

**San Diego Association of Governments (SANDAG)  
Memorandum of Understanding (MOU) #5004552**

**Strategic Removal of Invasive Weed Species  
*3rd Quarter Report - FY 2017-18: Report #13 for Project***

**January 1st, 2018 – March 31st, 2018**

Project: County of San Diego, Department of Agriculture, Weights & Measures (AWM) –  
Strategic Removal of Invasive Weed Species

To: Kim Smith and Sarah Pierce  
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**Project:**

Invasive plants are considered one of the biggest threats to endangered species and their habitats. A strategic plan for managing non-native invasive plant species in San Diego County was completed in 2012 through a SANDAG contract to the Conservation Biology Institute (CBI) (<http://sdmmp.com>). The Invasive Plant Strategic Plan (IPSP) is designed to develop a strategic approach towards the eradication and management of invasive plants in the San Diego region. The IPSP is meant to work in conjunction with the Management Strategic Plan for Conserved Lands in Western San Diego County (MSP) ([Management Strategic Plan](#)).

This Scope of Work will require the contractor to focus on the management of invasive plants identified in Levels 1, 2, and 3 of the IPSP. The following tasks have been identified as necessary to implement this effort:

This quarterly report covers work funded through the SANDAG Contract, which allowed work to occur from January 1st to March 31st 2017.

**TASK 1 – Invasive Plant Species Coordinator:**

Level of Effort: (25%) of overall contract

**Right of Entry (ROE) Work and Coordination With Property Owners:**

Coordination with property owners, land managers and AWM Integrated Pest Control (IPC) crew occurred throughout the quarter. Work included:

- European sea lavender: Sweetwater (Chula Vista), San Elijo (Solana Beach), and Loker Ave (Carlsbad).
- Ruby Salt Bush: Euclid Ave (National City)
- Ward's weed: La Costa Greens (Carlsbad).

### **The coordinator worked on six species at twelve field sites:**

Work tasks included monitoring field crews, assessing treatment success, and mapping and surveying target plants. This included site visits to assess phenology (growth stage of plants) to help time treatments. Site visits occurred:

- European sea lavender: Sweetwater (Chula Vista), San Elijo (Solana Beach), Loker Ave (Carlsbad), and La Costa Ave (Carlsbad).
- Canary Island St. John's Wort: Balboa Park.
- Ruby Salt Bush: Euclid Ave (National City)
- Carnation spurge: Multiple (4) Black Mountain sites.
- Volutaria knapweed: Rice Canyon, Chula Vista.
- Ward's weed: La Costa Greens.

### **Report preparation:**

Quarterly report for Q3 FY 2017-18 was prepared.

### **Mapping and occurrence data:**

Spatial data was updated. It has been determined that survey lines (tracks of crew during surveys) are more representative of survey work during treatments. Digitizing survey areas using the tracking line data over represented searched areas (areas between lines were not always searched and access routes in and out of the site are not counted toward survey acreage multiple times). Additionally digitizing survey areas based on line data was an added step in office work for the field crews. A more accurate assessment of crew activities at sites can now be made. This data is now presented as lines on field work maps (see maps in this report).

## **TASK 2 – AWM: Invasive Plant Level 1 Management**

Level of Effort: (<10%) of overall contract.

Level 1 Management Species are EDRR targets that were **not known to occur** in the county when the IPSP was written (2012).

Crews surveyed and treated two invasive weed species (Carnation spurge and Volutaria knapweed) at six sites this quarter. Maps for sites now show treated areas (red polygons) and surveyed areas as white lines which track pathways used by crews to survey and control plants. AWM IPC carried out optimal plant control, either hand pulling or using pesticide applications, protected the natural environment by preventing off-site movement of pesticides, and utilized Best Management Practices (BMPs) that prevented unintentional discharges to surface waters. For each site, AWM IPC followed the following procedures:

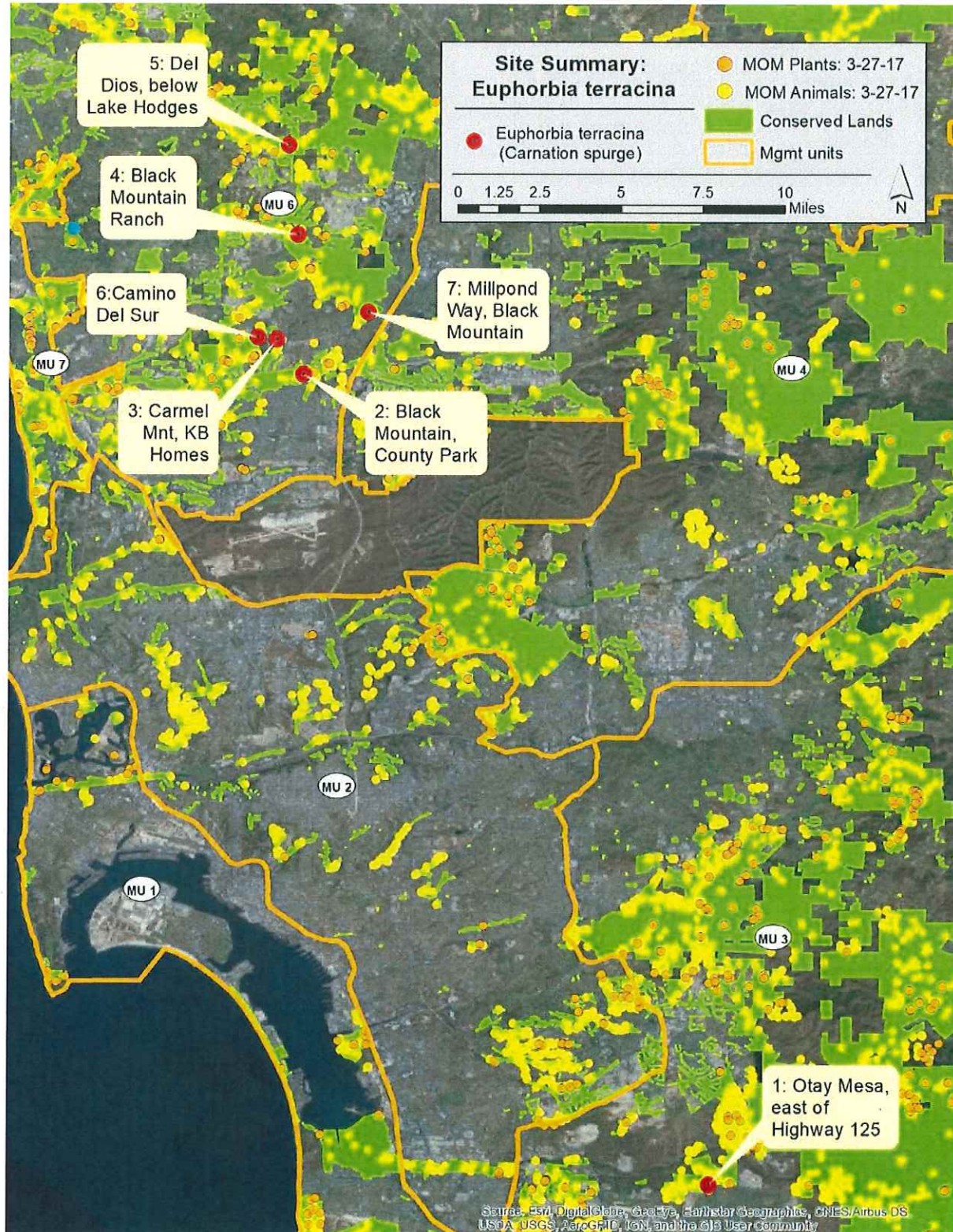
1. Identified the pest species to be treated.
2. Reviewed site conditions, such as soil texture, slope, standing water, irrigation or storm drains.
3. Identified and avoided streamside management areas and surface waters to prevent drift and application of pesticides not labeled for aquatic use onto surface waters.
4. Identified most appropriate method of control based on integrated pest management methods, designed to minimize the scale and number of pesticide applications.
5. Applied the least persistent and least toxic pesticide that effectively mitigates the target pest.



**Table 1. Summary of treatments performed by AWM on Level 1 species this quarter.**

Scientific Name	Common Name	# of Sites Worked	Acres Surveyed	Acres Treated	Plants Controlled
<i>Euphorbia terracina</i>	Carnation spurge	5	5.1	2.2	8,390
<i>Volutaria tubuliflora</i>	Volutaria knapweed	1	2.7	1.5	8 + pre-emergent

***Euphorbia terracina* (Carnation spurge):**



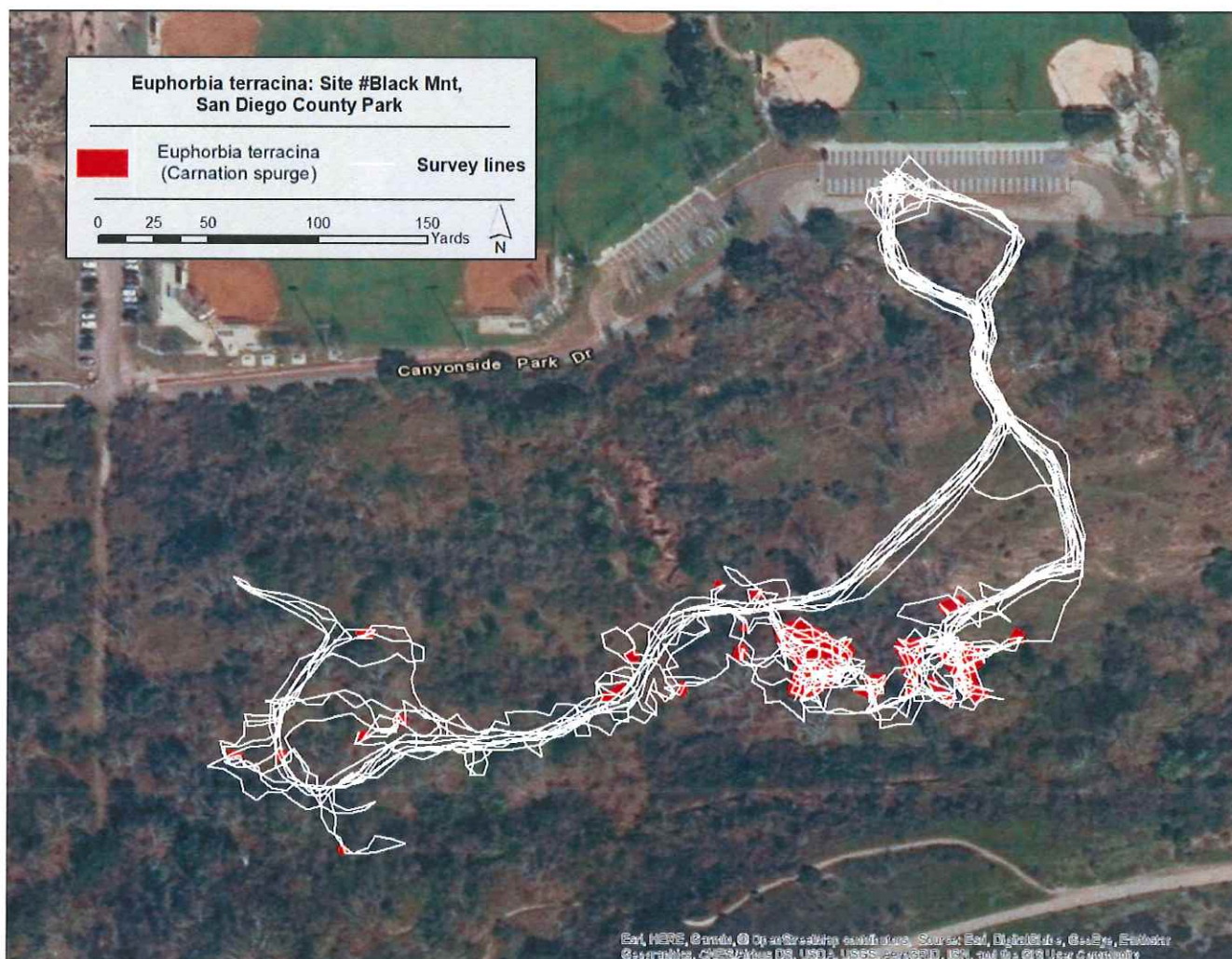


**Table 2. Summary of treatments performed by AWM on *Euphorbia terracina* (Carnation spurge).**

Work Site	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants Controlled
Site #2, Black Mt: County Park	Carnation spurge	1	0.55	0.4	890
Site #3, Carmel Mt: KB Homes	Carnation spurge	1	0.2	0.1	400
Site #3, Carmel Mt: Deer Canyon	Carnation spurge	1	0.25	0	0
Site #4, Black Mt: Ranch	Carnation spurge	2	2.5	1.1	7,000
Site #7, Millpond Way	Carnation spurge	1	0.1	0.1	100

***Euphorbia terracina* (Carnation spurge): Site #2, Black Mt, County Park**

Mature plants and seedlings were manually treated or removed (890 plants). A crew of two individuals worked three days on 3-13, 15 & 16-2018. There has been a reduction in cover (>80%), but there is an extensive seedbank that continues to generate new seedlings each spring.





**Euphorbia terracina (Carnation spurge): Site #3, Carmel Mt, KB Homes**

Seedlings were treated with glyphosate (400). A crew of two individuals worked on 3-12-2018. There has been a reduction in cover (>80%), but there is an extensive seedbank that will likely continue to express itself for some time.



**Euphorbia terracina (Carnation spurge): Site #3, Carmel Mt, Deer Canyon**

The site was surveyed on 3-13-2018 by a crew of two individuals. No seedlings or plants were found.





**Euphorbia terracina (Carnation spurge): Site #4, Black Mountain Ranch**

Treatments at this large site were timed just before rains to allow a pre-emergent to migrate into the soil to suppress seedling germination. Adult plants and seedlings were treated with a herbicide mixture of glyphosate and Gallery (2,500 plants). A crew of two to three individuals worked on 1-18 & 19-2018. A second application with post emergent (glyphosate) by a crew of two on 3-19 & 20-2018 occurred. There were approximately 4,500 seedlings. There has been a reduction in cover (>80%), but there is an extensive seedbank that will likely continue to express itself for some time.





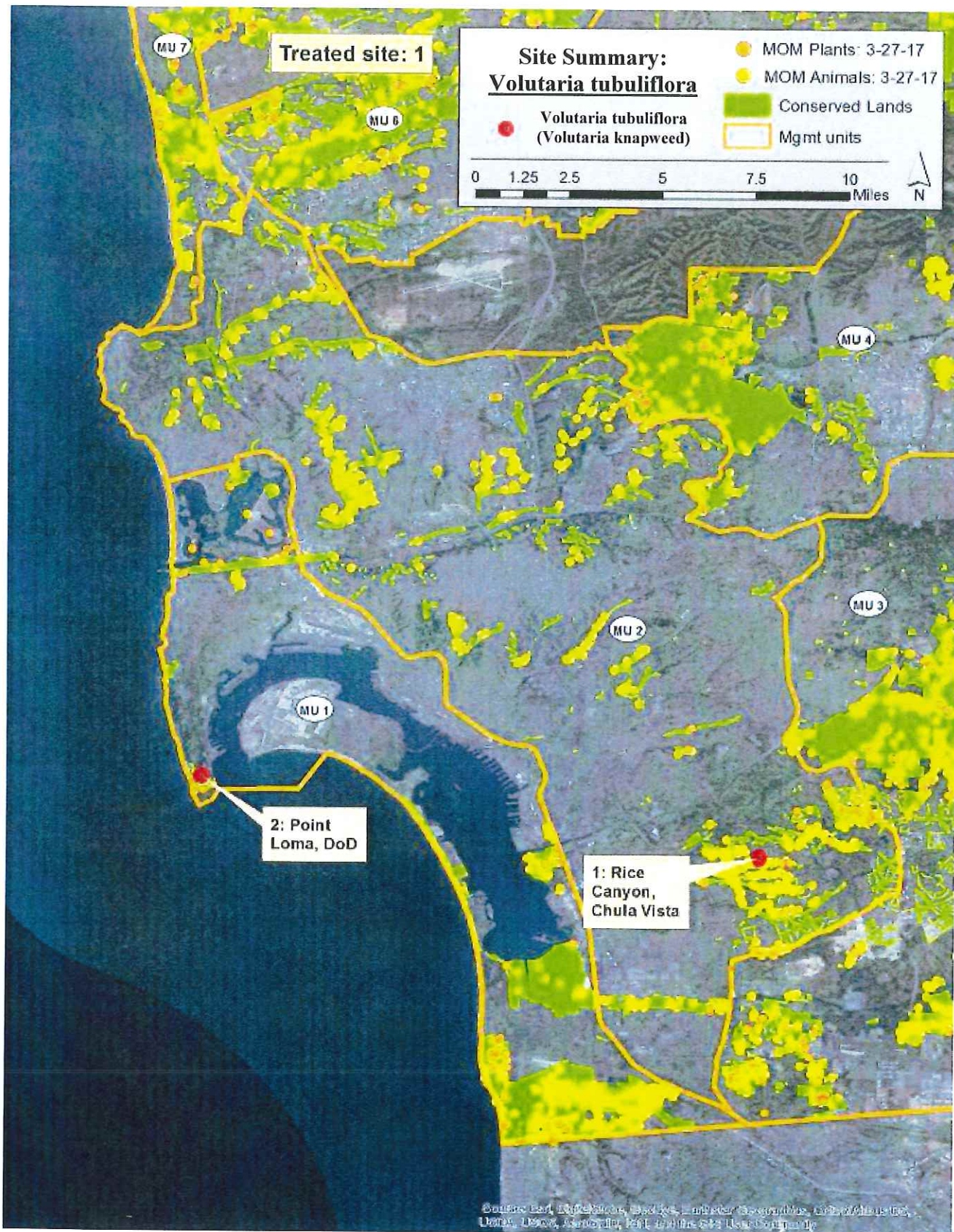
**Euphorbia terracina (Carnation spurge): Site #7, Mill Pond Way**

Seedlings were treated with glyphosate (100 plants). A crew of two individuals worked on 3-12-2018. There has been a reduction in cover (>80%), but there is an extensive seedbank that will likely continue to express itself for some time.





*Volutaria tubuliflora*, Volutaria knapweed:





**Table 3. Summary of treatments performed by AWM on *Volutaria tubuliflora* (Volutaria knapweed).**

Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #1: Rice Canyon, Chula Vista	Volutaria knapweed	1	2.7	1.5	8 + pre-emergent
Site #2: Point Loma, DoD	Volutaria knapweed	-	-	-	Area cleared of vegetation by DoD

This is the second year of treating this site and the second year of applying pre-emergent. Rains this year were very late and light. The pre-emergent used at this site (Milestone- a pre and post emergent selective herbicide that works well on composite plants) works best when plants, especially grasses, are just starting to emerge. Good soil contact is needed. A crew of three applied the pre-emergent to the central population on three days 1-16, 17 & 26- 2018. Eight plants were also had pulled. The site will be re-visited at least twice in the next quarter to treat or remove any plants that were not controlled by the pre-emergent or that are satellite populations (scattered patches) of plants not treated with the pre-emergent.





### **TASK 3 – AWM: Invasive Plant Level 2 Management.**

Level of Effort: (>40%) of overall contract

Level 2 Management Species are EDRR targets that were of limited distribution in the county when the IPSP was written (2012).

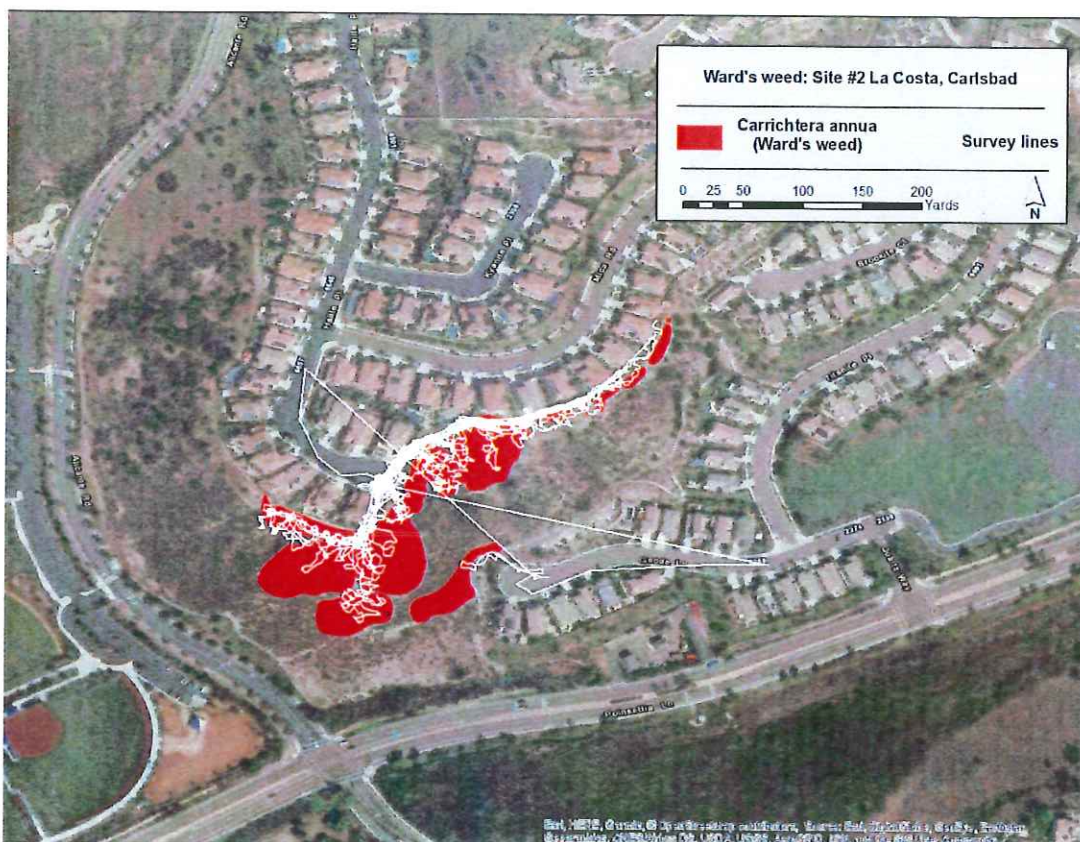
Crews surveyed and treated, 4 invasive weed species at 4 sites this quarter: French Broom, Rattle box, European sea lavender, and Algerian sea lavender. AWM IPC made optimal pesticide applications, protected the natural environment by preventing off-site movement of pesticides, and utilized Best Management Practices (BMPs) that prevented unintentional discharges to surface waters. For each site, AWM IPC followed the following procedures:

1. Identified the pest species to be treated.
2. Reviewed site conditions, such as soil texture, slope, standing water, irrigation or storm drains.
3. Identified and avoided streamside management areas and surface waters to prevent drift and application of pesticides not labeled for aquatic use onto surface waters.
4. Identified most appropriate method of control based on integrated pest management methods, designed to minimize the scale and number of pesticide applications.
5. Applied the least persistent and least toxic pesticide that effectively mitigates the target pest.

**Table 4. Summary of treatments performed by AWM on Level 2 species this quarter.**

Scientific Name	Common Name	# of Sites Worked	Acres Surveyed	Acres Treated	Plants Controlled
<i>Carrichtera annua</i>	Ward's weed	1	4.9	3.4	>5,200
<i>Hypericum canariense</i>	Canary Island St. John's Wort	2	14.2	6.1	5,335
<i>Limonium duriusculum</i>	European sea lavender	2	2.0	0.2	2,120

#### **Carrichtera annua, Ward's Weed:**





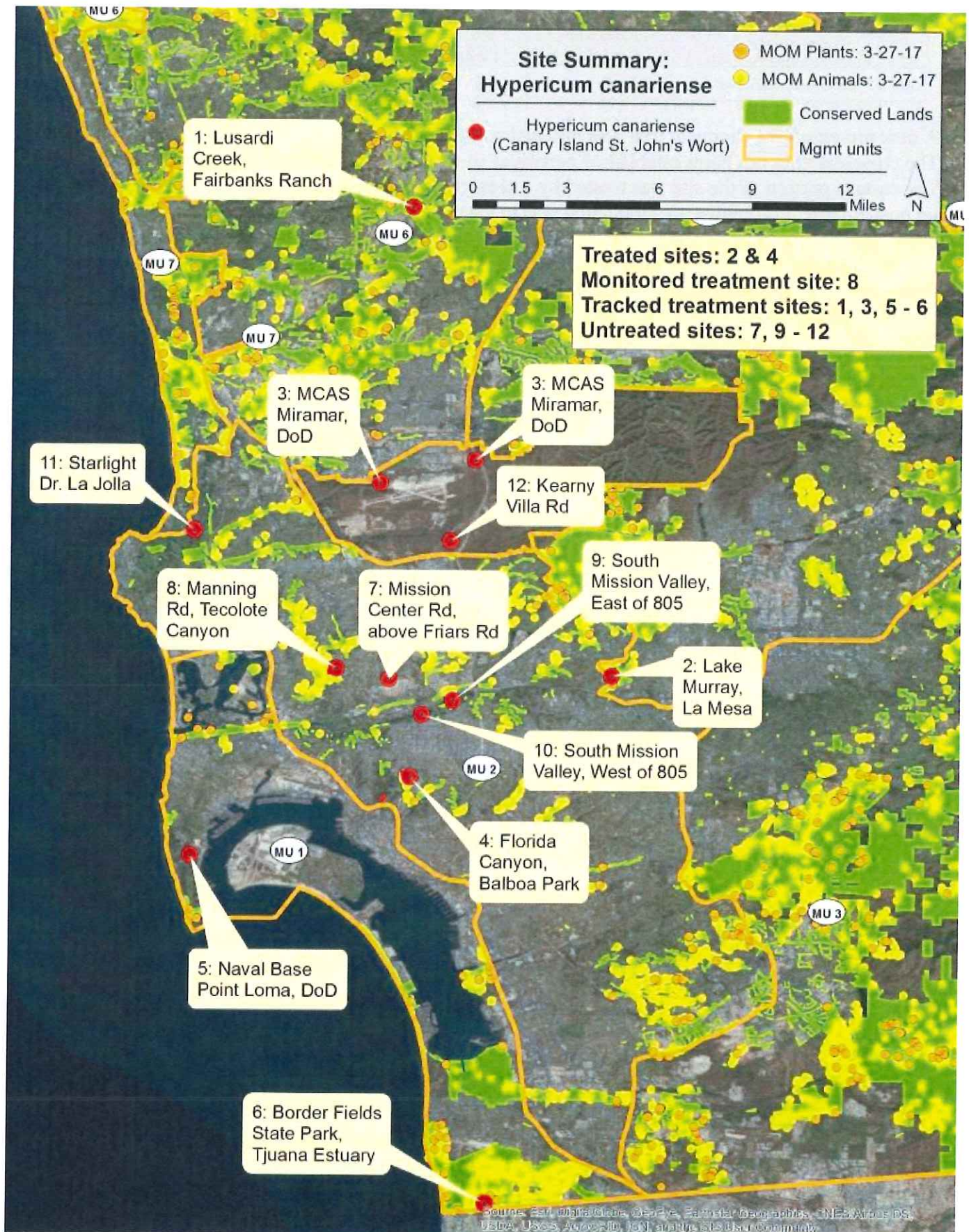
**Table 5. Summary of treatments performed by AWM on *Limonium ramosissimum* (Algerian sea lavender).**

Site Name	Common Name	# of Visits	Acres Surveyed	Acres Treated	Plants treated
Site #2: La Costa, Carlsbad	Ward's weed	2	4.9	3.4	>5,200

A new pre-emergent chemical trial was initiated using Gallery based on control efforts in Australia. The chemical does not harm established perennial shrubs and is effective at controlling wards weed. The eastern portion of the site was treated by a crew of three over two days, 1-5 & 8-2018. A follow-up post emergent (glyphosate) application was made by a crew of two over three days 3-21, 23, & 26-2018. The treatment area was the eastern portion of the site as well as treating any plants in the fuel management zone adjacent to housing. Center for Natural Land Management also carried out pre and post-emergent treatments. Together most of the site was treated. Results appear to be good, although rainfall levels this year were moderate.



*Hypericum canariense*, Canary Island St. John's Wort



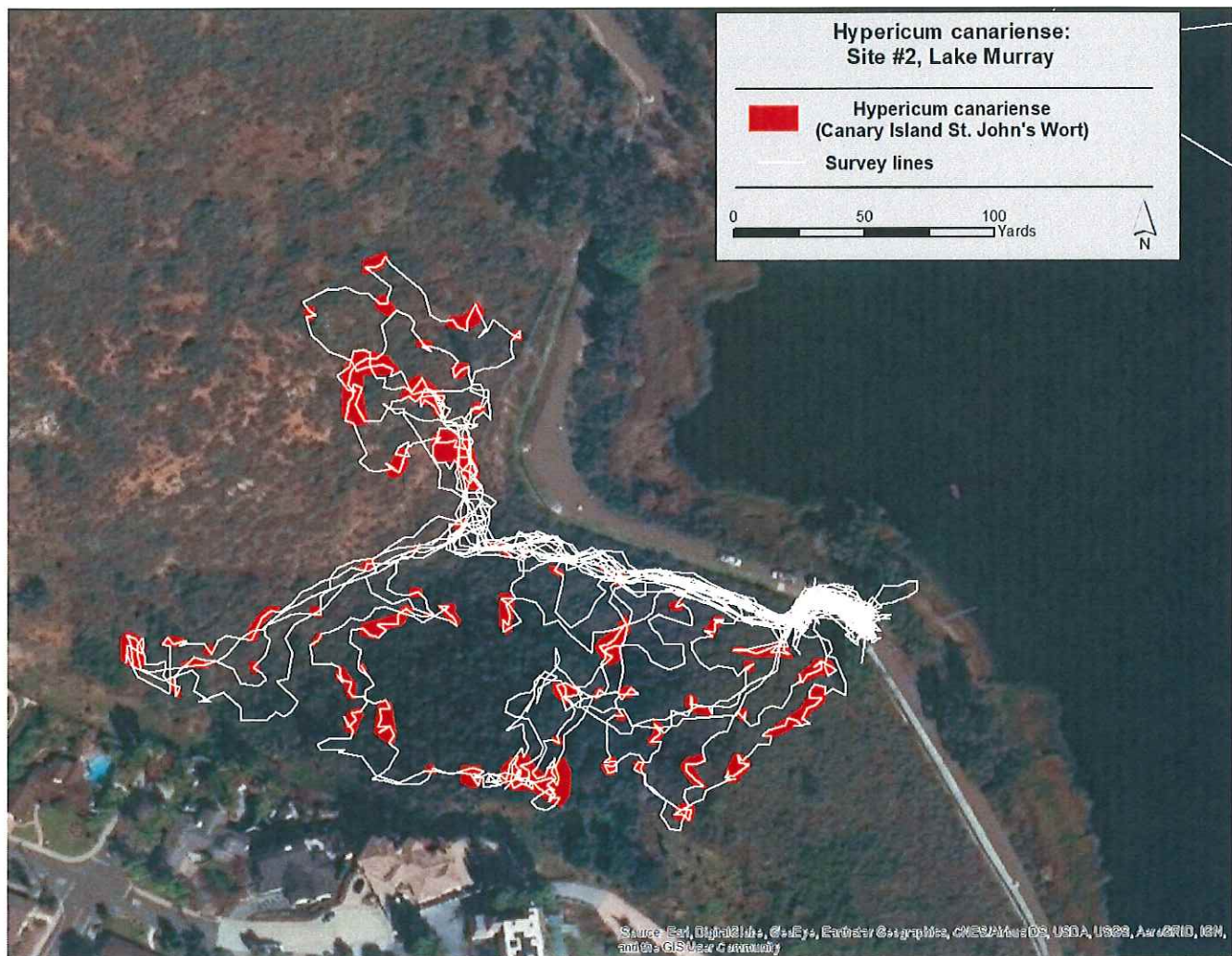


***Hypericum canariense*, Canary Island St. John's Wort: Site #2 Lake Murray**

**Table 6. Summary of treatments performed by AWM on *Hypericum canariense* (Canary Island St. John's Wort)**

Site Name	Common Name	# of Visits	Acres Surveyed	Acres Treated	Plants treated
Site #2, Lake Murray	Canary Island St. John's Wort	1	0.8	0.8	950

Re-sprouting plants and seedlings were foliar treated with herbicide (Element 4). A crew of two individuals visited the site over three days 1-16, 17 & 26-2018. Cover is greatly reduced (>90% cover reduction), but there were scattered re-sprouts and seedlings. Additional treatments will continue in the next quarter.

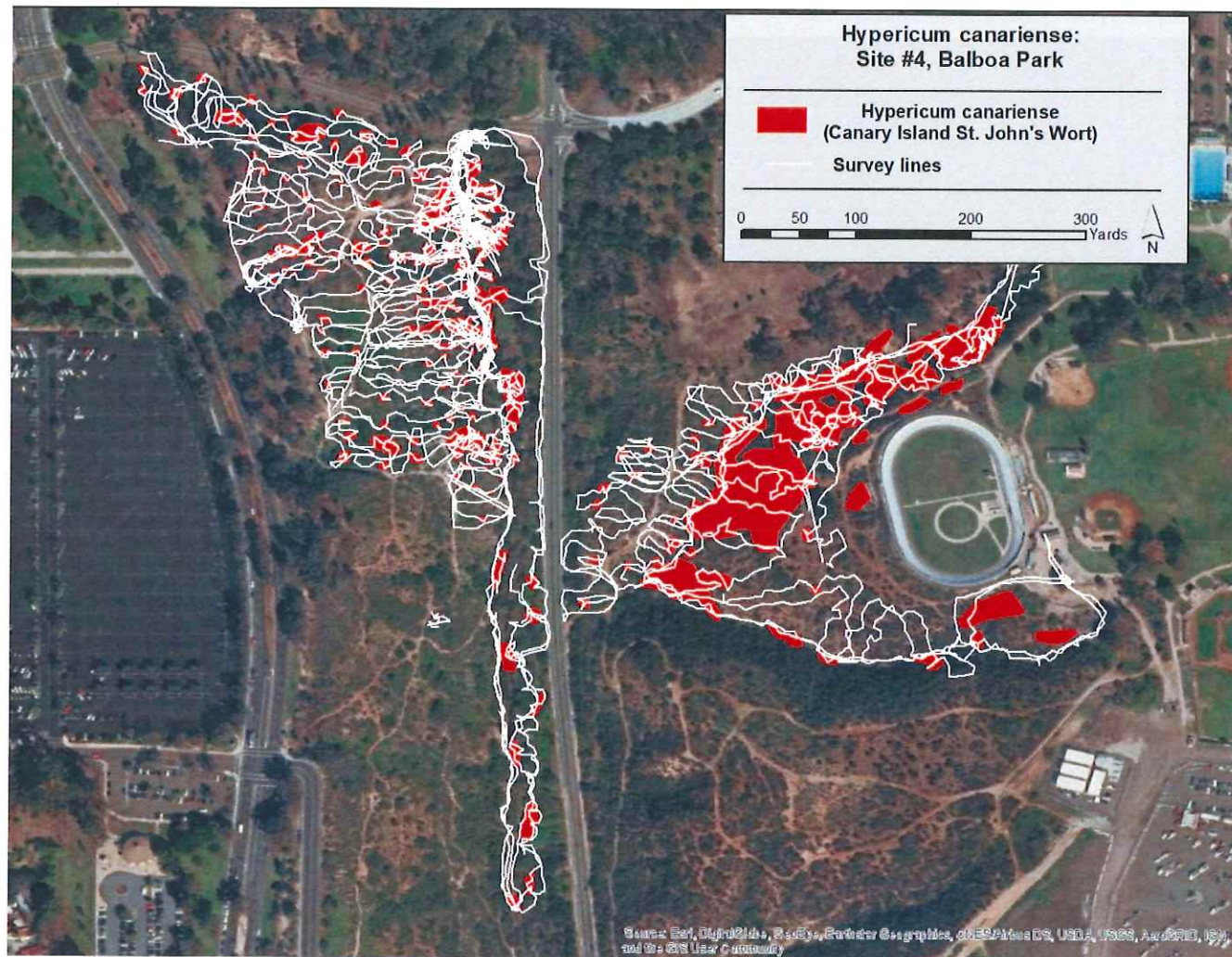




***Hypericum canariense*, Canary Island St. John's Wort: Site #4 Balboa Park**

Site Name	Common Name	# of Visits	Acres Surveyed	Acres Treated	Plants treated
Site #4, Florida Canyon, Balboa Park	Canary Island St. John's Wort	1	13.4	5.3	4,385

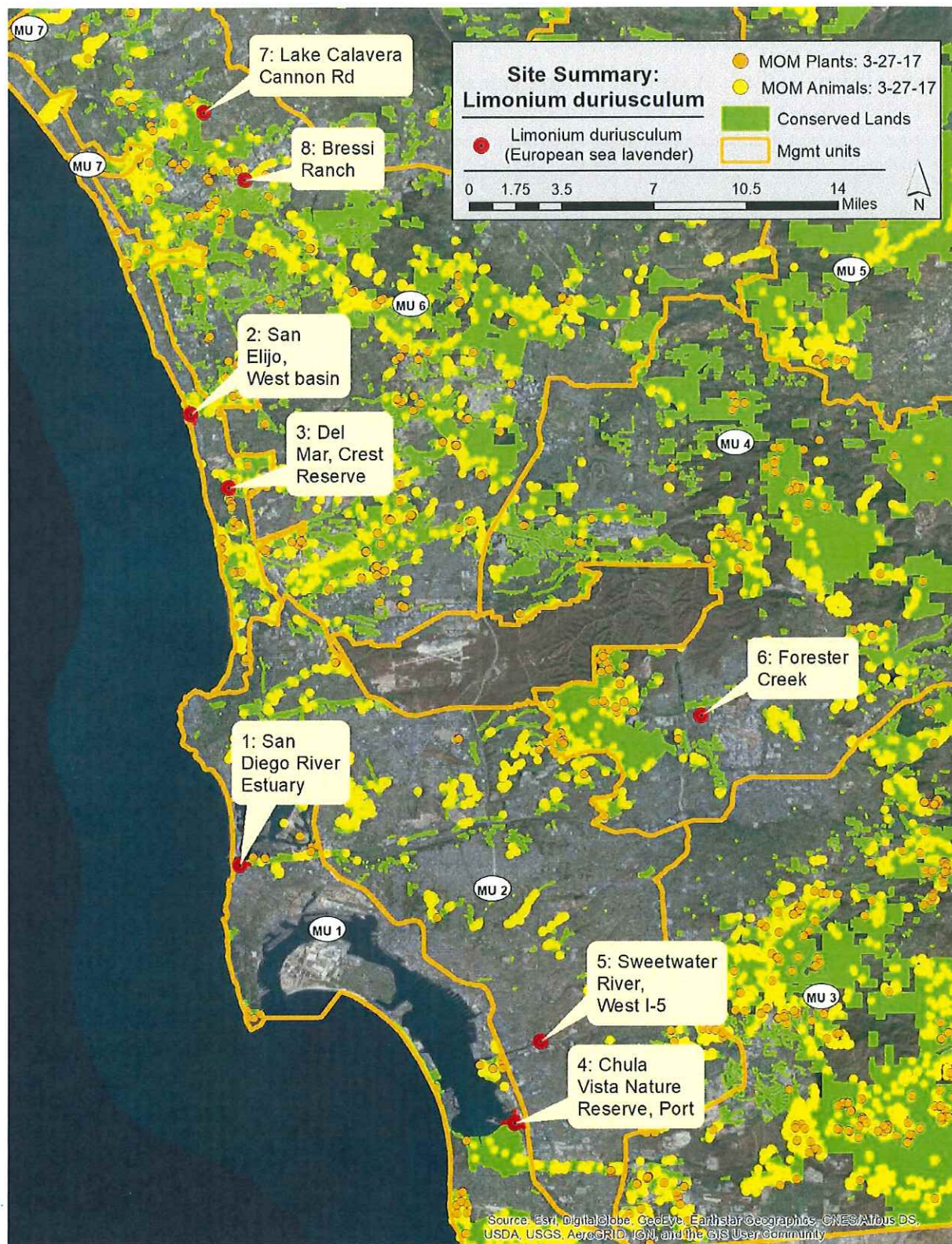
Re-sprouting plants and seedlings were treated with herbicide (Element 4) as well as scattered adult plants missed in previous treatments. A crew of two individuals visited the site over seventeen days 2/2, 5-6, 8-9, 12-13, 15-16, 20-23, 26, 28- 2018 and 3/26,28/2018. Cover is significantly reduced (>85% cover reduction), but there were many scattered re-sprouts and many seedlings.





*Limonium duriusculum*, European sea lavender:

Table 7. Summary of treatments performed by AWM on *Limonium duriusculum* (European sea lavender).

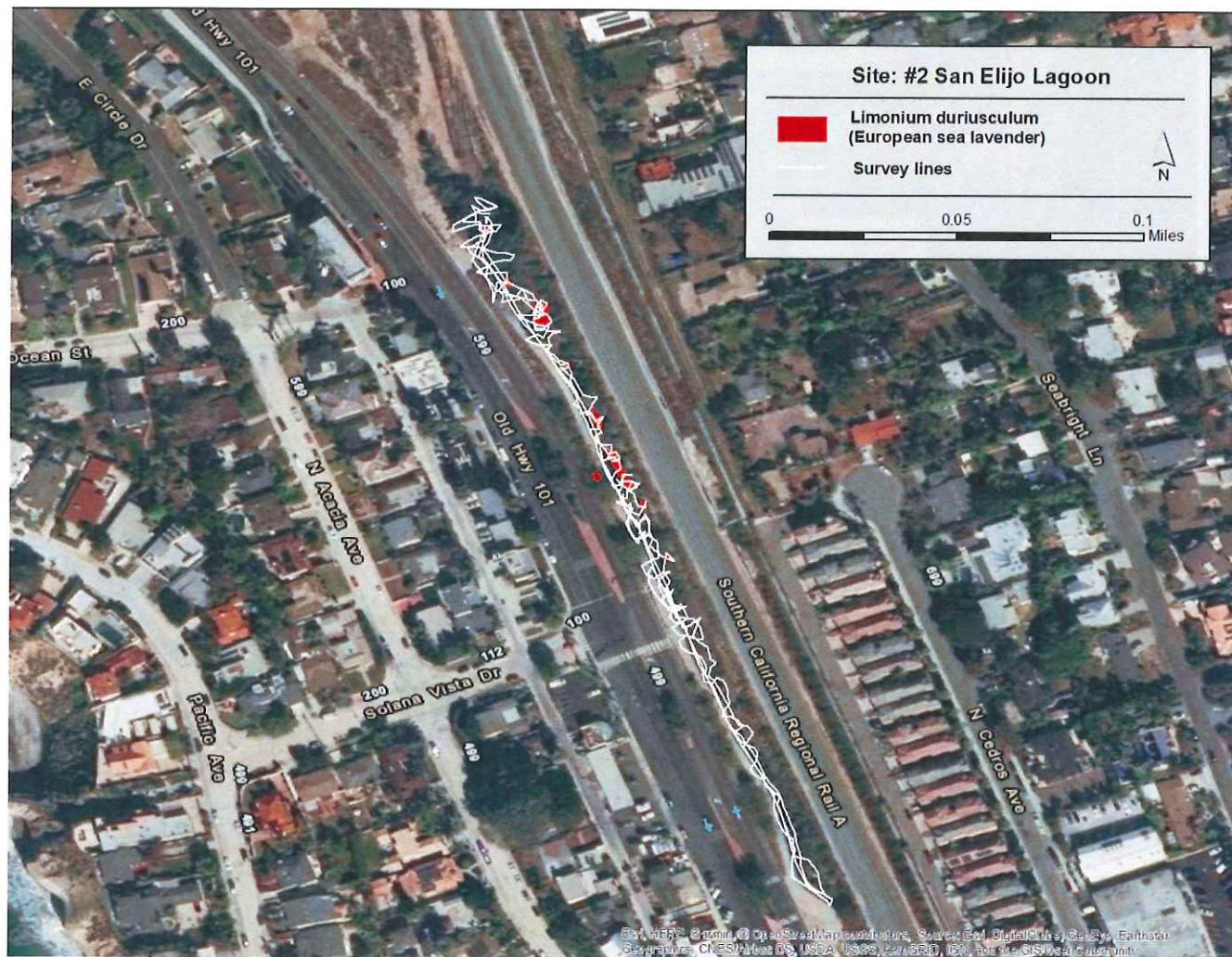




**Table 8. Summary of treatments performed by AWM on *Limonium duriusculum* (European sea lavender).**

Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #2 San Elijo Lagoon	European sea lavender	1	1.0	0.1	120

Seedlings were hand pulled. A crew of two individuals worked on 3-22-2018. Cover is greatly reduced (>95% cover reduction), but there are seedlings sprouting.





*Limonium duriusculum*, European sea lavender: Site #: Sweetwater River, Chula Vista

Table 9. Summary of treatments performed by AWM on *Limonium duriusculum* (European sea lavender).

Site Name	Common Name	# of Work Cycles	Acres Surveyed	Acres Treated	Plants treated
Site #5 Sweetwater River, Chula Vista	European sea lavender	1	1.0	0.1	2,000

Mature plants and seedlings were hand pulled on the edge of the population (under County authorization to maintain river banks). The County needs an ROE to initiate herbicide treatments. This is being requested from the City of Chula Vista. A crew of two individuals worked on 2-7-2018. Many patches of mature plants and carpets of seedlings necessitate the use of herbicide to control this population.





#### **TASK 4 – AWM: Invasive Plant Level 3 Management.**

Level of Effort: (<20%) of overall contract

- No charges during this quarter.

#### **TASK 5 – Coordinator: Tracking and Updating Invasive Species for Priority Removal.**

Level of Effort: (5%) of overall contract

- Volutaria knapweed (*Volutaria tubuliflora*) has been located in three sites in San Diego County (Borrego Springs; Chula Vista, Rice Canyon; and Point Loma, DoD). The status of the Point Loma population was checked. The site has been cleared of all vegetation, so there are no plants at the site. Volutaria knapweed also occurs in Orange County (Newport Bay). Coordination work with these regions on mapping, ID and treatment approaches continued (emails and calls).
- A Plant ID sheet for Medusahead was drafted.

#### **Work Anticipated for 4th Quarter Period, April 1 – June 30th, 2018:**

##### **Task 1 – Invasive Plant Species Coordinator:**

- Coordinate ROE work with AWM, update database.
- Monitor and coordinate with AWM during implementation.
- Survey and map sites as needed.
- Prepare quarterly report.
- Submit GIS data for target EDRR species and work with SDMMP of invasive species mapping attribute data.

##### **Task 2 – AWM: Invasive Plant Level 1 Management.**

- Survey, map, and treat any reported sightings of target Level 1 plants.
- Supervision of staff, provide training, guidance, and preparation for field work.
- Collect GIS treatment polygons and survey routes (lines) of targeted weeds.

##### **Task 3 – AWM: Invasive Plant Level 2 Management.**

- Re-treatment of sites.
- Supervision of staff, provide training, guidance, and preparation for field work.
- Coordinate and finalize tracking methods for work completed.
- Initiate and continue work outlined in work plan.
- Obtain signed ROEs.



- Collect GIS treatment polygons and survey routes (lines) of targeted weeds.

**Task 4 – AWM: Invasive Plant Level 3 Management.**

- No work planned.

**Task 5 – Coordinator: Tracking and Updating Invasive Species for Priority Removal.**

- Continue coordination with Department of Defense, California Department of Parks and Recreation, San Diego Weed Management Area and County of Orange CNPS EDRR invasive species groups.
- Continue to aggregate data and track new prospective EDRR target species.
- Attend SDMMP land manager, working group and other meetings as requested.