

# **SURVEYS and RESULTS**

- **CLEARANCE SURVEYS**
- **FWS PRE-PROJECT PROTOCOL SURVEYS**
- **DATA INTERPRETATION**
- **RESPONSIBILITIES**

# CLEARANCE

A photograph of a desert landscape featuring several Joshua trees in the foreground and middle ground. In the background, there are dark, silhouetted mountains. The sky is a deep blue with several bright white lightning bolts visible. The overall scene is dramatic and serves as a background for the text.

**Objective: To find and remove all desert tortoises  
and their eggs**

**[www.fws.gov.ventura/speciesinfo/protocols/guidelines](http://www.fws.gov.ventura/speciesinfo/protocols/guidelines)**

# Authorized Biologist

## Demonstrated knowledge, experience and skills

- Conduct clearance surveys
- Conduct presence/absence surveys
- Conduct other activities for permit

## Overall responsibility for the outcome of all project-related desert tortoise activities

- Approve, train, and oversee desert tortoise monitors
- Ensure implementation of tortoise and habitat protection measures

# Desert Tortoise Monitor

Monitor project activities

Record data

Move tortoises out of harm's way

Assist Authorized Biologist

\*\*\*NOT APPROVED to conduct clearance surveys,  
EXCEPT under direct supervision of Authorized Biologist























## TRANSECT WIDTH

**FWS (2009): 5 meters**

### **BASIS:**

**LDS (2004+2005)<sup>1</sup>: 227 live tortoises detected at 0-2m**

**177 (78%) - 2 - 4 m**

**138 (61%) - 4 - 6 m**

**109 (48%) - 6 - 8 m**

**Fort Irwin (2001+2002) and MCAGCC (2008 +2009)<sup>2</sup>:**

**4420 adult-sized burrows**

**Statistically reliably detected at 3-6.5 m:  $\bar{x}=5.2$  m**

- **Woodman (2004 and 2005)**
- **Karl (2002a, b, 2008, 2009)**







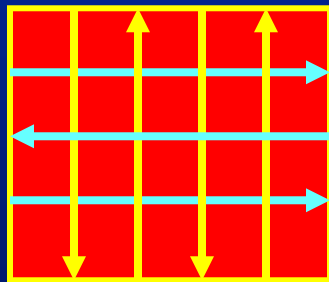
- **NUMBER OF PASSES**

$\geq 2$

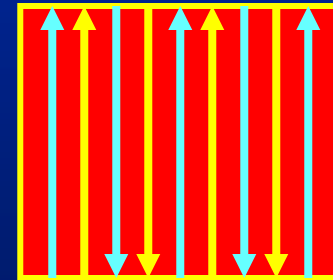
More if tortoises are found on the second or third pass

- **PASS CONFIGURATION**

**Perpendicular**

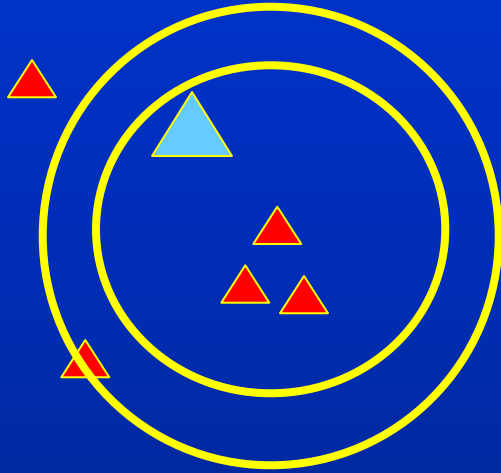


**Offset**





- **CONCENTRATED SEARCHES**



- **“RAT-HOLING”**





## **SURVEY TIMING:**

**“When tortoises are most active”:**

**April-May**

**September-October**



# **2010 FWS PRE-PROJECT SURVEY PROTOCOL**

## **ENDANGERED SPECIES ACT COMPLIANCE**

- **DENSITY AND/OR ABUNDANCE OF TORTOISES AFFECTED**
- **POPULATION AND SPECIES IMPACTS**
- **MITIGATION/COMPENSATION PROGRAMS**
- **APPROPRIATE LEVEL OF CONSULTATION**
- **STANDARDIZED METHOD OF GATHERING DATA AND REPORTING RESULTS**

**PRE-PROJECT PROTOCOL SURVEYS ARE REQUIRED:**

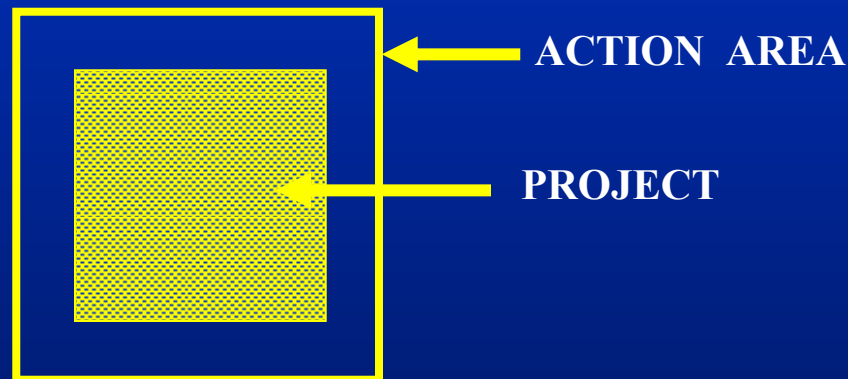
**When desert tortoises are possible (R.U., range, habitat)**



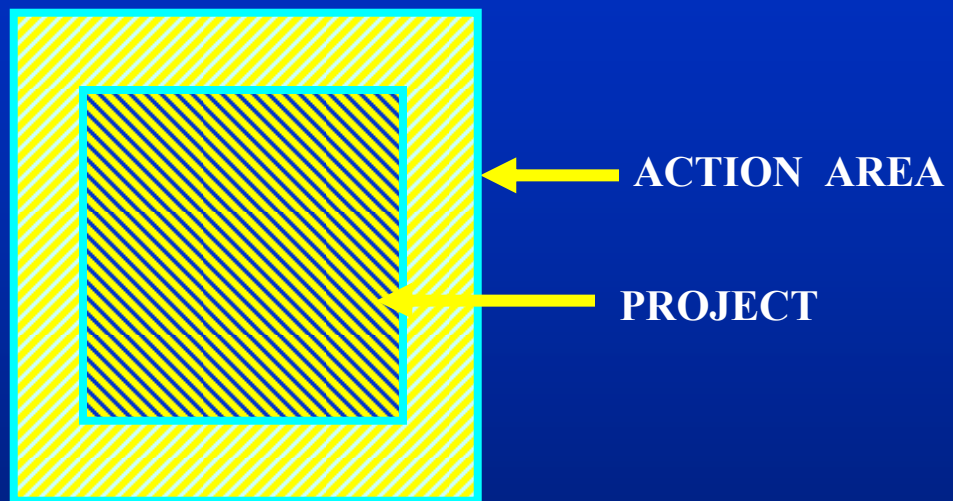
# ACTION AREA

**“All areas to be affected directly or indirectly and not merely the immediate area involved in the action (50 CFG§402.02).**

**The action area is not limited to the “footprint” of the action or jurisdiction. Rather, it is a biological determination of the reach of the proposed action on listed species”**



# **SURVEY COVERAGE**





# PROTOCOL SURVEY OPTIONS

**ACTION AREA SIZE  
EXCEEDS  
THRESHOLDS**

*YES*



**PROBABLISTIC  
SAMPLING**

*OR*

**100% COVERAGE**

**(MAYBE!!)**

*NO*



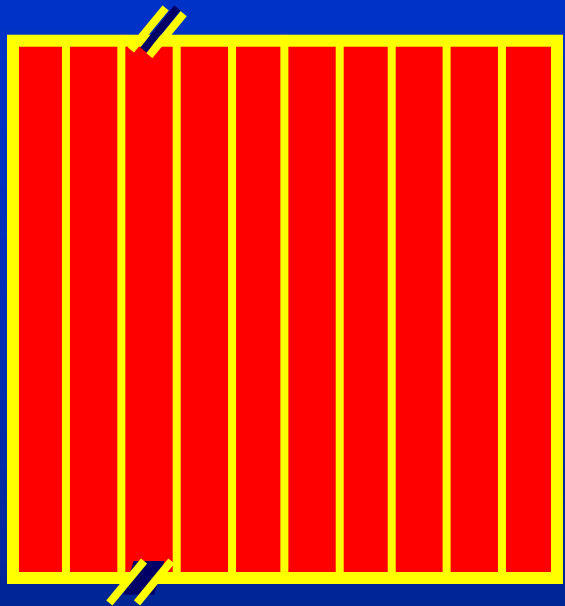
**100%  
COVERAGE**



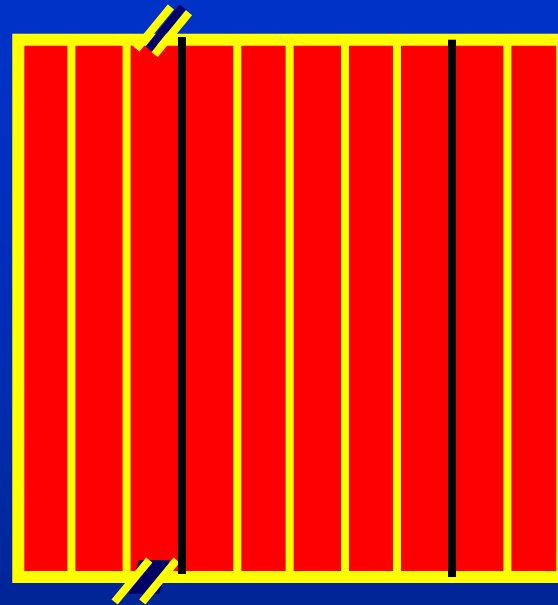
# PROBABLISTIC SAMPLING

<b>Recovery Unit</b>	<b>Threshold (Minimum) Action Area Size</b>	<b>Total Length of Km to Sample</b>
<b>Western Mojave</b>	<b>4.3 km<sup>2</sup> (1066 acres)</b>	<b>431</b>
<b>Colorado Desert</b>	<b>3.3 km<sup>2</sup> (811 acres)</b>	<b>328</b>
<b>North-East Mojave: S</b>	<b>4.5 km<sup>2</sup> (1103 acres)</b>	<b>446</b>
<b>North-East Mojave: N</b>	<b>11.3 km<sup>2</sup> (2789 acres)</b>	<b>1129</b>
<b>Upper Virgin River</b>	<b>1.1 km<sup>2</sup> (270 acres)</b>	<b>109</b>





**100%  
Cover**



**Probablistic  
Sampling**





# LINEAR PROJECTS or PROJECT AREAS <0.8 km (200 acres)

Action Area?

600 m

A diagram illustrating a linear project area. A central horizontal yellow band represents the project. Above and below this band are large cyan rectangular areas. A vertical yellow double-headed arrow on the right side of the cyan area above the project band indicates a width of 600 m. The text 'Action Area?' is centered within this upper cyan area. The entire diagram is framed by a dark blue border at the top and bottom.

**WHERE NO TORTOISE SIGN IS OBSERVED  
ON LINEAR PROJECTS or PROJECT AREAS <0.8 km (200 acres)**

**200 m**

**400 m**

**600 m**



# **SURVEY TIMING/TEMPERATURES**

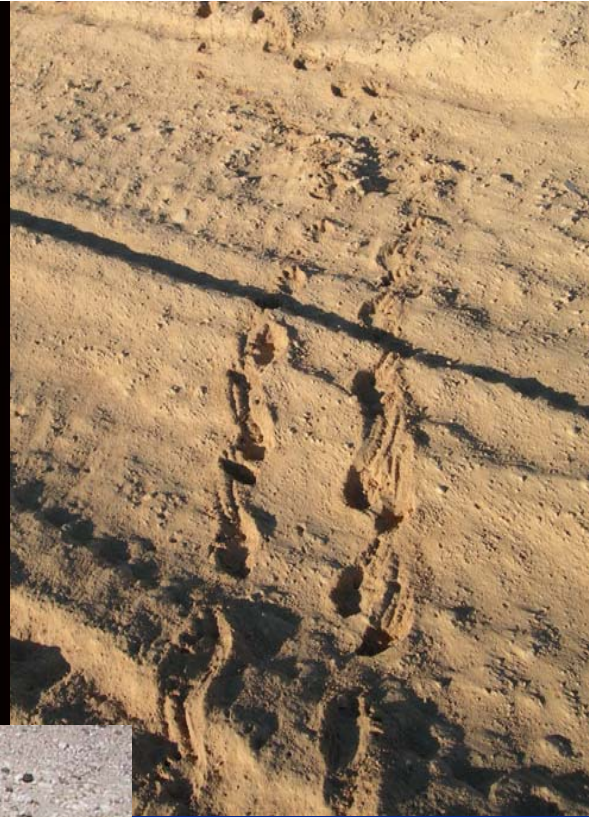
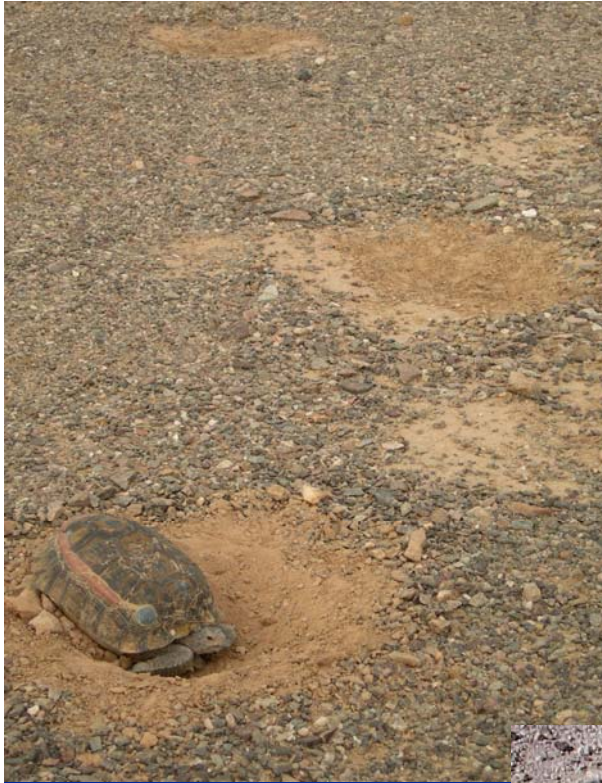
## **Based on Tortoise Activity:**

- **April through May, and late September through October**
- **$T_a @ 5 \text{ cm} < 40^\circ\text{C}$**

## **IMPORTANT CONSIDERATIONS**

- **Pre-Project Discussions With FWS and CDFG**
- **Provide qualifications of surveyors**
- **Alterations in Sampling Design**
  - **GET APPROVAL FROM FWS!!!**
- **Validity of Survey Results - 1 Year**







# **PROTOCOL SURVEY RESULTS BASED ON:**

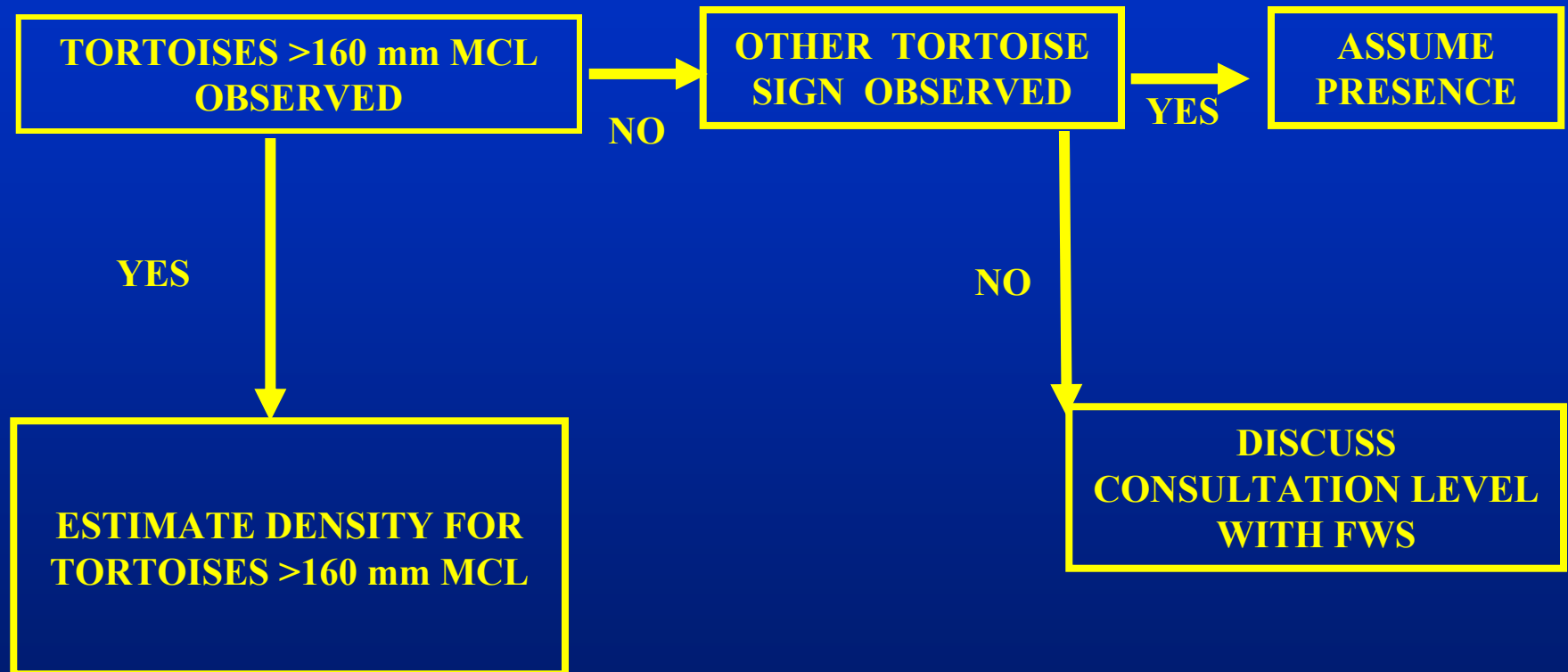
- 1. The number of active tortoises observed**
- 2. Takes into account:**
  - **Probability of detecting an above-ground tortoise ( $P_d$ )**
  - **Probability that a tortoise will be above ground ( $P_a$ )**
  - **Rainfall effects on  $P_a$**

**Based on FWS range-wide, several-year LDS program**





# ESTIMATING DENSITY or PRESENCE





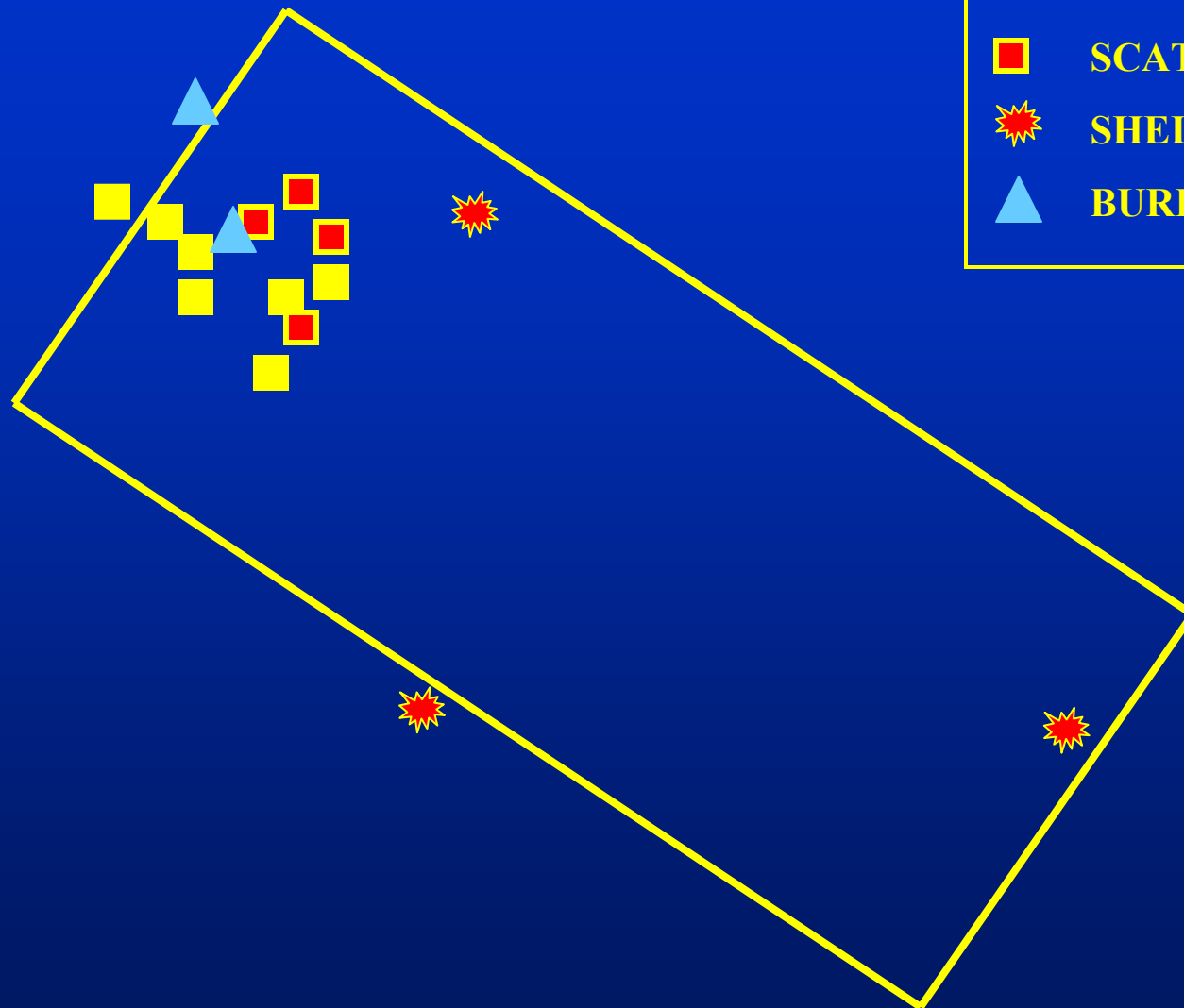
A photograph of two tortoises on a rocky, arid ground. The tortoise on the left is labeled 'CONSULTANT' and the one on the right is labeled 'FWS'. Both have dark, patterned shells and scaly heads. The 'CONSULTANT' tortoise is slightly behind the 'FWS' tortoise, and they appear to be interacting or facing each other. The ground is composed of small, light-colored rocks and dry soil.

**CONSULTANT**

**FWS**

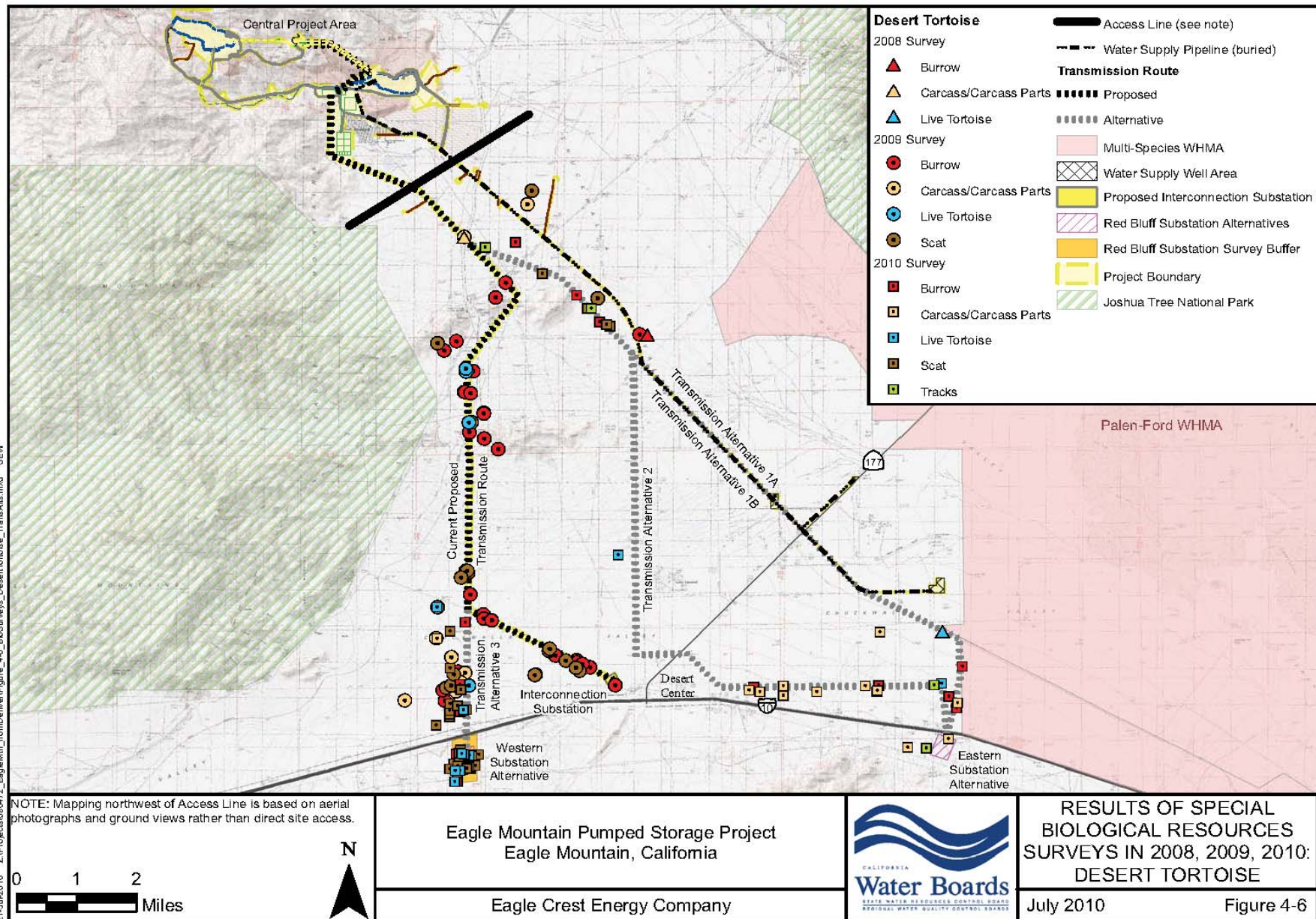


# MAPPING SIGN



- SCAT (TY) - >179mm MCL
- SCAT (TY) - 140-179 mm MCL
- ★ SHELL FRAGMENTS
- ▲ BURROW (TY) - >179mm MCL





# IDENTIFYING PROJECT EFFECTS

- **PROJECT ELEMENTS**

- **CONSTRUCTION:**

- **LENGTH, SEASON, TYPE**

- **OPERATION:**

- **FOOTPRINT SIZE, SHAPE, LOCATION**

- **LONGEVITY**

- **TYPES OF EFFECTS**

- **DIRECT, INDIRECT**

- **ON SITE, ADJACENT**

- **TEMPORARY, PERMANENT**

- **MITIGATION EFFECTS – BENEFICIAL *and* NEGATIVE**























# RESPONSIBILITIES

## ❖ SURVEYS

- GOALS
- ADEQUACY
- APPROVALS

## ❖ DATA INTERPRETATION

## ❖ REPORTING

- CLARITY
- COMPLETENESS

## ❖ RECOMMENDATIONS

- PROJECT EFFECTS
- CONSERVATION



**BUG OFF!**

