The Sunrise Powerlink Special Status Plant Restoration Program

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The Sunrise Powerlink Project

- Owned and built by San Diego Gas & Electric (SDG&E) in 2011/2012
- Split 230-kV and 500-kV transmission line over 117 miles including three reconductors and 12kV realignments
- Lead agencies: CPUC and BLM
- Numerous mitigation and sensitive species protection measures

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The Special Status Plant Restoration Program

- Restoration of special status plants within temporary impact areas in co-ordination with the restoration of sensitive vegetation communities in the same impact areas
- Restore special status plants to pre-construction conditions
- Sites occur from the deserts of Imperial County, over the three mountain ranges, six eco-regions and 20 sensitive vegetation communities to western San Diego County

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Outline

- Species Introduction
- Goals and Challenges
- Key Components of SSP Restoration Success
  - minimization of impact
  - seed collection
  - SSP implementation
  - monitoring methodology and digital data collection
- Results

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The Unusual Suspects: Species Profiling

Species Covered by the Restoration Plan for Special Status Plants (RPSP)

Scientific Name	Common Name	Sensitivity Code
Astragalus douglasii var. *perstrictus*	Jacumba milk-vetch	CNPS 1B.2, BLM SS, CNF SS
Caulanthus simulans	Payson's caulanthus	CNF SS (CNPS 4.2)
Geraea viscida	Sticky geraea	CNPS 2.3
Linanthus bellus	Desert beauty	CNPS 2.3
Mentzelia hirsutissima	Hairy stickleaf	CNPS 2.3

Sensitivity Codes

CNPS 1B.1: Rare, threatened, or endangered in California and elsewhere, seriously endangered in California

CNPS 1B.2: Rare, threatened, or endangered in California and elsewhere, fairly endangered in California

CNPS 2.3: Rare, threatened, or endangered in California, not very endangered in California

CNPS 4.2: Limited distribution [Watch List], fairly endangered in California

BLM SS: BLM sensitive species

CNF SS: Cleveland National Forest sensitive species, as identified by the USFS.

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Jacumba milk-vetch
Astragalus douglasii var. *perstrictus*

- Perennial herb in legume family (Fabaceae)
- Flowers from April to June
- Habitat includes southern oak woodland, open chaparrals, and grasslands 915 to 1,375 meters in elevation

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Payson's caulanthus
Caulanthus simulans

- Annual herb in the mustard family (Brassiceae)
- Small yellow flowers blooming March – May
- Found in chaparral and coastal scrub habitats

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Sticky geraea
Geraea viscida

- Short-lived perennial in the sunflower family (Asteraceae)
- Produces yellow flowers May and June
- Grows from an underground caudex
- Found in dry, sandy areas of chaparral

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Desert beauty
Linanthus bellus

- Delicate annual wildflower in the phlox family (Polemoniaceae)
- Grows to approximately 10 cm in height
- Blooms in April and May, flowers range from lilac to pink, with a yellow throat dotted with purple spots
- Found only in southeastern San Diego County and adjacent Baja Peninsula
- Grows in open sandy sites in semi-desert chaparral between 915 to 1,375 meters

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Hairy stickleaf
Mentzelia hirsutissima

- Annual herb in the loasa family (Loasaceae)
- Grows approximately 31 cm in height
- Blooms from March to May producing pale yellow flower
- Found within San Diego and Imperial Counties as well as Baja California, Mexico in Sonoran desert scrub

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Goals

- Restore special-status plants to pre-construction conditions
- Protect wildlife species and restore sensitive wildlife habitat
- Establish and implement appropriate and consistent methods
- Create structure to effectively and efficiently manage data
- Contribute to the knowledge of each species (i.e. distribution, germination, propagation, pollination)

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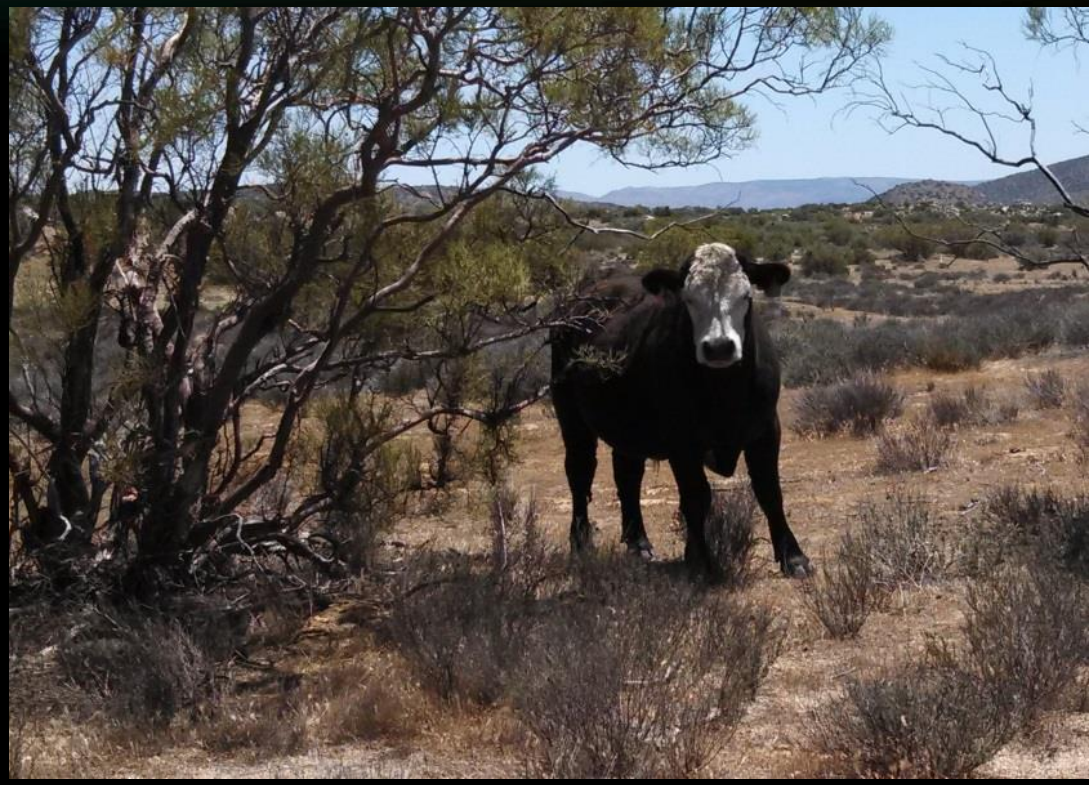
Challenges

- Propagation of Rare Plants
- The Elements
- Overall size and project complexity
- Multiple activities with restrictive time frames
- Multiple public and private property owners
- Unauthorized off-road-vehicle and military helicopter impacts



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Hairy stickleaf
Mentzelia hirsutissima

- Caging the rare plant for protection against the rare sheep

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Desert beauty
Linanthus bellus

- Grows in open sandy sites in semi-desert chaparal between 915 to 1,375 meters

- Breaking the Crust:
  Easily Disturbed

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Key Components of Program (Success)

- Seed collection program prior to construction
- Minimization of impacts during construction
- Seed bank supplemented by seeding
- Data management
- Ongoing adaptive monitoring and maintenance
- TIMING

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Seed Collection

- TIMING
- Collected seed from all 6 special status plant species
- Tracked and inventoried collections
- Processed, stored, and treated seed before germination

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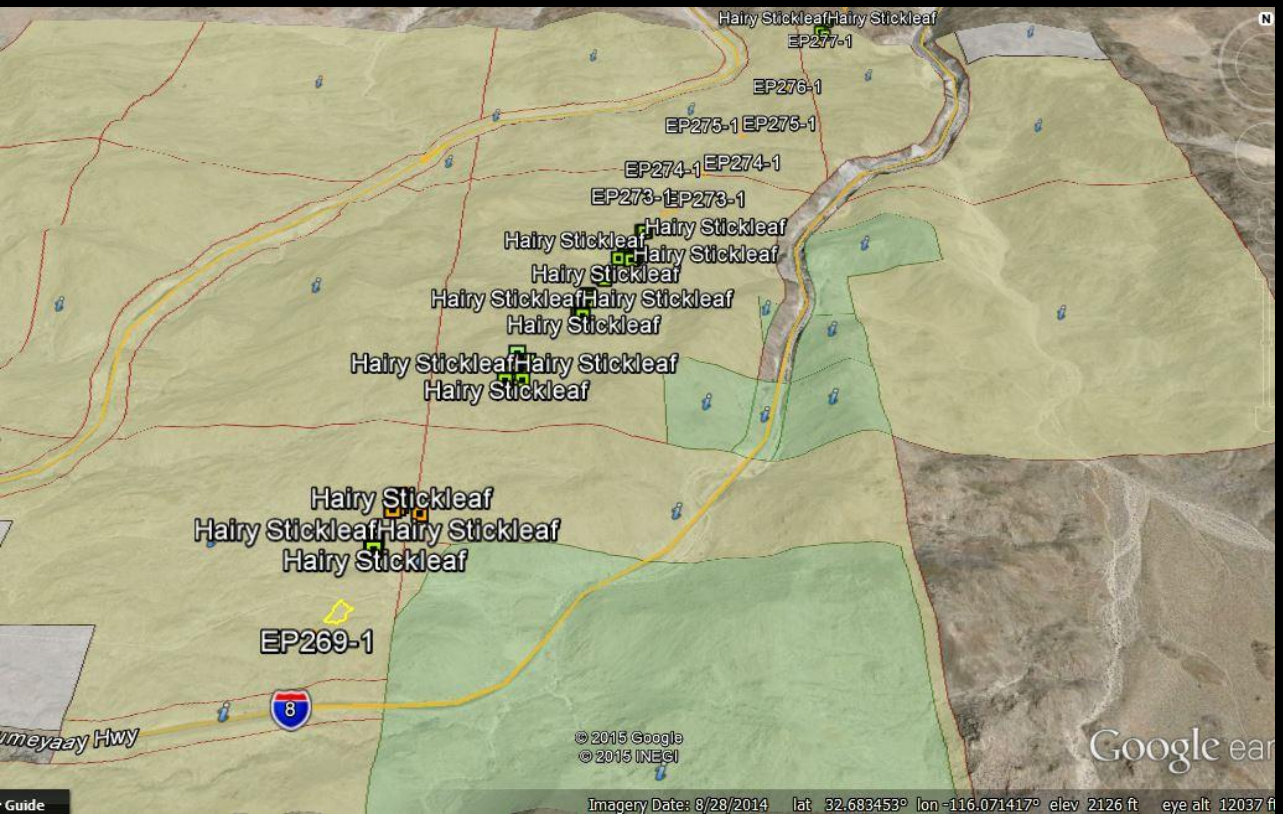
Special Status Plant Implementation

- Hand seeding in select locations
- Identifying reference sites in right-of-way
- Germination testing: Field and nursery setting
- Seed bulking



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Germination Testing: Field and Nursery Testing

- Performing germination testing for Special-status plant species
- Field and nursery setting
  - Counted 100 seeds
  - Planted in test plot within restoration sites
  - Planted in flats at RECON native plant nursery

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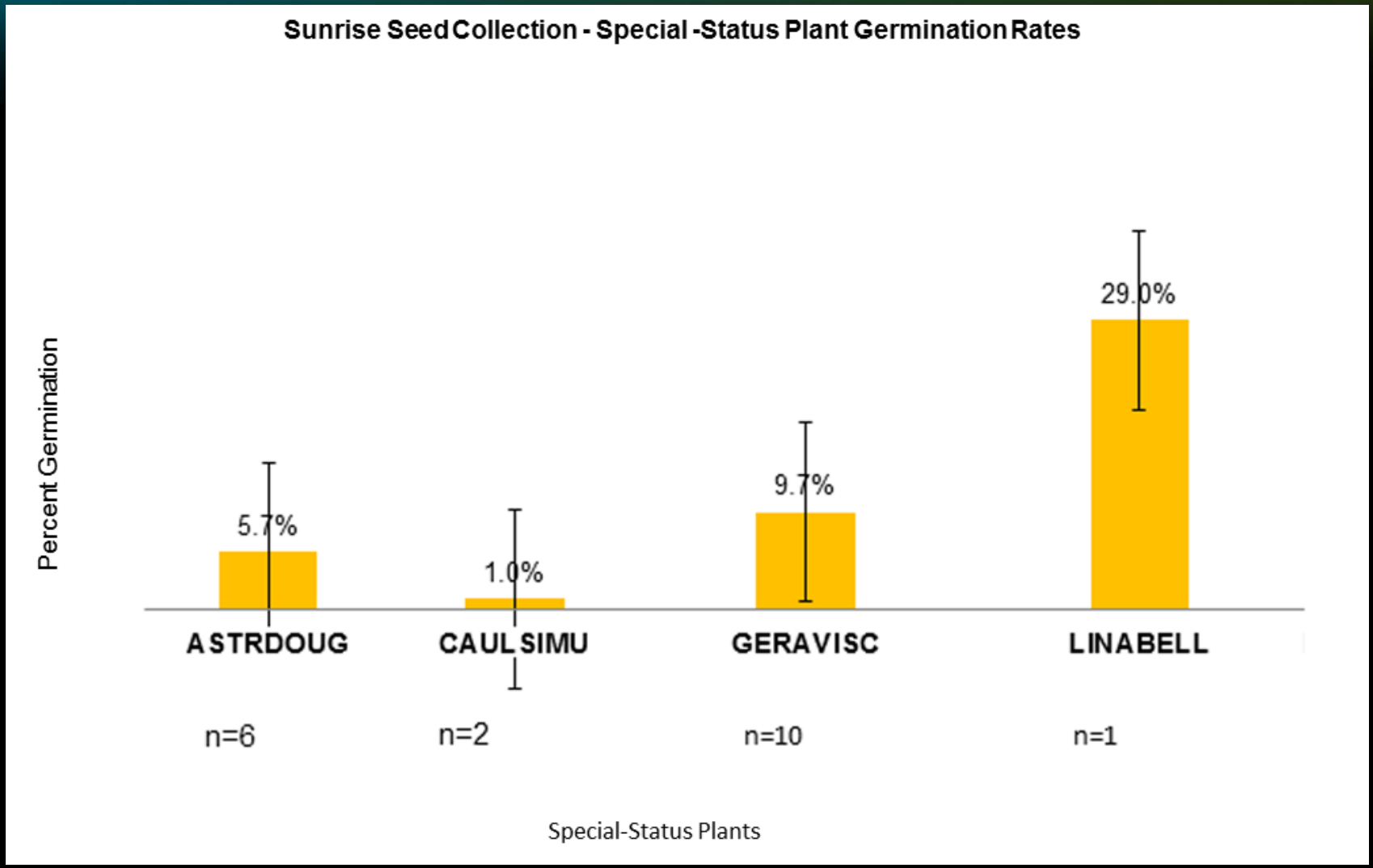
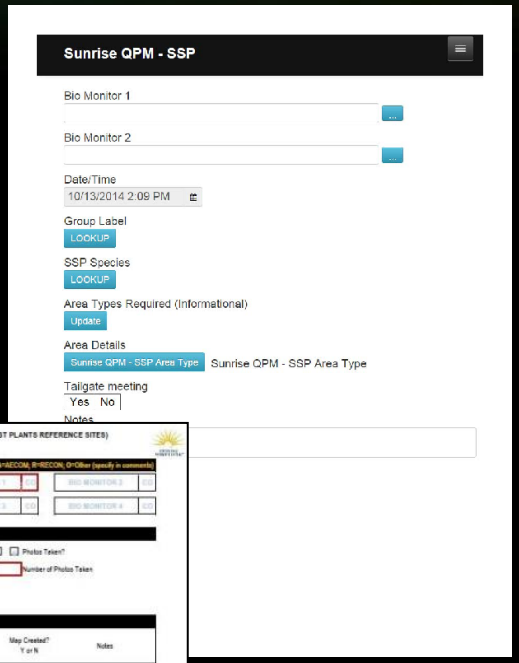
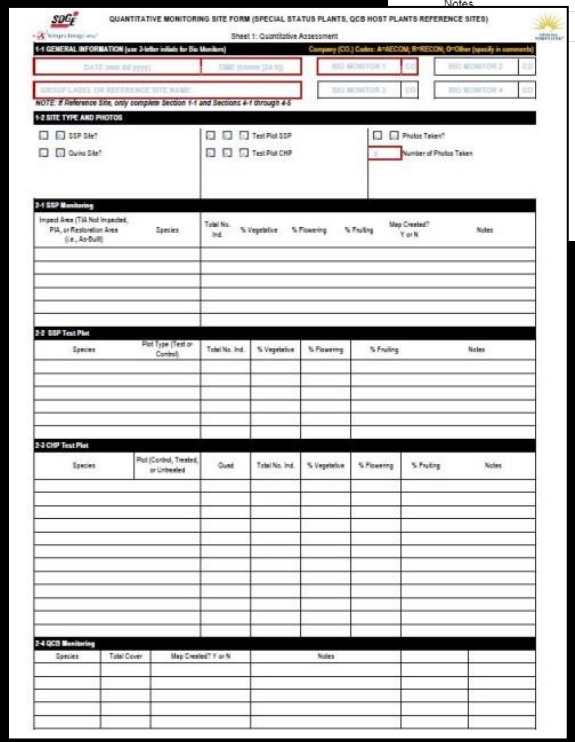
Germination Testing: Results



Monitoring Methodology and Digital Data Collection

- Annual Performance Monitoring (Quantitative)
  - Special-status plants (direct counts)
  - Germination test plot monitoring
- Digital Data Collection (remotely from field to database in minutes)
- Annual reports submitted to agencies





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Results - Measuring Success

- Special-status plant success based on replacing the number of plants impacted in temporary and permanent impact areas

Scientific Name	Number of Individuals			
	Impacted	Year 1	Year 2	Year 3
Astragalus douglasii var. *perstrictus*	**1278**	876	1287	1118
Caulanthus simulans	**274**	224	56	1403
Geraea viscida	**673**	426	631	835
Linanthus bellus	**3658**	2551	19	6999
Mentzelia hirsutissima	**6**	0	0	33
Ribes canthariforme	**2**	0	0	0

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THE FUTURE

- Continued Success
- Pollination studies
- Increased propagation and seed bulking

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THANK YOU!

Our Team: SDG&E, AECOM, RECON, and ACS Habitat Management

* **SDG&E – Marc Doalson, Keri Cuppage, Program Management – Teri Fenner, Jim Prine, Cecilia Meyer Lovell, Pete Tomsovic, Robert Hobbs, Greg Omori, Field Leads – Matt Kedziora, Aaron Andrews, Terressa Whitaker, Brian Parker, Andy Smisek, Implementation – Scott Rose, Jean-Luc Brullot, Ruth Vallejo, Skyler Bishop, numerous crew leaders and crew members, Data Management – Brad Stein, Alonso Cabello Documentation Leads – Lindsey Cavallaro, Support – Scott McMillan, Brenda McMillan, Shinsuke Kaneko, Shannon Race, Patty Anders**

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