Further evaluation and consideration of information provided by the Appellant pursuant to Administrative Appeal Decision dated 9 September 2015 for Tracy Lakes Property, San Joaquin County, California, Sacramento District

(SPK-2011-01069)

December 11, 2015

<u>Reason 1 Action:</u> The District must reconsider its decision that the Tracy Lakes are wetlands. The District must include sufficient documentation in the AR to support its final decision.

Response to Reason 1 Action: Tracy Lakes (two aquatic features, specifically Tracy Lake North and Tracy Lake South, hereafter simply "Tracy Lakes" unless referring to one of the two aquatic features) were delineated as "lakes" by the appellant, and no wetland data sheets were included in the original delineation report. A copy of the appellant's jurisdictional delineation map is provided in **Appendix A**.

District staff (Ms. Mary Pakenham-Walsh as lead, Mr. Jordan Krug as field assistant) conducted a September 30, 2015, field visit to the JD study area to collect vegetation, soils and hydrology data for the Tracy Lakes, in accordance with the methodology contained in the Corps' 1987 Wetland Delineation Manual and Arid West Regional Supplement (Regional Supplement). Data sheets for Corps data points (DPs) A-H, a field map created by the Corps (dated October 30, 2015), and representative site photographs taken during the September 30, 2015, field visit are included in **Appendix B.**

<u>Tracy Lake North</u>. Data points A-C characterize Tracy Lake North. Data points A and B represented the lowest areas of the eastern and western portions of the lake. Data point C represented a transition area midway in elevation between the lower "lake bed" and surrounding upland.

As DPs A-C show, non-hydrophytic vegetation occurs within the lake, with representative dominants including Alkali mallow (*Malvella leprosa*, FACU), pitseed goosefoot (*Chenopodium berlandieri* var. *sinuatum*, UPL), prickly lettuce (*Lactuca serriola*, FACU), bull thistle (*Cirsium vulgare*, FACU) and ripgut grass (*Bromus diandrus*, NOL). None of the DPs exhibited hydrophytic vegetation, nor were other substantially different, potentially Hydrophytic plant communities observed within the ordinary high water mark (OHWM) of the lake during the field visit. See photos 7 – 12 in **Appendix B**.

Soils in Tracy Lake North were consistently hydric, meeting the "depleted matrix" (F3) hydric soil indicator. The primary wetland hydrology indicator "inundation visible on aerial imagery" (B7) was met for DPs A-C, thus wetland hydrology is present. District staff reviewed recent (within the last 5 years, representing a parallel timeline to that established in the Corps' JD verification procedures, wherein approved JDs expire after 5 years) aerial imagery using Google Earth. Copies of representative aerials are included in **Appendix C**). The following aerial images showed visible inundation in Tracy Lake North in the location of DPs A-C: March, June, September and October 2011.

All three DPs for Tracy Lake North exhibited hydric soil, wetland hydrology, but non-hydrophytic vegetation. Therefore, the District has modified its decision on the wetland status of Tracy Lake North. The aquatic feature is considered to be a lake with a OHWM (as originally described in Sycamore Environmental's JD report), but not a lake that also contains wetlands within its OHWM.

<u>Tracy Lake South</u>. Data points D-H characterize Tracy Lake South. Data points D and F represented transitional areas toward higher ground. Data points F, G and H represented distinguishable plant communities within lower portions of the lake bed. All DPs in Tracy Lake South except for DP D exhibited hydrophytic vegetation, with representative dominants including Rabbitsfoot grass (*Polypogon monspeliensis*, FACW), curly dock (*Rumex crispus*, FAC) and an unidentifiable smartweed (*Persicaria sp.*, most of which are FACW or OBL).

Soils in Tracy Lake South were consistently hydric, meeting the "depleted matrix" (F3) hydric soil indicator. The primary wetland hydrology indicator "inundation visible on aerial imagery" (B7) was met for DPs D-H, thus wetland hydrology is present. District staff reviewed recent (within the last 5 years, as described above) aerial imagery using Google Earth; copies of representative aerials are included in **Appendix C**). The following aerial images showed visible inundation in Tracy Lake South in the location of DPs D-H: March and June 2011, and April 2013. September and October 2011 show inundation at DPs G and H (i.e., surface water appears to be "retreating;" the next available aerial image is from May 2012, and no inundation is apparent in the western portion of Tracy Lake South lying within the JD study area (eastward, nearby, inundation is apparent on this date). June 2013 shows inundation at DP-G, which is likely to be the lowest-elevation DP relative to DPs D, E, F and H. The time sequence of aerials between April and August 2013 depict a drying-down of Tracy Lake South from an inundated condition (April 2013) to a non-inundated condition (August 2013), with the interim condition in June 2013 appearing to be indicative of microtopography in

the lake bed, based on the location of inundation vs. non-inundation as the lake dried down.

Based on the findings documented by DPs D-H, a portion of Tracy Lake South exhibits all three wetland parameters (hydric soil, wetland hydrology and hydrophytic vegetation). An estimate of the wetland/non-wetland boundary within the OHWM of Tracy Lake South is shown on an August 2013 aerial photo, included in **Appendix B**. The roughly-estimated boundary is based on the information provided by DPs D-H, field observations of subtle differences in topography and plant communities within the lake bed, corroborated with office-based analysis of aerial photography, in particular the "drydown" sequence of April through August 2013 described above. The area calculation provided by Google Earth for the Corps' estimated wetland area is approximately 6 acres.

Therefore, the District has provided information to support its decision on the wetland status of Tracy Lake South, yet notes there are areas of the lake bed that do not meet wetland criteria. Based on the District's estimated extent of wetlands within Tracy Lake South, approximately 6 acres of wetlands occur in the eastern portion of the JD study area, extending southward to the newly-installed outfall location along the lake's south shoreline (authorized by NWP-12, SPK-2011-01069 [Tracy Lake Groundwater Recharge project]). The outfall is the discharge point for a just-constructed (summer 2015) 1,000-ft-long, 36-inch diameter pipeline that originates at a newly installed water diversion intake structure along the Mokelumne River. A copy of the project's site plan and a photograph taken on September 30, 2015, are included in **Appendix D**.

Summary of District's Findings.

Presence or Absence of Wetlands within OHWM of Tracy Lakes. The District documented conditions for Tracy Lake North and has revised its determination regarding this aquatic feature. Data points and other general field observations indicate this feature is a lake with a OHWM that does not contain wetlands within its OHWM. The District also documented conditions for Tracy Lake South, and has modified its prior determination, but has not wholly reversed it. Tracy Lake South contains approximately 6 acres of wetlands.

Based on review of recent aerial photography (in the last 5 years), in addition to other information already contained in the administrative record (e.g., USGS maps), the District believes that Tracy Lake North is a substantially "drier" lake relative to Tracy Lake South, with a much smaller natural watershed. Furthermore, Tracy Lake South

has a man-made outlet at its west end, which the administrative record has already documented contains a water control valve allowing for surface water from Tracy Lake South to be drained through a wetland ditch (shown on the delineation map) into Tracy Lake North.

Revised Approved JD Form. To document the above-described modifications to the district's JD assessment, a revised approved JD form was prepared and is included in **Appendix E**. The following highlights of the District's revised JD decision are documented in the form:

- Tracy Lake North is a lake with a OHWM that does not contain wetlands.
- As a lake that does not contain wetlands, the jurisdictional basis of a significant nexus to a TNW (Mokelumne River) was documented for Tracy Lake North.
- In response to Reasons 4 and 5 actions, below, the District documented its considerations concerning adjacency and hydrologic connectivity (for specific actions, please see below).
- Wetland acreage was reduced to account for the lack of wetlands in Tracy Lake North, and less wetlands than previously determined in the original JD form.

<u>Reason 2 Action:</u> The District must include documentation, including wetland data sheets, of its evaluation of the potential for aquatic features on the Property to be wetlands.

Response to Reason 2: Please see response to Reason #1.

<u>Reason 3 Action:</u> (No action required; reason for appeal did not have merit).

Response to Reason 3: N/A

<u>Reason 4 Action:</u> The District must first complete and document its evaluation of whether or not the aquatic resources on the Property are wetlands, as described in the responses to reasons 1 and 2, above. If the District's conclusion is that the aquatic resources on the Property are wetlands, the District must then document its evaluation of whether or not those aquatic features can be considered adjacent wetlands.

<u>**Response to Reason 4:**</u> Please see the response to Reason #1 regarding documenting the evaluation of Tracy Lake North and Tracy Lake South for presence or absence of wetlands within the OHWM.

Evaluation of Adjacent Wetlands.

Tracy Lake North. Tracy Lake North does not contain wetlands within its OHWM; therefore the District will not evaluate a jurisdictional basis of adjacency to the Mokelumne River for this aquatic feature.

Tracy Lake South. Approximately 6 acres of seasonal wetlands occur within Tracy Lake South, including along the lake's southern perimeter. Therefore, the District in its revised JD form retained the evaluation of adjacency from the previous JD form that served as the basis for the District's original JD decision, and further bolstered its evaluation in Section III.A.2 of the revised JD form.

Other Wetlands Within Study Area. Adjacency of wetlands (other than those potentially occurring within the OHWM of the Tracy Lakes) within the study area was not appealed. Thus, the District confirms that it considers adjacency to be retained as the basis for jurisdiction for all of the other wetlands within the study area (i.e., those not contained within the OHWM of Tracy Lake South). In addition to retaining its evaluation of adjacency, the District further bolstered its evaluation in Section III.A.2 of the revised JD form.

<u>Reason 5 Action:</u> District must reconsider assertion that there are hydrologic connections between the aquatic features on the Property and the Mokelumne River.

Response to Reason 5: The District has reconsidered the assertion of hydrologic connections. The appeal decision's discussion under Reason 5 included the following statement: "The District, while having a basis to believe that these hydrologic connections might exist from its review of LiDAR, aerial photographs, and topographic maps, as described above, did not document observations or other evidence which would confirm the existence of the hydrologic connections it expected to find."

As part of (but not solely) providing an evaluation basis for jurisdiction of wetlands adjacent to a TNW, the District had considered the role of both potential surface hydrologic connections, and potential groundwater hydrologic connections between the site's aquatic features and the Mokelumne River. Hydrologic connections as support basis for adjacency of wetlands to a TNW, however, is just one of three criteria clarified in the December 2, 2008 US EPA/Corps guidance memorandum

following the Rapanos v. United States and Carabell V. United States Supreme Court decision. In its revised JD form, the District clarified its primary use of the third criterion documented in the December 2, 2008 guidance as the leading basis for jurisdiction of seasonal wetlands adjacent to the Mokelumne River. The third criterion considers a wetland to be adjacent when the feature is in "reasonably close" proximity to a jurisdictional water, supporting the scientific inference that such wetlands have an ecological interconnection with jurisdictional waters.

The District's reconsideration of hydrologic connections between the Tracy Lakes and the Mokelumne River follows.

<u>Sub-surface Hydrologic Connection.</u> In its original JD form, the District documented primarily its belief that shallow sub-surface hydrologic connections are likely to occur between both of the Tracy Lakes and the Mokelumne River. A shallow sub-surface or surface hydrologic connection (even if intermittent) is one of the three criteria for wetland jurisdiction by basis of adjacency, as clarified in the December 2, 2008 US EPA/Corps post-Rapanos guidance memorandum.

Wetlands located near to rivers in riparian or floodplain landscape settings can be connected to the nearby river both overland flow and/or by subsurface (e.g., hyporheic) flow (USEPA 2015, pg. 2-7). In absence of obvious direct (e.g., fieldobserved) or indirect (e.g., discernible on aerial imagery) evidence of connectivity via overland flow, shallow sub-surface hydrologic connectivity is generally difficult to characterize for riparian/floodplain wetlands (USEPA, pg. 2-8).

The District retains its belief based on best professional judgment applied to available documentation in the administrative record (e.g., soil mapping, regional groundwater information, LiDAR imagery [already in administrative record; copy provided in **Appendix C**] and elevation data for the study area), that shallow subsurface hydrologic connections are likely to be present between the wetlands in the study area and the Mokelumne River, at least on an intermittent basis. The land surface elevations between the Tracy Lakes and the river range from 20 to 30 ft. above mean sea level (msl); however, this does not preclude the opportunity for shallow subsurface hydrologic connectivity through soils mapped in the area between the lakes and river that range from deep to "very deep," and are moderately well-drained (see Bates #441-444). Also, the OHWM of the Mokelumne River in the study area is estimated to be 17 ft. msl, and the OHWM of North and South Tracy Lakes, respectively, estimated to be 16 and 18 ft. msl. Areas of these lake bottoms within the study area were estimated by use of GPS devices and ocular observations during the District's Sept. 30, 2015 field work to be up to 5 ft. lower than the OWHM elevations (e.g., 11 ft. for North Tracy Lake, and 13 ft. for South Tracy Lakes). In absence of evidence to the contrary, the District cannot preclude the potential for intermittent, shallow sub-surface hydrologic connectivity between lake bottoms that are between 4 and 6 ft. below the OHWM of the Mokelumne River, during times when water occurs in the lake(s).

The above being said, the District has clarified on the revised JD form that its reliance on the potential (lacking direct evidence, e.g., data from shallow groundwater monitoring wells) of an intermittent, shallow sub-surface hydrologic connection is not its primary rationale or criterion for jurisdiction of the wetlands in Tracy Lake South on the basis of adjacency to the TNW, but rather a secondary basis. The District further asserts that the appellant has not provided conclusive evidence that would contradict the potential for a shallow sub-surface hydrologic connection to occur. For example, the lack of observable seeps or "daylighted" areas of lateral hydrologic flow between either of the lakes and the Mokelumne River, e.g., in Forested Wetland (FW) 9, which has a bottom elevation of 12 ft. msl, is not conclusive in negating a shallow sub-surface groundwater connection with the TNW. First, the subsurface connection could be lower than 12 ft., tapping into the open water and/or groundwater zones of the Mokelumne River. Second, all field observations made as part of this JD action have been during a drought period, not during one of the sporadic higher water times that are evidenced by aerial photography (as described above). It cannot be ruled out that seepage could potentially occur along the side of one or more forested wetland, particularly those closer to the river (e.g., FW-1, FW-3, FW-4, FW-8 and/or FW-9) during a higher water event and/or prolonged precipitation cycle.

<u>Surface Hydrologic Connection.</u> In its original JD form, the District documented primarily its belief that shallow sub-surface hydrologic connections are likely to occur between both of the Tracy Lakes and the Mokelumne River. The District also indicated on the JD form the potential for water from the Tracy Lakes to flow laterally across the surface, downslope to the south and west into the river. In its reconsideration of the potential for surface water pathways, the District has clarified in the revised JD form that with one exception, there does not appear to be a direct pathway for a surface hydrologic connection between the Tracy Lakes and the river, as unique and confounding as the site's geomorphology may be in that neither site observations nor remote sensing (e.g., LiDAR) assessment depict such a clear pathway for lateral, southwesterly surface water between either of the lakes and the TNW.

The District notes on the revised JD form that there is one surface hydrologic connection with the potential to be "intermittent," based on available data. This factor is presented, as a *secondary* basis for jurisdiction by adjacency, to bolster the District's primary basis for jurisdiction by adjacency (of "reasonably close" proximity/ecological interconnection). The man-made ditch, constructed sometime between 1953 and 1968 to drain Tracy Lake South as part of its agricultural use, has a controlled valve/gate at its northern end. Information in the record indicates the gate may not have been opened for the better part of 20 years (Bates #418), however, the District notes the

potential for a surface hydrologic connection as one that has been acknowledged to have occurred in the past. The appellant's representative also described a surface hydrology connection in a December 22, 2014 letter requesting the appeal of the District's original JD; "[w]hile it is unclear why the valve at the end of the ditch was left open in 2011, this resulted in water entering South Tracy Lake from the River through a man-made ditch and control structure during a high flow event." Thus, as recently as 2011, which is the year during which the March 2011 aerial depicts water in the subject ditch, there appears to have been a surface hydrology connection between Tracy Lake South and the Mokelumne River. The District concedes that a surface hydrology connection between these features may be sporadic enough in nature (in response to climatic conditions and human intervention to control the gate structure) so as to be less than intermittent, which is the standard cited in the December, 2008 US EPA/Corps guidance. This is further complicated by the infrastructure just installed (summer 2015) under the Tracy Lakes Groundwater Recharge project DA authorization (described above). The project's infrastructure is designed to allow operators to control water inflow pumped upgradient into Tracy Lake South from the Mokelumne River on a highly precise basis. In order to the serve the purpose of groundwater recharge, it is all the more unlikely that surface water releases would be necessary in the future, unless potentially a significant rain event(s) occurred. The applicant's project description for the groundwater recharge project did not state that the existing culvert or gate structure would be removed, so the District assumes that it is still present, barring new information.

Based on the above analysis of surface hydrologic connections, the District has reconsidered the potential for Tracy Lake North to have a surface connection to the Mokelumne River on a time scale at least intermittent in nature. Analysis of available evidence does not support this finding.

Jurisdictional Assessment of Tracy Lake North. The District applied appropriate jurisdictional assessment standards this non-wetland aquatic feature, starting with a determination of whether Tracy Lake South was an "isolated" non-navigable intrastate water. Applying this standard, the District does not consider the feature to be isolated from the TNW, based on the reason that there is a connecting ditch that carries water (via a gate-controlled culvert) from Tracy Lake South into Tracy Lake North. Thus, the lakes are hydrologically connected. With a man-made ditch connection between Tracy Lake South and the TNW, there is the potential for water from the TNW to reach Tracy Lake South (from a surface water connection perspective, much less likely vice-versa).

The District then applied the significant nexus standard to Tracy Lake North (considered to be a "not relatively permanent" tributary, which is inclusive of lakes per

the guidance contained in the Corps' post-Rapanos "Instructional Guidebook, dated May 30, 2007). Based on this standard, the feature would need to have a more than speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW. In considering the relevant factors of flow frequency and duration between Tracy Lake North and the TNW, there are three justifications supporting a finding that any effects to the TNW are speculative or insubstantial:

- 1. As noted above (and in the administrative record for the project), the direction of flow for surface water in the study area is from Tracy Lake South to Tracy Lake North (in combination with Tracy Lake North' own upstream watershed drainage). With the pending operation of the groundwater recharge project, the potential for water from the Mokelumne River to reach Tracy Lake North is likely to be augmented. However, the potential for vice-versa to result is likely to be even more diminished than it was in a pre-project condition. The aerial photo sequence between April and August 2013 (Appendix C) is a helpful illustration of the propensity for Tracy Lake South to retain water for a longer time period than Tracy Lake North.
- 2. As noted above, the District reconsidered the potential for a direct surface water hydrology connection between Tracy Lake North and the Mokelumne River. If water from the Mokelumne River flows into Tracy Lake North, this would not affect the integrity of the Mokelumne River in a way that could be said to be more than speculative. For example, once the water is taken off-stream, the formal project description for the groundwater recharge project designates Tracy Lake South as "the" reservoir (not both lakes).
- 3. As noted above, there is a potential for an intermittent sub-surface hydrologic connection between Tracy Lake North and the Mokelumne River. However, lacking evidence such as presence of "seeps" in intervening topographic depressions in the area between the lake and the river, this factor cannot be said to have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW.

In summary, the District's determination, as also documented on the revised JD form, is that Tracy Lake North does not meet the significant nexus standard. As of December 10, 2015, the District completed coordination regarding this determination with US EPA Region 9, in accordance with the procedures identified in the June 5, 2007 US EPA/Corps coordination memorandum. As a result, the District has determined that Tracy Lake North is a non-jurisdictional intrastate lake.

Jurisdictional Assessment of <u>Non-Wetland Areas</u> of <i>Tracy Lake South. The District applied appropriate jurisdictional assessment standards to the approximately 7.054

acres of non-wetland lakebed within the OHWM of this aquatic feature, starting with a determination of whether Tracy Lake South was an "isolated" non-navigable intrastate water. Applying this standard, the District does not consider the feature to be isolated from the TNW, based on the reason that there is an above-mentioned man-made ditch connection between Tracy Lake South and the TNW, thus there is the potential for water from the TNW to reach Tracy Lake South (from a surface water connection perspective, much less likely vice-versa).

The District then applied the significant nexus standard to the 7.054 acres of nonwetland lakebed within the OHWM of this aquatic feature (considered to be a "not relatively permanent" tributary, which is inclusive of lakes per the guidance contained in the Corps' post-Rapanos "Instructional Guidebook, dated May 30, 2007). Based on this standard, the feature would need to have a more than speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW. In considering the relevant factors of flow frequency and duration between the subject aquatic feature and the TNW, there are two justifications supporting a finding of not more than speculative or insubstantial effect on the TNW:

1. As noted above, the man-made ditch constructed sometime between 1953 and 1968 was built to drain Tracy Lake South as part of its agricultural use. The ditch has a controlled valve/gate at its northern end, and information in the record indicates the gate may not have been opened to drain Tracy Lake South toward the Mokelumne River for the better part of 20 years (Bates #418). As also described above, apparently in 2011 there was water from the Mokelumne River that entered into Tracy Lake South; it is unknown if there was a flow of water from the lake into the river. The year 2011 is four years ago from present, and more than likely the event in question occurred in the spring (e.g., March 2011's aerial photo discussed above). This would influence the timeline to +/- 4.5 years from present. If water from the Mokelumne River flows into Tracy Lake South on a highly intermittent basis (unknown except for the event indicated by the appellant's representative, as discussed above), this would not affect the chemical, physical and/or biological integrity of the Mokelumne River in a way that could be said to be more than speculative within the last approximately five years. Regulatory Guidance Letter 05-02 speaks to the potential for "rapidly changing environmental conditions" to affect specific geographic areas, which is part of the rationale behind the Corps' 5-year expiration date for approved JDs. If this man-made ditch had been assessed in the 1990's, for instance, the District may have found evidence of a less-than-speculative effect of Tracy Lake South waters on the TNW. In more recent time (2010-2015), the District does not have evidence that surface water from Tracy Lake South has reached the TNW.

2. As noted above, there is a potential for an intermittent sub-surface hydrologic connection between Tracy Lake South and the Mokelumne River. However, lacking evidence such as presence of "seeps" in intervening topographic depressions (including the man-made ditch) in the area between Tracy Lake South and the river, this factor cannot be said to have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW.

In summary, the District's determination, as also documented on the revised JD form, is that the 7.054 acres of non-wetland lakebed within the OHWM of Tracy Lake South does not meet the significant nexus standard. Therefore, the District has determined that non-wetland areas of Tracy Lake South are non-jurisdictional lake due to failing to meet the significant nexus standard.

References

U.S. Environmental Protection Agency. Connectivity of streams and wetlands to downstream waters: a review and synthesis of the scientific evidence. EPA/600/R-14-475F, January 2015.

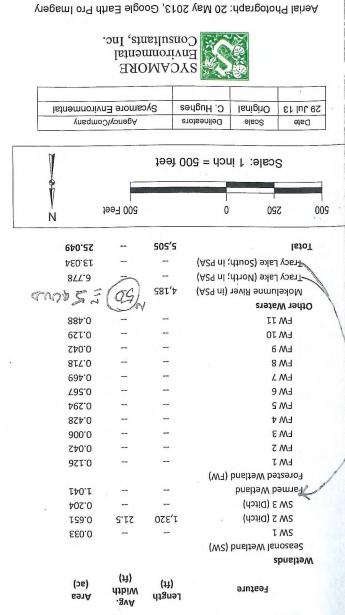
APPENDIX A

Appellant's JD Map

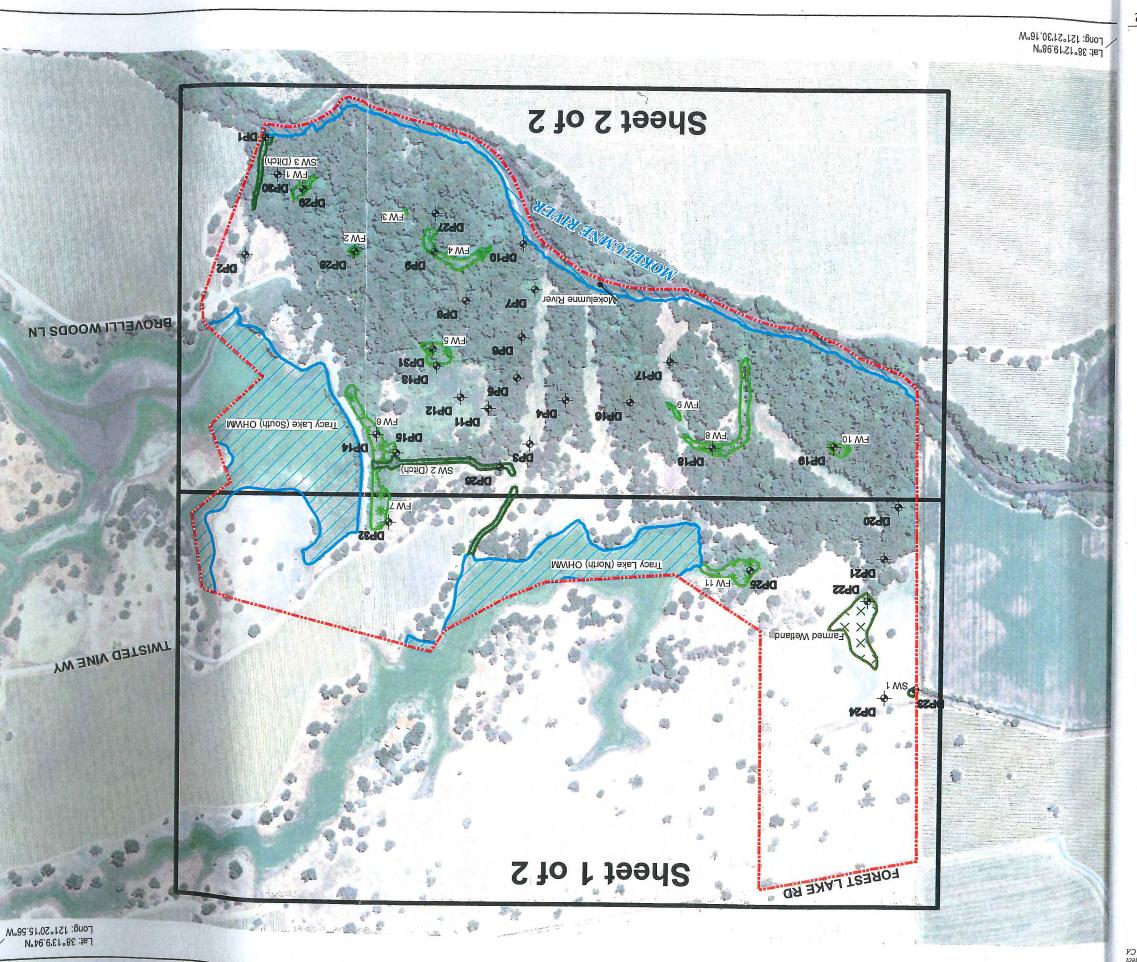
Tracy Lake Groundwater Recharge San Joaquin County, CA נפר באפר אפראמרפר

Key to Sheets Figure 4. Jurisdictional Delineation Map

N		500 Feet		0	520
	670.22		505'5		letoT
	13.034			(A29 ni ;dtuo2)	<u>т</u> гасу Lake
	844.9	\sim		(Aorth; In PSA)	9
2000	153	= (oc)	581'7	(A29 ni) nevia e	Mokelumn
	a de	' Ch		S	Other Water
	884.0		-		EM JJ
	621.0				EM TO
	240.0				6 M J
	817.0	-			8 M 3
	697.0	-			L W J
	792.0				9 M 3
	462.0				E M 2
	824.0				t W3
	900.0				EW 3
	0.042				FW 2
	921.0				EW 1
				(WF) bnslfa	
	1.041				W bemiel
	402.0				2M 3 (D!
	129.0	21.5	J'350	tch)	a) z wz
	6.033				τMS
				(W2) bnslfs\	
					wetlands
	691А (36)	.gvA Midth (ff)	(ֈֈ) բուցեր	əture	91
			ţr	Sheet Layou	
	nber	unu pue	noitsoo	Data point lo	+
			V	Lake OHWN	2
		MWHO	River C	Mokelumne	3
				Farmed Wet	~~
		(W)) bnslte	eW betearo	
		(MS)	bnslfe	W Isnozsa2	8
		(AS9)	у Агеа	Project Stud	[]



13024TracyLakeGroundwater Fig4DelinMap_KeytoSheets_v.mxd

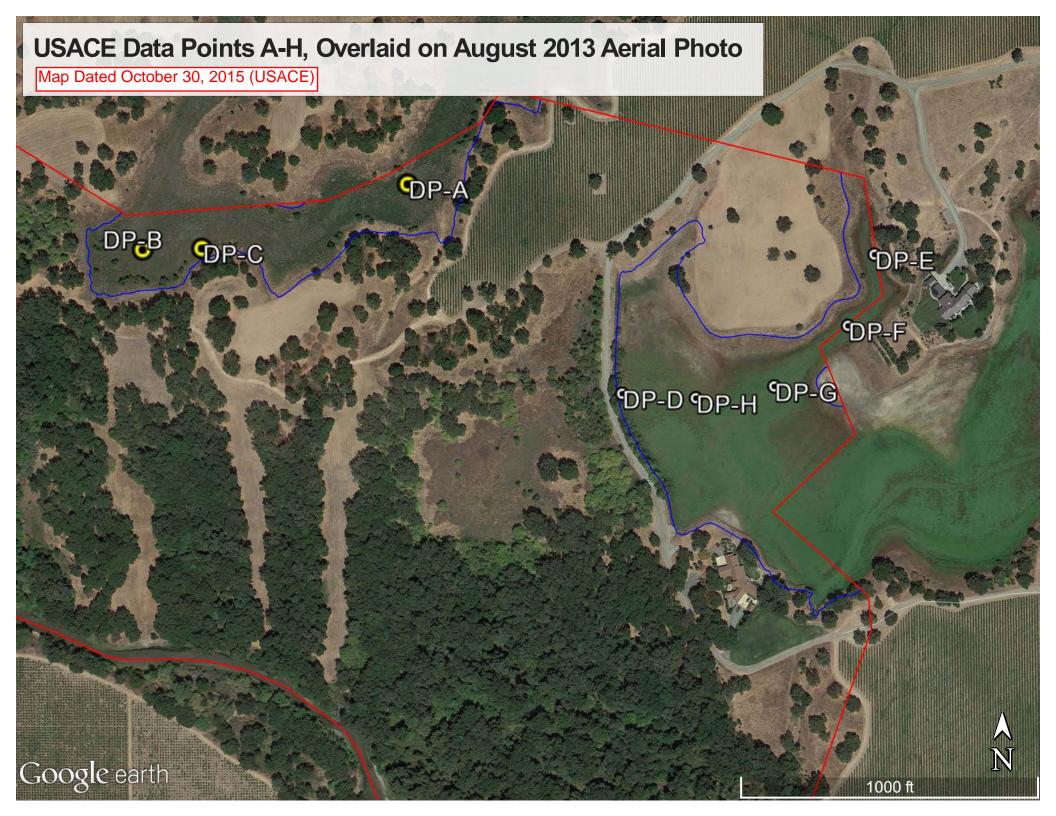


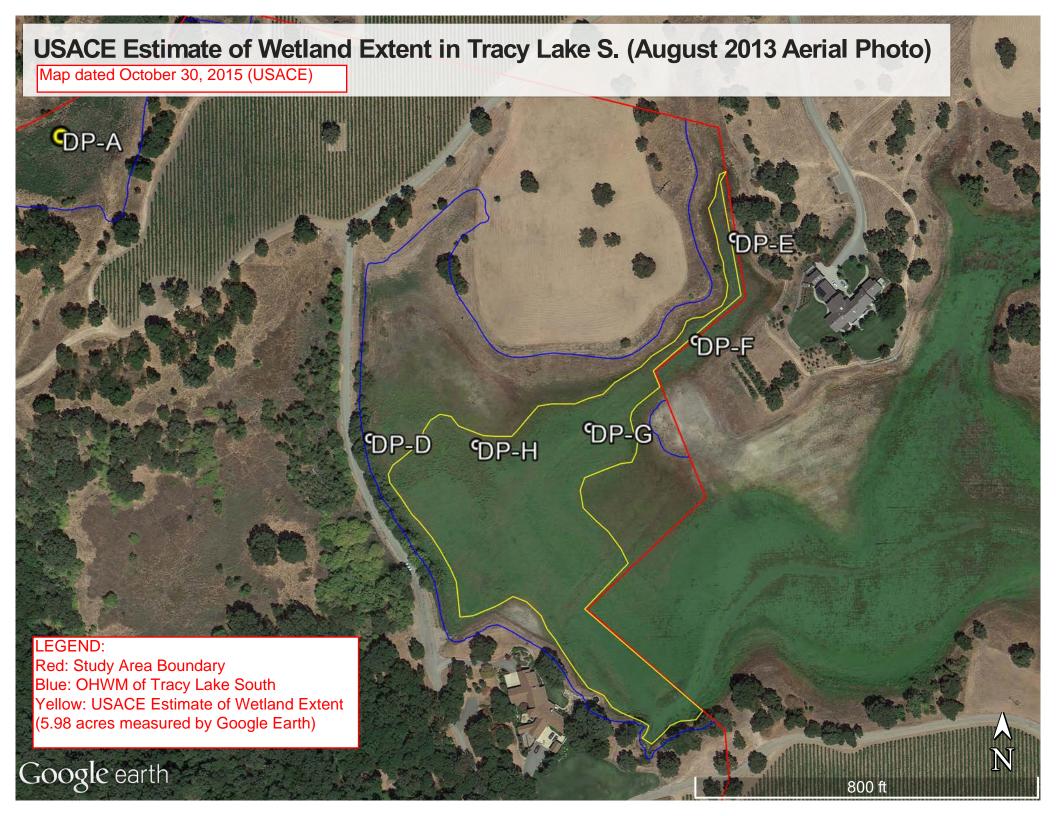
ional Delineation Recharge Project A, County, CA

. 57

APPENDIX B

USACE Data Sheets, JD Map and Representative Site Photos





Project/Site: Tracy Lakes (SPK-2011-01069)		City/Count	y: San Joac	uin	Sampling D	ate: Sept. 1	2, 201
Applicant/Owner: North San Joaquin Water Conservatio				and which is the first of the second		Contraction of the second second	
Investigator(s): Mary Pakenham-Walsh, USACE Sacram							1.02
Landform (hillslope, terrace, etc.): Depression							0
Subregion (LRR):							
Soll Map Unit Name:							
Are climatic / hydrologic conditions on the site typical for this							
Are Vegetation, Soil, or Hydrology sig						s N	o
Are Vegetation, Soil, or Hydrology na				eded, explain any ans			1
SUMMARY OF FINDINGS – Attach site map s							s, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes X No Wetland Hydrology Present? Yes X No		112.7.	he Sampled hin a Wetlar		No	X	
Remarks: DP is in a lower area	øF		and the second		valice e	stud	e.
Fran Sycamore's BPS loade		the c	IDAP-	was 11.5	msl.		
	Absolute	Dominan	t Indicator	Dominance Test w	orksheet:		
	% Cover	Species?	Status	Number of Dominar That Are OBL, FAC	t Species	ð	(A)
2				Total Number of Do Species Across All S		2	(B)
4		= Total Co	over	Percent of Dominan That Are OBL, FAC		0%	(A/B)
1NA				Prevalence Index v	vorksheet:		
2				Total % Cover of		lultiply by:	
3				OBL species	x 1 =	_	
4				FACW species	x 2 =		_
5				FAC species			
Herb Stratum (Plot size: 5'rad.)		= Total Co	over	FACU species			
1. Malvella Leprosa	40	Y	FACU	UPL species			
2. Chenippatium berlanditri var.	25	4	UPL	Column Totals:	(A)		_ (B)
3. Bare Grand sinvature	23			Prevalence Inc	iex = B/A =		
4. Lactura serviola	5	N	FACU	Hydrophytic Veget		s:	
5. Hirschfeldia incana	5	N	NOL	Dominance Tes			
6. Persicaria sp.	1	N	FAC-OSL	Prevalence Inde			Vienas
7. Galium aparine	2	N	FACU	Morphological A data in Rem	arks or on a sep	arate suppor arate sheet)	ting
8	77	= Total Co		Problematic Hy	drophytic Vegeta	ation ¹ (Explai	n)
Woody Vine Stratum (Plot size:) Down, 1.	[50 %] [2070	= 10tal Ca = 38.5 = 15.1		¹ Indicators of hydric be present, unless o			nust
2	-	= Total Co	over	Hydrophytic			
% Bare Ground in Herb Stratum 23% % Cover of	f Biotic C	rust <u>n</u>	la	Vegetation Present?	Yes N	10 <u>X</u>	
Remarks:							

Sampling Point:

Profile Description: (Descr Depth Matri		Dadas	Features				
(inches) Color (moist		Color (moist)	%	_Type ¹	Loc ²	Texture	Remarks
0-12" 104R41-2		7.54R 116	20	<u> </u>	<u></u>	SICL	
¹ Type: C=Concentration, D= Hydric Soil Indicators: (Ap Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sutfide (A4) Stratified Layers (A5) (LF 1 cm Muck (A9) (LRR D) Depleted Below Dark Su Thick Dark Surface (A12 Sandy Mucky Mineral (S	plicable to all LF RR C) face (A11)		wise note x (S5) trix (S6) cy Mineral ed Matrix dutrix (F3) Surface (rk Surfac essions (f	ed.) (F1) (F2) F6) e (F7)		Indicators fo 1 cm Muc 2 cm Muc Reduced Red Pare Other (Ex ³ Indicators of wetland hyd	ion: PL=Pore Lining, M=Matrix. r Problematic Hydric Soils ³ : ck (A9) (LRR C) ck (A10) (LRR B) Vertic (F18) ent Material (TF2) splain in Remarks) hydrophytic vegetation and drology must be present,
Sandy Gleyed Matrix (S4)						urbed or problematic.
Restrictive Layer (if presen	:):	A . 0.25					
		1/4					
Туре:		- NIA				A. Carlorado	V and
		N/A 				Hydric Soil Pr	resent? Yes <u>X</u> No
Type: Depth (inches): Remarks:	ors:	N/A				Hydric Soll Pr	resent? Yes <u>X</u> No
Type: Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicate			<u>.</u>				
Type: Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicator Primary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonri Sediment Deposits (B2) (Nonri Sediment Deposits (B2) (Nonri Surface Soil Cracks (B6) Surface Soil Cracks (B6) Inundation Visible on Aei Water-Stained Leaves (E	<u>of one required; (</u> verine) (Nonriverine) iverine) ial Imagery (B7)		B11) t (B12) ertebrate Sulfide Oc hizospher f Reduce Reduction Surface (dor (C1) res along d Iron (C4 on in Tille C7))	<u>Seconda</u> Wat Sed Drift Drai Cray ;) Satu Sha	resent? Yes No rry Indicators (2 or more required) er Marks (B1) (Riverine) iment Deposits (B2) (Riverine) Deposits (B3) (Riverine) nage Patterns (B10) Season Water Table (C2) yfish Burrows (C8) aration Visible on Aerial Imagery (C9) Ilow Aquitard (D3) 2-Neutral Test (D5)
Type: Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonri Sediment Deposits (B2) (Drift Deposits (B3) (Nonri Surface Soil Cracks (B6) Surface Soil Cracks (B6) Inundation Visible on Aeri	of one required; (verine) Nonriverine) iverine) ial Imagery (B7) 9)	check all that apply Salt Crust (Biotic Crus Aquatic inv Hydrogen S Oxidized R Presence c Recent Iror Thin Muck	B11) t (B12) ertebrate Sulfide Oc hizospher f Reduce r Reductio Surface (lain in Re	dor (C1) res along d Iron (C4 on in Tille C7))	<u>Seconda</u> Wat Sed Drift Drai Cray ;) Satu Sha	ary Indicators (2 or more required) er Marks (B1) (Riverine) Iment Deposits (B2) (Riverine) Deposits (B3) (Riverine) nage Patterns (B10) Season Water Table (C2) yfish Burrows (C8) Iration Visible on Aerial Imagery (C9) Ilow Aquitard (D3)
Type: Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicator Primary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonri Sediment Deposits (B2) (Nonri Sediment Deposits (B2) (Nonri Surface Soil Cracks (B6) Surface Soil Cracks (B6) Inundation Visible on Aei Water-Stained Leaves (E	of one required; (verine) Nonriverine) iverine) ial Imagery (B7) 9)	check all that apply Salt Crust (Biotic Crust Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Thin Muck Other (Exp	B11) t (B12) ertebrate Sulfide Oc hizospher f Reduce r Reductio Surface (lain in Re	dor (C1) res along d Iron (C4 on in Tille C7))	<u>Seconda</u> Wat Sed Drift Drai Cray ;) Satu Sha	ary Indicators (2 or more required) er Marks (B1) (Riverine) Iment Deposits (B2) (Riverine) Deposits (B3) (Riverine) nage Patterns (B10) Season Water Table (C2) yfish Burrows (C8) Iration Visible on Aerial Imagery (C9 Ilow Aquitard (D3)

Project/Site: Tracy Lakes (SPK-2011-01069)	21-0,00 V 2	City/County: Sa	n Joaquin		_ Sampling Date:	30 Sept. 28,	
Applicant/Owner: North San Joaquin Water Cons	ervation Distric	ct	State:	CA	_ Sampling Point	17	1.1
Investigator(s): Mary Pakenham-Walsh, USACE S	acramento D.	Section, Towns	hip, Range:	<u> </u>		100.17	-
Landform (hillslope, terrace, etc.): Degression	<u></u>	Local relief (cor	ncave, convex, none)	No	si si	ope (%):	0
Subregion (LRR):	Lat:	5.3.2 M G	Long:		Dat	um:	1
Soil Map Unit Name:			N	WI classif	fication:		
Are climatic / hydrologic conditions on the site typical		1 A & W. & W. & C. & C. & C. & C. & C. & C.		1	Charles and the second second	~	
Are Vegetation, Soil, or Hydrology	significantly	disturbed? M	Are "Normal Circur	nstances"	present? Yes	X_No_	
Are Vegetation, Soil, or Hydrology	naturally pro	oblematic?	(If needed, explain	any answ	ers in Remarks.)		
SUMMARY OF FINDINGS – Attach site r	nap showing	y sampling p	oint locations, t	ansect	s, important f	eatures,	etc.

Hydrophytic Vegel Hydric Soil Preser Wetland Hydrolog	nt?	Yes YesX YesX	No No No		Sampled Area n a Wetland?	Yes	s No_X	
Remarks: DP	is in a	lower	acrei	of the	North	Lake.	Elevator	Estimate
from	Sycamoris	EPS	loaded	with	LIDAR	who s	11 'msl.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover		t Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC:	ð	(A)
2			_	Total Number of Dominant Species Across All Strata:	3	(A) (B)
4 Sapling/Shrub Stratum (Plot size:)		= Total C	over	Percent of Dominant Species That Are OBL, FACW, or FAC:	0%	(A/B)
1		_	-	Prevalence Index worksheet: Total % Cover of:	Multiply by:	
3 4 5	-	_	=	OBL species x 1 FACW species x 2 FAC species x 3	=	2
et l		= Total Co	over	FACU species x 4		
Herb Stratum (Plot size: 5' rad) 1. Circium Vulgart 2. Lacture serriola 3. Bare bround	20	<u> </u>	FACU	UPL species x 5 Column Totals: (A) Prevalence Index = B/A =		(B)
4. Bromus diandrus 5. Chenopodium berlandieri var. sinu 6. Hirschfeldia incana	T	NN	NOL	Hydrophytic Vegetation Indicate Dominance Test is >50% Prevalence Index is ≤3.0 ¹		-
7. Hordevar sp. (muinum a marinum) 8. Galium aparine	 	N	FAC-FAC	/ Morphological Adaptations ¹ (F / data in Remarks or on a se	parate sheet)	
Woody Vine Stratum (Plot size:) De.M. 1.	12	= Total Co 37.5 15	over	Problematic Hydrophytic Vege ¹ Indicators of hydric soil and wetla be present, unless disturbed or pro-	nd hydrology r	
% Bare Ground in Herb Stratum 25 % Cover	of Biotic Cr	= Total Co rust/		Hydrophytic Vegetation Present? Yes	No <u>X</u>	
Remarks:						

Samp	lina	Dol	mi	ŀ.

B

					the absence of	manuality
Depth <u>Matrix</u>		x Features			6	in a start of a
(Inches) Color (moist) %	Color (moist)	%	Type	Loc ²	Texture	Remarks
0-12" 104R4/2 80	7.5 YR 4/6	20			SICL	
	·					
			-			
		· · · · · · · · · · · · · · · · · · ·				
¹ Type: C=Concentration, D=Depletion, RM				d Sand Gra	iins. ² Locat	ion: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators: (Applicable to a			d.)			or Problematic Hydric Soils ³ :
Histosol (A1)	Sandy Redo					ck (A9) (LRR C)
— Histic Epipedon (A2) Black Histic (A3)	Stripped Ma Loamy Muc		(E4)			ck (A10) (LRR B) I Vertic (F18)
Hydrogen Sulfide (A4)	Loamy Gley					ent Material (TF2)
Stratified Layers (A5) (LRR C)	X Depleted M		(, =)		the second s	xplain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark	- C.C.C.C.C. 1975-17	-6)			
Depleted Below Dark Surface (A11)	Depleted Da				MULTER P	
Thick Dark Surface (A12)	Redox Depr		8)			hydrophytic vegetation and
Sandy Mucky Mineral (S1)	Vernal Pool	s (F9)				drology must be present,
Sandy Gleyed Matrix (S4) Restrictive Layer (if present):					uniess disi	urbed or problematic.
Type:		2				
Depth (inches):	- NI	A			Hydric Soil P	resent? Yes X No
Remarks:					Tryane Gon T	
HYDROLOGY						
Wetland Hydrology Indicators:				-		
Wetland Hydrology Indicators: Primary Indicators (minimum of one require	and the second se	A.S.C.L.		_		ary Indicators (2 or more required)
Wetland Hydrology Indicators: Primary Indicators (minimum of one requir Surface Water (A1)	Salt Crust	(B11)			Wa	ter Marks (B1) (Riverine)
Wetland Hydrology Indicators: Primary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2)	Salt Crust Biotic Crus	(B11) st (B12)	(812)		Wa Sec	ter Marks (B1) (Riverine) liment Deposits (B2) (Riverine)
Wetland Hydrology Indicators: Primary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3)	Salt Crust Biotic Crus Aquatic In	(B11) st (B12) vertebrates			Wa Sec Drif	ter Marks (B1) (Riverine) liment Deposits (B2) (Riverine) t Deposits (B3) (Riverine)
Wetland Hydrology Indicators: Primary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	Salt Crust Biotic Crus Aquatic In Hydrogen	(B11) st (B12) vertebrates Sulfide Od	or (C1)	Living Root	Wa Sec Drif Dra	ter Marks (B1) (Riverine) liment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10)
Wetland Hydrology Indicators: Primary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)	Salt Crust Biotic Crus Aquatic In Hydrogen) Oxidized F	(B11) st (B12) vertebrates Sulfide Od Rhizospher	or (C1) es along	Living Root	— Wa — Sec — Drit — Dra s (C3) _ Dry	ter Marks (B1) (Riverine) liment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2)
Wetland Hydrology Indicators: Primary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine Drift Deposits (B3) (Nonriverine)	Salt Crust Biotic Crus Aquatic In Hydrogen) Oxidized F Presence	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduce	or (C1) es along d Iron (C4	l)		ter Marks (B1) (Riverine) liment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10)
Wetland Hydrology Indicators: Primary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)	Salt Crust Biotic Crus Aquatic Im Hydrogen) Oxidized F Presence Recent Iro	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduce	or (C1) es along d Iron (C4 on in Tille		— Wa Sec Drit Dra s (C3) Dry Cra Sat	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) iyfish Burrows (C8)
Wetland Hydrology Indicators: Primary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine Drift Deposits (B3) (Nonriverine)	Salt Crust Biotic Crus Aquatic Im Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduces on Reductio	or (C1) es along d Iron (C4 on in Tille C7)	l)	— Wa — Sec — Drit — Dra — Dra — Cra — Sat — Sat	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9)
Wetland Hydrology Indicators: Primary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (Salt Crust Biotic Crus Aquatic Im Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduces on Reductio Surface (G	or (C1) es along d Iron (C4 on in Tille C7)	l)	— Wa — Sec — Drit — Dra — Dra — Cra — Sat — Sat	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3)
Wetland Hydrology Indicators: Primary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Mater-Stained Leaves (B9) Field Observations:	Salt Crust Biotic Crus Aquatic Im Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reducer on Reduction Surface (Colain in Rei	or (C1) es along d Iron (C4 on in Tille C7)	l)	— Wa — Sec — Drit — Dra — Dra — Cra — Sat — Sat	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Mater-Stained Leaves (B9) Field Observations:	Salt Crust Biotic Crus Aquatic In Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck Other (Exp	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced m Reduction Surface (Colain in Rei ches):	or (C1) es along d Iron (C4 on in Tille C7)	l)	— Wa — Sec — Drit — Dra — Dra — Cra — Sat — Sat	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Water-Stained Leaves (B9) Field Observations: Surface Water Present?	Salt Crust Biotic Crus Aquatic In Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck Other (Exp	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduces on Reductio Surface (C plain in Rei ches): ches):	or (C1) es along d Iron (C4 on in Tille C7)	i) d Soils (C6)	Wa Sec Drit Dra Cra Sat Sha FAd	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required)	Salt Crust Biotic Crus Aquatic In Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck Other (Exp Other (Exp Other (Exp Depth (in Depth (in Depth (in	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced m Reductio Surface ((ches): ches): ches):	or (C1) es along d Iron (C4 on In Tille C7) marks)	i) d Soils (C6) Wetla	Wa Wa Drit (C3) Dry Cra Sat Sat FAi Sha	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3) C-Neutral Test (D5)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required)	Salt Crust Biotic Crus Aquatic In Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck Other (Exp Other (Exp Other (Exp Depth (in Depth (in Depth (in	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced m Reductio Surface ((ches): ches): ches):	or (C1) es along d Iron (C4 on In Tille C7) marks)	i) d Soils (C6) Wetla	Wa Wa Drit (C3) Dry Cra Sat Sat FAi Sha	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3) C-Neutral Test (D5)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required)	Salt Crust Biotic Crus Aquatic Im Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck Other (Exp Other (Exp Other (Exp Depth (in Depth (in Depth (in Depth (in Depth (in Depth (in	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced m Reduction Surface (C plain in Rei ches): ches): photos, pre	or (C1) es along d Iron (C4 on In Tille C7) marks) evious Ins	i) d Soils (C6) 	Wa Wa Bang Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3) C-Neutral Test (D5) Present? Yes No
Wetland Hydrology Indicators: Primary Indicators (minimum of one required) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Water Table Present? Yes Saturation Present? Yes Cincludes capillary fringe) Describe Recorded Data (stream gauge, not stream gauge, not	Salt Crust Biotic Crus Aquatic Im Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck Other (Exp Other (Exp Other (Exp Depth (in Depth (in Depth (in Depth (in Depth (in Depth (in	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced m Reduction Surface (C plain in Rei ches): ches): photos, pre	or (C1) es along d Iron (C4 on In Tille C7) marks) evious Ins	i) d Soils (C6) 	Wa Wa Bang Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3) C-Neutral Test (D5) Present? Yes No
Wetland Hydrology Indicators: Primary Indicators (minimum of one required)	Salt Crust Biotic Crus Aquatic Im Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck Other (Exp Other (Exp Other (Exp Depth (in Depth (in Depth (in Depth (in Depth (in Depth (in	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced m Reduction Surface (C plain in Rei ches): ches): photos, pre	or (C1) es along d Iron (C4 on In Tille C7) marks) evious Ins	i) d Soils (C6) 	Wa Wa Bang Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3) C-Neutral Test (D5) Present? Yes No
Wetland Hydrology Indicators: Primary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Surface Soil Cracks (B6) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Water Table Present? Yes Saturation Present? Yes Saturation Present? Yes Cincludes capillary fringe) Describe Recorded Data (stream gauge, minimum of the second stream stream stream stream stream stream of the second stream stream stream of the second stream stream stream of the second stream	Salt Crust Biotic Crus Aquatic Im Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck Other (Exp Other (Exp Other (Exp Depth (in Depth (in Depth (in Depth (in Depth (in Depth (in	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced m Reduction Surface (C plain in Rei ches): ches): photos, pre	or (C1) es along d Iron (C4 on In Tille C7) marks) evious Ins	i) d Soils (C6) 	Wa Wa Bang Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3) C-Neutral Test (D5) Present? Yes No
Wetland Hydrology Indicators: Primary Indicators (minimum of one required) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Saturation Present? Yes Gaturation Present? Yes Saturation Present? Yes Surface Present? Yes Saturation Present?	Salt Crust Biotic Crus Aquatic Im Hydrogen) Oxidized F Presence Recent Iro B7) Thin Muck Other (Exp Other (Exp Other (Exp Depth (in Depth (in Depth (in Depth (in Depth (in Depth (in	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced m Reduction Surface (C plain in Rei ches): ches): photos, pre	or (C1) es along d Iron (C4 on In Tille C7) marks) evious Ins	i) d Soils (C6) 	Wa Wa Bang Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa Wa	ter Marks (B1) (Riverine) diment Deposits (B2) (Riverine) t Deposits (B3) (Riverine) inage Patterns (B10) -Season Water Table (C2) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) allow Aquitard (D3) C-Neutral Test (D5) Present? Yes No

nvestigator(s): Mary Pakenham-Walsh, USACE Sa						7 02
andform (hillslope, terrace, etc.): <u>Gentle Slope</u>						
ubregion (LRR):				the second second states in an independent		
bil Map Unit Name:			100	NWI classific	ation:	
re climatic / hydrologic conditions on the site typical for	A STATE OF A STATE AND A STATE OF A					
re Vegetation, Soll, or Hydrology	significantly of	disturbed?	N Are "	Normal Circumstances" p	resent? Yes X_ No	
e Vegetation, Soil, or Hydrology	naturally pro	blematic?	(If ne	eded, explain any answer	rs in Remarks.)	
UMMARY OF FINDINGS – Attach site ma	ap showing	samplin	g point le	ocations, transects	, important features,	etc.
Hydrophytic Vegetation Present? Yes	No_X	Is th	e Sampled	Area		
	No		in a Wetlan		nsi)	
Vetland Hydrology Present? Yes X	No	12.11	0.309.0290	A GA 12' N	nsl)	
Buttom and Syramori	the second s				in the "leke	
EGETATION – Use scientific names of p						
Tree Stratum (Plot size:)	Absolute		Indicator	Dominance Test works	sheet:	
	<u>% Cover</u>	Species	Status	Number of Dominant Sp That Are OBL, FACW, o		A)
						~)
				Total Number of Domina Species Across All Strat		B)
						0,
apling/Shrub Stratum (Plot size:)		= Total Co	ver	Percent of Dominant Sp That Are OBL, FACW, c		A/B)
				Prevalence Index work	sheet:	
				Total % Cover of:	Multiply by:	
				OBL species	x1=	
				FACW species	x2=	
		-		the second of here and a second second	x 3 =	
Herb Stratum (Plot size: <u>5' rad.</u>)		= Total Co	ver		x 4 =	
Brownus diamanus	40	Y	NOL		x 5 =	120
Polyposen mongaliensis	30	Y	FACIN	Column Totals:	(A)	(B)
Lactura serviola	15	N	FACU	Prevalence Index	= B/A =	
. Galum aparine	10	N	FACU	Hydrophytic Vegetatio	n Indicators:	
Cirsium Vulgare	T	N	FACU	Dominance Test is	>50%	
. Bare bround	5		901M	Prevalence Index is	i≤3.0 ¹	
· · · · · · · · · · · · · · · · · · ·				Morphological Adap	otations ¹ (Provide supportin	g
·				1 I I I I I I I I I I I I I I I I I I I	or on a separate sheet) hytic Vegetation ¹ (Explain)	
	- 95%	= Total Co	ver	Frobientatic Hydrop	inyus vegetation (Explain)	
Voody Vine Stratum (Plot size:)	Dann! (50 %= 1 2070=	1715	THE OF	¹ Indicators of bydric soil	and wetland hydrology mu	st
	Course		_	be present, unless distu		
	- Lot-of	= Total Co	Ver	Hydrophytic		
		- I Utel UG	VGI			
6 Bare Ground in Herb Stratum % Co	over of Biotic Cr			Vegetation Present? Yes	s No X	

San	anling	Poin	4.

C

Profile Description: (Describe to the	English and the second s		cator or cor	firm the absence	e of indicators.)
Depth <u>Matrix</u> (inches) Color (moist) %		Features % Ty	vpel_Loc	² Texture	Remarks
0-12" 104R4/2 5	0 7.5 YR 416		CW	1	2
1011222	renging to				Value and the second second
			<u> </u>		
	<u></u>				
	(mixed)				
					L
· · · · · · · · · · · · · · · · · · ·		<u> </u>			
				_	
				10-1 21-	
¹ Type: C=Concentration, D=Depletion, Hydric Soll Indicators: (Applicable to					cation: PL=Pore Lining, M=Matrix. s for Problematic Hydric Soils ³ :
Histosol (A1)					Muck (A9) (LRR C)
Histosof (A1) Histic Epipedon (A2)	Sandy Redox Stripped Mat				Muck (A10) (LRR B)
Black Histic (A3)	Loamy Muck		0		ced Vertic (F18)
Hydrogen Sulfide (A4)	Loamy Gleye				Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Z Depleted Ma		()		(Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark S				
Depleted Below Dark Surface (A11		Contraction of the second s	7)		
Thick Dark Surface (A12)	Redox Depre	essions (F8)			s of hydrophytic vegetation and
Sandy Mucky Mineral (S1)	Vernal Pools	(F9)			I hydrology must be present,
Sandy Gleyed Matrix (S4)				unless	disturbed or problematic.
Restrictive Layer (if present):					
Type:		10			
1 Provense and the second s		NIA			· · · · · · · · · · · · · · · · · · ·
Depth (inches):		NIA		Hydric Sol	Il Present? Yes <u>X</u> No
Depth (inches):		MA		Hydric Sol	ll Present? Yes <u>X</u> No
Depth (inches):		MIA		Hydric Sol	ll Present? Yes <u>X</u> No <u> </u>
Depth (inches): Remarks: IYDROLOGY		MA		Hydric Sol	ll Present? Yes <u>X</u> No <u> </u>
Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicators:	uired; check all that apply				Il Present? Yes <u>No</u> No <u>ndary Indicators (2 or more required)</u>
Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one rec					ondary Indicators (2 or more required)
Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one rec Surface Water (A1)	Salt Crust (I	9 B11)		<u>Seco</u>	ondary Indicators (2 or more required) Water Marks (B1) (Riverine)
Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one rec Surface Water (A1) High Water Table (A2)	Salt Crust (I Biotic Crust) B11) (B12)	13)		ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one red Surface Water (A1) High Water Table (A2) Saturation (A3)	Salt Crust (I Biotic Crust Aquatic Inve) B11) (B12) ertebrates (B			ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one rec Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S) B11) (B12) ertebrates (B sulfide Odor ((C1)		ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one rec Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriver	ine) Salt Crust (I Solid Crust Aquatic Inve Hydrogen S	B11) (B12) ertebrates (B sulfide Odor (nizospheres ;	(C1) along Living	<u>Seco</u>	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2)
Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one rec 	ine) Salt Crust (I Solt Crust Aquatic Inve Hydrogen S Oxidized Rh	B11) (B12) ertebrates (B sulfide Odor (nizospheres ; f Reduced Ind	(C1) along Living on (C4)	Seco Roots (C3)	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Depth (inches): Remarks: IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one rec Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriver Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)	Image Content of Content (I) Image Content (I) Image Content (I) Image Content II Image Content III Image Content Image Content III Image Content IIII Image Content III Image Content III Image Content II) B11) (B12) ertebrates (B Sulfide Odor (nizospheres a f Reduced Ind Reduction in	(C1) along Living on (C4)	Seco Roots (C3) 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Depth (inches):	Ime) Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Oxidized Rh Presence of Recent Iron ry (B7) Thin Muck S	B11) (B12) ertebrates (B sulfide Odor (nizospheres a f Reduced Ind Reduction in Surface (C7)	(C1) along Living on (C4) n Tilled Soils	Seco Roots (C3) 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
Depth (inches):	Ime) Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Oxidized Rh Presence of Recent Iron ry (B7) Thin Muck S) B11) (B12) ertebrates (B Sulfide Odor (nizospheres a f Reduced Ind Reduction in	(C1) along Living on (C4) n Tilled Soils	Seco Roots (C3) 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Oxidized R Presence of Recent Iron Thin Muck S Other (Expl	B11) (B12) ertebrates (B sulfide Odor (nizospheres a f Reduced Iro Reduction ir Surface (C7) ain in Remar	(C1) along Living on (C4) n Tilled Soils	Seco Roots (C3) 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Oxidized Rh Presence of Recent Iron Recent Iron Thin Muck S Other (Expl No X Depth (incl	B11) (B12) ertebrates (B sulfide Odor (nizospheres a f Reduced Ind Reduction in Surface (C7) ain in Remar	(C1) along Living on (C4) n Tilled Soilt	Seco Roots (C3) 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Fine) Oxidized Ri Presence of Recent Iron ry (B7) No <u>X</u> Depth (incl No <u>X</u> Depth (incl	B11) (B12) ertebrates (B sulfide Odor (nizospheres a f Reduced Ind Reduction in Reduction in Surface (C7) ain in Remar nes):	(C1) along Living on (C4) n Tilled Soils rks)	Roots (C3)	Andary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Oxidized Rh Presence of Recent Iron Recent Iron Thin Muck S Other (Expl No X Depth (incl	B11) (B12) ertebrates (B sulfide Odor (nizospheres a f Reduced Ind Reduction in Reduction in Surface (C7) ain in Remar nes):	(C1) along Living on (C4) n Tilled Soils rks)	Roots (C3)	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Tine) Oxidized Rt Presence of Recent Iron ry (B7) No X Depth (Incl No X Depth (Incl	B11) (B12) ertebrates (B sulfide Odor (nizospheres a f Reduced Iro Reduction ir Surface (C7) ain in Remar nes): nes): nes):	(C1) along Living on (C4) n Tilled Soils rks)	Roots (C3) (C6) Wetland Hydrolog	andary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Tine) Oxidized Ri Presence of Recent Iron ry (B7) No X Depth (Incl No Depth (Incl No No	B11) (B12) ertebrates (B sulfide Odor (nizospheres ; f Reduced Iro Reduction ir Surface (C7) ain in Remar nes): nes): nes): nes):	(C1) along Living on (C4) n Tilled Soils rks)	Second	andary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Tine) Oxidized Ri Presence of Recent Iron ry (B7) No X Depth (Incl No Depth (Incl No No	B11) (B12) ertebrates (B sulfide Odor (nizospheres ; f Reduced Iro Reduction ir Surface (C7) ain in Remar nes): nes): nes): nes):	(C1) along Living on (C4) n Tilled Soils rks)	Second	andary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Tine) Oxidized Ri Presence of Recent Iron ry (B7) No X Depth (Incl No Depth (Incl No No	B11) (B12) ertebrates (B sulfide Odor (nizospheres ; f Reduced Iro Reduction ir Surface (C7) ain in Remar nes): nes): nes): nes):	(C1) along Living on (C4) n Tilled Soils rks)	Second	andary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Tine) Oxidized Ri Presence of Recent Iron ry (B7) No X Depth (Incl No Depth (Incl No No	B11) (B12) ertebrates (B sulfide Odor (nizospheres ; f Reduced Iro Reduction ir Surface (C7) ain in Remar nes): nes): nes): nes):	(C1) along Living on (C4) n Tilled Soils rks)	Second	andary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Depth (inches):	Salt Crust (I Biotic Crust Aquatic Inve Hydrogen S Tine) Oxidized Ri Presence of Recent Iron ry (B7) No X Depth (Incl No Depth (Incl No No	B11) (B12) ertebrates (B sulfide Odor (nizospheres ; f Reduced Iro Reduction ir Surface (C7) ain in Remar nes): nes): nes): nes):	(C1) along Living on (C4) n Tilled Soils rks)	Second	Andary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)

Project/Site: Tracy Lakes (SPK-2011-01069)		City/Coun	ty: <u>San Joac</u>	Juin		_ Samplin	g Date:	30 Sept. 18, 2
Applicant/Owner: North San Joaquin Water Conserv	ation Distri	ct	1.11.11	State:	CA	Samplin	g Point:	D
nvestigator(s): Mary Pakenham-Walsh, USACE Sacr	amento D.	Section, T	ownship, Ra	nge:			N. W. S. S.	
andform (hillslope, terrace, etc.): (edge of) depr							Slo	pe (%): (
ubregion (LRR):								
oil Map Unit Name:								
re climatic / hydrologic conditions on the site typical for								
re Vegetation, Soil, or Hydrology						1.		No
e Vegetation, Soil, or Hydrology			· · · · ·					
UMMARY OF FINDINGS – Attach site ma	5 - D - D - D - D - D - D - D - D - D -				10. NY 1		1.1	atures, e
Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes _X	No	19 1	he Sampled hin a Wetlar		Yes	No	X	
Remarks: ASout 1070 acted or 3-4' higher along the slop in plot ble not represent	erhag i i um	of S odiat	ichik ely w	goodding Lst of AF	ii a XP. T	utidai Didao	s ran	trd
EGETATION – Use scientific names of pla	ints.	3	DPE	eviden	11	3.5' 1		
Gree Stratum (Plot size:) 1.)			t Indicator Status	Dominance T Number of Do That Are OBL	minant	Species	-	(A)
	-		\equiv	Total Number Species Acros			3	2 2 (B)
Sapling/Shrub Stratum (Plot size:)		= Total C	over	Percent of Do That Are OBL,			33	<u>/6 (</u> A/E
	_	·		Prevalence In			The state	1.0
				Total % C			Multiply	
				OBL species	and the second sec			
				FACW species			3 =	
		= Total C	over	FACU species			_	
erb Stratum (Plot size: red)	1000			UPL species			5 =	
Galium aparine		<u> </u>	FACU	Column Totals		(A)		(B)
Polypogan Monspelinsis Bromus diandrus	30		FACIN	Bassala	and the day	500		
RUMUS diandrus RUMUX Crispus	10	-J	FAC	Hydrophytic V	15. 17.0440	x = B/A =	ore	
Cardous pycnocephalus	$-\frac{10}{T}$	1	NOL	Dominanc	1 (1 T (1)))		UIS.	
				Prevalenc				
	1			Morpholog	ical Ad	aptations ¹ (Provide s	supporting
				data in	Remark	s or on a s	eparate :	sheet)
CAR DISSING C 1	100	= Total Co	over	Problemat	tic Hydro	ophytic Veg	etation ¹ ((Explain)
Voody Vine Stratum (Plot size:) 7201	1. 50.90=		2	10000000000				
	170% =	20		¹ Indicators of h be present, un				
······		= Total Co	over	Hydrophytic Vegetation		and the second		1
6 Bare Ground in Herb Stratum んしん % Cov	er of Biotic C	rust_n	4	Present?	Y	95	No	X
Remarks:						·		

SOIL								Sar	npling Point:	D
Profile Desc	ription: (Describe	to the dep	th needed to docum	ent the i	ndicator o	r confirm	n the absence	of indicators	5.)	
Depth	Matrix		Redox	Feature	s	-1.11. Y				- 6.5
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture		Remarks	
0-15	1018 1/2	20	7.548416	20	<u></u> P.	<u>M</u>	<u>_sic</u>	More	clayey T	han A-C
1Tune: 0=00			=Reduced Matrix, CS		d or Coater	1 Sand Gr		cation: PI =P	ore Lining, M=N	
			LRRs, unless other			a Sanu Gi			atic Hydric Soi	
Histosol Histic Ep Black Hi Hydroge Stratified 1 cm Mu Depleted Thick Da Sandy M Sandy G	(A1) bipedon (A2) stic (A3) bit Layers (A5) (LRR b) ck (A9) (LRR D) d Below Dark Surfac ark Surface (A12) Mucky Mineral (S1) bleyed Matrix (S4)	C)	Sandy Redo: Stripped Mat Loamy Muck Loamy Gleye Depleted Ma Redox Dark Depleted Da Redox Depre Vernal Pools	x (S5) trix (S6) ty Minera ed Matrix trix (F3) Surface rk Surfac essions (i (F1) (F2) (F6) ce (F7)		1 cm M 2 cm M Reduc Red P Other ³ Indicators wetland	Muck (A9) (LF Muck (A10) (L ed Vertic (F1) arent Materia (Explain in Re of hydrophyti	RR C) RR B) B) I (TF2) emarks) c vegetation an ist be present,	
Type: Depth (in	Layer (if present): ches):		nla				Hydric Soil	Present?	Yes <u>X</u> 1	No
Remarks:	voted rec of sail on ded roots	lox a ad un likeh	long pore	linio firma I. A	as as uso no	ncen live t con	y of ul raits. T.	ich c otre (227	and ges	st tallt

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
Surface Water (A1) Salt Crust (B11)	Water Marks (B1) (Riverine)
High Water Table (A2) Biotic Crust (B12)	Sediment Deposits (B2) (Riverine)
Saturation (A3) Aquatic Invertebrates (B13	3) Drift Deposits (B3) (Riverine)
Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C	
Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres ald	ong Living Roots (C3) Dry-Season Water Table (C2)
Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron	(C4) Crayfish Burrows (C8)
Surface Soil Cracks (B6) Recent Iron Reduction in 1	Filled Soils (C6) Saturation Visible on Aerial Imagery (C9)
X Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9) Other (Explain in Remarks) FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No X Depth (inches);	
Water Table Present? Yes No _X_ Depth (inches):	
Saturation Present? Yes No Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous	i inspections), if available:
Remarks:	studied for possible ORCS
i see note above under stils.	
but did not consider indicato	to be mot. April - The
Arrids showing inundation : March ,	June, Sept. ; OCT. 2011; NY ZO13,

D

Project/Site: Tracy Lakes (SPK-2011-01069)	City/County: San Joa	guin	Sampling Date: Sept. 198, 2015
Applicant/Owner: North San Joaquin Water Conservation Distr	ict	State: CA	Sampling Point:
Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D.			
Landform (hillslope, terrace, etc.):	_ Local relief (concave,	convex, none):	e Slope (%): 0-5 %
Subregion (LRR): Lat:			A CONTRACTOR OF
Soil Map Unit Name:			
Are climatic / hydrologic conditions on the site typical for this time of y		the state of the state of the state	
Are Vegetation, Soil, or Hydrology significant			
Are Vegetation, Soil, or Hydrology naturally p			Contraction of the state of the
SUMMARY OF FINDINGS – Attach site map showin	유민이는 방송에서 전에 걸렸다.		
When we want to be the second s			, mportant routeroo, etci
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? YesX No	is the samplet	d Area	
Wetland Hydrology Present? Yes X No	within a Wetla	nd? Yes_X	No
Remarks: DP represents a transiti	- 1 Kas	apprend "Isk	Callon "
DP represents a parisiti	a pran e	VIDUAL INIC	, Souther .
Approximate elevation basid on s	Sycamores 6	ps withdre	1984: 13 ms/.
VEGETATION – Use scientific names of plants.			
Absolute	The second se	Dominance Test work	sheet:
Tree Stratum (Plot size:) <u>% Cove</u>	r Species? Status	Number of Dominant S	pecies
1		That Are OBL, FACW,	or FAC: (A)
2		Total Number of Domin	ant 3 (B)
3		Species Across All Stra	ita: (B)
4	= Total Cover	Percent of Dominant S	
Sapling/Shrub Stratum (Plot size:)		That Are OBL, FACW,	or FAC: (A/B)
1		Prevalence Index wor	ksheet:
2	1000 Carl	Total % Cover of:	Multiply by:
3		OBL species	x 1 =
4			x 2 =
5			× 3 =
Herb Stratum (Plot size: 51 red.)	_ = Total Cover		×4=
1. Polypagon Marspeliensis 20	Y FACIN		x 5 =
2. RUMIX CRISPUS 20	Y FAC	Column Totals:	(A) (B)
3. Browing hordeaccus 40	Y FACU	Prevalence Index	= B/A =
4. Bramus diandrus 5	N NOL	Hydrophytic Vegetatio	on Indicators:
5. Festica perennis (Italian rye gras) T	N FAC	X Dominance Test is	>50%
6. Rare Ground 15		Prevalence Index is	s ≤3.0 ¹
7		Morphological Ada	ptations ¹ (Provide supporting
8	<u></u>	[1] How MAN AND CONTRACT AND ADDRESS OF	s or on a separate sheet)
85	_ = Total Cover	Problematic Hydro	ohytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)		Indiantes of builds and	Construction of the destruction
1 20%=	<u>- \/</u>	be present, unless dist	l and wetland hydrology must irbed or problematic.
2	= Total Covor	Hydrophytic	
10	_= Total Cover	Vegetation	1
% Bare Ground in Herb Stratum % Cover of Biotic (Crust	Present? Ye	s No
Remarks:			
and the second sec			

20

Sampling Pr	Sector

E

Profile Desc	ription: (Describe	to the depti	needed to docur	nent the i	ndicator	or confirm	the absence	of indicators.)
Depth	Matrix			x Features			and the second second	
(inches)	Color (moist)		Color (moist)		Type	Loc ²		Remarks
0-12"	1044412	SU	7.5412416	Zo	<u>c</u> ,p	M.	Sic	
					_			
		· · · · · · ·						
								ter ter chinese ter ter ter ter ter ter ter ter ter te
	oncentration, D=Dep					d Sand Gr		ation: PL=Pore Lining, M=Matrix. for Problematic Hydric Soils ³ :
D 5 00 0 0 0 0 0	ndicators: (Applic	able to all L		and the second second	əd.)			
Histosol			Sandy Red Stripped Ma					uck (A9) (LRR C) uck (A10) (LRR B)
Black Hi	bipedon (A2) stic (A3)		Loamy Muc		(E1)			ed Vertic (F18)
	n Sulfide (A4)		Loamy Gley					irent Material (TF2)
	Layers (A5) (LRR C	C)	Z Depleted M		1.4			Explain in Remarks)
1 cm Mu	ick (A9) (LRR D)		Redox Dark					
the second se	Below Dark Surface	e (A11)	Depleted D				40.00000	tage in a state of the state of the state of the
the second se	ark Surface (A12)		Redox Dep		-8)			of hydrophytic vegetation and hydrology must be present,
	lucky Mineral (S1) leyed Matrix (S4)		Vernal Poo	IS (F9)				sturbed or problematic.
	_ayer (if present):				ā.			eternese et presidente
Type:							1.1.1.1.1	
10 10 10 10 10 10 10 10 10 10 10 10 10 1	ches):						Hydric Soil	Present? Yes X No
Remarks:							1-10-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	
HYDROLO	GY							
	drology Indicators:							
	cators (minimum of o		check all that app	v)			Secon	dary Indicators (2 or more required)
	Water (A1)		Salt Crust	and the second second			w	ater Marks (B1) (Riverine)
And the second s	ter Table (A2)		Biotic Cru	10 million (10 mil				ediment Deposits (B2) (Riverine)
Saturatio				vertebrate	s (B13)		D	rift Deposits (B3) (Riverine)
	larks (B1) (Nonriver	ine)	Hydrogen	Sulfide Od	dor (C1)			rainage Patterns (B10)
Sedimer	nt Deposits (B2) (No	nriverine)	Oxidized	Rhizosphe	res along	Living Roo	ots (C3) D	ry-Season Water Table (C2)
Drift Dep	posits (B3) (Nonrive	rine)	Presence	of Reduce	d Iron (C4	4)		rayfish Burrows (C8)
Surface	Soil Cracks (B6)		Recent In	on Reducti	on in Tille	d Soils (C6		aturation Visible on Aerial Imagery (C9)
the second secon	on Visible on Aerial I	Imagery (B7		< Surface (hallow Aquitard (D3)
and with some the second state of the	tained Leaves (B9)		Other (Ex	plain in Re	marks)		Đ	AC-Neutral Test (D5)
Field Obser						-		
Surface Wat			lo <u> </u>					
Water Table			lo <u>X</u> Depth (ir	and the second second		-	14.4	a same in in
Saturation P (includes ca)		'es N	lo <u> </u>	iches):	-	_ Wetl	and Hydrology	/ Present? Yes <u>X</u> No
Describe Re	corded Data (stream	gauge, mo	nitoring well, aerial	photos, pr	evious ins	pections),	if available:	
	a series of the design of	0.1.4	4 2 A 2 A 2					
Remarks:	Toursdale	in site	the on a	rends	det	d in	anch, JI	ing, Spl. + achiler
1.1.1						(A)		
	Zall, B	cerb 1	pril à Ju	NE R	013.			
				_	_			

Applicant/Owner: <u>North San Joaquin Water Conservation District</u> Investigator(s): <u>Mary Pakenham-Walsh</u> , USACE Sacramento D. Se			
	ction, Township, Rand		
	anald requiremptions	le:	All the second second
Landform (hillslope, terrace, etc.): La	ocal relief (concave, co	nvex, none):	Slope (%):
Subregion (LRR): Lat:		Long:	Datum:
Soil Map Unit Name:			
Are climatic / hydrologic conditions on the site typical for this time of year			C
Are Vegetation, Soil, or Hydrology significantly dis			
Are Vegetation, Soil, or Hydrology naturally proble		ded, explain any answers in F	
SUMMARY OF FINDINGS – Attach site map showing s			ALC: NOT A LONG THE REAL OF
Hydrophytic Vegetation Present? YesX No Hydric Soil Present? YesK No Wetland Hydrology Present? YesK No	Is the Sampled A within a Wetland	rea	
Remarks: Data point Transitional for DP-E is located, southward	an "arm	" of T.C. 50 rain Lody of -	with where the take.
VEGETATION – Use scientific names of plants.			
Tree Stratum (Plot size:) <u>% Cover_S</u>	pecies? Status	Dominance Test worksheet Number of Dominant Species	s 7
1		That Are OBL, FACW, or FA	C: (A)
3	and the second se	Total Number of Dominant	Z (B)
4.		Species Across All Strata:	(b)
Sapling/Shrub Stratum (Plot size:)		Percent of Dominant Species That Are OBL, FACW, or FAC	
1,		Prevalence Index workshee	ət:
2		Total % Cover of:	Multiply by:
3		OBL species	x 1 =
4		FACW species	
5		FAC species	
Herb Stratum (Plot size: 51 rod)	a strate i sta incenti i i i i i	FACU species	A set per part there are a set of the set of
1. RUMA Crispus 30		JPL species	
2. Polypagan manspeliensis 30	Y FACW	Column Totals:	(A) (B)
3. Bare pround 40		Prevalence Index = B//	4 =
4		Hydrophytic Vegetation Ind	licators:
5		✓ Dominance Test is >50%	3
6,		Prevalence Index is ≤3.0	1
7		Morphological Adaptation data in Remarks or or	ns' (Provide supporting
8		Problematic Hydrophytic	
Woody Vine Stratum (Plot size:) to a formation of the size o	Total Cover		
1		Indicators of hydric soil and voe present, unless disturbed	
		Hydrophytic /egetation Present? Yes X	No

1. 1. CACOLER 1991 A. 1997 P. 19		to the depti	n needed to docu			or comm	i the absence	or mulcators.
Depth (inches) Color	Matrix (moist)	%	Red Color (moist)	ox Feature %	s Type ¹	Loc ²	Texture	Remarks
0-12" 10 YR	the second s	80	7,546416	20	CP	m	SIC	Kemano
	116		112 110 1.10					
Type: C=Concentratio						d Sand Gr		cation: PL=Pore Lining, M=Matrix.
lydric Soil Indicators	: (Applic	able to all L	RRs, unless othe	erwise not	ed.)		Indicators	for Problematic Hydric Solls ³ :
Histosol (A1)			Sandy Red	dox (S5)				/luck (A9) (LRR C)
Histic Epipedon (A	2)		Stripped M					Auck (A10) (LRR B)
Black Histic (A3)	3.52			icky Minera				ed Vertic (F18)
_ Hydrogen Sulfide (-	Z Depleted M	eyed Matrix	(F2)			arent Material (TF2) (Explain in Remarks)
Stratified Layers (A 1 cm Muck (A9) (L		-)		rk Surface	(E6)		Other	(Explain in Remarks)
Depleted Below D:		e (A11)		Dark Surfac				
Thick Dark Surface		- v 11 (v		pressions (³ Indicators	of hydrophytic vegetation and
Sandy Mucky Mine			Vernal Por	ols (F9)				hydrology must be present,
_ Sandy Gleyed Mat							unless d	isturbed or problematic.
Instrictive I over /if m	resent):							
restrictive Layer (ii p								
Туре:							1.1.52.2.0	X
Type: Depth (inches):							Hydric Soil	Present? Yes X No
Type: Depth (inches): Remarks:							Hydric Soil	Present? Yes <u>X</u> No <u> </u>
Type: Depth (inches): Remarks: YDROLOGY							Hydric Soil	Present? Yes <u>X</u> No
Type: Depth (inches): Remarks: YDROLOGY Wetland Hydrology Ir	ndicators:							
Type: Depth (inches): Remarks: YDROLOGY Vetland Hydrology Ir Primary Indicators (mir	ndicators:						Seco	ndary Indicators (2 or more required)
Type: Depth (inches): Remarks: YDROLOGY Vetland Hydrology Ir Primary Indicators (mir Surface Water (A1	ndicators: nimum of c		Salt Crus	st (B11)			<u>Seco</u> i	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine)
Type: Depth (inches): Remarks: YDROLOGY Vetland Hydrology Ir Primary Indicators (mir Surface Water (A1 High Water Table	ndicators: nimum of c		Salt Crus Blotic Cru	st (B11) ust (B12)	es (B13)		Seco V \$	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Type: Depth (inches): Remarks: YDROLOGY Vetland Hydrology Ir Primary Indicators (mir Surface Water (A1 High Water Table Saturation (A3)	ndicators: nimum of c) (A2)	one required:	Salt Crus Blotic Cru Aquatic I	st (B11)			<u>Seco</u> V S	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine)
Type: Depth (inches): Remarks: YDROLOGY Vetland Hydrology Ir Primary Indicators (mir Surface Water (A1 High Water Table	ndicators: nimum of c) (A2) (Nonriver	ne required	Salt Crus Biotic Cru Aquatic I Hydroger	st (B11) ust (B12) nvertebrate	dor (C1)	Living Roc	<u>Seco</u> V S C	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Type: Depth (inches): Remarks: YDROLOGY Yetland Hydrology Ir Primary Indicators (mir Surface Water (A1 High Water Table Saturation (A3) Water Marks (B1)	ndicators: himum of c) (A2) (Nonriver s (B2) (No	one required ine) nriverine)	Salt Crus Biotic Cru Aquatic I Hydrogei Oxidized	st (B11) ust (B12) nvertebrate n Sulfide O	dor (C1) eres along		<u>Seco</u> V S C C	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Type: Depth (inches): Remarks: YDROLOGY YDROLOGY Primary Indicators (min Surface Water (A1 High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits	ndicators: himum of c) (A2) (Nonriver s (B2) (No i (Nonrive	one required ine) nriverine)	Salt Crus Blotic Crus Aquatic I Hydrogeu Oxidized Presence	st (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe	dor (C1) eres along ed Iron (C4	4)	<u>Seco</u> V S C C C C C C	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Orayfish Burrows (C8) Saturation Visible on Aerial Imagery (C3
Type: Depth (inches): Remarks: YDROLOGY Vetland Hydrology Ir Primary Indicators (mir Surface Water (A1 High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits Drift Deposits (B3) Surface Soil Crack Inundation Visible</td <td>ndicators: nimum of c) (A2) (Nonriver s (B2) (No s (B2) (No s (B6) on Aerial</td> <td>one required; Ine) nriverine) rine)</td> <td> Salt Crus Biotic Cru Aquatic I Hydrogeu Oxidized Presence Recent Iu) Thin Mut</td> <td>et (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduce ron Reduct ck Surface</td> <td>dor (C1) eres along ed Iron (C4 ion in Tille (C7)</td> <td>4)</td> <td> <u>Seco</u> V S C C C C C C C S S</td> <td>ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Drayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)</td>	ndicators: nimum of c) (A2) (Nonriver s (B2) (No s (B2) (No s (B6) on Aerial	one required; Ine) nriverine) rine)	Salt Crus Biotic Cru Aquatic I Hydrogeu Oxidized Presence Recent Iu) Thin Mut	et (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduce ron Reduct ck Surface	dor (C1) eres along ed Iron (C4 ion in Tille (C7)	4)	<u>Seco</u> V S C C C C C C C S S	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Drayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Type: Depth (inches): Remarks: YDROLOGY Vetland Hydrology Ir Primary Indicators (mir Surface Water (A1 High Water Table Surface Water (A1 High Water Table Surface Water (A1 High Water Table Surface Water (A1 High Water Table Surface Solies (B3) Uater Marks (B1) Sediment Deposits Drift Deposits (B3) Surface Soil Grack Inundation Visible Water-Stained Lease	ndicators: nimum of c) (A2) (Nonriver s (B2) (No s (B2) (No s (B6) on Aerial	one required; Ine) nriverine) rine)	Salt Crus Biotic Cru Aquatic I Hydrogeu Oxidized Presence Recent Iu) Thin Mut	et (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduce ron Reduce	dor (C1) eres along ed Iron (C4 ion in Tille (C7)	4)	<u>Seco</u> V S C C C C C C C S S	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Orayfish Burrows (C8) Saturation Visible on Aerial Imagery (C3
Type: Depth (inches): Remarks: YDROLOGY Yetland Hydrology Ir Primary Indicators (mir Surface Water (A1 High Water Table Surface Water (A1 High Water Table Surface Water (A3) Water Marks (B1) Sediment Deposits Drift Deposits (B3) Surface Soil Crack Inundation Visible Water-Stained Lease Field Observations:	ndicators: himum of c) (A2) (Nonriver s (B2) (No s (B2	nne required; nriverine) rine) limagery (B7	Salt Crus Biotic Cru Aquatic I Hydrogen Oxidized Presence Recent In) Thin Muc Other (E	st (B11) nvertebrate n Sulfide O Rhizosphe e of Reduct ron Reduct ck Surface xplain in Re	dor (C1) eres along ed Iron (C4 ion in Tille (C7)	4)	<u>Seco</u> V S C C C C C C C S S	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Drayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Type: Depth (inches): Remarks: YDROLOGY Wetland Hydrology Ir Primary Indicators (mir Surface Water Table Saturation (A3) Water Marks (B1) Sediment Deposits Drift Deposits (B3) Surface Soil Grack Xater-Stained Leas Field Observations: Surface Water Present	ndicators: himum of c) (A2) (Nonriver s (B2) (No s (B2	nriverine) nriverine) rine) Imagery (B7	Salt Crus Biotic Cru Aquatic I Hydrogen Oxidized Presence Recent In Thin Muc Other (E	st (B11) uust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct ron Reduct ck Surface xplain in Re	dor (C1) eres along ed Iron (C4 ion in Tille (C7)	4)	<u>Seco</u> V S C C C C C C C S S	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Drayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Type: Depth (inches): Remarks: YDROLOGY Wetland Hydrology Ir Primary Indicators (mir 	ndicators: himum of c) (A2) (Nonriver s (B2) (No s (B2	rine) nriverine) rine) lmagery (B7 'es N 'es N	Salt Crus Biotic Cru Aquatic I Hydrogeu Oxidized Presence Recent Iu Thin Muc Other (Ei No Depth (i No Depth (i	et (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduce ron Reduct ck Surface xplain in Re inches):	dor (C1) eres along ed Iron (C- ion In Tille (C7) emarks)	4) d Soils (C6	<u>Seco</u> V S C C C C C C S S F	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Orayfish Burrows (C8) Saturation Visible on Aerial Imagery (C3 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Depth (inches): Remarks: YDROLOGY Wetland Hydrology Ir Primary Indicators (mir 	ndicators: himum of c) (A2) (Nonriver (Nonrive (S (B2) (No (Nonrive (S (B2)) (Nonrive (S (B2)) (Nonrive) (Nonrive) (Non	rine) nriverine) rine) lmagery (B7 'es N 'es N	Salt Crus Biotic Cru Aquatic I Hydrogen Oxidized Presence Recent In Thin Muc Other (E	et (B11) ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduce ron Reduct ck Surface xplain in Re inches):	dor (C1) eres along ed Iron (C- ion In Tille (C7) emarks)	4) d Soils (C6	<u>Seco</u> V S C C C C C C S S F	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Drayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aquitard (D3)
Type: Depth (inches): Remarks: YDROLOGY Vetland Hydrology Ir Primary Indicators (mir Surface Water Call High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Water Marks (B1) Sediment Deposits (B3) Surface Soil Crack Unift Deposits (B3) Surface Soil Crack Water-Stained Lea Field Observations: Surface Water Present? Saturation Present? (includes capillary fring	ndicators: himum of c) (A2) (Nonriver s (B2) (No s (B2	rine) nriverine) rine) limagery (B7 'es N 'es N	Salt Crus Biotic Cru Aquatic I Hydroger Oxidized Presence Recent Ir Recent Ir Thin Muc Thin Muc Other (E: No Depth (i) No Depth (i)	st (B11) uust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct ron Reduct ck Surface xplain in Re inches): inches):	dor (C1) eres along ed Iron (C- ion In Tille (C7) emarks)	4) d Soils (Cf	<u>Secon</u> V S D _D	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Orayfish Burrows (C8) Saturation Visible on Aerial Imagery (C3 Shallow Aquitard (D3) FAC-Neutral Test (D5)
Type: Depth (inches): Remarks: YDROLOGY Wetland Hydrology Ir Primary Indicators (mir 	ndicators: himum of c) (A2) (Nonriver s (B2) (No s (B2	rine) nriverine) rine) limagery (B7 'es N 'es N	Salt Crus Biotic Cru Aquatic I Hydroger Oxidized Presence Recent Ir Recent Ir Thin Muc Thin Muc Other (E: No Depth (i) No Depth (i)	st (B11) uust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct ron Reduct ck Surface xplain in Re inches): inches):	dor (C1) eres along ed Iron (C- ion In Tille (C7) emarks)	4) d Soils (Cf	<u>Secon</u> V S D _D	ndary Indicators (2 or more required) Vater Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Orift Deposits (B3) (Riverine) Orainage Patterns (B10) Ory-Season Water Table (C2) Orayfish Burrows (C8) Saturation Visible on Aerial Imagery (C3 Shallow Aquitard (D3) FAC-Neutral Test (D5)

Project/Site: Tracy Lakes (SPK-2011-01069)	City/County: San Joaq	uin	Sampling Date: Sept. 02, 2015
Applicant/Owner: North San Joaquin Water Conservation Dist			
Investigator(s): Mary Pakenham-Walsh, USACE Sacramento E			
Landform (hillslope, terrace, etc.):	Local relief (concave,	convex, none);	Slope (%):
Subregion (LRR): Lat:			
Soil Map Unit Name:			
Are climatic / hydrologic conditions on the site typical for this time of			
Are Vegetation, Soil, or Hydrology significan	the second se		
Are Vegetation, Soil, or Hydrology naturally			
SUMMARY OF FINDINGS – Attach site map showin			
Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Yes X No Wetland Hydrology Present? Yes X No	- within a Wetlan	nd? Yes 🟒	×_ No
Remarks: A low "saddle" unidenay A. Lake "arm" to north (e.g., DP-F) and	of hisher The	in slightly an outfall a	hisher Than
VEGETATION – Use scientific names of plants.			and marshar,
Tree Stratum (Plot size:) Absolu 1	te Dominant Indicator er <u>Species?</u> <u>Status</u>	Dominance Test wor Number of Dominant S That Are OBL, FACW,	Species
2		Total Number of Domi	nant 7
3		Species Across All Str	
4		Percent of Dominant S That Are OBL, FACW	
1		Prevalence Index wo	rksheet:
2		a contrast de la comparada de	Multiply by:
3		OBL species	x 1 =
4		FACW species	x 2 =
5		FAC species	x 3 =
	_ = Total Cover	FACU species	x 4 =
Herb Stratum (Plot size: 5' (ad.) 1. Rumb crispus 35	4 Mac		x 5 =
2. Lactuca seriola 35	Y FACU	Column Totals:	(A) (B)
3. Deschampsia danthonoides 20	4 FACH	Prevalence Inde	x = B/A =
4. Bare Graind 10		Hydrophytic Vegetat	MC of 194 Charles and a second s
5		Z Dominance Test is	
6		Prevalence Index	is ≤3.0 ¹
7		Morphological Ada	aptations ¹ (Provide supporting
8			ks or on a separate sheet)
90		Problematic Hydro	ophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:) Down, [SD2 = 1. Z0 % 2.	458	¹ Indicators of hydric so be present, unless dis	bil and wetland hydrology must turbed or problematic.
	= Total Cover	Hydrophytic	
% Bare Ground in Herb Stratum 10 % Cover of Biotic		Vegetation Present? Ye	95 <u>X</u> No
Remarks:			

2.

San	noline	Do	int:

Color (moist) % Color (moist) % Type' Loc' Texture Remarks -[Z'))3 ½ (//2 ?RD 7.5 ½ (//2) ?RD ?.5 ½ (//2) ?RD ?Loc' ?Loc	Color (moist) % Color (moist) % Type Lac Texture Remarks 0-1Z '' 19 Y //2 · 1/2 20 7.5 Y //2 · 1/2 20 C, p VM S; GL 0-1Z '' 19 Y //2 · 1/2 20 7.5 Y //2 · 1/2 20 C, p VM S; GL 0-1Z '' 19 Y //2 · 1/2 20 7.5 Y //2 · 1/2 S; GL							6 - A	he abse	
12 ¹¹ 14 ¹ /4 ¹ /2 RD 7.5 ¹ /4 ¹ /4 ZD C, p ML Si CL ype: C-Concentration, D-Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ³ Location: PL=Pore Lining, M=Matrix, CM ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls? Histic Epipedon (A2) Stripped Matrix (S6) _1 cm Muck (A9) (LRR 0) Stratified Layer (A5) Loamy Mucky Mineral (F1) Red Paternt Material (T12) Stratified Layer (A5) Depleted Matrix (F3) _0 Cher (Explain in Remarks) 1 cm Muck (A9) (LRR 0) Z Depleted Matrix (F3) _0 Cher (Explain in Remarks) 1 cm Muck (A9) (LRR 0) Redox Dark Surface (F7)	212 " 10 Y (0 + 1/2 20 7.5 Y (0 + 1/2 20 C, p VM S; CL Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL=Pore Lining, M=Matrix, Vistor Solitation S			%				Loc2	Textur	e Remarks
ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix. yrdric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils': Histos (A1)	Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix, 1977 Histosal (A1) Sandy Redox (S5) Indicators for Problematic Hydric Soils*: Histosal (A2) Stripped Matrix (S6) 2 cm Muck (A9) (LRR C) Histosal (A3) Loarny Mucky Mineral (F1) Reduced Vartic (F18) Histosal (A4) Loarny Mucky Mineral (F1) Red Parent Material (F12) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) Red Parent Material (F12) Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR C) Redox Dark Surface (F6) Peleted Batrix (F3) Other (Explain in Remarks) Sandy Mucky Mineral (S1) Redox Dark Surface (F7) * * Sandy Mucky Mineral (S1) Vernal Pools (F9) * * Sandy Mucky Mineral (S1) Vernal Pools (F9) * * Sandy Gived Matrix (S4) User C ** Life Ck y** in This's face (Matrix) * Ype:				and the second day				10.00	
rdric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ³ : - Histic Epipedon (A2) Stripped Matrix (S6) 1 cm Muck (A9) (LRR C) Black Histic (A3) Loamy Mucky Mineral (F1) Reduce Vertic (F18) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) 2 bepleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophylic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) unless disturbed or problematic. * **** Soill functions (Intersect): Yes_X No	tydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ² : Histosol (A1) Sandy Redox (S5) 1 cm Muck (A9) (LRR C) Histo Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A10) (LR B) Black Histo (A3) Loamy Gleyed Matrix (F2) Reduced Vertic (F18) Hydrogen Suffice (A4) Loamy Gleyed Matrix (F2) Red Parent Material (F17) Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) Unless disturbed or problematic. Remarks: Soil function: Hydric Soil Present? Yes X no Strate Water (A1) Salt Crust (B11) Water Marks (B1) (Riverine) Surface Water (A1) Salt Crust (B12) Secondary Indicators (2 or more required) Soil function for erequired, check all that apply) Secondary Indicators (2 or more required) Surface Water (A1) Salt Crust (B12) Sediment Deposits (B2) (Riverine) Surface Water		<u></u>	<u></u>	3 11-110				J. The	
rdric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ³ : - Histic Epipedon (A2) Stripped Matrix (S6) 1 cm Muck (A9) (LRR C) Black Histic (A3) Loamy Mucky Mineral (F1) Reduce Vertic (F18) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) 2 bepleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophylic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) unless disturbed or problematic. * **** Soill functions (Intersect): Yes_X No	ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ² : Histosol (A1) Sandy Redox (55) 1 cm Muck (A9) (LRR C) Histic Epipedon (A2) Stripped Matrix (56) 2 cm Muck (A10) (LR B) Black Histic (A3) Loamy Gleyed Matrix (F2) Reduced Vertic (F18) Hydrogen Suffide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (F2) Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Batrix (S4) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) ************************************									
rdric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ³ : - Histic Epipedon (A2) Stripped Matrix (S6) 1 cm Muck (A9) (LRR C) Black Histic (A3) Loamy Mucky Mineral (F1) Reduce Vertic (F18) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) 2 bepleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophylic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) unless disturbed or problematic. * **** Soill functions (Intersect): Yes_X No	ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils*: Histic Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A6) (LRR C) Histic Epipedon (A2) Loamy Mucky Mineral (F1) Reduced Vertic (F18) Hydrogen Suffide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Batrix (K4) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Indicators of hydrophytic vegetation and welland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) Wernal Pools (F9) welland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) Sand Crust (B12) Hydric Soil Present? Yes X No emarks: Soil factive Were "Llocky" in This locations (2 or more required) Surface Water (A1) Salt Crust (B12) Secondary Indicators (2 or more required)									
rdric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ³ : - Histic Epipedon (A2) Stripped Matrix (S6) 1 cm Muck (A9) (LRR C) Black Histic (A3) Loamy Mucky Mineral (F1) Reduce Vertic (F18) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) 2 bepleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophylic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) unless disturbed or problematic. * **** Soill functions (Intersect): Yes_X No	ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils*: Histic Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A6) (LRR C) Histic Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A6) (LR B) Black Histic (A3) Loamy Mucky Mineral (F1) Reduced Vertic (F18) Hydrogen Suffide Layers (A5) (LRR C) Z bepleted Matrix (F2) Red Parent Material (F2) Stratified Layers (A5) (LRR D) Redox Dark Surface (F6) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7)									
rdric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ³ : - Histic Epipedon (A2) Stripped Matrix (S6) 1 cm Muck (A9) (LRR C) Black Histic (A3) Loamy Mucky Mineral (F1) Reduce Vertic (F18) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) 2 bepleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophylic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) unless disturbed or problematic. * **** Soill functions (Intersect): Yes_X No	ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils*: Histic Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A6) (LRR C) Histic Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A6) (LR B) Black Histic (A3) Loamy Mucky Mineral (F1) Reduced Vertic (F18) Hydrogen Suffide Layers (A5) (LRR C) Z bepleted Matrix (F2) Red Parent Material (F2) Stratified Layers (A5) (LRR D) Redox Dark Surface (F6) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7)					_				
rdric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ³ : - Histic Epipedon (A2) Stripped Matrix (S6) 1 cm Muck (A9) (LRR C) Black Histic (A3) Loamy Mucky Mineral (F1) Reduce Vertic (F18) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) 2 bepleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophylic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) unless disturbed or problematic. * **** Soill functions (Intersect): Yes_X No	ydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils*: Histic Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A6) (LRR C) Histic Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A6) (LR B) Black Histic (A3) Loamy Mucky Mineral (F1) Reduced Vertic (F18) Hydrogen Suffide Layers (A5) (LRR C) Z bepleted Matrix (F2) Red Parent Material (F2) Stratified Layers (A5) (LRR D) Redox Dark Surface (F6) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7)				Χ					
rdric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ³ : - Histic Epipedon (A2) Stripped Matrix (S6) 1 cm Muck (A9) (LRR C) Black Histic (A3) Loamy Mucky Mineral (F1) Reduce Vertic (F18) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) X Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F7) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) 2 bepleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophylic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) unless disturbed or problematic. * **** Soill functions (Intersect): Yes_X No	gdric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls*: Histic Epipedon (A2) Stripped Matrix (S6) 1 cm Muck (A9) (LRR C) Black Histic (A3) Loamy Gleyed Matrix (S6) 2 cm Muck (A10) (LRR B) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) Vernal Pools (F9) *Indicators (10 cm 4/20 cm 4/2		·							2
								d Sand Grai		
Histic Epipedon (A2) Stripped Matrix (S6) 2 cm Muck (A10) (LRR B) Black Histic (A3) Loamy Mucky Mineral (F1) Reduced Vertic (F18) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) Z Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Gleyed Matrix (S4) Vernal Pools (F9) Sandy Gleyed Matrix (S4) unless disturbed or problematic. setrictive Layer (If present): Type: Type:		5 () () () () () () () () () (, to un Era			,			
Black Histic (A3) Loamy Mucky Mineral (F1) Reduced Vertic (F18) Hydrogen Suffide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Other (Explain in Remarks) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) *Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) Vernal Pools (F9) wetland hydrology must be present, unless disturbed or problematic. strictive Layer (if present): Type:	Black Histic (A3) Loamy Mucky Mineral (F1) Reduced Vertic (F18) Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red Parent Material (TF2) Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) ³ indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Mucky Mineral (S1) Vernal Pools (F9) wetland hydrology must be present, unless disturbed or problematic. Sandy Mucky Mineral (S1) Vernal Pools (F9) unless disturbed or problematic. setrictive Layer (if present): Type:	- 1040 March 104								
		-					(F1)			
Stratified Layers (A6) (LRR C) Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) Sandy Gleyed Matrix (S4) unless disturbed or problematic. sstrictive Layer (if present): Type: Type: Hydric Soil Present? Depth (inches): W(erce " Locicy" in This locicity: imary Indicators (minimum of one required; check all that apply) Secondary Indicators (2 or more required; check all that apply) Surface Water (A1) Salt Crust (B11) Water Marks (B1) (Riverine) High Water Table (A2) Biotic Crust (B12) Sediment Deposits (B2) (Riverine) Saturation (A3) Aquatic Invertebrates (B13) Drift Deposits (B3) (Riverine) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2)	Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other (Explain in Remarks) 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A12) Redox Depressions (F8) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) Sandy Gleyed Matrix (S4) unless disturbed or problematic. Bestrictive Layer (If present): Type: Type: Hydric Soil Present? Yes Beach Surface (A11) Sandy Morky Mineral (S1) Depth (inches): Hydric Soil Present? Yes Beach Surface (A11) Sandy Cleved Matrix (S4) Beach Surface (A12) Soil factors: Marks: Biotic Crust (B11) High Water Table (A2) Biotic Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Norriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Norriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2) Drift Deposits (B3) (Norri									
Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) satrictive Layer (if present): unless disturbed or problematic. Type:	Depleted Below Dark Surface (A12) Pepleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) ^a Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) unless disturbed or problematic. estrictive Layer (If present): type: Type: Hydric Soil Present? Yes Depth (inches): Hydric Soil Present? Yes emarks: Soil factors: fittand Hydrology Indicators: fit actors (minimum of one required; check all that apply) Surface Water (A1) Salt Crust (B11) High Water Table (A2) Biotic Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Hydrogen Sulfice Oct) Sectiment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Seturation Visible on Aerial Imagery (B7) Thin Muck Surface (G7)		The second se						Ot	ther (Explain in Remarks)
					Redox Dar	k Surface (F6)			
Sandy Mucky Mineral (S1) Vernal Pools (F9) wetland hydrology must be present, unless disturbed or problematic. Sandy Gleyed Matrix (S4) unless disturbed or problematic. estrictive Layer (if present): Hydric Soil Present? Yes X No Type: Hydric Soil Present? Yes X No Depth (inches): Hydric Soil Present? Yes X No emarks: Soil factor Warce " blocky" in This lacaded. Surface Water (A1) Salt Crust (B11) High Water Table (A2) Biotic Crust (B12) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3)		_ Deplete	d Below Dark Surface (A	(11)					1.1.1.1.1	
Sandy Gleyed Matrix (S4) unless disturbed or problematic. estrictive Layer (if present):							8)			
Bestrictive Layer (if present): Type:	estrictive Layer (if present): Type: Depth (inches): emarks: Soil factors (minimum of one required; check all that app(y) Surface Water (A1) Surface Water (A1) Saturation (A3) Aquatic Invertebrates (B13) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Sufface Soil Cracks (B3) (Nonriverine) Drift Deposits (B2) (Nonriverine) Sufface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Surface Soil Cracks (B6) The sector of Reduced Iron (C4) Surface Soil Cracks (B6) The sector of Reduced Iron (C4) Surface Soil Cracks (B6) Thin Muck Surface (C7)				Vernal Poo	ols (F9)				요즘 그는 아무에 잘 많은 것 같아요. 그는 것 같아요. 이야가 가지 않는 것 같아요. 그는 것 같아요. 그 그는 것 같아요. 그 그는 것 같아요. 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그
Type:	Type: Hydric Soil Present? Yes No emarks: Soil facture wore "blocky" in This loaded. Ioaded. /DROLOGY ////////////////////////////////////								unle	ess disturbed or problematic.
Depth (inches): Hydric Soll Present? Yes X No emarks: Soil father where "blacky" in This lacedar. Incertain. 'DROLOGY	Depth (inches): Hydric Soil Present? Yes Xes No remarks: Soil father more "blocky" in This laceded. Iaceded. /DROLOGY ////////////////////////////////////		Layer (n present):	_						
emarks: Soil fature wore "blocky" in This loading. 'DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required; check all that apply) Secondary Indicators (2 or more required) _ Surface Water (A1) _ Salt Crust (B11) _ Water Marks (B1) (Riverine) _ High Water Table (A2) _ Biotic Crust (B12) _ Sediment Deposits (B2) (Riverine) _ Saturation (A3) _ Aquatic Invertebrates (B13) _ Drift Deposits (B3) (Riverine) _ Water Marks (B1) (Nonriverine) _ Hydrogen Sulfide Odor (C1) _ Drainage Patterns (B10) _ Sediment Deposits (B2) (Nonriverine) _ Oxidized Rhizospheres along Living Roots (C3) _ Dry-Season Water Table (C2)	emarks: Soil facture were "blocky" in This loaded. /DROLOGY /etiand Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply) Secondary Indicators (2 or more required)	Type	abaa):		*				Hydric	Soll Present? Yes X No
YDROLOGY retiand Hydrology Indicators: imary Indicators (minimum of one required; check all that apply) Secondary Indicators (2 or more required)	/DROLOGY /etiand Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply) Secondary Indicators (2 or more required)	Donth /in			-		_			
imary Indicators (minimum of one required; check all that apply) Secondary Indicators (2 or more required) _ Surface Water (A1) _ Salt Crust (B11) _ Water Marks (B1) (Riverine) _ High Water Table (A2) _ Biotic Crust (B12) _ Sediment Deposits (B2) (Riverine) _ Saturation (A3) _ Aquatic Invertebrates (B13) _ Drift Deposits (B3) (Riverine) _ Water Marks (B1) (Nonriverine) _ Hydrogen Sulfide Odor (C1) _ Drainage Patterns (B10) _ Sediment Deposits (B2) (Nonriverine) _ Oxidized Rhizospheres along Living Roots (C3) _ Dry-Season Water Table (C2)	rimary Indicators (minimum of one required; check all that apply) Secondary Indicators (2 or more required) Surface Water (A1) Salt Crust (B11) Water Marks (B1) (Riverine) High Water Table (A2) Biotic Crust (B12) Sediment Deposits (B2) (Riverine) Saturation (A3) Aquatic Invertebrates (B13) Drift Deposits (B3) (Riverine) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C3) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3)			10	Acres 1	Larte	1 1 V.C			
Surface Water (A1) Salt Crust (B11) Water Marks (B1) (Riverine) High Water Table (A2) Biotic Crust (B12) Sediment Deposits (B2) (Riverine) Saturation (A3) Aquatic Invertebrates (B13) Drift Deposits (B3) (Riverine) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Dralnage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2)	Surface Water (A1) Salt Crust (B11) Water Marks (B1) (Riverine) High Water Table (A2) Biotic Crust (B12) Sediment Deposits (B2) (Riverine) Saturation (A3) Aquatic Invertebrates (B13) Drift Deposits (B3) (Riverine) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Surface Soll Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (B7) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3)	emarks:	Soil tat	re V	Nore "	61 <i>0 cl</i> ci	1.10	1645		
High Water Table (A2) Biotic Crust (B12) Sediment Deposits (B2) (Riverine) Saturation (A3) Aquatic Invertebrates (B13) Drift Deposits (B3) (Riverine) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2)	High Water Table (A2) Biotic Crust (B12) Sediment Deposits (B2) (Riverine) Saturation (A3) Aquatic Invertebrates (B13) Drift Deposits (B3) (Riverine) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Surface Soll Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (B7) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3)	emarks: /DROLO /etland Hy	Soil tatu OGY Idrology Indicators:				1 10	. (645		
Saturation (A3) Aquatic Invertebrates (B13) Drift Deposits (B3) (Riverine) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2)	Saturation (A3) Aquatic Invertebrates (B13) Drift Deposits (B3) (Riverine) Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Surface Soil Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (B7) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3)	emarks: /DROLO /etland Hy rimary Indi	Soil fath OGY drology indicators: cators (minimum of one r		neck all that app	(v)		. 16.15		F Secondary Indicators (2 or more required)
Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2)	Water Marks (B1) (Nonriverine) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Surface Soll Cracks (B6) Recent Iron Reduction in Tilled Solls (C6) Saturation Visible on Aerial Imagery (B7) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3)	emarks: 'DROLO /etland Hy rimary Indi Surface	Soil fath OGY Idrology Indicators: cators (minimum of one r Water (A1)		neck all that app Salt Crust	iy) I (B11)		1642		Secondary Indicators (2 or more required) Water Marks (B1) (Riverine)
Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2)	Sediment Deposits (B2) (Nonriverine) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2) Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Surface Soll Cracks (B6) Recent Iron Reduction in Tilled Solls (C6) Saturation Visible on Aerial Imagery (B7) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3)	Procession of the second secon	Soil fath OGY Idrology Indicators: cators (minimum of one r Water (A1) ater Table (A2)		neck all that app Salt Crus Biotic Crus	ly) I (B11) Ist (B12)		1642		Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
	Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Crayfish Burrows (C8) Surface Soll Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C7) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3)	PROLO Petland Hy rimary Indi _ Surface _ High Wa _ Saturati	Soil fath OGY drology Indicators: cators (minimum of one r Water (A1) ater Table (A2) on (A3)	required; cf	neck all that app Salt Crust Biotic Cru Aquatic Ir	ly) I (B11) Ist (B12) Ivertebrate:	s (B13)	1642		Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Drift Deposits (B3) (Nonriverine) Presence of Reduced Iron (C4) Craviish Burrows (C8)	Surface Soll Cracks (B6) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3)	PROLO Petland Hy rimary Indi _ Surface _ High Wa _ Saturati	Soil fath OGY drology Indicators: cators (minimum of one r Water (A1) ater Table (A2) on (A3)	required; cf	neck all that app Salt Crust Biotic Cru Aquatic Ir Hydrogen	iv) I (B11) Ist (B12) Invertebrates	s (B13) lor (C1)		<u>s</u>	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dralnage Patterns (B10)
	Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Shallow Aquitard (D3)	DROLO TOROLO Tetland Hy Contract Surface High Wa Saturati Water M Sedime	Soil Fath OGY drology Indicators: cators (minimum of one r Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonriverine) nt Deposits (B2) (Nonriv	required; ch) /erine)	neck all that app Salt Crust Biotic Cru Aquatic Ir Hydrogen Oxidized	ly) I (B11) Ist (B12) Invertebrates I Sulfide Od Rhizospher	s (B13) lor (C1) es along	Living Roots	<u>s</u>	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2)
	그렇게 지시자 가지 않는 것 것 것 같아요. 이는 것 같아요. 이는 것 같아요. 그는 것 같아요. 것 같아요. 것 같아요. 이는 것 같아요. 그는 것 같아요. 이는 것 이는 것 않아요. 이는 것 이 이는 것 않아요. 이는 이는 ? 이는 것 않아요. 이는 것 않아요. 이는 것 이 이는 ? 이는 ? 이는 ? 이는 ?	DROLO TOROLO Tetland Hy Contract Surface High Wa Saturati Water M Sedime	Soil Fath OGY drology Indicators: cators (minimum of one r Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonriverine) nt Deposits (B2) (Nonriv	required; ch) /erine)	neck all that app Salt Crush Biotic Crush Aquatic Ir Hydrogen Oxidized Presence	l(y) I (B11) Ist (B12) Invertebrates Sulfide Od Rhizospher of Reduce	s (B13) lor (C1) es along d Iron (C4	Living Roots	<u>s</u>	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)
그것 이 지수, 것에서 정 지수가 있는 것이 지수가 집에서 집에서 있는 것이 같이 있는 것이 없는 것이 아버지에서 가지 않는 것이 가지 않는 것이 가지 않는 것이 가지 않는 것이 있다. 이 가지 않는 것이 없다. 않는 것이 없다. 것이 않는 것이 않는 것이 없는 것이 없다. 것이 없는 것이 없는 것이 없는 것이 없다. 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 것이 없는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없다. 않는 것이 없는 것이 없 않는 것이 없는 것이 없는 것이 없 않는 것이 없는 것이 없는 것이 없다. 않는 것이 없는 것이 없다. 것이 없는 것이 없는 것이 없는 것이 않는 것 않 것이 않는 것이 않 않는 것이 않 않 않 않 않는 것이 않는 것이 않 않는 것이 않 않 않이 않는 것이 않는 것이 않는 것이 않는 것이 않	Water-Stained Leaves (B9) Other (Explain in Remarks) FAC-Neutral Test (D5)	Procession Provident State Provident S	Soil fath OGY drology indicators: cators (minimum of one r Water (A1) ater Table (A2) ion (A3) Marks (B1) (Nonriverine) nt Deposits (B2) (Nonriv posits (B3) (Nonriverine s Soil Cracks (B6)	required; ch) /erine) »)	neck all that app Salt Crus Biotic Crus Aquatic Ir Hydrogen Oxidized Presence Recent In	ly) I (B11) Ist (B12) Ivertebrates Sulfide Od Rhizospher of Reduce on Reductio	s (B13) lor (C1) es along d Iron (C4 on in Tilleo	Living Roots	<u>s</u>	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C

Yes _____ No ____ Depth (inches): _

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Yes

No K Depth (inches):

Inundation visible on aericles deted march, June, 2011, and April and Jone 2013.

Water Table Present?

(includes capillary fringe)

Saturation Present?

Remarks:

X No

1 Oct

Septa

Wetland Hydrology Present? Yes ____

Project/Site: Tracy Lakes (SPK-2011-01069)	City/County: San Joaquin	Sampling Date: Sept. 4, 2015
Applicant/Owner: North San Joaquin Water Conservation District	ct State: <u>CA</u>	_ Sampling Point:
Investigator(s): Mary Pakenham-Walsh, USACE Sacramento D.	Section, Township, Range:	
Landform (hillslope, terrace, etc.):	Local relief (concave, convex, none):	Slope (%):
Subregion (LRR): Lat:	Long:	Datum:
Soil Map Unit Name:	NWI class	fication:
Are climatic / hydrologic conditions on the site typical for this time of years and the vegetation, Soil, or Hydrology significantly for the vegetation, Soil, or Hydrology naturally provide the vegetation Present? Yes No Hydric Soil Present? Yes No	disturbed? \mathcal{N}^J Are "Normal Circumstances oblematic? \mathcal{N}^J (If needed, explain any answ g sampling point locations, transec Is the Sampled Area	" present? Yes <u>X</u> No vers in Remarks.) ts, important features, etc.
Wetland Hydrology Present? Yes X No Remarks: In the "green patch" of		Kepertela
VEGETATION – Use scientific names of plants.		
Tree Stratum (Plot size:) Absolute 1	Dominant Indicator Dominance Test wo Species? Status Number of Dominant	

	That Are OBL, FACW, or FAC: (A)
	Total Number of Dominant
= Total Cover	Percent of Dominant Species / DD % (A/B)
	Prevalence Index worksheet:
	Total % Cover of: Multiply by:
	OBL species x 1 =
	FACW species x 2 =
	FAC species x 3 =
= Total Cover	FACU species x 4 =
	UPL species x 5 =
	Column Totals: (A) (B)
·	
a second se	
	_ X Dominance Test is >50%
. 20	_ Prevalence Index is ≤3.0 ¹
	Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)
50	Problematic Hydrophytic Vegetation ¹ (Explain)
= 1 otal Cover	
LZ6 70=16	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
= Total Cover	Hydrophytic
	$= \text{Total Cover}$ $= \frac{20}{70} + \frac{9}{74} +$

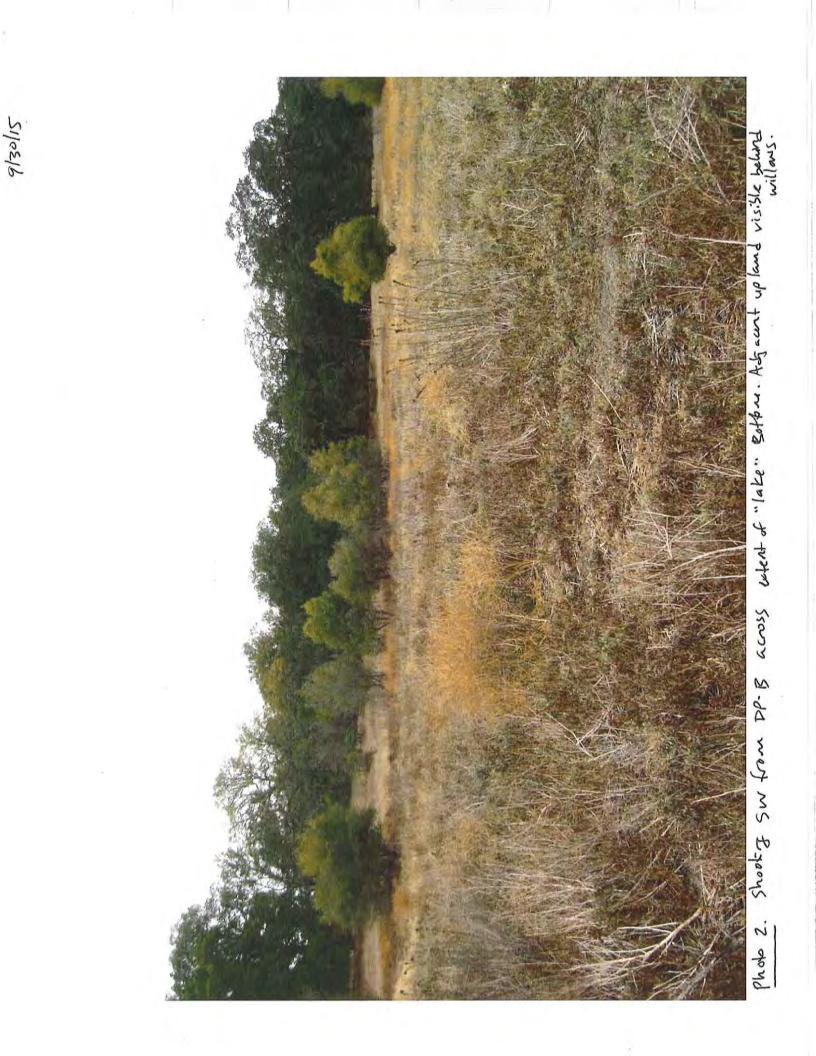
30

Sam	olina	Do	lint:

H

ALC: NOT ALC	cription: (Describe	to the dep				or confirn	n the absence of	indicators.)		
Depth (inches)	Matrix Color (moist)	%	Color (moist)	ox Feature %	Type ¹	Loc ²	Texture	Remarks		
D-12 "	18 412 4/2	80	754F416	20	CP	M	SICL	Keinand		
Q=1c	10 10-112		13 10-116							
				-	·					
				_						
		1			1	_				
Type: C=C	oncentration, D=Dep	letion RM:	Reduced Matrix C	S=Covere	d or Coate	d Sand G	rains ² Locat	ion: PL=Pore Lining, M=Matrix.		
	Indicators: (Applic					d Gand G		r Problematic Hydric Solls ³ :		
Histoso			Sandy Red				1 cm Muck (A9) (LRR C)			
	pipedon (A2)		Stripped N				2 cm Muck (A10) (LRR B)			
	listic (A3)			Loamy Mucky Mineral (F1)			Reduced Vertic (F18)			
	en Sulfide (A4)			Loamy Gleyed Matrix (F2)			Red Parent Material (TF2)			
	d Layers (A5) (LRR	C)	_X Depleted M Redox Date				Other (E)	kplain in Remarks)		
	uck (A9) (LRR D) d Below Dark Surfac	e (A11)	Depleted I							
	ark Surface (A12)	~ (/	Redox De				³ Indicators of	³ Indicators of hydrophytic vegetation and		
Sandy Mucky Mineral (S1)			Vernal Poo	Vernal Pools (F9)			wetland hydrology must be present,			
section and an advanced to the section of the secti	Gleyed Matrix (S4)						unless dist	urbed or problematic.		
	Layer (if present):									
Туре:			_				100000000	· · · · ·		
Depth (ir Remarks:	nches):			-			Hydric Soil P	resent? Yes <u>X</u> No		
IYDROLC	DGY									
Wetland Hy	drology Indicators									
	icators (minimum of o		t; check all that app	oly)	_		Seconda	ary Indicators (2 or more required)		
Surface	Water (A1)		Salt Crus	t (B11)			Wat	er Marks (B1) (Riverine)		
High W	ater Table (A2)		Biotic Cru	ust (B12)			Sed	liment Deposits (B2) (Riverine)		
Saturat	ion (A3)		Aquatic li	nvertebrate	es (B13)		Drif	t Deposits (B3) (Riverine)		
Water M	Marks (B1) (Nonrive	rine)		n Sulfide O				inage Patterns (B10)		
	ent Deposits (B2) (No		Oxidized		1.1.1.1.1.1.1.1	1		-Season Water Table (C2)		
	posits (B3) (Nonrive	rine)		of Reduc	the second second	1	Contraction of the second s	yfish Burrows (C8)		
	e Soil Cracks (B6)	International (D)		on Reduct k Surface		a Solis (Ci	and the second s	uration Visible on Aerial Imagery (C9) Illow Aquitard (D3)		
No. No. of Street, Str	ion Visible on Aerial Stained Leaves (B9)	magery (B		cplain in Re	1011 C.L			C-Neutral Test (D5)		
Field Obse				cpicari in ro	smanoy	1		Actual Total (50)		
		res	No X Depth (i	nches);		1				
Water Table			No 🔀 Depth (i							
Saturation F			No K Depth (i				land Hydrology I	Present? Yes <u>×</u> No		
(includes ca	pillary fringe)									
Describe Re	ecorded Data (strean	n gauge, mo	onitoring well, aeria	photos, p	revious ins	spections),	n available:			
Remarks:	Inundad	ian 1	psible a	an a	erids	date	d Mar	ich, June, Spt. +		
	0.1.		nd April	and	-	1 -71	112			
	024, 20	1 0	a thui	Canton	302	2 20	150			
	_									









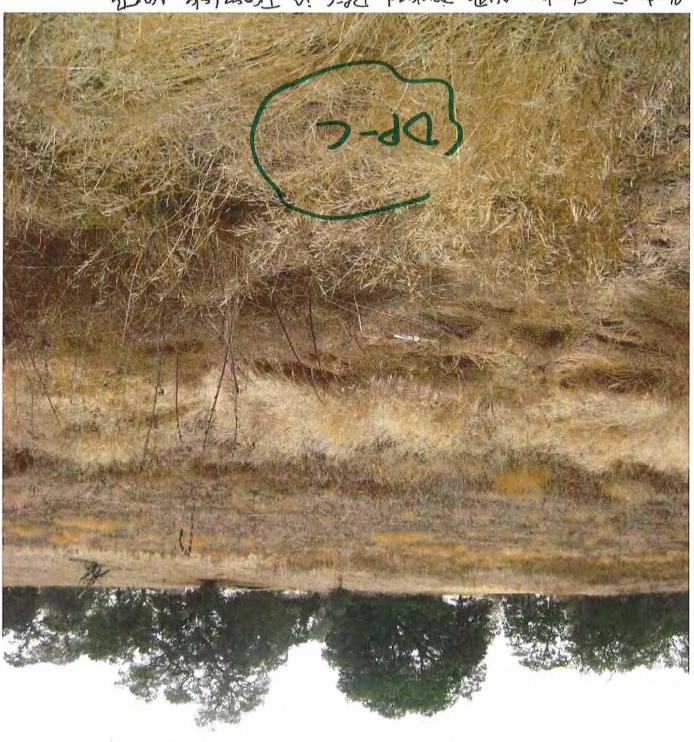
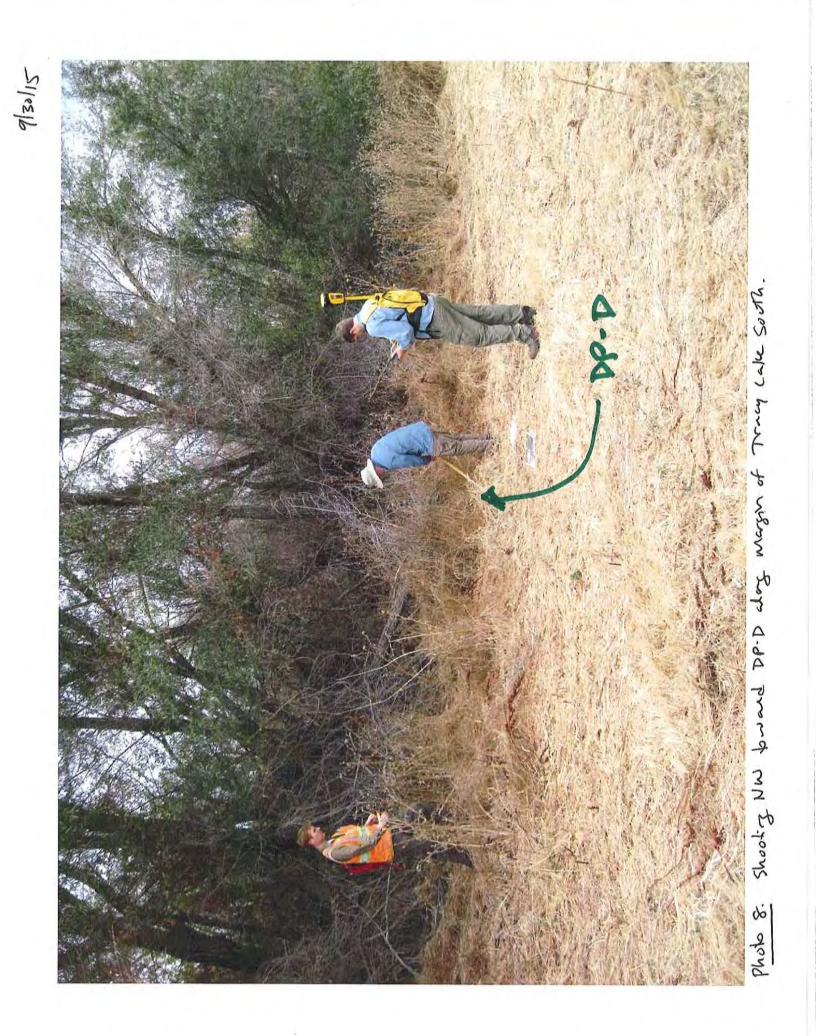


Photo 5. Shoot I with toward DP-C in Trance Lele worth.

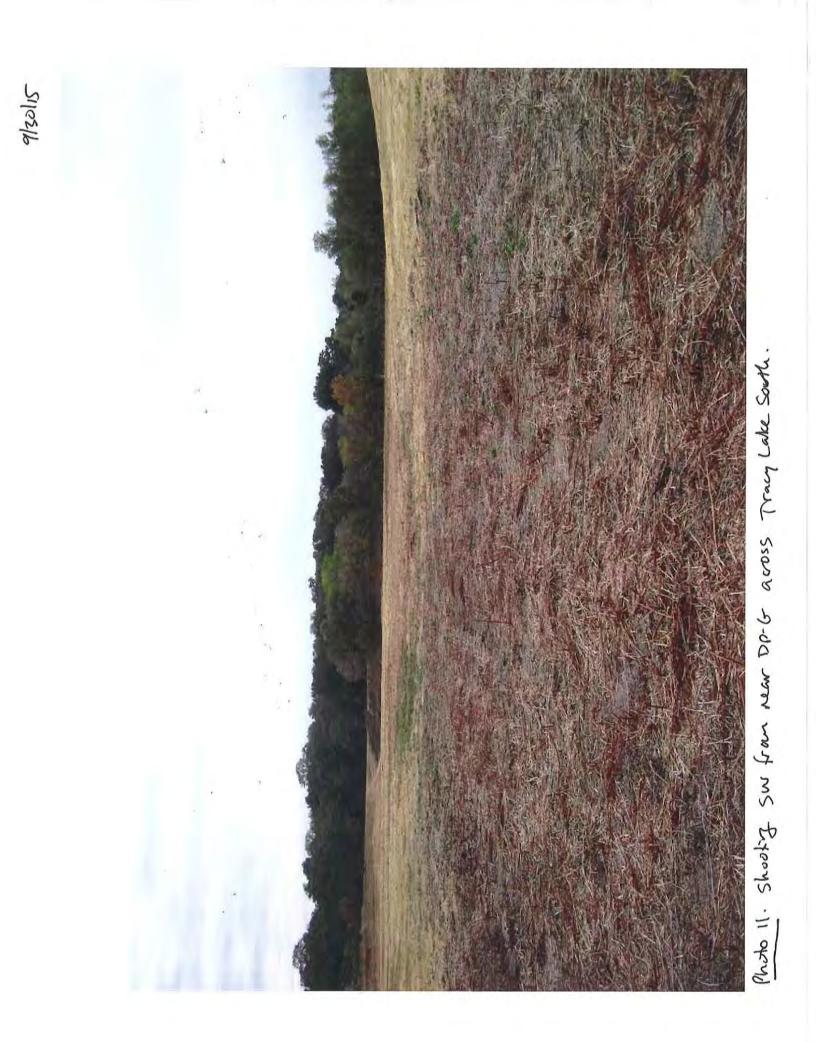










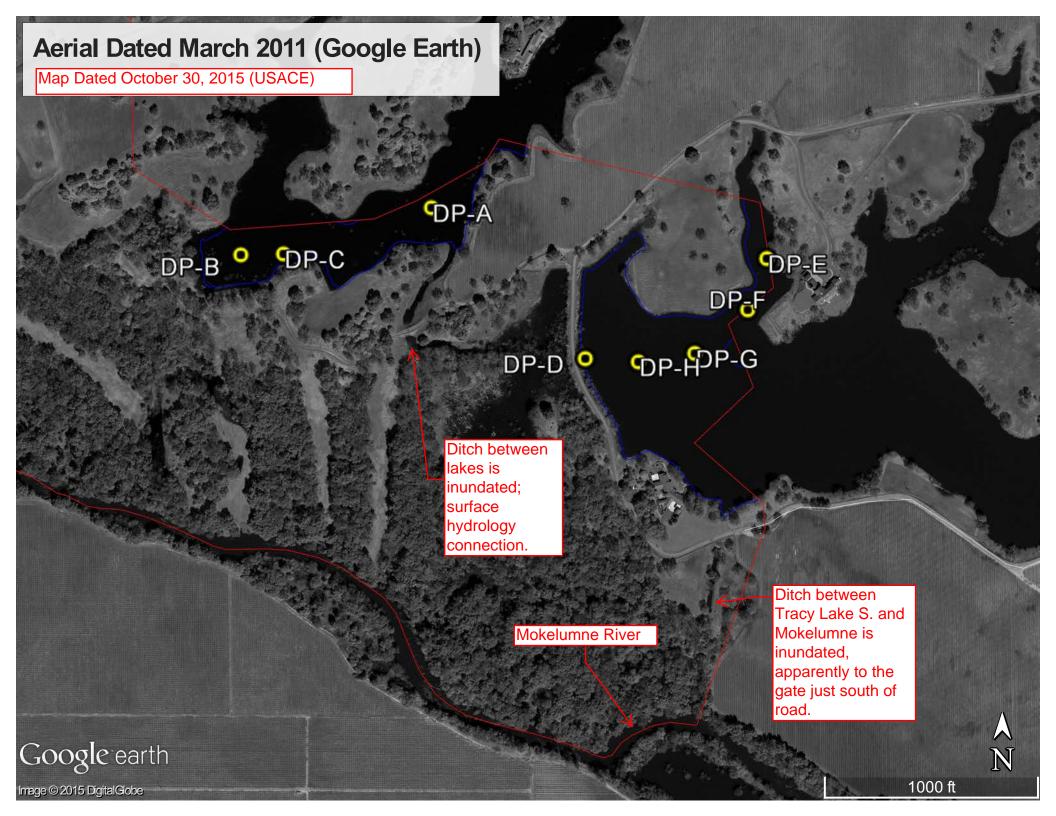




Plzolis

APPENDIX C

Representative Aerial Photos and LiDAR Mapping



Aerial dated October 2011, Showing Both Lakes Inundated

DP-A

Map dated October 30, 2015 (USACE)



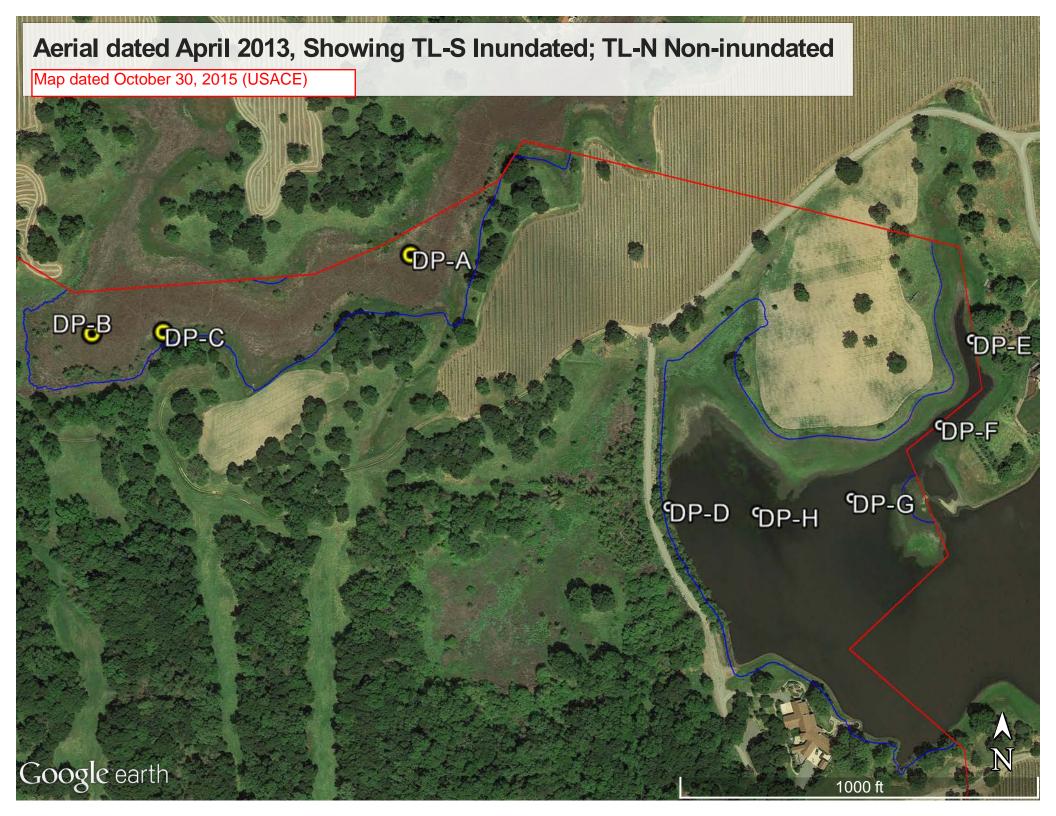
DP-F

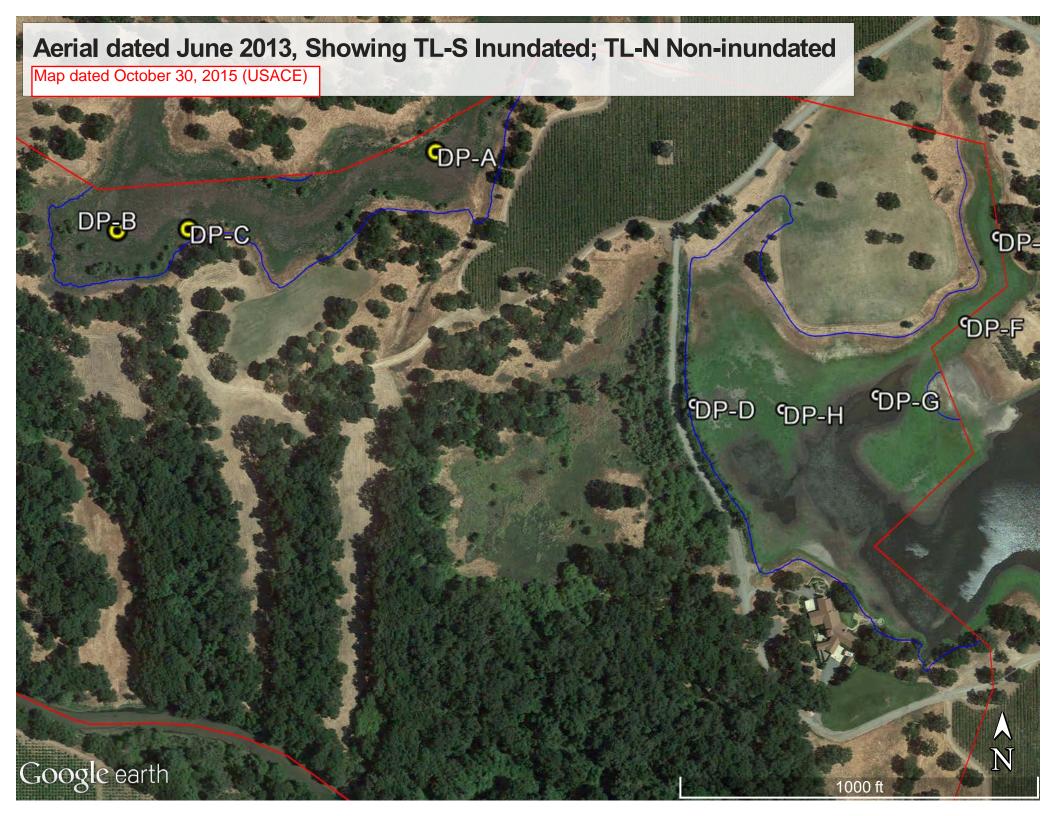
DP-E

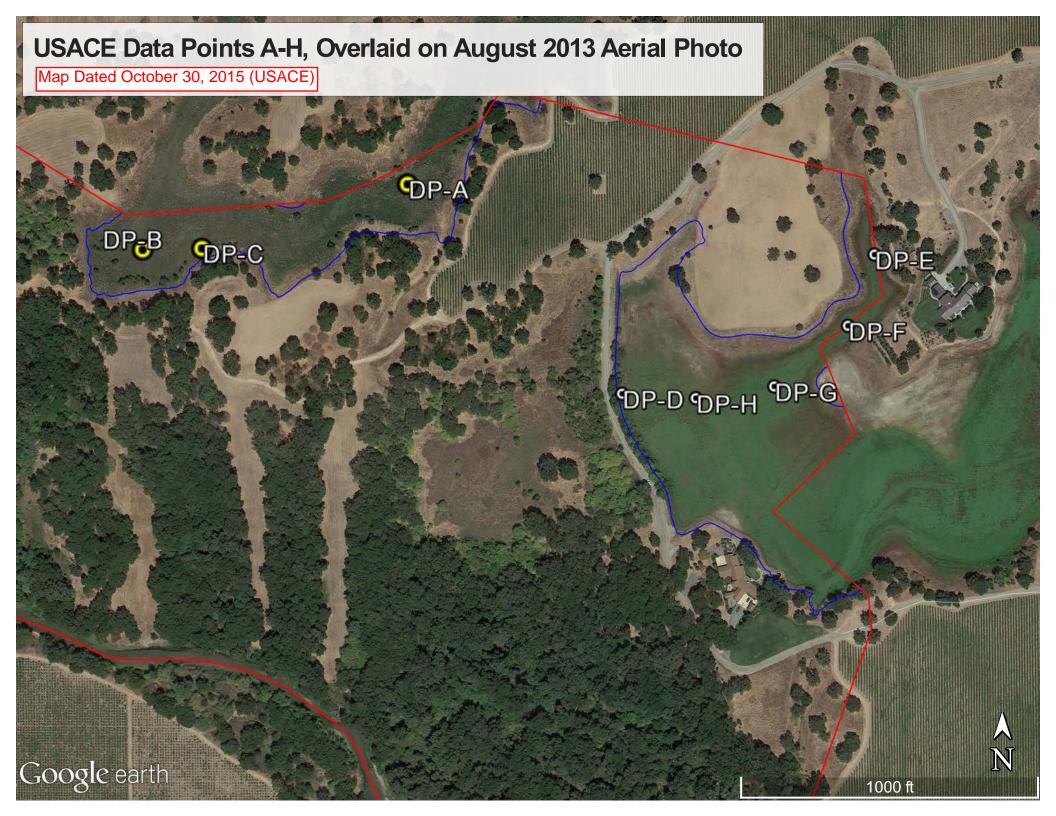
DP-DDP-H DP-G

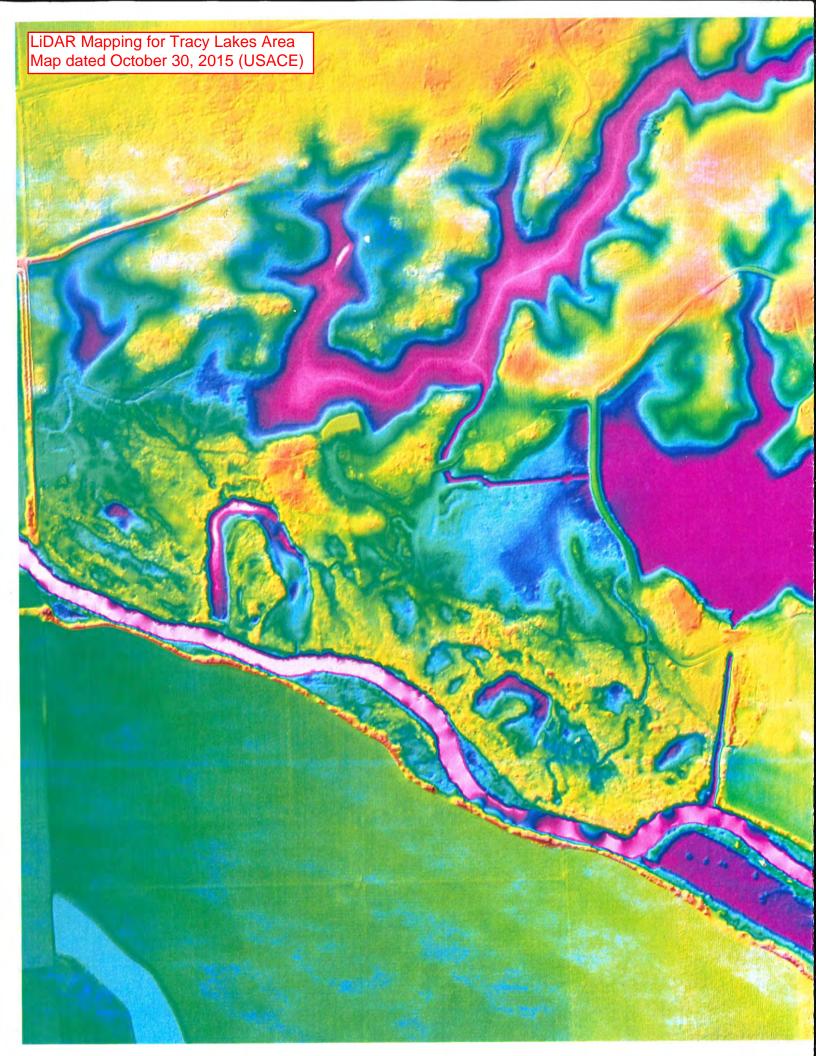


A N



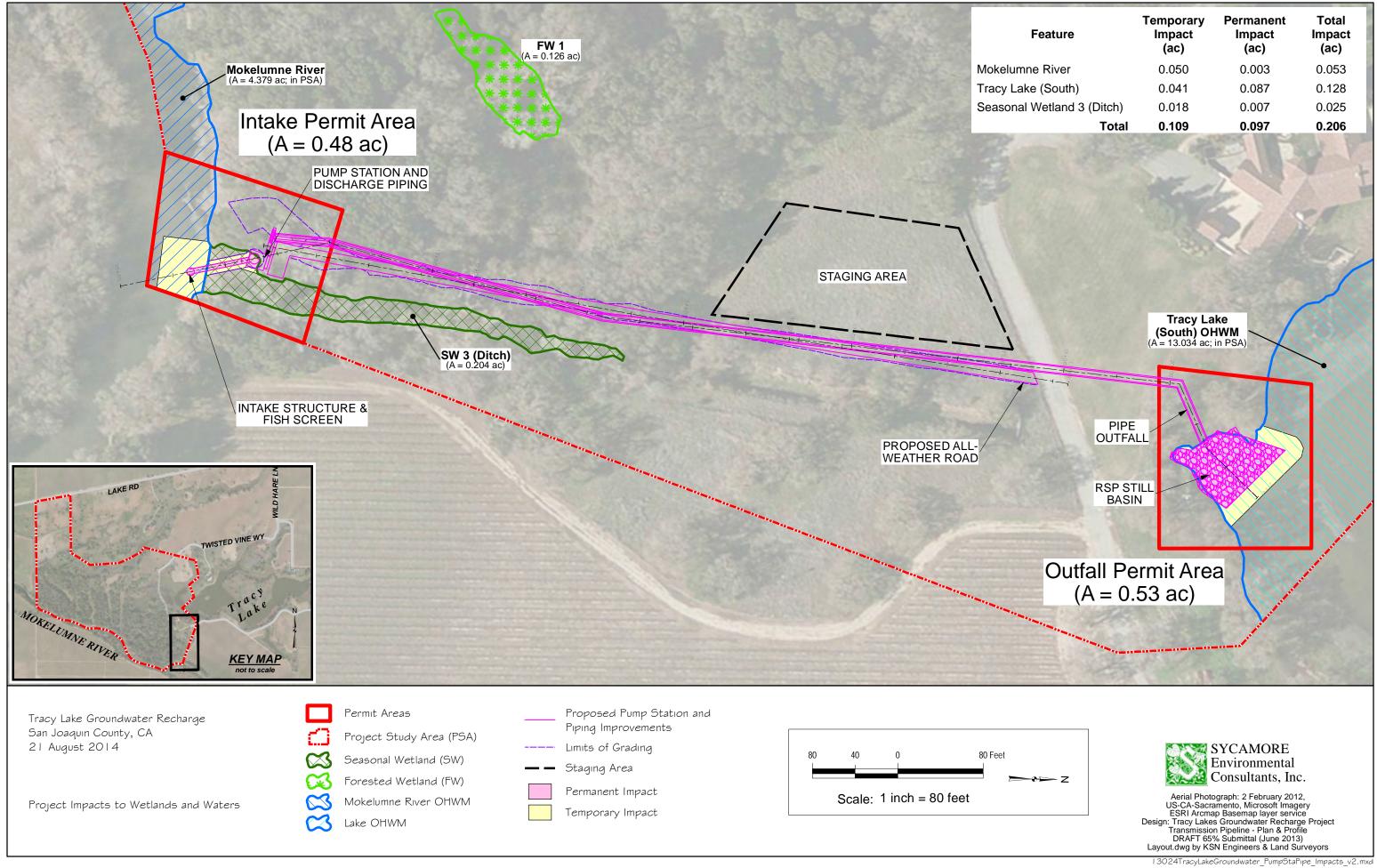






APPENDIX D

Tracy Lakes Groundwater Recharge Project Information (SPK-2011-01069; NWP-12 Verified on 17 November 2014)



)	Project Study
3	Seasonal Wetl
3	Forested Wetl
3	Mokelumne Riv
2	

Newly Installed Outfall Along South Shoreline of Tracy Lake South (USACE, photo taken September 30, 2015)

APPENDIX E

Revised JD Form

APPROVED JURISDICTIONAL DETERMINATION FORM **U.S. Army Corps of Engineers**

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

- A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): November 23, 2015
- B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Sacramento District, Tracy Lake Groundwater Recharge , SPK-2011-01069

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

County/parish/borough: San Joaquin City: State: California

Center coordinates of site (lat/long in degree decimal format): Lat. A38.2121°, Long. -121.3481°

Universal Transverse Mercator: 10 644621.51 4230635.25

Name of nearest waterbody: Mokelumne River

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Mokelumne River Name of watershed or Hydrologic Unit Code (HUC): Lower Consumnes-Lower Mokelumne. California., 18040005; Jahant Slough 180400121101

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form:

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 20 Nov 2015

Field Determination. Date(s): 10 Apr 2014, 30 Sep 2015

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Pick List "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There Pick List "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

- a. Indicate presence of waters of U.S. in review area (check all that apply): 1
 - TNWs, including territorial seas
 - Wetlands adjacent to TNWs
 - Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 - Non-RPWs that flow directly or indirectly into TNWs
 - Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 - Uvetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 - U Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

Impoundments of jurisdictional waters
 Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 4185 linear feet, ~50 wide, and/or ~18.632 (Mokelumne River ~4.80 acres and Tracy Lake North ~6.778 acres, Tracy Lake South non-wetland lake ~7.054 acres) acres.

Wetlands: 6.468 (~5.980 acres within OHWM of Tracy Lake South, and 0.488 acre other wetlands identified on Sycamore Environmental's July 29, 2013 JD map) acres.

- c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual
- Elevation of established OHWM (if known): ~17 ft (Mokelumne River); 16 ft (Tracy Lake North); 18 ft (Tracy Lake South)
- 2. Non-regulated waters/wetlands (check if applicable):³
 - Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: See Section III (F).

Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: Mokelumne River

Summarize rationale supporting determination: Documented tidal and Section 10 approximately 2 miles downstream. Tidal influence may extend into study area. Documented historical and current commercial and recreational navigation upstream and downstream and through the study area. The Mokelumne at this location may also be susceptible for use to transport interstate or foreign commerce. For example, the Lower Mokelumne (below Camanche Dam) is known as a popular fishing river for fall-run chinook salmon and bass, among other species, thus recreational boating including guided fishing trips occur along the Lower Mokelumne (http://www.anglerweb.com/fishing_spots/mokelumne-river and http://www.fishtrips.net/gt_mokelumne_float.htm).

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent": All wetlands identified on the JD map dated 29 July 2013 (attached) are considered adjacent to the TNW (The Mokelumne River) (5.237 acres total, consisting of SW 1-3, Farmed Wetland (a single feature) and Forested Wetlands FW 1-11). In addition to this, approximately 5.98 acres of area within the ordinary high water mark (OHWM) of Tracy Lake South in the study area is seasonal wetland, for a total of 11.22 acres of seasonal wetland within the study area.

"Adjacent" means "bordering, neighboring or contiguous" (33 CFR 328.3[c]). The December 2, 2008 US EPA/Corps guidance memorandum further clarified the meaning of the term "adjacent wetlands" as those wetland meeting at least one of the following three criteria: First, when a wetland has an unbroken surface or shallow sub-surface hydrologic connection to jurisdictional waters (even if it is intermittent). Second, when a wetland is physically separated from jurisdictional waters by man-made dikes or barriers, natural river berms, beach dunes and the like. Third, when a wetland is in "reasonably close" proximity to a jurisdictional water, supporting the scientific inference that such wetlands have an ecological interconnection with jurisdictional waters.

The wetlands within the study area are considered to be adjacent to the Mokelumne River, a TNW, since they are neighoring in the specific sense of being in reasonably close proximity to the TNW such that an implied ecological interconnection is more than speculative or insubstantial. Examples provided in the December 2, 2008. guidance include amphibians that move between such waters (i.e., a TNW and an adjacent wetland) in support of their life stage requirements. The wetlands within the study area are located either within or in very close proximity to a complex riparian/floodplain forest which supports a variety of bird and mammal species, as documented in the project's administrative record. The ecosystem functions as a riparian/floodplain forest and non-speculative ecological interconnection, when considering the physical and biological interactions that underpin ecology, especially in the occasional "flooded up" character of the riparian landscape between the river and the Tracy Lakes, inclusive of the ditch connecting the two lakes, and the ditch that has in the past drained water from Tracy Lake South to the Mokelumne River, shown in the March 2011 aerial photo in the record. Riparian areas in general, and during intermittent "flooded up" times, provide interconnection via food webs, including movements between riparian wetlands and the river for breeding, foraging and other life history requirements of invertebrates and amphibians, many species of which use aquatic areas and nearby uplands for different parts of their life histories. Relatively rare flood events can still have notable ecological effects, for example through nutrient storage and related modifications in nutrient cycling, or influencing organisms (e.g., insects, amphibians) to retreat to floodplain wetlands during such events. Another species-based ecological interconnection example is provided by the western pond turtle (Clemmys marmorata), which the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) documented the Tracy Lakes Groundwater Recharge project's (a NWP verified under the same project number, SPK-2011-01069) coverage under the SJMSCP, as a species with suitable habitat occuring within the project site (no occurrences have been found, however suitable habitat has been determined to occur). The SJMSCP required a western pond turtle-specific minimization measure that read, in part: "When nesting areas for pond turtles are identified on a project site, a buffer area of 300 feet shall be established between the nesting site (which may be immediately adjacent to wetlands or extend up to 400 feet away from wetland areas in uplands) and the wetland located near the nesting site" (San Joaquin Council of Governments, Inc., findings dated September 19, 2014, found in JD file's administrative record).

Wetlands located near to rivers in riparian or floodplain landscape settings can be connected to the nearby river both overland flow and/or by subsurface (e.g., hyporheic) flow (USEPA 2015*, pg. 2-7). In absence of obvious direct (e.g., field-observed) or indirect (e.g., discernible on aerial imagery) evidence of connectivity via overland flow, shallow sub-surface hydrologic connectivity is generally difficult to characterize for riparian/floodplain wetlands (USEPA, pg. 2-8). Based on best professional judgment applied to available documentation (e.g., soil mapping, regional groundwater information, LiDAR imagery and elevation data for the study area), shallow sub-surface hydrologic connections are likely to be present between the wetlands in the study area and the Mokelumne River, at least on an intermittent basis. The land surface elevations between the Tracy Lakes and the river range from 20 to 30 ft. above mean sea level (msl); however, this does not preclude the opportunity for shallow sub-surface hydrologic connectivity through soils mapped in the area between the lakes and river that range from deep to "very deep," and are moderately well-drained. Also, the OHWM of the Mokelumne River in the study area is estimated to be 17 ft. msl, and the OHWM of North and South Tracy Lakes, respectively, estimated to be 16 and 18 ft. msl. Areas of these lake bottoms within the study area were estimated by use of GPS devices and ocular observations during the District's Sept. 30, 2015 field work to be up to 5 ft. lower than the OWHM elevations (e.g., 11 ft. for North Tracy Lake, and 13 ft. for South Tracy Lakes). In absence of evidence to the contrary, the District cannot preclude the potential for intermittent, shallow sub-surface hydrologic connectivity between lake bottoms that are between 4 and 6 ft. below the OHWM of the Mokelumne River, during times when water occurs in the lake(s). Reliance on the potential (lacking direct evidence, e.g., data from shallow groundwater monitoring wells) of an intermittent, shallow sub-surface hydrologic connection is not the primary rationale or criterion for jurisdiction of the wetlands in Tracy Lake South on the basis of adjacency to the TNW, but rather a secondary rationale. The District does not consider that available conclusive evidence exists that would contradict the potential for a shallow sub-surface hydrologic connection between the wetlands in the study area and the Mokelumne River. For example, the lack of observable seeps or "daylighted" areas of lateral hydrologic flow between either of the lakes and the Mokelumne River, e.g., in Forested Wetland (FW) 9, which has a bottom elevation of 12 ft. msl, is not conclusive in negating a shallow sub-surface groundwater connection with the TNW. First, the subsurface connection could be lower than 12 ft., tapping into the open water and/or groundwater zones of the Mokelumne River. Second, all field observations made as part of this JD action have been during a drought period, not during one of the sporadic higher water times that are evidenced by aerial photography (as described above). It cannot be ruled out that seepage could occur along the side of one or more forested wetland, particularly those closer to the river (e.g., FW-1, FW-3, FW-4, FW-8 and/or FW-9) during a higher water event and/or prolonged precipitation cycle.

With one exception, there does not appear to be a direct pathway for a surface hydrologic connection between the Tracy Lakes and the river, based on site observations and remote sensing (e.g., LiDAR). There is one surface hydrologic connection with the potential to be "intermittent," based on available data. This factor is presented, as a secondary basis for jurisdiction by adjacency, to bolster the primary basis noted above (of "reasonably close" proximity/ecological interconnection). The man-made ditch constructed sometime between 1953 and 1968 to drain Tracy Lake South as part of its agricultural use has a controlled valve/gate at its northern end. Information in the record indicates the gate may not have been opened for the better part of 20 years, however, the potential for a surface hydrologic connection is noted as one that has been acknowledged to have occurred in the past. The applicant's representative also described a surface hydrology connection in a December 22, 2014 requesting the appeal of the District's original JD; "[w]hile it is unclear why the valve at the end of the ditch was left open in 2011, this resulted in water entering South Tracy Lake from the River through a man-made ditch and control structure during a high flow event." Thus, as recently as 2011, which is the year during which the March 2011 aerial depicts water in the subject ditch, there appears to have been a surface hydrology connection between Tracy Lake South and the Mokelumne River. A surface hydrology connection between these features may be sporadic enough in nature (in response to climatic conditions and human intervention to control the gate structure) so as to be less than intermittent, which is the standard cited in the December, 2008 US EPA/Corps guidance. This is further complicated by the infrastructure just installed (summer 2015) under the Tracy Lakes Groundwater Recharge project DA authorization. The project's infrastructure is designed to allow operators to control water inflow pumped upgradient into Tracy Lake South from the Mokelumne River on a highly precise basis. In order to the serve the purpose of groundwater recharge, it is all the more unlikely that surface water releases would be necessary in the future, unless potentially a significant rain event(s) occurred. The applicant's project description for the groundwater recharge project did not state that the existing culvert or gate structure would be removed, so it is assumed that it is still present, barring new information. Based on the above analysis of surface hydrologic connections, Tracy Lake North does not have a surface connection to the Mokelumne River on a time scale at least intermittent in nature.

In summary, based on the available information, the wetlands within the study area (inclusive of the wetlands within Tracy Lake South) are adjacent to the Mokelumne River, a TNW. The basis for adjacency results primarily from the wetlands' "reasonably close" proximity to the TNW, supporting the scientific inference that such wetlands have an ecological interconnection with jurisdictional waters. A supportive, secondary rationale for adjacency is provided by the non-speculative nature of sporadic surface water connectivity between Tracy Lake South and the Mokelumne River via the man-made ditch, and for the

potential, in absence of conclusive evidence to the contrary, for a shallow sub-surface hydrologic connection between the aquatic features in the river's floodplain area and the river itself.

*U.S. Environmental Protection Agency. Connectivity of streams and wetlands to downstream waters: a review and synthesis of the scientific evidence. EPA/600/R-14-475F, January 2015.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size:	acres	
Drainage area:	Pick List	
Average annual rair	nfall: inches	
Average annual sno	owfall: inches	
-		

(ii) Physical Characteristics:

(a) <u>Relationship with TNW:</u>
 ☐ Tributary flows directly into TNW.
 ☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are
Project waters arePick List
river miles from TNW.Project waters are
Project waters arePick List
aerial (straight) miles from TNW.Project waters are
Project waters are
Pick List
aerial (straight) miles from RPW.Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW⁵: Tributary stream order, if known:

(b) <u>General Tributary Characteristics (check all that apply):</u> Tributary is: Natural

☐ Natural
 ☐ Artificial (man-made). Explain:
 ☐ Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate): Average width: feet Average depth: feet

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

	Average side slopes: Pick List.
	Primary tributary substrate composition (check all that apply): Silts Sands Concrete Cobbles Gravel Muck Bedrock Vegetation. Type/% cover: Other. Explain:
	Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Presence of run/riffle/pool complexes. Explain: Tributary geometry: Pick List Tributary gradient (approximate average slope): %
(c)	<u>Flow:</u> Tributary provides for: Pick List Estimate average number of flow events in review area/year: Pick List Describe flow regime: Other information on duration and volume:
	Surface flow is: Pick List. Characteristics:
	Subsurface flow: Pick List . Explain findings: Dye (or other) test performed:
	Tributary has (check all that apply): Bed and banks OHWM ⁶ (check all indicators that apply): clear, natural line impressed on the bank destruction of terrestrial vegetation changes in the character of soil destruction of terrestrial vegetation shelving the presence of wrack line vegetation matted down, bent, or absent sediment sorting leaf litter disturbed or washed away scour sediment deposition multiple observed or predicted flow events water staining dabrupt change in plant community other (list): Discontinuous OHWM. ⁷ Explain:
	If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that
	 High Tide Line indicated by: di or scum line along shore objects fine shell or debris deposits (foreshore) physical markings/characteristics tidal gauges other (list):
Ch	emical Characteristics: aracterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: entify specific pollutants, if known:
	Dogical Characteristics. Channel supports (check all that apply): Riparian corridor. Characteristics (type, average width): Wetland fringe. Characteristics: Habitat for: □ Federally Listed species. Explain findings: □ Fish/spawn areas. Explain findings: □ Other environmentally-sensitive species. Explain findings: □ Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

apply):

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break. ⁷Ibid.

(i) Physical Characteristics:

- (a) <u>General Wetland Characteristics:</u> Properties: Wetland size: acres Wetland type. Explain: Wetland quality. Explain: Project wetlands cross or serve as state boundaries. Explain:
- (b) <u>General Flow Relationship with Non-TNW</u>: Flow is: **Pick List**. Explain:

Surface flow is: Pick List Characteristics:

Subsurface flow: **Pick List**. Explain findings: Dye (or other) test performed:

- (c) <u>Wetland Adjacency Determination with Non-TNW:</u>
 - Directly abutting
 - Not directly abutting
 - Discrete wetland hydrologic connection. Explain:
 - Ecological connection. Explain:
 - Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW. Project waters are **Pick List** aerial (straight) miles from TNW. Flow is from: **Pick List**. Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) Biological Characteristics. Wetland supports (check all that apply):

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:

Habitat for:

Federally Listed species. Explain findings:

Fish/spawn areas. Explain findings:

- Other environmentally-sensitive species. Explain findings:
- Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List** Approximately acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW.

include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

- 1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
- 2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
- 3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

- 2. RPWs that flow directly or indirectly into TNWs.
 - Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
 - Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet wide.
- Other non-wetland waters: acres.
 - Identify type(s) of waters:

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet, wide.
- Other non-wetland waters: acres.
 - Identify type(s) of waters:
- 4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

U Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

- U Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2. above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

- 5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
 - U Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs. 6.

Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.9

- As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
- Demonstrate that impoundment was created from "waters of the U.S.," or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):10

which are or could be used by interstate or foreign travelers for recreational or other purposes.

- in the share or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain:

Other factors. Explain:

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

acres.

- Tributary waters: linear feet, wide.
- Other non-wetland waters:
- Identify type(s) of waters: acres.
- Wetlands:

NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY): F.

- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:

Tracy Lake North: This feature is a sporadically-flooded non-RPW "tributary" (a term that is inclusive of lakes per the guidance contained in the Corps' post-Rapanos "Instructional Guidebook, dated May 30, 2007) that does not contain wetlands within its OHWM, fails the Significant Nexus standard, since the waters do not

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW (Mokelumne River). Supporting rationale is as follows:

1) the direction of flow for surface water in the study area is from Tracy Lake South to Tracy Lake North (in combination with Tracy Lake North' own upstream watershed drainage). With the pending operation of the groundwater recharge project, the potential for water from the Mokelumne River to reach Tracy Lake North is likely to be augmented. However, the potential for vice-versa to result is likely to be even more diminished than it was in a pre-project condition. The aerial photo sequence between April and August 2013 is a helpful illustration of the propensity for Tracy Lake South to retain water for a longer time period than Tracy Lake North;

2) As noted above, the potential for a direct surface water hydrology connection between Tracy Lake North and the Mokelumne River. If water from the Mokelumne River flows into Tracy Lake North, this would not affect the integrity of the Mokelumne River in a way that could be said to be more than speculative or insubstantial. For example, once the water is taken off-stream, the formal project description for the groundwater recharge project designates Tracy Lake South as "the" reservoir (not both lakes); and,

3) As noted above, there is a potential for an intermittent sub-surface hydrologic connection between Tracy Lake North and the Mokelumne River. However, lacking evidence such as presence of "seeps" in intervening topographic depressions in the area between the lake and the river, and/or data from groundwater monitoring wells, this factor cannot be said to have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW. In summary, Tracy Lake North does not meet the significant nexus standard.

Tracy Lake South (7.054 acres of non-wetland lakebed within the OHWM of lake): The non-wetland portion of the lake, which is also a sporadically-flooded non-RPW "tributary" fails the Significant Nexus standard, since the waters do not have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW (Mokelumne River). Supporting rationale is as follows:

1) As noted above, the man-made ditch constructed sometime between 1953 and 1968 was built to drain Tracy Lake South as part of its agricultural use. The ditch has a controlled valve/gate at its northern end, and information in the record indicates the gate may not have been opened to drain Tracy Lake South toward the Mokelumne River for the better part of 20 years. As also described above, apparently in 2011 there was water from the Mokelumne River that entered into Tracy Lake South; it is unknown if there was a flow of water from the lake into the river. The year 2011 is four years ago from present, and more than likely the event in question occurred in the spring (e.g., March 2011's aerial photo discussed above). This would influence the timeline to +/- 4.5 years from present. If water from the Mokelumne River flows into Tracy Lake South on a highly intermittent basis (unknown except for the event indicated by the appellant's representative, as discussed above), this would not affect the chemical, physical and/or biological integrity of the Mokelumne River in a way that could be said to be more than speculative within the last approximately five years. Regulatory Guidance Letter 05-02 speaks to the potential for "rapidly changing environmental conditions" to affect specific geographic areas, which is part of the rationale behind the Corps' 5-year expiration date for approved JDs. If this man-made ditch had been assessed in the 1990's, for instance, the District may have found evidence of a less-than-speculative effect of Tracy Lake South waters on the TNW. In more recent time (2010-2015), the District does not have evidence that surface water from Tracy Lake South has reached the TNW; and,

2) As noted above, there is a potential for an intermittent sub-surface hydrologic connection between Tracy Lake South and the Mokelumne River. However, lacking evidence such as presence of "seeps" in intervening topographic depressions (including the man-made ditch) and/or data from groundwater monitoring wells, this factor cannot be said to have more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of the TNW. In summary, the District has determined that the 7.054 acres of non-wetland lakebed within the OHWM of Tracy Lake South does not meet the significant nexus standard.

Other: (explain, if not covered above):

```
Non-wetland waters (i.e., rivers, streams): linear feet, wide.
```

Lakes/ponds: acres.

Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

Other non-wetland waters: acres. List type of aquatic resource:

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

Non-wetland waters (i.e., rivers, streams): linear feet, wide.

Lakes/ponds: 6.778 acres.

Other non-wetland waters:

acres. List type of aquatic resource:

Wetlands: acres.

SECTION IV: DATA SOURCES.

- A. SUPPORTING DATA. Data reviewed for JD (check all that apply checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
 - Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Tracy Lake Groundwater Recharge Figure 4: Jurisdictional Delineation Map (dated 29 July 2013, by Sycamore Environmental Consultants)
 - Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 Office concurs with data sheets/delineation report.
 Office does not concur with data sheets/delineation report.
 - Data sheets prepared by the Corps: 30 Sept. 2015, DPs A H
 - Corps navigable waters' study:
 - U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
 - U.S. Geological Survey map(s). Cite scale & quad name: 1:24K; CA-LODI NORTH
 - USDA Natural Resources Conservation Service Soil Survey. Citation: Soil Survey of San Joaquin County, CA (October 1992)
 - National wetlands inventory map(s). Cite name:
 - State/Local wetland inventory map(s):
 - FEMA/FIRM maps: FEMA Map Number 06077C0155F (October 16, 2009)
 - 100-year Floodplain Elevation is: 29-31 ft. (NAVD 88) (National Geodectic Vertical Datum of 1929)
 - Photographs: Aerial (Name & Date): **Google Earth, Bing Maps** or Other (Name & Date):
 - Previous determination(s). File no. and date of response letter: **SPK-2011-01069 (2 Oct 2014)**
 - Applicable/supporting case law:
 - Applicable/supporting scientific literature: CONNECTIVITY OF STREAMS AND WETLANDS TO DOWNSTREAM WATERS: A REVIEW AND SYNTHESIS OF THE SCIENTIFIC EVIDENCE (EPA/600/R-14/475F), January 2015
 - Other information (please specify): LiDAR

B. ADDITIONAL COMMENTS TO SUPPORT JD:

Tracy Lake North was assessed as a potential isolated non-navigable intrastate non-relatively permanent water, and found to not be isolated from the TNW for the reason that there is a connecting ditch that carries water (via a gate-controlled culvert) from Tracy Lake South into Tracy Lake North. Thus, the lakes are hydrologically connected. With a man-made ditch connection between Tracy Lake South and the TNW, there is the potential for water from the TNW to reach Tracy Lake South (from a surface water connection perspective, much less likely vice-versa).