

Napa River Rutherford Reach Restoration Project Annual Stream Maintenance Survey



Napa River Rutherford Reach, June 2017

July 2017

Prepared by:
Napa County Flood Control and Water Conservation District
Napa County, California



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1.0 Background

The maintenance program for the Napa River Rutherford Restoration Project (Project) was 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 balance the needs of landowners while protecting and enhancing the natural resources of the Napa River. As a result, landowners formed the Rutherford Dust Napa River Restoration Team 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 refer to "*Final Maintenance Plan for the Napa River Rutherford Reach Restoration Project*" (Jones and Stokes) <http://www.napawatersheds.org/files/managed/Document/3590/Rutherford%20Reach%20Maintenance%20Plan.pdf>.

As part of the maintenance program, District staff in coordination with the LAC and the Napa County RCD, conducts an annual stream survey (Survey) to identify and assess issues of maintenance concern and monitor Project resources. 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 Survey conducted during the summer of 2017.

River restoration construction activities were completed in the fall of 2014 and the Project is now in the maintenance and monitoring phase. For monitoring and maintenance tracking purposes the 4.5 mile Project reach has been divided into sub-reaches numbered from 1 to 9 starting from the Zinfandel Lane Bridge and ending at Oakville Cross Road. As a result of construction and completion of the Project in 2014, 26 floodplain benches measuring a total of 8,580 linear feet were constructed in Reaches 1-9. A total of 6 side channel, wetland and alcove features were built including the secondary channels constructed at the Round Pond and Wilsey Properties and the backwater alcove features constructed at Rutherford Wine Studios and Cakebread properties. 13 bank stabilization areas were constructed and approximately 14,303 linear feet of setback berms were created in order to widen the distance between agricultural activities and the river channel.

The focus of the 2017 stream maintenance survey included identifying and documenting target invasive and Pierce Disease host plant species, potentially erosive LWD accumulations, active bank erosion sites and accumulated trash or debris needing removal from the channel. The annual stream maintenance survey was conducted between June 20th through June 22nd, 2017; typical weather conditions included sunny to partly cloudy skies with 10%- 25% cloud cover and air temperatures ranging between 53° - 76° Fahrenheit. Stream flow measured at the USGS stream gage (ID#11456000) at the Pope Street Bridge, located approximately 1,100 feet upstream of the Project reach ranged from 3.4 – 5.5 cubic feet per second (cfs).

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 include:

- Debris (trash, etc.) 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.

1.1 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. Depending on the monitoring year 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. The

additional monitoring data collected is presented in a separate annual monitoring report. A team of resource specialists including an ecologist, fisheries biologist and hydrologist conduct the survey with assistance from District interns. The essential aspects of the annual stream survey are:

- Identify and prioritize maintenance actions, including vegetation management, large woody debris (LWD) realignment and/or relocation, debris (e.g. tires, 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.

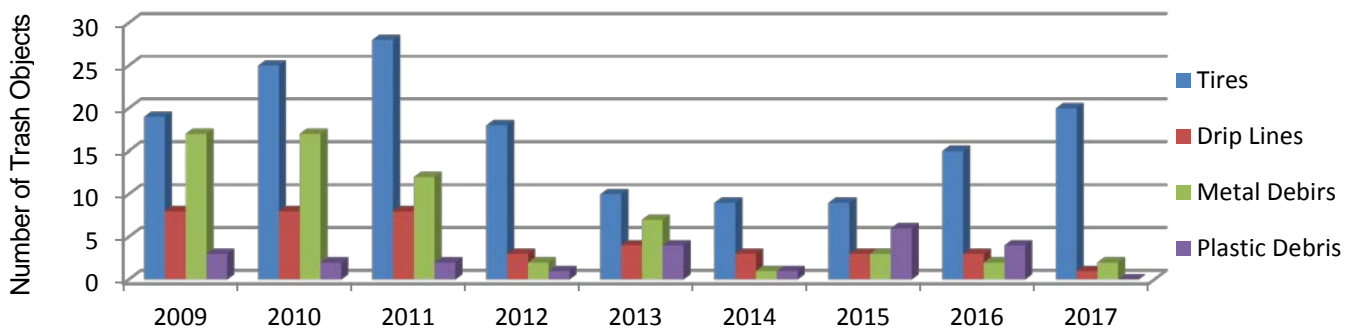
For further details regarding parameters measured please refer to the monitoring and maintenance plans prepared for the Project; both can be viewed and downloaded from the Napa Watershed Information and Conservation Council (WICC) http://www.napawatersheds.org/app_folders/view/3577.

2.0 Results

Trash and Debris:

A total of 23 significant occurrences of trash and debris were documented in the Project area. **Graph 1** illustrates the number and types of trash documented during the stream survey, including tires (**Picture 1**), drip lines, metal debris and plastic. Since surveys began in 2009, tires have consistently been the dominant trash documented in the channel. This year 20 of the 23 trash occurrences were tires. The remaining three (3) items included a lawn mower, garden hose and a computer monitor. **Figure 2** shows the location of the surveyed trash and debris.

Graph 1: Trash and Debris (2009-2017)



2.1 Invasive Non-Native and Pierce Host Plants

Figure 3 at the end of the report shows the location of significant occurrences of invasive/Pierce host vegetation that was documented during the 2017 stream survey. Himalayan blackberry, native and hybridized grape and Mugwort were the dominant target plants identified for management; other target species documented included giant reed (*Arundo*, **Picture 2**), *Vinca sp.*, and tree-of heaven but were limited in their distribution. Invasive 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 that are considered Pierce host’s species or priority invasive non-native vegetation.

A total of 380,775 square feet (8.7 acres) of non-native invasive and Pierce host vegetation was documented during the 2017 survey; for comparison a total of 512,088 sqft (11.7 acres) was documented in 2016. Species documented in 2017 include 61,650 sqft of Himalayan blackberry, 303,950 sqft of native/hybrid CA grape, 4,300 of vinca, 10,200 sqft of mugwort and 675 sqft of Giant reed. As in previous years, we encourage landowners to contact the maintenance lead with any additional requests for management of invasive and/or Pierce host vegetation in the riparian zone, beyond the top of bank, that may have not been documented during the channel maintenance survey. Management of the surveyed non-native invasive and Pierce host vegetation has already begun and will continue through the end of summer 2017; vegetation management in

Reaches 6 through 9 is being paid for under the post construction re-vegetation maintenance contracts and not with MAD funds.

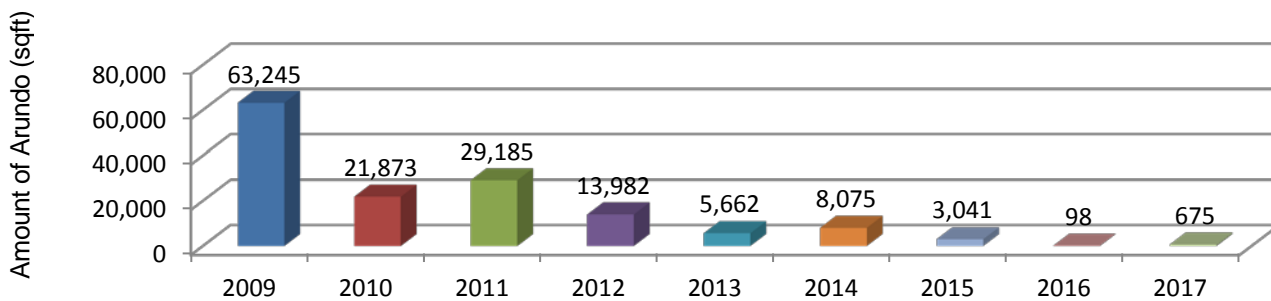
Table 1 below summarizes the invasive non-native and Pierce host plants documented during the 2017 stream survey. Further, **Table 1** lists if the species is a Pierce Disease host and ranks each species as a “high” or “moderate” impact invasive species as defined by the California Invasive Plant council (Cal-IPC); the Cal-IPC list primarily includes plants exhibiting some level of invasiveness in native habitats. A revised table will be presented in the spring 2017 final maintenance memo reflecting the total square footage of invasive and Pierce host vegetation treated during calendar year 2017.

Table 1: Invasive Non-Native and Pierce Host Plants documented during 2017 survey

Common Name	Scientific Name	Infested Area (SqFt)	Native?	Pierce Disease host	Cal-IPC Ranking
Giant reed	<i>Arundo donax</i>	675	No	No	High
Mugwort	<i>Artemisia douglasiana</i>	10,200	Yes	Yes	None
Periwinkle	<i>Vinca major</i>	4,300	No	Yes	Moderate
CA & Hybrid Grape	<i>Vitus sp.</i>	303,950	Yes/No	Yes	None
Himalayan Blackberry	<i>Rubus armeniacus</i>	61,650	No	Yes	High
Total		380,775			

Previous and ongoing efforts to manage and remove Giant reed have been successful in significantly reducing the quantity within the Project area; **Graph 2** below depicts the decline of *Arundo* throughout the Project area since monitoring and management began in 2009. The area of Giant reed documented this year (675 sqft) was more than the previously documented in 2016 (98 sqft). This is likely do to the fact that two significant new clumps were discovered that had previously gone undetected; all areas will be treated in the fall of 2017.

Graph 2: Arundo mapped and treated (2009-2017)



Picture 1: Tire in channel, Reach 8



Picture 2: Giant reed (Arundo) re-sprouts Reach 4



2.2 Instream Habitat Structures and Large Woody Debris

Previous Surveys conducted from 2009 through 2016 included assessing significant accumulation of “naturally recruited” and “installed” large woody debris (LWD) within the Project reach as LWD can influence the physical and biological function of aquatic habitat in stream channels. After establishing a 8 year baseline of data for this resource, which has informed LWD habitat function, density (LWD densities have remained stable over the last 7 years) and management within the Project reach, assessment of significant LWD and associated habitat will now be assessed once every 5 years in an effort to manage limited funds for long-term on-going Project monitoring and resource management. Please refer to previous years monitoring reports for data and analysis regarding LWD and other resource monitoring assessments; the next Project wide instream habitat and LWD assessment will take place in 2021.

2.3 Stream bank erosion and debris jams

Three areas of significant bank erosion (**Picture 3**) were documented during the survey; the District intends to address/stabilize 2 of the 3 erosion sites utilizing a combination of bio-technical methods during the fall of 2017. The remaining erosion site on Reach 8 is beyond the funding means and scope of services of the MAD; however the District is currently in contact with the landowner at this site to jointly work towards a solution to repair the area in a manner that is consistent with the goals of the Project. See **Table 3** for the location and details of the proposed bank stabilization work to be conducted.

Table 3: Proposed bank stabilization sites

River Station/Reach	Description	Proposed Work
197+00 (Reach 3)	Instream structure site, undercut from high flows	Rebuild exposed upper slope, erosion control fabric and jute net, broadcast erosion control seed mix and plant with live willow stakes in fall.
82+50 (Reach 7)	Several large downed cottonwoods exposed bank, under cutting	Rebuild exposed lower slope, explore feasibility of design and construction costs prior to conducting.
56+50 (Reach 8)	Undercut bank, several large trees undermined	District has acquired conceptual designs for repair and presented to landowner, District is in discussion with landowner regarding constructability and feasibility.

Picture 3: Erosion Site Reach 8



Picture 4: Beaver Dam Reach 3



Only 1 LWD occurrence in reach 4 (**Figure 2**) was identified during the Survey that was consider significant enough to require management actions. However, the LWD jam is located at the base of Rutherford Cross Road Bridge, a County owned structure, and thus the MAD will not be responsible for maintenance at this site. District staff has contacted the County Roads Department in order to have County roads crew members address this issue.

Previous surveys documented significant levels of beaver activity (dam building, downing of trees) within the Project reach of the Napa River; in 2016 for instance the District documented thirteen active beaver dams. However, it appears that high stream flows from the 2016/2017 winter not only removed all beaver dams documented last year but only two (**Picture 4**) were noted during this year’s Survey. In general, the District does not consider beaver dams to be an issue that would cause bank erosion or localized flooding; the dams are small relative to the river channel and typically wash away each winter (as demonstrated this past winter). During the low flow season, the dams impound slow water, providing cool, pool habitat for aquatic wildlife. However, if a particular dam does appear to present a hazard the District will manage the area appropriately by thinning out the structural wood of the dam to allow for sufficient flow and debris conveyance.

2.4 Irrigation and Vegetation Maintenance

As the District assumes greater responsibility of restored areas (i.e. when the three year vegetation maintenance contracts expire) additional costs are assumed by the Maintenance Assessment District (MAD). The District now has full maintenance responsibility for Reaches 1-4 and 8 (approximately 27 acres). Tasks once paid for under the three year maintenance contracts such as mowing, invasive/Pierce host vegetation management, watering, mulching, etc. are now paid for under the MAD. General vegetation maintenance and periodic watering at these restored sites will be conducted as needed in 2017 to ensure restored areas are being sufficiently maintained. In general, sites that have been planted and established for more than three years (all sites in Reaches 1-4 and 8) will no longer receive supplemental watering as the California native plants installed are adapted to the precipitation patterns of the region.

2.5 Landowner Requests for Maintenance

In addition to the regular maintenance work (invasive/Pierce host plant management, irrigation, LWD management, etc.) that takes place throughout the entire 4.5 mile Project reach landowners are encouraged to contact the District directly if specific tasks relative to river maintenance are desired that are not part of the routine maintenance conducted annually. **Table 4** below lists specific riverside property maintenance requests received from landowners by the District at the time of drafting this report. The District has already begun conducting work pursuant to this 2017 maintenance Survey report as well as routine maintenance and expects to complete all work by late summer/fall of 2017. Additionally, the District would like to remind landowners that maintenance requests are accepted throughout the year. A copy of the channel maintenance request form is included at the end of this report.

Table 4: Landowner Maintenance Requests received to date for maintenance year 2017

Reach	Property	Requested Work	Notes
Reach 1	Guggenhime Property	Mow annual grass top of bank and slope for fire suppression concerns, provide simple river access	Work completed June 2017.
Reach 8	AJM Vineyards	Remove/treat streamside and top of bank Himalayan blackberry and elderberry	Work is currently schedule to take place in July of 2017 with a follow up treatment of invasive/Pierce host vegetation in later summer/ fall 2017.

2.6 Recommendations and Work Plan:

The RDRT maintenance survey team recommends the following work be conducted during 2017:

- 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,
- Coordinate with County Roads Department to remove LWD jam at base of Rutherford Cross Road Bridge,
- Continue to protect large riparian trees with hardware cloth in areas that are in close proximity of active beaver dams,
- Treat large accessible patches of invasive and Pierce host vegetation with mechanical and chemical (glyphosate) methods including Himalayan blackberry, mugwort, vinca, California grape and Arundo; this task also includes appropriate re-vegetation and irrigation of treatment sites where treatment has left significant gaps in the riparian under story canopy,
- Repair and stabilize exposed stream bank erosion areas as proposed in Table 3,
- Conducted annual summer mowing of non-native grasses/broadleaf’s on constructed flood plain benches as needed,

- Complete maintenance work requested by landowners; continue to respond to maintenance requests for landowners through the calendar year,

A table providing additional site specific details (listed by property owner) of the proposed maintenance work to be conducted in 2017 will be presented for review to the landowners at the July 19th LAC meeting. After completing the review, evaluation and prioritization of the proposed maintenance work with the LAC and regulatory agencies, maintenance activities will be completed by October 15th, 2017. This report and a final summary memo of work conducted each year can be accessed and downloaded 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.

3.0 Budget:

The Maintenance Assessment District (MAD) has been in place since June, 2008 and generates annual revenues of \$98,160. Funds pay for annual vegetation and debris management and maintenance work, the annual river survey, report production and periodic resource monitoring surveys to gather data against which to track changes in channel and habitat conditions and comply with Project permit. Remaining funds accumulate for future annual maintenance and monitoring work. A draft cost estimate to complete the maintenance and monitoring tasks for fiscal year 2017/18 using funds generated from the MAD is provided in **Table 5** below. **Table 5** also includes an accounting of expenditures spent for the last two fiscal years as well as the fund balance as of July 1st, 2017. Maintenance tasks will be conducted by the Napa County Flood Control and Water Conservation District and contractors. An update of the actual expenditures for fiscal year 2017/18 will be provided in the spring 2018 final maintenance memo and at the spring LAC meeting.

Table 5: Expenditures from past two fiscal years and estimated expenditures for fiscal year 2017/2018

Tasks	Budget Item per Engineers Report	2015/16	2016/17	Proposed 2017/18
Annual surveys & development of work plans, report, monitoring, administration	9, 10	\$41,398	\$31,287	\$21,100*
Vegetation/ invasive plant management of floodplain benches, irrigation	2,4,5,8	\$31,932	\$19,232	\$36,500
Streambank erosion and habitat structure maintenance	3,6,7	\$1,115	\$0	\$20,000
Debris/LWD Thinning and/or removal	1	\$1,393	\$880	\$500
Total expenditures		\$75,838	\$51,399	\$78,100
Annual assessment balance		\$22,322	\$46,761	\$18,060
Cumulative fund balance (with interest) 7/01/2017		\$420,667		

*Includes Napa County and Napa Resource Conservation District services

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

4.0 References:

Jones and Stokes, August 2008. *Final Maintenance Plan for the Napa River Rutherford Reach Restoration Project*; 2015.

USGS Real-Time Water Data Web Site for stream gage #11456000 accessed on 07-05-2017:

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

Stream Survey Team:

Shannon Esser, Intern, NCFWCDC, Joe Panchesson, Intern, NCFWCDC, Jeremy Sarrow, Watershed & Flood Control Resources Specialist, NCFWCDC

Report Production:

Jeremy Sarrow, Watershed & Flood Control Resources Specialist, NCFWCDC

Figure 1: Project Location Map



Figure 2: LWD, Trash and Debris Map

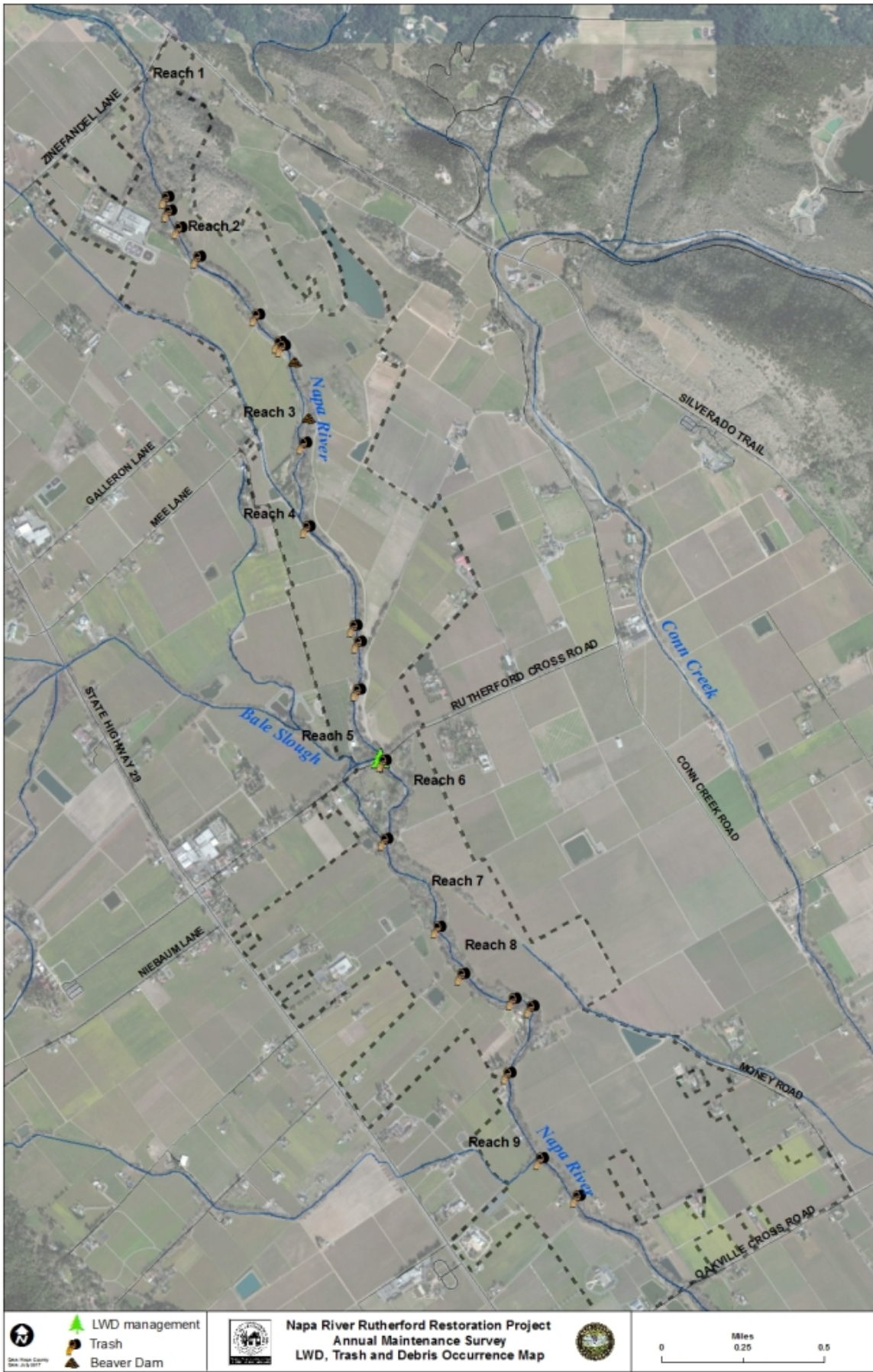


Figure 3: Invasive/ Pierce Host Plant Occurrence Map

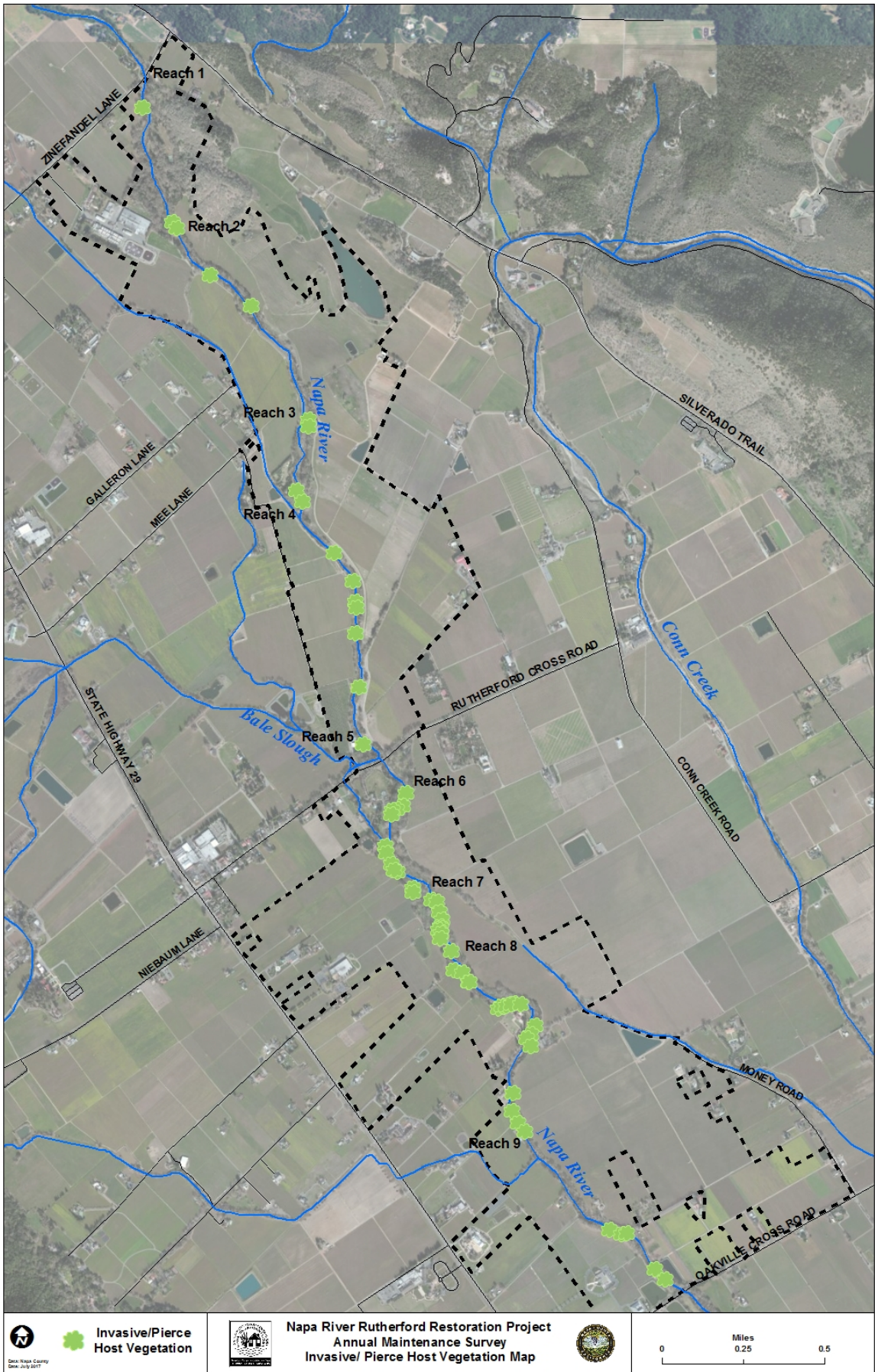
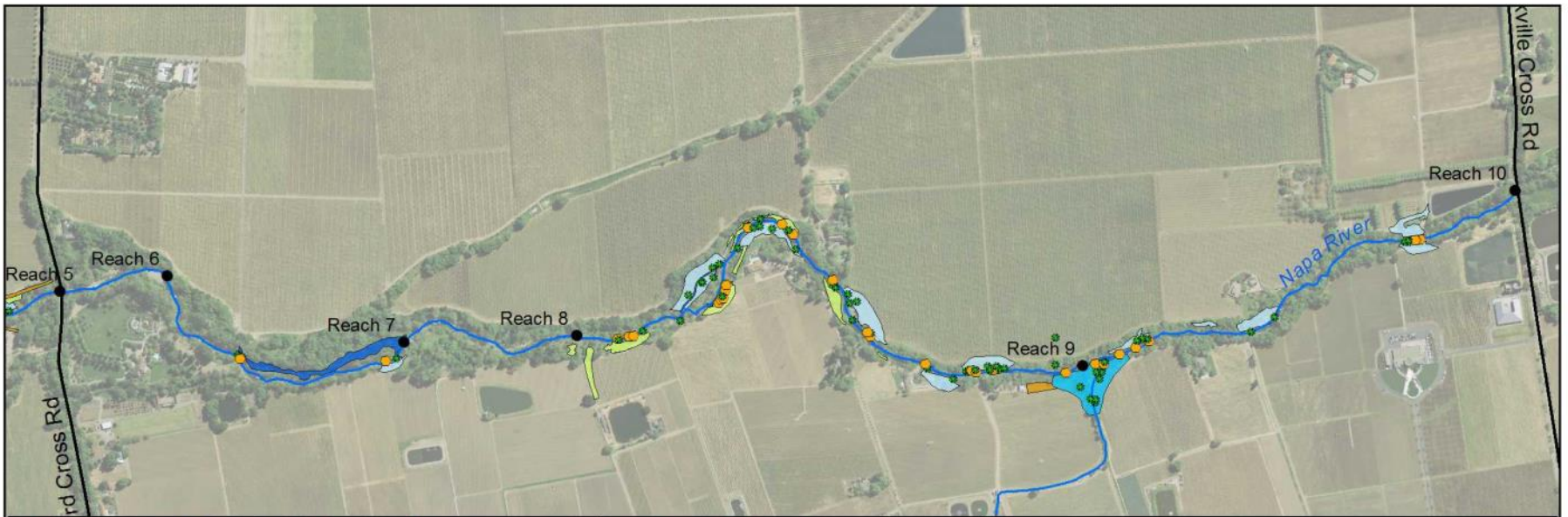
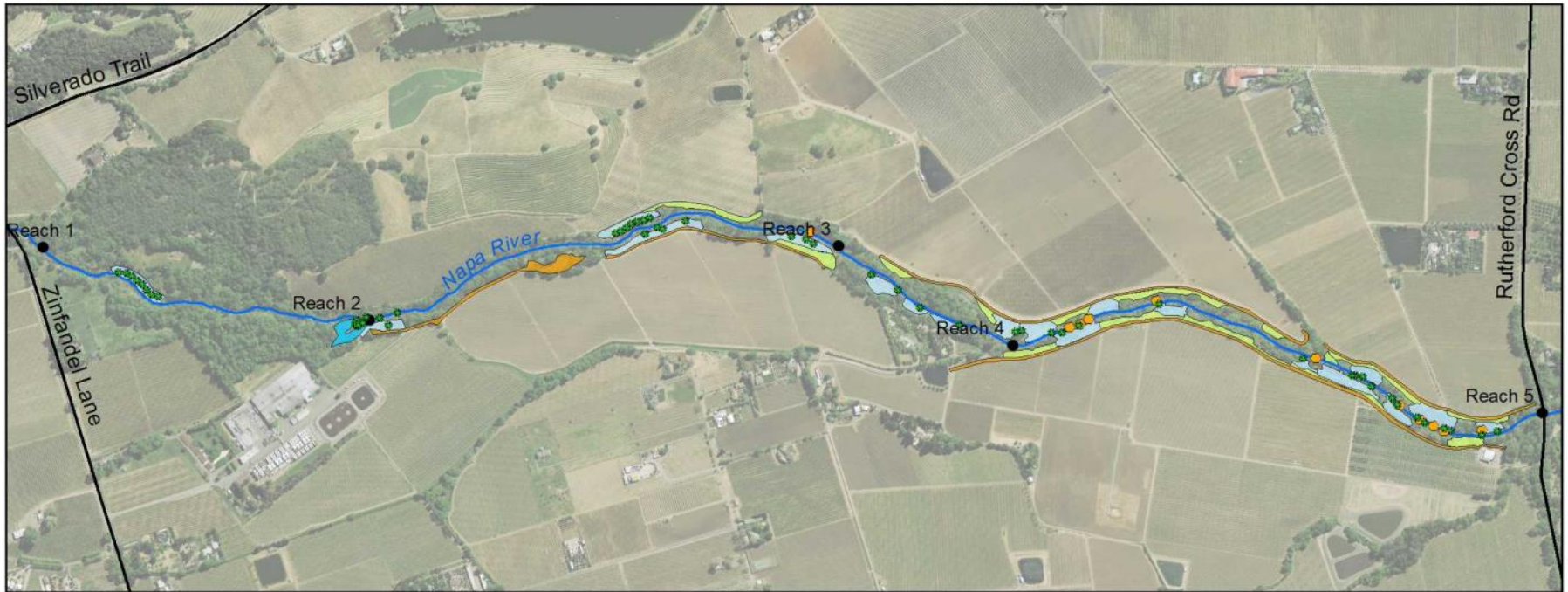


Figure 4: Constructed Features Map



Instream Bench	Bank Stabilization Area	LWD Structure
Side Channel	Setback berm	Boulder Cluster
Alcove		

Napa River Rutherford Restoration Project
Annual Maintenance Survey
Constructed Features Map