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Sordal Wetland Delineation



9/19/2018

Iris Koski and Kelsey McDonald delineated wetlands on the Sordal property on 9/17/2018. Biologist Iris Koski has completed wetland delineation training and is experienced with wetland delineation. Botanist/Biologist Kelsey McDonald assisted with plant identification and delineation.

A wetland was delineated in the pasture on the 001 parcel surrounding the spring and ponds (WD-3). The wetland vegetation was primarily characterized by penny royal (*Mentha pulegium*), and both wetland soils and hydrology were present at the site. The nearby cultivation site D is suitably placed, approximately 170 feet south of the wetland, and with over 50-foot buffers between the Class III intermittent streams to the northwest and southeast.

Several other sites were also investigated on 9/17/18. The spring box and lined pond area on parcel 007 did not contain dominant wetland vegetation. The wet area on parcel 007 near road point 12 contained a mix of wetland and upland vegetation, and appeared to show seasonal wetland hydrology with cracked bare soil, sediment deposits, and a visible drainage pattern (WD-1). No new construction is currently planned in this area. If any construction were to occur in or near the wet areas on parcel 007, a full wetland delineation with soil samples would be required.

On parcel 008, a small herbaceous wetland was delineated adjacent to the Class IV ditch and a gravel mining site (WD-2). The small flat was dominated by pennyroyal (*Mentha pulegium*), and showed evidence of wetland hydrology with drainage patterns, oxidized rhizospheres, and surface cracks in the soil.

Please see the attached map showing delineated wetlands and other wet areas. Additional wetland delineation is recommended if the client plans to develop any additional areas adjacent to springs, seeps, or wetland vegetation.

Please contact us if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Kelsey McDonald".

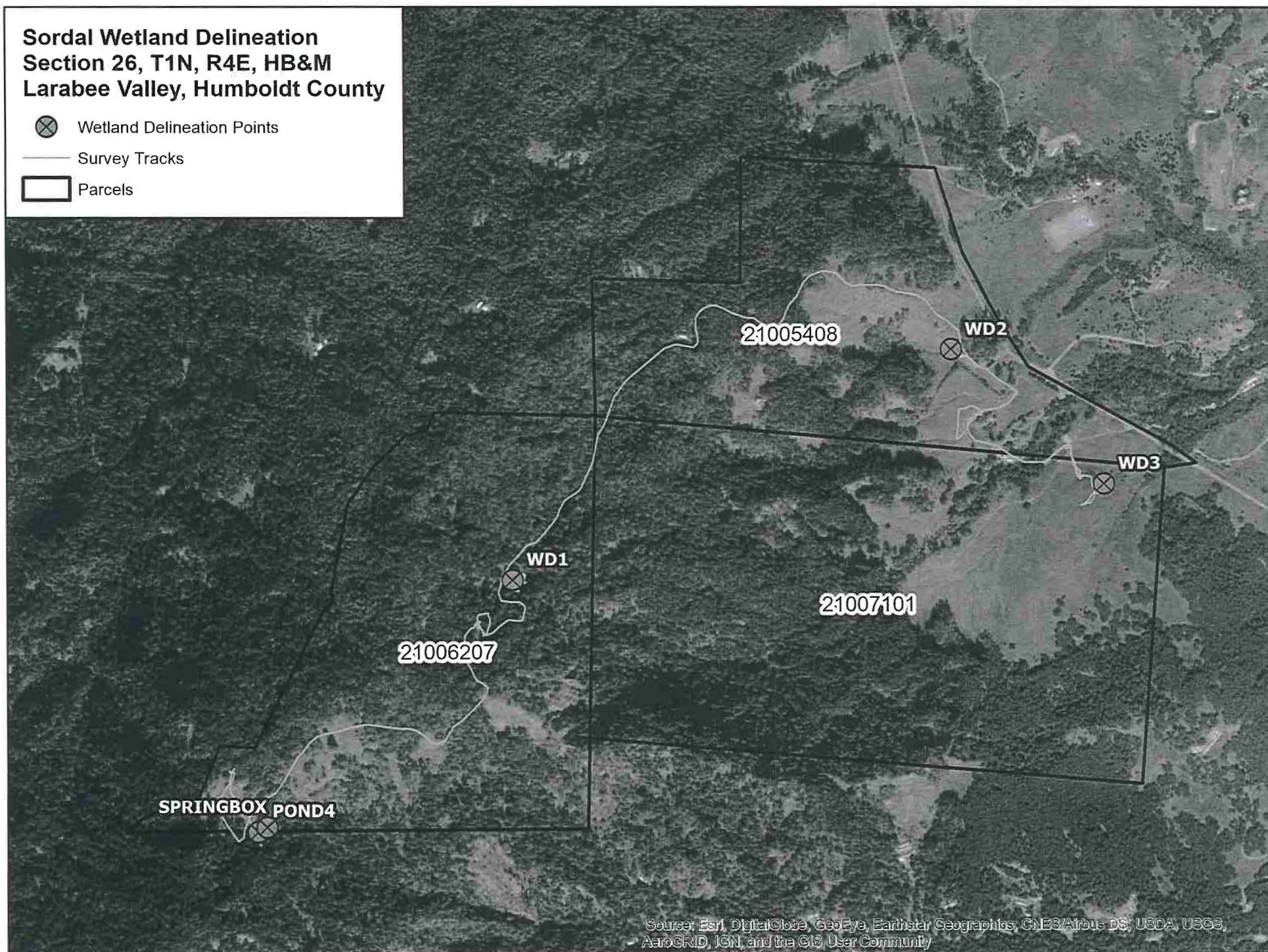
Kelsey McDonald
Botanist/Biologist

A handwritten signature in black ink that reads "Iris E Koski".

Iris Koski
Biologist

**Sordal Wetland Delineation
Section 26, T1N, R4E, HB&M
Larabee Valley, Humboldt County**

-  Wetland Delineation Points
-  Survey Tracks
-  Parcels



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

Photo 1. WD-3 on Parcel 001.

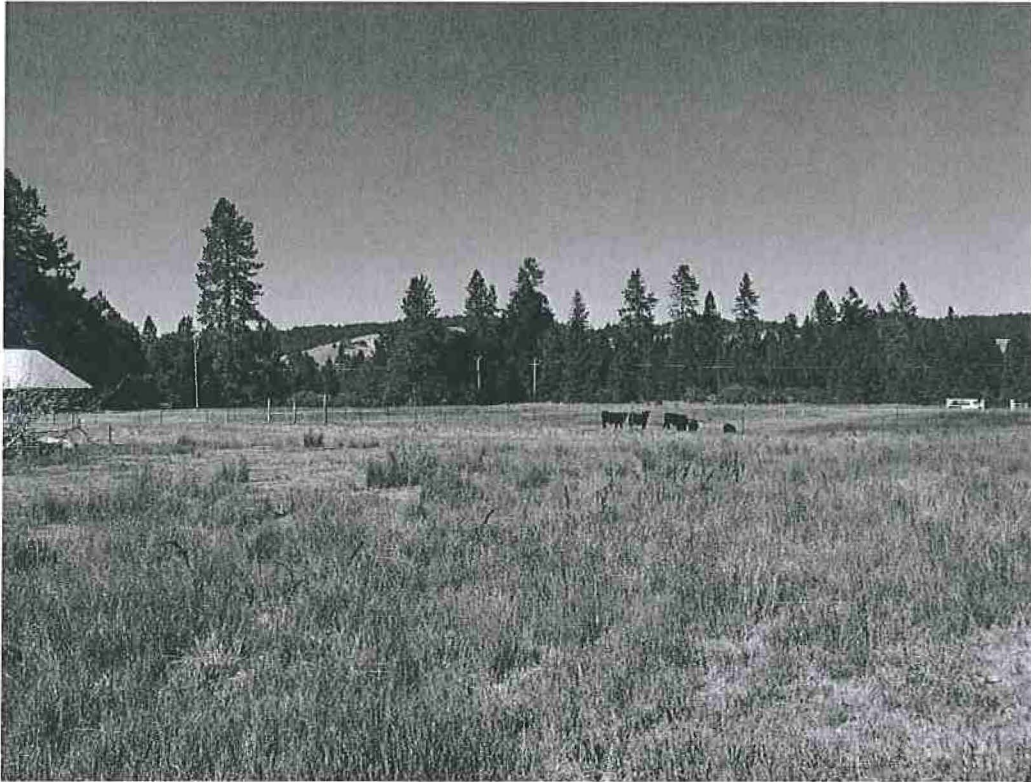


Photo 2. Wet Point on Parcel 007 near Road Point 12



Photo 3. Cracked soil indicative of wetland hydrology on Parcel 008, WD-3.



WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Sordal WDA City/County: Larabee Valley, Humboldt Sampling Date: 9/17/18
 Applicant/Owner: Sordal 007 parcel State: CA Sampling Point: WD-1
 Investigator(s): K. S. Koski, Kelsey McDonald Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 10
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	
Remarks: <u>Dry season, appears to be a seasonal wetland</u>		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>Pseudotsuga menziesii</u>	<u>5</u>		<u>Upl</u>	
2. <u>Acer macrophyllum</u>	<u>5</u>		<u>FACU</u>	
3. <u>Quercus kelloggii</u>	<u>1</u>		<u>Upl</u>	
4. <u>Nothofagus confertifolia</u>	<u>1</u>		<u>Upl</u>	
	<u>12</u> = Total Cover			
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>22</u> x 2 = <u>44</u> FAC species <u>32</u> x 3 = <u>96</u> FACU species <u>58</u> x 4 = <u>232</u> UPL species <u>12</u> x 5 = <u>60</u> Column Totals: <u>124</u> (A) <u>400</u> (B) Prevalence Index = B/A = <u>3.23</u>
1. <u>Arctostaphylos manzanita</u>	<u>5</u>		<u>Upl</u>	
2. _____				
3. <u>Symphoricarpos albus</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
4. <u>Sambucus nigra</u>	<u>2</u>		<u>FAC</u>	
5. <u>Ribes cereum</u>	<u>1</u>			
	<u>23</u> = Total Cover			
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <input type="radio"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="radio"/> 2 - Dominance Test is >50% <input type="radio"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="radio"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="radio"/> 5 - Wetland Non-Vascular Plants ¹ <input type="radio"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Juncus patens</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Bromus diandrus</u>	<u>10</u>			
3. <u>Anchusa asper</u>	<u>3</u>		<u>FACU</u>	
4. <u>Cynurus echinatus</u>	<u>10</u>			
5. <u>Festuca arundinacea</u> (syn)	<u>10</u>		<u>FAC</u>	
6. <u>Pteridium aquilinum</u>	<u>5</u>		<u>FACU</u>	
7. <u>Stachys rigida</u>	<u>2</u>		<u>FACW</u>	
8. <u>Carex cf. subfusca</u>	<u>10</u>		<u>FAC</u>	
9. <u>Holcus lanatus</u>	<u>10</u>		<u>FAC</u>	
10. <u>Elymus glaucus</u>	<u>10</u>		<u>FACU</u>	
11. <u>Dactylis glomerata</u>	<u>10</u>		<u>FACU</u>	
	<u>100</u> = Total Cover			
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u>Rubus leucodermis</u>	<u>5</u>		<u>FACU</u>	
2. _____				
	<u>5</u> = Total Cover			
% Bare Ground in Herb Stratum <u>2</u>				
Remarks: _____				

SOIL

Sampling Point: _____

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2,		
<input type="checkbox"/> High Water Table (A2)	MLRA 1, 2, 4A, and 4B)	4A, and 4B)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)	<input checked="" type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)		
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)				
Field Observations:				
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
(includes capillary fringe)			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Sordal W-2 City/County: Larabee Valley, Humboldt Sampling Date: 9/17/18
 Applicant/Owner: Sordal OVE parcel State: CA Sampling Point: WD2
 Investigator(s): Iris Koski, Helsey McDonald Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 42
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: <u>Dry season, seasonally wet. Compacted soil from grazing, road</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)														
1. <u>None</u>																		
2. _____																		
3. _____																		
4. _____																		
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>45</u></td> <td>x 1 = <u>45</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>7</u></td> <td>x 3 = <u>21</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>72</u> (A)</td> <td><u>138</u> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <u>1.92</u>	Total % Cover of:	Multiply by:	OBL species <u>45</u>	x 1 = <u>45</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>7</u>	x 3 = <u>21</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>72</u> (A)	<u>138</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>45</u>	x 1 = <u>45</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>7</u>	x 3 = <u>21</u>																	
FACU species <u>20</u>	x 4 = <u>80</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>72</u> (A)	<u>138</u> (B)																	
1. <u>None</u>																		
2. _____																		
3. _____																		
4. _____																		
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0' <input checked="" type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input checked="" type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Mentha pulegium</u>	<u>35</u>	<u>Y</u>	<u>OBL</u>															
2. <u>Festuca idahoensis</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>															
3. <u>Rumex acetosella</u>	<u>2</u>		<u>FACU</u>															
4. <u>Trifolium sp</u>	<u>10</u>																	
5. <u>Nanthes californica</u>	<u>5</u>		<u>FAC</u>															
6. <u>Luzula comosa</u>	<u>1</u>		<u>FAC</u>															
7. <u>Artemisia americanus</u>	<u>10</u>		<u>OBL</u>															
8. <u>Rumex minor</u>	<u>1</u>		<u>FAC</u>															
9. <u>Hypochaeris radicata</u>	<u>2</u>		<u>FACU</u>															
10. _____																		
Woody Vine Stratum (Plot size: _____)																		
1. _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
2. _____																		
% Bare Ground in Herb Stratum <u>14</u>																		
Remarks: _____																		

Sampling Point: _____

HYDROLOGY

Wetland Hydrology Indicators:

US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: SORDAL - SITE D1WD3 City/County: Larabee Valley, Humboldt Sampling Date: 9/17/18
 Applicant/Owner: Sordal COI parcel State: CA Sampling Point: WD-3
 Investigator(s): Lris Koski, Kelsey McDermott Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: <u>Heavily grazed. Dry season.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
_____ = Total Cover			
Sapling/Shrub Stratum (Plot size: _____)			
1. <u>Rosa rubiginosa</u>	<u>1</u>		<u>LPL</u>
2. <u>Rubus arcticus</u>	<u>1</u>		<u>FAC</u>
3. _____			
4. _____			
5. _____			
<u>2</u> = Total Cover			
Herb Stratum (Plot size: _____)			
1. <u>Mentha pulegium</u>	<u>35</u>	<u>Y</u>	<u>OBL</u>
2. <u>Juncus palens</u>	<u>5</u>		<u>FACW</u>
3. <u>Juncus effusus</u>	<u>10</u>		<u>FACW</u>
4. <u>Juncus sp. (brown leaves)</u>	<u>5</u>		<u>FACW</u>
5. <u>Rumex crispus</u>	<u>1</u>		<u>FAC</u>
6. <u>Hypericum anagalloides</u>	<u>3</u>		<u>OBL</u>
7. <u>Scirpus microcarpus</u>	<u>1</u>		<u>OBL</u>
8. <u>Lythrum salicaria</u>	<u>10</u>		<u>FACU</u>
9. <u>Anthriscus odoratum</u>	<u>5</u>		<u>FACU</u>
10. <u>Vulpia bromoides</u>	<u>10</u>		<u>FAC</u>
11. <u>Cirsium vulgare</u>	<u>2</u>		<u>FACU</u>
12. <u>Cynodon dactylon</u>	<u>95</u>		<u>FACU</u>
<u>95</u> = Total Cover			
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
_____ = Total Cover			
% Bare Ground in Herb Stratum <u>5</u>			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>39</u>	x 1 = <u>39</u>
FACW species <u>20</u>	x 2 = <u>40</u>
FAC species <u>11</u>	x 3 = <u>33</u>
FACU species <u>25</u>	x 4 = <u>100</u>
UPL species <u>5</u>	x 5 = _____
Column Totals: <u>95</u> (A)	<u>212</u> (B)

Prevalence Index = B/A = 2.23

Hydrophytic Vegetation Indicators:

- ☒ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0¹
- ☒ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- ☒ 5 - Wetland Non-Vascular Plants¹

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No _____

Remarks: _____

SOIL

Sampling Point: _____

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:		
<div> <div> Primary Indicators (minimum of one required; check all that apply) </div> <div> <div> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input checked="" type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) </div> <div> <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks) </div> </div> </div> <div> <div> Secondary Indicators (2 or more required) </div> <div> <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7) </div> </div>		
<div> <div> Field Observations: </div> <div> <div> Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <input type="text"/> </div> <div> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <input type="text"/> </div> <div> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <input type="text"/> </div> </div> <div> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> </div> </div>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		