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UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF CALIFORNIA

DUARTE NURSERY, INC.; and JOHN DUARTE,

Plaintiffs,

v.

UNITED STATES ARMY CORPS OF ENGINEERS; and UNITED STATES OF AMERICA

Defendants.

UNITED STATES OF AMERICA,

Counterclaim- Plaintiff,

v.

DUARTE NURSERY, INC.; and JOHN DUARTE,

Counterclaim- Defendants.

No. 2:13−CV−02095−KJM−DB

DIRECT EXPERT TESTIMONY OF LYNDON C. LEE, PH.D., PWS

Trial Date: August 15, 2017

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I, Lyndon C. Lee, Ph.D., declare as follows:

1. I am, and have been since January, 1990, the president and principal ecologist at L.C. Lee & Associates, Inc. in Seattle, Washington. My areas of expertise include ecosystem ecology and wetlands and river science. Since 1995, I have been a Professional Wetland Scientist ("PWS") certified by the Society of Wetland Scientists. The United States Department of Justice, Environment and Natural Resources Division, has retained me to conduct analyses and reach conclusions based on science and which reflect my 30+ years of education, experience, research, and training.

I. QUALIFICATIONS

2. A true and correct updated CV is attached hereto as Exhibit A. I provided a prior version during discovery **(USA Ex. 54**).

3. I have dedicated most of my career to the study of the structure and functioning of ecosystems with an emphasis on wetlands, rivers, and forests in the arid and mountainous landscapes of the American West, and in the bottomland hardwood forests and estuaries of the Mid-Atlantic and Southeastern regions of the U.S.

4. I earned a Bachelor of Science degree from Tufts University and the University of Montana in Forest Ecology (1974), a Master of Science in Forest Ecology from the University of Montana (1979), and a Ph.D. in Ecosystem Ecology and Wetland/River Science from the University of Washington (1983).

5. Since earning my Ph.D., I have served as the Research Manager of the wetlands programs at the University of Georgia's Institute of Ecology's Savannah River Ecology Laboratory (1984 – 1986), as Senior Wetlands Ecologist at U.S. EPA Headquarters in Washington, D.C. (1986-1990), Director of the National Wetland Science Training Cooperative (1990 - present), and Principal Ecologist and President, L.C. Lee & Associates, Inc. (1990 – Present).

6. Throughout my time as a professional ecologist on academic, public agency, and private sector platforms, I have focused on basic research, teaching, and the application of best available science and design to projects that produce land-based results. My scientific and

research interests are focused on responses of wetland, river, and forested ecosystems to perturbations, assessment of site-specific and cumulative impacts to waters/wetland ecosystems, management of the movement and fate of contaminants in waters/wetlands ecosystems, and ecosystem restoration. I have over 30 years of direct experience designing and constructing forest, river, and wetland ecosystem restorations that are located throughout the U.S. Most of these restorations have taken place in contexts that interact directly with federal, state, and local programs regulating activities in wetland, river, and forested ecosystems.

7. I have published two books, more than 25 refereed professional papers and chapters, many Guidebooks for assessing the functioning of wetland and riverine ecosystems, and over 200 technical reports. I have presented more than 70 oral papers and seminars at professional meetings and conferences. For seven years in the 1980's, I edited the *Bulletin* and served on the National Board of Directors of the Society of Wetland Scientists (SWS), During this interval, I co-founded the "SWS Student Awards Program" and endowment, and served as the Program Chairman for two national SWS meetings (Seattle, 1987 and Washington, D.C., 1988). In 1992, I was awarded Life Membership in the SWS for my service. On the platform of the National Wetland Science training Cooperative, I have taught more than 50 short courses throughout the U.S. These courses have focused on offering beginning and mid-career professionals hands-on training in delineations of waters/wetlands, functional assessment of waters/wetlands, restoration design and construction, and management of storm water and contaminants in wetlands and rivers.

8. Since 1990, part of my work has been to act as an Expert Witness and technical team leader for several cases that were referred to the U.S. Department of Justice Environment and Natural Resources Division by either the U.S EPA or the U.S. Army Corps of Engineers. In this context, I have spent a great deal of time examining the effect of various agricultural operations on the structure and functioning of vernal pool, vernal swale, and stream ecosystems in the Central Valley region of California. One of these cases (*Borden Ranch Partnership vs. U.S. Army Corps of Engineers and U.S. Environmental Protection Agency*) concentrated directly on the effects of deep ripping activities in vernal pools, swales, and streams.

II. EXAMINATION OF THE DUARTE SITE AND WATERSHED

9. I am very familiar with the Coyote Creek watershed. Coyote Creek, as discussed in more detail herein, is a stream that flows through Tehama County, California. Its headwaters form generally west of the site at issue here, the 450-acre Duarte site, which is bounded on the north by the north bank main stem channel system of Coyote Creek. Paskenta Road forms the western boundary, and Dusty Way bounds the southwestern extent of the property. The Coyote Creek Conservation Area ("CCCA") is immediately west of the Duarte site, just across Paskenta Road, and it has streams and wetlands. Figure IV-1 of the expert report (**USA Ex. 43 at original page 31**) shows the location of the CCCA reference sites and their proximity to the Duarte site. Beginning in May 2012, I began observing and conducting analyses of the CCCA for a case called *United States v. Anchordoguy*, which involved discharges of dredged or fill material to streams, vernal pools, and vernal swales associated with Coyote Creek due east and downstream of the CCCA (and the Duarte site). Beginning in October 2012, I installed and maintained water level recorders in Coyote Creek and began analyzing data regarding various aquatic features in the CCCA and the flowpath of Coyote Creek beginning in the CCCA to its junction with Oat Creek and then Oat Creek's junction with the Sacramento River.

10. The following colleagues joined me in 2012: Mark C. Rains, Ph.D., Professional Wetland Scientist, who specializes in hydrologic science and ecohydrology and has published scientific studies and literature on vernal pool complexes in California; Scott R. Stewart, Ph.D., Certified Professional Soil Scientist, who specializes in soil science and geomorphology; and Wade L. Nutter, Ph.D., Professional Hydrologist, who specializes in hydrology. Richard A. Lis, Ph.D., who specializes in plant ecology and systematics, joined us in 2015, and he has familiarity with the Coyote Creek watershed because of his work as a Senior Environmental Scientist Specialist with the California Department of Fish and Wildlife in Redding, California. The team has since continued inspections of the CCCA and inspected other locations such as property due north of the Duarte site at issue in *United States v. LaPant.*

11. I am very familiar with the Duarte site. Beginning on March 31, 2015, I led the team on an inspection of the Duarte site. The inspection lasted for approximately 10 days. Two

additional inspection days occurred July 17 and 18, 2015.

12. To prepare the team to inspect the Duarte site, we analyzed data and mapping from two environmental consulting firms that had inspected the site prior to the ripping operations at issue: North State Resources in 1994 (**USA Ex. 8**) and NorthStar Environmental in 2012 (**USA Ex. 20**). This provided valuable but under-inclusive baseline (i.e., pre-ripping) information regarding the extent of site's aquatic resources, and it helped us select representative areas for intensive inspection. In certain areas, we used a trackhoe to excavate soil test pits and to obtain data from representative soils and sub-soils. Led by Dr. Nutter, the mainstem of Coyote Creek and all other streams on the Duarte site were traversed to verify connectivity of the wetlands (vernal pools and vernal swales) and to Coyote Creek as it makes it way downstream (east) of the Duarte site. Also led by Dr. Nutter, the team and I observed and documented the continuous physical hydrologic connection from the headwaters of Coyote Creek to the Sacramento River.

III. SUMMARY OF CONCLUSIONS

13. On June 5, 2015, the team and I completed and produced a report entitled "U.S. Department of Justice, Expert Team Report, Duarte Nursery, Inc. v. US Army Corps of Engineers/United States v. Duarte Nursery, Inc. et al." (**USA Ex. 43**.). Although I am the principally author, the team worked collaboratively, as our expertise is complementary and creates a better result. Appendix A to the report includes executed wetland data sheets for 13 reference sites upsteam and downstream of the Duarte property (**USA Ex. 44**). Appendix A also includes wetland data sheets for 31 assessment sites on the Duarte property (**USA Ex. 45**). Although they are called "wetland" data sheets, in some locations stream data was collected and recorded. Appendix B to the report describes the condition of and includes photographs of reference sites (**USA Ex. 46)**. Appendix C to the report describes the condition of and includes photographs of 31 assessment sites on the Duarte property (**USA Ex. 47**). Appendix D to the report is a guidebook developed by Drs. Nutter, Rains, Stewart and me to provide hydrogeomorphic models for assessing the functions of streams, vernal pools, and vernal swales in the Coyote Creek and Oat Creek watersheds in Tehama County (**USA Ex. 48**). Appendix E to

the report contains information about occurrences of vernal pool fairy shrimp and vernal pool tadpole shrimp on or proximate to the Duarte site (**USA Ex. 49**). Appendix F to the report contains select photographs of reference sites (**USA Ex. 51)** and of the Duarte site (**USA Ex. 52**). Appendix G to the report contains the team's resumes as of June 2015, including mine (**USA Ex. 54**). Appendix H to the report contains a list of plant species observed at the Duarte site (**USA Ex. 58**). Appendix K to the report is a map showing all streams, vernal pools, and vernal swales that, the team concludes, would have been present on the Duarte site at the time of the ripping operation (**USA Exs. 59 & 60**). Finally, Appendix L to the report is a map of where, the team concludes, impacts from the late 2012 ripping operations occurred in streams, vernal pools, and vernal swales on the Duarte site (**USA Ex. 61**). (I am omitting discussion of Appendix I, which is a complete set of photographs, and Appendix J, which contains water stage recorder data.)

14. I am the principal author of, and am prepared to testify about, opinions and bases in the following parts of the June 5, 2015 expert report: § I (p.1), § II (pp. 2-10), § III.D. (pp. 24-25), § IV.A. & B. (pp. 26-28), § IV.D.1.b. (p. 32), § IV.F. & G. (pp. 39-43), § V.A. (p. 48), § V.A.3. (pp. 55-58), § V.B. (pp. 58-59), § V.F. (pp. 85-102), § V.L. (pp. 105-06), § V.M. (pp. 106-113), § V.N.1. (pp. 113-14), § V.N.7. (pp. 134-48), § VI except ¶¶ 8 & 11 (pp. 149-63), and Appendices D, K, and L. I am also prepared to testify about any table, figure, or appendix explicitly referenced or found within the foregoing sections or pages of the report, as well as my contributions to Appendices A, B, C, G, and I. I stand by my conclusions in the sections and appendices above. I previously filed a declaration to this effect and stand by it as well (ECF No. 123). I incorporate my sections of the report and appendices herein by reference.

15. I also am the principal author of, and am prepared to testify about, specified sections of a rebuttal report dated July 23, 2015 (**USA Ex. 76**). As with the prior report, I stand by my conclusions and incorporate the rebuttal report by reference.

16. My conclusions as set forth in the reports and appendices are based on personal knowledge, data and facts, reference material, reliable principles and methods, and expertise.

17. What follows is a summary of my conclusions on certain issues. The reports and appendices provide additional detail, support, and explanation.

18. **Before Duarte's ripping operation, the 450-acre site supported a substantial amount of streams and wetlands—approximately 43.9 acres as shown in Figure V-33b/Appendix K (USA Ex. 60)**:

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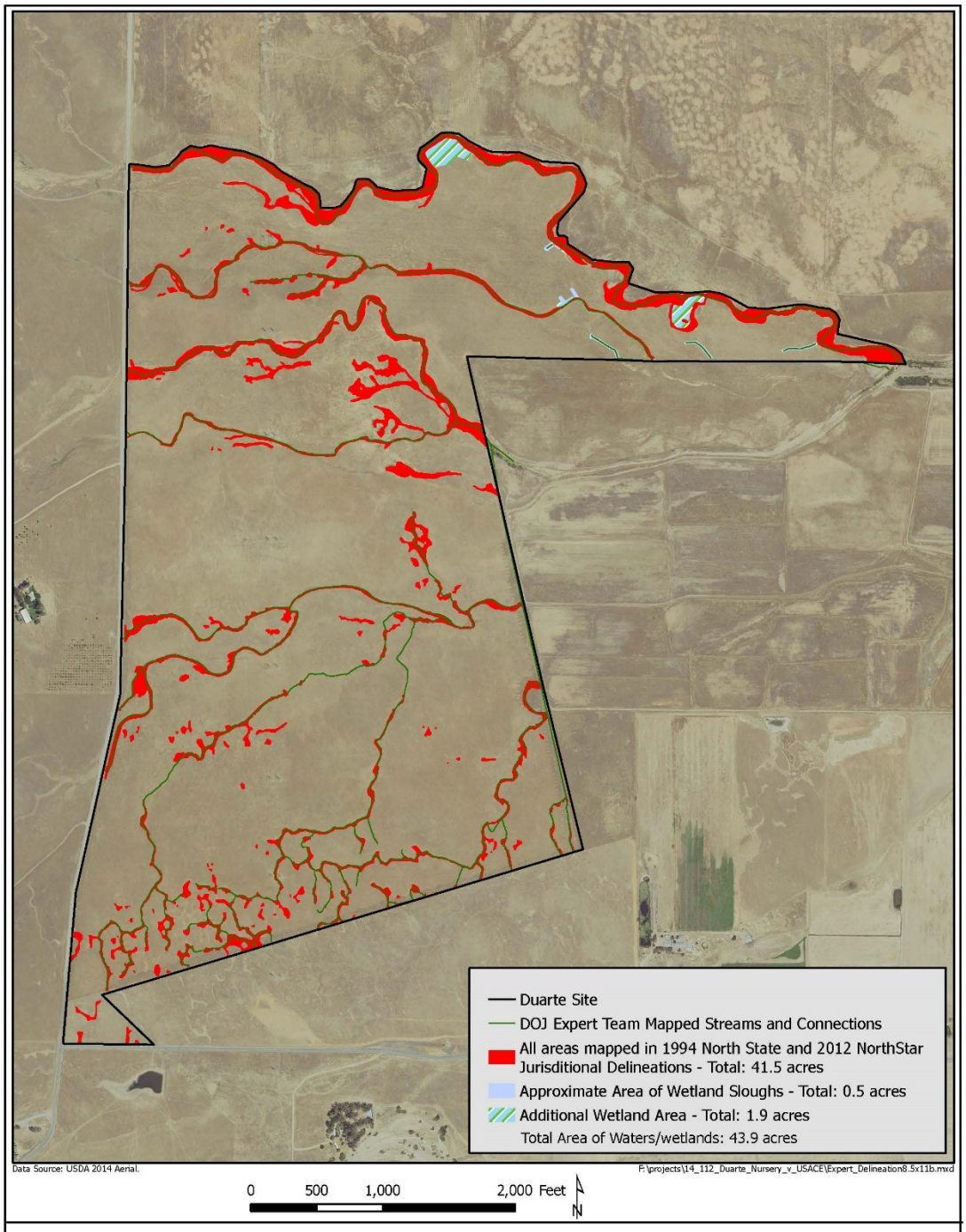

Figure V-33b. Duarte Site: DOJ Expert Team Delineation of Waters of the U.S., including Wetlands, Duarte Site, Tehama County, California.

19. The main stem of Coyote Creek traverses the northern boundary of the Duarte site. Coyote Creek is a tributary of the traditionally navigable Sacramento River, which runs southward from the Sacramento Valley's northern edge, through Tehama County and the City of Sacramento, and then downward to San Francisco Bay and into the Pacific Ocean. Coyote Creek's flowline to Oat Creek, the Sacramento River, and ultimately the Pacific Ocean is shown in Figure V-3 below.

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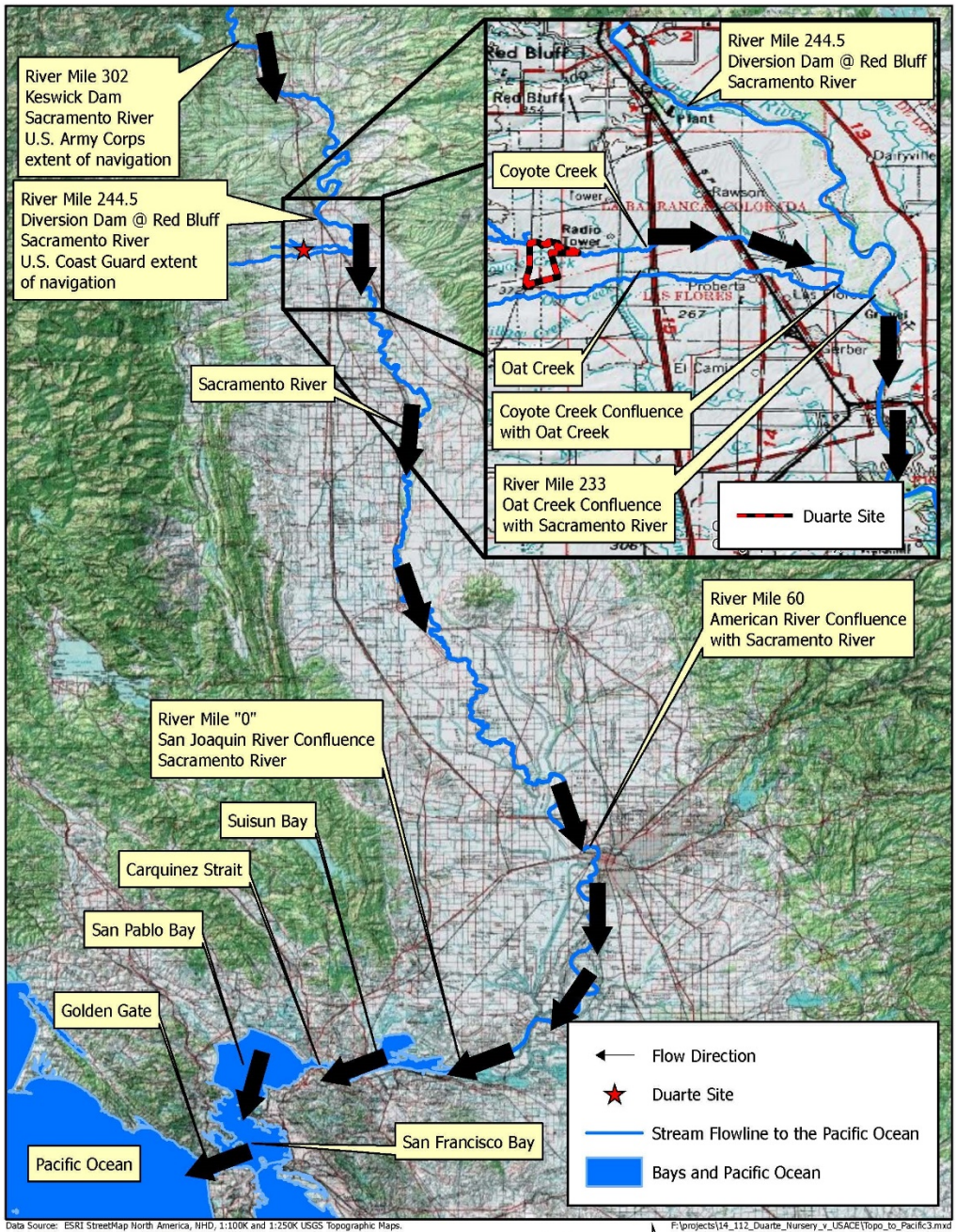

Figure V-3. Location of Duarte Site, Red Bluff, Tehama County, California.

20. There are 10 streams on the Duarte site: the main stem of Coyote Creek and nine additional streams that connect with and contribute flow to Coyote Creek.

21. The combined linear feet of the streams on the Duarte site is approximately 51,892 feet or 9.82 miles. These streams are shown and labeled as "Coyote Creek," "Stream 1," "Stream 2," "Stream 3," "Stream 4n [north]," "Stream 4c [central]," "Stream 4s [south,]" "Stream 5," "Stream 6," "Stream 8,"[1] "Stream 9," and "Stream 10" in Figure V-33a/Appendix K (**USA Ex. 59**):

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[1] Stream 7 is omitted; it is a short swale complex between Streams 6 and 8 and flows to either. It is treated as part of Stream 6.

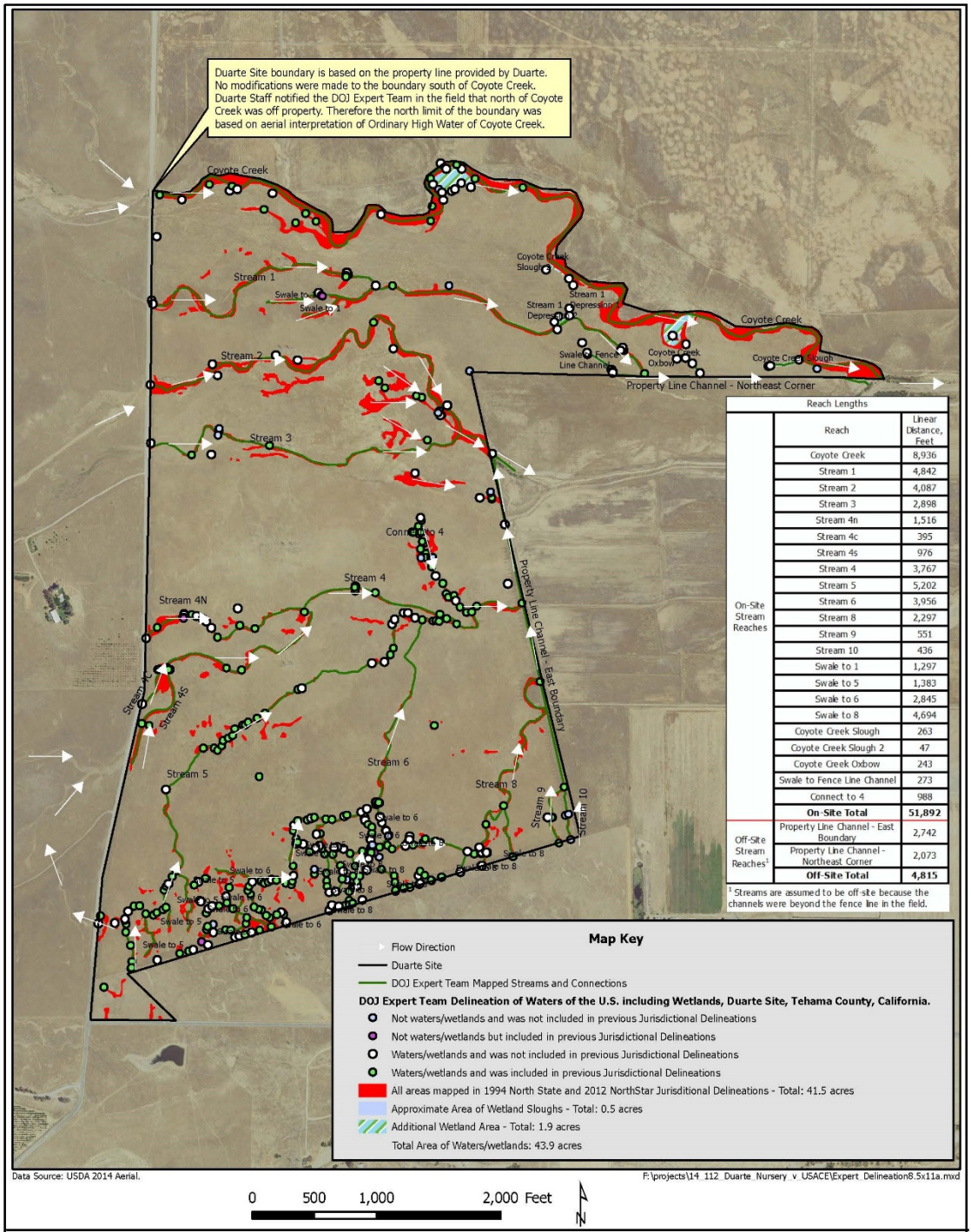


Figure V-33a. Duarte Site: DOJ Expert Team Delineation of Waters of the U.S., including Wetlands, Duarte Site, Tehama County, California.

22. The wetlands on the Duarte site include "vernal pools" and "vernal swales." Vernal pools are shallow, seasonally ponded wetland depressions that accumulate water during the wet season. Vernal swales are sloped wetlands that connect vernal pools to one another and to downstream waters. These wetlands occur over impermeable surfaces (i.e., bedrock) or "slowly permeable" soils that limit the downward movement of water. With their long water residence times and low energy water flows, vernal pools and vernal swales filter water, minimize soil erosion, and provide food and cover resources for a wide range of plants and animal species.

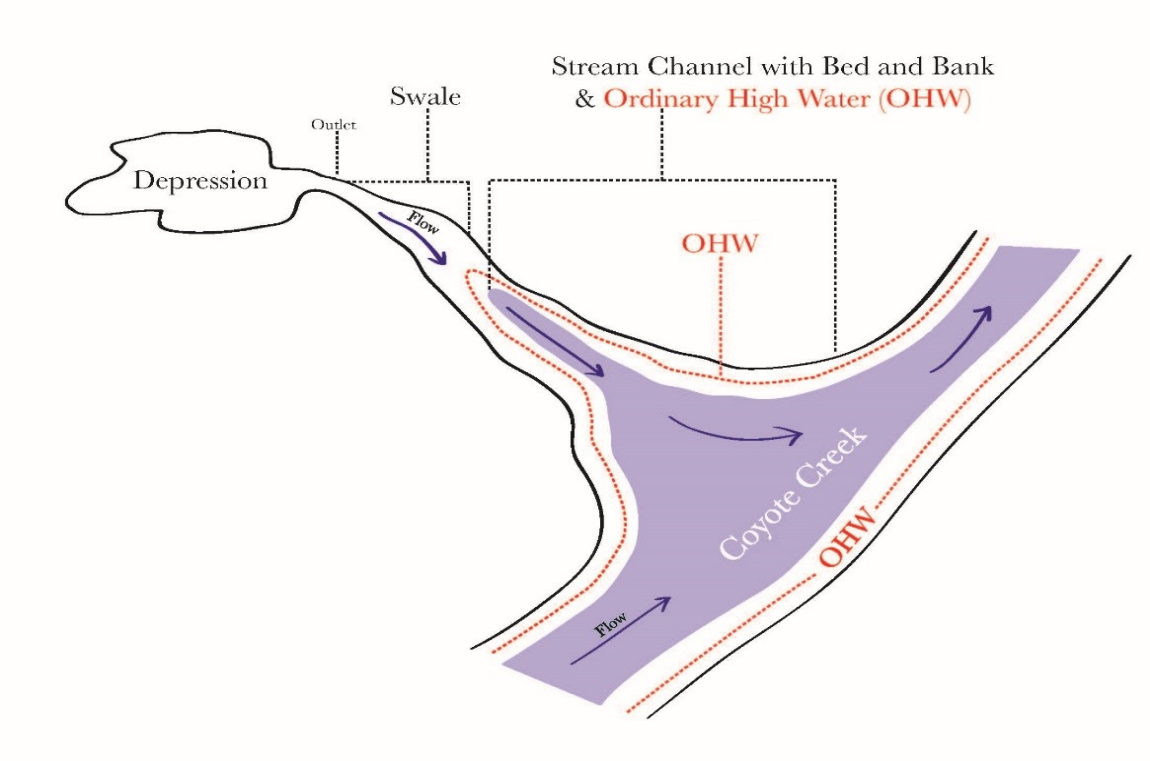
23. At least before Duarte's ripping operation, the vernal pools and vernal swales had: (1) a prevalence of plant species typically adapted to saturated soil conditions (or "hydrophytic plants"); (2) soil that is saturated, flooded, or ponded for sufficient time during the growing season to become anaerobic, or lacking in oxygen, in the upper part (or "hydric soil"); and (3) continuous inundation or saturation to the surface during at least five percent of the growing season in most years (or "wetlands hydrology"). Indicators of all three of these parameters are normally present in wetlands; however, when activities impact a site's vegetation, soils, or hydrology, one of the parameters may be inferred from the presence of the other two.

24. The vernal pools and vernal swales on the Duarte site are adjacent to streams. The vast majority of the vernal pools and vernal swales occur within or abut streams. A negligible (i.e., one to two) percent of the sites' wetlands neighbor but are physically separated from streams by uplands, as shown in Figure V-33b/Appendix K (**USA Ex. 60**).

25. **Before Duarte's ripping operation, the streams, vernal pools, and vernal swales on the site performed a suite of hydrologic (physical), biogeochemical (physical and chemical), plant community (biological), and faunal support/habitat (biological) functions. For example, they improved water quality on-site and downstream by filtering sediments and removing contaminants; produced food in several forms of organic matter that support downstream aquatic systems; stored water and released it slowly; and supported federally protected species. This high degree of functioning contributed to maintaining the flow of, water quality in, and chemical, physical, and biological integrity of downstream**

waters.

26. The streams, vernal pools, and vernal swales on the Duarte site function as one interconnected system, that is part of the Coyote Creek tributary ecosystem. An analogy is that a maple tree, for example, has a (dendritic) network of branches that occur at several scales, from small to large. Here, the main stem of Coyote Creek resembles the trunk of the tree while the many streams and wetlands within the body of the Duarte site resemble the tree's branches and leaves. Figure V-21 from our report is a schematic of the typical geomorphic setting and relationships among the streams, vernal pools, and vernal swales:

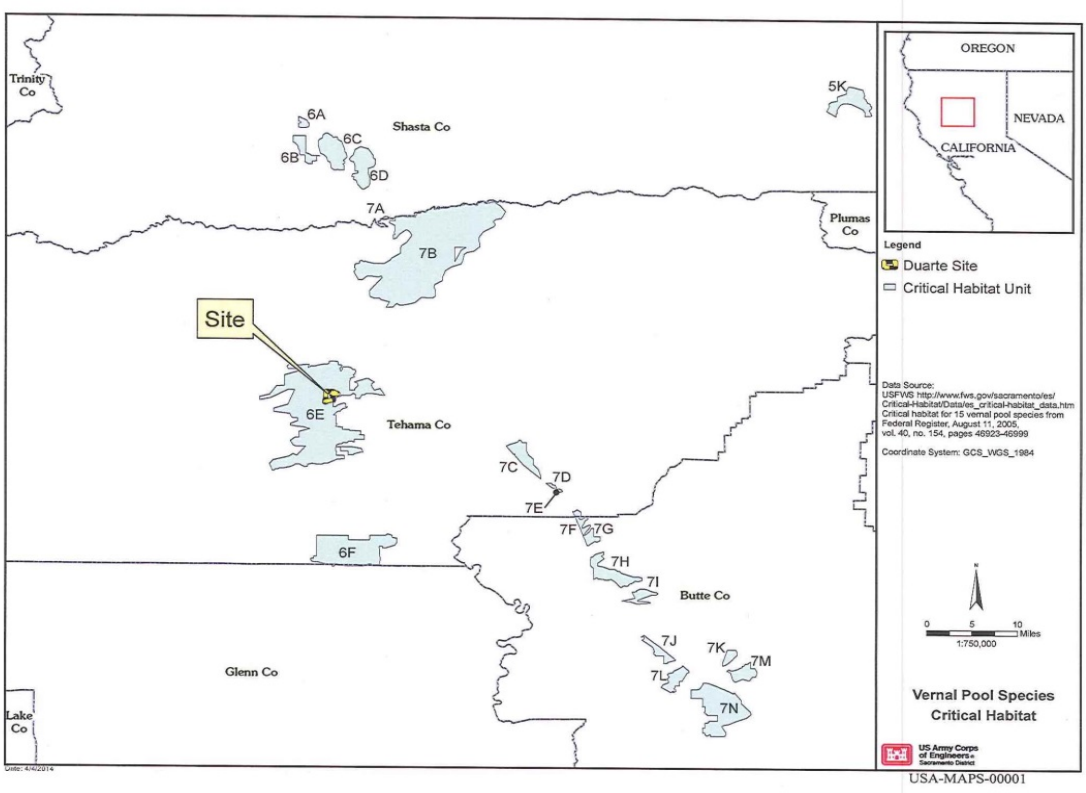


27. The Coyote Creek tributary ecosystem, including the hydrologically interconnected streams, vernal pools, and vernal swales on the Duarte Site, contribute substantial flows, at least seasonally to Oat Creek and then to the Sacramento River. During any given wet season, which occurs from October through April, several flows can occur and often are continuous for long durations (e.g.> 30 days at a stretch). These flows occur in response to direct precipitation inputs to the wetland and channel system combined with inputs from surface

and shallow subsurface water flows. Our team has measured and documented flows, which as of the date of our expert report included almost three water years (2012-13, 2013-14, and 2014-15).

28. The streams, vernal pools, and vernal swales on the Duarte site exist in large part due to the lateral movement of water on the soil surface and in shallow subsurface horizons that occur above slowly permeable layers. Ponding and soil saturation is common during the wet season, because the slowly permeable layers at or near the ground surface impede rapid vertical movement of water through the soil profile. Incoming water flows downward in the soil until it encounters a slowly permeable layer. Water then flows laterally or in a horizontal fashion and above the slowly permeable soil layers.

29. The vernal pools and vernal swales on the Duarte site are within the critical habitat for vernal pool fairy shrimp (*Branchinecta lynchi*), a threatened species, as shown in Figure II-2:



30. The vernal pools and vernal swales on the Duarte site are suitable habitat for vernal pool tadpole shrimp (*Lepidurus packardi*), an endangered species.

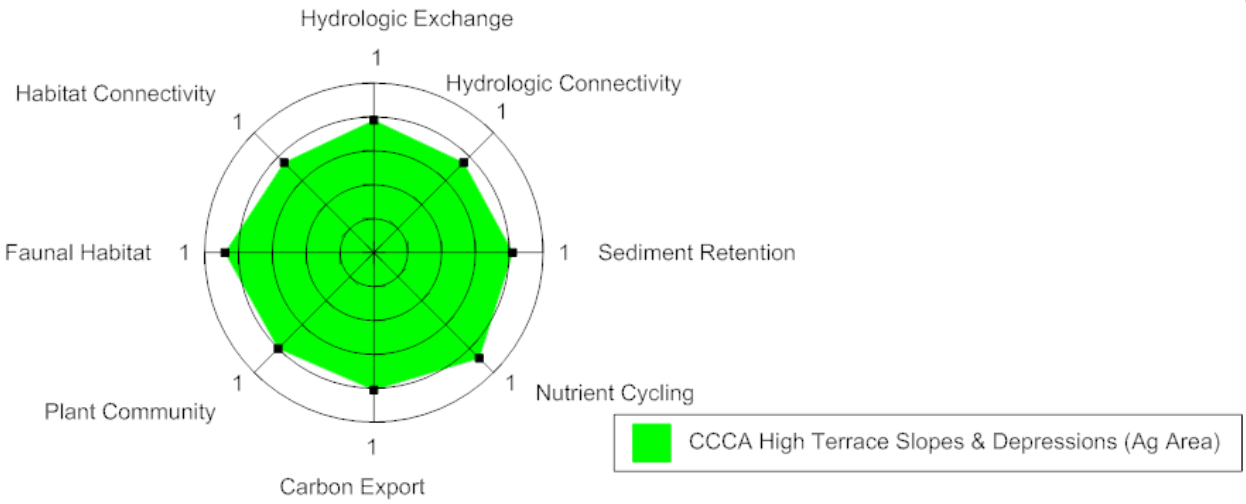
31. Coyote Creek, Oat Creek, and the Sacramento River share close ecological connections. Fish depend on these waters to complete reproduction and growth. These fish (such as Chinook Salmon) can be anadromous, meaning that they are hatched in freshwater, spend the majority of their life in saltwater, and then return to freshwater to spawn.

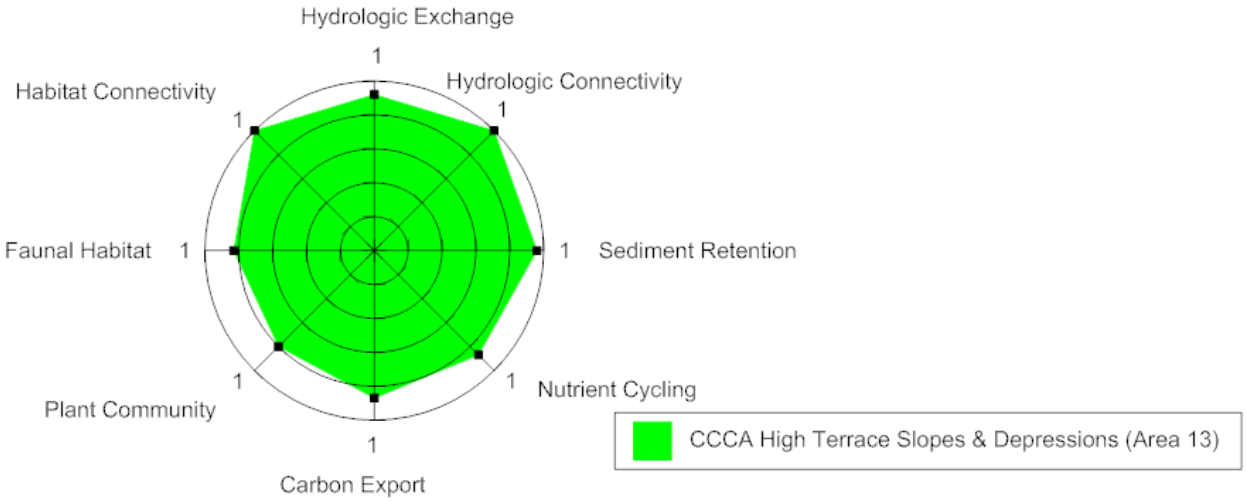
32. Downstream from the Duarte site, the Coyote Creek, Oat Creek, and Sacramento River ecosystem support critical habitat for the threatened Central Valley Spring Run Chinook Salmon, and the Oat Creek and Sacramento River ecosystem support critical habitat for the threatened Central Valley Steelhead. Figures II-3 through II-6 of the report (**USA Ex. 43 at original pp. 6-9**) show the distributions for these fishes.

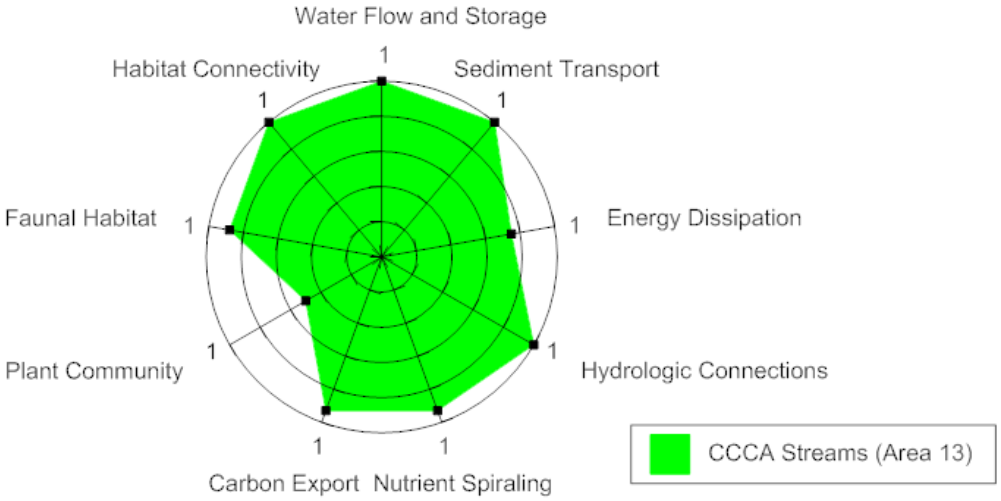
33. The streams, vernal pools, and vernal swales that occurred on the Duarte site before ripping operations performed the suite of ecosystem functions of which they were capable to a relatively high degree. Taken as highly functioning and connected landscape units in the upper reaches of the Coyote Creek ecosystem, they made significant contributions to maintenance of the physical, chemical, and biological integrity of downstream waters, including the Sacramento River.

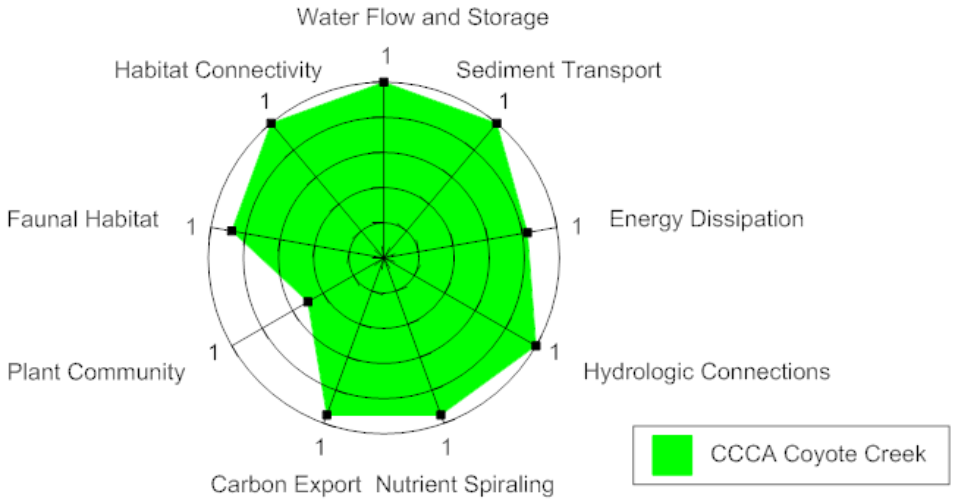
34. Figures V-28 through V-30 of the report, reproduced below, summarize the functioning of streams, vernal pools, and vernal swales immediately west of the Duarte site—in the Coyote Creek Conservation Area ("CCCA")—and by reasonable inference the Duarte site prior to the late 2012 ripping operation. The suite of ecosystem hydrologic, biogeochemical, plant community, and faunal support/habitat functions performed by these aquatic features is arrayed around the circular plot. Consistent with standard hydrogeomorphic ("HGM") methodologies, a functional capacity index score of one ("1.0") represents the "reference standard" condition or the best possible score for a particular function. Conversely, a zero ("0.0") is the lowest (most degraded) functional score. As would be expected, the functional index scores are relatively high (i.e., generally ranging from 0.75 to 1.0) for most ecosystem functions. This is because the CCCA Reference Areas and the Duarte site prior to late 2012 were not

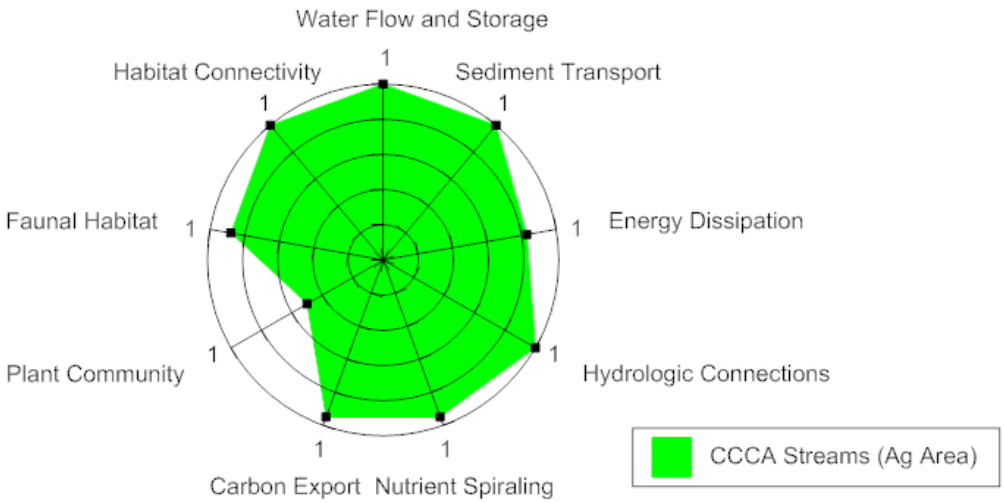
significantly perturbed. Plant community functions were low relative to other parameters, due to the existence of non-native weed species that are ubiquitous as members of plant associations throughout the grasslands of California (Minnich, 2008).

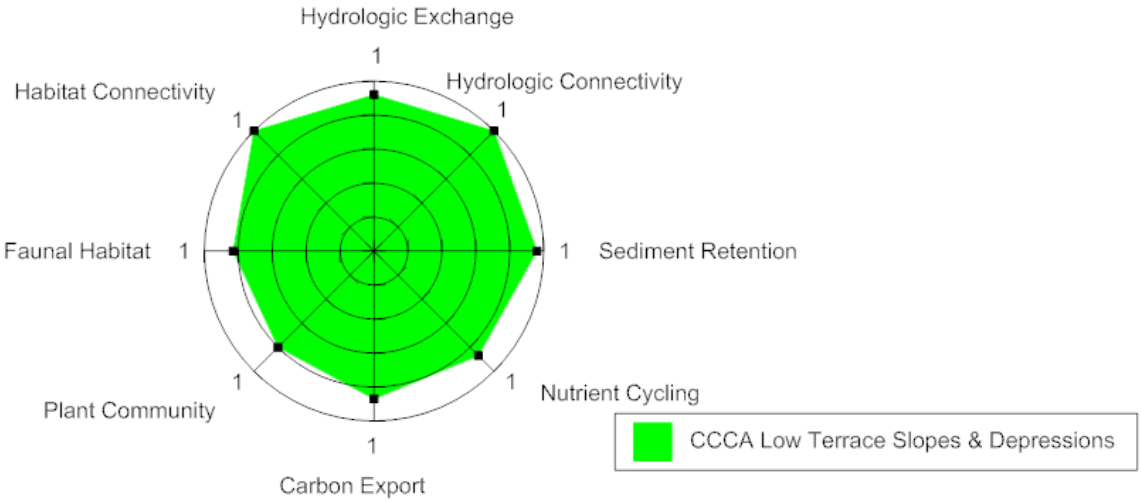





Water Flow and Storage
Habitat Connectivity
Sediment Transport
Faunal Habitat
Energy Dissipation
Plant Community
Hydrologic Connections
Carbon Export
Nutrient Spiraling
1
CCCA Streams (Area 13)


Water Flow and Storage
Habitat Connectivity
Sediment Transport
Faunal Habitat
Energy Dissipation
Plant Community
Hydrologic Connections
Carbon Export
Nutrient Spiraling
1
CCCA Coyote Creek


Water Flow and Storage
Habitat Connectivity
Sediment Transport
Faunal Habitat
Energy Dissipation
Plant Community
Hydrologic Connections
Carbon Export
Nutrient Spiraling
1
CCCA Streams (Ag Area)


Hydrologic Exchange
Habitat Connectivity
Hydrologic Connectivity
Faunal Habitat
Sediment Retention
Plant Community
Nutrient Cycling
Carbon Export
1
CCCA Low Terrace Slopes & Depressions

35. Duarte's late 2012 ripping operation caused earthen material, including soils, sub-soils, and slowly permeable soil layers, to be: (1) wrenched up and redeposited from below the ground surface to above the ground surface and into streams, vernal pools, and vernal swales; (2) redistributed from one location to another location within streams, vernal pools, and vernal swales; and (3) relocated from uplands and into streams, vernal pools, and vernal swales. This ripping operation occurred in and impacted at least 22.2 acres of aquatic areas on the Duarte site, approximately half of which are streams and the other half wetlands (i.e., vernal pools and vernal swales). All ripped aquatic locations are shown in Figure 47/Appendix L (USA Ex. 61):

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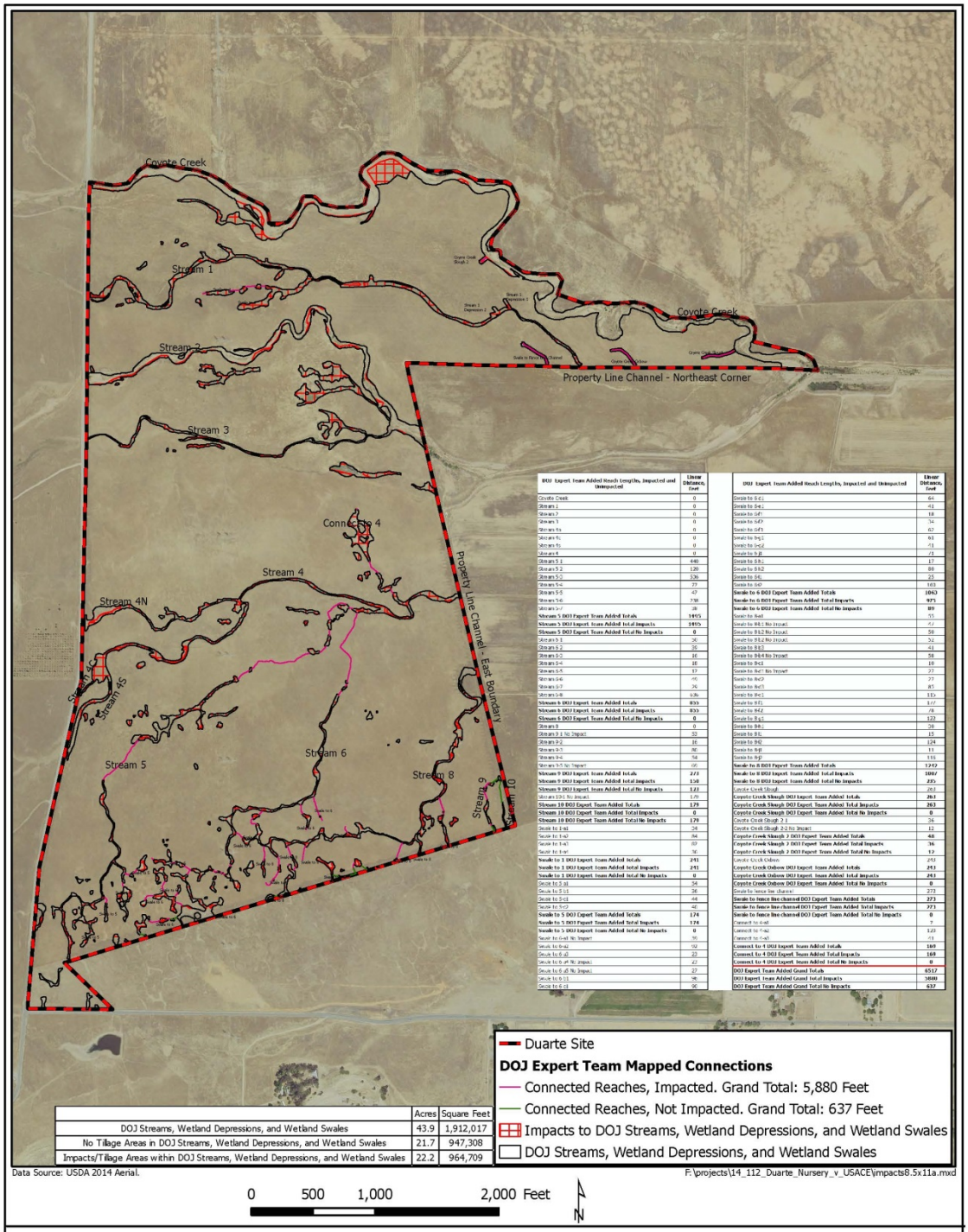

Figure V-47. Duarte Site: DOJ Expert Team Estimated Impacts to Streams, Wetland Depressions and Wetland Swales, Duarte Site, Tehama County, California.

36. The ripping operation did not reflect any plan to avoid streams, vernal pools, or vernal swales, or any plan to minimize impacts on streams, vernal pools, or vernal swales. To the contrary, the rippers operated throughout the Coyote Creek tributary ecosystem, including, for example, well within Coyote Creek's main stem and through the middle of streams, vernal pools, and vernal swales. As a representative example, Figure H6 from the rebuttal report (**USA Ex. 76** at original p. 62) is an April 15, 2015 photograph from Google Earth showing ripping well within the main stem of Coyote Creek:

Next, Figure H2 (**USA Ex. 76** at original p. 60) is an April 15, 2015 photograph from Google Earth showing ripping through the middle of Stream 2:

Similarly, Figure H4 (**USA Ex. 76** at original p. 61) is an April 15, 2015 photograph from Google Earth showing ripping through the middle of Stream 6:

And on the following page is a photograph taken on April 6, 2015 showing ripping through vernal pools within or abutting Stream 4 (Appendix C to the report, **USA Ex. 47** at original p. 66):

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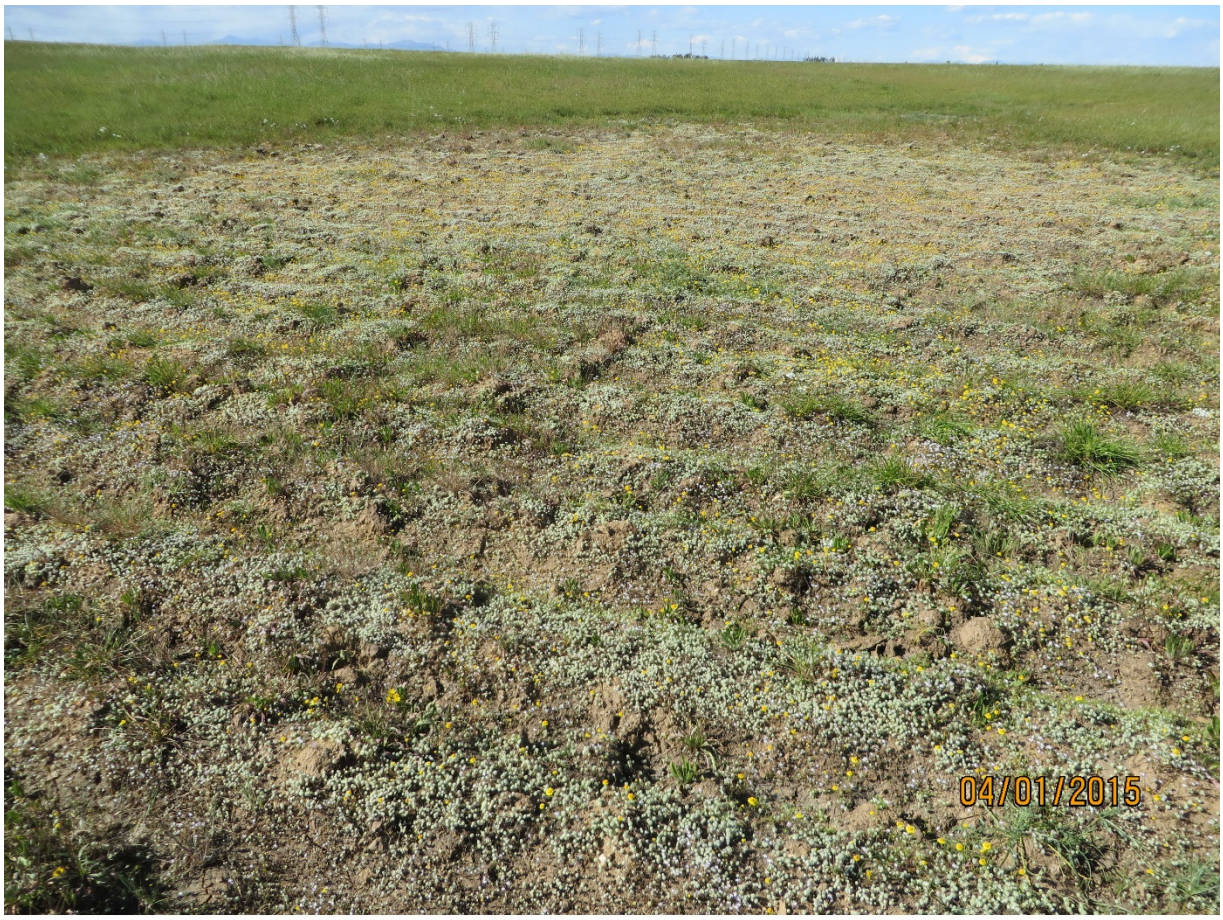
04/01/2015

37. The only places on the Duarte site that were *not* ripped were proximate to stream or wetlands features near Paskenta Road (the road that forms the western boundary of the property), areas that were deeply ponded or which had saturated soil conditions, tractor turn-around areas near fence lines or other obstructions, dangerously steep banks or abrupt transitions in local topography that would present a rollover risk for the tractor operator, and the extreme southwest corner of the property that is separated from the rest of the property by a fence.

38. Duarte's late 2012 ripping operation was harmful and resulted in losses of aquatic ecosystem functioning. Such significant degradation adversely affects the maintenance of the chemical, physical, and biological integrity of downstream waters, including the Sacramento River.

39. Ripping streams, vernal pools, and vernal swales on the Duarte site fractured and destroyed slowly permeable soil layers (e.g., "Bt" horizons) and other restrictive layers. Such fracturing changed the way water enters the soil (infiltration). It also changed the amount and timing of water entering the soil and the rate at which water moves through the soil (hydraulic conductivity). Such fracturing changed soil aeration porosity and hence changed water holding (storage) capacity.

40. Because it resulted in less water storage capacity, the ripping operation directly and negatively impacted the water balance or of streams, vernal pools, and vernal swales. Fracturing and destruction of slowly permeable soil layers sets up downward movement of water. The aquatic features on the Duarte site depend upon the lateral movement of water on the soil surface and in shallow subsurface horizons that occur above the slowly permeable (e.g., Bt) or other restrictive layers. Following ripping operations, more water will be required to cause saturation of soils at or near the surface or ponding of water above the soil surface.

41. Saturation of soils at or near the surface and/or ponding conditions are key processes that drive other hydrologic, biogeochemical, plant community and faunal support/habitat functioning in the streams, vernal pools, and vernal swales that occur on the Duarte site. In turn, the suite of functions performed by the entire Coyote Creek tributary ecosystem have direct and important effects on the maintenance of the physical, chemical and

biological integrity of the Sacramento River. For example, ripping operations on the Duarte site adversely altered the delivery, timing, and export mechanisms for organic carbon and other nutrients and compounds to waters on-site and downstream. Organic carbon and other nutrients and compounds form the energy and food base for several classes of faunal species. These include macroinvertebrates, federally protected Central Valley Spring Run Chinook Salmon and Central Valley Steelhead, and other fishes and aquatic and semi-aquatic vertebrates and invertebrates. These faunal species occur and complete important components of their life cycles along the river continuum from headwater areas west of the Duarte property, through the Coyote Creek and Oat Creek ecosystems, and in the Sacramento River.

42. The ripping eliminated shallow subsurface storage and exchange of water, altered the timing, rate, and volume of discharges of water downstream, and eliminated or significantly degraded hydrological connections among the aquatic features on the Duarte site and downstream to the Sacramento River. Given the Coyote Creek tributary ecosystem's hydrological interconnectedness, the ripper's fundamental alteration of stream and wetlands hydrology affects the integrity of the Sacramento River.

43. Figure V-43 of the report (**USA Ex. 43** at original p. 137) features: (a) a schematic of how the ripper's fracturing of slowly permeable (or restrictive) layers changed the length of time streams, vernal pools, and vernal swales maintained characteristic ponding and soil saturation; and (b) a photographic example of this destructive result from the Duarte site:

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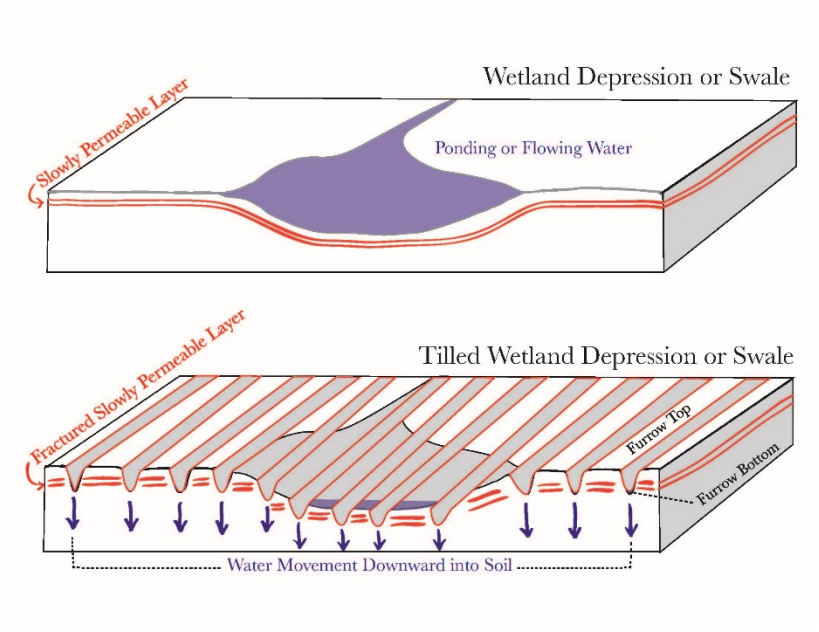


44. Similarly, by dragging earthen material into streams, vernal pools, and vernal swales, the ripping operation resulted in an increase of the bottom elevation of waters/wetlands and changed areas within streams, vernal pools, and vernal swales into uplands. The streams, vernal pools, and vernal swales at the Duarte site depend not only upon the soil's slowly permeable layer, but natural patterns of surface and shallow subsurface water flow, circulation, and

uninterrupted upstream and downstream connections. The ripping operation significantly altered these patterns and connections. It altered the surface microtopography, changing it from being relatively smooth to a pronounced furrow top and bottom configuration. These areas of raised elevation in combination with furrow bottoms impede or consolidate surface and shallow subsurface water flow patterns, depending on the direction that the rippers were dragged through streams and wetlands and their inlets and outlets. This blocks flow; in some cases on the Duarte site, the pattern of ripping across depression or swale outlets blocked flow and severed connections among vernal pools and swales.

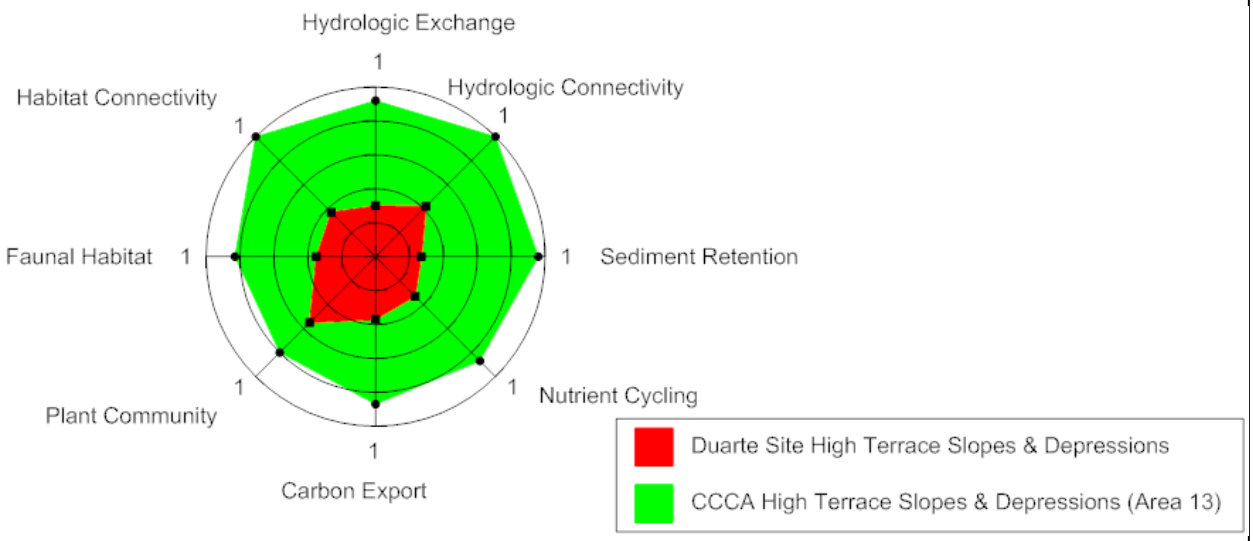
45. In addition, areas of raised elevation within wetlands that the ripping operation created no longer provide site water balance conditions that are conducive to growth and development of plant species that are typically adapted to life in saturated soil conditions (i.e., hydrophytic plant species). The rippers changed soil and associated site water balance conditions and patterns of water flow and circulation in a manner that retarded growth of native hydrophytic plant species and promoted the growth or reproduction of upland plant species. The rippers also fragmented and severely impacted the Duarte property's annually recurring and very old assemblages of hydrophytic plants and faunal habitats and changed the plant community and faunal habitat structure, patch size, patch connectivity, and biodiversity within the vernal pool, swale, and stream complexes.

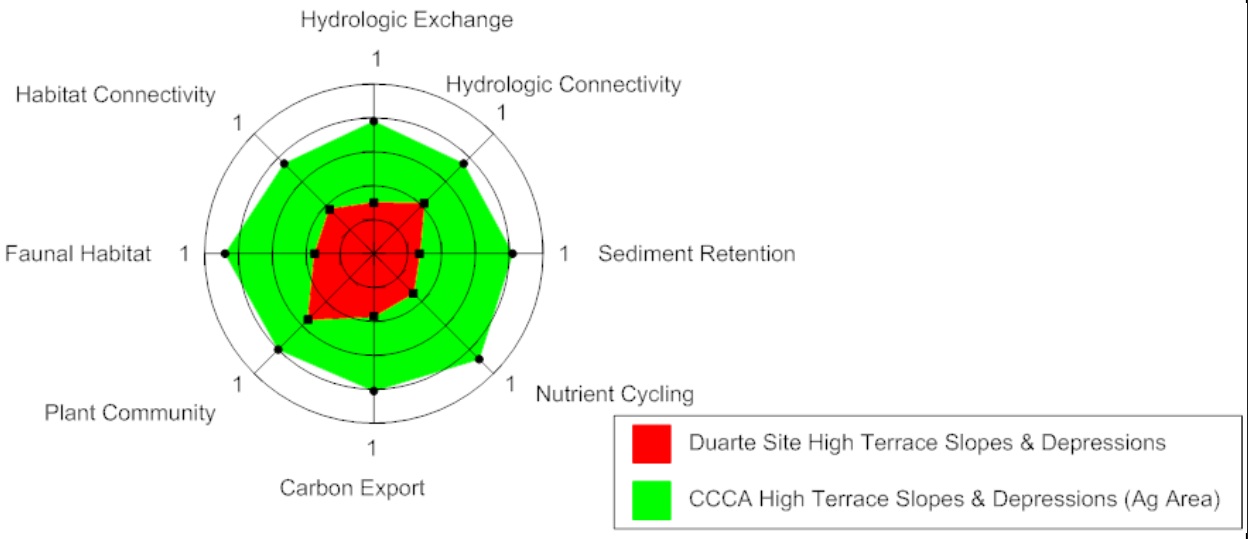
46. The dragging of upland clods of soil into streams, vernal pools, and vernal swales converted wetland boundary (or margin) areas to uplands. This reduced the reach of most of the streams, vernal pools, and vernal swales on the Duarte site. Dragging soils from uplands into streams, vernal pools, and vernal swales also brings nutrients, organic matter, and contaminants into waters/wetlands, which can bring about changes in the physical and chemical functioning of the wetlands which in turn impacts the associated flora and fauna of the wetland.

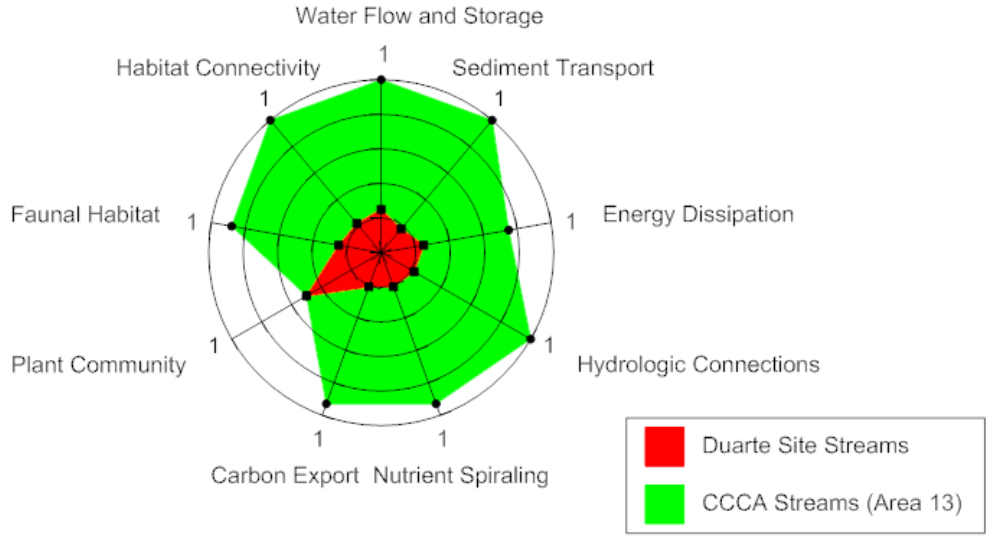
47. The rippers adversely impacted the critical habitat of threatened vernal pool fairy shrimp and the suitable habitat of endangered vernal pool tadpole shrimp.

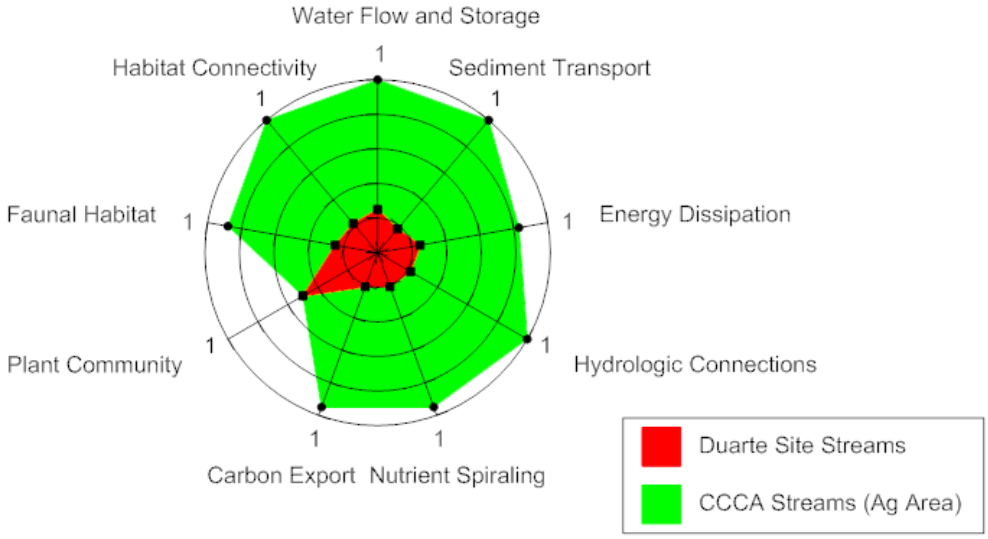
48. Figures V-44 through V-46 of the report, reproduced below, compare the *post-ripping* functioning of streams, vernal pools, and vernal swales on the Duarte site with their *pre-*

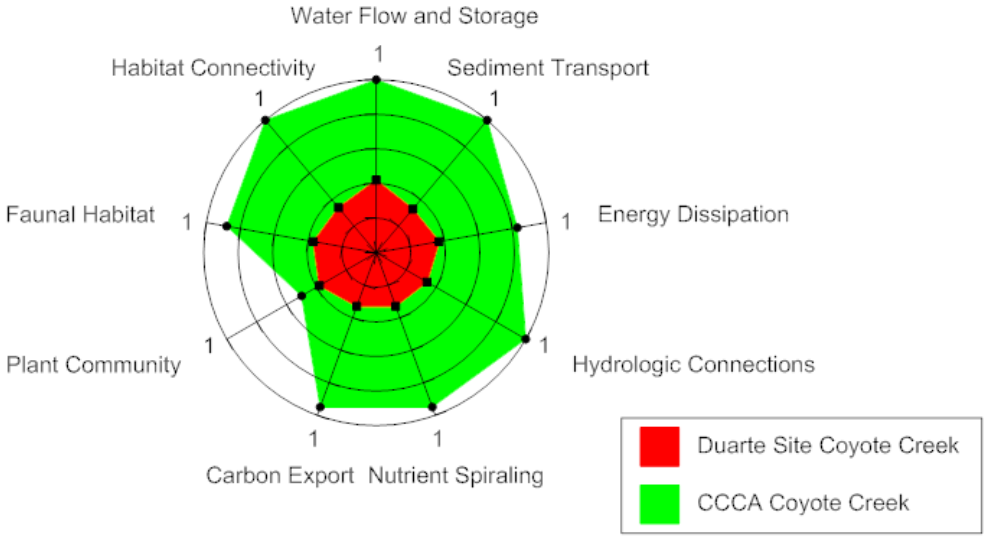
ripping functioning, the latter as shown and explained above (in conjunction with Figures V-28 through V-30). In short, these figures show that the rippers eliminated or significantly degraded the suite of hydrologic, biogeochemical, plant community, and faunal support/habitat functions that the waters/wetlands ecosystem on the Duarte property performed *pre-ripping*. As with Figures V-28 through V-30, and consistent with standard HGM methodologies, a functional capacity index score of one ("1.0" – outermost circle) represents the "reference standard" condition or the best possible score for a particular function. Conversely, a zero ("0" – innermost point in the polar plot) is the lowest (most degraded) functional score. Concentric circles represent increments of degrading function, starting from the outermost circle (1.0 – best condition) to 0.75, 0.50. 0.25. 0.10 and 0 (Highly degraded, not recoverable).

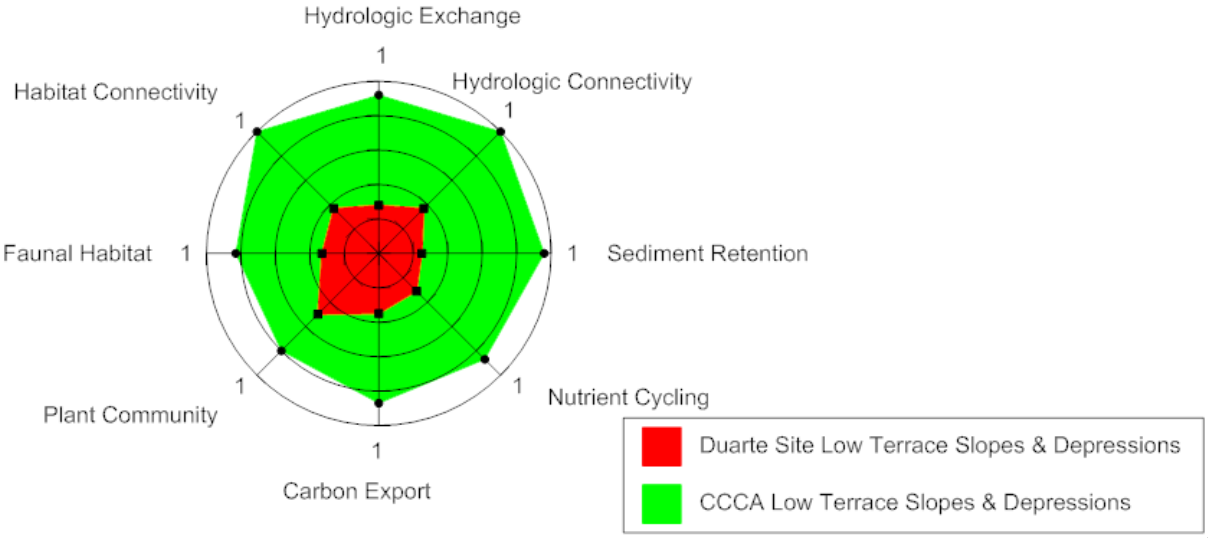



Hydrologic Exchange
Hydrologic Connectivity
Sediment Retention
Nutrient Cycling
Carbon Export
Plant Community
Faunal Habitat
Habitat Connectivity
1
Duarte Site High Terrace Slopes & Depressions
CCCA High Terrace Slopes & Depressions (Ag Area)


Water Flow and Storage
Sediment Transport
Energy Dissipation
Hydrologic Connections
Nutrient Spiraling
Carbon Export
Plant Community
Faunal Habitat
Habitat Connectivity
1
Duarte Site Streams
CCCA Streams (Area 13)


Water Flow and Storage
Habitat Connectivity
Sediment Transport
Faunal Habitat
Energy Dissipation
Plant Community
Hydrologic Connections
Carbon Export
Nutrient Spiraling
1
Duarte Site Streams
CCCA Streams (Ag Area)


Water Flow and Storage
Habitat Connectivity
Sediment Transport
Faunal Habitat
Energy Dissipation
Plant Community
Hydrologic Connections
Carbon Export
Nutrient Spiraling
1
Duarte Site Coyote Creek
CCCA Coyote Creek


Hydrologic Exchange
1
Hydrologic Connectivity
1
Habitat Connectivity
1
Faunal Habitat
1
1
Sediment Retention
Plant Community
1
1
Nutrient Cycling
1
Carbon Export
Duarte Site Low Terrace Slopes & Depressions
CCCA Low Terrace Slopes & Depressions

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49. Figures V-44 through V-46 above show that compared to reference sites in the Coyote Creek Conservation Area (directly west of the Duarte site), the ripped streams, vernal pools, and vernal swales are degraded over all hydrologic, biogeochemical, and faunal support/habitat functions. Plant community functions were degraded in high and low terrace swales (slopes) and depressions and in Coyote Creek. They were stable in small streams. Degradation of functions is shown by the HGM assessments mainly because ripping operations significantly impacted fundamental hydrologic and soil conditions on the site such as: (a) physical features and properties of Duarte site soils such as pathways for movement of water into and through soils and the location and volume of soil water storage capacities; (b) the elevation of inlets and outlets for vernal pools and vernal swale complexes, thus impacting the flow and circulation of surface and shallow subsurface water flows; (c) the residence time and location of water that would either pond on or saturate soils within ripped streams, vernal pools, and vernal swales; and (d) the physical arrangement/assembly of very old native plant communities displacing native assemblies from relative smooth, nearly level soil surfaces onto linear furrow tops and bottoms with abrupt and atypical site water balance characteristics.

50. The import of the HGM functional assessments summarized in Figures V-44 through V-46 is that the aquatic features of the interconnected Coyote Creek tributary system on the Duarte site are significantly degraded with respect to their physical, biogeochemical, and biological structure and functioning. Those losses of functioning, in turn, have negative implications for maintaining the physical, chemical and biological integrity of downstream reaches of the Coyote Creek and Oat Creek systems and the traditional navigable waters of the Sacramento River.

51. Although the harm to streams, vernal pools, and vernal swales may well be unrepairable—because the ripping operation fundamentally changed the hydrology and significantly altered the Duarte site's potential to support intact and functioning streams that are linked to intact vernal pools and vernal swales—the harm can be partially mitigated by practicable, on-site ecosystem restorative measures.

52. In the absence of any restoration on the Duarte property, it will take at least many decades for ripped soils and sub-soils underlying streams, vernal pools, and vernal swales to re-organize and build new slowly permeable layers at or near the surface. This is assuming that reorganization and building of these slowly permeable layers occurs at all. Further, without any restoration, additional waters are likely to become uplands, especially when California returns to another drought cycle.

53. To accelerate all possible restoration, and to mitigate the on-going harm, I recommend that the following measures be taken as soon as possible under a plan reviewed and approved by the Corps of Engineers, and then implemented by a qualified specialist:

(1) Use appropriate mechanical equipment to smooth tillage microtopograhy in ripped streams, vernal pools, and vernal swales. Target areas (e.g. inlets and outlets) where abrupt changes in microtopography cause significant alterations in patterns of water flow and circulation.

(2) Stabilize ripped and smoothed sites with a native grass seed mix specified by a qualified botanist/restoration ecologist.

(3) Establish buffers (at least 50 feet wide except if the top of the slope/watershed divide contributing to an area of wetlands is less than 50 feet, the buffer need not extend beyond the top of the slope) around all streams, vernal pools, and vernal swales.

(4) Preserve in perpetuity, for example through a conservation easement, the streams and wetlands on the property to allow the waters/wetlands time to heal.

(5) Monitor the conditions of restoration on the property and execute adaptive management and contingency measures that are sufficient to ensure that overall project targets and project standards are being met on time.

(6) As key project targets and project standards are met, consider incorporating compatible land uses such as light to moderate grazing rest rotation (to reduce fuel loads, conserve water, encourage persistence of native plants, and generate revenue) or shallow tillage in uplands.

54. With these measures taken, the ripped streams, vernal pools, and vernal swales stand the best chance of being returned to their pre-ripping condition.

55. On-site ecosystem restoration measures will not fully compensate for the loss of aquatic functioning. Compensatory mitigation can make up the difference.

56. Even if the on-site measures are executed perfectly, they will not be sufficient to mitigate for area and functional impacts and for temporal losses that started in late 2012 and continue in perpetuity; i.e., impacts to the Duarte site streams, vernal pools, and vernal swales are permanent.

57. To address the deficit of loss of aquatic ecosystem functioning, including indirect, cumulative, and temporal losses to both waters/wetland area and functioning that are permanent, I recommend that off -site compensatory mitigation be performed. Off-site mitigation is appropriate because the type and magnitude of on-site ripping impacts to vernal pools, vernal swales, and tributary streams on the Duarte site have made it very difficult to nearly impossible to restore wetland and tributary stream area and functioning for several decades, if ever. Off-site compensatory mitigation can be performed through different mechanisms—such as by purchasing mitigation credits from an existing mitigation bank, creating, restoring (i.e. " re-establishing" or "rehabilitating") aquatic resources under a Corps of Engineers-approved plan, or purchasing and preserving intact tributary streams, vernal pools, or vernal swales. Considering the 2008 national U.S. Army Corps of Engineers mitigation regulation (33 CFR Parts 325 and 332) in combination with rationale and protocols included in the U.S. Army Corps of Engineers South Pacific Division February 20, 2012 "Standard Operating Procedure For Determining Mitigation Ratios" document (**USA Ex. 62**), the amount of compensatory mitigation here should be equal to the off-site establishment or re-establishment of a stream, vernal pool, and vernal swale complex at a ratio of three acres for every one acre of impacts (3:1), which is approximately 66 acres (given at least 22 acres of impacts to streams, vernal pools, and vernal swales on the Duarte site). A ratio greater than one to one is needed because the indirect, cumulative, and temporal losses of aquatic areas and functioning on the Duarte site are on-going and have been so for approximately 5 years. Further, consistent with the foregoing materials

from the Corps and my national experience in managing no net loss of wetland area and functioning, successful "re-establishment" of vernal pools, vernal swales, and tributary streams includes significant risk, especially in the highly variable Mediterranean climate of the California Central Valley where reliable water is scarce. Efficient sites for wetland and stream re-establishment usually include an existing albeit structurally and functionally degraded wetland or stream, such as a series of filled and contaminated vernal pools and swales that could be excavated to remove fill, cleaned up, and returned to a relatively natural wetland or stream status. By definition, wetland and stream re-establishment results in a net increase in wetland or stream area and the associated ecosystem functioning.

58. As an alternative to the approach in the foregoing paragraph, the amount of off-site compensatory mitigation here should be equal to the "re-habilitation" of an off-site stream, vernal pool, and vernal swale complex at a ratio of six acres for every one acre of impacts (6:1), which is approximately 132 acres. Re-habilitation of vernal pools, vernal swales, and tributary streams is generally less risky than re-establishment because the physical and biological platform of the target wetlands is still generally intact. Given this context, re-habilitation plans and designs necessarily focus on making wetlands and streams that already exist structurally and functionally better. The downside to this approach is that re-habilitation by definition does not include net increases in wetland or stream area and functioning. Therefore, one needs to make structural and functional improvements over more area of wetland or stream to get compensatory mitigation credits that are equal to an approach where there is a net increase in wetland or stream area and functioning.

59. Under either approach, I recommend either purchasing mitigation credits from established mitigation banks serving the Coyote Creek or Oat Creek area or purchasing, preserving, and maintaining property within the Coyote Creek or Oat Creek watersheds that can serve as one or more mitigation sites. These options generally produce the best results toward achieving no net loss of wetlands.

IV. METHODS AND REFERENCES

60. The bases for my conclusions are set forth in the reports and appendices. They include standard materials such as United States Geological Survey maps at scales of 1:100,000 and 1:24,000; National Wetland Inventory maps; Natural Resources Conservation Service soil maps; Federal Emergency Management Agency ("FEMA") flood hazard and floodplain maps; California geological maps; existing LIDAR imagery downstream of the Duarte site; and information from the Tehama County Resource Conservation District, which oversees the Coyote Creek Conservation Area ("CCCA"). The FEMA map is Figure II-7 of the report (**USA Ex. 43 at original p. 10**), reproduced below.

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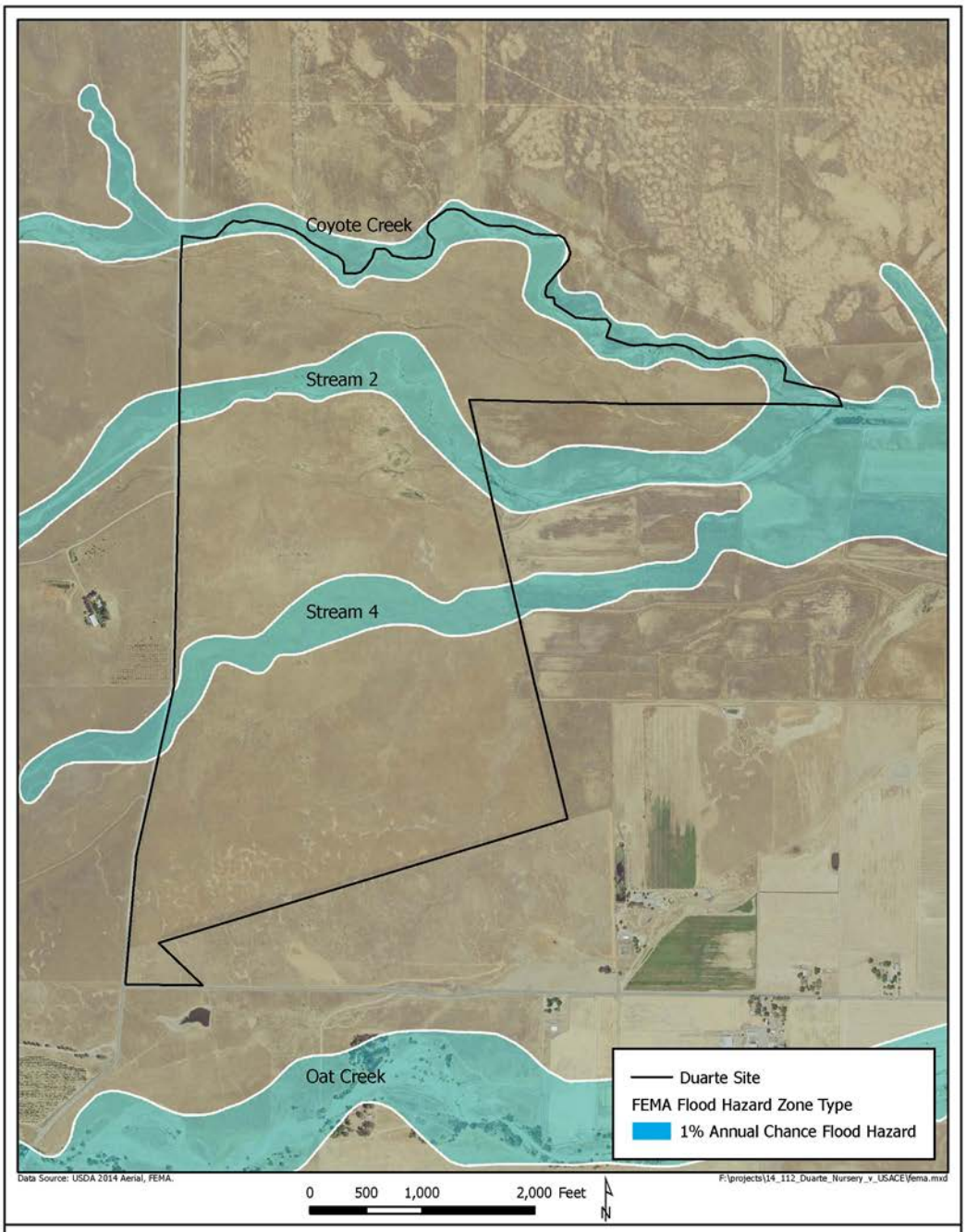

Figure II-7. FEMA Flood Hazard Zones.

61. The team and I observed references sites. I examined several potential reference areas in the vicinity of the Duarte site, including the SW corner of the Duarte site (where ripping did not occur because it is separated by a fence from the rest of the property), several sites along Oat Creek, several sites within the Coyote Creek Conservation Area, and several sites within the Thomes Creek Ecological Reserve, and in downstream reaches of Thomes Creek. Within the CCCA, there are reference areas called "Area 13" and the "Agricultural Area." Area 13 exists in a "grazed only" condition. It was never tilled and slowly permeable soil layers remain intact. The Agricultural Area does not appear to have been tilled since sometime before August 1998. Our reconnaissance field work shows that slowly permeable soil layers remain intact (i.e., the depth of tillage was shallow). The Agricultural Area was also historically and currently is grazed.

62. The team and I conducted analyses at the CCCA, which is exemplary of vernal depression, swale and associated stream landscapes in the northern Sacramento Valley. The CCCA provides excellent reference areas because it has numerous intact complexes of vernal depressions and swales and a network of streams that ultimately connect Coyote Creek to Oat Creek, and the Sacramento River. The CCCA has the following features: (a) high terrace transitioning to low terrace geomorphic surfaces; (b) low terrace transitions to floodplain and stream surfaces; (c) elevation/local relief features that are comparable to the Duarte site; (d) mapped and confirmed soil types consisting of Corning – Redding Gravelly Loams on 0 to 5% slopes; (e) a range of land uses including grazing only and grazing combined with some agriculture; (f) limited human uses other than grazing and relatively light and passive recreational uses; and (g) safe and secure/controlled access.

63. The team and I also conducted analyses on reference sites downstream from the CCCA and the Duarte site. Figure IV-2 from the report (at original p. 33), reproduced below, shows the locations of our reference sites in the Coyote Creek watershed in relation to the Duarte site and the Sacramento River.

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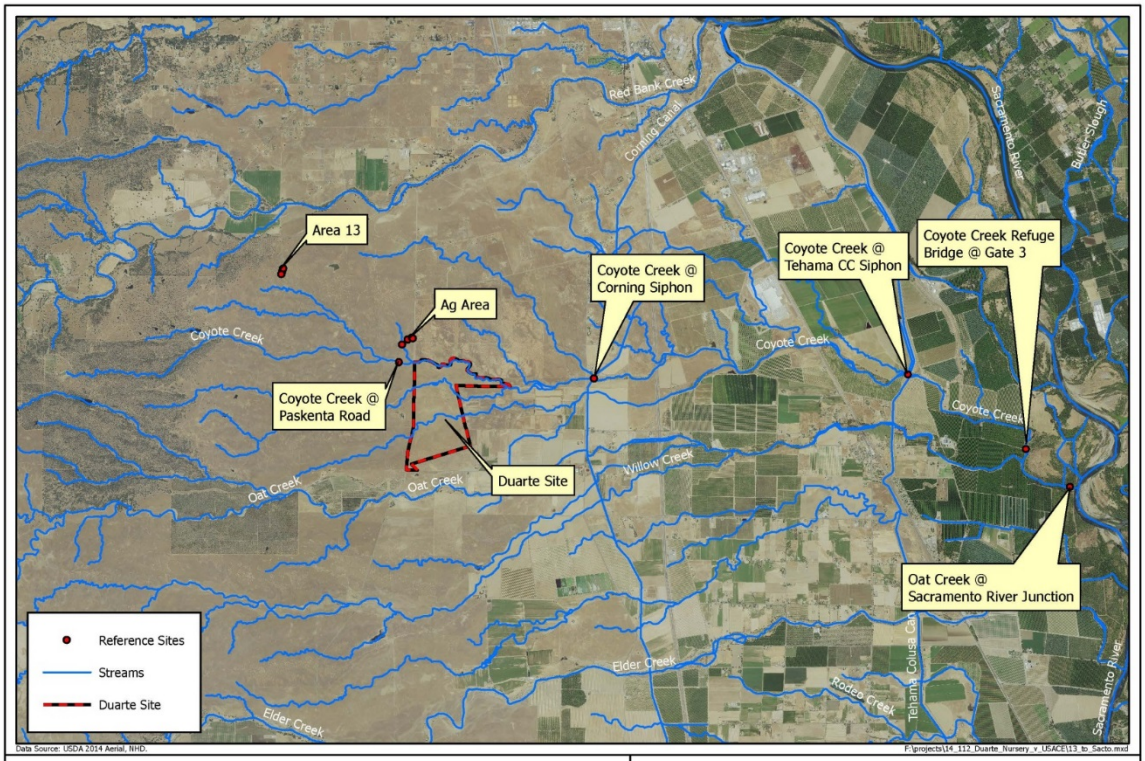

Figure IV-2. Reference site locations in the Coyote Creek watershed and connection to the Sacramento River.

64. The team and I considered standard definitions, manuals, guidance, and mapping products including:

- A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States A Delineation Manual. Robert W. Lichvar and Shawn M. McColley August 2008 (**USA Ex. 79**);
- The 1987 Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS (**USA Ex. 77**), including the "Atypical Approach" set forth in § IV.F of the Manual, which we used at the Duarte site due to the combination of site disturbances, particularly ripping, and their effects on current hydrologic, soil, and vegetation conditions; consistent with guidance for using the atypical protocol, we used several areas within the CCCA (Area 13 and the Agricultural Area) and the southwestern portion of the Duarte site as our principal reference sites;
- U.S. Army Corps of Engineers. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- Munsell Color, 2000, Munsell Soil Color Charts. Munsell Color, Macbeth Division of Kollmorgen Instruments Corp., New Windsor, NY.
- U.S. Army Corps of Engineers. 1982. "Clarification of "Normal Circumstances" in the Wetland Definition." Regulatory Guidance Letter No. 82-2.
- U.S. Army Corps of Engineers. 1986. "Clarification of "Normal Circumstances" in Wetland Definition (33 CFR 323.2(c)." Regulatory Guidance Letter No. 86-9.
- U.S. Army Corps of Engineers. 1990. "Clarification of the Phrase 'Normal Circumstances' as it pertains to Cropped Wetlands." Regulatory Guidance Letter No. 90-
- U.S. Army Corps of Engineers. 1992. "Clarification and Interpretation of the *1987 Manual*." 3-92 Memorandum.
- U.S. Army Corps of Engineers. 2007. "Practices for Documenting Jurisdiction Under

Sections 9 & 10 of the Rivers & Harbors Act (RHA) of 1899 and Section 404 of the Clean Water Act (CWA)." Regulatory Guidance Letter No. 07-01.

- USDA, NRCS. 2010. Field Indicators of Hydric Soils in the United States, Version 7.0 L.M. Vasilas, G.W. Hurt, C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX.
- Federal Register. July 13, 1994. Changes in Hydric Soils of the United States. Washington, D.C. (Hydric soil definition).
- Federal Register. September 18, 2002. Hydric Soils of the United States. Washington, D.C. (Hydric Soil Criteria).
- National Hydrologic Data Base [http://nhd.usgs.gov/]
- Scientific publications, including those by Dr. Rains that document hydrologic conditions and processes in vernal depression, swale, stream and riverine landscapes in several locations in the Central Valley of California (Rains et al. 2006, Rains et al. 2008).

65. The team and I built our own stream and wetlands delineation map. We performed a peer review of the 1994 North State (**USA Ex. 8**) and 2012 NorthStar (**USA Ex. 20**) delineations, in particular their delineation data sheets, delineation reports, and maps. According to the 1994 Corps-verified delineation, approximately 35.9 acres of streams and wetlands. At least 16.1 acres of waters of the United States existed on the Duarte property, as delineated by NorthStar and shown on the July 2012 Draft's map. We met with Len Lindstrand of North State and James Stevens and Kamie Loeser of NorthStar. We used existing maps and our Trimble GPS systems to locate mapped polygons. We walked through and examined most of the waters/wetlands polygons delineated by North State and NorthStar. Consistent with the Atypical Approach outlined in the 1987 Corps Manual, during these visits team members inspected and documented hydrology, soils and vegetation conditions, the areal limits of mapped polygons, and connections among polygons and downstream waters. As necessary, we used our reference framework to make inferences about Duarte site conditions prior to the late 2012 ripping operation. At each sampling site, we determined as a team if we agreed with either delineation (1994 or 2012) of if adjustments in the size, shape or connections among mapped polygons needed to be made. I

note that the prior delineations were complete and accurate enough to document that extensive streams, vernal pools, and vernal swales existed on the Duarte site as of 1994 and persisted until at least the early fall of 2012, prior to Duarte's late fall 2012 ripping operations. If waters/wetland areas were omitted or missed in the 1994 and 2012 delineations, we added these features. Downgradient hydrologic connections were documented using a combination of site walks by team members and where appropriate, determinations of elevation changes using my Spectre Precision Laser GL 412 level system. We used handheld Trimble Global Positioning Systems ("GPS") units to navigate and locate points in the field.

65. The team and I inspected and conducted analyses on the Duarte site, as explained at the outset of this declaration. The site assessment locations are shown in Figure V-34 of the expert report (**USA Ex. 43 at original p. 115**), which is reproduced below. Our inspection was not limited to these areas; the mainstem of Coyote Creek and all other streams on the Duarte site were traversed to verify connectivity with vernal pools and vernal swales.

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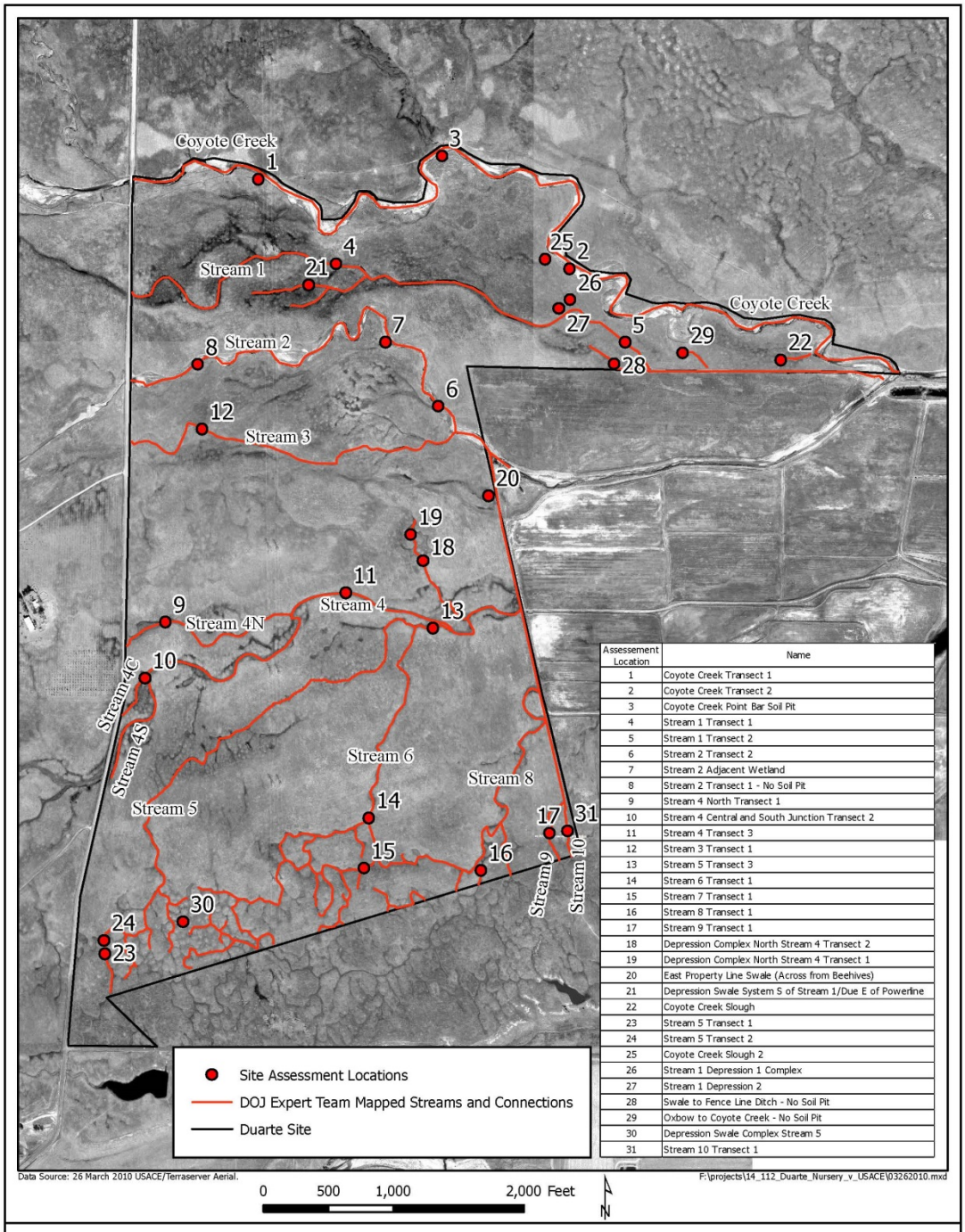

Assessement Location	Name
1	Coyote Creek Transect 1
2	Coyote Creek Transect 2
3	Coyote Creek Point Bar Soil Pit
4	Stream 1 Transect 1
5	Stream 1 Transect 2
6	Stream 2 Transect 2
7	Stream 2 Adjacent Wetland
8	Stream 2 Transect 1 - No Soil Pit
9	Stream 4 North Transect 1
10	Stream 4 Central and South Junction Transect 2
11	Stream 4 Transect 3
12	Stream 3 Transect 1
13	Stream 5 Transect 3
14	Stream 6 Transect 1
15	Stream 7 Transect 1
16	Stream 8 Transect 1
17	Stream 9 Transect 1
18	Depression Complex North Stream 4 Transect 2
19	Depression Complex North Stream 4 Transect 1
20	East Property Line Swale (Across from Beehives)
21	Depression Swale System S of Stream 1/Due E of Powerline
22	Coyote Creek Slough
23	Stream 5 Transect 1
24	Stream 5 Transect 2
25	Coyote Creek Slough 2
26	Stream 1 Depression 1 Complex
27	Stream 1 Depression 2
28	Swale to Fence Line Ditch - No Soil Pit
29	Oxbow to Coyote Creek - No Soil Pit
30	Depression Swale Complex Stream 5
31	Stream 10 Transect 1

Figure V-34. Duarte Site assessment locations.

66. Drs. Nutter, Rains, Stewart and I developed a "Guidebook for Assessment of the Functions of Low Order Riverine, Slope, and Depressional Waters/Wetlands Situated on Pliocene and/or Pleistocene Sandstone, Shale, and Gravel Deposits in the North Central Valley, California" (**USA Ex. 48**). This Guidebook was developed specifically to assess the condition of and any changes in the hydrologic, biogeochemical, plant community, and faunal support/habitat ecosystems functions of riverine (stream), slope (swale) and depressional waters/wetlands on the Duarte site and in the Coyote and Oat Creek watersheds. These changes could arise, for example, due to ripping activities on site, diversion of water flowing to the Duarte Site from the west, ditching, and consolidation drainage. Consistent with Federal guidance for use of best available science (Federal Register, 1997) this Guidebook relies on the hydrogeomorphic ("HGM") approach for assessment of waters/wetland ecosystem functions (Brinson, 1993 a and b; Brinson et al., 1995; Brinson, 1995; Smith et al., 1995; Federal Register, 1997). Means and methods used to develop the Guidebook and recommended field sampling protocols are detailed in the introductory sections of the Guidebook.

67. I have carefully considered restoration options on the Duarte site in a context that combines tactical intervention into hydrologic, soil, and plant community assembly processes along with establishment of buffers around the waters/wetlands and a commitment to waters/wetland restoration goals. Duarte site restoration goals that I considered protect the tight linkages of Duarte site waters/wetlands hydrologic processes to the surrounding upland landscapes. Additional detail and explanation on the subject of on-site ecosystem restoration work can be found in the report (**USA Ex. 43 at original pp. 157-62**).

68. The bases for my conclusions regarding compensatory mitigation include not only my observations of the Duarte site and assessment of the functional loss (as discussed elsewhere in this declaration), but my experience with the process for applying for a Clean Water Act permit for discharges of dredged or fill material and consideration of permitting materials from the Corps of Engineers. These permitting materials include those that I understand would have been relevant at the time of Duarte's ripping operation: the Corps' 2008 "Compensatory

Mitigation for Losses of Aquatic Resources; Final Rule" (**USA Ex. 6**) and the Corps' February 2012 "Standard Operating Procedure for Determination of Mitigation Ratios" (**USA Ex. 62**).

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I declare under penalty of perjury that my conclusions set forth above and in the reports and appendices referenced herein are true and correct.

Executed on August 4, 2017.

Lyndon C. Lee, Ph.D., PWS

Exhibit A: CV of Lyndon C. Lee, Ph.D., PWS

RESUME

Lyndon C. Lee, Ph. D., PWS

President and Principal Ecologist
L.C. Lee & Associates, Inc.
2442 NW Market Street, #392
Seattle, WA 98107
Tel: 206.979.5633
Email: lyndon@lcleeinc.com

Lyndon C. Lee is a national wetland and river science and regulatory expert. He works as the Principal Ecologist and President of L.C. Lee & Associates, Inc. and Director of the National Wetland Science Training Cooperative. His emphasis is on the application of good science and design to projects that interact with federal, state, and local programs regulating activities in wetland, river, and forested ecosystems.

Lyndon founded L.C. Lee & Associates, Inc. (LCLA) in 1990. During the interval late 2004 - 2009, Lyndon idled LCLA and led the Ecosystem Sciences and Restoration Services (ESR) teams at BBL/Arcadis, Entrix and WSP. ESR teams included senior scientists and technical teams who had applied national and international experience in wetland and river science, conservation biology, design/build approaches to ecosystem restorations, regulatory assistance, and training. In addition to waters/wetlands, ESR focused operations in many different types of ecosystems including forests, grasslands, riparian areas, urban landscapes, brownfields, and other contaminated sites. In August of 2009, Lyndon re-started L.C. Lee & Associates, Inc.

From 1986 to 1989, Lyndon served as the Senior Wetland Ecologist for the U.S. Environmental Protection Agency (EPA) Headquarters Office of Wetlands Protection, Washington, D.C. During this time, he was involved directly with the formulation and application of national waters/wetlands policy, basic and applied research, and regulatory/enforcement procedures. At EPA, Dr. Lee directed a national team of EPA technical and regulatory experts who dealt with top priority waters/wetland issues throughout the U.S. He also served as the liaison from the Office of Wetlands Protection to the EPA Superfund and RCRA programs. During his tenure at EPA, Lyndon led the team that produced a landmark study of cumulative impacts to bottomland hardwood forests of the southeastern U.S. He also founded the National Wetland Science Training Cooperative, which he has continued to run since leaving EPA.

Lyndon came to EPA from the University of Georgia Institute of Ecology, Savannah River Ecology Laboratory (SREL), Aiken, South Carolina. During the interval 1984 – 1986, he was the Research Manager of the SREL Division of Wetlands Ecology. At SREL, he managed wetland research programs at the U.S. Department of Energy's Savannah River Nuclear Facility and National Environmental Research Park. Savannah River is a principal production site for weapons-grade plutonium and many other radionuclides. SREL's basic and applied research focused on (a) assessment and monitoring of the effects of radionuclide production on

riverine waters/wetland ecosystems, (b) management of the movement and fate of radionuclide, heavy metal, and organic contaminants in waters/wetlands, and (c) restoration of wetland and river ecosystems degraded by chronic thermal and/or contaminant inputs.

While pursuing his graduate degrees, Lyndon spent six years researching the structure and functioning of riverine waters/wetlands and riparian forested ecosystems throughout the Pacific Northwest and Northern Rocky Mountain regions. He focused on interactions among physical and geochemical processes and development of the structure and functioning of floodplain and riparian plant communities. Between his Master's and Ph.D. programs, (1977 – 1980) he worked as a Senior Habitat Ecologist for the Interagency Grizzly Team's Border Grizzly Project, which was based at the Montana Forest and Range Conservation Experiment Station, Missoula, Montana. There he developed, conducted, and supervised research dealing with the definition, description, classification, protection, and restoration of grizzly bear and grey wolf habitat throughout the northern Rocky Mountains, southeastern British Columbia, and in northern Chihuahua, Mexico. Lyndon's work highlighted the importance of waters/wetlands ecosystems as essential components of critical habitat for endangered, free-ranging grizzly bears and other wide-ranging carnivores.

The scope of Lyndon's consulting experience over the last 22 years has taken him to all areas of the U.S., and to Canada, Europe, Japan, South America, Australia and many Pacific and Caribbean islands. He has completed more than 200 contracts with federal, state, and local government agencies, private industry, research and conservation organizations, and private landowners. Dr. Lee has focused most of his day to day efforts on the (a) application of science to the design and construction of wetland and river restoration projects, and (b) development and implementation of practical silvicultural, and land-use management programs for wetlands and riverine ecosystems. Currently Lyndon's research interests are focused on responses of wetland, river, and forested ecosystems to perturbation, assessment of site-specific and cumulative impacts to waters/wetland ecosystems, design and construction of waters/wetlands ecosystem restorations, and management of the movement and fate of contaminants in waters/wetlands ecosystems.

In addition to his technical and applied work, Lyndon continues to work as a U.S. national expert and team leader on federal U.S. Clean Water Act jurisdictional and functional assessment issues as they relate to management of waters/wetlands. In this capacity, his emphasis always has been on the application of science to federal, state, and local programs that focus on protection of aquatic ecosystems. He has a great deal of experience in U.S. federal regulatory and enforcement procedures, assessment of impacts to waters/wetlands ecosystems, and training of others in all of the above. For example, since 1993, Lyndon has been one of the principal architects responsible for development and implementation of the "Hydrogeomorphic Approach" (HGM) for assessment of waters/wetlands ecosystem functions. In this regard, he has extensive practical knowledge of ecological modeling, and application of science to regulatory, enforcement, and restoration programs. Further, since 1989, Lyndon has served as a lead expert and technical team leader for the National Resources Conservation Service, the U.S. Department of Justice - Environment and Natural Resources Defense Division (DOJ/ENRD), several U.S. EPA Regions, and the U.S. Army Corps of Engineers. Working with DOJ, Lee has helped win or settle at least ten major Clean Water Act cases that have been argued in three Districts of U.S. federal court, three circuit courts of appeal, and the U.S. Supreme Court.

Lyndon has been active in teaching and training throughout his career. He held the position of Assistant Research Professor at the University of Georgia's Institute of Ecology while working at the Savannah River Ecology Laboratory and at EPA Headquarters. He has also served as an Adjunct Assistant Professor at both the University of South Carolina and George Mason University. While at the universities of Washington and Montana, Lyndon taught or assisted in teaching a variety of forestry and natural resource management courses. He also served as a principal instructor for the Montana Forest Habitat Type Short Courses, sponsored by the U.S. Forest Service Rocky Mountain Forest and Range Experiment Station. Since 1987, Dr. Lee has led over 100 waters/wetlands training courses for EPA and several other federal, state, and local agencies and organizations through the National Wetland Science Training Cooperative.

Lyndon is an active member of the scientific community. He has published two books, more than 25 refereed professional papers and chapters, many HGM Guidebooks, and over 200 technical reports. He has presented more than 70 oral papers and seminars at professional meetings and conferences. He edited the *Bulletin* and served on the National Board of Directors of the Society of Wetland Scientists (SWS) for seven years. Lyndon co-founded the "SWS Student Awards Program" and endowment, and served as the Program Chairman for two national SWS meetings (Seattle, 1987 and Washington, D.C., 1988). In 1992, Lee was awarded Life Membership in the Society of Wetland Scientists for his service. In 1995, he earned certification as a Professional Wetlands Scientist (#385).

Lyndon C. Lee, Ph.D., PWS
Principal Ecologist & President
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I. EDUCATION

Ph.D. (April 1983) - College of Forest Resources, University of Washington, Seattle, Washington. *Majors*: Ecosystem Ecology, Wetland & River Science. Attended from 1980 - 1983.

M.Sc. (March, 1979) - School of Forestry, University of Montana, Missoula, Montana. *Majors*: Forest Ecology, Silviculture. Attended from 1975 - 1977.

B.S. (December, 1974) - School of Forestry, University of Montana, Missoula, Montana. *Majors*: Forest Ecology/Silviculture.

Tufts University, Medford, Massachusetts. *Major*: Botany. Attended from 1969 - 1971.

II. SUMMARY OF PROFESSIONAL EMPLOYMENT

A. Applied Science & Management

President and Principle Ecologist, L.C. Lee & Associates, Inc. and Director, National Wetland Science Training Cooperative. (August 2009 – Present)

Principal Ecologist & Vice President, Ecosystem Science & Restoration Services, WSP Environment & Energy, Seattle, Washington (February 2007 – August, 2009)

Principal Ecologist & Vice President, Ecosystem Science & Restoration Services, BBL/ Arcadis, Seattle, Washington (June 2004 – January 2006)

President and Principle Ecologist, L.C. Lee & Associates, Inc. and Director, National Wetland Science Training Cooperative. Independent private consultant specializing in wetland and river science, ecosystem restoration, and regulatory assistance and training. L.C. Lee & Associates, Inc. (LCLA) was a nationally based environmental consulting firm with offices in Seattle, Washington and Alameda (Bay Area), California. Dr. Lee's emphasis within the company was on applied science including (a) design and construction of waters/wetlands and forested ecosystem restorations, (b) assessment of impacts to waters/wetlands, (c) management of the movement and fate of contaminants in waters/wetland ecosystems, and (d) training of environmental professionals. During the fourteen years that Lee ran LCLA, he often served the US federal government as a national waters/wetlands regulatory expert. In this capacity, Lee

served as a national technical team member and leader on several complicated and/or controversial technology development, restoration and/or Clean Water Act enforcement projects throughout the U.S. and abroad. Lee's emphasis was always on the application of best available science to federal, state and local regulatory programs that focus on protection and restoration of aquatic ecosystems (February 1989 – June 2004).

Senior Wetlands Ecologist, Office Of Wetlands Protection, U.S. Environmental Protection Agency, Washington, DC & ***Assistant Research Ecologist***, Savannah River Ecology Laboratory, Institute of Ecology, University of Georgia. This appointment was a 3-year Cooperative Agreement between the University of Georgia's Savannah River Ecology Laboratory and the EPA Headquarters Office of Wetlands Protection. Dr. Lee functioned as the Senior Wetland Scientist responsible for (a) National Technical Oversight and Assistance of EPA Regional Wetlands Protection Programs, (b) National Training Programs In Wetland and Ecosystem Sciences and the U.S. Clean Water Act, (c) National Office Of Wetlands Protection Liaison to the Superfund and RCRA programs, and (d) Headquarters EPA - University Research Liaison (May 1986 - February 1989).

Research Manager and Assistant Research Ecologist, Division of Wetlands Ecology, Savannah River Ecology Laboratory (SREL), Institute of Ecology, University of Georgia, Aiken, South Carolina. Dr. Lee served as the supervisor of 11 PhD staff, 20 technicians and the $3,500,000/year Wetlands Research Program based at the U.S. Department of Energy Savannah River Nuclear Facility and National Environmental Research Park. Program focus was on (a) assessment and monitoring of the effects of weapons grade radionuclide production on waters/wetland ecosystems, (b) management of the fate, transport and removal of radionuclide, heavy metal, and complex organic contaminants in waters/wetlands, and (c) restoration of waters/wetland ecosystems degraded by thermal effluents and radionuclide and heavy metal contamination (Dr. R. R. Sharitz, Supervisor) (June 1984 - June 1986).

Research Associate, College of Forest Resources, University of Washington, Seattle, WA. Lee completed doctoral research on wetland and river ecosystems throughout the Pacific Northwest, including Alaska. Study design and direction, grant and contract development and management, employee and field-crew supervision, laboratory and data analyses, dissertation preparation, delivery, and publication of peer reviewed articles (Drs. C. C. Grier and T. M. Hinckley, Co-Chairmen) (January 1980 - June 1983).

Principal Habitat Ecologist, Interagency Grizzly Team, Border Grizzly Project. This job was with the Montana Forest and Conservation Experiment Station and Cooperative Wildlife Studies Unit, University of Montana, Missoula, Montana. Lee developed, conducted and supervised research on the definition, description, classification, protection and restoration of grizzly bear and grey wolf habitats throughout the northern Rocky Mountains, SE British Columbia, and northern Mexico. Responsibilities included research project design, planning, and direction, grant proposal preparation & funding, employee, student and field crew supervision in very remote areas, laboratory and data analyses, report development and publication, wildlife habitat impact assessment, and mitigation consultation (Drs. C. J. Jonkel and R. Ream, Directors) (January 1978 - January 1980).

Research Assistant, School of Forestry, University of Montana, Missoula, Montana. Completed Master's study on riparian/wetland ecosystems in mid-montane and high elevation habitats throughout western Montana (December 1975 - June 1977).

Forestry Technician, U.S. Forest Service, Intermountain Forest and Range Experiment Station, Missoula, Montana. Wind River Range, near Dubois, Wyoming and Coram Experimental Forest, Hungry Horse, Montana. Lee worked as a project scientist and forester documenting (a) management approaches for chipped slash in high elevation *Pinus contorta* forests, (b) field testing a habitat type classification for the Wind River Range, and (c) measuring surface and shallow subsurface runoff from clearcut *Larix occidentalis* forests (June - November 1975).

Project Technician, Silvicultural Harvest Practices Demonstration Area, Lubrecht Experimental Forest, School of Forestry, University of Montana, Missoula, Montana. Lee worked as the project technician, setting up demonstrations of silvicultural systems for mid-montane forests in the Garnet Range, Montana (June - September 1973).

Research Technician, Lubrecht Ecosystems Project, School of Forestry, University of Montana, Missoula, Montana. Lee worked as a survey crew member (June - September 1972).

B. Academic

Assistant Research Ecologist, Division of Wetlands/Ecology, Savannah River Ecology Laboratory, Institute of Ecology, University of Georgia, Aiken, South Carolina. Created and administered a Cooperative Agreement with the Office of Wetlands Protection, US Environmental Protection Agency (EPA), Washington, DC to serve as the Senior Scientist in the EPA Headquarters Office of Wetlands Protection. Lee also provided national EPA Programs with training and regional technical assistance. During the course of this appointment, Lee served on two doctoral and two master's committees. He also supervised one AAAS Science and Engineering Fellow, one EPA Senior Fellow, and three interns (May 1986 - February 1989).

Adjunct Assistant Professor, Department of Biology, George Mason University, Fairfax, Virginia (March 1987 - December 1990).

Adjunct Assistant Professor, Department of Biology, University of South Carolina, Columbia, South Carolina (December 1987 - February 1989).

Assistant Research Ecologist, Institute of Ecology, Savannah River Ecology Laboratory, University of Georgia. Postdoctoral (2), graduate (2) and undergraduate (1) student supervision in wetlands and ecosystems ecology at the Savannah River Ecology Laboratory, Aiken, South Carolina (June 1984 - May 1986).

Teaching Assistant, College of Forest Resources, University of Washington, Seattle, Washington (Silviculture, Plant Physiology) (January 1980 - January 1982).

Principal Instructor, Forest Habitat Classification & Silvicultural Management Short Course Series, MacMillan Bloedel Ltd., Woodlands Services, Nanaimo, British Columbia, Canada. Developed and delivered training for MacMillan Bloedel technical and field staff on forest site classification and "best silvicultural management practices" throughout Vancouver Island and the south coast of British Columbia, Canada (June - September 1981).

Teaching Assistant, Montana Forest and Conservation Experiment Station & U.S. Forest Service. Restructured the Montana Forest Habitat Type course curriculum, and authored *A Training Manual for Montana Forest Habitat Types* (January 1976 - June 1978).

Teaching Assistant, School of Forestry, University of Montana, Missoula, Montana (Forest Ecology, Silviculture, Soil Chemistry, Dendrology, Forest Ecosystem Ecology and Classification) (January 1975 – June 1977).

Instructor, Montana Forest Habitat Type Short Courses. Conducted and administered cooperative continuing education in forest habitat type classification and timber management for forest and range specialists from federal and state agencies, universities, corporations and small private entities from throughout the Rocky Mountains (Month of June, 1975 – 1979).

III. SELECTED PROJECT EXPERIENCE

A. Completed Ecosystem Restoration Projects

Presidio Trust/National Park Service, San Francisco California. Planned and designed the restoration of Dragonfly Creek, a perennial creek tributary to San Francisco Bay within the San Francisco Presidio, Golden Gate National Recreation Area (2004 – 2005).

Stanford University, Palo Alto, California. Planned, designed, permitted, and constructed a series of waters/wetlands in the Stanford Academic Reserve that served as breeding/metamorph aquatic habitat for the California Tiger Salamander (*Ambystoma californiense*) (2003 – 2005).

U.S. Department Of Justice, Washington, D.C. Borden Ranch, Galt, California. Developed plans/recommendations for mitigation of non-compliance activities in agricultural waters/ wetlands (2001).

Natural Resources Conservation Service and Headwaters Ranch Cooperative, Quilcene, Washington, Andrews Creek Restoration (2000 – Present).

University of Washington-Bothell/ Cascadia Community College Co-located Campus,

Bothell, Washington. Environmental assessment, planning, permitting, mitigation design, construction supervision, native plant nursery development and operation, and monitoring of the 58- acre stream ecosystem restoration in North Creek (1994 to 2004).

City Of Pacifica, California
San Pedro Creek Restoration. Flood Control/ Steelhead and California red-legged frog habitat restoration) (1990 – 2004). *Calera Creek Restoration*: Pacifica Wastewater Treatment Plant.

Environmental planning, permitting, grant procurement, mitigation design, endangered species issues, stream design, stream native plant propagation, construction supervision, and compliance monitoring of a 18- acre riparian waters/wetlands restoration on California's north-central coast (1989-2004).

Milagra Creek Restoration: Flood control (1996 - 1997) *Upper Calera Creek*: Riverine restoration in association with new police station (2000 – 2004). *Capistrano Bridge*: Rebuilt fish passage / riparian restoration (2001 – 2004).

Boeing Company, Seattle, Washington. Longacres Park Waters/Wetlands and Aquatic Gardens (1990-1995).

City of New York, New York. Restoration Advisor/Peer Review for waters/wetlands restoration projects (1993).

City of Portland, Oregon: Ramsey Lake Storm Water Treatment Wetlands at the Willamette Columbia River confluence (1995-1998).

Washington State Department of Corrections, Monroe, Washington. Restoration of forested slope wetlands (1999 – 2002).

Washington State Department of Corrections, Olympia and Aberdeen, Washington. Restoration of a tidally influenced reach of Newskah Creek, a tributary to Gray's Harbor, Washington (1998 – 2004).

Robert Cole Property. Tidal marsh restoration in Puget Sound, Anderson Island, Washington (1996 – 2002).

Shell Oil Company, Anacortes Refinery Clean Fuels Project, Anacortes, Washington. Permitted, designed mitigation, supervised construction, and monitored 16-acre restoration site adjacent to Padilla Bay National Estuarine Research Reserve (1993-2001).

Shell Oil Company/ Tesoro, March Point Refinery, Anacortes, Washington. Slope and riparian waters/wetland restoration in a tributary to the Padilla Bay national Estuarine Reserve (1992 – 2001).

International Paper, Ticonderoga, New York. Main Wastewater Pipeline Replacement Project. Emergency response, environmental assessment, planning, permitting, mitigation design,

restoration construction, monitoring of a 63-acre waters/wetland ecosystem adjacent to Lake Champlain (1992 -2000).

Shell Oil Company, Sewaren, New Jersey. Tidal marsh restoration in a tributary to the Arthur Kill/New York Harbor (1990-1992).

Boeing Company, Seattle Washington Customer Services Training Center. Master planning, land acquisition, design, permitting, and construction of the Longacres Corporate Park waters/wetlands, Boeing Customer Service Training Center (1990-1995).

National Arboretum, Washington, D.C. Restoration Advisor/Peer Review National Aquatic Gardens, Anacostia River Restoration (1989-1991).

U.S. Department Of Energy/University Of Georgia, Savannah River Plant, Aiken, South Carolina. Designed and constructed the 93 acre "L–Reactor" cooling lake and associated waters/wetlands (1984-1989).

Shurgard Storage, Seattle, Washington. Richards Creek Restoration. Resolve non-compliance issues in a salmon-bearing tributary to Lake Washington (1983-1986).

B. Ecosystem Restoration Projects

Bonhoeffer Botanical Gardens - Stanwood, Washington. Resolve noncompliance issues relating to clearing and earthwork in forested wetlands - develop a botanical gardens and learning center. (2010 - 2012)

Hoag Restoration, Mount Vernon, Washington. Restore a series of depressional wetlands on the floodplain of the Skagit River, city of Mount Vernon, Washington (2011 - Present)

Big Wave Project, Half Moon Bay, California. Environmental assessment, planning, permitting, waters/wetlands design to date; design and develop native plant nursery, permit and construction 7-acre landscape restoration pending (2008 – Present).

Chevron EMC, San Luis Obispo, California. San Luis Obispo Tank Farm Remediation and Landscape Restoration, San Luis Obispo, CA. Environmental assessment, planning, permitting, landscape mitigation design to date; design and develop native plant nursery, permit and construction 130-acre landscape restoration pending (2008 - Present).

City of Mount Vernon, Washington. Kulshan, Logan, and Trumpeter Creeks. Restore riverine forested ecosystem structure and functioning to three different salmon bearing urban creeks owned and managed by the City of Mount Vernon Integrate each restoration with the City's existing park and trail networks (2006 – present).

Lobisser Property, Bainbridge Island, Washington. Remediate contamination and restore estuarine ecosystem structure and functioning to a 2.5 acre tidal wetland in Port Madison, (Puget Sound), Washington (2006 – 2010).

Elma Horse Ranch, Elma,Washington. Restore riverine forested ecosystem structure and functioning to a 600 ft (3 acres) reach on an unnamed, swalmon-bearing tributary of the Chehalis River (2006 – 2014).

C. Expert Witness Work and Testimony

Expert Witness, US Department of Justice Environment and Natural Resources Division. Provide expert services/technical team leadership in the matter of Duarte v. U.S. Army Corps of Engineers (August, 2014 – Present).

Expert Witness, US Department of Justice Environment and Natural Resources Division. Provide expert services/technical team leadership in the matter of U.S. v. Greka Oil. This project focuses on documentation and restoration of the impacts of large-scale crude oil discharges to waters of the U.S., including wetlands - US Environmental Protection Agency Region IX, San Francisco, California. (November 2008 – Present)

Expert Witness, US Department of Justice Environment and Natural Resources Division. Provide expert services/technical team leadership in the matter of U.S. v. Anchordoguy. This project focuses on documentation and restoration of the impacts of earthwork and development in vernal pools and swales and other waters of the U.S., US Environmental Protection Agency Region IX, San Francisco, California. (Settled).

Expert Witness, US Department of Justice Environment and Natural Resources Division. Provide expert services/technical team leadership in the matter of U.S. v. Port of Tacoma. This project focuses on documentation and restoration of the impacts of earthwork in wetlands and other waters of the U.S. in Tacoma, Washington. U.S. Environmental Protection Agency Region X, Seattle, Washington (April, 2011 – December, 2013 - Settled).

Expert Witness, US Department of Justice Environment and Natural Resources Division. Provide expert services/technical team leadership in the matter of U.S. v. Lipar. This project focuses on documentation and restoration of the impacts of earthwork and development in forested wetlands and other waters of the U.S., US Environmental Protection Agency Region VI, Dallas, Texas (June, 2011 – Present).

Expert Witness, US Department of Justice Environment and Natural Resources Division. Provide expert services/technical team leadership in the matter of U.S. v. Rader Farms. This project focuses on documentation and restoration of the impacts of mechanical clearing, earthwork, drainage, and conversion of forested wetlands to blueberry production, Whatcom County, Washington. US Environmental Protection Agency Region X, Seattle, Washington (November, 2012 – Present).

Expert Witness, US Department of Justice Environment and Natural Resources Division. Provide expert services/technical team leadership in the matter of U.S. v. Klock. This project focuses on documentation and restoration of the impacts of mechanical clearing, earthwork, drainage, and conversion of forested wetlands to agricultural production, Snohomish County, Washington. US Environmental Protection Agency Region X, Seattle, Washington (November, 2013 – Present).

Expert Witness, US Department of Justice Environment and Natural Resources Division. Provide expert services/technical team leadership in the matter of U.S. v. Case. This project focuses on documentation and restoration of the impacts of levee construction in the North Fork Santiam River, Oregon. US Environmental Protection Agency Region X, Seattle, Washington (October, 2105 – Present).

Expert Witness, US Department of Justice, **Environment and Natural Resources Division.** Provide expert services/technical team leadership to the U.S. Department of Justice in the matter of U.S. v. Alaska Department of Transportation, throughout the Kenai Peninsula, Alaska (Court # A01-378 CV(RRB)). This project focuses on documentation of unauthorized hardening of several river and stream reaches and restoration of hardened reaches using bioengineering, installation of large wood jams, etc. (Outcome: Settled).

Expert Witness, US Department of Justice, Environment and Natural Resources Division and US Environmental Protection Agency Region IV, Atlanta, Georgia. Provide expert services / technical team leadership in the matter of U.S. v. Cundiff. This case focused on documentation and restoration of the impacts of large-scale mechanized land clearing in bottomland hardwood forested waters/wetlands in Muhlenberg County, Kentucky. U.S. Won in District Court (6th Circuit -480F. Supp. 2d 940 – 945) and in the 6th Circuit Court of Appeals (Nos. 65-5469/5905; 07-5630) (November 2007 - February 2009).

Witness, US Department of Justice, Environment and Natural Resources Division, Denver, Colorado. Provide expert services/technical team leadership to the Department of Justice in the matter of U.S. v. Abeldgaard *et al.,* Stariski Creek, Kenai Borough, Alaska (Court #: A01-378 CV(RRB). This project involves documentation of unauthorized filling in and restoration of large slope fen wetlands on the Kenai Peninsula. (Outcome: Pending; 2002 – Present).

Expert Witness, US Department of Justice, **Environment and Natural Resources Division**, Washington, DC – Expert witness and technical team leader for the U.S. Department of Justice in the matter of U.S. v Adams Brothers Farming, Inc. *et al.* (Case No. 10074522). Outcome: Trial bifurcated. U.S. won both jurisdictional and impact issues in 9th Circuit District Court, resulting in restoration orders and civil penalties in excess of $1,000,000 (2000 – 2004).

King County, Washington, **Griffin v. Anderson.** Outcome: arbitrated settlement and restoration of waters/wetlands ditched and drained for water management (2000 – 2001).

Parviz Mohandessi in Mohandessi v. State of Washington, Department of Ecology and City of Sammamish. Outcome: Washington State Coastal Commission ordered revision of State Determination(s) of Ordinary High Water mark on Lake Sammamish, Washington (2001).

Expert Witness, US Department of Justice, **Environment and Natural Resources Division**, Washington, D.C. Provided expert services to Department of Justice and US Environmental

Protection Agency, Region IX in the matter of Borden Ranch Partnership vs. U.S. Army Corps of Engineers and U.S. Environmental Protection Agency. This landmark case focused on documentation and restoration of the impacts of large-scale deep ripping of waters/wetlands in grazed pastures during conversion of these lands to vineyards. Outcome: Won in U.S. District Court, 9th Circuit Court of Appeals, and U.S. Supreme Court (1997 – 2000).

Washington State Attorney General. Expert testimony in State vs. 180th Associates, *et al.* Outcome: Settled in favor of Washington State (1993).

Expert Witness, Land and Natural Resources Division, US Department of Justice, Washington, DC. Served as the US Department of Justice, US Army Corps, and US Environmental Protection Agency wetlands expert in the matter of Russo Development Corporation vs. Reilly (Civil No. 87-3916 (HLS)(D.N.J.). This case focused on filling of tidal "meadowlands" waters/wetlands adjacent to the Hudson River near Newark, N.J. Settled in 1990.

Expert Witness, Land and Natural Resources Division, US Department of Justice, Washington, DC. Served as the U.S. Department of Justice, U.S. Army Corps and U.S. EPA wetlands expert in the matter of United States Of America vs. F. Wayne McLeskey, Jr. (Civil Action No. 89-54-N). (Jury Trial). This case focused on unauthorized clearing and filling of tidal wetland forests along a tributary to the Chesapeake Bay in Virginia Beach, VA. Outcome: Settled in favor of the U.S. prior to jury deliberation) (1989).

Expert Witness, Land and Natural Resources Division, U.S. Department of Justice, Washington, DC. Served as the US Department of Justice wetlands expert in the matter of Bayou Marcus Livestock & Agricultural Co. vs. US Environmental Protection Agency and US Army Corps of Engineers [(No. 88-30275-WEA (N.D. Florida)]. This case focused on mechanized clearing and drainage of bottomland hardwood forests near Pensacola, Fl. Outcome: Won on summary judgment) (1989).

C. Waters/Wetlands Ecosystem Functional Assessment Models, Methodologies, and Guidebook Development Programs and Publications

WSP Environment & Energy. 2007. *Operational Field Draft Guidebook to Assessment of Riverine, Slope and Depressional Waters/Wetlands Functions at the Chevron Tank Farm, San Luis Obispo, California***.** Consultant's report developed for Padre Associates, Inc. for use by Chevron EMC at San Luis Obispo, California Tank Farm. November 2007. (**L. C. Lee**, principal author).

Lee, L. C., K. L. Fetherston, A. K. Knox, and P. L. Fiedler. 2008. *Draft Guidebook to Assessment of Riverine, Slope and Depressional Waters/Wetlands in the City of Mount Vernon, Washington.* Prepared for the City of Mount Vernon by WSP Environment & Energy.

Entrix, Inc. 2006. *Operational Field Draft Guidebook to Assessment of Estuarine Fringe Waters/Wetlands Functions at Shell Pond, Pittsburg, California***.** Consultant's report developed for Pacific Gas & Electric Company, San Ramon, California (**L. C. Lee**, principal author).

National Wetland Science Training Cooperative. 2004. *Guidebook to Hydrogeomorphic Functional Assessment of Riverine Waters/Wetlands in the Santa Margarita Watershed.* Peer Review Draft, (1977). Operational Draft, (2004). In cooperation with U.S. EPA, Region IX, California Coastal

Conservancy, California Regional Water Quality Control Board (San Diego). (**L. C. Lee**, principal author).

Lee, L. C., Fiedler, P.L., Stewart, S.R., Curry, R.R., Partridge, D.J., Mason, J.A., Inlander, E.M., Almy, R.B., Aston, D.L., Spencer, M.E. 2001. *Draft Guidebook for Reference Based Assessment of the Functions of Riverine Waters/Wetlands Ecosystems in the South Coast Region of Santa Barbara County, California*. In cooperation with Santa Barbara County Water Agency, Santa Barbara, CA and U.S. EPA Region IX.

Brinson, M. M., R. D. Smith, D. F. Whigham, **L. C. Lee**, R. D. Rheinhart, W. L. Nutter. 1998. Progress in development of the hydrogeomorphic approach for assessing the functioning of wetlands. Pages 383- 406, in A. J. McComb and J. A. Davis, editors, *Wetlands for the Future*. Gleneagles Publishing, Adelaide, Australia.

Lee, L. C., M. L. Butterwick, J. L. Cassin, R. A. Leidy, J. A. Mason, M. C. Rains, L. E. Shaw, E. G. White. 1997. *Draft Guidebook for Assessment of the Functions of Waters of the U.S., Including Wetlands, on the Borden Ranch, Sacramento and San Joaquin Counties, California.* Seattle, Washington. In cooperation with U.S. Department of Justice and U.S. EPA Region IX.

National Wetland Science Training Cooperative. 1997. *Guidebook for the Hydrogeomorphic Assessment of Temporary and Seasonal Prairie Pothole Wetlands.* Operational Draft. In cooperation with Natural Resource Conservation Service Wetlands Institute, Wash. DC. (**L. C. Lee**, principal author).

National Wetland Science Training Cooperative. 1996. *Draft Guidebook for the Application of HGM Functional Assessments in Precipitation-Driven Wetlands in Interior Alaska*. In cooperation with State of Alaska, Department of Environmental Conservation and U.S. EPA Region X. (**L. C. Lee,** principal author).

National Wetland Science Training Cooperative. 1996. *Draft Regional Guidebook to Functional Assessments in Riverine Wetlands and Slope Wetlands in Southeast Alaska.* In cooperation with the State of Alaska, Department of Environmental Conservation, U.S. EPA Region X, Natural Resources Conservation Service. (**L. C. Lee**, principal author).

National Wetland Science Training Cooperative. 1996. *Draft Guidebook to Functional Assessments in 3rd and 4thOrder Riverine Waters/Wetlands of the Central California Coast.* In cooperation with California Coastal Commission, U.S. EPA Region IX and City of Pacifica, California. (**L. C. Lee**, principal author).

National Wetland Science Training Cooperative. 1995. *Draft Guidebook for Functional Assessment of Depressional Wetlands in the Pacific Northwest/Puget Sound Lowlands Region.* (**L. C. Lee**, principal author).

Brinson, M. M., F. R. Hauer, **L. C. Lee**, W. L. Nutter, R. D. Rheinhardt, R. D. Smith and D. Whigham. 1995. *Guidebook for Application of Hydrogeomorphic Assessments to Riverine Wetlands*. Technical Report TR-WRP-DE-11, Waterways Experiment Station, Army Corps of Engineers, Vicksburg, Mississippi. (L. C. Lee, principal author).

National Wetland Science Training Cooperative. 1995. *Draft Guidebook for Functional Assessment of Depressional Wetlands in the Mid-Atlantic Coastal Plain*. Natural Resource Conservation Service, Wetlands Institute. (**L. C. Lee,** principal author).

National Wetland Science Training Cooperative. 1995. *Draft Guidebook for Functional Assessment of Riverine Wetlands in the Inner Coastal Plain of Chesapeake Bay.* Natural Resource Conservation Service, Wetlands Institute. (**L. C. Lee**, principal author).

Brinson, M. M., W. Kruczynski, **L. C. Lee**, W. L. Nutter, R. D. Smith, and D. F. Whigham. 1994. *Developing an approach for assessing the functions of wetlands*. Pages 615-624, in W. J. Mitsch, editor, *Global Wetlands: Old World and New*. Elsevier Science B.V., Amsterdam.

Olsen, E. A. and **L. C. Lee.** 1992. *The use of hydrogeomorphic and vegetation data in differentiating functions among forested wetlands*. Prepared for Riverine Functional Assessment Group and R. Daniel Smith, Wetlands Section, Waterways Experiment Station, U.S. Army Corps Of Engineers, Vicksburg, Mississippi.

IV. HONORARIES, AWARDS, FELLOWSHIPS, PROFESSIONAL ORGANIZATIONS

Honoraries:

Xi Sigma Pi, Forestry Honorary (inducted 1976).
Sigma Xi, National Research Honorary (inducted 1983).

Academic Fellowships:

R.D. Merrill Fellowship, College of Forest Resources, University of Washington, Seattle, Washington (1983).

Graduate School Tuition Scholarship, University of Washington, Seattle, Washington (1983).

Northwest Scientific Association Research Fellowship (1983).

J.H. Bloedel Forestry Research Graduate Scholarship, College of Forest Resources, University of Washington, Seattle, WA (1982).

Professional Organizations:

Society For Ecological Restoration (2006 – 2010)

Society of Wetland Scientists (1984 - Present)

a. Bulletin Editor (1985 - 1991)
b. National Scientific Program Chairman (1987 & 1988)
c. Scientific Program Committee Member (1986, 1987, 1988, 1989, 1990)
d. Awarded lifetime membership (1998)
e. Professional Wetland Scientist Certification (1995): Registration #000385

Association of State Wetland Managers (1984 - 1989)
a. Science Advisory Board (1985 - 1989)

Ecological Society of America (1978 - 2003)

American Association for the Advancement of Science (1978 - 2003)

Northwest Scientific Association (1979 - 1995)

Society Of American Foresters (1983 - 1995)

Project Awards:

U.S. Environmental Protection Agency, Region IX. "Outstanding Environmental Achievement, Earth Day 2000". (Calera Creek Restoration) (2000).

Assemblyman Lou Papan, State Senator Jackie Speirer, Congressman Tom Lantos, Congresswoman Anna Eshoo, and State Senator Byron Sher. Commendation from: San Mateo County Board of Supervisors (Calera Creek Restoration) (2000).
California Legislature Assembly Resolution #3110 – Congratulating the City of Pacifica for success of Calera Creek Water Recycling Facility (Calera Creek Restoration) (2000).

Construction Excellence Award (Team Member with Mortenson and Active Construction), University of Washington-Bothell / Cascadia Community College Co-located Campus – North Creek Restoration (1998).

Team of the Year, Project Management Institute, Puget Sound Chapter Project, Boeing Longacres Park (1995).

V. PUBLICATIONS, PRESENTED PAPERS, WORKSHOPS AND SYMPOSIA

A. Refereed Journal Articles

Hardwick, K.A., P. Fiedler, **L.C. Lee**, B. Pavlik, R.J. Hobbs, J. Aronson, M. Bidartondo, E. Black, D. Coates, M.I. Daws, K. Dixon, S. Elliott, K. Ewing, G. Gann, D. Gibbons, J. Gratzfeld, M. Hamilton, D. Hardman, J. Harris, P.M. Holmes, M. Jones, D. Mabberley, A. Mackenzie, C. Magdalena, R. Marrs, W. Milliken, A. Mills, E. nic Lughadha, M. Ramsay, P. Smith, N. Taylor, C. Trivedi, M. Way, O. Whaley and S.D. Hopper. 2011. The Role of Botanic Gardens in the Science and Practice of Ecological Restoration. Conservation Biology 25:265-275

Gosselink, J. G., G. P. Shaffer. **L. C. Lee,** D. M. Burdick, D. L.Childers, N. C. Liebowitz, S. C. Hamilton, R. Boumans, D. Cushman, S. Fields. M. Koch, and J. M. Visser. 1990 . Can we manage cumulative impacts? Landscape conservation in a forested wetland watershed. *Bioscience*, Vol *40, (8); 588 - 600.*

Shaffer, G. P., D. M. Burdick, J. G. Gosselink, and **L. C. Lee**. 1992 A cumulative impact management plan for the Tensas Basin, Louisiana. *Wetlands Ecology and Management, Vol. 1, (4): 199 – 210*

Day, F. P., P. Megonigal, and **L. C, Lee**. 1989. Cypress root decomposition in experimental wetland mesocosms. *Wetlands* 9(2):263-282.

Leitch J. A., T. Golz, and **L. C. Lee.** 1988. Profile of Society of Wetland Scientists Membership, 1986. *Bulletin of the Society of Wetland Scientists* 5:6-8.

Lee, L. C. and J. G. Gosselink. 1988. Cumulative impact assessment in bottomland hardwood forests: linking scientific assessments with regulatory alternatives. *Environmental Management* 12(5):591 - 602.

Cooper, D. J. and **L. C. Lee**. 1987. Rocky Mountain wetlands: ecosystems in transition. National Wetlands Technical Council and the Environmental Law Institute. *National Wetlands Newsletter* 9:2-6.

Wolf, R. B., **L. C. Lee**, and R. R. Sharitz. 1986. Wetland creation and restoration in the United States from 1970 to 1985: an annotated bibliography. *Wetlands* 6:1-88.
Lee, L. C., T. M. Hinckley, and M. L. Scott. 1985. Plant water status relationships among major floodplain sites of the Flathead River, Montana. *Wetlands* 5:15-34.

Scott, M. L., R. R. Sharitz, and **L. C. Lee**. 1985. Disturbance in a cypress-tupelo wetland: an interaction between thermal loading and hydrology. *Wetlands* 5:53-68.

Lee, L. C. and C. J. Jonkel. 1981. Grizzlies and wetlands. *Western Wildlands* 7(4):26-30.

B. Books, Book Chapters & Theses

Mitsch, W. J., P. L. Fiedler, **L. C. Lee** and S. R. Stewart. 2001. Wetlands. *McGraw Hill Encyclopedia of Science and Technology*, 9th Edition. McGraw Hill, New York, NY.

Brinson, M. M., R. D. Smith, D. F. Whigham, **L. C. Lee**, R. D. Rheinhart, and W. L. Nutter. 1998. Progress in development of the hydrogeomorphic approach for assessing the functioning of wetlands. Pages 383-406, in A. J. McComb and J. A. Davis, editors. *Wetlands for the Future.* Gleneagles Publishing, Adelaide, Australia.

Brinson, M. M., W. Kruczynski, **L. C. Lee**, W. L. Nutter, R. D. Smith, and D. F. Whigham. 1994. *Developing an approach for assessing the functions of wetlands*. Pages 615-624 in W.J. Mitsch, editor. *Global Wetlands: Old World and New.* Elsevier Science B.V., Amsterdam.

Gosselink, J. G., **L. C. Lee**, and T.A. Muir, editors. 1990. *Ecological Processes and Cumulative Impacts - Illustrated by Bottomland Hardwood Wetland Ecosystems.* Lewis Publishers, Chelsea, Michigan. 708 pp.

Sharitz, R. R. R. L. Schneider, and **L. C. Lee.** 1990. Composition and regeneration of a disturbed floodplain wetland in South Carolina. Pages 195-218, in J. G. Gosselink, L. C. Lee, and T.A.

Muir, editors. *Ecological Processes and Cumulative Impacts - Illustrated by Bottomland Hardwood Wetland Ecosystems.* Lewis Publishers, Chelsea, Michigan.

Gosselink, J. G., M. M. Brinson, **L. C. Lee**, and G. T. Auble. 1990. Human activities and ecological processes in bottomland hardwood ecosystems: the report of the ecosystem workgroup. Pages 549-598, in J. G. Gosselink, L. C. Lee, and T.A. Muir, editors. *Ecological Processes and Cumulative Impacts - Illustrated by Bottomland Hardwood Wetland Ecosystems.* Lewis Publishers, Chelsea, Michigan.

Gosselink, J. G., **L. C. Lee** and T. A. Muir. 1990. The regulation and management of bottomland hardwood forest wetlands: implications of the EPA-sponsored workshops. Pages 638-671, in J. G. Gosselink, L. C. Lee, and T.A. Muir, editors. *Ecological Processes and Cumulative Impacts - Illustrated by Bottomland Hardwood Wetland Ecosystems.* Lewis Publishers, Chelsea, Michigan.

Gosselink, J. G. and **L. C. Lee.** 1989. Cumulative impact assessment in bottomland hardwood forests. *Wetlands* Volume 9, Special Issue. Society of Wetland Scientists, Wilmington, N.C. 174 pp.

Lee, L. C. 1983. The floodplain and wetland vegetation of two Pacific Northwest river ecosystems. Ph.D. Dissertation, College of Forest Resources, University of Washington, Seattle, WA. 268 pp.

Lee, L. C. 1979. A study of plant associations in upland riparian habitats in western Montana.. Master's Thesis, School of Forestry, University of Montana, Missoula, MT. 250 pp.

C. Published Reports and Proceedings

Fiedler, P. L., **L. C. Lee** and S. D. Hopper. 2007. Gnammas as rare wetlands in the Southwest Australian Floristic Region. In "Proceedings of the MEDECOS XI 2007 Conference, 2-5, September, Perth, Australia." Eds. D. Rokich, G. Wardell-Johnson, C. Yates, J. Stevens, K. Dixon, R. McLelland, and G. Moss, pp. 85-86. Kings Park and Botanic Garden, Perth, Australia.

Brinson, M. M., F. R. Hauer, **L. C. Lee,** W. L. Nutter, R. D. Rheinhardt, R. D. Smith and D. Whigham. 1995. *Guidebook for Application of Hydrogeomorphic Assessments to Riverine Wetlands*. Technical Report TR-WRP-DE-11, Waterways Experiment Station, U.S. Army Corps of Engineers, Vicksburg, Mississippi.

Lee, L .C. and F. E. Gross. 1989. Restoration, creation, and management of wetland and riparian ecosystems in the American West: a summary and synthesis of the symposium. Pages 201 - 219, K. M. Mutz, D. J. Cooper, M. L. Scott, and L. K. Miller, editors. *Proceedings of the Symposium on Restoration, Creation, and Management of Wetland and Riparian Ecosystems In The American West.* Rocky Mountain Chapter of the Society of Wetland Scientists, Denver, Colorado.

Gosselink, J. G., G. P. Shaffer, **L .C. Lee**, D. M. Burdick, D. L. Childers, N. Taylor, S. C. Hamilton, R. Boumans, D. Cushman, S. Fields, M. Koch, and J. M. Visser. 1989. *Cumulative Impact Assessment and Management in a Forested Wetland Watershed in the Mississippi River Floodplain*. Marine Sciences Department And Coastal Ecology Institute (LSU-CEI-89-02), Center For Wetland Resources, Louisiana State University, Baton Rouge, LA. 131 pp.

Lee, L. C., R. R. Johnson, and T. A. Muir. 1989. Riparian ecosystems as essential habitat for raptors in the American West. Pages 15-26, in B. G. Pendleton, C. E. Ruibal, D. L. Krahe, K. Steenhof, M. N. Kochert, and M. N. LeFranc, editors. 1989. P*roceedings of the Western Raptor Management Symposium and Workshop.* Institute For Wildlife Research, National Wildlife Federation, Scientific and Technical Series No. 12.Washington, D.C. 320 pp. National Wildlife Federation Raptor Management Symposium Series, Washington, D.C.

Lee, L. C. 1989. Mitigation for wetland loss: how much is appropriate? Pages 189-195 in N. A. Robinson, editor. 1989. *Proceedings of a Conference on the Preparation and Review of Environmental Impact Statements*, November 1987. President's Council On Environmental Quality and the Environmental Law Section of the New York State Bar Association. West Point, New York.

Brinson, M. M. and **L. C. Lee.** 1989. In-kind mitigation for wetland loss: statement of ecological issues and evaluation of examples. Pages 1069 – 1085, R. R. Sharitz and J. W. Gibbons, editors. *Freshwater Wetlands and Wildlife*. Proceedings of a symposium held at Charleston, South Carolina, March 24-27, 1986. U.S. Department Of Energy Office of Health & Environmental Research, Washington, D.C.

Magistro, J. L. and **L. C. Lee**. 1988. Association of Superfund sites with wetlands. Pages 136 – 140, in J. A. Kusler, S. Daly, and G. Brooks, editors. 1988. *Proceedings of the National Wetlands Symposiu*m, Urban Wetlands, Oakland, CA. Association of State Wetland Managers, Berne, New York.

Muir, T. A., **L. C. Lee,** and S. Sarason. 1987. The Environmental Protection Agency's initiative on bottomland hardwood ecosystems: a status report. Pages 27-31, K. M. Mutz and L. C. Lee, editors. 1987. *Wetland and Riparian Ecosystems of the American West*. Proceedings of the eighth annual meeting of the Society of Wetland Scientists. Society of Wetland Scientists - Western Chapter. Denver, Colorado.

Mutz, K. M. and **L. C. Lee**, editors. 1987. *Wetland and Riparian Ecosystems of the American West*. Proceedings of the eighth annual meeting of the Society of Wetland Scientists. Society of Wetland Scientists - Western Chapter. Denver, Colorado. 349 pp.

McCort, W. D., **L. C. Lee,** and G. R. Wein. 1987. Mitigating for large-scale wetland loss: a realistic endeavor? Pages 359-367, in J. A. Kusler, M.L. Quammen, and G. Brooks. 1987. Proceedings of the National Wetland Symposium On Mitigation Of Impacts And Losses, October 8-10, 1986, New Orleans, Louisiana. Association of State Wetland Managers, Berne, New York.

Gosselink, J. G. and **L. C. Lee**. 1987. Cumulative impact assessment principles. Pages 196-203, in J. A. Kusler, M. L. Quammen, and G. Brooks, editors. 1987. Proceedings of the National Wetland Symposium on Mitigation Of Impacts And Losses, October 8-10, 1986, New Orleans, Louisiana. Association of State Wetland Managers, Berne, New York.

Sharitz, R. R. and **L. C. Lee**. 1985. Recovery processes in Southeastern riverine wetlands, in R. R. Johnson, C.D. Ziebell, D.R. Patton, P.F. Folliott, and R.H. Hamre, editors. 1985. *Riparian*

Ecosystems and Their Management: Reconciling Conflicting Uses. Proceedings of the First North American RiparianConference. USDA Gen. Tech. Rpt. RM-120:499-501.

Sharitz, R. R. and **L. C. Lee**. 1985. Limits on regeneration processes in Southeastern riverine wetlands. Pages 139 - 143 in, Johnson, R. R., C. D. Ziebell, D. R. Patton, P. F. Folliott, and R. H. Hamre, editors. *Riparian Ecosystems and Their Management: Reconciling Conflicting Uses*. Proceedings of the First North American Riparian Conference. USDA Forest Service Gen. Tech. Rpt. RM-120: 139-143.

Chapman, R., **L. C. Lee**, R. O. Teskey, and T. M. Hinckley. 1982. Impact of water level changes on woody riparian and wetland communities, Vol. X - index and addendum to Volumes I - VIII. U.S. Fish and Wildlife Service Office of Biological Services FWS/OBS-82/23. USDI, Washington, D.C. 111 pp.

Lee, L. C. and T. M. Hinckley. 1982. Impact of water level changes on woody riparian and wetland communities, Vol. IX - Alaska. U.S. Fish and Wildlife Service Office of Biological Services FWS/OBS -82/23. U.S.D.I., Washington, D.C. 213 pp.

Lee, L. C. and R. D. Pfister. 1978. *A Training Manual for Montana Forest Habitat Types.* Montana Forest and Conservation Experiment Station, University of Montana, Missoula, MT. 142 pp.

D. Selected Oral Presentations Of Technical Papers, Invited Seminars, and Posters

Lee, L.C., J. Hanson, and D.B. Largen. 2008. Management of Waters/Wetlands Buffers In Urbanizing Landscapes: Do Big Passive Buffers Always Make Sense? 8th International Wetlands Conference (INTECOL), July 20-25, 2008, Cuyaba, Brazil.

Fiedler, P. L., **L. C. Lee** and S. D. Hopper. 2007. Gnammas as rare wetlands in the Southwest Australian Floristic Region. MEDECOS XI 2007 Conference, 2-5, September, Perth, Australia.

L. C. Lee, P. L. Fiedler, J. Gage, M. Keever, A. E. Launer, and S. Anderson. 2003. Restoration of breeding habitat for the California tiger salamander (*Ambystoma californiense*) on Stanford University lands - I. Design & implementation. Poster presented for the State of the Estuary, Challenges and Changes, 2003. October 21-23, 2003, Oakland, California.

S. Anderson, A. E. Launer, P. Oliveira, **L. C. Lee,** P. L. Fiedler, J. Gage, and M. Keever. 2003. Restoration of breeding habitat for the California tiger salamander (*Ambystoma californiense*) on Stanford University lands - II. Performance criteria and assessment. Poster presented for the State of the Estuary, Challenges and Changes, 2003. October 21-23, 2003, Oakland, California

Lee, L. C. and D. M. Spada. 2002. Working Buffer: Enhancement and Restoration as Compensatory Mitigation in a Chronically Degraded Wetland. Annual meeting of the Society of Wetland Scientists. June 2-7, 2002., Lake Placid, New York.

Fiedler, P. L., **L. C. Lee**, and S. Holmes. 1999. Continuity in urban stream restoration. Meeting of the Association of State Wetland Managers, October 25-27, 1999, Annapolis, Maryland.

Cassin, J., Fiedler, P. L., and **L. C. Lee**. 1999. The importance of weeds control in wetland restoration. Meeting of the Association of State Wetland Managers, October 25-27, 1999, Annapolis, Maryland.

Fiedler, P. L., L. C. Ellis, **L. C. Lee,** and M. C. Rains. 1997. Development of a monitoring plan for restored riverine waters/wetlands along the central California coast using HGM wetland functional assessment: The Calera Creek Project. Meeting of the Association of State Wetland Managers, March 10-13, 1997, Annapolis, Maryland.

Ellis, L. R., **L. C. Lee,** P. L. Fiedler, and M. C. Rains. 1995. Use of the hydrogeomorphic approach to assess wetland functions and design restoration of riparian wetlands along the central California coast. 1995 Annual Meeting, Society for Ecological Restoration, September 14-18. Seattle, Washington.

Lee, L. C. 1989. Approaches for Impact Assessment In Jurisdictional Wetlands: The American Experience. Invited paper at the European Community Workshop on Wetland Functions and Values. April 27-30, 1989, University of Exeter, United Kingdom.

Lee, L. C. and J. G. Gosselink. 1988. Cumulative impact assessment in bottomland hardwood forests of the Southeastern U.S. Third International Wetlands Symposium, September 18 -23, 1988, Rennes, France (Published Abstract).

Gosselink, J. G. and **L. C. Lee**. 1988. Cumulative impact assessment in bottomlands of the Tensas River basin, Louisiana. Third International Wetlands Symposium, September 18 - 23, Rennes, France. (Published Abstract).

Megonigal, J. P., W. H. Patrick, S. P. Faulkner, W. B. Parker, R. R. Sharitz, and **L. C. Lee.** 1988. Relationships among vegetation, soils and hydrology as they relate to wetland delineation. 9th Annual Meeting of the Society of Wetland Scientists, May 31 - June 3, 1988, Washington, DC (Published Abstract).

Smith, R. D. and **L. C. Lee.** 1988. Effects of assessment area boundary selection on functional ratings of the Wetland Evaluation Technique: how to drive WET wild. 9th Annual Meeting of the Society of Wetland Scientists, May 31 - June 3, 1988, Washington, DC (Published Abstract).

Burdick, D. M., G. P. Shaffer, J. G. Gosselink, and L. C. Lee. 1988. Planning for cumulative impact management using landscape pattern and principles of conservation biology. International Association of Landscape Ecologists, March 16-19, 1988, Albuquerque, NM. (Published Abstract).

Magistro, J. L. and **L. C. Lee**. 1988. Association of wetlands with Superfund sites: a pilot study. 9th Annual Meeting of the Society of Wetland Scientists, May 31 - June 3, 1988, Washington, D.C. (Published Abstract).

Gosselink, J. G., **L. C. Lee**, R. Boumans, D. Burdick, D. Cjilders, D. Cushman, S. Fields, S. Hamilton, M. Koch, G. Shaffer, N. Taylor, and J. Visser. 1988. Cumulative impact assessment and management in bottomlands of the Tensas basin, Louisiana. 9th Annual Meeting of the Society of Wetland Scientists, May 31 - June 3, 1988, Washington, DC. (Published Abstract).

Muir, T. A., **L. C. Lee,** and S. Sarason. 1987. The EPA initiative on bottomland hardwood ecosystems: a status report. 9th Annual Meeting of the Society of Wetland Scientists, May 26-29, 1987, Seattle, WA. (Published Abstract).

Megonigal, J. P., W. H. Patrick, S. P. Faulkner, R. R. Sharitz, and **L. C. Lee**. 1987. Wetland boundary delineation in the southeast using vegetation, soils, hydrology, soil aeration/reduction-oxidation status. 9th Annual Meeting of the Society of Wetland Scientists, May 26-29, 1987, Seattle, WA. (Published Abstract).

Lee, L. C. 1987. Scoping wetland mitigation projects: where to begin, when to stop, and what to expect. National Wildlife Federation Symposium on "Preserving Our Wetland Heritage", October 4-7, 1987, Washington, D.C.

Lee, L. C. 1987. Riparian ecosystems as essential habitat for raptors in the American West. Paper presented to the National Wildlife Federation and the Idaho Chapter of the Wildlife Society, Western Raptor Management Symposium, October 26-28, 1987, Boise, ID.

Lee, L. C. 1987. Mitigation for wetland loss: how much is appropriate? President's Council On Environmental Quality, National Symposium On The Preparation And Review Of Environmental Impact Statements, November 3-4, 1987, West Point, NY.

Lee, L. C. 1986-1987. Cumulative impacts in bottomland hardwood forests: linking scientific assessments with regulatory approaches. A series of six seminars given by invitation at Indiana University, Western Illinois University, Smithsonian Environmental Research Laboratory, University of Vermont, George Mason University, US EPA Region IV (Atlanta) 2nd Annual Wetlands Meeting.
Brinson, M. M. and **L. C. Lee.** 1986. In-kind mitigation for wetland loss. Savannah River Ecology Laboratory's Ninth Symposium: Freshwater Wetlands and Wildlife, March 24-27, 1986, Charleston, SC. (Published Abstract).

Lee, L. C. and T. A. Muir. 1986. Wetland forestry in the American West: approaches for silviculture in intricate ecosystem mosaics. International Symposium for Wetland Ecology and Management, U.S. Forest Service, Charleston, SC.

Lee, L. C. and M. M. Brinson. 1986. Scientific perspectives on mitigation for wetland loss. Plenary address presented to the Association of State Wetland Managers National Symposium On Wetlands Mitigation, October 8-10, 1986, New Orleans, LA.

Gosselink, J. G. and **L. C. Lee.** 1986. Cumulative impact assessment principles. Association of State Wetland Managers National Symposium On Wetlands Mitigation, October 8-10, 1986, New Orleans, LA.

McCort, W. D., **L. C. Lee**, and G. R. Wein. 1986. Mitigating for large-scale wetland loss: a realistic endeavor? Association of State Wetland Managers National Symposium On Wetlands Mitigation, October 8-10, 1986, New Orleans, LA.

Lee, L. C. 1986. Measurement of moisture gradients in floodplain wetland ecosystems of the Pacific Northwest. Moisture Gradient Workshop, Wetland Ecology Group, National Ecology Research Center, U.S. Fish and Wildlife Service, Ft. Collins, CO.

Lee, L. C. 1986. The floodplain and wetland vegetation of two Pacific Northwest river ecosystems. Invited seminar to the Center For Wetlands, University of Florida, Gainesville, FL.

Lee, L. C. 1985. Environmental effects of the L-Reactor restart at the Savannah River Plant, South Carolina. Invited paper, January 30, 1985 meeting of the South Carolina Chapter of the Wildlife Society, Columbia, South Carolina.

Sharitz, R. R. and **L. C. Lee.** 1985. Limits on regeneration processes in Southeastern riverine wetlands. First North American Riparian Conference: "Riparian Ecosystems And Their Management", April 16-18, 1985, Tucson, Arizona (Published Abstract).

Sharitz, R. R. and **L. C. Lee.** 1985. Recovery processes in Southeastern riverine wetlands. First North American Riparian Conference: "Riparian Ecosystems And Their Management", April 16-18, 1985, Tucson, Arizona (Published Abstract).

Lee, L. C., M. L. Scott, and T. M. Hinckley. 1985. Plant water status relationships among major floodplain sites of the Flathead River, Montana. 6th Annual Meeting of the Society of Wetland Scientists, July 29 - August 2, 1985, Durham, New Hampshire (Published Abstract).

Scott, M. L. and **L. C. Lee.** 1985. Biomass and production dynamics along a disturbance gradient in a cypress-tupelo forested wetland. 6th Annual Meeting of the Society of Wetland Scientists, July 29 - August 2, 1985, Durham, NH. (Published Abstract).

Sharitz, R. R., Schneider, R L., and **L. C. Lee**. 1984. Composition and regeneration of a disturbed floodplain wetland in South Carolina. US Environmental Protection Agency Bottomland Hardwood Ecosystem Characterization Workshop, December 3-7, 1984, St. Francisville, Louisiana.

Lee, L. C. 1984. Floodplain and wetland vegetation in western Montana. Invited Seminar to the Montana Forest and Conservation Experiment Station, University of Montana, Missoula, Montana.

Lee, L. C. 1984. Floodplain and wetland plant communities of the North Fork Flathead River, Montana. Northwest Scientific Association 57th Annual Meeting, March 21-24, 1984, Missoula, Montana (Published Abstract).

Lee, L. C. 1984. The floodplain and wetland vegetation of two Pacific Northwest river ecosystems. Society of Wetland Scientists 5th Annual Meeting, San Francisco, California (Published Abstract).

Lee, L. C. 1984. Water balance and leaf area relationships in floodplain plant communities in two Pacific Northwest river ecosystems. Annual Meeting of the Ecological Society of America, Ft. Collins, Colorado (Published Abstract).

Lee, L. C., C. C. Grier, and T. M. Hinckley. 1983. Water balance and leaf area relationships in floodplain plant communities of two Pacific Northwest river ecosystems. Paper presented at the Northwest Scientific Association 56th Annual Meeting, March 24-26, Olympia, WA. (Published Abstract/Best Student Paper award).

Lee, L. C. 1983. Definition, classification, and description of riparian wetlands in the Pacific Northwest. Invited seminar to the School of Landscape Architecture, University of Washington, Seattle, Washington.

Lee, L. C. 1981 - 1984. Nine formal oral and written declarations and testimonies before hearings of the King and Snohomish County Building and Development Divisions regarding assessment of impacts of proposed or existing developments in wetland or riparian habitats.

Lee, L. C. 1981. Gradient modeling of riparian and wetland vegetation. Invited paper presented to the Annual Meeting of the Association of American Geographers, Los Angeles, California (Published Abstract).

Jonkel, C. J., **L. C. Lee**, P. Zaeger, C. W. Servheen, and R. Mace. 1981. Grizzly bear - livestock competition in riparian ecosystems. Paper presented at the Coeur d'Alene Regional Wildlife Symposium, Coeur d'Alene, Idaho (Published Abstract).

Lee, L. C. 1980. The role of low elevation wetlands in the ecology of free ranging grizzly bears in Montana. Invited seminar presented to the Pacific Northwest Forest and Range Experiment Station, USDA Forest Service, Corvallis, Oregon.
Lee, L. C. 1980. Plant associations in montane riparian habitats in western Montana. Invited seminar presented to the Pacific Northwest Forest and Range Experiment Station, U.S. Forest Service, Corvallis, Oregon.

VI. SELELCTED WORKSHOPS AND SYMPOSIA ATTENDED BY INVITATION

Law Seminars International - Clean Water & Stormwater Continuing Legal Education. May 5, 2014, Seattle, Washington. Waters/Wetlands Jurisdictional Issues – Key Elements In Recent Scientific Studies.

Law Seminars International, Continuing Legal Education Seminar, Wetlands In Washington, October 2, 2013, Seattle, Washington. “Practical Tips For Assessing The Financial Impacts Of Waters/Wetlands Issues - Managing Smooth Sailing Through Permitting Processes”

Law Seminars International - Continuing Legal Education - “Wetlands In Washington”, Seattle, Washington, October 10, 2012.

Lorman Education Services - Continuing Legal Education - “SEPA” (Wetlands Section Speaker) Seattle, Washington. 2007.

Lorman Education Services - Continuing Legal Education - “SEPA” (Wetlands Section Speaker) Tacoma, Washington. 2007.

Law Seminars International. – Continuing Legal Education - "Successful Permitting Strategies." Seattle, Washington. 1999.

Institute for Wetland Science and Public Policy: The Association of State Wetland Managers, Inc. "*Wetlands '99*" (Plenary Speaker – "Design, Implementation and Monitoring For Successful Ecosystem Restorations") Annapolis, Maryland. 1999.

Wetlands Biological Assessment and Criteria Development Workshop. Association of State Wetland Managers. Boulder, Colorado. "The Hydrogeomorphic Approach To Assessment of Waters/Wetlands Ecosystem Functioning. 1996.

Alaska Association of Environmental Professionals Eighth Annual Meeting. "The Hydrogeomorphic Approach To Assessment of Waters/Wetlands Ecosystem Functioning In Discontinuous Permafrost Landscapes." Anchorage, Alaska. 1996.

Living Waters Symposium, Bass Anglers Sportsman's Society, Montgomery, Alabama. Offered perspectives on eco system impacts of flow regulation/reservoir management in the southeastern U.S. 1990.

Wet Environments: RCRA Subtitle D Monitoring Guidance. Office of Research and Development, U.S. Environmental Protection Agency Systems Laboratory. Tallahassee, Florida.April 17-19, 1989.

Restoration, Creation, and Management Of Wetland And Riparian Ecosystems in the American West. Lakewood, Colorado. (Plenary Speaker – "Restoration, creation, and management of wetland and riparian ecosystems in the American West: A summary and synthesis of the symposium"). November 14 - 15, 1988.

Cumulative Impacts Workshop. Wetlands Ecology Program, U.S. Environmental Protection Agency Environmental Research Laboratory, Corvallis, Oregon.. Summarized Gosselink and Lee work on cumulative impact assessment in bottomland hardwood forests of the southeastern U.S. 1987.

Restoration of Bottomland Hardwood Wetlands. Division of Wetlands Ecology, Savannah River Ecology Laboratory, Aiken, South Carolina. Follow-up symposium on lessons learned in the design, construction and monitoring of the L-Reactor Lake wetlands. 1987.

National Wetlands Technical Council Great Basin Desert and Montane Wetlands Workshop, Logan, Utah. ("Food Chain Support/Habitat" Workgroup Chairman). February 27-28, 1986.

Moisture Gradient Workshop. Wetland Ecology Group, National Ecology Research Center, U.S. Fish and Wildlife Service, Ft. Collins, Colorado. Summarized site water balance work in the North fork of the Flathead Valley (LCL Ph.D. Dissertation). 1986.

National Wetlands Technical Council Pacific Region Workgroup, San Francisco, California. ("Food Chain Support" workgroup Chairman). April 14-16, 1985.

US Environmental Protection Agency "Bottomland Hardwood Ecosystem Characterization Workshops". St. Francisville, Louisiana (December 3-7, 1984); Lake Lanier, Gerogia (July 15-19, 1985); and, Savannah, Georgia (January 13-17, 1986). Cumulative Impacts Workgroup Chairman. 1984, 1985, and 1986.

VII. ORGANIZATION OF PROFESSIONAL MEETINGS, TRAINING PROGRAMS AND SYMPOSIA

A. Meetings and Symposia

Session Chairman, "*Global Habitat Assessment*." MEDECOS XI: The International Mediterranean Ecosystems Conference, Perth, Australia. September 2 - 5, 2007.

Panel Organizer & Moderator, "*No Net Loss: Approaches for Implementing Policies To Sustain Wetland Area And/Or Function*." Society of Wetland Scientists Tenth Annual Meeting, Orlando, Florida. May 30 - June 3, 1989.

Meeting Co-Coordinator, *Pocosins and Associated Wetlands Of The Carolina Coastal Plain*. Workshop Organized for US Environmental Protection Agency Region IV, Atlanta, Georgia and Duke University Center for Wetlands. 1989.

Scientific Program Chairman, "*The Chesapeake and Its Landscape: Perspectives On The Science, Management, and Protection Of Freshwater and Estuarine Wetlands*" - the Society of Wetland Scientists 9th Annual Meeting. Washington, DC. Responsible for development and organization of all aspects of the SWS scientific for the 9th Annual Meeting. May 31 - June 3, 1988.

Session Chairman, "*Assessment and Management of Contaminants In Wetland Ecosystems*". Technical Session held at the 9th Annual Meeting of the Society of Wetland Scientists, Washington, DC. May 31 - June 3, 1988.

Session Chairman, "*Management of Contaminants in Saturated Media.*" Technical Session held at the Annual Meeting of the Association of State Wetland Managers, Oakland, California. June 26 - 29, 1988.

Scientific Program Chairman, "*Wetland and Riparian Ecosystems of the American West*." The Society of Wetland Scientists 8th Annual Meeting, Seattle, Washington. Responsible for development and organization of all aspects of the SWS scientific program for the 8th Annual Meeting. May 26 - 29, 1986.

Scientific Program Committee Manager, National Symposium, *Freshwater Wetlands And Wildlife: Perspectives On Natural, Managed, and Degraded Ecosystems*. University of Georgia Savannah River Ecology Laboratory, Ninth Symposium, Charleston, South Carolina. Responsible with Dr. R. R. Sharitz for (a) organization of all wetland technical sessions, (b) selection and coordination of plenary speakers, and (c) leadership of Freshwater Wetlands field trip. March 24 - 27, 1986.

Session Chairman "*Approaches For Mitigation Of Forestry Impacts To Wetlands*", Technical Session held at the National Symposium On Wetlands Mitigation, Association of State Wetland Managers, New Orleans, Louisiana. October 8 - 10, 1986.

B. Training Programs

Courses taught through Elkhorn Slough National Estuarine Research Reserve Coastal Training Program – Director and Lead Instructor. *2008 - Present*.

April 2008: *Jurisdictional Delineation of Waters of the U.S., Including Wetlands On the California Coast: Legal and Ecological Protocols For Diverse and Changing Landscapes.* Elkhorn Slough, California.

November 2008: *Jurisdictional Delineation of Waters of the U.S., Including Wetlands On the California Coast: Legal and Ecological Protocols For Diverse and Changing Landscapes.* Elkhorn Slough, California.

Courses taught through National Wetland Science Training Cooperative (under L.C. Lee & Associates, Inc.) – Director and Lead Instructor. *1989 - 2005*.

April 1989: *Jurisdictional Delineation of Wetlands in the Southeastern US.* Mobile, Alabama.

May 1989: *Jurisdictional Delineation of Wetlands in the Mid-Atlantic States*. New Brunswick, New Jersey.

July 1989: *Best Management Approaches for Silviculture in Non-Tidal Wetlands of Maryland*. Salisbury, Maryland. Taught in cooperation with the Maryland Department of Natural Resources, Maryland Forest, Park & Wildlife Service, and Society of American Foresters.

August - November 1989: *Jurisdictional Delineation of Wetlands in the Chesapeake Bay Region* (Seven 1-week courses offered in cooperation with US EPA Region III, the US Army Corps of Engineers, US Fish And Wildlife Service, and US Soil Conservation Service - Federal Ad Hoc Wetlands Group - Chesapeake Bay Program) - Harrisburg, PA; State College PA; Pittsburgh, PA; Annapolis, MD; Easton, MD; Laurel, MD; Richmond, VA.

May 1990. *Jurisdictional Delineation of Wetlands in The Mid-Atlantic States*. Annapolis, Maryland.

May 1990. *Jurisdictional Delineation of Wetlands in Pennsylvania*. State College, Pennsylvania.

June 1990. *Jurisdictional Delineation of Wetlands in the Pacific Northwest*. Seattle, Washington.

August 1990. *Jurisdictional Delineation of Wetlands in the Southeastern United States*. Charlotte, NC.

August 1990. *Jurisdictional Delineation of Wetlands in the American West*. Reno, Nevada.

May 1991. *Jurisdictional Delineation of Wetlands in the Pacific Northwest*. Seattle, Washington.

November 1991. *Jurisdictional Delineation of Wetlands in the Pacific Northwest*. Course taught for King County Building and Land Development), Seattle, Washington.

October 1991. *Restoration and Construction of Wetlands for Storm Water Management in the Pacific Northwest*. Seattle, Washington.

February 1992. Beyond WET: *Functional Assessment of Wetlands in the Southeastern US*. Course taught in cooperation with US EPA, Region IV. Atlanta, Georgia.

April 1992. *An Overview of Jurisdictional Delineation of Waters of the U.S., Including Wetlands on National Forests*. Course taught for the US Forest Service National Hydrology Workshop, Phoenix, Arizona.

June 1992. *Jurisdictional Delineation of Wetlands in the State of Minnesota.* Course taught in cooperation with the State of Minnesota and U.S, EPA Region V. Minneapolis, MN.

July 1992. *Jurisdictional Delineation of Wetlands in the State of Minnesota*. Course taught in cooperation with the State of Minnesota and U.S, EPA Region V. Bemidji, MN.

July 1992. *Jurisdictional Delineation of Wetlands in the State of Minnesota*. Course taught in cooperation with the State of Minnesota and U.S, EPA Region V), Alexandria, MN.

February 1993. *Jurisdictional Delineation of Wetlands in American Samoa*. Course taught in cooperation with the Government of Samoa and EPA Region IX. Pago Pago, American Samoa.

March 1993. *Jurisdictional Delineation of Wetlands in the American West*. Course taught in cooperation with American Fisheries Society. San Francisco, CA.

August 1993. *Advanced Jurisdictional Delineation of Wetlands in Michigan*. Course taught in cooperation with Michigan Department of Natural Resources and Michigan State University and US EPA, Region V. Kellogg Biological Station, Michigan.

August 1994. *Jurisdictional Delineation of Wetlands in Guam*. Course taught in cooperation with EPA Region IX. Guam and Republic of Palau.

October 1994. *The Hydrogeomorphic Approach to Functional Assessment of Wetlands in the Mid-Atlantic States, Annapolis, Maryland.* Course taught in cooperation with US EPA, Region III and the Smithsonian Environmental Research Laboratory.

November 1994. *The Hydrogeomorphic Approach to Functional Assessment of Wetlands in the Santa Margarita Watershed, San Diego, California*. Course taught in cooperation with US EPA, Region IX.

July 1995. *Jurisdictional Delineation of Wetlands in the Caribbean, San Juan, Puerto Rico*. Course taught in cooperation with US EPA Region II and Puerto Rico Department of Natural Resources. San Juan, Puerto Rico

August 1995. The Hydrogeomorphic Approach to Functional Assessment of Wetlands in the Pacific Northwest. Course taught in cooperation with Natural Resource Conservation Service Wetlands Institute. Seattle, Washington.

September 1995. *The Hydrogeomorphic Approach to Functional Assessment of Wetlands in the Mid-Atlantic States*. Course taught in cooperation with the Natural Resource Conservation Service Wetlands Institute. Annapolis, Maryland.

April 1996. *The Hydrogeomorphic Approach to Functional Assessment of Wetlands of the Central California Coast*. Course taught in cooperation with Natural Resource Conservation Service Wetlands Institute. San Francisco, California.

May 1996. *The Hydrogeomorphic Approach to Functional Assessment of Wetlands in Alaska*, Course taught in cooperation with the State of Alaska Department of Environmental Conservation and US EPA, Region X. Fairbanks, Alaska.

March 1997. *The Hydrogeomorphic Approach to Functional Assessment of Wetlands in the Kenai River Watershed*. Course taught in cooperation with the State of Alaska Department of Environmental Conservation and US EPA, Region X. Soldotna, Alaska.

May 1997. *The Hydrogeomorphic Approach to Functional Assessment of Wetlands in the Prairie Pothole Region*. Course taught in cooperation with the Natural Resource Conservation Service, Wetlands Institute, Washington, DC. Jamestown, North Dakota.

May 1999. *The Hydrogeomorphic Approach to Functional Assessment of Wetlands in Interior Alaska*. Course taught in cooperation with the State of Alaska Department of Environmental Conservation and US EPA, Region X.

December 2001. *The Hydrogeomorphic Approach to Functional Assessment of Riverine Waters/Wetlands in the South Coast Region of Santa Barbara County, California*. Course taught in cooperation with Santa Barbara County Flood Control & Water Conservation District, Santa Barbara County Water Agency and US EPA, Region IX. Santa Barbara, California.

November 7 – 9, 2005: *Growing Wetlands – Advances in Wetland Conservation and Restoration Workshop*. Invited by the Botanic Garden & Parks Authority, Kings Park & Botanic Garden to develop and teach a workshop on wetland ecosystem restoration. **L. C. Lee** & P. L. Fiedler, instructors. Western Australia Ecology Center, Perth, Western Australia

Program director and lead instructor for the U.S. Environmental Protection Agency Headquarters Office of Wetlands Protection, "National Wetlands Training Program". National 1-week field-based training courses offered by the Office of Wetlands Protection, U.S. Environmental Protection Agency, Washington, D.C. *1987 – 1989.*

June 1987. *Jurisdictional Delineation of Wetlands and Riparian Ecosystems in the American West*. Reno, Nevada.

July 1987. *Functional Assessment of Bottomland Hardwood Ecosystems in the Southeastern United States: Introduction to the "Bottomland Hardwood Wetland Evaluation Technique" and "Cumulative Impact Assessment in Bottomland Hardwood Forests."* Charleston, South Carolina.

October 1987. *Jurisdictional Delineation of Wetlands in the Southeastern United States.* University of Georgia Marine Institute, Sapelo Island, Georgia.

November 1987. *Functional Assessment of Wetland and Riparian Ecosystems in the American West.* Ft. Collins, Colorado.

March 1988. *Jurisdictional Delineation of Wetland and Riparian Ecosystems in the Southwestern United States*. Tucson, Arizona.

May 1988. J*urisdictional Delineation of Wetlands in the State of New Jersey*. East Hanover, New Jersey.

June 1988. *Jurisdictional Delineation of Wetlands in the Mid-Atlantic States. New Brunswick, New Jersey*. (Private Sector Only)

August 1988. *Jurisdictional Delineation of Wetlands in the State Of Virginia*. Virginia Institute of Marine Science, Gloucester Point, Virginia.

August 1988. *Functional Assessment of Wetlands in the Southeastern US: The National And Bottomland Hardwood Wetland Evaluation Techniques.* Galveston, Texas.

September 1988. *Jurisdictional Delineation of Wetlands in the North-Central US*. Kellogg Biological Station, Hickory Corners, Michigan.

October 1988. *Best Management Approaches for Silviculture in Southeastern Forested Wetlands*. Savannah, Georgia.

October 1988. *Cumulative Impact Assessment in Southeastern Wetland Ecosystems: The Pearl River.* Slidell, Louisiana.