



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

San Diego National Wildlife Refuge  
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December 14, 2015

Sarah Pierce, Environmental Planner  
San Diego Association of Governments  
401 B Street, Suite 800  
San Diego, CA 92101-4231

Subject: Transnet Environmental Mitigation Program Grant Agreement #5001761;  
Final Report for the San Diego National Wildlife Refuge Vernal Pool  
Invasive Weed Control Project

Dear Ms. Pierce:

This serves as our final report for the subject grant agreement for invasive weed control at the San Diego National Wildlife Refuge (SDNWR) vernal pool restoration site.

The project has addressed the following to date:

- Task 1. Hand weed vernal pools – Final round of weeding of three rounds completed.
- Task 2. Herbicide application outside of vernal pools – Final round of herbicide application of three rounds completed.
- Task 3. Weed treatment efficacy review and reporting – Final round of three weeding assessments completed. The contractor treatments were satisfactory.
- Task 4. Reporting – This is the final SDNWR report on this project.

Nature's Image has submitted its final invoice for the project (Invoice #15-03-488 dated 7/31/15) with cost of \$25,449.81. The current SDNWR invoice to SANDAG (Invoice #5 submitted to you via email on 12/04/2015) covers the contractor invoice as well as agency match and overhead costs. U.S. Fish and Wildlife Service's Denver Financial Office has submitted billings to SANDAG on this project.

In late 2014 we submitted a report (dated October 2014) that summarized work at the vernal pool site to date. The following provides information on activities since that time and closes out reporting for this agreement.

On January 6, 2015, we had a kick-off meeting for weed control work in 2015, with our contractor Nature's Image. Issues addressed included:

1. Familiarization of personnel with the site, including providing them with keys and gate access codes;
2. Providing personnel with maps, and explaining and demonstrating the pool numbering system;
3. Specified pools to hand-weed. Pools to be hand-weeded because of known occurrence of listed species were indicated on a spreadsheet and a map;

4. Pointed out sensitive species that were already up on the site, including *Convolvulus simulans* and *Pogogyne nudiuscula*;
5. Reiterated the importance of cleaning tools and vehicles to avoid contamination of the site with *Branchinecta lindahli*;
6. Pointed out artificial nest boxes for burrowing owls and reiterated importance of minimizing disturbance of nesting owls (no owls were encountered, and none nested on the site in 2015).

Nature's Image began a site-wide selective herbicide treatment on January 20, 2015. Hand-weeding of the specified pools was begun in late February, and completed by late March.

On April 21, refuge staff visited the site and noted some areas where remedial weed-control work was warranted. Several pools (e.g., 22, 25, 35, 34, 45, 48, 39, and 30) needed control of *Lythrum hyssopifolium*. This species was specifically called out in Task 2 of the Scope of Work (hand-weeding) as a problematic species in many basins on the site. There were a couple of pools in which seedling *Baccharis sarothroides* are common; these were requested to be pulled from the basins before they become shrubs. Hand-weeding of *Lythrum* in the identified pools had been completed by the last week of May.

The contract with Nature's Image stipulated that they were to provide a third site-wide selective herbicide treatment. From a biological perspective, awaiting a series of rain events to cause a larger fraction of the weed seeds in the soil seed bank to germinate, so that they could be killed would have been ideal. However, the lack of rainfall in 2015 resulted in lower weed abundance than expected in a normal growing season. Since our agreement with SANDAG stipulated that all field work must be completed by August 1, 2015, we assessed the site and had Nature's Image control what weeds remained onsite, particularly *Salsola tragus*, *Amaranthus albus*, and *Solanum americanum*;

Nature's Image completed these tasks by July 17, 2015. All work was accomplished by a six man crew, taking two weeks to complete. As in the preceding treatments, the crew applied glyphosate herbicide (Roundup Custom) at a 5% rate and removed all larger weeds and debris from site.

Although not specified in our agreement with SANDAG, the Refuge hosted a field trip to show members of the California Society for Ecological Restoration (in San Diego for their annual conference) the Shinohara vernal pool restoration project. The site looked good for the presentation, which took place on May 12, 2015. The 25 participants in the field trip appreciated the in-person overview of a vernal pool restoration in progress, and saw several of the focal species that the project is intended to benefit (e.g., Otay tarplant, Otay Mesa mint, and San Diego button celery). SANDAG was praised for its financial support of this conservation project during the field visit.

Photos from a site visit on December 11, 2015, are below. Please let me know if you have any questions regarding this final report on the vernal pool weed control project.

Sincerely,



Jill Terp  
Refuge Manager



Photos 1 and 2. San Diego NWR vernal pool restoration site December 2015 with native coastal sage vegetation establishing on higher elevations and reduced weed cover.





Photos 3 and 4. Vernal pool basins.





Photos 5 and 6. Vernal pool basins.





Photos 7 and 8. *Artemisia* recruitment and persistence of San Diego barrel cactus on site.





Photo 9. Burrowing owl burrow entry with sign of recent activity. One owl noted on December 11, 2015.