

Napa River Rutherford Reach Restoration Project Annual Maintenance and Monitoring Survey



Napa River June 2012

July 2012

Prepared by:

*Napa County Flood Control and
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Background:

The maintenance program for the Napa River Rutherford Restoration Project (Project) has been developed by the Rutherford Landowner Advisory Committee (LAC) and the Napa County Flood Control and Water Conservation District (District) to support the Project and to guide implementation of routine maintenance activities within the Rutherford Reach of the Napa River. The maintenance program was developed to carefully balance the needs of local landowners while protecting and enhancing the natural resources of the Napa River. As a result, concerned landowners formed the Rutherford Dust Napa River Restoration Team (also known as "RDRT") and worked with Napa County and its affiliate agencies to design and implement a comprehensive reach-scale restoration project known as the Napa River Rutherford Reach Restoration Project. The Project area is comprised of privately-held property adjacent to a 4.5-mile reach of the Napa River south of the city of Saint Helena, extending from Zinfandel Lane in the north, downstream to Oakville Cross Road in the south (Figure 1). The maintenance program balances the needs of local landowners with protection and enhancement of the river's natural resources. For further details regarding the maintenance program please refer to "*Final Maintenance Plan for the Napa River Rutherford Reach Restoration Project*" (Jones and Stokes; August 2008, <http://www.napawatersheds.org/files/managed/Document/3590/Rutherford%20Reach%20Maintenance%20Plan.pdf>). Critical elements of that plan are described below.

As part of the maintenance program, District staff in coordination with the LAC and the Napa County RCD, conducts an annual stream survey to identify and assess issues of maintenance concern. The survey, data analysis, and implementation of maintenance activities are facilitated by the District's Rutherford Reach Maintenance Coordinator (contact information below). This report presents the results and initial maintenance recommendations of the fourth annual stream survey conducted between June 5th and June 7th, 2012.

Maintenance activities must be in compliance with applicable resource agency permits in conjunction with best management practices (BMPs) specified in the final Maintenance Plan. Permitted activities may include:

- debris (man-made) removal;
- downed tree (also referred to as large woody debris or LWD) relocation and/or stabilization;
- vegetation management, including removal of invasive non-native and Pierce's disease host vegetation, management of emergent (young) in-channel vegetation, and planting for erosion control management;
- installation of erosion control fabric or coir logs, willow pole cuttings;
- maintenance of constructed features including floodplain benches, vegetative buffers, aquatic habitat enhancement structures, and bank stabilization structures.

At the time of the survey construction had been completed through Reach 4, east bank, resulting in the creation of 14 flood plain benches and 1 backwater alcove, installation of 27 bench logs, 18 rood wad structures, 6 boulder clusters and the setting back of over 10,100 linear feet (1.9 miles) of agricultural berms in order to increase riparian habitat width (Figure 4). Therefore, the focus of the 2012 stream survey included the assessment of the functionality of these features in Reaches 1 through 4 in addition to the regular activity of identifying and documenting target invasive plant species, Pierce Disease host plant species, potentially erosive LWD, bank erosion and accumulated trash or debris. Installed structures and graded areas that were not in need of maintenance will be reported on in a separate, detailed annual habitat monitoring report relative to habitat value and functionality of constructed restoration features.

Annual Stream Survey Objectives:

The stream survey begins the maintenance season by collecting and providing field data that will inform the creation of the annual stream maintenance work plan. The annual stream survey also captures data to be utilized in the annual Project monitoring report required to comply with funding and regulatory agency requirements. This additional monitoring data collected will be presented in a separate annual monitoring report. A team of resource specialists, including a geomorphologist, ecologist, fisheries biologist, invasive plant expert and a landowner representative conduct the survey with assistance from District interns.

The essential maintenance aspects of the Annual Stream Survey are to:

- Identify and prioritize maintenance actions, including vegetation management, large woody debris (LWD) realignment and/or relocation, debris (e.g. tires, shopping carts, irrigation lines, etc.) and trash removal, and biotechnical stream bank stabilization;
- Evaluate the status of and define any steps needed to maintain the function of constructed features and in-stream habitat structures;
- Identify infestations of non-native high priority invasive and Pierce's disease host plants and define control treatments to the extent practicable;
- Respond to Landowners requests for maintenance actions within the riparian corridor on their property.

A suite of parameters were measured, recorded and mapped using digital photography and handheld Trimble GPS enabled computers customized to log specific maintenance data parameters. Separate GPS/GIS files were created to capture distinct categories of interest during the survey, the files and the associated data fields include:

- Maintenance (Date, River Station, Bank Location, Problem, Invasive Species, Pierce Host, Patch Size, Priority, Recommendation, Photo, Notes, LWD maintenance)
- Eroding Stream Banks (Date, River Station, Length, Bank Location, Bank Erosion Location, Average Bank Erosion Height, Bank Condition, Treatment Element, Instability Element Description, Recommendation, Priority, Notes, Photo)
- Large Woody Debris (Date, River Station, Length, Bedform Association, LWD Location, LWD Function, Number of Pieces/Configuration, Bank Erosion Potential, LWD Type, Recruitment Mechanism, DBH, LWD Function, Riffle Crest Depth, Max Pool Depth, Structure Problem, Repair Recommended, Shelter Complex, Shelter Cover, Notes, Photo)
- Photographic Documentation Point (Date, River Station, , Number of Photos, Notes)

Survey Results:

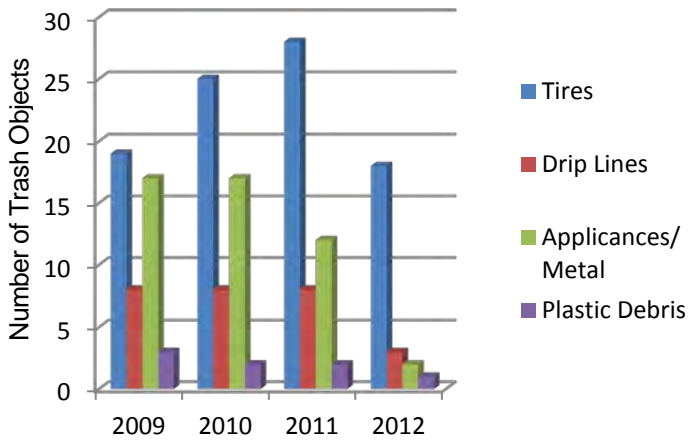
The annual stream survey was conducted between June 5th and June 7th; typical weather conditions included overcast to partly sunny skies with 20-50% cloud coverage and air temperatures ranging 65° - 72° Fahrenheit. Average water temperature ranged between 58° - 64° Fahrenheit, stream flow measured at the USGS stream gage (ID#11456000) located approximately 1100 feet upstream the beginning of the Project reach ranged from 7.1 – 6.4 cubic feet per second (cfs).

Issues documented during the stream survey included trash and debris located in-channel and at the top of the river banks, invasive and Pierce's disease plant species located throughout the riparian zone, eroding stream banks and potentially erosive large woody debris jams located in-channel. A total of 321 features were documented within the Project area. The following subsections describe these issues in details and any potential maintenance issues identified within the Project area.

Trash and Debris:

A total of 24 occurrences of trash and debris (Picture 1) were documented in the Project area with the dominant trash and debris type being tires (18) and the remaining (6) occurrences of trash and debris being various objects including irrigation drip lines, agricultural containers and large residential electronic appliances. This represents a significant decrease in the amount of trash and debris documented and removed from the three prior maintenance surveys. Figure 2 shows the location of the trash and debris documented; accumulation of trash was fairly consistent throughout the Project reach with the exception of Reach 9 having a fairly low amount of trash documented. Graph 1 below represents the amount and types of trash documented during the stream survey.

Graph 1: Trash and Debris



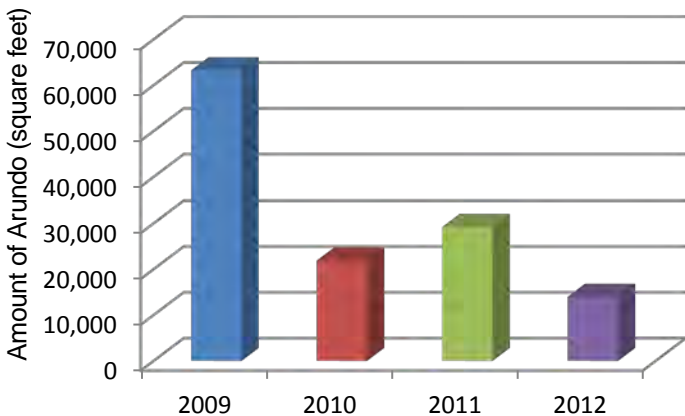
Picture 1: Trash and Debris



Invasive Non-Native and Pierce Host Plants:

A total of 44 occurrences of invasive non-native plants and non-native Pierce host plants were identified and will be targeted for treatment within the Project area (Figure 3). As identified in previous surveys, Giant reed, Himalaya blackberry, periwinkle (*Vinca sp.*), poison hemlock and native and hybridized grape species were the dominant target plants identified; other target species documented include tree-of heaven and red sesbania but were limited. The two sesbania occurrences detected during the survey were removed at the time of the survey. Species such as poison hemlock, fennel, etc. were observed but not quantified during the survey as a result of land owner’s requests in previous meetings to focus on and use funds for treatment of only invasive plant species that are considered Pierce host’s species as well. A total of 60, 112 square feet (sqft) of non-native invasive and Pierce host plants were documented including 13,982 sqft of giant reed, 36, 241 sqft of Himalaya blackberry and the remaining 9,889 sqft being a combination of native/non-native grape and periwinkle. However, it is important to note that there is significantly more grape, periwinkle and other Pierce host plants present beyond the river’s top of bank; in general the extent of these plants that can be documented from the perspective of the river channel and treated under the maintenance program extends to the top of bank of the riparian zone. For this reason landowners are encouraged to contact the maintenance lead with requests for management of invasive and Pierce host plants in the riparian zone beyond the top of bank. Additionally, to a large extent Himalayan blackberry and grape occur in a near continuous band of various width(s) throughout the entire 4.5 mile Project reach on both the east and west river banks. In general, previous and ongoing efforts to manage and remove giant reed (*arundo*) has been successful in significantly reducing the amount of giant reed in the Project area (Graph 2), therefore only small or re-sprouting patches will require minor treatment in 2012. However, it was noted that several areas where giant reed was treated previously have become unstable stream banks (Picture 2) and will require significant bank stabilization and re-vegetation work before the onset of winter rains and high stream flows.

Graph 2: Arundo mapped and treated (2009-2012)



Picture 2: Arundo treatment site showing bank erosion



Table 1 summarizes the invasive non-native and Pierce host plants documented during the 2012 stream survey. Further, Table 1 lists if the species is a Pierce Disease host and ranks each species as a “high” or “moderate” impact invasive species as defined by the California Invasive Plant council (Cal-IPC); the Cal-IPC list primarily includes plants exhibiting some level of invasiveness in native habitats.

Table 1: Invasive Non-Native and Pierce Host Plants

Common Name	Scientific Name	Infested Area (SqFt)	Pierce Disease host	Cal-IPC Ranking
Giant reed	<i>Arundo donax</i>	13,982	No	High
CA & Hybrid Grape & Periwinkle	<i>Vitis sp., Vinca major</i>	9,889	Yes	None
Himalaya Blackberry	<i>Rubus armeniacus</i>	36, 241	Yes	High

Additional invasive plant and Pierce host species removal activities are currently taking place in Reaches 1 through 4 under the post construction re-vegetation maintenance contracts. Species currently being removed include giant reed, Himalaya blackberry, periwinkle (*Vinca sp.*), poison hemlock and native and/or hybridized grape species; the amount treated and/or removed through this effort in calendar year 2012 will be quantified and presented on an annual basis at a later date in the final maintenance report.

Large Woody Debris (LWD):

145 naturally recruited large woody debris (LWD) occurrences greater than one foot in diameter and six feet in length were documented during the 2012 stream survey. Of those 145 LWD occurrences, 5 were ranked as potential maintenances and have been prioritized for maintenance action (thin out smaller wood, trim trunk and/or realign larger wood to reduce flood potential or erosion) in 2012 (Table 2, Figure 2). One of the LWD occurrences documented as a potential maintenance issue will be incorporated into Reach 8 construction activities during summer 2012 as an in-stream habitat structure. The remaining 140 LWD occurrences that were documented (functioning as important in-stream fish habitat) will not require maintenance pursuant to the goals of the maintenance survey. The distribution, habitat function and accumulation trends of the 145 occurrences of LWD will be presented in a separate annual habitat monitoring report.

LWD features were ranked as a potentially significant maintenance issue according to the following criteria:

- Potential for LWD to cause imminent bank failure beyond riparian zone.
- Risk to adjacent infrastructure and agriculture (i.e., structures, earthen berms, roads, pumps, utilities, crops).
- Potential for significant backwater formation.
- Extent of LWD mass relative to cross-sectional stream channel area (i.e. extent of channel blockage/hydraulic radius).
- Location relative to planned Project features that provide opportunity to re-use LWD in construction.
- Landowner priority.

Table 2: LWD identified for maintenance, monitoring or treatment

River Station/Reach	LWD feature	Recommendation	Notes
238+00 (Reach 1)	Large single trunk tree, center channel, causing erosion on left bank	Maintenance Recommended	Treatment – remove large limbs, leave trunk, to increase channel flow capacity, leave root wad in place
219+00 (Reach 2)	Large single trunk alder, center channel, root wad and branches causing erosion on right bank	Maintenance Recommended	Treatment – remove large branches/trunk to increase channel flow capacity/relieve pressure from right bank, relocate root wad to wider section of channel
219+30 (Reach 2)	Medium alder root wad right bank	Maintenance Recommended	Treatment –trim root wad and trunk to deflect flow from right bank, monitor for bank erosion

154+70 (Reach 4)	Medium wood accumulation/jam (>10), full channel	Maintenance Recommended	Treatment –trim root wad and trunk to deflect flow from left bank, remove debris accumulation, monitor
67+80 (Reach 7)	Medium wood accumulation/jam (>10), full channel	Maintenance Recommended	Treatment – large wood to be incorporated into Reach 8 project construction as in stream habitat structure

Installed LWD Structures and Constructed/Graded Benches

As mentioned previously, at the time of this survey, construction has been completed through Reach 4, east bank (Zinfandel Lane downstream to Rutherford Cross Road), resulting in the installation of 14 flood plain benches, 1 backwater alcove, 27 bench logs, 18 root wad structures and 6 boulder clusters. At the time of the survey, all LWD and boulder cluster structures appeared to be functioning as designed and will not require maintenance in 2012. Additionally, the LWD structure adjacent to the instream bench on Frogs Leap property that was repaired in 2011 by constructing a willow brush mattress to stabilize the stream bank behind the LWD structure appears to be holding up well; to date the willow brush mattress is functioning and growing vigorously and providing a bio-technical solution to erosion. Winter high flows have scoured fine sediment from the 2 LWD structures in Reach 2 that were partially buried in 2011 by sediment and now have small pools surrounding the structures and are once again functioning as in-stream fish habitat. The downstream end of the flood plain bench constructed on the Caymus Vineyard property that experienced scour and erosion around a large willow tree was treated in the summer 2011 by sloping back the stream bank to 3:1 grade, covering with erosion control fabric and planting willow and cottonwood stakes. This bio-technical solution appears to be growing and holding well (Pictures 3 and 4). However, as previously mentioned, there are additional areas of localized bank erosion related to the previously treated giant reed (*Arundo*) sites that the District intends to address/stabilize using a combination of bio-technical methods such as those utilized above. See Table 3 for the location and details of the proposed bank stabilization work to be conducted at these sites.

Picture 3: Caymus stream bank erosion site (2011)



Picture 4: Caymus site post bank stabilization (2012)



Table 3: Proposed bank stabilization sites at Arundo treatment areas

River Station/Reach	Property	Proposed Work
58+00 – 56+50 (Reach 8)	Frostfire Vineyards	Cut dead Arundo stalks to root mass, leave root mass in place in order to protect soil from erosion during winter flows. Haul off-site chipped Arundo where appropriate. Cover exposed areas of soil that do not have Arundo root wads holding soil in place with erosion control fabric, straw wattles and erosion control seed mix in Fall.
54+00 – 52+00 (Reach 8)	Hurt/McDowell	Cut dead Arundo stalks to root mass, leave root mass in place in order to protect soil from erosion during winter flows. Haul off-site chipped Arundo where appropriate. Cover exposed areas of soil that do not have Arundo root wads holding soil in place

		with erosion control fabric, straw wattles and erosion control seed mix in Fall.
157+00 (Reach 4)	Emmolo Vineyards	Will be treated as part of Reach 4, west bank, 2012 construction and re-vegetation work.
149+50 (Reach 4)	Emmolo Vineyards	Will be treated as part of Reach 4, west bank, 2012 construction and re-vegetation work.

Landowner Requests for Maintenance

A total of three landowner maintenance request forms were received by the District at the time of drafting this report. However, landowners should be aware that the District will accept landowner maintenance request forms and consider requested work any time of year. A copy of the landowner maintenance request form is included at the end of this report. Table 4 below details the specifics of the landowner request forms submitted for the 2012 maintenance season.

Table 4: Landowner Maintenance Request Forms received for maintenance year 2012

River Station/Reach	Property	Requested Work	Recommendation
219+00 (Reach 2)	The Ranch Winery	Remove large downed wood, center channel, causing erosion on right stream bank	Treatment – remove large branches/ trunk to increase channel flow capacity/ relieve pressure from right bank, relocate root wad to wider section of channel – work also noted in Table 2 above
58+00 – 56+50 (Reach 8)	Frostfire Vineyards	Remove dead <i>Arundo</i> , stabilize stream bank	Proposed work will be conducted as outline in Table 3.
54+00 – 52+00 (Reach 8)	Hurt/McDowell	Remove dead <i>Arundo</i> , stabilize stream bank	Proposed work will be conducted as outline in Table 3.

Recommendations and Work Plan:

The RDRT maintenance survey team recommends the following work be conducted during fiscal year 2012-2013:

- Removal of all trash and debris from the stream channel that can be readily accessed and accomplished with hand labor, pulley or winch assisted mechanisms.
- Limb/ thin large branches and/or root wads at LWD jams (<12-inches-in-diameter and/or <6-feet-long) adjacent to landowners property as recommended by survey report (Table 2).
- Treat large accessible patches of invasive and Pierce host plants that are ranked as either “high” or “moderate” impact species including periwinkle, Himalaya Blackberry, native and hybridized grape species and giant reed; this task also includes appropriate re-vegetation planting/seeding and irrigation of treatment of sites where treatment has left significant gaps in the riparian under story canopy.
- Repair and stabilize exposed stream banks at *Arundo* treatment sites as outlined in Table 3. Additionally, more comprehensive bank stabilization measure will be implemented at these sites once pending Project construction related activities commence during the summer of 2013.

A more detailed draft work plan with the proposed 2012 maintenance work listed by property owner is included at the end of this report. This draft report and the recommendations contained within will be presented to the LAC for review, evaluation and prioritization at a meeting scheduled for July, 2012 and will be available for comment to all landowners participating in the Project as well as engaged regulatory agencies. After completing the review, evaluation and prioritization of the annual maintenance report with the LAC and regulatory agencies, maintenance activities outlined in this report will begin and likely extent through December 2012 where appropriate. The draft report and a final recommendations and actions report can be accessed electronically from the Watershed Information Center & Conservancy of Napa County (WICC) http://www.napawatersheds.org/app_folders/view/3577. All maintenance work will be conducted in accordance with the regulatory permits issued for the Napa River Rutherford Reach Restoration Project.

Estimate of Cost/Fund Balance:

A draft cost estimate to complete maintenance tasks in fiscal year 2012/2013 using funds generated from the annual assessment know as the Rutherford Reach Benefit Zone - Assessment District 2008-01 is provided in Table 5 below. Table 5 also includes an accounting of funds spent to date by fiscal year as well as the remaining fund balance. It is anticipated that maintenance tasks will be conducted by the Napa County Flood Control and Water Conservation District and California Conservation Corps staff. A revised final budget that more accurately reflects the expenditures for 2013 will be issued at a later date.

Table 5: Estimated cost to complete maintenance work for fiscal year 2013 and fund balance by fiscal year

Task	Annual Expenditures by Fiscal Year (FY)					
	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Annual Surveys & Development of Work Plans, Report and Monitoring	0	20,954	37,495	27,440	28,008	28,008
Trash Removal & Disposal Fees (Napa County Waste Management)	0	0	2,144	2,144	3,013	3,180
Invasive Plant Management	0	1,320	8,027	8,479	10,519	13,056
LWD Thinning and/or Removal	0	0	1,760	1,496	2,867	2,970
Habitat Structure Maintenance/Re-vegetation/Erosion Repair	0	0	0	1,320	3,995	5,244
Field Equipment, Supplies, Administration, Misc.	0	314	826	392	875	500
Engineers Report/Public Notice/Legal	0	23,933	1,655	1,655	1,655	1,655
Total Expenditures	\$11,250	\$46,521	\$51,907	\$42,926	\$50,932	*\$4,613
Remaining balance (w/interest)	\$0	\$90,389	\$47,728	\$56,484	\$48,291	**\$43,547
Cumulative Fund Balance (with interest) to date	\$286,439					

* Estimated expenditures FY 2013 including encumbrances

** Assumes full assessment of 98,160 collected for FY 2012/2013

Contact: Jeremy Sarrow, Watershed & Flood Control Resources Specialist, NCFCWCD, jeremy.sarrow@countyofnapa.org

References:

Jones and Stokes, G. Hayes, L. Micheli. January 2011. *Monitoring Plan for the Rutherford Reach Restoration of the Napa River.*

Jones and Stokes. August 2008. *Final Maintenance Plan for the Napa River Rutherford Reach Restoration Project.*

USGS; 2012. USGS Real-Time Water Data Web Site for stream gage #11456000 accessed on 07-02-2012:

<http://waterdata.usgs.gov/nwis/uv?11456000>

Acknowledgements:

Stream Survey Team

Paul Blank, Hydrologist, Napa County Resource Conservation District

Gretchen E. Hayes, Geo-morphologist, Tessera Consulting

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Report Production

Jeremy Sarrow, Watershed & Flood Control Resources Specialist, NCFCWCD

Figure 1: Project Location Map



Figure 2: LWD, Trash and Debris Map

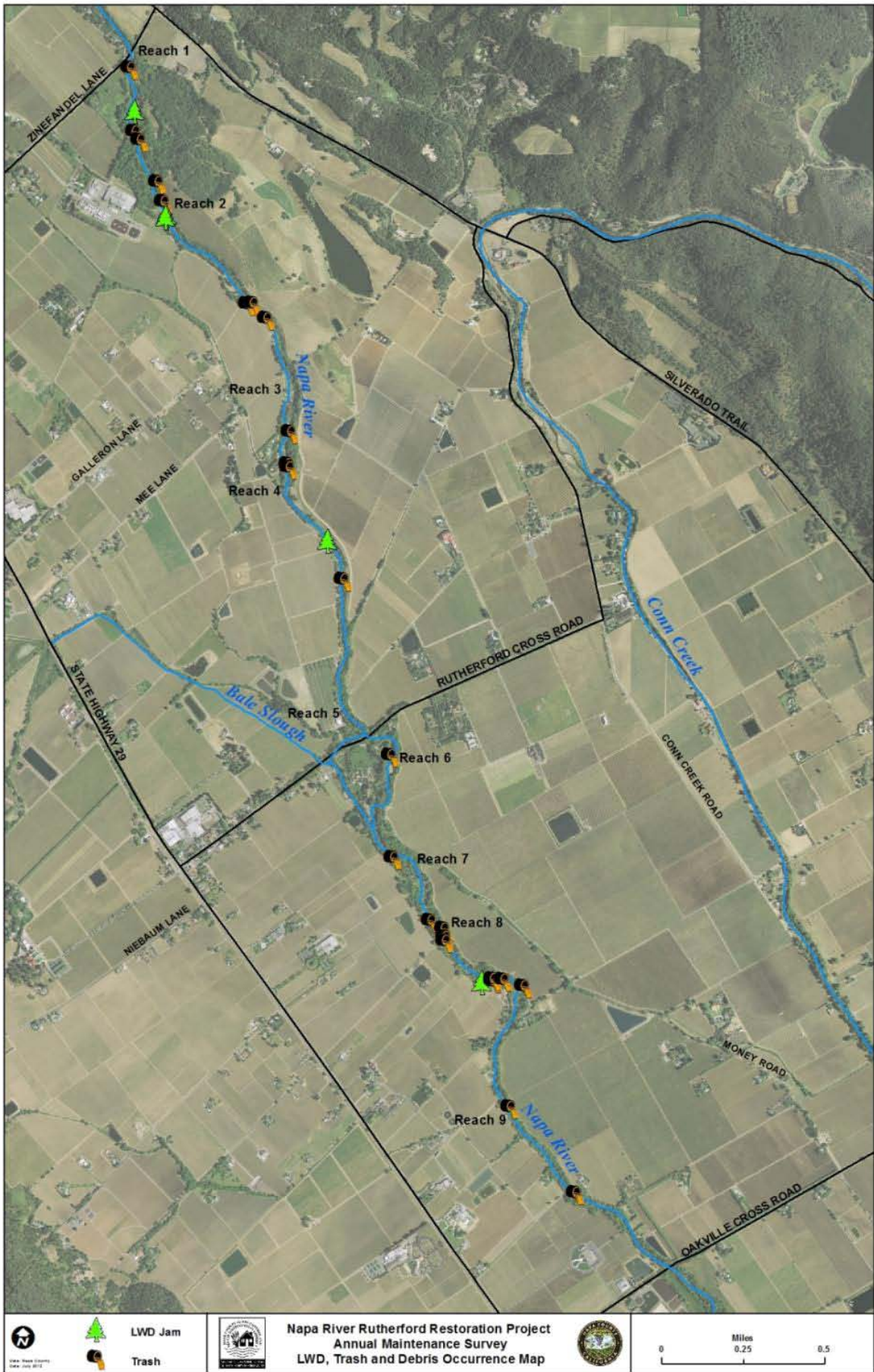
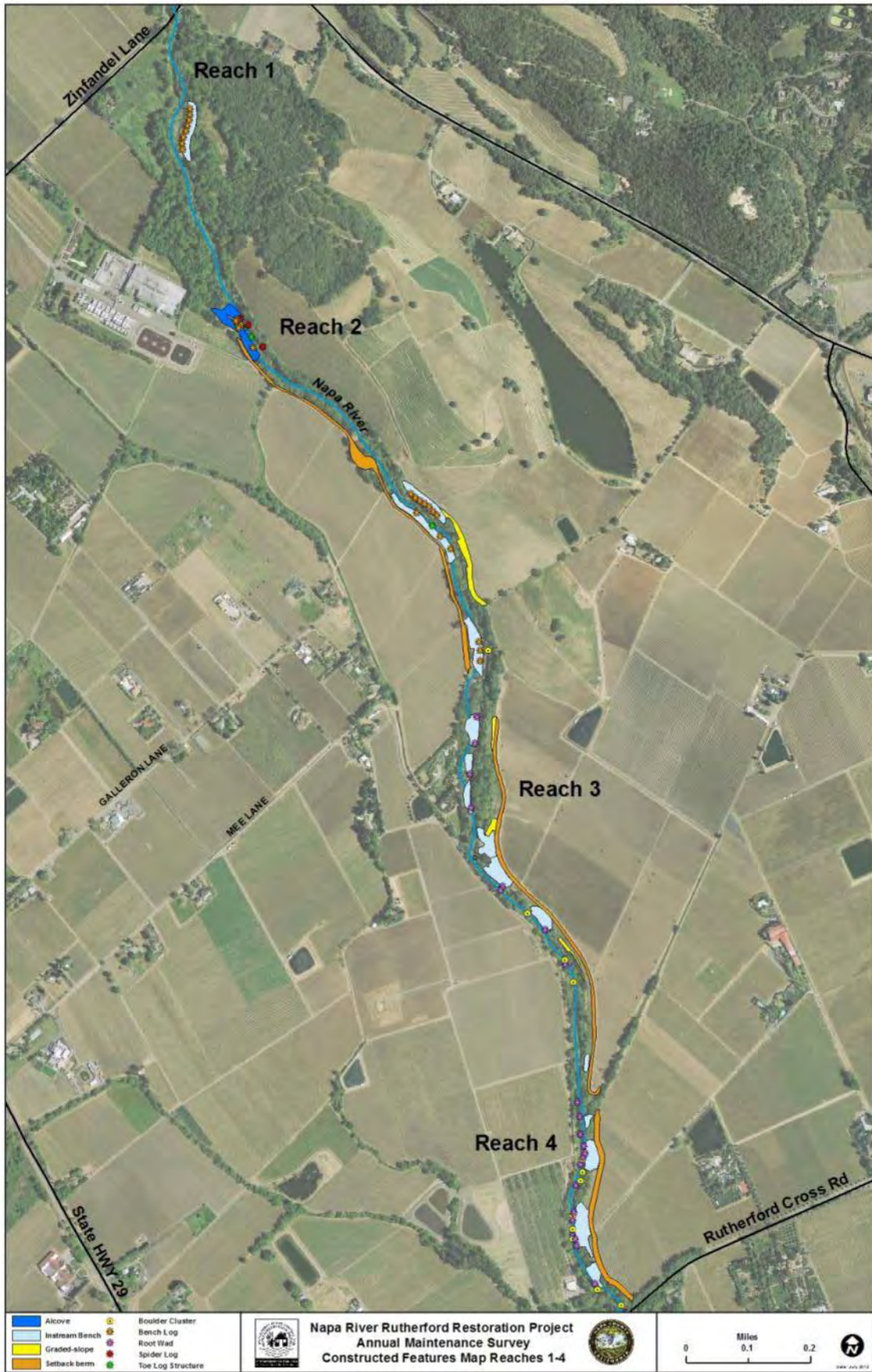


Figure 3: Invasive/ Pierce Host Plant Occurrence Map



Figure 4: Constructed Features Map



**RUTHERFORD DUST NAPA RIVER RESTORATION TEAM
LANDOWNER REQUEST FOR RIVER MAINTENANCE**

INTRODUCTION

The Rutherford Dust Napa River Restoration Project entails an annual survey to identify river maintenance problems and to treat priority sites. The purpose of this form is to provide Rutherford Dust Restoration Team (RDRT) members, including riverside landowners and managers, a way to record and identify issues on their properties for evaluation and potential treatment by the maintenance team comprised of RDRT and the Napa County Flood Control and Water Conservation District.

Four kinds of problems can be treated under our maintenance permit:

- 1) Pierce's disease host plant and other noxious weed infestations
- 2) Accumulated trash or debris
- 3) Downed trees and woody debris
- 4) Erosion of constructed bank protection structures

By providing your contact information and a brief summary of maintenance problems via this form, you will be submitting your request for consideration by the RDRT team, which will in turn contact you for a visit to evaluate the site.

REQUEST CONTACT INFORMATION

NAME _____ PROPERTY _____

CONTACT FOR SITE VISIT _____

PHONE _____ email _____

RIVER MAINTENANCE ISSUE

Provide a brief summary of your river maintenance concern. Identify the category of problem(s) (from above), approximate location, any time constraints on treatment, and any related issues.

For consideration, please return, via mail or email, to:

Jeremy Sarrow, Napa River Maintenance Coordinator
Napa County Water Conservation and Flood District
804 First Street, Napa, CA 94559
Email: jeremy.sarrow@countyofnapa.org phone: 707-259-8204