs within Segment 1A. This species has no potential to occur as the spring is 165 feet to the north and outside of the Survey Area. The Sonoran desert tortoise is considered sensitive under the USFWS Candidate Conservation Agreement. This species is found on rocky slopes and the Mojave and Sonoran Deserts and has high potential to occur across Segments 1A, 2, and 1B in the Survey Area.

The Sonoran collared lizard (*Crotaphytus nebrius*) and Gila monster (*Heloderma suspectum*) were both observed during general biological surveys. The Sonoran collared lizard is listed as a Species of Greatest Conservation Need (SGCN) 1B and has high potential to occur in Sonoran Desert habitats across Segments 1A, 2, and 1B. One recorded observation of Gila monster was made in Segment 3C during survey efforts and the subspecies was not noted. This observation coincides with a documented population

and observations of reticulate Gila monster (*Heloderma suspectum suspectum*) in the Segment 3C Survey Area. Reticulate Gila monster is listed as a SGCN 1A species and occurs in Sonoran Desert in rocky canyon substrates and has high potential to occur across Segments 3C.

6.3.2.4. Birds

A total of thirty-seven species of bird were documented within the Survey Area during the general biological surveys. A total of fifty-two special-status bird species have been documented to occur within two miles of the Survey Area, as indicated by the AZGFD HabiMap Arizona (AZGFD 2019). This analysis included four federally endangered or threatened bird species: Mexican spotted owl (*Strix occidentalis lucida*), Yuma Ridgway's Rail (*Rallus obsoletus yumanensis*), Southwestern willow flycatcher (*Empidonax traillii extimus*), and yellow-billed cuckoo (*Coccyzus americanus*).

The federally threatened Mexican spotted owl utilizes closed canopy forests within rocky canyons and cliffs for breeding and nesting habitat. Although this species is known to use riparian corridors for dispersal and movement it is unlikely to occur within the Survey Area. The federally endangered Yuma Ridgway's rail is known to occur in Quitobaquito Spring (AZFGD 2019). This species is unlikely to occur in the Survey Area, as the spring system is approximately 165 feet north of the Survey Area. The federally endangered Southwestern willow flycatcher utilizes riparian corridors for breeding, nesting, foraging, and migration movement. Suitable habitat to support breeding and foraging for this species occurs adjacent to Segment 3B in the San Pedro River, however, habitat structure within the Survey Area is unlikely to support the species. One record of this species was documented within Segment 3C, as the San Pedro River is a critical migration corridor (AZFGD 2019). The federally threatened yellow-billed cuckoo utilizes similar habitat as the Southwestern willow flycatcher, but in this region has less restricted requirements for nesting substrates. The yellow-billed cuckoo has high potential to occur within the gallery forests within Segments 3B and 3C in the Survey Area and occurrences have been documented adjacent to Segments 3B and 3C (AZFGD 2019).

There are two special-status bird species observed during general biological surveys within the Survey Area: loggerhead shrike (*Lanius ludovicianus*) and Gila woodpecker (*Melanerpes uropygialis*). The loggerhead shrike is a USFWS species of concern and suitable desert scrub habitat that could support the species occurs throughout the Survey Area. Suitable desert scrub and woodlands and riparian corridors that could support the SGCN 1B listed Gila woodpecker occur throughout the Survey Area. Both bird species have high potential to occur across the entire Survey Area.

6.3.2.5. Mammals

A total of thirteen species of mammal were documented within the Survey Area during the general biological surveys. A total of thirty-four special-status mammal species have been documented to occur within two miles of the Survey Area, as indicated by the AZGFD HabiMap Arizona (AZGFD 2019). For the entire Project, this analysis included four federally endangered or threatened mammal species: Sonoran pronghorn (*Antilocapra americana sonoriensis*), Ocelot (*Leopardus pardalis*), Jaguar (*Panthera onca*), and black-tailed prairie dog (*Cynomys ludovicianus*).

The federally endangered Sonoran pronghorn is found in alluvial valleys with desert scrub and mixed cacti associations. This species is known to occur within Segment 1A, 2, and 1B within the Survey Area. The federally endangered ocelot is found in dense thornscrub habitat and the predicted range for this species overlaps the Survey Area (AZFGD 2019). There is moderate potential for this species to occur within Segments 3A, 3B, and 3C. Federally endangered North American jaguar are found in arid montane and scrub habitats at the northern extent of their range in Arizona. There is moderate potential for this species

to occur within Segments 3A, 3B, and 3C. The black-tailed prairie dog is considered sensitive under the USFWS Candidate Conservation Agreement. This colonial species is found on rocky slopes and the Mojave and Sonoran Deserts and although suitable habitat exists within the Survey Area, this species has no potential to occur. Black-tailed prairie dog was extirpated from Arizona in the 1960's and reintroduction areas are approximately 30 miles away from the Survey Area.

There are two special-status mammal species observed during general biological surveys within the Survey Area: Harris' antelope squirrel (*Ammospermophilus harrisi*) and antelope jackrabbit (*Lepus alleni*).

The Harris' antelope squirrel is a SGCN 1B species and is found in canyons, arid plains, and river valleys in low elevation desert habitats. This species has high potential to occur within the Survey Area in Segments 1A, 2, and 1B. The antelope jackrabbit is listed as an SGCN 1B species and is found in grassy slopes and thornscrub desert habitats. This species has high potential to occur throughout the entire Survey Area.

6.4. Critical Habitat

USFWS Critical Habitat has been identified for nine species within or adjacent to the Survey Area: San Bernardino springsnail, desert pupfish [Quitobaquito pupfish (*Cyprinodon eremus*)], beautiful shiner, Yaqui catfish, Yaqui chub, Northern Mexican gartersnake, yellow-billed cuckoo, Mexican spotted owl, and jaguar.

Quitobaquito Spring is designated as critical habitat by the USFWS for desert pupfish (*Cyprinodon macularius*) and is found within Organ Pipe Cactus National Monument. Although this species of desert pupfish (*C. macularius*) is considered to be extirpated from Arizona, the designated critical habitat was put into place before the species split between desert pupfish (*C. macularius*) and Quitobaquito pupfish (*C. eremus*). Since Quitobaquito Spring is located approximately 165 feet north of the middle portion of Segment 1A, designated critical habitat for desert pupfish does not occur within the Survey Area.

Designated critical habitat has been identified for Mexican spotted owl and North American jaguar immediately adjacent the Segment 3A Survey Area within the Coronado National Monument. Proposed critical habitat has been identified for Northern Mexican gartersnake and yellow-billed cuckoo in Segment 3B Survey Area within the San Pedro River National Conservation Area.

Within or adjacent to the Segment 3C, designated critical is mapped within the SBNWR for San Bernardino springsnail, Yaqui chub, Yaqui catfish, and beautiful shiner. Proposed critical habitat for the Northern Mexican gartersnake and yellow-billed cuckoo is also found within the SBNWR (**Appendix A, Figure 6**).

6.5. Hydrology

The U.S. Army Corps of Engineers (USACE) regulates “Waters of the United States” under Section 404 of the Clean Water Act (CWA). Waters of the U.S. are defined in the Code of Federal Regulations (CFR) as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated at a sufficient depth and for a sufficient duration to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as “non-wetland waters” and are characterized by an ordinary high water mark (ohwm). Non-wetland waters generally include lakes, rivers, streams, and other

open-water habitats. The placement of fill material into waters of the U.S generally requires an individual or nationwide permit from the USACE under Section 404 of the CWA.

6.5.1. Field Evaluation Summary

A focused evaluation of the wetland and waters indicators within the Survey Area was conducted by Natural Channel Design, Inc. and all details of their findings are found in the Draft report: *U.S. Customs and Border Protection, Tucson Sector – Environmental Surveys Fence Replacement Projects. DRAFT Waters of the U.S. Delineation Report, Tucson, AZ.* October 2019 (NCD 2019).

Based on the findings of the jurisdictional assessment, the Survey Area contains approximately 14.26 acres of potentially jurisdictional non-wetland waters. No wetlands waters were delineated within the Survey Area. The non-wetland waters displayed an ohwm and are linked to “navigable waters of the U.S.” and therefore, are potentially jurisdictional under Section 404 of the CWA. Non-wetland Waters included ephemeral and perennial streams.

Table 1. Summary of Potential CWA Section 404 Jurisdictional Areas within the Survey Area.

Potentially Jurisdictional Features	Acres
<i>Non-wetland Waters</i>	
Ephemeral stream	14.21
Perennial stream	0.05
TOTAL	14.26
<i>Wetland</i>	
Perennial wetland	0.05
Ephemeral wetland	0.04
TOTAL	0.09

6.5.2. Non-Wetland Waters

The Survey Area had two categories of non-wetland waters mapped, ephemeral and perennial stream. All mapped features are likely to be considered jurisdictional by the USACE.

Ephemeral Stream

Ephemeral streams are episodic stream channels that appear to convey flows only during and immediately after precipitation events. Many of these features displayed an ohwm within the Survey Area and either originate in the U.S or Mexico and cross the international border. All channels were considered not to be permanent waters and only flow for short periods of time in response to precipitation events. The ephemeral streams are not considered connected to traditional navigable waters, which flow, year-round or seasonally, up to a period of three months.

Perennial Stream

One perennial stream was identified as part of the jurisdictional assessment within Survey Area Segment 3C in the SBNWR. Black Draw is a perennial spring fed system and flows south across the international border. Standing water was observed in the creek at the time of the survey.

6.5.3. Wetlands

The Survey Area contains two categories of wetland as identified by the National Wetlands Inventory, perennial and ephemeral wetlands. Both features are found within the SBNWR and are likely to be considered jurisdictional by the USACE. Black Draw considered a perennial wetland system and Hay Hollow Wash is considered an ephemeral system. Hay Hollow Wash was dry during the survey effort.

7. Best Management Practices and Mitigation

Impacts would be minimized through implementation of appropriate BMPs for the protection of special-status species, as well as for general plants, wildlife, and habitats. Temporarily impacted areas would be revegetated with native plants or seeds and are expected to function again as suitable habitat for special-status species after restoration is complete. Impacts to jurisdictional wetlands and waters of the U.S. would also be mitigated for appropriately. The scope and extent of any mitigation would be based on a final assessment of impacts. To reduce the potential for impacts to sensitive vegetation communities and special-status species, the following general BMPs are recommended. Implementation of these general BMPs, in combination with the species and habitat specific measures provided in the subsequent sections, would reduce construction related impacts.

BMPs for the Project were researched and developed by desktop analysis prior conducting general biological surveys. BMPs for the Project were approved prior to the start of construction in a stand-alone document. After detailed survey and assessment efforts for habitat across the Project, special-status plant and wildlife species were included in this BSR. Subsequently, not all the Special-status species are reflected in the Project BMPs.

It is CBP's policy to reduce impacts through the sequence of avoidance, minimization, and mitigation. Best management practices vary based on location and resource type. CBP may also implement mitigation measures. The scope or extent of CBP's mitigation would be based on the actual impacts from the Project and available funding. Project impacts would be documented during construction and assessed through monitoring after Project construction has been completed. CBP's assessment of mitigation would be based on feedback from environmental monitors and the final construction footprint.

No areas within the vicinity of the Project have yet to be identified as potential mitigation. Once the final impacts have been assessed a mitigation plan addressing the specific location and methods for mitigation would be prepared. Mitigation can be achieved either on-site, off-site at mitigation bank, or another appropriately identified location.

7.1. General Design BMPs

- General-01 Use vehicle fence for 50-foot stretches in place of primary fence to allow for passage of migratory ungulate and other large mammal species. Approximately once every 1.5 miles on Organ Pipe Cactus National Monument or Cabeza Prieta National Wildlife Refuge.
- General-02 Create flood/wildlife gate in primary fence at large drainage crossings to allow for passage of seasonal movement of wildlife species and flood waters. Ensure fence construction is

designed to ensure proper conveyance of floodwaters and to eliminate the potential to cause backwater flooding on either side of the U.S./Mexico international border.

- General-03 The construction workforce would be trained to identify and avoid any sensitive areas or resources. Sensitive areas would be flagged as appropriate (i.e., where they are in the vicinity of potential construction activity), and an environmental monitor would be consulted prior to working in sensitive areas to minimize the potential for accidental disturbance from construction equipment and crews.
- General-04 Construction area boundaries would be clearly marked throughout the entire Project with snow fencing or something similar.
- General-05 When feasible, construction activities shall avoid impacting vegetation, but when necessary shall implement drive and crush vegetation rather than clearing or grubbing. Construction equipment would drive over and crush native plants to minimize impacts to the roots of desert shrubs. The drive and crush method is expected to reduce the recovery time of vegetation within the temporary construction areas.
- General-06 At the end of each workday, the Project personnel shall inspect all potential wildlife pitfalls (e.g., trenches, bores, other excavations) for wildlife and remove wildlife as necessary. If the potential pitfalls are not immediately filled then construction crew would build slopes within the excavation to provide wildlife escape ramps (3:1 slope) or secure covers when work is not being completed at the excavation to prevent wildlife entry (i.e. night-time).
- General-07 The construction crews would provide closed lid rubbish containers. Trash and food-related waste should be placed in closed lid containers to ensure that workers do not feed or attract wildlife. The Project would promote a culture of a clean worksite without trash or debris that wildlife may attempt to eat or use as cover.
- General-08 All Project vehicle movement would be restricted to existing access roads and access roads constructed as a part of the Project and determined and marked by the Project in advance of construction, except when not feasible due to physical or safety constraints. The environmental monitor would be notified and consulted prior to any travel or construction off existing access roads, including construction of new access roads.
- General-09 Primary access is through the Roosevelt Reservation. To the extent practicable, the Project shall limit access and use of visitor access roads within national monuments, wildlife refuges, and riparian national conservation areas, unless absolutely necessary.
- General-10 To the extent feasible design any new access road to avoid stream crossings and or dry drainages (washes) to minimize erosion risk and adverse effects to aquatic or floodplain habitat.
- General-11 Any night lighting during construction and operation would be selectively placed, shielded, and directed away from all areas of native habitat to the maximum extent practicable. All unnecessary lighting should be turned off at night to limit attracting migratory birds. Light should avoid being visible from the surrounding landscape and controls such as timers, proximity sensors or additional shielding should be used as feasible. Non-UV Narrow band color temperatures of less than 3100K should be used.

- General-12 For permanent lighting fixtures the Project shall use the minimum wattage needed and minimize the number of lights to the extent feasible.
- General-13 Noise-reduction devices (e.g., mufflers) should be maintained in good working order on vehicles and construction equipment. Generators would have baffle boxes, mufflers, or other noise abatement capabilities. Blasting mats would be used to minimize noise and debris.

7.2. Storm Water Pollution Prevention Plan (SWPPP) BMPs

- SWPPP-01 The Project would develop the SWPPP, make a checklist for the entire Survey Area, and provide the checklist to the USACE of engineers, the environmental monitor, and the contractor's erosion control contractor for immediate implementation.
- SWPPP-02 Dust abatement techniques should be used on unpaved, unvegetated surfaces to minimize airborne dust; and erosion and fugitive dust control measures would be inspected and maintained regularly. Water trucks should be kept regularly running for dust control.
- SWPPP-03 Restrict construction vehicle speeds to 25 miles per hour (mph) on unpaved roads.
- SWPPP-04 Gravel or topsoil would be obtained from developed or previously used sources. Project design and engineering practices would be implemented to mitigate geologic limitations to site development. Biological and Cultural Resources monitors should approve any areas where material would be acquired, stored, or placed.
- SWPPP-05 The environmental monitor would identify locations that have the potential for wetlands or other waters of the U.S. with flagging. If no current existing USACE jurisdictional determination is available, a delineation would be conducted, and jurisdictional determination would be obtained from the USACE. Prior to conducting any activities that have the potential to affect wetlands and other waters of the U.S., all federal and state CWA Section 404 individual or applicable nationwide permits and 401 and other applicable permits would be obtained.
- SWPPP-06 Contact the environmental monitor to coordinate with waterway permitting agencies when performing work below the ordinary high water mark.
- SWPPP-07 Spoils shall be stockpiled in disturbed areas lacking native vegetation or where habitat quality is poor as identified by the environmental monitor. All stockpiles would have erosion control around them, except while actively being used
- SWPPP-08 To the extent possible, disturbance of shrubs and surface soils shall be minimized. All disturbances, vehicles, and equipment shall be confined to the flagged boundary limits. When additional staging areas are required, they would be placed in previously disturbed areas to the extent feasible.
- SWPPP-09 Design measures such as straw waddles, silt fencing, aggregate materials, wetting compounds, and revegetation of native plant species would be installed properly and implemented to decrease erosion and sedimentation.
- SWPPP-10 Properly install erosion and sediment control BMPs to protect drainages and wetlands.
- SWPPP-11 Place old fence components in previously disturbed areas, in designated laydown yards, or dispose of them immediately.

- SWPPP-12 Concrete would not be disposed of except in washout basin that can be removed and never if the basin is more than 75 percent full.
- SWPPP-13 Consistently use drip pans at night and under parked equipment.
- SWPPP-14 No re-fueling within 100 feet of any water or dry washes
- SWPPP-15 All fuels, waste oils, and solvents would be collected and stored in tanks or drums within a secondary containment system. Pumps, hoses, tanks, and other water storage devices would be cleaned and disinfected.
- SWPPP-16 Any spill of reportable quantities would be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock, etc.) would be used to absorb and contain the spill.
- SWPPP-17 Avoid contamination of ground and surface waters by storing any water that has been contaminated (e.g., with maintenance materials, oils, equipment residue) in closed containers on-site until removed for disposal. In upland areas, storage tanks must be on-ground containers.
- SWPPP-18 Cease work during heavy rains and do not resume work until conditions are suitable for the movement of equipment and materials.
- SWPPP-19 Uncured concrete should not be allowed to enter the water or dry washes.
- SWPPP-20 A Spill Prevention, Control, and Countermeasures Plan (SPCCP) would be in place prior to the start of operations, and all personnel would be briefed on this plan.
- SWPPP-21 All equipment maintenance, laydown, and dispensing of fuel, oil, or any other such activities would occur in the staging area identified prior to construction starting. The designated staging area would be situated to prevent runoff from entering dry washes and/or waters of the United States. All used oil and solvents would be recycled, if practicable. All non-recyclable hazardous and regulated wastes would be handled consistent with U.S. Environmental Protection Agency (EPA) standards.
- SWPPP-22 Wastewater from construction, including pressure washing, must be collected. A ground pit or sump can be used to collect the wastewater. Wastewater from pressure washing must not be discharged into any surface water. Avoid contamination of ground and surface waters by ensuring that water tankers that convey untreated surface water do not discard unused water where it has the potential to enter any aquatic or wetland habitat.
- SWPPP-23 If soaps or detergents are used, the wastewater and solids must be pumped/cleaned out and disposed of in an approved facility. If no soaps or detergents are used, the wastewater must first be filtered or screened to remove solids before being allowed to flow off-site. Detergents and cleaning solutions must not be sprayed over or discharged into surface waters.
- SWPPP-24 Prevent runoff from entering drainages or storm drains by placing fabric filters, sandbag enclosures, or other capture devices around the work area. Empty or clean out the capture device at the end of each day and properly dispose of the wastes.
- SWPPP-25 Heavy equipment use within an active flowing channel should be avoided. If absolutely necessary, sediment barriers would be used to avoid downstream effects of turbidity and sedimentation for in-water work in streams. Except for emergency repairs required to protect

human life, limit work within drainages to dry periods to reduce effects on downstream water quality.

- SWPPP-30 In low-water crossing areas, the BLM would like to coordinate and be on-site to discuss design of low water crossing areas.
- SWPPP-31 Borderlands in Southern Arizona are subject to inundation during annual monsoon season from July to September. The Project would incorporate periods of inactivity during the monsoon season as necessary to prevent damage to existing roads.
- SWPPP-32 At the completion of the Project, all construction materials would be removed from the site.

7.3. Cultural BMPs

- Cultural-01 Fence re-construction activities should stay confined to the Roosevelt Reservation. Monitoring of the Survey Area by a cultural monitor would be conducted on a regular basis. If there are any proposed areas of new disturbance that have not been previously surveyed, a cultural resource survey would be required in accordance with the National Historic Preservation Act.

7.4. Notifications from U.S. National Park Service

- Notifications NPS - 01 To the extent practicable, the Project shall limit access and use of visitor access roads within National Park lands unless absolutely necessary. Primary access is through the Roosevelt Reservation. Park roads used by visitors in the construction area include, from east to west: Camino de dos Republicas from the Gachado Line camp to Highway 85, and from Highway 85, the entirety of the South Puerto Blanco Road to Quitobaquito parking area, including access to the Senita Basin. Park roads are historic National Register-eligible resources and shall not be widened or improved beyond the confines of the existing roadbed. Large, heavy equipment accessing the east side of the park should use the Roosevelt Reservation as the primary access since the Camino de dos Republicas is a narrow, one lane road.
- Notifications NPS - 02 The one exception is the section of border road within the Roosevelt Reservation from Blankenship Ranch House to the Gachado Line Camp. Visitor access to this historic resource can only be accomplished by driving the border road. Two weeks' notice is requested, prior to construction occurrence within this area, so public notice can be posted and conveyed that this section of road and access to the historic resource is closed. If public access is an issue with construction activities from Blankenship to the Sierra de Santa Rosa, continued restrictions to the border road would be required until that section of fence is completed. Notification is requested once construction in this section is complete.
- Notifications NPS - 03 Blasting options have not been shared with stakeholders and the Project proponent is not aware that blasting would be used as an excavation tool. Prior notification is requested should blasting be needed to allow for consultation. There are extreme cautions around historic adobe structures and anywhere within 5 miles of Quitobaquito.
- Notifications NPS - 04 Maintenance of vehicles should occur within the Lukeville staging area, as opposed to areas within the Roosevelt Reservation that fall within National Park – the Park's legislative boundary includes the Roosevelt Reservation. If maintenance needs to occur outside the Lukeville area, care should be taken to prevent spills onto the soil by using drip pans, impervious canvas, and other similar spill-prevention methods.

- Notifications NPS - 05 Many areas of the National Park reserve have rare and sensitive resources. In particular areas, around Blankenship Ranch House and Quitobaquito have rare plants, as well as, state and federally endangered species. In these areas' construction should use a more limited footprint, confined to the existing roadbed only. A map has been prepared containing polygons of areas that would be avoided during construction in these areas. These areas are limited in scope and stakeholders hope that trust resources within these areas can be preserved. The Quitobaquito spring area and associated bosque is critical habitat for two endangered species within the pond, Sonoyta mud turtle (proposed critical habitat) and desert (Quitobaquito) pupfish (designated critical habitat). Aguajita Wash, just east of Quitobaquito, is an important riparian area that has a spring within 60-feet of the border and supports rare vegetation immediately adjacent to that area of the border. Consideration is requested to keep construction limited to the existing roadbed or just slightly larger to accommodate equipment. Considerations for alternative approaches are requested and highly advisable due to the public perception of Quitobaquito.
- Notifications NPS - 06 It is requested that from approximately 1/8th of a mile east of the Aguajita Wash to the Quitobaquito bosque, that no vegetation be removed from this area. The area is an important riparian area sensitive to disturbance and important to wildlife. There is a spring in Aguajita Wash near the border within the Roosevelt Reservation boundary. There are rare species of vegetation not found anywhere else and the Quitobaquito bosque is noted as critical habitat for two federally endangered species. NPS also requests consideration for areas near the Dos Lomitas and Blankenship Ranch House be spared disturbance due to the rare cactus species that grows in that area. Maps would be provided of the two areas of concern and would ensure the areas are limited in scope to save the species and associated trust resources.
- Notifications NPS - 07 Columnar cacti up to 6-feet tall can be transplanted and stakeholders can assist the Project with appropriate locations. Consideration is requested to leave specimen representatives unharmed. Examples include senita cactus, saguaros, and organ pipe cactus. The stakeholder can identify individuals and identify sites for direct transplanting.
- Notifications NPS - 08 It is requested that the Project not blade the full 60' of the Roosevelt Reservation, instead, exercise restraint and only disturb lands that actually need to be bladed for the border road and access to lighting. For example, as depicted in the cross section provided by USACE, the footprint from the fence to the north edge of the road includes a 7' space between the fence and the shoulder, 2' of shoulder and the roadbed is 20' wide with another 2' shoulder on the north side. Consideration is requested to have new iterations of the road reflect the current design, where the border road is up against the fence. This would reduce maintenance costs by keeping vegetation from growing up against the fence and allows agents to more efficiently check for sign along the road. This would save 9-feet of lands that would not require blading and allow the road to be close to the fence, increasing agent effectiveness as they check for sign.
- Notifications NPS - 09 Minimization of impacts could be achieved by only blading the area between the north shoulder to the lights to the north, limiting land disturbance only to areas that provide access to the lights. There is 11 feet of space and 10 feet of access to the lights, 21 feet of lands that do not need to be bladed. Lights are spaced 150' apart. An access road needs only be 8' wide leaving 142' of space between lights that does not need to be disturbed. Combined with the 9' of space if the road is up against the fence and the 21' of lands to the north, the combined 30' of saving lands would come at a substantial savings both to the cost of the Project and adverse effects to trust resources. Tall vegetation that might adversely affect the lighting can be removed

judiciously, instead of blading the entire area down to dirt and subsequently restoring disturbed lands. This would spare over 100 acres from needless disturbance and save money. As noted, the stakeholder encourages dialogue with the Ajo Station; agents have expressed concern over safety and a concern for lighting as they do not want to be seen from the south side of the fence.

- Notifications NPS - 10 The NPS requests avoidance be established for properties listed as eligible under the National Register of Historic Places. There are currently six sites within the Roosevelt Reservation that would be adversely affected by construction activities. NPS would provide maps noting sensitive areas and would ensure they only reflect immediate areas to avoid without extreme buffers. As noted above, consideration is requested not to blade the full 60-feet of the Roosevelt Reservation, but only those areas necessary to achieve the goals. This concept is more fully described in the vegetation and restoration paragraph above.
- Notifications NPS - 11 Cultural oversight during all excavation activities is required to identify and recover unique artifacts and important resources. Buffers would be established around National Register eligible (6 sites at the time of this writing) archaeological and cultural sites. If any cultural material is discovered during the construction efforts, it is requested that all activities stop until a qualified archeologist can assess the cultural remains.
- Notifications NPS - 12 Fence constructed in washes/arroyos should be designed to ensure proper conveyance of floodwaters and to eliminate the potential to cause backwater flooding on either side of the U.S./Mexico international border. Design plans should consider major rain events, such as monsoonal thunderstorms, where inch/hour rain events have occurred and extreme events, such as hurricanes. The 2018 hurricane season saw over 8-inches of rain in two weeks and significant flooding occurred as a result. Aguajita Wash and other washes flowed extremely high and included erosion and debris flows that dammed up against fencing.
- Notifications NPS - 13 As noted in discussions with the Project, the proposed action includes drilling new water wells every 5 miles. It is requested that no water wells be drilled 5 miles east and 5 miles west of Quitobaquito to ensure there is no adverse effect to the water budget from the springs. This would ensure water resources would not be diminished thus securing critical habitat for two endangered species (Sonoyta mud turtle and desert [Quitobaquito] pupfish) and a USFWS species of concern Quitobaquito Tryonia (*Tryonia quitobaquiae*). The Project has agreed to not drill or operate wells within 10 miles of Quitobaquito. There had been a mention to acquire water directly from the pond and the Project proponent noted that this action would not occur under any circumstance.
- Notifications NPS - 14 The Project proponent has agreed to install monitoring equipment at the springhead of Quitobaquito. Should any water supply reduction be noted during construction within 5 miles east and 5 miles west of the springs, all construction activities should halt and be evaluated to determine the cause of the reduction of flow.
- Notifications NPS - 15 It is requested that construction activities be restricted to daylight hours. The Twin Peaks Campground and backcountry camping in designated wilderness are upslope from the construction zone; camping and the visitor experience would be negatively affected by excessive nighttime sounds. It is requested that construction equipment possess properly working mufflers and are kept properly tuned to reduce excessive sounds.

7.5. Biological BMPs

- Bio-01 All ground disturbing activities such as crushing, clearing, and grubbing, shall be conducted during the non-breeding season (August 31 - February 15). If vegetation impacts are necessary during the breeding season, then the environmental monitor would provide avian nesting survey no more than 5 days prior to the clearing of the vegetation.
- Bio-02 If active bird nests are found within the Survey Area, buffers where Project related activities may not occur, would be implemented as follows:
 - Eagle and raptor nests - 300-foot buffer;
 - Burrowing owl burrow - 250-foot buffer;
 - Special-status bird species - 100-foot buffer; and,
 - Migratory birds - 25-foot buffer.
- Bio-03 Use opaque coverings and/or fill ends with concrete for all open pylons when stored overnight and/or longer without being actively used for construction activities, to avoid impacts to nesting birds and other small wildlife.
- Bio-04 Fence foundation should be flush or at a ground level to allow for the unimpeded movement of small wildlife species.
- Bio-05 Identify where the Project needs to go outside the 60-foot Project corridor before any impacts and have an environmental monitor review and survey the area prior to conducting work activities.
- Bio-06 All-natural materials (i.e., straw bales, fiber rolls, gravel, or fill materials) must come from weed free sources.
- Bio-07 Construction equipment would be cleaned prior to entering the site and starting work to minimize spread of invasive plant species.
- Bio-08 Invasive plant species that appear on the Project would be removed.
- Bio-09 Removal of any vegetation in habitats of federally listed species would be limited to the smallest amount needed to meet the objectives of the Project.
- Bio-10 If federally protected species are encountered, construction would stop until the environmental monitor can safely remove the individual or it moves away on its own.
- Bio-11 Special-status species and their habitats would be avoided whenever feasible, and when not feasible, the individuals would be transplanted, relocated, or would be given time to move/fledge on their own.
- Bio-12 Avoid areas containing columnar cacti or paniculate agaves to the extent practicable. If columnar cacti or agave species are removed, they would be replaced relocated or replaces as part of the construction activities.
- Bio-13 Equipment staging areas shall be located at previously used staging areas or at least 0.3 miles (1,500 feet) away from known, occupied sites of listed aquatic species.
- Bio-14 The Project proponent would not use any onsite surface water for any construction work or cleaning at all.

- Bio-15 The Project proponent would not use/bring in water from untreated sources, including water used for irrigation purposes, for maintenance and repair projects located within one mile of aquatic habitat for federally listed aquatic species. Groundwater or surface water from a treated municipal source would be used when within one mile of such habitats.

7.6. Special-Status Species BMP

7.6.1. Special-Status Plant BMPs

- Plants-01 Use of herbicides would not occur within areas of suitable habitat within the range or designated critical habitat of threatened or endangered plant species unless approved by the USFWS.
- Plants-02 Cleaning or modification of culverts and other work in drainages that could cause sedimentation or otherwise affect water quality or quantity would not occur within areas, or within 0.5 miles upstream of areas, where Huachuca water umbel occurs without further consultation with the USFWS.
- Plants-04 No ground disturbance would occur outside the existing footprint in suitable habitat or designated critical habitat of Huachuca water umbel or Cochise pincushion cactus, and areas within 0.25 miles upstream of suitable or critical habitat of Huachuca water umbel, without further consultation with USFWS.

7.6.2. Special-Status Fish Species

- Fish-01 No in-water work would occur within streams or other waterbodies with known occurrences or designated critical habitat without further consultation with the USFWS.
- Fish-02 Cleaning or modification of culverts and other work within drainages that could cause sedimentation or otherwise affect water quality or quantity would not occur within, or within 0.25 miles upstream of, critical habitat or other suitable habitat without further consultation with the USFWS.
- Fish-03 Use of herbicides would not occur in streams or other waterbodies with known occurrences within the range or designated critical habitat unless approved by the USFWS.

7.6.3. Chiricahua Leopard Frog

- Frog-01 In-water work within critical habitat of the species would occur during the active season (May through September) so that frogs can escape to the best of their ability. (This BMP may conflict with Sonoran tiger salamander BMPs. In areas where there is overlap between Sonoran tiger salamander (*Ambystoma tigrinum stebbinsi*) and Chiricahua leopard frog ranges, the environmental monitor would base Project activity implementation on the species most likely to occur in the area and on the potential for effects to either species.) In addition, maintenance would be designed and implemented so that the hydrology of streams, ponds, and habitat is not altered.
- Frog-02 Prior to any in-water work within critical habitat of this species, the Project proponent would contact USFWS Arizona Ecological Services Office personnel to determine if frogs can be salvaged and placed in holding facilities until work is complete. Capture, movement, and holding of frogs would be accomplished by permitted biologist, at the expense of the Project proponent, under all appropriate State and Federal permits, including permit conditions to ensure minimal harm or mortality.

- Frog-03 A site-specific SWPPP and a spill protection plan would be prepared, and regulatory approval sought, for maintenance and repair activities that could result in sedimentation within 0.3 miles of critical or occupied habitat. Including, but not limited to, placing straw bale type sediment traps at the inlet of ponds or stock tanks and upstream of drainages known to be occupied by the species or within Chiricahua leopard frog critical habitat.
- Frog-04 To the extent practicable, removal of riparian vegetation within 100 feet of aquatic habitats would be avoided to provide a buffer area to protect the habitat from sedimentation.
- Frog-05 Routine road maintenance practices would be implemented to avoid prolonged establishment of road and tire ruts within and adjacent to Chiricahua leopard frog critical habitat.
- Frog-06 Use of herbicides would not occur within 0.3 miles of Chiricahua leopard frog critical habitat or other suitable habitat within the species' range.
- Frog-07 Disease prevention protocols would be employed if the Project constructs in areas known or likely to harbor chytridiomycosis (consult with USFWS to identify these areas). In such cases, if construction vehicle/equipment use would occur in more than one frog habitat, the Project would ensure that all equipment is clean and disinfected before it moves to another habitat.
- Frog-08 Any use or storage of chemicals or fuels within the construction corridor or staging areas would be kept at least 0.3 mile from suitable frog sites, to the greatest extent practicable. No pumping of water from suitable breeding sites would occur for road maintenance, dust control, mixing concrete, or other purposes. No transfer of water or mud among suitable breeding sites would occur. Use of herbicides to control unwanted invasive plants at facilities or roadsides is an acceptable management technique when used according to label directions, provided that introduction of the herbicides to the Chiricahua leopard frog aquatic habitat does not occur.

7.6.4. Sonoran Tiger Salamander

- Salamander-01 A qualified biologist would monitor all ground-disturbing maintenance activities and use of heavy equipment immediately prior to and during the maintenance activity that occurs within 0.1 mile of Sonoran tiger salamander suitable habitat (i.e., cattle ponds and tanks with standing water) within the species' range. Monitoring would occur for all maintenance and repair activities to be conducted in vegetated or undisturbed areas. Burrows of fossorial animals identified by the monitor would be left intact if possible. If a Sonoran tiger salamander is observed, the monitor shall photograph the dorsal side of the salamander, without handling the salamander, record the geographic coordinates of its location, and report the location to the USFWS Arizona Ecological Services Office within 72 hours. If the salamander is in danger of being harmed (e.g. in the path of vehicles or foot traffic), work would cease in the area of the species until either the qualified environmental monitor can safely move the individual to a nearby location, in accordance with USFWS Endangered Species Permit requirements, or it moves away on its own.
- Salamander-02 A site-specific SWPPP would be prepared and regulatory approval sought, for maintenance and repair activities that could result in sedimentation and that occur within 0.3 miles of suitable habitat within the species' range. This would include, but is not limited to, placing straw bale type sediment traps at the inlet of ponds or stock tanks known to be occupied by the species.
- Salamander-03 Use of herbicides would not occur within 0.3 miles of Sonoran tiger salamander suitable habitat within the species' range, unless approved by USFWS.

- Salamander-04 Sonoran Tiger Salamander: In-water work within the range of this species would occur during period of low or no flow to minimize the chance of encountering a salamander (This BMP may conflict with Chiricahua leopard frog BMP. In areas where there is overlap between Sonoran tiger salamander and Chiricahua leopard frog ranges, CBP would base Project activity implementation on the species most likely to occur in the area and on the potential for effects to either species). In addition, maintenance would be designed and implemented so that the hydrology of streams, ponds, and suitable habitat is not altered.

7.6.5. Sonoran Desert Tortoise

- DETO-01 All staging areas and construction corridor would be flagged or staked.
- DETO-02 Environmental monitors would be present during construction activities to ensure construction activities remain within the established footprint.
- DETO-03 Environmental monitors would inspect below equipment daily before work construction activities begin.
- DETO-04 Environmental monitors would halt equipment if the Sonoran desert tortoise (*Gopherus agassizii*) is observed and would allow the tortoise to leave the area, to the greatest extent practicable. In the event the tortoise needs to be removed from the Project corridor, it would be handled only by a permitted individual.
- DETO-05 Environmental monitors would inspect below equipment daily before work construction activities begin.

7.6.6. Burrowing Owl

- BUOW-01 Avoid disturbing occupied burrowing owl (*Athene cunicularia cunicularia*) burrows during the nesting period, from 15 February through 31 August.
- BUOW-02 Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls. Burrow areas would be flagged with a 250-foot buffer.
- BUOW-03 If construction activities must take place within an active burrow buffer during BUOW nesting period active relocation services may be contacted to avoid impacts to this species.

7.6.7. Cactus Ferruginous Pygmy Owl

- FEPO-01 Impacts to all saguaros that provide the suitable nesting habitat for the cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) would be avoided. If any saguaros are damaged during construction activities, replacement/installation at an appropriate ratio would be determined by environmental monitor.
- FEPO-02 All saguaros within the Project corridor would be flagged prior to construction.
- FEPO-03 All staging areas would be flagged or staked.
- FEPO-04 Environmental monitors would halt equipment if the cactus ferruginous pygmy-owl is observed and would allow the cactus ferruginous pygmy-owl to leave the area before reinitiating construction activities.

7.6.8. Northern Aplomado Falcon

- APFA-01 When possible, avoid locating projects within two miles of suitable unoccupied and occupied Northern aplomado falcon (*Falco femoralis*) habitat to the greatest extent possible. Avoid fragmenting suitable unoccupied and occupied habitat.
- APFA-02 When possible, avoid impacts to large, tall yucca (*Yucca* spp.) and mesquite trees (*Prosopis* spp.) and to large raptor and raven nests that Northern aplomado falcons can use for nesting. Locate facilities as far from these habitat features as possible.
- APFA-03 Design facilities in cooperation with USFWS biologists, if possible, to minimize potential impacts to falcon movements in or adjacent to their territories.
- APFA-04 If you discover an active Northern aplomado falcon territory during a proposed facility's planning, consider alternate locations at least two miles from the nest and/or territory center.
- APFA-05 To the maximum extent possible, schedule construction and maintenance activities for roads, fences, or other facilities that you must build closer than two miles from occupied Northern aplomado falcon habitat between August 1 and January 31 to avoid their breeding season. Keep equipment and supply staging areas as far away as practicable from Northern aplomado falcon habitat.
- APFA-06 For construction and maintenance closer than two miles from occupied Northern aplomado falcon habitat, we recommend conducting activities during daylight hours to avoid noise and lighting issues.

7.6.9. Sonoran Pronghorn

- Pronghorn-01 No Program activities would occur during the fawning season (March 15 to July 31) within suitable Sonoran pronghorn habitat (i.e., Sonoran Desert scrub communities) within the range of this species. Some flexibility with these dates is possible, depending on forage conditions. If the Project proponent determines that Project activities will occur within the species range during the fawning season, exceptions to working during the fawning season may be granted through coordination with the USFWS and other the relevant federal land managers, depending on forage conditions.
- Pronghorn-02 Minimize the number of daily vehicle trips required for maintenance to reduce the likelihood of disturbing Sonoran pronghorn in the area or injuring an animal on the road. The use of vehicle convoys, multi-passenger vehicles, and other methods are appropriate. This can be adjusted if additional personnel and equipment would complete the work faster and thus reduce the time of disturbance.
- Pronghorn-03 During maintenance activities, if a pronghorn is observed by a maintenance crew upon arrival at the work site, and within one mile of the work site, delay beginning use of heavy mobile equipment (road grader, dump trucks, etc.) until the animal(s) move greater than one mile from the work site. When driving on roads, stop the vehicle if pronghorn are observed in front of or forward of the vehicle. As their distance from the road extends and it is obvious that the pronghorn is (are) departing, proceed forward at reduced speed of 10 to 15 mph.
- Pronghorn-04 During fence construction, if a pronghorn is seen within one mile of the activity, any construction work that could disturb the pronghorn should cease. For vehicle operations, this

should entail stopping the vehicle until the pronghorn moves away. Vehicles may continue at reduced speeds (10 to 15 mph) once the pronghorn has moved away. The environmental monitor should request that work cease until the pronghorn moves out of the area. As the schedule permits, construction crews would wait up to three hours from the initial sighting for the pronghorn to move beyond one mile away from the Project activity or vehicle. Should the pronghorn not leave, Project personnel may retreat from the area in the direction from which they came. During maintenance activities and to the extent practicable, appropriately trained staff would suspend maintenance activities until the pronghorn move away.

7.6.10. Mexican Desert Bighorn Sheep

- Sheep-01 If Mexican desert bighorn sheep (*Ovis canadensis mexicana*) are observed near the Project all work within 1,000-feet would stop until they have moved beyond 1,000-feet of the work area to avoid impacts to the species. To the extent feasible an environmental monitor would be present to observe work activities when they occur within Mexican desert bighorn sheep essential habitat.

7.6.11. Lesser Long-nosed Bat

- Bat-01 Removal of columnar cacti (i.e., saguaro and organ pipe) and paniculate agave would be limited to the minimum necessary to maintain drivable access roads and to maintain the functionality of other tactical infrastructure. Prior to conducting any maintenance or repair activity outside of the existing disturbed footprint of tactical infrastructure within the range of the lesser long nosed bat (*Leptonycteris curasoae yerbabuena*), a qualified biologist would conduct a pre-construction survey to identify and flag all columnar cactus and agave to be avoided.
- Bat-02 For maintenance and repair activities that would take place greater than 0.5 miles and less than 5 miles from any known lesser-long nosed bat roost, limit activities to daylight hours only from mid-April through mid-September to avoid effects on bats and bat roosts.
- Bat-03 Impacts to all saguaros, barrel cactus, cotton top cactus and agaves that provide the forage base for the lesser long-nose bat would be avoided to the extent practical . If any of the above cacti are damaged during construction activities, the Project shall replace at an appropriate ratio.
- Bat-05 No construction activities would be conducted within 0.5 miles of any known lesser long-nosed bat roost between mid-April through mid-September. USFWS would provide CBP with an updated list and maps of known lesser long-nosed bat roosts.

List of Preparers

Dustin Janeke

Senior Biologist

Years of Experience: 19

Lindsay Willrick

Senior Biologist

Years of Experience: 14

Rod Dossey

Senior Biologist

Years of Experience: 25

Brent Kober

GIS Manager

Years of Experience: 22

Stephanie Sherwood

GIS Manager

Years of Experience: 26

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Appendix A:
Figures

Figure 1: Project Overview Map

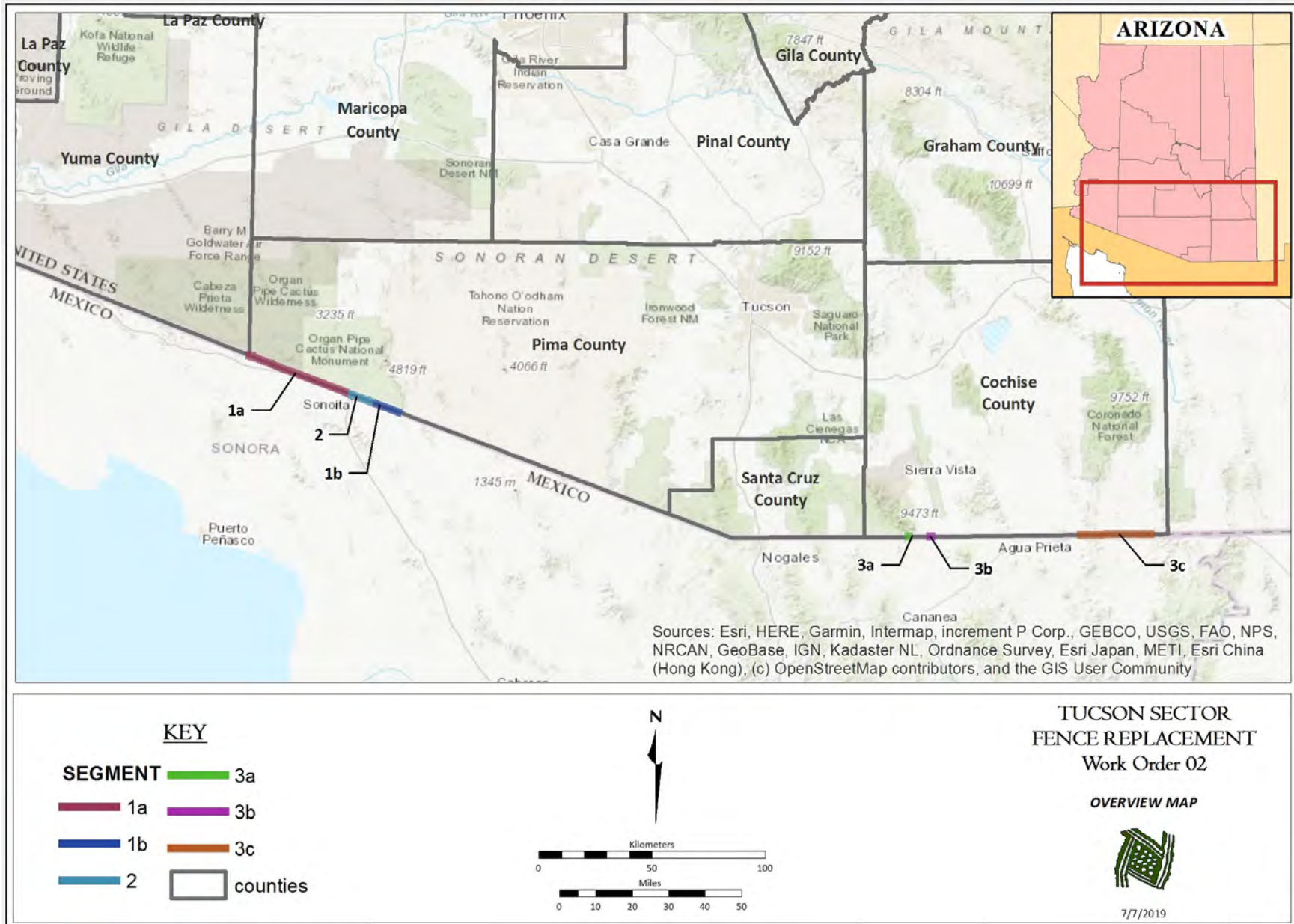
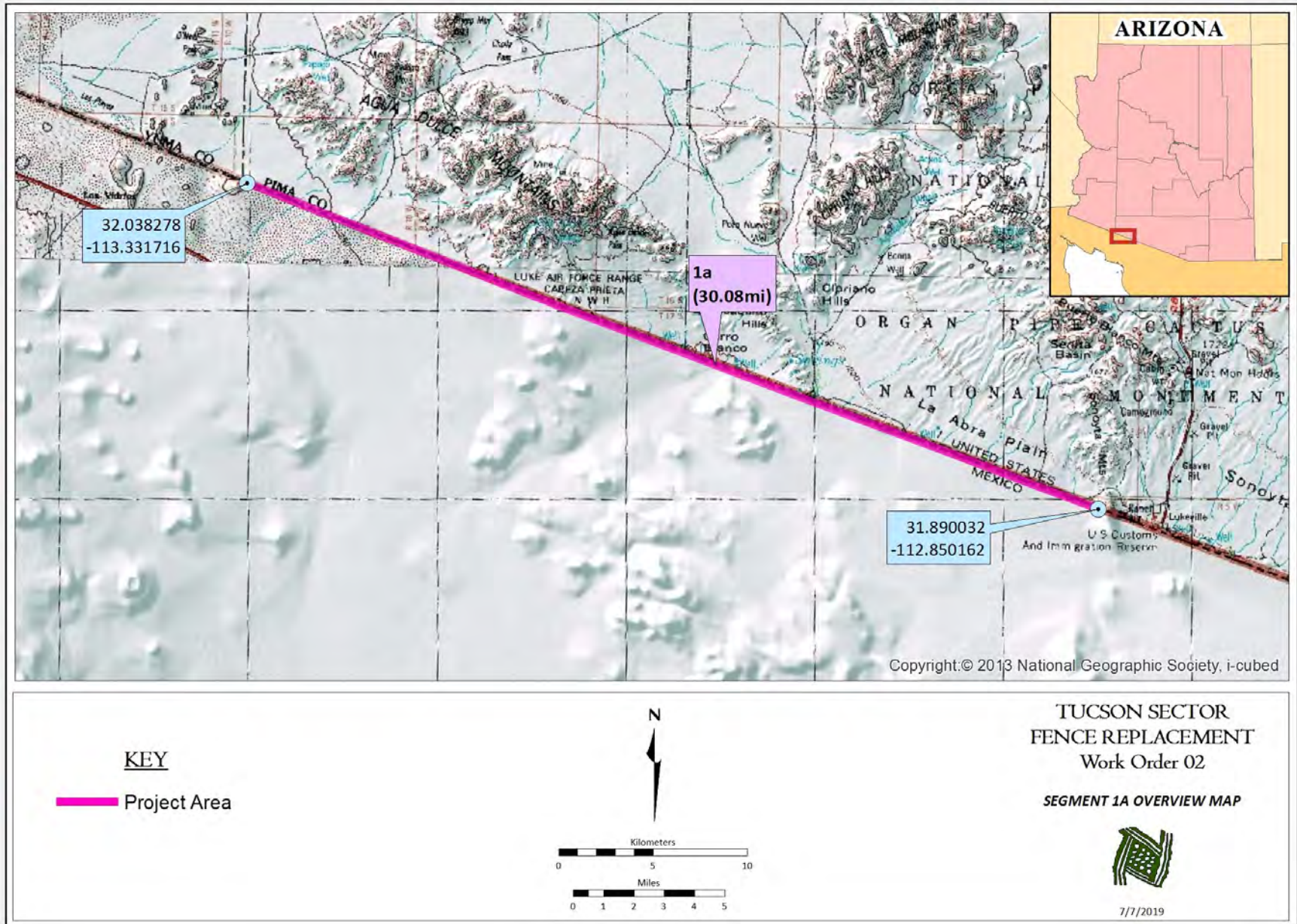


Figure 1

Figure 2: Project Location Map



KEY

 Project Area

TUCSON SECTOR
FENCE REPLACEMENT
Work Order 02

SEGMENT 1A OVERVIEW MAP



7/7/2019

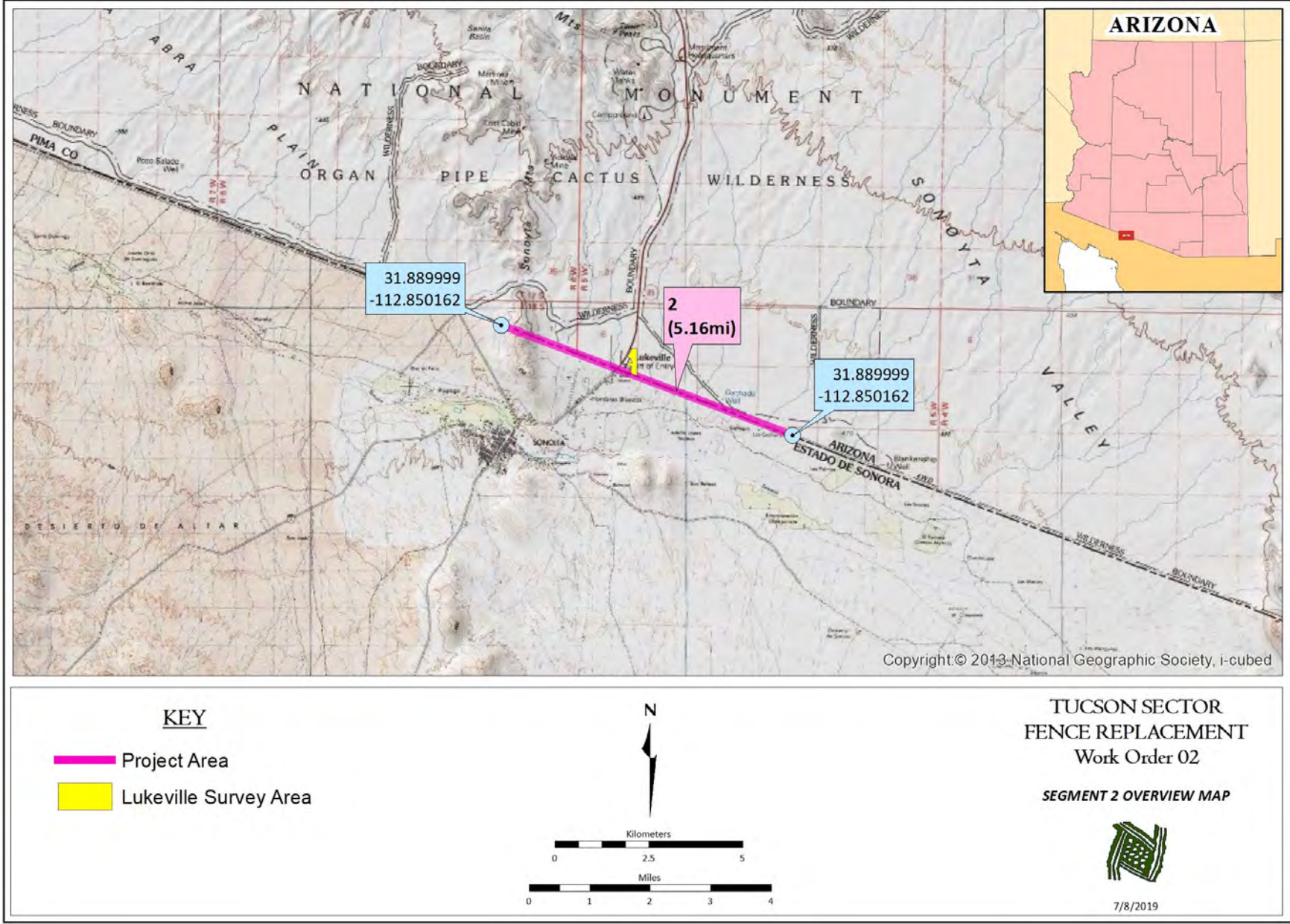


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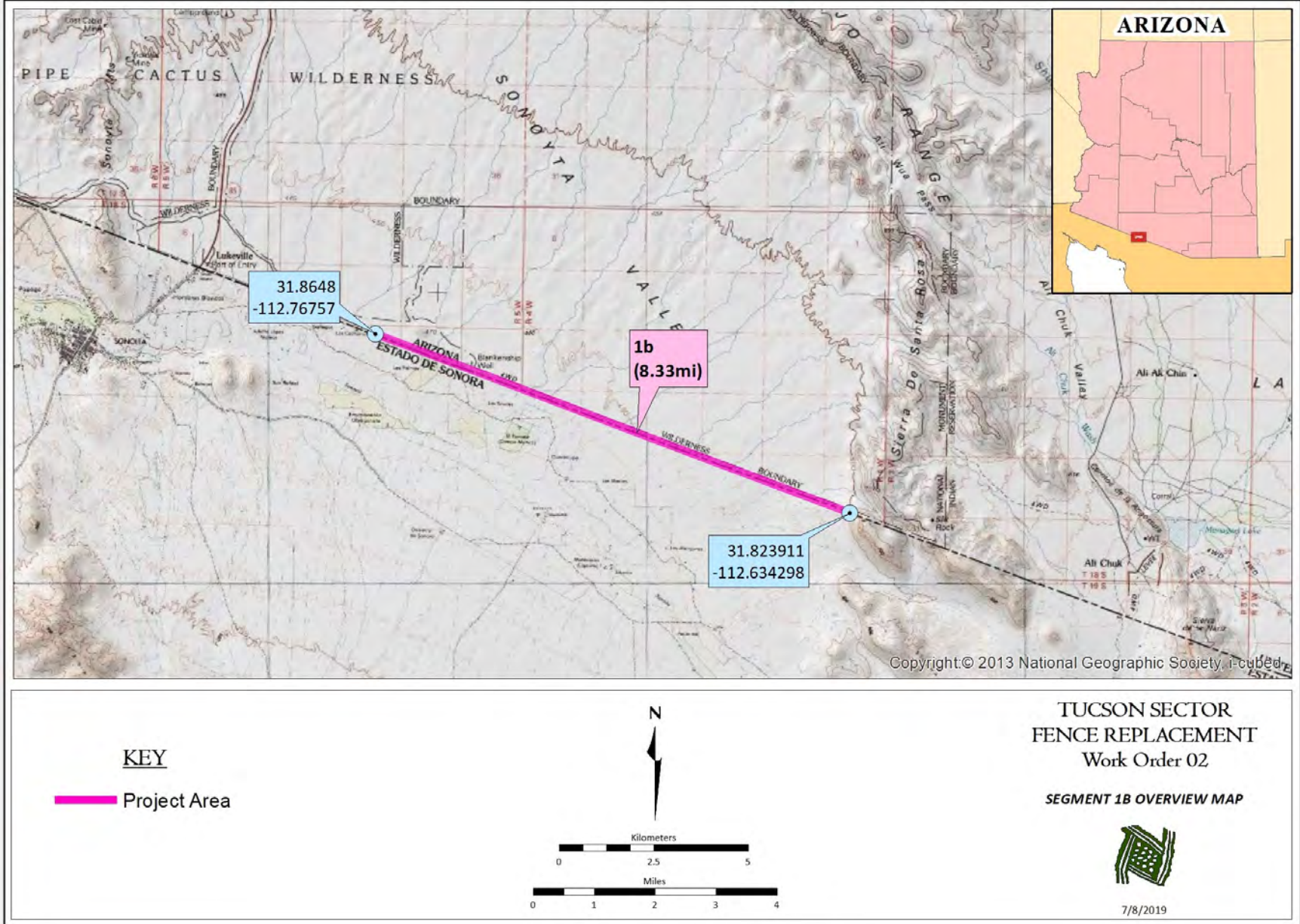


Figure 2

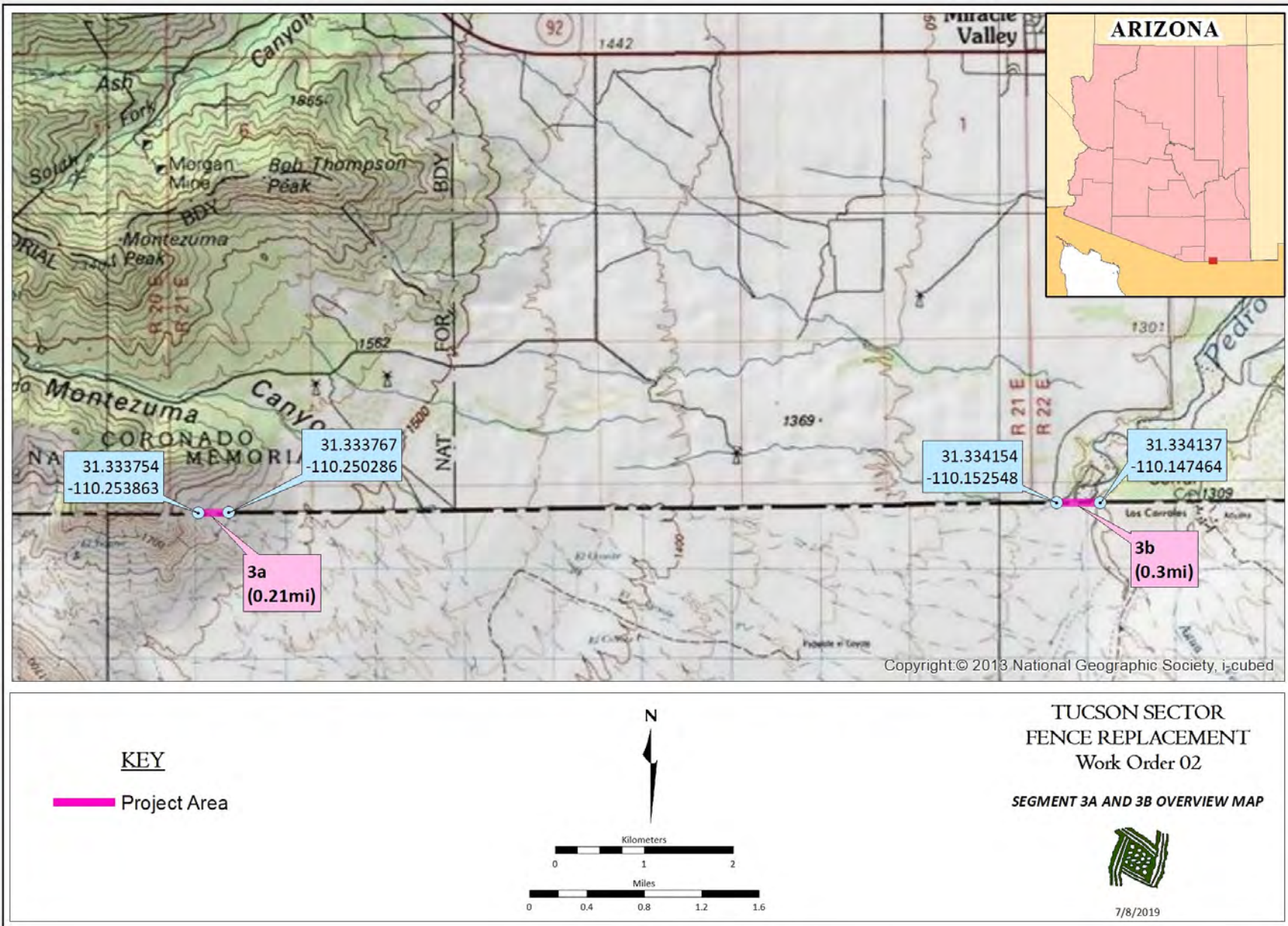


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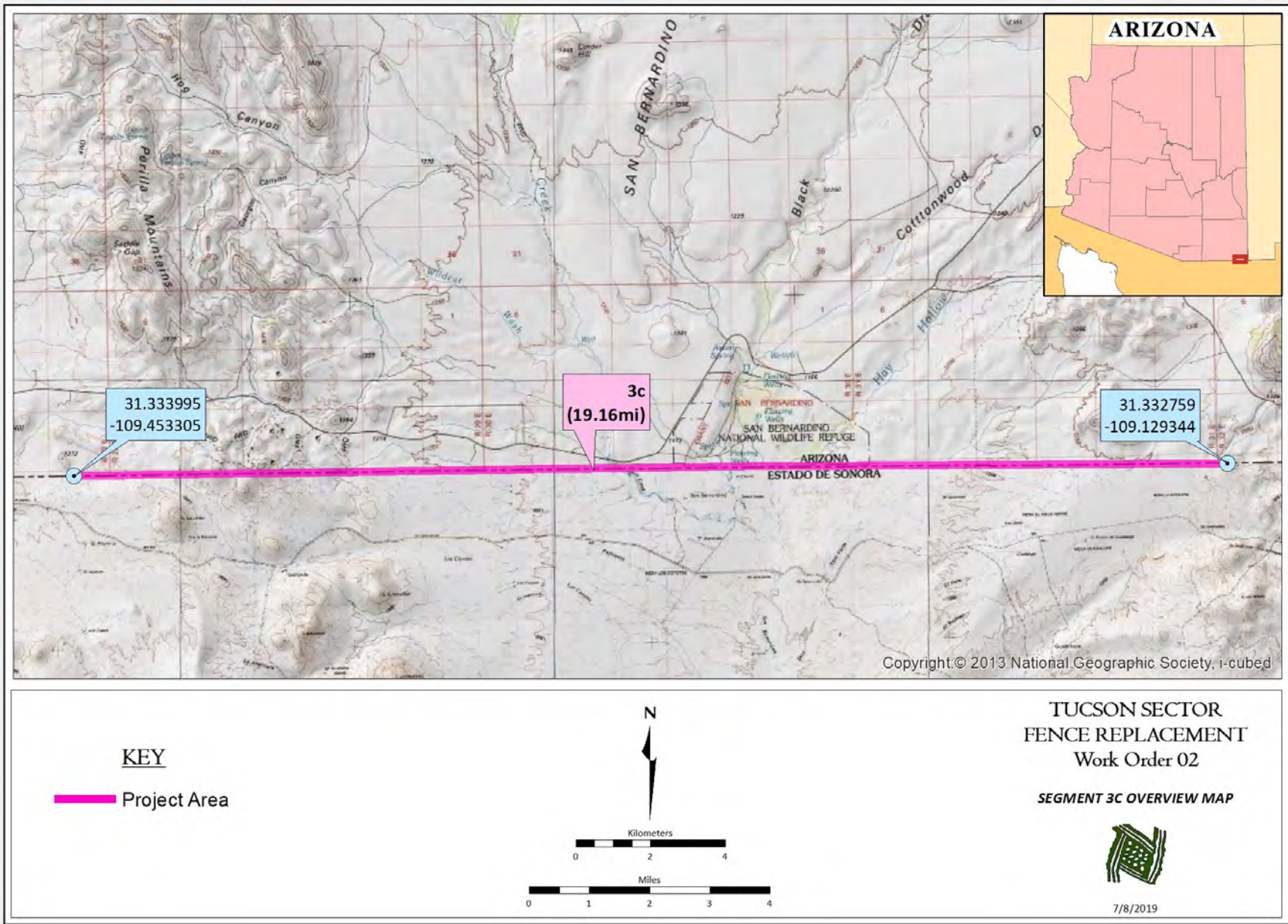
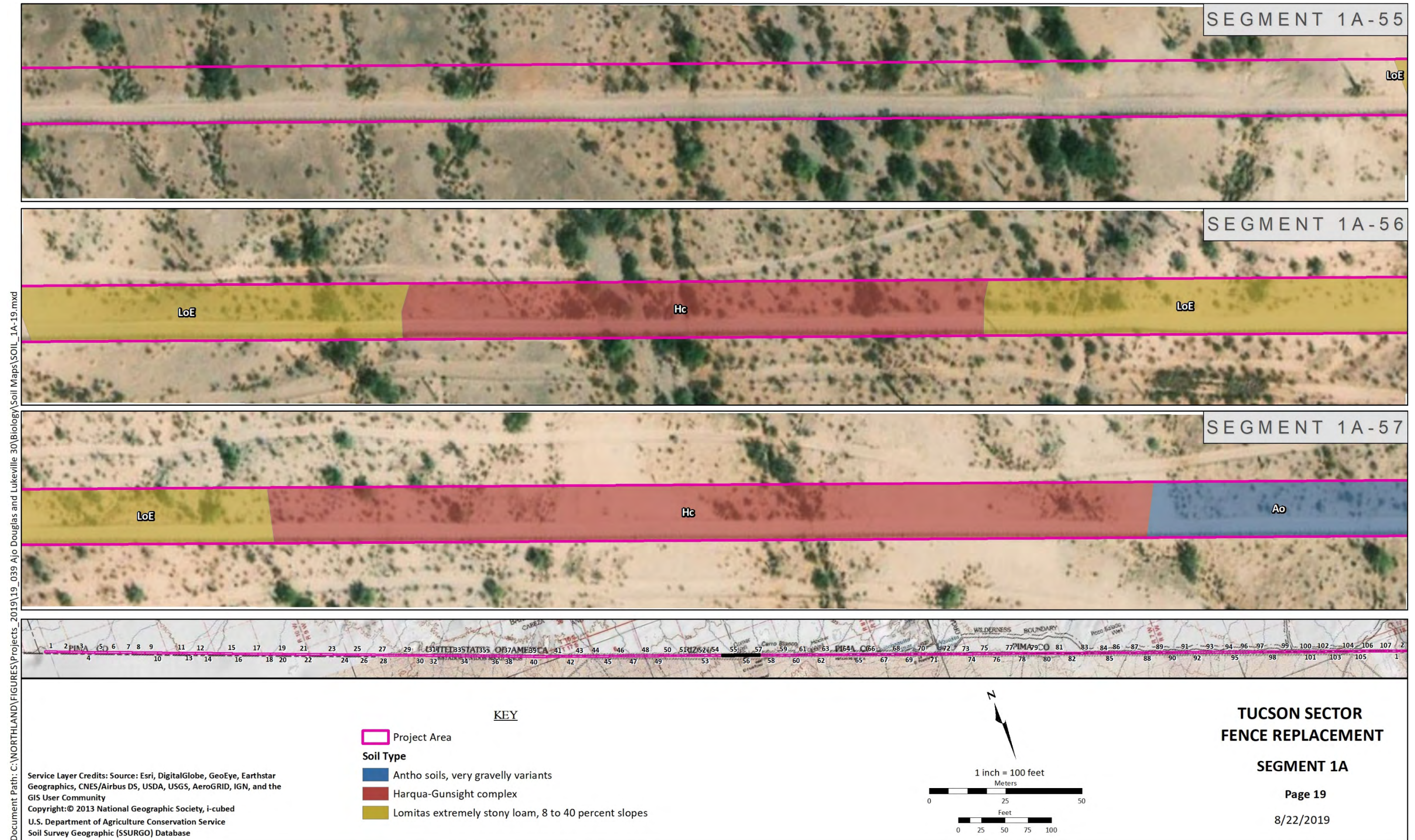


Figure 2

Figure 3: Soils Map



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 U.S. Department of Agriculture Conservation Service
 Soil Survey Geographic (SSURGO) Database

Figure 3

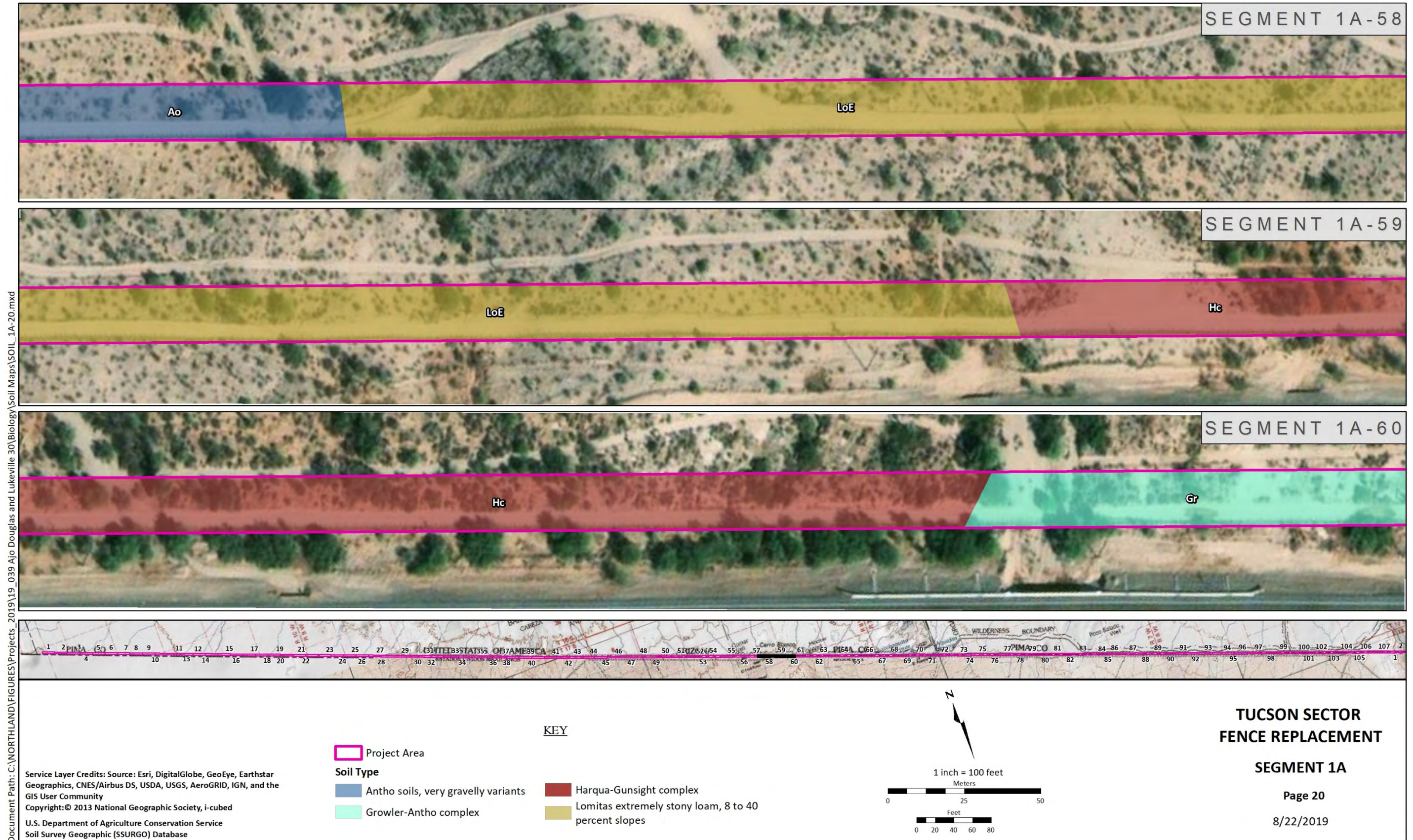
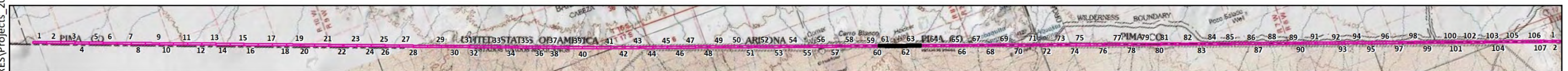


Figure 3

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KEY

- Project Area
- Soil Type
- Growler-Antho complex

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**TUCSON SECTOR
FENCE REPLACEMENT
SEGMENT 1A**

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1 inch = 100 feet

Figure 3

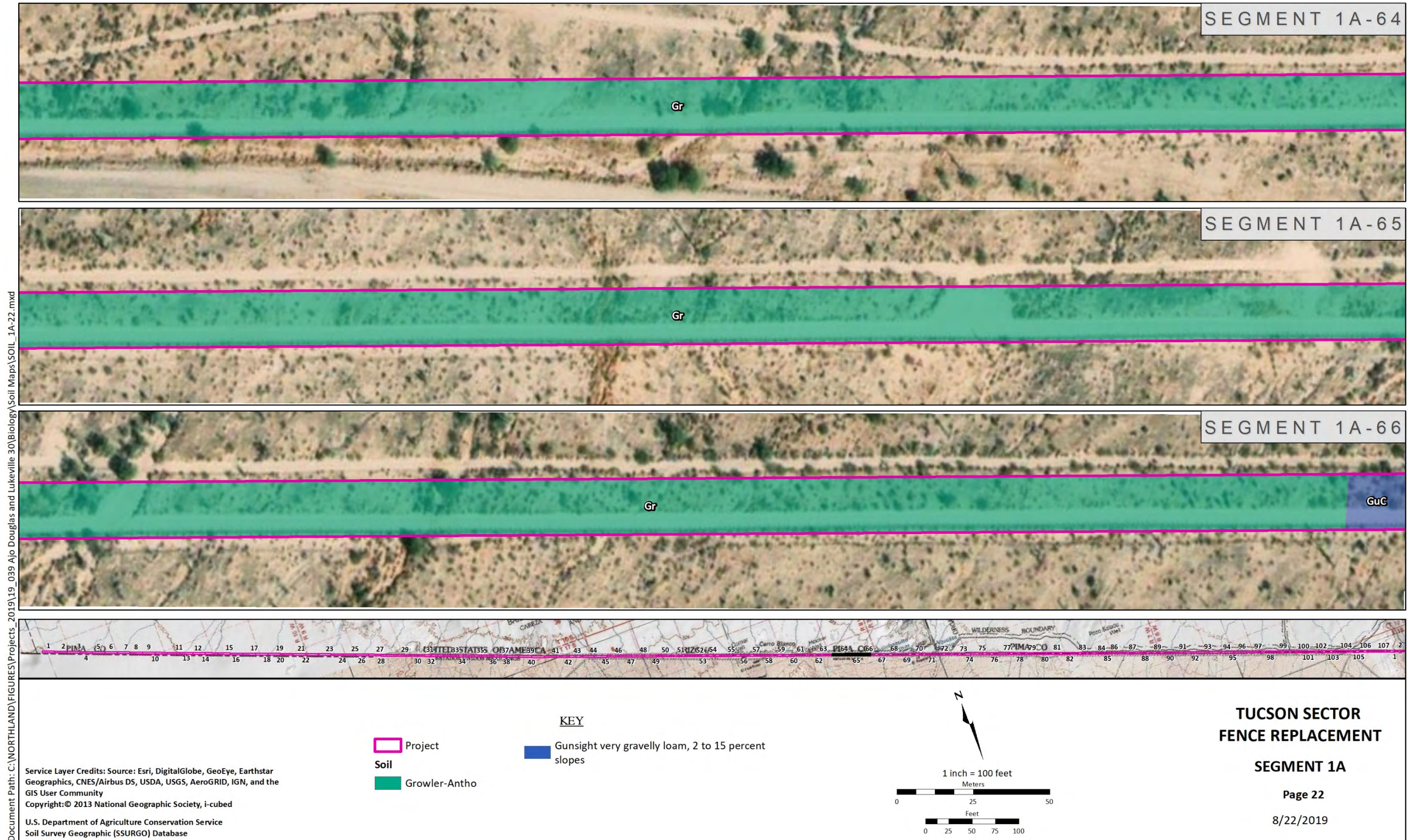


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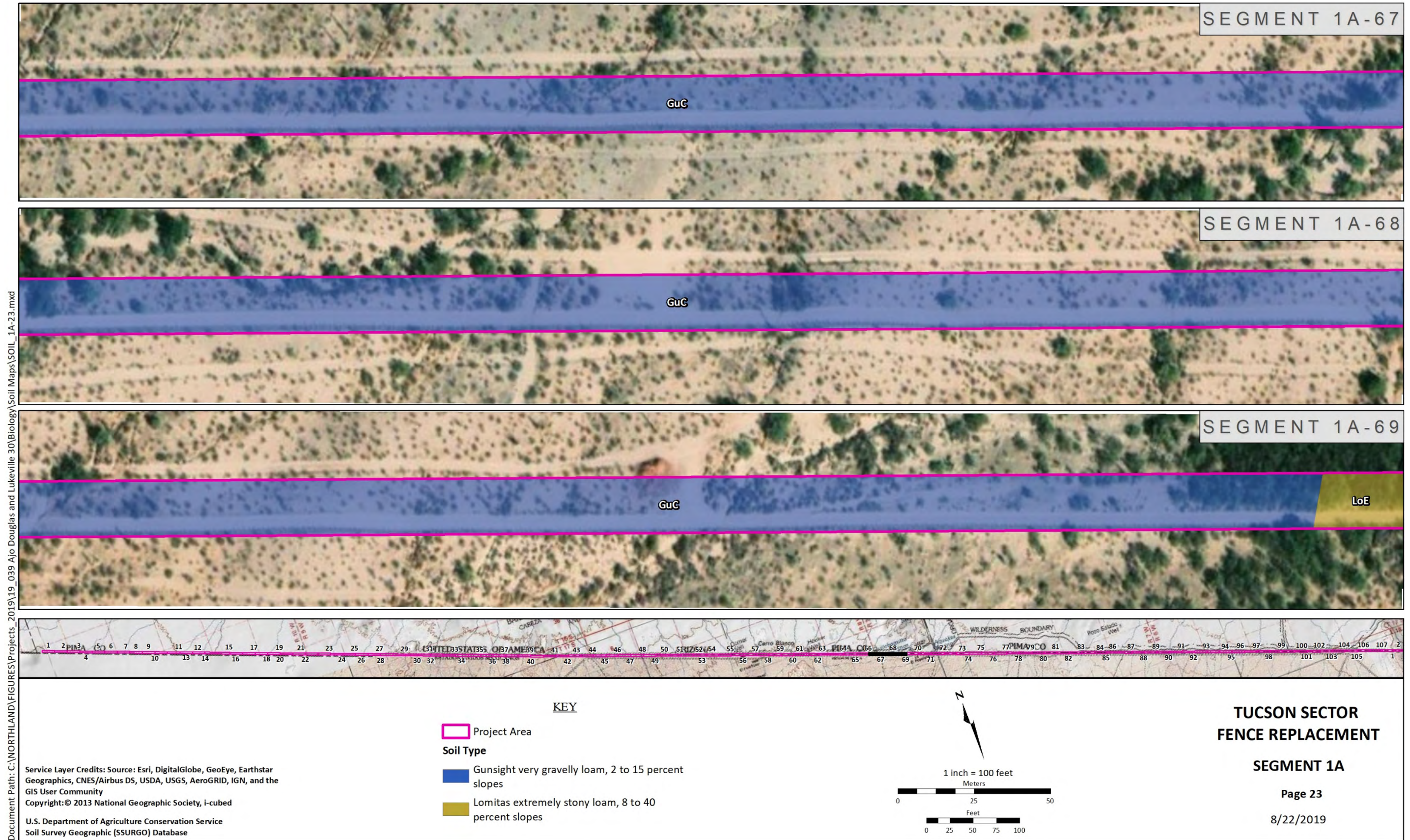


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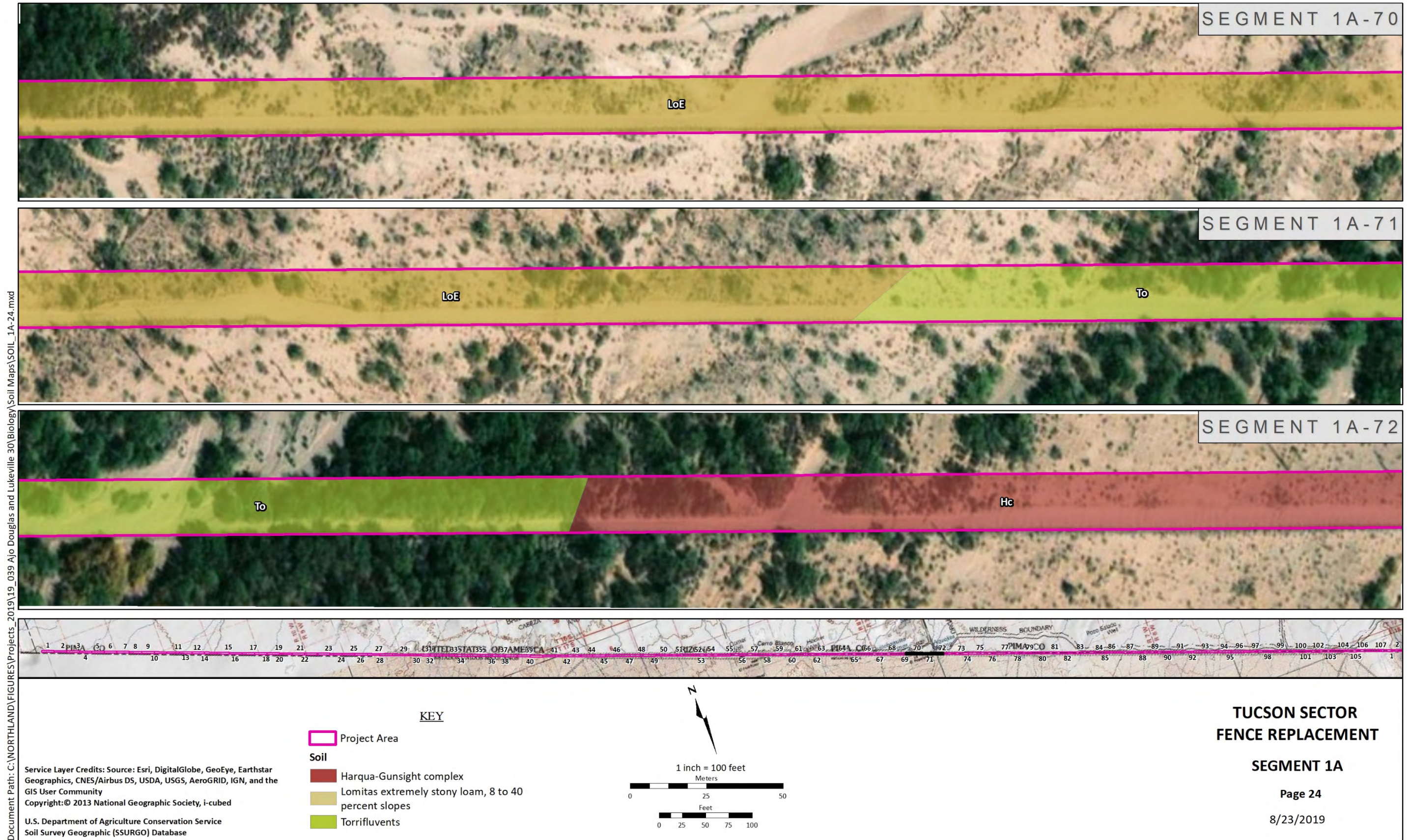


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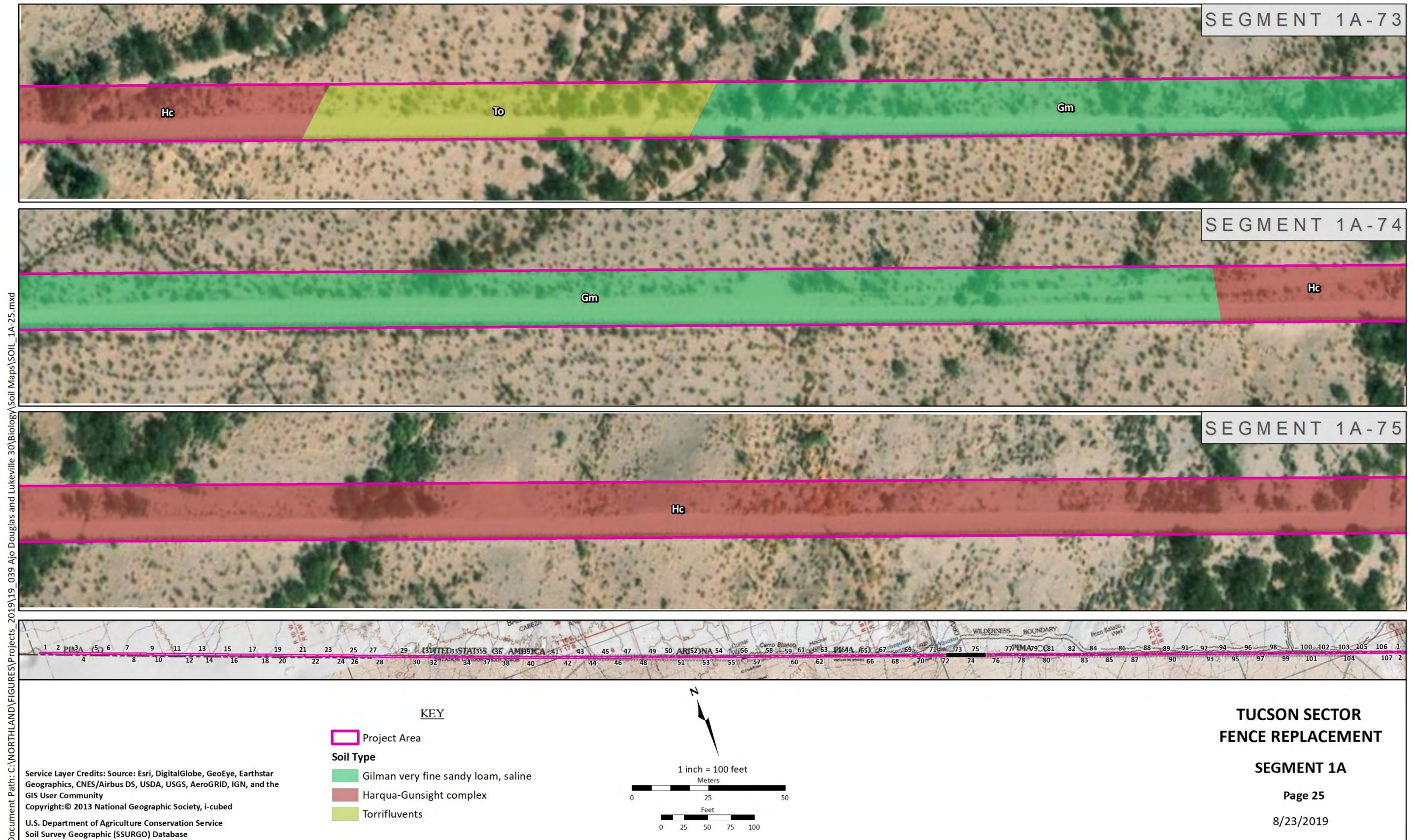
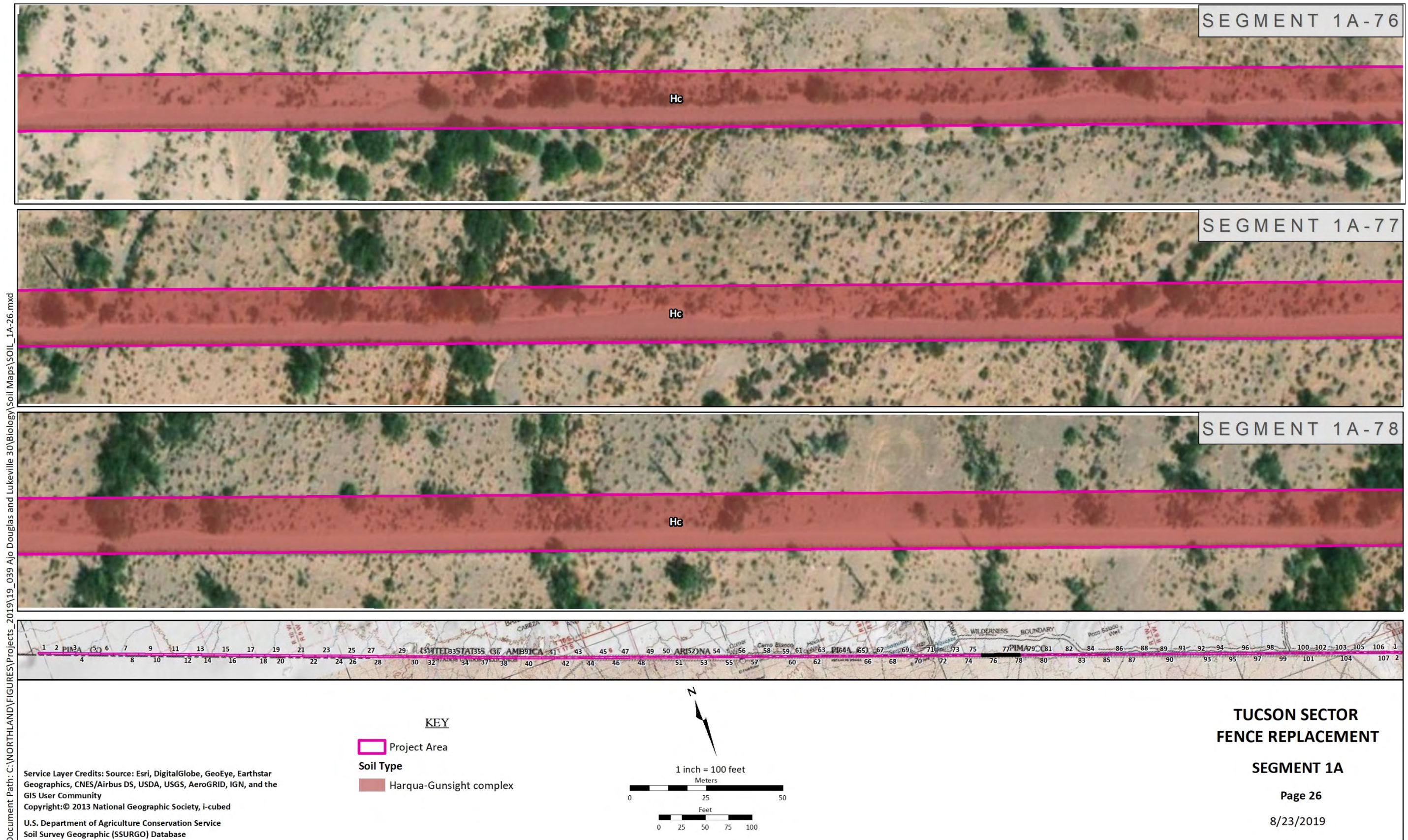


Figure 3



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 Soil Survey Geographic (SSURGO) Database

Figure 3

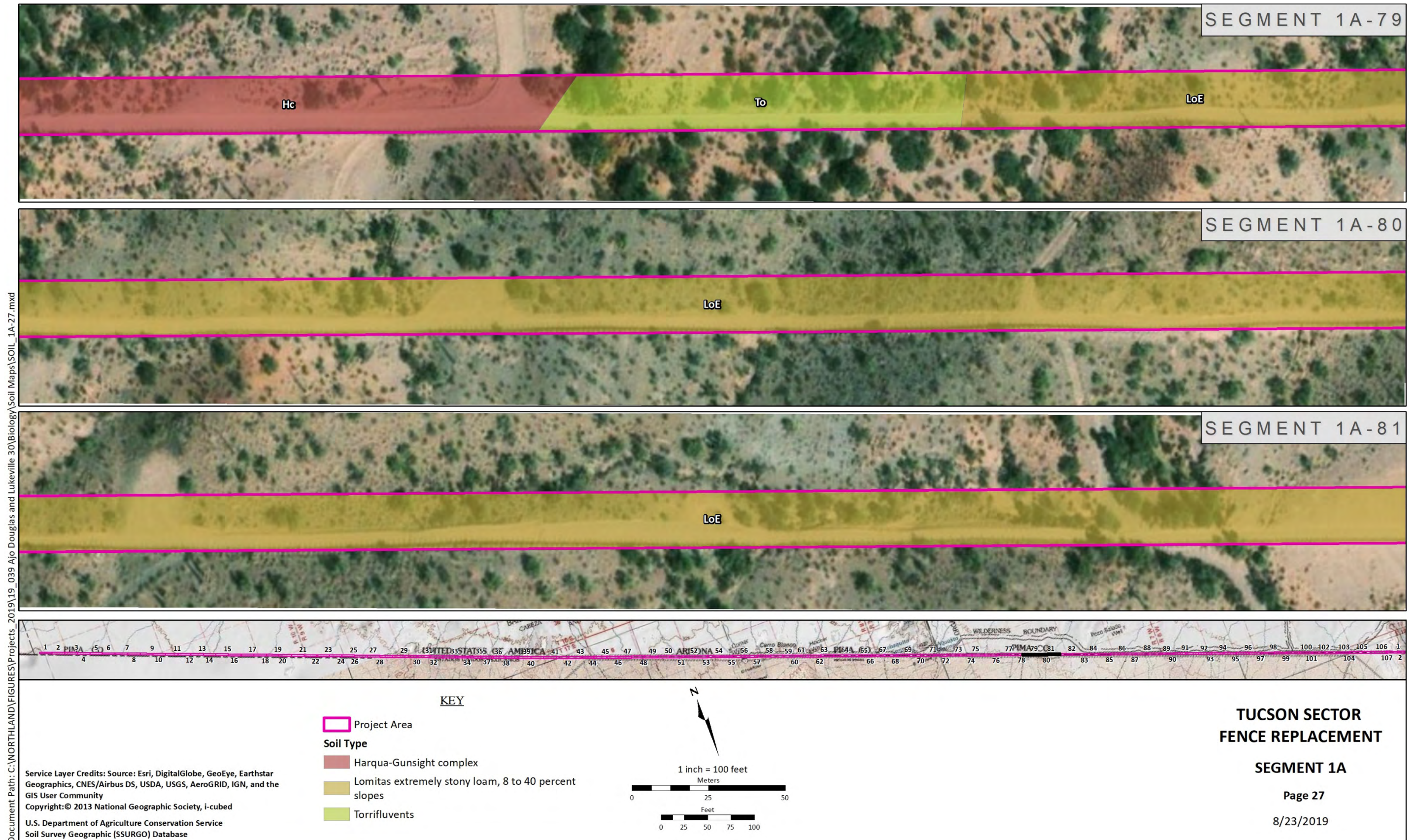


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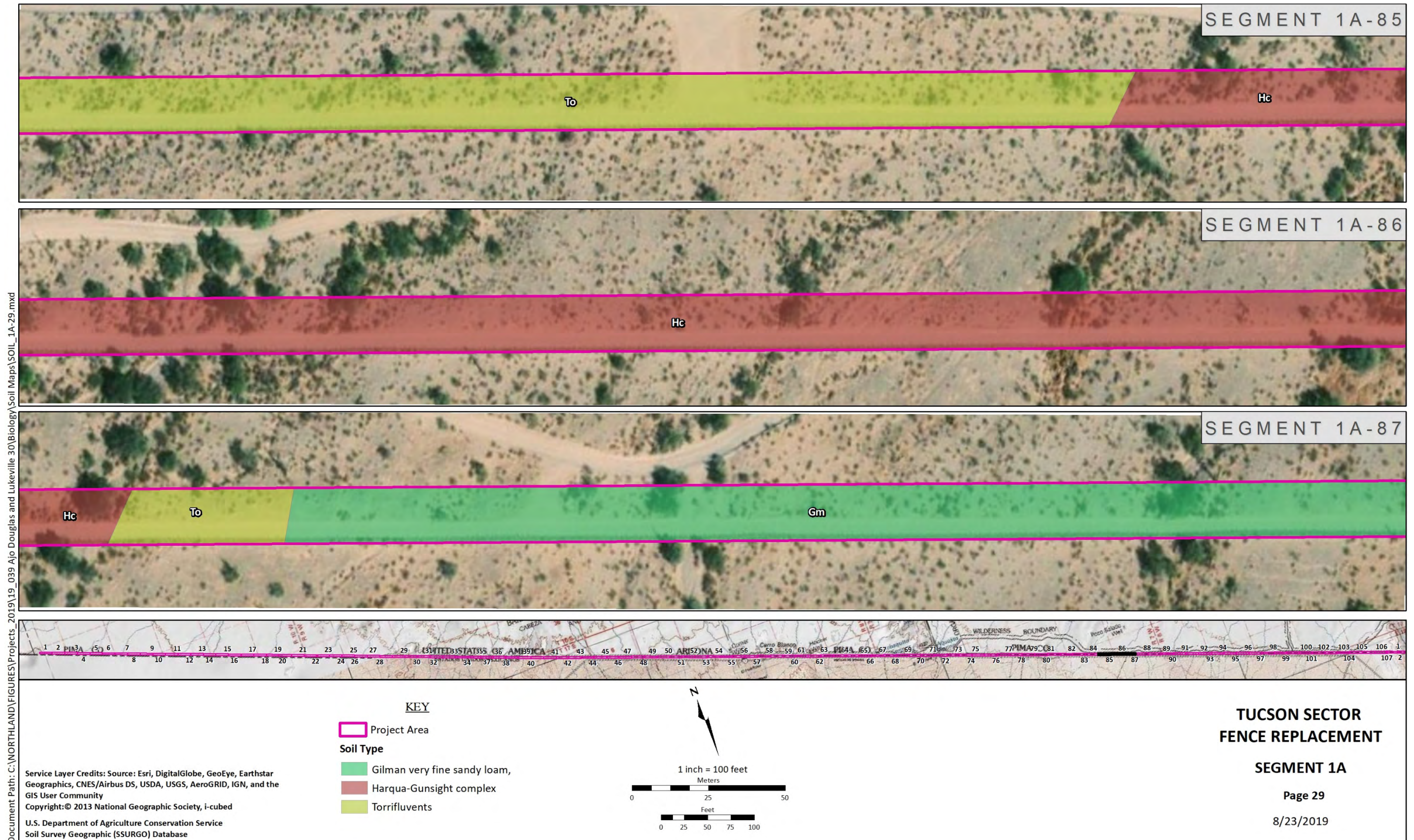


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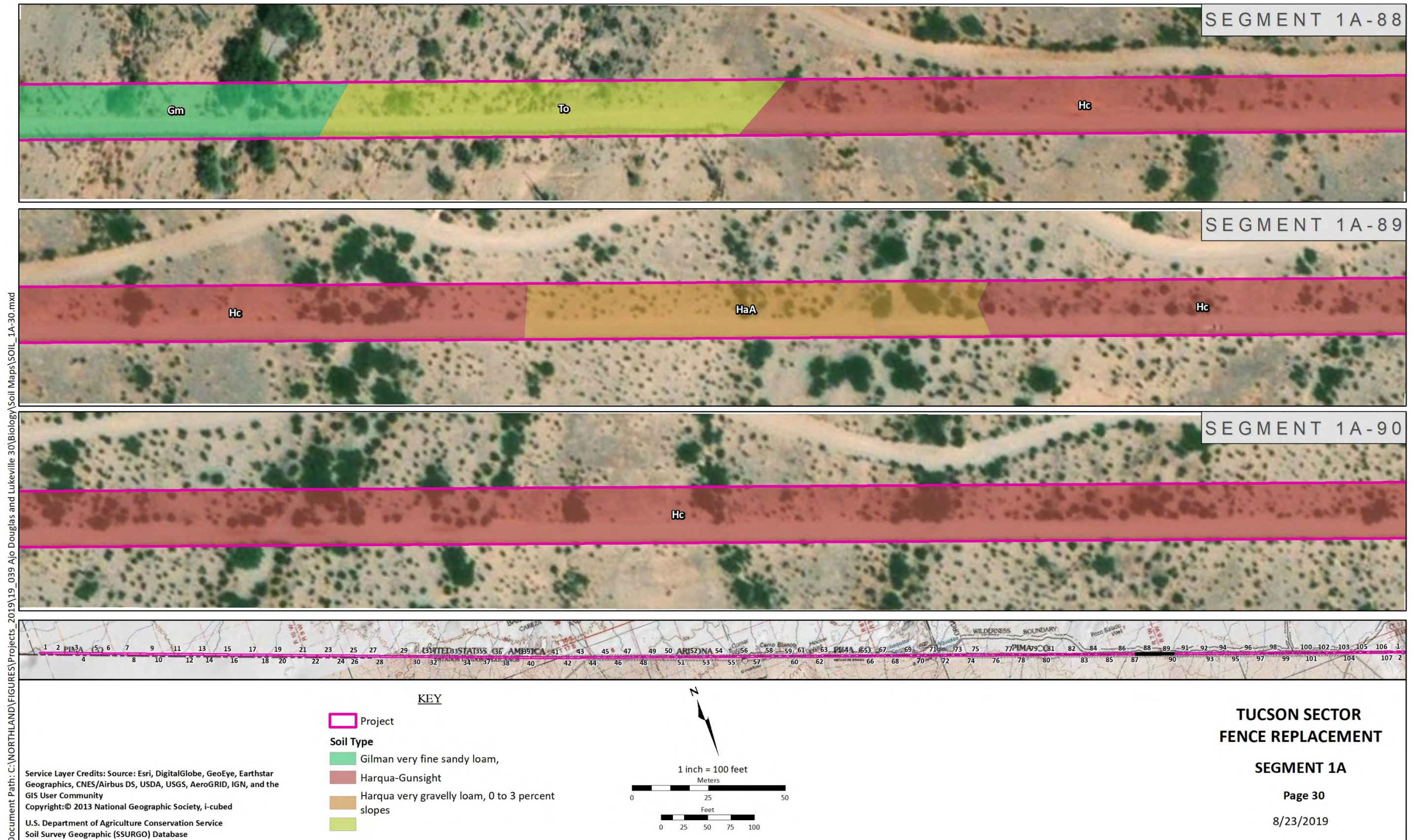
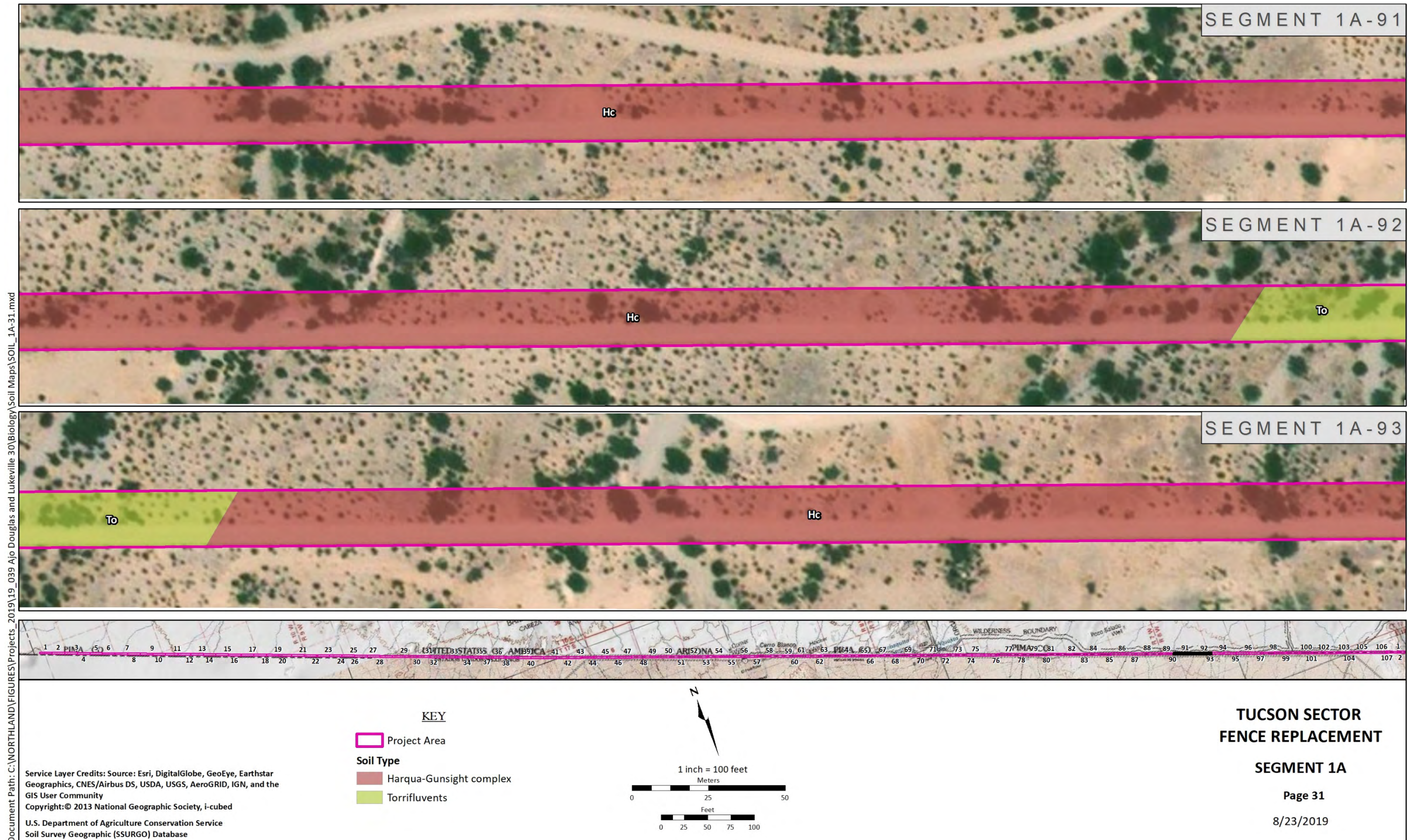


Figure 3



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Figure 3

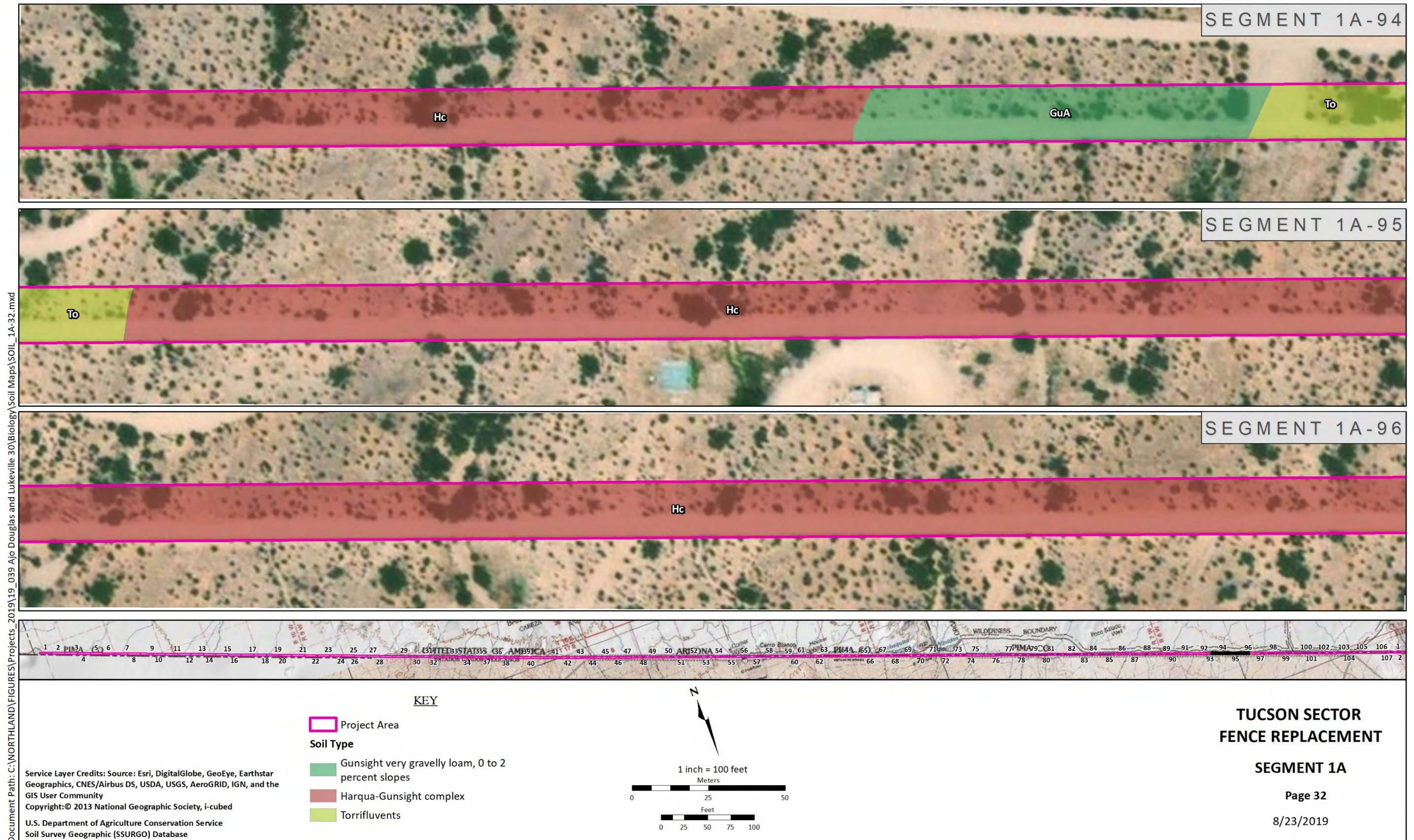


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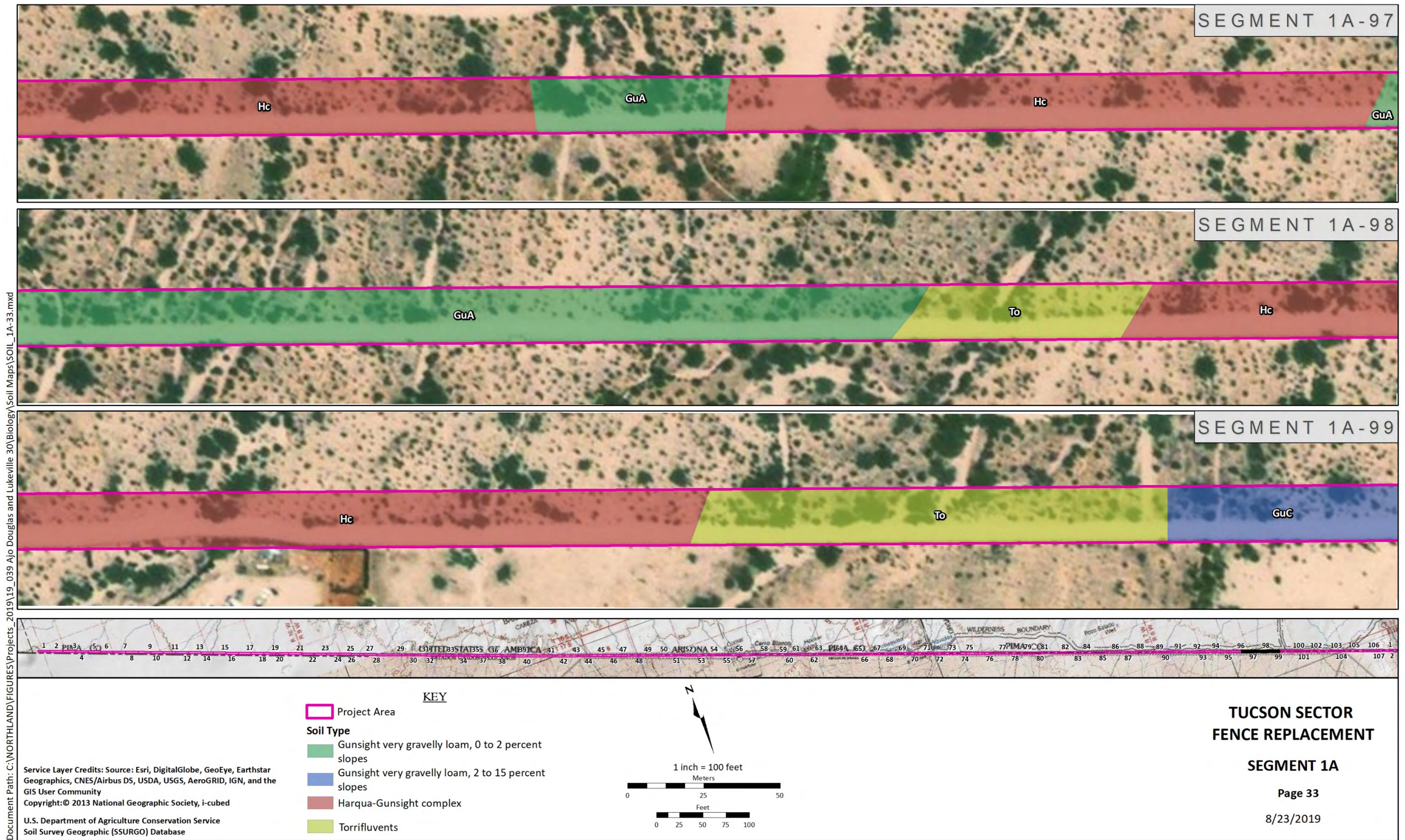


Figure 3

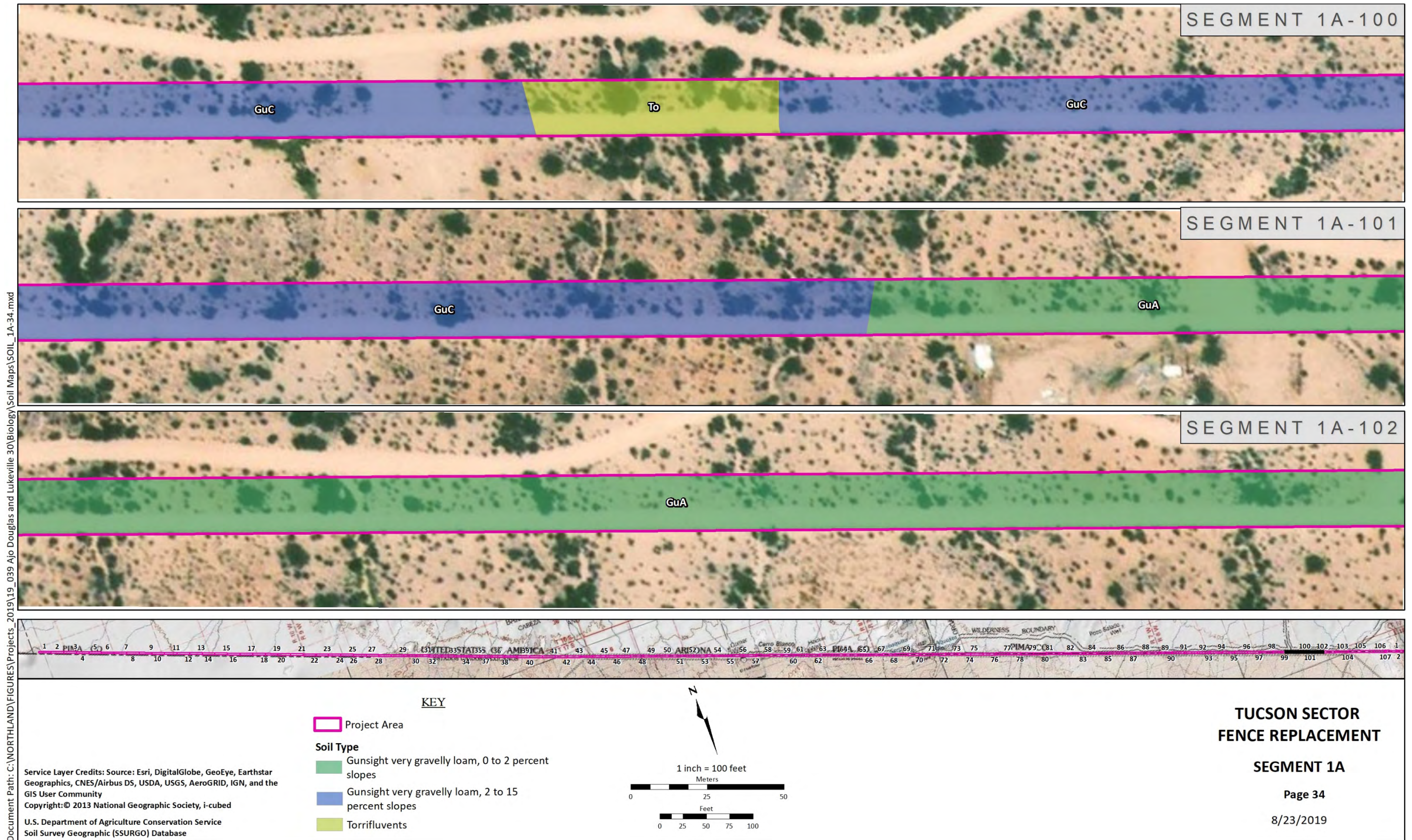


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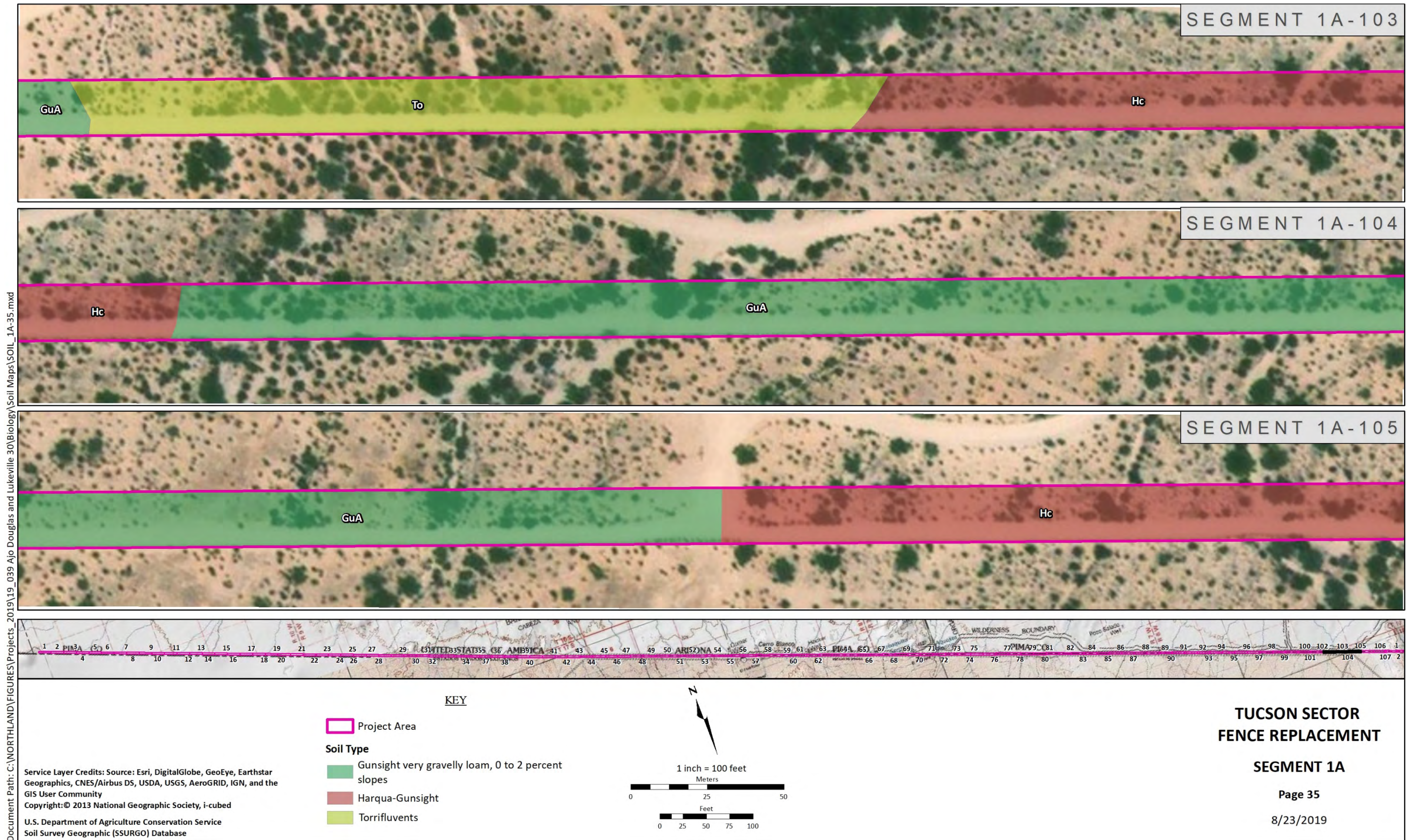
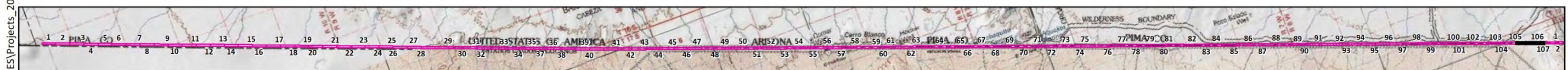


Figure 3



KEY

Project Area

Soil Type

- Gunsight very gravelly loam, 2 to 15 percent slopes
- Harqua-Gunsight
- Lomitas extremely stony loam, 8 to 40 percent slopes

1 inch = 100 feet
Meters

0 25 50

0 25 50 75 100
Feet

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FENCE REPLACEMENT
SEGMENT 1A**

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Figure 3

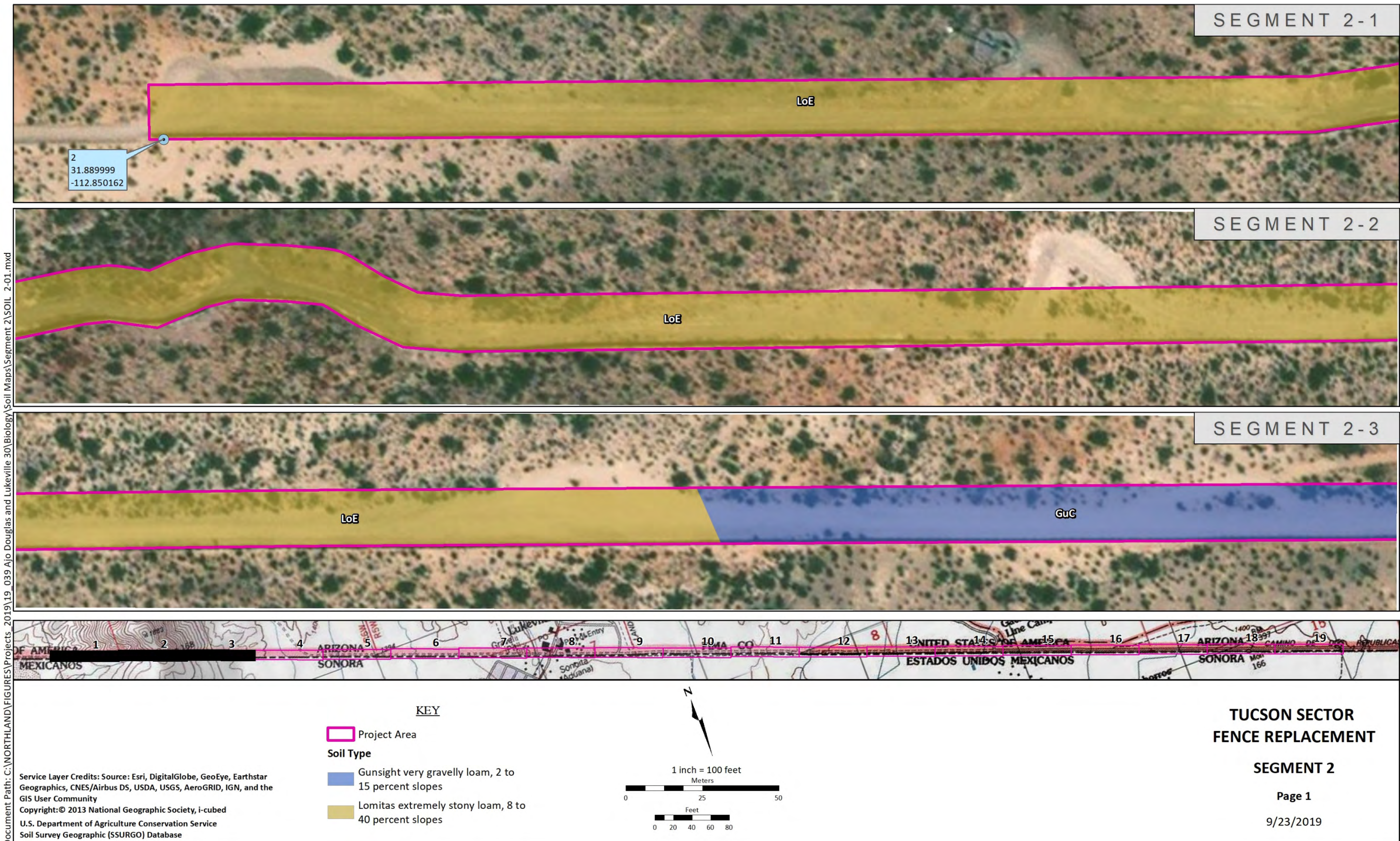


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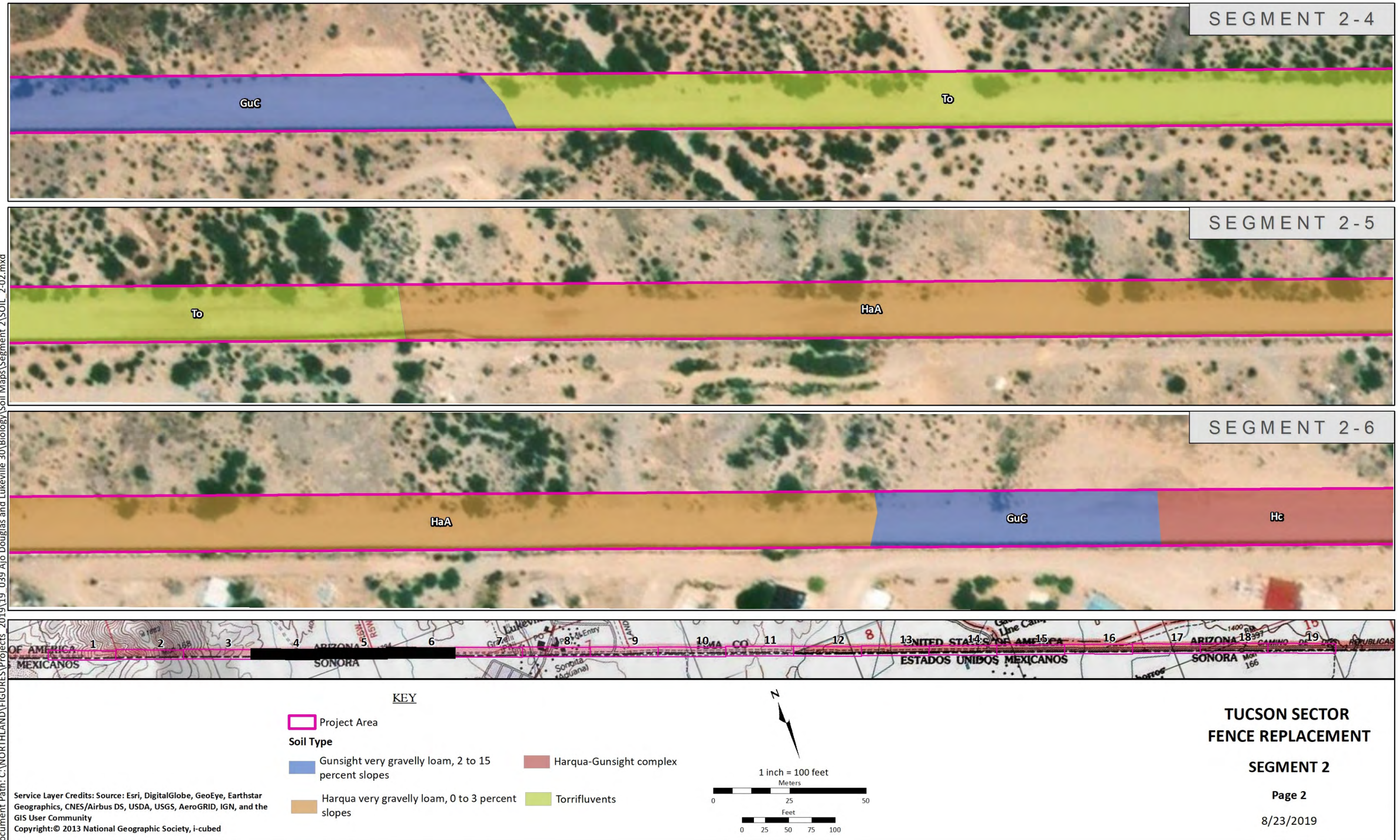


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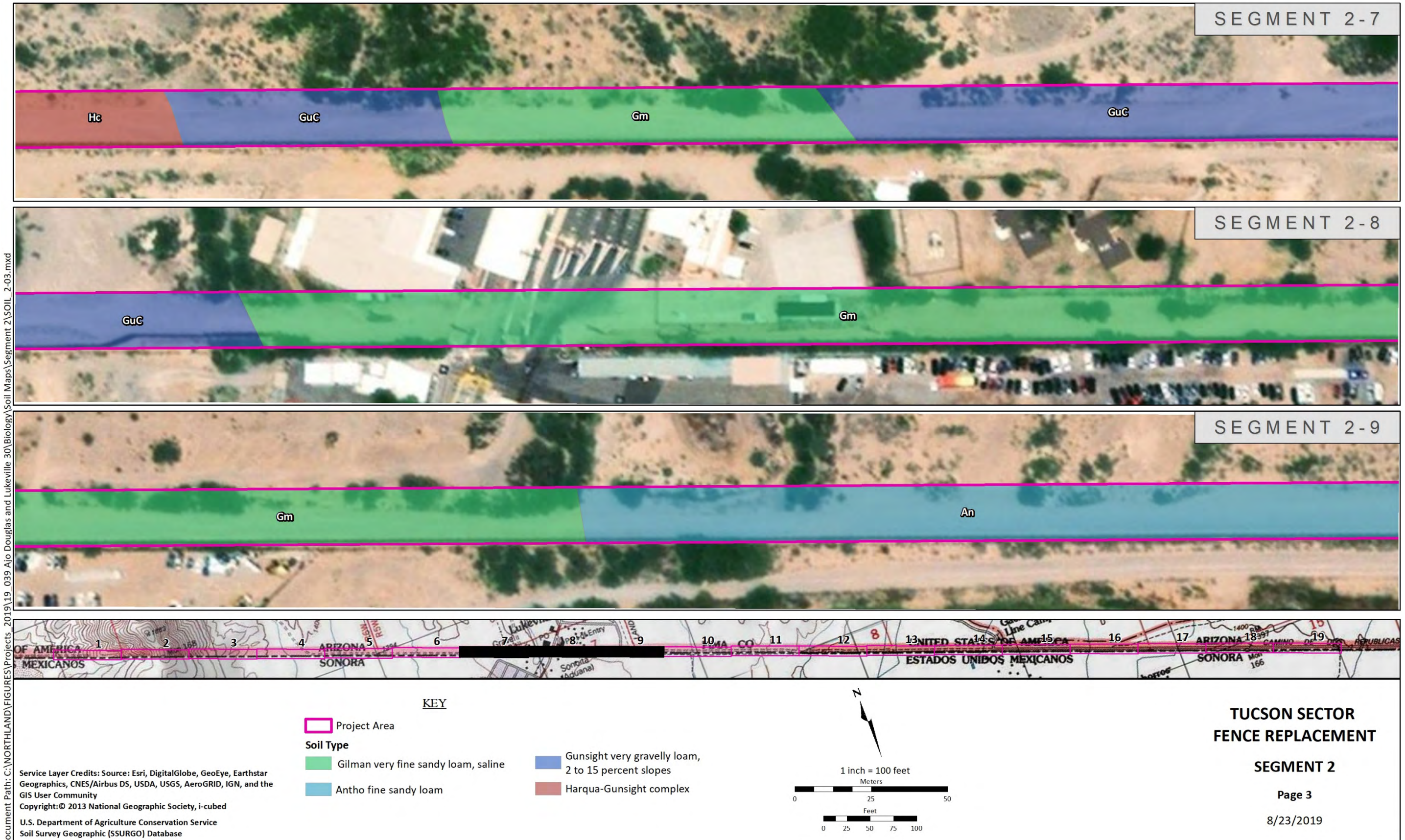


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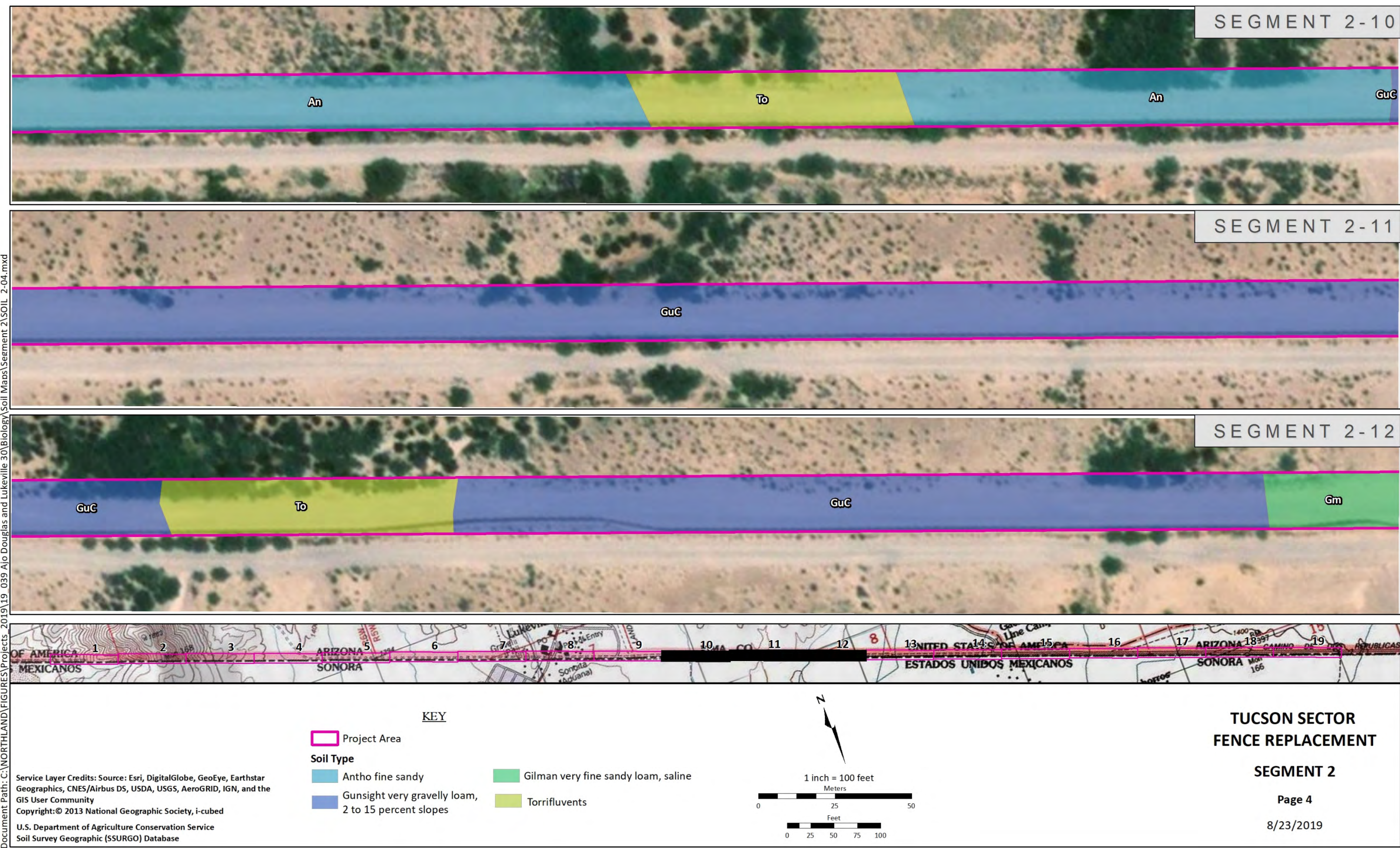
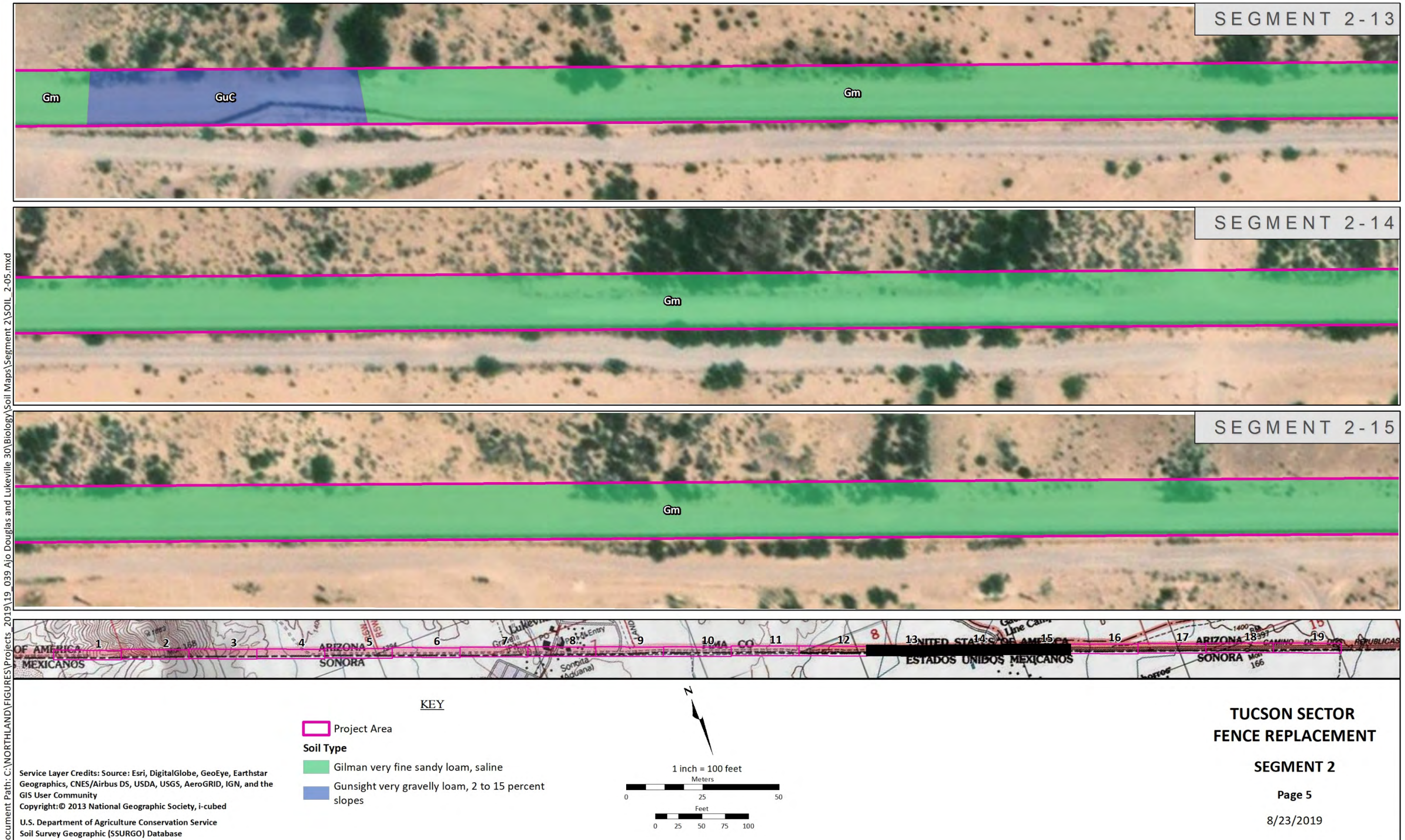


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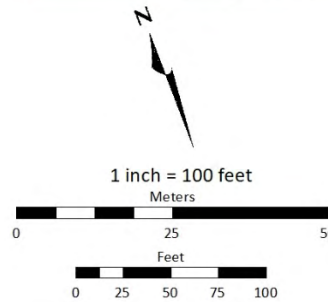
SEGMENT 2-13

SEGMENT 2-14

SEGMENT 2-15

KEY

- Project Area
- Soil Type**
- Gilman very fine sandy loam, saline
- Gunsight very gravelly loam, 2 to 15 percent slopes



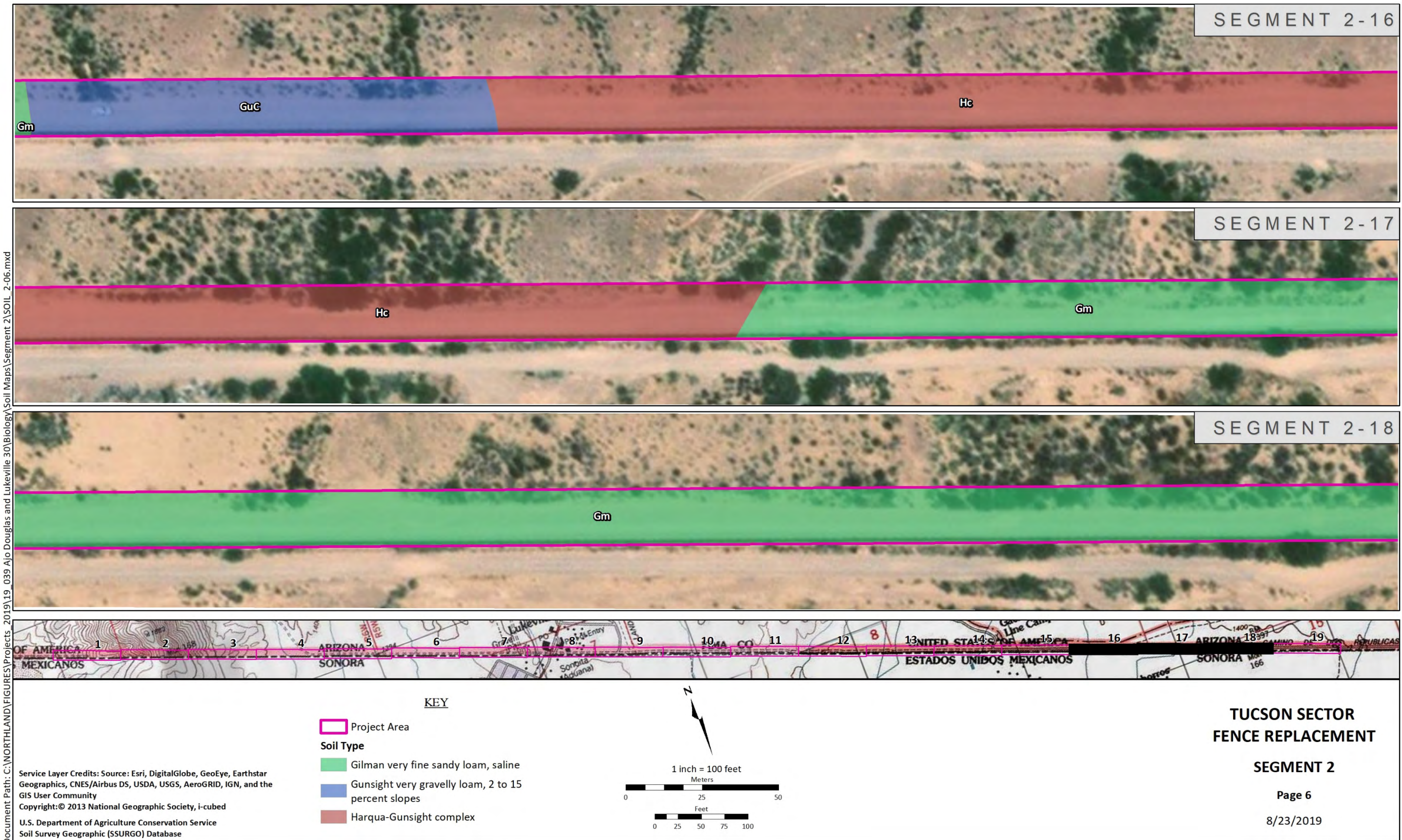
**TUCSON SECTOR
 FENCE REPLACEMENT**

SEGMENT 2

Page 5

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Figure 3

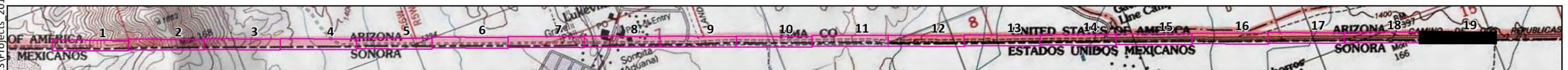


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Figure 3



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KEY

- Project Area
- Soil Type**
- Gilman very fine sandy loam, saline

N

1 inch = 100 feet

Meters

0 25 50

Feet

0 25 50 75 100

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FENCE REPLACEMENT**

SEGMENT 2

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Figure 3



Figure 3

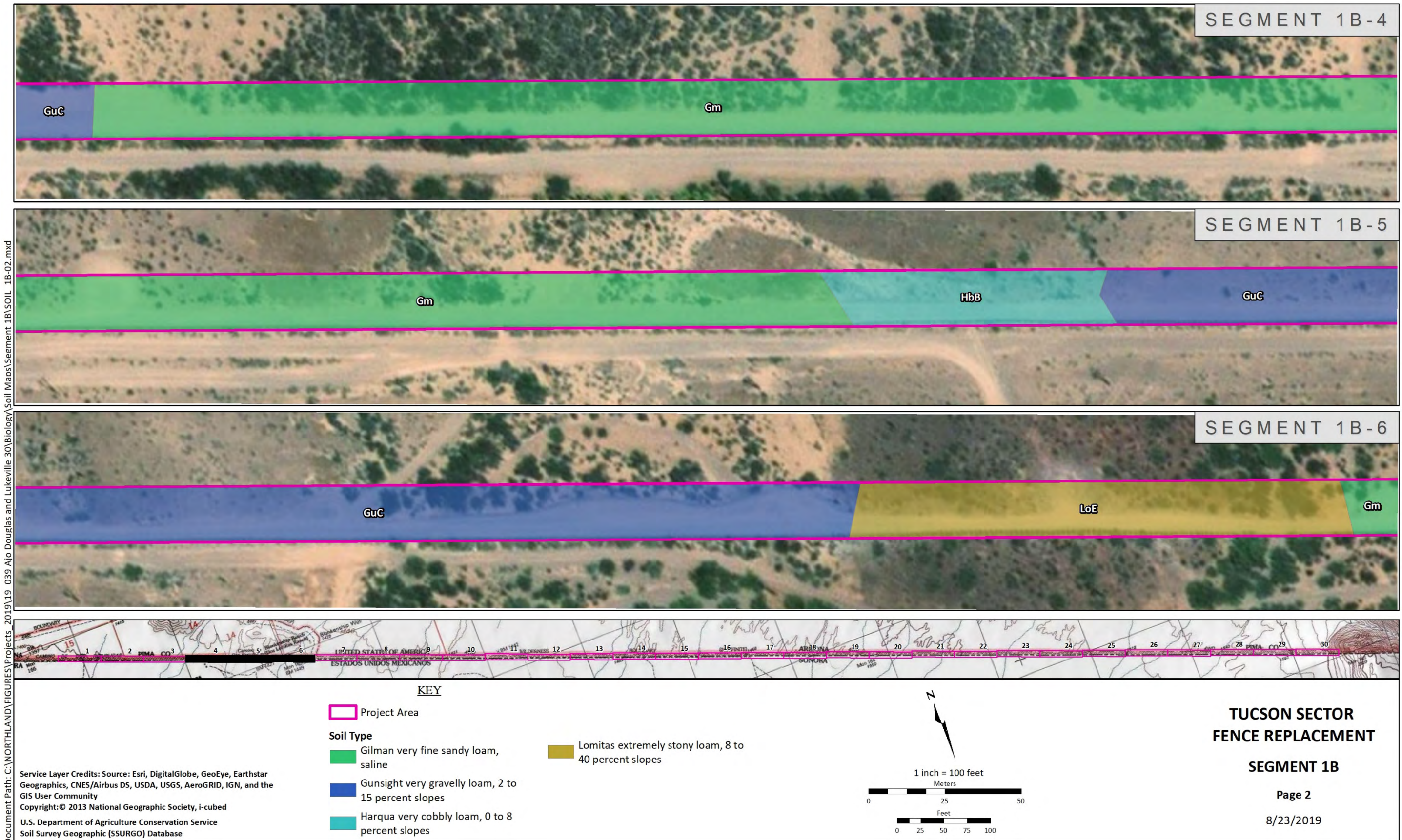


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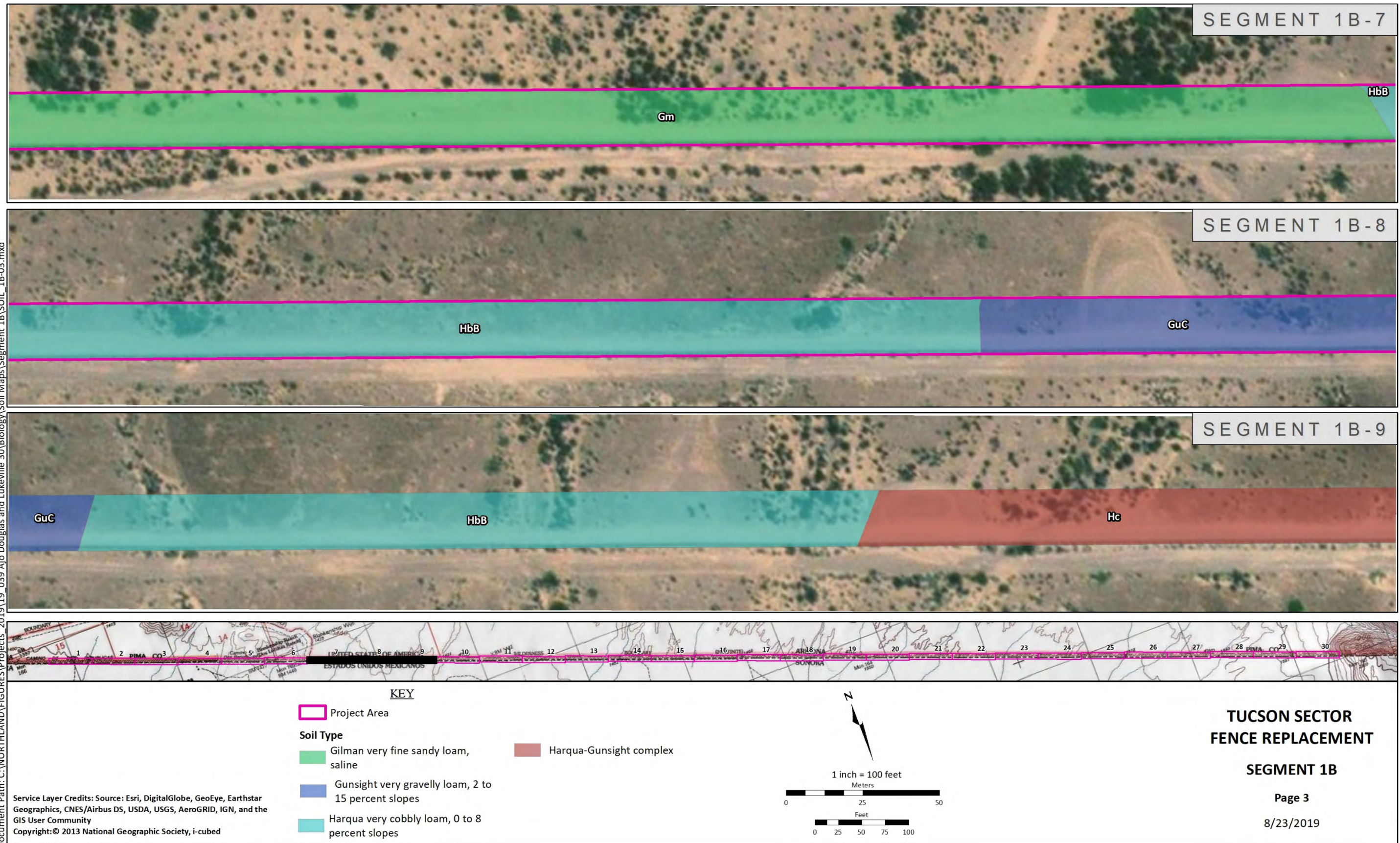


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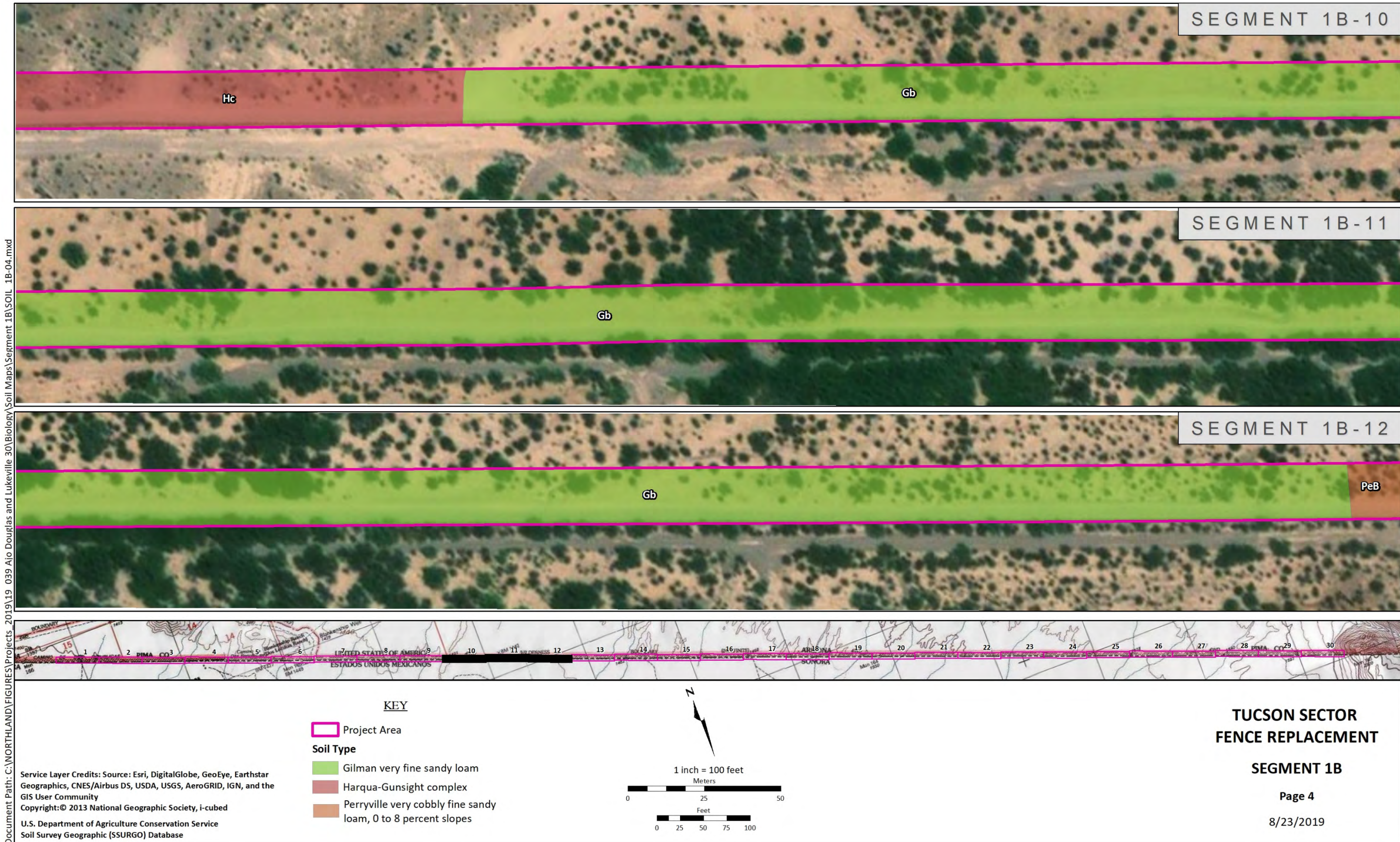


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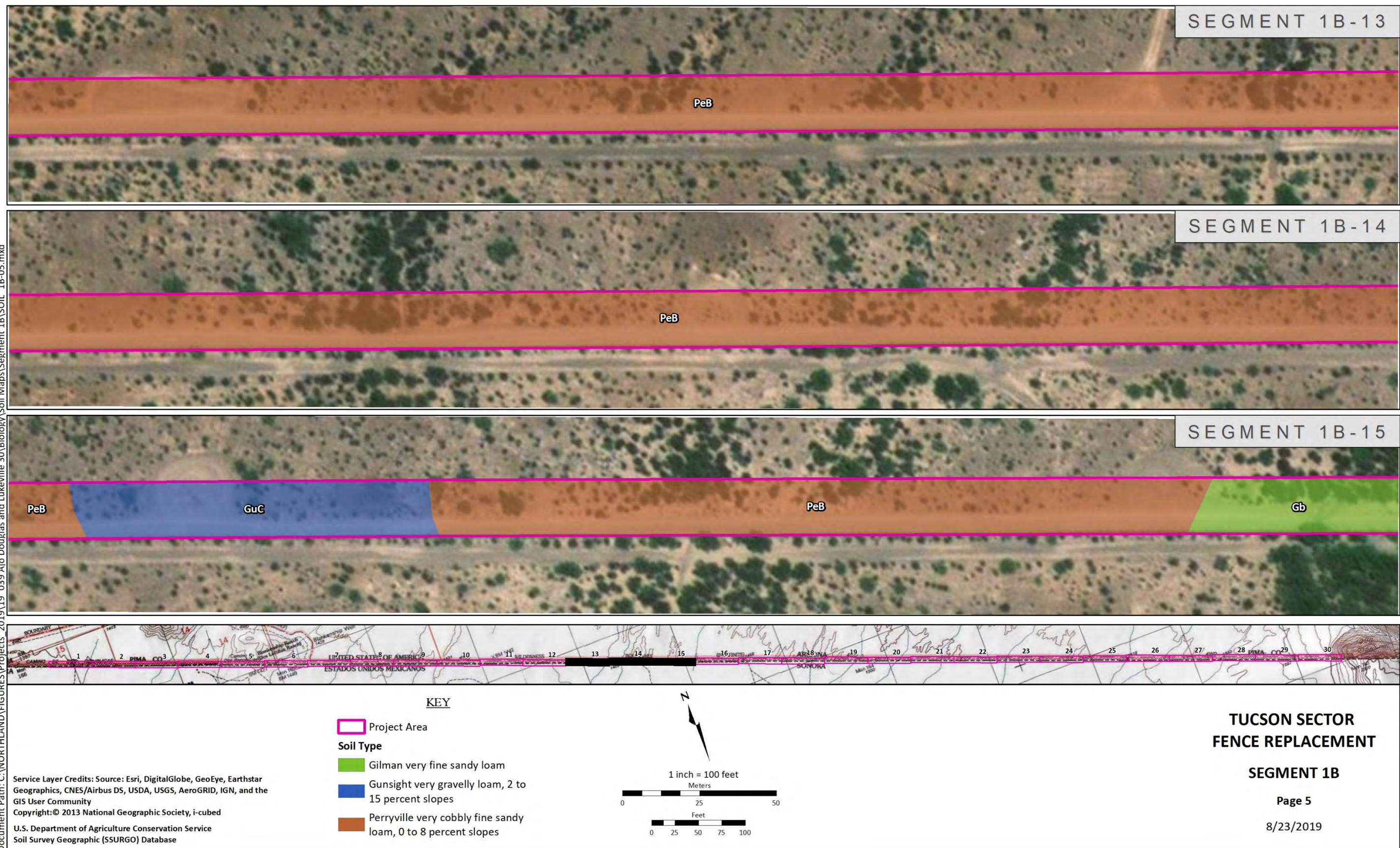
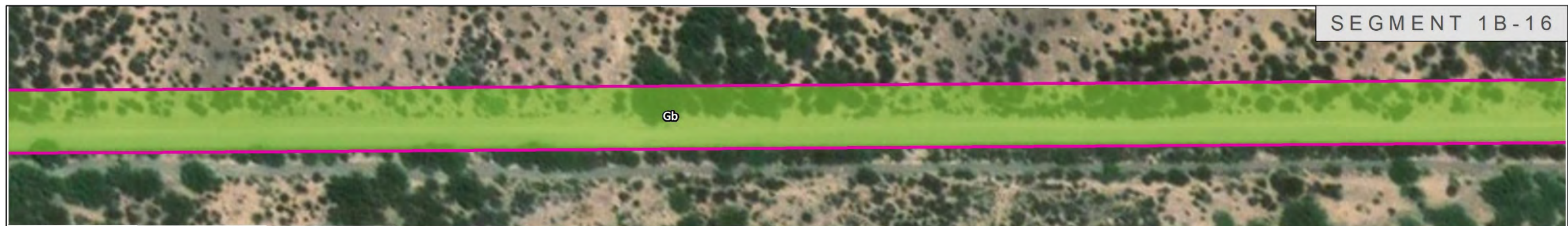


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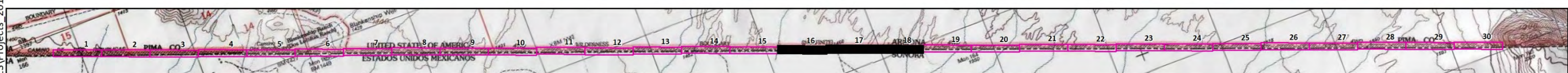
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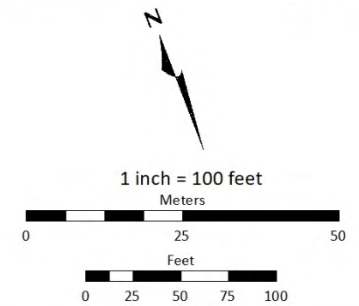
SEGMENT 1B-17



SEGMENT 1B-18



- KEY**
-  Project
 - Soil Type**
 -  Gilman very fine sandy
 -  Perryville very cobbly fine sandy loam, 0 to 8 percent slopes



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SEGMENT 1B

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Figure 3

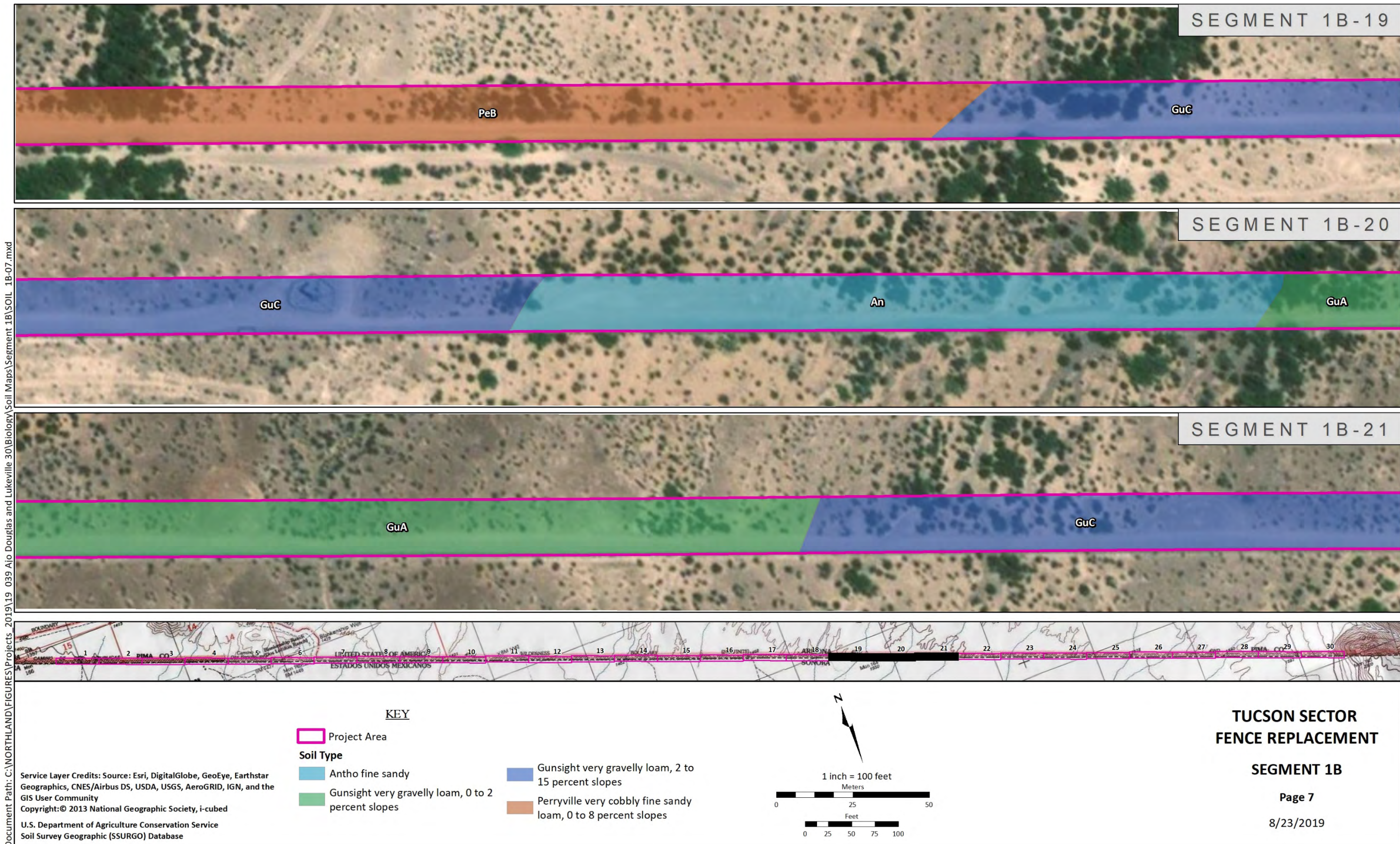


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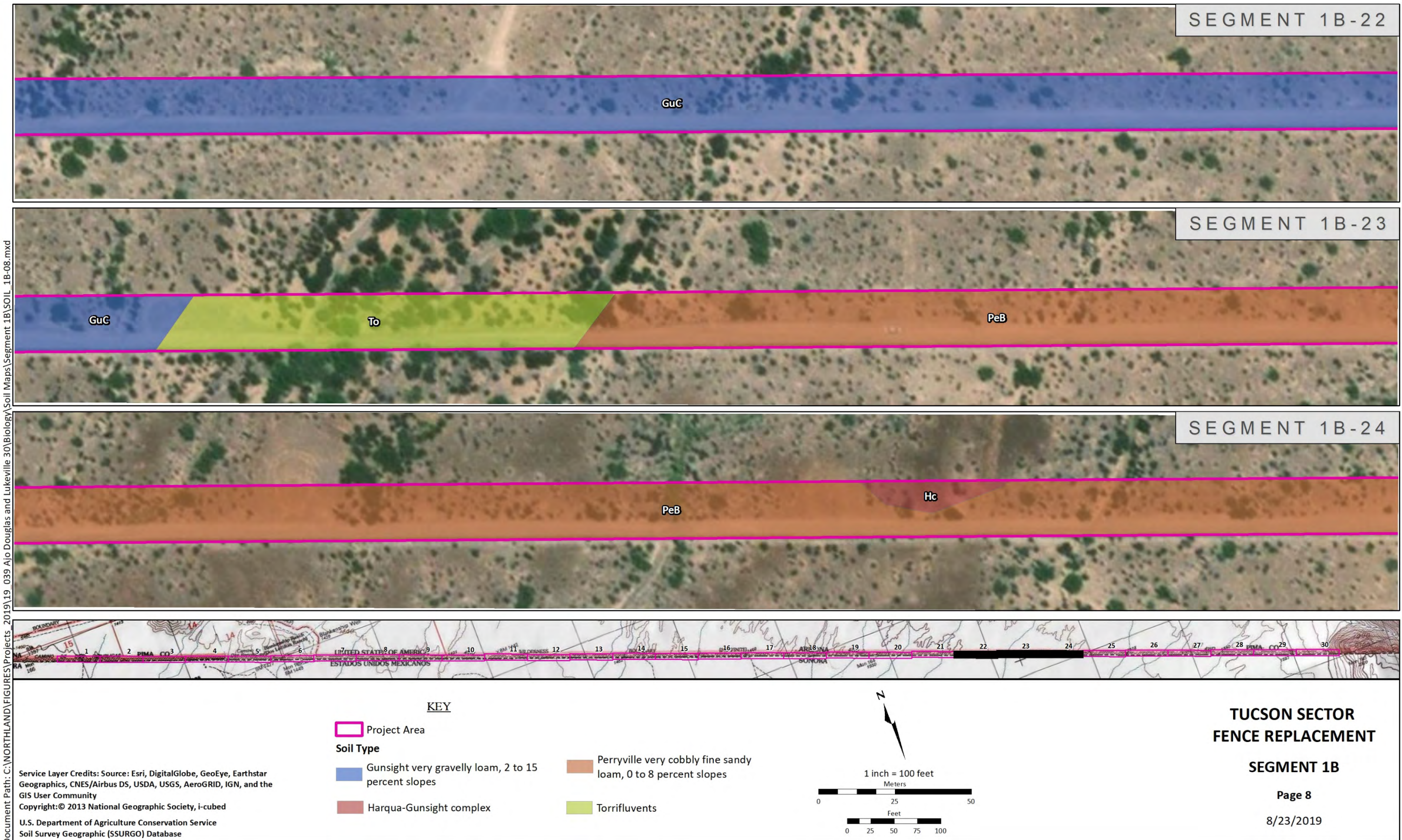
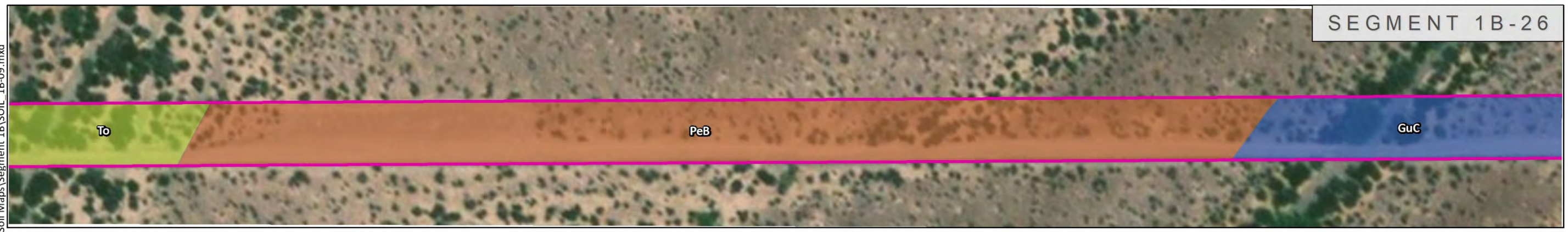


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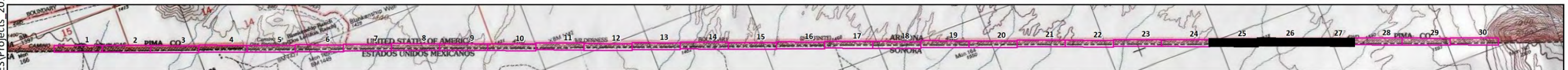
SEGMENT 1B-25



SEGMENT 1B-26



SEGMENT 1B-27



KEY

Project Area

Soil

 Gunsight very gravelly loam, 2 to 15 percent slopes	 Perryville very cobbly fine sandy loam, 0 to 8 percent slopes
 Harqua-Gunsight	 Torrifluvents

1 inch = 100 feet

**TUCSON SECTOR
FENCE REPLACEMENT**

SEGMENT 1B

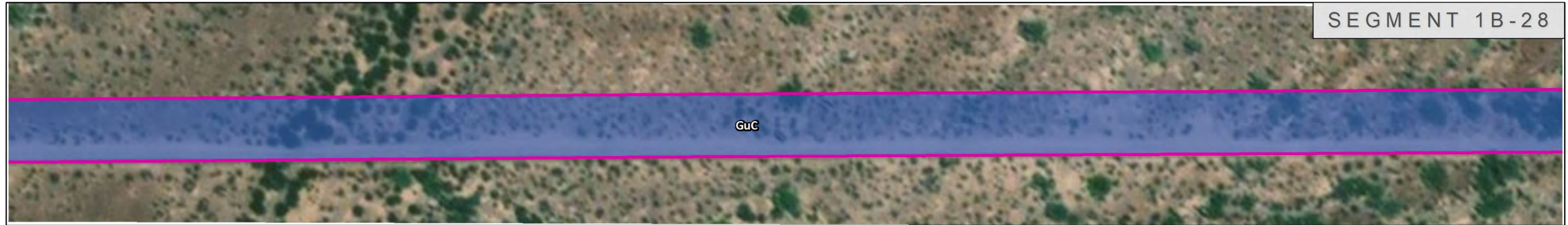
Page 9

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Figure 3

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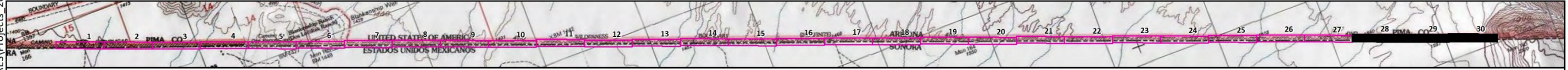
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SEGMENT 1B-29

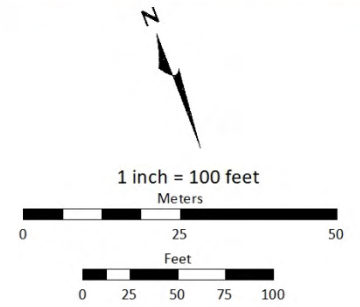


SEGMENT 1B-30



KEY

-  Project Area
- Soil**
-  Ajo very gravelly loam, 1 to 5 percent slopes
-  Gunsight very gravelly loam, 2 to 15 percent slopes
-  Rock outcrop



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FENCE REPLACEMENT**

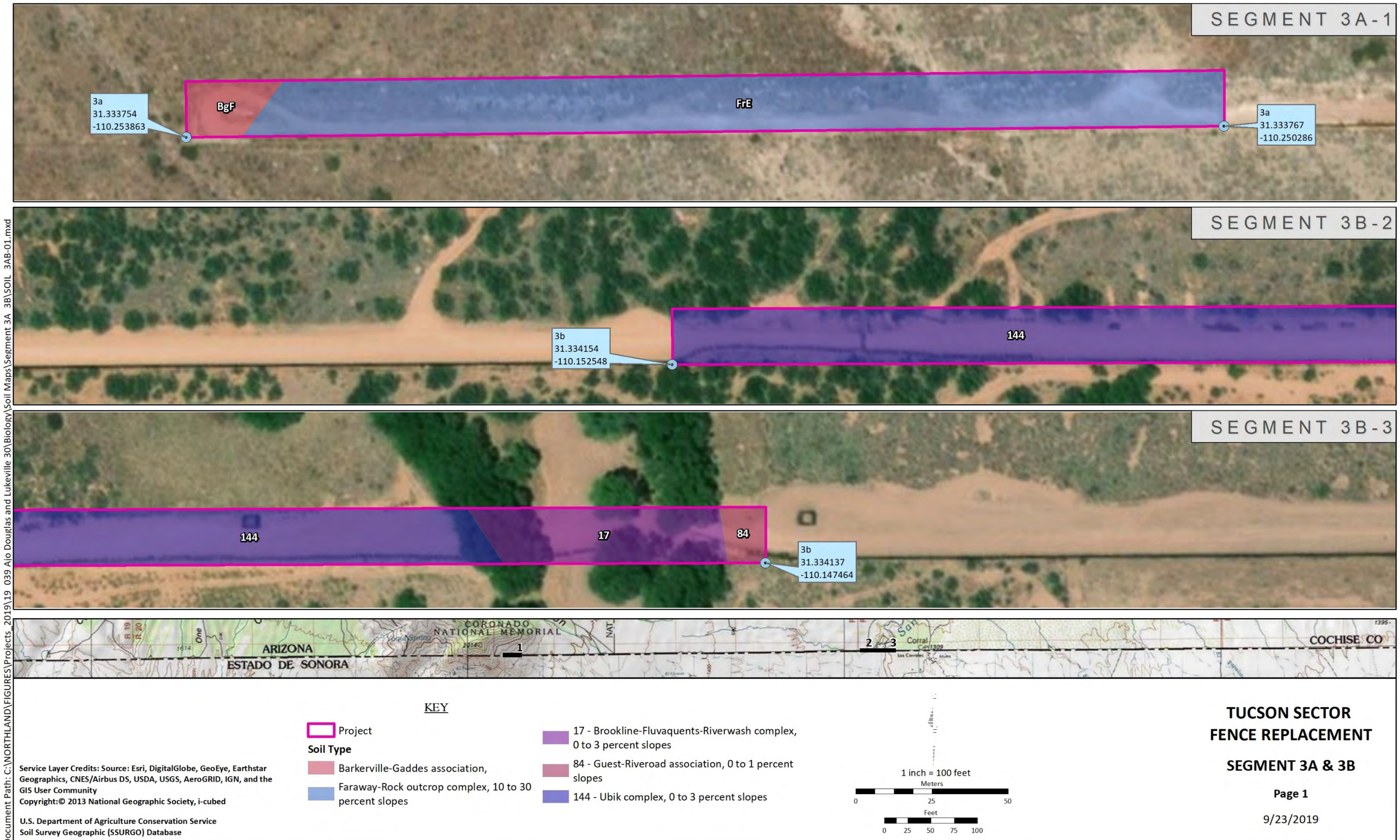
SEGMENT 1B

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Figure 3



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SEGMENT 3A-1

3a
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3a
31.333767
-110.250286

SEGMENT 3B-2

3b
31.334154
-110.152548

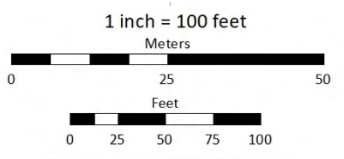
SEGMENT 3B-3

3b
31.334137
-110.147464

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Soil Survey Geographic (SSURGO) Database

KEY

- Project
- Soil Type**
- Barkerville-Gaddes association,
- Faraway-Rock outcrop complex, 10 to 30 percent slopes
- 17 - Brookline-Fluvaquents-Riverwash complex, 0 to 3 percent slopes
- 84 - Guest-Riveroad association, 0 to 1 percent slopes
- 144 - Ubik complex, 0 to 3 percent slopes



**TUCSON SECTOR
FENCE REPLACEMENT
SEGMENT 3A & 3B**

Page 1
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Figure 3

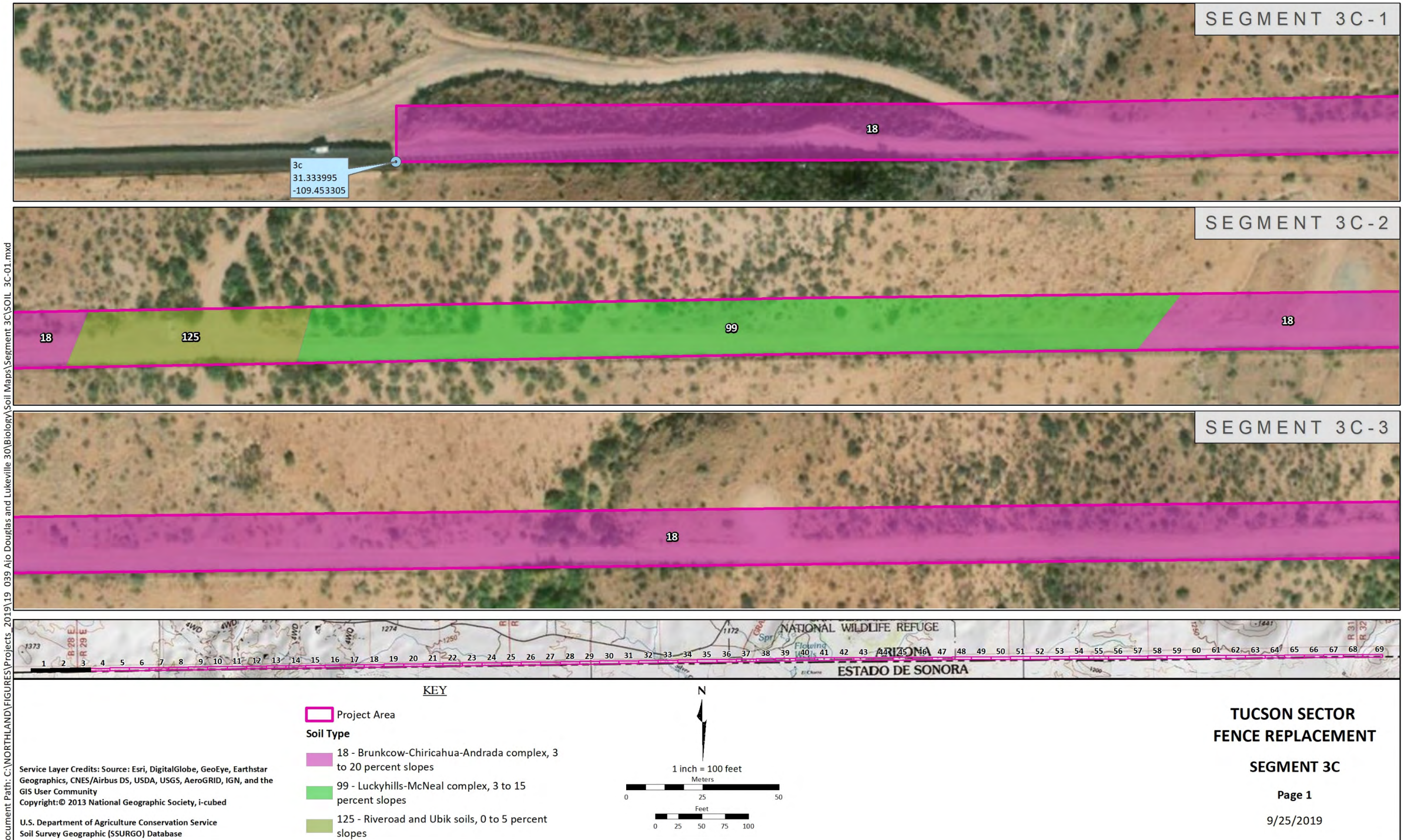


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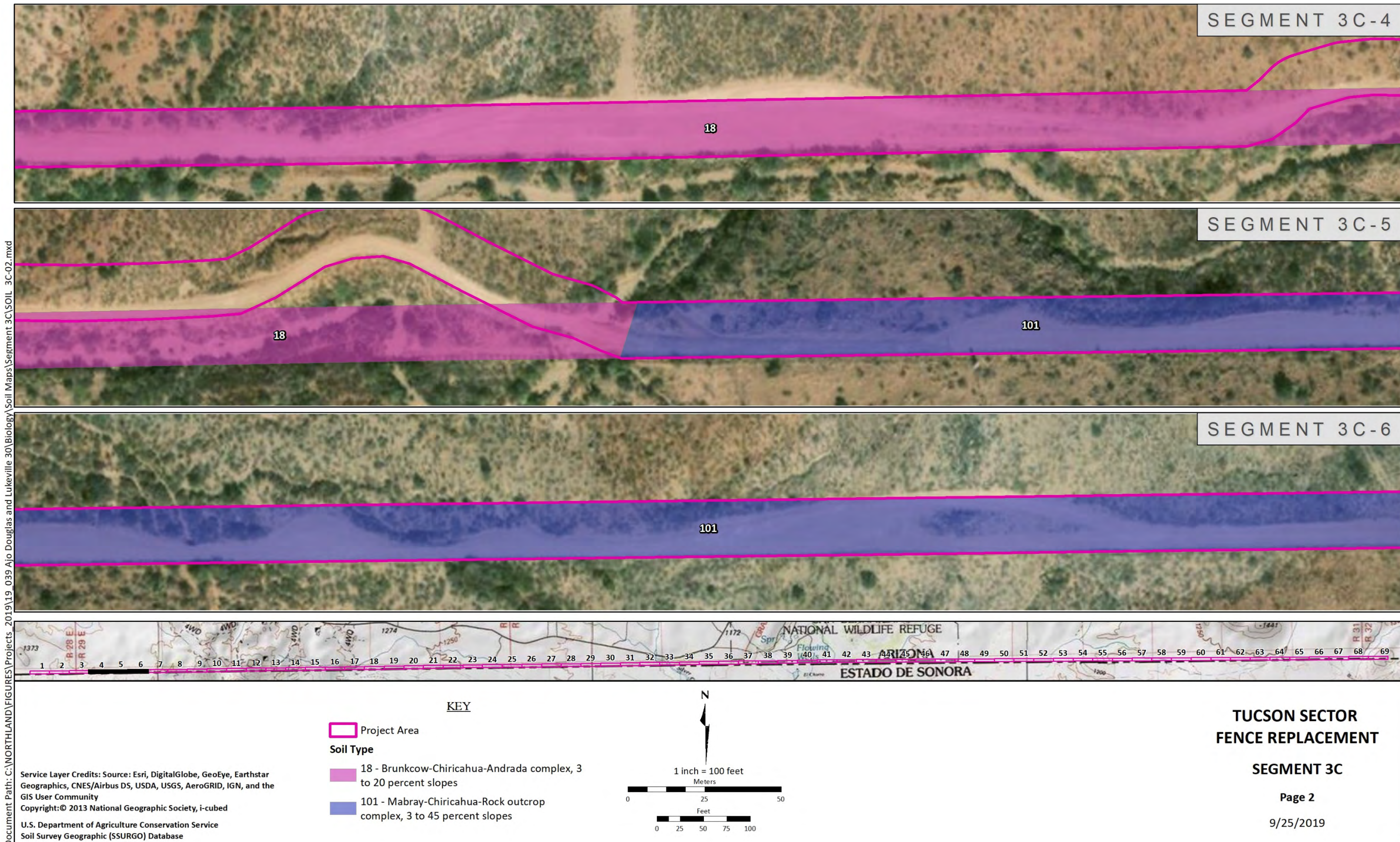
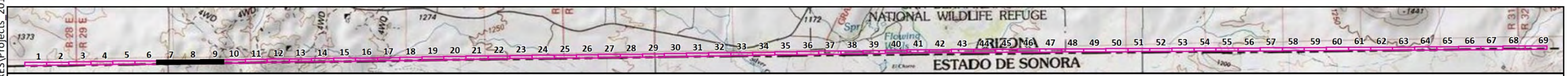
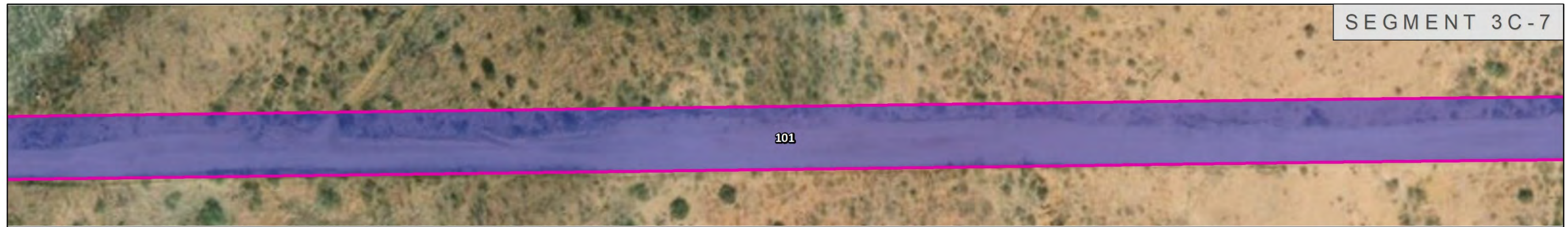


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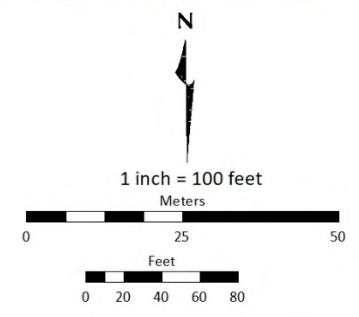


KEY

Project Area

Soil Type

101 - Mabray-Chiricahua-Rock outcrop complex, 3 to 45 percent slopes



**TUCSON SECTOR
FENCE REPLACEMENT**

SEGMENT 3C

Page 3

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Figure 3

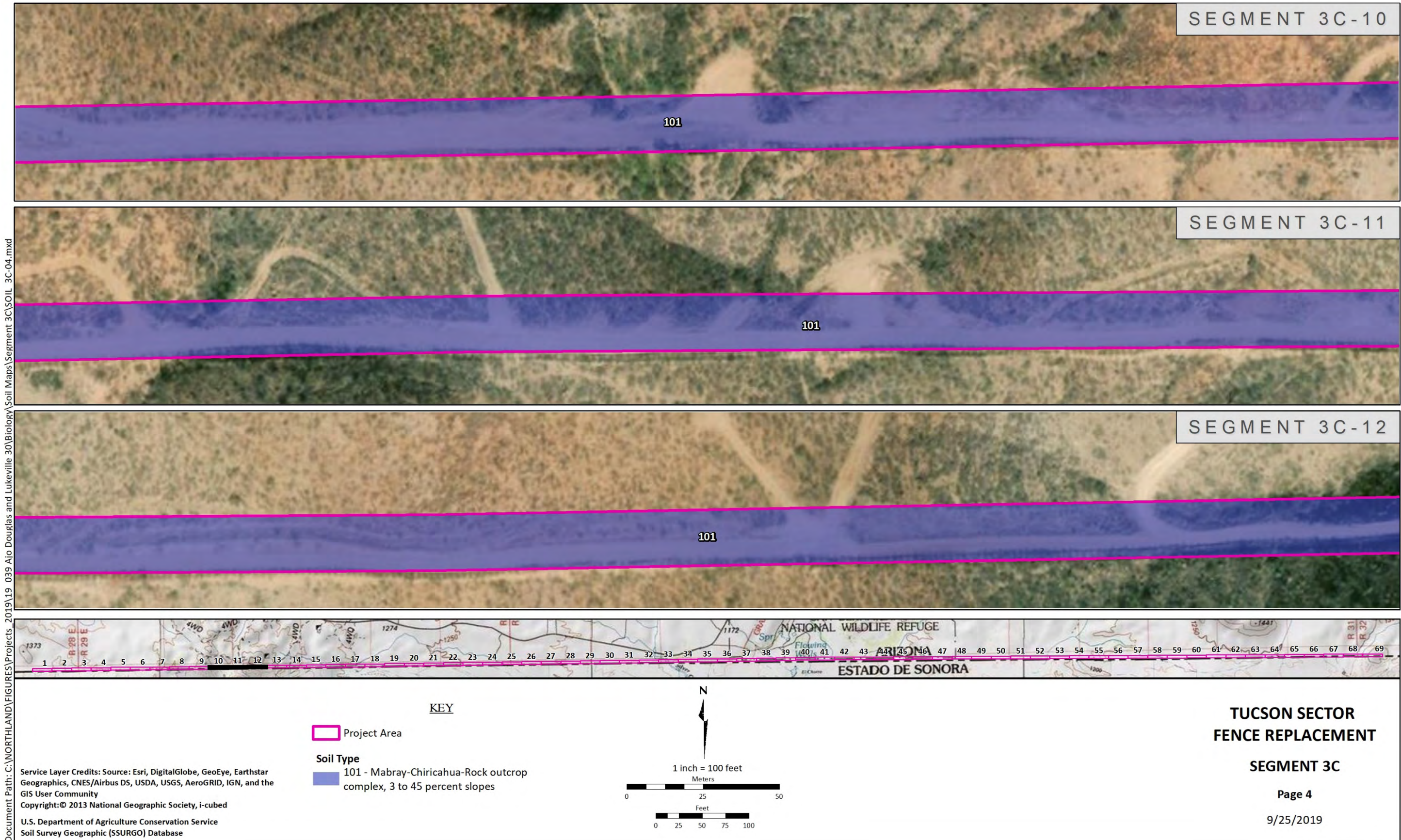


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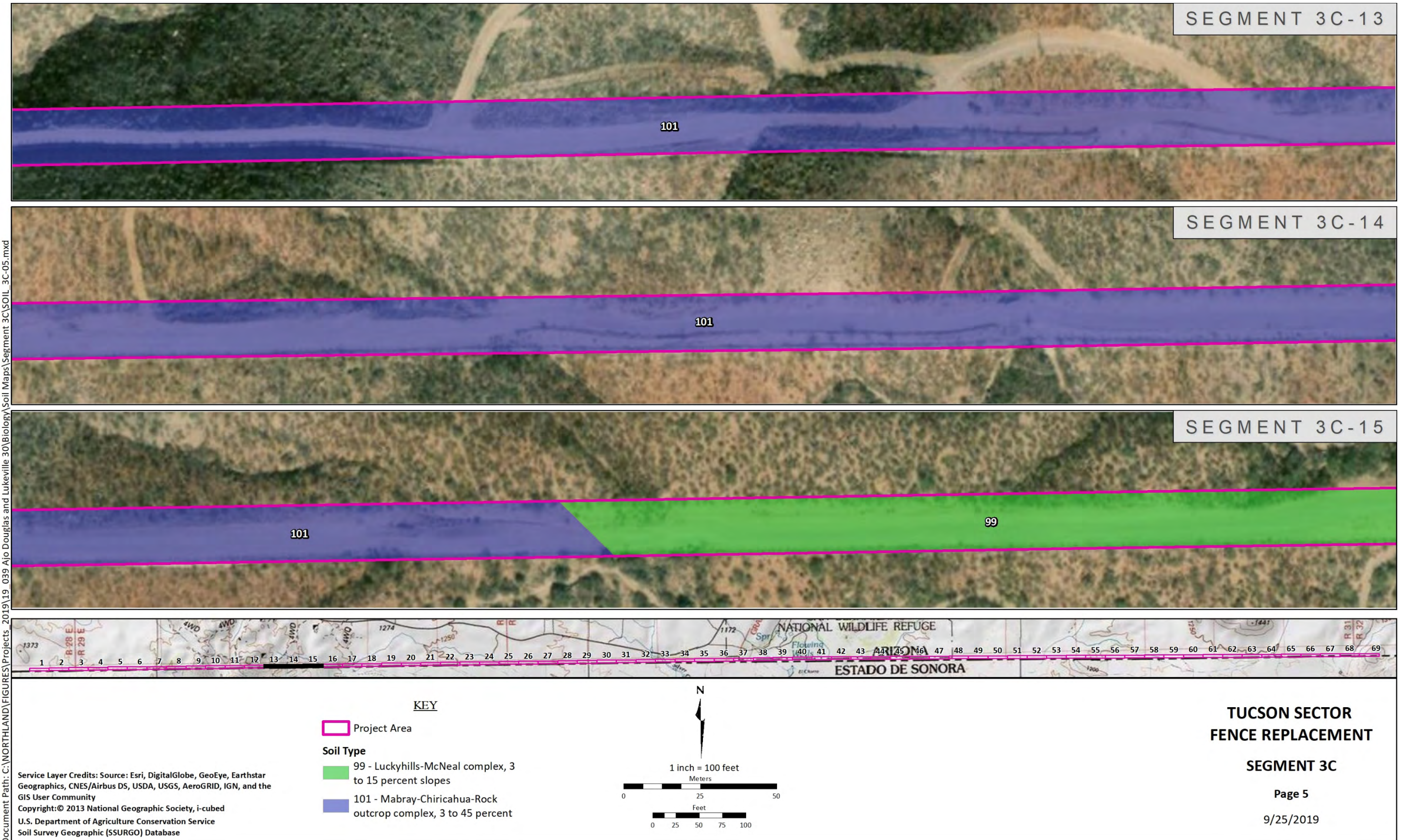


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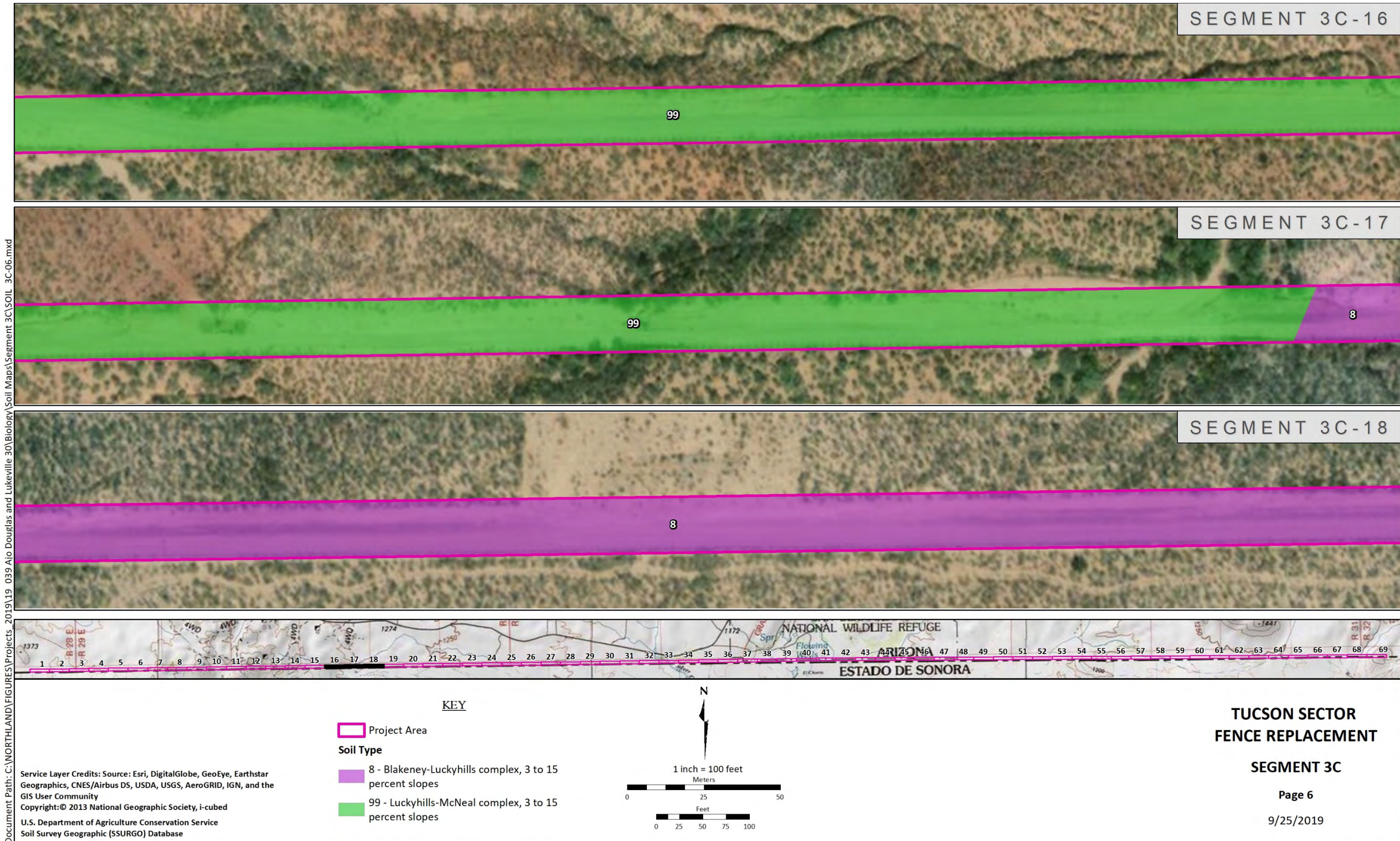


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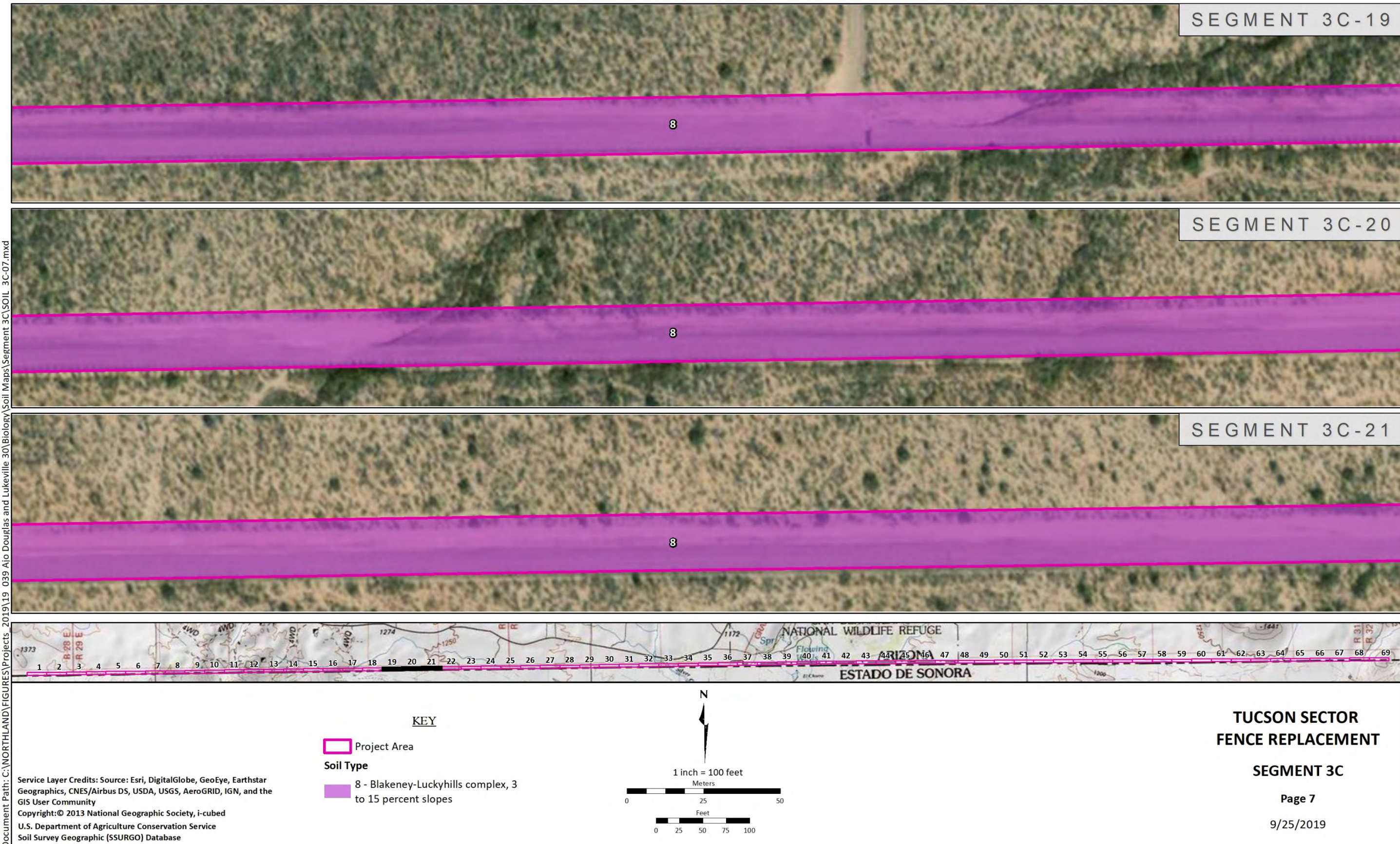
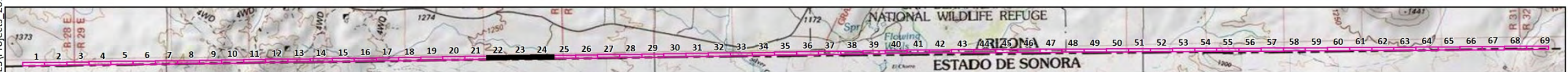





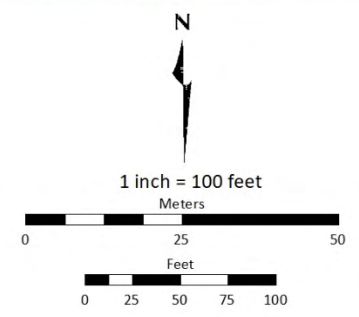
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- KEY**
-  Project Area
 - Soil Type**
 -  8 - Blakeney-Luckyhills complex, 3 to 15 percent slopes
 -  125 - Riveroad and Ubik soils, 0 to 5 percent slopes



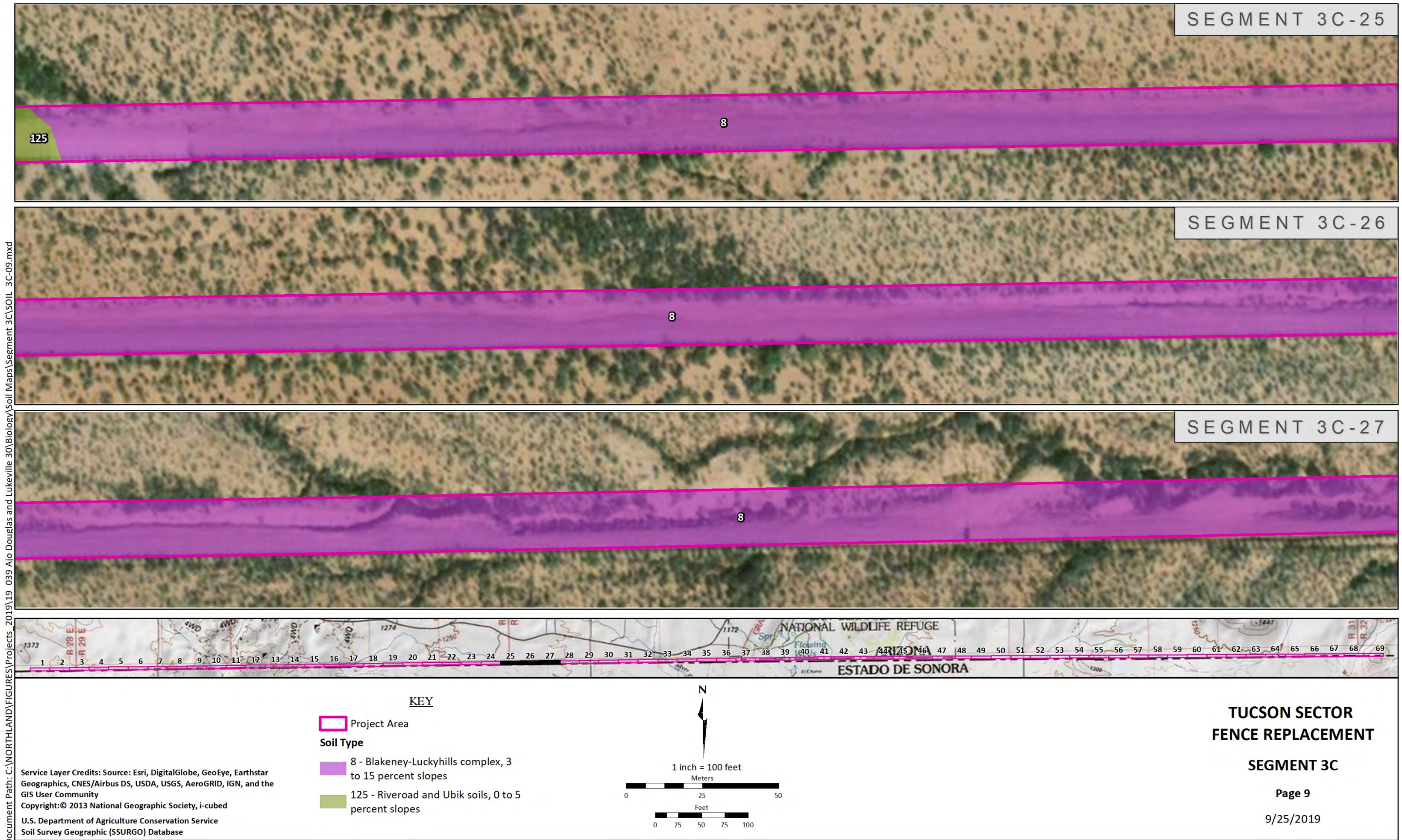
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SEGMENT 3C

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Figure 3



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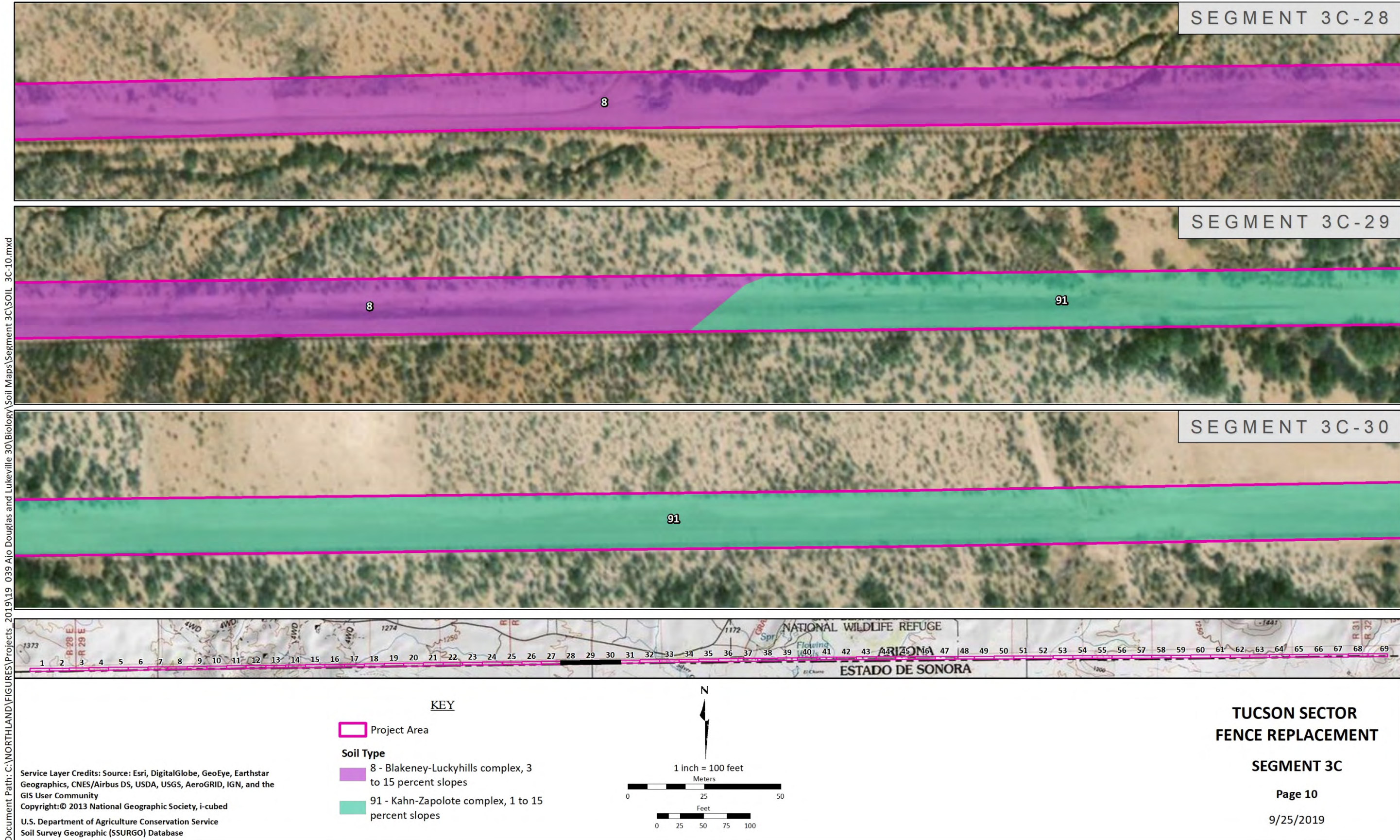


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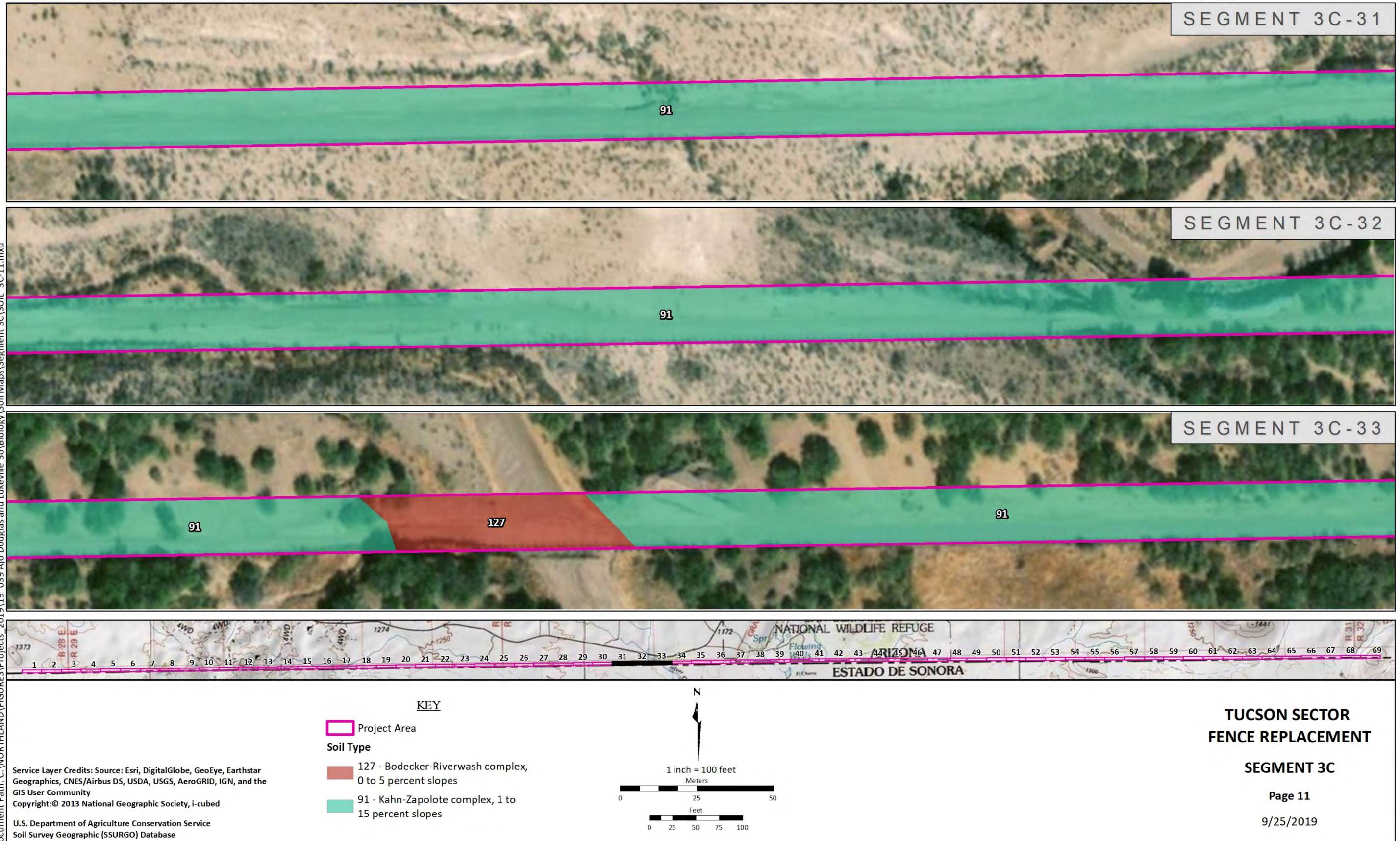


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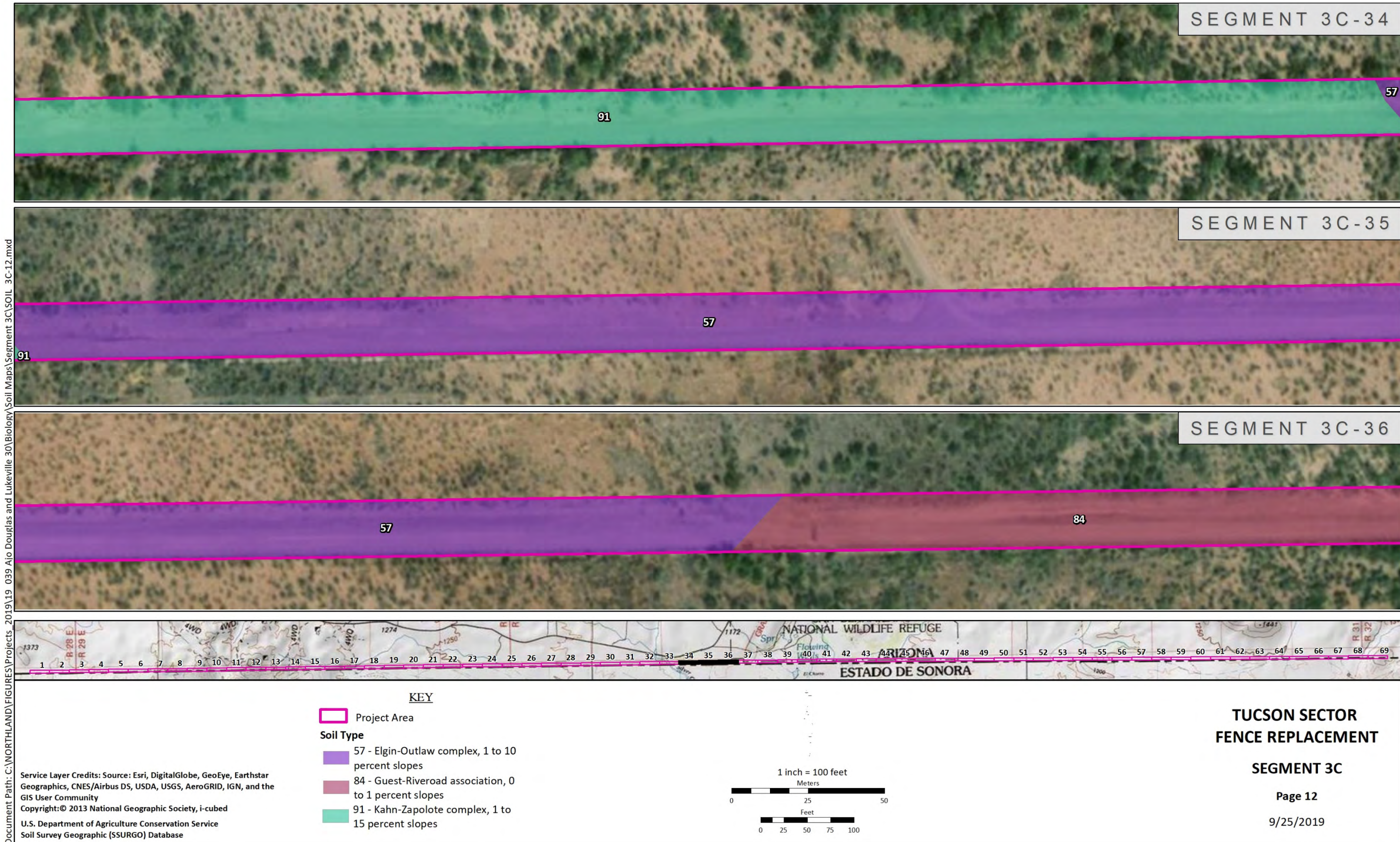


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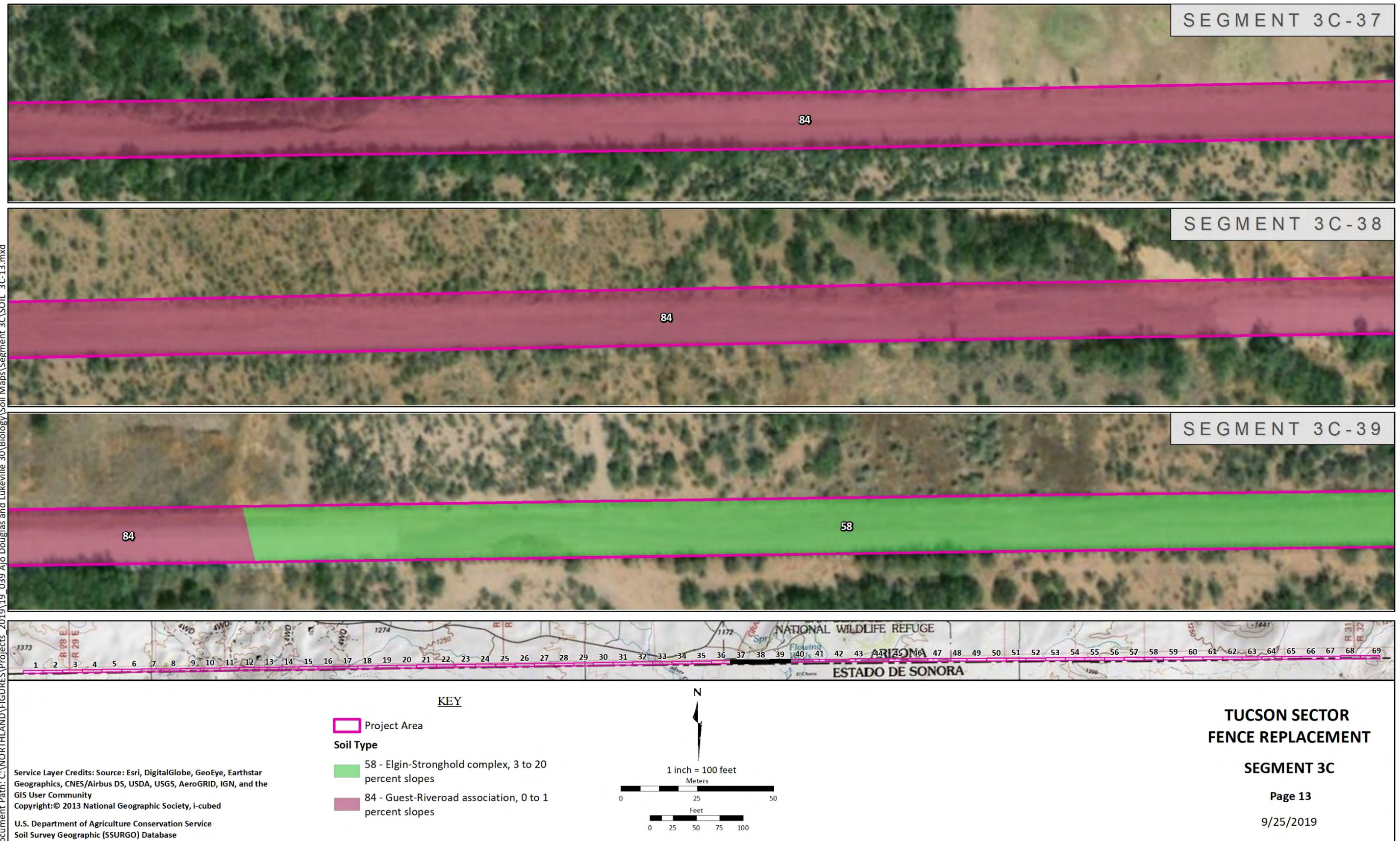


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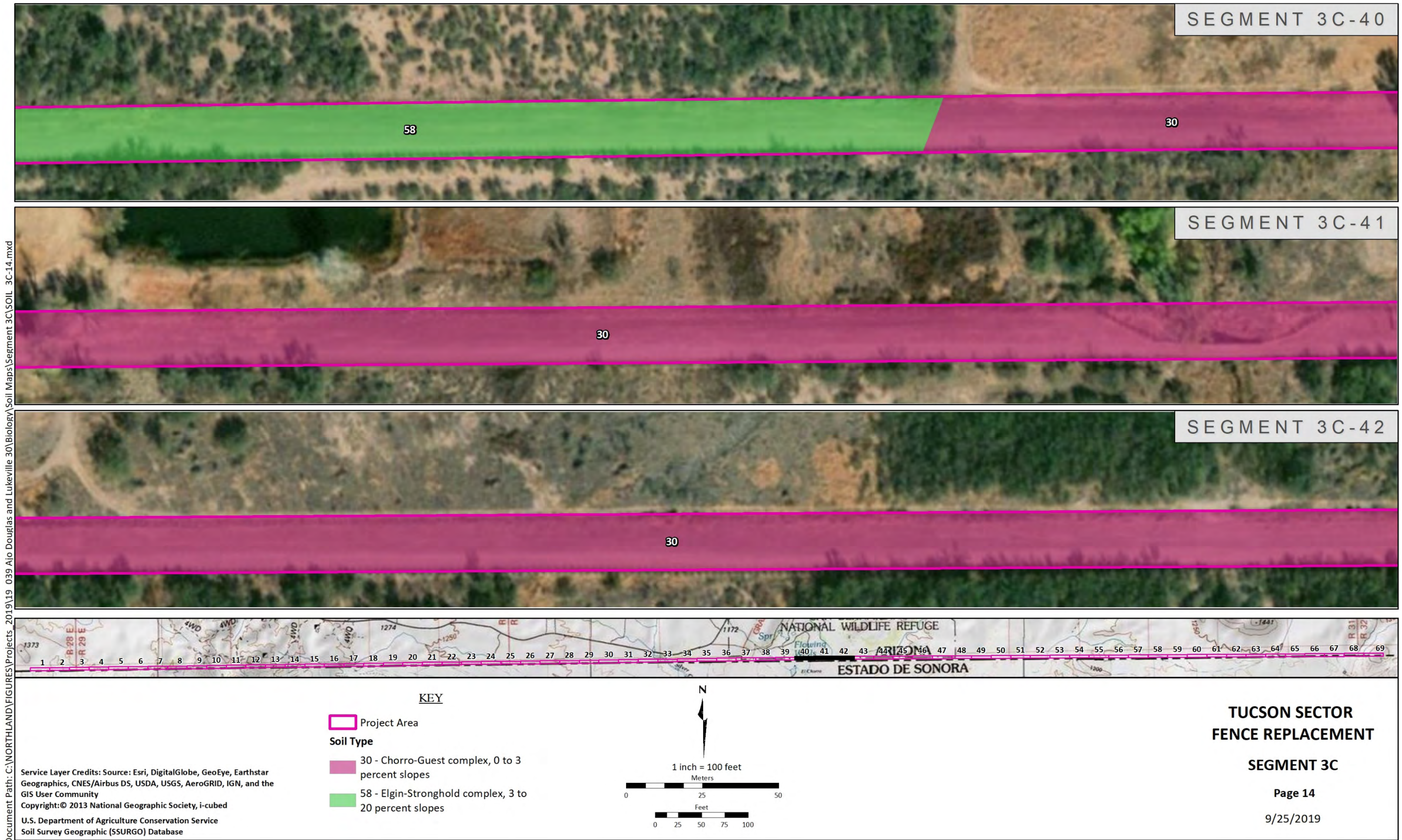


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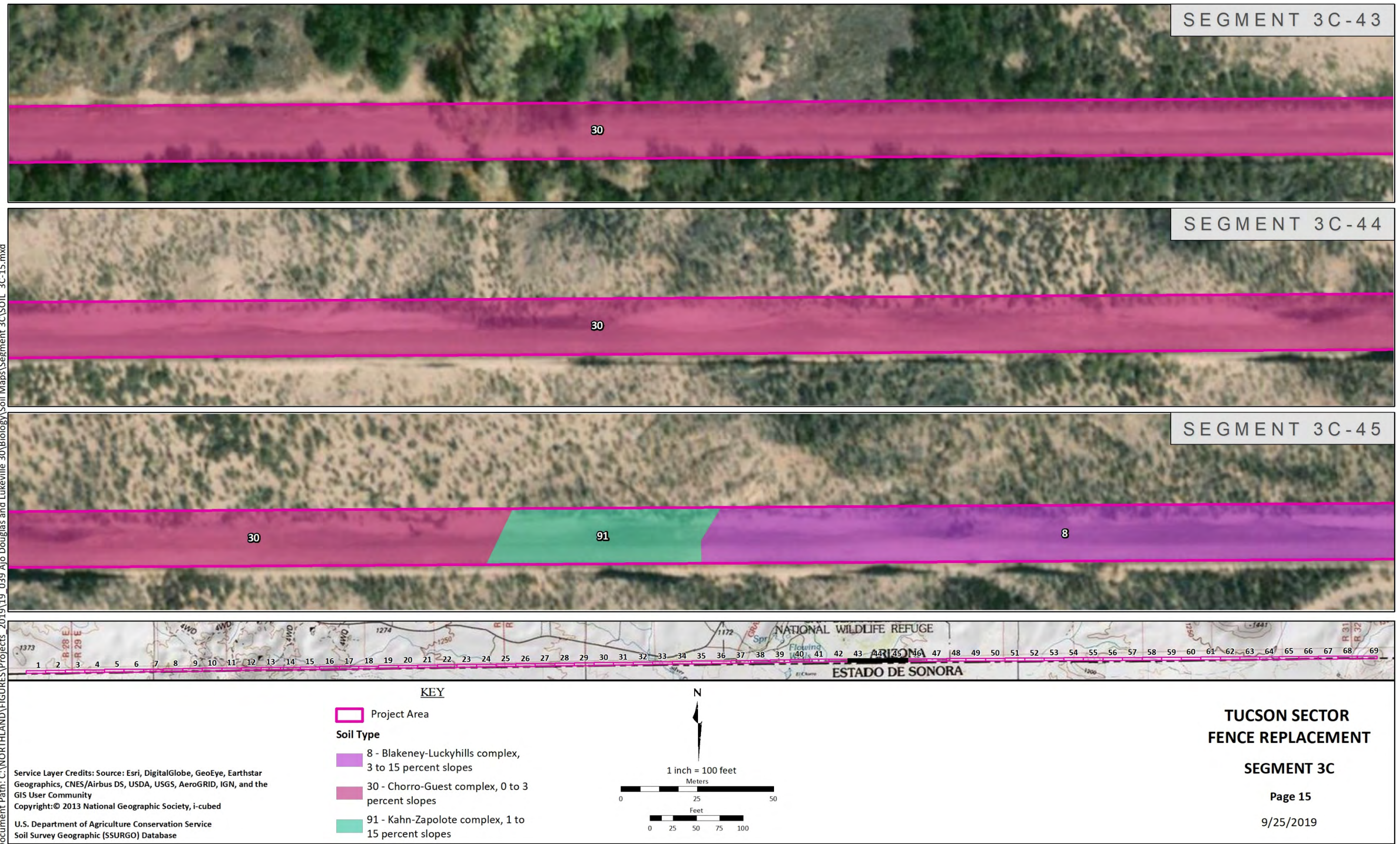
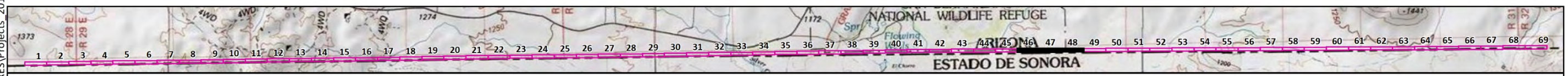
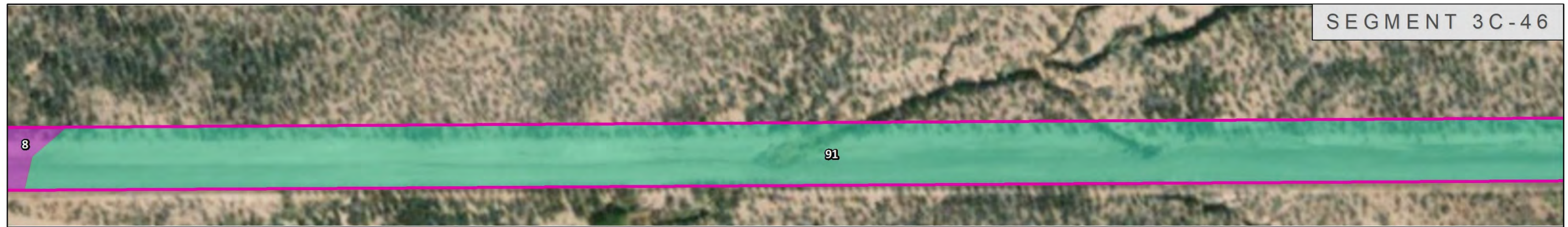
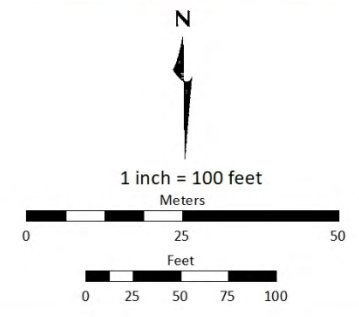


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- KEY**
- Project Area
 - Soil Type**
 - 8 - Blakeney-Luckyhills complex, 3 to 15 percent slopes
 - 91 - Kahn-Zapolote complex, 1 to 15 percent slopes



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FENCE REPLACEMENT**

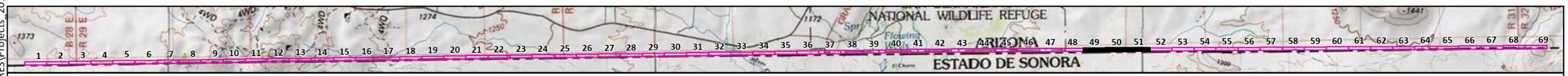
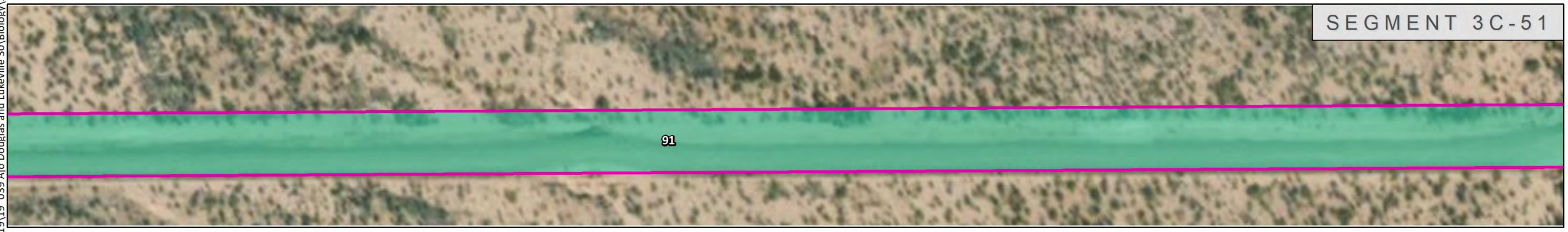
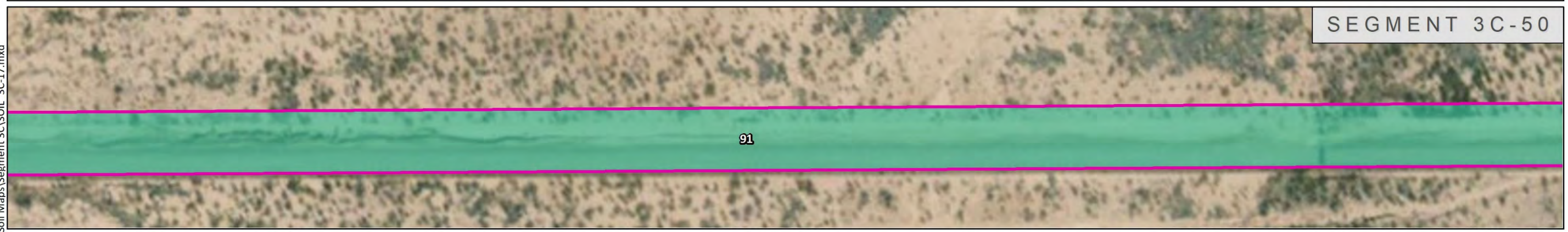
SEGMENT 3C

Page 16

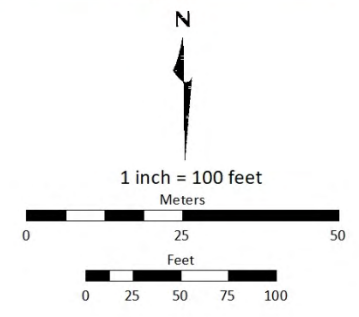
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Figure 3

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- KEY**
- Project Area
 - Soil Type**
 - 91 - Kahn-Zapolote complex, 1 to 15 percent slopes
 - 125 - Riveroad and Ubik soils, 0 to 5 percent slopes



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 FENCE REPLACEMENT**

SEGMENT 3C

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Figure 3

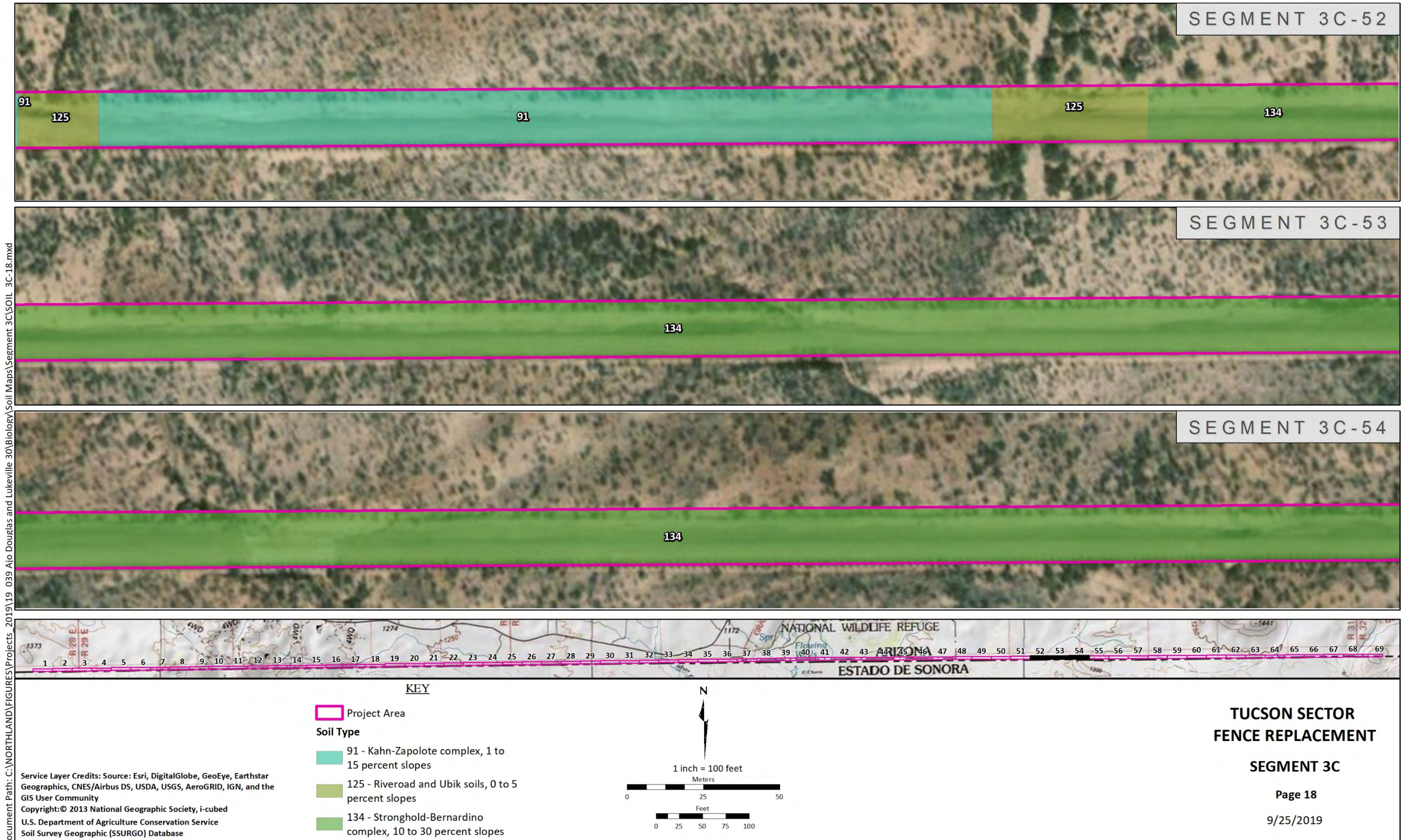
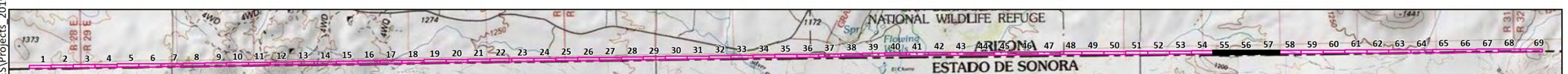
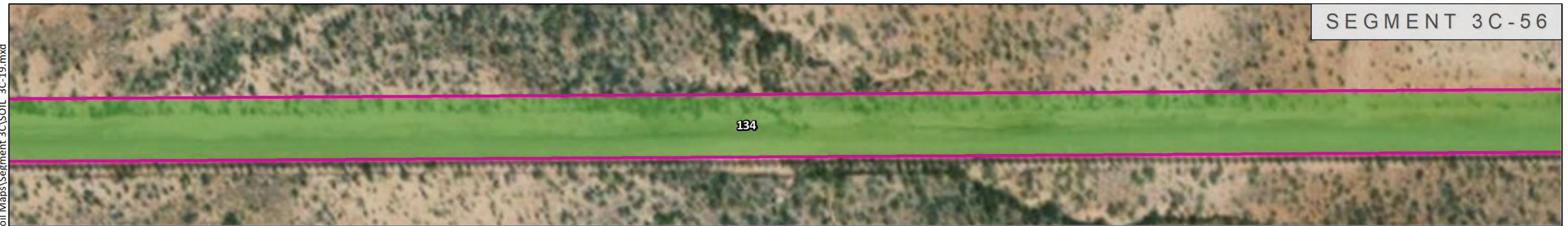
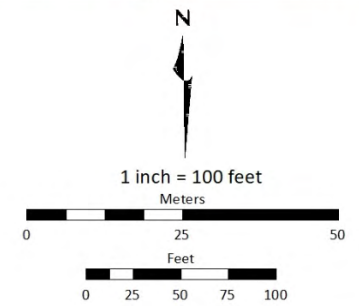


Figure 3

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- KEY**
- Project Area
 - Project Area
 - Soil Type
 - 125 - Riverroad and Ubik soils, 0 to 5 percent slopes
 - 134 - Stronghold-Bernardino complex, 10 to 30 percent slopes



**TUCSON SECTOR
FENCE REPLACEMENT**

SEGMENT 3C

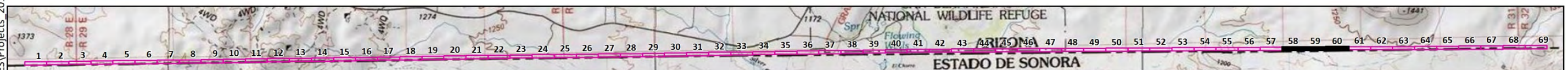
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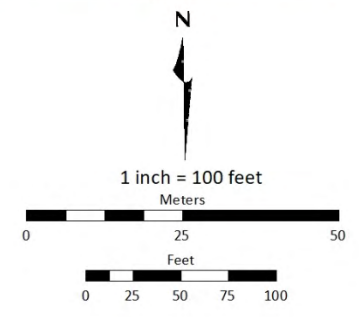
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 U.S. Department of Agriculture Conservation Service
 Soil Survey Geographic (SSURGO) Database

Figure 3

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- KEY**
- Project Area
 - Soil Type**
 - 125 - Riveroad and Ubik soils, 0 to 5 percent slopes
 - 134 - Stronghold-Bernardino complex, 10 to 30 percent slopes



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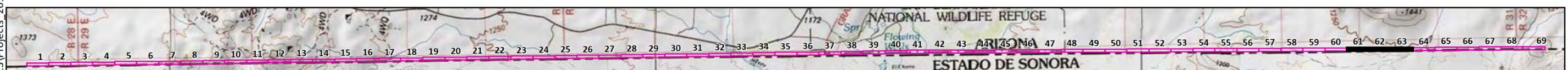
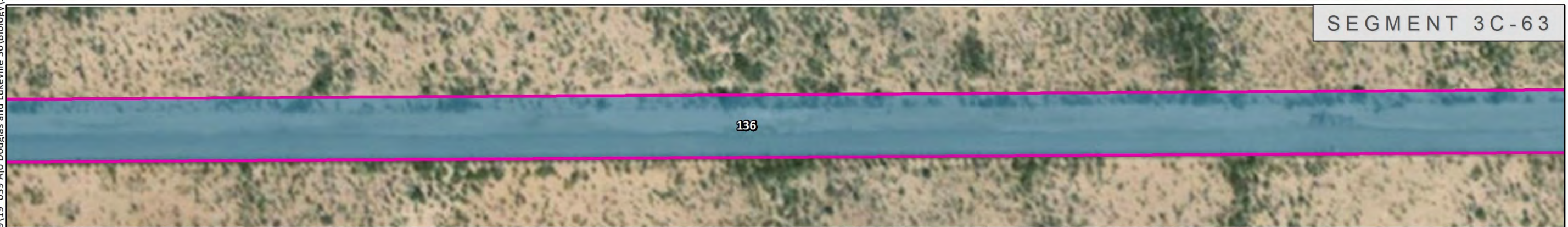
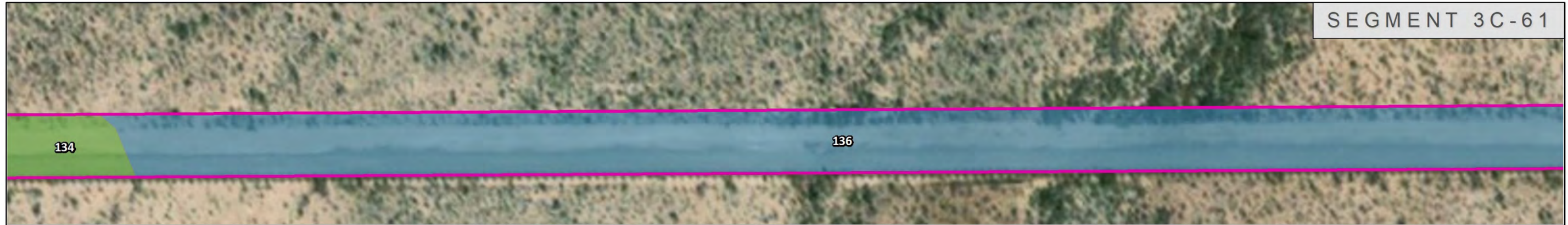
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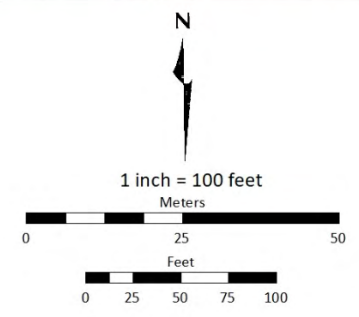
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Figure 3

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- KEY**
- Project Area
 - Soil Type**
 - 134 - Stronghold-Bernardino complex, 10 to 30 percent slopes
 - 136 - Sutherland-Mule complex, 3 to 15 percent slopes



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Figure 3

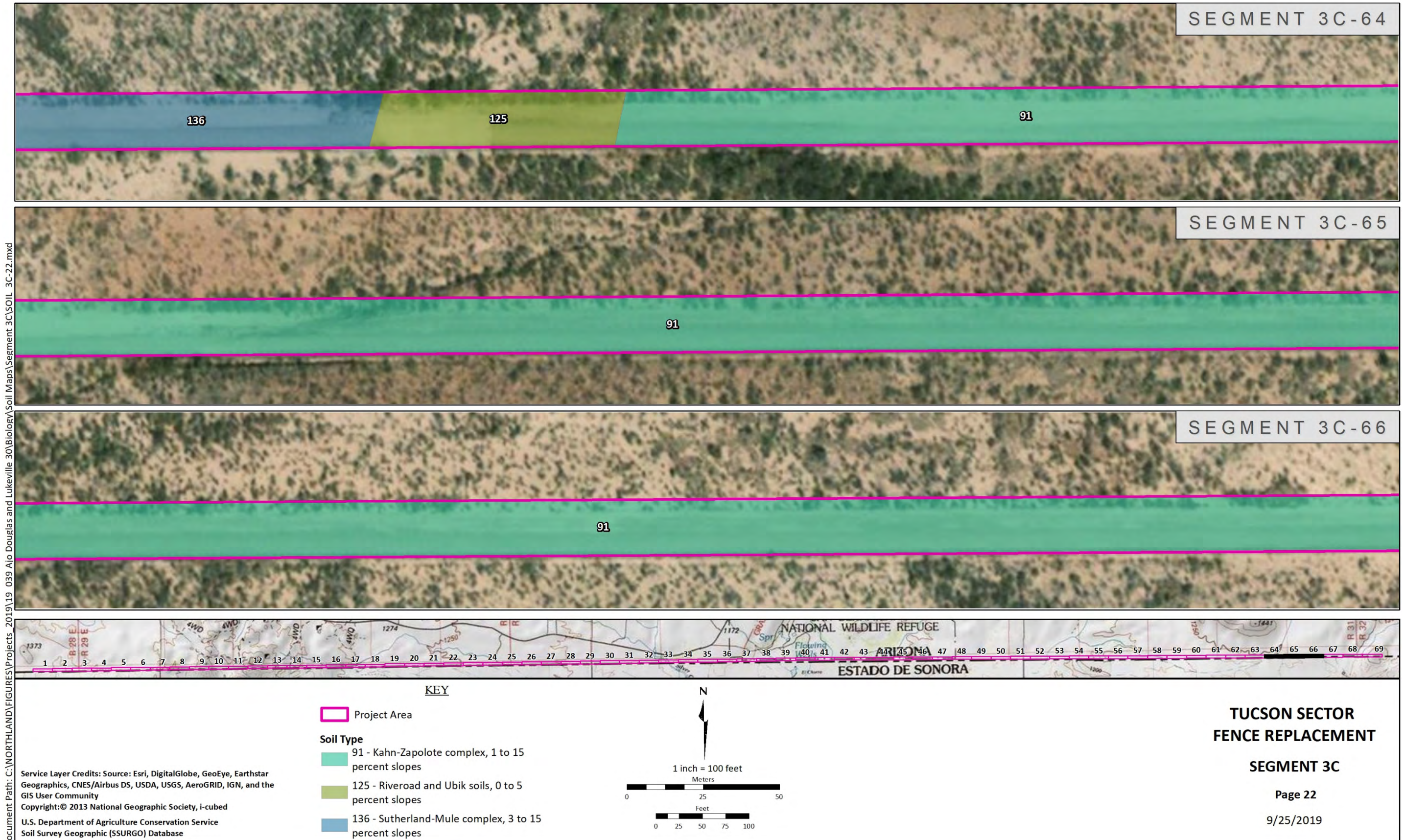


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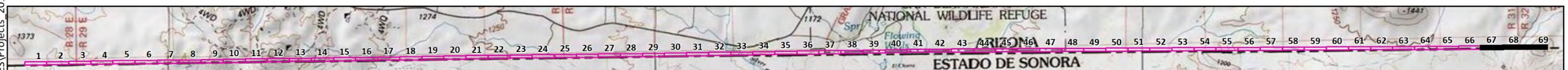
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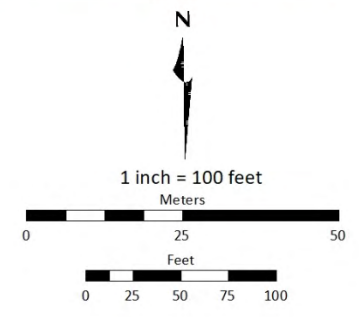
SEGMENT 3C-68



SEGMENT 3C-69



- KEY**
- Project Area
 - Soil Type**
 - 8 - Blakeney-Luckyhills complex, 3 to 15 percent slopes
 - 91 - Kahn-Zapolote complex, 1 to 15 percent slopes
 - 136 - Sutherland-Mule complex, 3 to 15 percent slopes



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Soil Survey Geographic (SSURGO) Database

Figure 3

Figure 4: Vegetation Communities Map

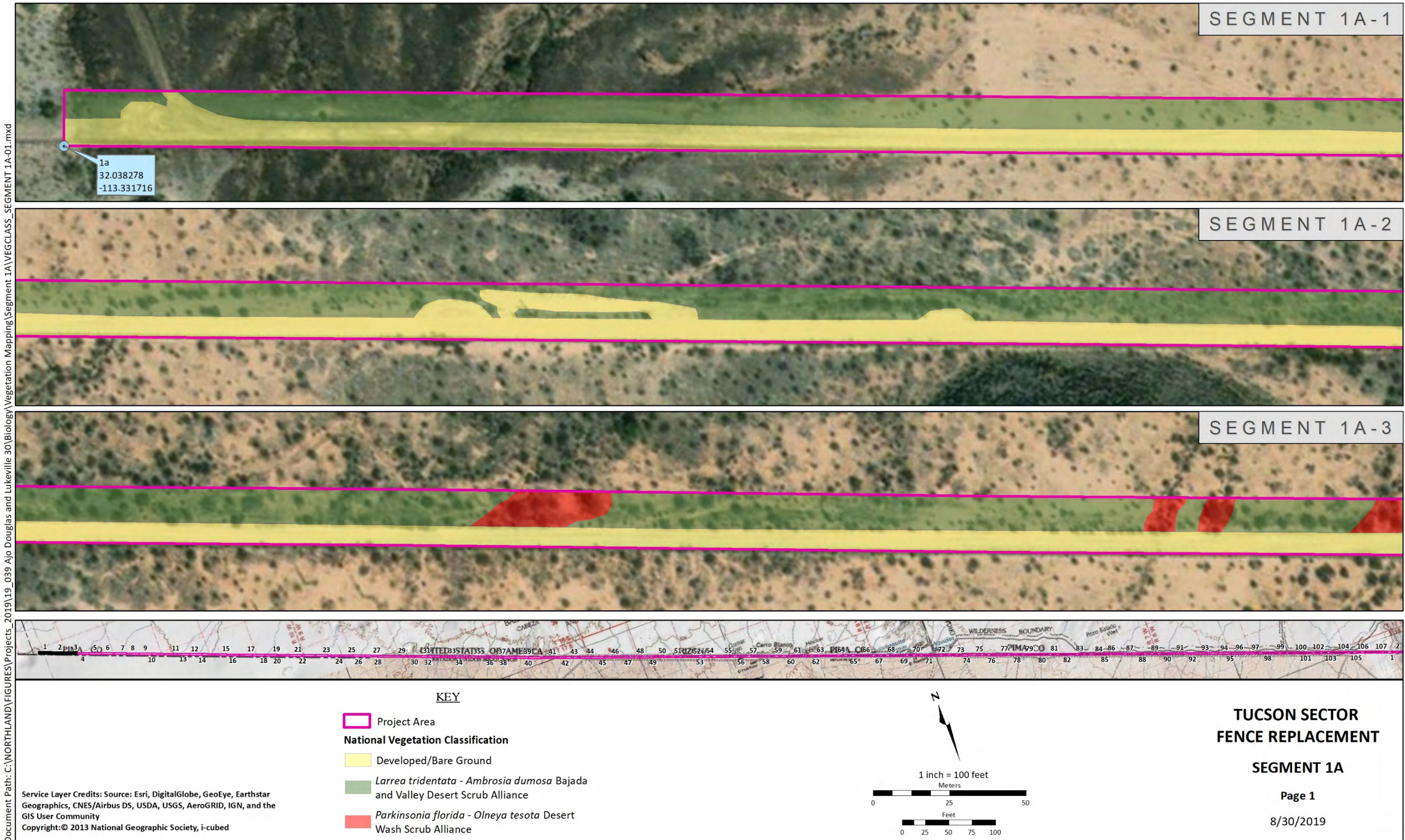


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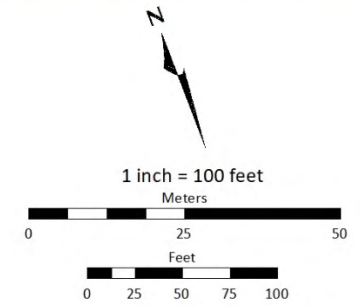
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KEY

- Project Area
- National Vegetation Classification**
- Developed/Bare Ground
- Larrea tridentata* - *Ambrosia dumosa* Bajada and Valley Desert Scrub Alliance
- Parkinsonia florida* - *Olneya tesota* Desert Wash Scrub Alliance
- Prosopis glandulosa* - *Prosopis velutina* - *Prosopis pubescens* Wet Scrub Alliance



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Figure 4

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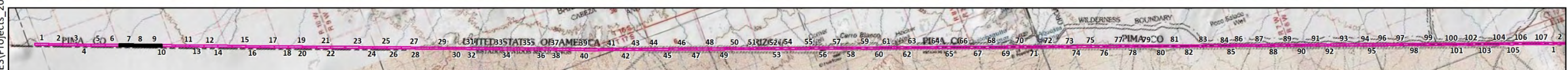
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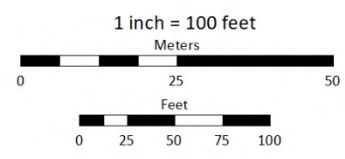


SEGMENT 1A-9



KEY

- Project Area
- National Vegetation Classification**
- Developed/Bare Ground
- Larrea tridentata* - *Ambrosia dumosa* Bajada and Valley Desert Scrub Alliance
- Mixed Desert Scrub
- Parkinsonia florida* - *Olneya tesota* Desert Wash Scrub Alliance



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Figure 4

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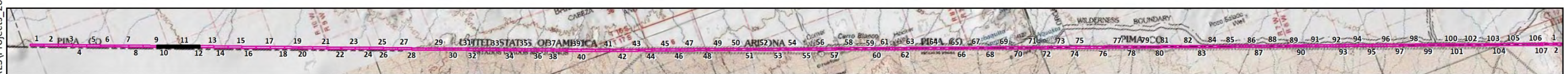
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SEGMENT 1A-11

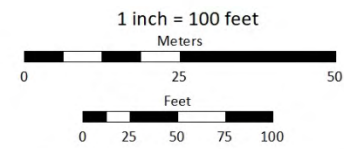


SEGMENT 1A-12



KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Larrea tridentata* - *Ambrosia dumosa* Bajada and Valley Desert Scrub Alliance
-  Mixed Desert Scrub
-  *Parkinsonia florida* - *Olneya tesota* Desert Wash Scrub Alliance



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SEGMENT 1A

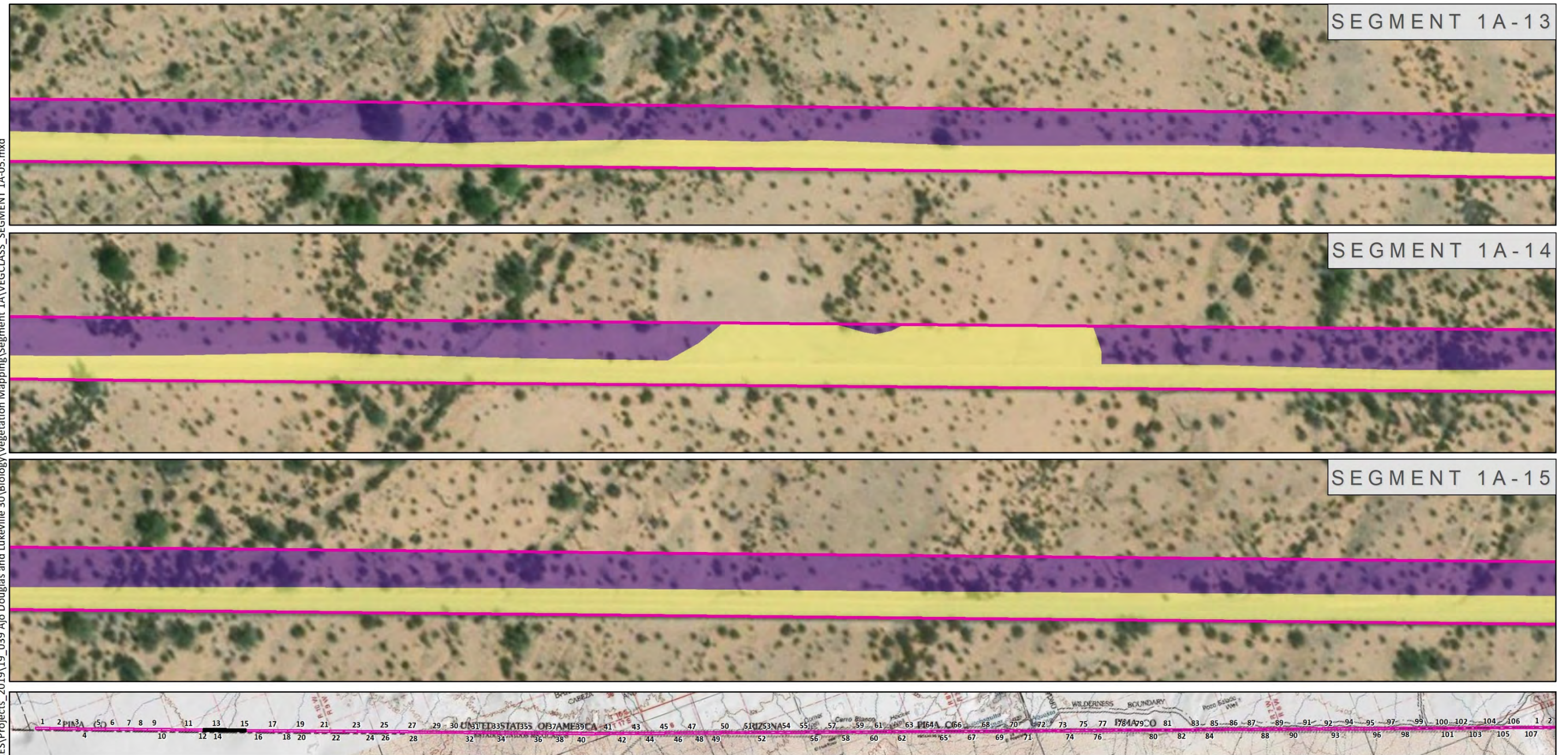
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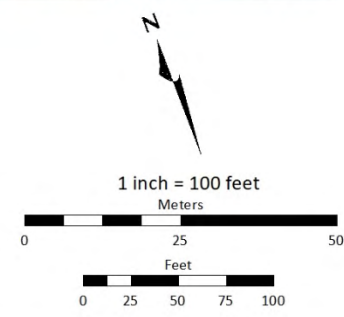
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KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  Mixed Desert Scrub



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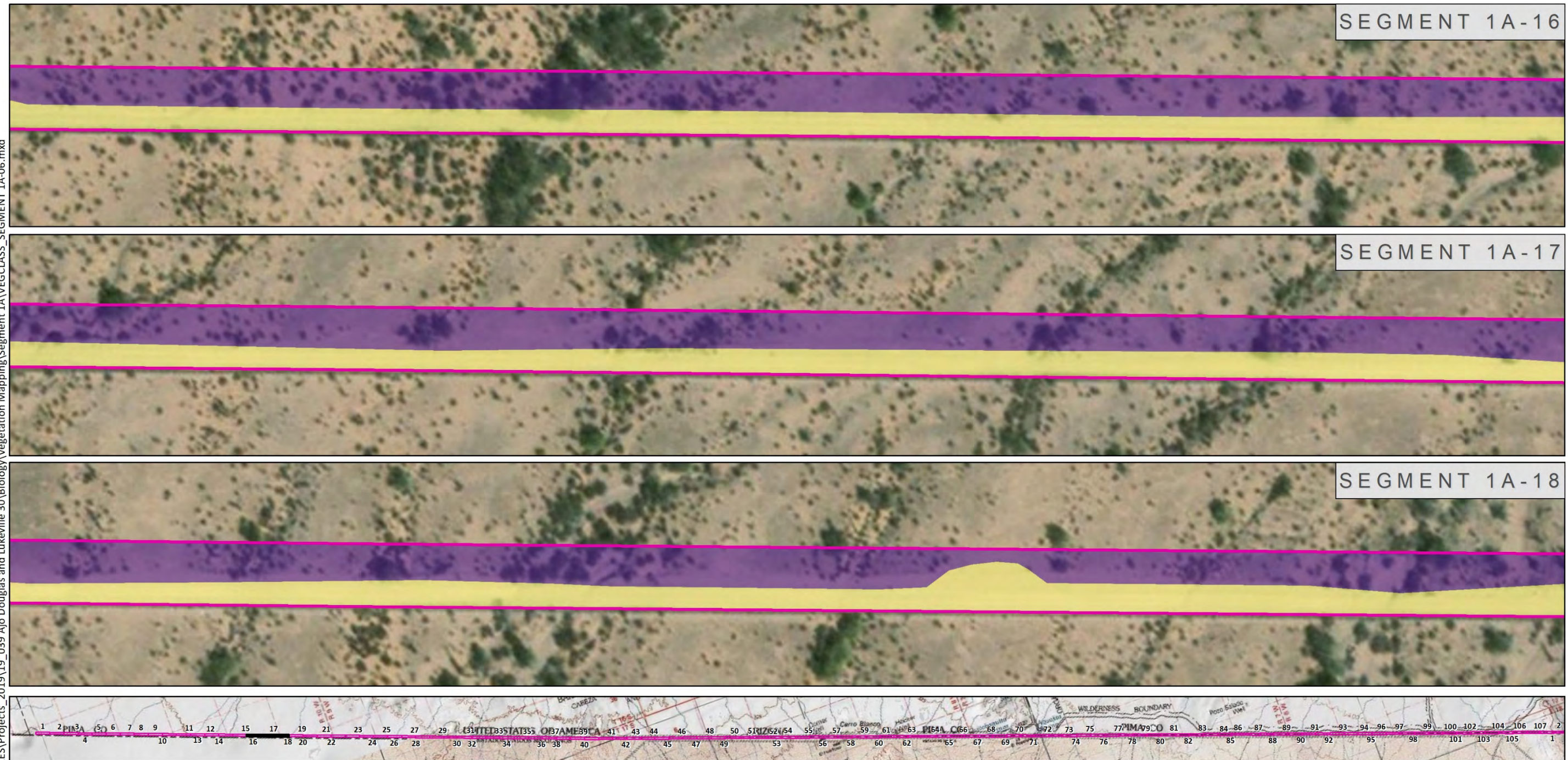
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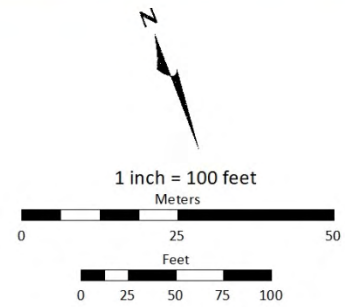
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SEGMENT 1A-17

SEGMENT 1A-18

KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  Mixed Desert Scrub



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SEGMENT 1A**

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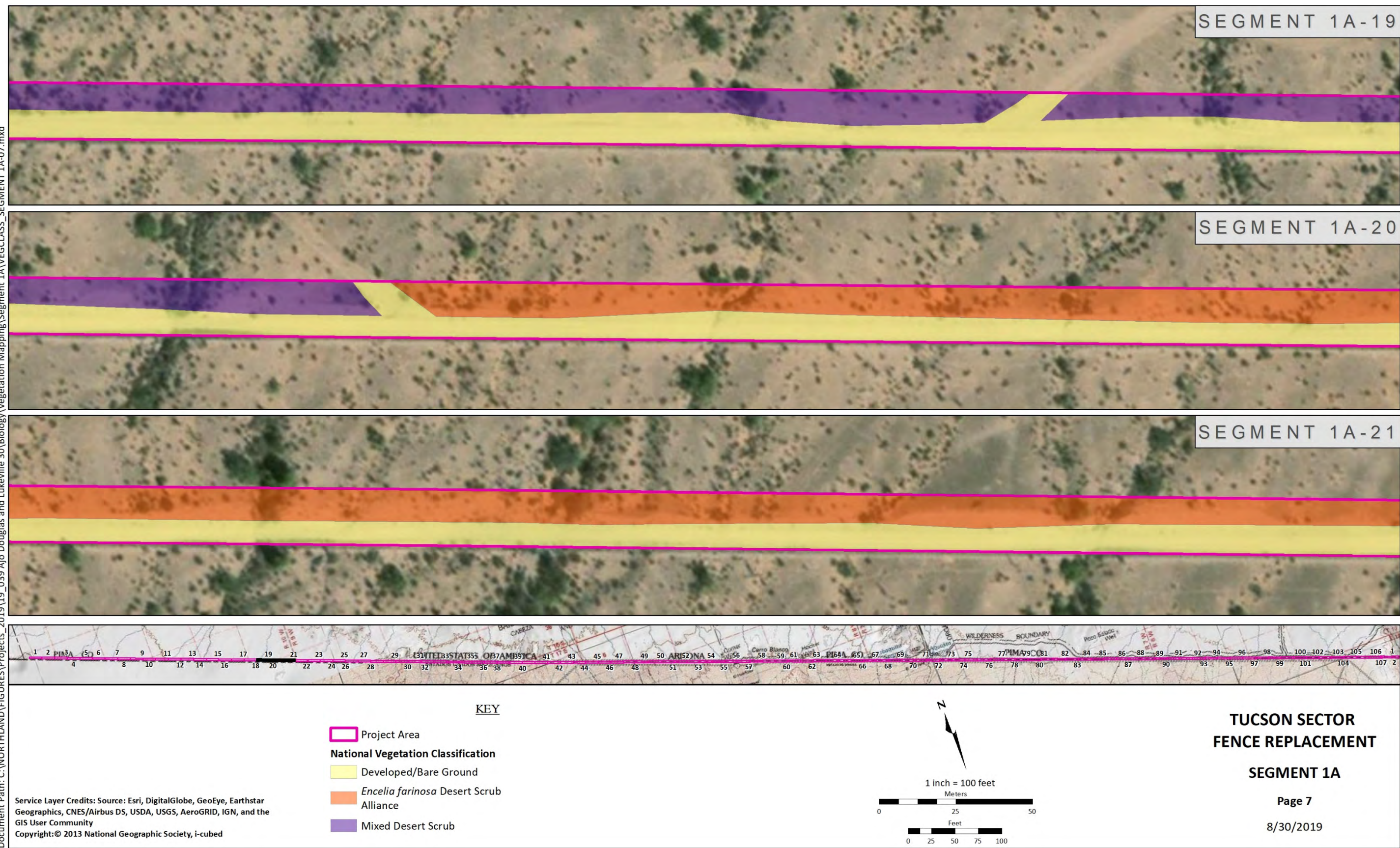


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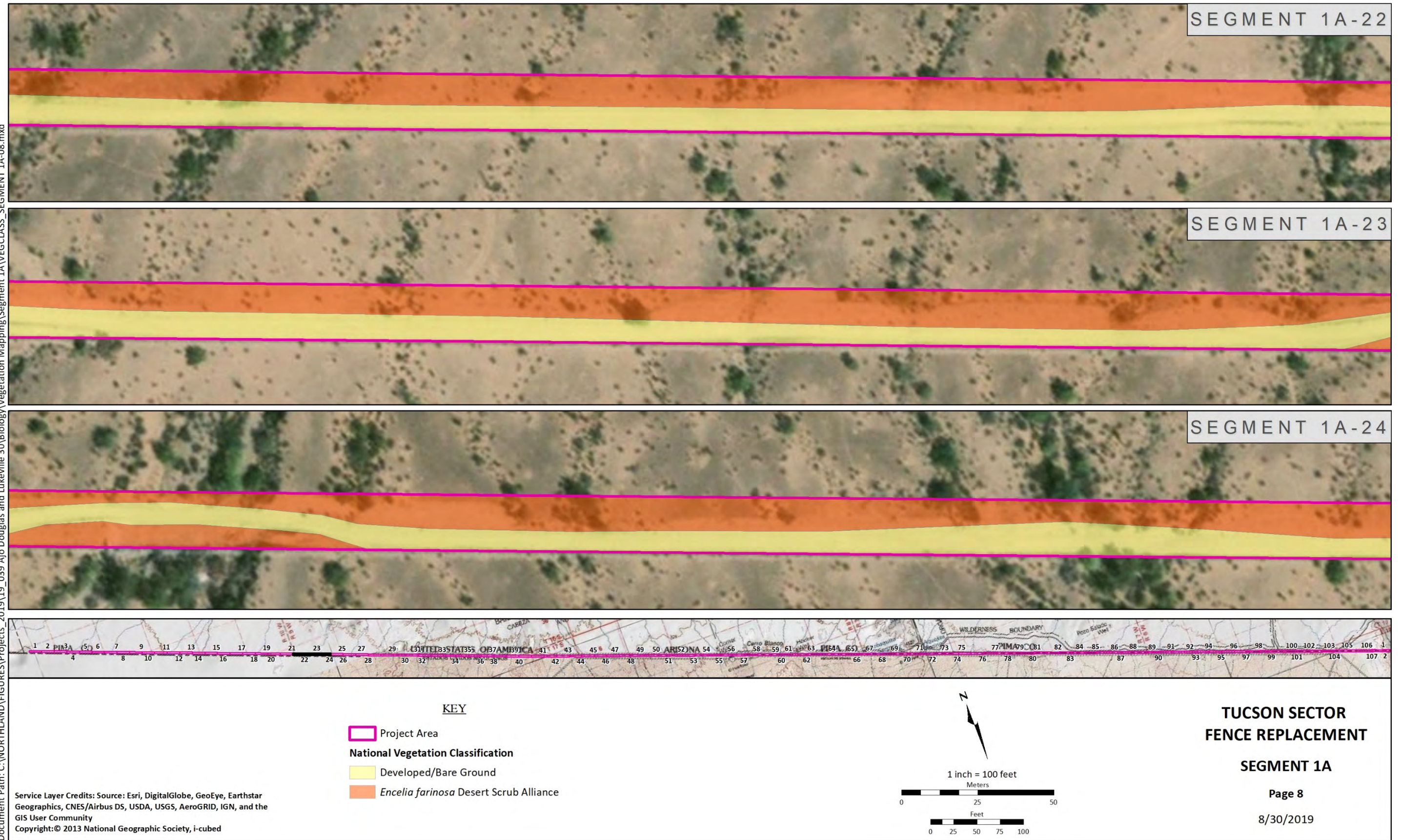
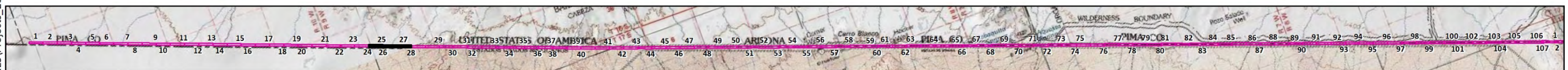


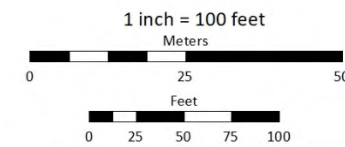
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KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Encelia farinosa* Desert Scrub Alliance



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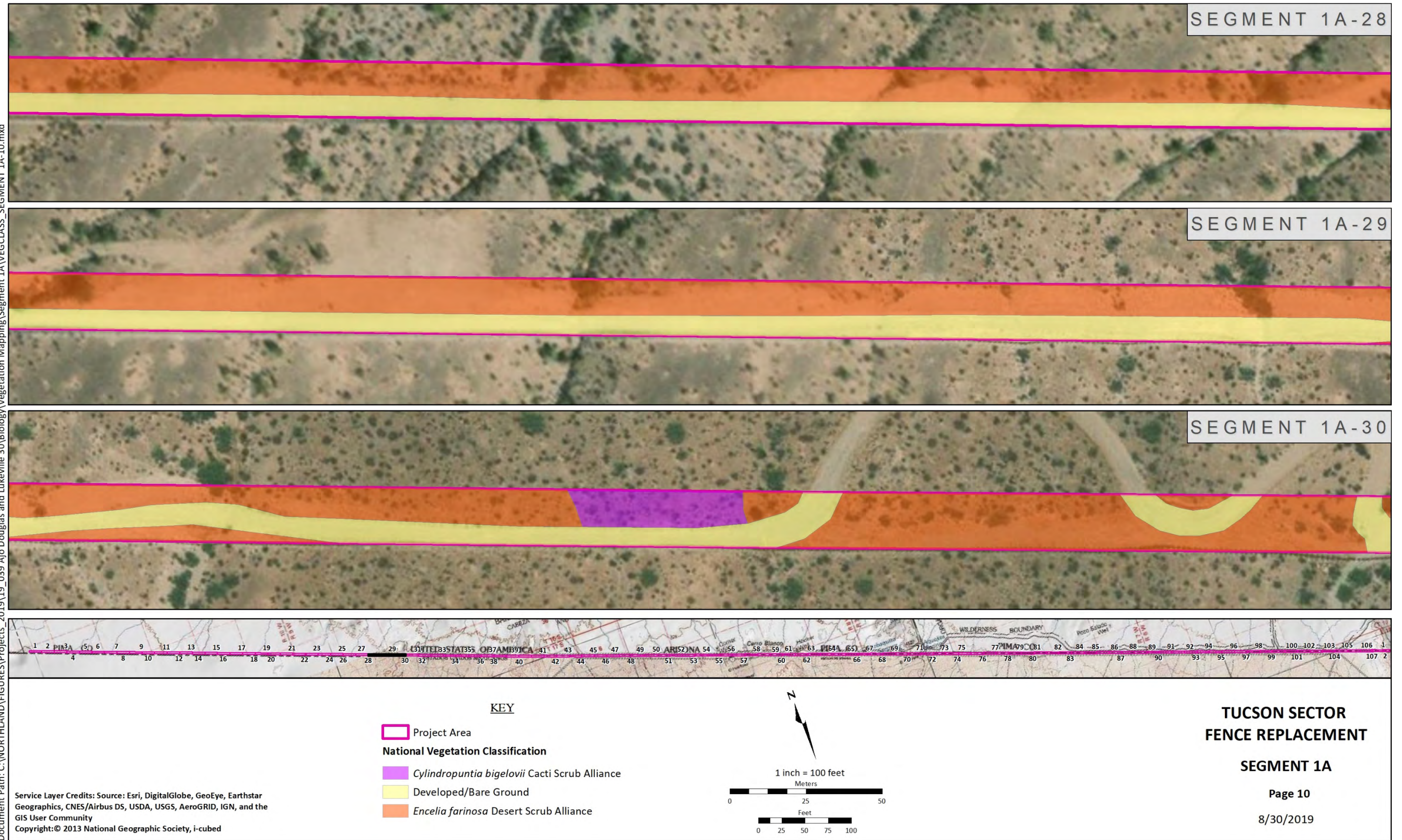


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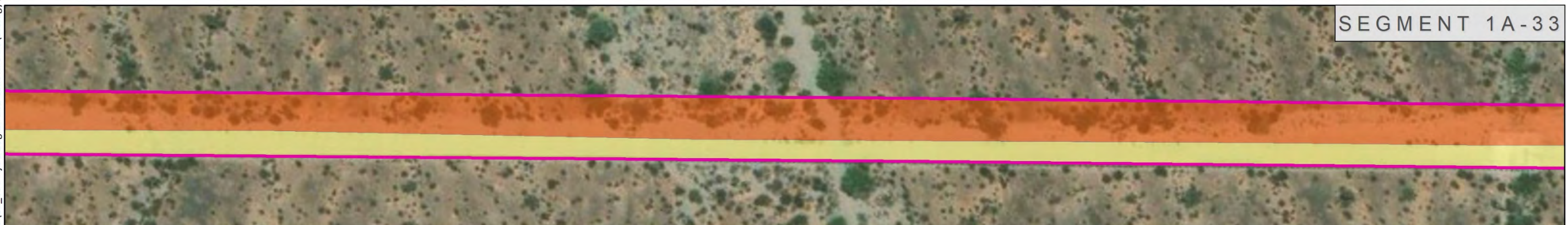
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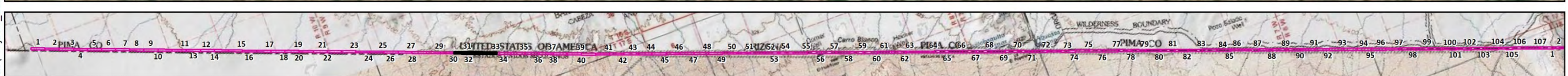
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SEGMENT 1A-32

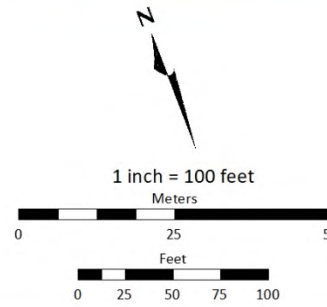


SEGMENT 1A-33



KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Encelia farinosa* Desert Scrub Alliance



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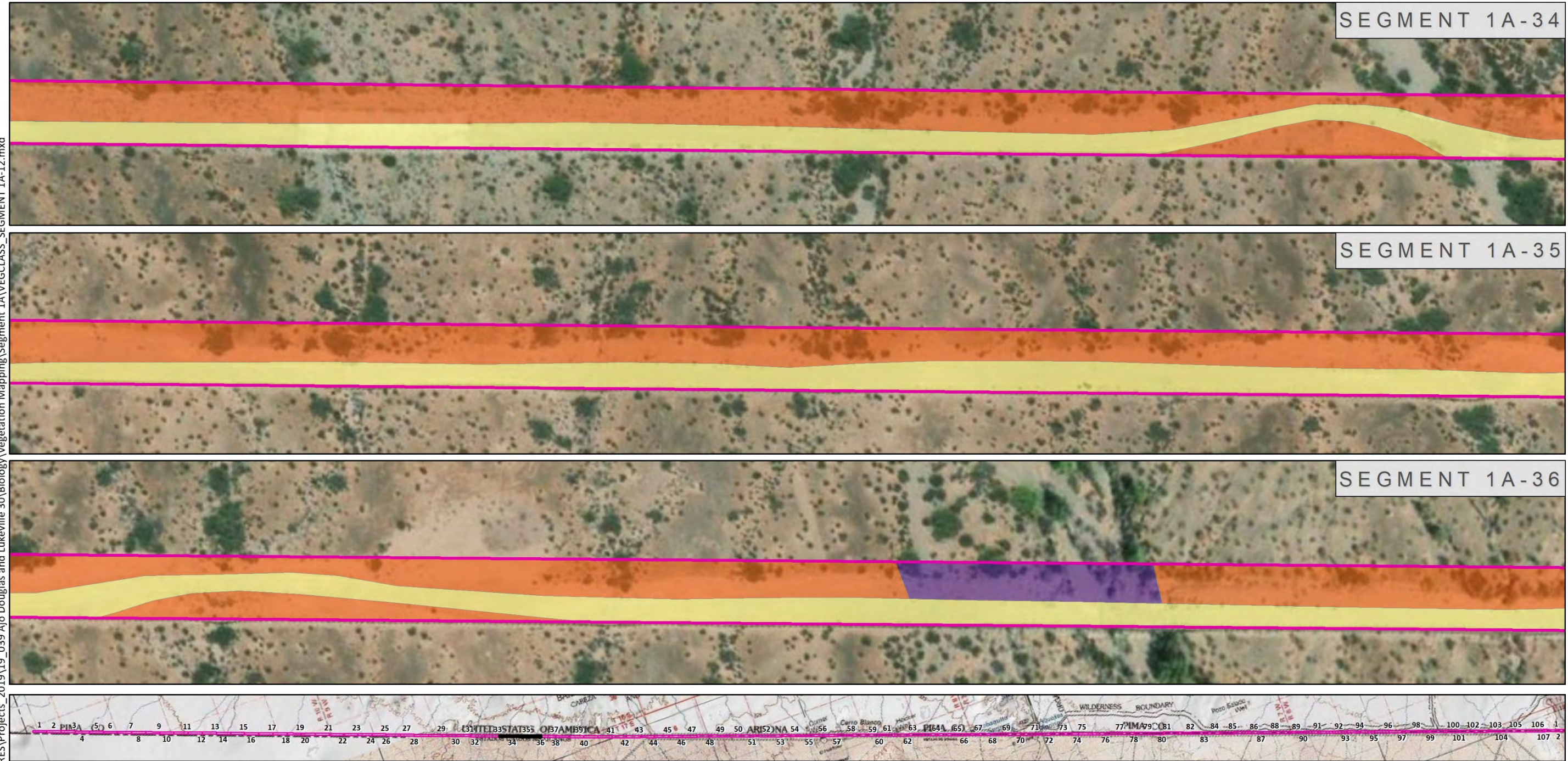
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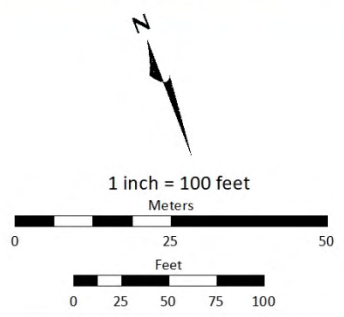
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KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Encelia farinosa* Desert Scrub Alliance
-  Mixed Desert Scrub



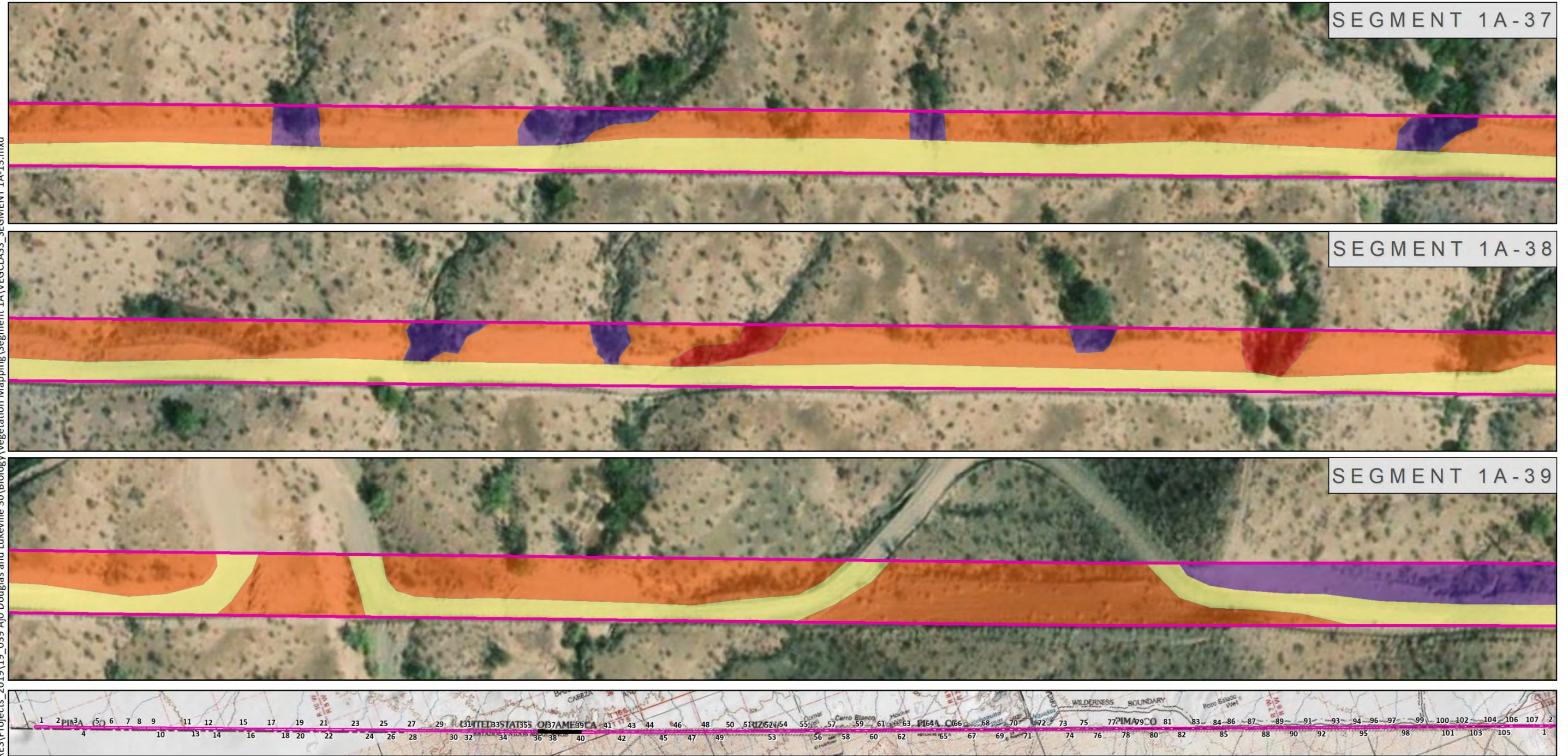
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KEY

- Project Area
- Encelia farinosa* Desert Scrub Alliance
- Mixed Desert Scrub
- Developed/Bare Ground
- Parkinsonia florida* - *Olneya tesota* Desert Wash Scrub Alliance

N

1 inch = 100 feet

Meters

0 25 50

Feet

0 25 50 75 100

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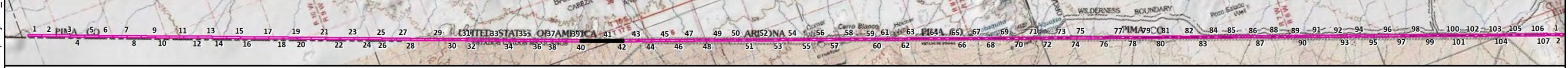
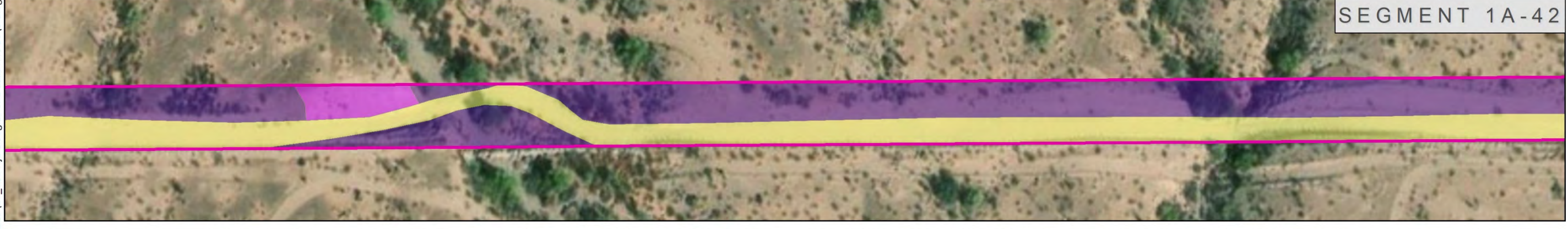
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Figure 4

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KEY

- Project Area
- National Vegetation Classification**
- Cylindropuntia bigelovii* Cacti Scrub Alliance
- Developed/Bare Ground
- Mixed Desert Scrub
- Parkinsonia florida* - *Olneya tesota* Desert Wash Scrub Alliance

N

1 inch = 100 feet

Meters

0 25 50

Feet

0 25 50 75 100

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


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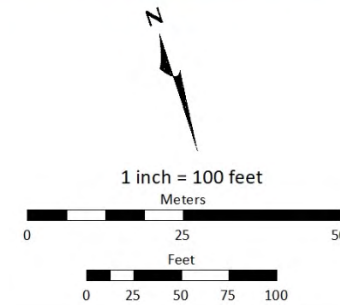
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KEY	
	Project Area
National Vegetation Classification	
	<i>Cylindropuntia bigelovii</i> Cacti Scrub Alliance
	Developed/Bare Ground
	<i>Encelia farinosa</i> Desert Scrub Alliance
	Mixed Desert Scrub



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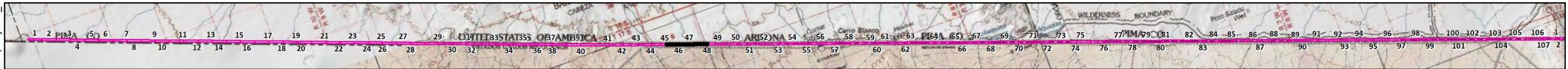
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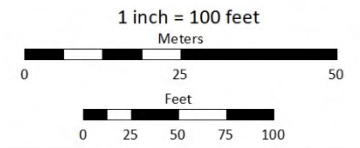


SEGMENT 1A-48



KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Encelia farinosa* Desert Scrub Alliance
-  Mixed Desert Scrub



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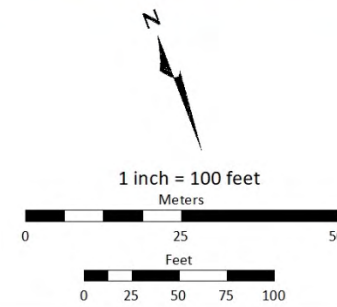
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KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Encelia farinosa* Desert Scrub Alliance
-  Mixed Desert Scrub



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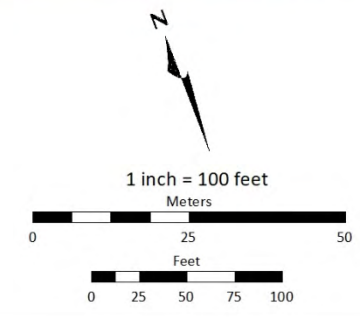
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KEY	
	Project Area
National Vegetation Classification	
	Developed/Bare Ground
	<i>Encelia farinosa</i> Desert Scrub Alliance
	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> Bajada and Valley Desert Scrub Alliance
	Mixed Desert Scrub
	<i>Parkinsonia florida</i> - <i>Olneya tesota</i> Desert Wash Scrub Alliance



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FENCE REPLACEMENT**

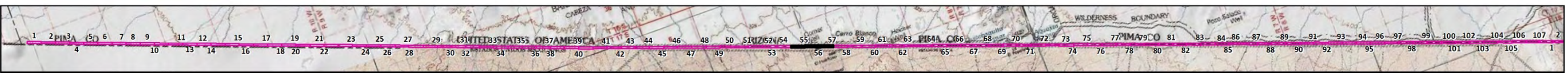
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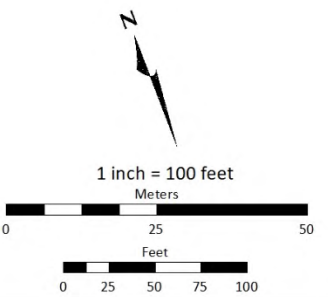
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Figure 4

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<u>KEY</u>	
<p> Project Area</p> <p>National Vegetation Classification</p> <p> Developed/Bare Ground</p>	<p> Mixed Desert Scrub</p> <p> <i>Parkinsonia florida</i> - <i>Olneya tesota</i> Desert Wash Scrub Alliance</p>



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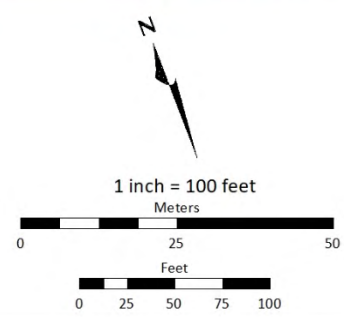


SEGMENT 1A-58

SEGMENT 1A-59

SEGMENT 1A-60

- KEY**
- Project Area
 - National Vegetation Classification**
 - Developed/Bare Ground
 - Larrea tridentata* - *Ambrosia dumosa* Bajada and Valley Desert Scrub Alliance
 - Mixed Desert Scrub
 - Parkinsonia florida* - *Olneya tesota* Desert Wash Scrub Alliance



**TUCSON SECTOR
FENCE REPLACEMENT**

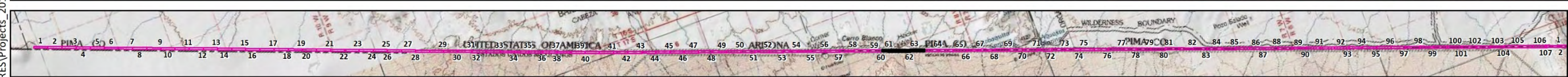
SEGMENT 1A

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Figure 4



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KEY

Project Area	Mixed Desert Scrub
National Vegetation Classification	<i>Parkinsonia florida</i> - <i>Olneya tesota</i> Desert Wash Scrub Alliance
Developed/Bare Ground	<i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance
<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> Bajada and Valley Desert Scrub Alliance	

1 inch = 100 feet
Meters
0 25 50
Feet
0 25 50 75 100

**TUCSON SECTOR
FENCE REPLACEMENT**

SEGMENT 1A

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Figure 4

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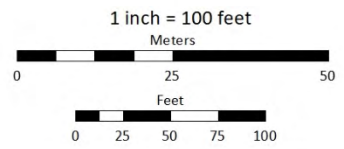
SEGMENT 1A-64

SEGMENT 1A-65

SEGMENT 1A-66

KEY

- | | |
|---|--|
| Project Area | Mixed Desert Scrub |
| National Vegetation Classification | <i>Parkinsonia florida</i> - <i>Olneya tesota</i>
Desert Wash Scrub Alliance |
| Developed/Bare Ground | <i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance |
| <i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> Bajada and Valley Desert Scrub Alliance | |



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FENCE REPLACEMENT**

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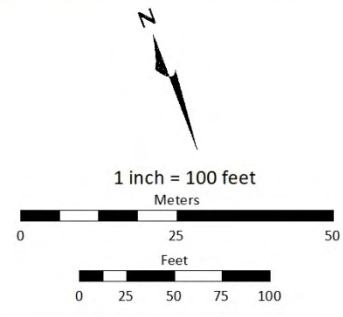
Figure 4

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KEY

Project Area	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> Bajada and Valley Desert Scrub Alliance
National Vegetation Classification	Mixed Desert Scrub
Developed/Bare Ground	<i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance



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Figure 4

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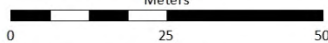


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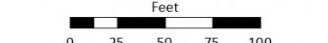
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National Vegetation Classification	
 Developed/Bare Ground	 Mixed Desert Scrub
	 <i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance

1 inch = 100 feet


Meters



Feet



N



**TUCSON SECTOR
FENCE REPLACEMENT**

SEGMENT 1A

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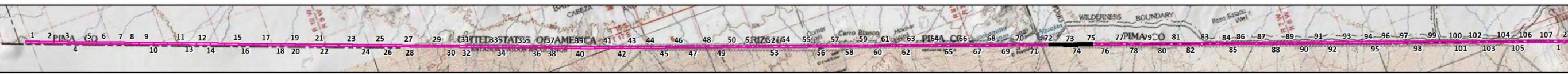
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SEGMENT 1A-73

SEGMENT 1A-74

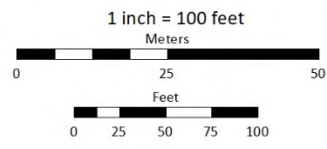
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KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
-  *Parkinsonia florida* - *Olneya tesota*
Desert Wash Scrub Alliance



**TUCSON SECTOR
FENCE REPLACEMENT**

SEGMENT 1A

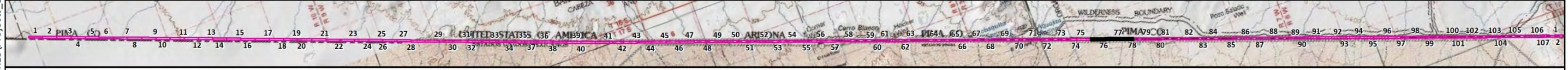
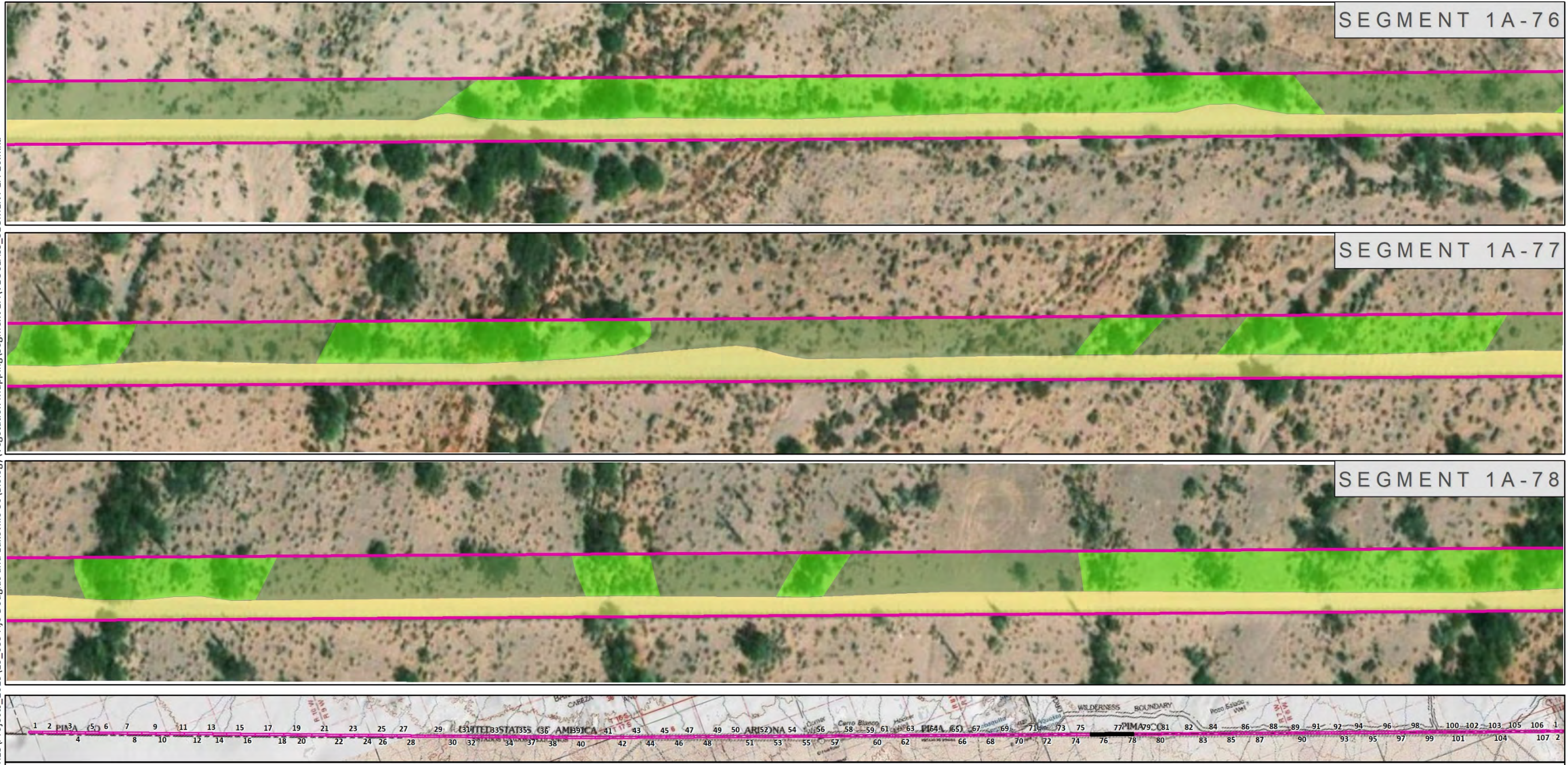
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Figure 4

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KEY

Project Area	<i>Parkinsonia florida</i> - <i>Olneya tesota</i> Desert Wash Scrub Alliance
National Vegetation Classification	<i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance
Developed/Bare Ground	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> Bajada and Valley Desert Scrub Alliance

1 inch = 100 feet

**TUCSON SECTOR
FENCE REPLACEMENT**

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Figure 4

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SEGMENT 1A-79



SEGMENT 1A-80



SEGMENT 1A-81



KEY

Project Area	<i>Parkinsonia florida</i> - <i>Olneya tesota</i> Desert Wash Scrub Alliance
National Vegetation Classification	<i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance
Developed/Bare Ground	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> Bajada and Valley Desert Scrub Alliance

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FENCE REPLACEMENT**

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1 inch = 100 feet

Meters

Feet

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SEGMENT 1A-82







SEGMENT 1A-83

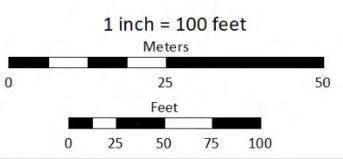


SEGMENT 1A-84



KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
-  *Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance



**TUCSON SECTOR
FENCE REPLACEMENT**

SEGMENT 1A

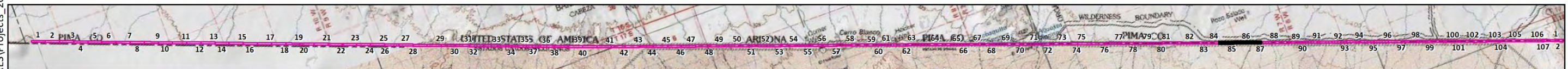
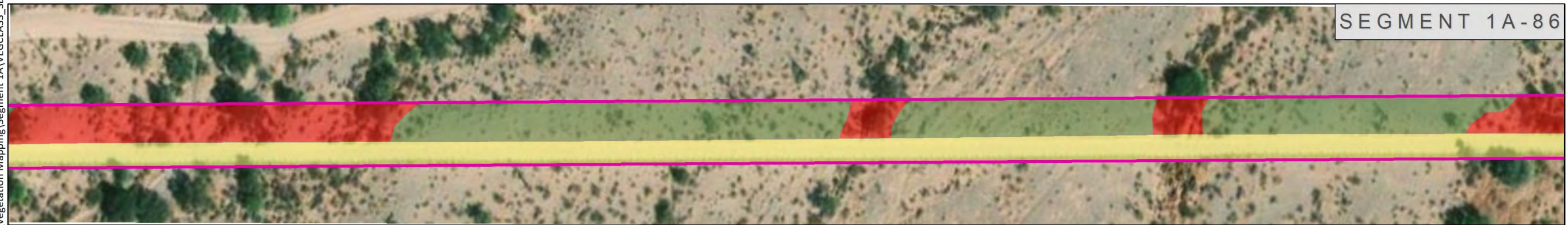
Page 28

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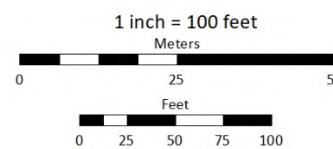
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KEY

- Project Area
- National Vegetation Classification**
- Developed/Bare Ground
- Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
- Parkinsonia florida* - *Olneya tesota*
Desert Wash Scrub Alliance



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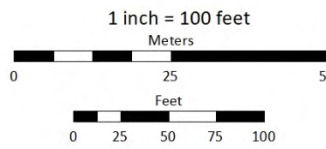
SEGMENT 1A-88

SEGMENT 1A-89

SEGMENT 1A-90

KEY

- Project Area
- National Vegetation Classification**
- Developed/Bare Ground
- Parkinsonia florida* - *Olneya tesota*
Desert Wash Scrub Alliance
- Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
- Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance



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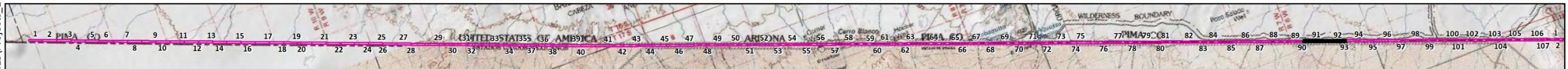
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SEGMENT 1A-92



SEGMENT 1A-93




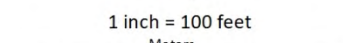
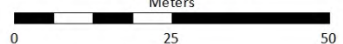
<p>Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Copyright:© 2013 National Geographic Society, i-cubed</p>	<p>KEY</p> <p> Project Area</p> <p>National Vegetation Classification</p> <p> Developed/Bare Ground</p> <p> <i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> Bajada and Valley Desert Scrub Alliance</p>	<p> <i>Parkinsonia florida</i> - <i>Olneya tesota</i> Desert Wash Scrub Alliance</p> <p> <i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance</p>	 <p>1 inch = 100 feet</p> <p>Meters</p>  <p>0 25 50</p> <p>Feet</p>  <p>0 25 50 75 100</p>	<p>TUCSON SECTOR FENCE REPLACEMENT</p> <p>SEGMENT 1A</p> <p>Page 31</p> <p>8/28/2019</p>
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Figure 4

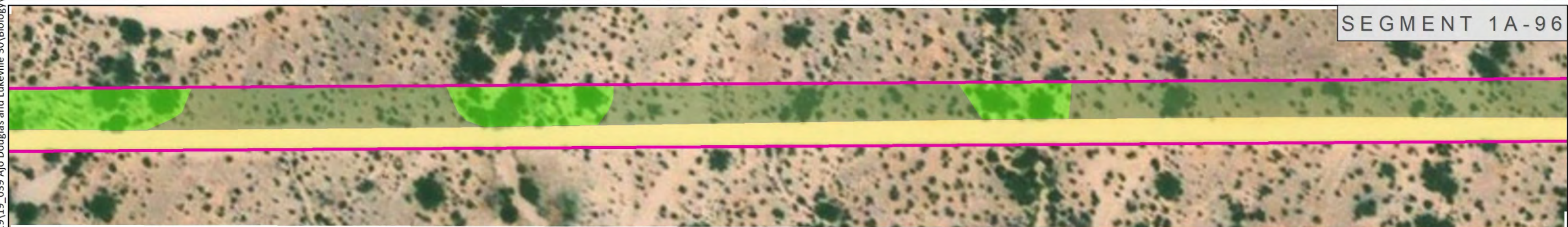
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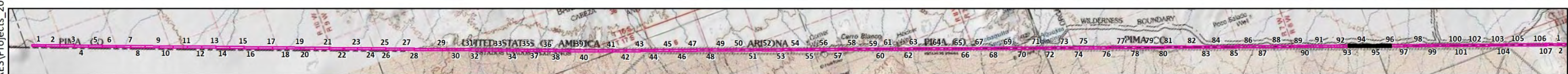
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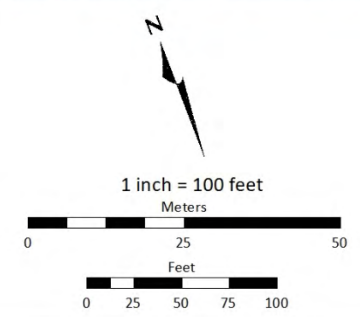
SEGMENT 1A-95



SEGMENT 1A-96



- KEY**
- Project Area
 - Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
 - National Vegetation Classification
Developed/Bare Ground
 - Mixed Desert Scrub
 - Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance



**TUCSON SECTOR
FENCE REPLACEMENT**

SEGMENT 1A

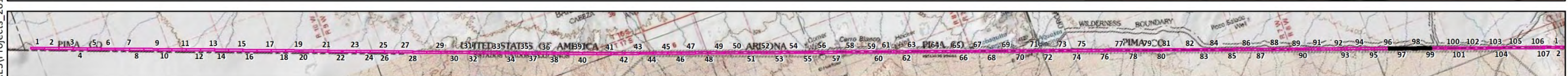
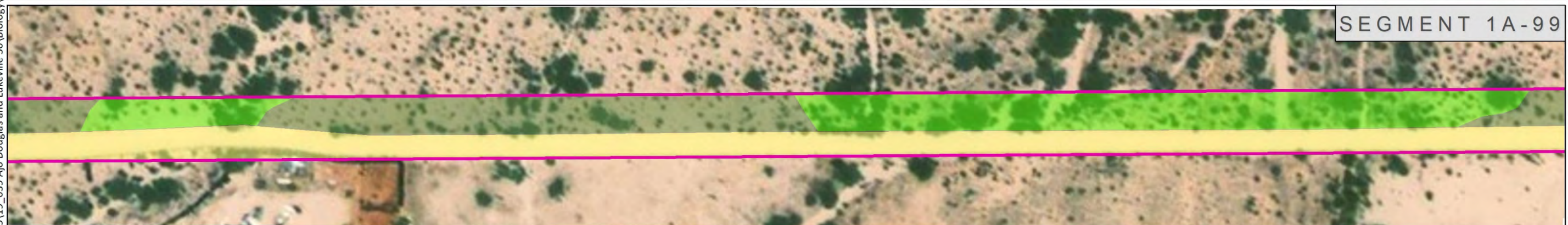
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KEY


-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
-  *Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance

Scale

1 inch = 100 feet

Meters: 0 25 50

Feet: 0 25 50 75 100



**TUCSON SECTOR
FENCE REPLACEMENT**

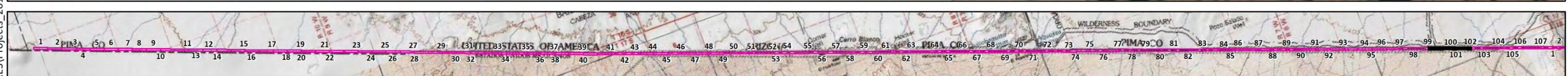
SEGMENT 1A

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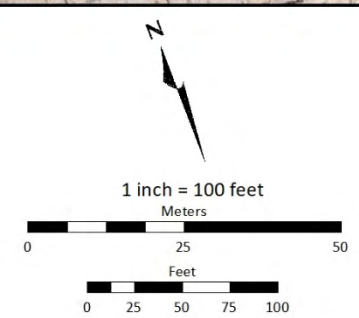
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Figure 4

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- KEY**
- Project Area
 - National Vegetation Classification**
 - Developed/Bare Ground
 - Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
 - Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance



**TUCSON SECTOR
FENCE REPLACEMENT
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Figure 4

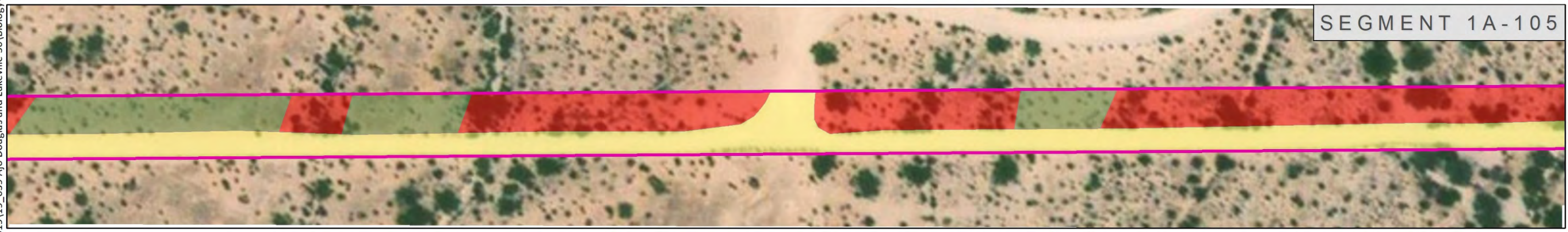
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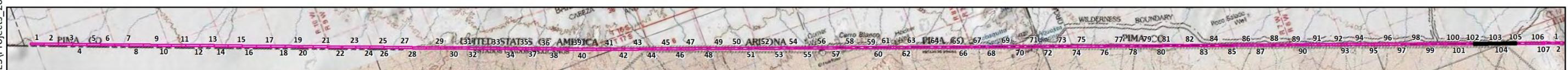
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SEGMENT 1A-104

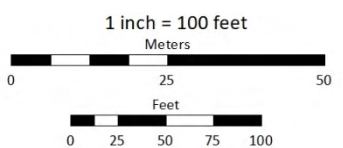


SEGMENT 1A-105



KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
-  *Parkinsonia florida* - *Olneya tesota*
Desert Wash Scrub Alliance



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FENCE REPLACEMENT**

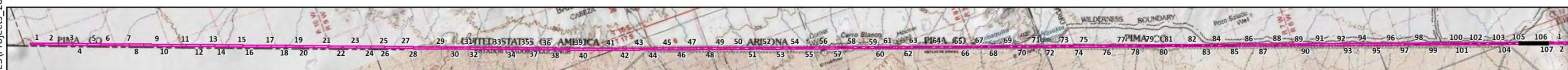
SEGMENT 1A

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Figure 4

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KEY

- Project Area
- National Vegetation Classification**
- Developed/Bare Ground
- Larrea tridentata* - *Ambrosia dumosa* Bajada and Valley Desert Scrub Alliance
- Parkinsonia florida* - *Olneya tesota* Desert Wash Scrub Alliance

N

1 inch = 100 feet

Meters

Feet

**TUCSON SECTOR
FENCE REPLACEMENT**

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Figure 4

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Figure 4

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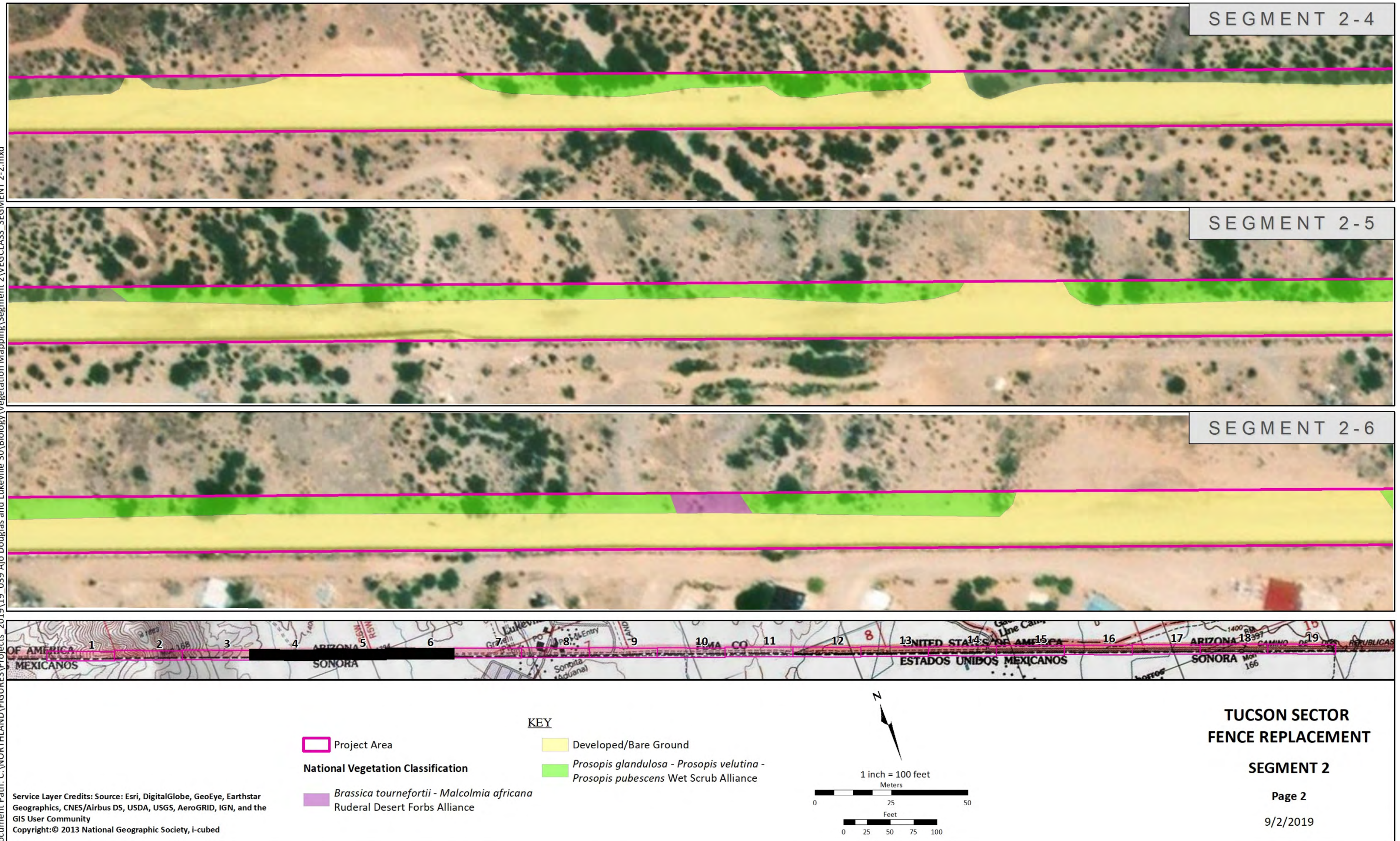


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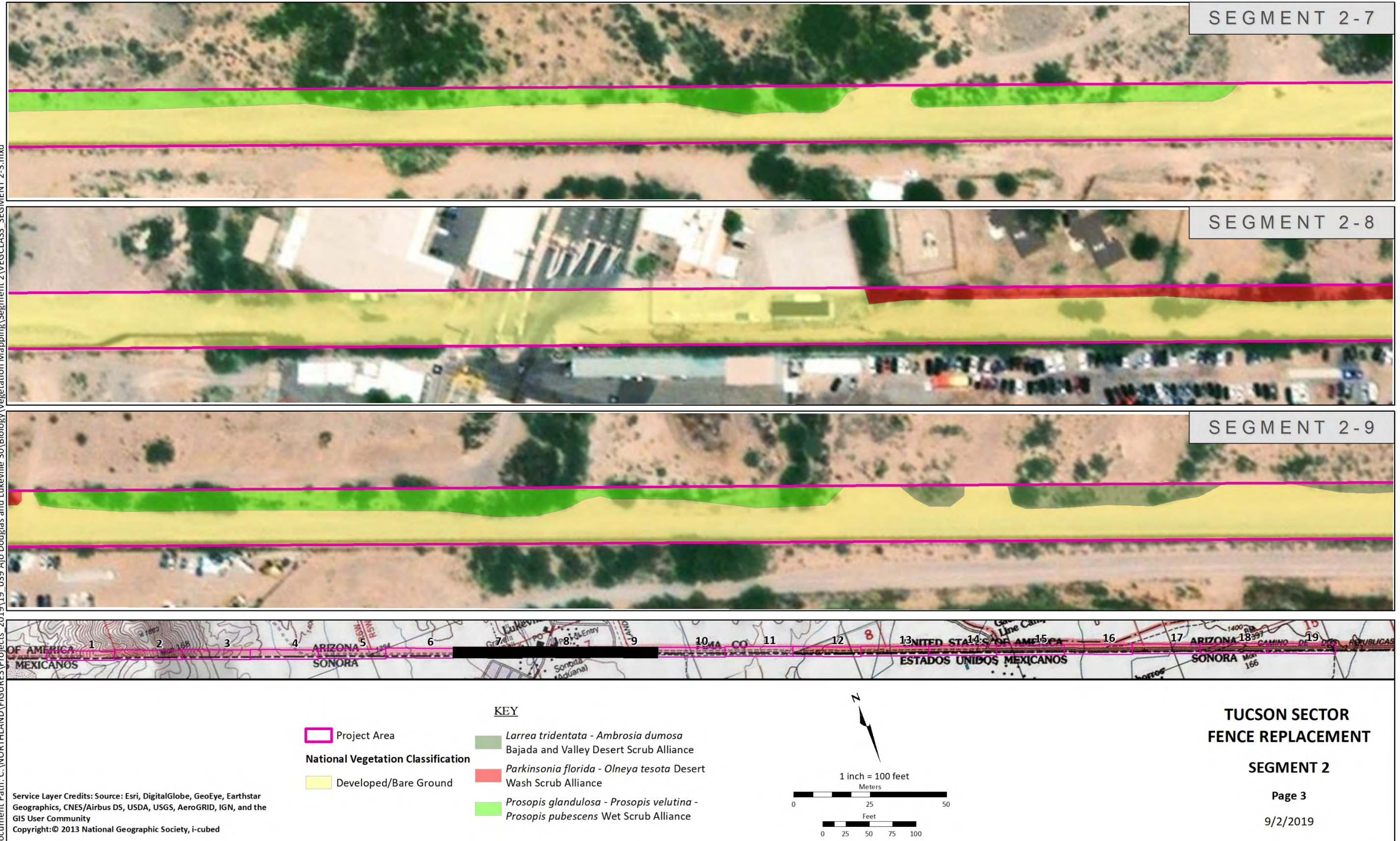
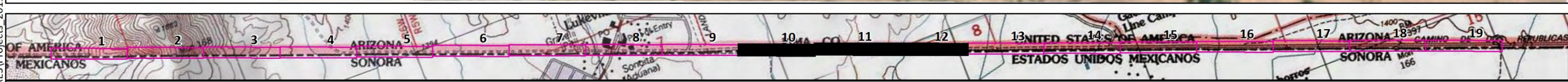
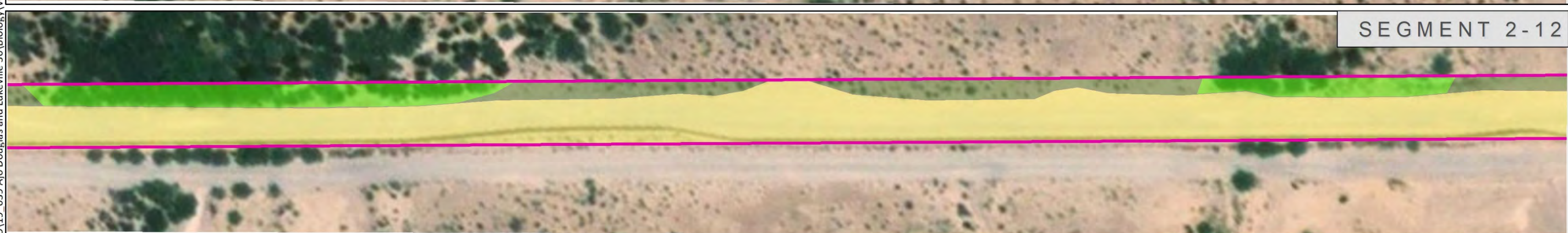
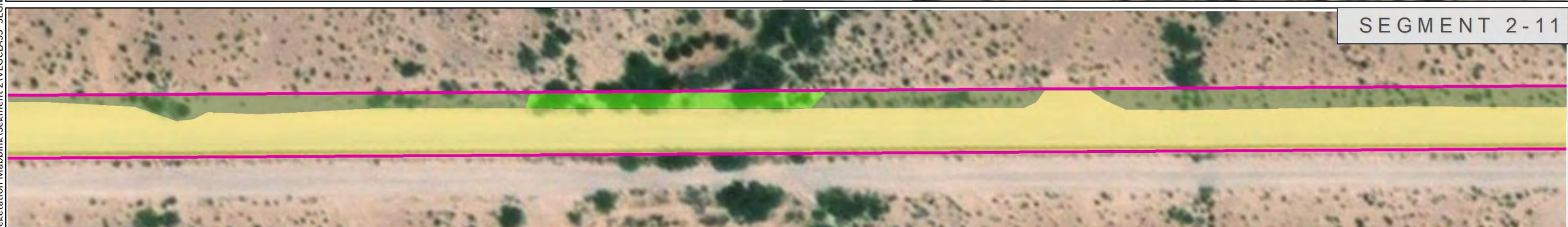
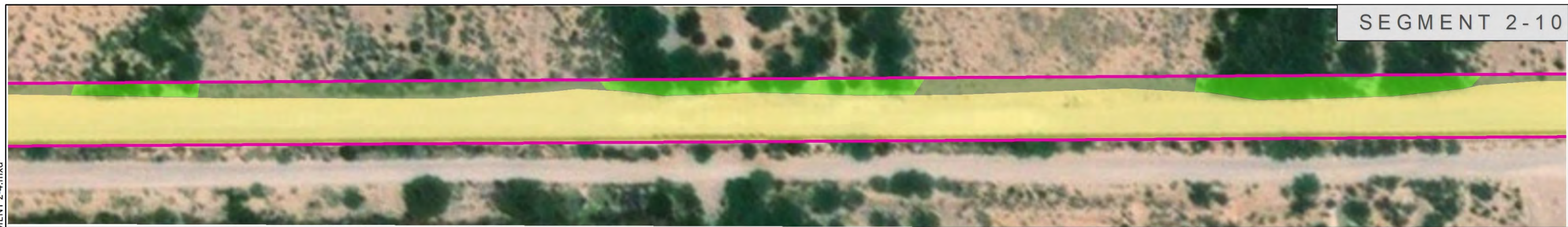




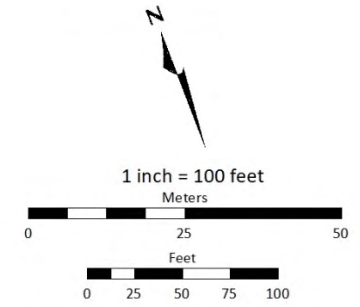


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- KEY**
-  Project Area
 - National Vegetation Classification**
 -  Developed/Bare Ground
 -  *Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
 -  *Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance



TUCSON SECTOR FENCE REPLACEMENT

SEGMENT 2

Page 4

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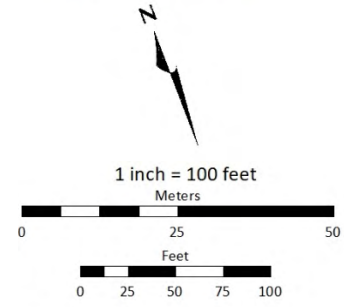
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Figure 4

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- KEY**
- Project Area
 - Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
 - National Vegetation Classification
Developed/Bare Ground
 - Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance



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SEGMENT 2

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Figure 4

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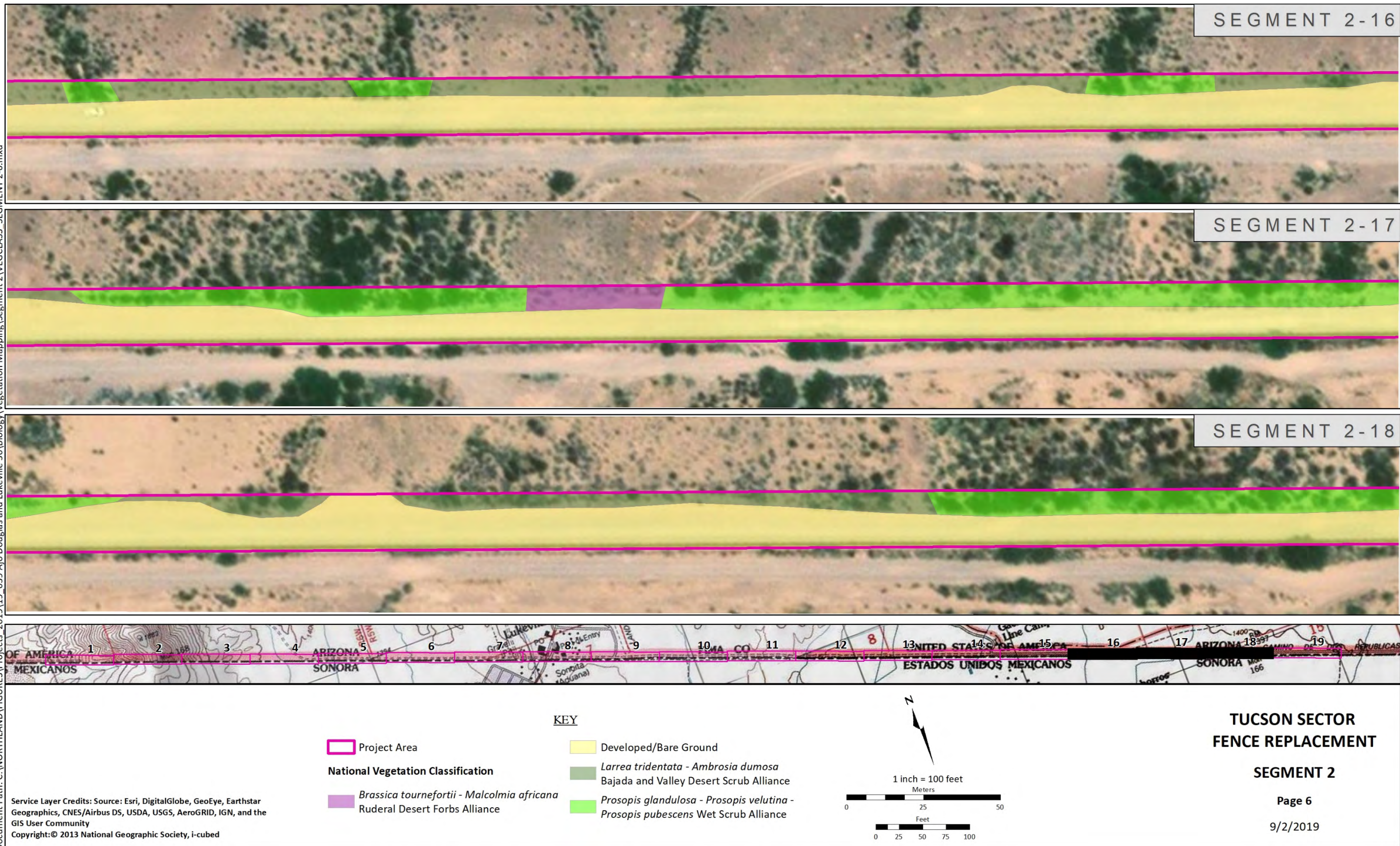
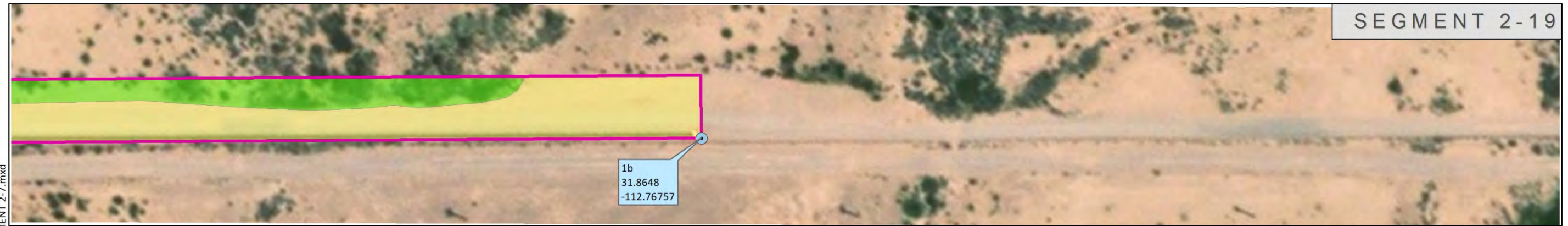
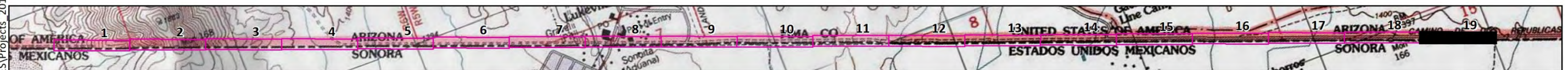


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SEGMENT 2-19



KEY

Project Area	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> Bajada and Valley Desert Scrub Alliance
National Vegetation Classification	<i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance
Developed/Bare Ground	

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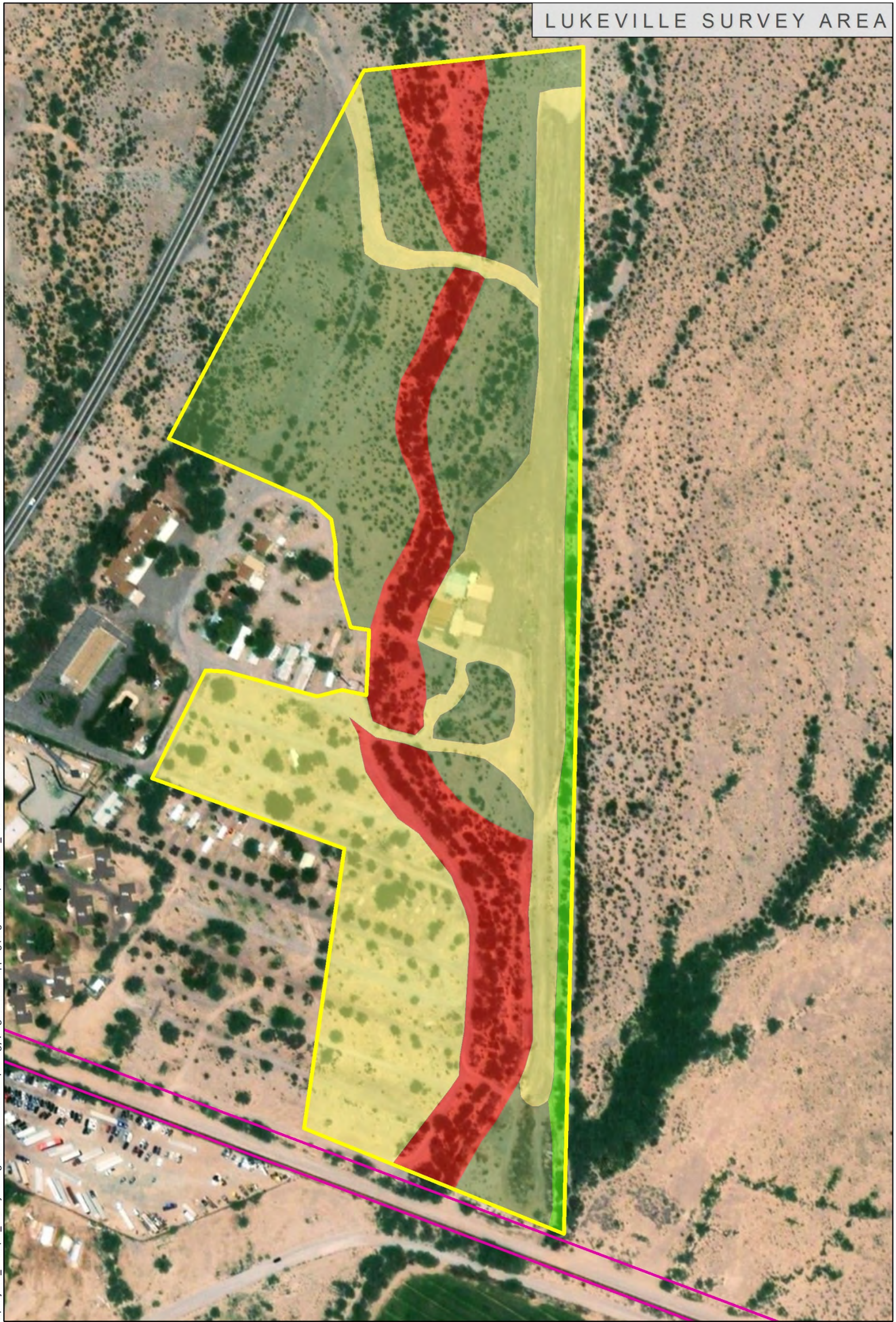
SEGMENT 2

Page 7








9/23/2019

Figure 4

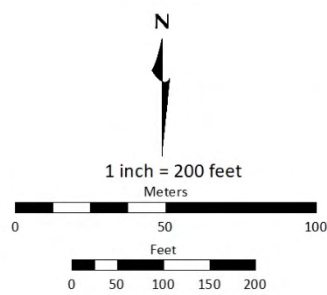
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LUKEVILLE SURVEY AREA

- | | | | | |
|---|-----------------------|------------|---|--|
|  | Lukeville Survey Area | KEY |  | <i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> |
|  | Project Area | |  | Bajada and Valley Desert Scrub Alliance |
| National Vegetation Classification | | |  | <i>Parkinsonia florida</i> - <i>Olneya tesota</i> Desert Wash Scrub Alliance |
|  | Developed/Bare Ground | |  | <i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance |

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LUKEVILLE

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Figure 5

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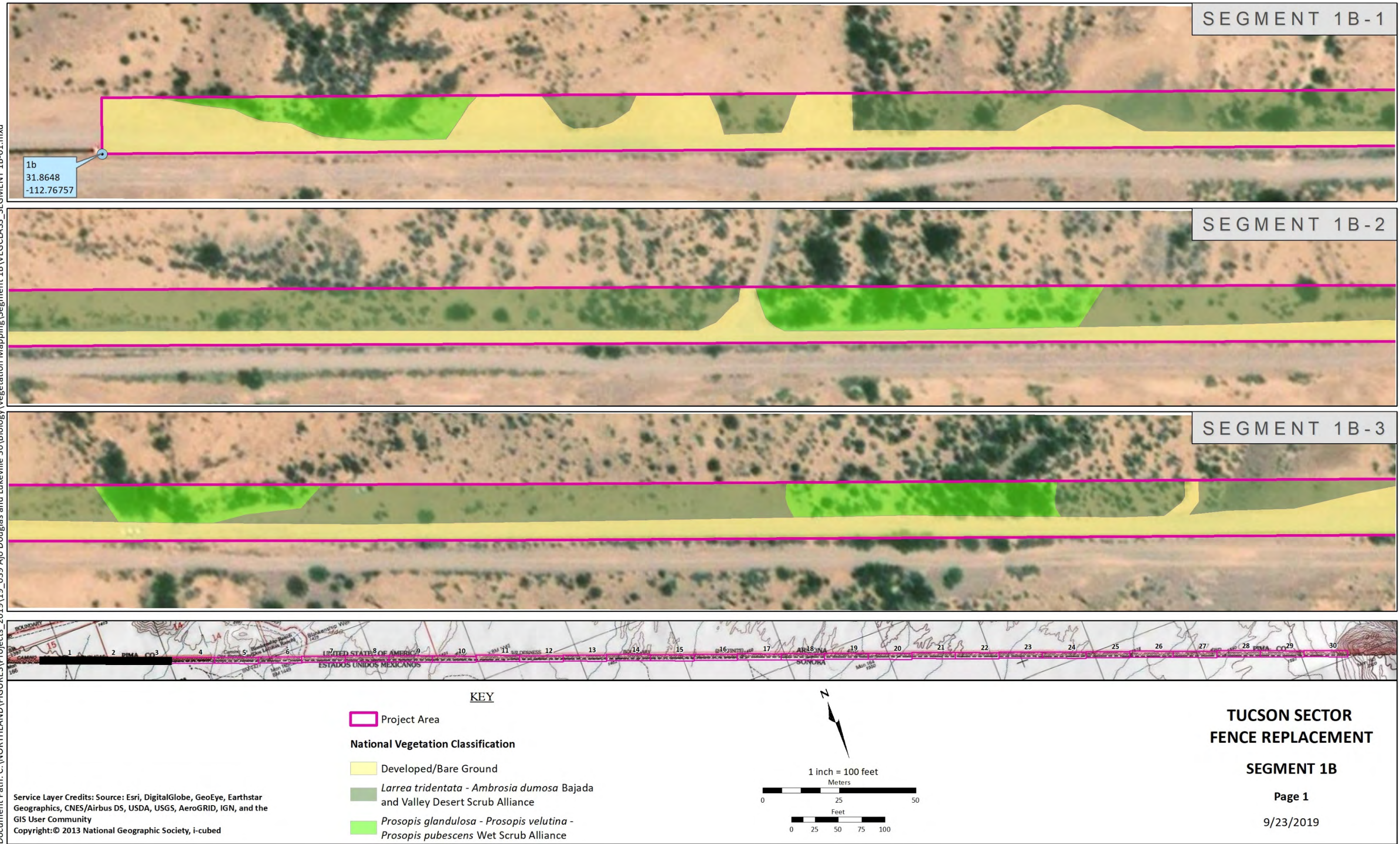






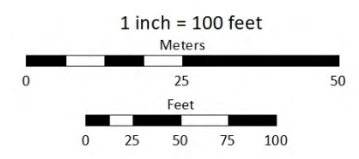
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KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
-  *Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance



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SEGMENT 1B

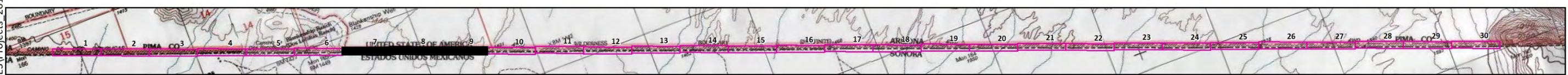
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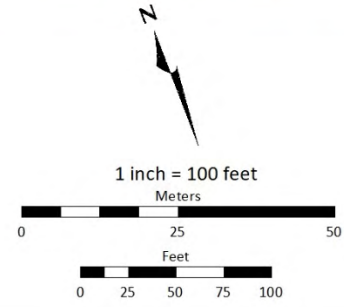
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- KEY**
- Project Area
 - National Vegetation Classification
 - Developed/Bare Ground
 - Larrea tridentata* - *Ambrosia dumosa* Bajada and Valley Desert Scrub Alliance
 - Prosopis glandulosa* - *Prosopis velutina* - *Prosopis pubescens* Wet Scrub Alliance



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SEGMENT 1B

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Figure 4

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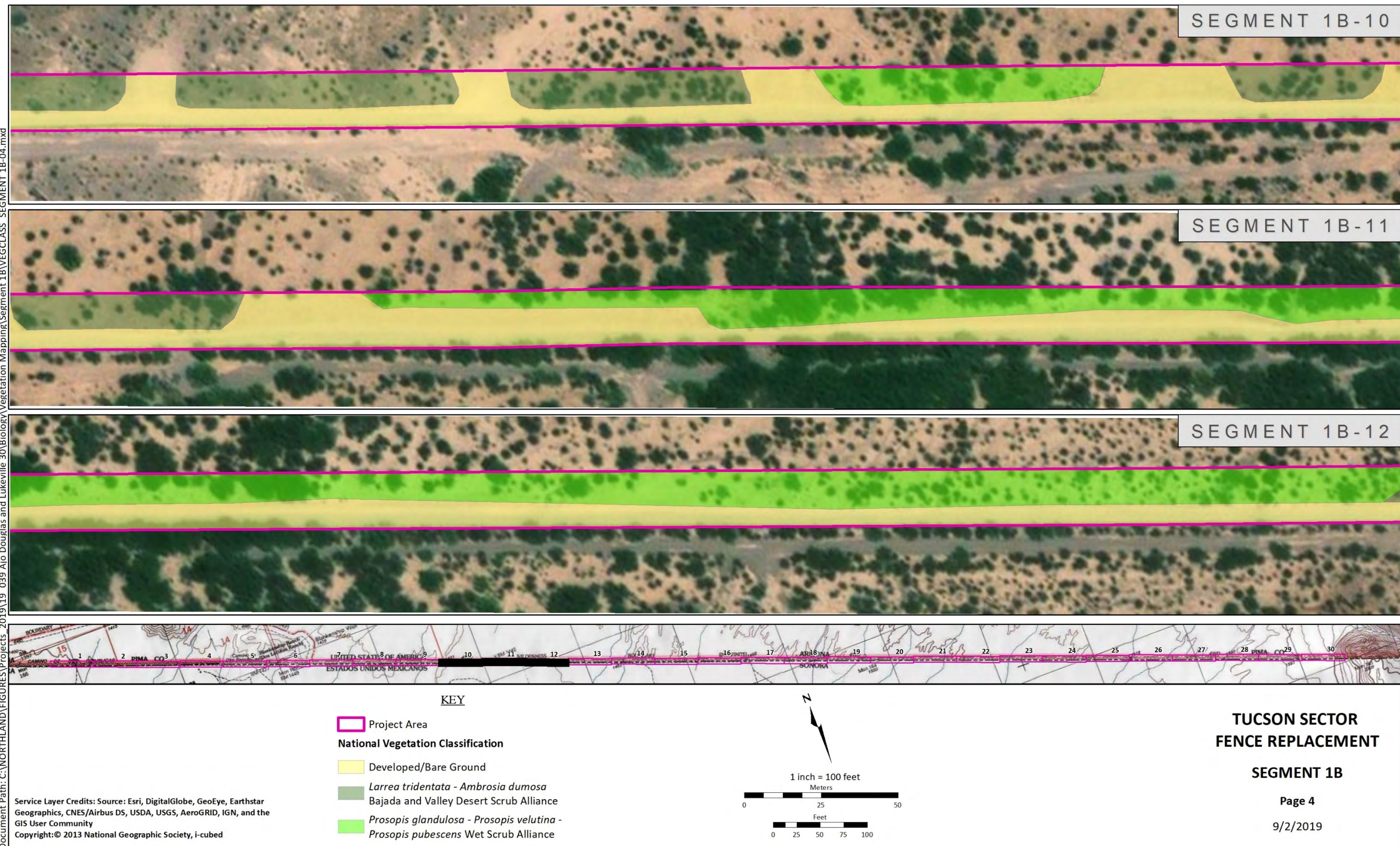


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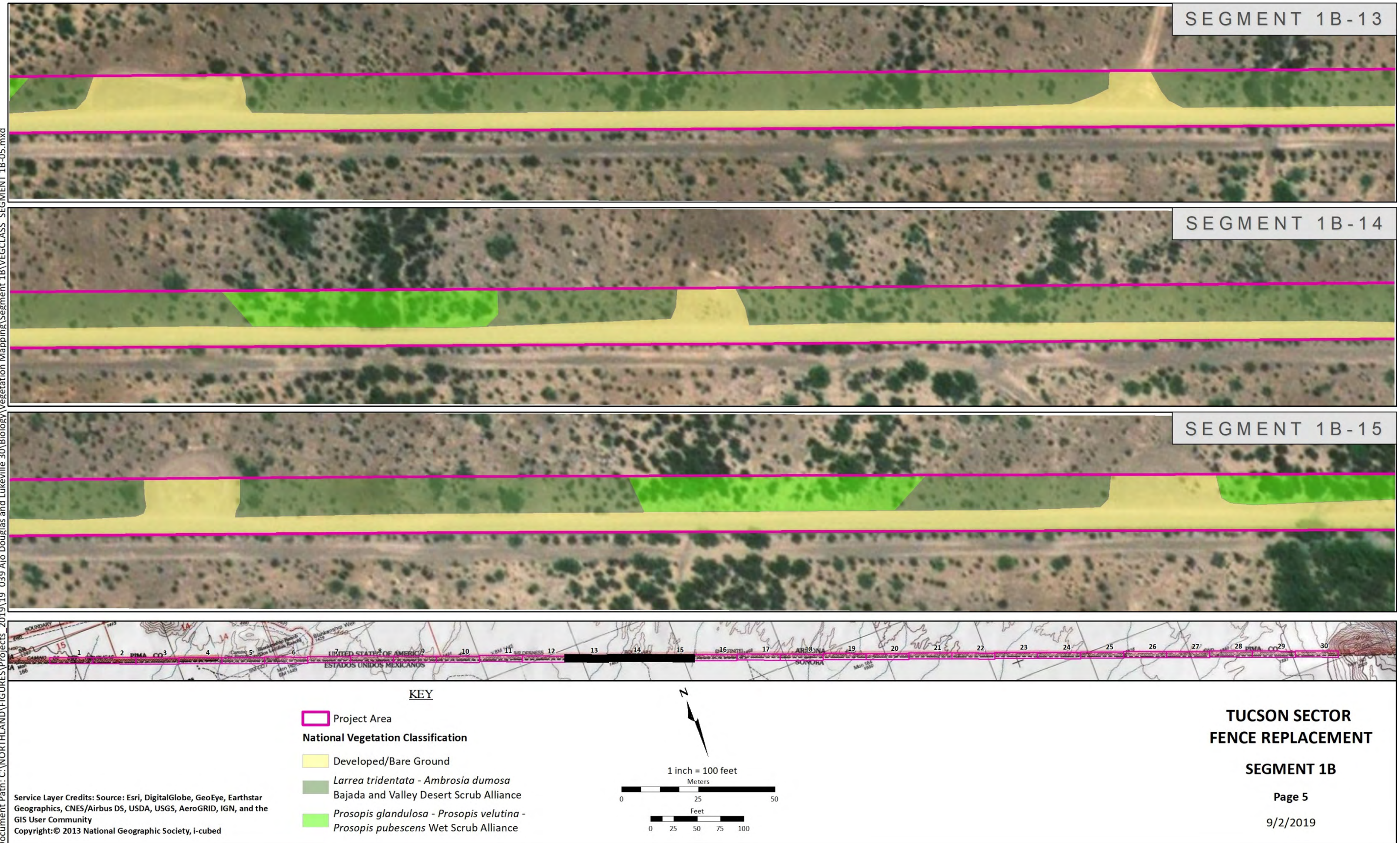
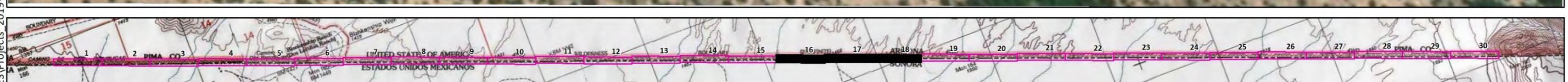
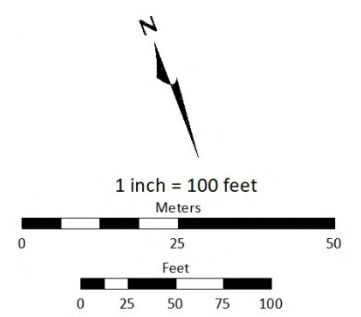


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- KEY**
- Project Area
 - National Vegetation Classification**
 - Developed/Bare Ground
 - Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
 - Parkinsonia florida* - *Olneya tesota*
Desert Wash Scrub Alliance
 - Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance



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SEGMENT 1B

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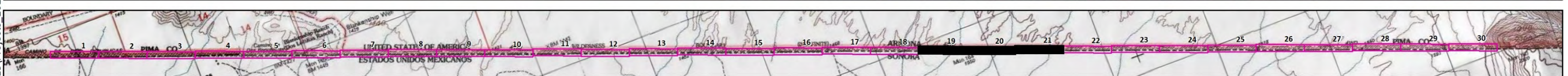
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


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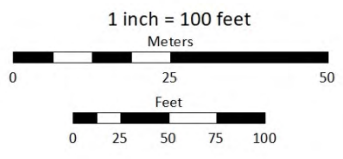


SEGMENT 1B-21



KEY

-  Project Area
- National Vegetation Classification**
-  Developed/Bare Ground
-  *Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
-  *Prosopis glandulosa* - *Prosopis velutina* -
Prosopis pubescens Wet Scrub Alliance



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SEGMENT 1B

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Figure 4

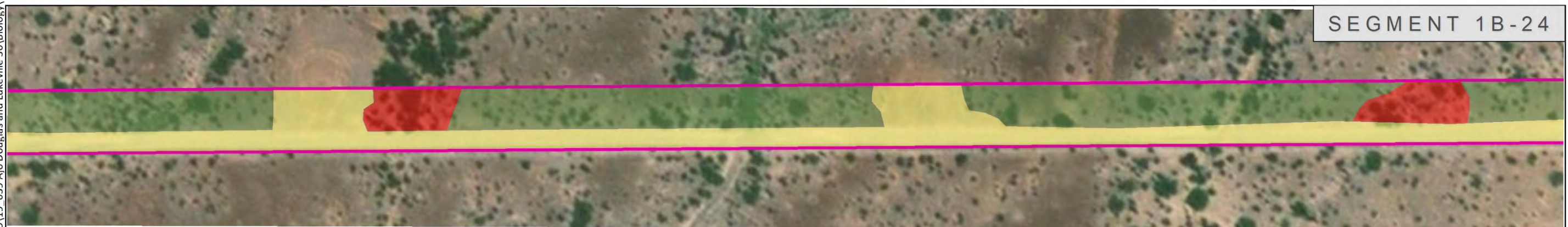
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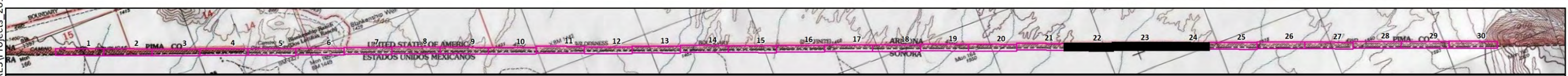
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SEGMENT 1B-23

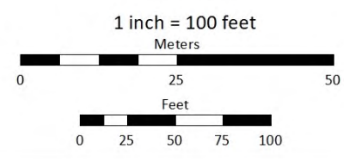


SEGMENT 1B-24



KEY

- Project Area
- National Vegetation Classification**
- Developed/Bare Ground
- Larrea tridentata - Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
- Parkinsonia florida - Olneya tesota* Desert
Wash Scrub Alliance
- Prosopis glandulosa - Prosopis velutina -
Prosopis pubescens* Wet Scrub Alliance



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SEGMENT 1B**

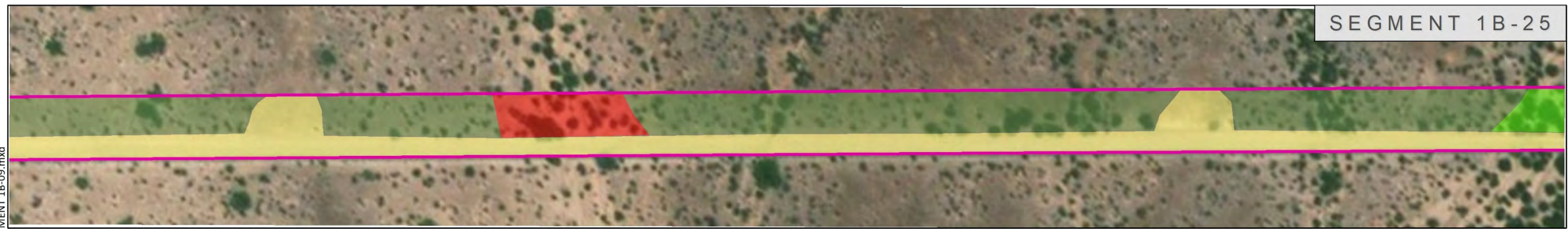
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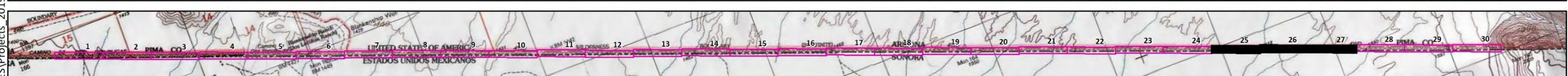
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SEGMENT 1B-26

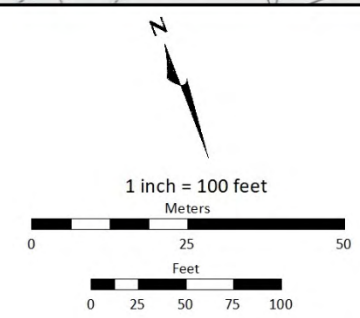


SEGMENT 1B-27



KEY

- Project Area
- National Vegetation Classification**
- Developed/Bare Ground
- Larrea tridentata* - *Ambrosia dumosa*
Bajada and Valley Desert Scrub Alliance
- Parkinsonia florida* - *Olneya tesota*
Desert Wash Scrub Alliance
- Prosopis glandulosa* - *Prosopis velutina* - *Prosopis pubescens* Wet Scrub Alliance



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SEGMENT 1B

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Figure 4

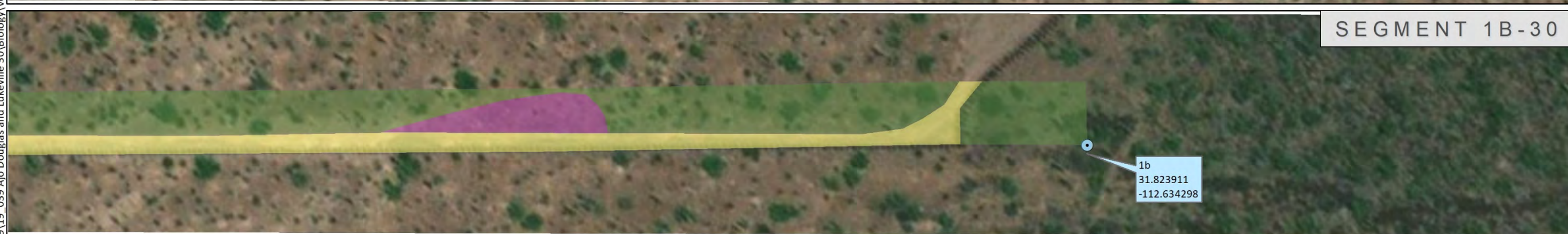
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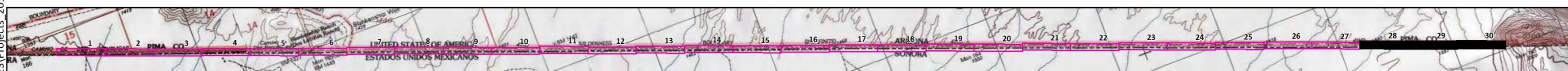


SEGMENT 1B-29



SEGMENT 1B-30

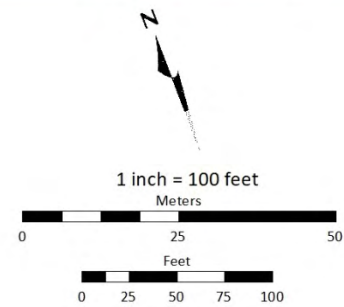
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KEY

Project Area	<i>Larrea tridentata</i> - <i>Ambrosia dumosa</i> Bajada and Valley Desert Scrub Alliance	<i>Prosopis glandulosa</i> - <i>Prosopis velutina</i> - <i>Prosopis pubescens</i> Wet Scrub Alliance
<i>Brassica tournefortii</i> - <i>Malcolmia africana</i> Ruderal Desert Forbs Alliance	<i>Parkinsonia florida</i> - <i>Olneya tesota</i> Desert Wash Scrub Alliance	
Developed/Bare Ground		

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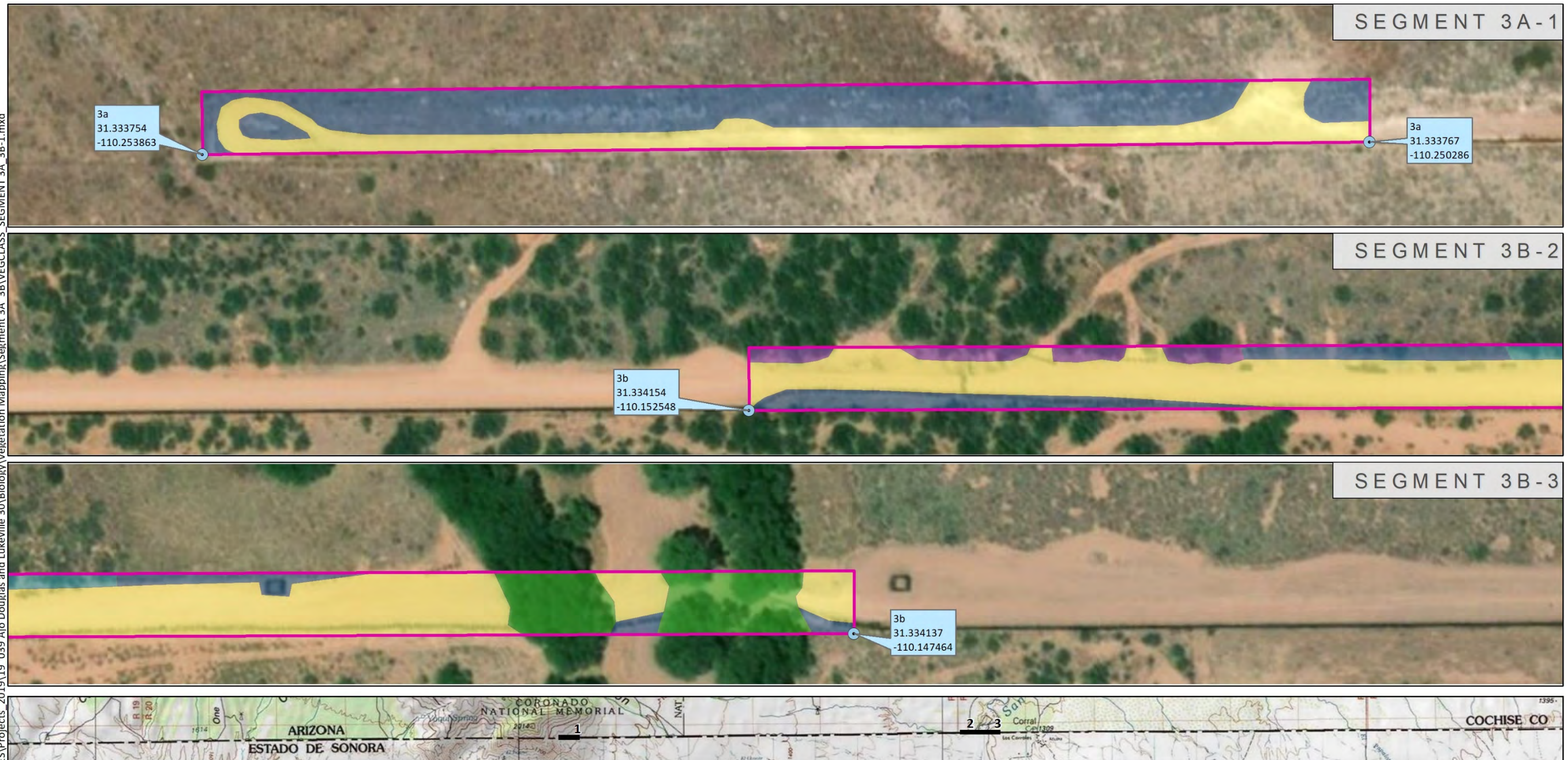
SEGMENT 1B

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Figure 4

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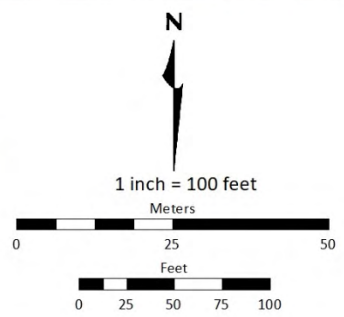


KEY

Project Area
 Project Area

National Vegetation Classification

- Populus fremontii* Great Basin Riparian Forest Alliance
- Brassica tournefortii* - *Malcolmia africana* Ruderal Desert Forbs Alliance
- Developed/Bare Ground
- Prosopis glandulosa* Lowland Basin Chihuahuan Desert Scrub Alliance
- Dasyliiron spp.* / *Bouteloua curtipendula* - *Muhlenbergia setifolia* Foothill Desert Grassland Alliance



**TUCSON SECTOR
 FENCE REPLACEMENT
 SEGMENT 3A & 3B**

Page 1
 9/23/2019

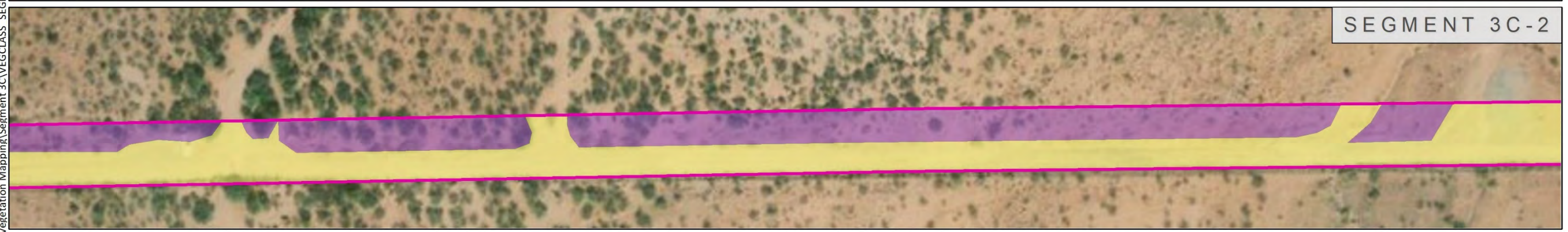
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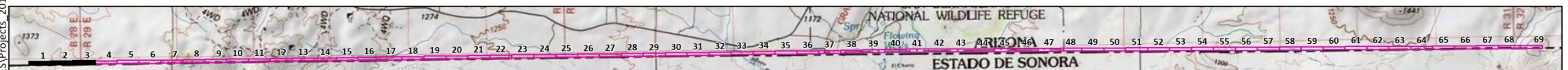
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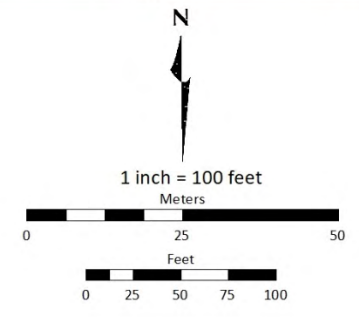
SEGMENT 3C-2



SEGMENT 3C-3



- KEY**
- Project Area
 - National Vegetation Classification**
 - Prosopis glandulosa* Lowland Basin Chihuahuan Desert Scrub Alliance
 - Acacia constricta* - *Acacia neovernicosa* Thornscrub Alliance
 - Developed/Bare Ground



**TUCSON SECTOR
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SEGMENT 3C

Page 1

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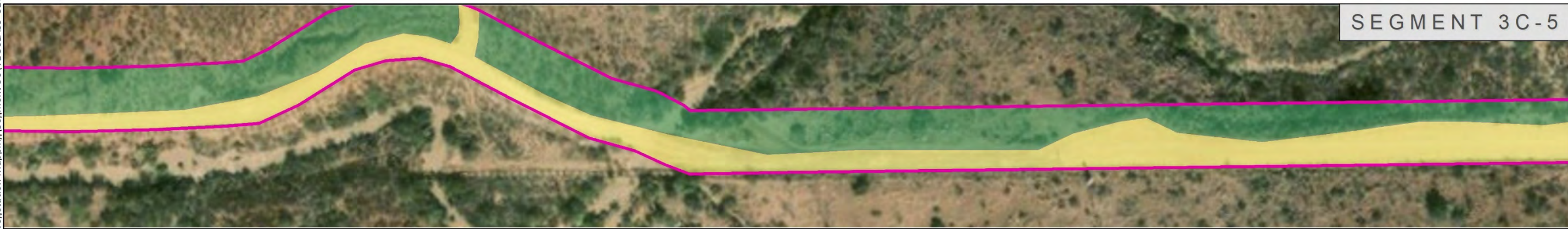
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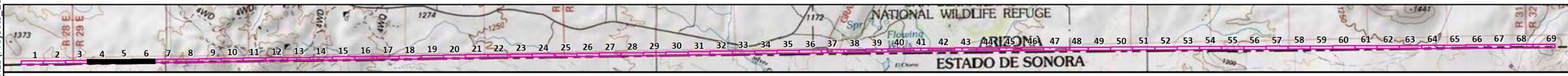
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SEGMENT 3C-5

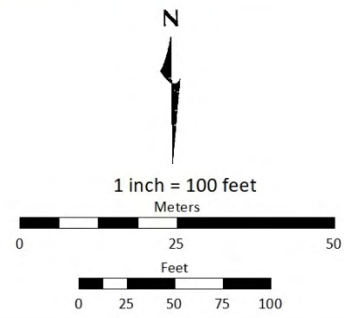


SEGMENT 3C-6



KEY

-  Project Area
- National Vegetation Classification**
-  *Larrea tridentata* Chihuahuan Desert Scrub Alliance
-  *Prosopis glandulosa* Lowland Basin Chihuahuan Desert Scrub Alliance
-  Developed/Bare Ground



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SEGMENT 3C

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Figure 4

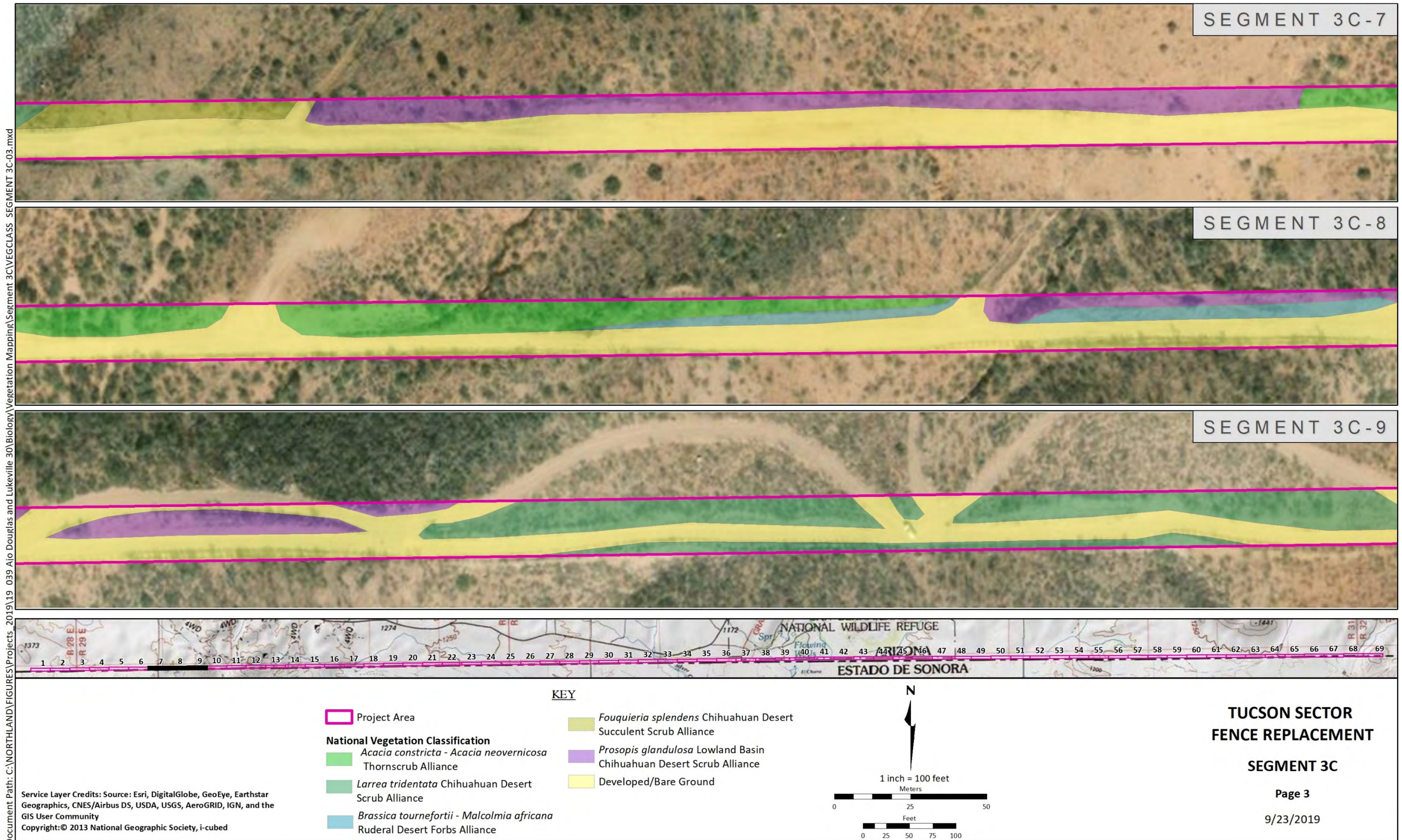


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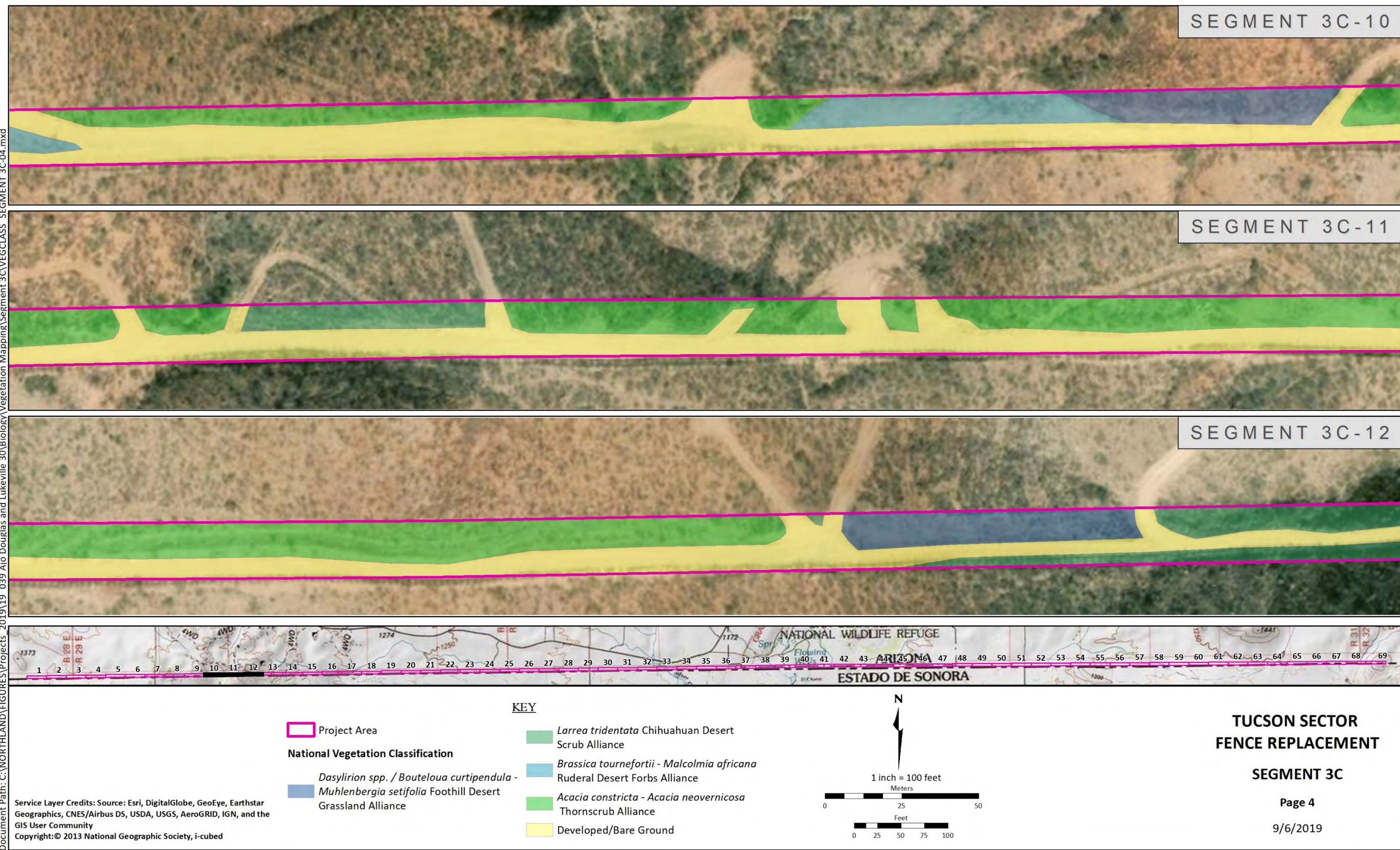


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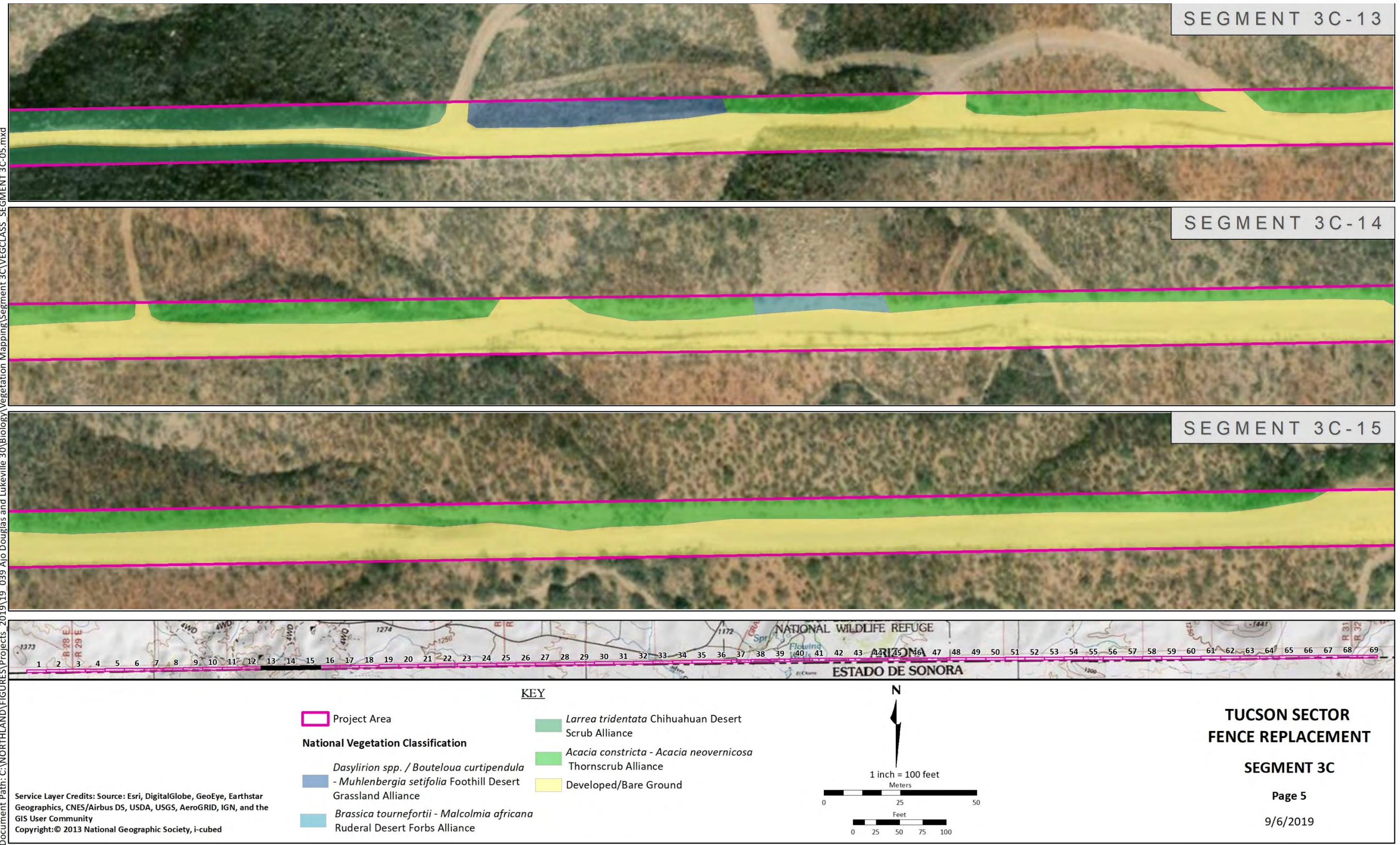
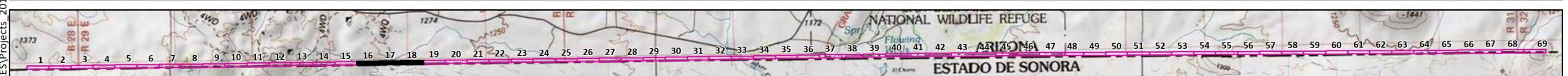


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Project Area

National Vegetation Classification

Larrea tridentata Chihuahuan Desert Scrub Alliance

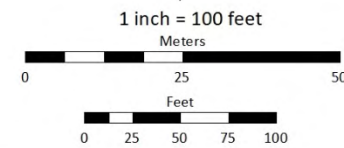
KEY

Brassica tournefortii - Malcolmia africana Ruderal Desert Forbs Alliance

Acacia constricta - Acacia neovernicosa Thornscrub Alliance

Developed/Bare Ground

N



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SEGMENT 3C

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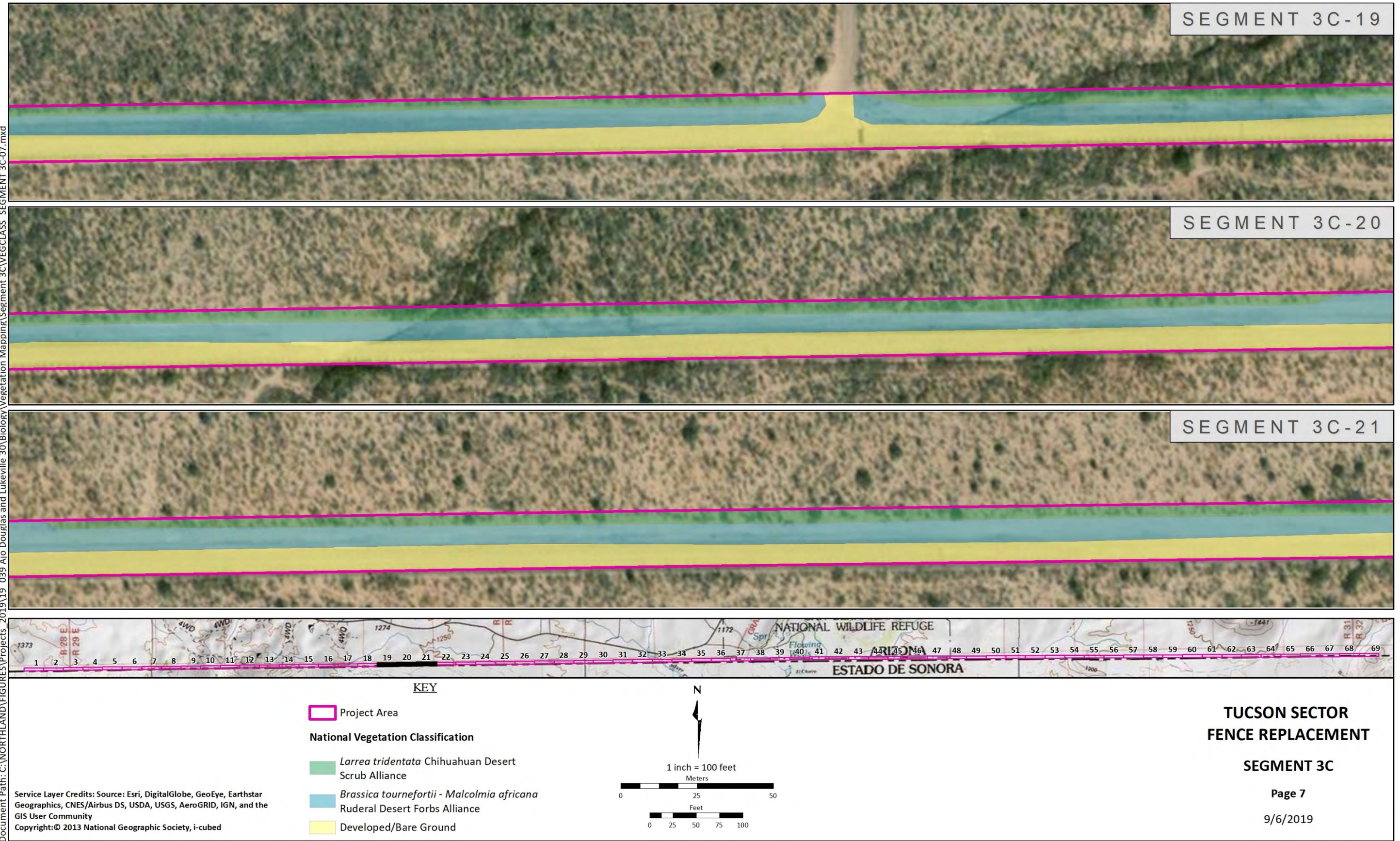


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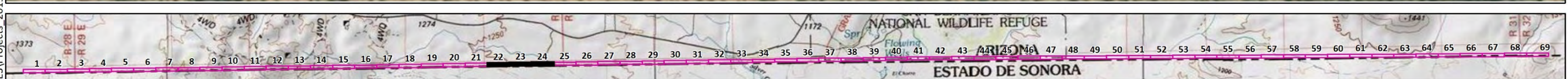
SEGMENT 3C-22



SEGMENT 3C-23



SEGMENT 3C-24



KEY

Project Area	<i>Prosopis glandulosa</i> Lowland Basin Chihuahuan Desert Scrub Alliance
National Vegetation Classification	Developed/Bare Ground
<i>Larrea tridentata</i> Chihuahuan Desert Scrub Alliance	
<i>Brassica tournefortii</i> - <i>Malcolmia africana</i> Ruderal Desert Forbs Alliance	

N

1 inch = 100 feet

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FENCE REPLACEMENT**

SEGMENT 3C

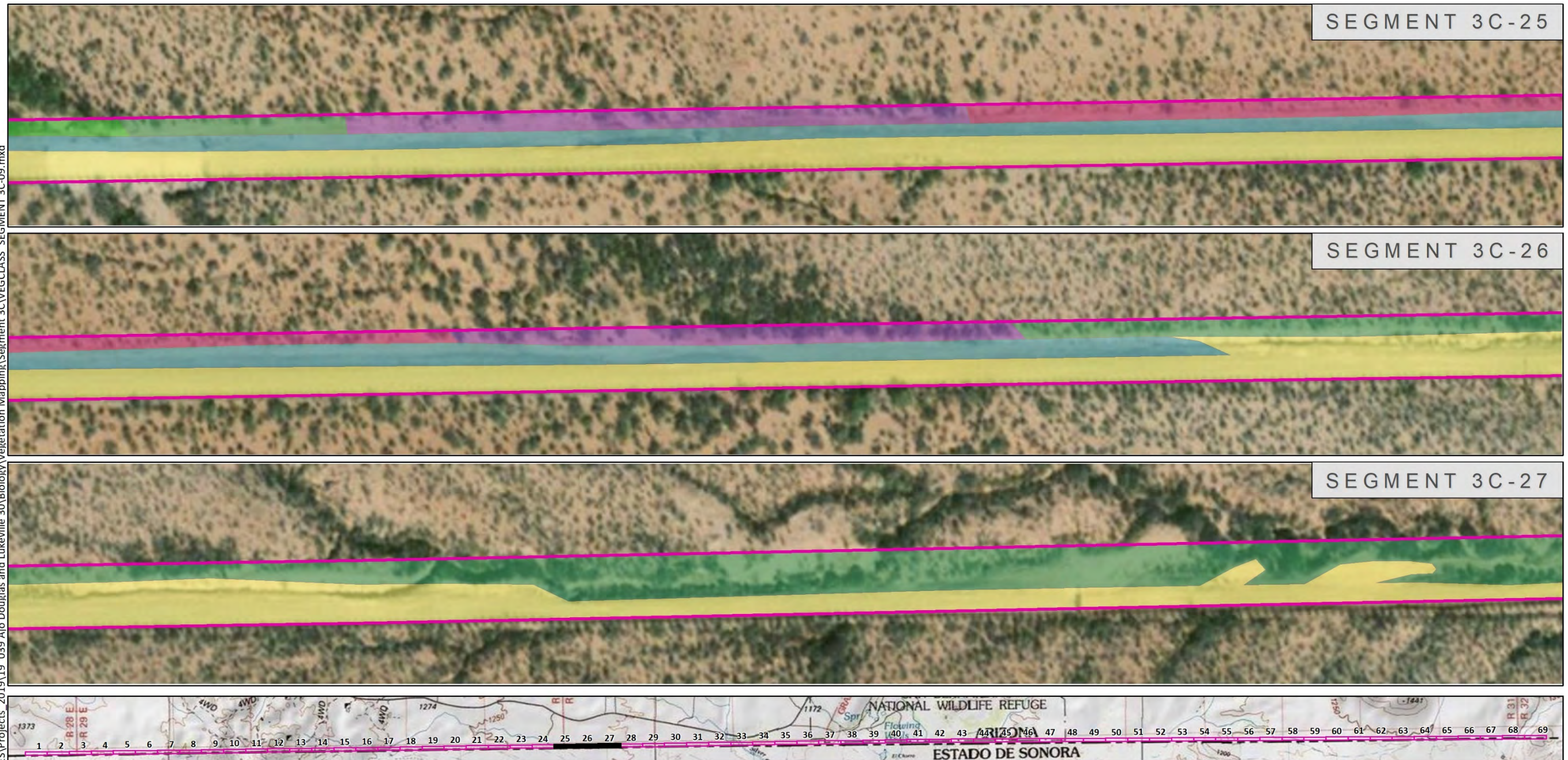
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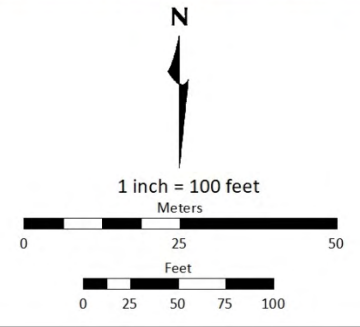
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Figure 4

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KEY	
	Project Area
National Vegetation Classification	
	<i>Larrea tridentata</i> Chihuahuan Desert Scrub Alliance
	<i>Flourensia cernua</i> Lowland Basin Desert Scrub Alliance
	<i>Brassica tournefortii</i> - <i>Malcolmia africana</i> Ruderal Desert Forbs Alliance
	<i>Prosopis glandulosa</i> Lowland Basin Chihuahuan Desert Scrub Alliance
	<i>Acacia constricta</i> - <i>Acacia neovernicosa</i> Thornscrub Alliance
	Developed/Bare Ground



**TUCSON SECTOR
FENCE REPLACEMENT**

SEGMENT 3C

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Figure 4

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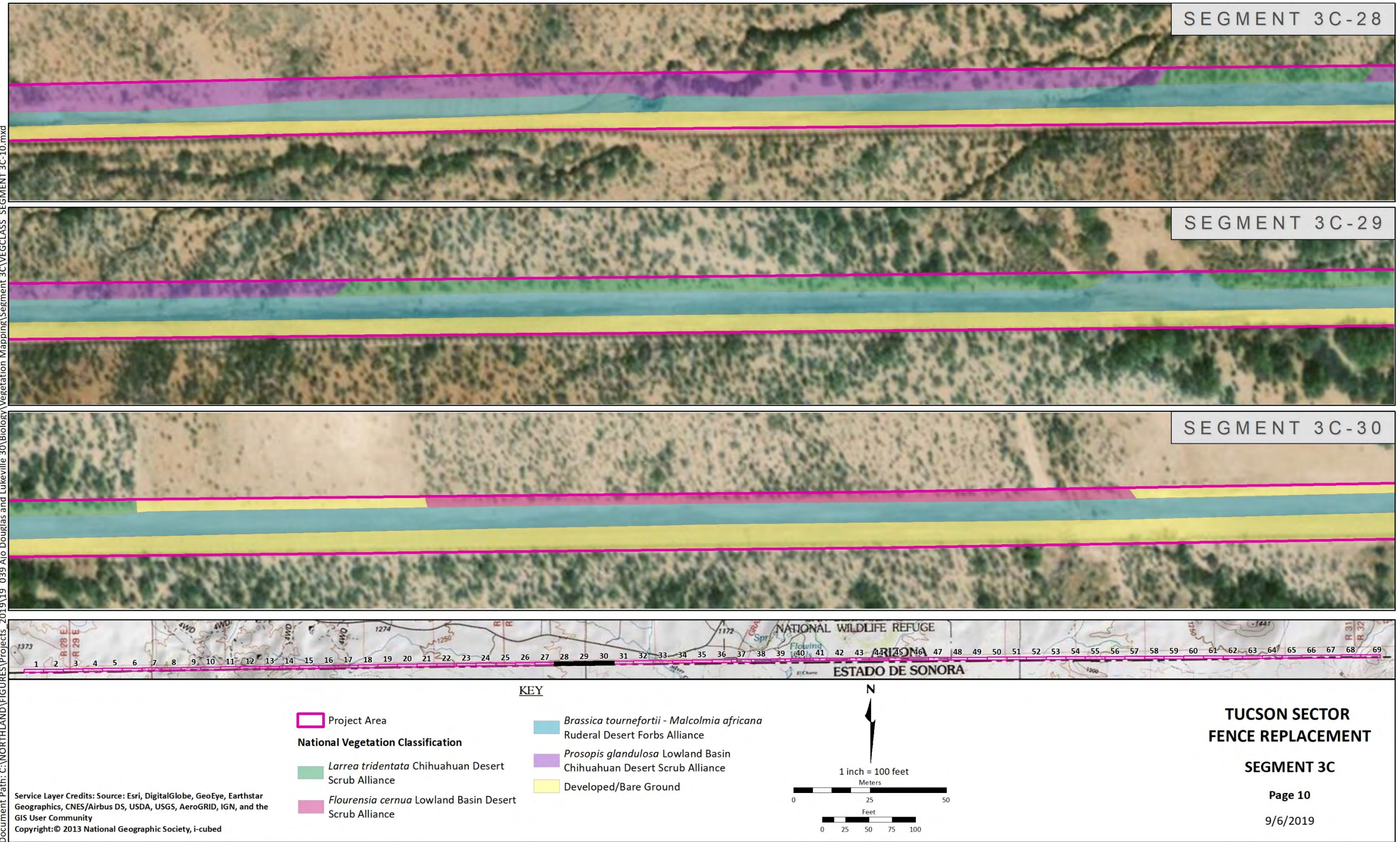


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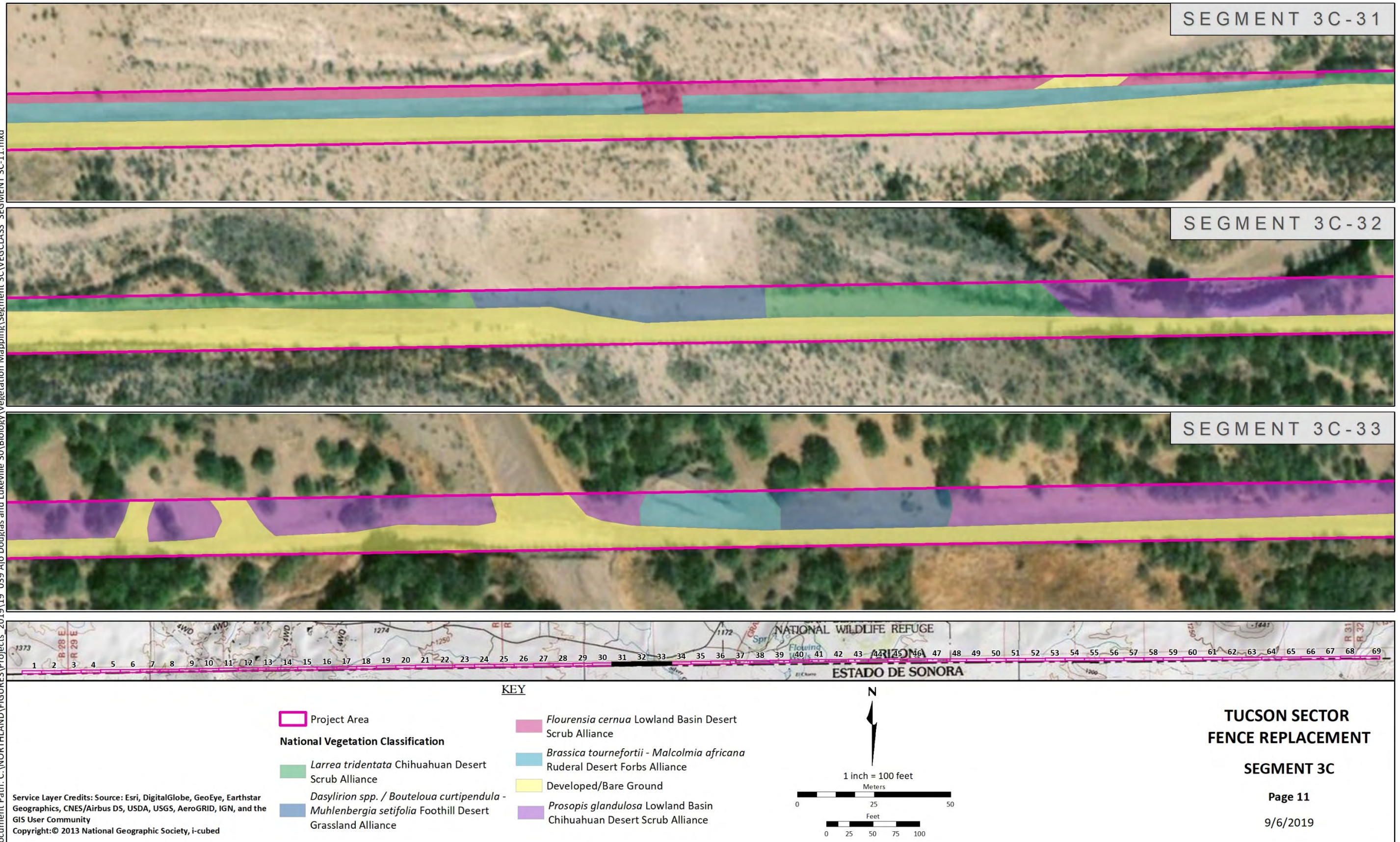


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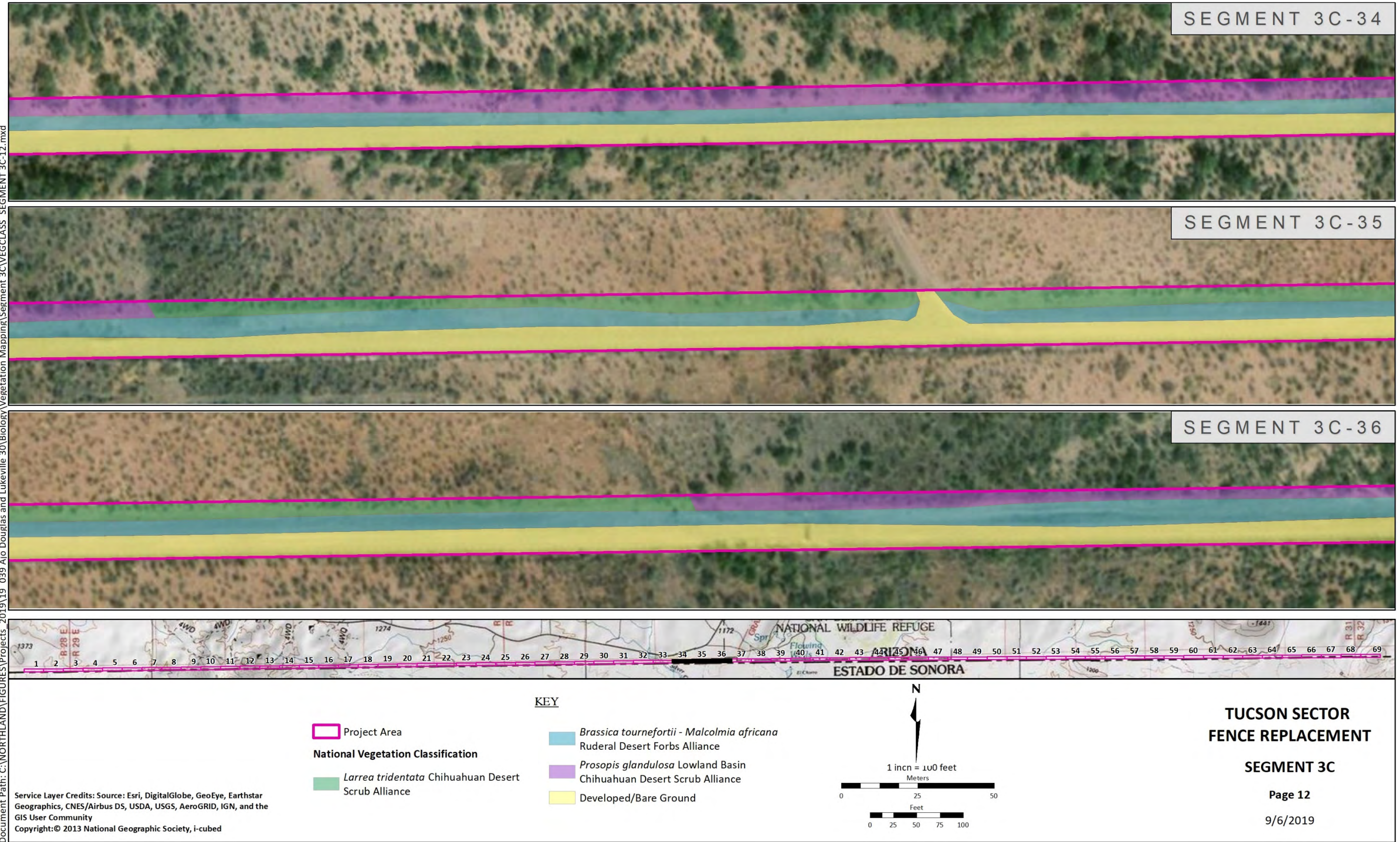


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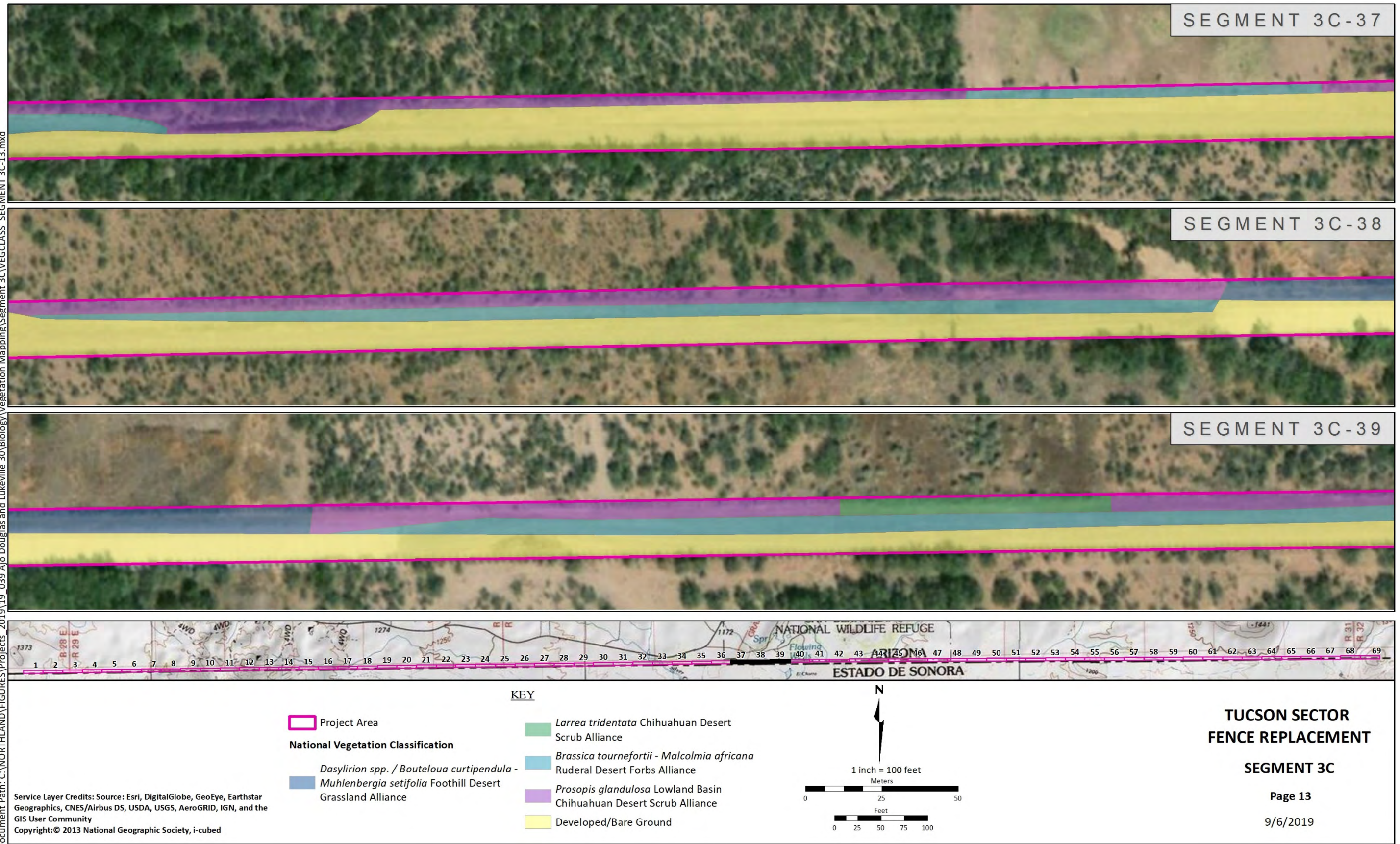


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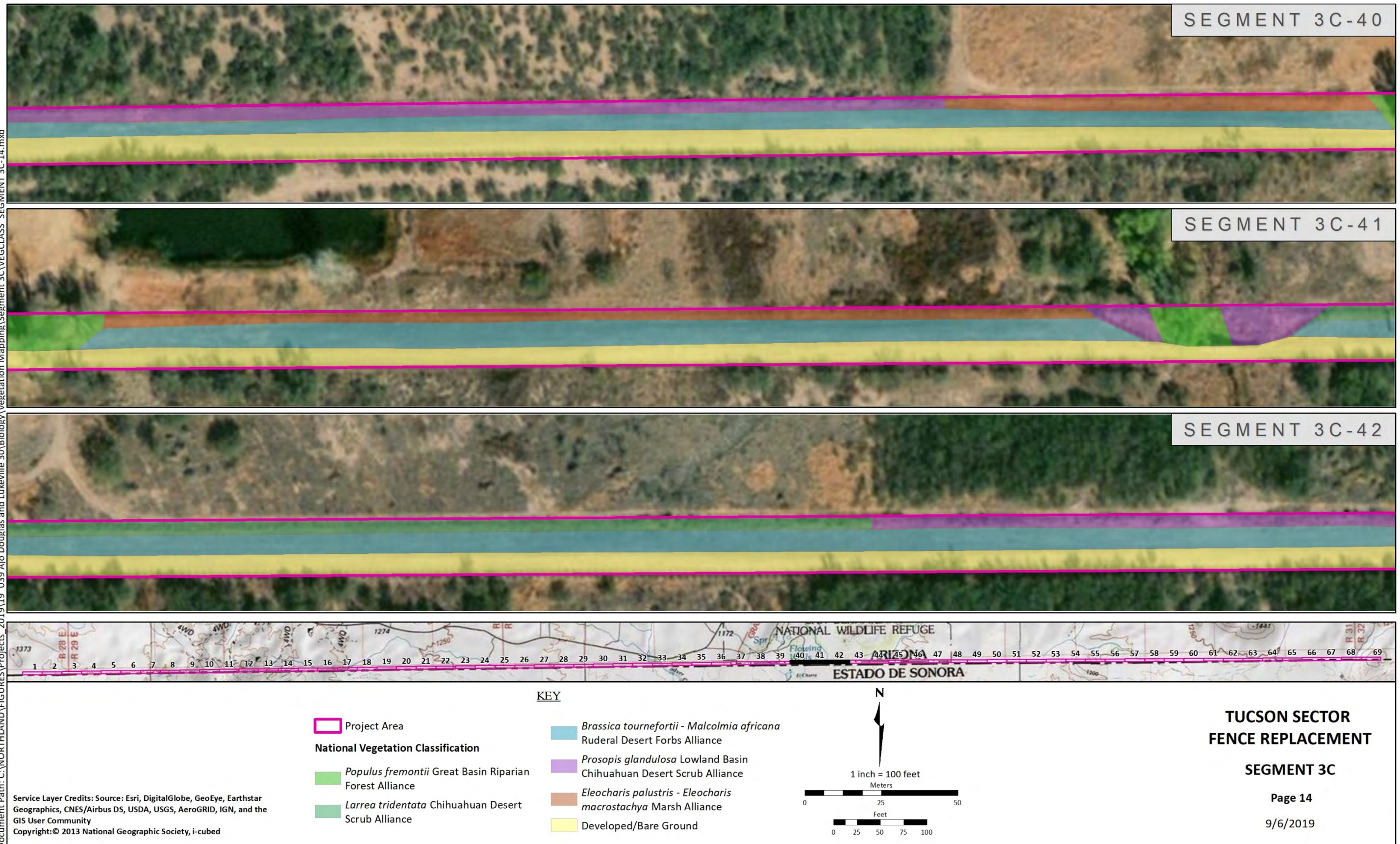


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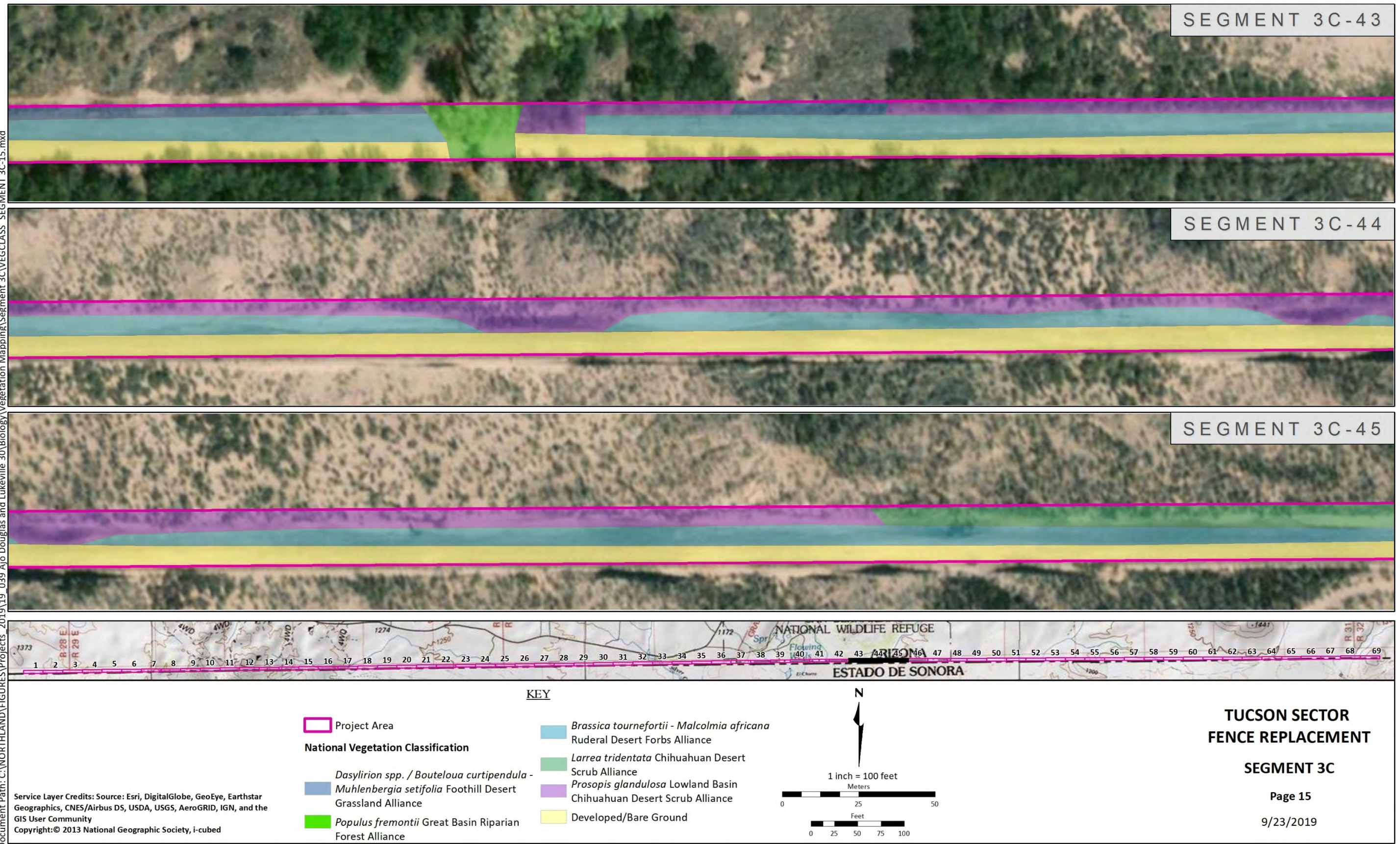
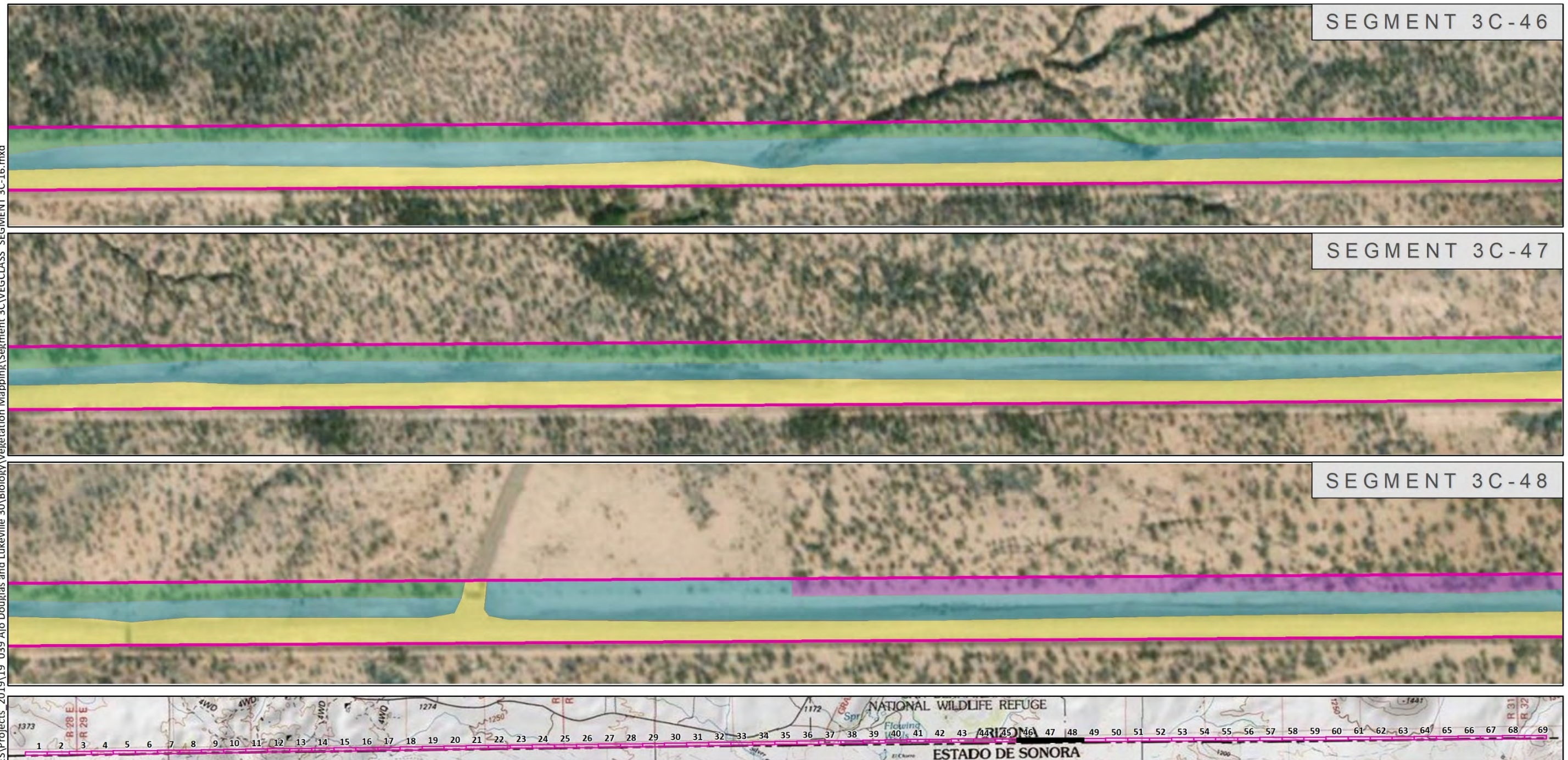


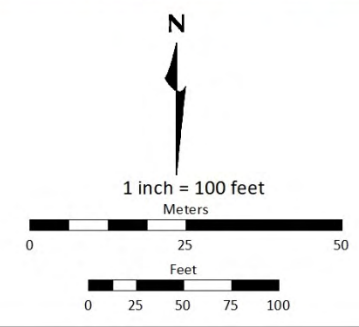
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KEY

- Project Area
- National Vegetation Classification**
- Larrea tridentata* Chihuahuan Desert Scrub Alliance
- Brassica tournefortii* - *Malcolmia africana* Ruderal Desert Forbs Alliance
- Prosopis glandulosa* Lowland Basin Chihuahuan Desert Scrub Alliance
- Developed/Bare Ground



**TUCSON SECTOR
FENCE REPLACEMENT
SEGMENT 3C**

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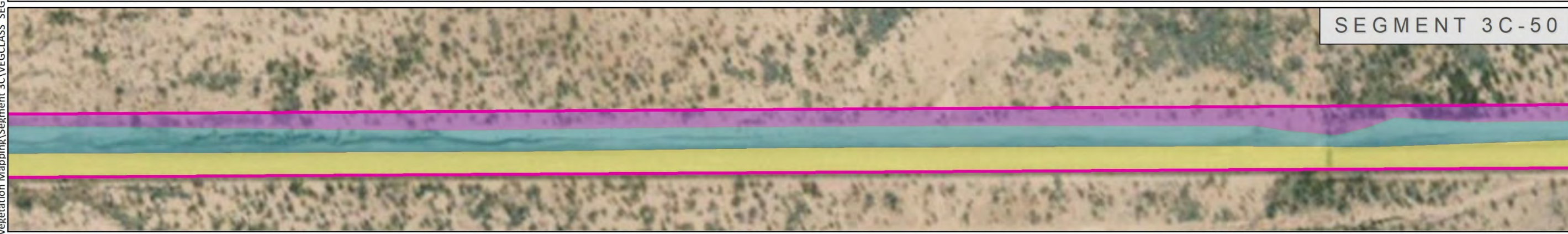
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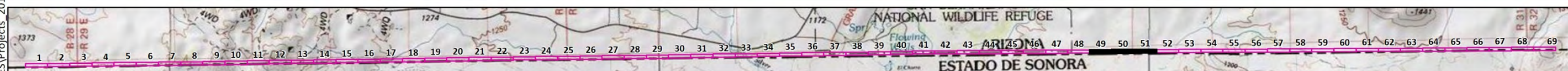
SEGMENT 3C-49



SEGMENT 3C-50

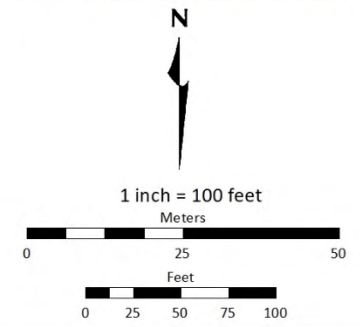


SEGMENT 3C-51



KEY

-  Project Area
- National Vegetation Classification**
-  *Brassica tournefortii* - *Malcolmia africana*
Ruderal Desert Forbs Alliance
-  *Prosopis glandulosa* Lowland Basin
Chihuahuan Desert Scrub Alliance
-  Developed/Bare Ground



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FENCE REPLACEMENT**

SEGMENT 3C

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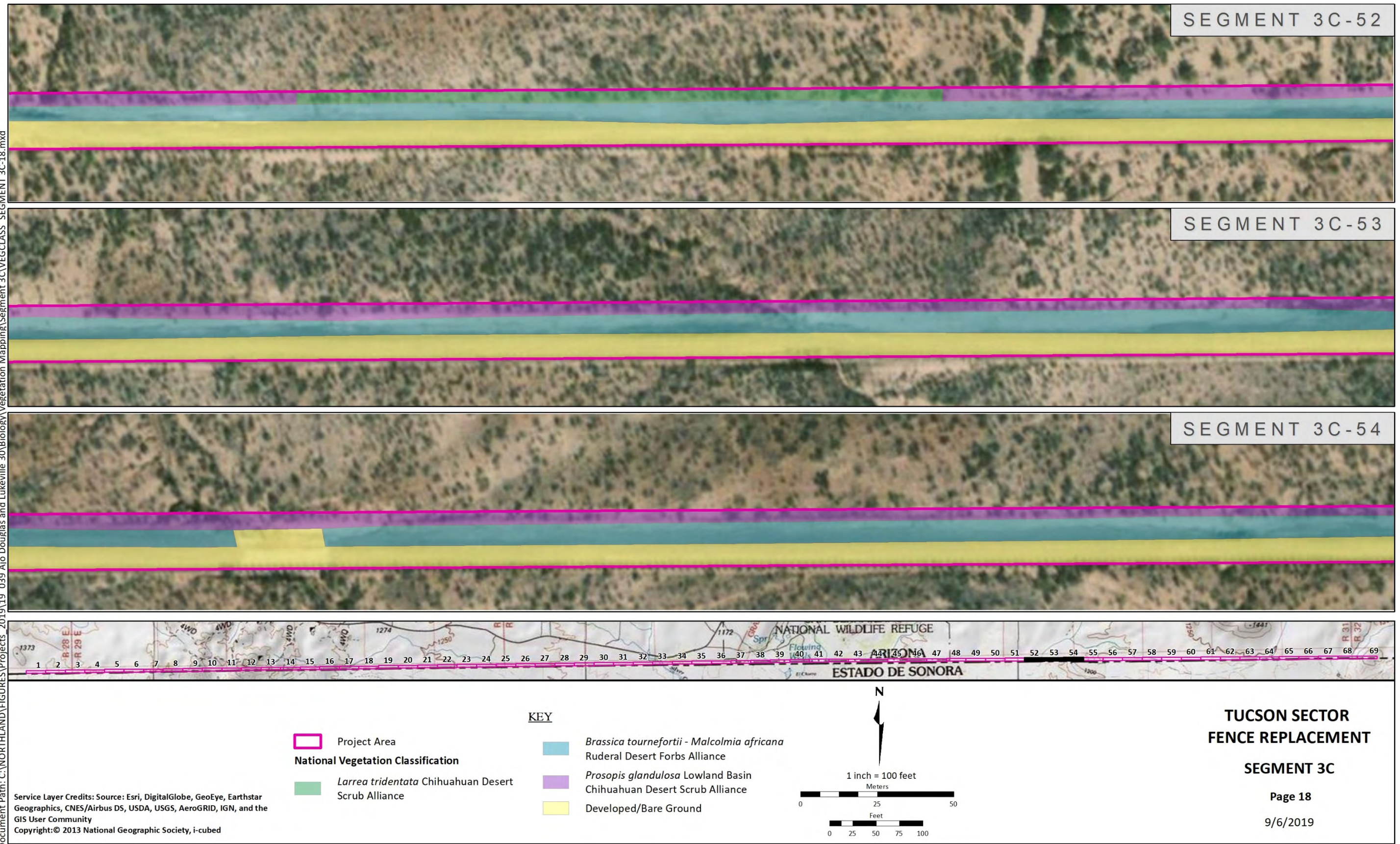


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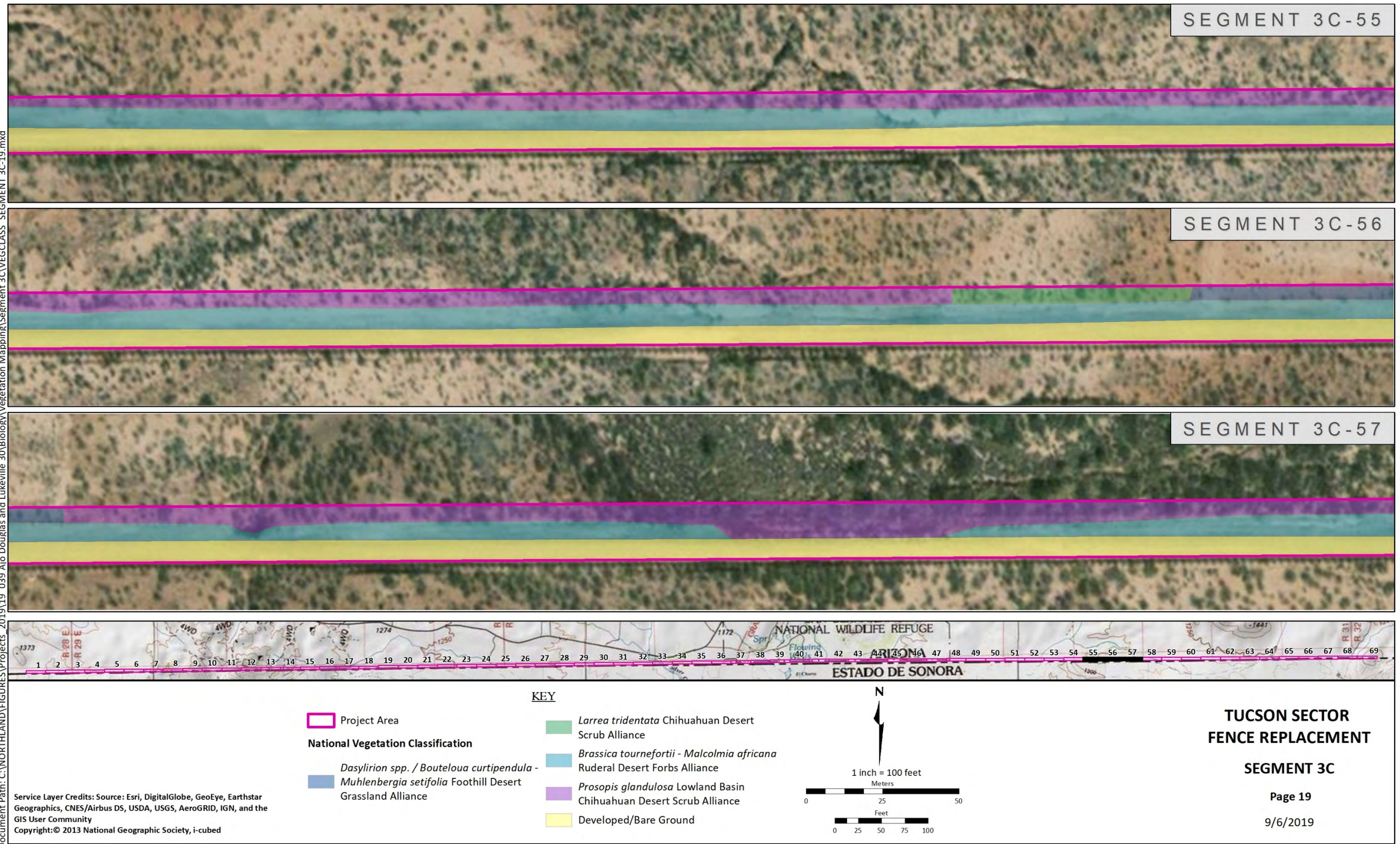


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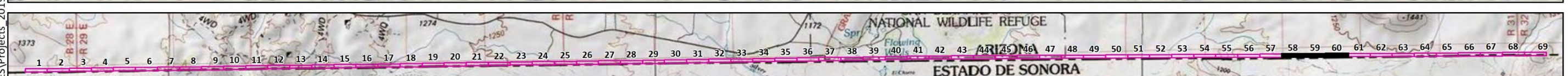
SEGMENT 3C-58



SEGMENT 3C-59



SEGMENT 3C-60



KEY

-  Project Area
- National Vegetation Classification**
-  *Larrea tridentata* Chihuahuan Desert Scrub Alliance
-  *Brassica tournefortii* - *Malcolmia africana* Ruderal Desert Forbs Alliance
-  *Prosopis glandulosa* Lowland Basin Chihuahuan Desert Scrub Alliance
-  Developed/Bare Ground

N

1 inch = 100 feet

Meters

0 25 50

Feet

0 25 50 75 100

TUCSON SECTOR FENCE REPLACEMENT

SEGMENT 3C

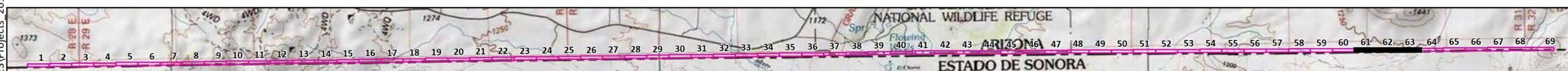
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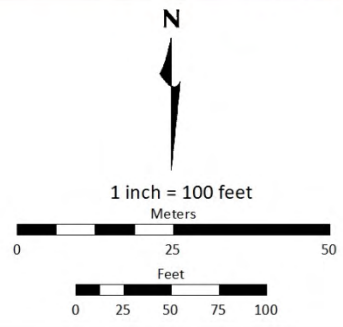
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KEY

-  Project Area
- National Vegetation Classification**
-  *Larrea tridentata* Chihuahuan Desert Scrub Alliance
-  *Brassica tournefortii* - *Malcolmia africana* Ruderal Desert Forbs Alliance
-  Developed/Bare Ground



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FENCE REPLACEMENT**

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Figure 4

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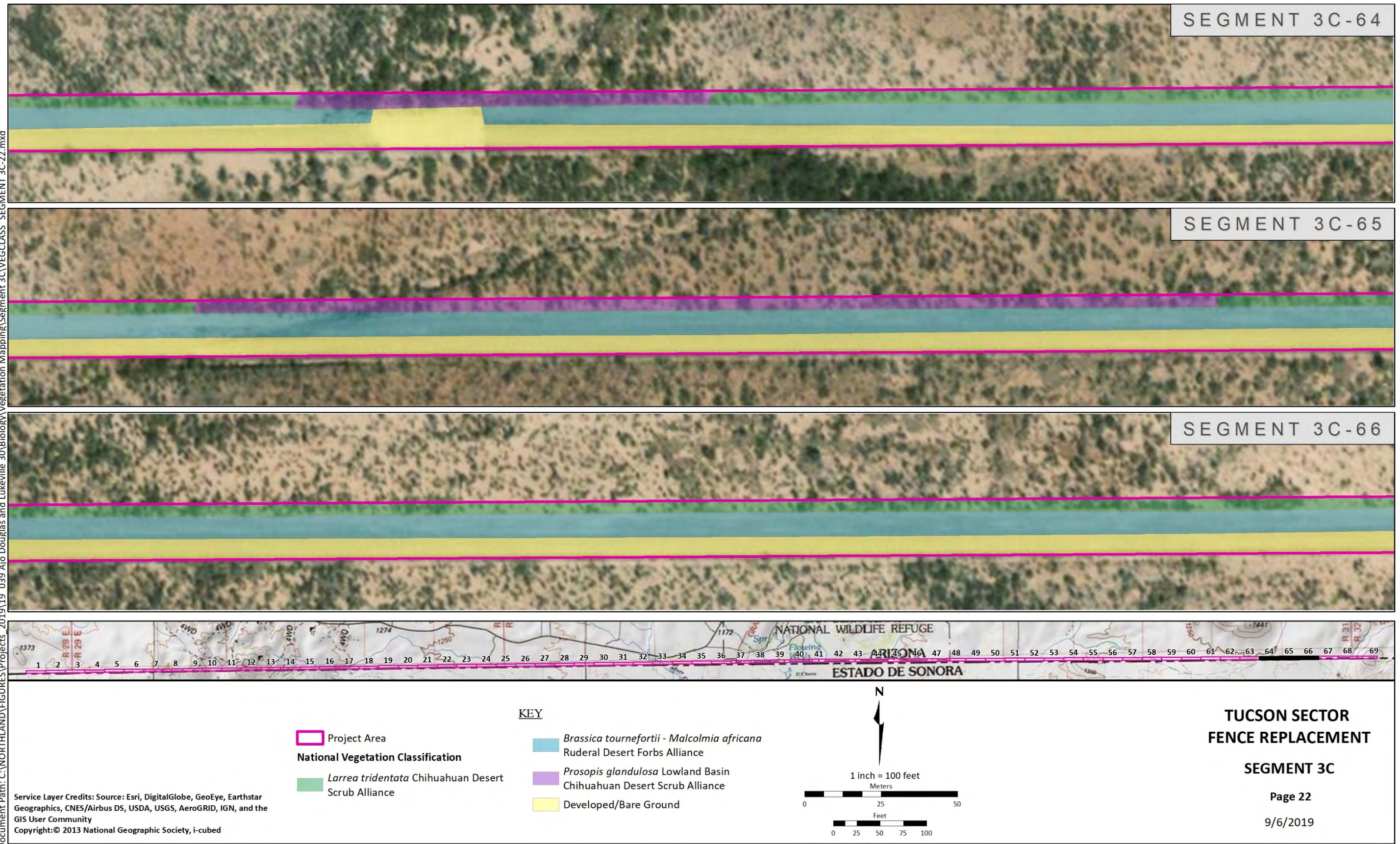


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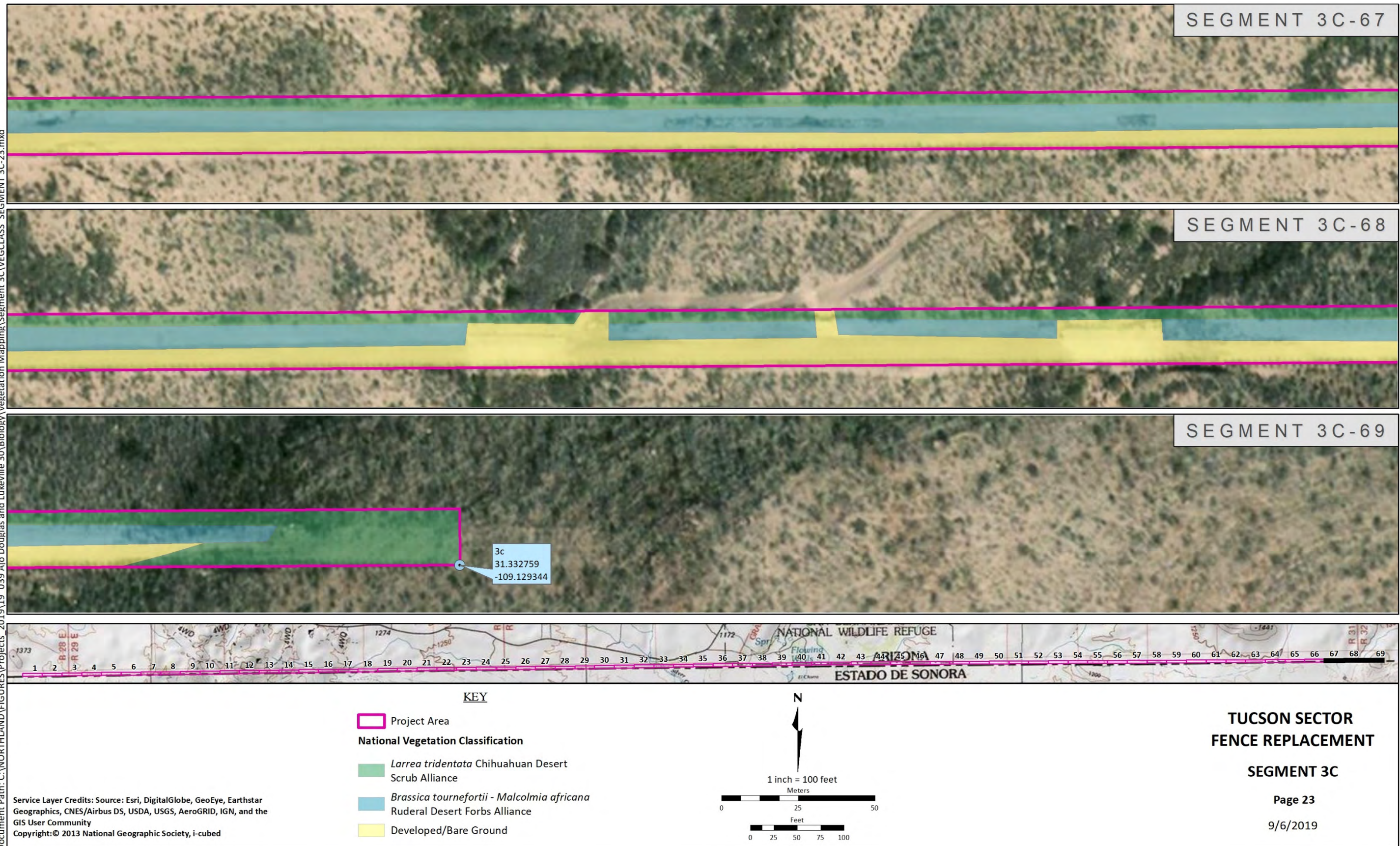


Figure 4

Figure 5: Special-Status Species Map

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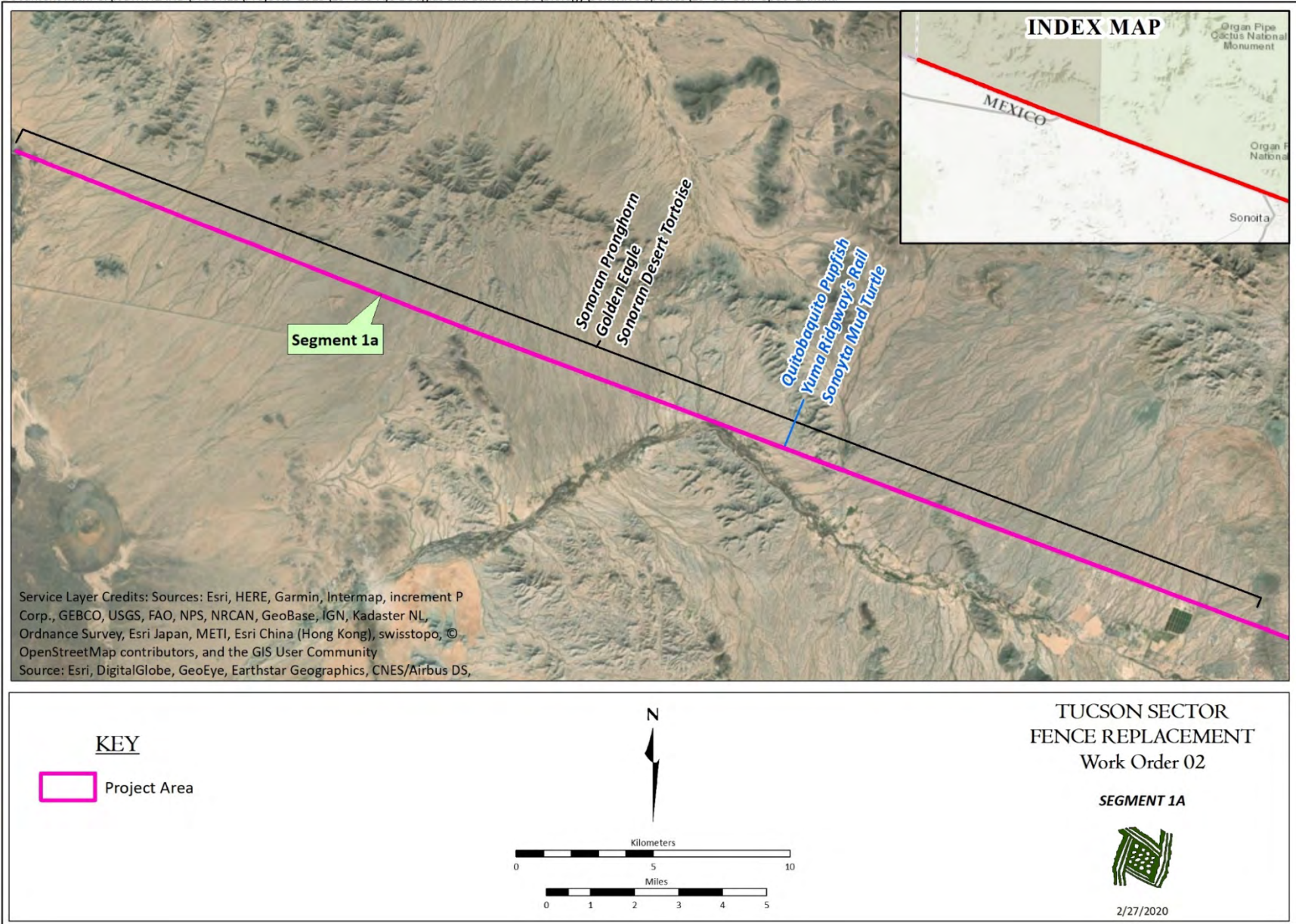


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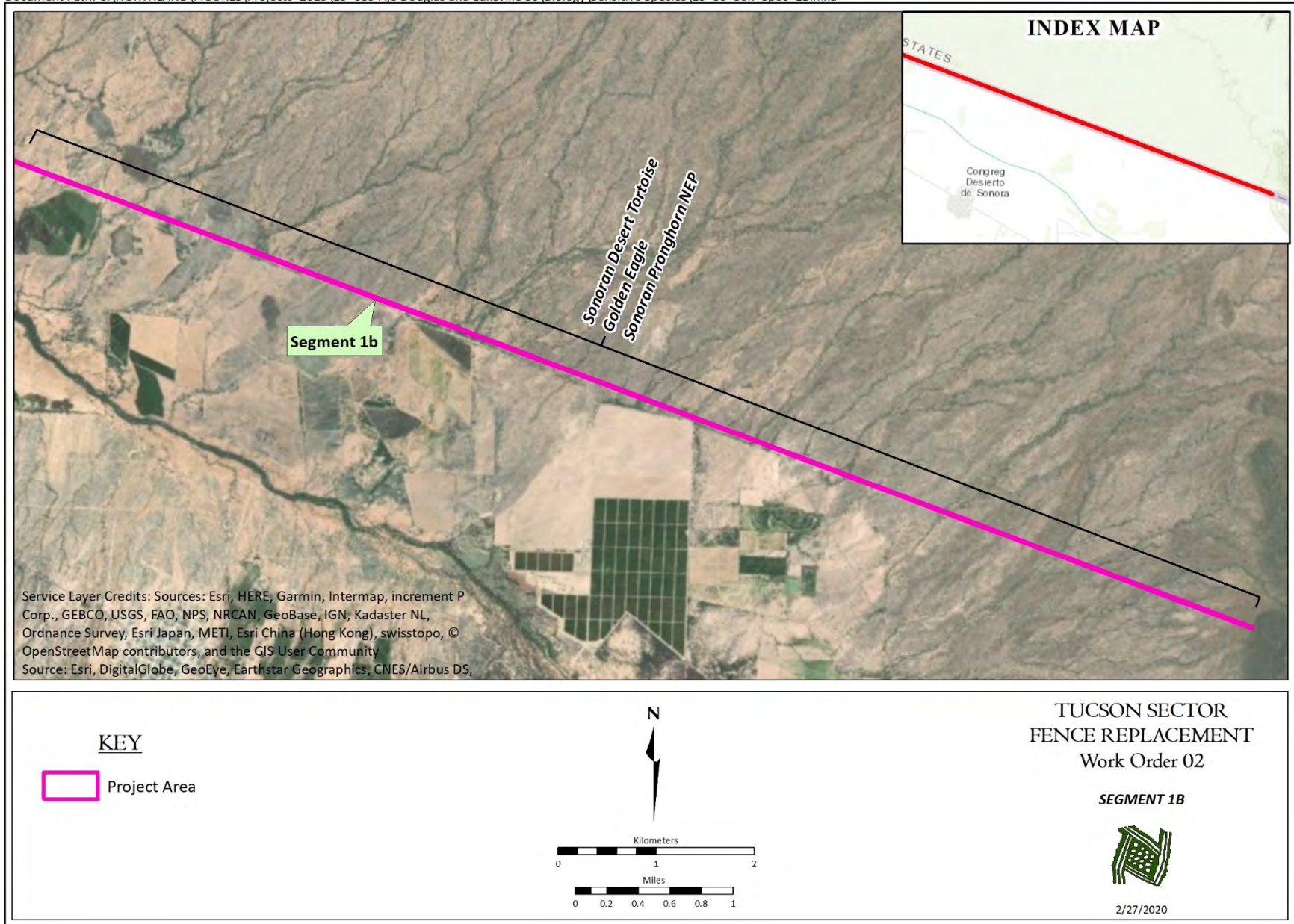


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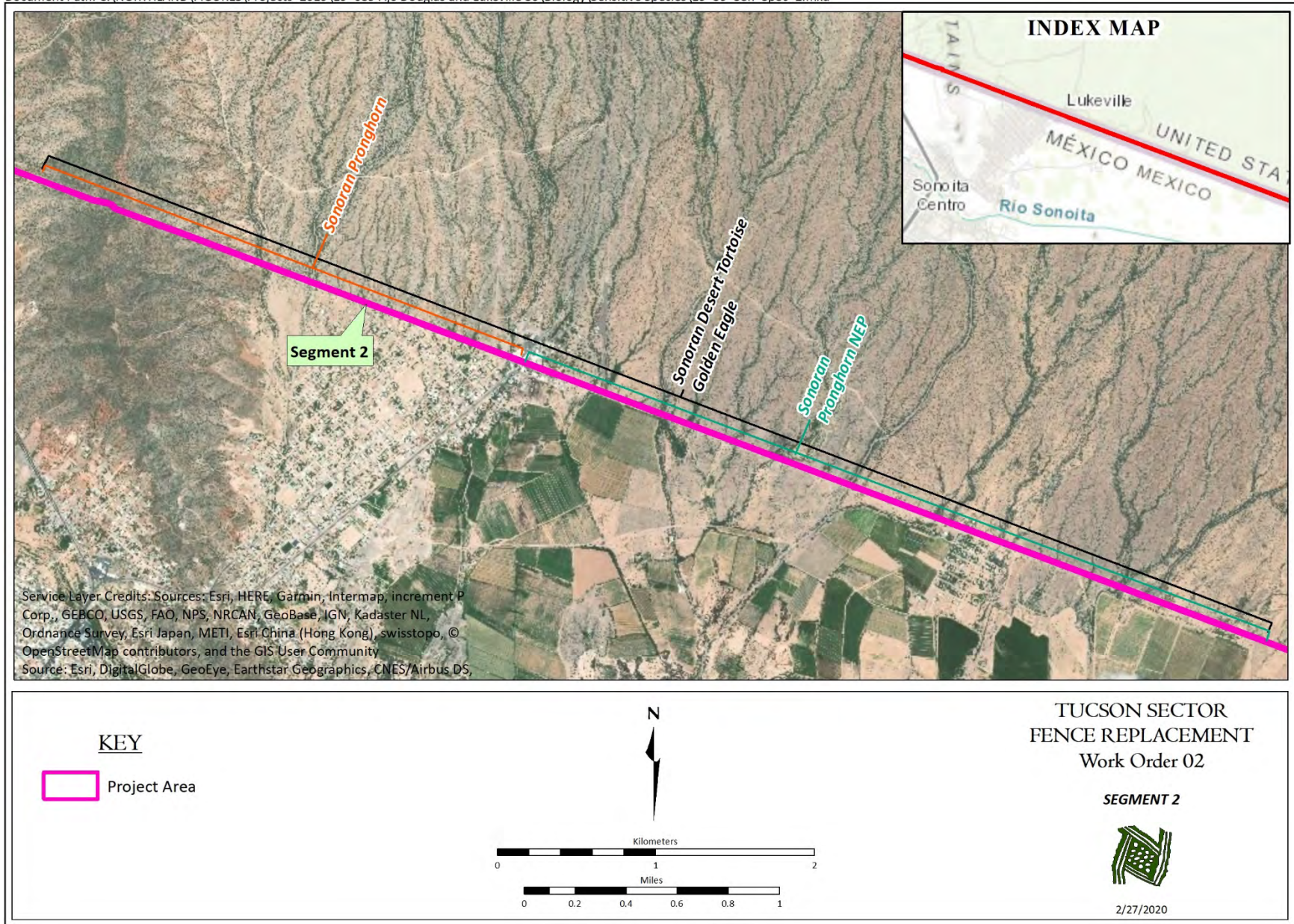


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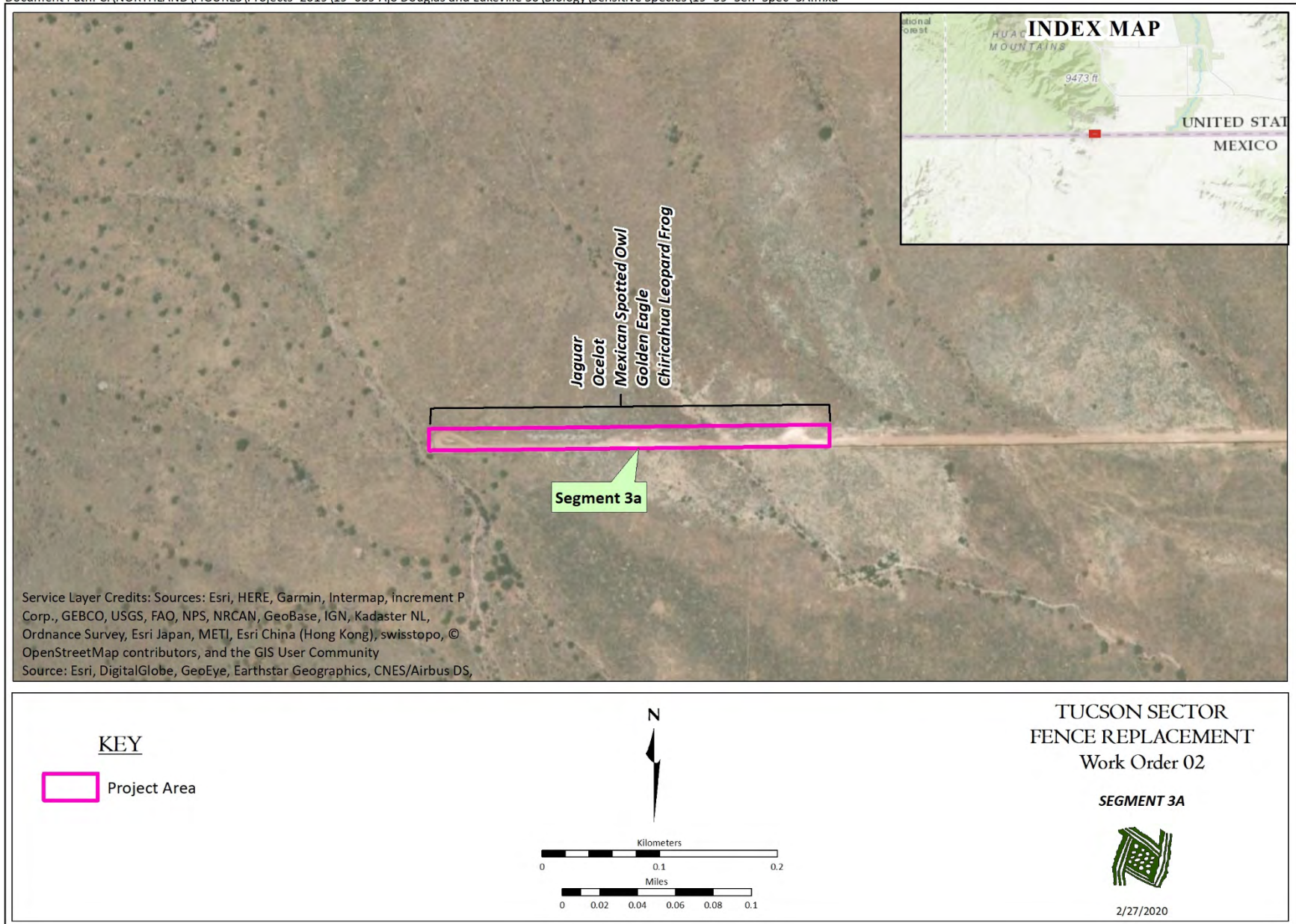


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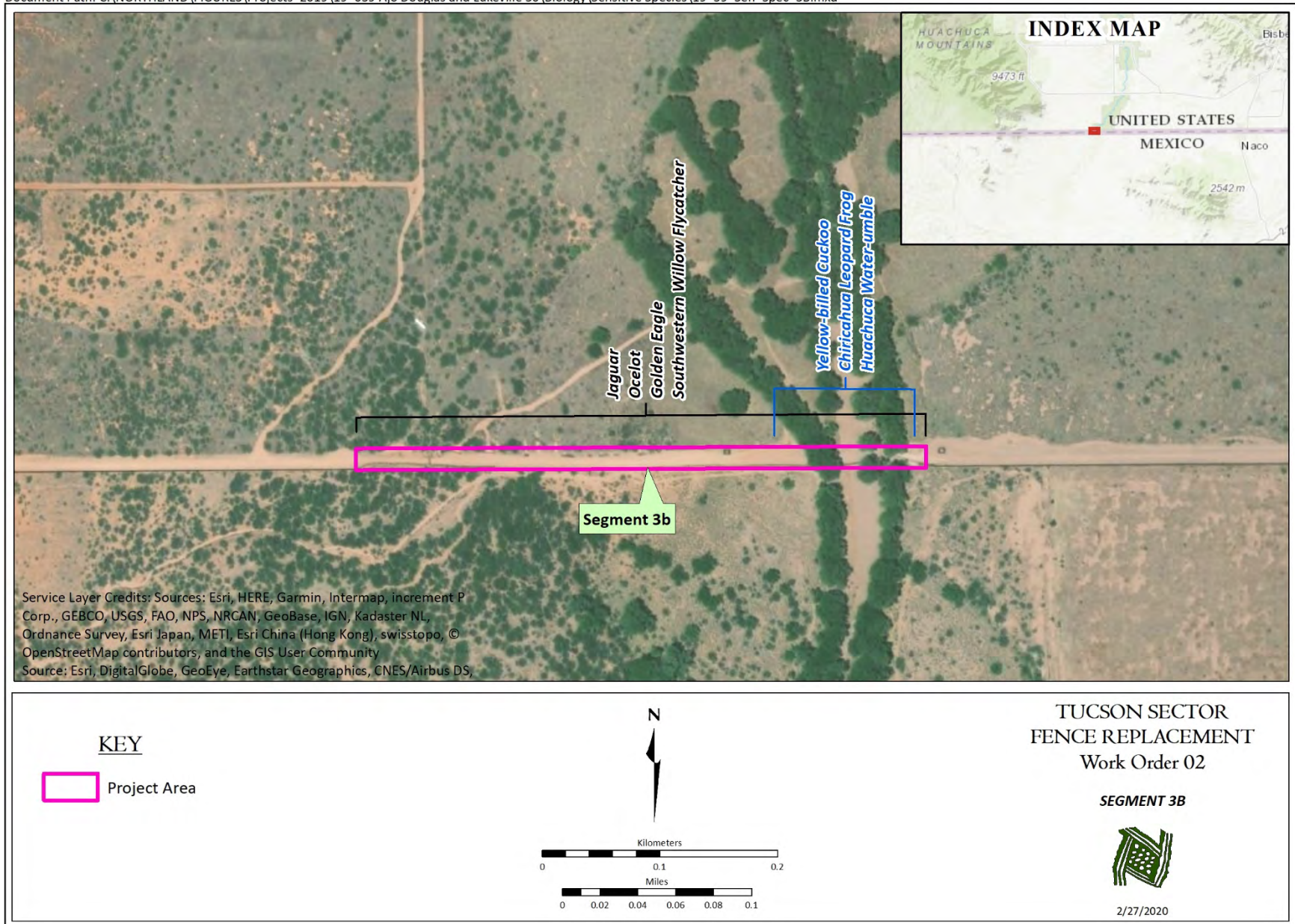


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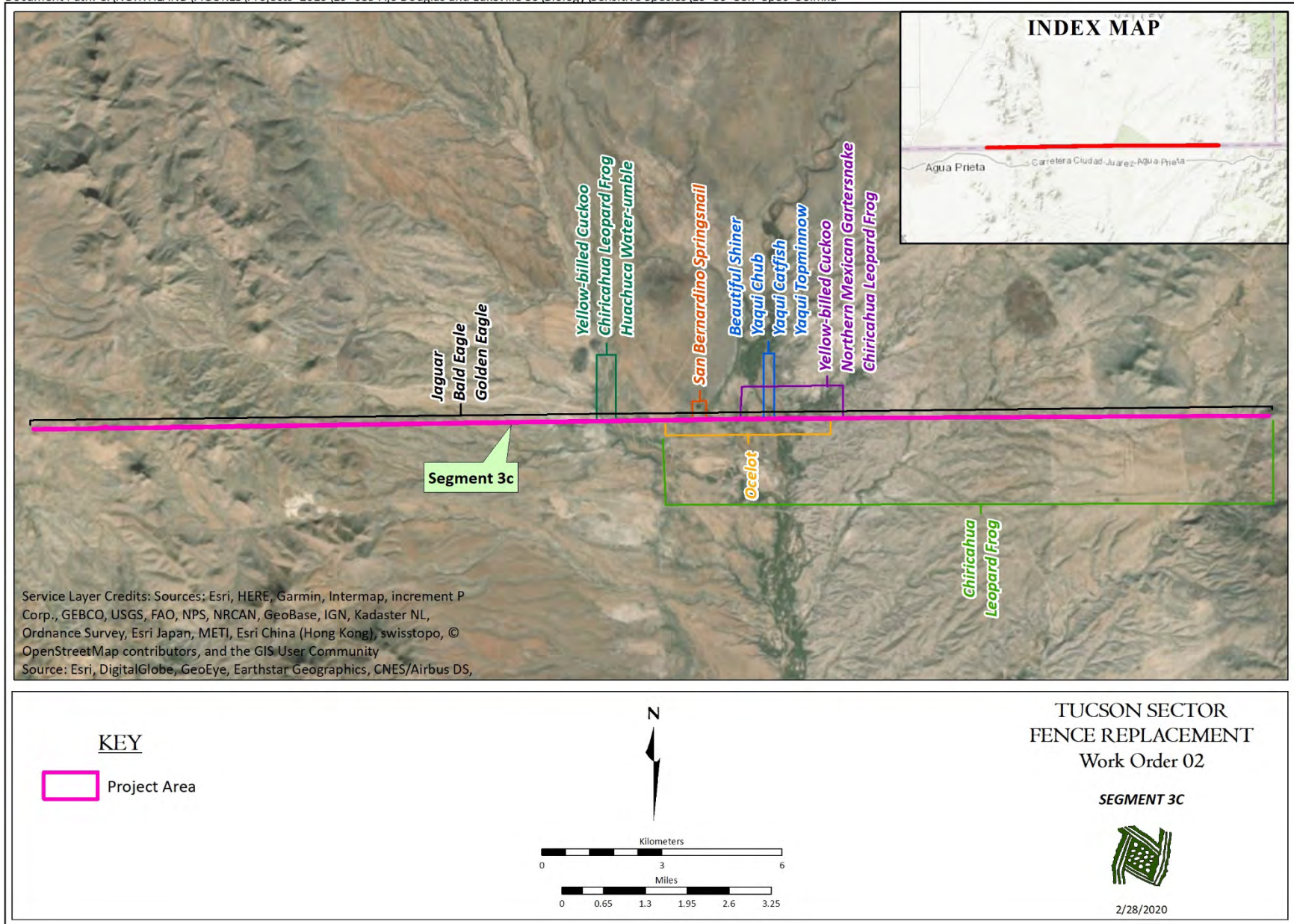


Figure 5

Figure 6: Critical Habitat

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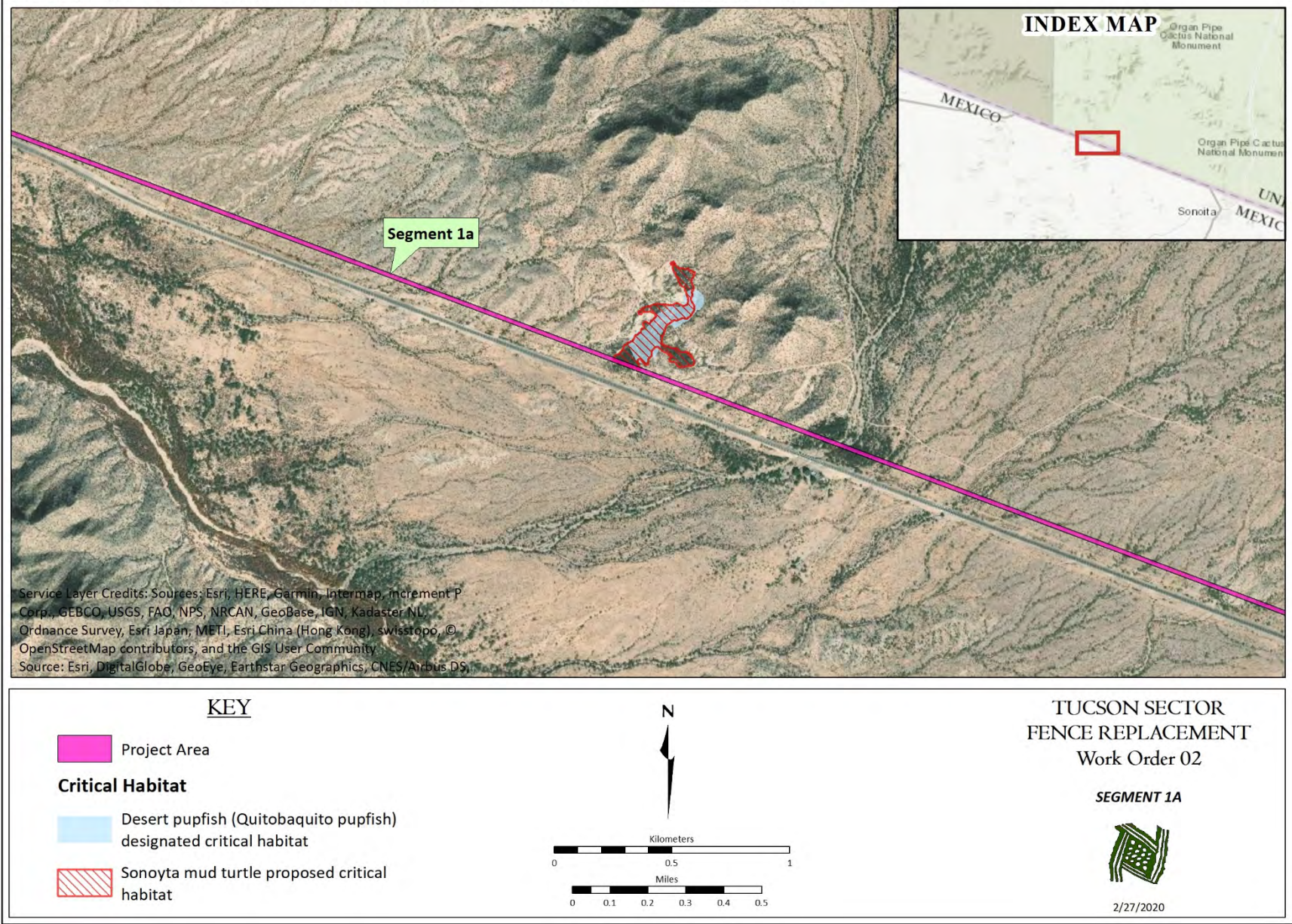


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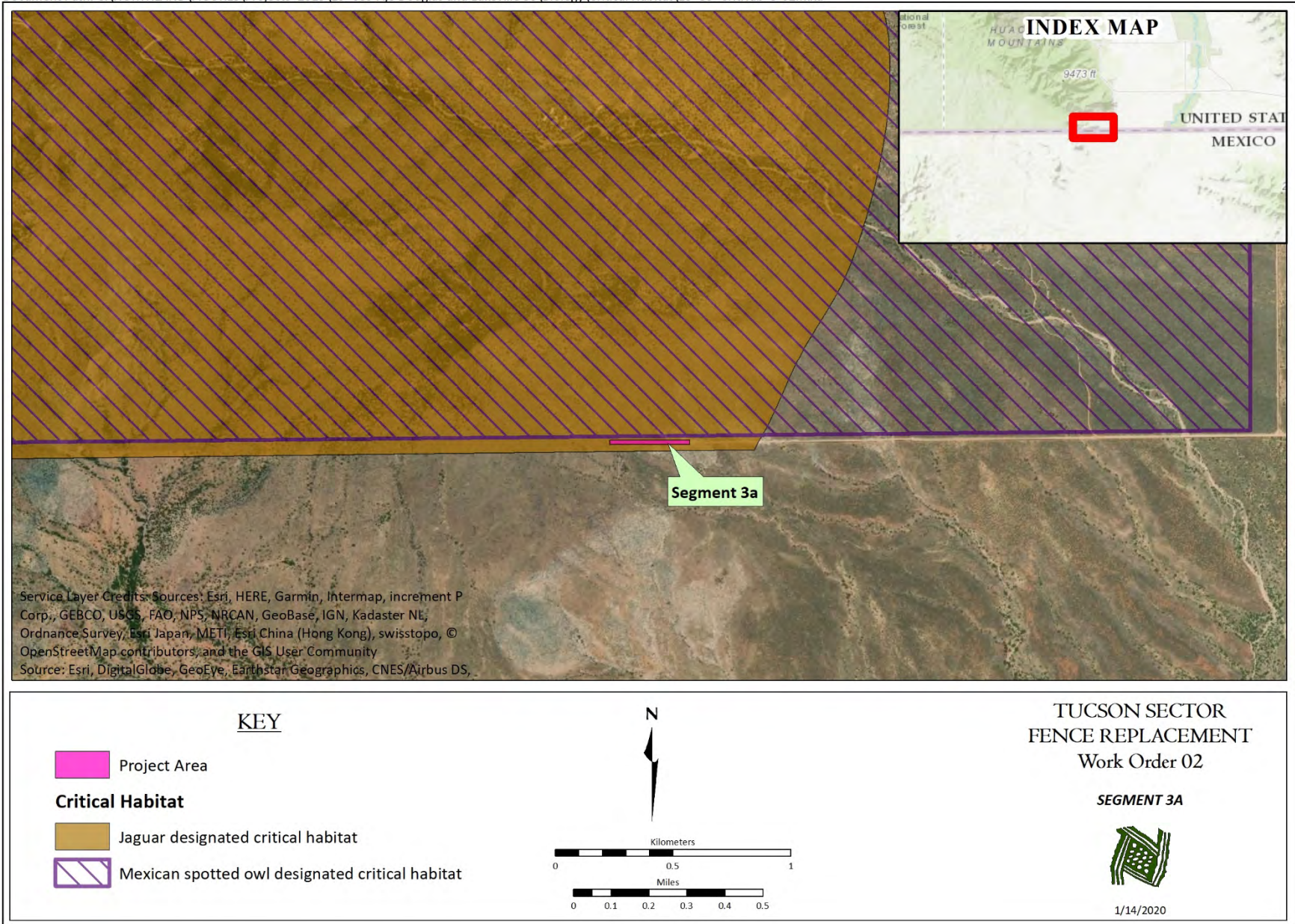


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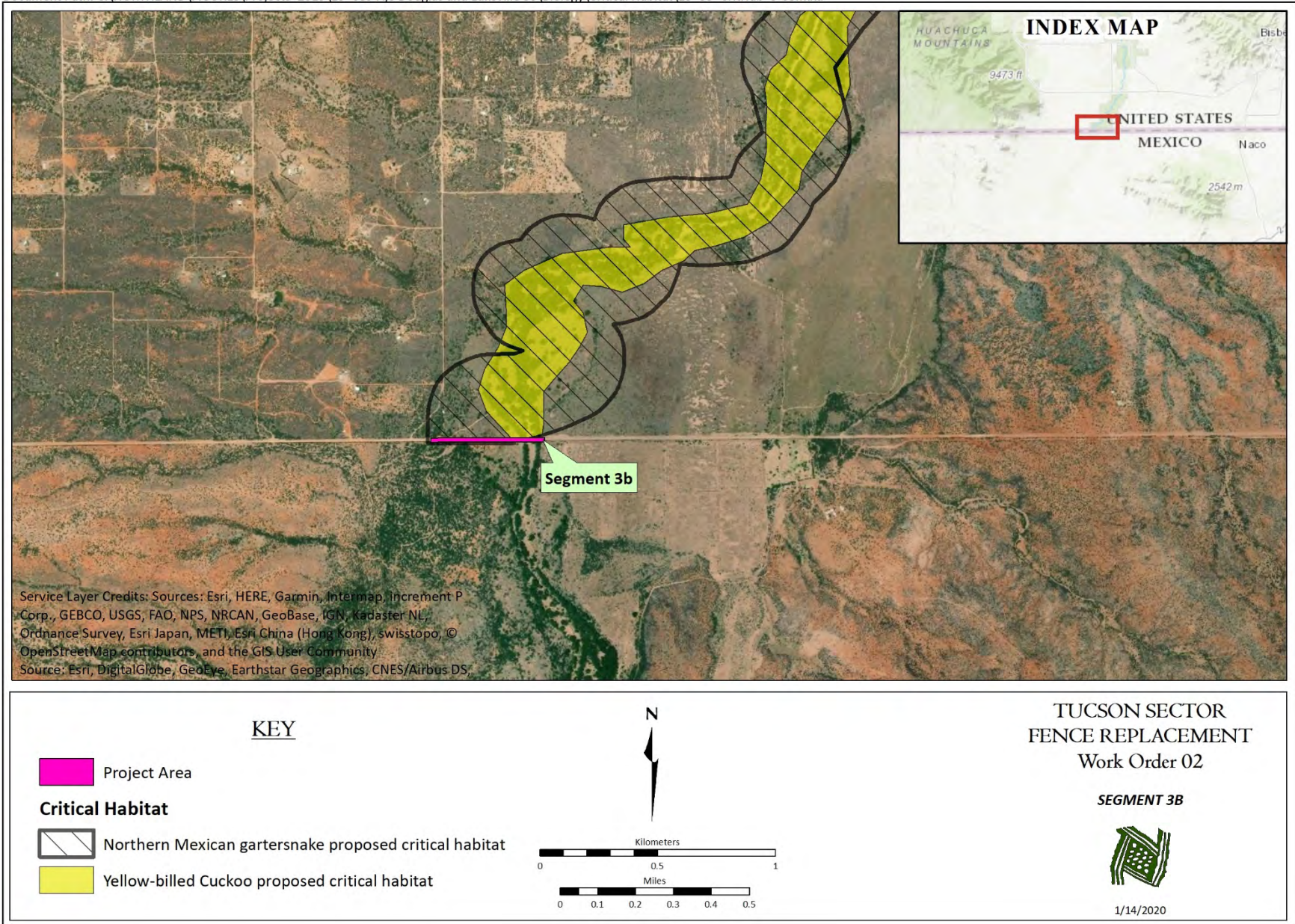


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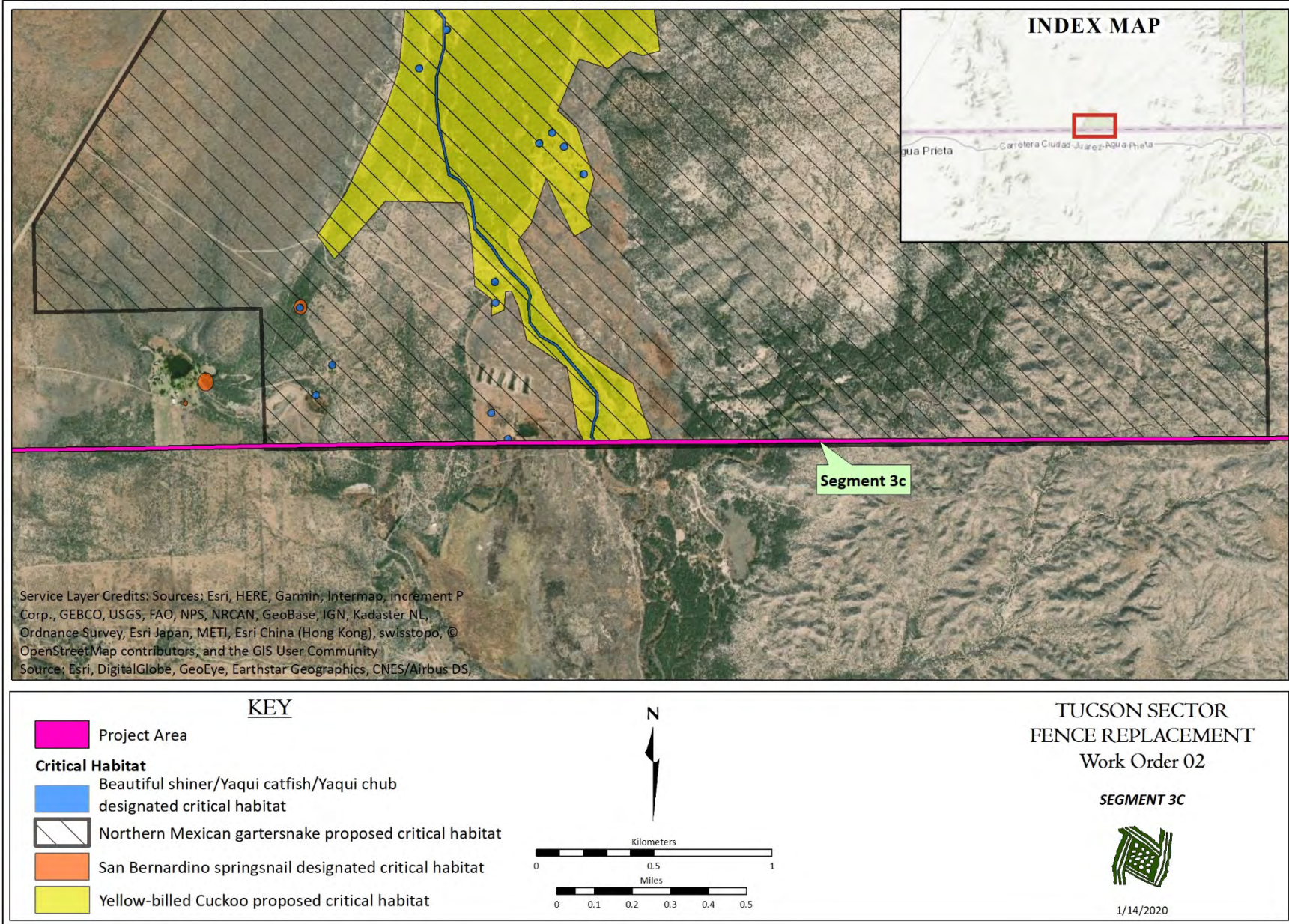


Figure 6

Appendix B:
Description of Special-Status Plant Species

Federally Listed Species

Huachuca water-umbel (*Lilaeopsis schaffneriana* ssp. *recurva*)

Federally endangered

Huachuca water umbel was listed as a Federal endangered species in January 1997 (62 FR 665) and critical habitat was designated in July 1999 (USFWS 1999, 64 FR 37441).

As of 2016, there were 17 known extant and 8 extirpated locations of Huachuca water umbel, and 6 locations where it has not been observed in recent years (USFWS 2016). Extant sites occur in 3 watersheds in the U.S., the San Pedro, Santa Cruz, and Río Yaqui. In Sonora Mexico, another 21 locations are known in the Santa Cruz, San Pedro, Río Yaqui, Río Sonora, and Río Concepción watersheds, but these sites have not been assessed recently (USFWS 2016). Huachuca water umbel is typically associated with cienegas, rivers, streams, and springs in shallow, perennial exposures or areas of slow-moving water between 2,000 and 7,000 feet (USFWS 2016). Side-channels in streams that create refugia sites protected from flood scour are suitable habitats. Huachuca water umbel is found around aquatic communities in association with bulrush (*Schoenoplectus* sp.), cattail (*Typha* sp.), spikerush (*Eleocharis* sp.), rush (*Juncus* sp.), and sedge (*Carex* sp.). They can be found in full sun exposure to the shady understory of willow-cottonwood riparian woodland and they are generally located around the edges of suitable riparian habitats (USFWS 2016).

Population occurrences have been documented near Survey Segment 3B and 3C (AZGFD 2019a). Suitable aquatic habitat is present in Survey Segment 3C at Black Draw, but it was not observed during surveys in 2019 (Bio-Studies 2020). During the same survey, Silver Creek was assessed for suitable Huachuca water umbel habitat, but the creek was dry, and no suitable habitat was observed. Critical habitat for the Huachuca water umbel occurs in the San Pedro River, downstream from Survey Segment 3B, but critical habitat does not extend upstream to the Survey Area. Surveys conducted in 2019 at San Pedro River did not find suitable habitat for Huachuca water umbel in the Survey Area in Segment 3B (Bio-Studies 2020). There is a moderate potential for Huachuca water umbel to occur in Survey Segment 3C.

Cochise pincushion cactus (*Escobaria robbinsiorum* [= *Coryphantha robbinsorum*])

Federal Threatened Species

Cochise pincushion cactus was listed as a Federal threatened species without critical habitat on January 9, 1986 (51 FR 952).

The Cochise pincushion cactus is scattered among three small limestone hills in San Bernardino Valley, southeastern Cochise County, Arizona (51 FR952, USFWS 1993, USFWS 2007). At least one additional population is known from northern Sonora, Mexico. The cacti are found on hills of high-calcium Permian limestone, at elevations from 4,200 to 4,700 feet at the transition between Chihuahuan Desert scrub and semi-desert grassland. Preferred soils are thin gravely loam over bedrock with fist-sized limestone rocks or rubble inclusions. Substrates are low in nutrients, well-drained, and have a pH of 7.9 to 8.0. Plants typically grow in full sunlight with the densest colonies forming on bedrock or where bedrock is close to the surface (USFWS 1993). The limited range of this species is attributed in the lack of optimal habitat (USFWS 1993, USFWS 2007). Within this limited range, plants are found scattered, with a few dense clumps ranging from 100 to 1,000 individuals.

Population occurrences have been documented north of the Survey Area, east of the SBNWR (AZGFD 2019b). Potentially suitable limestone soils are present in the eastern half of Segment 3C, but where they occur, they are alluvial flanks of the hills that support the cactus and just under the minimum documented elevation for the species. They also lack the bedrock exposure preferred by the cactus. Cochise pincushion cactus is unlikely to occur in the Survey Area.

References

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- AZGFD 2019b Arizona Game and Fish Department. 2019. *Coryphantha robbinsorum*, Cochise Pincushion Cactus. Heritage Data Management System [Map]. Accessed online < <https://drive.google.com/drive/folders/0BwLs0i-QWFssdVkwQ24wdlo1dE0>> February 2020.
- Bio-Studies 2020 Bio-Studies. 2020. Survey Report for Black Draw, Silver Creek, and San Pedro River Tucson Fence Replacement Project. February 2020.
- USFWS 1993 U.S. Fish and Wildlife Service. 1993. Cochise Pincushion cactus (*Coryphantha robbinsorum*) Recovery Plan. USDI Fish and Wildlife Service, Albuquerque, New Mexico. 44 pp.
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- USFWS 2007 U.S. Fish and Wildlife Service. 2007. Cochise Pincushion Cactus (*Coryphantha robbinsorum*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Arizona Ecological Services Office, Phoenix, Arizona. 15 pp.
- USFWS 2016 U.S. Fish and Wildlife Service. 2016. Draft recovery plan for *Lilaeopsis schaffneriana* ssp. *recurva* (Huachuca water umbel). U.S. Fish and Wildlife Service, Southwest Region, Tucson, Arizona. 85 pp.

Appendix C:
Description of Special-Status Wildlife Species

Federally Listed Species

Huachuca Springsnail (*Pyrgulopsis thompsoni*)

USFWS Candidate Conservation Agreement, U.S. Forest Service Sensitive, SGCN 1A

The Huachuca springsnail was designated a candidate species for listing under the ESA in 1996 (61 Federal Register [FR] 7601). Following a petition filed by WildGuardians in 2004, the USFWS concluded that listing of the Huachuca springsnail was warranted. A Huachuca Springsnail Working Group was created in 2016 and a Candidate Conservation Agreement for the Huachuca Springsnail (*Pyrgulopsis thompsoni*) was drafted in 2016. The Conservation Agreement is designed to guide conservation management for this species and alleviate the need for listing under the ESA (HSWG 2016).

The Huachuca springsnail is found in springs and cienegas in the San Pedro and Santa Cruz River drainages. In the San Pedro River drainage, Huachuca springsnail is found in Ramsey Canyon, Sawmill Canyon Spring, Canelo Hills Cienega, Bear Creek, Garden Canyon, McClure Canyon, Cave Spring, Huachuca Canyon, and Miller Canyon. In the Santa Cruz River drainage, they are found at Sheehy Spring, Cottonwood Spring, Monkey Spring, Peterson Ranch, and Neighbor Spring (AZGFD 2019a). They occupy marshy areas with aquatic and emergent plants in grasslands, oak and pine-oak woodlands, and pine forest vegetation communities between 4,500 and 7,000 feet (AZGFD 2019a). They are typically found in the shallower areas in cienegas or in the rocky seep habitats at a spring source (AZGFD 2019a). Their diet consists of periphyton, a mixture of algae, bacteria, microbes, and detritus found on submerged surfaces in aquatic environments (Mladenka 1992).

Suitable spring or cienega habitat is not present in the Survey Area at Segment 3A or 3B. All other Survey Segments are outside of the San Pedro and Santa Cruz River drainage range for this species. The nearest population occurrences are found northwest of Survey Segment 3A. There is no potential for Huachuca springsnail to be present in the Survey Area. There is a concern that if wells are constructed within the watershed it may draw down the spring water levels to a level where this species may no longer be supported.

San Bernardino Springsnail (*Pyrgulopsis bernardina*)

Federal Threatened Species, SGCN 1A

The San Bernardino springsnail was listed as a threatened species under the ESA in 2012 (77 FR 23059). Critical habitat for the springsnail was designated at the time of listing.

The historic range of the San Bernardino springsnail in the U.S. likely included several springs along the Rio San Bernardino (Black Draw) in the headwaters of the Rio Yaqui. The current distribution includes two springs on the John Slaughter Ranch Museum: Goat Tank Spring and Horse Spring (77 FR 23059). Critical habitat was designated for four springs, the two currently occupied springs, and Snail and Tule Spring (77 FR 23059). This species relies on freshwater habitats, including spring-fed brooks. It prefers sand and cobble substrates; moderate vegetation density, water velocity, and dissolved oxygen; water temperatures of 57–71°F; and pH values between 7.6 and 8.0 (AZGFD 2015a).

The San Bernardino springsnail is limited to two springs on John Slaughter Ranch Museum north of the Survey Area near Segment 3C. Neither spring is in the Survey Area and there is no critical habitat in the Survey Area. There is no potential for San Bernardino springsnail to be present in the Survey Area. There is a concern that if wells are constructed within the watershed it may draw down the spring water levels to a level where this species may no longer be supported.

Quitobaquito Tryonia (*Tyronia quitobaquiae*)

USFWS Species of Special Concern, SGCN 1A

The Quitobaquito tyronia is a freshwater snail in the family Cochliopidae. They are known from three springs in the Organ Pipe National Monument: Quitobaquito Spring, Burrow Spring, and William's Spring. They have been extirpated from the latter two sites (AZGFD 2019b). The Quitobaquito tyronia occupies spring habitats in the Sonoran Desert and is found among aquatic vegetation in the spring run channel. Plants associated with this habitat include *Juncus* sp., *Scirpus* sp., and *Eleocharis* sp. (AZGFD 2019b). The diet of this species is not well understood, but it is assumed that they feed on periphytic diatoms, similar to other springsnails.

The Quitobaquito tyronia is confined to the Quitobaquito Spring and the associated spring run channel and pool. The spring, including the pool, is 165 feet northeast of the Survey Area in Segment 1A. There is no suitable aquatic habitat in Segment 1A for Quitobaquito tyronia and no potential for them to occur in the Survey Area. There is a concern that if wells are constructed within the watershed it may draw down the spring water levels to a level where this species may no longer be supported.

Beautiful Shiner (*Cyprinella formosa*)

Federal Threatened Species, SGCN 1A

The beautiful shiner was listed as an endangered species under the ESA in August of 1984 (49 FR 34490). Critical habitat was designated for the beautiful shiner on the San Bernardino National Wildlife Refuge (SBNWR) at the time of listing (49 FR 34490).

The beautiful shiner was extirpated from its native range in the U.S. by 1970 and reintroduced into four ponds on the SBNWR in 1990 (AZGFD 2001a). It is typically found in pools, runs and riffles of small to medium streams with gravel, rock or sandy substrate. The largest populations are found in small streams or pools with a high percentage of riffle habitat in wet years (AZGFD 2001a). The beautiful shiner is an omnivore and feeds on aquatic and terrestrial insects in the water column and algae.

The beautiful shiner is known to occur in four pools on the SBNWR near Segment 3C. Aquatic surveys were conducted in the Survey Area at Black Draw in 2019 and no beautiful shiner were observed (Bio-Studies 2020a). There are no other areas of suitable beautiful shiner habitat in the Survey Area. Beautiful shiner is unlikely to be present in the Survey Area.

Quitobaquito Pupfish (*Cyprinodon eremus*)

Federal Endangered Species, SGCN 1A

The Quitobaquito pupfish was listed as an endangered species under the ESA in 1986 under the name desert pupfish (*Cyprinodon macularius*) (51 FR 10842). It was later separated out as a

subspecies (*C. m. eremus*) and eventually raised to its own species (*C. eremus*). Critical habitat was designated for desert pupfish at the time of listing, but only the Quitobaquito Spring portion of critical habitat is relevant for Quitobaquito pupfish.

The Quitobaquito pupfish occurs in one location in the U.S., Quitobaquito Spring just north of the U.S./Mexico international border in Organ Pipe Cactus National Monument in Arizona. Another population exists at Rio Sonoyta in Sonora, Mexico (USFWS 2010). Desert pupfish can withstand a range of environmental extremes, including high temperatures (95°F), high salinities (3 times that of seawater), and low dissolved oxygen in comparison to other freshwater fish (USFWS 2010). At Quitobaquito, the pupfish is found in a large, shallow pool where it prefers shallower water. They are omnivorous and feed on aquatic insects, crustaceans and plants.

The Quitobaquito pupfish is confined to the Quitobaquito Spring and its associated pool. Critical habitat for the pupfish at Quitobaquito includes a 100-foot buffer around the spring (51 FR 10842). The spring, including the pool, is 165 feet northeast of the Survey Area in Segment 1A. There is no suitable aquatic habitat in Segment 1A for pupfish. There is no potential for the Quitobaquito pupfish to occur in the Survey Area.

Yaqui Chub (*Gila purpurea*)

Federal Endangered Species, SGCN 1A

The Yaqui chub was listed as an endangered species under the ESA in August of 1984 (49 FR 34490). Critical habitat for the Yaqui chub was designated on the SBNWR at the time of listing (49 FR 34490).

In Arizona it is found in the SBNWR, Leslie Canyon National Wildlife Refuge (NWR), and associated ponds and main stream of West Turkey Creek in the Chiricahua Mountains (AESFO 2010a). The species requires clean, narrow, permanent streams and spring pools, free of introduced fish species. It prefers living in deep pools of smaller streams with dense vegetation in the water (AZGFD 2001b). Larger individuals prefer deep pools and smaller individuals prefer intermediate riffles and smaller pools (AZGFD 2001b). Associated overstory vegetation includes watercress (*Nasturtium* spp.), willow (*Salix* sp.), seep-willow (*Baccharis salicifolia*), cottonwood (*Populus fremontii*), velvet ash (*Fraxinus velutina*), and tobosa grass (*Pleuraphis mutica*).

The Yaqui chub is present in Black Draw and various pools associated with Black Draw on the SBNWR. Surveys conducted in 2019 in the Survey Area at Black Draw found four Yaqui chub (Bio-Studies 2020a). Yaqui chub is present in the Survey Area in Segment 3C.

Yaqui Catfish (*Ictalurus pricei*)

Federal Threatened Species, SGCN 1A

The Yaqui catfish was listed as a threatened species under the ESA in 1984 (49 FR 34490). Critical habitat was designated for the Yaqui catfish on the SBNWR at the time of listing (49 FR 34490).

The species is found only in the Rio Yaqui Drainage of Sonora, Mexico. Previously extirpated from the United States, it was reintroduced to SBNWR and West Turkey Creek in Cochise County, Arizona in 1997 (AZGFD 2001c) which is the northern reach of the Rio Yaqui watershed. The species inhabits ponds, streams, and moderate to large rivers in areas of medium to slow current over sand/rock bottom. Its known elevation range is in streams from 4,000 to 5,000 ft (AZGFD

2001c). The Yaqui catfish feeds on other fish, insects, larvae, crustaceans, and plant and detritus matter found on the bottom of the water body (AZGFD 2001c).

This species was reintroduced into the SBNWR in 1997. It was not observed during surveys conducted at Black Draw in 2019 (Bio-Studies 2020a). There is a moderate potential that this species is present in Segment 3C in the Survey Area.

Yaqui Topminnow (*Poeciliopsis occidentalis sonoriensis*)

Federal Endangered, SGCN 1A

The Yaqui topminnow was listed as an endangered species in 1967 under the Endangered Species Preservation Act under the name Gila topminnow (*Poeciliopsis occidentalis*) (32 FR 4001). No critical habitat was designated. The Gila topminnow has since been split into two subspecies, the Yaqui topminnow (*P. o. sonoriensis*) and the Gila topminnow (*P. o. occidentalis*).

The Yaqui topminnow is currently found in both natural and introduced populations in the SBNWR. It has also been introduced into Leslie Canyon NWR. This topminnow lives in shallow, warm, slow-moving waters containing thick algae and debris. It is most common in marshes, especially those fed by springs. It feeds on detritus and small bits of animal and plant material. They can tolerate a range of water temperatures from freezing to 100°F and low dissolved oxygen (AESFO 2010b, AZGFD 2001d). This species is tolerant of varying water quality conditions and adapted to periodic flash flooding (AZGFD 2001d).

Yaqui topminnow is known to be present at Black Draw in the SBNWR (AZGFD 2001d). Surveys conducted at Black Draw in the Survey Area documented 250 Yaqui topminnows (Bio-Studies 2020a). Yaqui topminnow is present in the Survey Area in Segment 3C.

Sonora Tiger Salamander (*Ambystoma mavortium stebbinsi*)

Federal Endangered Species, SGCN 1A

The Sonora tiger salamander was listed as an endangered species under the ESA in 1997 (62 FR 665). No critical habitat was designated for the Sonora tiger salamander.

Sonora tiger salamanders are only found in the Eastern San Rafael Valley in Santa Cruz County and Western Cochise County in Southern Arizona. The species is also known to higher elevations on the Mogollon Rim. Adult Sonora tiger salamanders come in two forms, terrestrial metamorphosed adults without gills, or branchiate adults that do not metamorphose, retain gills and remain aquatic like a larval stage juvenile (AZGFD 2013a). Adult Sonora tiger salamanders living in ephemeral ponds that dry will metamorphose when large enough. In permanent ponds only a small percent of adults that are large enough will metamorphose, the rest remain as branchiate adults (USFWS 2002). The Sonora tiger salamander is found around sources of water, including lakes and natural or livestock ponds in arid sagebrush plains, desert grasslands, mountain meadows and forest habitats. They occupy old burrows dug by gophers, badger or ground squirrels or they find refuge under other objects. The essential habitat feature for suitable Sonora tiger salamander habitat is standing water from January to June (USFWS 2002). Adult salamanders feed on terrestrial insects and other large terrestrial and aquatic invertebrates. Branchiate adults feed on zooplankton, large aquatic invertebrates, salamander eggs and salamander larvae (USFWS 2002).

Survey Segment 3A is approximately 1.5 miles east of the known range and documented population occurrences (AZGFD 2019c). Suitable desert grassland upland habitat is present, but the area lacks a suitable source of standing water that is necessary for this species, making presence in Segment 3A unlikely.

Chiricahua Leopard Frog (*Lithobates chiricahuensis*)

Federal Threatened Species, SGCN 1A

The Chiricahua leopard frog was listed as a threatened species under the ESA in 2002 (67 FR 40790). Critical habitat was designated in 2012 (77 FR 16324).

The Chiricahua leopard frog is found in two major population segments in Arizona. One population is found in the montane areas of central Arizona and Mogollon Rim. The second population is found in southeastern Arizona in the mountains and valleys south of the Gila River (AZGFD 2019d). Traditional habitat for the Chiricahua leopard frog consists of cienegas, pools, livestock ponds, lakes, reservoirs, streams, and rivers between 3,000 and 9,000 feet. Their current distribution is restricted to springs, livestock ponds, and the upper portions of stream watersheds where non-native predators are not present (AZGFD 2019d). Chiricahua leopard frogs feed on a wide variety of arthropods, invertebrates, and potentially small vertebrates.

Suitable habitat for the Chiricahua leopard frog is present in the Survey Area in Survey Sections 3B and 3C. Predicted range and documented populations are present near Survey Segment 3B and 3C (AZGFD 2019e). Surveys in Black Draw (Segment 3C) were conducted in 2019 (Bio-Studies 2020a). One leopard frog tadpole was collected during seining surveys. This individual could not be conclusively identified as Chiricahua leopard frog from markings, but adult Chiricahua leopard frogs were noted calling from habitat south of the U.S./Mexico border near the survey site (Bio-Studies 2020a). Chiricahua leopard frogs are known to hybridize with lowland leopard frogs (*Lithobaetes yavapaiensis*) which are present on SBNWR, and Chiricahua leopard frogs have not been observed on SBNWR since 1991 (SWAT 2019). Therefore, Chiricahua leopard frogs cannot be confirmed at Black Draw, but they have a high potential to occur in the Survey area.

Sonoran Desert Tortoise (*Gopherus morafkai*)

USFWS Candidate Conservation Agreement, U.S. Forest Service Sensitive, Bureau of Land Management Sensitive; SGCN 1A

The Arizona Interagency Desert Tortoise Team (AIDTT) was formed in 1985 and drafted a management plan for the Sonoran population of desert tortoise (*Gopherus agassizii*) in 1995. The AIDTT improved the management plan as a State Conservation Agreement in the early 2000's and the Sonoran population of desert tortoise became a candidate for Federal listing under the ESA in 2010 (75 FR 78094). The Sonoran desert tortoise was split out into its own species as *G. morafkai* in 2011 (AIDTT 2015). A Candidate Conservation Agreement for the Sonoran Desert Tortoise was completed in 2015 (AIDTT 2015) and alleviated the need to list the species under the ESA. It was subsequently removed from the candidate species list (USFWS 2015).

Sonoran desert tortoises have been documented as far west as the Yuma Proving Grounds and Barry M. Goldwater Range in Yuma County and as far east as the middle San Pedro River drainage in Cochise County (AZGFD 2015b). Some observations are documented in southeastern Cochise County, but these are believed to be released pet tortoises (AZGFD 2015b). Sonoran desert tortoises occupy areas of Sonoran and Mojave Desert scrub on rocky slopes and bajadas. One of

the most critical habitat features in Sonoran desert tortoise habitat is the presence of adequate shelter. Shelter may be present in the form of loose soil, which would allow tortoises to dig shallow burrows under rocks and boulders, under vegetation, or occasionally burrow into open slopes (AZGFD 2015). Shelter can also be found in rock crevices or caliche caves in incised banks of desert washes (AZGFD 2015). They use these shelters to escape the temperature extremes of the desert summers and winters. They feed on annual and perennial grasses, forbs, shrubs, trees, and succulents. The most common items in the diet include the woody vine Slender Janusia (*Janusia gracilis*) and various mallows (Malvaceae) (Van Devender and Schwalbe 1999).

Suitable habitat for Sonoran desert tortoise is present in Survey Segments 1A, 2 and 1B. Predicted range, population occurrences and observations have been documented in or near the Survey Area (AZGFD 2019f). There is a high potential for Sonoran desert tortoise to occur in the Survey Area.

Sonoyta Mud Turtle (*Kinosternon sonoriense longifemorale*)

Federal Endangered Species, SGCN 1A

The Sonoyta mud turtle was listed as an endangered species under the ESA in 2017 (82 FR 43897). Critical habitat was proposed for the Sonoyta mud turtle on 12.28 acres at Quitobaquito Springs in Organ Pipe Cactus National Monument in 2018 (83 FR 62778).

The Sonoyta mud turtle is known only from the Quitobaquito Spring in the U.S. and from another five locations in Rio Sonoyta, Sonora, Mexico (AZGFD 2016). They occur in aquatic and riparian habitats with perennial, or close to perennial water. These aquatic habitats are dominated by American bulrush (*Schoenoplectus americanus*) and contain other species of sedge (*Carex* sp.) as well (AZGFD 2016). Sonoyta mud turtles lay their eggs; average four per clutch, on land and have a relatively high rate of survival (AZGFD 2016). Sex determination depends on incubation temperature and can have an effect over time on the demographics of the population. They are carnivorous and feed on a variety of prey items, including insects, crustaceans, snails, fish, and amphibians, but will also consume some plant material (AZGFD 2016).

The Sonoyta mud turtle is restricted to the aquatic portions of the Quitobaquito Spring and nearby adjacent land for nesting. The Quitobaquito Spring is approximately 165 feet northeast of the Survey Area at Segment 1A. There is no potential for the Sonoyta mud turtle to occur in the Survey Area due to a lack of suitable habitat within the Survey Area Segment 1A.

Northern Mexican Gartersnake (*Thamnophis eques megalops*)

Federal Threatened Species; U.S. Forest Service Sensitive; SGCN 1A

The northern Mexican gartersnake was listed as a threatened species under the ESA in 2014 (79 FR 38678). Critical habitat for this species was proposed in 2013 (78 FR 41550).

Northern Mexican gartersnake occur in, middle and lower Tonto Creek, the middle and upper Verde River drainage, the Cienega Creek drainage, and several scattered wetlands in southeastern Arizona, including the SBNWR (AZGFD 2012). The northern Mexican gartersnake is found in cienega pools, riparian forest and woodland, and along streams in upland riparian gallery forest in densely vegetated habitats between 3,000 and 5,000 feet (occasionally up to 8,500 feet). The northern Mexican gartersnake forages for native fish and tadpoles of the family Ranidae. In

addition, they will also feed on earthworms, small rodents, lizards, salamanders and small adult frogs (AZGFD 2012).

Suitable habitat for the northern Mexican gartersnake is present in the Survey Area in Segments 3B and 3C. Proposed critical habitat is present in Survey Segment 3B and predicted range and a population occurrence has been documented in Survey Segment 3C (AZGFD 2019g).

Golden Eagle (*Aquila chrysaetos*)

Bald and Golden Eagle Protection Act, U.S. Bureau of Land Management Sensitive, SGCN 1B

The original Bald Eagle Protection Act of 1940 was amended and renamed in 1962 to include federal protection for the golden eagle as well.

The golden eagle is large raptor of open and semi-open areas and tends to avoid areas of contiguous forest. Found throughout Europe, Asia and North America, they are primarily distributed in the western areas of North America up into Canada and Alaska, and down into Mexico. Occurrences of golden eagles in the eastern areas of North America are scarce or occur during migration (The Cornell Lab 2020). They build large nests on cliffs or mature trees, and on man-made structures, in areas surrounded by grassland, chaparral, shrubland, forest and other vegetation types (The Cornell Lab 2020). Nests can reach eight to ten feet across and up to four feet deep (AZGFD 2002a) as the nesting site allows, with nest growing in size over successive years of use. A territory may have several alternate nests and the pair may elect to use the same nest site in consecutive years, or alternate among nest sites (AGFD 2002a). The peak breeding period in the southwest is between February and March with 1-3 eggs typical in a clutch. In Arizona golden eagles are generally found around mountainous terrain and tend to leave hot desert environments during the summer after the breeding season (AGFD 2002a). Territories range from 22 to 55 square miles in the western U.S. (AGFD 2002a).

Golden eagles feed on a variety of medium-sized vertebrates, including ground squirrels (Family Sciuridae), rabbits (*Sylvilagus* sp., *Lepus* sp.), prairie dogs (*Cynomys* sp.), marmots (*Marmota* sp.), snakes (e.g. *Pituophis* sp.) and similar species, and will also scavenge larger carcasses.

No golden eagle nesting habitat occurs within the Survey Area, but potential nesting habitat is present outside the Survey Area within the foraging distance of a golden eagle pair. Golden eagles may forage in the Survey Area in Survey Segments 1A, 1B, 2, 3A, 3B, and 3C, and are expected to be absent in Segments 1A, 2, and 1B in the summer months following the breeding season. There is moderate potential for golden eagles to be present in the Survey Area.

Yellow-billed Cuckoo (*Coccyzus americanus*; Western DPS*)

Federal Threatened Species, U.S. Forest Service Sensitive, SGCN 1A

The Western Distinct Population Segment (DPS) of yellow-billed cuckoo was listed as a Federal threatened species in 2014 (79 FR 59991). Critical habitat for the yellow-billed cuckoo (Western DPS) was proposed in 2014 (79 FR 48548). In June of 2018 a petition to delist the yellow-billed cuckoo (Western DPS) was acknowledged by the USFWS and a status review was initiated (83 FR 30091). The results of that status review are expected in 2020. An eastern population of yellow-billed cuckoo east of the Rocky Mountains is considered separate from the western population, but a formal distinction has not yet been accepted (Daw 2014).

Western DPS yellow-billed cuckoos (are migratory, nesting from northwest Mexico up through the U.S. west of the Rocky Mountains, and into southwest Canada. They winter in South America,

as far south as central Argentina and Uruguay (AZGFD 2011a). West of the Rocky Mountains, the yellow-billed cuckoo is found in cottonwood-willow gallery forest in riparian corridors, as well as, non-native salt cedar groves. Suitable habitats have a densely structured understory which may play an important role in nest site selection. In Arizona, yellow-billed cuckoos can be found outside of the cottonwood-riparian habitats in mesquite bosques and are only transient in desert and urban habitats (AZGFD 2011a). The yellow-billed cuckoo is found in all counties of Arizona, despite habitat reductions from historic levels.

Cicadas and tent caterpillars are important food sources and yellow-billed cuckoo breeding often occurs during outbreaks of these two species. Stick platform nests are constructed in areas well-concealed by foliage 4 to 30 feet high in willows or mesquite. A clutch of 3-4 eggs are laid and hatch synchronously. In addition to building a nest, the yellow-billed cuckoo may occasionally parasitize the nests of other bird species by laying their eggs in the nest of another species. This occurs particularly in years of abundant food supply. Double clutching is also known in this species. In addition to cicadas and tent caterpillars, yellow-billed cuckoos will also feed on other bird eggs, frogs, lizards, ants, beetles, wasps, flies, berries and fruit (AZGFD 2011a).

Suitable habitat for the yellow-billed cuckoo is present along the San Pedro River in Survey Segment 3B and in the area of Black Draw in Survey Segment 3C. Populations of yellow-billed cuckoo have been documented at both sites (AZGFD 2019h). There is a high potential for yellow-billed cuckoos to occur in the Survey Area.

*Distinct Population Segment (yellow-billed cuckoos west of the Rocky Mountains).

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Federal Endangered Species, SGCN 1A

The southwestern willow flycatcher subspecies was listed as a Federal endangered species in 1995 (60 FR 10694). A revised critical habitat for the subspecies, including 1,975 drainage kilometers, was designated in 2013 (78 FR 344). Critical habitat has been designated in several counties in Arizona.

The southwestern willow flycatcher is migratory with a breeding range in the Southwest U.S and extreme Northern Mexico and a wintering range in Mexico, Central and possibly South America. The breeding range in the U.S. includes Arizona, New Mexico, and southern California, plus the extreme southern part of Nevada and Utah, and southwest Colorado.

Breeding habitat consists of dense riparian forests and thickets along rivers, swamps, lakes, or reservoirs. Historically, nesting occurred in willow (*Salix* sp.), mulefat (*Baccharis salicifolia*), boxelder (*Acer negundo*), buttonbush (*Cephalanthus occidentalis*) and cottonwood (*Populus fremontii*); however, as a result of alterations to riparian habitats, the southwestern willow flycatcher now includes tamarisk (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolia*) and mixed non-native vegetation stands of suitable structure to the list of vegetation suitable for nesting (USFWS 2014). The southwestern willow flycatcher is insectivorous, foraging on insects which it catches in flight or it gleans off vegetation.

Limited habitat for the southwestern willow flycatcher is present in riparian areas at Black Draw, Survey Segment 3C, and the San Pedro River, Survey Segment 3B. These areas may be used for nesting or as a movement corridor to more suitable nesting habitat during migration (Bio-Studies 2020b). There is a moderate potential for southwestern willow flycatchers to be present in the Survey Area.

Bald Eagle (*Haliaeetus leucocephalus*)

Bald and Golden Eagle Protection Act, U.S. Fish and Wildlife Service Species of Concern, U.S. Forest Service Sensitive, Bureau of Land Management Sensitive, SGCN 1A

The bald eagle first received Federal protection under the Bald Eagle Protection Act (later amended and renamed to include golden eagles) in 1940. The bald eagle was listed as endangered when the Endangered Species Act was adopted in 1973. In 1995, the bald eagle status was reclassified from endangered to threatened and in 1999 proposed for delisting. In 2007, the bald eagle was delisted under the Endangered Species Act but retains federal protections under the Bald and Golden Eagle Protection Act (in addition to the Migratory Bird Treaty Act).

Bald eagles feed primarily on fish and are found in habitats near large water sources, such as coastal areas, estuaries, and inland waters including rivers, water impoundments, dam spillways, and lakes. They can inhabit arid habitats if adequate food is available in an appropriate water source (AZGFD 2011b). Nests are constructed in tall trees, often ones rising above the surrounding forest. If tall trees are not available, bald eagles will nest on a cliff or ledge. Nests are large, up to 6 feet across and 3 feet tall. Nest material is added every season, so nest can become much larger if there is sufficient support. Most nests are only used for a few years. In addition to feeding on fish, bald eagles will also take small mammals, carrion, and waterfowl. They will also steal food items from other eagles or osprey (*Pandion haliaetus*).

A resident population of bald eagles is present in central Arizona, and wintering eagles are present in both central and northern Arizona (AZGFD 2011b). There are insufficient open water resources to support nesting or wintering bald eagles in the Survey Area. The nearest bald eagle occurrence is for wintering eagles located 13 miles northwest of Survey Segment 3A at Parker Canyon Lake, Cochise County (AZGFD 2019i). Two observations of bald eagles have been reported on eBird from the SBNWR (Sullivan et. al. 2009). One observation in 2019 was of a bald eagle moving towards Sonora, Mexico at very high altitude, and the second observation from 2003 contains no added comment beyond the observation. Bald eagles are unlikely to occur in the Survey Area.

Yuma Ridgway's Rail (*Rallus obsoletus yumanensis*)

Federal Endangered Species, SGCN 1A

The Yuma Ridgway's rail was first listed as endangered in 1967 under the Endangered Species Preservation Act of October 15, 1966 (As Yuma clapper rail, *Rallus longirostris yumanensis*). It became a Federal endangered species in 1973 with the adoption of the Endangered Species Act. No critical habitat for this species was designated.

In Arizona, the Yuma Ridgway's rail is found along the Colorado River up to Lake Mead, the Virgin River, Bill Williams river and lower Gila River (AZGFD 2006). They are occasionally reported in suitable habitats outside these riparian corridors. The preferred habitat of the Yuma Ridgway's rail is fresh or brackish marshes and sidewaters with dense cattail (*Typha* sp.) and bulrush (*Schoenoplectus* sp.). Within this habitat, they are found at the interface between standing water and saturated soil. When the soil surface in a marsh dries out, the rail moves to a new location. Nests are constructed of various types of vegetation and are built on a stable base such

as a grass clump, low snag, base of emergent plants, or on mats of residual vegetation (USFWS 2009). Male rails construct multiple nests in a territory in case the primary nest is disturbed by predators or rising water (USFWS 2009). Adult rails are able to move eggs from one nest location to another (USFWS 2009). During nesting, both the male and female will defend the territory (AZGFD 2006). A clutch of 5 to 10 eggs with males incubating at night and females during the day. Re-nesting in this species has not been confirmed, but in general, clapper rails will re-nest if the first nest fails (USFWS 2009).

One of these occasional occurrences for Yuma Ridgway's rail is Quitobaquito Spring, 165 feet north of the Survey Area in Survey Segment 1A (AZGFD 2006). If Yuma Ridgway's rail are currently present at Quitobaquito Spring, they would be expected to occupy the thick cattail edges of the spring pond. There is no suitable habitat between the spring and the Survey Area, and no suitable habitat in the Survey Area. There may also be suitable habitat in Survey Segment 3C at Black Draw, but this area appears to be beyond the accepted range for this species (USFWS 2009). There are no reports of this species from Cochise County and no predicted habitat (AZGFD 2019j). the Yuma Ridgway's rail is unlikely to occur in the Survey Area.

Mexican Spotted Owl (*Strix occidentalis lucida*)

Federal Threatened Species, SGCN 1A

The Mexican spotted owl was given Federal threatened species status in 1993 (58 FR 14248) and critical habitat was designated in 1995 (60 FR 29914). Critical habitat for the Mexican spotted owl was rescinded in 1998 (63 FR 14378) and re-designated in 2001 (66 FR 8530) and again in 2004 (69 FR 53181).

Mexican spotted owls inhabit forested and rocky-canyon habitats. Forest habitats tend to have high canopy cover with multiple levels in the interior. In Arizona, these forests tend to be composed of mixed-conifer, pine-oak and evergreen forest species, and nests are built in larger trees. They will also inhabit rocky canyon habitats with various desert scrub and riparian vegetation communities where they will roost and nest in caves and rock ledges. Foraging habitat is more varied and can include managed and unmanaged forests, pinyon-juniper woodlands, mixed-conifer, and ponderosa pine forest. Cliff areas, terraces between cliffs and riparian areas are also used by Mexican spotted owls for foraging (USFWS 2012, AZGFD 2005). The primary food sources for the Mexican spotted owl include small and medium-sized rodents, including woodrats (*Neotoma* sp.), deer mice (*Peromyscus* sp.), pocket gophers (*Thomomys* sp.) and voles (*Microtus* sp.), but they will also take bats, birds, reptiles and arthropods (USFWS 2012).

Suitable forest or rocky canyon habitat for the Mexican spotted owl does not occur in the Survey Area; however, Survey Segment 3A is located along the southern edge of designated Mexican spotted owl critical habitat. The vegetation in this area is desert grassland and is unsuitable for Mexican spotted owl nesting. More suitable habitat begins approximately 0.3 miles northwest of Segment 3A. Given the lack of suitable habitat within the Survey Area, there is no potential Mexican spotted owls will nest in the Survey Area, and the desert grassland habitat in Segment 3A makes the presence of foraging Mexican spotted owls unlikely.

Sonoran Pronghorn (*Antilocapra americana sonoriensis*)

Federal Endangered Species, USFWS Nonessential Experimental Population, SGCN 1A

The Sonoran pronghorn received Federal protection as an endangered species in 1967 under the Endangered Species Preservation Act (32 FR 4001) and was included as an endangered species under the Endangered Species Act in 1973 (40 FR 44412). In 2011, the USFWS established a nonessential experimental population (NEP) of Sonoran pronghorn in Arizona. The NEP is located north of Interstate 8 and south of Interstate 10, with the Colorado River forming the western boundary and Interstate 10 forming the eastern boundary (Kofa Sub-unit). The NEP continues south of Interstate 8 with Highway 85 as the western boundary and Interstates 10 and 19 forming the eastern boundary (Sauceda Sub-unit). The southern boundary is the U.S.-Mexico border (76 FR 25593). Sonoran pronghorn were released in the Kofa NWR in 2013, 2014 and 2015, and in the Barry Goldwater Range East (East of Highway 85) in 2015 (USFWS 2016a).

The Sonoran pronghorn is one of five subspecies of pronghorn and one of three subspecies found in Arizona, including Chihuahuan pronghorn (*A. americana mexicana*), and American pronghorn (*A. americana americana*). The Chihuahuan pronghorn is classified as a big game animal in Arizona (AZFGD 2002b). Sonoran pronghorn are found in two subdivisions of the Sonoran Desert, the Arizona Upland subdivision and the Lower Colorado subdivision (AZGFD 2002b). These include paloverde-saguaro and creosote-bursage vegetation types. They typically occupy open habitats on broad alluvial valleys and prefer areas with paloverde (*Parkinsonia* sp.) and chainfruit cholla (*Cylindropuntia fulgida*) (USFWS 2016). They infrequently use more mountainous terrain (USFWS 2016). Chainfruit cholla is an important food source during the summer and may make up half of their diet at this time (AZGFD 2002). They browse on forbs and cholla in the summer and fall and shrubs, cholla and ocotillo during the remaining periods (AZGFD 2002b).

The Sonoran pronghorn is found in Yuma, La Paz, Maricopa, and Pima Counties in southwestern Arizona. They frequently use the valleys and hills of Pinta Sands, Mohawk Valley, San Cristobal Valley, and Growler Valley northwest of the Survey Area. Of these locations Pinta Sands is closest to the Survey Area at 15 miles northeast of Segment 1A. Sonoran pronghorns are known to occur within CPNWR, and Organ Pipe National Monument (USFWS 2016a) with the CPNWR being central to its natural distributional range (USFWS 2006). There is high potential for Sonoran pronghorn to occur in the Survey Area in Segment 1A and Segment 2 from Lukeville west. Segment 2 from Lukeville east through Segment 1B is NEP Sonoran pronghorn habitat. Sonoran pronghorn may be split from portions of their range, water resources or other Sonoran pronghorn unless it is possible for them to move north and south across the border. It is also worth noting that Chihuahuan pronghorn have been reintroduced into historic southeastern Arizona range and could be present in Segment 3A, 3B or 3C.

Black-tailed Prairie Dog (*Cynomys ludovicianus*)

USFWS Candidate Conservation Agreement, Bureau of Land Management Sensitive, SGCN 1A

In 1998, the 11 states within the historic range of the black-tailed prairie dog (Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas and Wyoming) formed the Interstate Black-tailed Prairie Dog Conservation Team and developed the Black-tailed Prairie Dog Conservation Assessment and Strategy. Each State in the conservation team developed their own State management plan, under the guidance of a Multi-state

Conservation Plan, to guide the conservation of the Black-tailed prairie dog. This conservation strategy alleviates the need for Federal protection under the ESA.

Black-tailed prairie dogs live in desert grassland habitats on flat open ground. They prefer shortgrass or heavily grazed vegetation communities with grass less than a foot tall (AZGFD 2013b). They are burrowing animals and prefer fine textured soils to preserve the integrity of their burrows. Burrow entrances are obvious with a large mound of soil used as a lookout position. Burrows extend up to 10 feet deep and are dug in such a way that the prevailing wind provides ventilation in the burrow system. Burrows have multiple exits and are divided into areas for nesting, resting during the hotter periods of the year, and for bathrooms. Black-tailed prairie dogs feed on grasses, forbs, and shrubs, eating leaves, stems, and seeds. Some insects are consumed as well (AZGFD 2013b). They are active throughout the year and do not store food underground. The primary predators of Black-tailed prairie dogs include badgers (*Taxidea taxus*), and black-footed ferrets (*Mustela nigripes*)

In Arizona, black-tailed prairie dogs were originally distributed across the southeastern portion of the state but were eradicated by 1961 (AZGFD 2013b). A reintroduction effort was initiated in Arizona in 2008 at the Las Cienegas National Conservation Area. Three colonies have been established as of 2015 (KTAR 2015). Predicted range for the black-tailed prairie dog includes Survey Segments 3A, 3B and 3C (AZGFD 2019k), but the only extant population is over 30 miles to the northwest of Segment 3A.

Ocelot (*Leopardus pardalis*)

Federal Endangered Species; SGCN 1A

The United States population of ocelot was listed as a Federal endangered species in 1982 (47 FR 31670). No critical habitat was designated.

The ocelot's range historically included the southern U.S. and northern Mexico (USFWS 2016b, AZFGD 2010). Although the greatest abundance of ocelots occurs in tropical environments of Mexico, the range of northern populations extends into the more arid environments of the southwestern U.S including remnant populations in Texas and transient populations in Arizona. In its northern range the ocelot occurs in subtropical thorn forest, thorn scrub and dense brushy thickets, often in riparian bottomland where it prefers areas of dense ground cover. The ocelot is more adaptable than the jaguar and may persist in partly cleared forests, dense cover near large towns, second growth woodland, and abandoned cultivation, which have gone back to bush. Ocelots are primarily crepuscular and nocturnal, spending the day in heavy brush. Vegetation densities in the survey area are sparse to moderate compared to other areas within the ocelot's range; however, the ocelot could potentially migrate through the area or utilize the terrain itself as cover.

Predicted range for the ocelot is present in Survey Segments 3A, 3B, and 3C (AZGFD 2018). Observations of ocelots have been documented in the Huachuca Mountains, immediately north of Survey Segment 3A. Marginal habitat is present in 3A, 3B and 3C. Ocelots may use Black Draw (Segment 3C) and the San Pedro River valley (Segment 3B) as movement corridors to reach more suitable habitats. There is a moderate potential for ocelots to occur in the Survey Area.

Jaguar (*Panthera onca*)

Federal Endangered Species, SGCN 1A

The jaguar first received Federal protection as an endangered species in 1972 when they were added to the list of foreign endangered species protected under the amended Endangered Species Preservation Act (37 FR 6476) and was included as an endangered species under the Endangered Species Act in 1973 (40 FR 44412). Due to an oversight, the U.S. population of jaguar was not listed as an endangered species until 1997 (62 FR 39147). Critical habitat for the jaguar was designated in 2014 (79 FR 12572).

In Arizona, jaguars have been observed in southcentral and southeastern Arizona. They are rarely encountered with only about 7 or 8 individuals observed north of the U.S.-Mexico border since 1996 (USFWS 2018). All of those individuals were male jaguar, no female jaguar have been documented in the U.S. since 1963 (USFWS 2018). Jaguars prefer lowland wet vegetation communities, including swampy savannas and tropical rain forests at the mid-latitudes of their range, but in the northern more arid portions of their range, jaguars will use thornscrub, desert scrub, chaparral, semi-desert grassland, Madrean evergreen woodlands, deciduous forest and conifer forest (USFWS 2018). Jaguars in the northern portion of their range may be irregularly active throughout the day or night (USFWS 2018). They are ambush hunters and will take a wide variety of prey species, including javelina (*Tayassu tajacu*) white-tailed deer (*Odocoileus virginianus*), rabbits (*Sylvilagus* sp. and *Lepus* sp.) and occasionally carrion. They also tend to feed heavily on cattle (*Bos taurus*) in the northern portions of their range.

The nearest documented observation of jaguar to the Survey Area is approximately 5 miles to the northwest of Survey Segment 3A in the Huachuca Mountains. Survey Segment 3A is on the southern edge of jaguar critical habitat. Vegetation communities in Survey Segments 3A, 3B and 3C are all suitable to support jaguar, and there is a known individual(s) in the Huachuca Mountains near Survey Segment 3A. There is only a moderate potential for jaguar being present within the Survey Area given the low numbers of individuals in Arizona.

Present

Sonoran Collard Lizard (*Crotaphytus nebrius*)

SGCN 1B

The Sonoran collared lizard is found on rocky bajadas, hillsides, canyons and mountain slopes where large boulders are present for basking and as lookout spots. These areas are vegetated with Sonoran Desert scrub and include saguaro (*Carnegia gigantea*), barrel cactus (*Ferocactus* sp.), fishhook cactus (*Mammillaria* sp.), cholla (*Cylindropuntia* sp.) paloverde (*Parkinsonia* sp.), mesquite (*Prosopis* sp.), and other species (AZGFD 2007). They are day-active lizards with activity extending into the dusk period as well (AZGFD 2007). Sonoran collared lizards are well-adapted to the desert heat and will hibernate through the fall and winter periods. They make use of burrows to escape from danger. They feed on a variety of insects, spiders and small lizards.

Predicted range for the Sonoran collard lizard is present in Survey Segments 1A, 2 and 1B (AZGFD 2019l). A Sonoran collard lizard was observed in Segment 1B during surveys and are considered present in the Survey Area.

Reticulate Gila Monster (*Heloderma suspectum suspectum*)

USFWS Species of Concern, SGCN 1A

Gila monsters are most commonly found in Sonoran and Mojave Desert scrub habitats and less commonly in desert grassland and oak woodlands. They occur in rocky foothills, bajadas and canyons and are less frequent in sandy plains. They are a day-active lizard but spend most of their time underground in a burrow dug with powerful limbs. In the warmer parts of the desert summer, the Gila monster will become active at night to avoid the hot temperatures (Brennan 2008). Above ground activity is limited and may total about 3 weeks out of the year (Brennan 2008). Gila monsters will move between cold-season and warm-season burrows with the latter being in a cooler and more humid lower bajada or valley location and the former at higher elevation among rocky outcrops (AZGFD 2002c). Total yearly home range is typically less than one kilometer (AZGFD 2002c). Gila monsters are predatory lizards, feeding on small mammals, lizards and the eggs of birds and reptiles. They are one of only two venomous lizards in the world and the only one in the U.S.

Predicted range for Gila monster (*H. suspectum*, no subspecies distinction) is present in Survey Segments 1A, 2, 1B, 3A, 3B and 3C. Observations of Gila monster and a population occurrence are documented in Segment 1A and 3C (AZGFD 2019m). A Gila monster (no subspecies identified) was observed during field surveys in Segment 3C. This observation coincides with a population occurrence and observations of reticulate Gila monster (AZGFD 2019n). Reticulate Gila monster are considered present in Survey Segment 3C.

Loggerhead Shrike (*Lanius ludovicianus*)

USFWS Species of Concern

The loggerhead shrike is a common summer resident in open habitats of Arizona except in brushless grasslands. Relatively uncommon in midsummer along the southern boarder west of the Baboquivari Mountains. Winters in the lower Sonoran zone (AZGFD 2004). Suitable loggerhead shrike habitat includes open country with scattered trees and shrubs, savannah, desert scrub and even open woodland areas (AZGFD 2004). Poles, wires and fence posts are common components in shrike habitat. The loggerhead shrike is the only predatory songbird (AZGFD 2004) and feeds on insects, small birds, lizards and rodents. The components of the diet vary with the season and the location. The shrike uses a hunting strategy of sit-and-wait from a pole or low perch, diving at prey and moving to the next perch. They are known to impale prey on thorns or barbs of barbed wire fences and have gained the common name “butcher bird.”

The loggerhead shrikes were observed on Survey Segments 1A and 3C. Based on habitat type and documented observations (AZGFD 2019o), the loggerhead shrike is present on Segment 1A and 3C and likely present on Segments 2, 1B, 3A, and 3B.

Gila Woodpecker (*Melanerpes uropygialis*)

SGCN 1b

In Arizona the Gila woodpecker is found in desert habitats in areas with large cacti like saguaro and cordon (*Pachycereus pringlei*), or in riparian woodlands with cottonwood (*Populus* sp.), willow (*Salix* sp.) and mesquite (*Prosopis* sp.) suitable for nesting. Nests in saguaro cactus on arroyos are common in southern Arizona (NatureServe 2019). Nest holes in live cactus are typically excavated after the breeding season to allow time for the nest cavity to dry before use (NatureServe 2019). Gila woodpeckers are omnivorous and feed primarily on insects that is collects by probing the bark and cavities of trees and cacti. They will glean insects off vegetation and will also eat cactus fruit, mistletoe (*Phoradendron* sp.) and *Lyceum* sp. berries, and may catch and eat small lizards and the eggs of other birds (NatureServe 2019).

Predicted range for Gila woodpeckers is present in Survey Segments 1A, 2, 1B, 3B and parts of 3C (AZGFD 2019p), and was observed on Segment 3B in cottonwood trees (Bio-Studies 2020b). Gila woodpecker is present in the Survey Area.

Harris' Antelope Squirrel (*Ammospermophilus harrisi*)

SGCN 1B

Harris' antelope squirrel is found in canyons, dry plains and river valleys in sparsely vegetated desert habitats up to about 4,250 feet elevation. Creosote bush – bursage vegetation is typical for this species (NatureServe 2019). They dig burrows with the entrance typically under a shrub, in cactus, or among rocks (NatureServe 2019, Reid 2006). Harris' antelope squirrel is well-adapted to the desert environment and can be active throughout the day, even in hot weather (Reid 2006). They are also active throughout the year and do not hibernate (Reid 2006) Its diet is composed of the fruit and seeds of cactus, mesquite seeds and insects, and it is known to store seeds underground.

Predicted range for Harris' antelope squirrel is present on Survey Segments 1A, 2, 1B, 3A, 3B, and 3C (AZGFD 2019q) and it was observed on Segments 2 and 1B during surveys. Harris' antelope squirrel is present in the Survey Area.

Antelope Jackrabbit (*Lepus alleni*)

SGCN 1B

Antelope jackrabbits are found on grassy slopes in arid habitats with scattered mesquite (*Prosopis* sp.), catclaw (*Acacia* sp.) and cacti from sea level to 5,000 feet (Reid 2006). They are a solitary species, active primarily at night starting around dusk and into the dawn period. They spend the hotter parts of the day in a shelter form in thick vegetation, under shady shrubs or in the shadow of a tree trunk or cactus. Antelope jackrabbits feed on green vegetation, including grasses, mesquite leaves and cacti. They are adapted for the dry desert environment and do not need a source of surface water, rather they get all their moisture from the plants they eat (Tekiela 2008).

Predicted range for the Antelope jackrabbit is present on Survey Segments 1A, 2, 1B, 3A, 3B and 3C (AZGFD 2019r). The Antelope jackrabbit was observed on Survey Segments 2 and 1B during surveys. Antelope jackrabbit is present in the Survey Area.

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Appendix D:
Table of Potential Special-Status Plant Species

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
MONOCOT			
Cyperaceae - Sedge family			
<i>Carex chihuahuensis</i> Chihuahuan Sedge	USFS Sensitive	Perennial grass-like plant found in pine-oak forest and riparian woodlands in stream beds, shallow draws, wet meadows, cienegas, marshy areas and canyon bottoms between 3,600 to 7,200 feet. North and northwest slopes. Suitable soils include wet sand, mud, among rocks, streambeds.	Moderate Potential Suitable marsh and riparian woodland habitats are present (Segment 3C) to support Chihuahuan sedge. The Arizona Heritage Data Management System identifies an element occurrence in the 3C segment (AZGFD 2019)
EUDICOTS			
Apiaceae - Carrot family			
<i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i> Huachuca Water-umbel	Federal Endangered Species	Semi-aquatic to aquatic perennial. Occurs in shallow, perennial water in shaded or unshaded sites. Found in cienegas, marshy wetlands, seeps, springs and streams between 2,000 to 7,000 feet. Suitable sites occur in Sonoran Desert scrub, grassland, oak woodland or conifer forest. Requires slow moving water in stream habitats.	Moderate Potential Suitable marsh and riparian woodland habitats are present (Segments 3B and 3C) to support Huachuca water umbel. The Arizona Heritage Data Management System identifies element occurrences in segments 3B and 3C (AZGFD 2019).
Asteraceae - Sunflower family			
<i>Erigeron arisolius</i> Arid Throne Fleabane	USFS Sensitive	Annual herbaceous forb, or short-term perennial. Found in grassy openings and roadsides in semi-desert grasslands and Madrean evergreen oak woodlands. Soils are frequently wet and rocky.	High Potential Suitable semi-desert grassland habitat is present (Segment 3B) in association with an element occurrence for this species near the survey area (AZGFD 2019)
<i>Pectis imberbis</i> Beardless Chinchweed	USFWS Species of Concern, USFS Sensitive	Herbaceous perennial. Grows well in disturbed areas, found along roads in open grassland and oak grassland in eroded granite substrates.	High Potential Suitable semi-desert grassland habitat is present (Segment 3B) with suitable soils of granitic origin. Beardless chinchweed grows well in disturbed areas like those found along the

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			existing border patrol road. Element occurrences of this species are present in the area (Segment 3B) (AZGFD 2019)
<i>Senecio multidentatus</i> var. <i>huachucanus</i> Huachuca Groundsel	USFS Sensitive	Herbaceous perennial. Vegetation dies back annually to a perennial root. Occurs in Madrean montane conifer forest and Madrean evergreen woodlands between 7,000 and 9,500 feet. Prefers intermediate disturbance habitats on steep slopes and canon bottoms in pine-oak and mixed conifer forests with stabilized granite or metamorphic rock talus slopes.	No Potential An element occurrence for this species is present near the survey area (Segment 3B), however, the survey area is approximately 3,000 feet below the accepted minimum elevation preferred by Huachuca groundsel, and the preferred conifer or evergreen forest is not present.
Cactaceae - Cactus family			
<i>Escobaria robbinsiorum</i> (= <i>Coryphantha robbinsorum</i>) Cochise Pincushion Cactus	Federal Threatened Species	Perennial succulent. Occurs in Chihuahuan Desert scrub between 4,200 and 4,650 feet at the transition to semi-desert grassland. Found on Permian Limestone Formation on flat ridgetops of coarse limestone gravel or bedrock. Plants will root in bedrock cracks or in thin soil.	Unlikely Species has a limited range, occurring on three hills composed of Permian limestone, in the San Bernardino Valley near the international border and in northern Sonora. Potentially suitable limestone soils (Sutherland-Mule complex) in Survey Segment 3C are on the alluvial flanks of hills that support Cochise pincushion cactus and Segment 3C is just below the reported preferred minimum elevation for the species. The soil type on the hilltop where the species occurs (Mabray-Rock Outcrop Complex) differs from that on the alluvial flanks.

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Peniocereus greggii</i> var. <i>greggii</i> Night-blooming Cereus	USFWS Species of Concern	Perennial succulent. Found in creosote bush scrub, desert grasslands or Chihuahuan Desert scrub between 3,900 and 5,000 feet. Grows in association with creosote or mesquite on desert flats or in washes. Prefers sandy or gravelly calcareous loam soil.	High Potential Suitable calcareous soils and vegetation communities (creosote bush scrub) are present at suitable elevation for Night-blooming cereus in Segment 3C. An element occurrence is present in the area of Segment 3C (AZGFD 2019).
Capparaceae - Caper family			
<i>Peritoma multicaulis</i> Slender Spiderflower	USFWS Species of Concern	Annual herb. Found in creosote desert scrub and desert grassland in wet, alkaline soils around alkali sinks, meadows or old lake beds or saline soils around saline playas and springs. Known from two locations in Arizona, Wilcox playa and San Bernardino Ranch, Cochise County.	High Potential Suitable saline soils are present within the survey area (Segment 3C) near an element occurrence of slender spiderflower (AZGFD 2019). Suitable creosote desert scrub vegetation is also present.
Fabaceae - Legume family			
<i>Desmodium metcalfei</i> Metcalf's Tick-trefoil	USFS Sensitive	Perennial herb. Occurs in Ponderosa pine-Gambel oak, mesquite wash, grassland, riparian, and Cienega habitats on rocky slopes and canyons between 4,000 and 6,500 feet.	Moderate Potential Grassland and riparian vegetation are present at suitable elevation. An element occurrence for Metcalfe's tick-trefoil is present in the area of Segment 3B (AZGFD 2019). Rocky slopes and other vegetation species associate with Metcalfe's tick trefoil are limited.
Rosaceae - Rose family			

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Vauquelinia californica</i> ssp. <i>pauciflora</i> Limestone Arizona Rosewood	USFWS Species of Concern	Wood perennial large shrub or tree. Occurs on dry limestone and rhyolite ridges and hills in Chihuahuan Desert scrub. Found growing with ocotillo, white thorn, agaves and grasses.	High Potential Suitable Chihuahuan Desert scrub vegetation and limestone soils are present in Section 3C near an element occurrence for limestone Arizona rosewood (AZGFD 2019)

References

- AZGFD 2019 Arizona Game and Fish Department. 2019. Arizona's Natural Heritage Program. Online <https://www.azgfd.com/wildlife/heritagefund/> Accessed January 2020.

Appendix E:
Table of Potential Special-Status Wildlife Species

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
INVERTEBRATES			
<i>Danaus plexippus</i> Monarch	BLM Sensitive	Breeds and migrates through Arizona. Breeding habitat is characterized by the presence of native milkweed plants of the family Apocynaceae (subfamily Asclepiadoideae), and suitable diversity of nectar plant species and vegetation for shade and resting.	High Potential Suitable host plants of the subfamily Asclepiadoideae are likely to be present within the Survey Area. Migrating monarch butterflies are likely to cross the Survey Area during spring and fall migration (WAFWA 2019).
<i>Pyrgulopsis thompsoni</i> Huachuca Springsnail	USFWS Candidate Conservation Agreement, USFS Sensitive, SGCN 1A	Found in marshy springs and cienegas with emergent aquatic vegetation located in oak and pine-oak woodlands, and coniferous forests. Huachuca springsnail occupy the shallower areas of cienegas and are more likely to be found in wet rocky seep areas near the origin of the spring. Found on or near Fort Huachuca.	No Potential Suitable spring and cienega habitat are not present within the Survey Area.
<i>Pyrgulopsis bernardina</i> San Bernardino Springsnail	Federally threatened, SGCN 1A	Currently known from two springs on private property next to the San Bernardino National Wildlife Refuge (SBNWR). This one-foot-wide spring has a dense vegetative cover of watercress with water trickling over gravel, mud, dead wood and leaves. San Bernardino springsnail is associated with sand and cobblestone substrates and moderate vegetative cover. They appear to avoid silt and organic substrates with deep, faster flowing water.	No Potential This species occurs only on the John Slaughter Ranch Museum adjacent to the SBNWR (77 FR 23059). Currently present at two springs that do not occur in the Survey Area. Critical habitat includes the two occupied springs plus Snail and Tule Spring, none of which occur in the Survey Area (77 FR 23059).
<i>Tryonia quitobaquitae</i> Quitobaquito Tryonia	USFWS Species of Concern, SGCN 1A	Extant in one Sonoran Desert spring complex. This spring channel between the spring origin and the downstream pool was cement-lined prior to 2001 with a hard substrate and run, riffle and pooled habitats and emergent aquatic vegetation (<i>Juncus</i> sp., <i>Scripus</i> sp. and <i>Eleocharis</i> sp.).	No Potential Suitable habitat and a known presence of Quitobaquito tryonia is present 165 feet to the northeast of the Survey Area in Segment 1A at Quitobaquito Spring. However, no suitable habitat occurs within the Survey Area.

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
VERTEBRATES			
Fish			
<i>Agosia chrysogaster chrysogaster</i> Gila Longfin Dace	USFWS Species of Concern, BLM Sensitive, SGCN 1B	Found in small to medium size streams from hot low desert to higher elevations. They occupy streams with sandy or gravelly bottoms and occupy shallow (less than 0.6 feet deep) eddies and pools with cover. They are tolerant of high temperatures and low dissolved oxygen but prefer water less than 75 degrees Fahrenheit. Omnivorous and opportunistic feeders and will consume detritus, aquatic insects, algae and zooplankton. In Gila and Bill Williams drainages (introduced to Virgin River basin)	High Potential Suitable stream conditions are present in the Survey Area and an element occurrence is documented in Segment 3B of the Survey Area.
<i>Agosia chrysogaster ssp. 1</i> Yaqui Longfin Dace	USFWS Species of Concern, BLM Sensitive, SGCN 1B	Found in small to medium size streams from hot low desert to higher elevations. They occupy streams with sandy or gravelly bottoms and occupy shallow (less than 0.6 feet deep) eddies and pools with cover. They are tolerant of high temperatures and low dissolved oxygen but prefer water less than 75 degrees Fahrenheit. Omnivorous and opportunistic feeders and will consume detritus, aquatic insects, algae and zooplankton. In SBNWR and Willcox Playa and its tributaries.	High Potential Suitable stream conditions are present in the Survey Area and an element occurrence is documented in Segment 3C of the Survey Area. Known to be present at the SBNWR.
<i>Campostoma ornatum</i> Mexican Stoneroller	USFWS Species of Concern, BLM Sensitive, SGCN 1A	The Mexican stoneroller is found in small streams with shallow riffles and runs over gravel or in pools over sand. Can also be found in flowing Segments of pools or areas with cover, like undercut banks. Feeds on detritus, algae and aquatic insects. Known from Rucker Canyon (Chiricahua Mountains) and San Bernardino Creek.	High Potential Suitable shallow river habitat is present, and a population occurrence is documented at San Bernardino Creek.
<i>Catostomus bernardini</i> Yaqui Sucker	SGCN 1B	Found in one shallow, mud-bottom pool in riparian vegetation in Arizona, but in Mexico, they are found in clear, cool streams with gravel substrate and aquatic plants. Formerly found only in San Bernardino Creek but disappeared prior to 1970.	Unlikely Formerly found in San Bernardino Creek but may be locally extirpated. No observations of this species since 1968.
<i>Cyprinella formosa</i> Beautiful Shiner	Federally threatened, SGCN 1A	Found in pools of small to medium sized streams with sand, gravel, and rock substrates. May prefer streams with a high percentage of riffle habitat. Extirpated from SBNWR by 1970 but reintroduced	Unlikely This species is found in the wild only on SBNWR (AZGFD 2001a). This species

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
		into four ponds in 1990. Feeds on drifting aquatic and terrestrial invertebrates, but likely omnivorous.	was not observed during aquatic surveys in Black Draw south of the SBNWR in October 2019 (Bio-Studies 2020).
<i>Cyprinodon eremus</i> Quitobaquito Pupfish	Federally endangered, SGCN 1A	Cienegas, springs, small streams, and the edges of larger bodies of water. Requires clear water but tolerates saline and warm water conditions. Restricted in distribution to a single spring-fed pond (USFWS 2010).	No Potential The Quitobaquito pupfish is present at the Quitobaquito Spring, 165 feet northeast of the Survey Area. There is no suitable habitat within the Survey Area to support Quitobaquito pupfish.
<i>Gila purpurea</i> Yaqui Chub	Federally endangered, SGCN 1A	Deep pools of smaller streams with dense vegetation in the water associated with watercress, willow, seep-willow, cottonwood, velvet ash, and tobosa grass (<i>Hilaria mutica</i>) vegetation (AZGFD 2001b).	Present Known to occur in Black Draw creek within the Survey Area (Bio-Studies 2020).
<i>Ictalurus pricei</i> Yaqui Catfish	Federally threatened, SGCN 1A	The species inhabits moderate to large streams in areas of medium to slow current over sand/rock bottom. It is typically found in streams between 4,000 to 5,000 feet in elevation.	Moderate Potential Suitable stream habitat is present in the Survey Area. This species is found only in the Rio Yaqui, SBNWR, and West Turkey Creek (AZGFD 2001c). Reintroduced to the SBNWR in 1997 (AZGFD 2019a).
<i>Poeciliopsis occidentalis sonoriensis</i> Yaqui Topminnow	Federally endangered, SGCN 1A	Small streams, springs, cienegas and vegetated shallows.	Present Suitable stream habitat is present in Survey Segment 3C. Yaqui topminnow is known to occur in Black Draw. Surveys conducted in 2019 at Black Draw in Segment 3C recorded 250 Yaqui topminnow (Survey Segment 3C, Bio-Studies 2020).

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
Amphibian			
<i>Ambystoma mavortium stebbinsi</i> Sonora Tiger Salamander	Federally endangered, SGCN 1A	Stock tanks and impounded cienegas in San Rafael Valley, Huachuca Mountains	Unlikely Suitable desert grassland habitat is present in the Survey Area, and a population occurrence has been documented near survey Segment 3A; however, the most important characteristic of Sonora tiger salamander habitat, standing water from January through June, is not present.
<i>Anaxyrus retiformis</i> Sonoran Green Toad	BLM Sensitive; SCGN 1B	Found in areas near water, including rain pools and wash bottoms, in saguaro-paloverde desert scrub, creosote bush scrub, and semi-arid mesquite grassland.	High Potential Suitable desert vegetation, including saguaro, paloverde, creosote and mesquite dominated communities occur within the Survey Area. Suitable sources of water, including wash bottoms, rain pools and springs occur in or adjacent to the Survey Area. Several known populations of Sonoran green toad are present near or within the Survey Area (AZGFD 2019a)
<i>Craugastor augusti cactorum</i> Western Barking Frog	USFS Sensitive; SCGN 1B	Shows strong association with Naco Group limestone of the Huachuca Mountains. Uses rock outcrops, caves and rocky slopes of limestone, rhyolite, granite and possibly other fissure-forming rocks. Vegetation types include scrubby oak or pine-oak woodlands. Forages on a variety of invertebrates, including field crickets, scorpions, silverfish, centipedes, grasshoppers and others.	No Potential The Survey Area lacks suitable vegetation combined with limestone rock outcrops at an appropriate elevation range.
<i>Gastrophryne olivacea</i> Western Narrow-mouthed Toad	BLM Sensitive; SCGN 1C	More terrestrial than aquatic, the western narrow-mouthed toad occurs in the vicinity of streams, springs and seasonal rain pools in vegetation ranging from mesquite semi-desert grassland to oak woodland. They	High Potential Suitable mesquite vegetation is present in the vicinity of the Quitobaquito Spring at a

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
		share burrows with other animal species or can be found under flat rocks, dead wood or other debris. Diet is composed almost entirely of ants.	suitable elevation to support western narrow-mouthed toads. There is a documented population occurrence for this species near the Quitobaquito Spring (AZGFD 2019a)
<i>Lithobates blairi</i> Plains Leopard Frog	BLM Sensitive; SCGN 1A	Found in or near aquatic habitats, including streams, ponds, creek pools, reservoirs, marshes, or irrigation ditches in prairie and desert grassland. Also found in oak and oak-pine woodland, and agricultural settings. Feeds on arthropods and insects.	High Potential Suitable desert grassland habitat is present with stream and pond features within the Survey Area in Segment 3C. Survey Segment 3C is in the predicted range of the plains leopard frog and documented observations have been recorded (AZGFD 2019a).
<i>Lithobates chiricahuensis</i> Chiricahua Leopard Frog	Federally threatened, SGCN 1A	Found in or near aquatic habitats including, cienegas, pools livestock tanks, lakes, streams, and rivers in oak, mixed oak and pine woodlands. Also found in chaparral, grassland and desert habitats. Feeds on arthropods and insects.	High Potential Suitable aquatic habitat occurs in the Survey Area in Segments 3B and 3C to support Chiricahua leopard frog. Population occurrences for this species have been documented in the Survey Area (AZGFD 2019a). Surveys at Black Draw in the SBNWR identified a single leopard frog tadpole that could not be identified to species (Bio-Studies 2020). Chiricahua leopard frogs are known to hybridize with lowland leopard frogs (<i>Lithobaetes yavapaiensis</i>) which are present in the Black Draw area. Chiricahua leopard frogs have not been observed at SBNWR since 1991 (Jim Rorabaugh, personal communication) and are

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			considered extirpated.
<i>Lithobates yavapaiensis</i> Lowland Leopard Frog	USFWS Species of Concern, USFS Sensitive; BLM Sensitive, SGCN 1A	Unregulated streams, rivers, and cienages, cattle tanks, agricultural canals from sea level to 6,000 feet in low desert scrub to pinyon-juniper woodlands. Feeds on arthropods and insects.	High Potential Suitable stream habitat in desert scrub and grassland habitat is present in the Survey Area along Segment 3C. An element occurrence has been documented near the Survey Area at Segment 3C (AZGFD 2019a).
Reptile			
<i>Aspidoscelis stictogramma</i> Giant Spotted Whiptail	USFWS Species of Concern, USFS Sensitive; SGCN 1B	Occurs in dense shrubby vegetation or bunch grass habitats near perennial or seasonal water sources in mountain canyons, arroyos, semi-arid mesas and lowland deserts. Forages on insects and spiders.	Moderate Potential Suitable riparian habitat occurs within the Survey Area to support giant spotted whiptails. The predicted range for this species includes the Survey Area and giant spotted whiptails have been documented in or near survey Segment 3C (AZGFD 2019a).
<i>Aspidoscelis xanthonota</i> Red-backed Whiptail	USFWS Species of Concern, USFS Sensitive; SGCN 1B	Occurs in dense shrubby vegetation on hills and in canyons in juniper-oak woodlands to Sonoran upland deserts. Can also be found on volcanic slopes and near springs or other water sources. Forages on insects and spiders.	High Potential Suitable Sonoran Desert habitat is present in the Survey Area. Populations of red-backed whiptail have been documented within the Survey Area (AZGFD 2019a).
<i>Chilomeniscus stramineus</i> Variable Sandsnake	SGCN 1B	Found in Sonoran Desert scrub habitats in or near drainages with loose sand or gravel substrate. The variable sandsnake burrows and spends much of its time underground. Active at night, it feeds on insects and centipedes. Hibernates during the cold months (Brennan 2012).	Moderate Potential Suitable desert washes and drainages with loose sand or gravel substrates occur in Sonoran Desert scrub vegetation in the Survey Area. Survey Segments 1A, 2, and 1B are included in the predicted range for variable sandsnakes (AZGFD 2019a). Much of the Survey Area is currently disturbed, compacted

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			road and not suitable for burrowing species.
<i>Chionactis palarostris organica</i> Organ Pipe Shovel-nosed Snake	SGCN 1B	This burrowing species occurs in sandy and gravelly soils on bajadas and rolling hills of paloverde-saguaro habitats. Specialized to feed on arthropods, including scorpions.	Moderate Potential Suitable sandy and gravelly soils in paloverde and saguaro dominated habitats are present in the Survey Area. Known populations are present in and near the Survey Area (AZGFD 2019a). Much of the Survey Area is currently disturbed, compacted road and not suitable for burrowing species.
<i>Coluber bilineatus</i> Sonoran Whipsnake	SGCN 1B	Found on mountain slopes, canyons, foothills and rocky bajadas in Sonoran Desert scrub, semidesert grassland, interior chaparral, Madrean evergreen woodland and lower Great Basin conifer woodland. Feeds on small vertebrates (Brennan 2012).	High Potential Suitable Sonoran Desert scrub and semidesert grassland habitats are present within the Survey Area. Predicted range for the Sonoran whipsnake includes all Segments of the Survey Area.
<i>Crotalus lepidus klauberi</i> Banded Rock Rattlesnake	SGCN 1A	Found in rocky areas of upper desert grassland to lower Ponderosa pine, typically on south-facing slopes and rockslides. Often found in near perennial or seasonal water sources. Main food source is lizards but will also prey on other snakes and rodents.	Moderate Potential Limited areas of suitable desert grassland with perennial and seasonal water sources occur within 2 miles of the Survey Area. Predicted range is present near Segments 3A, 3B and 3C (AZGFD 2019a).
<i>Crotalus pricei</i> Twin-spotted Rattlesnake	USFS Sensitive; SGCN 1A	Found on south-facing rock outcrops and boulder rockslides. Also found in flat open forest. Associated with Mexican pine-oak woodland, Ponderosa pine, spruce, and white and Douglas fir forests. A rattlesnake of the “sky islands,” ranges from 6,000 to 11,000 feet. Feeds on lizards, small rodents, and birds.	Unlikely Suitable rocky habitats do not occur within the Survey Area and Segment 3A, nearest the known range of the twin-spotted rattlesnake, is a few hundred feet below the current accepted minimum elevation documented for this species.

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			There is, however, a known population and predicted range close to Segment 3A and suitable habitat less than half a mile from Segment 3A.
<i>Crotalus tigris</i> Tiger Rattlesnake	SGCN 1B	Occurs in Sonoran Desert scrub, Chihuahuan Desert scrub, interior chaparral, and Madrean evergreen woodland on rocky slopes and washes of rocky mountains and foothills. Feeds on small mammals and lizards (Brennan 2012).	High Potential Suitable Sonoran Desert scrub and Chihuahuan Desert scrub are present throughout the Survey Area. Observations of tiger rattlesnakes and predicted range occur in or near the Survey Area (AZGFD 2019a).
<i>Crotalus willardi willardi</i> Arizona Ridge-nosed Rattlesnake	SCGN 1A	Found around rock crevices and forest floor in oak woodland and pine-fir forest, mesic canyon bottoms with broadleaf deciduous trees, and occasionally in tall grasslands bordering forest habitats. Occurs in “sky island” ranges in the Huachuca, Santa Rita, Canelo, Patagonia, and Whetstone mountains between 4,800 and 9,000 feet. Feeds on rodents, snakes, lizards, and arthropods.	Unlikely Populations of Arizona ridge-nosed rattlesnake are known to occur near the Survey Area (AZGFD 2019a), but suitable oak woodland, pine-fir forest, or mesic canyon bottoms do not occur within the Survey Area.
<i>Crotaphytus nebrius</i> Sonoran Collared Lizard	SGCN 1B	Occurs in rocky bajadas, hillsides, canyons and mountain slopes with large rocks and boulders in Sonoran Desert scrub. Feeds on insects, spiders and small lizards.	Present Suitable rocky bajadas, hillsides and canyons in Sonoran Desert scrub are present along survey Segment 1A, 2, and 1B. A Sonoran collared lizard was observed during surveys in Segment 1B. Predicted Sonoran collared lizard range is present in survey Segments 1A, 2, and 1B (AZGFD 2019a).
<i>Gopherus morafkai</i> Sonoran Desert Tortoise	USFWS Candidate Conservation Agreement, USFS Sensitive, BLM Sensitive; SGCN 1A	Found on rocky slopes and bajadas in Mojave and Sonoran Desert scrub. Often excavates a shallow burrow to escape the desert heat and to hibernate in the winter. Forages on annual and perennial grasses, forbs, and succulents.	High Potential Suitable rocky slopes and bajadas of Sonoran Desert scrub are present in the Survey Area. Documented populations

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			and predicted range are present within the Survey Area (AZGFD 2019a).
<i>Heloderma suspectum cinctum</i> Banded Gila Monster	USFWS Species of Concern; SGCN 1A	Occurs in Sonoran Desert and the western edge of the Mojave Desert. Found less frequently in desert grassland and oak woodland. Prefers rolling rocky foothills, bajadas and canyons, and is uncommon in sandy plains. Feeds on small mammals, reptiles, bird eggs, and carrion.	High Potential Suitable rocky foothills, bajadas and canyon habitat with Sonoran Desert vegetation is present within the Survey Area.
<i>Heloderma suspectum suspectum</i> Reticulate Gila Monster	SGCN 1A	Occurs in Sonoran Desert and the western edge of the Mojave Desert. Found less frequently in desert grassland and oak woodland. Prefers rolling rocky foothills, bajadas and canyons, and is uncommon in sandy plains. Feeds on small mammals, reptiles, bird eggs, and carrion.	Present Suitable rocky foothills, bajadas and canyon habitat in Sonoran Desert vegetation is present within the Survey Area. A Gila monster (subspecies not identified) was observed in Segment 3C during surveys. This observation coincides with a documented population and observations of reticulate Gila monsters (AZGFD 2019b)
<i>Hypsiglena sp. nov.</i> Hooded Nightsnake	SGCN 1B	Found in Sonoran Desert scrub, grasslands, woodlands and Petran montane conifer forest on flat, open desert and steep, rocky wooded slopes. Feeds on lizards, small snakes, reptile eggs, frogs, and insects (Brennan 2012).	High Potential Suitable open desert and rocky slopes in Sonoran Desert scrub and grassland vegetation are present in the Survey Area. Existing populations and predicted range are both documented within the Survey Area (AZGFD 2019a).
<i>Kinosternon sonoriense longifemorale</i> Sonoyta Mud Turtle	Federally endangered, SGCN 1A	Occurs in pond and streams; however, it is restricted to Quitobaquito Springs in the U.S, and nearby stream habitat in Mexico. Feeds on crustaceans, snails, fish, frogs and plant material.	No Potential Suitable spring and stream habitat are not present within the Survey Area. Sonoyta mud turtles are confined to the wetland habitat surrounding Quitobaquito Spring, 165 feet beyond the Survey Area.

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Kinosternon sonoriense sonoriense</i> Desert Mud Turtle	BLM Sensitive; SGCN 1B	Occurs in springs, creeks, ponds and water holes of intermittent streams up to 6,700 feet. Feeds on crustaceans, snails, fish, frogs and plant material.	High Potential Suitable spring, creek, pond, and intermittent stream habitat occurs in or near the Survey Area and is capable of supporting desert mud turtle. Observations of desert mud turtles have been documented in and near the Survey Area (AZGFD 2019a).
<i>Lampropeltis nigrata</i> Mexican Black Kingsnake	SGCN 1B	Occurs in low elevation semi desert grassland areas in rock outcrops, rodent burrows and under vegetative or surface cover. Feeds on various vertebrates including birds and reptiles, their eggs, and small mammals.	High Potential Suitable semi desert grassland habitat is present in the Survey Area. Documented population occurrences and predicted range are present near and within the Survey Area (AZGFD 2019a).
<i>Lichanura trivirgata</i> Rosy Boa	USFWS Species of Concern; SGCN 1B	Occurs on rocky mountains and hillsides with granite outcroppings in arid scrublands, bushlands and chaparral. Makes use of rodent burrows and rock shelters. Feeds on small mammals, lizards and birds.	High Potential Suitable arid scrublands are present within the Survey Area to support rosy boa populations. Documented population occurrences and predicted range occur near and within the Survey Area (AZGFD 2019a).
<i>Micruroides euryxanthus</i> Sonoran Coralsnake	SGCN 1B	Associated with rocky or gravelly drainages, mesquite washes, and canyons in Sonoran, Mojave and Chihuahuan Desert scrub and semidesert grassland. Most common in upland desert and bajadas. Feeds on small snakes and lizards.	Moderate Potential Suitable Sonoran and Chihuahuan Desert scrub and grassland habitats with washes, and rocky drainages are present in the Survey Area. Predicted range occurs within the Survey Area, but no documented observations or populations are known within two miles of the Survey Area (AZGFD 2019a).

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Phrynosoma cornutum</i> Texas Horned Lizard	USFWS Species of Concern	Occurs on sandy to gravelly flat ground with scattered shrubs or mesquite in Chihuahuan Desert and desert-grassland habitats. Feeds primarily on ants, grasshoppers, isopods, beetles and beetle larvae.	High Potential Suitable sandy and gravelly flats in Chihuahuan Desert scrub and desert grassland habitats are present within the Survey Area. Population occurrences of Texas horned lizards have been documented within the Survey Area at Segment 3C (AZGFD 2019a).
<i>Phrynosoma goodei</i> Goode's Horned Lizard	SGCN 1B	Occurs on flat, open areas with sandy or loamy soils in Sonoran Desert scrub vegetation. Less commonly found on rocky bajadas and foothills. Feeds on ants, beetles, moth and butterfly larvae, spiders, and other insects. Will also consume some plant material (Brennan 2012).	Moderate Potential Suitable flat open areas of sandy soil in Sonoran Desert scrub vegetation are present within the Survey Area. Predicted range for Goode's horned lizard includes portions of the Survey Area (AZGFD 2019a).
<i>Phrynosoma solare</i> Regal Horned Lizard	SGCN 1B	Occurs in valleys, rocky bajadas, and low foothills in Sonoran and Chihuahuan Desert scrub, and semidesert grassland. Feeds primarily on ants but will also consume beetles and other insects (Brennan 2012).	High Potential Suitable rocky bajadas and foothills in Sonoran and Chihuahuan Desert scrub and semidesert grassland vegetation are present in the Survey Area. Documented observations and predicted range for regal horned lizards occur within and adjacent to the Survey Area.
<i>Phyllorhynchus browni</i> Saddled Leaf-nosed Snake	SGCN 1B	A burrowing snake found in coarse, loose rocky soils and sandy gravelly areas in desert scrub habitats dominated by mesquite, creosote bush, saltbush, paloverde and saguaro. Feeds on lizards and their eggs.	Moderate Potential Suitable loose rocky, sandy and gravelly soils in desert scrub habitat are present within the Survey Area, however much of the Survey Area is currently disturbed, compacted road and not suitable for burrowing species. Documented

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			population occurrences and predicted range are present in or near the Survey Area.
<i>Plestiodon callicephalus</i> Mountain Skink	USFS Sensitive	Found in Madrean evergreen woodland and adjoining higher elevation areas of semidesert grassland under rocks, logs and other surface cover. Typically found in mesic areas including riparian corridors, rocky canyon bottoms and grassy hills. Feeds on beetles, flies and other insects as well as spiders (Brennan 2012).	Unlikely Suitable mesic evergreen woodland habitat is not present in the Survey Area. Semidesert grassland is present in the Survey Area near documented populations of mountain skink in Survey Segment 3A but is approximately 1,500 feet from potentially suitable habitat.
<i>Sceloporus slevini</i> Slevin's Bunchgrass Lizard	USFS Sensitive; BLM Sensitive; SGCN 1B	Occurs on the ground around bunchgrass in coniferous forests up to 10,000 feet. Rare in desert grasslands. Feeds on insects and spiders.	Unlikely Preferred coniferous forest habitat is not present in the survey are. Desert grassland habitat is present but Slevin's bunchgrass lizard is rare in such habitats. Documented populations and predicted range are present near Segment 3A.
<i>Sistrurus tergeminus edwardsii</i> Desert Massasauga	BLM Sensitive; SGCN 1A	Occurs in tobosa grassland on bajadas with surface rocks. Forages on lizards, small mammals, and centipedes.	Unlikely Desert grasslands occur within the Survey Area in Segment 3C but are not the preferred tobosa - dominated grasslands. Documented populations occur several miles north of the Survey Area (AZGFD 2019a).
<i>Tantilla wilcoxi</i> Chihuahuan Black-headed Snake	BLM Sensitive; SGCN 1B	Found on rocky hillsides of cactus, grasslands, pine-oak forest, and shaded rocky canyons in Madrean evergreen woodland and Petran montane conifer forest. Typically found under surface debris. Feeds on a variety of invertebrates.	Unlikely Preferred vegetation, including cactus covered hills, pine-oak forest, evergreen woodland and conifer forest do not occur in the Survey Area. Grassland habitat does occur in the Survey Area. Known

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			populations are present near the Survey Area but appear to be 9 miles north in Ramsey Canyon (AZGFD 2019a).
<i>Terrapene ornata luteola</i> Desert Box Turtle	USFS Sensitive; BLM Sensitive; SGCN 1A	Occurs in semidesert grasslands and Chihuahuan desert scrub in southeastern Arizona. Forages for carrion, bird eggs, other reptiles, tadpoles, grass, cactus fruits, melons insects and beetles.	High Potential Suitable semi-desert grasslands are present within the Survey Area. Populations of desert box turtle have been documented in or near the Survey Area in Segment 3C (AZGFD 2019a).
<i>Thamnophis eques megalops</i> Northern Mexican Gartersnake	Federally threatened; USFS Sensitive; SGCN 1A	Occurs in ponds, cienegas, riparian forest and woodland, and stream gallery forest. Avoids steep mountain stream habitats and prefers densely vegetated habitats. Forages for fish, adult and larval Ranid frogs, earthworms, small rodents, lizards, salamanders and treefrogs.	High Potential Suitable riparian habitat is present within the Survey Area in Segments 3B and 3C. Populations of northern Mexican garter snake have been documented in or near the Survey Area along with predicted range (AZGFD 2019a).
Birds			
<i>Accipiter gentilis</i> Northern Goshawk	USFWS Species of Concern, USFS Sensitive, BLM Sensitive; SGCN 1B	In southern Arizona, the northern goshawk nests in Arizona and Ponderosa pines and occasionally in low elevation oak forest (> 4,900 feet). They prefer mature or old growth stands and select larger tracks over smaller tracks of forest. They prey on small mammals and birds and will take them in the air, in vegetation or on the ground.	Unlikely Suitable pine or oak forest habitat is not present within the Survey Area. Documented populations are present in the vicinity of Segment 3A and 3B (AZGFD 2019a). Northern goshawks may be observed near those Segments, but they would not be expected to nest in the area.
<i>Aix sponsa</i> Wood Duck	SGCN 1B	Typically, a winter visitor to Arizona with occasional breeding in central Arizona. Prefers freshwater habitats in a woodland setting with plenty of cover, including marshes, wooded swamps, perennial pools, lakes, and slow stream reaches. Prefers to forage where the surface zone is 7 to 16 inches deep.	Unlikely Limited freshwater habitats are present in Segments 3B and 3C, however this species would only be expected to be present during winter, and uncommon

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			records of breeding in the state do not occur near the survey area (AZGFD 2019a)
<i>Amazilia violiceps</i> Violet-crowned Hummingbird	USFS Sensitive; SGCN 1B	Occurs in riparian woodlands at lower elevations. Nests in sycamore or cottonwood-willow riparian habitats, but may also use scrub, woodland, forest edge, and plantations in arid or semi-arid regions.	Moderate Potential Suitable cottonwood riparian habitat is present within the Survey Area in Segments 3B and 3C. Predicted range includes areas within and near the Survey Area (AZGFD 2019a).
<i>Ammodramus savannarum ammolegus</i> Arizona Grasshopper Sparrow	USFS Sensitive; BLM Sensitive; SGCN 1B	Breeds in southeastern Arizona and winters across southern Arizona. Occurs in semi-arid grassland habitats with low shrub component and medium-height grasses. Areas with trees are avoided. Feeds on insects in the summer and seeds in the winter.	Moderate Potential Suitable nesting and wintering habitat in desert grassland are present within the Survey Area. Predicted range is present within the Survey Area (AZGFD 2019a).
<i>Ammodramus savannarum perpallidus</i> Western Grasshopper Sparrow	SGCN 1B	Winters in western and southeastern Arizona. Occurs in semi-arid grassland habitats with low shrub component and medium-height grasses. Areas with trees are avoided. Feeds on seeds in the winter.	Moderate Potential Suitable year-round desert grassland habitat is present within the Survey Area to support western grasshopper sparrow populations. Predicted range includes areas within the Survey Area, but documented populations have not been reported.
<i>Anthus spragueii</i> Sprague's Pipit	USFWS Species of Concern; SGCN 1A	Sprague's pipit is a rare and sparse winter resident in Arizona and there are no records of it nesting in Arizona. Found in pastures and weedy fields, thickly vegetated grasslands or agricultural fields planted to grass species.	Unlikely Limited suitable habitat occurs within the Survey Area, but additional suitable habitat may occur outside and adjacent to the Survey Area. Sprague's pipit is a rare winter visitor not known to breed in Arizona (AZGFD 2019a).
<i>Antrostomus ridgwayi</i> Buff-collared Nightjar	USFS Sensitive; SGCN 1B	A scarce summer visitor to Arizona. Found in arid canyons at low to mid elevations in foothill washes.	Unlikely Suitable arid foothill wash

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
		Also known from open riparian canyons with mesquite or hackberry thickets. Breeding in Arizona has been reported in thick thornscrub of mesquite, acacia and hackberry (Fray 2015).	habitat is present in the Survey Area and small pockets of thick thornscrub are also present. The scarce occurrence of this species and small pockets of available potential nesting habitat suggest this species is unlikely to occur in the Survey Area. There are no reported populations or observations within 2 miles of the Survey Area and no predicted range (AZGFD 2019a).
<i>Aquila chrysaetos</i> Golden eagle	Bald and Golden Eagle Protection Act; BLM Sensitive; SGCN 1B	In Arizona, golden eagles are found in mountainous areas. Eagles nesting in desert habitats appear to leave the area after nesting. Nesting occurs on rock ledges, cliffs or in large trees. Forages on small mammals, reptiles, juvenile hoofed species, and carrion.	Moderate Potential No suitable nesting cliffs, ledges or trees occur within the Survey Area. Some Survey Areas have suitable golden eagle nesting habitat within 2 miles of the Survey Area so there is a moderate potential that golden eagles may forage in the Survey Area.
<i>Athene cunicularia hypugaea</i> Western Burrowing Owl	USFWS Species of Concern, USFS Sensitive, BLM Sensitive; SGCN 1B	Open, dry grassland, desert floor, and agricultural fields, usually in association with burrowing animal populations. Sometimes found near human developments, including airports and golf courses.	Moderate Potential Suitable grassland, desert and agricultural field habitat occurs in or near the survey area and are capable of supporting nesting burrowing owl populations. Predicted range includes areas within the Survey Area but no populations or observations have been documented (AZGFD 2019a).
<i>Botaurus lentiginosus</i> American Bittern	SGCN 1B	Rare transient during spring and fall migrations in Arizona. Occurs in marshes and wet meadows with dense reed, rush, cordgrass, cattail or other emergent aquatic vegetation.	Unlikely American bitterns are rare transient species in Arizona during migration. Limited

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			amounts of suitable wetland habitat occur in and adjacent to the Survey Area so there is a remote potential that an American bittern may stop over during migration. Nesting in the survey is not expected.
<i>Buteo plagiatus</i> Gray Hawk	USFWS Species of Concern	Breeds in southeast Arizona and migrates south during the winter. Found in riparian woodlands and associated with large cottonwood trees, typically near mesquite forest	High Potential Suitable riparian woodland with cottonwood trees are present within the Survey Area and can support nesting gray hawks. Known populations of gray hawks are present in the Survey Area (AZGFD 2019a).
<i>Buteo regalis</i> Ferruginous Hawk	USFWS Species of Concern; BLM Sensitive; SGCN 1B	Found throughout Arizona in the fall and winter, breeds in northern Arizona. Occurs in open forms of woodlands, scrublands, grasslands and semi-desert grasslands. Also found in agricultural settings. Feeds primarily on rabbits, ground squirrels and pocket gophers, and potentially prairie dogs	High Potential Suitable open habitats, including desert grasslands and scrublands, are present in the Survey Area and can support wintering populations of ferruginous hawk (AZGFD 2019a). They are not expected to nest in or near the Survey Area.
<i>Lanius ludovicianus</i> Loggerhead Shrike	USFWS Species of Concern	Occurs across Arizona in habitats with scattered trees and shrubs for perching and hunting. Often uses fence poles, telephone wires and poles for perching.	Present Suitable habitat is present across the entire Survey Area. Loggerhead shrike were observed during general biological surveys.
<i>Calothorax lucifer</i> Lucifer Hummingbird	USFS Sensitive	Occurs in Chihuahuan Desert foothills during the summer months. Found in canyons, dry washes in desert scrub vegetation (The Cornell Lab 2019a).	Moderate Potential Suitable dry washes in desert scrub vegetation are present in the Survey Area to support Lucifer hummingbirds. Known observations occur near the Survey Area (AZGFD 2019a).

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Camptostoma imberbe</i> Northern Beardless-Tyrannulet	USFS Sensitive	Year-round resident in southeast Arizona. Found in wooded areas including mesquite stands, stream thickets, canyons. Prefers mesquite or cottonwood-willow stands in Arizona. Feeds on insects (Audubon 2019a).	Moderate Potential Suitable mesquite and cottonwood stands are present in the Survey Area to support northern beardless tyrannulets. No observations or populations have been documented in or near the Survey Area (AZGFD 2019a).
<i>Centronyx bairdii</i> Baird's Sparrow	USFWS Species of Concern, USFS Sensitive; SGCN 1C	Winter visitor to southeast Arizona. Found in grasslands with scattered shrubs. Feeds on insects and seeds (The Cornell Lab 2019b).	Moderate Potential Suitable grassland habitat is present in the Survey Area to support winter populations of Baird's sparrow. Documented population of Baird's sparrow occur in or near the Survey Area (AZGFD 2019a).
<i>Chordeiles minor</i> Common Nighthawk	SGCN 1B	Summer resident in southern and southwestern Arizona. Occurs in open arid habitats of dry grasslands and scrub, and in desert washes. Nests on the ground with no nest, sometimes in the shade of a shrub (Audubon 2019 b).	High Potential Suitable open arid grassland and desert scrub habitats occur in the Survey Area to support nesting common nighthawk populations. Predicted range includes areas within the Survey Area (AZGFD 2019a).
<i>Coccothraustes vespertinus</i> Evening Grosbeak	SGCN 1B	In Arizona, occurs in pine forests. May be found in deciduous forests, woodlands and semi-open areas in the winter. Feeds on seeds berries and insects (Audubon 2019c).	Unlikely Suitable pine forests and woodland habitats are not present in the Survey Area, but semi-open grassland is present and may support evening grosbeaks. A known population of evening grosbeaks is present near the Survey Area (AZGFD 2019a).
<i>Coccyzus americanus</i> Yellow-billed Cuckoo (Western DPS)	Federally threatened, USFS Sensitive; SGCN 1A	Occurs in riparian cottonwood-willow gallery forest and tamarisk groves with dense understory. May also be found in large mesquite bosques. Forages for	High Potential Suitable cottonwood riparian gallery forest is present within the Survey Area in sections 3B

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
		caterpillars, bird eggs, small reptiles and amphibians, insects, berries and fruit.	and 3C. Yellow-billed cuckoo populations have been documented in the Survey Area in sections 3B and 3C (AZGFD 2019a).
<i>Colaptes chrysoides</i> Gilded Flicker	BLM Sensitive; SGCN 1B	Occurs in desert woodlands, bosques of saguaro, Joshua tree, mesquite, willow or cottonwood, and suburban areas. Feeds primarily on carpenter ants.	High Potential Suitable bosques of cottonwood, saguaro and mesquite are present in the Survey Area and are capable of supporting gilded flickers. Predicted range for the gilded flicker includes portions of the Survey Area.
<i>Cynanthus latirostris</i> Broad-billed Hummingbird	USFS Sensitive; SGCN 1B	Summer resident in southeastern Arizona. Found in arid scrub and mesquite-sycamore riparian vegetation.	High Potential Suitable arid scrub habitat is present within the Survey Area to support broad-billed hummingbird. Documented observations and predicted range are also present in the Survey Area (AZGFD 2019a).
<i>Empidonax fulvifrons pygmaeus</i> Northern Buff-breasted Flycatcher	USFWS Species of Concern, USFS Sensitive; SGCN 1B	Summer resident in southeastern Arizona where it breeds in the Huachuca, Santa Catalina and Chiricahua mountains. Found in open pine forest or sycamore with herbaceous understory. Does not like dense vegetation.	Unlikely Suitable open pine or sycamore woodland is not present in the Survey Area. The Survey Area is also several hundred feet below the preferred elevation minimum of 5,720 feet for this species (AZGFD 2019a).
<i>Empidonax traillii extimus</i> Southwestern willow flycatcher	Federally endangered; SGCN 1A	Breeds in riparian tree and shrub vegetation found along rivers, swamps, lakes and reservoirs. Prefers cottonwood/willow and tamarisk vegetation communities with dense canopy of foliage and surface water during the summer.	Moderate Potential Suitable riparian habitat is limited within the Survey Area and occurs near Segments 3B and 3C. One record of Southwestern willow flycatcher has been documented in Segment 3C.

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<p><i>Eugenes fulgens</i> Rivoli's Hummingbird</p>	<p>SGCN 1B</p>	<p>Summer resident in eastern Arizona. Occurs in montane coniferous forest, pine-oak and oak woodland and in canyons lined with sycamore and oak</p>	<p>No Potential Suitable pine forest and pine-oak woodland habitats preferred by Rivoli's hummingbird are not present in the Survey Area. No documented populations or observations have been recorded in the Survey Area and the Survey Area contains no predicted range for this species (AZGFD 2019a).</p>
<p><i>Falco peregrinus anatum</i> American Peregrine Falcon</p>	<p>USFWS Species of Concern, USFS Sensitive, BLM Sensitive; SGCN 1A</p>	<p>Open habitats, particularly along water sources (e.g. coast lines and rivers) where cliffs are present for nesting. Requires an ample supply of birds as a prey base.</p>	<p>Moderate Potential Suitable nesting cliffs for American peregrine falcons do not occur in the Survey Area. Suitable nesting cliffs do occur within two miles of the Survey Area and the Survey Area contains suitable foraging habitat. No documented populations or observations are reported but the Survey Area is part of the predicted range for this species.</p>
<p><i>Glaucidium brasilianum cactorum</i> Cactus Ferruginous Pygmy-owl</p>	<p>USFWS Species of Concern, USFS Sensitive, BLM Sensitive; SGCN 1B</p>	<p>Found in Sonoran riparian deciduous woodland and Sonoran Desert scrub. Can be found in riparian cottonwoods and willows and adjacent mesquite bosques with saguaros nearby. Occurs less frequently in dry washes among large mesquite, paloverde, ironwood and saguaro. Feeds on insects, small birds, lizards, and small mammals that is catches around dawn and dusk.</p>	<p>Moderate Potential Preferred Sonoran riparian deciduous woodland is not present in the Survey Area, but dry washes with Sonoran Desert scrub is present and have potential to support cactus ferruginous pygmy owls. Documented populations occur near the Survey Area, and the predicted range extends into the Survey Area (AZGFD 2019a).</p>

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Glaucidium gnoma gnoma</i> Mountain Pygmy-owl	SGCN 1B	Occurs in dense mountainous pine-oak, pine, and pine-evergreen forests (Lewis 2015).	No Potential No suitable dense mountain vegetation occurs within the Survey Area.
<i>Haliaeetus leucocephalus</i> Bald Eagle	USFWS Species of Concern; Bald and Golden Eagle Protection Act; USFS Sensitive; BLM Sensitive; SGCN 1A	In Arizona, bald eagles typically nest on cliff faces, ledges and pinnacles in central and northern Arizona. Nest sites are in saguaro-paloverde, desert grassland, and chaparral. Occupy areas near water sources, including rivers, reservoirs and lakes.	Unlikely No suitable forest or cliff nesting habitat occurs near the Survey Area and there are few suitable water sources such as lakes, reservoirs or rivers to provide foraging habitat. No populations or observations have been documented By AZGFD near the Survey Area (AZGFD 2019). Predicted range for the bald eagle is present near the Survey Area. (AZGFD 2019a). Two reported sightings of bald eagle at SBNWR near Segment 3C have been reported to eBird (Sullivan et. al. 2009).
<i>Junco phaeonotus</i> Yellow-eyed Junco	USFS Sensitive; SGCN 1B	Found in montane fir, pine and pine-oak forests in southeastern Arizona. In the winter they move to lower elevations in oak woodland, scrub, pasture and field habitats.	Unlikely Montane fir, pine and pine-oak summer habitats of the yellow-eyed junco do not occur in the Survey Area but may occur within two miles. Woodland, scrub and pasture winter habitats are limited within the Survey Area but occur closer to the Survey Area so there is potential they could move through or occasionally forage in the Survey Area.

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Lampornis clemenciae</i> Blue-throated mountaingem	SGCN 1B	Nests in mountainous areas of southeastern Arizona in pine-oak, deciduous woodland, and wet mountain canyon habitats from 5,000 to 10,000 feet.	Unlikely Suitable pine-oak, deciduous woodlands or wet mountain canyon habitats do not occur within the Survey Area but may occur within 2 miles of segment 3A. The Survey Area is included in the predicted range and documented occurrences of blue-throated mountaingem are reported near Segment 3A.
<i>Megascops trichopsis</i> Whiskered Screech-owl	USFS Sensitive; SGCN 1B	Occurs in dense montane oak-conifer and oak woodlands in canyons, generally above 5,000 feet. In Arizona, they can also be found in sycamore groves next to oak woodlands. Feeds mainly on insects (Audubon 2019d).	No Potential Suitable dense montane oak and conifer habitats and sycamore stands next to oak woodlands do not occur in or adjacent to the Survey Area. Predicted range extends near the west end of Segment 3B (AZGFD 2019aa).
<i>Melanerpes uropygialis</i> Gila Woodpecker	SGCN 1B	Occurs in desert scrub and woodlands, saguaro stands, mesquite woodlands, riparian corridors with cottonwoods and low canyon woodlands. Can be common in urban settings and around date palm agriculture.	Present Suitable desert scrub with saguaro and mesquite are present in the Survey Area. Predicted range is included in the Survey Area and documented observations have been recorded close to the Survey Area (AZGFD 2019a). Gila woodpecker were observed during biological surveys.
<i>Meleagris gallopavo mexicana</i> Gould's Turkey	USFS Sensitive; SGCN 1B	Occurs in coniferous, pine-oak, oak, deciduous and riparian woodlands, and thorn scrub in southeastern Arizona.	Moderate Potential Small areas of suitable riparian woodland are present in the Survey Area, while larger areas of thorn scrub are also present. Predicted range extends close

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			to Segments 3A, 3B and 3C.
<i>Melospiza lincolnii</i> Lincoln's Sparrow	SGCN 1B	Winters in southern Arizona. Found in thickets, fallow fields, dense brush.	Moderate Potential Some pockets of dense mesquite thicket are present and would provide suitable wintering habitat for Lincoln's sparrows in and adjacent to the Survey Area. Predicted range is present in the Survey Area (AZGFD 2019a).
<i>Melospiza aberti</i> Abert's Towhee	USFS Sensitive; SGCN 1B	Resident bird in southern and western Arizona. Found in desert woodlands, mesquite scrub, riparian habitats, orchard fields, and urban settings.	Moderate Potential Some limited areas of mesquite scrub and riparian forest are present in the Survey Area and could support Abert's towhee. Predicted range is not present in the Survey Area (AZGFD 2019a).
<i>Myiarchus tuberculifer</i> Dusky-capped Flycatcher	SGCN 1B	Summer resident, breeding in southeastern Arizona. Found in low to middle elevation montane riparian, oak, and pine-oak woodlands and juniper habitats.	Unlikely Suitable breeding habitat in montane riparian, oak, pine-oak and juniper habitats are not present in the Survey Area. Small areas of predicted range are present near Segment 3A (AZGFD 2019a).
<i>Myiodynastes luteiventris</i> Sulphur-bellied Flycatcher	USFS Sensitive; SGCN 1B	Summer resident in southern Arizona where it breeds in sycamore-walnut riparian habitat in lower elevation mountain canyons and cottonwood-sycamore riparian habitat along low elevation streams.	Unlikely Breeding habitat for the sulphur-bellied flycatcher is limited to a couple areas of cottonwood riparian forest in the Survey Area. These areas are similar to some breeding habitats for this species but lack the sycamore component.

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			Small portions of predicted range occur near Segment 3A (AZGFD 2019a)
<i>Passerculus sandwichensis rostratus</i> Large-billed Savannah Sparrow	USFWS Species of Concern, SGCN 1B	Late summer visitor to lakes near Yuma Arizona. Occurs in wetlands, tidal salt marsh and coastal estuaries with short to intermediate stature vegetation height and density. Prefers habitats with well-developed detritus layer.	No Potential Known to occur near lakes in Yuma, Arizona. Suitable habitat does not occur in the Survey Area.
<i>Passerculus sandwichensis rufofuscus</i> Chihuahua Savannah Sparrow	SGCN 1B	Found in central to southern Arizona. Winter habitat in southern Arizona includes cultivated and pasture fields, golf courses, dunes and salt marshes and the edges of roads. Sonoran and Chihuahuan Desert scrub.	High Potential Suitable Sonoran Desert scrub habitat occurs in the Survey Area to support wintering Chihuahua savannah sparrows.
<i>Peucaea botterii arizonae</i> Arizona Botteri's Sparrow	BLM Sensitive; SGCN 1B	Summer resident in southeastern Arizona where it is closely associated with tall, dense desert grasslands for breeding. Avoids heavily grazed habitats.	High Potential Suitable desert grassland habitats are present in the Survey Area to support breeding and wintering populations of Arizona Botteri's sparrow. Predicted range and predicted wintering habitat both occur in the Survey Area (AZGFD 2019a).
<i>Peucaea carpalis</i> Rufous-winged Sparrow	SGCN 1B	Year-round resident in southern central Arizona where it occupies flat desert grassland with thorn scrub and cactus. Frequently observed along washes. Avoids heavily grazed habitats but may be found in well-vegetated suburban areas where development is scattered.	High Potential Suitable desert grassland and thornscrub habitats are present in the Survey Area to support rufous-winged sparrow breeding and wintering. Predicted range is present in the Survey Area (AZGFD 2019a).
<i>Dryobates arizonae</i> Arizona Woodpecker	USFS Sensitive; SGCN 1B	Occurs year-round in dry pine-oak woodlands and riparian oak woodlands in canyons between 4,000 and 7,000 feet.	No Potential Suitable pine-oak and riparian oak woodlands do not occur within or adjacent to the Survey Area. Predicted range

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			extends close to Segment 3A, but the Segment is not in a canyon setting (AZGFD 2019a).
<i>Progne subis hesperia</i> Desert Purple Martin	BLM Sensitive; SGCN 1B	Breeds in Sonoran Desert habitats in Arizona in the summer. Use natural cavities or woodpecker holes in saguaros or other trees for nesting. Loosely colonial to solitary in nesting.	High Potential Suitable breeding habitat, composed of Sonoran Desert scrub with saguaro cactus, is present in the Survey Area. Predicted range is present in the Survey Area (AZGFD 2019a).
<i>Rallus obsoletus yumanensis</i> Yuma Ridgway's Rail	Federally endangered; SGCN 1A	In Arizona, found in freshwater and brackish marshes generally dominated by cattail and bulrush with a mix of riparian trees and shrubs. Occasionally found in desert springs like Quitobaquito.	Unlikely Restricted to freshwater and brackish marshes like Quitobaquito Spring. Yuma Ridgway's rail has been documented at Quitobaquito Spring, 165 feet northeast of the Survey Area (AZGFD 2019a), but no marsh habitat occurs within the Survey Area.
<i>Setophaga petechia</i> Yellow Warbler	SGCN 1B	Found in riparian habitats within thickets and early stages of successional habitats dominated by willows.	Unlikely Riparian habitats occur within the Survey Area, but none of these habitats are dominated by willow species. Predicted range occurs in or near the Survey Area and one observation occurs in or near the Survey Area (AZGFD 2019a).
<i>Sialia sialis fulva</i> Azure Bluebird	SGCN 1B	Year-round resident in southeastern Arizona. Nests in cavities in open habitats, including woodlands, secondary growth habitats, pastures, and field edges where cavities are available. Prefers cavities in open oak forests for nesting.	Unlikely Suitable azure bluebird nesting habitat is not present in the Survey Area. Potential suitable nesting habitat is less than 0.5 miles from Segment 3A (AZGFD 2019a). Foraging birds may occur around the

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			Survey Area.
<i>Strix occidentalis lucida</i> Mexican Spotted Owl	Federally threatened; SGCN 1A	Closed-canopy forests of mixed conifer, pine-oak, and pinyon juniper woodland, and steep, narrow, entrenched, rocky canyons and cliffs. Riparian habitat is important as a movement corridor or stop-over habitat for dispersing owls.	Unlikely Closed canopy forest habitats in areas of rocky canyons and cliffs do not occur in or adjacent to the Survey Area. Riparian habitat is present in the Survey Area and may be used by dispersing owls moving from one suitable habitat to another.
<i>Toxostoma lecontei</i> LeConte's Thrasher	BLM Sensitive; SGCN 1B	Occurs in southwestern Arizona in desert scrub, mesquite, tall riparian brush and chaparral with sandy soils.	Moderate Potential Suitable desert scrub and mesquite habitat are present in the Survey Area. Predicted range includes portions of the Survey Area and known populations are present near the Survey Area (AZGFD 2019a). The majority of observations occur west of the Survey Area in Yuma County (AZGFD 2019a).
<i>Troglodytes pacificus</i> Pacific Wren	SGCN 1B	Occurs in woodlands and brush in the winter in Arizona.	Unlikely Suitable woodland habitat capable of supporting wintering populations of Pacific wren are limited in and adjacent to the Survey Area. Small areas of predicted range are present in survey Segments 3B and 3C.
<i>Trogon elegans</i> Elegant Trogon	USFS Sensitive; SGCN 1B	Breeds in canyons of the “sky islands” in southeastern Arizona. Preferred canyons have sycamores along the riparian areas and pine and oaks in the remaining watershed.	Unlikely Suitable sycamore riparian canyon habitat bordered by oak and pine forest preferred by elegant trogons for breeding does not occur in or adjacent to

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			the Survey Area. There is potential that individuals from a known population north of survey Segment 3A may traverse through the Survey Area on occasion (AZGFD 2019a).
<i>Tyrannus crassirostris</i> Thick-billed Kingbird	USFS Sensitive; SGCN 1B	Breeds in riparian habitats of Sonoita Creek, Sycamore Canyon, Guadalupe Canyon, and the lower San Pedro River. Prefers deciduous riparian habitats and semi-arid canyons, typically sycamores and cottonwoods.	Unlikely Suitable cottonwood riparian forest occurs within the Survey Area in section 3B and 3C, but thick-billed kingbirds have not been reported in these areas (AZGFD 2019a). Predicted range does not extend into the Survey Area (AZGFD 2019a).
<i>Vireo bellii arizonae</i> Arizona Bell's Vireo	SGCN 1B	Breeds during the summer in lowland riparian areas composed of willows, mesquite and mulefat. Prefers low, dense, shrubby structure.	Moderate Potential Limited riparian habitat with cottonwood, mulefat and mesquite are present within the Survey Area and may be suitable for nesting Arizona Bell's vireo. Predicted range extends into the Survey Area and a documented observation has been reported (AZGFD 2019a).
Mammals			
<i>Ammospermophilus harrisi</i> Harris' Antelope Squirrel	SGCN 1B	Found in canyons, dry plains and river valleys in low desert habitats. Digs burrows under shrubs and may be active throughout the day. Feeds on fruit and seeds of cactus and mesquite, and some insects (Reid 2006).	Present Suitable low desert habitat with cactus and mesquite are present in the Survey Area and could support Harris' antelope squirrel. Predicted range extends into the Survey Area, but documented observations are lacking (AZGFD 2019a).

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Antilocapra americana sonoriensis</i> Sonoran Pronghorn	Federally endangered, USFWS Nonessential Experimental Population; SGCN 1A	Occurs in broad intermountain alluvial valleys with creosote bush, bursage, and paloverde-mixed cacti associations. Pronghorn are grazers in the summer, feeding on grass, forbs and cacti, and browsers in the winter (AZGFD 2019a).	High Potential Suitable Sonoran Desert scrub habitat is present in the Survey Area. Sonoran pronghorn occurs on Cabeza Prieta National Wildlife Refuge and Organ Pipe Cactus National Monument in the Survey Area (AZGFD 2019a).
<i>Baiomys taylori</i> Northern Pygmy Mouse	USFS Sensitive	The northern pygmy mouse is found in fields, prairies, desert grassland and open woodlands with a grassy vegetation community and thick thatch or other groundcover. This pygmy mouse creates tiny runways through the groundcover from nests to foraging areas. Feeds on seeds, fruit and green vegetation (Reid 2006, AZGFD 2019a).	High Potential Suitable desert grassland habitats occur in Survey Segments 3A, 3B, and 3C. Documented populations have been recorded in the Survey Area (AZGFD 2019a).
<i>Castor canadensis</i> American Beaver	SGCN 1B	American beavers are large, semiaquatic rodents found in wooded habitats containing water, including swamps, lakes, streams and rivers. Primarily nocturnal to crepuscular. They have an incredible ability to alter habitats by damming the flow of water with trees and branches that it fells using large front teeth. Beavers living in rivers do not make dams but burrow into the riverbank. Feeds on green vegetation and roots during the summer, and on bark during the winter. Will cut and store young trees underwater for use in the winter (Reid 2006, AZGFD 2019a).	Moderate Potential Suitable habitat occurs in cottonwood gallery forest along the San Pedro River in survey Segment 3B. Predicted range includes this location and observation of American beaver have been recorded down-river and outside the Survey Area (AZGFD 2019a).
<i>Choeronycteris mexicana</i> Mexican Long-tongued Bat	USFWS Species of Concern, USFS Sensitive, BLM Sensitive; SGCN 1C	Habitat generalist associated with a variety of vegetation types, including arid thorn scrub, riparian vegetation, montane oak-conifer woodlands and forests, and tropical deciduous forests. Day roosts are found in caves, old mines, culverts, rock fissures and rarely buildings. Mexican long-tongued bats hang from the ceiling of day-roosts in dimly lit portions of cave systems. They feed on fruit, pollen and nectar, and likely insects as well. Primary food sources are cactus and agave (Adams 2003, WBWG 2019).	Unlikely Suitable roosting habitat does not occur in the Survey Area, but suitable nectar, pollen and fruit resources are present but seasonal. Mexican long-tongued bats may forage in and near the Survey Area or move through the area commuting from foraging to roosting sites at night.

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Corynorhinus townsendii pallescens</i> Pale Townsend's Big-eared Bat	USFWS Species of Concern, USFS Sensitive, BLM Sensitive; SGCN 1B	Occurs in desert scrub, pinyon-juniper woodlands, oak woodlands and coniferous forest habitats. Obligate cave-roosting species, forming colonies in natural caves or abandoned mines. It has also been known to roost occasionally in buildings, bridges, and tree hollows. Males roost singly during the maternity season. Townsend's big-eared bat is considered a moth specialist but will take other insect species. They typically forage in edge habitats and may range as much as 93 miles in a night while foraging (Adams 2003, WBWG 2019).	Unlikely Suitable caves for roosting are not present in the Survey Area. Suitable cave habitat is present outside the Survey Area and within the 93-mile foraging range for this species (AZGFD 2019a) so there is potential that pale Townsend's big-eared bats may forage in or commute through the Survey Area at night.
<i>Cynomys ludovicianus</i> Black-tailed Prairie Dog	USFWS Candidate Conservation Agreement, BLM Sensitive, SGCN 1A	Black-tailed prairie dogs are found on dry, flat, open plains and desert grasslands with medium to fine textured soils. Prairie dog towns are frequently found in silty clay loam, sandy clay loam, and loams with little gravel and good drainage. They feed on a variety of grasses, forbs and shrubs, including leaves, stems and seeds. Will also consume some insects. The black-tailed prairie dog does not need a source of surface water for drinking (AZGFD 2019a).	No Potential Exterminated in Arizona by 1962. Suitable habitat is present in the Survey Area to support black-tailed prairie dogs, but reintroduction efforts are occurring north of Sonita, AZ in the Las Cienegas National Conservation Area, over 30 miles from the Survey Area (AZGFD 2019a).
<i>Dipodomys spectabilis</i> Banner-tailed Kangaroo Rat	BLM Sensitive; SGCN 1B	Banner-tailed kangaroo rats are associated with desert scrub and desert grassland habitats with scattered shrubs on slopes with hard or gravelly soil. Common vegetation includes mesquite, juniper, creosote bush, or acacia. Typically, nocturnal, they feed on grass seeds and some green and succulent vegetation. Will store seeds for later consumption (Reid 2006, AZGFD 2019a).	Moderate Potential Suitable desert scrub and desert grassland habitat occurs within the Survey Area. Predicted range extends throughout the Survey Area but documented observations have not been reported near the Survey Area (AZGFD 2019a).
<i>Euderma maculatum</i> Spotted Bat	USFWS Species of Concern, USFS Sensitive, BLM Sensitive; SGCN 1B	Occurs in desert scrub, pinyon-juniper woodland, Ponderosa pine, mixed conifer forest, riparian habitats, pastures, and canyons. Day-roosts are found in rock cracks and crevices or caves high up on cliff faces. Spotted bats may travel as far as 24 miles from their day-roost and up to 50 miles a night. They feed primarily on moths (Adams 2003, WBWG 2019).	Unlikely Suitable rock crevice roosting habitat does not occur within the Survey Area, but suitable roosting habitat does occur within the 50-mile foraging range for this species. There is

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			potential that spotted bats may forage in or commute through the Survey Area at night.
<i>Eumops perotis californicus</i> Greater Western Bonneted Bat	USFWS Species of Concern; BLM Sensitive; SGCN 1B	Associated with lower and upper Sonoran Desert scrub near rugged rocky cliffs and canyons. Roosts in rock crevices in rugged rocky areas or steep-walled canyons. Forages well above ground level and may range far from the roost site in search of prey (Adams 2003, WBWG 2019).	Unlikely Suitable rock crevice roosting habitat does not occur in the Survey Area, but suitable roosting habitat is likely present within the 15-mile foraging range of this species (AZGFD 2019a). There is potential that greater western bonneted bats may forage in or commute through the Survey Area at night.
<i>Eumops underwoodi</i> Underwood's Bonneted Bat	USFWS Species of Concern; SGCN 1B	Similar to the greater western bonneted bat. Habitat associations of this species are not well-understood, but they have been encountered in mesquite-grassland and Sonoran Desert habitats in the U.S. and pine-oak forest in Mexico. Presumed to roost in rock crevices on cliff faces, but the only known roost (in Mexico) was in a large tree hollow. Feeds on night-flying insects, including grasshoppers, leafhoppers, moths and beetles (Adams 2003, WBWG 2019).	Unlikely Suitable rock crevice roosting habitat does not occur in the Survey Area, but suitable roosting habitat is likely present within foraging range of this species. There is a potential that Underwood's bonneted bat may forage in or commute through the Survey Area at night.
<i>Lasiurus blossevillii</i> Western Red Bat	USFS Sensitive; SGCN 1B	Highly migratory and typically solitary, roosting primarily in the foliage of trees or shrubs. Roosts are usually in broad-leaved trees, including cottonwoods, sycamores, alders, and maples. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. Rarely found in desert habitats. Western red bats feed on moths and other insects (Adams 2003, WBWG 2019).	High Potential Suitable broad-leaf tree roosting habitat is present in the Survey Area in Segments 3B and 3C. Predicted range extends into the Survey Area and documented populations are present near the Survey Area (AZGFD 2019a).

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Lasiurus xanthinus</i> Western Yellow Bat	USFS Sensitive; SGCN 1B	Western yellow bats prefer environments with dry, thorny vegetation. They roost individually in the leaves of <i>Washingtonia</i> sp. palms, sycamores, hackberries and cottonwood trees. Feeds on medium to small night-flying insects, particularly beetles (Adams 2003, WBWG 2019).	High Potential Suitable cottonwood roosting habitat is present in Segments 3B and 3C. Predicted range extends into the Survey Area and a documented population has been reported in Segment 3C (AZGFD 2019a).
<i>Leopardus pardalis</i> Ocelot	Federally endangered; SGCN 1A	Ocelots occupy habitats containing dense cover with an ample prey base. Habitat use in Arizona is not well understood, but ocelots are known to use dense thornscrub and chaparral in Texas with 95 percent cover preferred, and areas under 75 percent cover avoided. Preys on a variety of small vertebrates and invertebrates including small mammals, reptiles, amphibians, birds, fish, insects and land crabs (AZGFD 2019a).	Moderate Potential Suitable dense thornscrub habitat is present in the Segment 3C for use as a movement corridor or part of a home range. Predicted range extends into Segments 3A, 3B and 3C, and a documented population has been recorded north of Segment 3A (AZGFD 2019a).
<i>Leptonycteris yerbabuenae</i> Lesser Long-nosed Bat	USFWS Species of Concern; SGCN 1A	Found in desert grassland and shrubland, up to the point of transition to oak woodlands. They day-roost in caves and mine tunnels, and occasionally old buildings and culverts. May roost in large colonies in excess of 10,000 individuals. Feeds on nectar, pollen, fruit and insects, particularly agaves, yuccas, saguaro and organ pipe cactus. May travel up to 19 miles to feeding grounds (Adams 2003, WBWG 2019).	Unlikely Suitable roosting habitat does not occur in the Survey Area, but suitable nectar, pollen and fruit resources are present but seasonal. Lesser long-nosed bats may forage in and near the Survey Area or move through the area commuting from foraging to roosting sites at night.
<i>Lepus alleni</i> Antelope Jackrabbit	SGCN 1B	Occurs on grassy slopes in arid habitats, often with mesquite, catclaw and cacti. Typically, crepuscular to nocturnal, but may be active during the day in mild weather. Feeds on grass and browses on leaves of mesquite, cacti and other shrubs (Reid 2006, AZGFD 2019a).	Present Suitable desert habitat with mesquite, catclaw and cactus occurs within the Survey Area and is capable of supporting antelope jackrabbits. Predicted range is present in the Survey Area, but no documented populations or observations are

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			reported (AZGFD 2019a). Antelope jackrabbit was observed during biological surveys.
<i>Macrotus californicus</i> California Leaf-nosed Bat	USFWS Species of Concern; BLM Sensitive; SGCN 1B	California leaf-nosed bats can be found in desert riparian, desert wash, desert scrub, desert succulent scrub, alkali scrub and palm oasis habitats. They inhabit rocky, rugged terrain with mines or caves for roosting. Feeds on large flying insects, including grasshoppers, moths and beetles, gleaned from vegetation or taken in flight (Adams 2003, WBWG 2019).	Unlikely No cave or mine roosting habitat is present in the Survey Area, but suitable rugged terrain with potential roosting habitat is present within the foraging range of this species. There is potential that California leaf-nosed bats may forage in or commute through the Survey Area at night. Predicted range is present in the Survey Area and documented populations occur in or near the Survey Area (AZGFD 2019a).
<i>Microtus mexicanus</i> Mexican Vole	SGCN 1B	The Mexican vole is found in moist grass and sedge habitats with perennial and seasonal waters likes seeps and springs. May occupy drier grass and forb areas. Often in association with spruce-fir, Ponderosa pine, or Gambel's oaks above 6,000 feet and pinyon-juniper or sage brush under 6,000 feet. Active day and night, they create runways between burrows and feeding sites. Mexican voles feed on grasses, forbs, and other plants (Reid 2006, AZGFD 2019a).	Unlikely Suitable grass and sedge habitats are limited in the Survey Area (Black Draw) and it is not in association with spruce-fir, Ponderosa pine or Gambel's oak above 6,000 feet. Predicted range is present in the Survey Area, but there are no documented observations or population occurrences in Cochise County (AZGFD 2019a).
<i>Myotis occultus</i> Arizona Myotis	USFWS Species of Concern; BLM Sensitive; SGCN 1B	Found in Ponderosa pine and oak pine woodlands near water, or in desert riparian habitats around sources of permanent water. In Arizona, this myotis is more common at higher elevations. Day roosts are formed in tree cavities and crevices, and nursery colonies are found in snags exposed to a greater degree of solar	Unlikely Suitable large trees (e.g. cottonwood trees) with potential rooting habitat near water are present in the Survey

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
		<p>heating. Arizona myotis have been observed roosting with other species of <i>Myotis</i> and <i>Tadarida brasiliensis</i> (Adams 2003, WBWG 2019).</p>	<p>Area, but Arizona myotis are more typically associated with pine and oak forests. Pine and oak habitats do occur within the foraging range of this species. There is potential that Arizona myotis may forage in or commute through the Survey Area at night. Limited predicted range extends to just west of Segment 3A and the majority of documented observations occur in central Arizona (AZGFD 2019a).</p>
<p><i>Myotis velifer</i> Cave Myotis</p>	<p>USFWS Species of Concern; BLM Sensitive; SGCN 1B</p>	<p>Cave myotis are found in desert scrub vegetation consisting of creosote bush brittlebush, palo verde and cacti. Forms large colonies of 2,000 to 5,000 individuals in mines, caves, bridges and sometimes buildings. Feeds opportunistically on small moths, weevils, antlions and small beetles that it catches in flight over the desert scrub vegetation (Adams 2003, WBWG 2019).</p>	<p>Moderate No cave, mine, or bridge roosting habitat is present in the Survey Area, but buildings are present in or near the Survey Area in Segment 2 and could provide suitable roosting habitat. The creosote and desert scrub vegetation in the Survey Area are suitable foraging habitat and rocky terrain with potential roosting habitat for cave myotis is present within foraging distance for this species. There is potential that cave myotis may forage in or commute through the Survey Area at night. Predicted range extends into the Survey Area, and population occurrences and observations are present in and near the Survey Area (AZGFD 2019a).</p>

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Myotis yumanensis</i> Yuma Myotis	USFWS Species of Concern; SGCN 1B	Occupies a wide variety of upland and lowland habitats, including riparian, desert scrub, moist woodlands, and forests, usually near open water. Foraging occurs over water or in open spaces over land. Warm-season roosts are in caves, cliff crevices, bridges, buildings, tunnels, abandoned cliff swallow nests, and cavities of large live trees (redwood, Douglas-fir, oak, maple) near water. Large nursery colonies may form in buildings, caves, mine tunnels, and under bridges (Adams 2003, WBWG 2019).	Moderate Potential Cottonwood trees with potential for suitable roosting cavities are present in limited quantity in the Survey Area. Suitable cliff, cave, and bridge roosting habitat is not present in the Survey Area, but buildings are present in or near the Survey Area in Segment 2 and could provide suitable roosting habitat. Cliff, and cave roosting habitat is likely present within the nightly foraging range for this species. Potential habitat for Yuma myotis is present in the Survey Area, but no observations or population occurrences have been documented (AZGFD 2019a).
<i>Notiosorex cockrumi</i> Cockrum's Desert Shrew	SGCN 1B	Occurs in desert and desert scrub habitat, dry woodlands, pinion-juniper and Ponderosa pine forests. Prefers areas with fallen branches or other cover that allows for more humid habitat pockets in the desert. Small nests are made of plant fiber, often in wood rat nests. Diet is similar to other shrews and includes small invertebrates like insects and earthworms, small vertebrates including amphibians and neonate rodents, and some seeds and fungi (Reid 2006, AZGFD 2019a).	Moderate Potential Suitable desert scrub habitat is present in the Survey Area to support Cockrum's desert shrew. Predicted range includes the Survey Area, but no population occurrences or observations have been documented (AZGFD (2019a).
<i>Nyctinomops femorosaccus</i> Pocketed Free-tailed Bat	SGCN 1B	Occurs rarely in low-lying arid areas, including desert scrub, woodlands, and evergreen forests. Requires high cliffs or rocky outcrops for roosting sites. Feeds on small moths, beetles, flying ants, flies, leafhoppers, crickets and other insects (Adams 2003, WBWG 2019).	Unlikely No cliff or rocky outcrop roosting habitat is present in the Survey Area. The desert scrub vegetation in the Survey Area is suitable foraging habitat and rocky terrain with potential roosting habitat for pocketed free-tailed bat is

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
			<p>present within the nightly foraging range for this species. There is potential that pocketed free-tailed bats may forage in or commute through the Survey Area at night. Predicted range occurs in the Survey Area, and population occurrences and observations are present in or near the Survey Area (AZGFD 2019a).</p>
<p><i>Odocoileus virginianus</i> White-tailed Deer</p>	<p>SGCN 1B</p>	<p>Habitats are variable throughout the range of the white-tailed deer, but basic requirements are wooded areas for cover and open areas for foraging. May be common in mesquite brushland and thornscrub habitats. Feeds on leaves, twigs, nuts, berries, fungi, grasses, and some agricultural crops (AZGFD 2019a).</p>	<p>High Potential A suitable mosaic of wooded and open areas to provide cover and foraging opportunities for white-tailed deer are present in the Survey Area. Segments of predicted range occur in the Survey Area but occurs just west of survey Segment 3A.</p>
<p><i>Ovis canadensis mexicana</i> Mexican Desert Bighorn Sheep</p>	<p>SGCN 1B</p>	<p>Associated with steep, rugged terrain with sparse vegetation in the Sonoran Desert. Will also use canyon bottoms, alluvial fans and sandy washes to find water and forage. They feed on leaves, twigs, flowers, forbs, grasses and cacti (AZGFD 2019a).</p>	<p>High Potential Steep, rugged terrain is present in close proximity to Segments 1A, 2, and 1B. Canyon bottoms, alluvial fans and sandy wash habitat used for foraging is present in the Survey Area. Predicted range includes the Survey Area, but no observations have been documented (AZGFD 2019a). The Mexican desert bighorn sheep is known to occur on Cabeza Prieta National Wildlife Refuge (USFWS 2005).</p>

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<p><i>Panthera onca</i> Jaguar</p>	<p>Federally endangered; SGCN 1A</p>	<p>Jaguars have a preference for wetter lowland habitats like swampy grasslands and tropical rain forests, but at the northern end of their range in Arizona, they occur in more arid habitats from desert scrub to pine-oak woodland. Recent sightings have been above 5,000 feet. The jaguar is an apex predator, taking larger prey such as deer and javelin as well as smaller species when available and depending on the location within the large range of the species (AZGFD 2019a).</p>	<p>Moderate Potential Suitable desert scrub habitat is present in the Survey Area and pine-oak woodland is present north of the Survey Area in Segment 3A. The Survey Area forms part of a habitat mosaic that extends from Southern Arizona, across the Survey Area, and into Mexico. Jaguar home ranges can be very large, from 4 to 66 square miles. There is potential that jaguars may move through the Survey Area over the course of regular movements in their home range. The San Pedro River Valley and Black Draw could also serve as a movement corridor for jaguars moving north or south to suitable habitats in the U.S. or Mexico. Predicted range includes portions of the Survey Area and observations have been documented north of survey Segment 3A (AZGFD 2019a). As many as 8 different jaguars have been documented in AZ since 1996 (USFWS 2016).</p>
<p><i>Perognathus amplus</i> Arizona Pocket Mouse</p>	<p>SGCN 1B</p>	<p>Associated with areas of flat desert scrub with firm, fine sandy soils and sparse creosote bush vegetation. Stays torpid in a burrow over winter. Feeds on the seeds of creosote bush and other plants (Reid 2006, AZGFD 2019a).</p>	<p>High Potential Suitable desert scrub with creosote bush vegetation is present within the Survey Area. Predicted range extends into the Survey Area, but observations in or adjacent to the Survey Area have not been documented (AZGFD 2019a).</p>

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
<i>Peromyscus merriami</i> Merriam's Deermouse	USFS Sensitive	Merriam's deermouse is associated with riparian or low desert habitats in stands of mesquite, cholla, prickly pear paloverde and grasses. They are nocturnal and active throughout the year. Merriam's deermouse feeds on seeds, fruit, flowers, green vegetation and insects. This deermouse is primarily granivorous, feeding on the seeds of creosote bush, <i>Pectocarya</i> , heronbill and plantain (Reid 2006, AZGFD 2019a).	High Potential Suitable desert vegetation with mesquite, cholla, paloverde and annual grasses is present in the Survey Area. A population occurrence of Merriam's deermouse has been reported from the Survey Area (AZGFD 2019a).
<i>Peromyscus nasutus</i> Northern Rock Deermouse	SGCN 1B	Found at higher elevations in excess of 7,000 feet in rocky outcrops and talus slopes in pinyon-oak-juniper vegetation. This deermouse is semi-arboreal and feeds on acorns, nuts, juniper berries, and vegetation (Reid 2006, AZGFD 2019a).	No Potential Suitable pinyon-oak-juniper vegetation above 7,000 ft does not occur in or near the Survey Area.
<i>Sigmodon ochrognathus</i> Yellow-nosed Cotton Rat	USFWS Species of Concern; SGCN 1C	Occurs on dry rocky slopes in sparse grassy habitats, oak woodlands, and montane meadows in Ponderosa pine and Douglas fir forests. Associated with bunch grasses, beargrass, agave and yucca. Nests are above ground in bunch grasses, or underground. Yellow-nosed cotton rats feed on grasses and prickly pear fruit where it occurs. Do not require a free water source (Reid 2006, AZGFD 2019a).	High Potential Suitable bunch grass habitat occurs in the Survey Area and has the potential to support this species. Documented populations and observations occur in or near survey Segments 3A and 3B (AZGFD 2019a).
<i>Sorex arizonae</i> Arizona Shrew	USFWS Species of Concern, USFS Sensitive; SGCN 1B	The Arizona shrew is associated with riparian vegetation in mountain canyons. Typical vegetation includes oak, walnut, maple, sycamore, Douglas fir, quaking aspen and conifers. Suitable habitats have heavy ground cover consisting of logs, rocks and dense vegetation and a surface water source. The Arizona shrew forages on arthropods, earthworms, slugs and other insects (Reid 2006, AZGFD 2019a).	Unlikely Suitable mountainous canyons with riparian vegetation is not present in the Survey Area. Predicted range extends to just north of Segment 3A where a documented population has been reported.
<i>Tadarida brasiliensis</i> Brazilian Free-tailed Bat	SGCN 1B	The Brazilian free-tailed bat inhabits the Lower Sonoran and Upper Sonoran life zones. Primarily a lowland species, it occasionally ranges into the highlands. They can form extremely large colonies, in excess of 100,000 individuals, in caves, mines, bridges, parking garages, buildings and attics. They feed primarily on moths. Capable of fast, long distance flight, and may travel as much as 30 miles from its	Unlikely Suitable roosting habitat, including buildings, bridges, caves or mines are not present in the Survey Area, but suitable roosting habitat is present within the nightly foraging range for this species. There is

NAME	STATUS	HABITAT	POTENTIAL TO OCCUR
		roots to forage (Adams 2003, WBWG 2019).	potential that Brazilian free-tailed bats may forage in or commute through the Survey Area during the night. The predicted range for this species includes the Survey Area and they have been documented in or near the survey (AZGFD 2019a)
<i>Thomomys umbrinus intermedius</i> Southern Pocket Gopher	SGCN 1B	The southern pocket gopher is found in gravelly soils on rocky slopes in open oak woodland. Found towards the base of mountain ranges. Other vegetation associated with this gopher include juniper, agave, mountain mahogany, sumac, and grasses. Feeds on roots, tubers, grasses, and forbs like most pocket gophers (Reid 2006, AZGFD 2019a).	Moderate Potential Suitable grassland habitat is present near survey Segments 3A and 3B and could potentially support southern pocket gophers. Survey Segments 3A and 3B are near the predicted range of southern pocket gophers, but no observations have been documented (AZGFD 2019a).
<i>Vulpes macrotis</i> Kit Fox	SGCN 1B	Kit foxes are found in open arid areas, shrub grasslands and desert habitats. They use an underground den to rest during the day. Dens may have multiple entrances and there may be several dens in a territory. Primarily nocturnal, they feed on kangaroo rats, rabbits, reptiles, insects and some berries (Reid 2006, AZGFD 2019a).	High Potential Suitable arid grassland, shrublands and desert scrub habitat is present throughout the Survey Area to support kit fox populations. The predicted range of the kit fox includes all Segments of the Survey Area and they have been observed near Segment 1A (AZGFD 2019a).

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Appendix F:
Observed Plant Species

Scientific Name	Common Name	Special-Status
FERNS		
Pteridaceae - Brake family		
<i>Astrolepis</i> sp.	Cloakfern	
EUDICOTS		
Acanthaceae - Acanthus family		
<i>Justicia californica</i>	Beloperone, chuparosa	
Amaranthaceae - Amaranth family		
<i>Amaranthus albus</i>	Pigweed	
Anacardiaceae – Sumac family		
<i>Rhus virens</i>	Evergreen sumac	
Asteraceae - Sunflower family		
<i>Ambrosia deltoidea</i>	Triangle bur ragweed	
<i>Ambrosia dumosa</i>	White bursage	
<i>Baccharis sarothroides</i>	Broom baccharis	
<i>Baileya multiradiata</i>	Desert marigold	
<i>Encelia farinosa</i>	Brittlebush	
<i>Flourensia cernua</i>	American tarwort	
<i>Helianthus annuus</i>	Common sunflower	
<i>Laennecia coulteri</i>	Coulter's horseweed	
Boraginaceae - Borage family		
<i>Cryptantha</i> sp.	Popcorn flower	
Cactaceae - Cactus family		
<i>Carnegiea gigantea</i>	Saguaro	
<i>Cylindropuntia bigelovii</i>	Teddybear cholla	
<i>Cylindropuntia fulgida</i>	Chainfruit cholla	
<i>Echinocereus fendleri</i> ssp. <i>rectispinus</i>	Pinkflower hedgehog cactus	
<i>Echinocereus engelmannii</i>	Hedgehog cactus	
<i>Ferocactus emoryi</i>	Emory's barrel cactus	NPL SR
<i>Ferocactus cylindraceus</i>	Desert barrel cactus	NPL SR
<i>Opuntia</i> sp.	Prickly-pear	
<i>Pachycereus schottii</i>	Senita	NPL SR
<i>Stenocereus thurberi</i>	Organ pipe cactus	NPL SR
Cannabaceae - Hemp family		
<i>Celtis laevigata</i> var. <i>reticulata</i>	Netleaf hackberry	
Chenopodiaceae - Goosefoot family		
<i>Atriplex polycarpa</i>	Desert saltbush	
<i>Atriplex</i> sp.	Saltbush	
<i>Salsola tragus</i>	Prickly Russian thistle	

Scientific Name	Common Name	Special-Status
Convolvulaceae - Morning-glory family		
<i>Calystegia longipes</i>	Paiute false bindweed	
Euphorbiaceae – Spurge family		
<i>Jatropha macrorrhiza</i>	Ragged nettlespurge	
Fabaceae - Legume family		
<i>Acacia constricta</i>	White-thorn acacia	
<i>Calliandra eriophylla</i>	Pink fairy-duster	
<i>Eysenhardtia orthocarpa</i>	Tahitian kidneywood	
<i>Olneya tesota</i>	Ironwood	NPL HR, SA
<i>Parkinsonia</i> sp.	Palo verde	
<i>Prosopis glandulosa</i>	Honey mesquite	
<i>Prosopis</i> sp.	Mesquite	
<i>Prosopis velutina</i>	Velvet mesquite	NPL HR, SA
<i>Senegalia greggii</i>	Catclaw, devil's claw	
<i>Vachellia</i> sp.	Acacia	
Fouquieriaceae - Ocotillo family		
<i>Fouquieria splendens</i>	Ocotillo	
Geraniaceae - Geranium family		
<i>Erodium</i> sp.	Stork's bill	
Gentianaceae - Gentian family		
<i>Frasera speciosa</i>	Monument plant	
Lamiaceae - Mint family		
<i>Condea emoryi</i>	Desert lavender	
Nyctaginaceae - Four O'clock family		
<i>Boerhavia coccinea</i>	Scarlet spiderling	
<i>Mirabilis</i> sp.	Four o'clock	
Oleaceae – Olive family		
<i>Fraxinus</i> sp.	Ash	
Plantaginaceae - Plantain family		
<i>Plantago ovata</i>	Desert Indianwheat	
Rhamnaceae - Buckthorn family		
<i>Condalia globosa</i>	Bitter snakewood	
<i>Ziziphus obtusifolia</i>	Lotebush	
Salicaceae - Willow family		
<i>Populus fremontii</i>	Fremont cottonwood	
<i>Salix</i> sp.	Willow	
Simaroubaceae - Quassia Or Simarouba family		
<i>Castela emoryi</i>	Crucifixion-thorn	NPL SR
Solanaceae - Nightshade family		
<i>Datura wrightii</i>	Sacred thorn-apple	

Scientific Name	Common Name	Special-Status
<i>Lycium berlandieri</i>	Berlandier's wolfberry	
<i>Lycium</i> sp.	Desert-thorn	
Tamaricaceae - Tamarisk family		
<i>Tamarix aphylla</i>	Athel tamarix	
Verbenaceae - Vervain family		
<i>Aloysia wrightii</i>	Wright's beebrush	
Viscaceae - Mistletoe family		
<i>Phoradendron californicum</i>	Desert mistletoe	
Zygophyllaceae - Caltrop family		
<i>Larrea tridentata</i>	Creosote bush	
MONOCOTS		
Agavaceae - Century Plant family		
<i>Agave palmeri</i>	Palmer's agave	
<i>Agave</i> sp.	Agave	
<i>Yucca elata</i>	Soaptree yucca	
Cyperaceae - Sedge family		
<i>Carex</i> spp.	Sedge	
<i>Eleocharis</i> spp.	Spikerush	
Juncaceae - Rush family		
<i>Juncus</i> spp.	Rush	
Liliaceae – Lily family		
<i>Dasyilirion wheeleri</i>	Common sotol	
Poaceae - Grass family		
<i>Pennisetum ciliare</i>	Buffelgrass	
<i>Schismus</i> sp.	Mediterranean grass	
Typhaceae - Cattail family		
<i>Typha</i> sp.	Cattail	

Special-Status Legend:

Arizona Native Plant Law (NPL):

SR - Salvage Restricted: collection only with permit.

SA - Salvage Assessed: permits required to remove live trees.

HR - Harvest Restricted: permits required to remove plant by-products.

**Appendix G:
Observed Wildlife Species**

Scientific Name	Common Name	Special-Status
VERTEBRATES		
Fish		
<i>Gila purpurea</i>	Yaqui Chub	FE, SCGN 1A
<i>Gambusia affinis</i>	Mosquito Fish	
<i>Poeciliopsis occidentalis sonoriensis</i>	Yaqui Topminnow	FE, SCGN 1A
Amphibians		
<i>Lithobates catesbeiana</i>	American Bullfrog	
<i>Lithobates chiricahuensis</i>	Chiricahua Leopard Frog	FT, SCGN 1A
Reptiles		
<i>Aspidoscelis unipare</i>	Desert Grassland Whiptail	
<i>Aspidoscelis tigris</i>	Tiger Whiptail	
<i>Callisaurus draconoides</i>	Zebratail Lizard	
<i>Crotaphytus collaris</i>	Eastern collared lizard	
<i>Crotaphytus nebrius</i>	Sonoran Collared Lizard	SGCN 1B
<i>Dipsosaurus dorsalis dorsalis</i>	Northern Desert Iguana	
<i>Gambelia wislizenii</i>	Longnose Leopard Lizard	
<i>Heloderma suspectum suspectum</i>	Reticulate Gila Monster	SGCN 1A
<i>Holbrookia elegans</i>	Elegant earless lizard	
<i>Sceloporus magister</i>	Desert Spiny Lizard	
<i>Sceloporus occidentalis</i>	Western Fence Lizard	
<i>Urosaurus ornatus</i>	Ornate Tree Lizard	
<i>Uta stansburiana</i>	Common Side-blotched Lizard	
Birds		
<i>Accipiter cooperii</i>	Cooper's Hawk	
<i>Amphispiza bilineata</i>	Black-throated Sparrow	
<i>Ardea herodias</i>	Great Blue Heron	
<i>Auriparus flaviceps</i>	Verdin	
<i>Buteo jamaicensis</i>	Red-tailed Hawk	
<i>Callipepla gambellii</i>	Gambel's Quail	
<i>Callipepla squamata</i>	Scaled Quail	SGCN 1C
<i>Campylorhynchus brunneicapillus</i>	Cactus Wren	
<i>Caracara cheriway</i>	Crested Caracara	
<i>Cathartes aura</i>	Turkey Vulture	
<i>Chondestes grammacus</i>	Lark Sparrow	
<i>Circus hudsonius</i>	Northern Harrier	
<i>Corvus corax</i>	Common Raven	
<i>Corvus cryptoleucus</i>	Chihuahuan Raven	
<i>Falco sparverius</i>	American Kestrel	

Scientific Name	Common Name	Special-Status
<i>Geococcyx californianus</i>	Greater Roadrunner	
<i>Lanius ludovicianus</i>	Loggerhead Shrike	USFWS SC
<i>Melanerpes uropygialis</i>	Gila Woodpecker	SGCN 1B
<i>Melospiza melodia</i>	Song Sparrow	
<i>Mimus polyglottos</i>	Northern Mockingbird	
<i>Molothrus ater</i>	Brown-headed Cowbird	
<i>Passerina caerulea</i>	Blue Grosbeak	
<i>Phainopepla nitens</i>	Phainopepla	SGCN 1C
<i>Polioptila melanura</i>	Black-tailed Gnatcatcher	SGCN 1C
<i>Psaltriparus minimus</i>	Bushtit	
<i>Pyrocephalus rubinus</i>	Vermilion Flycatcher	SGCN 1C
<i>Quiscalus mexicanus</i>	Great-tailed Grackle	
<i>Regulus calendula</i>	Ruby-crowned Kinglet	
<i>Sayornis nigricans</i>	Black Phoebe	
<i>Setophaga coronata</i>	Yellow-rumped warbler	
<i>Spinus tristis</i>	American Goldfinch	
<i>Thryomanes bewickii</i>	Bewick's Wren	
<i>Tyrannus verticalis</i>	Western Kingbird	
<i>Zenaida asiatica</i>	White-winged Dove	
<i>Zenaida macroura</i>	Mourning Dove	
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow	SGCN 1C
Mammals		
<i>Ammospermophilus harrisi</i>	Harris's antelope squirrel	SGCN 1B
<i>Bos Taurus</i>	Domestic Cow	
<i>Chaetodupus spp.</i>	Pocket Mouse	
<i>Dipodomys spp.</i>	Kangaroo Rat	
<i>Lepus alleni</i>	Antelope Jackrabbit	SGCN 1B
<i>Lepus californicus</i>	Black-tailed Jackrabbit	
<i>Neotoma lepida</i>	Desert Woodrat	SGCN 1C
<i>Odocoileus hemionus</i>	Mule Deer	
<i>Prycyon lotor</i>	Northern Raccoon	
<i>Sylvilagus audubonii</i>	Desert Cottontail	
<i>Tayassu tajacu</i>	Javelina	
<i>Urocyon cinereoargenteus</i>	Common Gray Fox	
<i>Xerospermophilus tereticaudus</i>	Round Tailed Ground squirrel	

Special-Status Legend:

USFWS Endangered Species Act:

FE - Federally Endangered: imminent jeopardy of extinction

FT - Federally Threatened: imminent jeopardy of becoming Endangered

USFWS SC - Species of Concern.

AZGFD State Wildlife Action Plan – Wildlife Species of Greatest Conservation Need (SGCN)

1A - Scored “1” for Vulnerability in at least one of the eight categories and matches at least one of the following: Federally listed as endangered or threatened under the ESA; Candidate species under ESA; Is specifically covered under a signed conservation agreement or a signed conservation agreement with assurances, Recently removed from ESA and currently requires post-delisting monitoring; Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

1B - Scored “1” for Vulnerability in at least one of the eight categories, but match none of the above criteria.

1C - Unknown status species. Scored “0” for Vulnerability in one of the eight categories, meaning there are no data with which to address one or more categories, and vulnerability status cannot be assessed. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.