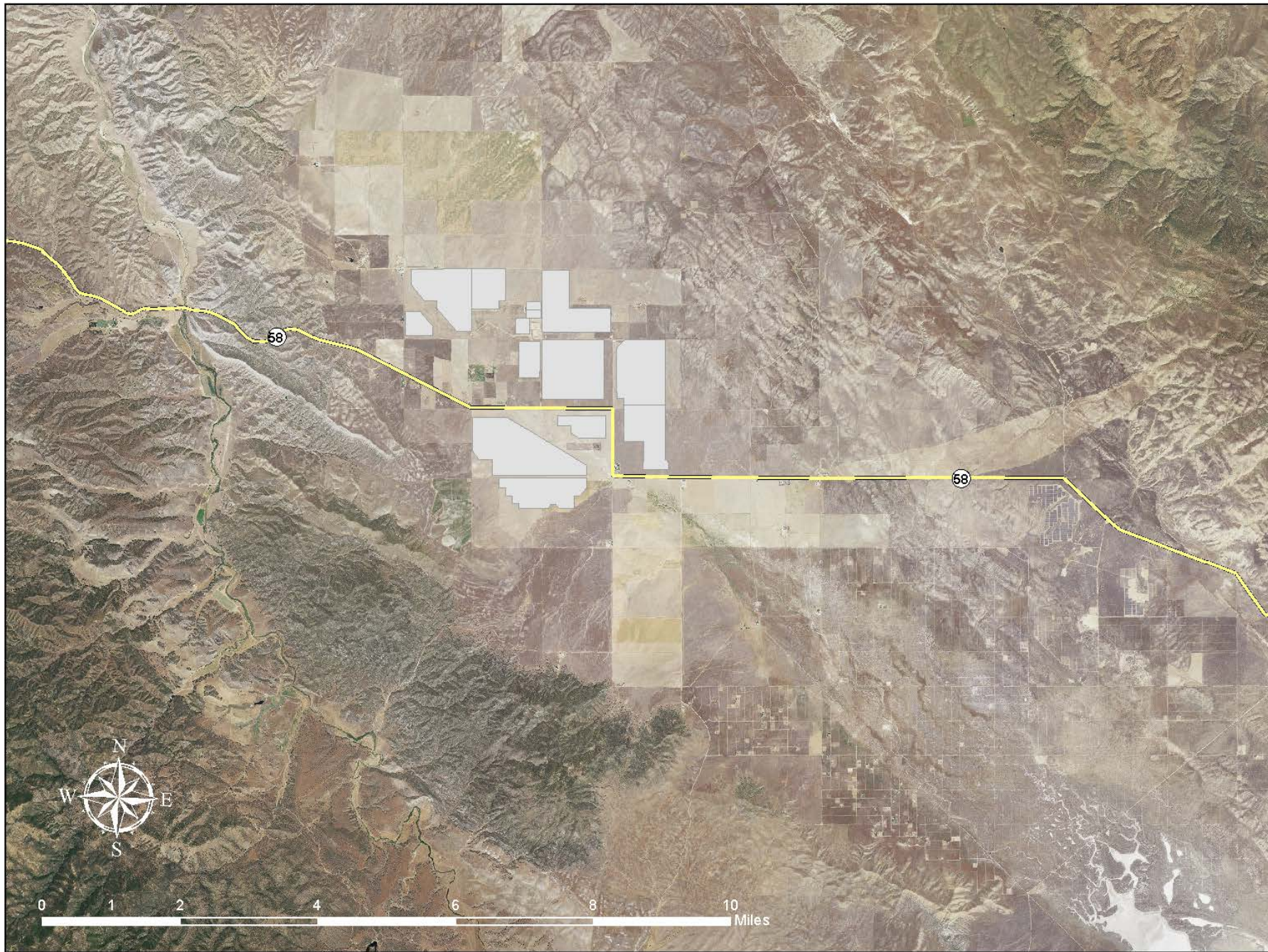


San Joaquin Kit Fox Presence On and Near Topaz Solar Farms, San Luis Obispo County

Daniel E. Meade, Jason Dart, Christine Van Horn Job,
Brian Cypher, Bill Vanherweg, Jacqueline Tilligkeit







2009

April

Rain Year
6.75"



Conditions on planted
fields, natural grassland,
fallow agriculture field





April 28, 2009





Scat Detection Dog Surveys

2013 Study Areas
and Survey Transects

Working Dogs for
Conservation Foundation
Deborah A. Smith, Ph.D.

Prepared for

Topaz Solar Farms, LLC

10400 Helios Way
Santa Margarita, CA 93453

- Perimeter Fence Gates
- ▭ Project Study Area
- ▨ Excluded Area
- Transect
- Fenced Work Areas
- Operations and Maintenance
- Commissioning
- Stewardship Land
- Mitigation Land

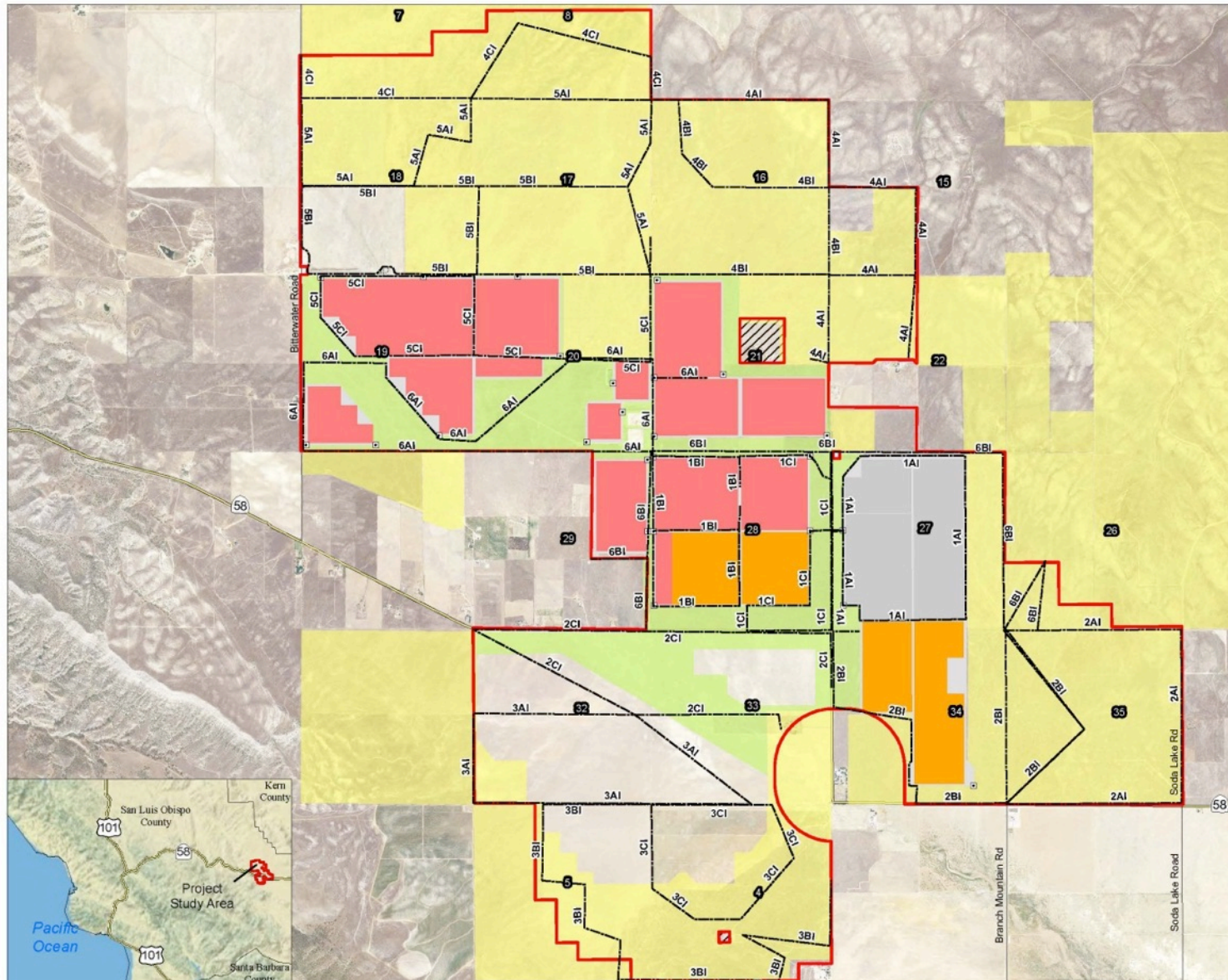


0 0.25 0.5 1
Mile

2013 San Luis Obispo County
NAIP Aerial Photography
Map Updated: November 26, 2013, 09:27 AM



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Paso Robles, CA 93446



KitFox Individuals

2009

Legend

 Project Study Area

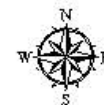
 Excluded Area

Kit Fox Individual

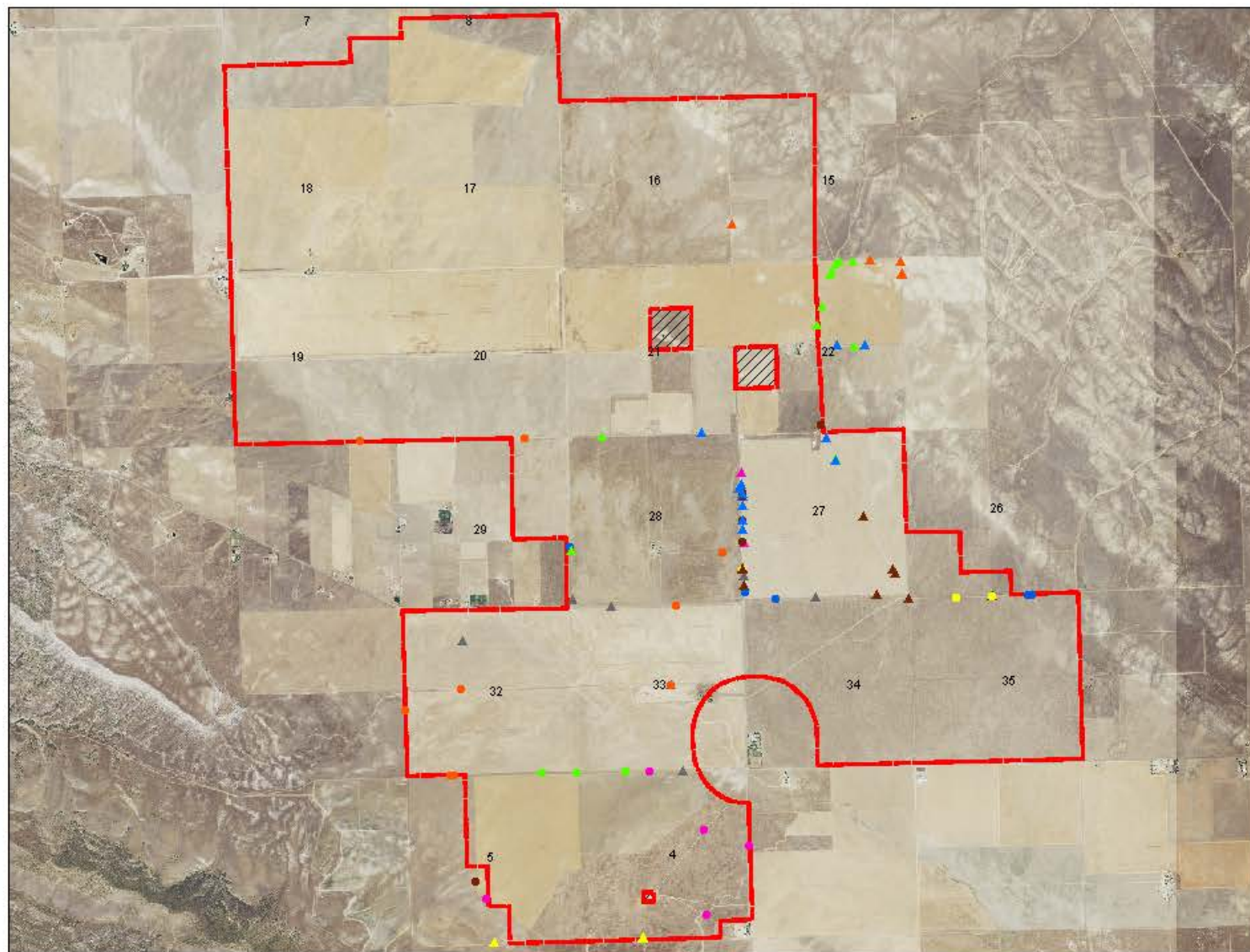
-  1
-  2
-  3
-  4
-  5
-  6
-  7
-  8
-  9
-  10
-  11
-  12
-  13



13



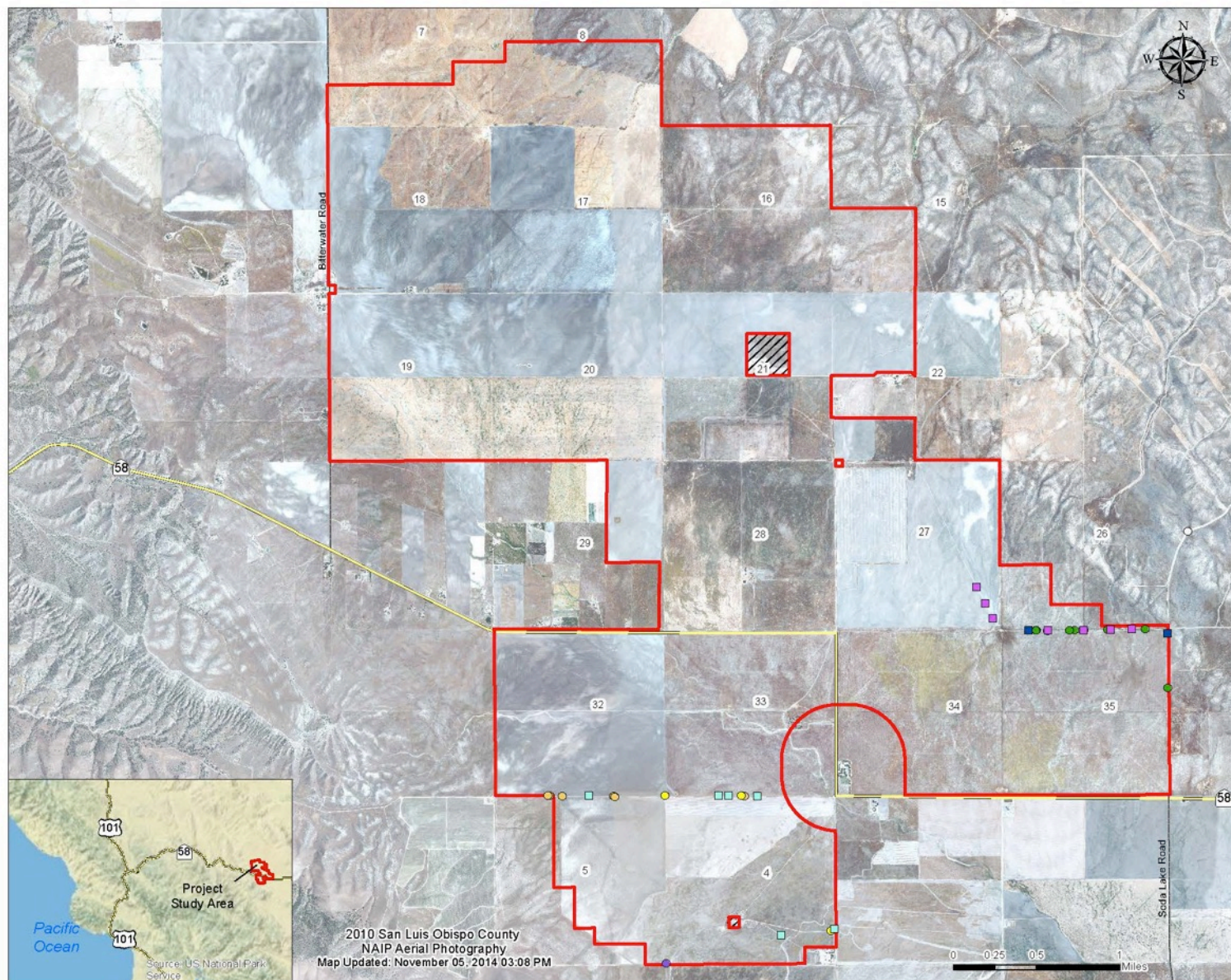
0 0.25 0.5 1 Miles



February 2, 2010

Rain Year
14.16"





Scat Detection Dog Surveys

2010 Fresh Scat
Genetic Results

Working Dogs for
Conservation Foundation
Deborah A. Smith, Ph.D.

Prepared for



Topaz Solar Farms, LLC
10400 Helios Way
Santa Margarita, CA 93453

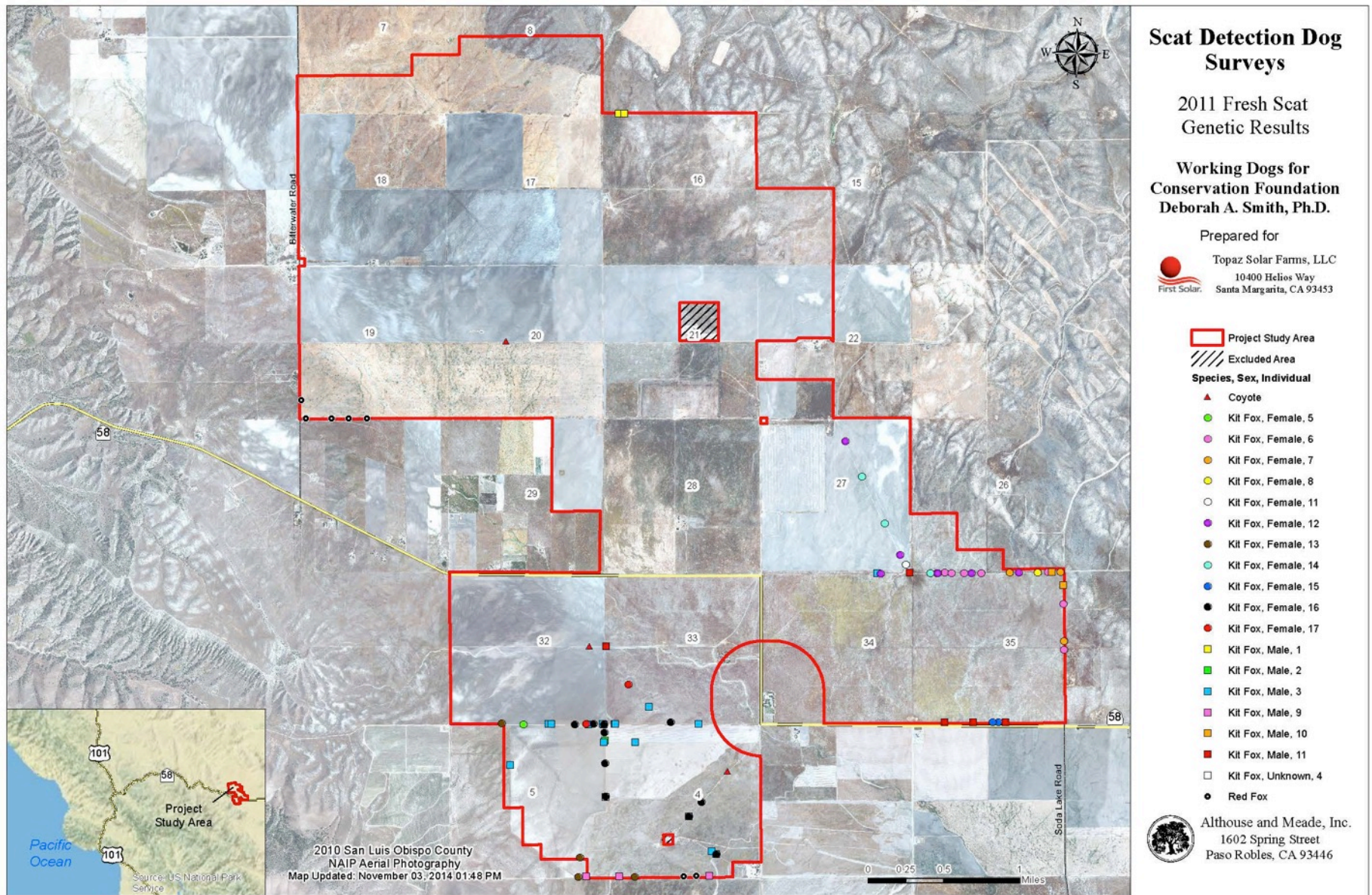
Species, Sex, Individual

- Kit Fox, Male, 2
- Kit Fox, Male, 28
- Kit Fox, Male, 29
- Kit Fox, Female, 1
- Kit Fox, Female, 20
- Kit Fox, Female, 21
- Kit Fox, Female, 24

- Project Study Area
- Excluded Area



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NON-INVASIVE BASELINE GENETIC MONITORING OF THE ENDANGERED SAN JOAQUIN KIT FOX ON A PHOTOVOLTAIC SOLAR FACILITY

Wilbert, Woollett, Whitelaw, Dart, Hoyt, Galen, Ralls, Meade, Maldonado

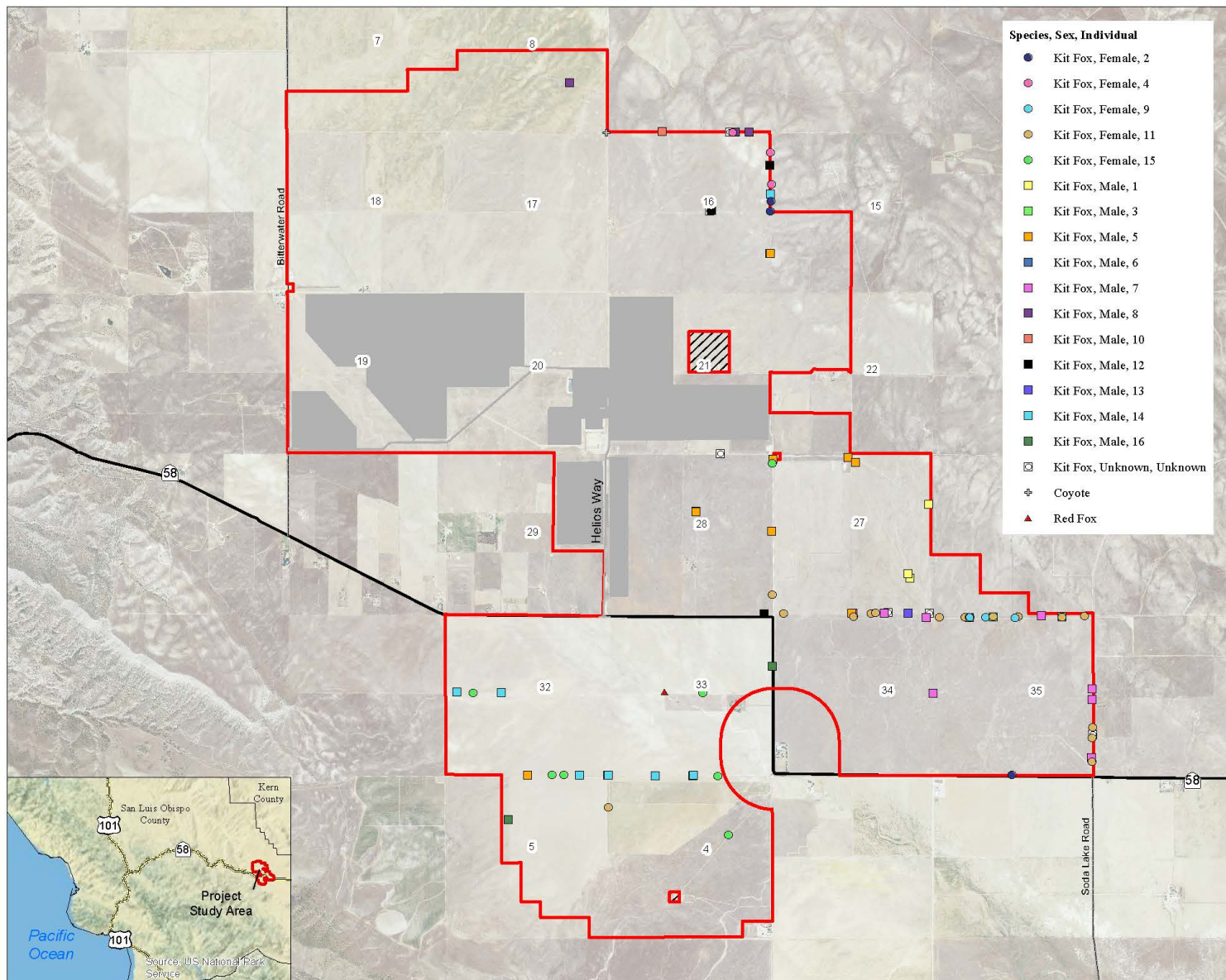
Endangered Species Research – accepted





Other foxes





Scat Detection Dog Surveys

2012 Fresh Scat Genetic Results

Prepared for
Topaz Solar Farms, LLC
 10400 Helios Way
 Santa Margarita, CA 93453

Legend

- Project Work Area
- Project Study Area
- Excluded Area



2012 San Luis Obispo County
 NAIP Aerial Photography
 Map Updated: August 08, 2014 12:04 PM



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 1602 Spring Street
 Paso Robles, CA 93446

Scat Detection Dog Surveys

2013 Fresh Scat Locations

Working Dogs for
Conservation Foundation
Deborah A. Smith, Ph.D.

Prepared for

Topaz Solar Farms, LLC

10400 Helios Way
Santa Margarita, CA 93453

-  Project Study Area
-  Topaz Solar Farm
-  Excluded Area
-  Fresh SJKF Scat

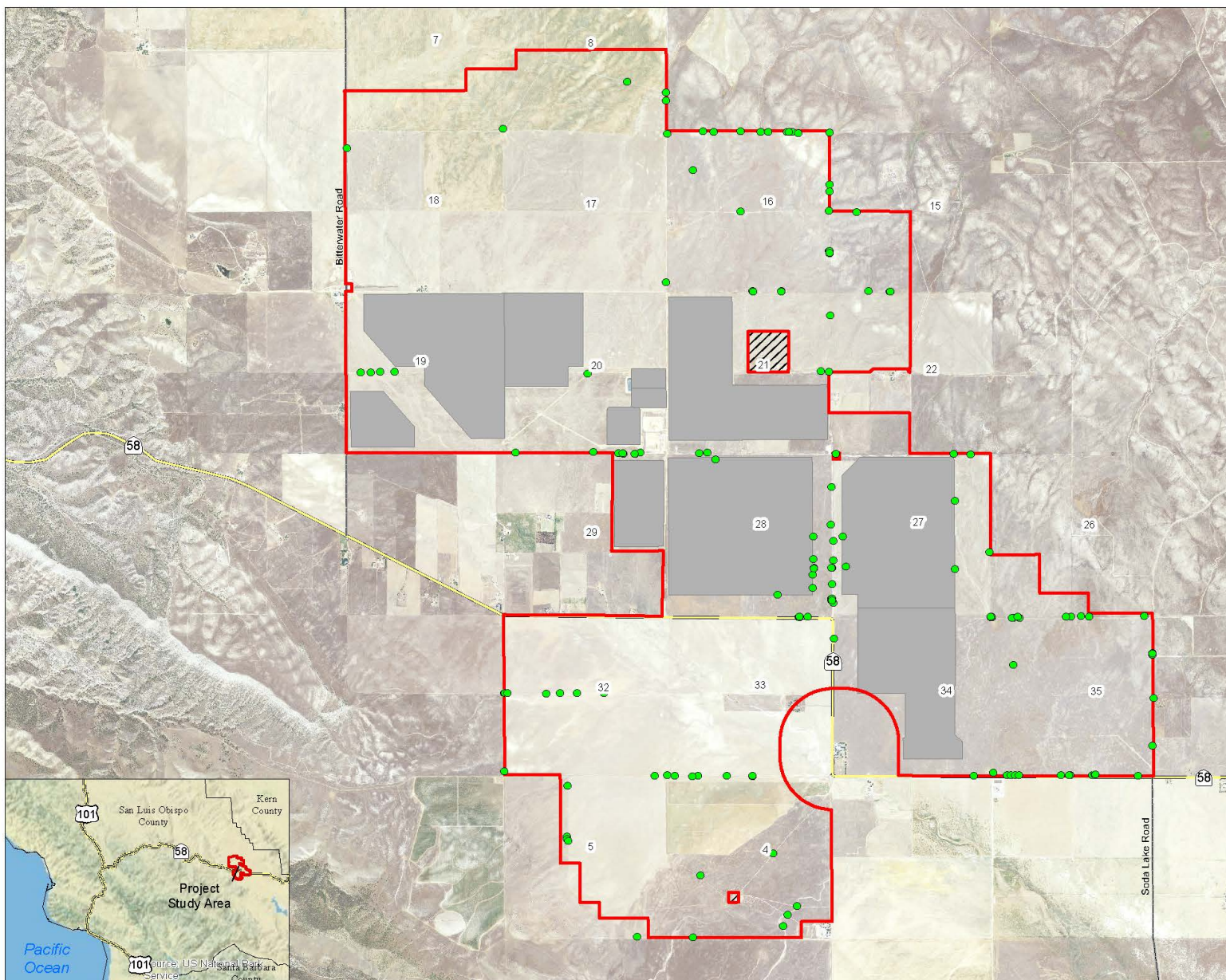


0 0.25 0.5 1
Mile

2012 San Luis Obispo County
NAIP Aerial Photography
Map Updated: March 19, 2014, 10:04 AM

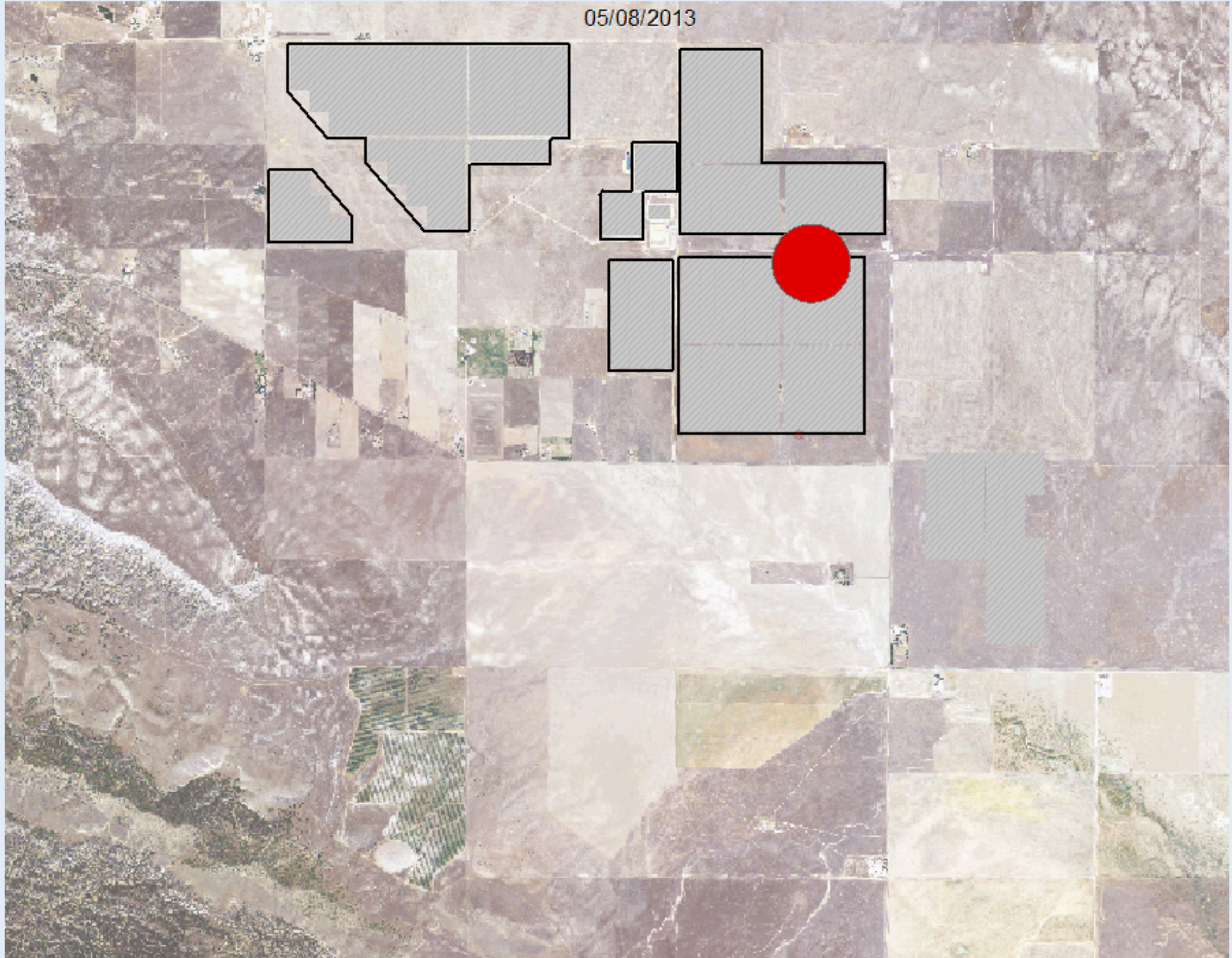


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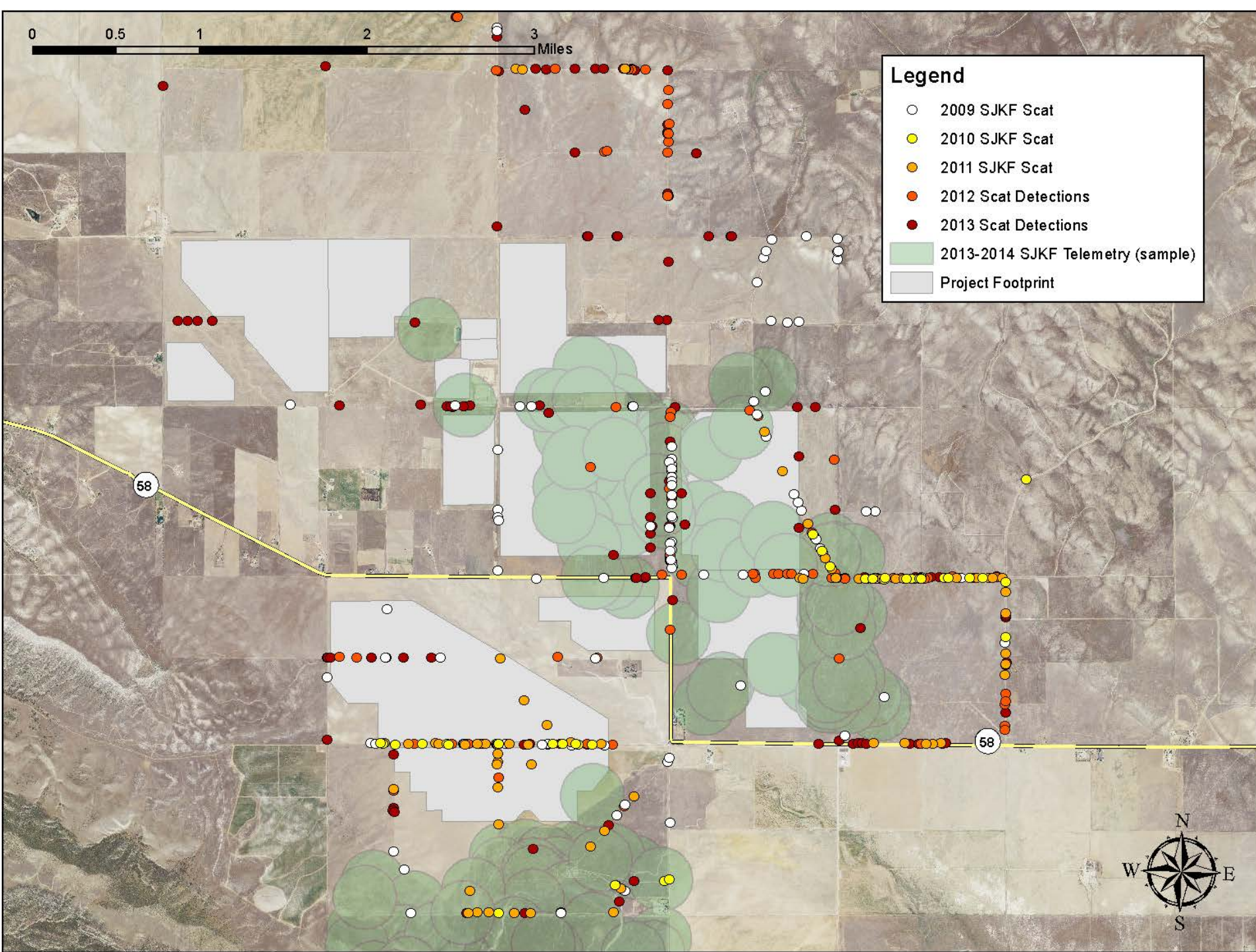
05/08/2013



0 0.5 1 2 3 Miles

Legend

- 2009 SJKF Scat
- 2010 SJKF Scat
- 2011 SJKF Scat
- 2012 Scat Detections
- 2013 Scat Detections
- 2013-2014 SJKF Telemetry (sample)
- Project Footprint





October 21, 2014



0 0.5 1 2 3 Miles

Dens

Legend

San Joaquin Kit Fox Dens

- ▲ Artificial
- × Excavated
- Known
- One-Way Door
- Natal
- Post-Natal
- Project Footprint









April 23, 2014



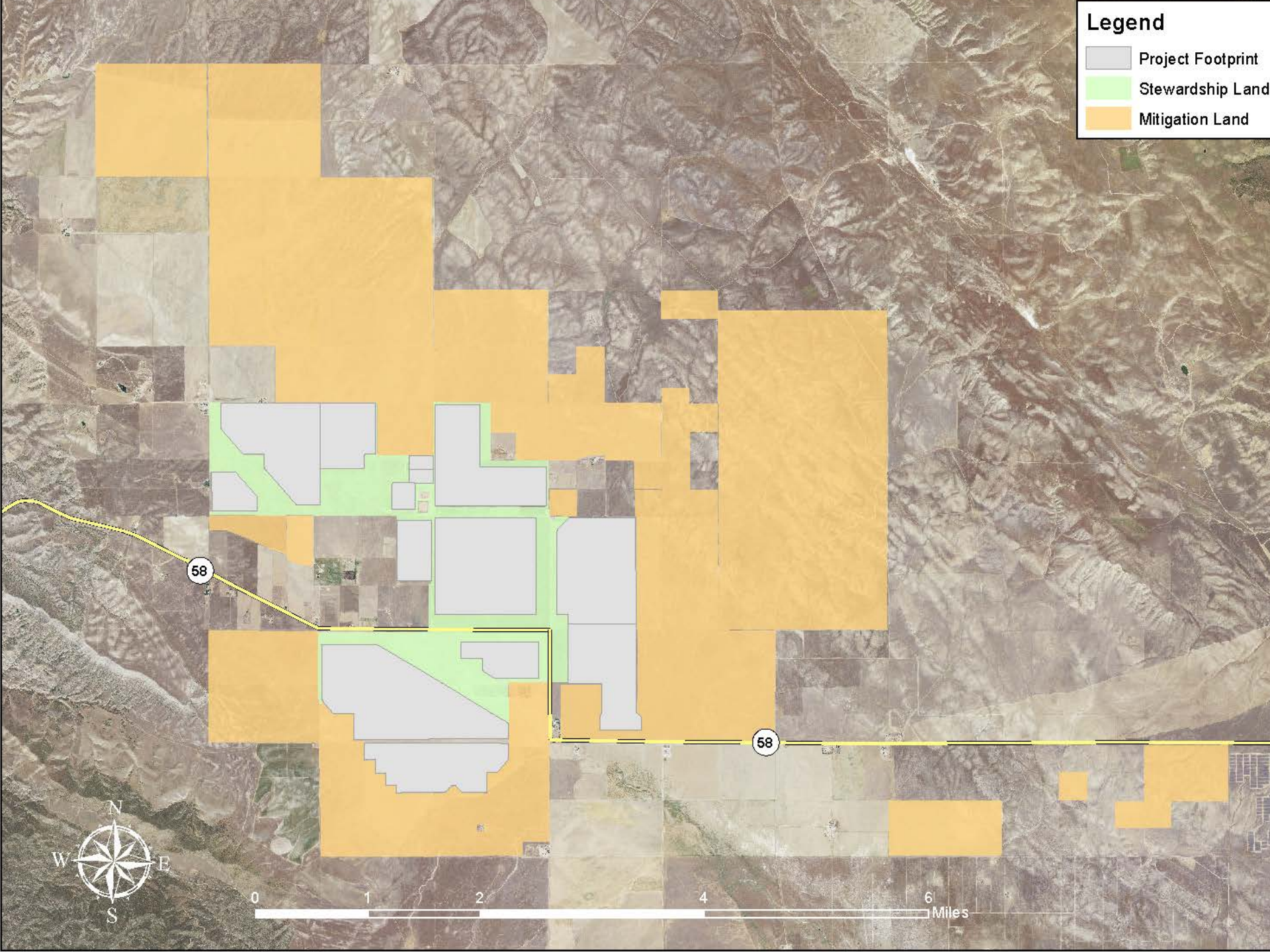






Legend

- Project Footprint
- Stewardship Land
- Mitigation Land



SJKF Detections

Radio Collar

April 22, 2013 to October 29, 2014

555 to 183 days

Attempted detections = 8,758

Detections = 4,214

Fox #	Collar date	Days Detected	Detections
M 6697	April 22, 2013	81%	921
F 6709	Aug. 24, 2013	82%	749
M 6702	Aug. 31, 2013	81%	713
F 6571	Nov. 24, 2013	29%	136
F 6706	Nov. 24, 2013	85%	618
F 6572*	Nov. 26, 2013	69%	191
M 6617	Nov. 27, 2013	72%	359
M 6618	Jan. 9, 2014	38%	126
F 6619	Jan. 10, 2014	87%	401
*deceased 5-27-14			4214

SJKF Habitat Utilization

4,214 detections

	Within Arrays	Arrays and 1/4 Mile of Project	Further than 1/4 Mile From Project	Unknown Distance From Project
M6697	52%	99%	0%	1%
F6709	39%	97%	0%	2%
M6702	14%	69%	7%	25%
F6706	13%	65%	10%	25%
M6617	1%	5%	86%	10%
F6571	0%	0%	76%	24%
F6572*	0%	8%	81%	11%
F6619	0%	2%	83%	15%
M6618	0%	0%	91%	9%
M6705	0%	0%	100%	0%
Total	23%	61%	27%	12%



Two foxes M6697 and F6709 present under these pallets



MY-074
NT/DB
101012/NT3/011



Objectives

- Foxes utilizing habitat in the Solar Farm
- Tracking foxes when plant is operational
- Protect and increase population

Opportunities

- GPS collaring studies
- Population scat surveys will continue for 5 years.
- Use onsite will be documented



Summary

- Detection locations (scat) expanded from 2011 to 2014.
- Kit foxes are using Topaz Solar Farms
- Two kit fox pairs include array fields in their home range.
- GPS collars will provide more accurate utilization information.

Acknowledgements

- Althouse and Meade, Inc. - Jeremy Pohlman, Jessie Henderson-McBean, Monica Brick, Dustin Groh, Will Knowlton, Luke Knox, Greg Salas, Alex Stewart, Kyle Weichert, Ryan Russell
- Tom Olson, Randi McCormick, Adam Grimes, Marcia Wolfe, Rick Perry
- Working Dogs for Conservation, Debbie Woollett, Alice Whitelaw, Ngaio Richards
- Tammy Wilbert, Jesus Maldonado – Smithsonian Conservation Biology Institute, Center for Conservation and Evolutionary Genetics



SJKF Detections

April 22, 2013 to March 9, 2014

Kit Fox	Array Areas	Within ¼ mile
M 6697	78%	99%
F 6709	53%	100%
M 6702	22%	84%
F 6571	2%	2%
F 6706	26%	84%
F 6572	1%	84%
M 6617	3%	9%
M 6618	0%	63%
F 6619	1%	1%