



Fish Friendly Farming Certification Program

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LEVELS OF ACCOMPLISHMENT

The Fish Friendly Farming Certification Program (FFF) began in Mendocino and Sonoma Counties in 1997. The program started in the Napa Valley in 2002, Solano County in 2005 and the Sierra Foothills in 2008 and the Delta in 2020.

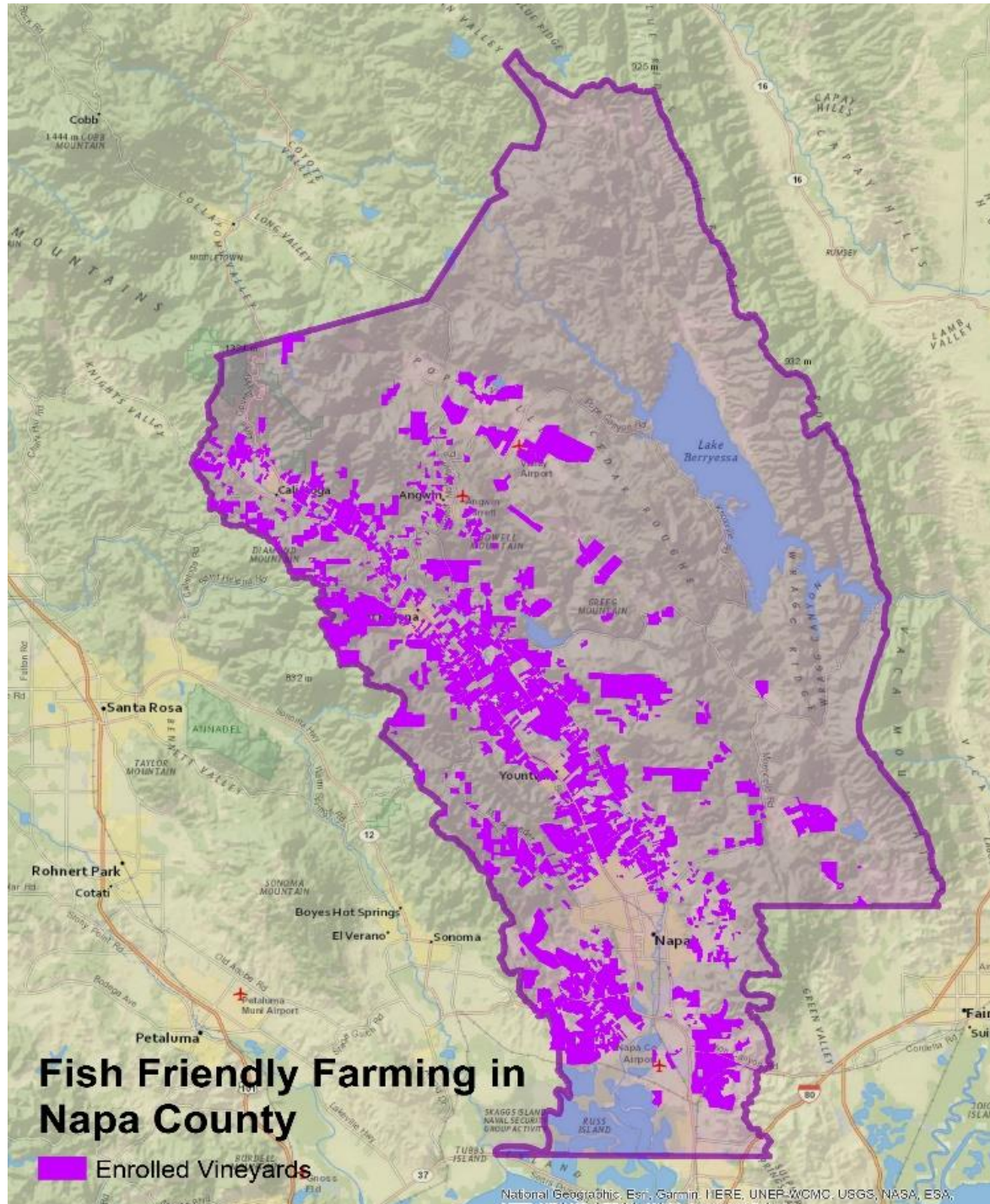
In California the FFF program has 210,000 acres enrolled made up of over 1400 individual farms, has assessed and improved 960 miles of dirt roads, 451 miles of blue-line creeks and river corridors and many more miles of ephemeral creeks. All FFF farm plans include requirements for water conservation, soil conservation and protection of water quality and habitats.

Over 95% of all the vineyards in Napa County are in the FFF program.

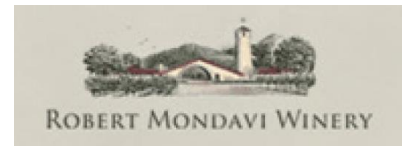
FFF provides professional one-on-one technical assistance to inventory and assess numerous features of the site. Produces a complete farm plan with maps.

FFF certifies vineyards, fruit /nut orchards, row crops, grazing land and cannabis.

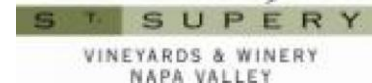
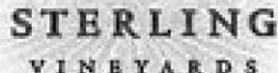
FFF provides regulatory compliance in the Regional Water Quality Control Board Regions 2 and 5 and soon Region 1



In Napa County the FFF program has certified 1,100 separate vineyard properties encompassing over 39,600 vineyard acres and 100,800 total parcel acres. Three quarters of this acreage of vineyards have been recertified at least once demonstrating long term implementation of BMPs. Water conservation practices, irrigation efficiency and water sources used are documented in detail for each site.



SCHARFFENBERGER CELLARS



FARM CONSERVATION PLAN

Element 1 - General Site Features

Element 2 - New Vineyard

Element 3 - Managing the Existing Vineyard

Element 4 - Major Replants

Element 5 - Roads

Element 6 - Creek/River Corridors

Element 7 - Photo-monitoring

Element 8 – Work Force and Community

Element 9 – Business Practices

Element 10 – Green Initiatives

Element 11 – Climate Adaptation Certification

Overview of FFF



SHEET EROSION



GULLY EROSION



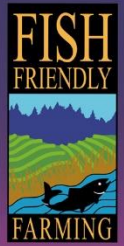
**CHANNEL
EROSION OR
ENTRENCHMENT**

RILL EROSION



EROSION CONTROL PRACTICES INCLUDING COVER CROPS, GRASS FILTER STRIPS AND OTHER EROSION CONTROL MEASURES





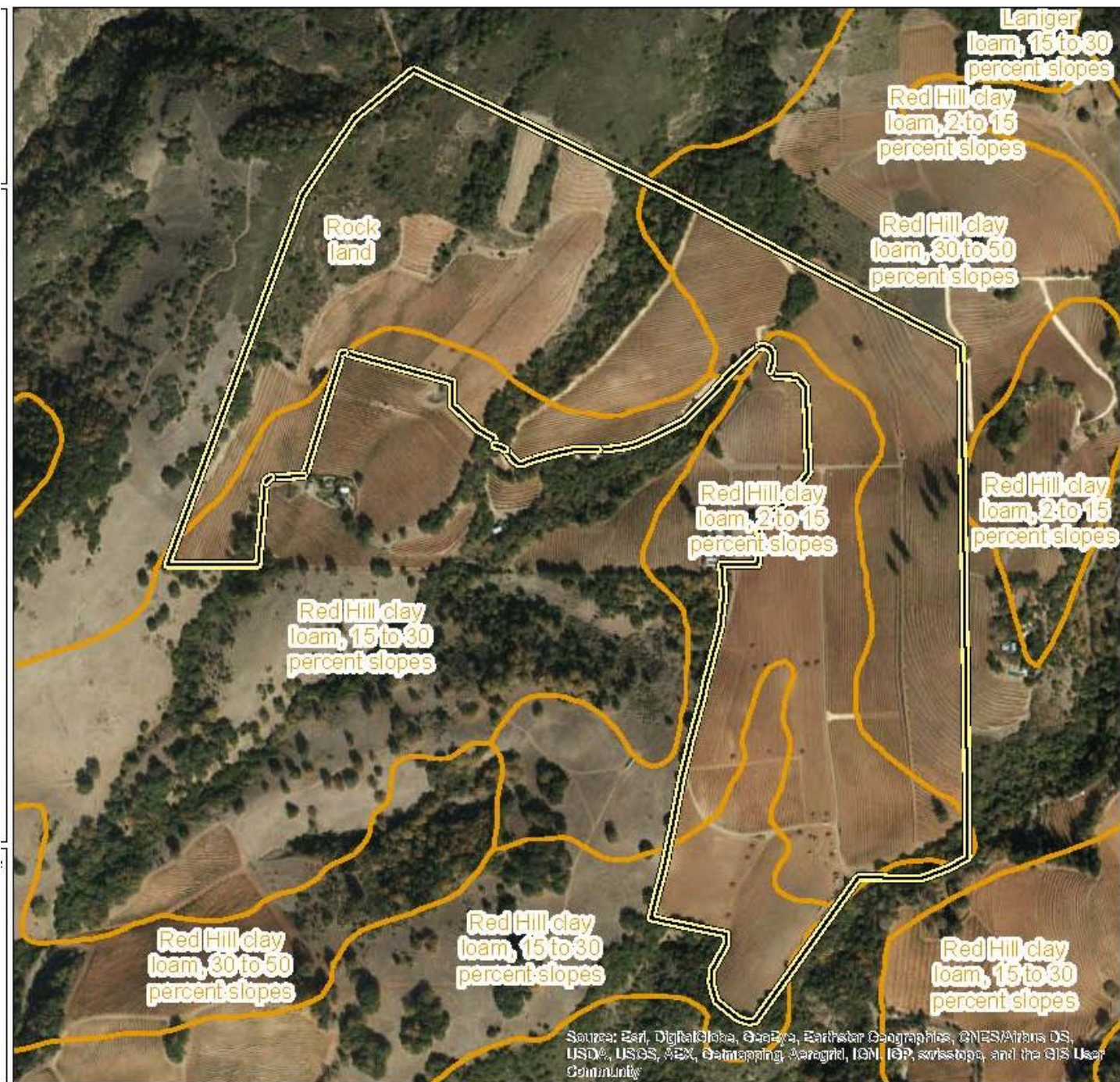
FARM CONSERVATION PLAN

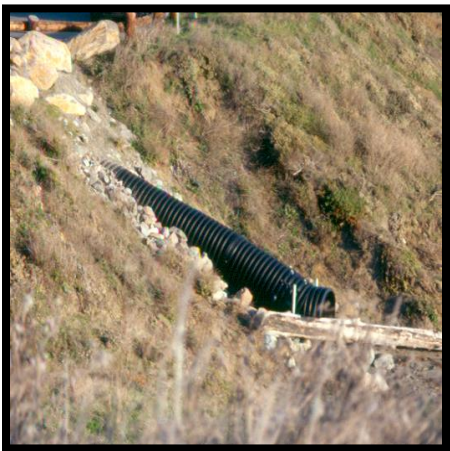
Slope



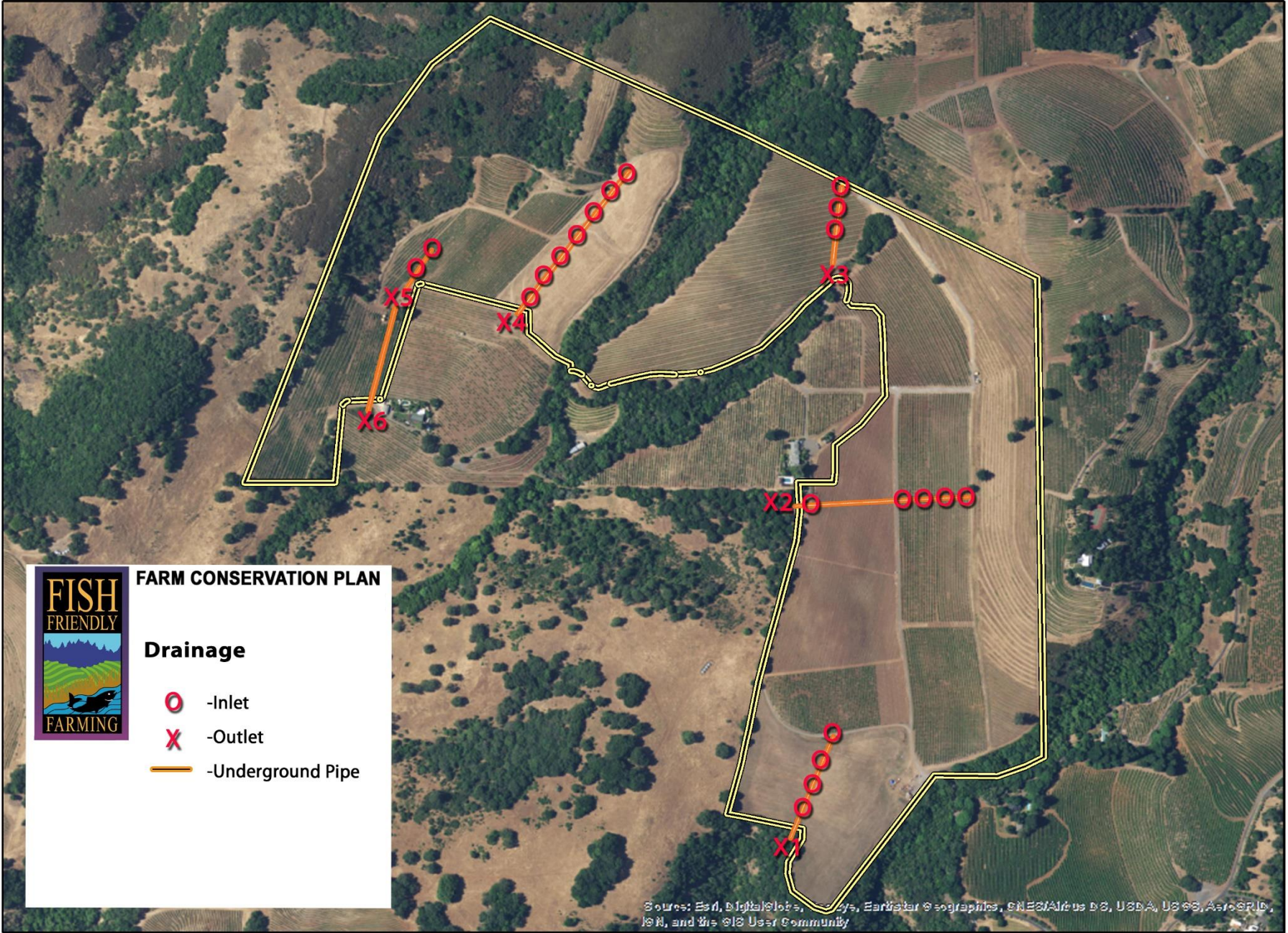
Areas over 5% slope

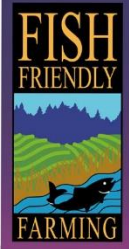
Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





EROSION CONTROL PRACTICES INCLUDING CONCENTRATED FLOW SOURCES

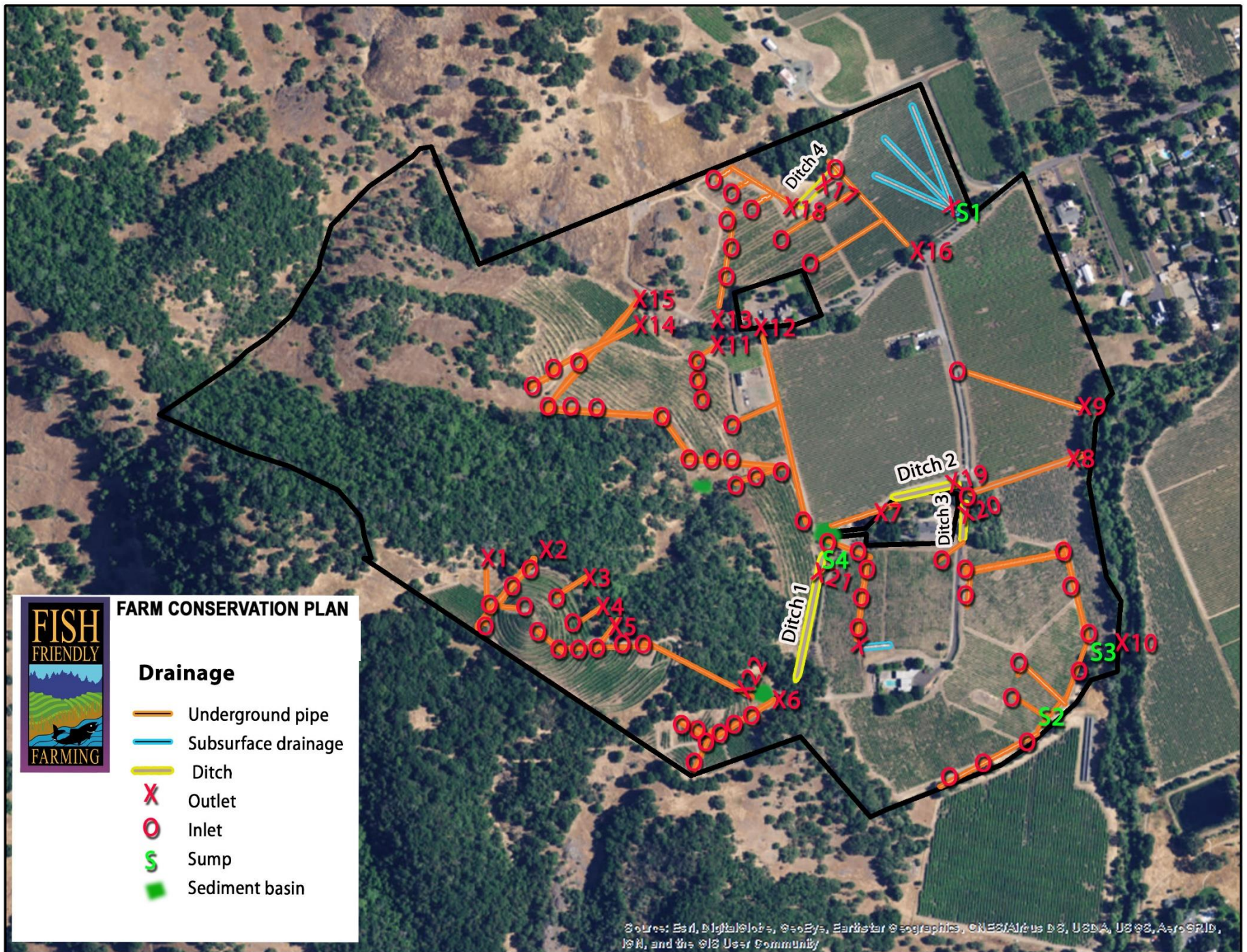


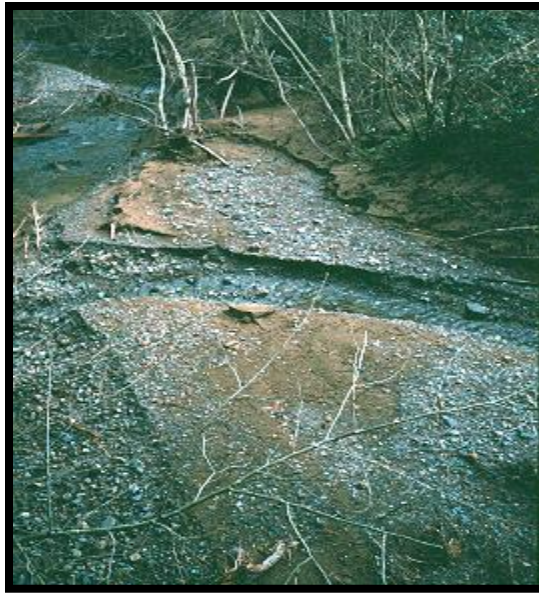


FARM CONSERVATION PLAN

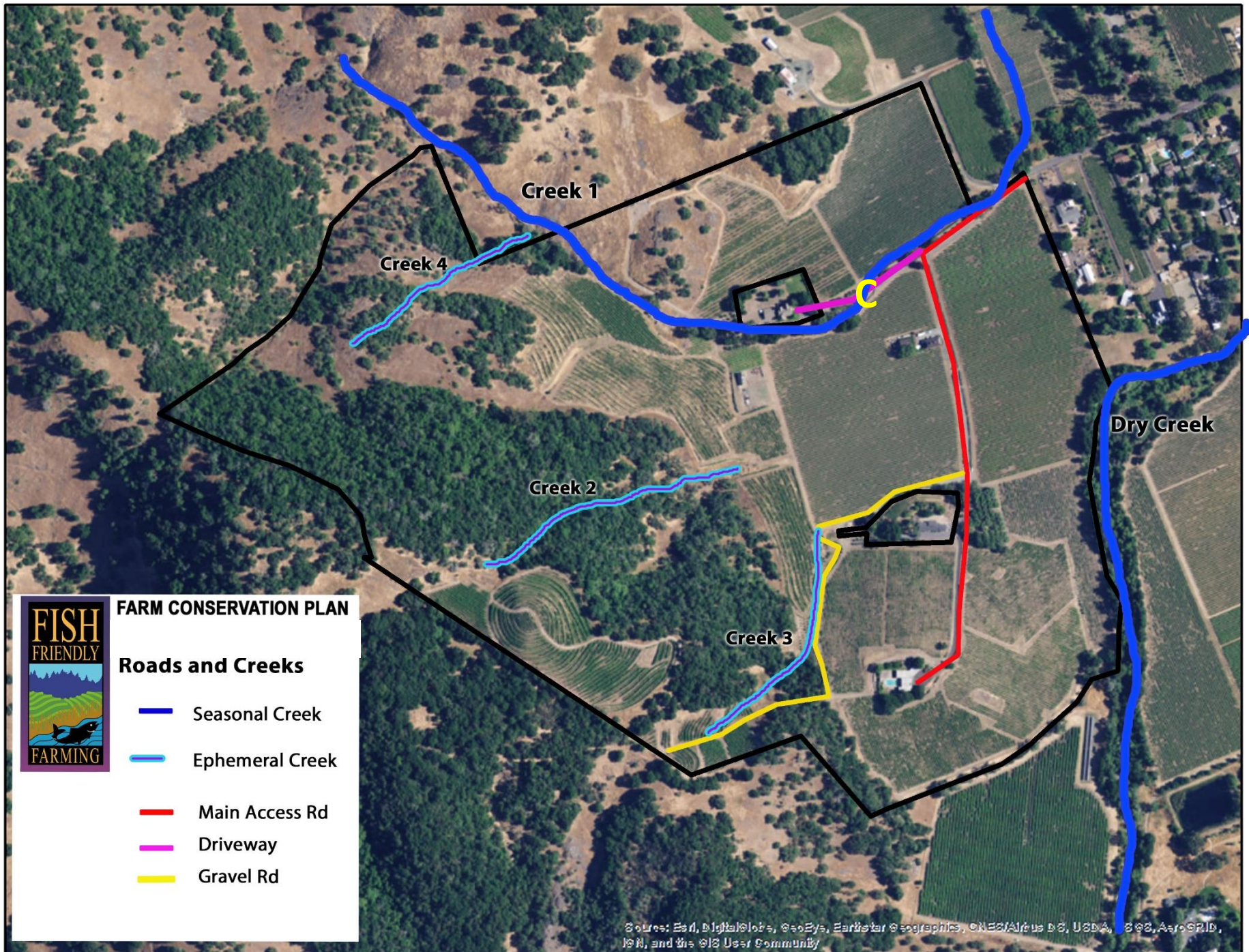
Drainage

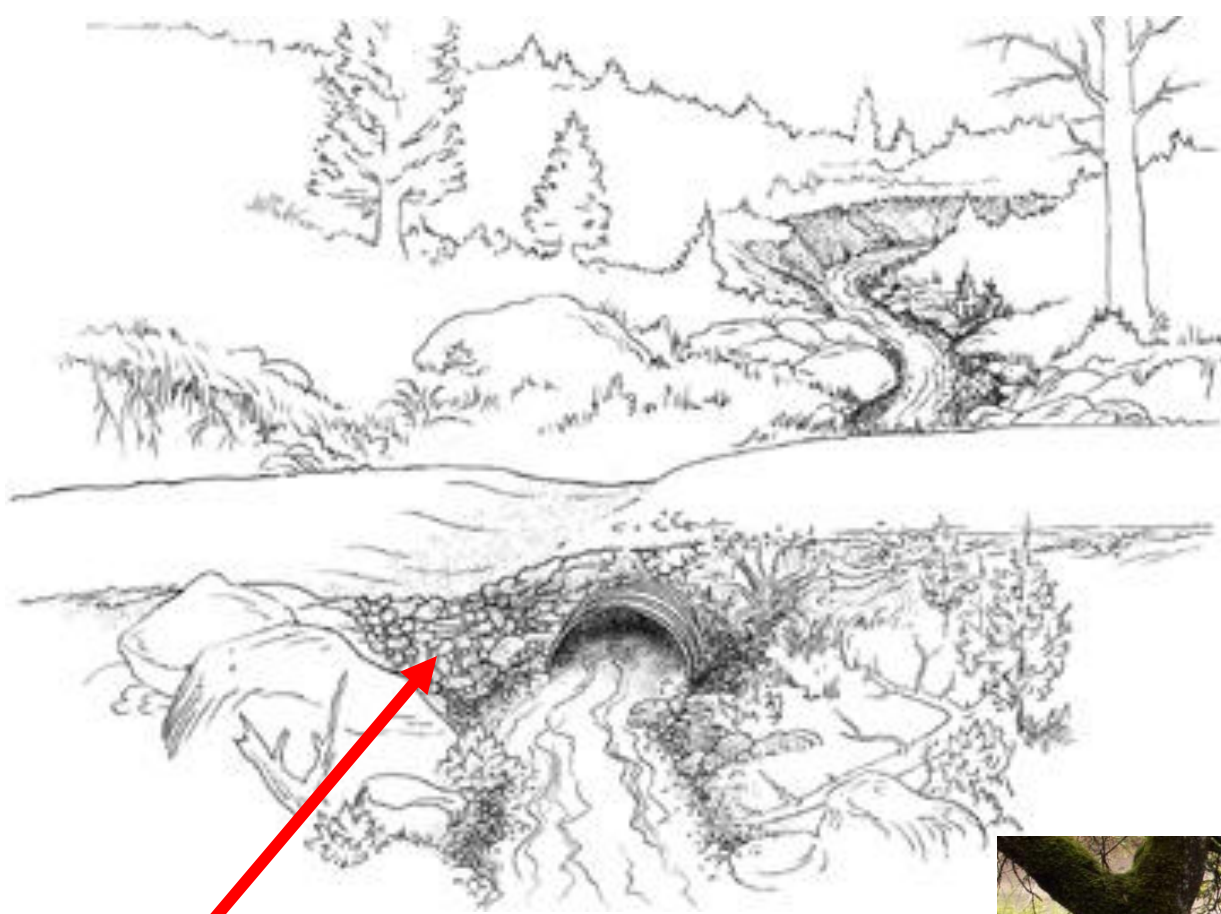
-  Underground pipe
-  Subsurface drainage
-  Ditch
-  Outlet
-  Inlet
-  Sump
-  Sediment basin





ELEMENT V - ROADS
ROADS ARE THE LARGEST
SOURCE OF SEDIMENT IN STREAMS

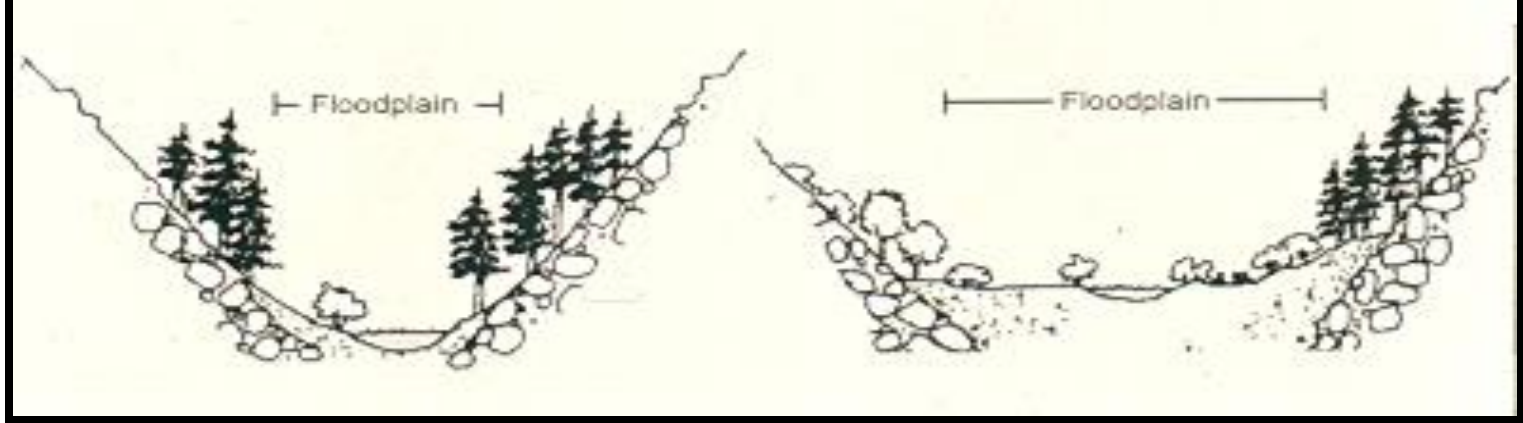




CRITICAL DIP



TRASH RACK

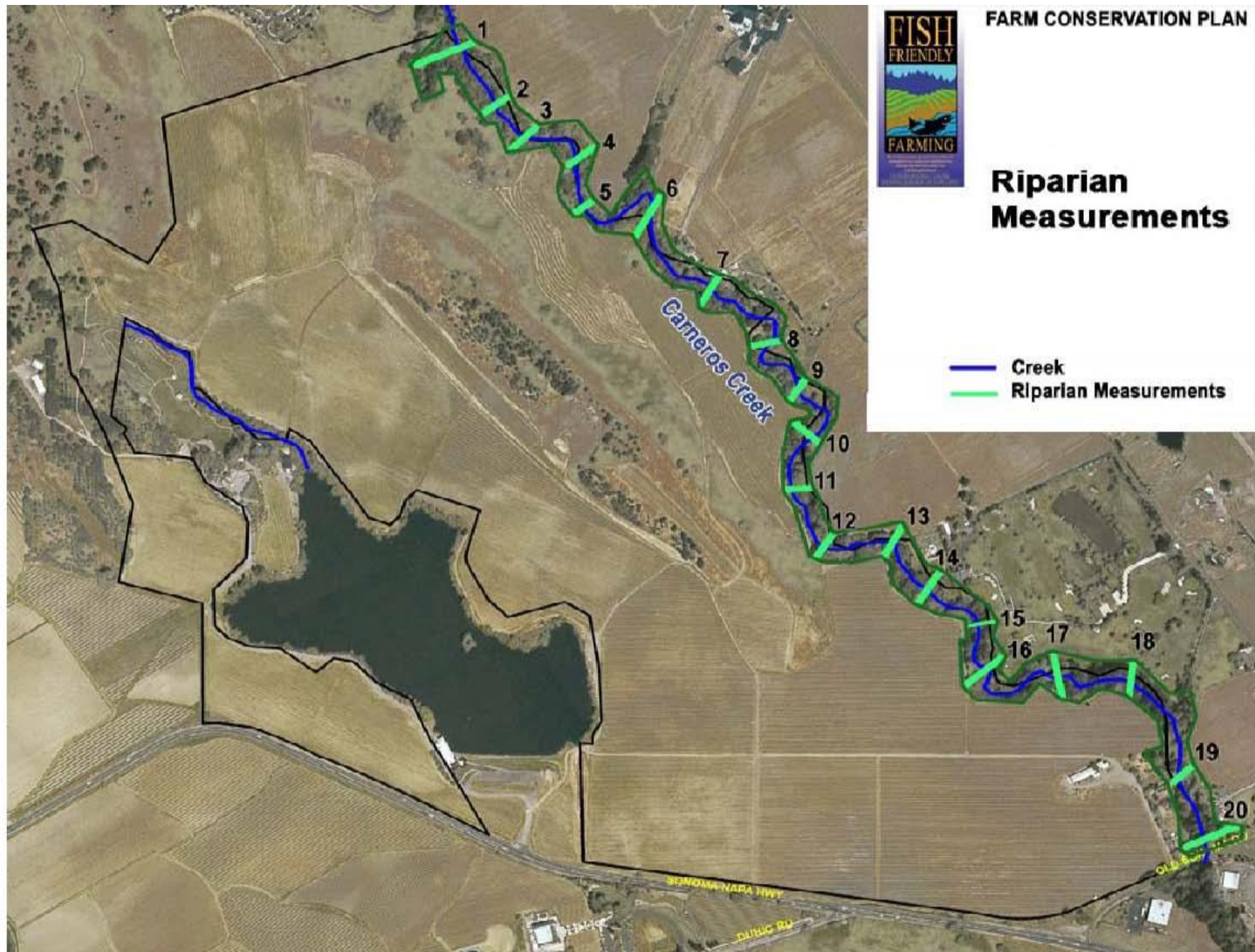


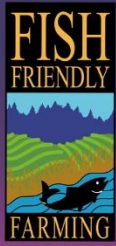
**CONFINED
CHANNEL**

**UNCONFINED
CHANNEL**



For unconfined blue line channels we measure the width of the scour channel, width of the riparian corridor, distance from the outside of the corridor to the vineyard, distance from the vineyard to the edge of the scour channel and bank heights, bed composition, bank composition, level of meandering, seasonality of flow, native and non native species present and condition of crossings and other features

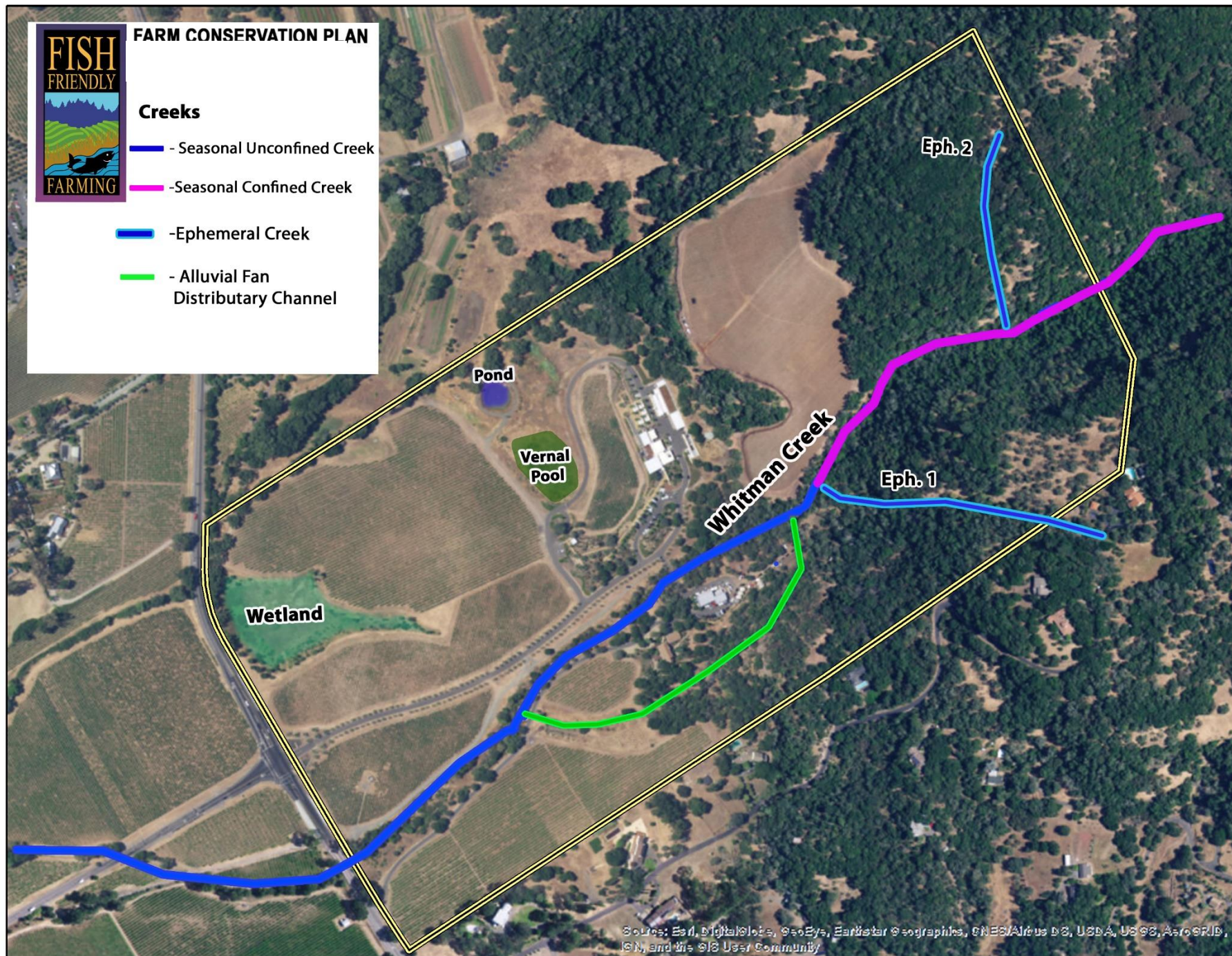




FARM CONSERVATION PLAN

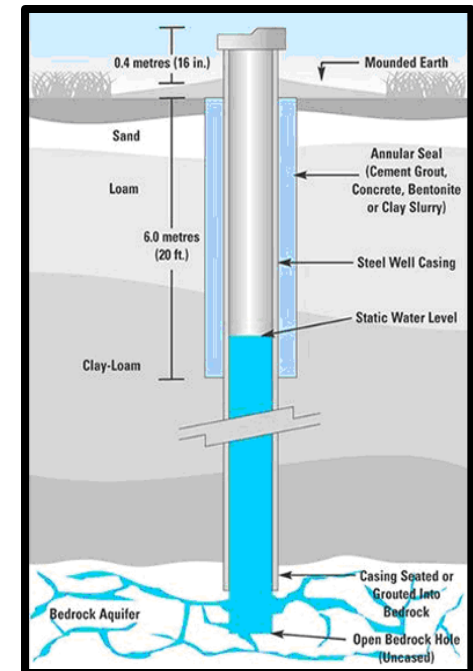
Creeks

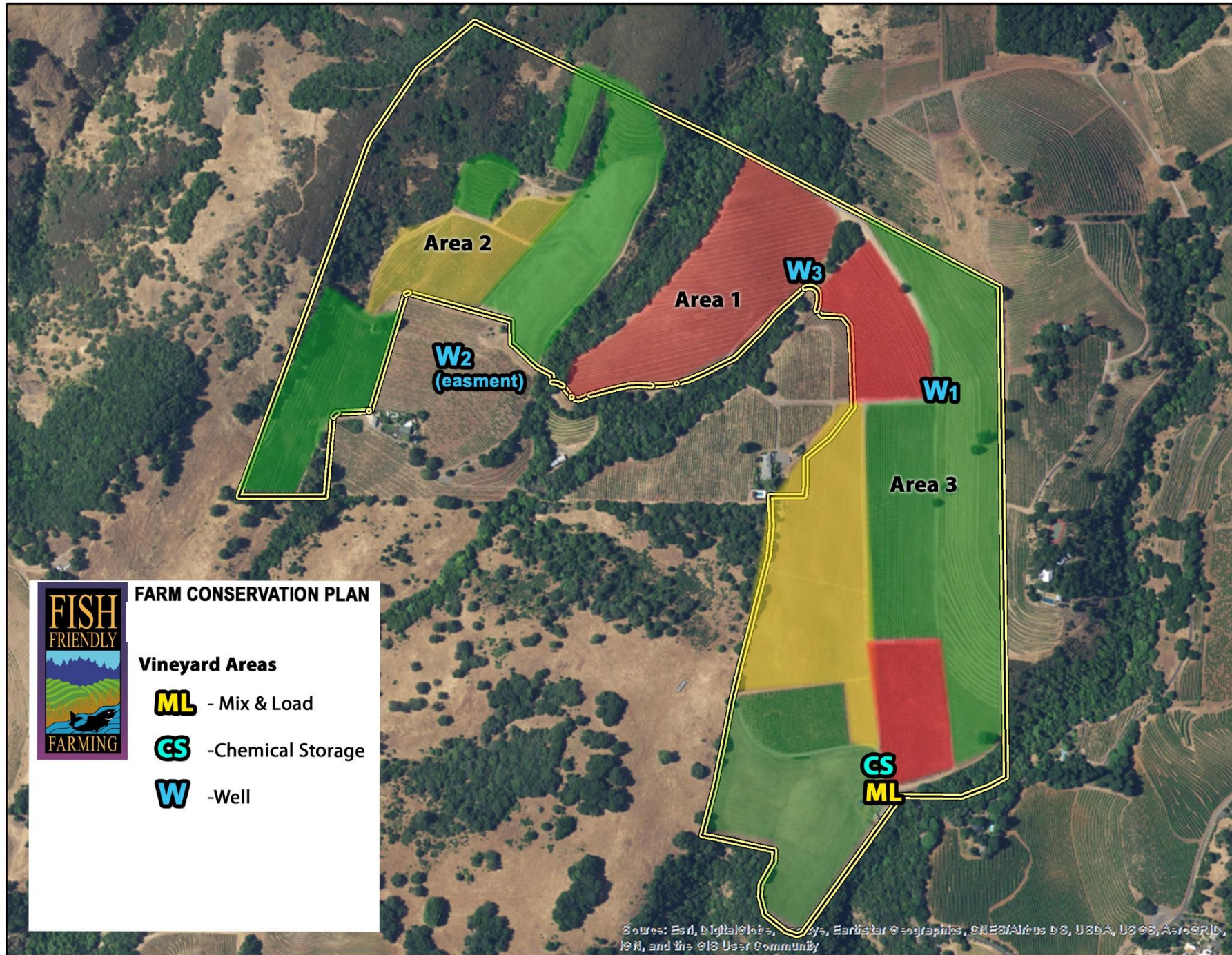
- Seasonal Unconfined Creek
- Seasonal Confined Creek
- Ephemeral Creek
- Alluvial Fan Distributary Channel

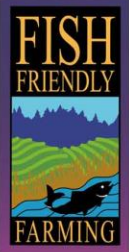


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

TYPES OF WATER SUPPLY



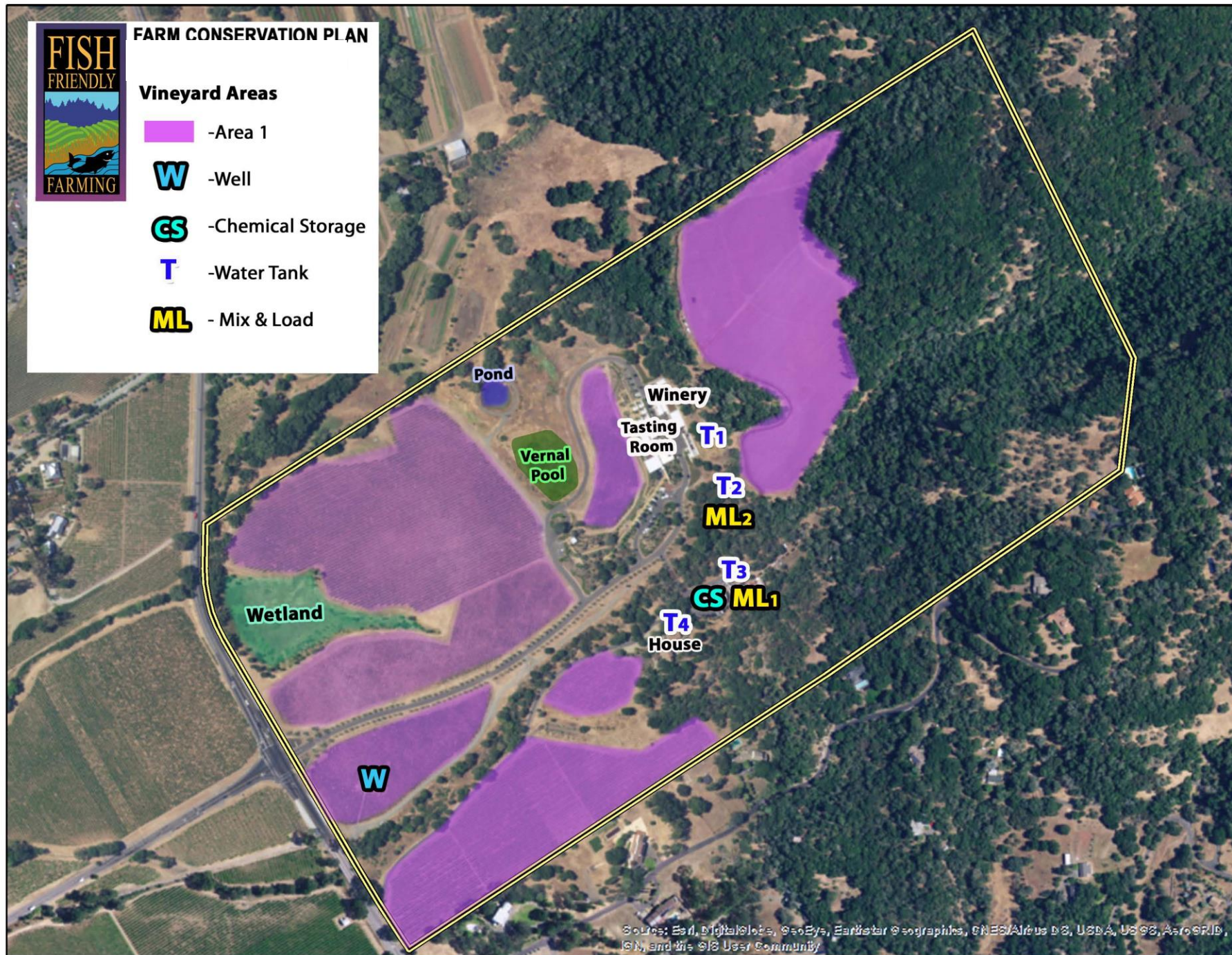




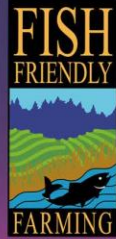
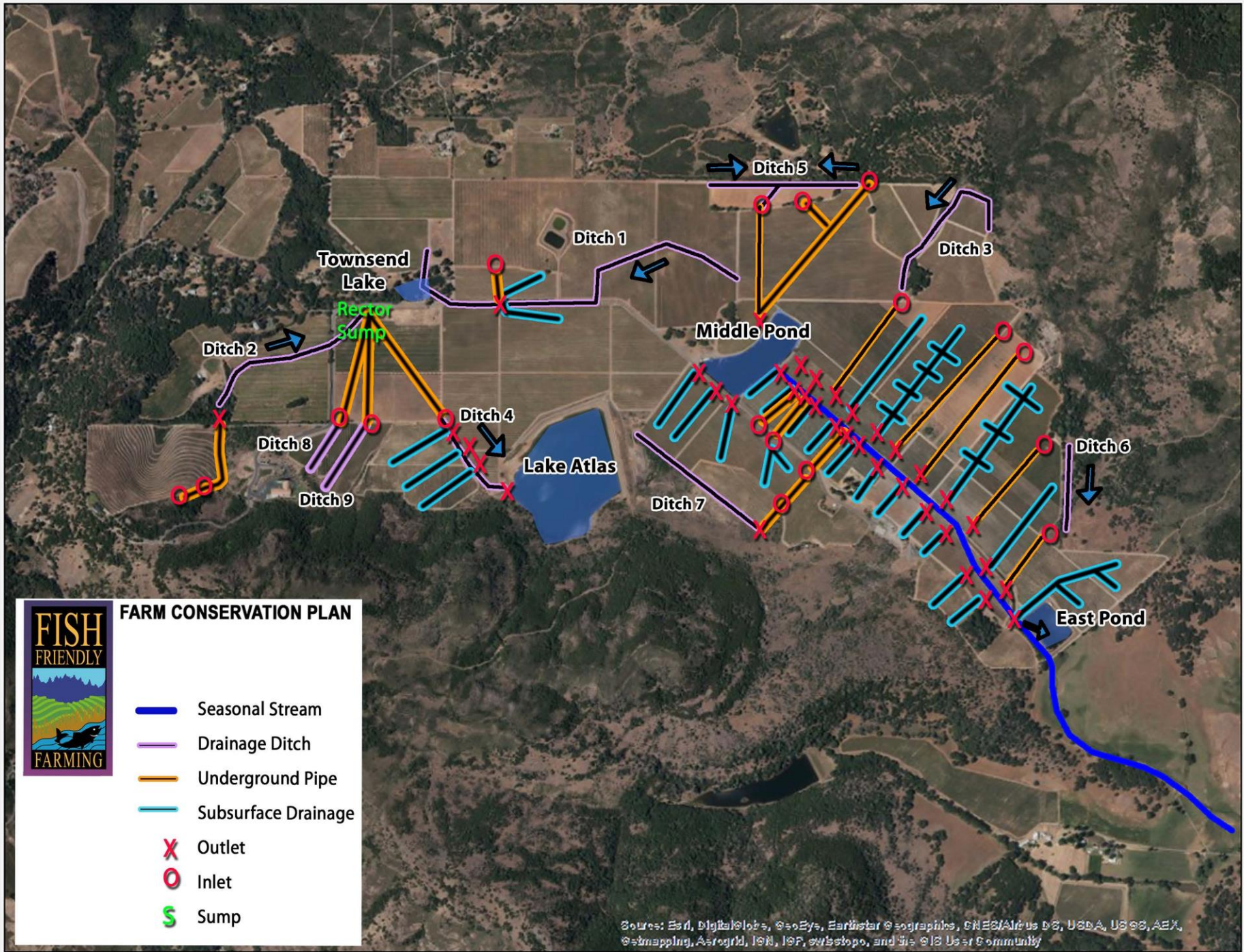
FARM CONSERVATION PLAN

Vineyard Areas

-  -Area 1
-  -Well
-  -Chemical Storage
-  -Water Tank
-  - Mix & Load



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



FARM CONSERVATION PLAN

- Seasonal Stream
- Drainage Ditch
- Underground Pipe
- Subsurface Drainage
- X Outlet
- O Inlet
- S Sump

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, Aero, Screenshot, Aerogrid, IGN, IGP, swisstopo, and the GIS User community

FFF documents all sources of water used for both frost control and irrigation including surface water, groundwater, municipal recycled water, winery wastewater and purchased water as well as all conservation and efficiency measures.

For each surface water source, we document the acres irrigated, storage facilities, water rights, season, source and amount of each diversion, measurement devices used for each water source (SB 88 compliant) and measurement devices used for bypass flows. All stream and river diversions are required to be metered and be in compliance with State water rights. Fish screens are also required to protect endangered salmonids.

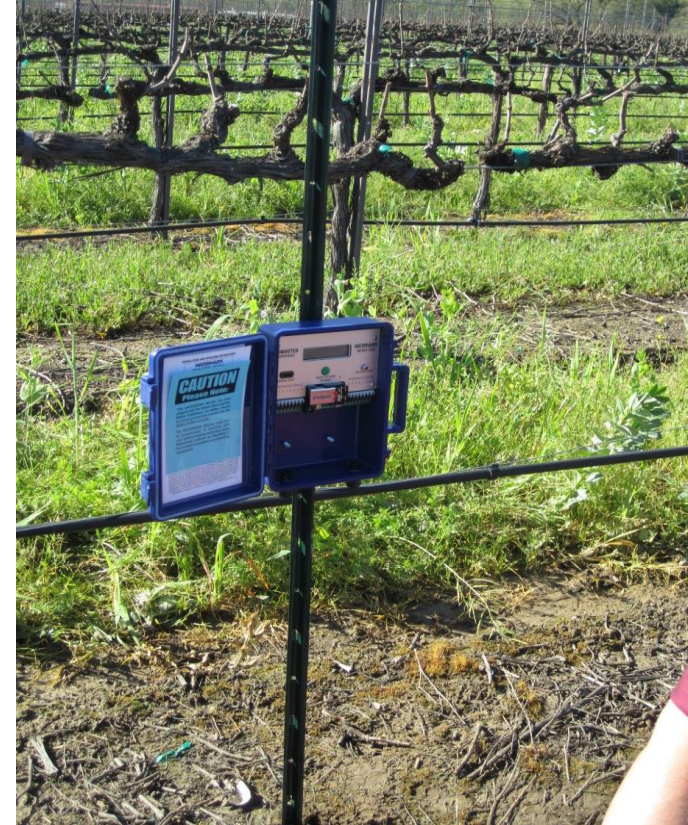
For wells we map the location of active, domestic and abandoned wells on every site and document the well production in gallons/minute, total depth, depth of first screen, proximity to streams, protection from polluted runoff (backflow protection, proximity to chemical storage and mixing sites), acres irrigated from each well, if well fills a storage feature, if there are water rights as an underflow well.

Well number or location	Production (gallons per minute)	Depth (in feet)	Depth of first opening, screen or pumping water level	If well is used to fill reservoir indicate number or name	Distance of well from creek or river channel (in feet)	If you have an appropriative water right for the well, list the number	Do you file a riparian statement of use for well?	Acreage of irrigated land for this water source	Acreage of frost control for this water source
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WATER CONSERVATION PRACTICES IN IRRIGATION AND FROST CONTROL



Continuous recording soil moisture monitoring systems



FFF has sponsored 3 grants to fund soil moisture or ET monitoring system for vineyards. We have held over 20 workshops since 2015 on the different types of monitoring technology and how to use the data to improve irrigation decisions and conserve water



Evapotranspiration Monitoring

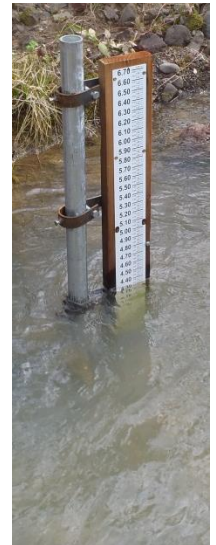
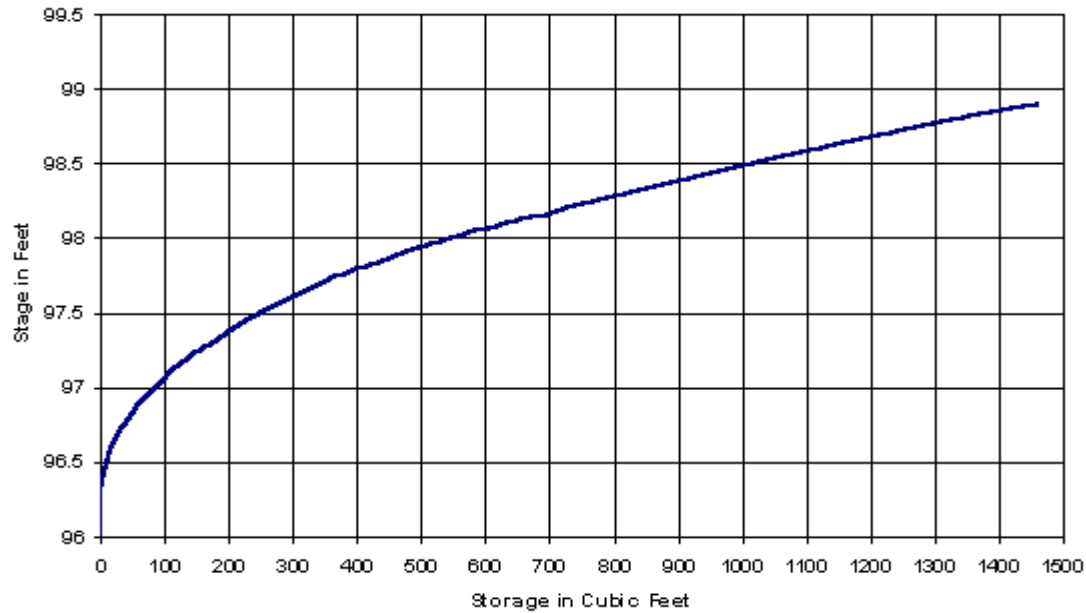


Smart valves control water applications, can detect leaks and problems in irrigation systems and can shut down the system. They can be controlled from a phone or tablet. There are a number of sophisticated water management technologies being implemented by growers

Measurement of surface water sources under SB 88



Storage Volume, Pond 3



Stage-Storage Curve



Drip irrigation practices are used and the system is checked regularly for leaks and water efficiency to reduce losses.
Irrigation system has a uniformity test done every other year and repairs are made to improve uniformity
Soil moisture/plant condition is monitored to determine irrigation needs.
Frost water conservation measures are installed.
Use non-water or waste/recycled water for frost control.
Water diversions are measured or metered

Soil management requirements

Winter cover crop use over entire vineyard floor and terraces by Oct. 15, use of a perennial cover crop, or if harvest is later than Oct. 15, install erosion control practices by Oct. 15, then seed cover crop post harvest.

If site is located in the watershed of a Napa County municipal reservoir, the site is winterized by Sept 15.

No tilling in the vineyard until after end of rainy season and no sooner than April 1. Mowing to reduce frost damage is okay.

Winterization of turnarounds, roads and other areas in vineyard and adjacent areas by Oct. 15, or if harvest is later than Oct. 15, install erosion control practices by Oct. 15, then seed cover crop post harvest.

Installation of vegetated filter strips by Oct. 15, or if harvest is later than Oct. 15, install erosion control practices by Oct. 15, then seed cover crop post harvest.

We can easily incorporate the BMPs for row orientation and rootstock selection for replanting. Vineyards already carry out canopy management.

Given the large sample size our program represents, benchmarking would be easiest in our program

CERTIFICATION PROCESS

Each property is certified according to a review of the farm plan and the site. The National Marine Fisheries Service and County Agricultural Commissioner certify each site. They read the farm plan for its accuracy, its completeness, the BMPs applied and the implementation timeline. They visit the site to check the accuracy of the plan and that the need for improvements are correctly defined.

Once reviewed each agency issues a certification letter and sends to CLSI. Then CLSI will issue a certificate. Annual on line audits are required and recertification is required every 5 years. Violation of our Certification Policy can result in loss of the certification.



**CERTIFICATION TEAM INSPECTING THE
OUTLET OF A CULVERT**

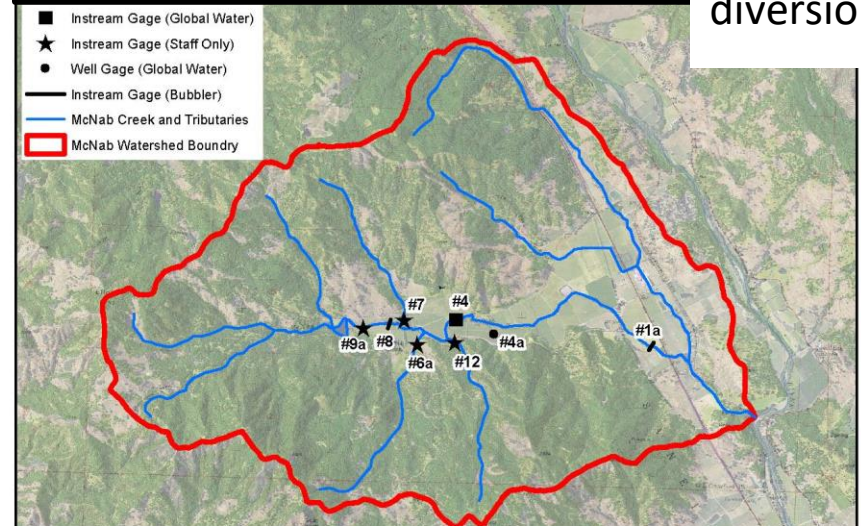
Water Demand Management Program – Mendocino tributaries and Mainstem Russian River



With the NRCS and growers built \$5.1 million in off-stream ponds. Can fill during the day and reduce the demand from the stream system during the frost event



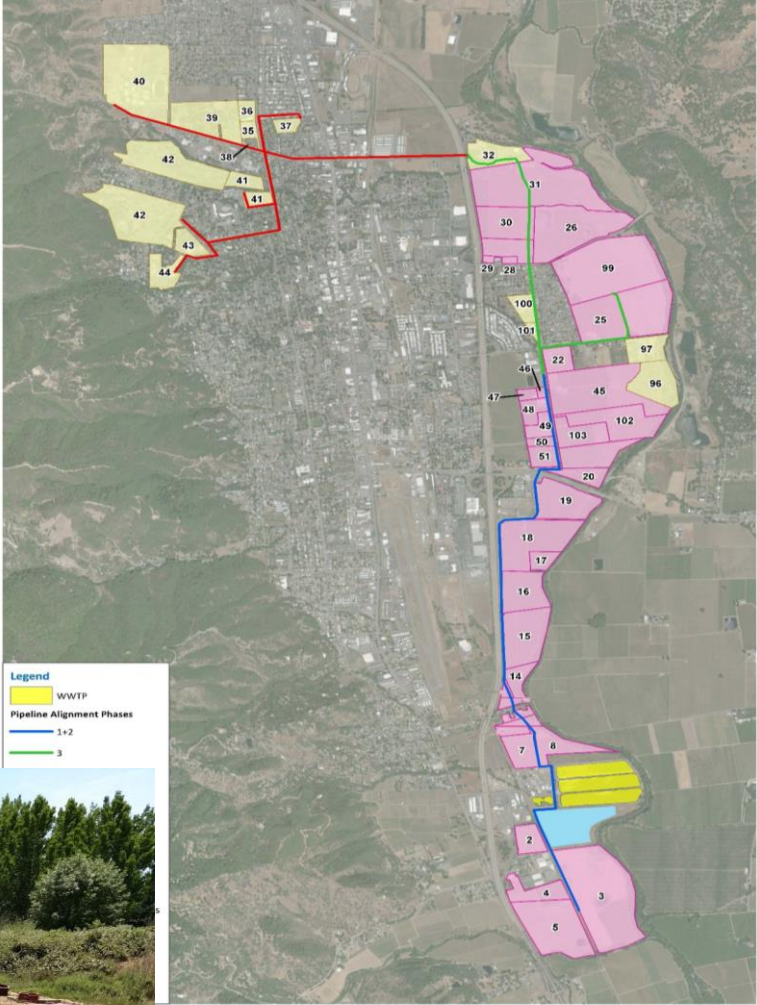
Established stream flow monitoring program with growers to coordinate and change diversions.



Map of gage network used to determine effect of each diversion and on-stream reservoir on stream flow and need to coordinate diversion to protect salmonids

Ukiah Recycled Water Program

This Recycled Water Project will reuse 870 acre feet/year of municipal recycled water for irrigation and 131 acre feet/year for frost control offsetting freshwater diversions of these amounts from the Russian River



Creation of a Decision Support Tool that will provide:

- An easy-to-understand internet interface displaying model results for the current climate condition, river stream flows at 4 gages and groundwater level data at 4-8 wells.
- Early calendar year predictions for dry season conditions and the likelihood of curtailments for planning purposes
- Guidance on threshold values to inform water diverters about when surface water sources (river/tributary) are likely to become unavailable for diversions
- Guidance on threshold values for groundwater pumping levels based on location in the basin to avoid surface water effects
- Guidance on threshold values for location of new wells to avoid surface water effects
- Guidance on numerous water conservation measures including metering of water systems for monitoring leaks, improved timing for water use to reduce losses to evaporation, inexpensive urban landscape irrigation systems, types of inexpensive storage for winter water and others

