

<b>Applicant Name:</b>	Mission Resource Conservation District
<b>Address:</b>	130 East Alvarado St., Fallbrook, CA 92028
<b>Phone and Email:</b>	760-728-1332, Judy@missionrcd.org
<b>Name of Property:</b>	Over 700 properties on San Luis Rey, Santa Margarita, & San Dieguito Watersheds, and Carlsbad HU
<b>General Location:</b>	San Luis Rey, Santa Margarita & San Dieguito Watersheds and Carlsbad HU: Oceanside, Fallbrook, Valley Center, San Pasqual Valley, Carlsbad.
<b>Jurisdiction:</b>	San Diego County
<b>Total Acres:</b>	>800,000 acres in the four watersheds (only San Diego County)
<b>Estimated Acres Requiring Management:</b>	Approximately 7,000 acres actively searched and treated, > 50 river & stream miles
<b>Owner(s) of Property:</b>	Various: Public- State, County, municipal, agency & private groups or individuals.

**Land manager(s) of property (include names):**

Mission RCD: District Manager-Judy Mitchell, Conservation Biologist- Karla Standridge. San Dieguito JPA and Conservancy: Shauna Anderson and Jack Hughes. San Elijo Lagoon Conservancy: Doug Gibson and Shirley Innecken.

**Brief Project Summary that includes your primary goal and objectives:**

No invasive non-native plant has the ability to alter and degrade biotic and abiotic processes to the magnitude that *Arundo donax* can. It alters hydrology, geomorphology, fluvial processes, fire, habitat, and biological function, driving riparian systems toward *Arundo* dominated systems with limited value to native plants and animals, including many listed species. Fire impacts also reach uplands as *Arundo* conveys fire across and down rivers. The Santa Margarita and San Luis Rey Watersheds were the two most invaded watersheds in the County - they are now over 98% *Arundo* free. EMP funding is needed to continue re-treatments to allow the program to reach its goal of eradication. The program has active regulatory permits, current right of entry agreements (ROEs) for over 600 properties, and continues to secure other funding to complete the few remaining initial treatments (match). State and Federal funders infrequently fund re-treatments (viewed as O&M), but this is a critical component of the program and is one that is vital for the EMP program to support. The Invasives Plant Species Plan specifically recommends supporting watershed based *Arundo* programs that have completed work on a high percentage of their watersheds- this projects covers the four most comprehensive programs.

**Quantify Expected Results**

- *Arundo* re-treatment of over 28 miles of creeks and rivers each year on the Santa Margarita and San Luis Rey Watersheds (initial treated *Arundo* stands Fig.2; past EMP re-treatment work Fig. 3). This has been about 4,000 treatment points per year based on past EMP work, but the number is dropping.
- *Arundo* re-treatment on over 15 miles of San Dieguito River each year with about 4,000 re-treatment points recorded based on completed 2016 and 2017 EMP funded work (initial treated *Arundo* stands Fig.2; past EMP re-treatment work Fig. 3).
- *Arundo* re-treatment on over 5 miles of Carlsbad HU each year with about 2,000 re-treatment points expected (initial *Arundo* stands Fig. 2).
- Maintenance of the ROE databases, which have over 1,500 permissions to date (all three programs).
- Annual reporting and maintenance of regulatory permits on all three watersheds (CADFW, USFWS, ACOE, & CEQA all complete and active).

**Brief Description of dedicated staff and/or consultants that would work on Project:**

Mission RCD has been implementing watershed based *Arundo* control projects since 1994. It has completed eleven major *Arundo* control projects funded by: Wildlife Conservation Board, Coastal Conservancy, SWCB, DWR, SANDAG, and Caltrans under various grant programs. San Dieguito JPA and Conservancy have worked on *Arundo* control for the past 10 years with State Resources, DWR, NRCS, and SANDAG support. Shauna Anderson and Jack Hughes have years of experience in permitting and project management. San Elijo Conservancy (Carlsbad HU) has over 10 years of watershed based invasives control experience funded by WCB, DWR, NRCS, and the Coastal Conservancy. Doug Gibson and Shirley Innecken have years of experience in permitting and project management. Dendra Inc. principal Jason Giessow has worked on *Arundo* control programs since 1996. He has assisted all three programs with permitting, grant writing, mapping and formation of their watershed based programs (Santa Margarita, San Luis Rey, Carlsbad, San Dieguito), as well as San Diego River watershed and Orange, and Monterey Counties. He has served as the California Invasive Plant Council

(Cal-IPC) president and worked with Conservation Biology Institute (CBI) and Cal-IPC to evaluate regionally based invasive non-native plant impact scores and priorities for the San Diego Region.

**Funding Needs Summary**

**1. Please indicate how much funding is being requested from SANDAG and any matching funding proposed:**

Budget Item	Requested Funding Amount	Proposed Matching Funds*	Description
Personnel Expenses Staff	\$24,000	\$24,000	Includes staff time for non-administrative work on the project
Personnel Administrative Expenses	\$21,000	\$21,000	Includes all staff time to administer the contract
Consultant Expenses	\$334,500	\$334,500	Includes all costs for consultant services
Other Direct Expenses	\$0	\$0	Includes all equipment, supplies, mileage, etc.
Indirect Costs	\$0	\$0	All indirect charges (e.g., overhead) on the project, if any.
<b>Totals</b>	<b>\$379,500</b>	<b>\$379,500</b>	

**2. Are there matching funds available?**  Yes  No

**If yes, how are the matching funds assured?**

Matching funds will be provided by two awarded state funded projects through CDFW and WCB, federal projects (ACOE and NRCS), and local funds for treatment of *Arundo* stands on the San Luis Rey, Santa Margarita, San Dieguito and Carlsbad Watersheds. Both match and EMP funds will be used to treat *Arundo* in the program area. Match will focus on completing control of remaining untreated *Arundo* stands (initial treatments) and the EMP funding will focus on re-treatments of *Arundo* (work on past project sites). We will be able to provide supporting documentation via reimbursed invoices from contractors, consultants, and staff.

**PROJECT PROPOSAL**

**A. Project Purpose**

**1. Describe the proposed management activity(ies) and how it relates to the Management Strategic Plan (MSP) for Conserved Lands in Western San Diego County.**

The *Arundo* control program for the San Luis Rey and Santa Margarita watersheds has been operating since 1994. The program has completed initial treatments on over 99% of Santa Margarita and 98% of San Luis Rey using predominantly State and Federal grant funds (Fig. 2). For watershed based *Arundo* eradication programs to be successful, long term re-treatments must occur. State and Federal funders typically only fund initial control and re-vegetation work. Local programs, such as the SANDAG EMP program, are vital in providing funding for re-treatment efforts to make these watershed based programs successful over the long term. This EMP proposal focuses on the two critical tasks that must be completed, re-treatment of *Arundo* and maintenance of the right-of-entry (ROE) database, to allow re-treatments to occur on over 700 public and private properties (Fig. 2-3). New EMP funding will renew Mission RCD's expiring EMP funded work for up to three years: fall 2018, fall 2019 and fall 2020 to carry out re-treatments moving the program closer to 100% eradication in the watersheds. The proposal will also fund the second round of re-treatments on over half of the San Dieguito watershed (Fig. 2-3). Additionally, the proposal will also fund the first round of re-treatments on the Carlsbad HU watershed (Fig. 2) All project areas are of very high value, protecting substantial investments in habitat restoration and preservation on all three program areas (four watersheds).

The MSP's approach to managing invasive plant species is laid out in the Invasive Plant Strategic Plan (IPSP), which recommends the support of existing programs that are currently implementing containment and eradication programs on a watershed or management unit based scale, and that the support should be EMP funding directed toward the re-treatment of previously treated areas. All four target watersheds in this proposal received a priority ranking of "very high". The invasive non-native plant *Arundo* had the highest impact ranking of any plant reviewed (PAF score 8.9), as well as receiving a 'very high' priority ranking as a Level 3 management species (a species that is being controlled at the landscape level). **These are the highest prioritization ranking scores in the Plan (for species, for management level, and for specific watershed project areas).** This proposal should receive strong consideration for continuing funding given the recommendations of the IPSP. *Arundo* has severe abiotic and biotic impacts, as well as being highly invasive, as reflected in the high PAF score. *Arundo* has severe impacts to listed species [arroyo toad, Southwestern willow flycatcher, least Bell's vireo, southwestern pond turtle, *Ambrosia pumila* (San Luis Rey), Fig. 1], as well as indirect impacts to upland listed species (coastal cactus wren, Quino checkerspot (San Dieguito), Hermes copper, Western burrowing owl (Carlsbad)) through *Arundo*'s ability to move fire across landscapes, which results in severe impacts to upland terrestrial communities.

*Arundo*'s potential impacts to specific Caltrans and SANDAG/Transnet mitigation sites (and the listed species they support) will be described below.

**2. Which MSP species and their habitats will benefit from the proposed management activity? Which specific MSP objective(s) and action(s) will be implemented? Name the specific MSP species occurrence(s) to benefit from the management activity, if applicable.**

Arroyo toads (*Anaxyrus californicus*) are particularly impacted by changes to channel morphology as they require pools and fluvial sandy material for aestivation and completion of their life cycles. The MSP goal for arroyo toads is to, "Protect and enhance existing significant occurrences of arroyo toad to self-sustaining levels and re-establish occurrences in locations where they previously existed to ensure persistence over the long-term." Significant occurrences of arroyo toads are known to occur in MUs 5, 6, and 8, covering three target watersheds in the project area. The MSP, lists non-native invasive plants as a significant threat to arroyo toad populations and states that "densities of arroyo toad are highly variable, fluctuating from year to year depending on the presence of suitable habitat which is affected by drought, fire, flooding, hydrology and other climatic and human-induced causes." *Arundo* control will meet MSP objectives 2 (conduct routine management actions for arroyo toad identified...including removing invasive plants...within the known arroyo toad habitat) and 11 (...implement post fire management actions to ensure the recovery of arroyo toad at occupied sites following wildfire events, including invasive plant control).

Continued *Arundo* re-treatment is needed on the San Luis Rey to protect/enhance large Caltrans mitigation sites (Morrison and Vessels) that provide new toad aestivation areas (Morrison) as well as river bed widening activities (Vessels) that created pool areas. Keys Creek and the Caltrans mitigation sites have extensive documentation of toad presence (Fig. 1). The portion of San Dieguito requested for re-treatment funding is a core population areas for toads (both FWS data and consultant reports demonstrate extensive occurrences, Fig. 1). Transnet/SANDAG is implementing a major riparian habitat restoration plan for a site in this area that will benefit arroyo toads.

Populations of San Diego ambrosia (*Ambrosia pumila*) typically occupy open spaces along the upper terraces of river and creek drainages. *Arundo*'s ability to significantly alter natural hydrological flows reduces the availability of critical habitat needed for *Ambrosia* populations to persist. Encroaching *Arundo* stands increase cover, minimizing the open, sandy terraces needed for *Ambrosia*'s success, and pose wildland fire threats in fluvial areas. *Arundo* control will meet the MSP objective and action for continued work on Best Management Practices (BMPs) at the local level to control and reduce invasive non-native plant cover. The MOM database has some, but not all, occurrences on San Luis Rey and San Dieguito (Fig 1). There are three populations on Caltrans mitigation sites (Groves, Morrison, and Marron), additional sites are also mapped in detail by FWS in the *A. pumila* critical habitat designation, these are all shown on Fig 1. *Arundo* control will meet MSP objective 2 for Ambrosia (Using BMPs, conduct invasive plant control annually until success criteria are met and then as needed thereafter).

Populations of Hermes copper in the Carlsbad HU (Fig 1) will benefit through the reduction of wildland fire risks. The goals and objectives for the species list increased fire frequency as a substantial threat the Hermes copper. This project will meet MSP objective 11 (Beginning in 2019, implement high priority MSP 2018 Wildfire Ignition Reduction Plan measures for Hermes copper to reduce the probability of ignition at most at-risk occurrences) for this species.

Northern harrier (Carlsbad and San Dieguito, Fig 1) face threats from the occurrence invasive plants changing nesting and foraging habitat. Likewise, southwestern pond turtles face a significant threat from invasive plants encroaching into suitable habitat. The Project will control *Arundo* that can degrade suitable habitat for these species.

The Light-footed Ridgeway's rail (Carlsbad and San Luis Rey, Fig 1) has a highly limited range that is affected by the loss and degradation of habitat, as well disturbances due to altered hydrological conditions. This project will address both of these concerns.

Sticky dudleya and Encinitas baccharis (Carlsbad and San Dieguito, Fig 1) face threats from altered fire regimes and invasive plants. Both of these species are directly adjacent to riparian habitat areas.

The *Arundo* control project will also meet MSP objective 9 for the coastal cactus wren (Implement management actions to reduce severity of potential fires through...reducing nonnative grasses and herbs that can carry wildfire into cactus patches).

South western willow flycatcher populations are under significant decline regionally. Populations occur on the San Luis Rey and Santa Margarita Rivers. *Arundo* significantly degrades the habitat by altering fire, water, and succession processes.

*Additionally Arundo* control benefits populations of heart-leaved pitcher sage, Orcutt's brodiaea, Parry's tetracoccus, thread-leaved brodiaea, western burrowing owl and *Quino checkerspot* through the reduction of wildland fire threats. Re-treatment of *Arundo* is the critical component to achieving full eradication and stopping the spread/re-growth of *Arundo* infestations throughout the target watersheds. Achieving 100% eradication will ultimately allow riparian systems to return to their natural vegetative state, greatly reducing wildland fire risk.

**3. Is the proposed project within the MSP area? In which Management Unit (MU) is the project located? Attach a map.**

Project work is within the MSPA. Work and benefits will occur in MUs 5, 6, 7, & 8 (Figs. 1-3). Upper portions of Santa Margarita, San Luis Rey and San Dieguito watersheds are outside of the MSPA, but active work on the ground is not occurring in these upper portions of the watersheds or in Riverside (for SMW).

#### **4. Describe the stressors and/or threats to the MSP species and their habitats in the project area that will be addressed through implementation of this project proposal.**

*Arundo* is nearly unique in the severity and diversity of its impacts. These impacts occur predominantly due to the size and density of *Arundo* stands that develop over time. Dense stands of *Arundo* modify fluvial processes on large river systems, such as the Santa Margarita, San Luis Rey and San Dieguito. *Arundo* stands form along the banks converting the system into a single deep channel that is stable (persistent) versus the multiple, laterally unstable channels that were historically present. This change is particularly detrimental to arroyo toads, which require pools for reproduction. These form in dynamic systems where there are braided channels with scoured out pools. Single deep water channels are not favorable. *Arundo* stands also modify sediment transport as well as filling in/growing over sandy terraces. These are areas that toads use for aestivation. Control and eradication of *Arundo* helps restore width and instability as well as normalizing sediment transport, which are critical to maintaining riverine features that endangered species utilize.

*Arundo*'s greatest impact may be on the alteration of fire regime cycles in both riparian and upland areas. *Arundo* stands are highly flammable as well as encouraging encampments, which create a new class of fires that start in riparian areas as opposed to burning when upland fires occur (Cal-IPC 2011). Riparian areas that once interrupted the conveyance of upland fires are now frequently the location of ignition, as well as a fire conveyance corridor. *Arundo*'s unique role in the urban-wildland fire cycle cannot be over emphasized.

The San Luis Rey watershed was recently impacted by the Lilac Fire (December 2017), which burned approximately 4,100 acres and destroyed 157 structures. The fire began along Interstate 15 and then burned down slope setting a large *Arundo* stand on fire in a bowl between I-15 and Old Highway 395 (landowner has not participated in program). The fire quickly moved down main stem San Luis Rey River as well as jumping to adjacent upland habitat. Several ongoing re-treatment sites were impacted by the fire, as well as a new large *Arundo* treatment site (WCB funded, ~7.9 acres). *Arundo* resprouts quickly (1-2 weeks) after fire events and can grow 3-4 times faster than native riparian vegetation after fire, which can lead to an *Arundo* dominated system if left unchecked (type conversion). Re-treatment of past project areas that were burned in the fire with EMP funding is critical to restoring these areas after the fires; they will be re-treated in 2018, 2019 and 2020.

The MSP describes the threats and stressors to MSP species and their habitats. Among these, altered fire regimes are listed as a major threat due to the ability to significantly alter vegetative communities and cause significant mortality among listed species. The MSP describes the threats and stressors of non-native invasive plants to MSP species and their habitats, and the SDPAF for *Arundo* outlines both biotic and abiotic impacts with detailed descriptions of impacts to listed species. The Cal-IPC *Arundo* Impact Report (2011) also exhaustively examines numerous impacts to federally listed species. The IPSP lists *Arundo* as a Level 3 invasive species, meaning that its abundance is high in localized areas but has a high likelihood of being eradicated within focal areas such as a management unit or watershed. The MSP's approach to managing invasive species is to follow the recommendations provided in the IPSP. The IPSP recommends the support of existing programs that are currently implementing containment and eradication programs on a watershed or management unit based scale and states that "due to the high cost of initial control, EMP funding support should be directed toward re-treatment of previously treated areas". The four target watersheds – Carlsbad HU, San Luis Rey, Santa Margarita, and San Dieguito – received a high priority ranking in the IPSP and re-treatment work is necessary to meet the goals and objectives of both the MSP and IPSP.

#### **5. Describe the management techniques proposed, including whether they have been previously used successfully and where. Are there any negative effects to MSP and other sensitive species and their habitats that could result?**

The project uses only one method for *Arundo* re-treatments - foliar application of aquatic approved formulations of glyphosate (Aquamaster or Rodeo). This is a targeted application using backpack sprayers in the fall when efficacy is highest. Greater than 90% of the *Arundo* leaf area is treated, an aquatic approved surfactant is used to improve spreading and adhesion of the spray, and a dye is used to assist in assuring adequate coverage and to make sure drift/non-target application is not occurring. This method has been fine tuned over the past 15 years to assure the highest effectiveness and minimize impacts to non-target species. It is important not to cut the *Arundo* prior to spraying as this drastically reduces treatment effectiveness. *Arundo* is very difficult to kill- hence the need for ongoing re-treatments in past project areas. It is important to note that initial work was on well established stands of *Arundo* with large reservoirs of energy stored in their rhizome mats (over 40 canes per m<sup>2</sup>, stands sometimes over 10 acres in size). At specific sites the number of canes drops significantly over time with re-treatments (Fig. 3, Table 1), but it takes persistent re-treatment over every mile and every patch of treated *Arundo* to achieve 100% success. The watershed control program is also a 'big' program, with major projects ending about every three years. This has generated 'new' re-treatment areas (1 to 5 miles of river and streams per completed project) as projects move into the EMP funded program. Heavily invaded portions of Santa Margarita that once had 100's of acres of dense stands now have a few canes per mile. The goal is to have no canes per mile- and it takes 15 to 20 years to achieve that from the initial treatment date. Permits are held that specifically allow minor trimming of natives if needed to assure un-cut *Arundo* is treated and native vegetation is not sprayed. Trimming of natives is minor and they quickly regenerate within the next spring growing season. Permits held by CADFW, FWS, and ACOE all outline measures that protect habitat and water resources. All work occurs between September 15th and March 15th, with most occurring in the fall. This avoids impacts as

crews are working when listed species are either not present (migratory: least Bell’s vireo, southwestern willow flycatcher) or not active/dormant (arroyo toad, *Ambrosia pumila*).

**Table 1.** Selected sites from San Luis Rey Watershed funded by EMP re-treatment grants. Number of *Arundo* 'points' or 'locations' treated (each point has multiple canes, that number is declining over time too- see grant reports).

Re-treatment Year	Santa Margarita	San Luis Rey River: College	Ostrich Creek	Live Oak Creek	Olive Hill Creek	Castle Creek
	Initial work ended: 2002 & 2004	Initial work end: 2008	Initial work ended: 2002	Initial work ended: 2000	Initial work ended: 2004	Initial work ended: 2006
2009 (spring)	-	-	196	-	-	-
Fall 2010	504	1,932	273	297	121	568
Fall 2011	-	1,517	84	46	15	268
Fall 2012	-	472	101	47	11	169
Fall 2013	169	689	-	40	-	95
Fall 2014	-	469	95	22	28	99
Fall 2015	155	233	-	-	-	40
Fall 2016	-	236	-	28	-	-
Fall 2017	117	-	27	-	22	5

**6. What strategic approach will be used to ensure the successful, long-term outcome of the proposed project (e.g. upstream exotic removal prior to downstream, future on-going maintenance)? Which adjacent conserved lands will not be included and why?**

*Arundo* control programs are most effective when top down implementation occurs. This is how all three watershed based programs have been implemented. The Santa Margarita and San Luis Rey is the most complete, large scale watershed eradication programs in the State (Cal-IPC 2011). San Dieguito watershed is also being rapidly treated, with most areas treated above Rancho Santa Fe. Carlsbad HU has very complete treatments on Escondido creek and strong control on most main creek corridors on the other watershed units. All three programs have had significant Federal and State funding to implement initial control, but require continued funding to achieve their goal of 100% *Arundo* control (eradication). EMP funding is the best funding source for re-treatments, as State funders view the work as O&M, which Bond funds cannot be applied toward. Federal programs are typically aimed at agricultural or private property agreements (NRCS & FWS). These Federal funding programs require income declarations and extensive contracting with **each** property owner. This is not practical when hundreds of properties are involved as is the case of watershed based programs. With continued EMP funding MRCD, SDRVC, and SELC can use current right of entry permissions to carryout re-treatment work efficiently and effectively.

Funding is held by MRCD to continue initial (new) treatments on the San Luis Rey and Santa Margarita (WCB). Nearly all *Arundo* on both watersheds is either funded for initial treatment (grant or mitigation) or needs to be re-treated (this EMP application). This covers all conserved lands, as well as nearly all privately held habitat areas on both watersheds within San Diego County. The previous EMP funded project was very effective in treating *Arundo* re-sprouts as shown in Figure 3 and Table 1. These past re-treatment areas will continue to be re-treated in rotation along with new areas where recently completed projects require re-treatments. Recently completed projects include: ARRA/SWCB (ended 2012), first WCB project (ended 2012), IRWM and WCB #2(ended 2015, and WCB #3 (ends 2021).

**7. What are the goals and objectives for the proposed project? What criteria/metrics will be used to measure success? If applicable, what quantitative monitoring data will be collected to evaluate success? Who will be collecting the monitoring data and what are their qualifications?**

The goal of the project is to complete re-treatments and move the *Arundo* program closer to its goal of eradication. On the Santa Margarita River the areas between Temecula and Camp Pendleton are very close to having 100% control. Initial treatment of these areas was started in the mid 1990's and was completed by 2004. It has taken 20 years to achieve this level of control. Sandia and lower Rainbow Creeks are also close to 100% control – 117 treatment points were recorded in 2018, with most of these being single or small groups of canes.

Work on the San Luis Rey Watershed started in 2000. Past EMP funding shows significant progress in moving towards the goal of 100% control (Figs. 3, Table 1). Older program areas (Live Oak Creek, Ostrich Creek, upper San Luis Rey) are approaching

100% control. Other parts of San Luis Rey were started after 2005. These areas are making steady progress and they require EMP funding to achieve 100% control.

Upper San Dieguito has had extensive Arundo control work which started in 2007 and ended in fall 2015. EMP re-treatments in fall 2016 and 2017 were successful, continued re-treatments are critical. The program is making rapid progress, but stable re-treatment funding is needed. Past project areas have not always been re-treated, which has lengthened the control effort. With EMP funding the program can achieve >98% control with eradication of *Arundo* in river areas possible by 2020. There is one property that is not participating in the program that will be tracked over time.

Carlsbad HU Arundo work began in 2005. Areas on Escondido Creek have been worked on fairly steadily through 2014. Re-treatment funds are needed to re-visit these sites and scattered sites on other watershed units treated under projects completed in 2009 and 2012.

All re-treated *Arundo* is GPSed by the crews as they treat. This is the only efficient way to track the scattered *Arundo* plants that are distributed across treatment areas. This is building a valuable dataset that tracks locations of *Arundo*, as well as documenting progress over time. Photos are also taken during the work cycle for reporting. These are the largest invasive plant treatment datasets that have been provided to SANDAG EMP staff to date. These point datasets compliment the initial polygon based GIS mapping that occurred prior to initial treatment work. Current mapping/GIS work is catered to project goals and needs: 1) tracking re-treatment progress over time, 2) documenting extent of work, and 3) assisting in assessment of which ROEs need to be maintained to carryout re-treatments (the program does not want to spend resources maintaining ROEs that it no longer needs). The contractors that carry out re-treatments GPS *Arundo* points as they go (firms such as: ACS Habitat, Natures Image, etc.). Mission RCD and consultants (such as: Dendra Inc) compile GIS data, carry out analyses, and generate maps and reports. Mission RCD and Dendra Inc. have compiled and generated some of the larger mapping datasets in the region for multiple clients including: SANDAG, DoD, and Cal-IPC.

**8. How will the applicant manage the data collected? What software will be used to house the data? Who will be responsible for compiling and transferring the data to SANDAG? Who will be preparing the required quarterly, final, and all other reports?**

The re-treatment GIS data will be collected by the contractor as it carries out re-treatments. This GIS data will be delivered as Shape or Geodatabase files (ESRI Inc.). These datasets will be compiled and verified, metadata will be added, and they will be submitted to the SANDAG EMP program at the end of the project. Maps will be generated quarterly and annually for reporting. At any point that SANDAG/EMP wishes to utilize GIS information, it will be provided. Quarterly reporting will also describe work on tasks, including photos of representational sites each treatment season (Mission RCD staff and Dendra Inc.). Data and information gathered during the EMP project is a component of the overall *Arundo* control program. The information will be utilized in planning re-treatments and maintaining the ROE database. The ROE database itself is also maintained and updated. It can be shared with SANDAG EMP if needed, however it contains personal contact information and notes on properties pertaining to annual re-treatments, so it should not be shared publicly. Additionally, a binder is kept of ROE forms which is retained by Mission RCD and updated as permission slips are renewed and/or ownership changes. Mission RCD and Dendra Inc. also maintain project area maps which are utilized by contractors to carry out re-treatments. This helps to organize the various creeks and portions of the river into discrete work areas. The maintenance of the GIS ROE database, complimentary Excel data files, and work area maps is a time consuming but necessary task to assure that re-treatments occur on properties that have given permission, and that permission is obtained from all properties where *Arundo* is found. These datasets have been pulled together over a 15 year period for the program area.

**9. Has the proposed project received *TransNet* Environmental Mitigation Program (EMP) funds previously? If so, what was accomplished with the funds and why are additional funds being requested?**

This will be the fourth cycle of EMP funding for re-treatments for Santa Margarita and San Luis Rey, the second for San Dieguito areas, and the first for Carlsbad HU (Fig 3). The project was the highest ranked project in the EMP evaluation process in 2008. Four years of funding were provided and Mission RCD was able to stretch the funding to five years of re-treatment work. The second and third projects also received high ranking and have been well executed. The inclusion of San Dieguito at a low cost for benefit gained in the last application has lead MRCD to add Carlsbad HU to this current application. MRCD and SELC have completed several large Arundo grant projects jointly (IRWM, and two WCB grants). As shown in Table 1, a summary of selected sites, areas have been treated nearly every year and significant progress is being made in controlling *Arundo* within re-treatment areas. Keep in mind the number of canes at each re-treatment point is dropping in addition to an overall downward trend in number of re-treatment locations for each area. For example, Live Oak Creek once had over 25 solid acres of *Arundo*. Initial re-treatments recorded 297 treatment locations in 2010, in 2012 this dropped to 47 locations, fall 2014 had 22 and fall 2017 had 28 treatment locations. Ostrich Creek had 273 re-treatment locations in 2010, 101 were recorded in 2012, and 95 in 2014 and 27 in 2017. The College area had 1,932 locations recorded in 2010, by 2012 there were only 472, and 469 in 2014, 233 in 2015 and 236 in 2016. Similar patterns are seen in the Olive Hill, Castle Creek and Santa Margarita. Funding of this EMP re-treatment application is critical to allow the program to achieve its long term goal of eradicating *Arundo*. Older project sites are being treated every other year, while more recently completed projects will continue to require re-treatment annually. Two large State funded projects were recently

completed (WCB 2016 and IRWM 2015). It is imperative that these projects on the main stem of the San Luis Rey River San Dieguito and Carlsbad HU receive re-treatment funding through this application. The cost of re-treatment, while not negligible, is far less than the high cost of initial treatment. The watershed program on San Luis Rey has received over \$6 million to complete initial control work. The first EMP funded grant was for four and a half years for a total of \$354,300. The second was for two years at \$174,000. The third was for a total of \$306,000 and included San Dieguito Watershed. This new EMP application follows a comparable annual cost structure, is for up to three years, includes San Dieguito and Carlsbad HU, and is for a total of \$379,500.

**10. Is the proposed activity being done on land that was previously set aside as mitigation?**

The program carries out re-treatments on public and private land that may or may not have conservation restrictions. There are some properties that have had past mitigation work carried out. These properties are typically held by the County or municipalities. Work only occurs on properties that have no management funding set aside to carry out invasive plant control (typically old projects from the 70's & 80's). No EMP funding in this proposal would be used to fulfill current funded mitigation projects, such as Vista High School, Granite Construction, CalTrans 76 improvements, ACOE/ City Oceanside Channel Maintenance or private development mitigation. The same is true for San Dieguito and Carlsbad, active mitigation areas mapped and not worked in (City and Transnet sites). All *Arundo* control and re-treatment work benefits all downstream properties that would have had the potential to be invaded by *Arundo*. The goal of the program is to eradicate *Arundo* on the watershed and reduce long-term management costs for all conserved areas on the watershed.

**B. Scope of Work by Task**

Task #	Task Name	Task Description	Quantifiable Results/Deliverables
1	SM & SLR: Right of Entry Agreements	Maintain database of over 400 ROEs, includes signed forms, GIS & Excel databases. Coordinate with land owner & contractor during treatment, monitor work.	All ROEs current; GIS and excel databases
2	SM & SLR: Re-treatment of <i>Arundo</i>	Re-treatment of 28 creek/river miles each year, minimum.	28 miles re-treated; GIS maps and files.
3	San Dieguito: Right of Entry Agreements	Maintain 10 ROEs. Coordinate with land owner/leasee and contractor during treatment, monitor work.	All ROEs current; GIS and excel databases
4	San Dieguito: Re-treatment of <i>Arundo</i>	Re-treatment of 15 river miles each year, minimum.	15 miles re-treated; GIS maps & files.
5	Carlsbad: Right of Entry Agreements	Maintain over 500 ROEs. Coordinate with land owner/leasee and contractor during treatment, monitor work.	All ROEs current; GIS & excel databases
6	Carlsbad: Re-treatment of <i>Arundo</i>	Re-treatment of 5 river miles each year, minimum.	5 miles re-treated ; GIS maps & files.
7	Permit reports and biological monitoring	Biological monitoring during implementation and annual permit reports as specified under permits	All permits in compliance; Annual reports to DFG, ACOE, FWS
'n'	Administrative	Contracting and invoicing.	Quarterly invoices & reports

**Budget by Task**

**Exhibit B – Proposed Project Budget**

Task #	Task Name	Year 1 Grant Request	Year 1 Matching Funds <sup>1</sup>	Year 2 Grant Request	Year 2 Matching Funds <sup>1</sup>	Year 3 Grant Request	Year 3 Matching Funds <sup>1</sup>	Total Grant Request	Total Matching Funds	Total Project Cost
1	Santa Marg & San Luis Rey: Right of Entry Agreements	8,000	8,000	8,000	8,000	8,000	8,000	24,000	24,000	48,000
2	Santa Marg & San Luis Rey: Re-treatment of <i>Arundo</i>	50,000	50,000	50,000	50,000	50,000	50,000	150,000	150,000	300,000
3	San Dieguito: Right of Entry Agreements	2,500	2,500	2,500	2,500	2,500	2,500	7,500	7,500	15,000
4	San Dieguito: Re-treatment of <i>Arundo</i>	18,000	18,000	18,000	18,000	18,000	18,000	54,000	54,000	108,000
5	Carlsbad HU: Right of Entry Agreements	7,000	7,000	7,000	7,000	7,000	7,000	21,000	21,000	42,000
6	Carlsbad HU: Re-treatment of <i>Arundo</i>	30,000	30,000	30,000	30,000	30,000	30,000	90,000	90,000	180,000
7	Permit reports and biological monitoring	4,000	4,000	4,000	4,000	4,000	4,000	12,000	12,000	24,000
8	Administrative	7,000	7,000	7,000	7,000	7,000	7,000	21,000	21,000	42,000
<b>TOTAL</b>		126,500	126,500	126,500	126,500	126,500	126,500	379,500	379,500	759,000
<b>PERCENTAGE</b>		<b>16.67%</b>	<b>16.67%</b>	<b>16.67%</b>	<b>16.67%</b>	<b>16.67%</b>	<b>16.67%</b>	<b>50%</b>	<b>50%</b>	<b>100%</b>

\*If EMP budget does not allow all areas/years to be funded, work areas and/or years could be removed to lessen overall proposed budget.

**D . Project Schedule**

**Exhibit C - Proposed Project Schedule**

*(Assumes Fall 2018 Notice to Proceed [NTP])*

Task #	Task Name	Proposed Start Date	Months Needed to Complete Task	Task End Date
1	Santa Marg & San Luis Rey: Right of Entry Agreements	"1" Months from NTP	"36" Months	10/30/2021
2	Santa Marg & San Luis Rey : Re-treatment of <i>Arundo</i>	"1" Months from NTP	"36" Months	10/30/2021
3	San Dieguito: Right of Entry Agreements	"1" Months from NTP	"36" Months	10/30/2021
4	San Dieguito: Re-treatment of <i>Arundo</i>	"1" Months from NTP	"36" Months	10/30/2021
5	Carlsbad HU: Right of Entry Agreements	"1" Months from NTP	"36" Months	10/30/2021
6	Carlsbad HU: Re-treatment of <i>Arundo</i>	"1" Months from NTP	"36" Months	10/30/2021
7	Permit reports and biological monitoring	"1" Months from NTP	"36" Months	10/30/2021
8	Administrative	"1" Months from NTP	"36" Months	10/30/2021

**Please explain why and how much additional time would be needed in the event of any delays due to NTP being provided beyond Fall 2018 and/or unexpected weather conditions such as drought that could occur during the proposed project implementation.**

All three program areas have the needed ROEs in hand and are ready to begin work on September 15, 2018, per permit conditions; however, competitive contracting will need to occur before work can begin. A delay in SANDAG contracting will delay the RFP process and push work back by 30 to 60 days. Work may also be delayed due to weather conditions (too wet, too cold) but this is unlikely as there are typically windows of time when work can occur (i.e. between rain events).

**NOTICE REGARDING PREVAILING WAGES**

SANDAG's EMP Land Management Grant Program projects are funded with *TransNet* revenues consistent with the *TransNet* Extension Ordinance adopted by the voters in November 2004 (SANDAG Ordinance 04-01). Although SANDAG Ordinance 04-01 does not require payment of prevailing wages, California law may require that public works projects pay prevailing wages for workers.

Applicant acknowledges that SANDAG has strongly encouraged Applicant to seek legal counsel regarding whether the Proposed Project will require applicant to pay prevailing wages and agrees that SANDAG will have no liability for conducting this analysis.  Yes  No

Applicant acknowledges that if awarded an EMP Land Management Grant, the grant agreement between SANDAG and the grantee requires grantee's compliance with all federal, state and local laws and ordinances applicable to the Agreement.  Yes  No

**REQUIRED STATEMENTS FROM APPLICANT**

- Yes  No The applicant has read and understands the Sample Grant Agreement (Agreement) and Invoice Template (Attachment 4).
- Yes  No If the SANDAG Board of Directors approves the proposed project proposal, the proposed applicant agrees to sign and return the Agreement to SANDAG, without exceptions or amendments, within 45 days of receipt.
- Yes  No The applicant agrees to comply with SANDAG's Board Policy No. 035, Competitive Grant Program Procedures, which outlines "Use-it-or-lose-it" project milestone and completion deadlines. Board Policy No. 035 is included in the Agreement, and also is on SANDAG's website at the following link: [sandag.org/organization/about/pubs/policy\\_035.pdf](http://sandag.org/organization/about/pubs/policy_035.pdf)
- Yes  No The applicant understands that 10 percent of all invoices will be retained until the completion of the proposed project.
- Yes  No The applicant understands that for proposed projects with matching funds, retention will be withheld beyond the 10 percent retention for each invoice submittal that does not meet the proportionate matching funds requirement. These additional matching funds will not be released until proportionate matching funds are reached for the project to-date.
- Yes  No The applicant understands that all invoices must be accompanied by written, documented support of the charges for requested reimbursement of grant funds and payment will not be made by SANDAG until all documents are satisfactorily submitted.
- Yes  No The applicant understands that invoices and reports must be submitted on a quarterly basis within three weeks after the period covering January 1 to March 31; within three weeks after the period covering April 1 to June 30; within three weeks after the period covering July 1 to September 30; and within three weeks after the period covering October 1 to December 31.
- Yes  No The applicant understands that the EMP quarterly report template (to be sent to the grantee after NTP is issued) must be used to document quarterly progress and that invoices with errors will be returned to the grantee for correction prior to being processed by SANDAG staff.
- Yes  No The applicant understands that the final invoice must be accompanied by written, documented support of the charges for requested reimbursement of grant funds; a final report (prepared in accordance with the final report template to be sent to grantee after NTP is issued); and all outstanding deliverables in order to receive final payment and have retained funds released.
- Yes  No The applicant understands that to be considered eligible for funding, a resolution complying with the requirements of Board Policy No. 035, Section 4.1, must be submitted to SANDAG at least *two weeks* prior to the recommendation by the Regional Planning Committee of the list of prioritized project proposals. SANDAG will provide applicants with advance notice of the Regional Planning Committee's anticipated meeting date.
- Yes  No The applicant agrees to submit all project data/information to SANDAG in a format compatible with the regional management database.

**I have the authorization to submit this proposal (Grant Application Form and required supplementary materials) on behalf of my organization.**

Judith Mitchell, District Manager

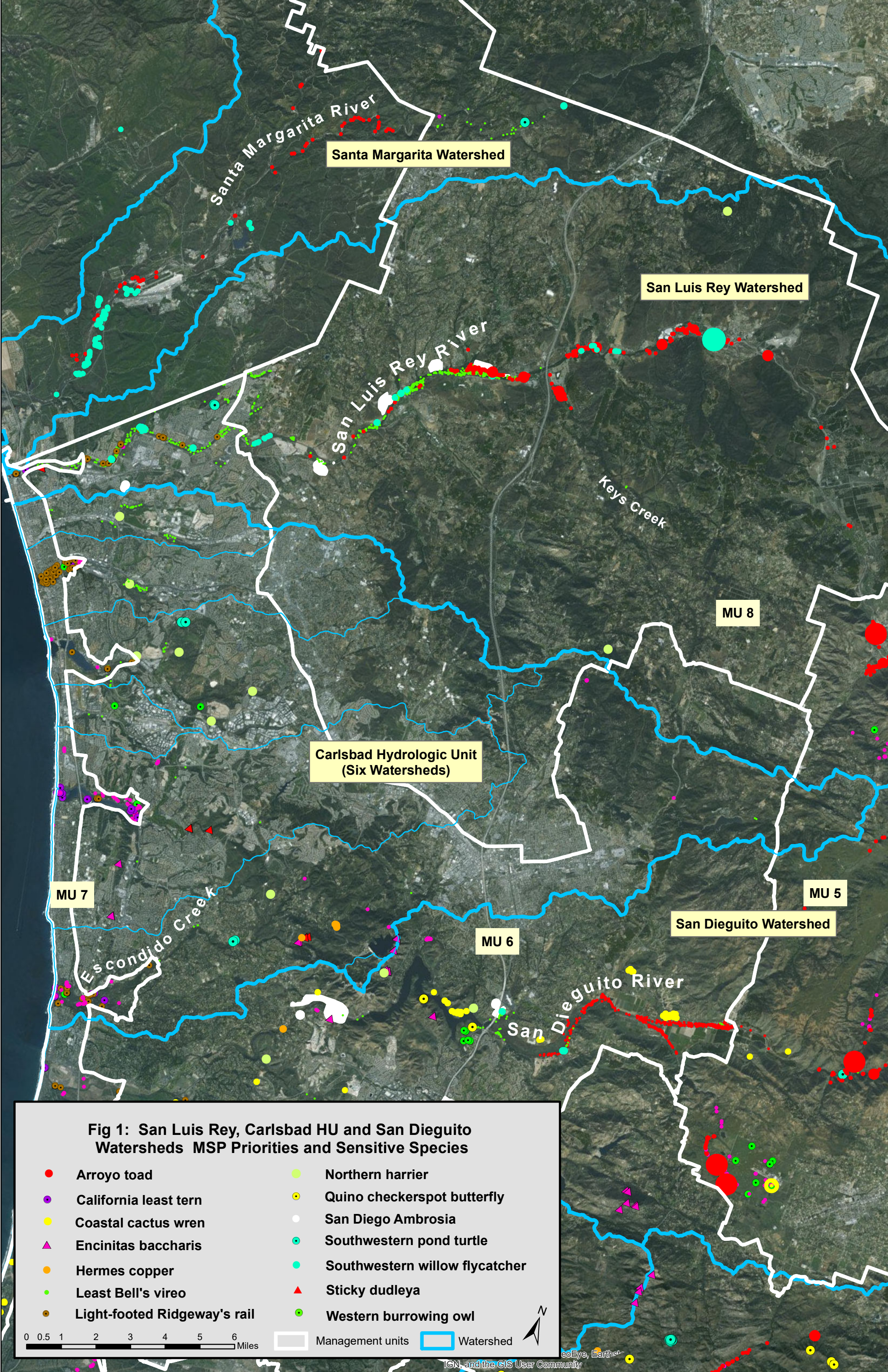
**Applicant Name/Title** (print or type)

*Judith Mitchell*

01/12/2018

**Applicant Signature**

**Date**



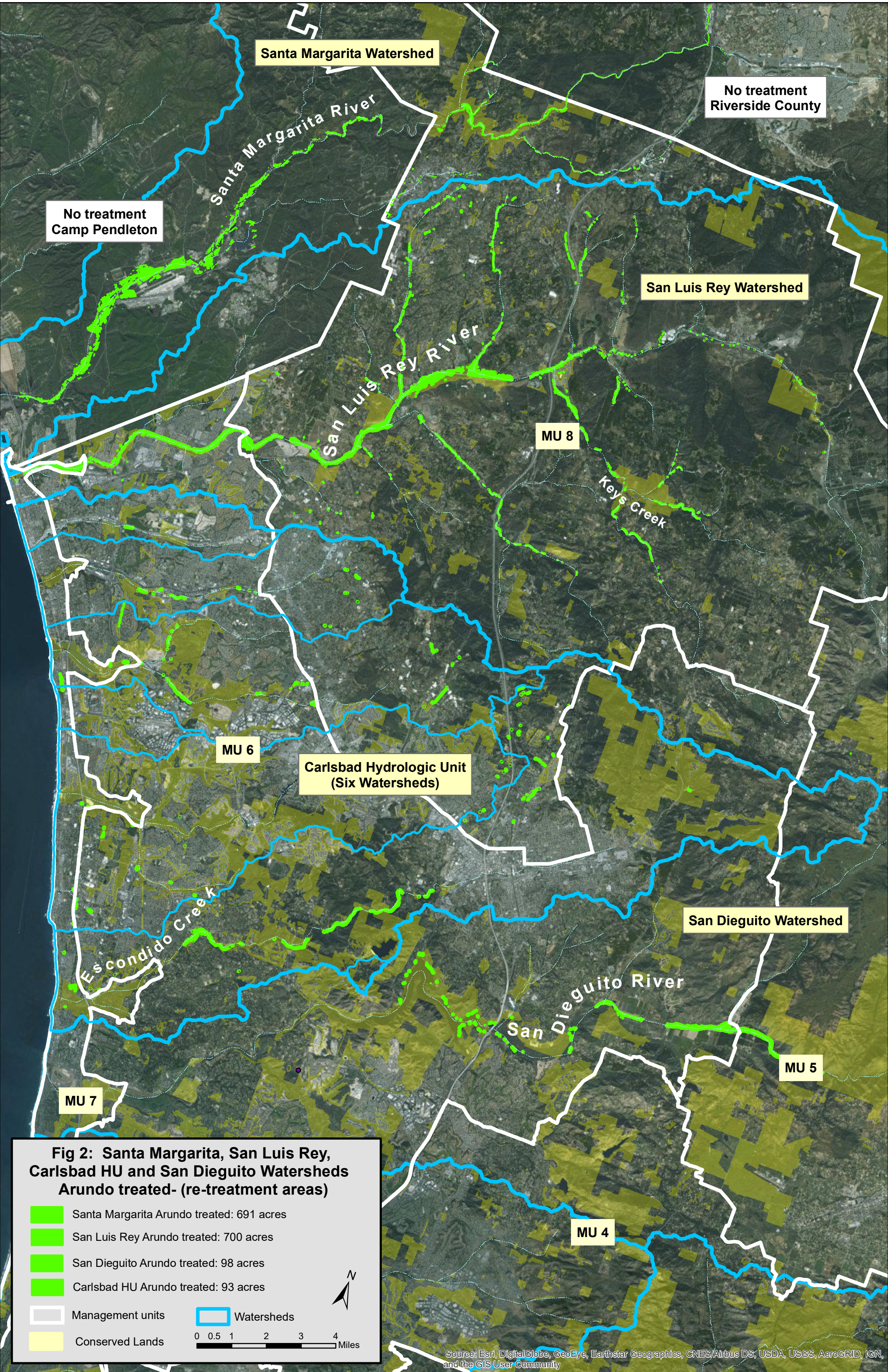
**Fig 1: San Luis Rey, Carlsbad HU and San Dieguito Watersheds MSP Priorities and Sensitive Species**

- |                                |                                  |
|--------------------------------|----------------------------------|
| ● Arroyo toad                  | ● Northern harrier               |
| ● California least tern        | ● Quino checkerspot butterfly    |
| ● Coastal cactus wren          | ● San Diego Ambrosia             |
| ▲ Encinitas baccharis          | ● Southwestern pond turtle       |
| ● Hermes copper                | ● Southwestern willow flycatcher |
| ● Least Bell's vireo           | ▲ Sticky dudleya                 |
| ● Light-footed Ridgeway's rail | ● Western burrowing owl          |

0 0.5 1 2 3 4 5 6 Miles

Management units Watershed





Santa Margarita Watershed

No treatment  
Riverside County

No treatment  
Camp Pendleton

San Luis Rey Watershed

MU 8

Carlsbad Hydrologic Unit  
(Six Watersheds)

San Dieguito Watershed

MU 5

MU 4

MU 6

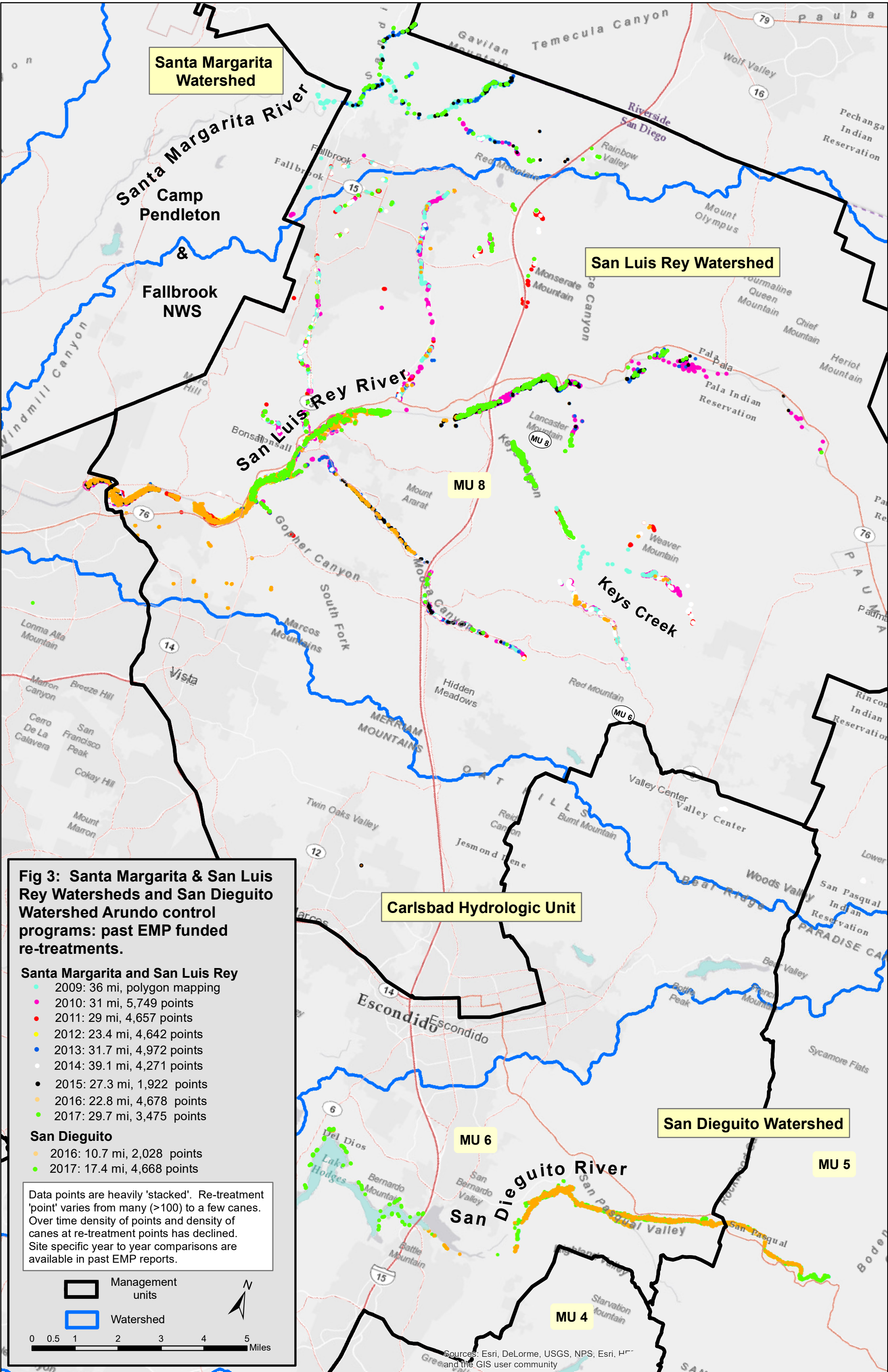
MU 7

**Fig 2: Santa Margarita, San Luis Rey, Carlsbad HU and San Dieguito Watersheds Arundo treated- (re-treatment areas)**

- Santa Margarita Arundo treated: 691 acres
- San Luis Rey Arundo treated: 700 acres
- San Dieguito Arundo treated: 98 acres
- Carlsbad HU Arundo treated: 93 acres

- Management units
- Conserved Lands





**Santa Margarita Watershed**

**San Luis Rey Watershed**

**Carlsbad Hydrologic Unit**

**San Dieguito Watershed**

**Fig 3: Santa Margarita & San Luis Rey Watersheds and San Dieguito Watershed Arundo control programs: past EMP funded re-treatments.**

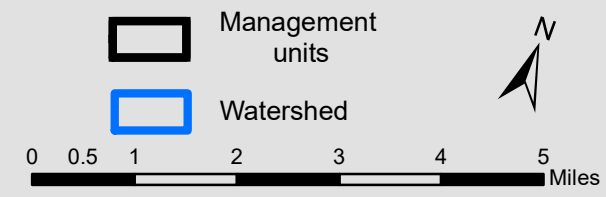
**Santa Margarita and San Luis Rey**

- 2009: 36 mi, polygon mapping
- 2010: 31 mi, 5,749 points
- 2011: 29 mi, 4,657 points
- 2012: 23.4 mi, 4,642 points
- 2013: 31.7 mi, 4,972 points
- 2014: 39.1 mi, 4,271 points
- 2015: 27.3 mi, 1,922 points
- 2016: 22.8 mi, 4,678 points
- 2017: 29.7 mi, 3,475 points

**San Dieguito**

- 2016: 10.7 mi, 2,028 points
- 2017: 17.4 mi, 4,668 points

Data points are heavily 'stacked'. Re-treatment 'point' varies from many (>100) to a few canes. Over time density of points and density of canes at re-treatment points has declined. Site specific year to year comparisons are available in past EMP reports.



Sources: Esri, DeLorme, USGS, NPS, Esri, HP and the GIS user community