APPENDIX A
CORRESPONDENCE

1300 Pennsylvania Avenue NW
Washington, DC 20229

U.S. Customs and Border Protection

October 13, 2011

Mr. Bob Broscheid, Project Evaluation Program Supervisor
Arizona Game and Fish Department
Habitat Branch- Project Evaluation Program
2221 West Greenway Road
Phoenix, AZ 85023

SUBJECT: Proposed Environmental Assessment for the OTIA Douglas Project, U.S. Border Patrol Tucson Sector

Dear Mr. Broscheid:

On behalf of the Department of Homeland Security, U.S. Customs and Border Protection (CBP), the U.S. Army Corps of Engineers (USACE), Fort Worth District is preparing an Environmental Assessment (EA) for the Office of Technology Innovation and Acquisition (OTIA) Integrated Fixed Tower Project for the U.S. Border Patrol (USBP) Douglas Station, Tucson Sector. This EA will address the construction, operation, and maintenance of up to 11 sensor and communication towers and associated access roads. The proposed action is located near Douglas, Arizona (Figure 1). This system of towers and access roads creates a communications network in support of overall law enforcement situational awareness in the project area.

The EA will analyze the potential for significant adverse impacts or beneficial effects of the proposed action to the environment. The proposed action includes the construction of up to 11 sensor and communication towers. Additionally, proposed tower construction at 10 other sites will be considered as alternates. Tower access road construction, improvements, repairs, and maintenance are also part of the proposed action.

Enclosed is a map showing the tower sites proposed as part of the OTIA Douglas Project (Figure 2). Additionally, the ownership of potentially affected lands is identified on Figure 2. The table below shows the location (latitude and longitude in decimal degrees) for each proposed activity area.

Tower Number	Tower Name	Latitude	Longitude
TCA-DGL-0364	GTR Tower	31.357467	-109.428583
TCA-DGL-0366	S. Panther Hill	31.339900	-109.383217
TCA-DGL-0368	Cinder Hill	31.346250	-109.309950
TCA-DGL-0372	GTR / Guadalupe Canyon	31.379017	-109.210100
TCA-DGL-0374	NE McGoffin's	31.385250	-109.160700
TCA-DGL-0380	Douglas Station	31.350450	-109.632364
TCA-DGL-0384	State Road 80 Milemarker 375	31.44059	-109.47396

Tower Number	Tower Name	Latitude	Longitude
TCA-DGL-0388	Mafioso Trail	31.34302002	-109.1229486
TCA-DGL-0390	Guadalupe Canyon Mile Marker 6	31.35516	-109.12614
TCA-DGL-0392	Malpai West	31.36115	109.27222
TCA-DGL-0396	Geronimo Trail Road MM 6	31.33770	109.41082
TCA-DGL-0076*	S-Curve	31.357070	-109.428440
TCA-DGL-0078*	Cinder Hill	31.346710	-109.309750
TCA-DGL-0081*	Cocktail Lounge	31.378060	-109.210090
TCA-DGL-0156*	Old Douglas Station	31.363436	-109.546378
TCA-DGL-0258*	Panther Hill Alt 4	31.342260	-109.380250
TCA-DGL-0362*	Quarry	31.449700	-109.474033
TCA-DGL-0386*	All-Red Rock	31.34874	-109.12029
TCA-DGL-0394*	Malpai East	31.35966	-109.26956
TCA-DGL-0400*	Mile Marker 392 1/2 (Cinder Hill #2)	31.55264	-109.27219
TCA-DGL-0402*	Mile Marker 403	31.66267	-109.15352

* Alternate tower site

CBP is currently in the process of gathering the most current information available regarding Federal and state listed species potentially occurring within the project area. CBP respectfully requests that your agency provide input regarding protected species, designated critical habitat, descriptions of the sensitive resources (e.g., rare or unique plant communities, threatened and endangered and candidate species), and unique or environmentally sensitive areas that you believe may be affected by the proposed USBP activities.

We intend to provide your agency with a copy of the Draft EA for the OTIA Douglas Integrated Fixed Tower Project once completed. Please let us know if additional copies are needed.

Your prompt attention to this request would be greatly appreciated. If you have any questions, please call Ms. Paula Miller at (571) 468-7291.

Sincerely,

Kenneth D. Marien
Program Manager
Integrated Fixed Towers
CBP/OTIA Program Management Office

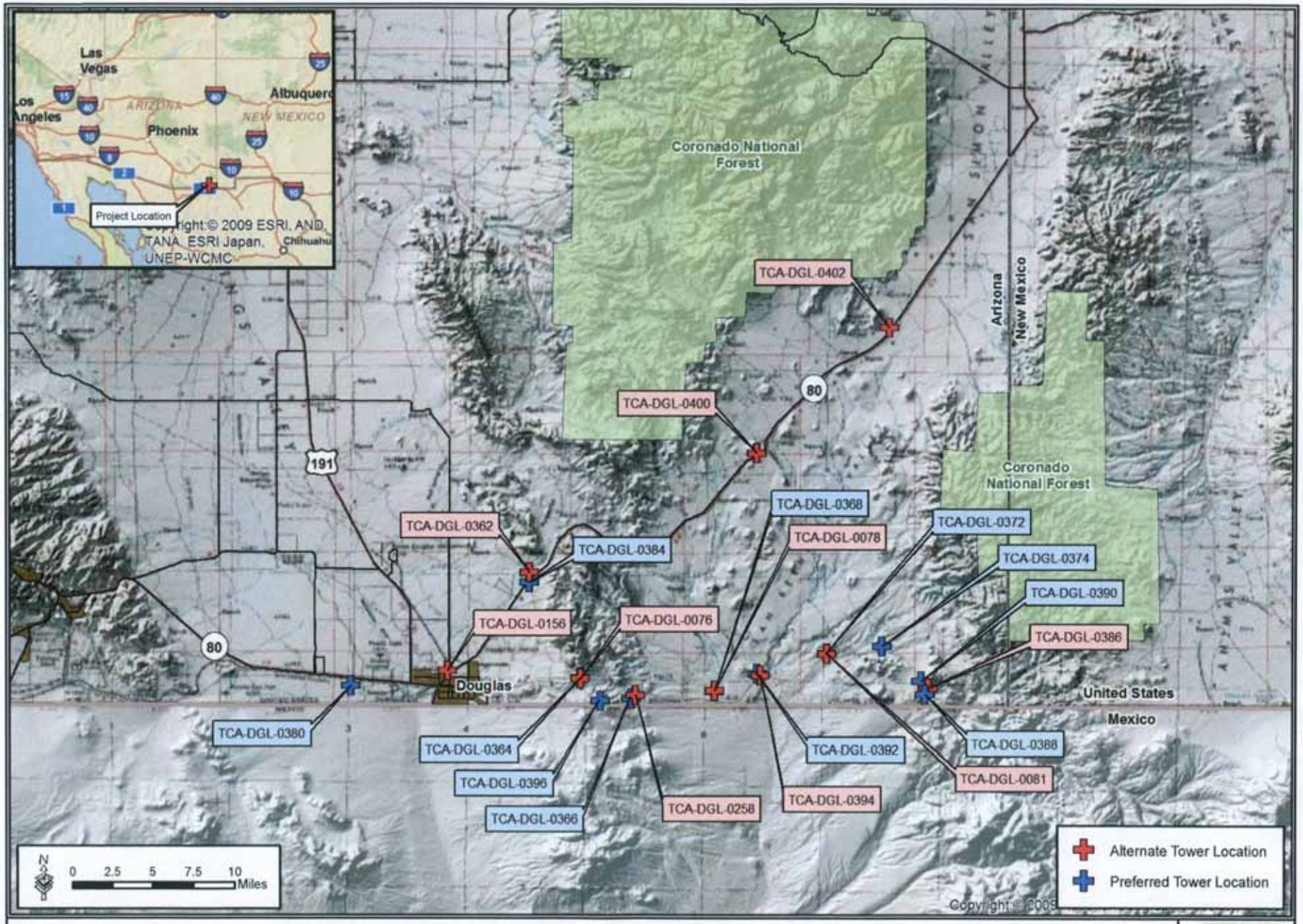

Figure 2: Douglas IFT Tower Locations

GSRC

October 2011

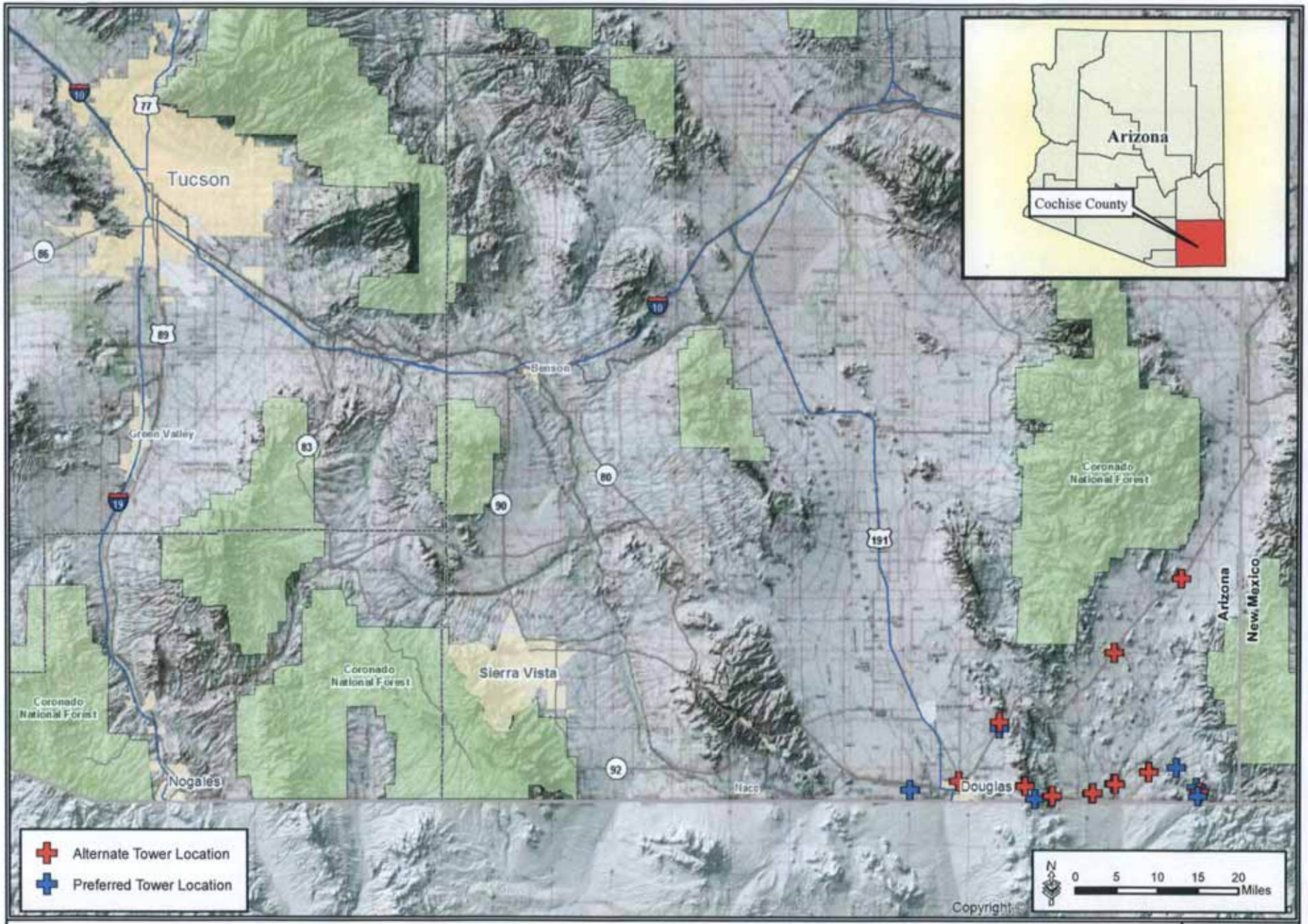

Figure 1: Vicinity Map

GSRC

October 2011

Identical copies of the coordination letter from CBP (dated October 13, 2011) were sent to the following Federal and state agencies and Native American tribal representatives.

Arizona State Land Department
Ms. Maria Baier, State Land Commissioner
1616 West Adam Street
Phoenix, AZ 85007

Bureau of Land Management
Tucson Field Office
Mr. Biran Bellew, Field Manager
12661 East Broadway
Tucson, AZ 85748-7208

Mr. Michael J. Ortega, County Administrator
Cochise County
1415 Melody Land, Building G
Bisbee, AZ 85603

Mr. Nova Blazej
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Honorable Jeff Houser, Chairman
Fort Sill Apache Tribe of Oklahoma
Rt 2, Box 121
Apache, OK 73006

Honorable Benjamin H. Nuvamsa, Charirman
Hopi Tribal Council
P.O. Box 123
Kykotsmovi, AZ 86039

Honorable Mark Chine, President
(Ms. Holly Houghton, Cultural Affairs Office)
Mescalero Apache Tribe
124 Chiricahua Plaza
Mescalero, NM 88340

Mr. Ned Norris, Chairperson
Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
Steve Spangle, Field Supervisor
2321 West Royal Palm Road, Suite 103
Phoenix, AZ 85021-4915

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
Ms. Jean Calhoun, Assistant Field Supervisor
201 N. Bonita Avenue, Suite 141
Tucson, AZ 85745

Mr. Edward Drusina, Commissioner
International Boundary and Water Commission
4171 North Mesa
Building C, Suite C-100
El Paso, TX 79902-1441

Honorable Ronnie Lupe, Chairman
(Mr. Mark Altaha, THPO)
White Mountain Apache Tribal Council
P.O. Box 700
White River, AZ 75941

Arizona Department of Environmental Quality
Southern Regional Office
Office of Border Environmental Protection
Ms. Edna Mendoza, Director
400 West Congress Street, Suite 433
Tucson, AZ 85701

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Tucson Field Office
12661 East Broadway Boulevard
Tucson, Arizona 85748-7208
www.blm.gov/az/

TAKE PRIDE IN AMERICA

October 25, 2011

In Reply Refer To:
2860 (AZG020)

Mr. Kenneth D. Marien
U.S. Customs and Border Protection
Program Manager
Integrated Fixed Towers
CBP/OTIA Program Management Office
1300 Pennsylvania Avenue NW
Washington, D.C. 20229

Dear Mr. Marien:

Our office has reviewed your letter dated October 13, 2011, regarding your agency's proposed environmental assessment for the construction of 11 sensor and communication towers and roads near Douglas, Arizona. Our review found only one of the preferred tower locations falls within the boundary of the Tucson Field Office. This tower is identified as TCA-DGL-0380 lying west of Douglas. This proposed tower location is not on public lands and does not require an authorization from the Bureau of Land Management (BLM) Tucson Field Office.

However, the remaining proposed tower locations fall within the boundary of the BLM's Safford Field Office. The Safford Field Office will be providing you with a response to their review of your letter. The contact person to reach at the Safford Field Office is Roberta Lopez, Realty Specialist, at 928-348-4400.

If you have any questions, please do not hesitate to contact Susan Bernal, Realty Specialist, at 520-258-7206.

Sincerely,

Brian B. Bellew
Field Manager

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

OFFICE OF THE COMMISSIONER
UNITED STATES SECTION

November 3, 2011

Kenneth D. Marien
U.S. Customs and Border Protection
Office of Technology Innovation and Acquisition
1300 Pennsylvania Avenue NW
Washington, DC 20229

Re: Proposed Environmental Assessment for the OTIA Douglas Project, U.S. Border Patrol Tucson Sector

Dear Mr. Marien:

The International Boundary and Water Commission, United States Section (USIBWC) appreciates the opportunity to participate in the scoping process for the preparation of an Environmental Assessment (EA) by the U.S. Army Corps of Engineers, Fort Worth District on behalf of the Department of Homeland Security, U.S. Customs and Border Protection (CBP). The EA will be prepared for the CBP Office of Technology Innovation and Acquisition (OTIA) Integrated Fixed Tower Project for the U.S. Border Patrol Douglas Station, Tucson Sector and will address the proposed action of construction, operation, and maintenance of up to 11 sensor and communication towers and associated access roads near Douglas, Arizona.

The USIBWC does not have any comments or concerns regarding the OTIA Douglas Project at this time. Please direct future correspondence and the Draft EA to Gilbert Anaya, Environmental Management Division Chief. If you have any questions, please contact Mr. Anaya at (915) 832-4702.

Thank you again for the opportunity to review and comment on the project.

Sincerely,

Edward Drusina, P.E.
Commissioner

White Mountain Apache Tribe

Office of Historic Preservation
PO Box 507
Fort Apache, AZ 85926
Ph: (928) 338-3033 Fax: (928) 338-6055

To: Paula Miller, U.S. Customs and Border Protection

Date: November 16, 2011

Project: EA for the OTIA Douglas Project, U.S. Customs and Border Patrol Tucson Sector Integrated Fixed Tower Project for 11 Sensor Towers and Access Road Consrutction

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The White Mountain Apache Tribe Historic Preservation Office appreciates receiving information on the proposed project, October 13, 2011 . In regards to this, please attend to the following checked items below.

► ***There is no need to send additional information unless project planning or implementation results in the discovery of sites and/or items having known or suspected Apache Cultural affiliation.***

N/A - The proposed project is located within an area of probable cultural or historical importance to the White Mountain Apache tribe (WMAT). As part of the effort to identify historical properties that maybe affected by the project we recommend an ethno-historic study and interviews with Apache Elders. The tribe's ***Cultural Heritage Resource Director Mr. Ramon Riley*** may be contacted at (928) 338-3033 for further information should this become necessary.

► Please refer to the attached additional notes in regards to the proposed project:

We have received and reviewed information regarding U.S. Customs and Border Patrol's OTIA Integrated Fixed Tower Project , and we have determined the proposed action will ***may have an effect*** on the White Mountain Apache tribe's (WMAT) historic properties and/or traditional cultural properties. Considering, any/all ground disturbing activities should be monitored ***if*** there are reasons to believe that there are human remains and/or funerary objects are present, and if such remains and/or objects are encountered all project activities should cease and the proper authorities and/or ***affiliated*** *tribe(s)* be notified to evaluate the situation.

Thank you. We look forward to continued collaborations in the protection and preservation of place of cultural and historical significance.

Sincerely,

Mark T. Altaha

White Mountain Apache Tribe

Historic Preservation Office

THE HOPI TRIBE

LeRoy N. Shingoitewa
CHAIRMAN

Herman G. Honanie
VICE-CHAIRMAN

November 3, 2011

Kenneth D. Marien, Program Manager
Integrated Fixed Towers, CBP/OTIA Program Management Office
U.S. Customs and Border Protection
1300 Pennsylvania Avenue NW
Washington, DC 20229

Re: Office of Technology Innovation and Acquisition Douglas Project, Tucson Sector

Dear Mr. Marien,

This letter is in response to your correspondence dated October 13, 2011, regarding the Integrated Fixed Tower Project for the U.S. Border Patrol Douglas Station, Tucson Sector. The Hopi Tribe claims cultural affiliation to prehistoric cultural groups in Arizona. The Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites, and we consider the prehistoric archaeological sites of our ancestors to be Traditional Cultural Properties. Therefore, we appreciate U.S. Customs and Border Protection's continuing solicitation of our input and your efforts to address our concerns.

And therefore, the Hopi Cultural Preservation Office requests consultation on any proposal in Arizona that may adversely affect prehistoric cultural resources. We understand the project consists of construction of up to 11 sensor and communications towers, 10 alternative sites, and access roads. We assume a cultural resources survey of the area of potential effect will be conducted as part of the environmental assessment. Therefore, if the survey identifies National Register eligible prehistoric sites that may be adversely affected by project activities, please provide us with copies of the survey report and any proposed treatment plans for review and comment.

For your information and future correspondences, LeRoy N. Shingoitewa is now Chairman of the Hopi Tribe. If you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office at 928-734-3619 or tmorgart@hopi.nsn.us. Thank you for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: Arizona State Historic Preservation Office

From: Peter Steere [mailto:peter.steere@tonation-nsn.gov]
Sent: Tuesday, March 20, 2012 2:50 PM
To: MILLER, PAULA M
Cc: Erick M Laurila (elaurila@azstateparks.gov)
Subject: NHPA Section 106 Review - 10 New and 2 retro-Fitted Towers (IFT) - Tucson Sector, Douglas Station, Arizona

MEMORANDUM

DATE: March 20, 2012

TO: Paula M. Miller, Deputy Environmental Planning and Compliance Manager, CBO, DHS
1300 Pennsylvania Avenue, NW, Washington, D.C. 20229

CC: Erick M. Laurila, Arizona SHPO, Phoenix, Arizona

FROM: Peter L. Steere, Tribal Historic Preservation Officer & Manager, Cultural Affairs Office,
Tohono O'odham Nation, P.O. Box 837, Sells, Arizona 85634

RE: NHPA Section 106 review of the construction, operation and maintenance of 10 new, and 2 retro-fitted surveillance
and communication towers (IFT) by CBP, Tucson Sector, Douglas Station, Arizona

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Thank you for consulting with the Tohono O'odham Nation regarding the siting, construction, operation, and maintenance of 10 new and 2 retro-fitted integrated fixed surveillance and communication towers (IFT) located in the Tucson Sector, Douglas Station.

The Tohono O'odham Nation has the following request and comments:

1. Please send copies of cultural resource reports for our review.
2. Please send copy of EA for review.
3. Is the access road to tower site TCA-DGL-0402 that will cross the NRHP-eligible railroad alignment site an existing road or does it involve construction of a new road – if it is a new road then there will be an "adverse effect" on a NRHP-eligible site, if it is an existing road that will not be widened or otherwise modified that there likely is "no adverse effect" on the NRHP-eligible site.
4. The other NRHP-eligible site that we assume is a prehistoric site (can't tell from the letter with no report attached) located along an existing road to access towers TCA-DGL-0426 and TCA-DGL-0428 may have "no adverse effect" as long as the road is not widened or otherwise modified. If the road is to be modified then there likely will be "an adverse effect" on a NRHP-eligible site.

   What type of site is this ? prehistoric, historic ? multi-component ?
   Is there cultural materials eroding out of the road bed ?
   Construction crew would need to be briefed about their limitations on using this road – can't pull off road onto site or do turn-arounds off road

Archaeological monitors will likely be needed when construction activities are taking place for these tower sites

5. Please send copy of reports for pedestrian survey of October 13-14, 2011 and February 8-9, 2012
6. Please send list of isolated occurrences if not in report
7. Disagree that that there are no historic properties – There is a site along the access road to towers TCA-DGL-0426 and TCA-DGL-0428 – Whether this site will be affected or not needs to be determined by the Arizona SHPO.

From: Lopez, Roberta L [mailto:rlopez@blm.gov]
Sent: Monday, December 05, 2011 7:00 PM
To: MILLER, PAULA M
Subject: FW: Proposed EA for the OTIA Douglas Project, U.S. Border Patrol Tucson Sector

Paula,

Below are the comments from our Biologist in Safford for areas that cover Safford, Arizona. Please call if you have any questions. Thanks!

Roberta Lopez
Realty Specialist
Safford Field Office
(928)348-4437

From: Conn, Jeffery A
Sent: Thursday, December 01, 2011 9:49 AM
To: Lopez, Roberta L
Subject: Proposed EA for the OTIA Douglas Project, U.S. Border Patrol Tucson Sector

Hi Roberta,

Here are my comments in response to the request for information for the proposed Environmental Assessment for the OTIA Douglas Project, U.S. Border Patrol Tucson Sector. I'm assuming they'll be incorporated into one response which would include realty and other concerns. Let me know if you need any other information or would like this in a different format.

Given the limited information provided in the proposed action some species and critical habitat, within the proposed project area, of concern to the BLM are:

Yaqui longfin dace, Agosia chrysogaster ssp. 1

Swainson's hawk, Buteo swainsoni

Mexican stoneroller, Campostoma ornatum

Lesser long-nosed bat, Leptonycteris curasoae yerbabuenae

Playa spider plant, Cleome multicaulis

Yellow-billed cuckoo, Coccyzus americanus

Beautiful shiner, Cyprinella formosa

Yaqui chub, Gila purpurea

Yaqui catfish, Ictalurus pricei

Western red bat, Lasiurus blossevillii

Western yellow bat, Lasiurus xanthinus

Huachuca water-umbel, Lilaeopsis schaffneriana var. recurva

Cave myotis, Myotis velifer

Mule deer, Odocoileus hemionus

Night-blooming Cereus, Peniocereus greggii var. greggii

Texas horned lizard, Phrynosoma cornutum

Yaqui topminnow, Poeciliopsis occidentalis sonoriensis

San Bernardino springsnail, Pyrgulopsis bernardina

Chiricahua leopard frog, Rana chiricahuensis

Lowland leopard frog , Rana yavapaiensis

Northern Mexican gartersnake, Thamnophis eques megalops

Tropical kingbird, Tyrannus melancholicus

Designated Critical Habitat for Yaqui Fishes

In addition the majority, if not all, of the San Bernardino Valley and surrounding mountain ranges are considered of environmental importance due to the high species diversity and containing intact wildlife corridors.

Thanks,

Jeff Conn
Natural Resource Specialist
Bureau of Land Management
711 S. 14th Ave
Safford, AZ 85546
Phone: 928-348-4470
Fax: 928-348-4450

United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

In reply refer to:
AESO/SE
02EAAZ00-2012-SL-0040

November 25, 2011

Mr. Kenneth D. Marien, Program Manager
U.S. Customs and Border Protection
1300 Pennsylvania Avenue NW
Washington, DC 20229

RE: Construction, Maintenance and Operation of Eleven Sensors Communication Towers, Located at the Douglas Border Patrol Station, Town of Douglas, Cochise County, Arizona

Dear Mr. Marien:

Thank you for your recent request for information on threatened or endangered species, or those that are proposed to be listed as such under the Endangered Species Act of 1973, as amended (ESA), which may occur in your project area. The Arizona Ecological Service Field Office has posted lists of the endangered, threatened, proposed, and candidate species occurring in each of Arizona's 15 counties on the Internet. Please refer to the following web page for species information in the county where your project occurs:
http://www.fws.gov/southwest/es/arizona

If you do not have access to the Internet or have difficulty obtaining a list, please contact our office and we will mail or fax you a list as soon as possible.

After opening the web page, find County Species Lists on the main page. Then click on the county of interest. The arrows on the left will guide you through information on species that are listed, proposed, candidates, or have conservation agreements. Here you will find information on the species' status, a physical description, all counties where the species occurs, habitat, elevation, and some general comments. Additional information can be obtained by going back to the main page. On the left side of the screen, click on Document Library, then click on Documents by Species, then click on the name of the species of interest to obtain General Species Information, or other documents that may be available. Click on the "Cactus" icon to view the desired document.

Please note that your project area may not necessarily include all or any of these species. The information provided includes general descriptions, habitat requirements, and other information for each species on the list. Under the General Species Information, citations for the Federal Register (FR) are included for each listed and proposed species. The FR is available at most Federal depository libraries. This information should assist you in determining which species may or may not occur within your project area. Site-specific surveys could also be helpful and may be needed to verify the presence or absence of a species or its habitat as required for the evaluation of proposed project-related impacts.

Endangered and threatened species are protected by Federal law and must be considered prior to project development. If the action agency determines that listed species or critical habitat may be adversely affected by a federally funded, permitted, or authorized activity, the action agency will need to request formal consultation with us. If the action agency determines that the planned action may jeopardize a proposed species or destroy or adversely modify proposed critical habitat, the action agency will need to enter into a section 7 conference. The county list may also contain candidate or conservation agreement species. Candidate species are those for which there is sufficient information to support a proposal for listing; conservation agreement species are those for which we have entered into an agreement to protect the species and its habitat. Although candidate and conservation agreement species have no legal protection under the Act, we recommend that they be considered in the planning process in the event that they become listed or proposed for listing prior to project completion.

If any proposed action occurs in or near areas with trees and shrubs growing along watercourses, known as riparian habitat, we recommend the protection of these areas. Riparian areas are critical to biological community diversity and provide linear corridors important to migratory species. In addition, if the project will result in the deposition of dredged or fill materials into waterways, we recommend you contact the Army Corps of Engineers which regulates these activities under Section 404 of the Clean Water Act.

The State of Arizona and some of the Native American Tribes protect some plant and animal species not protected by Federal law. We recommend you contact the Arizona Game and Fish Department and the Arizona Department of Agriculture for State-listed or sensitive species, or contact the appropriate Native American Tribe to determine if sensitive species are protected by Tribal governments in your project area. We further recommend that you invite the Arizona Game and Fish Department and any Native American Tribes in or near your project area to participate in your informal or formal Section 7 Consultation process.

Some projects may potentially impact species that are protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. sec. 703-712) and/or bald and golden eagles protected under the Bald and Golden Eagle Protection Act (BEGPA). Prohibitions under the MBTA include the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except as specifically authorized by the FWS. If you believe migratory birds will be affected by the project, we recommend you contact our Migratory Bird Permit Office, P.O. Box 709, Albuquerque, NM 87103, (505) 248-7882 or by email *FW2_birdpermits@fws.gov*. For more information regarding the MBTA and permitting process, please visit the following web site: *http://www.fws.gov/migratorybirds/mbpermits.html*. For information on protections for bald eagles under the BEGPA, please refer to the FWS's National Bald Eagle Management Guidelines (72 FR 31156) and regulatory definition of the term "disturb" (72 FR 31132) that were published in the Federal Register on June 5, 2007. Existing take authorizations for bald eagles issued under the ESA became covered under the BEGPA via a final rule published in the Federal Register on May 20, 2008 (73 FR 29075).

Mr. Kenneth D. Marien, Program Manager

For additional communications regarding this project, please refer to consultation number 02EAAZ00-2012-SL-0040. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. If we may be of further assistance, please feel free to contact Brenda Smith (928) 226-0614 (x101) for projects in Northern Arizona, Debra Bills (602) 242-0210 (x239) for projects in central Arizona and along the Lower Colorado River, and Scott Richardson (520) 670-6150 (x242) for projects in southern Arizona.

Sincerely,

for Steven L. Spangle
Field Supervisor

cc: Regional Supervisor, Arizona Game and Fish Department, Tucson, AZ
Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ

W:\Cathy Gordon\administration\species ltrs\complete\US Border Patrol -11 Sensors Communication Towers Project.docx:cgg

U.S. Department of Homeland Security
Washington D.C. 20229
U.S. Customs and Border Protection

July 9, 2012

Mr. Bob Broscheid, Project Evaluation Program Supervisor
Arizona Game and Fish Department
Habitat Branch-Project Evaluation Program
2221 West Greenway Road
Phoenix, AZ 85023

SUBJECT: Draft Environmental Assessment (EA) and Proposed Finding of No Significant Impact (FONSI) for Integrated Fixed Towers in the U.S. Border Patrol's Douglas Station Area of Responsibility, Tucson Sector, Arizona, U.S. Customs and Border Protection, Department of Homeland Security, Washington, DC

Dear Mr. Broscheid,

U.S. Customs and Border Protection (CBP), Office of Technology Innovation and Acquisition (OTIA) is pleased to provide a copy of the *Draft Environmental Assessment for Integrated Fixed Towers in the U.S. Border Patrol's Douglas Station Area of Responsibility, Tucson Sector, Arizona, U.S. Customs and Border Protection, Department of Homeland Security, Washington, DC.* CBP has determined that the proposed project would cause no significant impacts on environmental resources and plans to construct, operate, and maintain 10 integrated fixed towers (IFT) and retrofit two existing towers to provide long-term/permanent surveillance, construct 10 access roads (approximately 0.22 linear mile), and improve eight approach roads (approximately 4.9 linear miles). The IFTs and all access and approach roads are within the U.S. Border Patrol's Douglas Station Area of Responsibility within Cochise County, Arizona.

The EA was prepared in compliance with provisions of the National Environmental Policy Act (NEPA) of 1969 as amended (42 U.S. Code 4321, et seq.), the Council on Environmental Quality's NEPA implementing regulations at 40 Code of Federal Regulations Part 1500 et seq., and the Department of Homeland Security's *Directive 023-1, Environmental Planning Program.*

CBP invites your participation in this public review process. Comments must be received by close of business August 10, 2012. When submitting your comments, please include your name and address, and identify your comments as intended for the Douglas Station IFT Draft EA and Proposed FONSI. Comments or questions regarding the enclosed document can be submitted via:

(a) Email to: mary.d.hassell@cbp.dhs.gov, or
(b) By mail to: Ms. Mary D. Hassell, U.S. Customs and Border Protection, Office of Technology Innovation and Acquisition, 1901 S. Bell Street, Room 7-001, Arlington, Virginia 20598, or
(c) By fax to: (571) 468-7391, Attention: Ms. Mary Hassell

Sincerely,

Mary D. Hassell, CEP
Head, Environmental and Real Estate Program
Office of Technology Innovation and Acquisition
U.S. Customs and Border Protection
Department of Homeland Security

Enclosure

Identical copies of the draft EA transmittal letter from CBP (dated July 9, 2012) were sent to the following Federal and state agencies and Native American tribal representatives.

Arizona State Land Department
Ms. Maria Baier, State Land Commissioner
1616 West Adam Street
Phoenix, AZ 85007

Bureau of Land Management
Tucson Field Office
Mr. Brian Bellew, Field Manager
12661 East Broadway
Tucson, AZ 85748-7208

Mr. Michael J. Ortega, County Administrator
Cochise County
1415 Melody Land, Building G
Bisbee, AZ 85603

Mr. Nova Blazej
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Honorable Jeff Houser, Chairman
Fort Sill Apache Tribe of Oklahoma
Rt 2, Box 121
Apache, OK 73006

Honorable Benjamin H. Nuvamsa, Charirman
Hopi Tribal Council
P.O. Box 123
Kykotsmovi, AZ 86039

Honorable Mark Chine, President
(Ms. Holly Houghton, Cultural Affairs Office)
Mescalero Apache Tribe
124 Chiricahua Plaza
Mescalero, NM 88340

Mr. Ned Norris, Chairperson
Tohono O'odham Nation
P.O. Box 837
Sells, AZ 85634

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
Steve Spangle, Field Supervisor
2321 West Royal Palm Road, Suite 103
Phoenix, AZ 85021-4915

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
Ms. Jean Calhoun, Assistant Field Supervisor
201 N. Bonita Avenue, Suite 141
Tucson, AZ 85745

Mr. Edward Drusina, Commissioner
International Boundary and Water Commission
4171 North Mesa
Building C, Suite C-100
El Paso, TX 79902-1441

Honorable Ronnie Lupe, Chairman
(Mr. Mark Altaha, THPO)
White Mountain Apache Tribal Council
P.O. Box 700
White River, AZ 75941

Arizona Department of Environmental Quality
Southern Regional Office
Office of Border Environmental Protection
Ms. Edna Mendoza, Director
400 West Congress Street, Suite 433
Tucson, AZ 85701

Ms. Greta Anderson
Center for Biological Diversity
P.O. Box 710
Tucson, AZ 85702

Mr. Craig Miller
Northern Jaguar Project
110 Church Street, Suite 4292
Tucson, AZ 85701

Ms. Jennifer Allen
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Ms. Elizabeth Alvarez del Castillo
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950 North Cherry Avenue
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Mr. Biell T. Jannuzi, Director
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Mr. Christopher Corbally, S.J.
Vatican Observatory Group
University of Arizona, Steward Observatory
933 North Cherry Avenue, Room N204
Tucson, AZ 85721-0065

Ms. Cynthia Manuel
Gu Achi District Representative
Tohono O'odham Nation, Legislative Branch
P.O. Box 837
Sells, AZ 85634

Mr. Paul J. Winger
9131 N. Overlook Drive
Tucson, AZ 85704

Mr. Sean Sullivan
Sierra Club
758 N. 5th Avenue, Suite 214
Tucson, AZ 85705

Mr. Robert L. Gent
International Dark-Sky Association
4204 South Hohokam Drive
Sierra Vista, AZ 85650

Mr. Robert L. Gent
Astronomical League
9201 Ward Parkway, Suite 100
Kansas City, MO 64114

Mr. Dan Brocious, Public Information
Smithsonian Institution, Fred Lawrence Whipple Observatory
670 Mount Hopkins Road
Amado, AZ 85645-0097

Mr. Matt Clark, Southwest Representative
Defenders of Wildlife
110 South Church Street, Suite 4292
Tucson, AZ 85701

PUBLIC NOTICE

NOTICE OF AVAILABILITY DRAFT ENVIRONMENTAL ASSESSMEMT FOR INTEGRATED FIXED TOWERS IN THE U.S. BORDER PATROL'S DOUGLAS STATION AREA OF RESPONSIBILITY TUCSON SECTOR, ARIZONA U.S. CUSTOMS AND BORDER PROTECTION DEPARTMENT OF HOMELAND SECURITY WASHINGTON, DC

The public is hereby notified of the availability of the draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for the construction, operation, and maintenance of 10 new integrated fixed towers (IFT) and the retrofit of two existing towers to provide long-term/permanent surveillance in the U.S. Border Patrol's(USBP) Douglas Station Area of Responsibility (AOR). The Proposed Action also includes the construction of 10 access roads (approximately 0.22 linear mile) and improvement of eight appróach roads (approximately 4.9 linear miles). The tower sites proposed as part of the USBP's Douglas Station AOR IFT project are located on Federal, state, and private lands in the USBP'sDouglas Station AOR within Cochise County, Arizona. The Proposed Action described in the EA represents CBP's plan to develop technology and supporting infrastructure to provide a persistent border surveillance capability along approximately 42 miles of border in the Tucson Sector. The draft EA will be available at the Douglas Public Library, 560 Tenth Street, Douglas, Arizona and the Joel D. Valdez Main Library, 101 N. Stone Avenue, Tucson, Arizona. It is also available for download from the CBP's internet web page at the following URL address: http://www.cbp.gov/xp/cgov/border_security/otia/sbi_news/sbi_enviro_docs/nepa. Comments concerning the draft EA and proposed FONSI will be accepted for a period of 30 days from publication of this notice and should be sent to: Ms. Mary Hassell, Department of Homeland Security, U.S. Customs and Border Protection, Office of Technology Innovation and Acquisition, 1901 S. Bell Street, Room 7-001, Arlington, Virginia 20598; by facsimile at (571) 468-7390; or by email to: mary.d.hassell@cpb.dhs.gov.

Published: July 11, 2012

STATE)
: SS
COUNT)

AFFIDAVIT OF PUBLICATION

Dianna M.Wachtel being first

Duly sworn, deposes and says: That (he) (she) is the Agent to the Publisher of the DOUGLAS DISPATCH newspaper printed and published one day a week in the City of Douglas, County of Cochise, State of Arizona. That the notice, a copy of which is hereto attached, described as follows:

NOA-ENVIRONMENTAL ASSESSMENT
FINDING OF NO SIGNIFICANT IMPACT

was printed and published in the regular and entire issue of said

DOUGLAS DISPATCH for 1 issues, that the first was

made on the 11th day of July 2012

and the last publication thereof was made on the 11th day of

July 2012 that said publication

was made on each of the following dates, to wit:

July 11, 2012

Request of Gulf South Research Corp

The Douglas Dispatch

530 11th Street Douglas, AZ 85607 (520)364-3424

By

Subscribed sworn to before me this 12th day of July

2012

PATRICIA J. AGUIRRE
Notary Public - Arizona
Cochise County
My Comm. Expires Mar 25, 2016

Patricia J Aguirre

Notary Public in and for the County of Cochise, State of Arizona

My Commission Expires:

March 25, 2016

ARIZONA DAILY STAR

Tucson, Arizona

STATE OF ARIZONA)
COUNTY OF PIMA)

Debbie Capanear, being first duly sworn deposes and says: that she is the Legal Advertising Representative of **TNI PARTNERS,** a General Partnership organized and existing under the laws of the State of Arizona, and that it prints and publishes the Arizona Daily Star, a daily newspaper printed and published in the City of Tucson, Pima County, State of Arizona, and having a general circulation in said City, County, State and elsewhere, and that the attached and was printed and

Legal Notice

published correctly in the entire issue of the said Arizona Daily Star on each of the following dates, to-wit: July 11, 2012

Debbie Capanear

Subscribed and sworn to before me this 27 day of July, 2012

Lydia Fimbres

Notary Public

LYDIA FIMBRES
Notary Public - Arizona
Pima County
My Comm. Expires Oct 18, 2015

My commission expires _____

AD NO. 7817566

NOTICE OF AVAILABILITY DRAFT ENVIRONMENTAL ASSESSMEMT FOR INTEGRATED FIXED TOWERS IN THE U.S. BORDER PATROL'S DOUGLAS STATION AREA OF RESPONSIBILITY TUCSON SECTOR, ARIZONA U.S. CUSTOMS AND BORDER PROTECTION DEPARTMENT OF HOMELAND SECURITY WASHINGTON, DC

The public is hereby notified of the availability of the draft Environmental Assessment (EA) and proposed Finding of No Significant Impact (FONSI) for the construction, operation, and maintenance of 10 new integrated fixed towers (IFT) and the retrofit of two existing towers to provide long-term/ permanent surveillance in the U.S. Border Patrol's (USBP) Douglas Station Area of Responsibility (AOR). The Proposed Action also includes the construction of 10 access roads (approximately 0.22 linear mile) and improvement of eight approach roads (approximately 4.9 linear miles). The tower sites proposed as part of the USBP's Douglas Station AOR IFT project are located on Federal, state, and private lands in the USBP's Douglas Station AOR within Cochise County, Arizona. The Proposed Action described in the EA represents CBP's plan to develop technology and supporting infrastructure to provide a persistent border surveillance capability along approximately 42 miles of border in the Tucson Sector. The draft EA will be available at the Douglas Public Library, 560 Tenth Street, Douglas, Arizona and the Joel D. Valdez Main Library, 101 N. Stone Avenue, Tucson, Arizona. It is also available for download from the CBP's internet web page at the following URL address: http://www.cbp.gov/xp/cgov/border_security/otia/sbi_news/sbi_enviro_docs/nepa. Comments concerning the draft EA and proposed FONSI will be accepted for a period of 30 days from publication of this notice and should be sent to: Ms. Mary Hassell, Department of Homeland Security, U.S. Customs and Border Protection, Office of Technology Innovation and Acquisition, 1901 S. Bell Street, Room 7-001, Arlington, Virginia 20598; by facsimile at (571) 468-7390; or by email to: mary.d.hassell@cpb.dhs.gov.

Publish July 11, 2012
Arizona Daily Star

White Mountain Apache Tribe

Office of Historic Preservation
PO Box 507
Fort Apache, AZ 85926
Ph: (928) 338-3033 Fax: (928) 338-6055

To: Mary D. Hassell, CEP U.S. Customs and Border Protection

Date: July 30, 2012

Prj: Draft EA and Proposed FONSI for Integrated Fixed Towers Douglas Station AOR, Tucson Sector

.....

The White Mountain Apache Tribe Historic Preservation Office appreciates receiving information on the proposed project, July 9, 2012 . In regards to this, please attend to the following checked items below.

► ***There is no need to send additional information unless project planning or implementation results in the discovery of sites and/or items having known or suspected Apache Cultural affiliation.***

N/A - The proposed project is located within an area of probable cultural or historical importance to the White Mountain Apache tribe (WMAT). As part of the effort to identify historical properties that maybe affected by the project we recommend an ethno-historic study and interviews with Apache Elders. The tribe's ***Cultural Heritage Resource Director Mr. Ramon Riley*** may be contacted at (928) 338-3033 for further information should this become necessary.

► Please refer to the attached additional notes in regards to the proposed project:

We have received and reviewed the information regarding draft EA and the proposed FONSI for the Integrated Fixed Towers in the U.S. Borders Patrol's Douglas Station Area of Responsibility, Tucson Sector, Arizona, and we have determined the proposed action/plans ***will not have an adverse effect*** on the White Mountain Apache tribe's (WMAT) historic properties and/or traditional cultural resources. Regardless, we recommend all ground disturbing activities be monitored ***if*** there are reasons to believe that there are human remains and/or funerary objects are present, and if such remains and/or objects are encountered all project activities should cease and the proper authorities and/or ***affiliated*** *tribe(s)* be notified to evaluate the situation.

Thank you. We look forward to continued collaborations in the protection and preservation of place of cultural and historical significance.

Sincerely,

Mark T. Altaha

White Mountain Apache Tribe

Historic Preservation Office

From: James W Cogswell [mailto:jcogswell@azstateparks.gov]
Sent: Tuesday, August 07, 2012 3:04 PM
To: HASSELL, MARY D
Subject: Re: Report on Survey for 12 Integrated Fixed Towers, Douglas Sector, AZ;SHPO-2012-
0263(106231)

Dear Mary,
Thank you for continuing Section 106 consultation with this office on the above-referenced undertaking. After reviewing the submitted materials and your email below, I
concur with you determination that sites [redacted] and [redacted] are not eligible for listing on the National Register of Historic Places (NRHP), and that AZ
[redacted] is NRHP-eligible. I also concur with your determination that the undertaking will have No Adverse Effect on [redacted] as long as vehicle traffic is restricted as provided in stipulation #2 of your email below.

Concerning the NRHP-eligible site [redacted], the Southern Pacific Railroad bed, in discussion with Bill Collins, Historian and Deputy State Historic Preservation
Officer, we would prefer if the railroad bed be avoided by construction activities and
tower access. As an alternative, we recommend that a dirt berm/ramp be built up on either side of and over the cinder ballast to provide protection of the affected segment.
This berm could be removed when appropriate. The survey report does not specify where
the tower site would be accessed, so if the access road has not been subjected to a cultural
resources survey, this should be conducted prior to ground-disturbing activities, and a
supplement to the report provided to this office for review.

As always, I appreciate your efforts to comply with federal historic preservation requirements. Please let me know if you have any questions or comments.
Sincerely,
Jim Cogswell

On Aug 2, 2012, at 8:21 AM, HASSELL, MARY D wrote:

2 August 2012

Dear Jim,

Thank you for your e-mail regarding the proposed Integrated Fixed Tower project in the
U.S. Border Patrol Douglas Sector, Arizona.

To answer your questions:

1. Based on the research, surveys and survey reports, the Office of Technology Innovation and Acquisition (OTIA) has determined that [redacted] and
[redacted] are not eligible for listing on the National Register of Historic Places. OTIA has further determined that [redacted] is eligible for listing on the National Register of Historic Places.

2. The existing road through [redacted] would be used to provide access

to proposed towers [redacted]. OTIA will ensure avoidance of the site by requiring that all construction vehicle traffic is confined

to the existing road footprint by construction fencing. Furthermore, no road improvements will be made within the site boundary. Project activities will therefore not constitute an adverse effect on [redacted]. The requirements for fencing, area avoidance and associated mitigation will be reflected in the project's final environmental assessment and finding of no significant impact, as well as in project construction and maintenance statements of works.

Respectfully,

// SIGNED//

Mary D. Hassell

Mary D. Hassell, CEP
Head, Environmental and Real Estate Program
Office of Technology Innovation and Acquisition
U.S. Customs and Border Protection
Department of Homeland Security
Office: 571-468-7512
Cell: 202-731-9655
mary.d.hassell@cbp.dhs.gov

From: James W Cogswell [mailto:jcogswell@azstateparks.gov]
Sent: Wednesday, August 01, 2012 5:54 PM
To: HASSELL, MARY D
Subject: Report on Survey for 12 Integrated Fixed Towers, Douglas Sector, AZ;SHPO-2012-0263(106231)

Dear Mary,
Thank you for speaking with me yesterday. I would like to summarize what I am hoping

you can supply me for the above-referenced undertaking.
1. Please give me your agency's determination of eligibility for the newly discovered sites
[redacted], and the previously recorded site AZ [redacted].
2. Please provide me with a description of how any of the NRHP-eligible sites would be
impacted by project activities, and whether those activities would be adverse effects. This
information will assist with our office's ability to concur with these findings and assess
whether additional consultation would be required.
Perhaps in response to a communication from you, Mr. David Hart of Gulf South Research Corporation phoned me to ask for additional clarification on the original, draft

report's deficiencies and how to avoid them in the future. I think it was a useful conversation for both of us and I am not opposed to speaking directly with a consultant in
the future on technical matters such as report revisions.
In the interest in expediting consultation on this project, please feel free to respond by
email.
Sincerely,
Jim

_____

James Cogswell, PhD
Archaeological Compliance Specialist
State Historic Preservation Office

Phone: (602) 542-7142
Email: jcogswell@azstateparks.gov
Web: http://AZStateParks.com

_____

United States Department of the Interior

Fish and Wildlife Service
Arizona Ecological Services Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

AESO/SE
02EAAZ00-2013-I-0008

November 7, 2012

Ms. Mary D. Hassell
Department of Homeland Security
U.S. Customs and Border Protection
Office of Technology Innovation and Acquisition
1901 S. Bell Street, Room 7-007
Arlington, VA 20598

Dear Ms. Hassell:

Thank you for your correspondence dated September 21, 2012, received in our office on October 1, 2012. This letter documents our review of the U.S. Customs and Border Protection (CBP), Office of Technology Innovation and Acquisition's proposed Douglas Integrated Fixed Tower (IFT) program. You are requesting informal consultation on the potential effects of the proposed action pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544) (Act), as amended. You have requested our concurrence with your determination that the proposed project may affect, but is not likely to adversely affect Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*), beautiful shiner (*Cyprinell Formosa*), Yaqui catfish (*Ictalurus pricei*), Yaqui chub (*Gila purpurea*), Yaqui topminnow (*Poeiliopsis occidentalis sonoriensis*), Chiricahua leopard frog (*Rana chiricahuaensis*), jaguar (*Panthera onca*), ocelot (*Leopardus pardalis*), and lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), as well as that the proposed action may affect, but is not likely to adversely affect designated critical habitat for the beautiful shiner, Yaqui catfish, or Yaqui chub. We concur with your determinations and provide our rationale below.

DESCRIPTION OF THE PROPOSED ACTION

The tower sites proposed as part of the Douglas IFT program are located in the U.S. Border Patrol (USBP) Tucson Sector, Arizona. More specifically, the IFT sites are located in the USBP Douglas Station's Area of Responsibility in Cochise County, Arizona. The proposed sites are located on

Federal, State, and private lands.

The Douglas IFT program consists of the proposed construction, operation, and maintenance of 10 new IFTs, the retrofit of two existing IFTs, and construction, improvements, repair, and maintenance of approximately 5.12 miles of access and approach roads. Each IFT would consist of a tower equipped with a suite of sensors and/or communications equipment. Tower retrofits would include installing or replacing sensors and/or communications equipment on existing towers. Approach roads are existing private or public roads used to travel to an IFT site. Access roads are short road segments from an approach road to an IFT site. The proposed action includes the construction of 10 access roads and improvement of 8 approach roads. The new access roads will be constructed to provide a 12-foot-wide driving surface with 2-foot shoulders on each side (16 feet total).

CBP has included a suite of general and species-specific best management practices (BMPs) that are anticipated to avoid and minimize potential adverse effects to listed species and designated critical habitat within the project action area. These BMPs are found in the September 12, 2012 Biological Assessment (BA) beginning on page 1-18. A complete description of the proposed action is found in the September 2012 BA, and is included herein by reference.

CONCLUSION

Concurrence for aquatic species including Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*) and critical habitat, beautiful shiner (*Cyprinell Formosa*) and its critical habitat, Yaqui catfish (*Ictalurus pricei*)and its critical habitat, Yaqui chub (*Gila purpurea*) and its critical habitat, and Yaqui topminnow (*Poeiliopsis occidentalis sonoriensis*).

Environmental Baseline

Five listed aquatic species occur in the project area. These include one plant species (Huachuca water umbel) and four fish species (beautiful shiner, Yaqui catfish, Yaqui chub, and Yaqui topminnow). The proposed action could result in impacts to these species and their critical habitat.

Three tower sites occur within the distribution of Huachuca water umbel. These include TCA-DGL-0258, TCA-DGL-0368, and TCA-DGL-0428. Five tower sites occur within the distribution of Yaqui catfish and Yaqui chub, TCA-TCA-DGL-0258, TCA-DGL-0368, TCA-DGL-0428, TCA-DGL-0372, and TCA-DGL-0374. Two tower sites occur within the beautiful shiner distribution TCA-DGL-0368 and TCA-DGL-0428. One tower site occurs in or near the Yaqui topminnow distribution, TCA-DGL-0428. Tower site TCA-DGL-0428 is the only tower site that occurs in or near suitable habitat for the aquatic species. Construction of tower site TCA-DGL-0428 and associated access roads would occur near or adjacent to the riparian area surrounding Black Draw, where these species occur and critical habitat is designated for beautiful shiner, Yaqui catfish, and Yaqui chub. However, no new road construction would occur within the channel of Black Draw. No low-water crossings within Black Draw are associated with the project. The action area for aquatic species is defined as the channel and riparian areas of Black Draw within 0.5 mile downstream of proposed tower site TCA-DGL-0428 and its associated access and approach roads.

Huachuca water umbel was listed as a Federal endangered species on January 6, 1997 (62 FR 665), with critical habitat subsequently designated in 1999 (64 FR 37441, July 12, 1999). However, critical habitat for Huachuca water umbel does not occur within the action area for this species. Huachuca water umbel is a semi-aquatic to aquatic, herbaceous, perennial plant with slender erect leaves. The leaves are segmented, hollow cylinders. The flat-topped, rounded flower cluster is composed of 3 to 10 flowers that arise from the root nodes (FWS 1999). Huachuca water umbel is found in mid-elevation wetland communities in southern Arizona and northern Sonora, Mexico (64 FR 37441). This aquatic plant has an opportunistic strategy that ensures its survival in healthy riverine systems, cienegas, and springs. In upper watersheds that generally do not experience scouring floods, the species occurs in microsites (small isolated sites) where competition among different plant species is low. At these sites, it occurs on wetted soils interspersed with other plants at low density, along the periphery of the wetted channel, or in small openings in the understory. Huachuca water umbel has been documented from 26 sites in Santa Cruz, Cochise, and Pima counties, Arizona, and in adjacent Sonora, Mexico, west of the continental divide (64 FR 37441). The plant has been extirpated from six of the sites. The 20 extant sites occur in four major watersheds: San Pedro River, Santa Cruz River, Rio Yaqui, and Rio Sonora. All sites are between 3,500 and 6,500 feet in elevation. Threats to Huachuca water umbel include watershed degradation due to livestock grazing and development, trampling by livestock, diversion of water and dewatering of habitats, and flash flooding (FWS 2001a).

The beautiful shiner was listed as threatened and critical habitat was designated in 1984 (49 FR 34490). Critical habitat for this species occurs in the action area. The beautiful shiner is known from small and medium-sized streams and artificial ponds (FWS 2001a). It uses the middle to upper portion of the water column near but rarely within beds of plants or other cover near the margins of ponds. It also uses riffle habitats in small streams, moving into pools during periods of higher flow. It has done well in ponds at San Bernardino National Wildlife Refuge NWR. The beautiful shiner was historically found in the riffles of small streams throughout the Rio Yaqui basin of Sonora, Mexico, and the United States (FWS 2001). Headwaters of the Yaqui basin in the United States include San Bernardino Creek and Black Draw in eastern Cochise County, Arizona, and the Mimbres River in New Mexico. Natural populations of this species no longer occur in the San Bernardino Creek basin; however, three introduced populations are maintained in separate ponds on San Bernardino NWR (FWS 2011a). Threats to this species include loss of creek habitat resulting from excess groundwater pumping, chemical and sewage pollution, and impacts of non-native species.

The Yaqui catfish was listed as threatened and critical habitat was designated in 1984 (49 FR 34490). Critical habitat for this species occurs in the action area. Yaqui catfish historically occurred in larger rivers throughout several basins in Mexico (AESFO 2010). The Yaqui catfish is a bottom-dwelling species most commonly found in larger rivers in areas of medium to slow current over gravel/sand substrates. It is also found in intermediate to low elevation warmwater creeks and cienegas, as well as moderate to large rivers. Habitats have alternating riffles and pools with undercut banks, boulders, and wood debris. Pools may be preferred in small streams. The Yaqui catfish is currently known to naturally occur only in the Rio Yaqui basin. An introduced population existed in Arizona in the Santa Cruz River system from 1899 to the 1950s. Yaqui catfish were

reintroduced on San Bernardino NWR in 1990 using progeny of captive stocks held at Dexter National Fish Hatchery and Technology Center, but the species has not been observed there since 2005 (FWS 1995). In the United States, the Yaqui catfish exists in a pond on Slaughter Ranch next to San Bernardino NWR and on El Coronado Ranch where they were stocked under a Habitat Conservation Plan. Threats to the Yaqui catfish include reduction in spring flows or surface water from surface water development and groundwater pumping and predation from nonnative species such as bullfrogs.

The Yaqui chub was listed as threatened and critical habitat was designated in 1984 (49 FR 34490). Critical habitat for this species does occur in the action area. The Yaqui chub is a small to medium-sized cyprinid fish. Males in breeding condition are bluish, and females and non-reproducing males are brownish-grey. Breeding occurs from March to September. Yaqui chub are omnivores. In the revision of species taxonomy, the historical range of the Yaqui chub was reduced to a small section of the Rio San Bernardino and nearby Sonora, Mexico. In the United States, the Yaqui chub exists in 18 known sites on San Bernardino and Leslie Canyon NWRs, West Turkey Creek on Coronado National Forest, El Coronado Ranch where they were stocked under a Habitat Conservation Plan (FWS 1995), and in an area upstream of Leslie Canyon National Wildlife Refuge on private lands. There have been no recent surveys in Mexico. Threats to the Yaqui chub include reduction in spring flows or surface water from surface water development and groundwater pumping, predation from nonnative species such as bullfrogs, and infestation from Asian tapeworm (*Bothriocephalus acheilognathi*).

The Yaqui topminnow is a subspecies of the Sonoran topminnow. Both subspecies were listed as endangered in the United States, with no critical habitat designation in 1967 (32 FR 2001). The Yaqui topminnow is a small, live-bearing fish that produce broods of up to 20 young every 20 or so days. Reproduction is generally between April and October, but can occur all year in habitat areas supported by warm water discharges from springs. The Yaqui topminnow is omnivorous. Few live longer than 1 year. The Yaqui topminnow inhabits small to moderate-sized streams, springs, and cienegas below 4,500 feet in elevation. The Yaqui topminnow prefers habitats providing dense mats of algae and organic debris found along stream margins and pools, and are most abundant in cienegas. Asian tapeworm does not apparently present a significant threat to the species (FWS 1995). The Yaqui topminnow is only found on San Bernardino and Leslie Canyon NWRs in Cochise County. The subspecies is also known from the Rio Yaqui drainage in Mexico; however, Yaqui topminnow is not protected in Mexico. Threats to the Yaqui chub include reduction in spring flows or surface water from surface water development and groundwater pumping, and predation from nonnative species such as bullfrogs.

Effects of the Proposed Action

No direct effects on aquatic species (Huachuca water umbel, beautiful shiner, Yaqui catfish, Yaqui chub, and Yaqui topminnow) will occur as a result of the project because no in-water project activities associated with the Douglas IFT program would occur within the channel of Black Draw, and no low-water crossings within Black Draw are associated with the project. However, because of the location of tower site TCA-DGL-0428 within the riparian area surrounding Black Draw, indirect effects on these species could occur. These include:

- contamination of habitat from the transport of hazardous materials to the site,
- increased erosion and sedimentation, and
- an increased potential for invasive species and wildfire.

CBP will implement BMPs designed to avoid or reduce these indirect impacts.

Hazardous materials, hazardous wastes, and other wastes will be properly handled, stored, and disposed (BMP2a). As such, the potential for contamination of aquatic habitat from the transport of hazardous wastes and other materials is discountable.

Erosion, sedimentation, and runoff into Black Draw could also affect aquatic/semi-aquatic habitat. However, CBP will implement multiple water resources BMPs to avoid contamination and reduce erosion, sedimentation, and runoff during and after construction. Minimizing ground disturbance (see BMP2b), the development and implementation of a site-specific Storm Water Pollution Prevention Plan (SWPPP) (BMP6), post-construction monitoring (BMP7), and restricting riparian vegetation clearing within 100 feet of aquatic habitat would make the potential for sedimentation entering Black Draw discountable.

Managing water use and storage (BMP3) will avoid spread of aquatic disease and pests. Managing the cleaning of equipment and clothing, minimizing the removal of native species, and the monitoring and removal of invasive species will prevent the expansion and establishment of non-native invasive plants (BMP10) and related habitat degradation. Wildfire can also have an adverse effect on aquatic species as a result of the direct loss of vegetation, ash, and erosion of the surrounding landscape. The potential for wildfires will be reduced through the measures to control invasive species and the development of a Fire Management Plan (BMP10).

Monitoring construction by a biological monitor (BMP4) will ensure that the BMPs are implemented during and after construction. It will also allow for the documentation of any unforeseen construction-related effects on the riparian habitat. Post-construction monitoring (BMP7) along the approach or access roads will help to prevent or remediate impacts related to erosion of disturbed areas and road use. Erosion occurring up to three years post-construction would be remediated with the implementation of post-construction monitoring at the tower site and along the approach or access roads.

Conclusion

The Service concurs with the CBP determination that the proposed action may affect, but is not likely to adversely affect the Huachuca water umbel, beautiful shiner, Yaqui catfish, Yaqui chub, and Yaqui topminnow based upon the following:

- No in-water project work will occur within Black Draw.

- BMPs will be implemented to protect water resources from hazardous materials, hazardous

wastes, other regulated wastes, and invasive species, and the potential for such effects is anticipated to be discountable.

- BMPs will be implemented to reduce sedimentation and runoff, and to reduce the potential for invasive species and fire to a discountable level.
- Clearing of riparian vegetation will not occur within 100 feet of Black Draw.
- Monitoring will ensure the implementation of BMPs and the documentation and remediation of unforeseen impacts.
- Post-construction monitoring will allow for the prevention or remediation of erosion into Black Draw for at least three years after construction.

Critical Habitat

Critical Habitat for the beautiful shiner, Yaqui catfish, and Yaqui chub includes all aquatic habitats on the San Bernardino NWR (FWS 2001b). Critical habitat occurs within the action area of the Douglas IFT program for these species. The Primary Constituent Elements of critical habitat for the Rio Yaqui fishes include small, clean, permanent streams and spring pools without any exotic fishes. The streams should have deep pool areas, separated by riffles and flowing areas with moderate current. Backwater areas of stream and springs with overgrown cut banks and accumulations of detritus are necessary for feeding and shelter (FWS 2008). Note that introduced non-native fish that prey on or compete with these species have been eliminated from San Bernardino NWR, but bullfrogs could still occur there.

Conclusion

The Service also concurs with the CBP determination that the proposed action may affect, but is not likely to adversely affect critical habitat for beautiful shiner, Yaqui catfish, and Yaqui chub based upon the following:

- No in-water project work will occur within Black Draw.
- BMPs will be implemented to protect water resources from hazardous materials, hazardous wastes, other regulated wastes, and invasive species.
- BMPs will be implemented to reduce sedimentation and runoff, and to reduce the potential for invasive species and fire.
- Clearing of riparian vegetation will not occur within 100 feet of Black Draw.
- Monitoring will ensure the implementation of BMPs and the documentation and remediation of unforeseen impacts.
- Post-construction monitoring will allow for the prevention or remediation of erosion into Black

Draw for at least three years after construction.

Concurrence for Chiricahua leopard frog (*Rana chiricahuaensis*).

Environmental Baseline

All of the tower sites occur within the general range of the Chiricahua leopard frog. However, tower site TCA-DGL-0374 is the only tower site near or adjacent to suitable Chiricahua leopard frog habitat. The site is within 0.08 mile (~425 feet) of North Tank, the ephemeral drainages associated with North Tank, and an ephemeral drainage located between North Tank and Guadalupe Canyon Road North Tank is considered occupied habitat (FWS 2011b). The action area for the Chiricahua leopard frog includes proposed tower site TCA-DGL-0374, its access and approach roads, and the potential breeding and dispersal habitat within 0.5 miles of the construction activities.

The Chiricahua leopard frog was listed as threatened in 2002 (67 FR 40790). Over 10,000 acres of lands in Arizona and New Mexico were designated as critical habitat for the frog in 2012 (77FR 16324). However, no critical habitat occurs in the action area of the Douglas IFT program for this species. The Chiricahua leopard frog is a large (about 4.3 inches in length) green or brown leopard frog. It is distinguished from other Southwestern leopard frogs by a combination of characters, including a distinctive salt and pepper pattern on the rear of the thigh of adults and some juveniles, dorsolateral folds that are interrupted and inset towards the rear; stocky body proportions; eyes that are relatively high and upturned on the head; and relatively rough skin on the back and sides (FWS 2012). Chiricahua leopard frogs are habitat generalists and historically have been found in a variety of aquatic habitat types in the Salt, Verde, Gila, San Pedro, Santa Cruz, Yaqui/Bavispe, Magdalena, and Little Colorado River basins. It is currently known from cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 3,300 to 8,900 feet (FWS 2007a).

Based on 2009 data, the species is still extant in the major drainage basins in Arizona and New Mexico where it occurred historically, with the exception of the Little Colorado River drainage in Arizona and possibly the Yaqui drainage in New Mexico. The species has been extirpated from about 80 percent of its historical localities in Arizona and New Mexico. As of 2009, there were 84 sites in Arizona at where the species is likely to occur in the wild, with an additional four captive or partially captive refugia sites. At least 33 of the wild sites support breeding. In 2009 in New Mexico, Chiricahua leopard frogs were found at 39 sites, at least 26 of which were breeding sites. Nineteen and eight localities, respectively, are known from Sonora and Chihuahua, Mexico. The species' current status in Mexico is poorly understood; however, it has been found in recent years in western Chihuahua (FWS 2011c).

Threats to this species include predation by non-native organisms, especially American bullfrogs, fish, and crayfish; fungal disease (*Batrachochytrium dendrobatadis* or "chytrid"); drought and floods; degradation and loss of habitat as a result of water diversions and groundwater pumping; livestock management that degrades frog habitats; catastrophic wildfire (fire-prone upland habitats) resulting from a long history of fire suppression, development, and other human activities; disruption of metapopulation dynamics (populations are isolated); increased chance of extirpation or extinction resulting from small numbers of populations and individuals existing in dynamic

environments; and environmental contamination such as stormwater runoff and airborne contaminants. Loss of Chiricahua leopard frog populations fits a pattern of global amphibian decline, suggesting that other regional or global causes of decline may be important as well. These could include elevated ultraviolet radiation resulting from ozone depletion, pesticides, or other contaminants, and climate change (FWS 2007a).

In the action area for the Douglas IFT program, North Tank probably supports breeding Chiricahua leopard frogs, but breeding has not yet been documented there. North Tank is located on private property (Maggoffin Ranch) or Arizona State Trust lands. The Magoffin Ranch, and Chiricahua leopard frog habitat on the ranch, is managed under the Malpai Borderlands Safe Harbor Agreement, with several management actions that provide direct and indirect benefit to Chiricahua leopard frogs. These benefits include stock tank construction and maintenance, management of

livestock operations, avoidance of release of nonnative species, and measures to ensure that prescribed fire, herbicides, and other treatments promote maintenance of essential habitat characteristics (Malapai Borderlands Group 2004).

Effects of the Proposed Action

The project has the potential to result in direct and indirect impacts to Chiricahua leopard frogs. Direct impacts could include injury or mortality if a frog were to enter the construction site, or through habitat degradation if clearing of vegetation occurs in suitable habitat. Potential indirect impacts include the following:

- contamination of habitat from the transport of hazardous materials to the site,
- increased erosion and sedimentation into habitat,
- spread of disease, and
- increased potential for invasive species and wildfire.

BMPs will be implemented to avoid and minimize direct and indirect impacts. As such, impacts are unlikely to occur.

Construction of tower site TCA-DGL-0374 and its associated access road construction and road improvements would result in 0.73 acre of permanent impacts within 2.95 acres of temporary disturbance to vegetation and soils. Due to the proximity of the tower site to the occupied habitat of North Tank, there is a potential for dispersing leopard frogs to enter the construction site, resulting in injury or mortality. In order to prevent frogs from entering the construction site, frog exclusion fences will be erected and maintained around the temporary impact area (BMP8) for the construction of the tower, as well as around the access and approach roads. If possible, tower site TCA-DGL-0374 and its associated roads will be constructed and improved during the Chiricahua leopard frog dormant season, from November through January. If construction cannot be completed

during the dormant season, a qualified biologist will monitor the ground disturbing activity and equipment use immediately prior to and during construction and road improvement activities (BMP4 and BMP8). If a Chiricahua leopard frog is found in the project area and is in danger of being harmed (e.g., in the path of vehicles or foot traffic), work will cease until the qualified biological monitor can safely move the individual to a nearby location, in accordance with FWS Endangered Species Permit requirements, or it moves away on its own. As such, the potential for construction to directly impact dispersing Chiricahua leopard frogs that enter the construction site is discountable. A small, grassy swale (dominated by tobosa grass *[Hilaria mutica]*), located approximately 180 feet southeast of TCA-DGL-0374, might provide an important source of protective cover to Chiricahua leopard frogs moving overland between suitable habitats during seasonal dispersal events. This grassy swale would be avoided during the construction of the access road (BMP8). Finally, the roads associated with TCA-DGL-0374 will be maintained over the long-term to avoid creating ruts (BMP8) that could hold water or moisture and be used as Chiricahua leopard frogs as they move throughout their habitats, and which could result in injury or mortality from maintenance vehicles.

Hazardous materials, hazardous wastes, and other wastes will be properly handled, stored, and disposed (BMP2a). Chemicals and fuels will not be stored at the tower site TCA-DGL-0374 (BMP8). Herbicides will not be used at this tower site or along its access and approach roads, unless approved by the FWS (BMP8). These BMPs will avoid and minimize the contamination of breeding and dispersal habitat from the transport of hazardous wastes and other materials.

Soil disturbance related to construction of the tower site, access road construction, and road improvements, as well as installation of a new low-water crossing could result in erosion, sedimentation, and runoff into aquatic habitats. Erosion and sedimentation could alter the suitability of the breeding and dispersal habitats of North Tank. BMPs would be implemented to reduce erosion, sedimentation, and runoff during and after construction. Minimizing ground disturbance (see BMP2b); developing and implementing of a site-specific SWPPP (BMP6 and BMP8) for tower site TCA-DGL-0374 and its associated roads; and post-construction monitoring (BMP7 and BMP 8) in order to ensure that erosion into occupied habitat does not occur, would make the potential for sedimentation to enter the breeding and dispersal habitats at North Tank discountable. As such, the effects on Chiricahua leopard frogs would be negligible.

Managing water use and storage (BMP3 and BMP8) will avoid spread of aquatic disease and pests. To prevent the spread of amphibian disease, all construction or maintenance work at tower site TCA-DGL-0374 and its associated roads will conform to amphibian disease prevention protocols, as described in the recovery plan for Chiricahua Leopard Frog (FWS 2007a). Equipment would either be disinfected between uses at different sites or rinsed and air dried.

Managing the cleaning of equipment and clothing, minimizing the removal of native species, and the monitoring and removal of invasive species will prevent the expansion and establishment of non-native invasive plants species (BMP 10) and related habitat degradation. Wildfire can also

have an adverse on aquatic species as a result of the direct loss of vegetation, ash, and erosion of the surrounding landscape. The potential for wildfire to occur as a result of tower site operation would

be reduced to a discountable level through measures to control invasive species and the development of a Fire Management Plan.

Monitoring tower construction by a biological monitor (BMP4) will also ensure the on-site implementation of BMPs. It will also allow the documentation of any unforeseen construction-related effects on the riparian habitat. Post construction monitoring (BMP7) along the approach or access roads would prevent or remediate future impacts related to erosion of disturbed areas and road use. Although road repairs would be temporary, any erosion occurring three years post-construction would be remediated with the implementation of post construction monitoring and maintenance at the tower site and along the approach or access roads.

Conclusion

The Service concurs with the CBP determination that the proposed action may affect, but is not likely to adversely affect Chiricahua leopard frog based upon the following:

- Frog exclusion fencing would be used around the construction site. Additionally, the work would be conducted during the Chiricahua leopard frog dormant season or using a biological monitor, who would ensure that Chiricahua leopard frogs do not enter the construction site. The potential for these effects is discountable.

- A grassy swale (comprised of tabosa grass) which could be Chiricahua leopard frog dispersal habitat, located approximately 180 feet southeast of the proposed tower site TCA-DGL-0374, will be avoided during construction.

- BMPs will be implemented to protect water resources from hazardous materials, hazardous wastes, other regulated wastes, and invasive species. Potential effects to water resources will be discountable.

- BMPs will be implemented to reduce sedimentation and runoff, and to reduce the potential for invasive species to a discountable level.

- Monitoring would also ensure the implementation of BMPs and the documentation and remediation of unforeseen impacts.

- Post-construction monitoring would allow the remediation of erosion into Chiricahua leopard frog breeding and dispersal habitat for at least three years after construction.

Concurrence for upland species including jaguar (*Panthera onca*), ocelot (*Leopardus pardalis*), and lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*).

Environmental Baseline

A number of listed species occur in the upland ecosystems of the action area. These species include

two terrestrial mammals (jaguar and ocelot) and a bat species (lesser long-nosed bat). Effects to these upland species from the proposed action occur in somewhat different areas than those described for other species groups as described above. All of the tower sites are within the range of jaguar, ocelot, and lesser long-nosed bat.

The U.S. population of jaguar was listed as federally-endangered without critical habitat on July 22, 1997 (62 FR 39147). The non-U.S. population of jaguar was listed as federally-endangered on March 30, 1972 (37 FR 6476). Critical habitat has recently been proposed (77 FR 50214) for the portion of the jaguar's range within the U.S. in Arizona and New Mexico. However, proposed critical habitat does not occur in the action area for this species. The jaguar is the largest species of cat native to the western hemisphere. It has a cinnamon-buff color with many black spots and has a muscular, deep-chested body with relatively short, massive limbs. Its weight ranges widely from 40 to 135 kilograms (90 to 300 pounds) and its length is typically 2.4 meters (7.8 feet) from head to tail tip (FWS 2000). In Arizona, the species was historically found in mountainous parts of eastern Arizona to the Grand Canyon. The current range includes central Mexico and into central South America as far south as northern Argentina. While a number of documented occurrences have occurred in Arizona and New Mexico since the mid-1990s, there are no currently known breeding populations in the United States (FWS 2000). In Arizona, potential habitat includes areas of forest, woodland, and grassland vegetation in the Baboquivari Mountains, the southern portion of the Altar Valley, a portion of the southern Santa Cruz River basin, and the San Pedro River basin south of Arivapa Creek. The recent jaguar observations in south-central Arizona near the Mexican border have primarily occurred in Madrean oak woodland communities; however, jaguars were also documented in open mesquite grasslands and desert scrub/grasslands on the desert valley floor (77 FR 50214).

The U.S. population of ocelot was listed as federally-endangered without critical habitat on August 20, 1982 (47 FR 31670). The ocelot is a medium-sized nocturnal cat, measuring up to 3 feet in body length and weighing twice as much as a large domestic cat. It is slender and covered with attractive, irregular-shaped rosettes and spots that run the length of its body. The ocelot's background coloration can range from light yellow to reddish gray, to gold, and to a grayish gold color. The ocelot is divided into as many as 11 subspecies; 2 subspecies occur in the United States: the Texas/Tamaulipas ocelot (*L.p. albescens*) and the Arizona/Sonora ocelot (*L.p. sonoriensis*) (FWS 2010). The Arizona/Sonora ocelot subspecies is known to occur in southern Arizona and northwestern Mexico. The first live Arizona/Sonora ocelot since the 1960s was documented in Cochise County, Arizona, in November 2009. In April 2010, an ocelot was found dead on a road near Globe, Arizona. In February 2011, the Arizona Game and Fish Department reported that an ocelot was observed in the Huachuca Mountains of southern Arizona. This individual has been subsequently detected by trail cameras a number of times in the Huachuca Mountains, including as recent as spring 2012. A possible fourth ocelot was also detected in the Huachuca Mountains in spring 2012. In addition, a number of sightings of ocelot have been documented directly south of the U.S. border in Sonora, Mexico, including more than four ocelots in the Sierra Azul, 30 to 35 miles southeast of Nogales since 2007; and one ocelot in 2009 in the Sierra de Los Ajos, 30 miles south of Naco, Mexico (FWS 2010). A female with a kitten was reportedly photographed at Rancho El Aribabi, in the Sierra Azul, in February 2011. In Arizona, little is known about habitat use. Some studies suggest that Arizona/Sonora ocelots are most often associated with tropical or

subtropical habitat, including subtropical thornscrub, tropical deciduous forest, and tropical thornscrub (FWS 2010). Threats to the ocelot include destruction, modification, and curtailment of its habitat and range; collection for commercial, recreational, scientific, and educational purposes; and disease and predation (FWS 2010).

The lesser long-nosed bat is a yellow-brown or cinnamon gray bat, with a total head and body measurement of approximately 8 cm (3 inches). The tongue measures approximately the same length as the body. This species also has a small nose leaf (FWS 2001c). Lesser long-nosed bat was listed as federally endangered without critical habitat on September 30, 1988 (53 FR 38456). The species historically ranged from southern Arizona in the Picacho Mountains, the Agua Dulce Mountains, and the Chiricahua Mountains to southwestern New Mexico in the Animas and Peloncillo Mountains through much of Baja California, Mexico (FWS 1994). These bats are seasonal (April to September) residents of southeastern Arizona, and possibly extreme western Arizona (i.e., Cochise, Pima, Santa Cruz, Graham, Pinal and Maricopa counties, Arizona) (FWS 2001c, 2005). Habitat for the species includes mainly desert scrub habitat in the U.S. portion of its range. In Mexico, the species occurs up into high elevation pine-oak and ponderosa pine forests. Within the United States, this species forages at night on nectar, pollen from columnar cacti (such as saguaros), and agaves with branched flower clusters (FWS 2001c). Considerable evidence exists for the interdependence of *Leptonycteris* bat species and certain agaves and cacti (FWS 2001c). A total of 60 Palmer's agaves were observed among 10 of the 12 proposed tower sites surveyed. Palmer's agave was not found to be a dominant component of the vegetation association, and no dense stands of agave would be impacted by the Proposed Action.

During daylight, lesser long-nosed bats roost in caves or abandoned mines. Impacts to forage resources have been identified as a threat to this species. Impacts to forage resources that include the conversion of habitat for agricultural uses, livestock grazing, woodcutting, urbanization, and other development might contribute to the decline of long-nosed bat populations. In addition, occupancy of communal roost sites by illegal border crossers and recreational users is a potential threat. These bats are particularly vulnerable due to many individuals using only a small number of communal roosts (FWS 2001c). In general, the trend in overall number of lesser long-nosed bats has been stable or increasing in both the United States and Mexico. In part, for this reason, the FWS recommended reclassifying the status of this species to threatened (FWS 2007b).

The action area of the Douglas IFT program for the jaguar and ocelot includes all of the proposed new tower sites, associated access and approach roads, and a 1,000 –foot buffer around these sites and roads. It is assumed that noise will be attenuated to a level of negligible effects at 1,000 feet and that noise will be the effect resulting from the action that extends farthest away from construction activities. The jaguar is not likely to frequent areas where human activity occurs, such as in the areas of TCA-DGL-0380 (Douglas Station) and TCA-DGL-0156.

Although no potential roosts were observed within or adjacent to the project area during the survey effort, at least one roost is known to occur approximately 2.5 miles north of TCA-DGL-0362. All of the tower sites are also within 30 miles of at least one of the lesser long-nosed bat late summer roosts. The action area of the Douglas IFT program for lesser long-nosed bat is defined as the construction footprint of tower sites and associated roads within 30 miles of known roosts that

support forage plants. The action area includes seven proposed tower sites and associated roads, TCA-DGL-0364, -0366, -0374,-0384, -0388, -0390, and -0396.

Effects of the Proposed Action

There are a number of potential direct and indirect effects to these upland species from the proposed action. These include potential direct impacts such as reduction of habitat and disturbance from noise and potential indirect impacts such as an increased risk of wildfire associated with an increase invasive plant species where habitat is disturbed. However, BMPs would be implemented to avoid and minimize these impacts.

All proposed tower sites would be located in habitats identified as potentially suitable for jaguar and ocelot, based on extrapolation from a limited number of past occurrences. However, jaguar and ocelot have not been documented in the project area. Construction of tower sites, new road construction, and repairs to approach roads would result in a temporary increase of noise and human-related activity within the affected region. Due to the limited duration and limited area over which these effects would occur relative to the assumed range of the jaguar and ocelot, the potential for adverse effects to occur would be discountable. Construction-related noise effects would not extend more than 1,000 feet from construction activities. Due to the vast amount of equally suitable habitat between tower sites, the potential for noise-related effects to result in significant changes in behavior such that the health of individual jaguars would be affected is unlikely. Operation-related noise, any required maintenance, and post-construction monitoring would be limited in extent and duration, and it is highly unlikely that a jaguar would be present during these activities. Additionally, noise and light pollution and disturbance from human presence during construction and operation would be minimized through the use of BMPs (BMP2c and BMP2d). BMPs would also be implemented to minimize the potential for collisions between construction and maintenance vehicles and ocelot and jaguar by reducing the speeds of construction vehicles on unpaved roads and at nighttime (BMP2d). These effects will occur at an insignificant level.

A total of 12 tower sites and access roads occur within the range of foraging LLNBs. Only one of the proposed tower sites and access roads exists within 5 miles of a known LLNB roost. Construction of tower sites, new road construction, and repairs to approach roads would result in a temporary increase of noise and human-related activity within the affected region. Construction-related noise effects would not extend more than 1,000 feet from construction activities. Noise and disturbance from human presence during construction and operation will be minimized through the use of BMPs (BMP2c and BMP2d). Shielded and motion-sensored lighting (BMP2c) will be used at each site to minimize the effects of lighting to an insignificant level.

Agaves were observed in low densities, within the proposed tower site footprints or access road alignments. A total of 0.29 mile of new road construction and 4.9 miles of road improvements would occur within 30 miles of known roosts. Ground disturbance during construction would be minimized (BMP2b) by flagging the area, using the construction footprint for staging, limiting vegetation and ground disturbance, designing and locating the roads to protect habitat and stabilizing the construction sites. Only the minimum number of agave required for construction purposes would be removed (BMP8). All agave plants in the construction footprint would be

flagged prior to the construction. As such, loss of forage plants would have a negligible impact on forage opportunities for LLNBs, and the effects would be insignificant.

The physical presence of 12 towers is not expected to have an effect on LLNB. Bats would be able to avoid the physical structures at each tower site. CBP conducted bat carcass surveys of 13 existing CBP communications and sensor towers in the Ajo and Tucson stations' AORs in an effort to document bat fatalities associated with CBP towers (GSRC 2011 and 2012). The 13 existing towers were monitored twice per week on consecutive days from June 1 to September 30 during 2010 and 2011. No bat carcasses were documented during the 2 years of monitoring. The potential for bats to collide with the towers would be unlikely, and potential effects would be discountable.

The electromagnetic field (EMF) produced by radio equipment may affect LLNB by causing increased surface and deep body temperatures if exposed for prolonged periods or by causing bats to avoid foraging. LLNBs are particularly susceptible to EMF strengths greater than 2 volts/meter (Nicholls and Racey 2007). Current monitoring conducted by CBP at existing sensor towers equipped with radar has not shown that bats avoid the tower sites or adjacent areas.

Wildfire can also have an adverse effect on jaguar, ocelot, and lesser long-nosed bat habitat. The potential for wildfire to occur as a result of tower site operation would be reduced through measures to control invasive species and the development of a Fire Management Plan. Managing the cleaning of equipment and clothing, minimizing the removal of native species, and the monitoring and removal of invasive species will prevent the expansion and establishment of non-native invasive plants (BMP 10) and related habitat degradation. These effects are thus anticipated to be insignificant.

Monitoring tower construction by a biological monitor (BMP4) will ensure the on-site implementation of BMPs. It will also allow the documentation of any unforeseen construction-related effects on these species. The tower sites which would require biological monitors to avoid effects to jaguar, ocelot, and lesser long-nosed bat include TCA-DGL-0364, -0366, -0368, -0384, -0388, -0390, and -0396. Additionally, tower sites TCA-DGL-0372, -0374, and -0428 would require biological monitors to avoid impacts to jaguar and ocelot.

Conclusion

The Service concurs with the CBP determination that the proposed action may affect, but is not likely to adversely affect the upland species, jaguar, ocelot, and lesser long-nosed bat, based upon the following:

- Jaguar and ocelot have never been documented in the action area and are so rare in the action area that the potential for individuals of these species to encounter construction and maintenance activities is extremely unlikely to occur, and such effects, therefore, are discountable.

- Impacts to jaguar, ocelot, and lesser long-nosed bats from noise and light pollution and human disturbance would be minimized to insignificant levels through the use of BMPs.

- Direct and indirect impacts to jaguar, ocelot, and lesser long-nosed bat habitat would be minimized through the use of BMPs. The habitat that would be impacted constitutes a small portion of suitable habitat for these species and, thus, such effects will be insignificant.

- Removal of agave will be limited to the minimum necessary and a qualified biologist will conduct a survey to identify and flag all agaves to be avoided. Effects to LLNB forage resources are thus expected to be insignificant.

- Monitoring would ensure the implementation of BMPs and the documentation of unforeseen impacts.

Thank you for your continued coordination related to this consultation. No further section 7 consultation is required for this project at this time. Should project plans change, or if additional information on the distribution or abundance of listed species or critical habitat becomes available, this determination may need to be reconsidered. Additionally, we encourage you to coordinate the review of this project with the Arizona Fish and Game Department and the appropriate land management agencies and private landowners.

For further information please contact Scott Richardson (520) 670-6150(x242) or Jean Calhoun (520) 670-6150 (x223). Please refer to the consultation number, 02EAAZ00-2012-I-0173 in future correspondence concerning this project.

Sincerely,

Jean A Calhoun

for Steven L. Spangle
Field Supervisor

cc: (hard copy):
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Jean Calhoun, Assistant Field Supervisor, Fish and Wildlife Service Tucson, AZ
Acting Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ

cc (electronic copy):
Mark Crites, Fish & Wildlife Biologist, Fish and Wildlife Service, Tucson, AZ

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APPENDIX B
DOUGLAS STATION'S AOR IFT PROJECT SITES

Figure 1. Project Area Map Showing the Location of TCA-DGL-0156

GSRC

September 2012

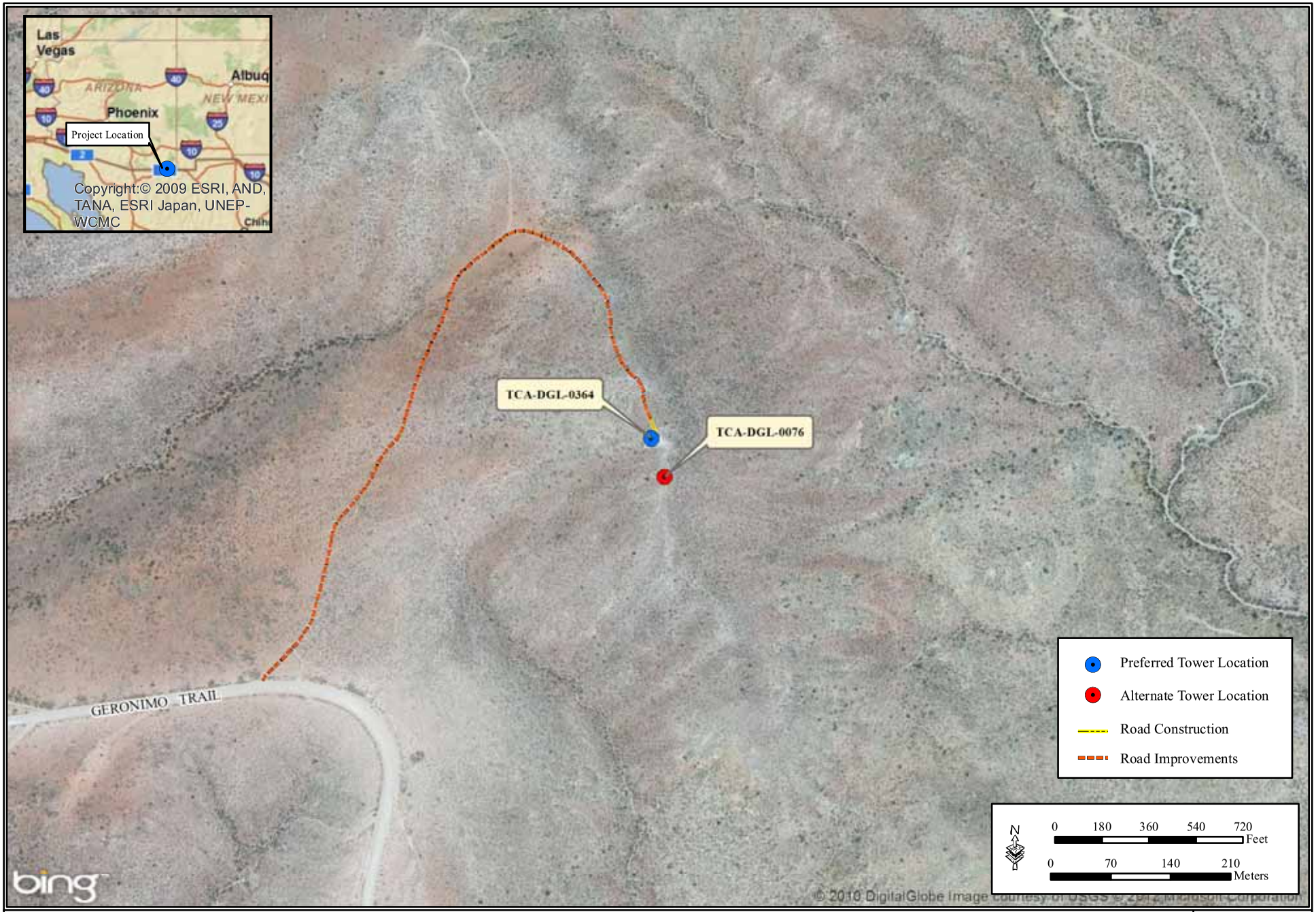


Figure 2. Project Area Map Showing the Location of TCA-DGL-0364 and TCA-DGL-0076

GSRC

June 2012

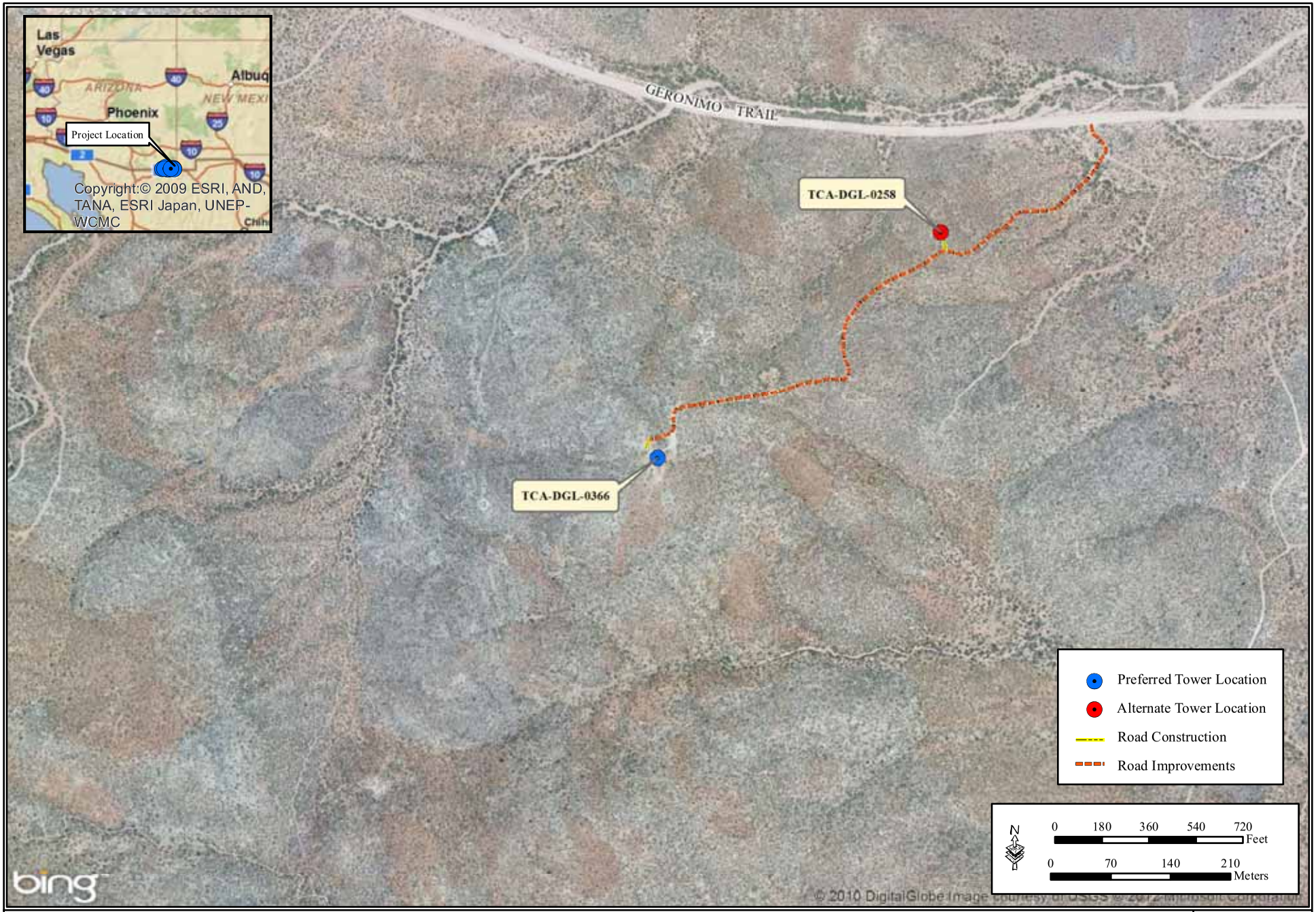


Figure 3. Project Area Map Showing the Location of TCA-DGL-0366 and TCA-DGL-0258

GSRC

August 2012

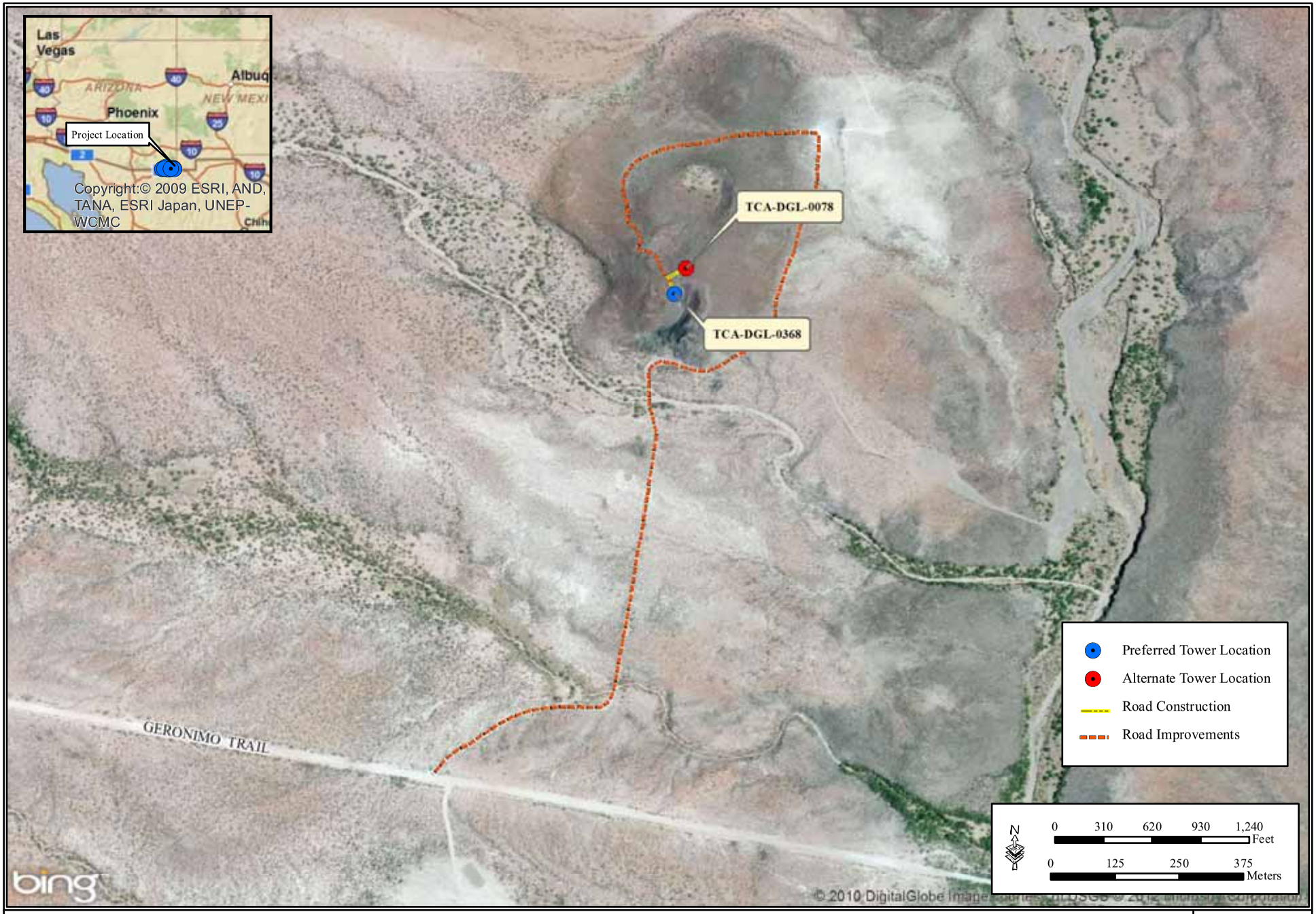


Figure 4. Project Area Map Showing the Location of TCA-DGL-0368 and TCA-DGL-0078

GSRC

August 2012

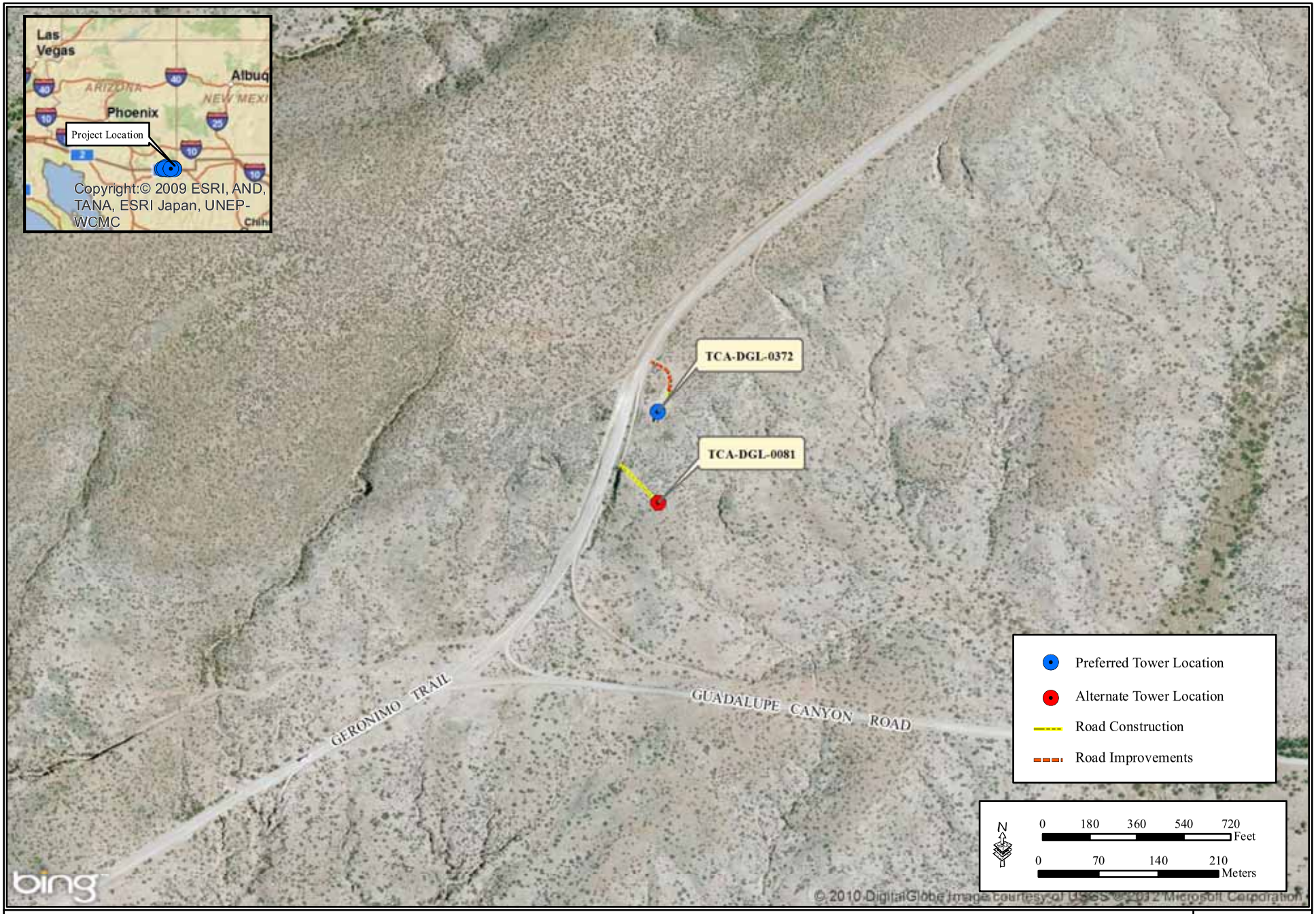


Figure 5. Project Area Map Showing the Location of TCA-DGL-0081 and TCA-DGL-0372

GSRC

August 2012

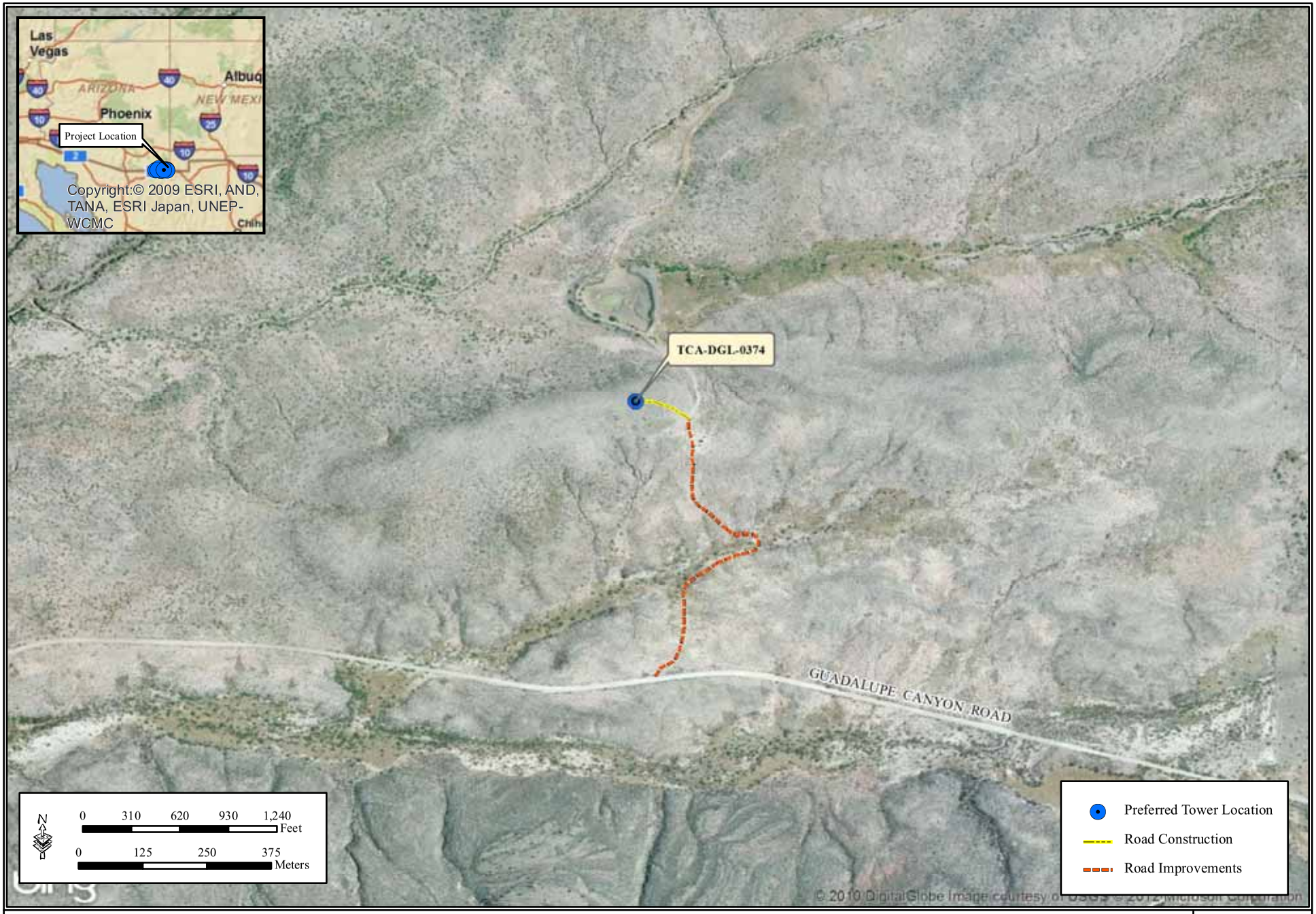


Figure 6. Project Area Map Showing the Location of TCA-DGL-0374

GSRC

August 2012

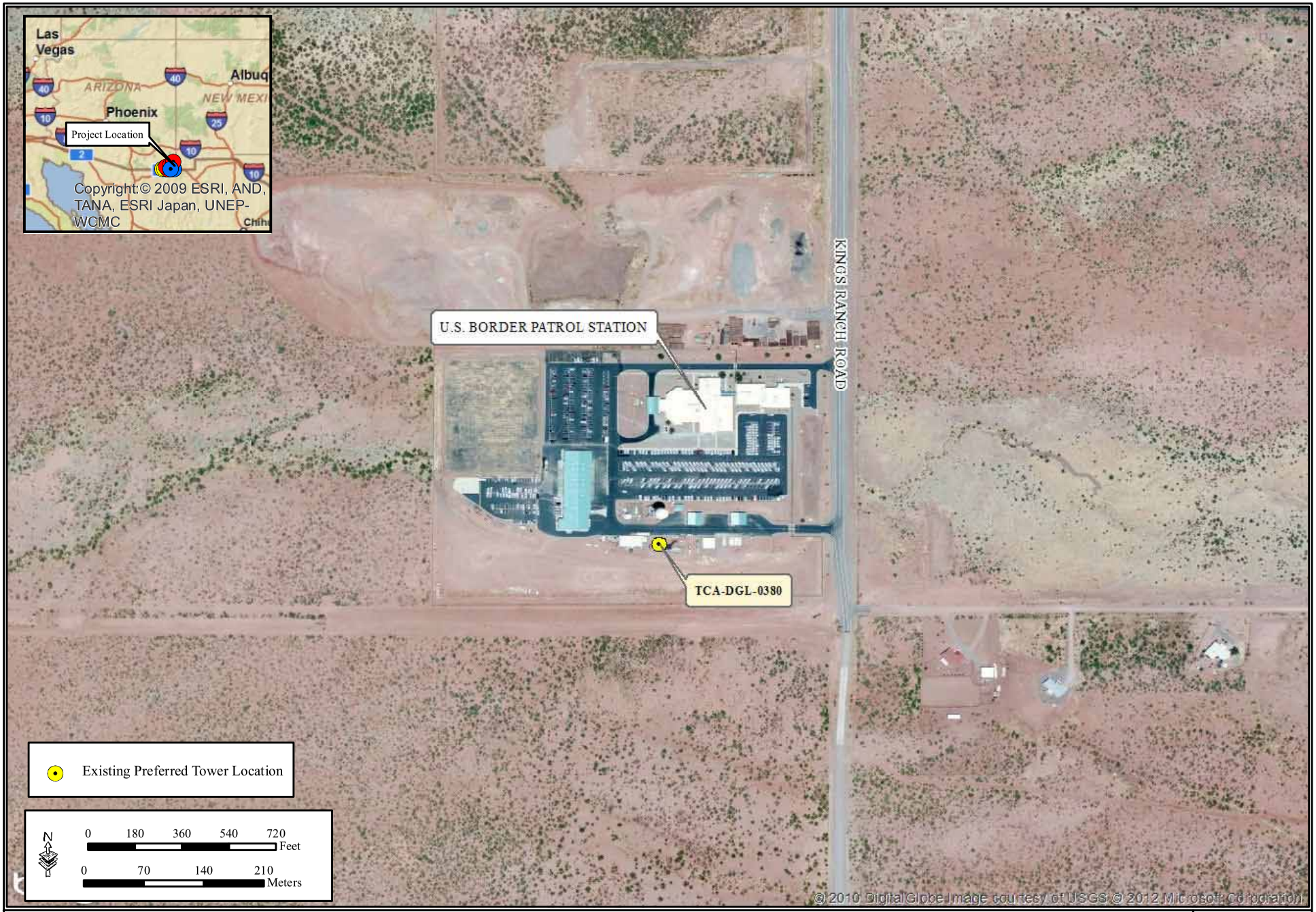


Figure 7. Project Area Map Showing the Location of TCA-DGL-0380

GSRC

August 2012

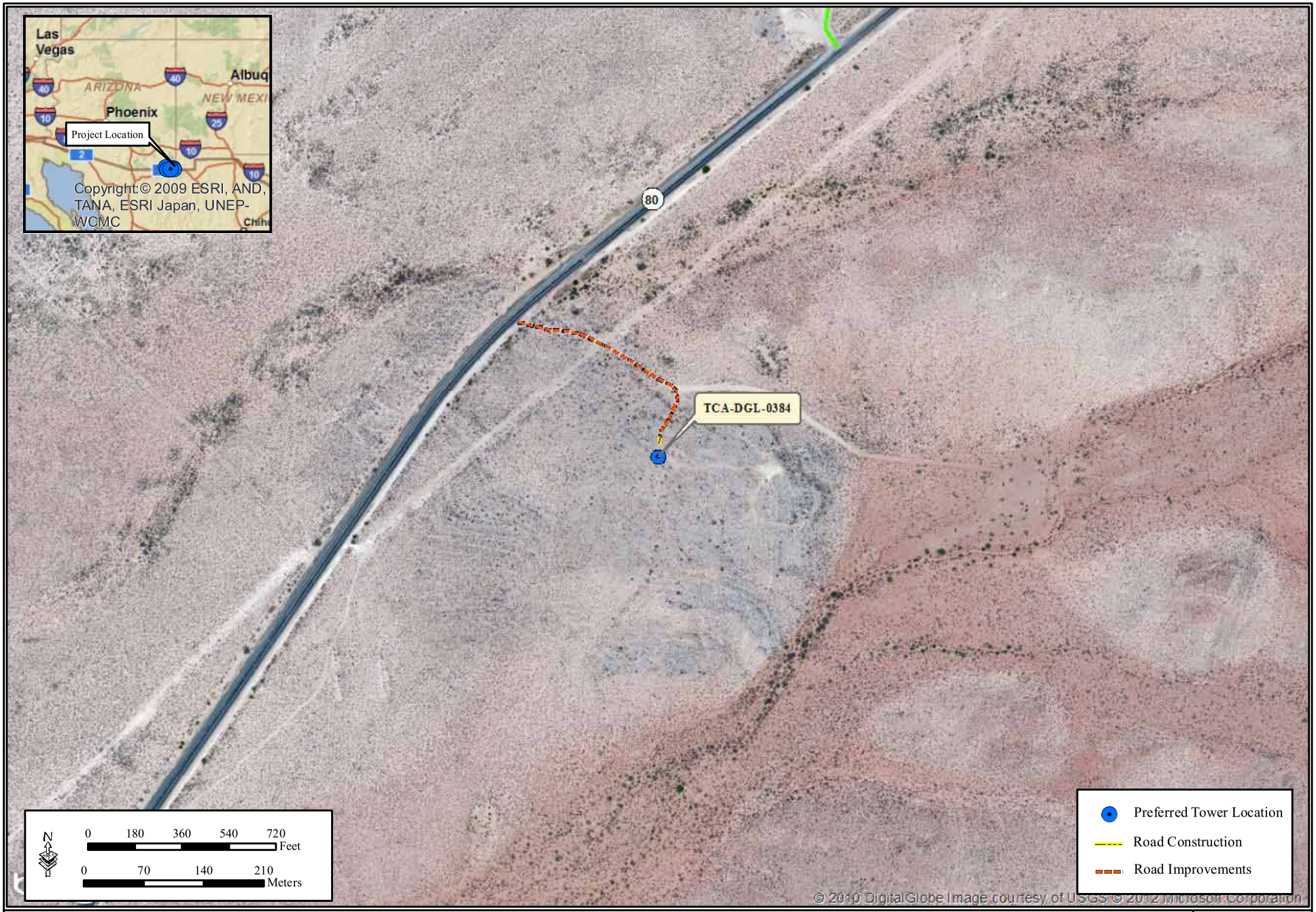


Figure 8. Project Area Map Showing the Location of TCA-DGL-0384

GSRC

September 2012

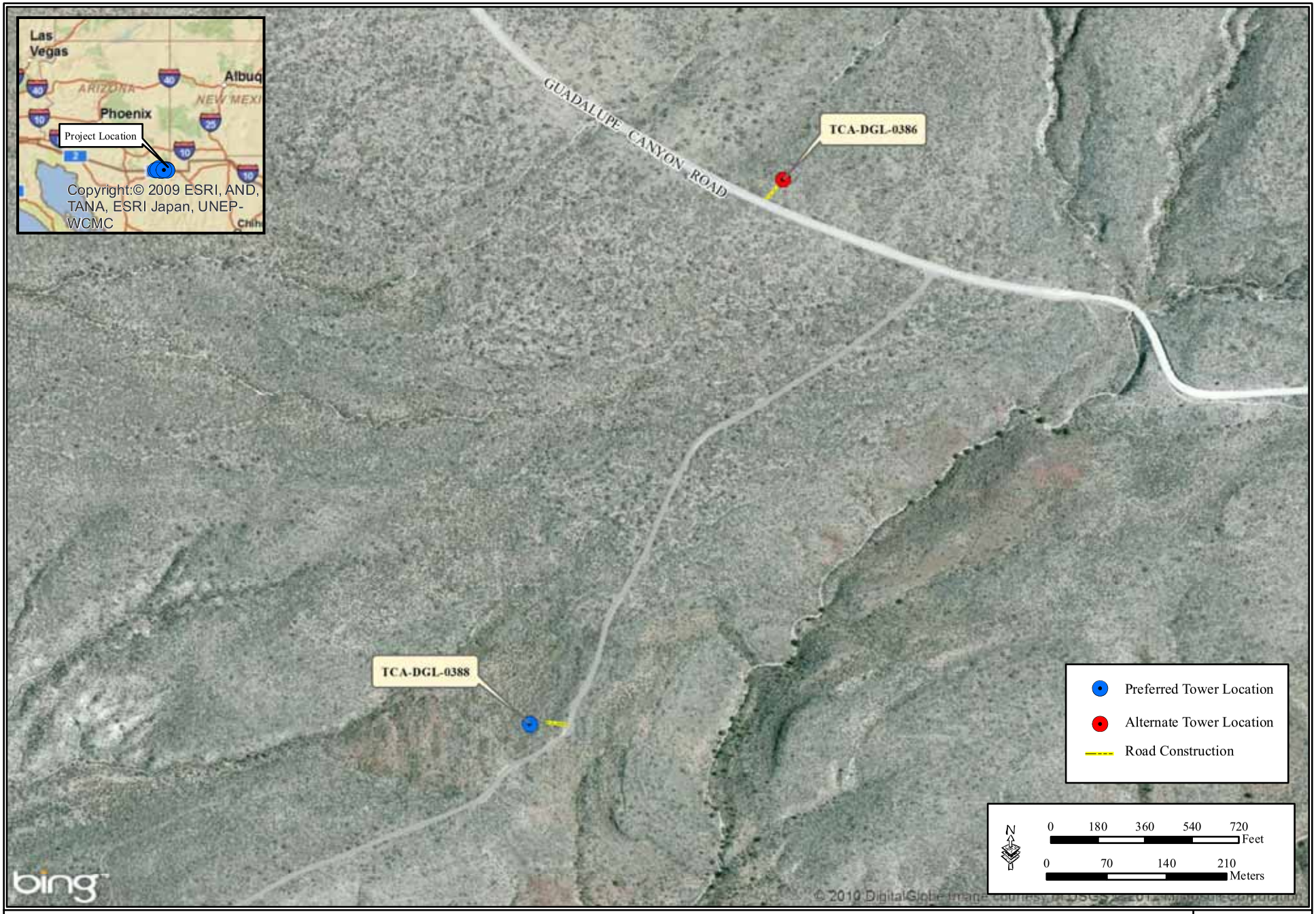


Figure 9. Project Area Map Showing the Location of TCA-DGL-0388 and TCA-DGL-0386

GSRC

August 2012

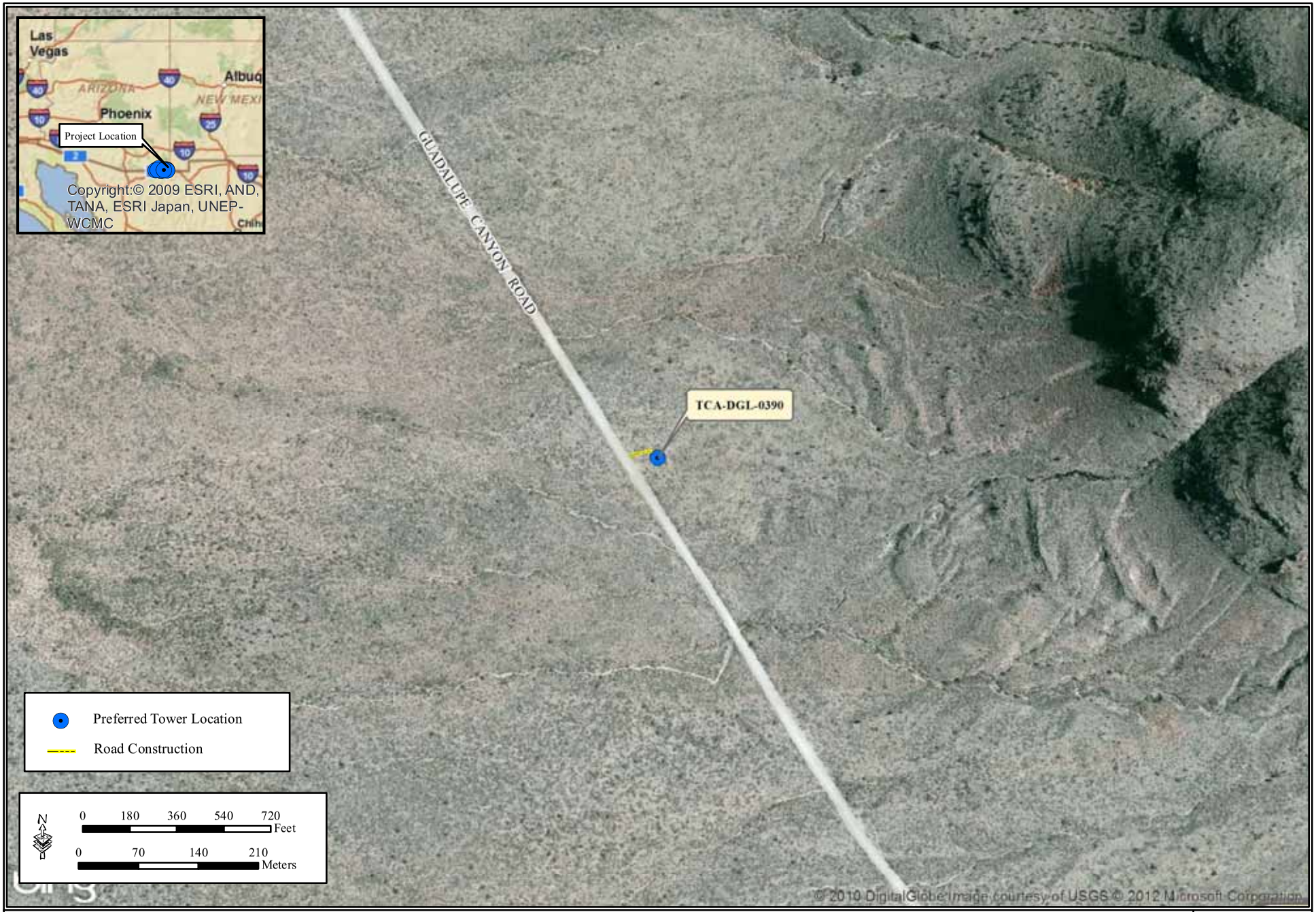


Figure 10. Project Area Map Showing the Location of TCA-DGL-0390

GSRC

August 2012

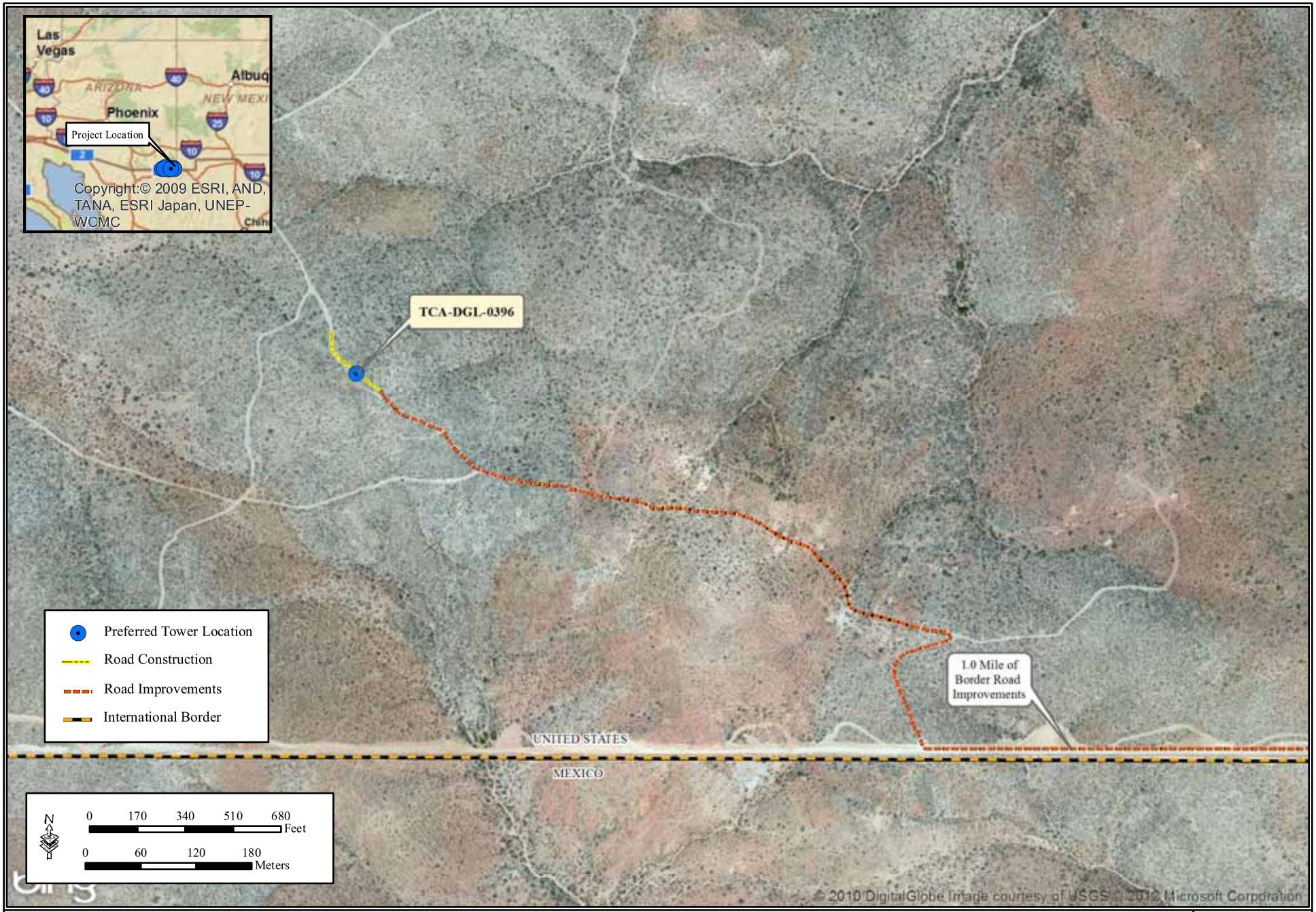


Figure 11. Project Area Map Showing the Location of TCA-DGL-0396

GSRC

August 2012

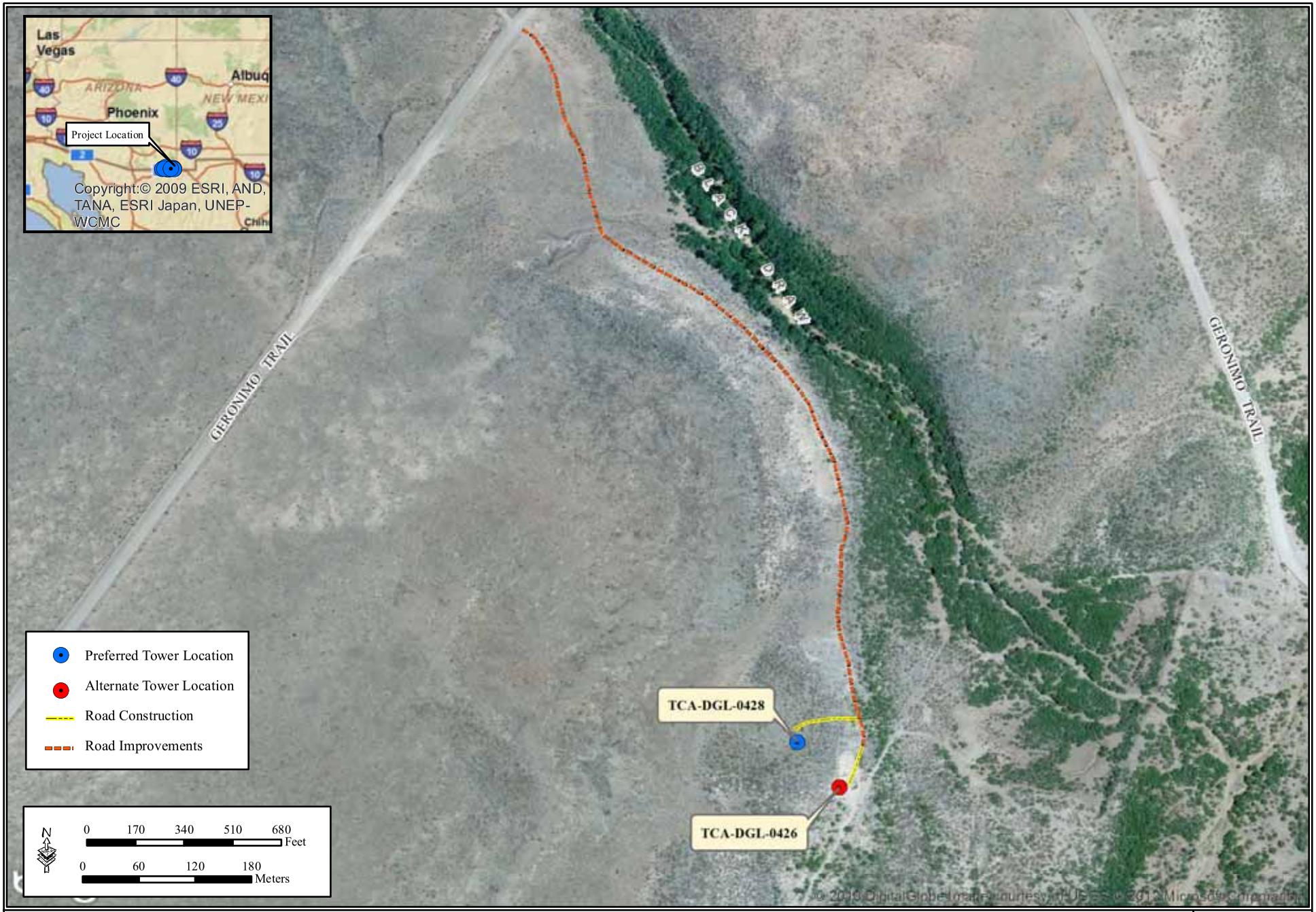


Figure 12. Project Area Map Showing the Location of TCA-DGL-0426 and TCA-DGL-0428

GSRC

August 2012

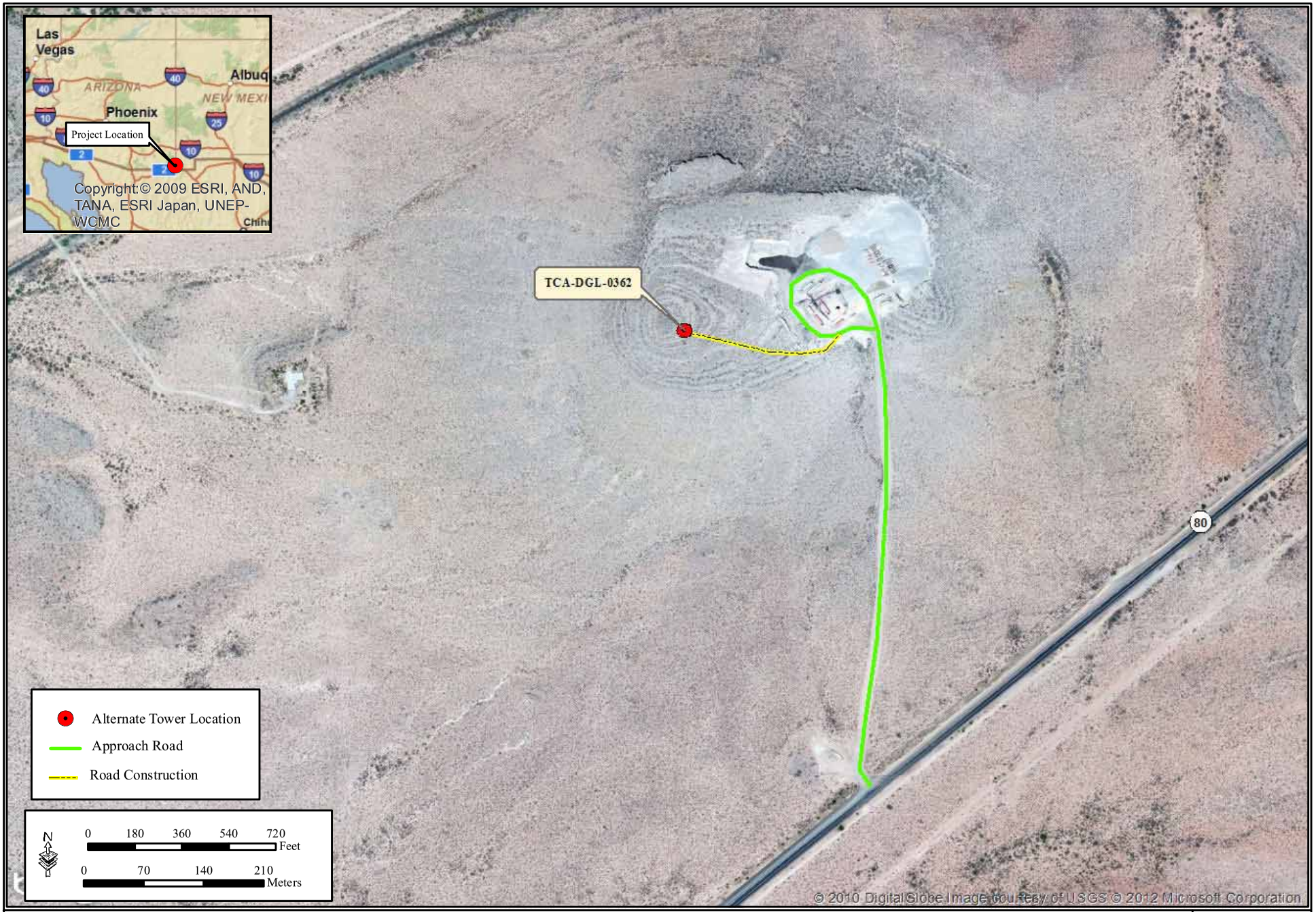


Figure 13. Project Area Map Showing the Location of TCA-DGL-0362

GSRC

September 2012

Figure 14. Project Area Map Showing the Location of TCA-DGL-0400

GSRC

August 2012

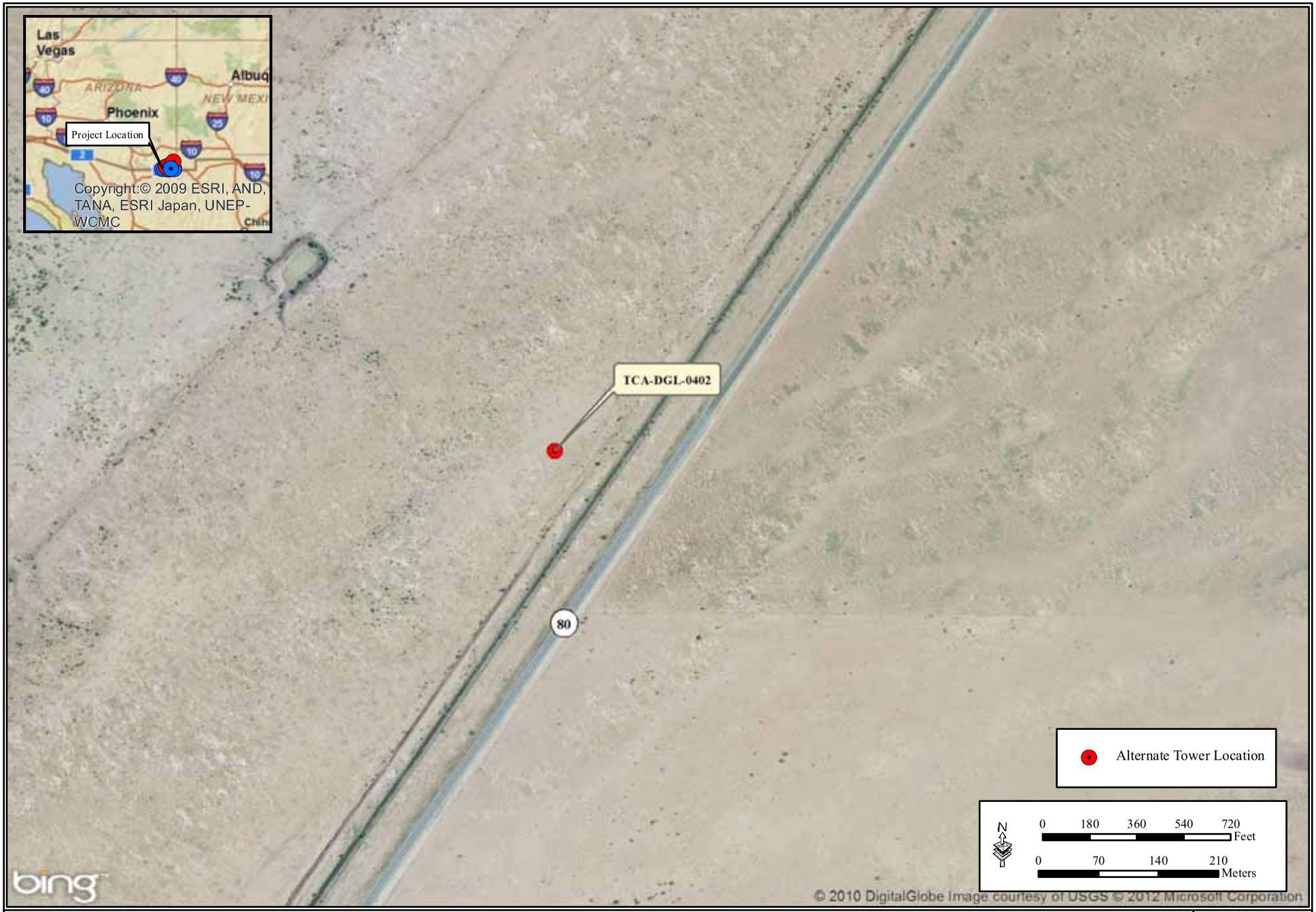
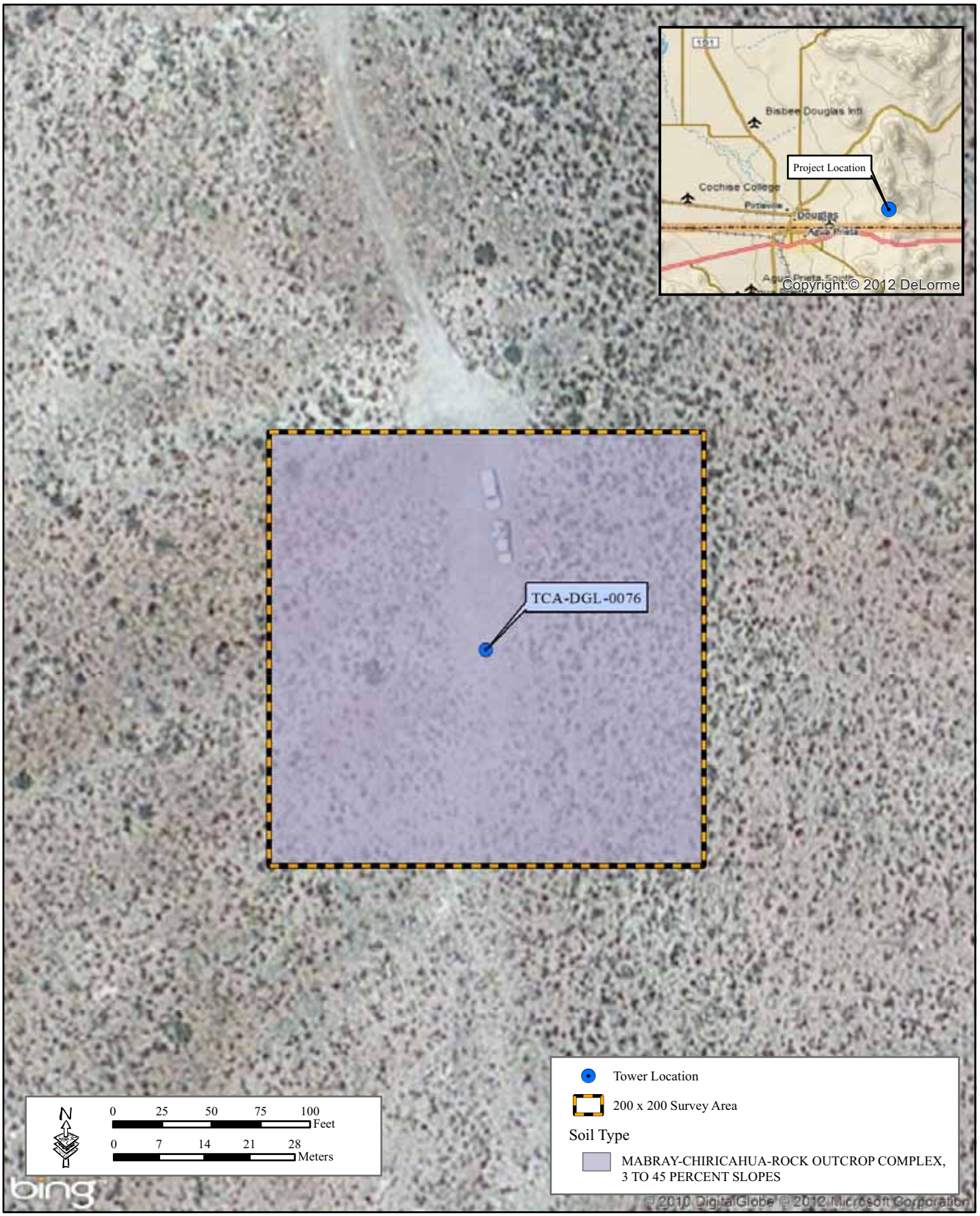


Figure 15. Project Area Map Showing the Location of TCA-DGL-0402

GSRC

August 2012

APPENDIX C
SOIL MAPS



TCA-DGL-0076 Soil Map

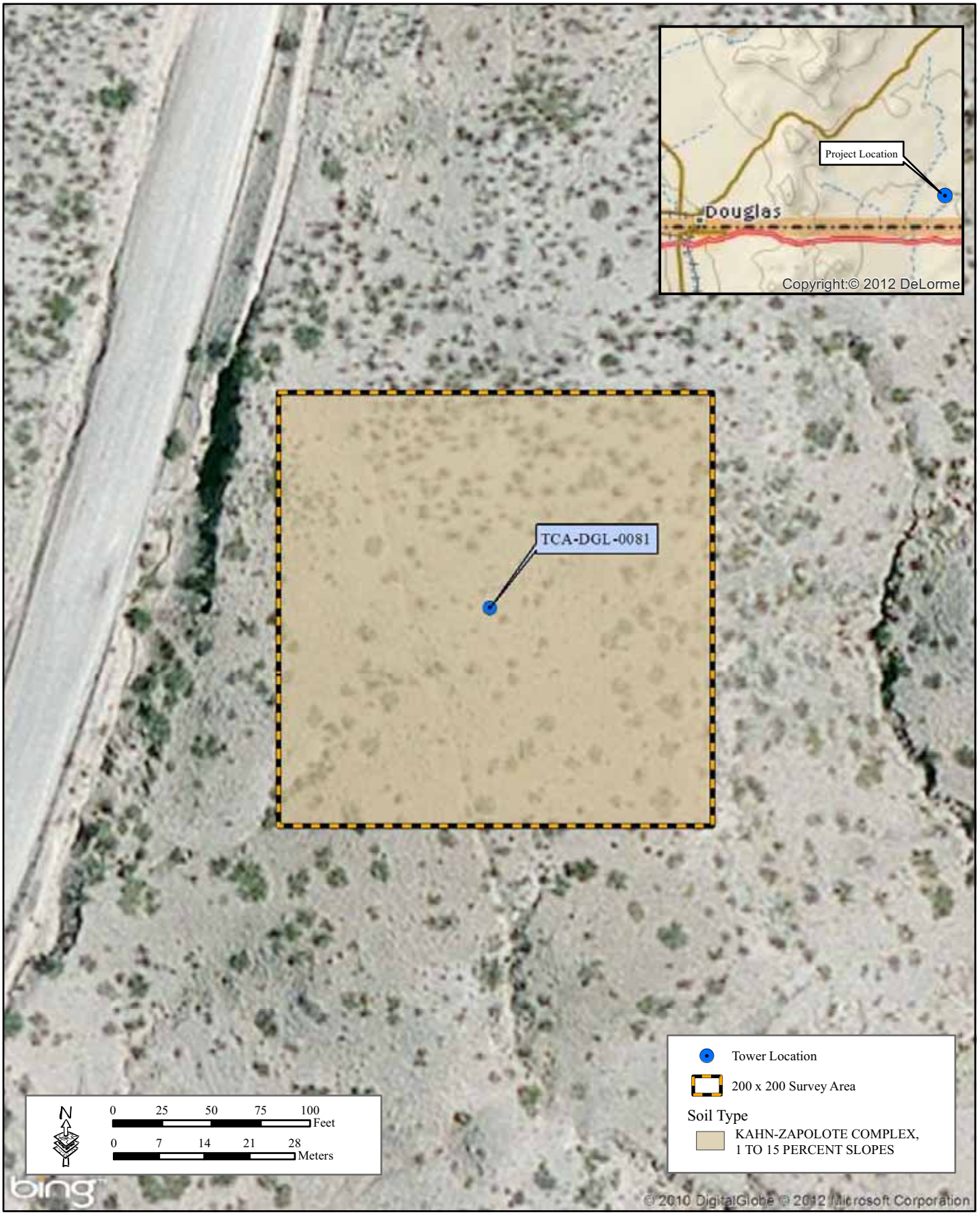
GSRC

February 2012

TCA-DGL-0078 Soil Map

GSRC

February 2012



TCA-DGL-0081 Soil Map

GSRC

February 2012

TCA-DGL-0156 Soil Map

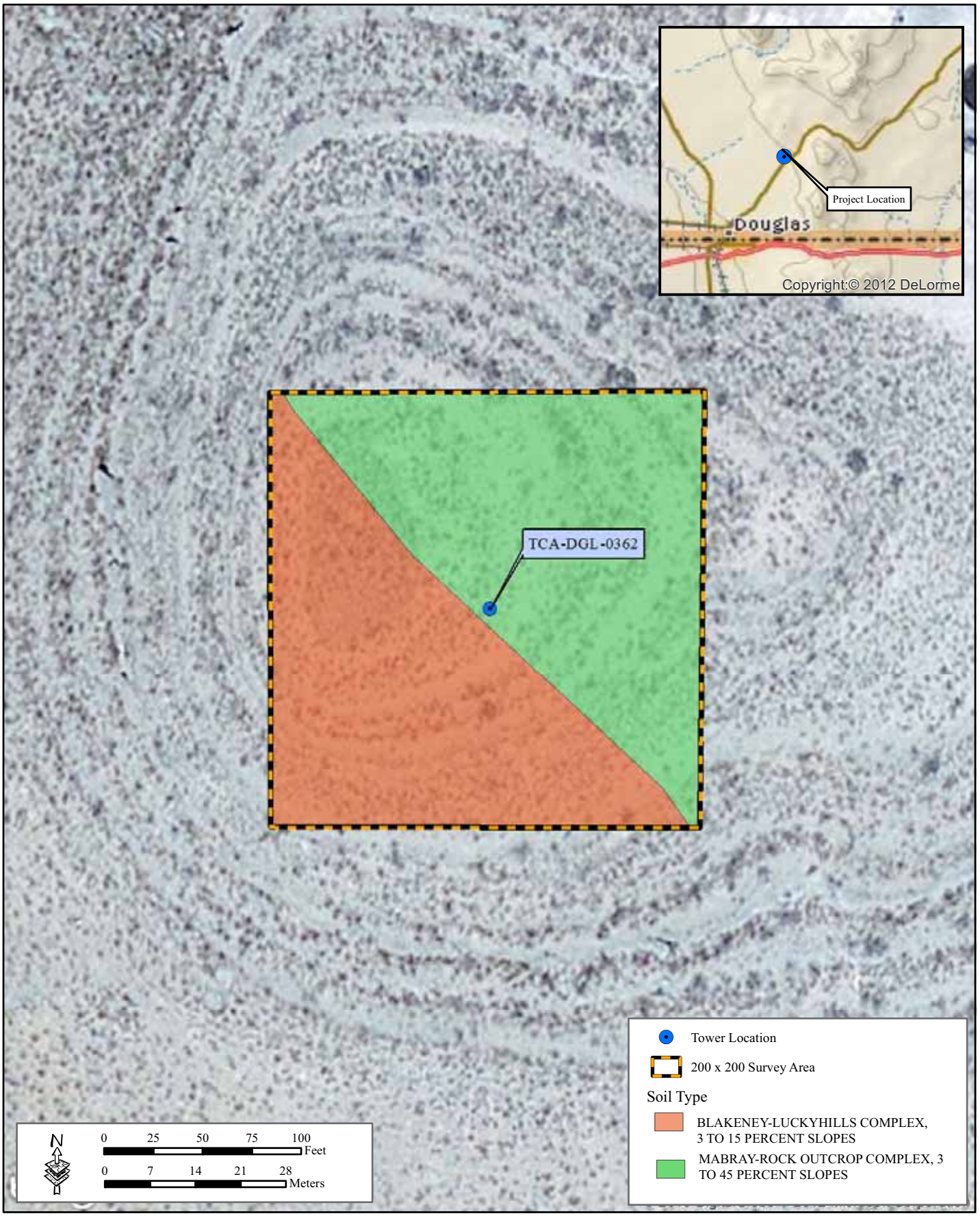
GSRC

February 2012

TCA-DGL-0258 Soil Map

GSRC

February 2012



TCA-DGL-0362 Soil Map

GSRC

February 2012

TCA-DGL-0364 Soil Map

GSRC

February 2012

TCA-DGL-0366 Soil Map

GSRC

February 2012

TCA-DGL-0368 Soil Map

GSRC

February 2012

TCA-DGL-0372 Soil Map

GSRC

February 2012

TCA-DGL-0374 Soil Map

GSRC

February 2012

TCA-DGL-0380 Soil Map

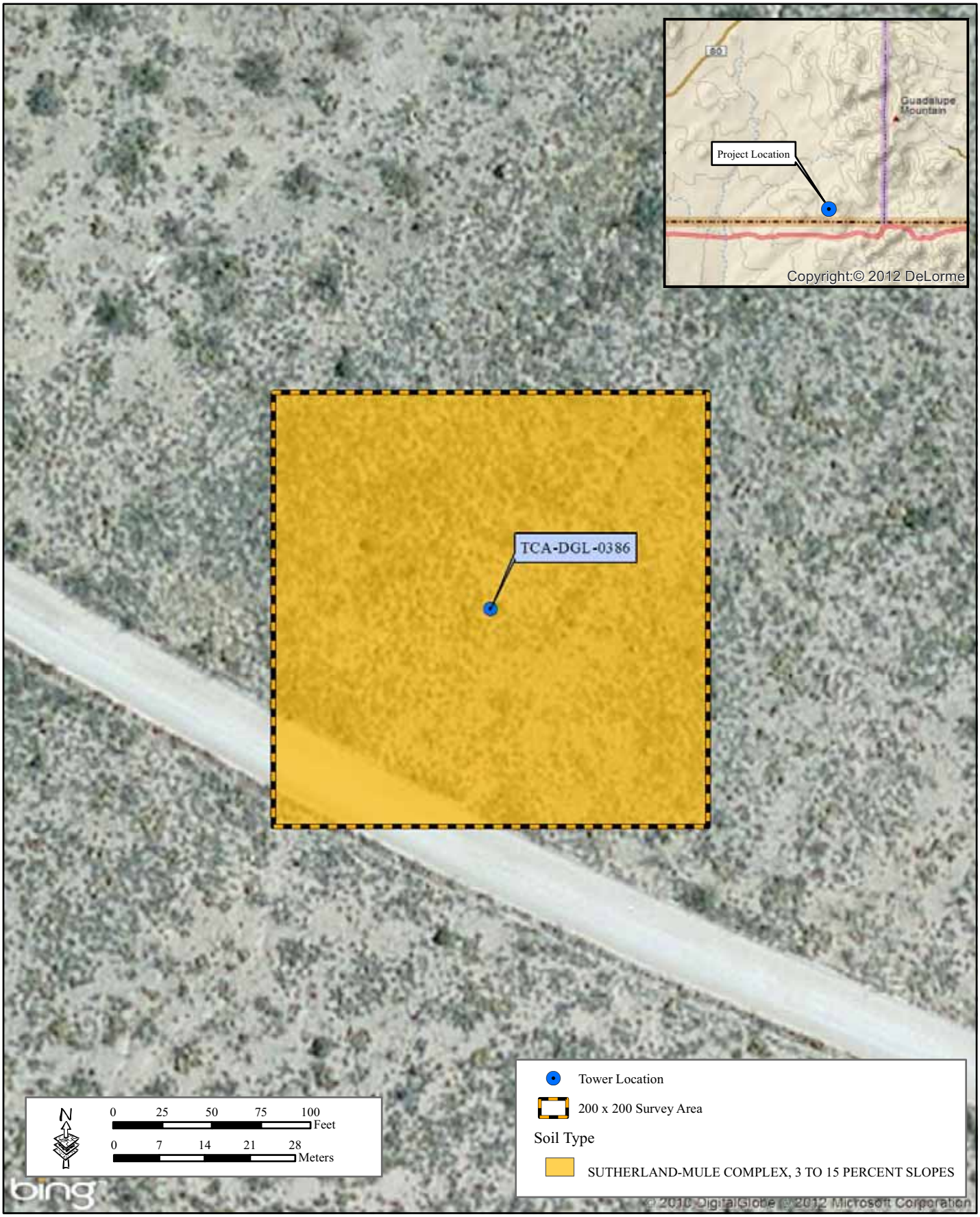
GSRC

February 2012

TCA-DGL-0384 Soil Map

GSRC

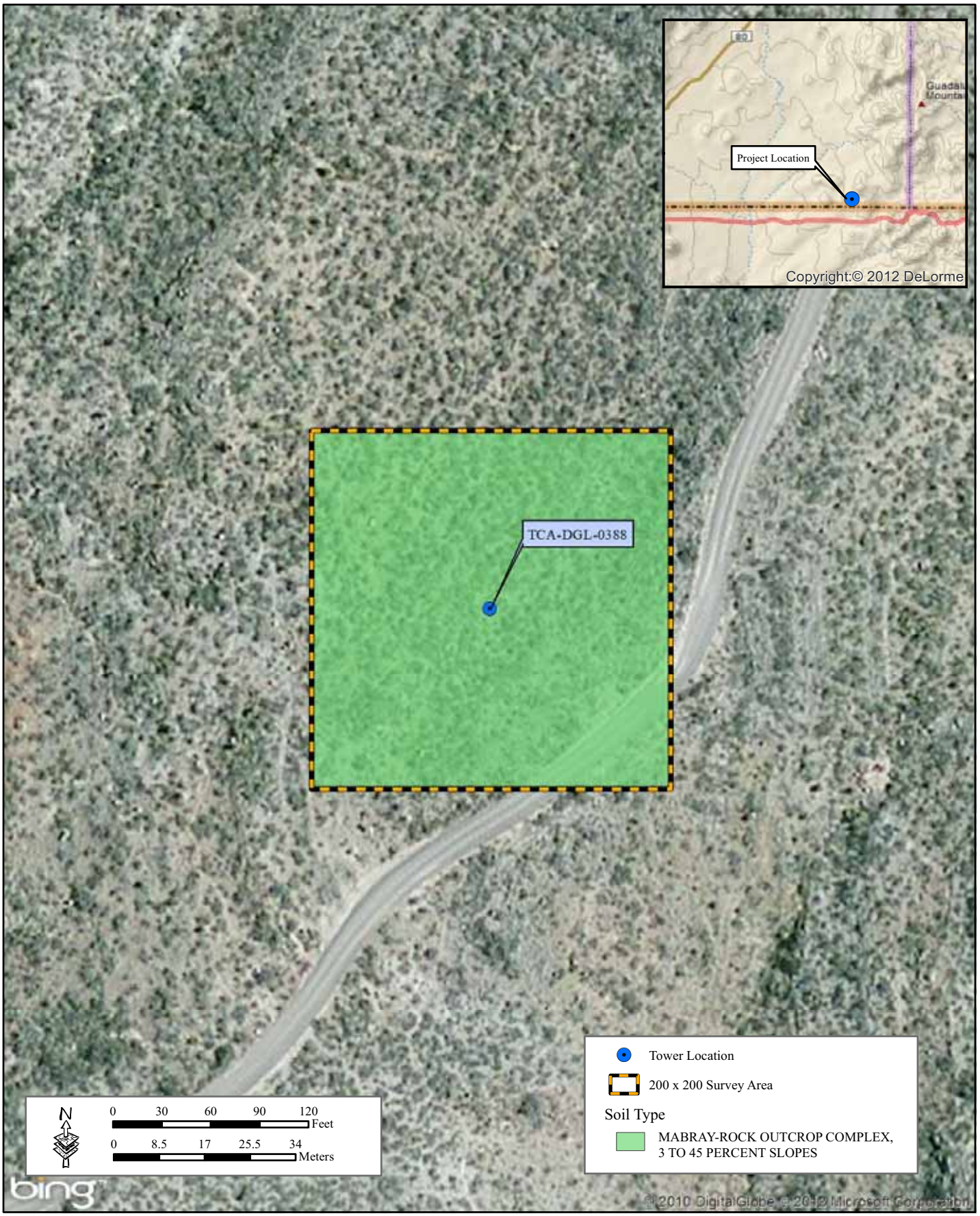
February 2012



TCA-DGL-0386 Soil Map

GSRC

February 2012



TCA-DGL-0388 Soil Map

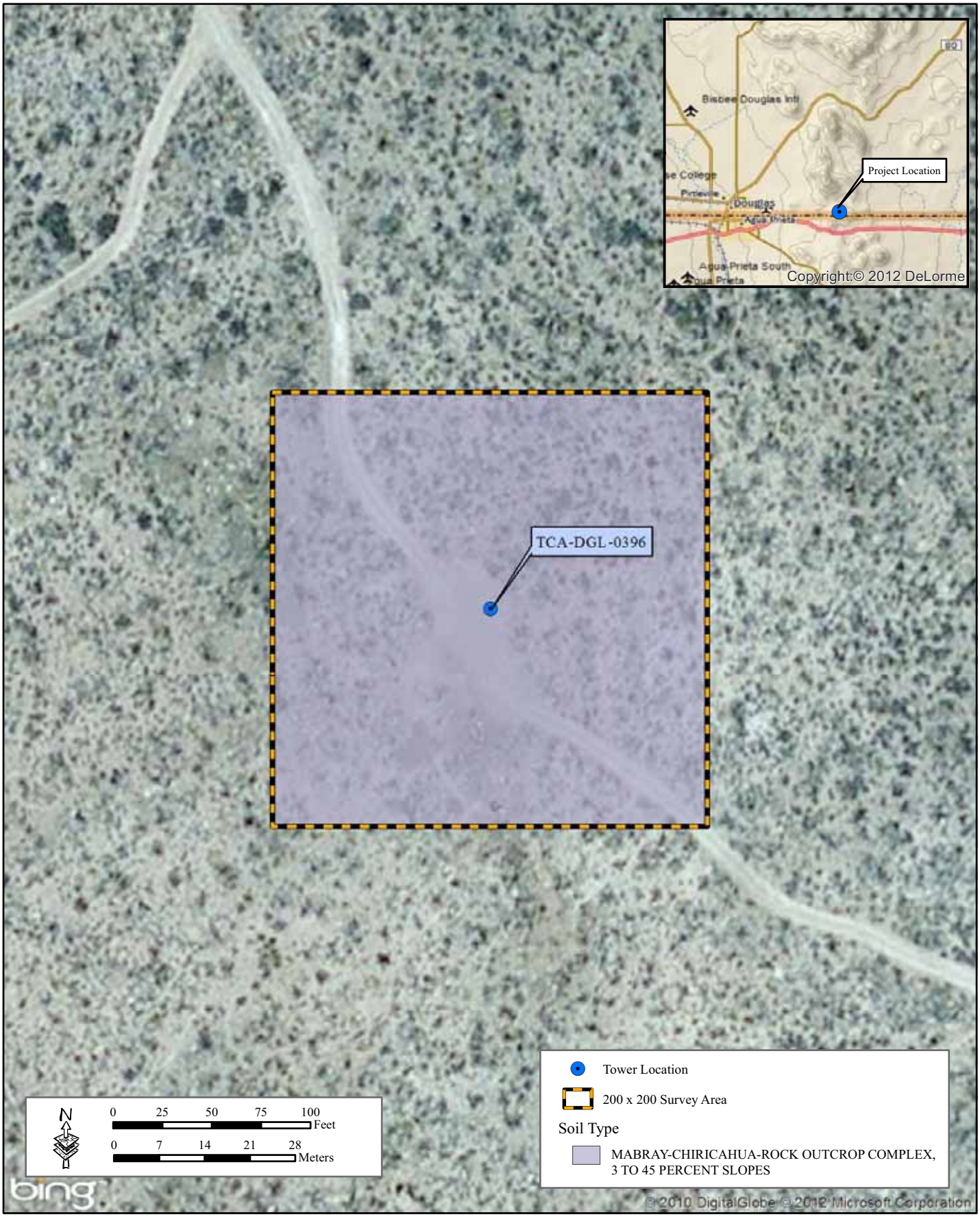
GSRC

February 2012

TCA-DGL-0390 Soil Map

GSRC

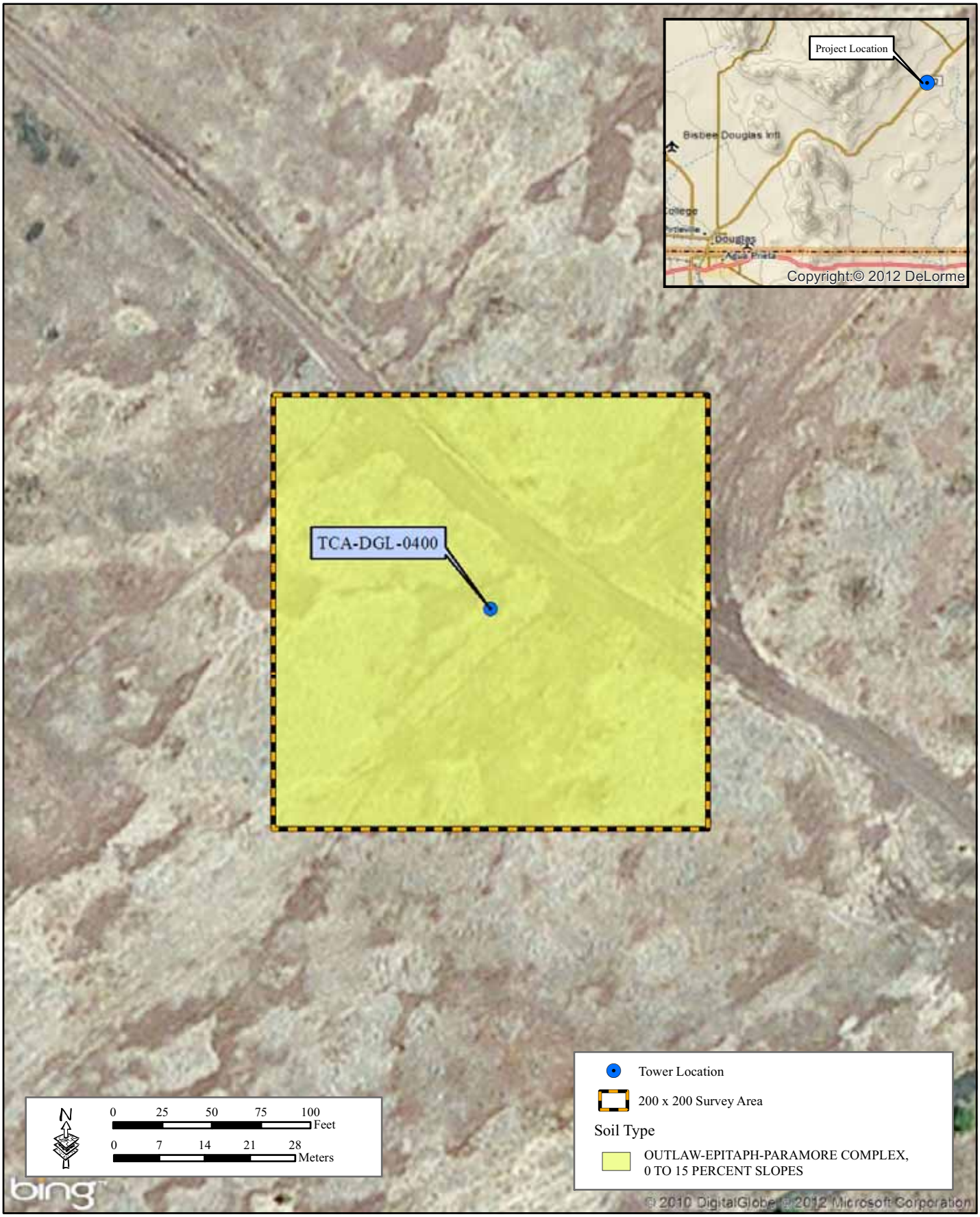
February 2012



TCA-DGL-0396 Soil Map

GSRC

February 2012



TCA-DGL-0400 Soil Map

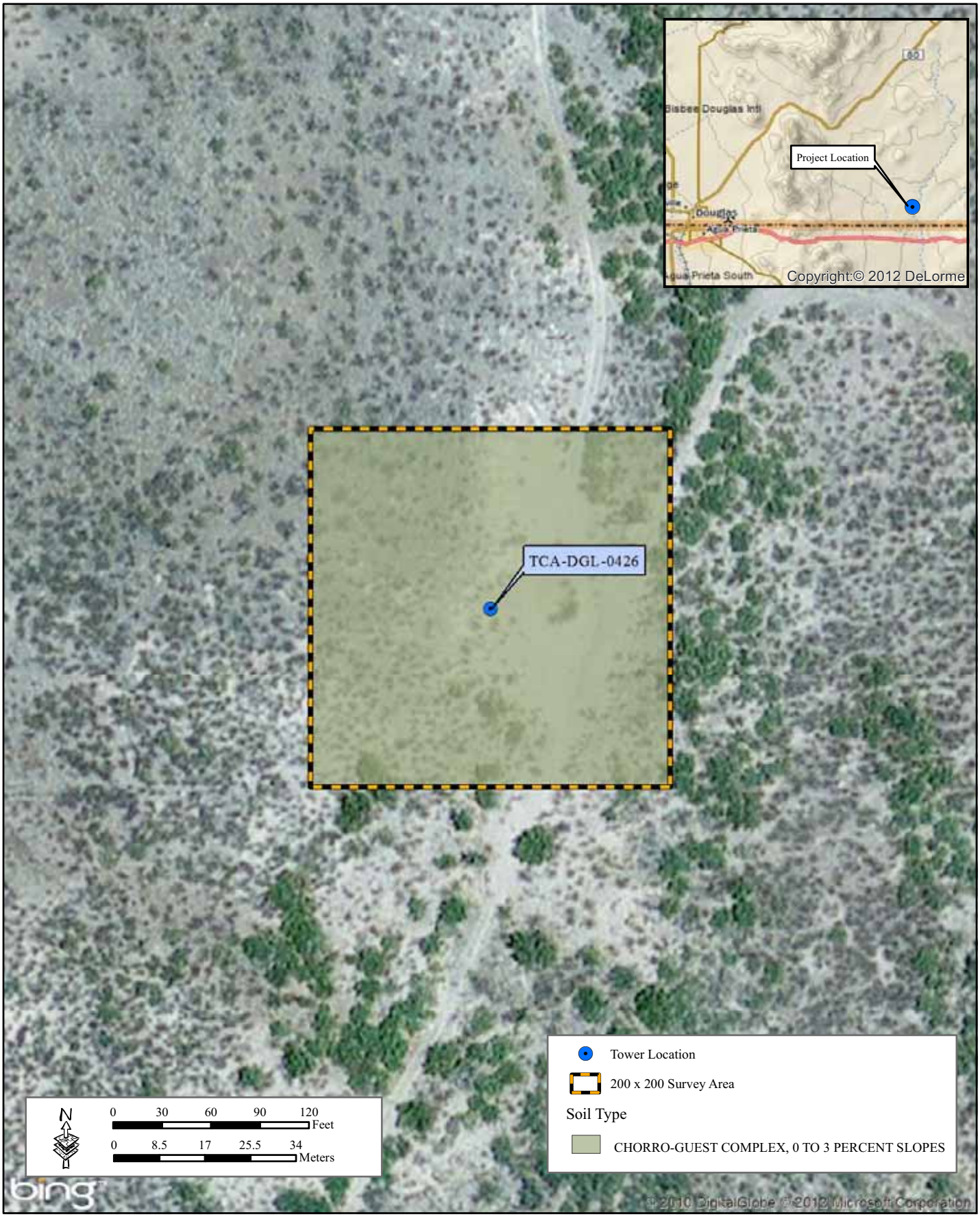
GSRC

February 2012

TCA-DGL-0402 Soil Map

GSRC

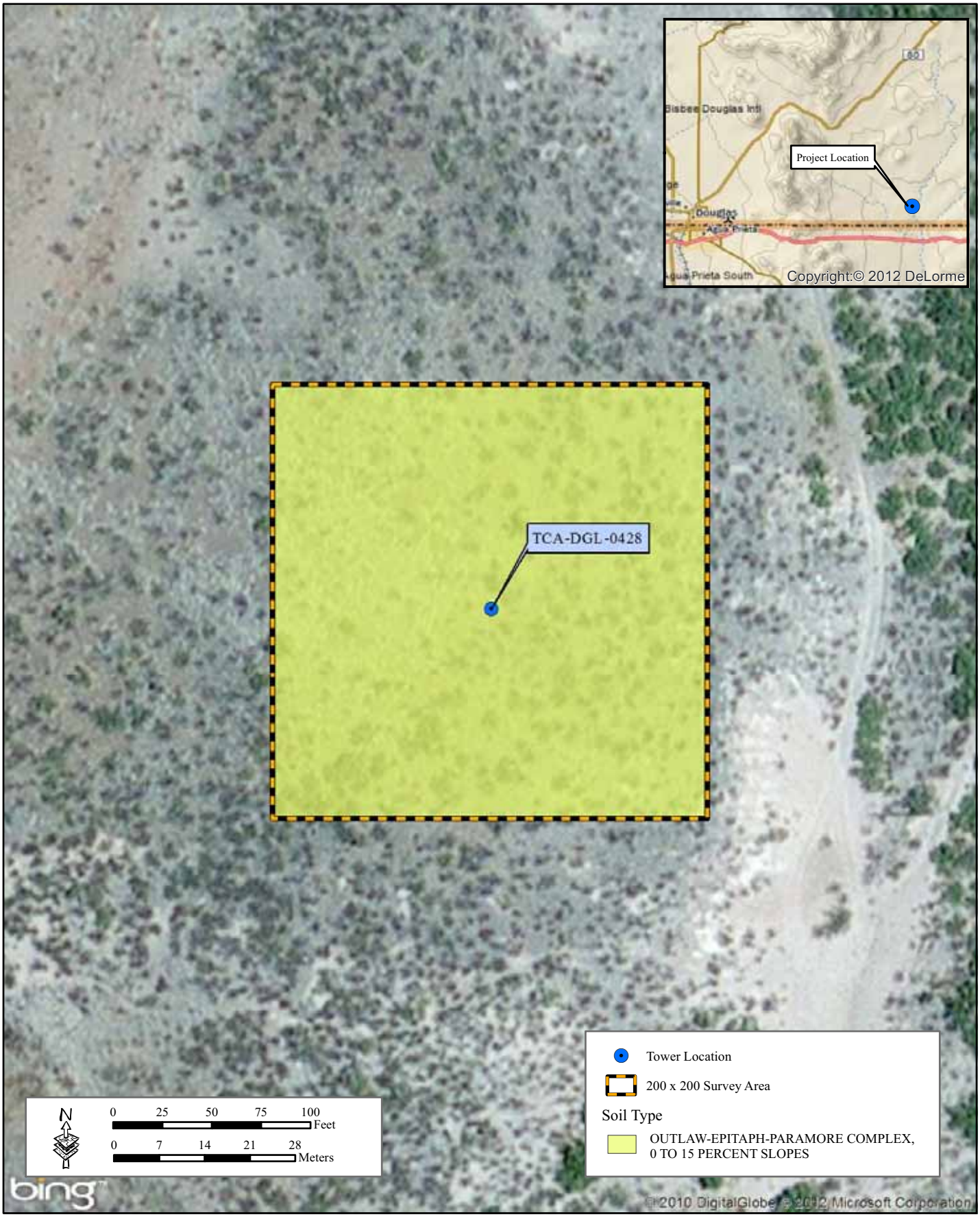
February 2012



TCA-DGL-0426 Soil Map

GSRC

February 2012



TCA-DGL-0428 Soil Map

GSRC

February 2012

APPENDIX D
ARIZONA NATURAL HERITAGE PROGRAM (ANHP)
SPECIAL STATUS SPECIES LIST

Element Status Designations by County, Taxon, Scientific Name
Arizona Game and Fish Department, Heritage Data management System
Updated: July 02, 2012

COUNTY	TAXON	SCIENTIFIC NAME	COMMON NAME	ESA	BLM	CRIT HAB	USFS	NESL	MEXFED	STATE	ELCODE	S RANK	G RANK
Cochise	AMPHIBIAN	Ambystoma mavortium stebbinsi	Sonora Tiger Salamander	LE					PR	WSC	AAAAA01145	S1	G5T1T2
Cochise	AMPHIBIAN	Anaxyrus debilis insidior	Western Green Toad						PR		AAABB01062	S3	G5T5
Cochise	AMPHIBIAN	Craugastor augusti cactorum	Western Barking Frog				S			WSC	AAABD04171	S2	G5T5
Cochise	AMPHIBIAN	Hyla wrightorum (Huachuca/Canelo Pop.)	Arizona Treefrog (Huachuca/Canelo DPS)	C,DPS							AAABC02082	S1	G4T2
Cochise	AMPHIBIAN	Lithobates chiricahuensis	Chiricahua Leopard Frog	LT		Y			A	WSC	AAABH01080	S2	G3
Cochise	AMPHIBIAN	Rana blairi	Plains Leopard Frog		S		S			WSC	AAABH01040	S1	G5
Cochise	AMPHIBIAN	Rana yavapaiensis	Lowland Leopard Frog	SC	S		S		PR	WSC	AAABH01250	S3	G4
Cochise	AMPHIBIAN	Spea bombifrons	Plains Spadefoot								AAABF02010	S4	G5
Cochise	BIRD	Accipiter gentilis	Northern Goshawk	SC	S		S	4	A	WSC	ABNKC12060	S3B	G5
Cochise	BIRD	Amazilia beryllina	Berylline Hummingbird								ABNUC29080	S1	G4
Cochise	BIRD	Amazilia violiceps	Violet-crowned Hummingbird				S			WSC	ABNUC29150	S3	G5
Cochise	BIRD	Ammodramus bairdii	Baird's Sparrow	SC			S			WSC	ABPBXA0010	S2N	G4
Cochise	BIRD	Ammodramus savannarum ammolegus	Arizona grasshopper sparrow		S		S				ABPBXA0021	S1S2	G5TU
Cochise	BIRD	Anas platyrhynchos diazi	Mexican Duck								ABNJB10062	S4	G5T5
Cochise	BIRD	Anthus spragueii	Sprague's Pipit	C						WSC	ABPBM02060	S2N	G4
Cochise	BIRD	Aquila chrysaetos	Golden Eagle		S			3	P		ABNKC22010	S4	G5
Cochise	BIRD	Ardea herodias	Great Blue Heron						|		ABNGA04010	S5	G5
Cochise	BIRD	Athene cunicularia hypugaea	Western Burrowing Owl	SC	S		S	4	A		ABNSB10012	S3	G4T4
Cochise	BIRD	Basileuterus rufifrons	Rufous-capped Warbler								ABPBX21020	SAB	G4G5
Cochise	BIRD	Buteo albonotatus	Zone-tailed Hawk				S				ABNKC19090	S4	G4
Cochise	BIRD	Buteo nitidus maxima	Northern Gray Hawk	SC			S		PR	WSC	ABNKC19011	S3	G5T4Q
Cochise	BIRD	Buteo swainsoni	Swainson's Hawk				S				ABNKC19070	S3	G5
Cochise	BIRD	Buteogallus anthracinus	Common Black-Hawk				S		A	WSC	ABNKC15010	S3	G4G5
Cochise	BIRD	Calothorax lucifer	Lucifer Hummingbird				S				ABNUC44010	S2	G4G5
Cochise	BIRD	Camptostoma imberbe	Northern Beardless-Tyrannulet				S				ABPAE04010	S4	G5
Cochise	BIRD	Caprimulgus ridgwayi	Buff-collared Nightjar				S				ABNTA07060	S2S3	G5
Cochise	BIRD	Catharus ustulatus	Swainson's Thrush								ABPBJ18100	S1	G5
Cochise	BIRD	Chloroceryle americana	Green Kingfisher								ABNXD02020	S2	G5
Cochise	BIRD	Coccothraustes vespertinus	Evening Grosbeak								ABPBY09020	S3	G5
Cochise	BIRD	Coccyzus americanus	Yellow-billed Cuckoo (Western U.S. DPS)	PS:C			S	2		WSC	ABNRB02020	S3	G5
Cochise	BIRD	Dendrocygna autumnalis	Black-bellied Whistling-Duck							WSC	ABNJB01040	S3	G5
Cochise	BIRD	Dumetella carolinensis	Gray Catbird				S			WSC	ABPBK01010	S1	G5
Cochise	BIRD	Elanus leucurus	White-tailed Kite								ABNKC06010	S2B,S2S3N	G5
Cochise	BIRD	Empidonax fulvifrons pygmaeus	Northern Buff-breasted Flycatcher	SC			S			WSC	ABPAE33141	S1	G5T5
Cochise	BIRD	Empidonax traillii extimus	Southwestern Willow Flycatcher	LE		Y		2		WSC	ABPAE33043	S1	G5T1T2
Cochise	BIRD	Euptilotis neoxenus	Eared Quetzal				S		A		ABNWA03010	SAB,S1N	G3
Cochise	BIRD	Falco peregrinus anatum	American Peregrine Falcon	SC	S		S	4	A	WSC	ABNKD06071	S4	G4T4
Cochise	BIRD	Haliaeetus leucocephalus (wintering pop.)	Bald Eagle - Winter Population	SC	S		S	2	P	WSC	ABNKC10015	S4N	G5TNR
Cochise	BIRD	Himantopus mexicanus	Black-necked Stilt								ABNND01010	S2	G5
Cochise	BIRD	Icterus bullockii	Bullock's Oriole								ABPBXB9220	S4BS1N	G5
Cochise	BIRD	Ictinia mississippiensis	Mississippi Kite						A	WSC	ABNKC09010	S3	G5
Cochise	BIRD	Lampornis clemenciae	Blue-throated Hummingbird								ABNUC34040	S4	G5
Cochise	BIRD	Peucaea carpalis	Rufous-winged Sparrow								ABPBX91080	S3	G4
Cochise	BIRD	Plegadis chihi	White-faced Ibis	SC			S				ABNGE02020	S?B,S2S3N	G5
Cochise	BIRD	Polioptila nigriceps	Black-capped Gnatcatcher							WSC	ABPBJ08040	S1	G5
Cochise	BIRD	Recurvirostra americana	American Avocet								ABNND02010	S2	G5
Cochise	BIRD	Sialia sialis fulva	Azure Bluebird								ABPBJ15012	S3	G5TU
Cochise	BIRD	Spinus tristis	American Goldfinch						A		ABPBY06110	S1B,S5N	G5
Cochise	BIRD	Strix occidentalis lucida	Mexican Spotted Owl	LT		Y		3	A	WSC	ABNSB12012	S3S4	G3T3
Cochise	BIRD	Tachybaptus dominicus	Least Grebe								ABNCA01010	SAB	G5
Cochise	BIRD	Trogon elegans	Elegant Trogon							WSC	ABNWA02070	S3	G5
Cochise	BIRD	Tyrannus crassirostris	Thick-billed Kingbird				S			WSC	ABPAE52040	S2	G5
Cochise	BIRD	Tyrannus melancholicus	Tropical Kingbird							WSC	ABPAE52010	S3	G5
Cochise	FISH	Agosia chrysogaster chrysogaster	Gila Longfin Dace	SC	S		S		A		AFCJB37151	S3S4	G4T3T4
Cochise	FISH	Agosia chrysogaster ssp. 1	Yaqui Longfin Dace	SC	S		S		A		AFCJB37152	S1	G4T1
Cochise	FISH	Campostoma ornatum	Mexican Stoneroller	SC			S		P	WSC	AFCJB03030	S1	G3
Cochise	FISH	Catostomus clarkii	Desert Sucker	SC	S		S				AFCJC02040	S3S4	G3G4
Cochise	FISH	Catostomus insignis	Sonora Sucker	SC	S		S		P		AFCJC02100	S3	G3
Cochise	FISH	Cyprinella formosa	Beautiful Shiner	LT		Y			A	WSC	AFCJB49080	S1	G2
Cochise	FISH	Cyprinodon macularius	Desert Pupfish	LE		Y			P	WSC	AFCNB02060	S1	G1
Cochise	FISH	Gila intermedia	Gila Chub	LE		Y			P	WSC	AFCJB13160	S2	G2

COUNTY	TAXON	SCIENTIFIC NAME	COMMON NAME	ESA	BLM	CRIT HAB	USFS	NESL	MEXFED	STATE	ELCODE	S RANK	G RANK
Cochise	FISH	Gila purpurea	Yaqui Chub	LE		Y			P	WSC	AFCJB13140	S1	G1
Cochise	FISH	Ictalurus pricei	Yaqui Catfish	LT		Y			PR	WSC	AFCKA01090	S1	G2
Cochise	FISH	Poeciliopsis occidentalis sonoriensis	Yaqui Topminnow	LE					A	WSC	AFCNC05022	S1	G3T3
Cochise	FISH	Rhinichthys osculus	Speckled Dace	SC	S				P		AFCJB37050	S3S4	G5
Cochise	INVERTEBRATE	Agathymus aryxna	Arizona Giant Skipper								IILEP87080	S5	G4G5
Cochise	INVERTEBRATE	Agathymus evansi	Huachuca Giant-skipper				S				IILEP87110	S3	G2G3
Cochise	INVERTEBRATE	Agathymus neumoegeni	Neumogen's Giant Skipper								IILEP87010	S3	G4G5
Cochise	INVERTEBRATE	Anthocharis cethura	Desert Orangetip								IILEPA6010	S4	G4G5
Cochise	INVERTEBRATE	Cicindela oregona maricopa	Maricopa Tiger Beetle	SC							IICOL02362	S3	G5T3
Cochise	INVERTEBRATE	Discus shimekii	Striate Disc	SC							IMGAS54120	S2?	G5
Cochise	INVERTEBRATE	Ellipsoptera nevadica citata	Chiricahua Tiger Beetle								IICOL02175	S1	G5T3
Cochise	INVERTEBRATE	Erynnis scudderi	Scudder's Dusky Wing								IILEP37070	S1S2	G4G5
Cochise	INVERTEBRATE	Eumorsea balli	Ball's Monkey Grasshopper								IIORT14020	S1	G2G4
Cochise	INVERTEBRATE	Neophasia terlooii	Chiricahua Pine White								IILEP99020	S4	G3G4
Cochise	INVERTEBRATE	Psephenus arizonensis	Arizona Water Penny Beetle	SC							IICOL63010	S2?	G2?
Cochise	INVERTEBRATE	Pyrgulopsis bernardina	San Bernardino Springsnail	LT	S	Y					IMGASJ0950	S1	G1
Cochise	INVERTEBRATE	Pyrgulopsis thompsoni	Huachuca Springsnail	C	S		S				IMGASJ0230	S2	G2
Cochise	INVERTEBRATE	Sonorella neglecta	Portal Talussnail								IMGASC9440	SH	G1
Cochise	INVERTEBRATE	Sphingicampa raspa	A Royal Moth								IILEW0H080	S?	G1G2
Cochise	INVERTEBRATE	Stygobromus arizonensis	Arizona Cave Amphipod	SC	S						ICMAL05360	S1?	G1
Cochise	INVERTEBRATE	Sympetrum signiferum	Spot-winged Meadowhawk								IIODO61150	S2	G2G3
Cochise	MAMMAL	Antrozous pallidus	Pallid Bat								AMACC10010	S4	G5
Cochise	MAMMAL	Baiomys taylori	Northern Pygmy Mouse				S				AMAFF05010	S3	G4G5
Cochise	MAMMAL	Bat Colony									OBATCOLONY	SU	GNR
Cochise	MAMMAL	Bat Foraging Area	High Netting Concentration								OBATFORAG1	SU	GNR
Cochise	MAMMAL	Choeronycteris mexicana	Mexican Long-tongued Bat	SC	S		S		A	WSC	AMACB02010	S3	G4
Cochise	MAMMAL	Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S		S	4			AMACC08014	S3S4	G4T4
Cochise	MAMMAL	Didelphis virginiana californica	Mexican Opossum								AMAAA01011	S3	G5TNR
Cochise	MAMMAL	Eptesicus fuscus	Big Brown Bat								AMACC04010	S4S5	G5
Cochise	MAMMAL	Eumops perotis californicus	Greater Western Bonneted Bat	SC	S		S				AMACD02011	S3	G5T4
Cochise	MAMMAL	Idionycteris phyllotis	Allen's Lappet-browed Bat	SC	S		S				AMACC09010	S2S3	G3G4
Cochise	MAMMAL	Lasionycteris noctivagans	Silver-haired Bat						PR		AMACC02010	S3S4	G5
Cochise	MAMMAL	Lasiurus blossevillii	Western Red Bat				S			WSC	AMACC05060	S3	G5
Cochise	MAMMAL	Lasiurus cinereus	Hoary Bat	No Status							AMACC05030	S4	G5
Cochise	MAMMAL	Lasiurus xanthinus	Western Yellow Bat				S			WSC	AMACC05070	S2S3	G5
Cochise	MAMMAL	Leopardus pardalis	Ocelot	LE					P	WSC	AMAJH05010	S1	G4
Cochise	MAMMAL	Leptonycteris curasoae yerbabuenae	Lesser Long-nosed Bat	LE					|	WSC	AMACB03030	S2S3	G4
Cochise	MAMMAL	Mustela frenata	Long-tailed Weasel								AMAJF02030	S4	G5
Cochise	MAMMAL	Myotis auriculus	Southwestern Myotis								AMACC01080	S3	G5
Cochise	MAMMAL	Myotis californicus	California Myotis								AMACC01120	S4S5	G5
Cochise	MAMMAL	Myotis ciliolabrum	Western Small-footed Myotis	SC							AMACC01140	S3S4	G5
Cochise	MAMMAL	Myotis occultus	Arizona Myotis	SC	S						AMACC01160	S3	G3G4
Cochise	MAMMAL	Myotis thysanodes	Fringed Myotis	SC							AMACC01090	S3S4	G4G5
Cochise	MAMMAL	Myotis velifer	Cave Myotis	SC	S						AMACC01050	S3S4	G5
Cochise	MAMMAL	Myotis volans	Long-legged Myotis	SC							AMACC01110	S3S4	G5
Cochise	MAMMAL	Neotoma mexicana	Mexican Woodrat								AMAFF08070	S5	G5
Cochise	MAMMAL	Notiosorex cockrumi	Cockrum's Desert Shrew				S				AMABA05020	S1	GNR
Cochise	MAMMAL	Nyctinomops femorosaccus	Pocketed Free-tailed Bat				S				AMACD04010	S3	G4
Cochise	MAMMAL	Nyctinomops macrotis	Big Free-tailed Bat	SC							AMACD04020	S3	G5
Cochise	MAMMAL	Panthera onca	Jaguar	LE		P			P	WSC	AMAJH02010	S1	G3
Cochise	MAMMAL	Reithrodontomys fulvescens	Fulvous Harvest Mouse				S				AMAFF02050	S4	G5
Cochise	MAMMAL	Reithrodontomys montanus	Plains Harvest Mouse				S				AMAFF02010	S3	G5
Cochise	MAMMAL	Sciurus nayaritensis chiricahuae	Chiricahua Fox Squirrel	SC			S				AMAFB07051	S2	G5T2
Cochise	MAMMAL	Sigmodon ochrognathus	Yellow-nosed Cotton Rat	SC			S				AMAFF07040	S4	G4G5
Cochise	MAMMAL	Sorex arizonae	Arizona Shrew	SC			S		P	WSC	AMABA01240	S2	G3
Cochise	MAMMAL	Tadarida brasiliensis	Brazilian Free-tailed Bat								AMACD01010	S3S4	G5
Cochise	MAMMAL	Thomomys bottae	Botta's Pocket Gopher								AMAFC01020	S5	G5
Cochise	MAMMAL	Thomomys bottae mearnsi	Mearns' Southern Pocket Gopher	SC			PS				AMAFC0102G	S5	G5T5
Cochise	PLANT	Adiantum pedatum	American Maidenhair								PPADI030B0	S5	G5
Cochise	PLANT	Aeschynomene villosa	Sensitive Joint Vetch								PDFAB04070	S2?	G4
Cochise	PLANT	Ageratina lemmonii	Lemmon's Thorough-wort								PDASTBX0L0	S1	G3?
Cochise	PLANT	Allium plummerae	Plummer Onion							SR	PMLIL021V0	S3	G4
Cochise	PLANT	Allium rhizomatum	Redflower Onion							SR	PMLIL02320	S1	G3?Q
Cochise	PLANT	Ammocodon chenopodioides	Goosefoot Moonpod								PDNYC04010	S1	G5
Cochise	PLANT	Apacheria chiricahuensis	Chiricahua Rock Flower							SR	PDCRO01010	S2	G2

COUNTY	TAXON	SCIENTIFIC NAME	COMMON NAME	ESA	BLM	CRIT HAB	USFS	NESL	MEXFED	STATE	ELCODE	S RANK	G RANK
Cochise	PLANT	Arabis tricornuta	Chiricahua Rock Cress				S				PDBRA06200	S1	G1
Cochise	PLANT	Arceuthobium blumeri	Blumer Dwarf Mistletoe								PDVIS03040	S1?	G3?
Cochise	PLANT	Asclepias lemmonii	Lemmon Milkweed				S				PDASC020Z0	S2	G4?
Cochise	PLANT	Asclepias quinquedentata	Tooth Hood Milkweed								PDASC021L0	S2	G4
Cochise	PLANT	Asplenium dalhousiae	Dalhouse Spleenwort		S						PPASP020A0	S1	GNR
Cochise	PLANT	Asplenium exiguum	Sonoran Spleenwort								PPASP020D0	S1	GU
Cochise	PLANT	Aster pauciflorus	Marsh Alkali Aster								PDASTEL010	S1	G4
Cochise	PLANT	Aster potosinus	Lemmon's Aster								PDASTE8160	S1	G2
Cochise	PLANT	Astragalus cobrensis var. maguirei	Coppermine Milk-vetch	SC			S			SR	PDFAB0F262	S1	G4T2
Cochise	PLANT	Astragalus hypoxylus	Huachuca Milkvetch	SC	S		S			SR	PDFAB0F470	S1	G1
Cochise	PLANT	Atriplex griffithsii	Griffith Saltbush								PDCHE040S0	S2S3	G2G3
Cochise	PLANT	Bouchea prismatica	Prism Bouchea								PDVER04020	S4	G4G5
Cochise	PLANT	Carex chihuahuensis	Chihuahuan Sedge				S				PMCYP032T0	S2S3	G3G4
Cochise	PLANT	Carex meadii	Mead Sedge								PMCYP03870	S3?	G4G5
Cochise	PLANT	Carex ultra	Arizona Giant Sedge		S		S				PMCYP03E50	S2	G3?
Cochise	PLANT	Castilleja lanata	White-woolly Indian-paintbrush								PDSCR0D1L0	S4	G5
Cochise	PLANT	Castilleja nervata	Trans-pecos Indian-paintbrush				S				PDSCR0D270	S1	G3Q
Cochise	PLANT	Castilleja patriotica	Tricolor Indian Paintbrush								PDSCR0D2F0	S3S4	G4
Cochise	PLANT	Centaurea rothrockii	Knap Thistle								PDAST1Y0P0	S3	G4
Cochise	PLANT	Cheilanthes arizonica	Arizona Lip Fern								PPADI09030	S2	G4
Cochise	PLANT	Cleome multicaulis	Playa Spider Plant	SC						SR	PDCPP03080	S1	G2G3
Cochise	PLANT	Coryphantha robbinsorum	Cochise Pincushion Cactus	LT						HS	PDCAC0X0C0	S1	G1
Cochise	PLANT	Coryphantha scheeri var. valida	Slender Needle Corycactus							SR	PDCAC040C4	S3?	G4T4
Cochise	PLANT	Coryphantha sneedii	Carpet Foxtail Cactus							SR	PDCAC0X0E0	S1	G2
Cochise	PLANT	Coursetia glabella	Smooth Baby-bonnets	SC			S				PDFAB140B0	S1	G3?
Cochise	PLANT	Croton fruticulosus	Encinillas								PDEUP0H0F0	S1	G5
Cochise	PLANT	Dichondra argentea	Silver Pony Foot								PDCON08010	S1	G4
Cochise	PLANT	Draba standleyi	Standley Whitlow-grass	SC							PDBRA112G0	S2S3	G2G3
Cochise	PLANT	Echinocereus ledingii	Pinaleno Hedgehog Cactus							SR	PDCAC06066	S4	G4G5T4
Cochise	PLANT	Echinocereus pseudopectinatus	Devil-thorn							SR	PDCAC060P0	S1	G4
Cochise	PLANT	Echinomastus erectocentrus var. erectocentrus	Needle-spined Pineapple Cactus	SC						SR	PDCAC0J0E2	S3	G3T3Q
Cochise	PLANT	Epithelantha micromeris	Button Cactus						PR	SR	PDCAC07020	S1	G4
Cochise	PLANT	Eragrostis obtusiflora	Alkali Lovegrass								PMPOA2K150	S3	G5
Cochise	PLANT	Erigeron arisolius	Arid Throne Fleabane				S				PDAST3M510	S2	G2
Cochise	PLANT	Erigeron arizonicus	Arizona Fleabane								PDAST3M0B0	S3	G3?
Cochise	PLANT	Erigeron kuschei	Chiricahua Fleabane	SC			S			SR	PDAST3M240	S1	G1
Cochise	PLANT	Erigeron lemmonii	Lemmon Fleabane	C						HS	PDAST3M2A0	S1	G1
Cochise	PLANT	Erigeron sceptrifer	Scepterbearing Fleabane								PDAST3M520	S1	GNR
Cochise	PLANT	Erigeron scopulinus	Winn Falls Fleabane								PDAST3M4E0	S1	G3?
Cochise	PLANT	Eriogonum capillare	San Carlos Wild-buckwheat	SC						SR	PDPGN08100	S4	G4
Cochise	PLANT	Eriogonum terrenatum	San Pedro River Wild Buckwheat		S						PDPGN08760	S1	G1
Cochise	PLANT	Eryngium lemmonii	Lemmon Button Snakeroot								PDAPI0Z0J0	S3	G4
Cochise	PLANT	Eryngium sparganophyllum	Ribbonleaf Button Snakeroot								PDAPI0Z0T0	S1	G2
Cochise	PLANT	Euphorbia macropus	Woodland Spurge	SC						SR	PDEUP0Q2U0	S2	G4
Cochise	PLANT	Euphorbia trachysperma	Roughseed Spurge								PDEUP0D2E0	S4	G4
Cochise	PLANT	Fraxinus gooddingii	Goodding Ash								PDOLE04080	S3	G3
Cochise	PLANT	Gentianella wislizeni	Wislizeni Gentian	SC			S			SR	PDGEN07090	S1	G2
Cochise	PLANT	Gentianopsis macrantha	Mexican Fringed Gentian								PDGEN08060	S1S2	G4
Cochise	PLANT	Graptopetalum bartramii	Bartram Stonecrop	SC	S		S			SR	PDCRA06010	S3	G3
Cochise	PLANT	Gutierrezia wrightii	Wright's Snakeweed								PDAST4B0C0	S2S3	G4?
Cochise	PLANT	Hedeoma costatum	Chiricahua Mock Pennyroyal								PDLAM0M0L0	S1	G5
Cochise	PLANT	Hedeoma dentatum	Mock-pennyroyal								PDLAM0M0M0	S3	G3
Cochise	PLANT	Heteranthera limosa	Mud Plantain								PMPON03030	S1	G5
Cochise	PLANT	Heterotheca rutteri	Huachuca Golden Aster	SC	S		S				PDAST4V0J0	S2	G2
Cochise	PLANT	Heuchera glomerulata	Arizona Alum Root				S				PDSAX0E0F0	S3	G3
Cochise	PLANT	Hexalectris revoluta	Chisos Coral-root				S				PMORC1C030	S1	G1G2
Cochise	PLANT	Hexalectris spicata	Crested Coralroot							SR	PMORC1C040	S3S4	G5
Cochise	PLANT	Hexalectris spicata var. arizonica	Arizona Crested coralroot				S			SR	PMORC1C041	S1S2	G5T2T4
Cochise	PLANT	Hexalectris warnockii	Texas Purple Spike	SC	S		S			HS	PMORC1C050	S1	G2G3
Cochise	PLANT	Hieracium pringlei	Pringle Hawkweed	SC							PDAST4W170	S1	G2Q
Cochise	PLANT	Hieracium rusbyi	Rusby Hawkweed				S				PDAST4W1A0	S1	G2?
Cochise	PLANT	Hymenoxys ambigens var. floribunda	A Daisy								PDAST530T2	S2	G3?T2
Cochise	PLANT	Hymenoxys quinquesquamata	Five Scale Bitterweed								PDAST530F0	S3	G3
Cochise	PLANT	Hypoxis mexicana	Yellow Star Grass								PMLIL16030	S1	G5
Cochise	PLANT	Ibervillea tenuisecta	Texas Globe Berry								PDCUC0F020	S1	G4

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Cochise	PLANT	Ipomoea plummerae var. cuneifolia	Huachuca Morning Glory								PDCON0A141	S3	G4T3
Cochise	PLANT	Ipomoea tenuiloba	Trumpet Morning-glory								PDCON0A1H0	S4	G4
Cochise	PLANT	Ipomoea thurberi	Thurber's Morning-glory								PDCON0A1K0	S1	G3
Cochise	PLANT	Justicia sonorae	Palm Canyon Justicia								PDACA0E0K0	SE	G4
Cochise	PLANT	Laennecia eriophylla	Woolly Fleabane								PDASTDL020	S2	G3
Cochise	PLANT	Leibnitzia lyrata	Woodland Sunbonnets								PDASTDM010	S4	G5
Cochise	PLANT	Lilaeopsis schaffneriana var. recurva	Huachuca Water-umbel	LE		Y				HS	PDAPI19051	S2	G4T2
Cochise	PLANT	Lilium parryi	Lemmon Lily	SC			S			SR	PMLIL1A0J0	S2	G3
Cochise	PLANT	Lithospermum viride	Green Puccoon								PDBOR0L0G0	S1	G4
Cochise	PLANT	Lobelia fenestralis	Leafy Lobelia							SR	PDCAM0E0H0	S1	G4
Cochise	PLANT	Lupinus huachucanus	Huachuca Mountain Lupine				S				PDFAB2B210	S2	G2
Cochise	PLANT	Lupinus lemmonii	Lemmon's Lupine				S				PDFAB2B2A0	S1Q	G1Q
Cochise	PLANT	Machaeranthera riparia	Chiricahua Mountain Tansy-aster								PDAST641B0	S1	G4
Cochise	PLANT	Malaxis corymbosa	Madrean Adders Mouth							SR	PMORC1R020	S3S4	G4
Cochise	PLANT	Malaxis porphyrea	Purple Adder's Mouth							SR	PMORC1R0Q0	S2	G4
Cochise	PLANT	Malaxis tenuis	Slender Adders Mouth							SR	PMORC1R090	S1	G4
Cochise	PLANT	Mammillaria viridiflora	Varied Fishhook Cactus							SR	PDCAC0A0D0	S4	G4
Cochise	PLANT	Mammillaria wrightii var. wilcoxii	Wilcox Fishhook Cactus							SR	PDCAC0A0E1	S4	G4T4
Cochise	PLANT	Mentzelia lindheimeri	Lindheimer Stickleaf								PDLOA030U0	S1	G4
Cochise	PLANT	Mentzelia oligosperma	Sparseseed Stickleaf								PDLOA03170	S1	G4
Cochise	PLANT	Metastelma mexicanum	Wiggins Milkweed Vine	SC			S				PDASC050P0	S1S2	G3G4
Cochise	PLANT	Microchloa kunthii	Kunth Grass								PMPOA40010	S1	G5
Cochise	PLANT	Muhlenbergia dubioides	Box Canyon Muhly				S				PMPOA480G0	S1	G1Q
Cochise	PLANT	Nemastylis tenuis	Slender Shell Flower								PMIRI0B040	S1	G5
Cochise	PLANT	Nissolia wislizeni	Arizona Nissolia								PDFAB2Q030	S1	G2G4
Cochise	PLANT	Notholaena aschenborniana	Aschenborn Cloak Fern								PPADI0G020	S1	G4
Cochise	PLANT	Notholaena neglecta	Neglected Cloak Fern								PPADI0G0F0	S1	G4
Cochise	PLANT	Oenothera havardii	Havard Primrose								PDONA0C0K0	S1	G4
Cochise	PLANT	Ophioglossum engelmannii	Engelmann Adders Tongue								PPOPH02040	S1	G5
Cochise	PLANT	Pectis imberbis	Beardless Chinch Weed	SC			S				PDAST6W0A0	S1	G3
Cochise	PLANT	Pediomelum pentaphyllum	Small Indian Breadroot	SC	S		S				PDFAB5L070	S1	G1
Cochise	PLANT	Pellaea ternifolia	Ternate Cliffbrake								PPADI0H0B0	S2	G5
Cochise	PLANT	Peniocereus greggii var. greggii	Night-blooming Cereus	SC					PR	SR	PDCAC0V011	S1	G3G4T2
Cochise	PLANT	Penstemon discolor	Catalina Beardtongue				S			HS	PDSCR1L210	S2	G2
Cochise	PLANT	Penstemon pinifolius	Pineleaf Beardtongue								PDSCR1L500	S3	G3G4
Cochise	PLANT	Penstemon ramosus	Branching Penstemon								PDSCR1L7L0	S1	G3G4Q
Cochise	PLANT	Penstemon stenophyllus	Narrowleaf Beardtongue								PDSCR1L5V0	S3	G4?
Cochise	PLANT	Penstemon superbus	Superb Beardtongue								PDSCR1L630	S2?	G3?
Cochise	PLANT	Perityle cochisensis	Chiricahua Rock Daisy				S			SR	PDAST70080	S1	G1
Cochise	PLANT	Phyllanthus polygonoides	Knotleaf Flower								PDEUP130E0	S2	G5
Cochise	PLANT	Physalis latiphysa	Broad-leaf Ground-cherry				S				PDSOL0S0H0	S1	G1
Cochise	PLANT	Physocarpus monogynus	Mountain Ninebark								PDROS19040	S4	G4
Cochise	PLANT	Pinaropappus roseus	Rock Lettuce								PDAST78020	S2	G5
Cochise	PLANT	Platanthera limosa	Thurber's Bog Orchid							SR	PMORC1Y0G0	S4	G4
Cochise	PLANT	Polemonium flavum	Pinaleno Jacobs Ladder								PDPLM0E0B2	S2	G5T3?
Cochise	PLANT	Polemonium pauciflorum ssp. hinckleyi	Hinckley's Ladder	SC			S				PDPLM0E0G1	S1	G3G5T2Q
Cochise	PLANT	Polygala glochidiata	Spiny Milkwort								PDPGL020J0	S2	G5
Cochise	PLANT	Psacalium decompositum	Sonoran Indian-plantain								PDASTDS010	S2	G4?
Cochise	PLANT	Psilactis gentryi	Mexican Bare-ray-aster				S				PDASTE7010	S1	G3
Cochise	PLANT	Psorothamnus scoparius	Broom Pea								PDFAB3C070	S1	G4
Cochise	PLANT	Pyrrhopappus rothrockii	False Dandelion								PDAST7V050	S3	G4
Cochise	PLANT	Ranunculus arizonicus	Arizona Buttercup								PDRAN0L0B0	S3	G4
Cochise	PLANT	Rhamnus serrata	Serrate Buckbrush								PDRHA0C0D0	S1	G4G5
Cochise	PLANT	Rumex orthoneurus	Blumer's Dock	SC			S			HS	PDPGN0P0Z0	S3	G3
Cochise	PLANT	Sagittaria montevidensis	Long-lobed Arrow-head								PMALI040K0	S1	G4G5
Cochise	PLANT	Salvia amissa	Aravaipa Sage	SC	S		S				PDLAM1S020	S2	G2
Cochise	PLANT	Samolus vagans	Chiricahua Mountain Brookweed				S				PDPRI09040	S2	G2?
Cochise	PLANT	Schiedeella arizonica	Fallen Ladies'-tresses							SR	PMORC67020	S4	GNR
Cochise	PLANT	Senecio carlomasonii	Seemann Groundsel								PDAST8H3W0	S2S3	G4?Q
Cochise	PLANT	Senecio multidentatus var. huachucanus	Huachuca Groundsel				S			HS	PDAST8H411	S2	G2G4T2
Cochise	PLANT	Senecio neomexicanus var. toumeyi	Toumey Groundsel				S				PDAST8H274	S2	G5T2Q
Cochise	PLANT	Senecio parryi	Mountain Groundsel								PDAST8H2B0	S4	G4
Cochise	PLANT	Seymeria bipinnatisecta	Sierra Madre Seymeria								PDSCR1T060	S1	G4G5
Cochise	PLANT	Sisyrinchium cernuum	Nodding Blue-eyed Grass				S				PMIRI0D0B0	S2	G5
Cochise	PLANT	Solanum heterodoxum	Melonleaf Nightshade								PDSOL0Z0X0	S4	G4G5

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Cochise	PLANT	Sophora arizonica	Arizona Necklace								PDFAB3N020	S3	G3
Cochise	PLANT	Spiranthes delitescens	Canelo Hills Ladies'-tresses	LE						HS	PMORC2B140	S1	G1
Cochise	PLANT	Stellaria porsildii	Porsild's Starwort				S				PDCAR0X160	S1	G1
Cochise	PLANT	Stenorrhynchos michuacanum	Michoacan Ladies'-tresses							SR	PMORC2B0L0	S3	G4
Cochise	PLANT	Streptanthus carinatus	Lyre-leaved Twistflower								PDBRA2G0C0	S3S4	G4
Cochise	PLANT	Talinum angustissimum	Yellow Flame Flower								PDPOR08010	S2	G4
Cochise	PLANT	Talinum marginatum	Tepic Flame Flower	SC			S			SR	PDPOR080N0	S1	G2
Cochise	PLANT	Tephrosia thurberi	Thurber Hoary Pea								PDFAB3X0M0	S3	G4G5
Cochise	PLANT	Tillandsia recurvata	Ball Moss								PMBRO090E0	S2	G5
Cochise	PLANT	Tragia amblyodonta	Tombstone Noseburn								PDEUP1D010	S1	G4
Cochise	PLANT	Tragia laciniata	Sonoran Noseburn				S				PDEUP1D060	S3?	G3G4
Cochise	PLANT	Trifolium amabile	Linda Clover								PDFAB40030	S1S2	G4
Cochise	PLANT	Tripsacum lanceolatum	Mexican Gama Grass								PMPOA68030	S2S3	G4
Cochise	PLANT	Vauquelinia californica ssp. pauciflora	Limestone Arizona Rosewood	SC						SR	PDROS1R022	S1	G4T3
Cochise	PLANT	Viola umbraticola	Shade Violet				S				PDVIO042E0	S2?	G3G4
Cochise	PLANT	Xanthisma texanum	Sleepy Daisy								PDAST9Y010	S1	G5
Cochise	PLANT	Zigadenus virescens	Green Death Camas							SR	PMLIL280E0	S4	G4
Cochise	REPTILE	Aspidoscelis arizonae	Arizona Striped Whiptail		S						ARACJ02071	S1S2	G2
Cochise	REPTILE	Aspidoscelis burti stictogrammus	Giant Spotted Whiptail	SC			S				ARACJ02011	S2	G4T4
Cochise	REPTILE	Aspidoscelis exsanguis	Chihuahuan Spotted Whiptail								ARACJ02030	S2	G5
Cochise	REPTILE	Crotalus lepidus klauberi	Banded Rock Rattlesnake						PR		ARADE02051	S3	G5T5
Cochise	REPTILE	Crotalus pricei	Twin-spotted Rattlesnake				S		PR		ARADE02080	S2	G5
Cochise	REPTILE	Crotalus willardi obscurus	New Mexico Ridge-nosed Rattlesnake	LT					PR		ARADE02131	S1	G5T1T2
Cochise	REPTILE	Crotalus willardi willardi	Arizona Ridge-nosed Rattlesnake				S		PR	WSC	ARADE02132	S1S2	G5T4
Cochise	REPTILE	Gopherus agassizii (Sonoran Population)	Sonoran Desert Tortoise	C			S		A	WSC	ARAAF01013	S4	G4T4
Cochise	REPTILE	Gyalopion canum	Chihuahuan Hook-nosed Snake								ARADB16010	S3	G5
Cochise	REPTILE	Heloderma suspectum suspectum	Reticulate Gila Monster				S		A		ARACE01012	S4	G4T4
Cochise	REPTILE	Heterodon kennerlyi	Mexican Hog-nosed Snake						PR		ARADB17012	S3	G5T4
Cochise	REPTILE	Kinosternon flavescens	Yellow Mud Turtle								ARAAE01020	S1	G5
Cochise	REPTILE	Lampropeltis getula nigrita	Western Black Kingsnake						A		ARADB19026	S3	G5T3T4Q
Cochise	REPTILE	Lampropeltis triangulum celaenops	New Mexico Milksnake						A		ARADB19052	S1	G5TNR
Cochise	REPTILE	Phrynosoma cornutum	Texas Horned Lizard	SC					A		ARACF12010	S3S4	G4G5
Cochise	REPTILE	Phrynosoma hernandesi	Greater Short-horned Lizard								ARACF12080	S4	G5
Cochise	REPTILE	Phrynosoma modestum	Round-tailed Horned Lizard								ARACF12050	S3	G5
Cochise	REPTILE	Plestiodon callicephalus	Mountain Skink				S				ARACH01030	S2	G4G5
Cochise	REPTILE	Sceloporus slevini	Slevin's Bunchgrass Lizard		S		S				ARACF14180	S2	G4
Cochise	REPTILE	Sceloporus virgatus	Striped Plateau Lizard								ARACF14150	S3	G4
Cochise	REPTILE	Senticolis triaspis intermedia	Northern Green Ratsnake				S				ARADB44011	S3	G5T4
Cochise	REPTILE	Sistrurus catenatus edwardsii	Desert Massasauga						PR	WSC	ARADE03012	S1	G3G4T3T4Q
Cochise	REPTILE	Tantilla nigriceps	Plains Black-headed Snake								ARADB35050	S2	G5
Cochise	REPTILE	Tantilla wilcoxi	Chihuahuan Black-headed Snake								ARADB35120	S1	G4
Cochise	REPTILE	Tantilla yaquia	Yaqui Black-headed Snake				S				ARADB35130	S2	G4
Cochise	REPTILE	Terrapene ornata luteola	Desert Box Turtle		S				PR		ARAAD08021	S2S3	G5T4
Cochise	REPTILE	Thamnophis eques megalops	Northern Mexican Gartersnake	C			S		A	WSC	ARADB36061	S1	G5T5

APPENDIX E
AIR QUALITY CALCULATIONS

CALCULATION SHEET-COMBUSTION EMISSIONS-CONSTRUCTION

Assumptions for Combustion Emissions					
Type of Construction Equipment	Num. of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Water Truck	1	300	8	240	576000
Diesel Road Compactors	1	100	8	30	24000
Diesel Dump Truck	3	300	8	30	216000
Diesel Excavator	1	300	8	30	72000
Diesel Hole Trenchers	2	175	8	60	168000
Diesel Bore/Drill Rigs	2	300	8	60	288000
Diesel Cement & Mortar Mixers	2	300	8	60	288000
Diesel Cranes	1	175	8	60	84000
Diesel Graders	1	300	8	30	72000
Diesel Tractors/Loaders/Backhoes	1	100	8	30	24000
Diesel Bulldozers	1	300	8	30	72000
Diesel Front-End Loaders	1	300	8	30	72000
Diesel Forklifts	1	100	8	240	192000
Diesel Generator Set	2	40	8	240	153600

Emission Factors							
Type of Construction Equipment	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	PM-10 g/hp-hr	PM-2.5 g/hp-hr	SO2 g/hp-hr	CO2 g/hp-hr
Water Truck	0.440	2.070	5.490	0.410	0.400	0.740	536.000
Diesel Road Compactors	0.370	1.480	4.900	0.340	0.330	0.740	536.200
Diesel Dump Truck	0.440	2.070	5.490	0.410	0.400	0.740	536.000
Diesel Excavator	0.340	1.300	4.600	0.320	0.310	0.740	536.300
Diesel Trenchers	0.510	2.440	5.810	0.460	0.440	0.740	535.800
Diesel Bore/Drill Rigs	0.600	2.290	7.150	0.500	0.490	0.730	529.700
Diesel Cement & Mortar Mixers	0.610	2.320	7.280	0.480	0.470	0.730	529.700
Diesel Cranes	0.440	1.300	5.720	0.340	0.330	0.730	530.200
Diesel Graders	0.350	1.360	4.730	0.330	0.320	0.740	536.300
Diesel Tractors/Loaders/Backhoes	1.850	8.210	7.220	1.370	1.330	0.950	691.100
Diesel Bulldozers	0.360	1.380	4.760	0.330	0.320	0.740	536.300
Diesel Front-End Loaders	0.380	1.550	5.000	0.350	0.340	0.740	536.200
Diesel Forklifts	1.980	7.760	8.560	1.390	1.350	0.950	690.800
Diesel Generator Set	1.210	3.760	5.970	0.730	0.710	0.810	587.300

CALCULATION SHEET-COMBUSTION EMISSIONS-CONSTRUCTION

Emission factors (EF) were generated from the NONROAD2005 model for the 2006 calendar year. The VOC EFs includes exhaust and evaporative emissions. The VOC evaporative components included in the NONROAD2005 model are diurnal, hotsoak, running loss, tank permeation, hose permeation, displacement, and spillage. The construction equipment age distribution in the NONROAD2005 model is based on the population in U.S. for the 2006 calendar year.

Emission Calculations							
Type of Construction Equipment	VOC tons/yr	CO tons/yr	NOx tons/yr	PM-10 tons/yr	PM-2.5 tons/yr	SO2 tons/yr	CO2 tons/yr
Water Truck	0.279	1.314	3.485	0.260	0.254	0.470	340.227
Diesel Road Paver	0.010	0.039	0.130	0.009	0.009	0.020	14.181
Diesel Dump Truck	0.105	0.493	1.307	0.098	0.095	0.176	127.585
Diesel Excavator	0.027	0.103	0.365	0.025	0.025	0.059	42.552
Diesel Hole Cleaners\Trenchers	0.094	0.452	1.076	0.085	0.081	0.137	99.196
Diesel Bore/Drill Rigs	0.190	0.727	2.269	0.159	0.156	0.232	168.114
Diesel Cement & Mortar Mixers	0.194	0.736	2.310	0.152	0.149	0.232	168.114
Diesel Cranes	0.041	0.120	0.529	0.031	0.031	0.068	49.080
Diesel Graders	0.028	0.108	0.375	0.026	0.025	0.059	42.552
Diesel Tractors/Loaders/Backhoes	0.049	0.217	0.191	0.036	0.035	0.025	18.278
Diesel Bulldozers	0.029	0.109	0.378	0.026	0.025	0.059	42.552
Diesel Front-End Loaders	0.030	0.123	0.397	0.028	0.027	0.059	42.544
Diesel Aerial Lifts	0.419	1.642	1.811	0.294	0.286	0.201	146.162
Diesel Generator Set	0.205	0.636	1.011	0.124	0.120	0.137	99.411
Total Emissions	**1.699**	**6.820**	**15.633**	**1.354**	**1.318**	**1.931**	**1400.549**

Conversion factors	
Grams to tons	1.102E-06

CALCULATION SHEET-TRANSPORTATION COMBUSTION EMISSIONS-CONSTRUCTION

Construction Worker Personal Vehicle Commuting to Construction Site-Passenger and Light Duty Trucks									
	Emission Factors		Assumptions				Results by Pollutant		
Pollutants	Passenger Cars g/mile	Pick-up Trucks, SUVs g/mile	Mile/day	Day/yr	Number of cars	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr	Total tns/yr
VOCs	1.36	1.61	60	240	10	10	0.22	0.26	0.47
CO	12.4	15.7	60	240	10	10	1.97	2.49	4.46
NOx	0.95	1.22	60	240	10	10	0.15	0.19	0.34
PM-10	0.0052	0.0065	60	240	10	10	0.00	0.00	0.00
PM 2.5	0.0049	0.006	60	240	10	10	0.00	0.00	0.00
CO2	369	511	60	240	10	10	58.56	81.09	139.65

Heavy Duty Trucks Delivery Supply Trucks to Construction Site									
	Emission Factors		Assumptions				Results by Pollutant		
Pollutants	10,000-19,500 lb Delivery Truck	33,000-60,000 lb semi trailer rig	Mile/day	Day/yr	Number of trucks	Number of trucks	Total Emissions Cars tns/yr	Total Emissions Trucks tns/yr	Total tns/yr
VOCs	0.29	0.55	60	240	2	2	0.01	0.02	0.03
CO	1.32	3.21	60	240	2	2	0.04	0.10	0.14
NOx	4.97	12.6	60	240	2	2	0.16	0.40	0.56
PM-10	0.12	0.33	60	240	2	2	0.00	0.01	0.01
PM 2.5	0.13	0.36	60	240	2	2	0.00	0.01	0.02
CO2	536	536	60	240	2	2	17.01	17.01	34.02
Commute of Staff Maintaining Towers Associated with Proposed Action									
	Emission Factors		Assumptions				Results by Pollutant		
Pollutants	Passenger Cars g/mile	Pick-up Trucks, SUVs g/mile	Mile/day	Day/yr	Number of Cars	Number of trucks	Total Emissions cars tns/yr	Total Emissions Trucks tns/yr	Total tns/yr
VOCs	1.36	1.61	80	272		1	-	0.04	0.04
CO	12.4	15.7	80	272		1	-	0.38	0.38
NOx	0.95	1.22	80	272		1	-	0.03	0.03
PM-10	0.0052	0.0065	80	272		1	-	0.00	0.00
PM 2.5	0.0049	0.006	80	272		1	-	0.00	0.00
CO2	369	511	80	272		1	-	12.25	12.25

Truck Emission Factor Source: MOBILE6.2 USEPA 2005 Emission Facts: Average annual emissions and fuel consumption for gasoline-fueled passenger cars and light trucks. EPA 420-F-05-022 August 2005. Emission rates were generated using MOBILE.6 highway.

CALCULATION SHEET-TRANSPORTATION COMBUSTION EMISSIONS-CONSTRUCTION

Conversion factor:	gms to tons
	0.000001102

Carbon Equivalents	Conversion Factor
N2O or NOx	311
Methane or VOCs	25

Source: EPA 2010 Reference, Tables and Conversions, Inventory of U.S. Greenhouse Gas Emissions and Sinks; http://www.epa.gov/climatechange/emissions/usinventoryreport.html

CARBON EQUIVALENTS

Construction Commuters	Conversion	Emissions CO2 tons/yr	Total CO2
VOCs	25	11.78	
NOx	311	0.34	
Total		12.13	151.77

Delivery Trucks	Conversion	Emissions CO2 tons/yr	Total CO2
VOCs	25	0.67	
NOx	311	173.42	
Total		174.09	208.11

Kirtland AFB staff and Students	Conversion	Emissions CO2 tons/yr	Total CO2
VOCs	25	0.97	
NOx	311	9.10	
Total		10.06	22.32

OPERATION EMISSIONS FROM 25kW PROPANE GENERATOR

Assumptions for Combustion Emissions					
Type of Construction Equipment	Num. of Units	HP Rated	Hrs/day	Days/yr	Total hp-hrs
Propane-off grid	7	30	6	365	459900
Propane-on grid	5	30	5	13	9750

Emission Factors							
Type of Construction Equipment	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	PM-10 g/hp-hr	PM-2.5 g/hp-hr	SO2 g/hp-hr	CO2 g/hp-hr
Propane Generator Set	2.03	31.91	9.93	0.06	0.06	0.01	653.9

Emission factors (EF) were generated from the NONROAD2005 model for the 2006 calendar year. The VOC EFs includes exhaust and evaporative emissions. The VOC evaporative components included in the NONROAD2005 model are diurnal, hotsoak, running loss, tank permeation, hose permeation, displacement, and spillage. The construction equipment age distribution in the NONROAD2005 model is based on the population in U.S. for the 2006 calendar year.

Emission Calculations							
Type of Construction Equipment	VOC tons/yr	CO tons/yr	NOx tons/yr	PM-10 tons/yr	PM-2.5 tons/yr	SO2 tons/yr	CO2 tons/yr
Propoane Generator Set-off grid	1.031	16.175	5.031	0.028	0.028	0.006	331.380
Propoane Generator Set-on grid	0.022	0.343	0.107	0.001	0.001	0.000	7.025
Total Emissions	**1.053**	**16.518**	**5.138**	**0.029**	**0.029**	**0.007**	**338.405**

Conversion factors	
Grams to tons	1.102E-06

CALCULATION SHEET-FUGITIVE DUST-CONSTRUCTION

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19	ton PM10/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM10/acre-month	MRI 1996; EPA 2001; EPA 2006

PM2.5 Emissions

PM2.5 Multiplier	0.10	(10% of PM10 emissions assumed to be PM2.5)	EPA 2001; EPA 2006
Control Efficiency	0.50	(assume 50% control efficiency for PM10 and PM2.5 emissions)	EPA 2001; EPA 2006

Project Assumptions

Construction Area (0.19 ton PM10/acre-month)

			Conversion Factors	
Duration of Construction Project	1.5	months	0.000022957	acres per feet
Length		miles	5280	feet per mile
Length (converted)	0	feet		
Width		feet		
Area	13.00	acres		

Assume that each site is equal to or less than 1 acre and each tower will require 6 weeks of construction

Road Construction & Improvements

Duration of Construction Project	3	months
Length	4	miles
Length (converted)	21120	feet
Width	16	feet
Area	7.76	acres

	Project Emissions (tons/year)			
	PM10 uncontrolled	PM10 controlled	PM2.5 uncontrolled	PM2.5 controlled
Construction Area (0.19 ton PM10/ac	3.71	1.85	0.37	0.19
Road Construction & Improvements	3.26	1.63	0.33	0.16
Total	**6.96**	**3.48**	**0.70**	**0.35**

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999.* EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants.*Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM10/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM10/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions from Construction Operations, calculated the 0.19 ton PM10/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM10/acre-month) and 75% of the average emission factor (0.11 ton PM10/acre-month).

The 0.19 ton PM10/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM10/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particle (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District and the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM10 and PM2.5 in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM10/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM10/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

PM2.5 Multiplier **0.10**

PM2.5 emissions are estimated by applying a particle size multiplier of 0.10 to PM10 emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM10 and PM2.5 **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM10 and PM2.5 in PM nonattainment areas. Wetting controls will be applied during project construction (EPA 2006).

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999.* EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

CALCULATION SHEET-SUMMARY OF EMISSIONS

Proposed Action Construction Emissions for Criteria Pollutants (tons per year)									
Emission Source	VOC	CO	NOx	PM-10	PM-2.5	**SO2**	**CO2**	**CO2 Equivalents**	**Total CO2**
Combustion Emissions	1.70	6.82	15.63	1.35	1.32	1.93	1400.55	4904.45	6305.00
Construction Site-Fugitive PM-10	NA	NA	NA	3.48	0.35	NA	NA	NA	NA
Construction Workers Commuter & Trucking	0.50	4.60	0.90	0.02	0.02	NA	139.65	292.97	432.61
Total emissions-CONSTRUCTION	**2.20**	**11.42**	**16.54**	**4.85**	**1.68**	**1.93**	**1,540**	**5,197**	**6,738**
Propane Generators	1.05	16.52	5.14	0.03	0.03	0.01	338.41	1,624	1,963
Maintenance commute	0.04	0.38	0.03	0.00	0.00	NA	12.25	10.06	22.32
Total Emissions-OPERATIONS	**1.09**	**16.89**	**5.17**	**0.03**	**0.03**	**0.01**	**350.66**	**1,634**	**1,985**
De minimis Thresholds	100	100	100	100	100	100			27,557

1. Cochise County is in non-attainment for PM-10.

Carbon Equivalents	Conversion Factor
N2O or NOx	311
Methane or VOCs	25

Source: EPA 2010 Reference, Tables and Conversions, Inventory of U.S. Greenhouse Gas Emissions and Sinks; http://www.epa.gov/climatechange/emissions/usinventoryreport.html