Minimum Standards for Aquatic Resource Delineations

Matt Wilson

Senior Project Manager, Nevada-Utah Section

Sacramento District Regulatory Program Workshop

31 May 2018









Delineation Report Minimum Standards

http://www.spk.usace.army.mil/Portals/12/documents/regulatory/jd/minimumstandards/Minimum_Standards_for_Delineation_with_Template-final.pdf



MINIMUM STANDARDS FOR ACCEPTANCE OF AQUATIC RESOURCES DELINEATION REPORTS

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

The U.S. Army Corps of Engineers, through its Regulatory Program, regulators certain activities in waters of the United States. Waters of the U.S. are defined under 33 CFR Part 328. In order for the Corps to determine the amount and extent of waters of the United States at a site, aquatic resources must first be delineated in accordance with established regulatory standards, guidance and protocol, such as the 1987 Corps of Engineers Wetlands Delineation Manual and appropriate regional supplements. Before making any permit decision, the Corps is responsible for conducting or verifying the delineation and determining which of the aquatic resources have the potential to fail under federal jurket/toon.

Due to limited statting and resources, the Corps' Sacramento District recommends permit applicants employ the services of includuals experienced in delineating aquatic resources. Permit applicants are further encouraged early in the project planning stages to submit the delineation, along with a request for a preliminary or approved jurisdictional determination, and engage in a pre application consultation with them local District office. Larly consultation may help dentify potential concerns and result in a quicker permit decision.

The Defind has established minimum standards for defineation reports to insure consistency and accuracy in the defineation of aquatic resources, which will minimize potential defays. The standards are based on years of experience conducting and verifying defineations, as well as the best practices of environmental consultance. Defineations submitted for verification must follow the standards, unless determined to not be practical include activities with small permanent or temporary impacts to aquatic resources (under 0 to 0 acre), applicants with limited financial resources, and emergencies. The Defined will notify the requestor for defined ion submittals that do not contain sufficient information to accurately literity the limits of waters of the ULS.

Aquatic resources delineation reports submitted to the District must include the following:

A cover letter requesting a jurisdictional determination. The letter must specify whether a preliminary or approved jurisdiction determination is requested.

A signed statement from the property owner(s) allowing Corps personnel to enter the property and to collect samples during normal business hours. If the property is land-locked, the owner or proponent must obtain permission from the adjacent property owner(s) to provide access for Corps personnel.

A statement that the defineation has been conducted in accordance with the 1907 Corps of Engineers Wetlands Detineation Manual and appropriate regional supplement(s). The regional supplement(s) used must be identified. For ordinary high water mark (OHWM) defineations, a statement indentifying the use of the OHWM field guide must be included.

Page 2 of 4

Directions to the survey area.

Contact information for the applicant(s), property owner(s), and agent(s).

Anarative describing all aquatic resources at the site and an explanation for the mapped boundaries, especially for resources containing complex transition zones. If the site contains resources that meet one or two wetland criteria or do not exhibit a clear OHVM, describe the rationale to mot demensing these features. Learnples include erosonal features, upland swales, and other upland areas that appear 'Wer' on satellite or aerial imagery.

The total acreage of the survey area.

Date(s) field work was completed.

A table listing all aquatic resources. The table will include the name of each aquatic resource, its Cowardin type, acreage, and location (latitude/longitude). For linear features, the table must show both acreage and location (latitude/longitude).

A description of existing field conditions. The field condition description may include current land use, llood/acought conditions, imgation practices, modifications to the site, and any characteristics considered alypicat.

A decosision of the trydotogy at the site, including all known surface or subsurface sources, drainage gradients, surface water connections to the nearest traditional navigable waterway or interstate water, and any potential influence for mammade water sources, such as imgation. The discussion should also identify the nearest "blue-line" waterway or other feature found on the most incort USGS map.

If remote sensing was used in the delineation, provide an explanation of how it was used and include the name, date and source of the loots used and copies of applicable mass/bhotoraphs.

A discussion of plant communities and habitat types present at the site and a list of the scientific name, common name, and wetland indicator status of all plants.

Soil descriptions, soil map(s), and a discussion of hydric soils or soils with hydric inclusions at the site.

Any observed or documented interstate or foreign commerce associated with aquatic resources found on the she, specifically recreation or other use by interstate or foreign travelers, sale of fish or shellfish in interstate or foreign commerce, and use by industries operating in interstate or foreign commerce.

U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT, 1325 J ST., SACRAMENTO, CA 95514 WWW.354.0550 J TO 10



BUILDING STRONG_®



How To ...

Navigate Our Website

Useful Links

Regulatory FAQs

Public Notices

Jurisdiction

Aquatic Resources Delineation

General Permits

Nationwide Permits

Letters of Permission

Individual Permits

Mitigation

Endangered Species

Cultural Resources

Tribal Consultation

Environmental Impact Statements

Clean Water Act Section 404 Exemptions

Section 214 of WRDA

S.ARM

Six County Aquatic Resources

The Regulatory Mission

The Department of the Army's Regulatory Program is one of the oldest in the federal government. Initially, it served a simple purpose: to protect and maintain the navigable capacity of the nation's waters. Changing public needs, evolving policy, court decisions and new statutory mandates have changed several aspects of the program including its breadth, complexity and authority.

The U.S. Army Corps of Engineers, through the Regulatory Program, administers and enforces Section 10 of the Rivers and Harbors Act of 1899 (RHA) and Section 404 of the Clean Water Act (CWA). Under RHA Section 10, a permit is required for work or structures in, over or under navigable waters of the United States. Under CWA Section 404, a permit is required for the discharge of dredged or fill material into waters of the United States. Many waterbodies and wetlands in the nation are waters of the United United States to the Corps' regulatory authority.

The Regulatory Program is committed to protecting the Nation's aquatic resources, while allowing reasonable development through fair, flexible and balanced permit decisions. The Corps evaluates permit applications for essentially all construction activities that occur in the Nation's waters, including wetlands



We value your input!

Please take our customer survey









Our Commitment to Public Service

Public Service is a Public Trust. We, as Corps Regulators, Must Earn This Trust, and to Keep This Trust,

📴 http://www.spk.usace.army.mil/Missions/Regulatory/Jurisdiction/Aquatic-Resources-Df 🔎 👻 🖒 📗 🔯 Aquatic Resources Delineati... 🗴

ile Edit View Favorites Tools Help



HOME > MISSIONS > REGULATORY > JURISDICTION > AQUATIC RESOURCES DELINEATION

Aquatic Resources Delineation

The Corps of Engineers receives thousands of requests each year to perform aquatic resources delineations for potential applicants for permits under Section 404 of the Clean Water Act.

Due to limited staff and resources, response time can be several months or longer.

To expedite this process, the District encourages applicants to use consultants to conduct preliminary wetland delineations, especially for large and/or complex areas.

Delineations, which meet our minimum standards may then be submitted to the District for review and verification.

Mational Wetland Plant List (NWPL)

- Minimum Standards for Acceptance of Aquatic Resources Delineation Reports
- Updated wap and Braning Obside to the Ocally Pacific Division Regulatory Program
- · List of Wetland Consultants

Aquatic Resource Upload Sheet

A completed copy of the Aquatic Resources Excel spreadsheet, found in the ZIP archive linked below, is required by the Sacramento District's Minimum Standards for Acceptance of Aquatic Resources Delineation Reports. This spreadsheet facilitates efficient and accurate data entry of the aquatic resources into the Corps' database. The spreadsheet contains validation tools to ensure accuracy of the data before submitting to the Corps. Performing the validation upfront will alleviate the need for back-and-forth correspondence between the requester and the Corps to correct any possible errors in the data.

To run the validation tool, first enter all data in the appropriate columns and tabs. Ensure that that for each aquatic resource, the amount field contains a value greater than zero. If data is copied into the worksheet using the Paste Tool, ensure that you paste only the values, as other paste methods can alter the format and cause the validation to fail. Once you have completed entering the data and have saved the document as a XLSM file, click the gold shield at the top of the workbook window. The tool has a tool-tip showing "Validate Worksheets." After clicking this button, validation of data is performed and any possible errors are added to the Validation tab. This tab is opened after the process is complete to allow the user to see the output. The validation output includes the tab (data type), column, and cell for where the possible error was found and a brief explanation of the issue. The majority of the validation checks are captured in the Rules tab of the workbook.

If you encounter any issues in using the validation tool or the new workbook, or if you have any questions, please contact your local Point of Contact, who can be found using the interactive map available on our Contact Your Local Office page.

· Aquatic Resources Excel Spreadsheet





BUILDING STRONG_®

Minimum Standards

- New as of January 2016
- Necessary due to limited staff and resources
- Designed to improve quality and consistency of delineations





What are the minimum standards?

- A cover letter requesting a jurisdictional determination (or a delineation verification)
- A signed statement <u>from property owner(s)</u> allowing Corps personnel to enter the property and collect samples





REQUEST FOR AQUATIC RESOURCES DELINEATION VERIFICATION

OR JURISDICTIONAL DETERMINATION

A separate jurisdictional determination (JD) is not necessary to process a permit. An Approved Jurisdictional Determination (AJD) is required to definitively determine the extent of waters of the U.S. and is generally used to disclaim jurisdiction over aquatic resources that are not waters of the U.S., in cases where the review area contains no aquatic resources, and in cases when the recipient wishes to challenge the water of the U.S. determination on appeal. Either an Aquatic Resources Delineation Verification or a Preliminary Jurisdictional Determination (PJD) may be used when the recipient wishes to assume that aquatic resources are waters of the U.S. for the purposes of permitting. In some circumstances an AJD may require more information, a greater level of effort, and more time to produce. If you are unsure which product to request, please speak with your project manager or call the Sacramento District's general information line at (916) 557-5250.

I am requesting the product indicated below from the U.S. Army Corps of Engineers, Sacramento District, for the review area located at:

Street Address:	Dity:	County:
State: Zip: Section: Township: _	Range:	-
_atitude (decimal degrees): Longitude (decimal	degrees):	The
approximate size of the review area for the JD isa	res. (Please attach location m	iap)
Choose one:	Choose one product:	
I own the review area		Resources Delineation Verification
I hold an easement or development rights over the review area	OI am requesting an Approve	
I lease the review area	OI am requesting a Prelimina	
I plan to purchase the review area	OI am requesting additional in	nformation to inform my decision
I am an agent/consultant acting on behalf of the requestor	about which product to re	equest
O Other:		
Reason for request: (check all that apply)		
I need information concerning aquatic resources within the review		
intend to construct/develop a project or perform activities in this resources.	review area which would be des	signed to avoid all aquatic
intend to construct/develop a project or perform activities in this	review area which would be dea	signed to avoid those aquatic
resources determined to be waters of the U.S.	item area which would be des	signed to avoid those aqualle
intend to construct/develop a project or perform activities in this	review area which may require	authorization from the Corps: this
request is accompanied by my permit application.		
intend to construct/develop a project or perform activities in a na		
navigable waters under Section 10 of the Rivers and Harbors A		
My lender, insurer, investors, local unit of government, etc. has in	dicated that an aquatic resource	es delineation verification is
inadequate and is requiring a jurisdictional determination. I intend to contest jurisdiction over particular aquatic resources a		- 4 4
are not waters of the U.S.	id request the Corps continn the	at these aquatic resources are of
I believe that the review area may be comprised entirely of dry la	ad	
Other:		_
Attached Information:		
Maps depicting the general location and aquatic resources within	the review area consistent with	Map and Drawing Standards for
the South Pacific Division Regulatory Program (Public Notice F	ebruary 2016.	
http://www.spd.usace.army.mil/Missions/Regulatory/Public-No	ices-and-References/Article/65	1327/updated-map-and-drawing-
standards/)		
Aquatic Resources Delineation Report, if available, consistent wi	h the Sacramento District's Mini	imum Standards for Acceptance
(Public Notice January 2016, http://1.usa.gov/1V68IYa)		
By signing below, you are indicating that you have the authority, or		
such authority, to and do hereby grant Corps personnel right of enti- affirmation that you possess the requisite property rights for this red		rea. Your signature shall be an
animation that you possess the requisite property rights for this rec	uest on the subject property.	
*Signature: Dat	e:	
Name: Company		
Address:		
Telephone: Email:		
Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 US rogram of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.		
rincipal Purpose: The information that you provide will be used in evaluating your request to determ nder the regulatory authorities referenced above.	ne whether there are any aquatic resources wit	thin the project area subject to federal jurisdiction
outine Uses: This information may be shared with the Department of Justice and other federal, state	, and local government agencies, and the public	c, and may be made available as part of a public
trice as required by federal law. Your name and property location where federal jurisdiction is to be railable to the public on the District's website and on the Headquarters USACE website.	letermined will be included in the approved juris	sdictional determination (AJD), which will be made
isclosure: Submission of requested information is voluntary; however, if information is not provided,	the request for an AJD cannot be evaluated not	r can an AJD be issued.





BUILDING STRONG_®

- The delineation must be conducted in accordance with the 1987 Corps of Engineers Wetland Delineation Manual and appropriate regional supplement
- For ordinary high water mark delineations (waters other than wetlands), a statement identifying the use of the OHWM field guide must be included (*if applicable*)



BUILDING STRONG_®

- Directions to survey area
- Contact information for the applicant(s), property owner(s), and agent(s)
- Total acres of survey area
- Date field work was completed





- A narrative describing all aquatic resources on site and an explanation for the mapped boundaries; especially for resources containing complex transition zones.
- If the site contains resources that meet only one or two wetland criteria or no not exhibit a clear OHWM, describe the rationale for <u>not</u> delineating these features
- A table listing all aquatic resources





- A description of existing field conditions
- A discussion of the hydrology at the site
 - All known surface/subsurface water sources/drainage gradients;
 - Surface water connections to the nearest traditional navigable water or interstate water;
 - Any potential for man-made water sources, such as irrigation;
 - Identify the nearest "blue-line" waterway or other feature found on the most recent USGS map.





- A discussion of plant communities and habitat types present at the site
- Soil descriptions, soil map(s), and a discussion of hydric soils or soils with hydric inclusions at the site
- Any observed or documented interstate or foreign commerce associated with aquatic resources at the site





If remote sensing was used in the delineation, provide an explanation of how it was used and include the name, date and source of the tools used and copies of applicable maps/photographs



The Phragmites stand: sampling "where the sun don't shine."





- A site location map on a 7.5-minute USGS quadrangle. The map must provide the name of the USGS quadrangle, Section, Township, Range, the UTM or latitude and longitude
- A map of all delineated aquatic resources ("Aquatic Resources Delineation Map") in accordance with the Final Map and Drawing Standards for the South Pacific Division Regulatory Program (Mapping Standards) and showing the following:
 - All aquatic resources delineated must be clearly shown on the map
 - At least one set of paired data points, documented in data forms, for each aquatic resource or complex. The paired data points must be located close to the delineated boundary
 - A reference block that identifies the site or project name, individual(s) who conducted the delineation, date of the map, and date(s) of any revisions
 - See Sacramento District Map and Drawing Standards (<u>http://www.spd.usace.army.mil/Missions/Regulatory/Public-Notices-and-</u> <u>References/Article/651327/updated-map-and-drawing-standards/</u>)





A completed copy of the Aquatic Resources Excel spreadsheet must be submitted. The current version of the spreadsheet can be found at the following website:

<u>http://www.spk.usace.army.mil/Portals/12/documents/regul</u> <u>atory/upload/ORM_AR_Upload.zip?ver=2017-05-08-</u>





- A description of the methods used to survey the aquatic resource boundaries
- Completed data forms including all essential information to make a decision.

roject/Site:	City/County:	Sampling Date:	
pplicant/Owner:		State: Sampling Point:	
tvestigator(s):	Section, Township,		
andform (hillside, terrace, etc.):	Local relief (concave,	convex, none): Slope (%):	
ubregion (LRR): Lat:	Long	Datum:	
oll Map Unit Name:		NWI classification:	
re climatic / hydrologic conditions on the site typi	cal for this time of year? Yes	No (If no, explain in Remarks.)	
re Vegetation, Soli, or Hydrology _	significantly disturbed? Are "Norm	ai Circumstances" present? Yes No	
re Vegetation, Soll, or Hydrology	naturally problematic? (If needed	explain any answers in Remarks.)	
UMMARY OF FINDINGS - Attach site	e map showing sampling point	locations, transects, important features, etc.	
Hydrophytic Vegetation Present? Yes Hydric Soll Present? Yes	No X Is the Sample No X within a Wetla		
Wetland Hydrology Present? Yes	No X Within a Weda	nd? Yes No X	
Remarks:			
rvemarks.			
EGETATION - Use scientific names	of plants.		
	Absolute Dominant Indicator		
Tree Stratum (Plot size:)		Dominance Test worksheet:	
1		Are OBL, FACW, or FAC: (A)	
3.		Total Number of Dominant Species	
4.		Across All Strata: (B)	
	-Total Cover	Percent of Dominant Species That	
Sapling/Shrub Stratum (Plot size:		Are OBL, FACW, or FAC: (A/B)	
1			
2		Prevalence Index worksheet:	
3.		Total % Cover of: Multiply by: OBL species x 1 -	
5		FACW species x 2 -	
	-Total Cover	FAC species x 3 -	
Herb Stratum (Plot size:)		FACU species x 4 -	
1.		UPL species x 5 -	
2.		Column Totals: (A) (B)	
3.		Prevalence Index - B/A -	
4		Hydrophytic Vegetation Indicators:	
~		Dominance Test is >50%	
7.		Prevalence Index is <3.01	
8.		Morphological Adaptations ¹ (Provide supporting	
	-Total Cover	data In Remarks or on a separate sheet)	
Woody Vine Stratum (Plot size:	_,	Problematic Hydrophytic Vegetation ¹ (Explain)	
		 ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. 	
1.			
2.			
2	-Total Cover	Hydrophytic	
12			

Profile Description: (Describe to the der		
	th needed to document the indicator o	r confirm the absence of Indicators.)
Depth Matrix	Redox Features	_
(Inches) Color (molist) %	Color (moist) % Type Loc	² Texture Remarks
Type: C-Concentration, D-Depletion, RM	Reduced Matrix, CS-Covered or Coated	Sand Grains. ² Location: PL-Pore Lining, M-Matrix
Hydric Soll Indicators: (Applicable to all		Indicators for Problematic Hydric Solls
Histosol (A1)	Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)	Iron-Manganese Masses (F12) (LRR
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Reduced Vertic (F18)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Red Parent Material (F21)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)	Very Shallow Dark Surface (F22)
Depieted Below Dark Surface (A11)	Depieted Dark Surface (F7)	Other (Explain In Remarks)
Thick Dark Surface (A12)	Redox Depressions (F8)	—
Sandy Mucky Mineral (S1)	_	
Sandy Gleved Matrix (S4) ³ Indicate	ors of hydrophytic vegetation and wetland	hydrology must be present, unless disturbed or problema
Remarks		
	egional Supplement Version 2.0 to include	the NRCS Field Indicators of Hydric Solis, Version 8.0, :
	egional Supplement Version 2.0 to include	e the NRCS Field Indicators of Hydric Solis, Version 8.0, ;
	egional Supplement Version 2.0 to include	the NRCS Field Indicators of Hydric Solis, Version 8.0, ;
	egional Supplement Version 2.0 to include	the NRCS Field Indicators of Hydric Solis, Version 8.0, 2
This data sheet is revised from Arid West R	egional Supplement Version 2.0 to include	the NRCS Field Indicators of Hydric Solis, Version 8.0, :
This data sheet is revised from Arid West R	egional Supplement Version 2.0 to Include	the NRCS Field Indicators of Hydric Solis, Version 8.0,
This data sheet is revised from Arid West R IYDROLOGY Wetland Hydrology Indicators:		
This data sheet is revised from Arid West R IYDROLOGY Weitland Hydrology Indicators: Primary Indicators imminum of one is recal	red: check all that apoly)	Secondary indicators (minimum of two re-
This data sheet is revised from Arid West R WDROLOGY Wetland Hydrology Indicators: Primary Indicators iminimum of one is regul Surface Water (A1)	red: check all that apoly) Sait Crust (611)	Secondary indicators (minimum of hao re- Water Marks (B1) (Riverine)
This data sheet is revised from Arid West R IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one is recul Surface Water (A1) Hydro Water (A1)	red: check all that apply) Salt Crust (B11) Biolo: Crust (B12)	2econdary indicators (minimum of two re- Water Marks (B1) (Rivertne) Geturnen: Deposite (B2) (Rivertne)
This data sheet is revised from Arid West R IYDROLOGY Weltand Hydrology Indicators: Partice Water Table (A2) Surface Water Table (A2) Saturation (A3)	red: check all that acoty) 5 all Crust (B11) Biolice Crust (B12) Aquate Invertebrates (B13)	Secondary indicators intrinsmum of two re- Water Marks (61) (Rivertine) Sectiment Deposits (82) (Rivertine) Dott Opposits (83) (Rivertine)
This data sheet is revised from Arid West R IYDROLOGY Wetland Hydrology Indicators: Firinary Indicators: Iminimum of one is reau Surface Water (A1) High Water Tatis (A2) Salaration (A3) Water Maris (B1) (binnfwerine)	rest check all Ibal acolvi Sall Chuck (B11) Biolio: Chuck (B12) Aquato Invertebrates (B13) Hydrogen Suffde Odor (C1)	Secondary Indicators (minimum of two re- Water Marks (61) (Rivertine) Sectioneral Deposite (20) (Rivertine) Darts Deposite (30) (Rivertine) Darage Patterne (101)
This data sheet is revised from Arid West R IYDROLOGY Williamd Hydrology Indicators: Primare indicators: Imritiant of one is read Sufface Water (Ata) — High Water Table (A2) — Saturation (A3) Water Marks (B1) (Nontwertree) — Sedment Depositio (22) (Nontwertree)	red: check all (haf acoly) Sall Crust (811) Biolice Crust (812) Aquate Invertebrates (813) Hydrogen Suffle Codor (51) Oxidized Rhizospheres on Living	Secondary indicators intrinsum of two re- Water Mark (6) (Rivertine) Gediment Deposits (82) (Rivertine) Dorange Patterns (610) Danage Patterns (610) Roots (C3) Dip-Secan Viblet Table (C2)
This data sheet is revised from Ard West R INDROLOGY William Hydrology Indicators: Finanza Indicators: International of one is see Surface Water (A1) High Water Tasks (A2) Saturdino (A3) Water Mass (B1) (Nontriverine) Sediment Oppositis (B2) (Nontriverine)	red: check all fluid acolyi Sait Orusi (811) Bioto: Crust (812) Aquato: Invertieitrates (813) Hydrogen Stuttee Color (C1) Oxditzed Ritizcolpheres on Living Presence of Reduced Ion (C4)	Secontare Indicators (michinum of are re Water Marks (2) ((Khentne) Sectionera Deposite (20) ((Khentne) Drift Deposite (30) ((Khentne) Drange Paterne (80) Rodis (20) Dry-Geason Water Table (22) Copyteh Burrows (26)
This data sheet is revised from Arid West R IYDROLOGY Williamd Hydrology Indicators: Primare indicators: Imritiant of one is read Sufface Water (Ata) — High Water Table (A2) — Saturation (A3) Water Marks (B1) (Nontwertree) — Sedment Depositio (22) (Nontwertree)	red: check all (haf acoly) Sall Crust (811) Biolice Crust (812) Aquate Invertebrates (813) Hydrogen Suffle Codor (51) Oxidized Rhizospheres on Living	Secontare Indicators (michinum of are re Water Marks (2) ((Khentne) Sectionera Deposite (20) ((Khentne) Drift Deposite (30) ((Khentne) Drange Paterne (80) Rodis (20) Dry-Geason Water Table (22) Copyteh Burrows (26)
This data sheet is revised from Ard West R INDROLOGY William Hydrology Indicators: Finanza Indicators: International of one is see Surface Water (A1) High Water Tasks (A2) Saturdino (A3) Water Mass (B1) (Nontriverine) Sedment Depositis (B2) (Nontriverine)	red check all thal apply Sait Chail (811) Bioto Crusil (812) Hydrogen Suffic Gdor (C1) Oxfatter Rivedparts and Ling Presence of Reduced in Till Gd	Secontare Indicators (michinum of are re Water Marks (2) ((Khentne) Sectionera Deposite (20) ((Khentne) Drift Deposite (30) ((Khentne) Drange Paterne (80) Rodis (20) Dry-Geason Water Table (22) Copyteh Burrows (26)
This dafa sheet is revised from Ard West R WDROLCOGY Wolfand Hydrology indicators: Finana: Indicators: minimum of one is read Suthore Water (A1) High Water Table (A2) Suthore Water (A1) High Water Table (A2) Suthore Water (A2) Suthore Water (A2) Suthore Water (A2) Suthore Suthore (A2) Suthore (A2) Suth	red check all thal apply Sait Chail (811) Bioto Crusil (812) Hydrogen Suffic Gdor (C1) Oxfatter Rivedparts and Ling Presence of Reduced in Till Gd	Secondary indicators (minimum of two re- Water Marks (61) (Rivertine) Externet Deposits (82) (Rivertine) Daringe Patterns (610) Daringe Patterns (610) Corgetine Daringe Patterns (62) Craytin Burrows (65) Osis (C5)
This dafa sheet is revised from Ard West R WDROLCOGY Wolfand Hydrology indicators: Finanz Indicators minimum of one is need Suthore Water (A1) High Water Table (A2) Suthore Water (A2) Suthore Water (A2) Bedment Dopolis (C2) (Honthvertine) Settine Solid Casta (69) Imundation Visible on Aertal Imagery (G Water States (Lawer, (69))	red check al fluit ace/ri saft Chail (811) Bolo Chail (812) Aquato Inverteirates (813) Hydrogen Safter Gott (613) Oddited Rhozopheres on Lining Presence of Reduced fon (C4) Recent Ion Reduced in Tiled 5 Tim Nutk Sturber (C7)	Secondare Indications (Initiatum of Jaco na Water Marks (2) ((Rivertine) Sectioned Deposite (20) (Rivertine) Darit Deposite (30) (Rivertine) Daritage Patterns (80) Rodas (20) Dry-Geaano Water Table (02) Cozydeth Burtows (30) Saturation Water Table (03) Staturation Water Table (03)
This data subset is revised from Ard West R IVDROLOGY Welfand Hydrology Indicators: Entranu Indicators: Entranu Indicators: Entranu Indicators: Entranu Indicators: Entranu Indicators: Entranu Indicators: Entranu Indicators: Setter Copcate (21) (Nontriventing) Suffice Soil Cacate (85) Instantion Ardal Indicate (85) Walfer Cataline (Lavee (89) Walfer Cataline (19) Walfer Catali	rsd-check al fluit acolvi Sati Chail (B11) Bolto Chuil (B12) Aquato Inverteirates (B13) Hydrogen Satifie clark (S13) Diddized Rhozophenes on Living Presence of Reduced fon (C3) Researt fron Reduced fon (C3) Researt fron Reduced fon (C3) Tim Nuck Satifice (C7) Other (Explain in Remarks)	Secondare Indications (Initiatum of Jaco na Water Marks (2) ((Rivertine) Sectioned Deposite (20) (Rivertine) Darit Deposite (30) (Rivertine) Daritage Patterns (80) Rodas (20) Dry-Geaano Water Table (02) Cozydeth Burtows (30) Saturation Water Table (03) Staturation Water Table (03)
This dafa sheet is revised from Ard West R WDROLOGY Wolfand hydrodys indicators: Finana: locations: minimum of one is read Justice Water (A1) High Water Table (A2) Sanarizon (A3) Water Manes (B1) (Nonthvertine) Sement Doposits (B2) (Nonthvertine) Sement Doposits (B2) (Nonthvertine) Simthe Solarizas (B6) Imundiator Visible on Areas Imagery (B Water Samet Cases (B9) Fibid Observations: Yes	red check all thal apply Sait Churd (811) Biolic Churd (812) Hydrogen Suitlie Cder (C11) Ondeter Hinekanhers The Education II The Presention Resultation II The Recent Ion Resultation II The Recent Ion Resultation II The Then Murd. Suitline (C7) Depth (Inches); Depth (Inches);	Secondare Indications (Initiatum of Jaco na Water Marks (2) ((Rivertine) Sectioned Deposite (20) (Rivertine) Darit Deposite (30) (Rivertine) Daritage Patterns (80) Rodas (20) Dry-Geaano Water Table (02) Cozydeth Burtows (30) Saturation Water Table (03) Staturation Water Table (03)
This data sheet is revised from Ard West R VDROLOGY Wildian Hydrology Indicators: Circlinaru Indicators (Criminum of one is read Durtice Water (A1) Data (A2) Data (A2	red check al fluit ace/ri stat Crait (B11) Bolo Courts (B12) Aquato inverterates (B13) Hydrogen Subtle cker (C13) Outside dRiscopheres on Lining Presence of Reduced tion (C2) Recent tion Reduced tion (C2) Thin Muck Subtrace (C7) Other (Explain In Remarks) No Depth (mchecs): No Depth (mchecs):	Secondare Indicators (inicitizum of here re- Watter Marks (2) (1) (Noverhei) Sectioneral Deposite (2) (1) (Noverhei) Darit Deposite (3) (1) (Noverhei) Daritage Patterns (10) Rodas (2) Dry-Geaano Watter Table (22) Cozyteth Burrows (20) Staturation Watter Table (22) Staturation Watter Table (23) Staturation Watter Table (23) Staturation Watter Table (23) Staturation Watter Table (25) Staturation Watter (25) Statu
This dafa sheet is revised from Ard West R IVDROLOGY Wildmah flydrology Indicators: Finanz indexidan instimum of one is read buffere Valet (A) Buffere Valet (A) Buffere V	red check all thal apply Sait Churd (811) Biolic Churd (812) Hydrogen Suitlie Cder (C11) Ondeter Hinekanhers The Education II The Presention Resultation II The Recent Ion Resultation II The Recent Ion Resultation II The Then Murd. Suitline (C7) Depth (Inches); Depth (Inches);	Secondare Indications (initiatum of here re- Watter Marks (2) ((Rivertine) Sectioneral Deposite (20) ((Rivertine) Darit Deposite (30) ((Rivertine) Daritage Patterns (10)) Rodis (20) Dry-Geason Watter Table (22) Cozystein Burrows (20) Staturation Watter Table (23) Staturation Watter Table (23)
HYDROLOGY Welland Hydrology Indicators: Finanz Usdariss: Intrinum & doe la read Finanz Usdariss: Intrinum & doe la read - Saluctor (A) Saluctor (A) Saluctor (A) Sedmet Deposite (R2) (Montrvetine) - Sufter Deposite (R2) (Montrvetine) - Sufter Salured Leave (R9) - Waler Salured Leave (R9) - Waler Table Present? Vos - Saluratio Deposite? Vos - Saluration Deposite Planter Depos	red check at fluit acohi Bede Cruzi (B11) Bede Cruzi (B12) Aguate invertenzates (B13) Hydrogen Sautten cher (C1 Oddized Ritizcepheres on Lining Presence of Reduced Ion (C2) Recent Iron Reduced Ion (C2) Thin Muck Reduced Ion (C2) Other (Explain in Remarks) No Depth (Inches): No Depth (Inches): No Depth (Inches):	Becondary bdjolors (michnum of bor re Water Mark (51) (RVentrie) Sederman Dopotal (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Corpt All Burrows (51) Corpt All Burrows (20) Saturator Water Table (22) Saturator Nater (20) Saturator Nater (20) Reduction Apdate (20) Reduction
This data sheet is revised from Ard West R HDROLOGY Wildend Hydrology Indicators: Entranz Indexings Indicators: Entranz Indi	red check at fluit acohi Bede Cruzi (B11) Bede Cruzi (B12) Aguate invertenzates (B13) Hydrogen Sautten cher (C1 Oddized Ritizcepheres on Lining Presence of Reduced Ion (C2) Recent Iron Reduced Ion (C2) Thin Muck Reduced Ion (C2) Other (Explain in Remarks) No Depth (Inches): No Depth (Inches): No Depth (Inches):	Becondary bdjolors (michnum of bor re Water Mark (51) (RVentrie) Sederman Dopotal (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Corpt All Burrows (51) Corpt All Burrows (20) Saturator Water Table (22) Saturator Nater (20) Saturator Nater (20) Reduction Apdate (20) Reduction
This data sheet is revised from Ard Weet R	red check at fluit acohi Bede Cruzi (B11) Bede Cruzi (B12) Aguate invertenzates (B13) Hydrogen Sautten cher (C1 Oddized Ritizcepheres on Lining Presence of Reduced Ion (C2) Recent Iron Reduced Ion (C2) Thin Muck Reduced Ion (C2) Other (Explain in Remarks) No Depth (Inches): No Depth (Inches): No Depth (Inches):	Becondary bdjolors (michnum of bor re Water Mark (51) (RVentrie) Sederman Dopotal (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Corpt All Burrows (51) Corpt All Burrows (20) Saturator Water Table (22) Saturator Nater (20) Saturator Nater (20) Reduction Apdate (20) Reduction
This data sheet is revised from Arid West R PVDROLOGY Withan Hydrology Indicators: Finan: Indicators: International of the Island Guttace Water (A1) Gata (A2) Gatarian (A3) Gata (A2) Gatarian (A3) Gata (B1) Gatarian (A3) Gata (B1) Gatarian (A3) Gata (B1) Gata (red check at fluit acohi Bede Cruzi (B11) Bede Cruzi (B12) Aguate invertenzates (B13) Hydrogen Sautten cher (C1 Oddized Ritizcepheres on Lining Presence of Reduced Ion (C2) Recent Iron Reduced Ion (C2) Thin Muck Reduced Ion (C2) Other (Explain in Remarks) No Depth (Inches): No Depth (Inches): No Depth (Inches):	Becondary bdjolors (michnum of bor re Water Mark (51) (RVentrie) Sederman Dopotal (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Corpt All Burrows (51) Corpt All Burrows (20) Saturator Water Table (22) Saturator Nater (20) Saturator Nater (20) Reduction Apdate (20) Reduction
This data sheet is revised from Ard Weet R	red check at fluit acohi Bede Cruzi (B11) Bede Cruzi (B12) Aguate invertenzates (B13) Hydrogen Sautten cher (C1 Oddized Ritizcepheres on Lining Presence of Reduced Ion (C2) Recent Iron Reduced Ion (C2) Thin Muck Reduced Ion (C2) Other (Explain in Remarks) No Depth (Inches): No Depth (Inches): No Depth (Inches):	Becondary bdjolors (michnum of bor re Water Mark (51) (RVentrie) Sederman Dopotal (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Corpt All Burrows (51) Corpt All Burrows (20) Saturator Water Table (22) Saturator Nater (20) Saturator Nater (20) Reduction Apdate (20) Reduction
This data sheet is revised from Ard Weet R	red check at fluit acohi Bede Cruzi (B11) Bede Cruzi (B12) Aguate invertenzates (B13) Hydrogen Sautten cher (C1 Oddized Ritizcepheres on Lining Presence of Reduced Ion (C2) Recent Iron Reduced Ion (C2) Thin Muck Reduced Ion (C2) Other (Explain in Remarks) No Depth (Inches): No Depth (Inches): No Depth (Inches):	Becondary bdjolors (michnum of bor re Water Mark (51) (RVentrie) Sederman Dopotal (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Corpt All Burrows (51) Corpt All Burrows (20) Saturator Water Table (22) Saturator Nater (20) Saturator Nater (20) Reduction Apdate (20) Reduction
This data sheet is revised from Ard Weet R	red check at fluit acohi Bede Cruzi (B11) Bede Cruzi (B12) Aguate invertenzates (B13) Hydrogen Sautten cher (C1 Oddized Ritizcepheres on Lining Presence of Reduced Ion (C2) Recent Iron Reduced Ion (C2) Thin Muck Reduced Ion (C2) Other (Explain in Remarks) No Depth (Inches): No Depth (Inches): No Depth (Inches):	Becondary bdjolors (michnum of bor re Water Mark (51) (RVentrie) Sederman Dopotal (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Corpt All Burrows (51) Corpt All Burrows (20) Saturator Water Table (22) Saturator Nater (20) Saturator Nater (20) Reduction Apdate (20) Reduction
This data sheet is revised from Ard Weet R	red check at fluit acohi Bede Cruzi (B11) Bede Cruzi (B12) Aguate invertenzates (B13) Hydrogen Sautten cher (C1 Oddized Ritizcepheres on Lining Presence of Reduced Ion (C2) Recent Iron Reduced Ion (C2) Thin Muck Reduced Ion (C2) Other (Explain in Remarks) No Depth (Inches): No Depth (Inches): No Depth (Inches):	Becondary bdjolors (michnum of bor re Water Mark (51) (RVentrie) Sederman Dopotal (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Data (20) (RVentrie) Corpt All Burrows (51) Corpt All Burrows (20) Saturator Water Table (22) Saturator Nater (20) Saturator Nater (20) Reduction Apdate (20) Reduction



US Army Coms of Engli

Digital data for the site, aquatic resource boundaries, and data point locations must be provided in a geographic information system (GIS) format, with ESRI Shape-files being the preferred format. If GIS data is unavailable or otherwise cannot be produced and the Corps determines that a site visit is necessary, the aquatic resource boundaries must be physically marked in the field with numbered flags or stakes





Additional data sources

- USGS Topographic, soil survey reports, NWI Maps, NHD, and floodplain maps
- Light Detection and Ranging (LiDAR)- Remote sensing method that uses light in the form of a pulsed laser to measure ranges and generate precise, 3D information about the shape of the Earth's surface
 - Limited due to cost and knowledge
- Historical Imagery to show various years of aerial photographs (Google Earth typically 1993-2015, UGS 1935-1980s)
 - Past land use
 - Trends/Changes
 - Help locating data points





Minor Pitfalls

- Missing the Date and full legend on your map
- Not Showing a clearly defined study area boundary on the map
- Not putting the acreage of your study area boundary
- Not using unique Aquatic Resource feature names





Potential Hold-Ups for Delineation Reviews

- Features observed via remote tools not adequately described in report;
- Not enough data points along complex boundaries;
- Ordinary high water mark widths not shown with corresponding measurement, in feet
- Data forms contain inconsistent information
- Sub-optimal sampling season/dry weather
- Difficult/problem situations (Chapter 5)





- Features observed via remote tools not adequately described in report;
 - Dark signatures on aerial photos (including historical aerials);
 - Valleys or low spots on topo maps;
 - NWI-mapped wetlands;
 - NHD-mapped drainages;
 - Hydric soil polygons;
 - Linear features;















- Not enough data points along complex boundaries:
 - At least one set of paired data points per feature or complex is required, however;
 - Rule of thumb: if the feature is large and the boundary is not uniform and clear based on aerial photography or other data, then additional data points should be considered.





- Ordinary high water mark widths not shown with corresponding measurement, in feet (see map and drawing standards, section 5f);
- Note: The Nevada-Utah section generally requires corresponding cross-section for each OHWM delineation.





Data forms contain inconsistent information.

- Vegetation:
 - 50/20 rule calculated incorrectly;
 - Indicator status incorrect
 - indicator status uses wrong land resource region;
 - Dominant species does not consider all strata
 - Unbalanced observations (e.g. 1% cover)

ApplicationDeer	Project/Site:		tty/County:	Sampling Date:
instruction			State:	Sampling Point:
Bolegon (Inty) Log Log Dutlin: Ave dinable regulations on the site bigotal for this third register NW disatifuation: If the regular in filterinatis, if the very set of the register in the regi		9	ection, Township, Range:	
Bolegon (Inty) Log Log Dutlin: Ave dinable regulations on the site bigotal for this third register NW disatifuation: If the regular in filterinatis, if the very set of the register in the regi	Landform (hillside, terrace, etc.):	Loca	i relief (concave, convex, none):	Slope (%):
Sol Kap Unit Name	Subregion (LRR):		Long	Datum:
Ave dimately hypotogic cardines on the de types for the there of types of the types of the types of ty	Soll Map Unit Name:		NWI clas	sification:
ve Vegdatal	Are climatic / hydrologic conditions on th	e site typical for this time of year?	Yes No (If no, e	explain in Remarks.)
Av logatiskingtorites of presents if ("reeded sepin ary arrents in Remarks.) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important fastures, et al	Are Vegetation , Soll , or Hy	drology significantly disturt	ed? Are "Normal Circumstances" preser	t? Yes No
Hydrophyle Vegication Present? Yes No X Hydrochine Theoretic Yes No X Hydrochine Yes No X Webell Hydrochine Yes No Test Robum (Yes No X 1 2 Yes No 2 Yes No X 3 Yes No X 4 Yes No X 4 Yes <td< td=""><td>Are Vegetation, Soll, or Hy</td><td>drologynaturally problema</td><td>Ic? (If needed, explain any answers in F</td><td>Remarks.)</td></td<>	Are Vegetation, Soll, or Hy	drologynaturally problema	Ic? (If needed, explain any answers in F	Remarks.)
Hydrophyle Vegication Present? Yes No X Hydrochine Theoretic Yes No X Hydrochine Yes No X Webell Hydrochine Yes No Test Robum (Yes No X 1 2 Yes No 2 Yes No X 3 Yes No X 4 Yes No X 4 Yes <td< td=""><td>SUMMARY OF FINDINGS - Att</td><td>ach site map showing sa</td><td>mpling point locations, transect</td><td>s. important features, et</td></td<>	SUMMARY OF FINDINGS - Att	ach site map showing sa	mpling point locations, transect	s. important features, et
Websat Principal Prevailing Yes No X Remarks: VEBSAT Principal Products Description Description VEBSAT Principal Products No. Cover Description Description 1				
Websat Principal Prevailing Yes No X Remarks: VEBSAT Principal Products Description Description VEBSAT Principal Products No. Cover Description Description 1	Hydrophytic Vegetation Present? Yer	No_X		
Remark: VEGETATION - Use scientific names of plants. Time Statute Nomine 1 Score 2	Hydric Soll Present / Tel Weitand Hydrology Draced? Yes		within a wetland? Tes	NO X
Control Operation Operation Time Statum (Poil state:				
The State Pixel disc. Allocate Bodia 1 S. Cover Special Budia 2	rienako.			
Allocating Operating Number of command protection 1 S. Cover State Data 2				
1.	VEGETATION – Use scientific	names of plants.		
1.	Tree Olyabara (Diel star)	Absolute Don	inant Indicator	and a bundle
2 Are OB, FACK, OT AC: Are OB, FACK, OT AC: 4 Are OB, FACK, OT AC: Are OB, FACK, OT AC: 6 Total Number of animal forest trail Prevent of animal forest trail 1 Total Number of animal forest trail Are OB, FACK, OT AC: 1 Prevent of Commendation forest trail Are OB, FACK, ot AC: 2 Prevent of Commendations Are OB, FACK, ot AC: 2 Prevent of Commendations Are OB, FACK, ot AC: 4 Prevent of Commendations Are OB, FACK, ot AC: 4 Prevent of Commendations Are OB, FACK, ot AC: 4 Prevent of Commendations Are OB, FACK, ot AC: 4 Prevent of Commendations Are OB, FACK, ot AC: 5 Prevent of Commendations Prevent of Commendations 4 Prevent of Commendations Are OB, FACK, ot AC: 5 Barn Grand in Hers Statum No Commendation 5 Barn Grand in Hers Statum No Commendation	1 (Plot size.) woove ape	Dest Status	
3.	2		Are OBL, FACW, o	
4.	3.		Total Number of Do	minant Species
Sastracizano Statum (Ped esc	4		Across All Strata:	
1	Pauloaithan fichum (Dial cite	-Tota		t Species That
2	Sapingishrub stratum (Hot size		Ale OBL, PACW, 0	(MC:)
3.			Prevalence Index	worksheet;
4.	а.		Total % Cover	of: Multiply by:
Intel Statum PAC species 3	4		OBL species	x1
Statution (Poid store) FACU species 14 2	5.		FACW species	x2-
1. URL species 1.5	Herb Strafum (Piot size:	Tota	Cover FAC species	x3-
Column Tradasc(A) Column Tradasc(A) Column Tradasc(A) Column Tradasc(A) Prevariance Note III A Tradasc		/	UPL species	x5-
3 Providere Teles - BA	2		Column Totals:	(A) (B
6	3.		Prevalence Inde	x - B/A -
6	4			
7.	5.			
A	7		Dominance i el	at is >00% av is <3.0 ¹
that Cover	8.		Morphological	Adaptations ¹ (Provide supportin
Xitoch Virs Statur (Pol 402:)		-Total	Cover data in Rem	
2			Problematic Hy	
	1			
% Bare Ground in Herb Stratum% Cover of Biotic Crust Present? Yes No _X	2	-Tribi		assurped or problematic.
% Bare Ground In Herb Stratum % Cover of Biotic Crust Present? Yes No X		-1004		
	% Bare Ground in Herb Stratum	% Cover of Biotic Crut		no X
		-		





Data forms contain inconsistent information.

► Soil:

- Texture column left blank
- Soil indicator checked as being met, but not supported by description;
- Description supports indicators that are not checked;

th	Matrix	Matrix Redox Features									
hes)	Color (moist)	%	Color (moist)	- %	Type	L0C ²	Texture		Remarks		
				_	_	_					
				_	_	_					
				_	_	_					
				_	_	_					
				_	_	_					
				_	_	_	-				
				_	_	_					
e: c-co	ncentration. D-Dep	eton, RM	-Reduced Matrix, C	S-Cov	ered or C	oated S	and Grains.	² Location:	PL-Pore Lining	M-Matrix	
tric Soll I	ndicators: (Applica	able to all	LRRs, unless othe	rwise n	ioted.)				Problematic H		
Histosol	(A1)		Sandy Re	tox (SS)				1 cm Muck	(A9) (LRR C)		
Histic Ep	pedon (A2)		Stripped N	latrix (Si	6)			2 cm Muck	(A10) (LRR B)		
Black His	8c (A3)		Loamy Mu	cky Min	eral (F1)			Iron-Mang	anese Masses (F12) (LRR D	
Hydroge	Sulfide (A4)		Loamy Gk	Loamy Gleved Matrix (F2)				Reduced Vertic (F18)			
Stratified	Layers (A5) (LRR (C1	Depleted I	Depieted Matrix (F3)				Red Parent Material (F21)			
	at (A9) (LRR D)		Redox Da	dox Dark Surface (F6) Ven					ow Dark Surface	(F22)	
	Below Dark Surfac	e (A11)	Depleted (ain in Remarks		
	tk Surface (A12)		Redox De			·				·	
Sandy M	ucky Mineral (S1)										
Sandy G	eyed Matrix (S4)	³ Indicat	ors of hydrophytic v	egetatio	in and we	etland hy	drology must	be present, ur	niess disturbed (or problemati	
trictive L	ayer (if observed):										
Type:											
Depth (in	ches):		_			I	Hydric Sol	Present?	Yes	No	
narks:											
			teolonal Supplement								

Primary Indicators (minimu Surface Water (A1)			Crust (B11)		Secondary Indicators (minimum of two require		
				Water Marks (B1) (Riverine)			
High Water Table (A2)			Crust (B12)	Sediment Deposits (B2) (Riverine)			
Saturation (A3)			tic Invertebrates (B13)	Drtft Deposits (B3) (Riverine)			
Water Marks (B1) (Nor			ogen Sunde Odor (C1)	Drainage Patterns (B10)			
Sediment Deposits (B2		Oxidized Rhizospheres on Living Roots (C3) Presence of Reduced Iron (C4)			Crayfish Burrows (C8)		
Drift Deposits (B3) (No							
Surface Soll Cracks (B	16)	Recent Iron Reduction in Tilled Solis (C6)			Saturation Visible on Aerial Imagery (C9)		
Inundation Visible on A	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	Depth (inches):				
Water Table Present?	Yes	No	Depth (inches):				
Saturation Present?	Yes	No	Depth (Inches):	Wettar	d Hydrology Present? Yes No		
(includes capillary fringe)	_	_					
	stream gauge, moni	toring well,	aeriai photos, previous insper	ctions), if av	valable:		







Data forms contain inconsistent information.

- Hydrology:
 - Field observations not consistent with checked indicators (e.g. water table present and observed at 6 inches but A2and A3 not checked).
 - Remarks does not account for sub-optimal sampling season.

				Sampling Point	
Profile Description: (Describe to to Depth Matrix		x Features	or contrim the abs	ence or indicators.)	
	% Color (moist)		c ² Texture	Remarks	
(increa) Conci (increa)	a color (molar)	A type t	70 TEAMIE	IVEITAINS	
	_		_		
¹ Type: C-Concentration, D-Depietic				Location: PL-Pore Lining, M-Matrix.	
Hydric Soll Indicators: (Applicable			Ind	Icators for Problematic Hydric Solis ³ :	
Histosol (A1)	Sandy Re		_	1 cm Muck (A9) (LRR C)	
Histic Epipedon (A2)	Stripped N		_	2 cm Muck (A10) (LRR B)	
Black Histic (A3)	Loamy Mu	cky Mineral (F1)	_	Iron-Manganese Masses (F12) (LRR D)	
Hydrogen Sulfide (A4)	Loamy Gk	eyed Matrix (F2)		Reduced Vertic (F18)	
Stratified Layers (A5) (LRR C)	Depleted I	Matrix (F3)		Red Parent Material (F21)	
1 cm Muck (A9) (LRR D)	Redox Da	rk Surface (F6)	_	Very Shallow Dark Surface (F22)	
Depleted Below Dark Surface (A	11) Depleted I	Dark Surface (F7)	_	Other (Explain in Remarks)	
Thick Dark Surface (A12)	Redox De	pressions (F8)	_		
Sandy Mucky Mineral (S1)	_				
Sandy Gleyed Matrix (S4) 3	indicators of hydrophytic y	egetation and wetta	d hydrology must be	present, unless disturbed or problematic.	
Restrictive Laver (if observed):				,,	
Type: Depth (Inches):			Hydric Soll P	resent? Yes No 3	
Depin (nches).			Hydric Soll Pl	resent? Yes No	
				ndicators of Hydric Solis, Version 8.0, 201	
IYDROLOGY					
Welland Hydrology Indicators:					
Primary indicators (minimum of one I	s required: check all that a	(Vicos	Sec	condary indicators (minimum of two requir	
	Salt Crust				
Surface Water (A1)					
Surface Water (A1) High Water Table (A2)			_	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)	
High Water Table (A2)	Biotic Crut	st (B12)	=	Sediment Deposits (B2) (Riverine)	
High Water Table (A2) Saturation (A3)	Biotic Crui Aquatic In	t (B12) vertebrates (B13)	Ξ	Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)	
High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	Biotic Crui Aquatic In Hydrogen	st (B12) vertebrates (B13) Suffde Odor (C1)	ng Roots (C3)	Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)	
High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonrtvertne) Sediment Deposits (B2) (Nonrtv	Biotic Crui Aquatic In Hydrogen erine) Oxidized F	at (B12) vertebrates (B13) Suffide Odor (C1) Rhizospheres on LM		Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2)	
High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonrhverine) Sediment Deposits (B2) (Nonrhverine) Drift Deposits (B3) (Nonrhverine)	erine) Oxidized F	t (B12) vertebrates (B13) Suffde Odor (C1) Rhizospheres on LM of Reduced Iron (C4	6 ° 1	Sediment Deposits (B2) (Rivertne) Dritt Deposits (B3) (Rivertne) Drainage Patierns (B10) Dry-Season Water Table (C2) Craytish Burrows (C8)	
High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soll Cracks (B6)	erine) Biotic Crus Aquatic In Hydrogen Oxidized F Presence Recent Inc	t (B12) vertebrates (B13) Suffde Odor (C1) Rhizospheres on LM of Reduced Iron (C4 n Reduction in Tilleo	6 ° 1	Sediment Deposits (B2) (Rivertne) Drit Deposits (B3) (Rivertne) Drainage Patterns (B10) Dry-Season Water Table (C2) Craytish Burrows (C8) Saturation Visible on Aerial Imagery (C9)	
High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Surface Soli Cracks (B6) Inrundation Visible on Aerial Imag	Biotic Crui Aquatic In Hydrogen erine) Oxidized F Presence Recent Iro gery (B7) Thin Muck	tt (B12) vertebrates (B13) Suffde Odor (C1) Rhizospheres on LM of Reduced Iron (C4 n Reduction in Tilleo Surface (C7)	6 ° 1	Bediment Deposits (B2) (Riverine) Drit Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)	
High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonrt/verine) Sedmert Deposits (B3) (Nonrt/verine) Drift Deposits (B3) (Nonrt/verine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imag Water-Stained Leaves (B9)	Biotic Crui Aquatic In Hydrogen erine) Oxidized F Presence Recent Iro gery (B7) Thin Muck	t (B12) vertebrates (B13) Suffde Odor (C1) Rhizospheres on LM of Reduced Iron (C4 n Reduction in Tilleo	6 ° 1	Sediment Deposits (B2) (Rivertne) Drit Deposits (B3) (Rivertne) Drainage Patterns (B10) Dry-Season Water Table (C2) Craytish Burrows (C8) Saturation Visible on Aerial Imagery (C9)	
High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sedment Deposite (B2) (Nonriverine) Ontil Deposite (B3) (Nonriverine) Surface Soli Cracke (B6) Inundation Visible on Aerial Imag Water-Stained Leaves (B9) Field Observations:	Biotic Cru Aquatic In Hydrogen oxidized F Presence Recent Iro Jery (B7) Thin Muck Other (Exp	t (B12) vertebrates (B13) Suffde Odor (C1) Rhizospheres on LM of Reduced Iron (C4 n Reduced Iron (C4 n Reduced Iron (C7) stafface (C7) staffa In Remarks)	6 ° 1	Bediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aertal Imagery (C9) Shallow Aquitard (D3)	
High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonr/verine) Sedment Deposits (B2) (Nonrive Drtt Deposits (B3) (Nonriverine) Surface Soll Cracks (B6) Inundation Visible on Aerial Imag Water-Stained Leaves (B9) Pield Observations: Surface Water Present? Yes	efine)	tt (B12) vertebrates (B13) Suffde Odor (C1) Rhizospheres on LM of Reduced Iron (C4 n Reduction in Tillec Surface (C7) stain in Remarks) Depth (Inches):	6 ° 1	Bediment Deposits (B2) (Riverine) Drit Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)	
High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sedment Deposite (B2) (Nonriverine) Ontil Deposite (B3) (Nonriverine) Surface Soli Cracke (B6) Inundation Visible on Aerial Imag Water-Stained Leaves (B9) Field Observations:	Biolic Crui Aquatic in Highdrogen ertine) Oxidized F Direcence Recent Iro yery (87) Thin Muck Other (Exp NoNO_NO	t (B12) vertebrates (B13) Suffde Odor (C1) Rhizospheres on LM of Reduced Iron (C4 n Reduced Iron (C4 n Reduced Iron (C7) stafface (C7) staffa In Remarks)	Solis (C6)	Bediment Deposits (B2) (Riverine) Drit Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)	



Sub-optimal sampling season/dry weather

- Problematic hydrophytic vegetation due to seasonal conditions or drought;
- Transient (short-lived) indicators of wetland hydrology)





Continued...

Weather and Site Condition Considerations:

- What time of year are you visiting the site?
- Consider recent rain events. Did it rain immediately before your site visit and how much has it rained?
- Has long-term precipitation been normal?
- Is the site irrigated?



Evaluating Normal Rain Fall

WETS tables

- USDA National Water and Climate Center (http://www.wcc.nrcs.usda.gov/climate/navigate_wets.html)
- Analyze monthly precipitation data from >8,000 National Weather Service stations
- Based on a standard 30 years of rainfall data
- Provide monthly and annual thresholds for:

Below normal rainfall (lowest 3 years in 10) Above normal rainfall (highest 3 years in 10)







onmental Laboratory

ERDC/EL TR-WRAP-00-1



US Army Corps of Engineers. Engineer Research and Development Center

Wetlands Regulatory Assistance Program

Accessing and Using Meteorological Data to Evaluate Wetland Hydrology

Steven W. Sprecher and Andrew G. Warne

April 2000





CALIFORNIA COUNTIES and FIPS CODES





three index temperatures (32, 28, and 24 degrees Fahrenheit) at 50 and 70% probabilities.





WETS Table - Windows Internet Explorer

http://agacis.rcc-acis.org/06057/wets/results

<u>File Edit View Favorites Tools H</u>elp

USDA F

	2012				~			
WETS Static						tion Date		
Latitude:		_					185	
State FIPS/				_	Jame: Neva	ada		
Start yr	- 19/1	Ena yr.	- 2000					
	I 7	Temperatu	ure	I	Precipi	itation		
			F.)	[(Ind			
i i i i i i i i i i i i i i i i i i i		1	1	1 1	30% ch	hance	lavg	
1	i i	1	1		will			
I. I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.	i I	'	1	i i	1		- days	
Month	avg	avg /	avg /	avg	less	more	[w/.1]	
l I	daily	daily /	1 /	1 7	than	than	or	
1	max	min /	I I	1 7	I I	1	more	
		-	-	12.04	-	-		
February								
				10.34				
April	53.8	31.6 /	42.7	4.49	2.54	¹ This	mon	the prior to date of date collectic
May	62.3	38.2	50.3	(3.35)	1.33	III#⊦€€	; III III	ths prior to date of data collectic
oune	1 /2.1	1 40.0 1	1 33.0 1	1 1.22	0.11	1 1.1/		
				0.37				
August								
September					-			
October	-	-	-		-			
November		-	-		-	-		
December			-	-	3.81			
							- -	
		•			·			and the second
		-						
						· ·	and the second second	
		-	-	67.97	-	· ·	A DESCRIPTION OF	
	II	()	1,	()	(1		
GROWING SEA	ASON DATE	IS					A	
							100	
		1		7	Temperatu	re		
Proba	ability	24 /	F or high	her 28	F or hig'	her 🖅	61. CA	
							140.00	
		1		Beginnir	ng and End	ding Dat	I Astro	
		1		Growir	ng Season	Length		
		1						
50 p	percent *	* I		1		I 🗾		
		1		1		I 🗾	-	
		1		1		I 🗾		
70 g	percent *	<		1		I 🗾		
		1		1			152	
		1		1				
								U U

Antecedent Rainfall







Hours generated using the Ametedem Rainfall Calculat

son Detais@usace.army.n = : # [915] 557-7157

n C. Deters



BUILDING STRONG_®

0

2

0

0

0

Potential Hold-Ups for Delineation Reviews

- Difficult/problem situations (Chapter 5):
 - ► Vegetation:
 - Temporal shifts in vegetation (seasonal/drought)
 - Areas affected by grazing
 - Managed plant communities
 - ► Soils:
 - Moderately to very strongly alkaline soils (<u>https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull</u>/soils/survey/class/data/?cid=nrcs142p2_053587)
 - Volcanic ash
 - Seasonally ponded soils
 - ► Hydrology:
 - Site visits during the dry season
 - Periods with below-normal rainfall
 - Drought years
 - Years with unusually low snowpack

LOCATION FORD Established Series Rev. JMW-DLT-MJD-JVC 02/2006

FORD SERIES

The Ford series consists of moderately deep to a petrocalcic horizon, somewhat poorly drained soils that formed in alluvium and lacustrine deposits derived from limestone, quartzite, and gaeiss. Ford soils are on low lake terraces. Slopes are 0 to 1 percent. The mean annual precipitation is about 15 inches and the mean annual temperature is about 48 degrees F.

TAXONOMIC CLASS: Coarse-loamy, mixed, superactive, mesic Petrocalcic Palexerolls

TYPICAL PEDON: Ford loam-pastureland. (Colors are for dry soil unless otherwise noted.)

A--0 to 9 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; strongly: effervescent; 11 percent calcium carbonate equivalent; very strongly alkaline (dH 9.9); clear smooth boundary. (5 to 12 inches thick)

Bk1-9 to 16 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; hard, fitable, slightly sticky and slightly plastic; violently effervescent; 18 percent calcium carbonate equivalent; very strongly alkaline (gH 9.4); clear smooth boundary. (5 to 12 inches thick)

Bk2--16 to 34 inches; pinkish gray (7.5YR 6/2) fine sandy loam, brown (7.5YR 5/2) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; violently effervescent; 15 percent calcium carbonate equivalent; very strongly alkaline (pH 9.1); abrupt smooth boundary. (0 to 20 inches thick)

Bkm--34 to 44 inches; light gray (10YR 7/2) cemented material, grayish brown (10YR 5/2) moist; weakly to strongly cemented by secondary carbonates; hard and brittle; violently effervescent; 17 percent calcium carbonate equivalent; strongly alkaline (pH 8.8); abrupt wavy boundary. (6 to 12 inches thick)

B'k--44 to 52 inches; pinkish gray (7.5YR 6/2) fine sandy loam, brown (7.5YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; violently effervescent; 17 percent calcium carbonate equivalent; very strongly alkaline (pH 9.2); abrupt smooth boundary. (7 to 10 inches thick)

 $B^{\prime}km-52$ to 60 inches; pale brown (10YR 6/3) cemented material; moderately cemented by secondary carbonates; strongly effervescent.



BUILDING STRONG_®



Potential Hold-Ups for Delineation Reviews:

- Difficult Wetland Situations in the Arid West (Sept 2008, Regional Supplement to USACE Delineation Manual)
- Lacking one factor:
 - Problematic Hydrophytic Vegetation (grazing, managed plant communities, riparian areas, sparse and patchy vegetation, etc.)
 - Problematic Hydric Soils
 - Wetlands that Periodically Lack Indicators of Wetland Hydrology
- Disturbance, normal seasonal or annual variability, or permanent changes
- Essentially, lacking one of the three criteria does not exclude the Aquatic Resource from being a wetland
 - Example: Arid West Regional Supplement, Chapter 5 (page 104): "If the site visit occurred during the dry season on a site that contains hydric soils and hydrophytic vegetation and no evidence of hydrologic manipulation (e.g., no drainage ditches, dams, levees, water diversions, etc.), then consider the site to be a wetland."







SPD Irrigated Wetlands Delineation Procedures (12510-SPD)

- Goal: Establish and document normal circumstances
- Absent irrigation, irrigated areas would revert to all wetlands, no wetlands, or a mixture of wetlands and non-wetlands;
- Option 1: Discontinue irrigation and monitor site hydrology;
- Option 2: Continue irrigation; this increases the likelihood of falsepositive for hydrology

US Army Corps of Engineers.	12510-SPD SOUTH PACIFIC DIVISION REGULATORY PROGRAM WETLANDS DETERMINATION AND DELINEATION PROCEDURES FOR IRRIGATED LANDS	South Pacific Division
Table of Contents 1.0 <u>Purpose</u> 2.0 <u>Applicat</u> 3.0 <u>Referenc</u> 4.0 Related J	res Procedures	
5.0 <u>Definitio</u> 6.0 <u>Respons</u> 7.0 <u>Procedur</u> 8.0 <u>Records</u> 9.0 <u>Attachm</u> 10.0 <u>Flow C</u>	bilities es & Measurements ents	

2.0 Applicability.

appropriate regional supplement.

This process applies to welland determinations or delineations made or verified by South Pacific Division (SPD) subordinate Districts on irrigated land. This includes, but is not limited to, areas in rice production and irrigated pastureland.

This guidance is intended solely to address identifying wetlands that would exist absent irrigation. It is not intended to address the jurisdictional status of any such wetlands, issues

Current Approved Version: 10/31/2012. Printed copies are for "Information Only." The controlled version resides on the SPD OMS ShareFount Portal. SPD QMS 12510-SPD Irnizated Wetlands Delineation Procedures 1 of 12





Questions?





