Napa River Rutherford Reach Restoration Project
Annual Maintenance and Monitoring Survey

RDRT survey team collecting data in the Rutherford Reach of the Napa River, June, 2010

July 2010

Prepared by:

Napa County Flood Control and
Water Conservation District
Napa County, California

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Background:

Historic land use practices in the Napa River Watershed have resulted in confinement of the river into a narrow channel, loss of riparian and wetland habitats, accelerated channel incision and bank erosion, and reduction in the quality and quantity of in-stream habitat for salmonids and other native fish. Because of ongoing channel degradation, properties along the Rutherford Reach of the Napa River have been subject to bank instability and failure leading to the loss of valuable vineyard land, threat to structures, and costly repairs. As a result, affected landowners formed the Rutherford Dust Napa River Restoration Team (also known as "RDRT") and have worked with Napa County and its affiliate agencies to design and implement a comprehensive reach-scale restoration called the Napa River Rutherford Reach Restoration Project (Project). The project area is comprised of privately-held parcels 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 for the Project was developed by the RDRT Landowner Advisory Committee (LAC) and the Napa County Flood Control and Water Conservation District (District) to support routine maintenance activities within the Rutherford Reach needed for a successful Project. 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 recommendations of the second annual stream survey conducted from June 2nd through June 10th, 2010.

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 invasive non-native and Pierce's disease host vegetation control, management of emergent (young) in-channel vegetation, and planting for erosion control management;
- installation of erosion control fabric or coir logs;
- maintenance of constructed features, including floodplain benches, vegetative buffers, aquatic habitat enhancement structures, and bank stabilization structures.

As of the time of this survey two flood plain benches had been installed (Fall 2009) in Reach 1 of the Project. Therefore, the focus of the 2010 stream survey included the review of the status of these two flood plain benches, one on the Guggenhime property, and one on the Quintessa property, in addition to the regular activities of identifying and documenting target invasive plant species, Pierce Disease host plant species, potentially erosive LWD, and trash or debris.

Annual Stream Survey Objectives:

The stream survey commences 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 applied to Project monitoring required to comply with funding agency requirements. This additional data collected will be presented in a separate monitoring report. A team of resource specialists, including a geomorphologist, aquatic/riparian biologist, fisheries biologist, invasive plant expert, and a landowner representative conduct the survey with assistance from District interns.

The essential maintenance objectives 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, barrels, etc.) trash removal, and biotechnical stabilization;
- Evaluate the status of, and define the steps needed to maintain the function of constructed in-stream habitat enhancement structures;
- Identify infestations of non-native invasive and Pierce's disease host plant species, and define control treatments to the extent practicable;
- Respond to Landowners requests for maintenance actions on their property.

A suite of parameters were measured along the channel, recorded using digital photography, and mapped using two handheld computers equipped with GPS and customized software to log specific maintenance data. Four separate GIS *layers* were created to capture various categories of interest via GPS during the survey, the layers and the associated data fields include:

- *Maintenance* (Date, River Station, Bank Location, Problem, Invasive Species, Pierce Host, Patch Size, Priority, Recommendation, Photo, Notes)
- *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, Notes Photo)
- *Photographic Documentation Point* (Date, River Station, Way Point, Number of Photos, Notes)

Survey Results:

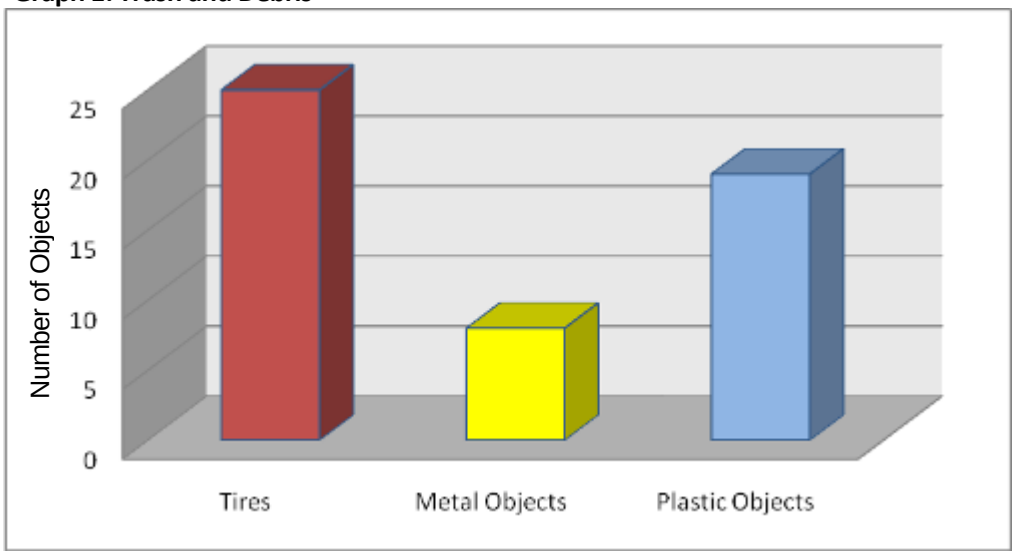
The annual stream survey was conducted from June 2st through June 10th, 2010 and included mild weather conditions and 20-50% cloud coverage. Average water temperature ranged between 58° - 63° Fahrenheit, stream flow measured at the USGS stream gage (ID#11456000) located approximately 1100 feet upstream the beginning of the Project reach ranged from 22.0 - 14.0 cubic feet per second (cfs).

Issues documented during the stream survey included trash and debris located in-channel and at the top of the stream banks, invasive plant species located throughout the riparian zone, eroding stream banks and potentially erosive large woody debris jams located in-channel. A total of 417 features were documented within the Project area. The following subsections describe potential maintenance issues identified within the Project area.

Trash and Debris:

A total of 52 occurrences of trash and debris were documented in the Project area with the dominant trash and debris type being tires (25) and the remaining (27) occurrences of trash and debris were plastic objects including irrigation drip lines, tarps, agricultural field tubs and metal objects such as storage drums, appliances, etc. Figure 2 shows the location of the trash and debris documented while Graph 1 below represents the amount of trash types documented during the stream survey.

Graph 1: Trash and Debris



Invasive Non-Native Plants:

A total of 86 occurrences of invasive non-native plants were identified and documented within the Project area (Figure 3). Giant reed and poison hemlock were the dominate invasive plants documented, while tree-of-heaven, yellow spurge, and periwinkle (*Vinca*) also occurred in relatively high number, sesbania, black locust and fennel occurrences were relatively low. A new previously undocumented species of invasive honeysuckle was also documented in the riparian zone. It is important to note that while over 21,873 square feet (sqft) of giant reed, 35,100 sqft of poison hemlock and 17,424 sqft of periwinkle were mapped there is likely significantly more poison hemlock and periwinkle present in the riparian zone due to the fact they also occupy large upland areas of the floodplain that are outside of the view from the stream survey crew. Landowners are encouraged to contact the maintenance lead with requests for maintenance of invasive species near the top of bank or on the floodplain. The distribution of giant reed was generally limited to those patches not treated previously due to the inability to secure landowner access agreements for treatment in 2009 or small patches that were treated previously but will require minor re-treatment in 2010. The largest patches of giant reed were documented within Reach 8. Poison hemlock occurred in large patches throughout Reaches 1 through 8, while it was relatively not present in Reach 9. The distribution of tree-of-heaven, sesbania, black locust, yellow spurge and other invasive species occurrences were roughly continuous in small patches throughout the project area (Figure 3). Table 1 summarizes the invasive non-native plants documented during the 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 Plants

Common Name	Scientific Name	Pierce Disease host	Cal-IPC Ranking
Tree-of-heaven	*Ailanthus altissima*	No	Moderate
Giant reed	*Arundo donax*	No	High
Poison hemlock	*Conium maculatum*	No	Moderate
Fennel	*Foeniculum vulgare*	No	High
Black locust	*Robinia pseudoacacia*	No	Limited
Himalaya Blackberry	*Rubus armeniacus*	Yes	Hight
Red sesbania	*Sesbania punicea*	No	High
Periwinkle	*Vinca major*	Yes	Moderate

While poison hemlock is not a Pierce disease host it has become readily apparent over the course of the last two annual surveys that this species is becoming a dominate invasive plant in the riparian zone and will require focused efforts that may be beyond that of the maintenance survey crews budgetary and labor resources; future LAC meetings should determine the priority of maintenance resources to manage this species.

Large Woody Debris (LWD):

Table 2 and Figure 2 list the 16 locations where large woody debris (LWD) greater than one foot in diameter and six feet in length were documented and ranked as potential maintenances issues in the channel in 2010. Two of these 16 occurrences have been prioritized for maintenance actions (thin out smaller wood and/or realign larger wood to reduce flood potential) in 2010 and one of the logs will be incorporated into a bench cut and LWD installation to be constructed in summer/fall 2010. The remaining 13 LWD occurrences documented as potential maintenances issues will be monitored to track any additional wood accumulation, mobilization, or incipient scour. In locations where LWD was located in proximity of a designed and constructed Project feature, the LWD will be salvaged and integrated into the design feature during Project construction. The 15 LWD structures that were installed at the constructed flood plain benches in 2009 appear to be functioning as designed (during high winter flows) and do not require maintenance at this time. The survey teams fisheries biologist has proposed monitoring the scour holes created by the bench logs for the potential to create possible trapping pools for fish. Additional LWD that was documented as significant in-stream fish habitat but ranked insignificant as a maintenance issue did not receive any specific maintenance recommendations and will be presented in a separate 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 backwater formation.
- Extent of LWD relative to cross-channel distance (i.e. extent of channel blockage).
- Location relative to planned Project features that provide opportunity to use LWD in construction.
- Landowner priority.

Table 2 lists the large woody debris structures that were identified for potential maintenance actions.

Table 2: LWD identified for maintenance monitoring or treatment

River Station/Reach	LWD feature	Recommendation	Notes
53+95 (Reach 8)	Small wood accumulation (>10), left side of channel, flood deposited	Monitor	Monitor for additional wood accumulation
66+45 (Reach 8)	Medium single piece of wood on gravel bar, providing bank stability	Monitor	Monitor for additional wood accumulation
67+00 (Reach 8)	Medium wood accumulation/jam (>10), full channel pool scour	Monitor	Monitor for additional wood accumulation/bank scour
80+75 (Reach 7)	Medium wood accumulation/jam (>10), full channel pool scour	Monitor	Monitor for additional wood accumulation/bank scour
82+30 (Reach 7)	Medium accumulation on gravel bar, providing bank stability	Monitor	Monitor for additional wood accumulation
86+00 (Reach 7)	Large single piece of wood on terrace, flood deposited	Monitor	Monitor for additional wood accumulation
87+05 (Reach 7)	Medium wood accumulation/jam (>10), gravel bar flood deposited	Monitor	Monitor for additional wood accumulation
113+50 (Reach 5)	Large single piece of wood on riffle crest, pool scour	Monitor	Monitor for additional wood accumulation/bank scour
137+45	Medium wood accumulation (>10),	Monitor	Monitor - adjacent to proposed graded

(Reach 4)	right side of channel, flood deposited		bench cut and LWD installation
161+30 (Reach 4)	Small single piece of wood on terrace, flood deposited	Monitor	Monitor - adjacent to proposed graded bench cut
169+55 (Reach 3)	Medium single piece of wood in pool, providing bank stability	Monitor	Monitor for additional wood accumulation
193+80 (Reach 2)	Large wood accumulation/jam (>10), full channel pool scour	Monitor	Monitor – Documented in 2009 survey, water surface elevation lower in 2010
194+90 (Reach 2)	Medium wood accumulation/jam (>10) on terrace - flood deposited	Remove limited trash & debris	Received landowner request in addition to survey documentation of issue
196+00 (Reach 2)	Medium single tree with crown in stream channel, pool scour	Remove tree crown and branches	Damaged by Siteworks spring 2010 culvert repair work at project site
219+30 (Reach 1)	Small single piece of wood on low terrace, flood deposited	Utilize in 2010 construction	Incorporate into 2010 constructed bench cut and LWD installations
241+45 (Reach 1)	Large single piece of wood in pool, flood deposited	Monitor	Monitor for additional wood accumulation

Landowner Requests for Maintenance

A total of eight landowner requests forms were received by the District, 6 had specific requests for maintenance actions and 2 had general maintenance requests with no specific tasks requested. Landowner requests for specific maintenance actions ranged from removal of specific patches of invasive and Pierce Disease host plants to realignment and/or relocation of large and/or small woody debris and concrete rubble. Table 3 below details the specifics of those landowner request forms that requested specific actions be performed during the 2010 maintenance season.

Table 3: Landowner Request Forms received for maintenance year 2010

River Station/Reach	Parcel #	Requested Work	Recommendation
225+00-214+00 (Reach 1)	030-060-025-000	Remove non-native noxious weeds and Pierce Disease host plants	Non-native and Pierce host plants will be removed during 2010 Project construction, remaining Non-native and Pierce host plants will be removed post construction
194+90-196+00 (Reach 2)	030-060-059-000	Thin accumulated wood jam and SiteWorks felled tree and trash in debris	Conduct requested work with limited thinning of wood jam
186+00-140+00 (Reach 2)	030-090-002-000	Remove of trash/ debris, repair various bank erosion and remove periwinkle (*Vinca*)	Bank erosion and non-native plants will be repaired/removed during 2010 Project construction, remaining Non-native and Pierce host plants will be removed post construction
72+00-65+00 (Reach 8)	030-190-005-000	Repair massive stream bank failure (Sequoia Grove) on west bank	Bank repair solution currently in design phase, project implementation funds being sought
52+00-48+00 (Reach 8)	031-010-005-000	Remove non-native noxious weeds and Pierce Disease host plants, remove concrete rubble from failed bridge	Conduct requested non-native and Pierce Disease host plant removal, remove of concrete rubble bridge to be addressed during future Project construction
27+80-13+20 (Reach 9)	031-040-027-000	Remove non-native noxious weeds and Pierce Disease host plants	Conduct requested non-native noxious weed and Pierce Disease host plant removal

Recommendations and Work Plan:

The RDRT maintenance survey team recommends the following work be conducted during fiscal year 2010-2011:

- 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.
- Realign and/or thin out two LWD jams (<12-inches-in-diameter and/or <6-feet-long) adjacent to landowners property as recommended by survey team and requested by landowner (Tables 2 and 3).

- Treat large accessible patches of invasive plants that are ranked as either "high" or "moderate" impact species and are known Pierce Disease hosts, including periwinkle, Himalaya Blackberry, poison hemlock and giant reed. Control and treat red sesbania and tree of heaven patches with appropriate control measures including mechanical removal and herbicide application (this task also includes some re-vegetation planting and irrigation of treatment sites where treatment has left significant gaps in the riparian under story canopy).

This draft report and the recommendations contained within will be presented to the LAC for review, evaluation and prioritization of annual maintenance activities at a meeting scheduled for July 21st, 2010 and will be available for comment to all landowners participating in the Project as well as appropriate regulatory agencies. After completing the review, evaluation and prioritization of the annual maintenance report with the LAC and regulatory agencies maintenance activities pursuant to the report will begin and likely extent through November 2010. 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:

A cost estimate to complete these maintenance tasks using funds generated from the annual assessment know as the Rutherford Reach Benefit Zone - Assessment District 2008-01 is provided below. It is anticipated that maintenance tasks will conducted by Napa County Flood Control and Water Conservation District and California Conservation Corps staff.

Rutherford Reach Maintenance Tasks Fiscal Year 2010-2011	Estimate
1. Invasive and Pierce disease host plant removal and re-vegetation	$13,215
2. Trash removal	$2,145
3. LWD removal/relocation and debris removal	$4,900
TOTAL	**$20,260**

Contact: Jeremy Sarrow, Watershed & Flood Control Resources Specialist, NCFCWCD, jsarrow@co.napa.ca.us

References:

Jones and Stokes, G. Hayes, L. Micheli. January 2009. *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; 2010. USGS Real-Time Water Data Web Site for stream gage #11456000 accessed on 06-24-2010: http://waterdata.usgs.gov/nwis/uv?11456000

Acknowledgements:

Stream Survey Team

Paul Blank, Hydrologist, Napa County Resource Conservation District
Leif Bryant, Watershed Assistant, NCFCWCD
Gretchen E. Hayes, Geo-morphologist, Tessera Consulting
Jonathan Koehler, Senior biologist, Napa County Resource Conservation District
Calyton Leal, San Jose State Graduate Student
Jeremy Sarrow, Watershed & Flood Control Resources Specialist, NCFCWCD
Chris Sauer, Watershed Assistant, NCFCWCD

Report Production

Jeremy Sarrow, Watershed & Flood Control Resources Specialist, NCFCWCD

Figure 1: Project Location Map

Figure 2: LWD, Trash and Debris Map

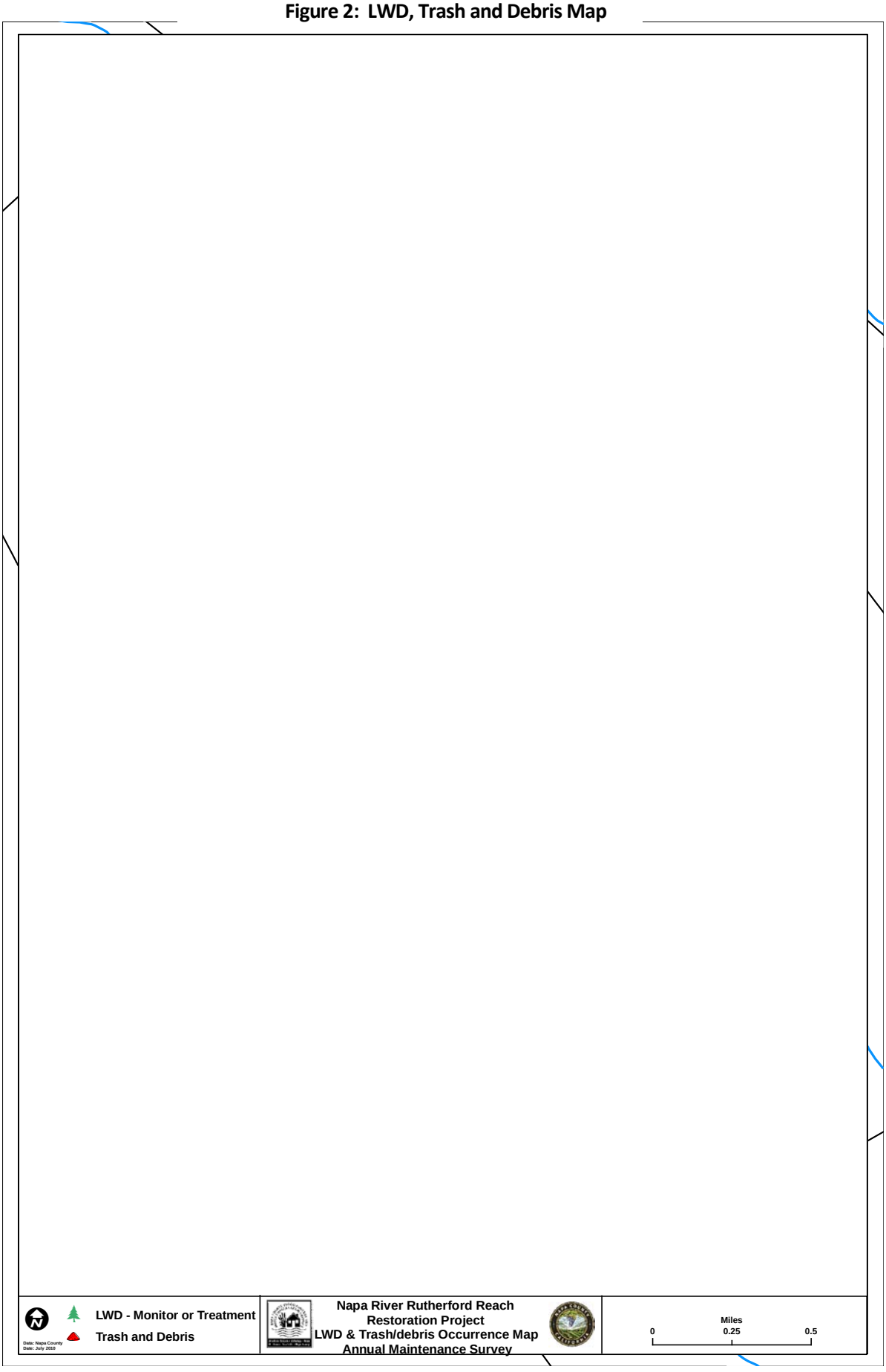
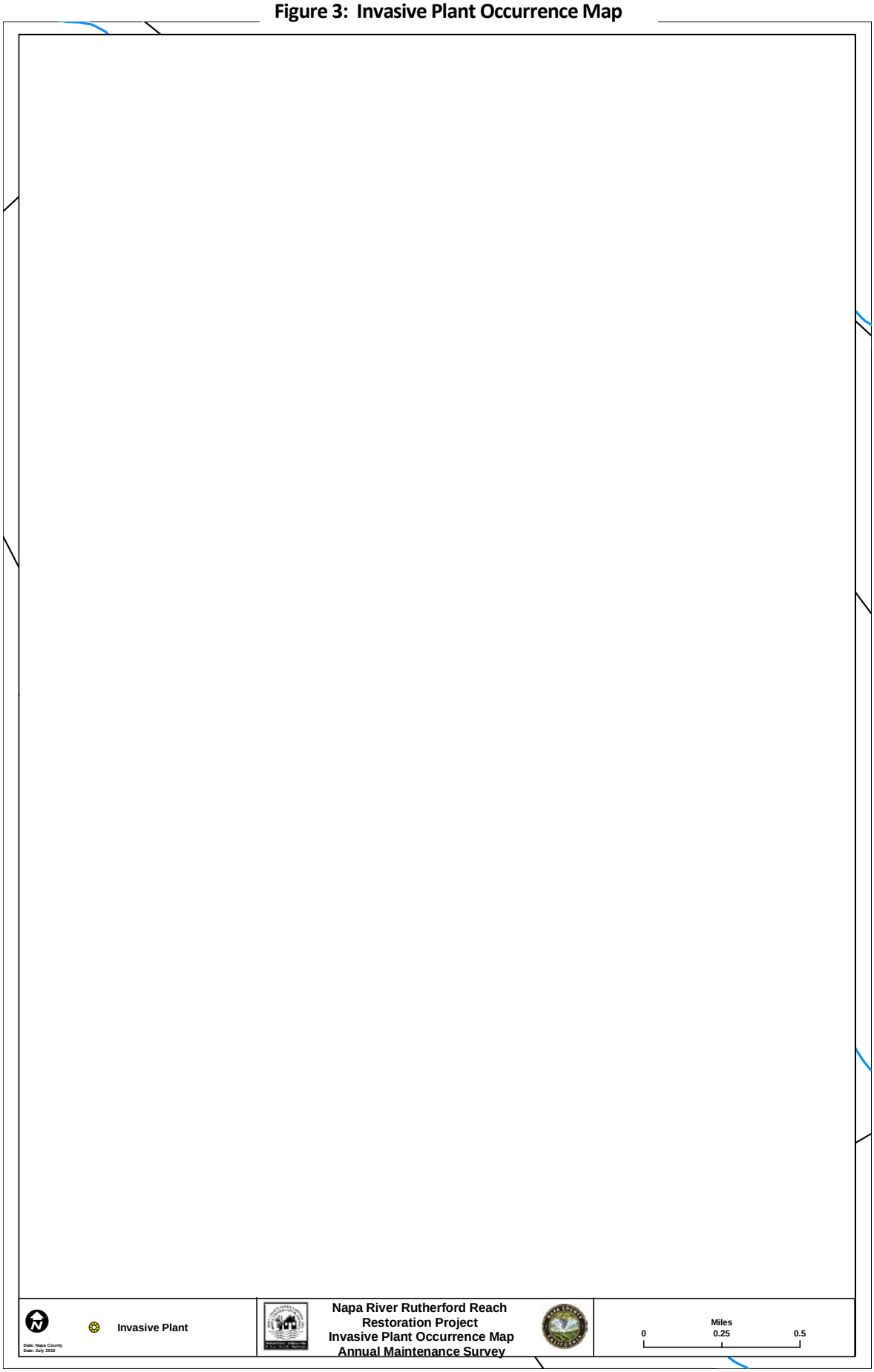


Figure 3: Invasive Plant Occurrence Map



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 BY JULY 30, 2010

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