# California Red-legged Frog Habitat Site Assessment at Santa Susana Field Laboratory Area IV and Vicinity

*Prepared For:*

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*Submitted on behalf of:*

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Submittal Date: March 25, 2010

# California Red-legged Frog Habitat Site Assessments
# Outfall 4/SRE Pond, Silvernale Pond, and Outfall 18 Ponds
# Santa Susana Field Laboratory Area IV and Vicinity, Ventura County, California

The Santa Susana Field Laboratory (SSFL) in Ventura County, California, lies within the current and historic breeding range of the California red-legged frog (CRF) (USFWS 2002). In a letter dated October 5, 2009 from Chris Dellith of the U.S. Fish and Wildlife Service (USFWS) to Stephie Jennings of the U.S. Department of Energy (DOE), California red-legged frog was identified as a listed species that may occur at or near the SSFL Area IV and two adjacent undeveloped land areas. This Habitat Assessment focuses on SSFL Area IV and adjacent undeveloped lands, which are proposed to undergo a Radiological Study by EPA and is the subject of an Environmental Impact Statement (EIS) being developed to address the future remediation and decommissioning of the site by the DOE.

Of the three habitats addressed in this assessment, only Outfall 4/SRE Pond is within Area IV and would potentially be affected by the EPA survey. This report also addresses Silvernale Pond and the ponds at Outfall 18 for two reasons. First, these sites are hydrologically connected to and receive surface runoff from Area IV. Should contamination attributed to Area IV be present in sediment, the EIS may evaluate cleanup within the ponds. Secondly, these ponds, if occupied by CRF, could represent "source populations". Because of proximity of these habitats to Area IV, CRF during a rainy night could conceivably migrate onto Area IV where they could be affected by the EPA Radiological Survey. This latter scenario is unlikely given the aridity of Area IV and the very small size and ephemeral nature of the drainages on Area IV.

As detailed below in this report and data sheets, no evidence of CRF was found. All three of the habitats investigated have some physical characteristics suitable for supporting CRF, at least seasonally, but their distance and isolation from existing CRF locations and aspects of the habitat make occupation by CRF unlikely.

The developed and formerly developed portions of Area IV and vicinity (identified as Burro Flats on USGS maps) comprise about 90 acres of the 290-acre SSFL Area IV and tend to be more or less level or gently sloping areas, with sandstone outcrops prevalent in the northern part of the site. The majority of the structures that had formerly been present on the site have been removed. The previously developed portions of the site support a patchy vegetation cover ranging from weedy non-native species to a cover dominated by native shrubs. The adjacent undeveloped lands lie to the north of SSFL and drop off steeply. They are vegetated primarily by chaparral that burned in a 2005 wildland fire (the Topanga Fire), with grass and native herb assemblages on the thin soil on the surface of steeply dipping sandstone bedrock.

Surface water at SSFL Area IV and vicinity is ephemeral except in human-made impoundments, which were constructed as water retention structures in this xeric environment. The impoundments now serve as part of the stormwater control and treatment system. Ephemeral drainages leading from the site pass through outfalls constructed to allow the runoff water to be monitored and treated as necessary to remove contaminants and meet regulatory requirements. On SSFL Area IV itself, the only site supporting marsh vegetation and having water for extended periods is a small impoundment below Outfall 4, which drains to the north. This is also known as the SRE pond. This habitat assessment focuses on the Outfall 4 site and includes two nearby larger impoundments on portions of SSFL Area III and SSFL Area II. These latter areas are Silvernale Pond and sites adjacent to Outfall 18 (R-2A pond and R-2B pond). Silvernale Pond and the sites at Outfall 18 were selected because of their proximity to Area IV, their substantial size and relative permanence, and the fact that they are hydrologically connected to the southern part of Area IV.

CRF has not been recorded during previous surveys on the SSFL (Ogden Environmental and Energy Services, 1998; MWH Americas, Inc. and AMEC Earth and Environmental, Inc., 2003/2005; MWH Global, Inc., 2009; U. S. Department of Energy, 2003). The nearest recorded CRF observations in the California Natural Diversity Database (CNDDB) are in East Las Virgenes Creek and nearby in the mainstem of Las Virgenes Creek (CNDDB 2010). These were the only CRF records found in a search of the 16 contiguous USGS Quadrangles surrounding the site.

As the crow flies, the CRF location in the mainstem of Las Virgenes Creek is approximately 4 miles (6.5 km) from the Outfall 4 pond in SSFL Area IV, 3.6 miles (5.9 km) from Silvernale Pond in SSFL Area III, and 3.4 miles (5.4 km) from the Outfall 18 ponds in SSFL Area II (See attached vicinity map). The CRF location in East Las Virgenes Creek is slightly farther away from these sites. Actual overland distances would be considerably longer due to topography and deviations from straight line travel.

SSFL Area IV, located at the drainage divide between Simi Valley (Arroyo Simi) on the north and Bell Canyon on the south, is separated from the mainstem and East Las Virgenes Creek locations by drainage divides and a total elevation difference of about 1,000 feet (with multiple gains and losses in elevation between the two sites). Other potential barriers between the East Las Virgenes Creek location and SSFL include steep terrain, dry falls, and suburban development.

The southern part of Area IV and vicinity drains southward into Bell Canyon and ultimately to the Los Angeles River. Drainage from the northern part of the site leads ultimately to Arroyo Simi reaching the Pacific at Mugu Lagoon. Drainage from Las Virgenes Creek drains ultimately into Malibu Lagoon.

The small wetland at Outfall 4 (SSFL Area IV) usually goes dry by June and July (per Boeing personnel) and does not hold water again until after the rainy season begins. During a site visit in early October, no sites on Area IV held water. However, Silvernale Pond (SSFL Area III) and one of the ponds associated with Outfall 18 (SSFL Area II) held water at that time. Upland habitat surrounding each site includes large areas of standstone outcrops interspersed with chaparral recovering from a 2005 wildland fire and small areas of coast-live oak woodlands.

SSFL Area IV and the adjacent lands known as the northern undeveloped areas are proposed to undergo a radiological study described in a biological assessment submitted to USFWS (USEPA 2009). An Environmental Impact Statement (EIS) is being developed by DOE to address the future remediation and decommissioning of the site.

Listed below are the documents being submitted supporting this CRF Habitat Site Assessment Report:

## Vicinity Maps

Vicinity maps showing the locations of surveyed sites on SSFL, documented locations of CRF in Las Virgenes Creek and East Las Virgenes Creek, and approximate locations of drainage divides separating individual watersheds in the vicinity (Bell Creek, Las Virgenes Creek, Medea Creek, Lower Arroyo Simi and Upper Arroyo Simi). On USGS 1:24,000 topo and October 2007 airphoto base maps.

## Site Photos

*SRE Pond below Outfall 4 Area*--Aerial Photograph (October, 2007) of the Outfall 4 (SRE pond) vicinity showing locations of photopoints and site photographs showing habitat types and important features. The outfall and small marsh/pond are outlined. The marsh is not obvious in the air photo because the marsh was dry and most of the cattails were dead and matted due to seasonal drought conditions.

*Silvernale Pond*--Aerial Photograph (October, 2007) showing locations of photopoints and site photographs showing habitat types and important features.

*R-2A and R-2B Ponds at Outfall 18*--Aerial Photograph (October, 2007) showing locations of photopoints and site photographs showing habitat types and important features.

### Data Sheets

1. California Red-legged Frog Habitat Site Assessment Data Sheet, Site Outfall 4 (note: all field notes are written on the Habitat Site Assessment Sheet.
2. Scoring Ponds and Small Streams as Breeding Habitat Sheet, adapted by Norman J. Scott and Galen B. Rathbun (April 2006), Site Outfall 4
3. California Red-legged Frog Survey Data Sheet (from night survey assessment), Site Outfall 4
4. California Red-legged Frog Habitat Site Assessment Data Sheet, Site Silvernale Pond (note: all field notes are written on the Habitat Site Assessment Sheet).
5. Scoring Ponds and Small Streams as Breeding Habitat Sheet, adapted by Norman J. Scott and Galen B. Rathbun (April 2006), Site Silvernale Pond
6. California Red-legged Frog Survey Data Sheet (from night survey assessment), Site Silvernale Pond
7. California Red-legged Frog Habitat Site Assessment Data Sheet, site Outfall 18 (note: all field notes are written on the Habitat Site Assessment Sheet.
8. Scoring Ponds and Small Streams as Breeding Habitat Sheet, adapted by Norman J. Scott and Galen B. Rathbun (April 2006), Site Outfall 18
9. California Red-legged Frog Survey Data Sheet (from night survey assessment), Site Outfall 18

## References


California Natural Diversity Data Base (CNDDB). 2010. Full Condensed Report for 16 USGS Quadrangles in the vicinity of the Calabasas Quadrangle. California Department of Fish and Game, Sacramento California

MWH Global, Inc. 2009. Biological Report on Braunton's Milk-Vetch Habitat. Prepared for The Boeing Company, Santa Susana Field Laboratory, Ventura County, California. Prepared by MWH Global, Inc., Arcadia, California. October 2, 2009.

MWH Americas, Inc. and AMEC Earth and Environmental, Inc. 2003/2005. Addendum to the Biological Conditions Report, Santa Susana Field Laboratory, Ventura County, California. Prepared for the Boeing Company, National Aeronautics and Space Administration, and U. S. Department of Energy. Prepared by MWH Americas, Inc., Pasadena, California, and AMEC Earth and Environmental, Inc., San Rafael, California. July 2003/September 2005.

Ogden Environmental and Energy Services. 1998. Biological Conditions Report Santa Susana Field Laboratory, Ventura County, California. Prepared for Boeing North American Rocketdyne Propulsion and Power, and National Aeronautics and Space Administration, and U. S. Department of Energy, Energy Technology Engineering Center Division. Prepared by Ogden Environmental and Energy Services Co., Inc., San Diego, California. April 1998. Project No. 313150002.

U. S. Department of Energy (DOE). 2003. Environmental Assessment for Cleanup and Closure of the Energy Technology Engineering Center. Final. Oakland, CA. U. S. Department of Energy, NNSA Service Center. UDOE/EA-1345. March.

U.S. Environmental Protection Agency (USEPA) 2009. Biological Assessment for the Santa Susana Field Laboratory Area IV Radiological Study, Ventura County, CA. EPA Contract Number: EP-S7-05-05, Task Order Number: 038. San Francisco, CA. USEPA Region 9. Prepared by HydroGeologic, Inc. and Envicom Corporation.

U.S. Fish and Wildlife Service (UWFWS). 2002. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon. viii + 173 pp.

# California Red-legged Frog Habitat Vicinity Maps

(Reduced versions included; 11x17 maps transmitted separately)

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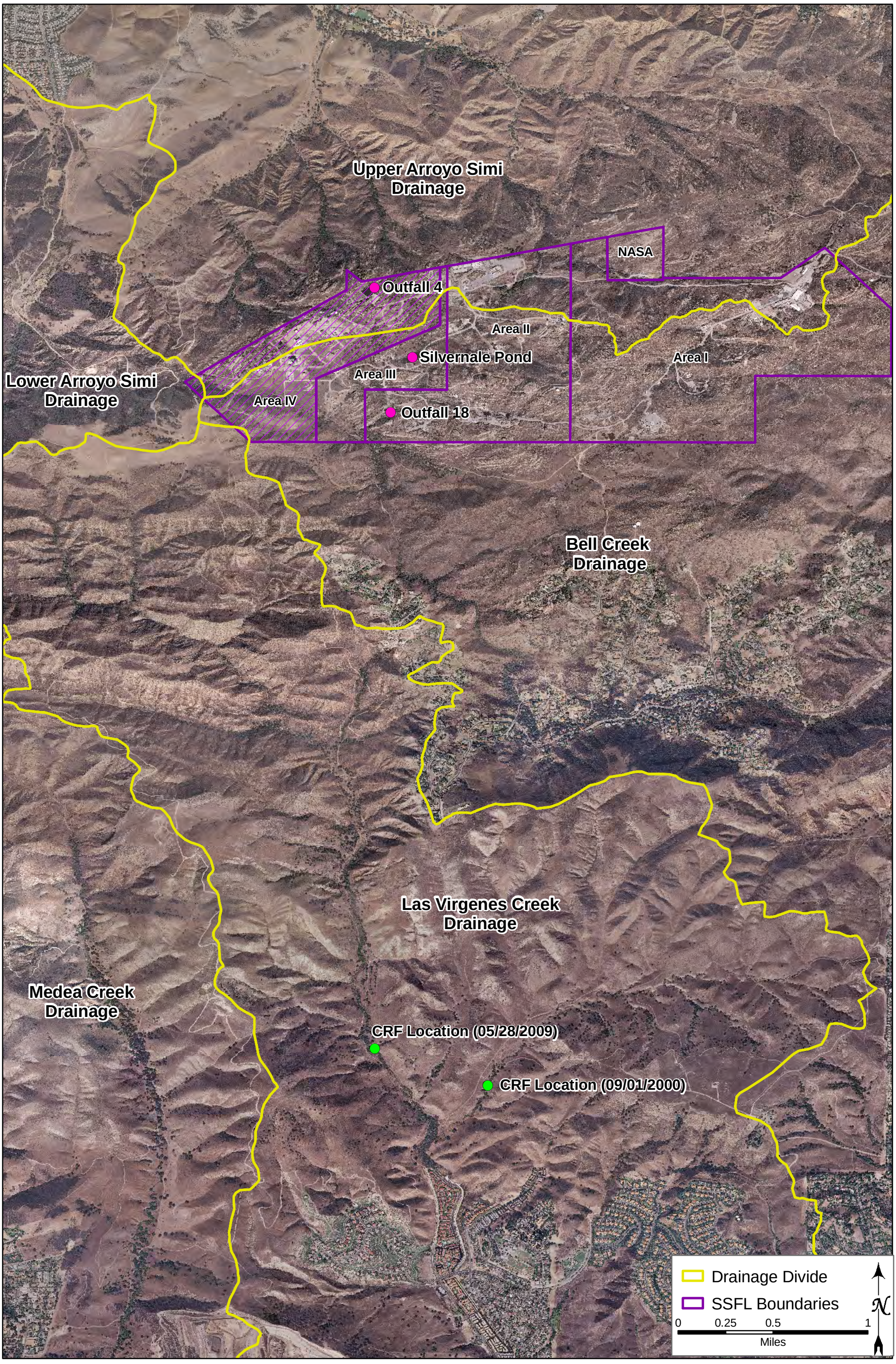
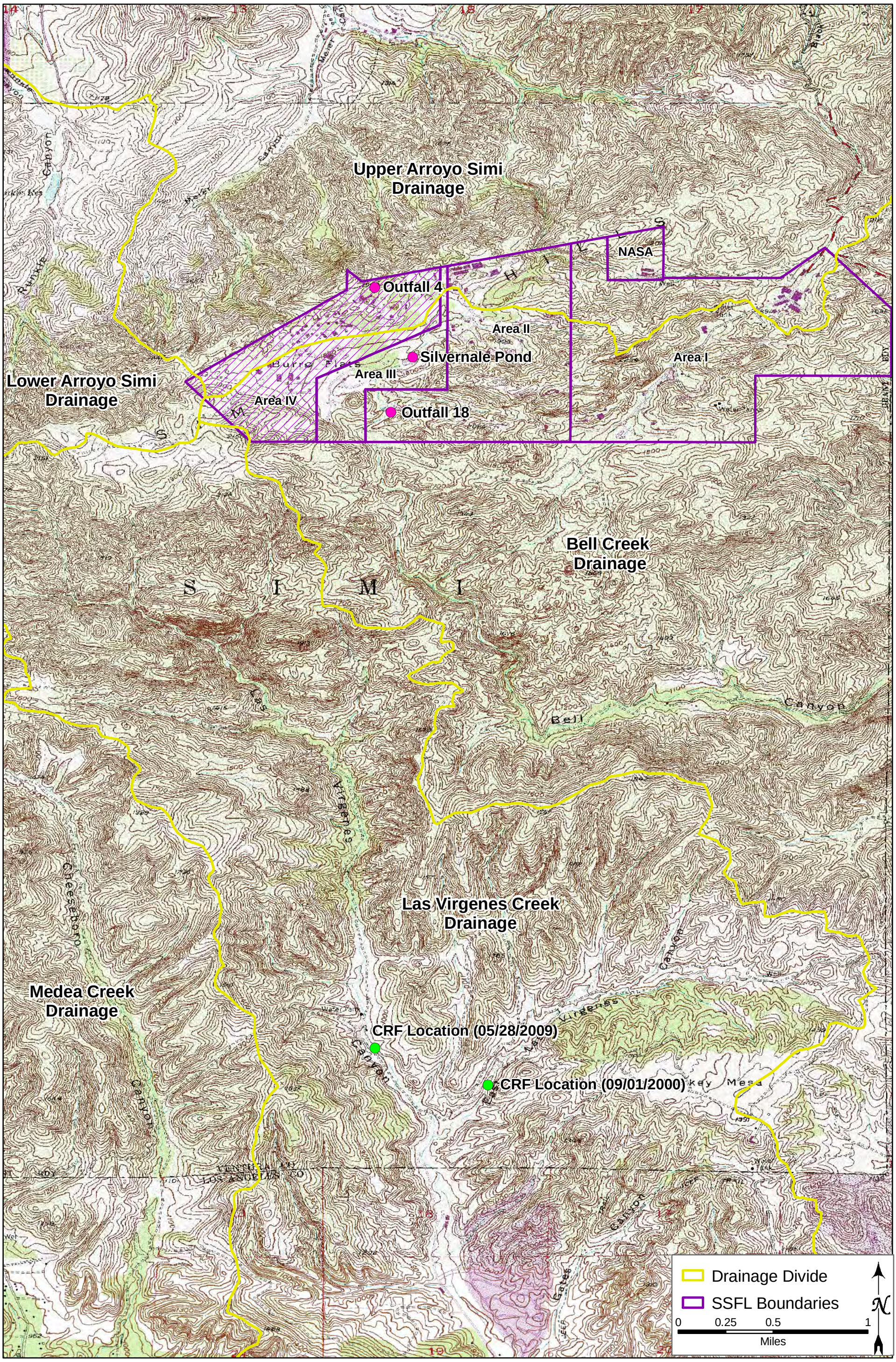



**Locations of California red-legged frog (CRF) survey sites on SSFL, documented locations of CRF in Las Virgenes Creek and East Las Virgenes Creek, and approximate boundaries of individual watersheds (Bell Creek, Las Virgenes Creek, Medea Creek, Lower Arroyo Simi and Upper Arroyo Simi).**




**Locations of California red-legged frog (CRF) survey sites on SSFL, documented locations of CRF in Las Virgenes Creek and East Las Virgenes Creek, and approximate boundaries of individual watersheds (Bell Creek, Las Virgenes Creek, Medea Creek, Lower Arroyo Simi and Upper Arroyo Simi).**

# Site Photos

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**SRE Pond at Outfall 4 and Vicinity**

CRF Report Photo Captions

Small impounded marsh below Outfall 4 (in SSFL Area IV) known as the SRE Pond. Area of this small marsh is approximately 0.01 ha.

Photo 1. Overview of SRE pond/marsh taken October 8, 2009. Shows marsh dominated by (cattails *Typha* spp.). Adjacent mesic upland supports coyote brush (*Baccharis pilularis*).

Photo 2. Closeup of marsh taken February 25, 2010 showing water underneath dead cattails.

Photo 3. Closeup of marsh taken February 25, 2010 showing small area of open water adjacent to cattails.


**Silvernale Pond**

Silvernale Pond (in SSFL Area III). Area of pond and adjacent wetlands is approximately 0.9 ha. In the October 2007 airphoto, the rosette pattern over water at the southeast corner of the pond is water pumped from the pond and discharged to the air through sprinklers to increase evaporation. Water may be treated at Silvernale Pond to meet NPDES requirements and ultimately discharged through outfall 18. Water may be pumped uphill from Pond R2-A for detention and treatment at Silvernale Pond prior to discharge from the site.

Photos 1-6 were taken February 25, 2010 from the approximate midpoint of the marsh along the south side with view angles as shown in the airphoto. Water levels in the pond on February 25, 2010 are lower than shown in the October 2007 airphoto with more emergent vegetation (cattails, bulrushes, and sapling willows) evident.

Photo 1. Mid-Silvernale to east.

Photo 2.  Mid-Silvernale to north.

Photo 3.  Mid-Silvernale to north northwest.

Photo 4.  Mid-Silvernale to west.

Photo 5.  Mid-Silvernale to southwest.

Photo 6. Silvernale with western toad *(Bufo boreas)* in water.


**R2-A and R2-B Ponds at Outfall 18**

Ponds R2-A and R2-B at Outfall 18. Area of R2-A is about 0.2 ha and R2-B about 0.1 ha. R2-A is a relatively steep sided impoundment, with varying water levels. Water levels in the following photos taken February 25, 2010 are lower than shown in this airphoto (taken October 2007). R2-A supports little emergent vegetation. Outfall 18 with step like filters extends southward from R2-A. R2-B is to the west and upstream from R2-A. R2-B is currently a very shallow marsh due to influx of sediment. It has extensive emergent vegetation and little open water.

R2-A Photo 1. View of west end of the impoundment showing shallow water level on February 25, 2010, maintained at this low level by pumping.

R2-A Photo 2. View eastward across pond, showing pump. October 8, 2009.

R2-A Photo 3. View northward across pond showing small area of emergent marsh. October 8, 2009.

R2-B Photo 1.

R2-B Photo 2.

# Data Sheets

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## Appendix D.
## California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

**Date of Site Assessment:** 02/25/2010 (mm/dd/yyyy)

**Site Assessment Biologists:** Holmes (Last name) Christina (first name) _____ (Last name) _____ (first name)

Mulroy (Last name) Thomas (first name) _____ (Last name) _____ (first name)

**Site Location:** Outfall 4, Santa Susana Field Lab, Ventura Co. Ca
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S ).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Santa Susana EPA Gamma Scan Survey.
Brief description of proposed action:
EPA will perform a gamma scan survey of the Area IV Study Area. This will likely involve trimming vegetation to within 12 inches of ground.

1) Is this site within the current or historic range of the CRF (circle one)? (YES) NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

## GENERAL AQUATIC HABITAT CHARACTERIZATION
*(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)*

**POND:**
Size: 37' x 43' (0.01 ha) Maximum depth: 1 foot

Vegetation: emergent, overhanging, dominant species: emergent non-native grasses, most of pond surrounded by and with emergent cattails (Typha sp.) (both standing and matting) Surrounding exterior of pond dominated by mulefat (Bacchans salicifolia).

~~Substrate:~~ _____
Cattails dead and matted.
Substrate: mud and silt

**Perennial or Ephemeral** (circle one). If ephemeral, date it goes dry: approx. June/July

**Appendix D.**
**California Red-legged Frog Habitat Site Assessment Data Sheet**

**STREAM:**

Bank full width: _____
Depth at bank full: _____
Stream gradient: _____

Are there pools (circle one)? YES NO
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____
_____
_____

Vegetation: emergent, overhanging, dominant species: _____
_____
_____

Substrate: _____
_____

Bank description: _____
_____
_____

**Perennial or Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

Many ~~Pseudacris~~ Pseudacris regilla egg-masses observed. Mosquitos observed in pond, as well.

Birds observed at pond: Bewicks wren, song sparrow, California thrasher, oak titmouse.

Pond has an outfall from storm water. Per Bocine, the pond usually goes dry in June or July. Pond dry during surveys in October.

**Necessary Attachments:**

1. All field notes and other supporting documents
2. Site photographs

Maps with important habitat features and species location

## Appendix E.
## California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

**Date of Survey:** 02/25/2010 (mm/dd/yyyy)

**Survey Biologist:** Holmes (Last name) Christina (first name)

**Survey Biologist:** Mulroy (Last name) Thomas (first name)

**Site Location:** Outfall 4, Santa Susana Field Lab, Ventura Co California
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S ).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Santa Susana EPA Gamma Scan Survey.
Brief description of proposed action:
EPA will perform a gamma scan survey of the Area IV Study Area. This will likely involve trimming vegetation to within 12 inches of the ground.

**Type of Survey** (circle one): **DAY** (**NIGHT**) **BREEDING** (**NON-BREEDING**)

**Survey number** (circle one): (**1**) 2 3 4 5 6 7 8

**Begin Time:** 1910 hrs. **End Time:** 1930 hrs.

**Cloud cover:** none **Precipitation:** none

**Air Temperature:** 52°F **Water Temperature:** ≈60°F

**Wind Speed:** 1 mph NW **Visibility Conditions:** Great

**Moon phase:** 3/4 **Humidity:** low

**Description of weather conditions:** Clear, cool, and calm. Rain expected the next day.

**Brand name and model of light used to conduct surveys:** Maglite 3D

**Were binoculars used for the surveys** (circle one)? (**YES**) **NO**
**Brand, model, and power of binoculars:** Brunton 8x42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

| Species | # of indiv. | Observed (O) Heard (H) | Life Stages | Size Class | Certainty of Identification |
|---|---|---|---|---|---|
| Pseudacris regilla | 4 | H | Adult | adult | positive |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: No fish or bullfrogs observed in pond during day. Raccoons prevelent in area.

Other notes, observations, comments, *etc.*

**Necessary Attachments:**

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

SCORING PONDS AND SMALL STREAMS AS BREEDING HABITAT FOR
CALIFORNIA RED-LEGGED FROGS (*Rana draytonii*)[1]

his scoring system is probably not suitable for large or complex aquatic systems and those influenced by sea water (e.g. Salinas River, Pescadero marsh, San Simeon Creek lagoon, etc). Intermediate scores can be applied subjectively. Maximum score is 49. Red-legged frogs probably will not consistenetly breed in habitats that score zero for one or more factors with an asterisk or if an overall score is less than about 20. ①SRE-outfall4

| FACTOR | POINTS | POINTS |
|---|---|---|
| **Sufficient duration (through July or August)*** | | |
| ➢ Pools with tadpole habitat present through July or August | 5 | |
| ➢ Pools do not hold water through July or August in most years | 0 | 0 |
| **Exotic fishes, or fished with cover for frog escape*** | | |
| ➢ No fish | 5 | 5 |
| ➢ Exotic predator fish with no frog cover (also possibly *Xenopus* & crayfish) | 0 | |
| **Distance to other breeding areas (part of a metapopulation?)*** (700 and 1,000 m. away) | | |
| ➢ Two or more breeding sites within 500 m | 5 | |
| ➢ No other breeding sites within 2 km | 0 | 0 |
| **Water flow*** [illegible] | | |
| ➢ No flow (ponds or pools in creek) | 5 | 5 |
| ➢ Yearly flushing flows in winter/spring | 0 | |
| **Pond Nutrients*** outflow | | |
| ➢ High level of nutrient input (livestock, sewage, etc) | 5 | 1 |
| ➢ Low level of nutrient input (deep well, spring water) | 1 | |
| **Egg and tadpole rearing area** | | |
| ➢ Greater than 0.5 ha | 5 | |
| ➢ Less than 0.5 ha | 1 | 1 |
| **Vater temperature (warmer the better)** 60°F | | |
| ➢ Above about 80 F | 5 | 1 |
| ➢ Below about 60 F | 0 | |
| **Bullfrogs** | | |
| ➢ No bullfrogs | 3 | 3 |
| ➢ Bullfrogs abundant and reproducing | 0 | |
| **Metamorph habitat* (little is known about this variable)** | | |
| ➢ Aquatic micro-habitat with good cover (e.g. cattails) and few or no adult red-legged frogs or bullfrogs | 3 | 3 |
| ➢ No cover and abundant adult frogs or other predators | 0 | |
| **Submerged vegetation** | | |
| ➢ Mosaic of open and vegetated water | 2 | |
| ➢ Choked with vegetation | 1 | 1 |
| ➢ No vegetation (a rocky cobble substrate can substitute for vegetation in a stream) | 0 | |
| **Urban proximity** | | |
| ➢ Urban development further than 1 km | 2 | 1 |
| ➢ Urban development closer than 500 m | 0 | |
| **Pond persistence** | | |
| ➢ Dries up in fall at least every 2-4 years | 2 | 2 |
| ➢ Never dries up | 0 | |
| **Summer refuges*** | | |
| ➢ Summer refuges at site or within 200 m | 2 | 1 |
| ➢ Summer refuges >2 km | 0 | |
| | 49/2 | 24 |

* 0's : 1

[1]4 April 2006; Norman J. Scott and Galen B. Rathbun

Closest - E Las Virgenas Creek <4 mi

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**California Red-legged Frog Habitat Site Assessment Data Sheet**

Site Assessment reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

**Date of Site Assessment:** 02/25/2010
(mm/dd/yyyy)

**Site Assessment Biologists:** Holmes Christina _____
(Last name) (first name) (Last name) (first name)

Mulroy Thomas _____
(Last name) (first name) (Last name) (first name)

**Site Location:** Silvernale Pond; Santa Susana Field Lab, Ventura Co., CA
**(County, General location name, UTM Coordinates or Lat./Long. or T-R-S ).**

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Santa Susana EPA Gamma Scan Survey
Brief description of proposed action:
EPA will perform a gamma scan survey of the Area IV Study Area. This will likely involve trimming vegetation to within 12 inches of the ground.

1) Is this site within the current or historic range of the CRF (circle one)? (YES) NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

## GENERAL AQUATIC HABITAT CHARACTERIZATION

*(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)*

**POND:**
Size: 250' x 415' (0.9 ha) Maximum depth: 6'8"

Vegetation: emergent, overhanging, dominant species: Emergent and dominant ~~perenn~~ species include Bullrush (Scirpus spp.), Bachans salicifolia, non-native grasses. The majority of vegetation surrounds the pond but is not emergent. Rocky edge is primary.

Substrate:
Rock and mud/sand sediment.

(Perennial) or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

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**STREAM**:

Bank full width: _____
Depth at bank full: _____
Stream gradient: _____

Are there pools (circle one)? YES NO
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____
_____
_____

Vegetation: emergent, overhanging, dominant species: _____
_____
_____

Substrate: _____
_____

Bank description: _____
_____
_____

**Perennial or Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

Pseudacris regilla heard calling. Birds observed include: red-winged blackbirds, belted kingfisher, ruby-crowned kinglet, Bewick's wren, white-crowned sparrow, western scrub jay

Pond is large with temporary pump house nearby. Many fish in pond - kingfisher and herons observed fishing in pond.

Boeing employees report "goldfish" and "carp" in pond.

**Necessary Attachments:**

1. All field notes and other supporting documents
2. Site photographs

Maps with important habitat features and species location

**Appendix E.**
**California Red-legged Frog Survey Data Sheet**

Survey results reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

**Date of Survey:** 02/25/2010 (mm/dd/yyyy)

**Survey Biologist:** Holmes (Last name) Christina (first name)

**Survey Biologist:** Mulroy (Last name) Thomas (first name)

**Site Location:** Silvernale pond, Santa Susana Field Lab, Ventura Co., CA
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S ).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Santa Susana EPA Gamma Scan Survey.
Brief description of proposed action:
EPA will perform a gamma scan survey of the Area IV Study Area. This will likely involve trimming vegetation to within 12 inches of the ground.

**Type of Survey** (circle one): **DAY** (**NIGHT**) (**BREEDING**) **NON-BREEDING**

**Survey number** (circle one): (1) 2 3 4 5 6 7 8

**Begin Time:** 1935 hrs. **End Time:** 2025 hrs.

**Cloud cover:** none **Precipitation:** none

**Air Temperature:** 52°F **Water Temperature:** ≥ 60°F

**Wind Speed:** 1mph NW **Visibility Conditions:** great

**Moon phase:** 3/4 **Humidity:** low

**Description of weather conditions:** Clear, cool, and calm. Rain expected next day.

**Brand name and model of light used to conduct surveys:** Maglite 3D

**Were binoculars used for the surveys** (circle one)? (**YES**) **NO**
**Brand, model, and power of binoculars:** Brunton Echo 8x42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

| Species | # of indiv. | Observed (O) Heard (H) | Life Stages | Size Class | Certainty of Identification |
|---|---|---|---|---|---|
| Pseudacris regilla | 25+ | O, H | Adult | Adult | positive |
| Bufo boreas | 50+ | O | Adult | Adult | positive |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: Potential threats such as non-native fish and bullfrogs not observed during the day or night surveys. Potential for non-native fish present. Fish observed being eaten by kingfisher - identity unknown but perch like

Other notes, observations, comments, *etc.*
Many Bufo boreas individuals observed and likely present in pond. Day and night surveys by boat would need to be performed to accurately determine if California red-legged frogs are present in the pond. Pond is pumped regularly to maintain a minimum depth of 6 feet. Water is pumped to treatment systems and ultimately to Outfall 18.

**Necessary Attachments:**

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

SCORING PONDS AND SMALL STREAMS AS BREEDING HABITAT FOR
CALIFORNIA RED-LEGGED FROGS (*Rana draytonii*)[1]

This scoring system is probably not suitable for large or complex aquatic systems and those influenced by sea water (e.g. Salinas River, Pescadero marsh, San Simeon Creek lagoon, etc). Intermediate scores can be applied subjectively. Maximum score is 49. Red-legged frogs probably will not consistenetly breed in habitats that score zero for one or more factors with an asterisk or if an overall score is less than about 20. Silvernale pond

| FACTOR | POINTS | POINTS |
|---|---|---|
| **Sufficient duration (through July or August)*** | | |
| ➢ Pools with tadpole habitat present through July or August | 5 | 5 |
| ➢ Pools do not hold water through July or August in most years | 0 | |
| **Exotic fishes, or fished with cover for frog escape*** | | |
| ➢ No fish | 5 | |
| ➢ Exotic predator fish with no frog cover (also possibly *Xenopus* & crayfish) | 0 | 1 |
| **Distance to other breeding areas (part of a metapopulation?)*** (700 and 1,000 m away) | | |
| ➢ Two or more breeding sites within 500 m | 5 | 0 |
| ➢ No other breeding sites within 2 km | 0 | |
| **Water flow*** | | |
| ➢ No flow (ponds or pools in creek) | 5 | 5 |
| ➢ Yearly flushing flows in winter/spring | 0 | |
| **Pond Nutrients*** | | |
| ➢ High level of nutrient input (livestock, sewage, etc) | 5 | 1 |
| ➢ Low level of nutrient input (deep well, spring water) | 1 | |
| **Egg and tadpole rearing area** | | |
| ➢ Greater than 0.5 ha | 5 | 5 |
| ➢ Less than 0.5 ha | 1 | |
| **Water temperature (warmer the better)** | | |
| ➢ Above about 80 F | 5 | 1 |
| ➢ Below about 60 F | 0 | |
| **Bullfrogs** | | |
| ➢ No bullfrogs | 3 | 3 |
| ➢ Bullfrogs abundant and reproducing | 0 | |
| **Metamorph habitat* (little is known about this variable)** | | |
| ➢ Aquatic micro-habitat with good cover (e.g. cattails) and few or no adult red-legged frogs or bullfrogs | 3 | 3 |
| ➢ No cover and abundant adult frogs or other predators | 0 | |
| **Submerged vegetation** | | |
| ➢ Mosaic of open and vegetated water | 2 | 2 |
| ➢ Choked with vegetation | 1 | |
| ➢ No vegetation (a rocky cobble substrate can substitute for vegetation in a stream) | 0 | |
| **Urban proximity** | | |
| ➢ Urban development further than 1 km | 2 | |
| ➢ Urban development closer than 500 m | 0 | 1 |
| **Pond persistence** | | |
| ➢ Dries up in fall at least every 2-4 years | 2 | |
| ➢ Never dries up | 0 | 0 |
| **Summer refuges*** | | |
| ➢ Summer refuges at site or within 200 m | 2 | 2 |
| ➢ Summer refuges >2 km | 0 | |
| | 49/2 | 29 |

No * zeros.

[1]4 April 2006; Norman J. Scott and Galen B. Rathbun

Jan - began pumping to 6-7'

**Appendix D.**
**California Red-legged Frog Habitat Site Assessment Data Sheet**

Site Assessment reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

**Date of Site Assessment:** 02/25/2010
(mm/dd/yyyy)

**Site Assessment Biologists:** Holmes Christina _____
(Last name) (first name) (Last name) (first name)

Mulroy Thomas _____
(Last name) (first name) (Last name) (first name)

**Site Location:** Outfall 18 (a.k.a. R-2A + R-2B ponds); Santa Susana Field Lab, Ventura Co., CA
**(County, General location name, UTM Coordinates or Lat./Long. or T-R-S ).**

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: Santa Susana EPA Gamma Scan Survey.
Brief description of proposed action:
EPA will perform a Gamma Scan Survey of the Area IV Study Area. This will likely involve trimming vegetation to within 12 inches of the ground.

1) Is this site within the current or historic range of the CRF (circle one)? (YES) NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

## GENERAL AQUATIC HABITAT CHARACTERIZATION

*(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)*

**POND:** R-2A: 110' x 267' (0.2 HA)
Size: R-2B 138' x 55' (0.1 ha) Maximum depth: 4 ft.

Vegetation: emergent, overhanging, dominant species: The majority of the perimeter of the pond is surrounded by bare mud and gravel. Approx. 30% of pond has emergent vegetation - bullrush (Scirpus sp.) and mulefat (Baccharis salicifolia).
Substrate: gravel, mud

**Perennial or Ephemeral** *(circle one)*. If ephemeral, date it goes dry: June/July (pers. commentary Boeing)
R-2A is perennial!
R-2B is ephemeral

**Appendix D.**
**California Red-legged Frog Habitat Site Assessment Data Sheet**

**STREAM**:

Bank full width: _____
Depth at bank full: _____
Stream gradient: _____

Are there pools (circle one)? YES NO
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____
_____
_____

Vegetation: emergent, overhanging, dominant species: _____
_____
_____

Substrate: _____
_____

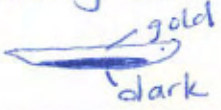
Bank description: _____
_____
_____

**Perennial or Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

- R-2A and R-2B ponds are connected through a narrow drainage. At the time of the habitat assessment, no water was present in the drainage, so ponds are separate.

- Many small fish were observed in the larger R-2A pond. Fish were approx. 4 inches long, ~~torep~~ torpedo-shaped, dark brown/black with a flicker of gold along the top ridge




**Necessary Attachments:**

1. All field notes and other supporting documents
2. Site photographs

Maps with important habitat features and species location

Appendix E.

## California Red-legged Frog Survey Data Sheet

Survey results reviewed by _____ (FWS Field Office) _____ (date) _____ (biologist)

**Date of Survey:** 02/25/2010 (mm/dd/yyyy)

**Survey Biologist:** Holmes (Last name) Christina (first name)

**Survey Biologist:** Mulroy (Last name) Thomas (first name)

**Site Location:** Outfall 18 (a.k.a. R-2A and R-2B ponds) Santa Susana Field Lab Ventura Co., CA
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S ).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Santa Susana EPA Gamma Scan Survey.
Brief description of proposed action:
EPA will perform a Gamma Scan Survey of the Area IV Study Area. This will likely involve trimming vegetation to within 12 inches of the ground.

**Type of Survey** (circle one): **DAY** (**NIGHT**) (**BREEDING**) **NON-BREEDING**

**Survey number** (circle one): (1) 2 3 4 5 6 7 8

**Begin Time:** 2030 hrs **End Time:** 2055 hrs.

**Cloud cover:** none **Precipitation:** none

**Air Temperature:** 52°F **Water Temperature:** ≈ 60°F

**Wind Speed:** 1mph NW **Visibility Conditions:** Great

**Moon phase:** 3/4 **Humidity:** low

**Description of weather conditions:** Clear, cool, and calm. Rain expected the next day.

**Brand name and model of light used to conduct surveys:** Maglite 3D

**Were binoculars used for the surveys** (circle one)? (**YES**) **NO**
**Brand, model, and power of binoculars:** Brunton Echo 8x42

Appendix E.
California Red-legged Frog Survey Data Sheet

AMPHIBIAN OBSERVATIONS

| Species | # of indiv. | Observed (O) Heard (H) | Life Stages | Size Class | Certainty of Identification |
|---|---|---|---|---|---|
| Pseudacris regilla | 20+ | O, H | Adult | Adult | positive |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Describe potential threats to California red-legged frogs observed, including non-native and native predators such as fish, bullfrogs, and raccoons: No bullfrogs observed during day or night survey. Raccoons likely in area. Unknown species of fish observed in R-2A pond (drawing and description below). Green heron heard in pond and observed regularly.

Other notes, observations, comments, *etc.*

Fish: approx. 4 inches long. Torpedo-shaped. Dark brown/black with flicker of gold along top ridge.


- R-2A pond is connected to R2-B pond through a narrow drainage. No water currently in drainage so ponds are separated.

**Necessary Attachments:**

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species locations

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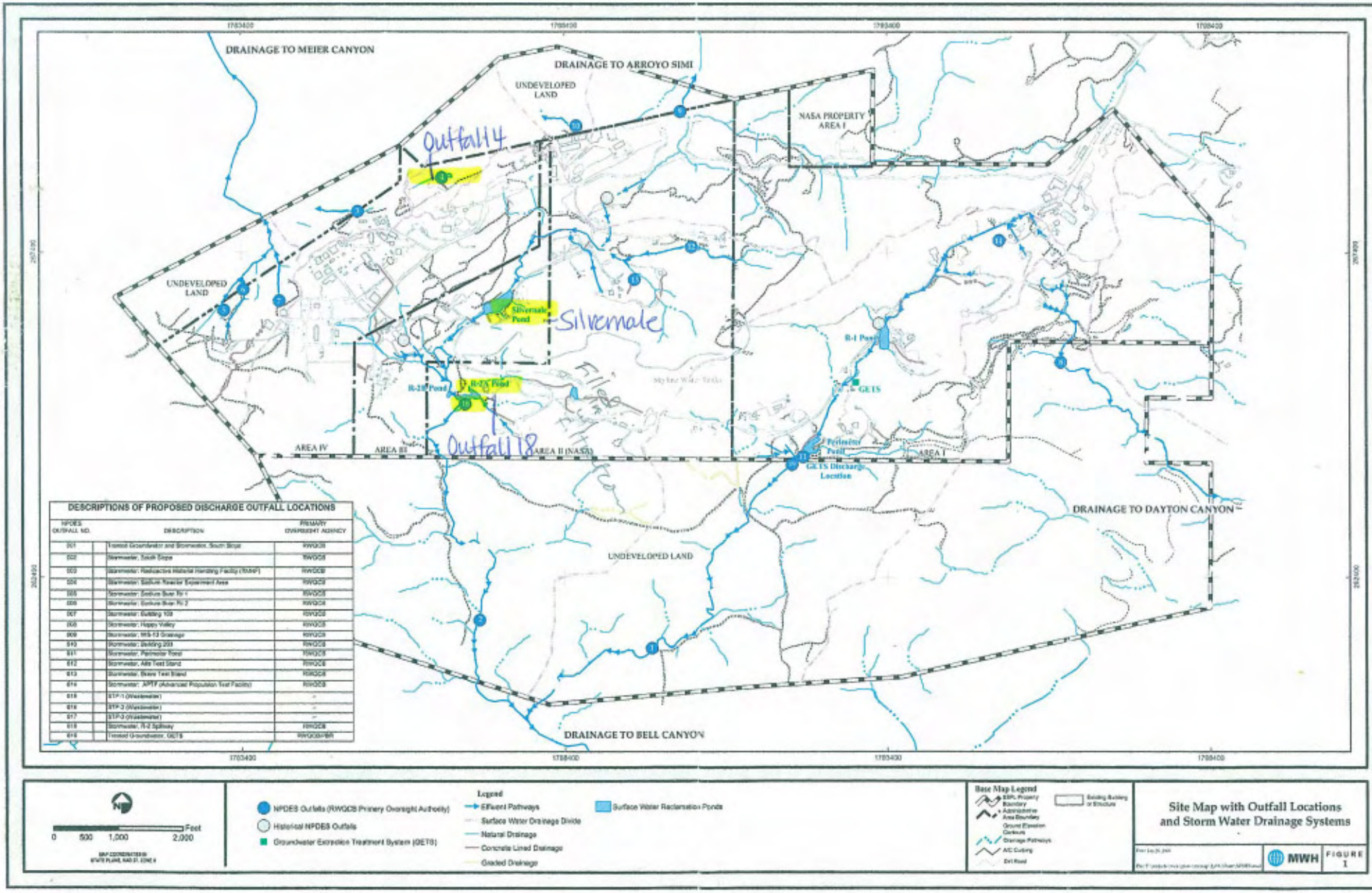
his scoring system is probably not suitable for large or complex aquatic systems and those influenced by sea water (e.g. Salinas River, Pescadero marsh, San Simeon Creek lagoon, etc). Intermediate scores can be applied subjectively. Maximum score is 49. Red-legged frogs probably will not consistenetly breed in habitats that score zero for one or more factors with an asterisk or if an overall score is less than about 20. (R2-A and R2-B ponds) aka Outfall 18

| FACTOR | POINTS | POINTS R2A | R2B |
|---|---|---|---|
| **Sufficient duration (through July or August)*** | | | |
| ➢ Pools with tadpole habitat present through July or August | 5 | | 0 |
| ➢ Pools do not hold water through July or August in most years | 0 | 5 | |
| **Exotic fishes, or fished with cover for frog escape*** | | | |
| ➢ No fish | 5 | 0 | 0 |
| ➢ Exotic predator fish with no frog cover (also possibly *Xenopus* & crayfish) | 0 | | |
| **Distance to other breeding areas (part of a metapopulation?)*** Approx. 700m and 1,000 m away | | | |
| ➢ Two or more breeding sites within 500 m | 5 | 5 | 0 |
| ➢ No other breeding sites within 2 km *Nearest known breeding site | 0 | 0 | |
| **Water flow*** | | | |
| ➢ No flow (ponds or pools in creek) | 5 | 5 | 5 |
| ➢ Yearly flushing flows in winter/spring | 0 | | |
| **Pond Nutrients*** | | | |
| ➢ High level of nutrient input (livestock, sewage, etc) | 5 | 1 | 1 |
| ➢ Low level of nutrient input (deep well, spring water) | 1 | | |
| **Egg and tadpole rearing area** | | | |
| ➢ Greater than 0.5 ha | 5 | | 1 |
| ➢ Less than 0.5 ha | 1 | 1 | |
| **Water temperature (warmer the better)** | | | |
| ➢ Above about 80 F | 5 | | 1 |
| ➢ Below about 60 F | 0 | 1 | |
| **Bullfrogs** | | | |
| ➢ No bullfrogs | 3 | 3 | 3 |
| ➢ Bullfrogs abundant and reproducing | 0 | | |
| **Metamorph habitat* (little is known about this variable)** | | | |
| ➢ Aquatic micro-habitat with good cover (e.g. cattails) and few or no adult red-legged frogs or bullfrogs | 3 | 1 | 3 |
| ➢ No cover and abundant adult frogs or other predators *Minimal cover @ R2A | 0 | | |
| **Submerged vegetation** | | | |
| ➢ Mosaic of open and vegetated water | 2 | | 2 |
| ➢ Choked with vegetation | 1 | | |
| ➢ No vegetation (a rocky cobble substrate can substitute for vegetation in a stream) | 0 | 0 | |
| **Urban proximity** | | | |
| ➢ Urban development further than 1 km *Urban development remote, but infrastructure nearby | 2 | | |
| ➢ Urban development closer than 500 m | 0 | 1 | |
| **Pond persistence** | | | |
| ➢ Dries up in fall at least every 2-4 years | 2 | 1 | 2 |
| ➢ Never dries up | 0 | | |
| **Summer refuges*** (e.g. dried mud, pond under cattails) | | | |
| ➢ Summer refuges at site or within 200 m | 2 | 2 | 2 |
| ➢ Summer refuges >2 km | 0 | | |
| | 49/2 | 21 | 20 |

# *with zero scores: 1

[1]4 April 2006; Norman J. Scott and Galen B. Rathbun


DRAINAGE TO MEIER CANYON
DRAINAGE TO ARROYO SIMI
UNDEVELOPED LAND
NASA PROPERTY AREA I
Outfall14
UNDEVELOPED LAND
Silvernale Pond
Silvernale
R-1 Pond
R-2S Pond
R-2E Pond
GETS
Outfall18
AREA IV
AREA III
AREA II (NASA)
Perimeter Pond
AREA I
GETS Discharge Location
DRAINAGE TO DAYTON CANYON
UNDEVELOPED LAND
DRAINAGE TO BELL CANYON
1703400
1708400
1713400
1718400
DESCRIPTIONS OF PROPOSED DISCHARGE OUTFALL LOCATIONS
NPDES OUTFALL NO.
DESCRIPTION
PRIMARY OVERSIGHT AGENCY
001 Treated Groundwater and Stormwater, South Slope RWQCB
002 Stormwater, South Slope RWQCB
003 Stormwater: Radioactive Material Handling Facility (RMHF) RWQCB
004 Stormwater: Sodium Reactor Experiment Area RWQCB
005 Stormwater: Bonus Burn Pit 1 RWQCB
006 Stormwater: Bonus Burn Pit 2 RWQCB
007 Stormwater: Building 109 RWQCB
008 Stormwater: Happy Valley RWQCB
009 Stormwater: WS-13 Drainage RWQCB
010 Stormwater: Building 203 RWQCB
011 Stormwater: Perimeter Pond RWQCB
012 Stormwater: Alfa Test Stand RWQCB
013 Stormwater: Bravo Test Stand RWQCB
014 Stormwater: APTF (Advanced Propulsion Test Facility) RWQCB
015 STP-1 (Wastewater) -
016 STP-3 (Wastewater) -
017 STP-3 (Wastewater) -
018 Stormwater, R-2 Spillway RWQCB
019 Treated Groundwater, GETS RWQCB/BR
0 500 1,000 2,000 Feet
NPDES Outfalls (RWQCB Primary Oversight Authority)
Historical NPDES Outfalls
Groundwater Extraction Treatment System (GETS)
Legend
Effluent Pathways
Surface Water Drainage Divide
Natural Drainage
Concrete Lined Drainage
Graded Drainage
Surface Water Reclamation Ponds
Base Map Legend
Existing Building or Structure
Site Map with Outfall Locations and Storm Water Drainage Systems
MWH
FIGURE 1

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