

The United States versus Duarte Nursery, a
Summary of the Hydrological and Biological
Effects of the Tillage as Assessed by the Federal
Expert Team, and Description of the Final
Settlement Agreement

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Acknowledgements

1. My Federal Expert Team Members
 1. Lyndon C. Lee, Ph.D. PWS
 2. Wade Nutter, Ph.D. PH
 3. Mark Rains, Ph.D. PWS
 4. Scott Stewart, Ph.D. CPSS
 5. GIS Support Clark Hurst and Shelley Dodd

2. Department of Justice Attorneys:
 1. Andrew Doyle (Lead Attorney)
 2. John Thomas Do
 3. Greg Broderick
 4. Samara Spence

Duarte Site Location

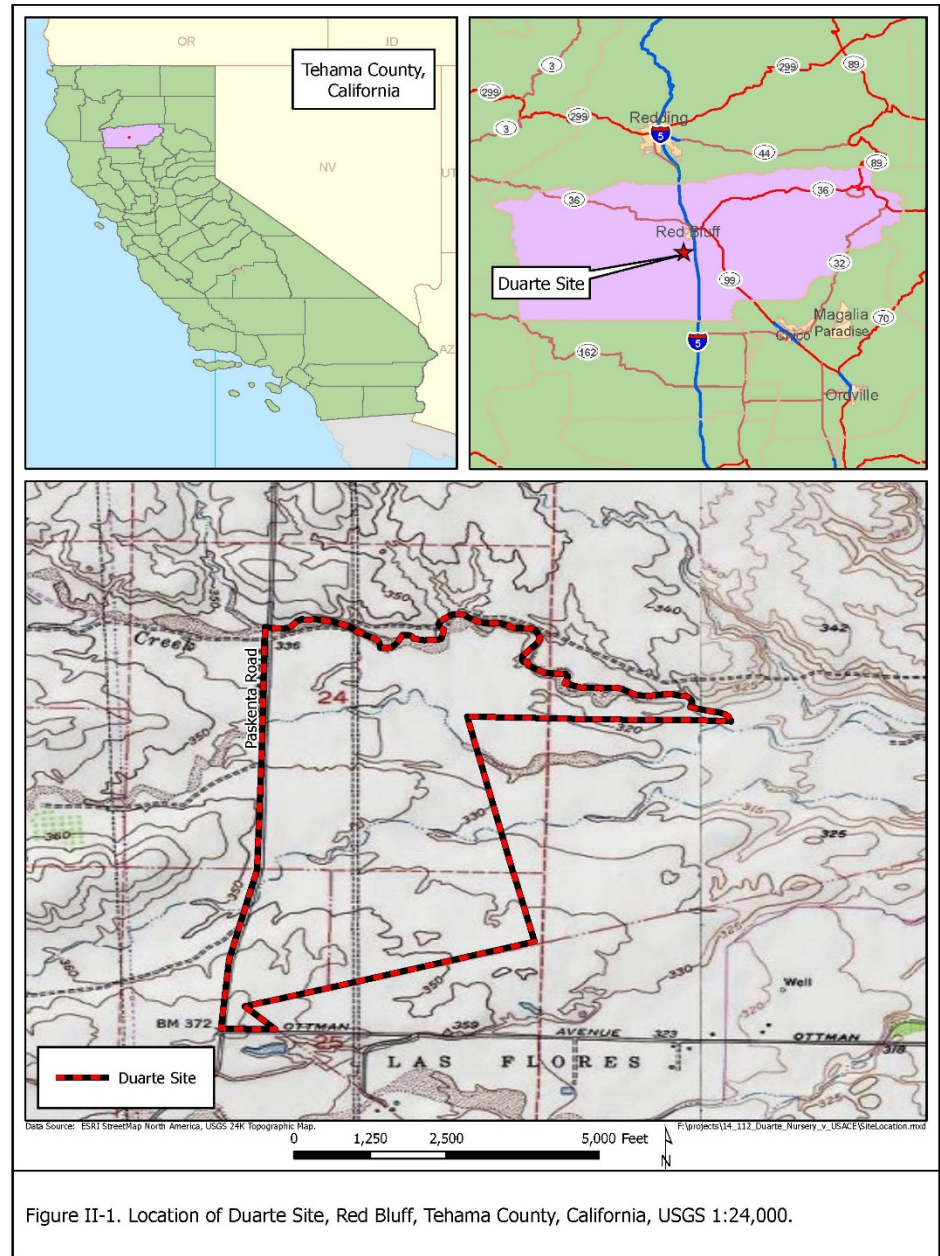


Figure II-1. Location of Duarte Site, Red Bluff, Tehama County, California, USGS 1:24,000.

Major Watercourses FEMA Flood Hazard Zones

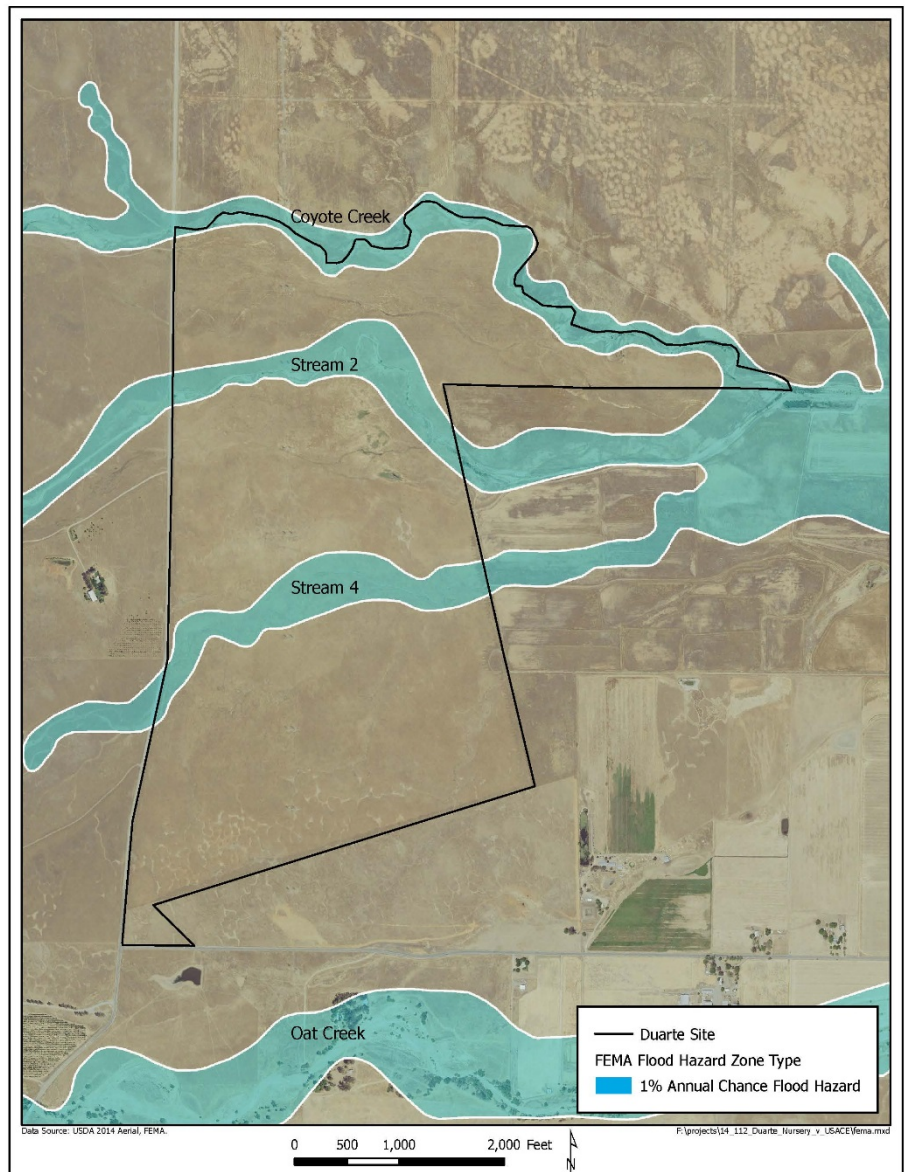


Figure II-7. FEMA Flood Hazard Zones.

Previous Pertinent Environmental Assessments on Duarte Site

- ◆ 1994 Wetland Delineation
- ◆ 2006 – 2008 Considered as Possible Mitigation Bank
- ◆ 2012 Wetland Delineation (Unverified)

Duarte Site

What Happened? Highly Abbreviated.

- ◆ Wetland delineation by Consultant in Feb 2012 on Duarte Site requested by John Duarte, but not verified by ACOE;
- ◆ Duarte purchased parcels totaling 1,950 acres in April 2012;
- ◆ Duarte sold 1,500 acres almost immediately;
- ◆ Draft Wetland Delineation for Duarte Site produced by consultant in July 2012;
- ◆ Unpermitted tillage operations began in Nov. 2012;
- ◆ Equipment operated for two or three weeks into Dec 2012;
- ◆ ACOE informs Duarte that tillage was occurring without permit, Dec. 2012;
- ◆ ACOE sends Cease and Desist Order to Duarte Nursery, Feb 2013.

Tillage Implement

International Harvester Quadtrac with
Wilcox Ripper having seven 36" shanks spaced 24" apart.



U. S. Dept. of Justice

Expert Team 2015 Event Sequence

1. Preliminary Data review and assembly Jan – March 2015
2. Field Assessment and Data Collection April 2015
3. Expert Report Preparation April – May 2015
4. Final Expert Report Submitted June 5, 2015
5. Review Expert Reports from Duarte Nursery and Prepare Rebuttal Reports, June – July 2015
6. Additional field review July 2015

Reference Site Locations in Coyote Creek, Oat Creek, and Sacramento River Watersheds

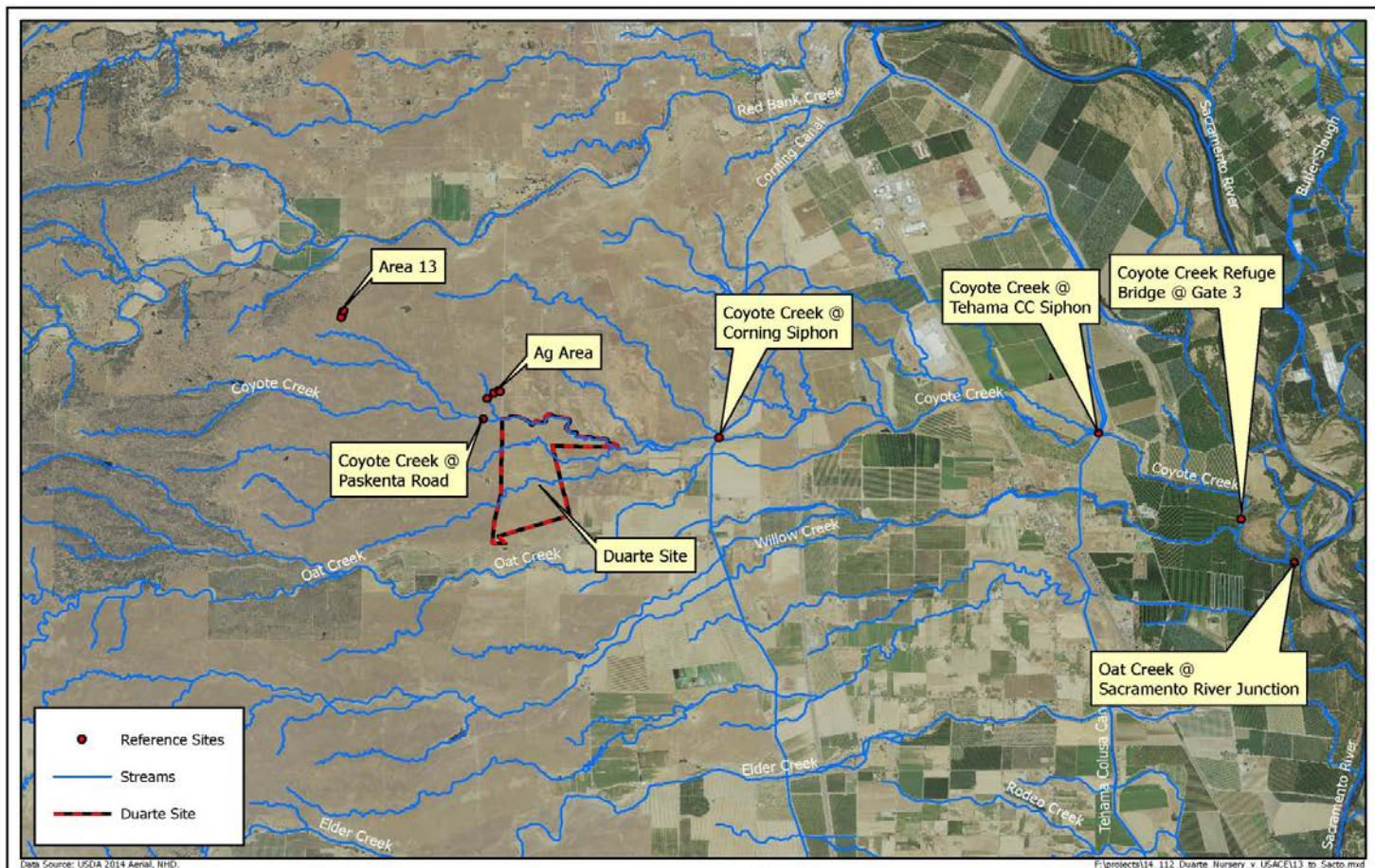
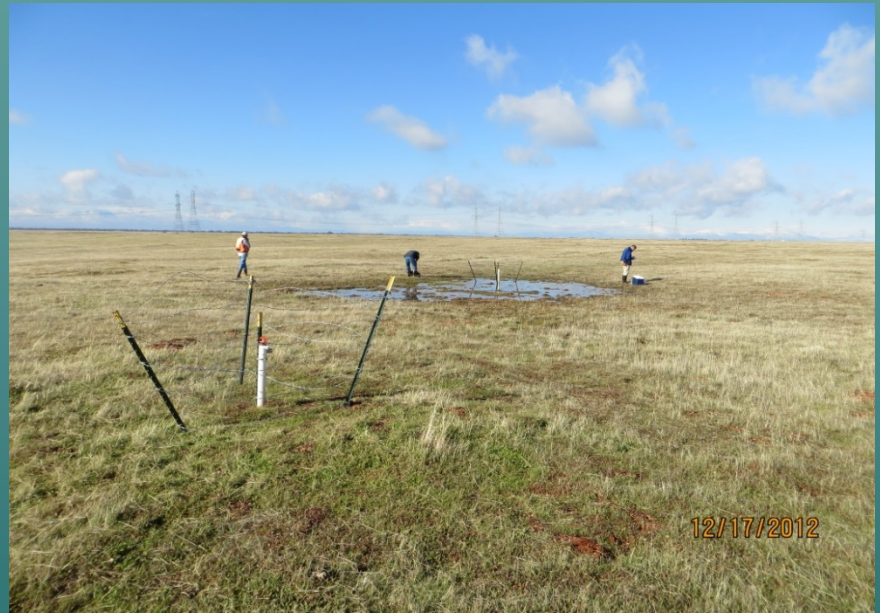


Figure IV-2. Reference site locations in the Coyote Creek watershed and connection to the Sacramento River.

Reference Sites and Data Collection

- ◆ Coyote Creek Conservation Area (up gradient from Duarte Site)
 - Hydrology
 - Soils
 - Vegetation



- ◆ Hydrologic Sampling
 - Rainfall at Red Bluff Airport
 - Rainfall at Coyote Creek Conservation Area (tipping bucket gage)
 - Water levels in uplands, swales, depressions, streams, river, measured using data loggers in shallow stand pipes

Expert Team Site Review and Assessment

◆ Field Work on Site to Assess

Overview and reconnaissance of entire site

Identification of primary and secondary stream systems.

Identification of geomorphological changes and soils.

Walk and map stream connections and flow patterns.

Determine locations for complete wetland delineation:

Hydrology

Soils

Vegetation



Duarte Site Stream Network

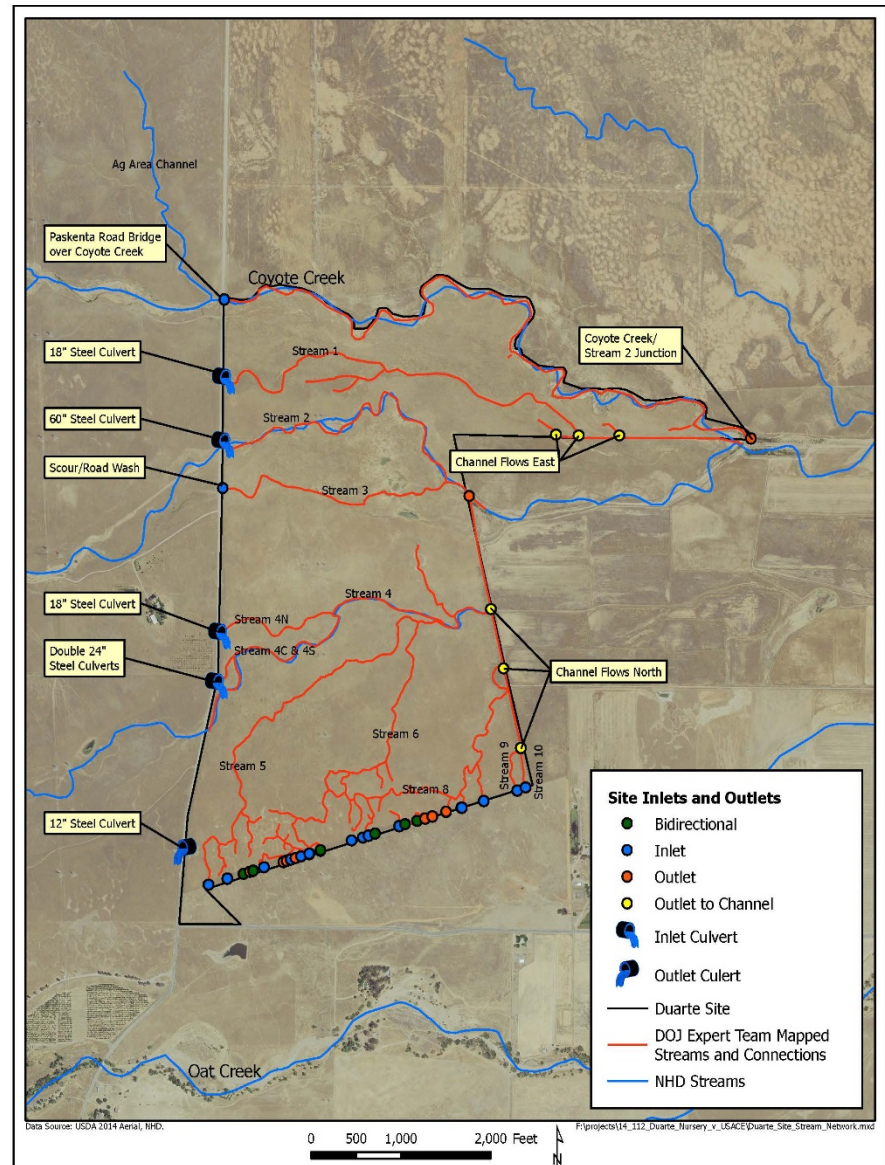
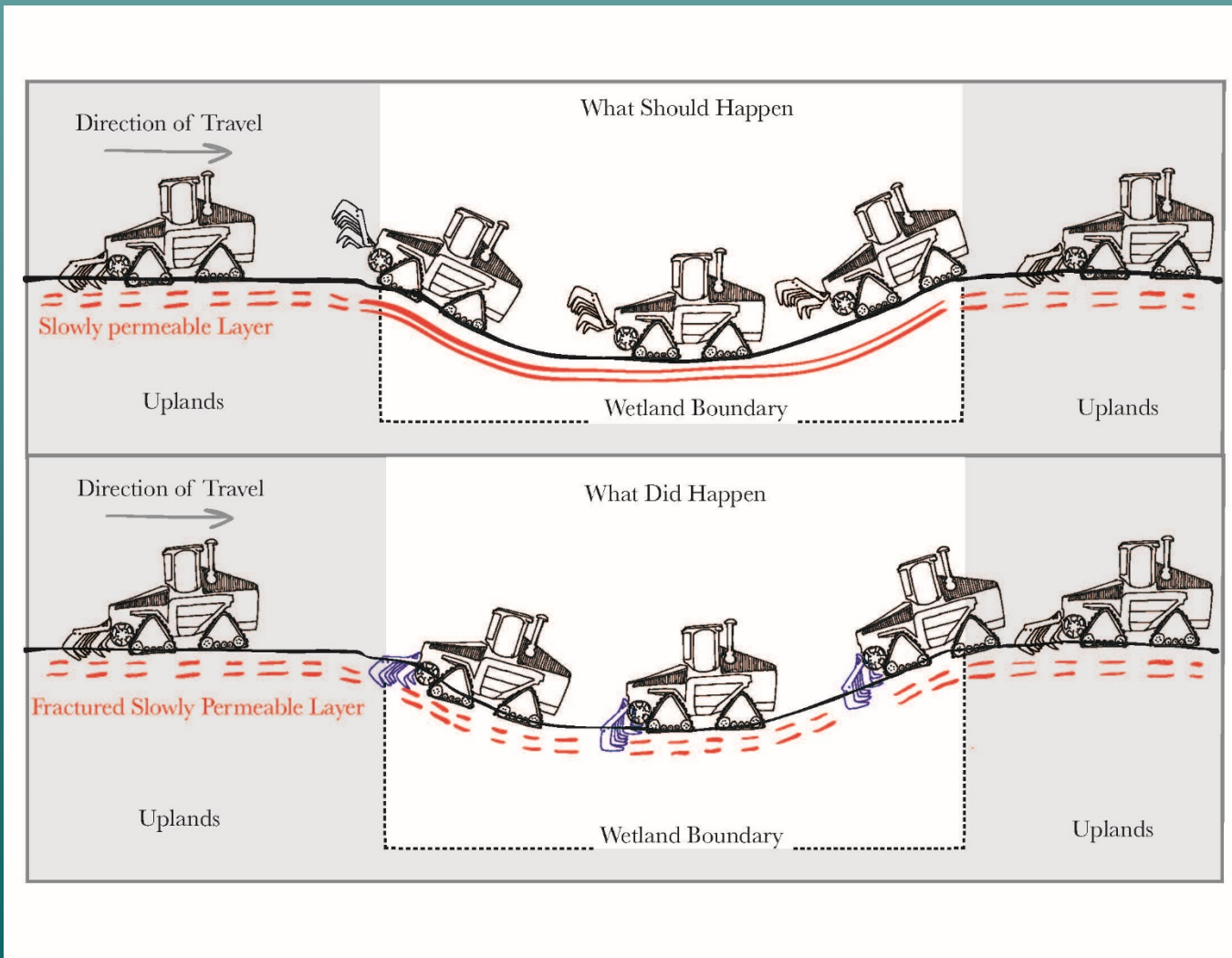
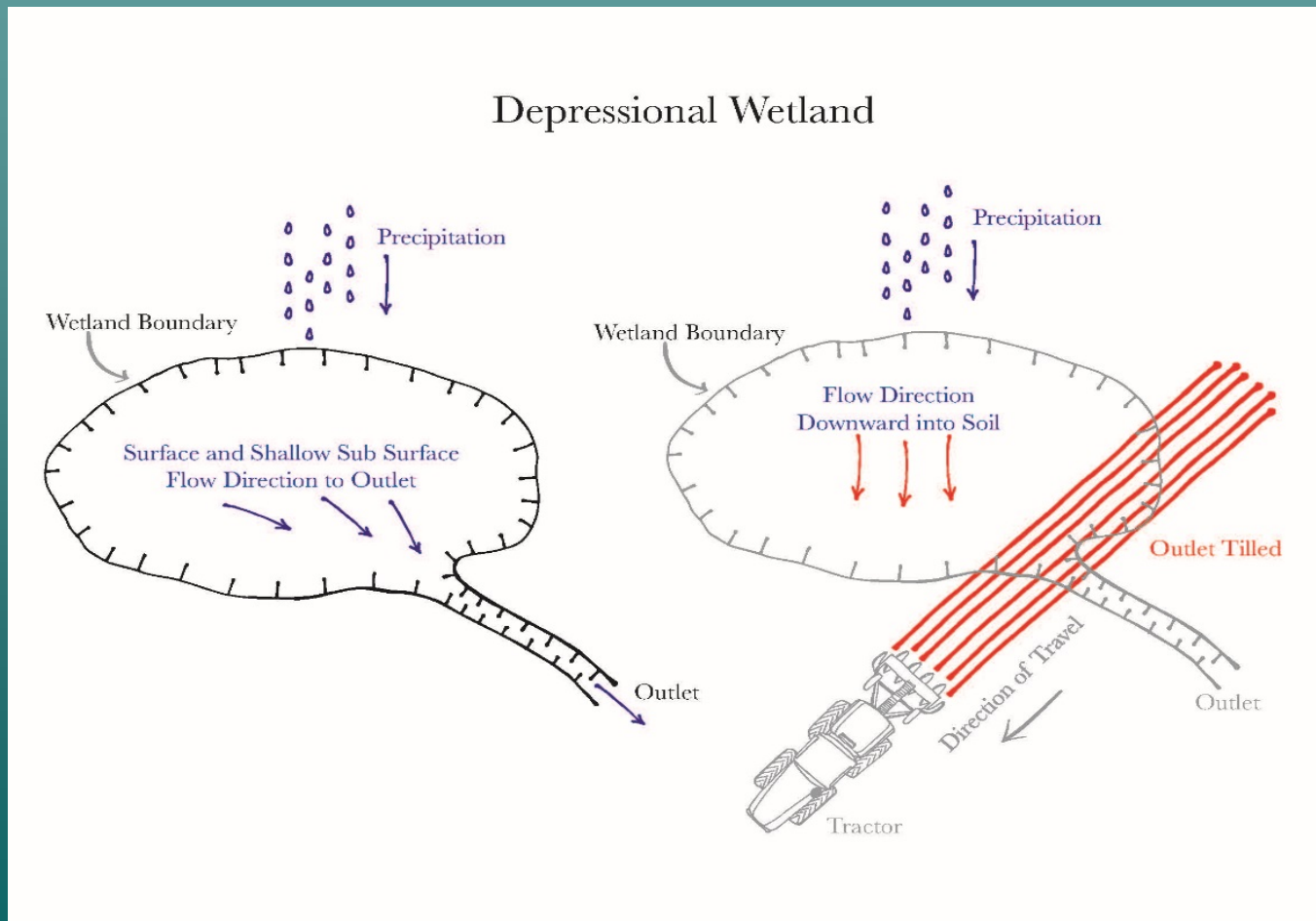


Figure V-4. Duarte site stream network.

Schematic of tillage operations where ripper is raised, compared to not raised, when crossing wetlands.



Schematic of tillage across depression outlet changing the patterns of flow and circulation of water from the wetland.

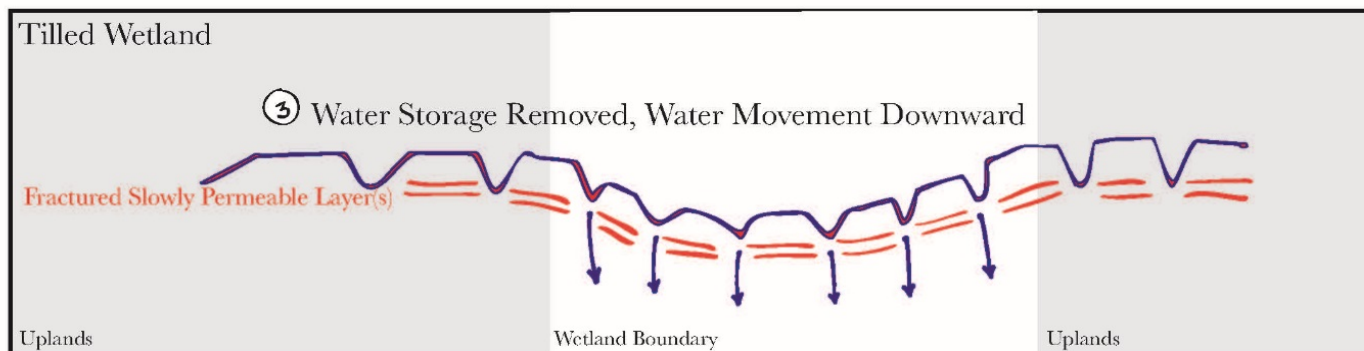
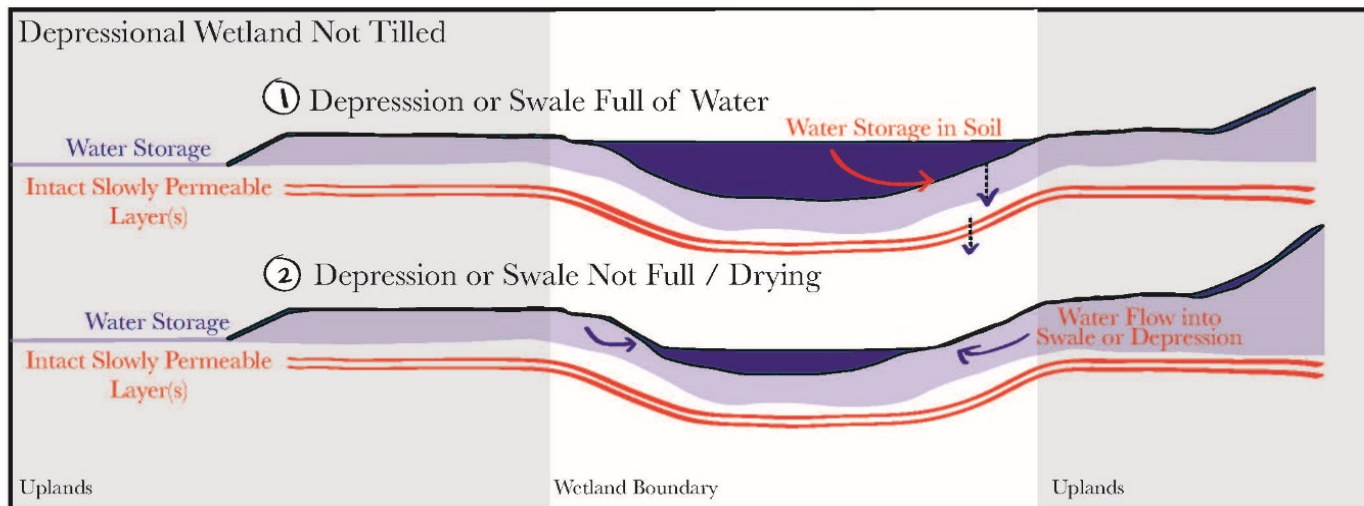


Tillage operations resulting in ridges and troughs in wetlands



Comparison of hydrologic function of surface and shallow subsurface water storage and exchange in untilled and tilled wetland.

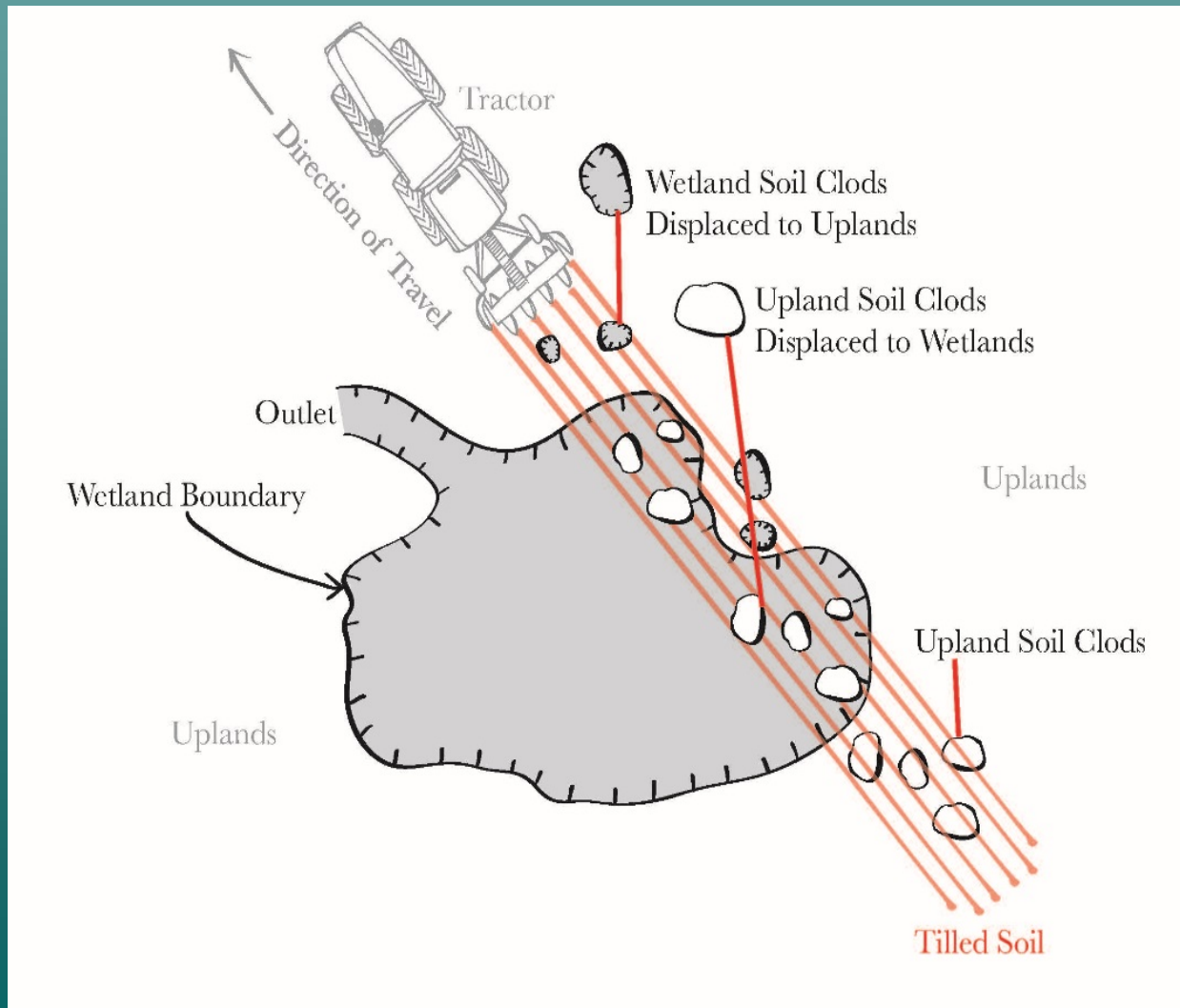
Example of Hydrologic Function: Surface and Shallow Subsurface Water Storage & Exchange



Vegetation growing
on tilled surfaces.
April 2015.



Schematic of soil chunks or clods being dragged from uplands and deposited into wetlands

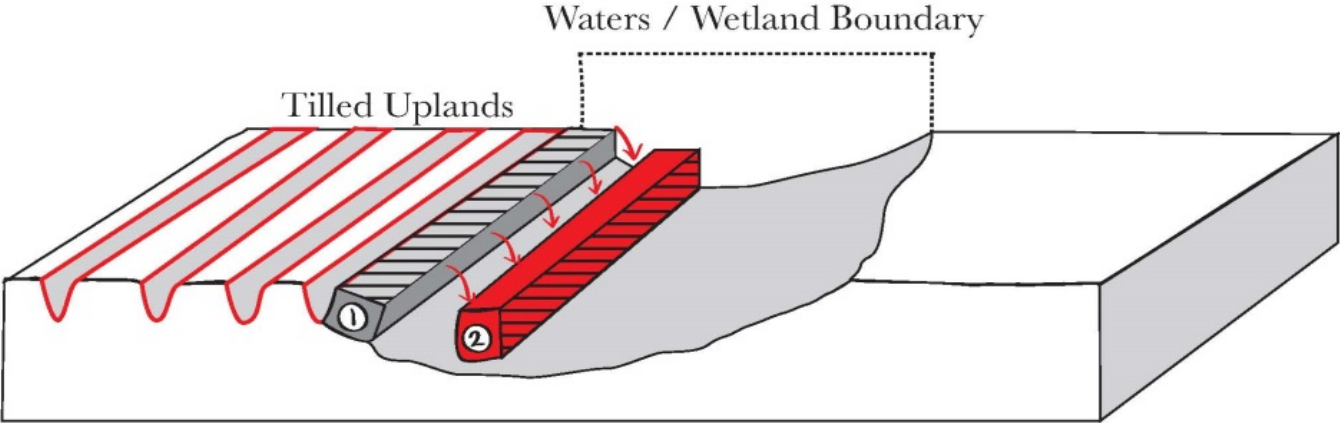


Upland soils dragged
into waters and
wetlands.
April 2015



Redistribution and deposition of soil slabs loosened by tillage too close to edges of waters and wetlands.

Slab Sliced and Deposited into Depression



- ① Furrow Soil Slab in Place
- ② Furrow Soil Slab Displaced into Waters/Wetland

Slab failure in Waters



Direct Impacts to Waters/Wetlands Area and Functioning

- ◆ 1. Accretion of bottom elevation of waters/wetlands in depressions, swales, streams, and wetlands.
- ◆ 2. Redistribution of materials (soils etc.) within and proximate to waters/wetlands.
- ◆ 3. Destruction of native soil and hydrologic systems structure and functioning with elimination of shallow subsurface storage and exchange of water, and alterations in timing, rate, and volume of discharges of water.
- ◆ 4. Significant and discernable alteration of patterns of subsurface and shallow subsurface flow and circulation of water. Fracturing of slowly permeable soil layers

Direct Impacts to Waters/Wetlands Area and Functioning (Continued)

- ◆ 5. Destruction and potential future elimination of waters/wetlands and significant changes in the extent of reach of margins.
- ◆ 6. Destruction of the structure and functioning of native plant communities.
- ◆ 7. Destruction of the structure and functioning of important waters/wetlands faunal habitats that support various classes of faunal species with large to small home ranges.
- ◆ 8. In all likelihood listed *Branchinecta lynchi* occurred on Duarte site prior to 2012 and were directly impacted by tillage operations.

Indirect Impacts Cumulative and Temporal



- ◆ Tillage operations fractured slowly permeable (or restrictive) soil layers in streams, swales, and depressions throughout virtually the entire 450 acre site.
- ◆ Tillage operations impaired the of flow and circulation of waters within streams, swales, and depressions and reduced the reach and extent of these waters and wetlands.
- ◆ Tillage operations harmed, degraded, or destroyed the hydrological, biogeochemical, plant community, and faunal support habitat functioning of waters and wetlands.

Events

Fall 2015 – August 2017

Fall 2015 to Feb 2017--Legal activities dominated and with periodic scheduling and cancelling of trial dates.

Spring 2017 trial set for August 15th.

Trial preparation begins in June 2017.

Settlement reached morning of August 15th.



Settlement Agreement

Primary Elements

1. Civil penalty of \$330,000.00.
2. No disturbance to the 43.9 acres of waters/wetlands plus a setback (buffer) of 35 feet for 10 years except for moderate grazing and weed control.
3. Permanent protection for Coyote Creek and one major stream on property.
4. Remediation to 22 acres of wetlands to smooth all disturbed soil surfaces and reasonably match pre-November 2012 grade and hydrology.
5. Off-site mitigation compensation of \$770,000.00.
6. Success criteria and review of plans to be approved by Army Corps of Engineers.

Thank you!



Snowy Egret Old Oregon Trail Vernal Pool Preserve, Shasta County