Minimum Standards for Aquatic Resource Delineations

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Sacramento District Regulatory Program Workshop

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U.S.ARMY

US Army Corps of Engineers

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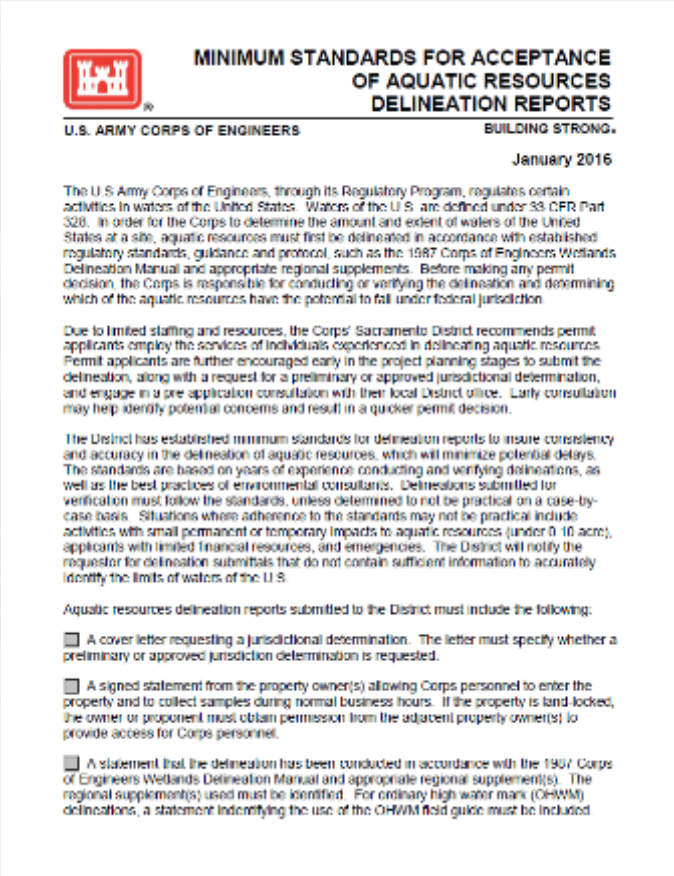
Delineation Report Minimum Standards

http://www.spk.usace.army.mil/Portals/12/documents/regulatory/jd/minimum-standards/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®

January 2016

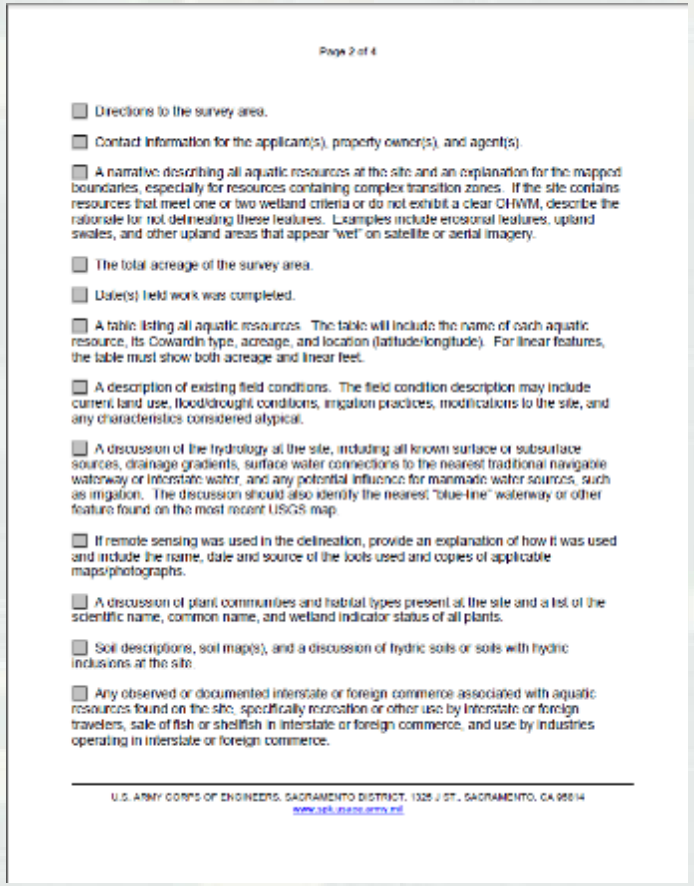
The U.S Army Corps of Engineers, through its Regulatory Program, regulates certain activities in waters of the United States. Waters of the U.S. are defined under 33 CFR Part 328. In order for the Corps to determine the amount and extent of waters of the United States at a site, aquatic resources must 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 fall under federal jurisdiction.

Due to limited staffing and resources, the Corps' Sacramento District recommends permit applicants employ the services of individuals 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 their local District office. Early consultation may help identify potential concerns and result in a quicker permit decision.

The District has established minimum standards for delineation reports to insure consistency and accuracy in the delineation of aquatic resources, which will minimize potential delays. The standards are based on years of experience conducting and verifying delineations, as well as the best practices of environmental consultants. Delineations submitted for verification must follow the standards, unless determined to not be practical on a case-by-case basis. Situations where adherence to the standards may not be practical include activities with small permanent or temporary impacts to aquatic resources (under 0.10 acre), applicants with limited financial resources, and emergencies. The District will notify the requestor for delineation submittals that do not contain sufficient information to accurately identify the limits of waters of the U.S.

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 delineation has been conducted in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and appropriate regional supplement(s). The regional supplement(s) used must be identified. For ordinary high water mark (OHWM) delineations, a statement indentifying the use of the OHWM field guide must be included.



- ☐ Directions to the survey area.
- ☐ Contact information for the applicant(s), property owner(s), and agent(s).
- ☐ A narrative 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 OHWM, describe the rationale for not delineating these features. Examples include erosional features, upland swales, and other upland areas that appear "wet" 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 linear feet.
- ☐ A description of existing field conditions. The field condition description may include current land use, flood/drought conditions, irrigation practices, modifications to the site, and any characteristics considered atypical.
- ☐ A discussion of the hydrology 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 manmade water sources, such as irrigation. The discussion should also identify the nearest "blue-line" waterway or other feature found on the most recent 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 tools used and copies of applicable maps/photographs.
- ☐ 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 site, 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.

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
- Six County Aquatic Resources Inventory

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 ubject 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

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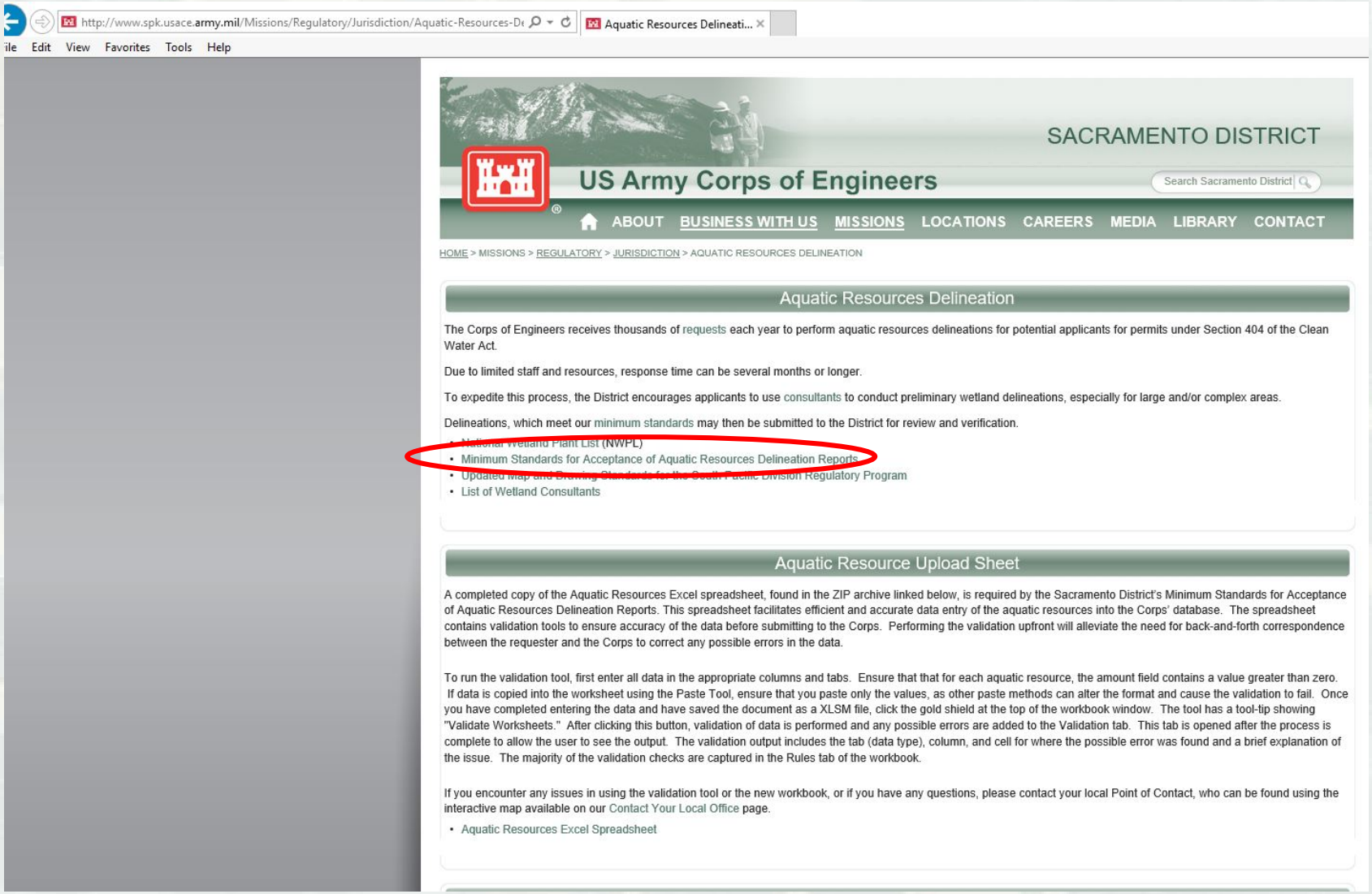
Our Commitment to Public Service

Public Service is a Public Trust. We, as Corps Regulators, Must Earn This Trust, and to Keep This Trust,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Aquatic Resources Delineati...
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SACRAMENTO DISTRICT
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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.
National Wetland Plant List (NWPL)
Minimum Standards for Acceptance of Aquatic Resources Delineation Reports
Updated Map and Drawing Standards for the South 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

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 **from property owner(s)** 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: _____ City: _____ County: _____
State: _____ Zip: _____ Section: _____ Township: _____ Range: _____
Latitude (decimal degrees): _____ Longitude (decimal degrees): _____ The approximate size of the review area for the JD is _____ acres. **(Please attach location map)**

Choose one:
- ○ I own the review area
- ○ I hold an easement or development rights over the review area
- ○ I lease the review area
- ○ I plan to purchase the review area
- ○ I am an agent/consultant acting on behalf of the requestor
- ○ Other:

Choose one product:
- ○ I am requesting an Aquatic Resources Delineation Verification
- ○ I am requesting an Approved JD
- ○ I am requesting a Preliminary JD
- ○ I am requesting additional information to inform my decision about which product to request

Reason for request: (check all that apply)
- ☐ I need information concerning aquatic resources within the review area for planning purposes.
- ☐ I intend to construct/develop a project or perform activities in this review area which would be designed to avoid all aquatic resources.
- ☐ I intend to construct/develop a project or perform activities in this review area which would be designed to avoid those aquatic resources determined to be waters of the U.S.
- ☐ I 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.
- ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district's list of navigable waters under Section 10 of the Rivers and Harbors Act of 1899 and/or is subject to the ebb and flow of the tide.
- ☐ My lender, insurer, investors, local unit of government, etc. has indicated that an aquatic resources delineation verification is inadequate and is requiring a jurisdictional determination.
- ☐ I intend to contest jurisdiction over particular aquatic resources and request the Corps confirm that these aquatic resources are or are not waters of the U.S.
- ☐ I believe that the review area may be comprised entirely of dry land.
- Other: _

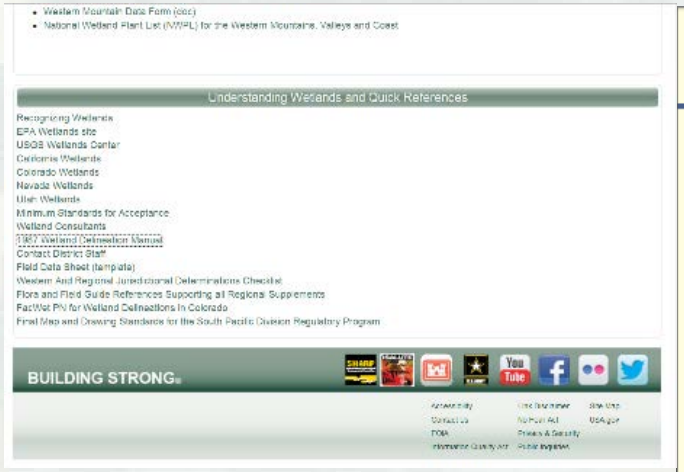
Attached Information:
- ☐ Maps depicting the general location and aquatic resources within the review area consistent with Map and Drawing Standards for the South Pacific Division Regulatory Program (Public Notice February 2016, http://www.spd.usace.army.mil/Missions/Regulatory/Public-Notices-and-References/Article/651327/updated-map-and-drawing-standards/)
- ☐ Aquatic Resources Delineation Report, if available, consistent with the Sacramento District's Minimum Standards for Acceptance (Public Notice January 2016, http://1.usa.gov/1V68IYa)

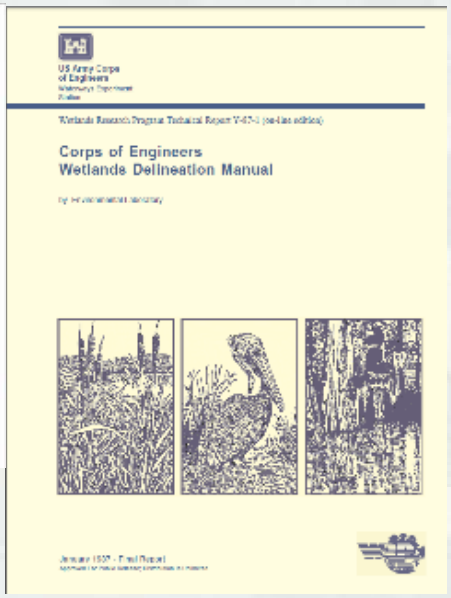
By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the review area. Your signature shall be an affirmation that you possess the requisite property rights for this request on the subject property.

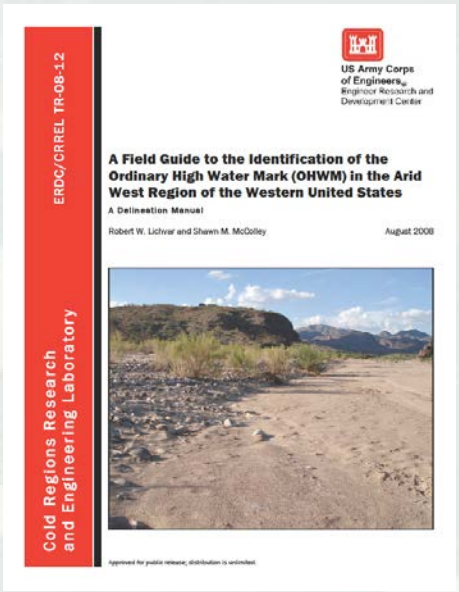
*Signature: _____ Date: _____
Name: _____ Company name: _____
Address: _____
Telephone: _____ Email: _____

***Authorities:** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

- 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*)





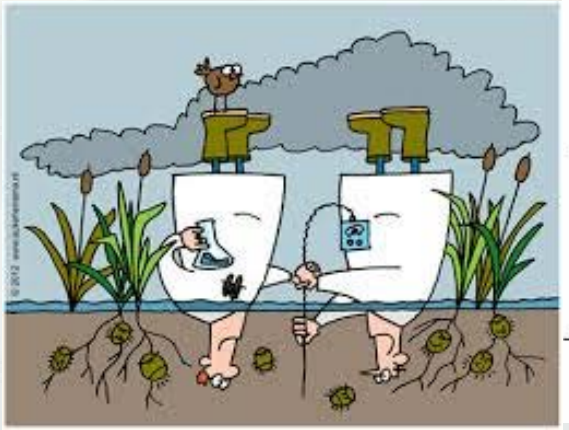


- Directions to survey area
- Contact information for the applicant(s), property owner(s), and agent(s)
- Total acres of survey area
- Date field work was completed

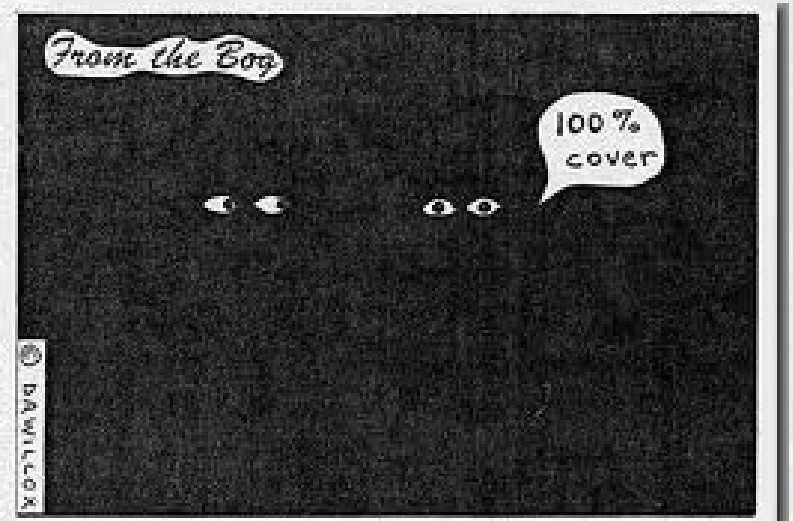
- A narrative describing all aquatic resources on site and an explanation for the mapped boundaries; especially for resources containing complex transition zones.
- If the site contains resources that meet only one or two wetland criteria or no not exhibit a clear OHWM, describe the rationale for not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

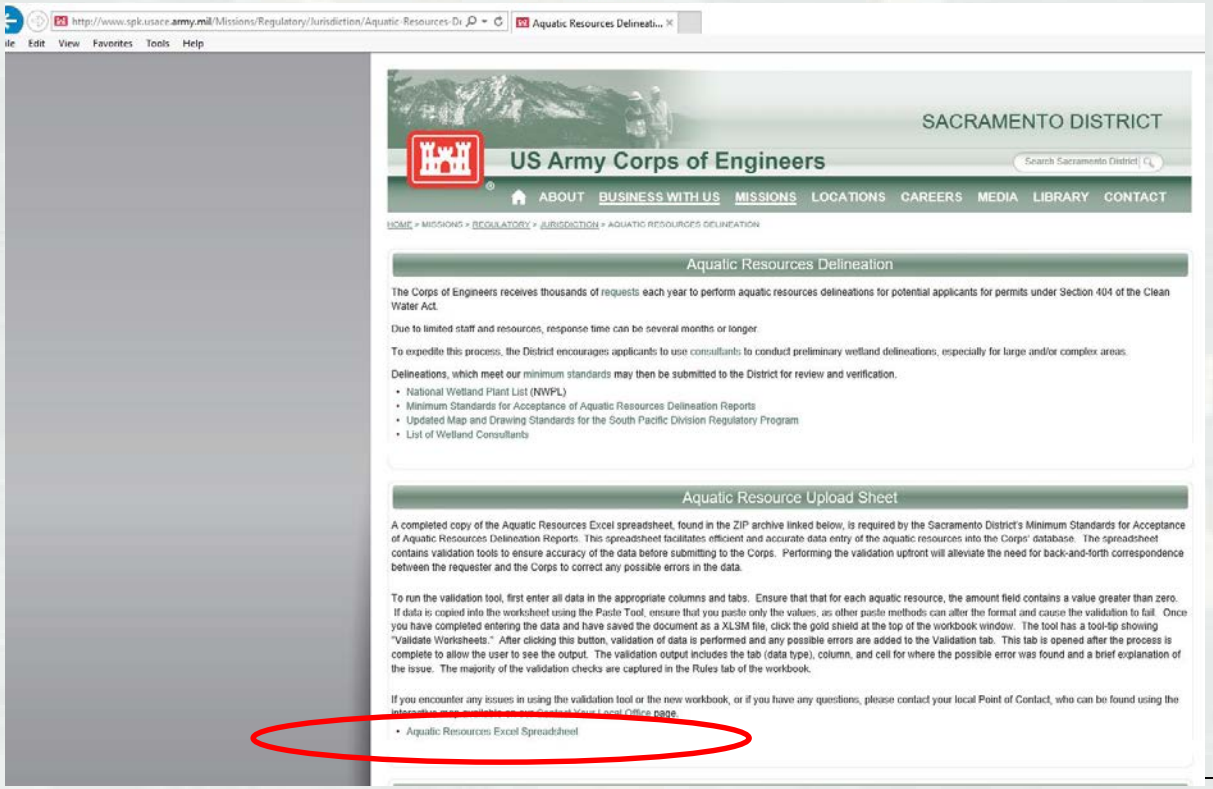


The *Phragmites* stand: sampling "where the sun don't shine."

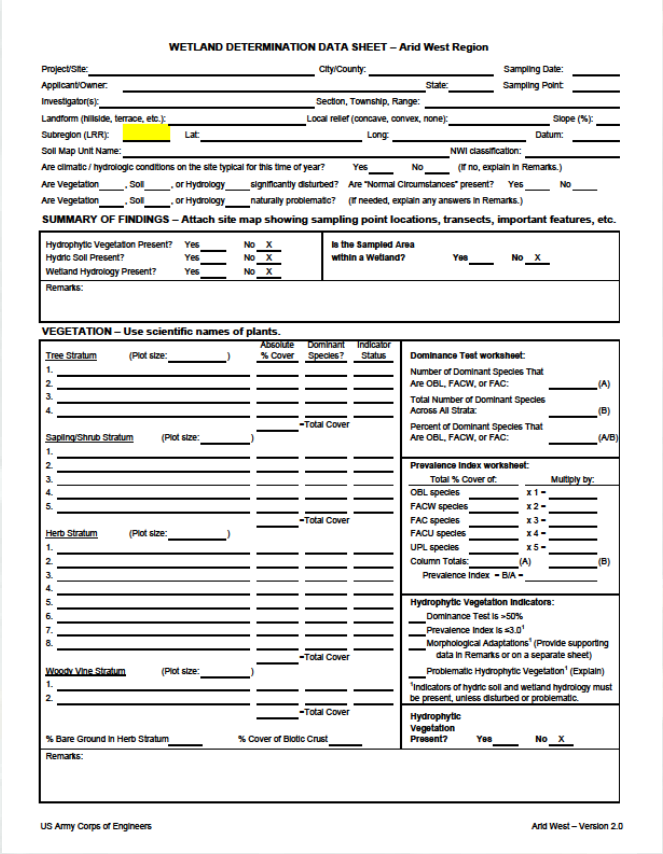
- A site location map on a 7.5-minute USGS quadrangle. The map must provide the name of the USGS quadrangle, Section, Township, Range, the UTM or latitude and longitude
- A map of all delineated aquatic resources ("Aquatic Resources Delineation Map") in accordance with the *Final Map and Drawing Standards 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* (*http://www.spd.usace.army.mil/Missions/Regulatory/Public-Notices-and-References/Article/651327/updated-map-and-drawing-standards/*)

- 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:*

http://www.spk.usace.army.mil/Portals/12/documents/regulatory/upload/ORM_AR_Upload.zip?ver=2017-05-08-114136-027



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



WETLAND DETERMINATION DATA SHEET – Arid West Region

Project/Site: _____ City/County: _____ Sampling Date: _____

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

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____ No__X__

Hydric Soil Present? Yes____ No__X__

Wetland Hydrology Present? Yes____ No__X__

Is the Sampled Area within a Wetland? Yes____ No__X__

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
Woody Vine Stratum (Plot size:_____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum_____ % Cover of Biotic Crust_____

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes____ No__X__

Remarks:

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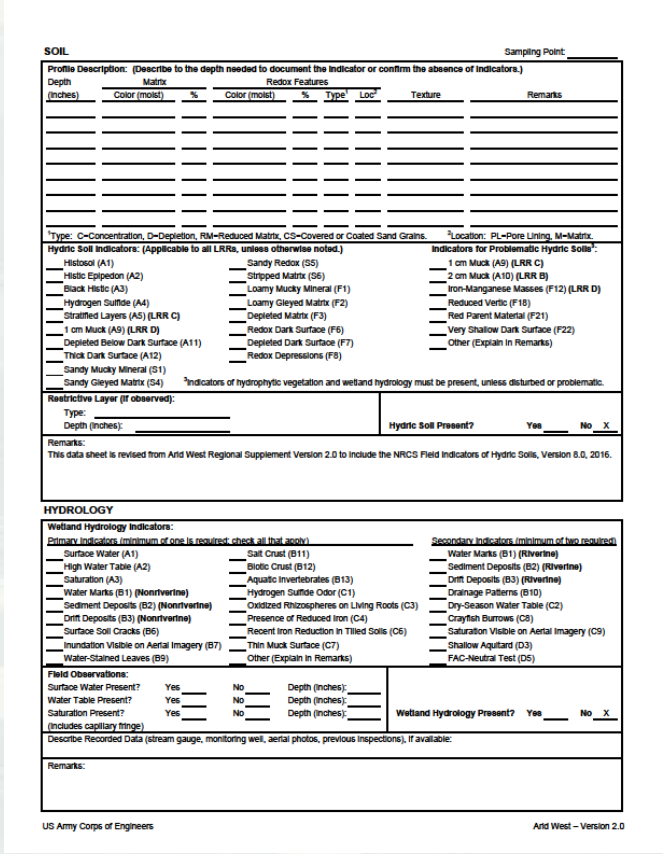


SOIL Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) **(LRR C)**
___ 1 cm Muck (A9) **(LRR D)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR C)**
___ 2 cm Muck (A10) **(LRR B)**
___ Iron-Manganese Masses (F12) **(LRR D)**
___ Reduced Vertic (F18)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes____ No__X__

Remarks:

This data sheet is revised from Arid West Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ 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 (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two 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)

Field Observations:

Surface Water Present? Yes____ No____ Depth (inches):_____

Water Table Present? Yes____ No____ Depth (inches):_____

Saturation Present? Yes____ No____ Depth (inches):_____

(includes capillary fringe)

Wetland Hydrology Present? Yes____ No__X__

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

Remarks:

US Army Corps of Engineers — Arid West – Version 2.0

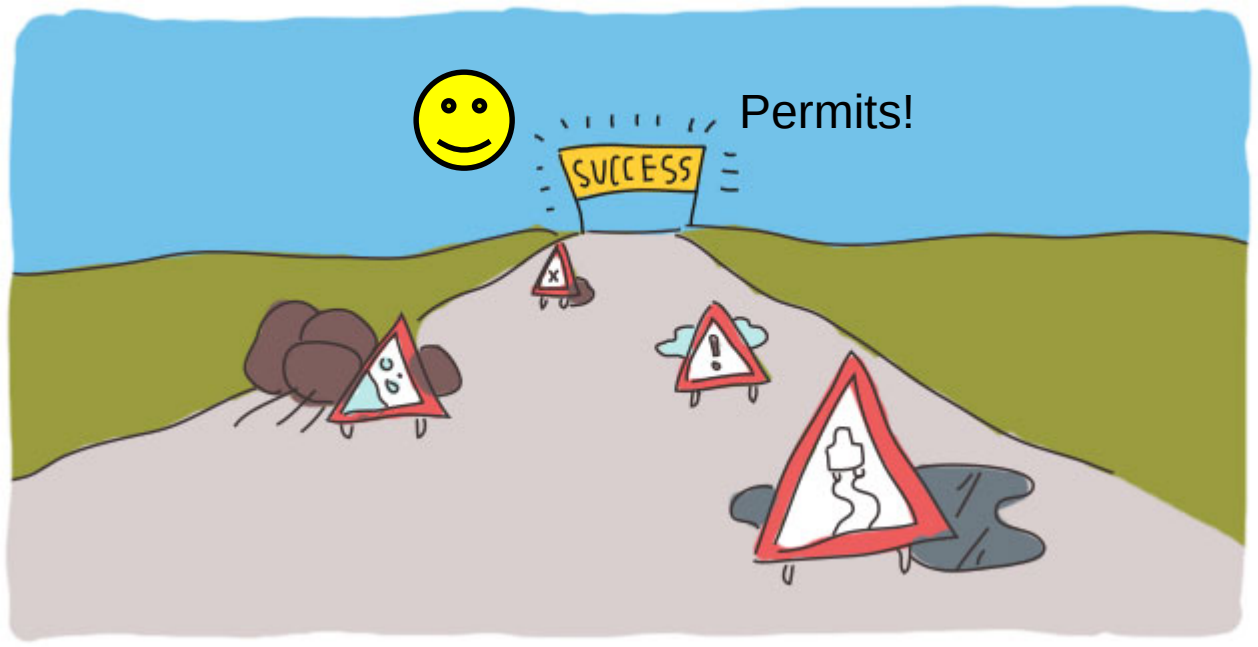
- Digital data for the site, aquatic resource boundaries, and data point locations must be provided in a geographic information system (GIS) format, with ESRI Shape-files being the preferred format. If GIS data is unavailable or otherwise cannot be produced and the Corps determines that a site visit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

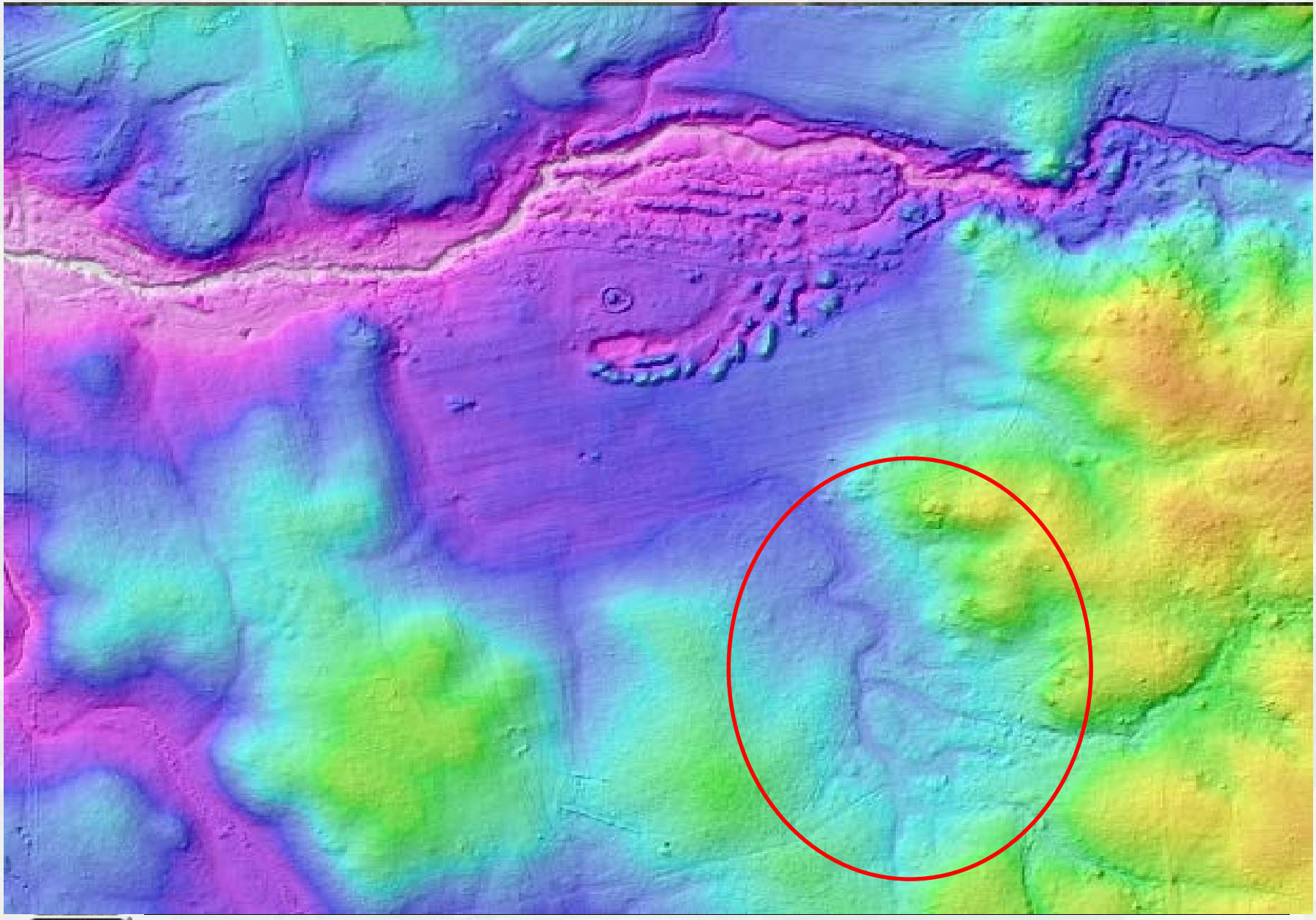


Potential Hold-Ups for Delineation Reviews

- 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)

Potential Review Hold-Ups

- 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;



Potential Review Hold-Ups

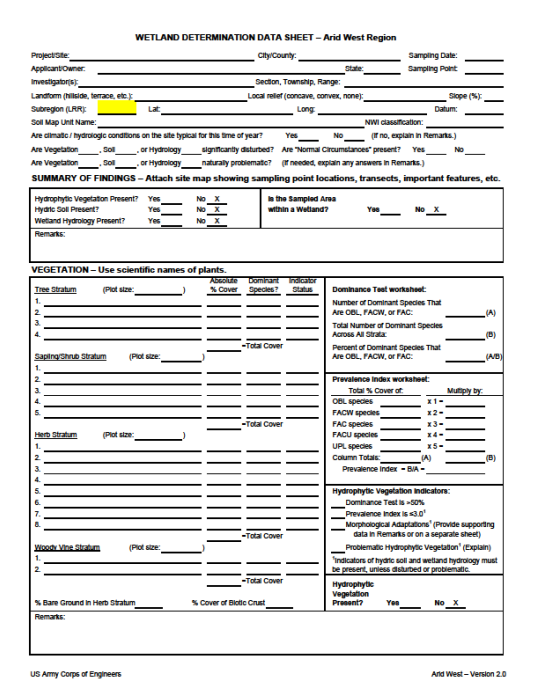
- Not enough data points along complex boundaries:
  - ► At least one set of paired data points per feature or complex is required, however;
    - Rule of thumb: if the feature is large and the boundary is not uniform and clear based on aerial photography or other data, then additional data points should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

Potential Review Hold-Ups

- 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.

Potential Review Hold-Ups

- 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)



WETLAND DETERMINATION DATA SHEET – Arid West Region

Project/Site: _____ City/County: _____ Sampling Date: _____

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): ___

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 ___ No X
Hydric Soil Present? Yes ___ No X
Wetland Hydrology Present? Yes ___ No X

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ___ (A)
Total Number of Dominant Species Across All Strata: ___ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: ___ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

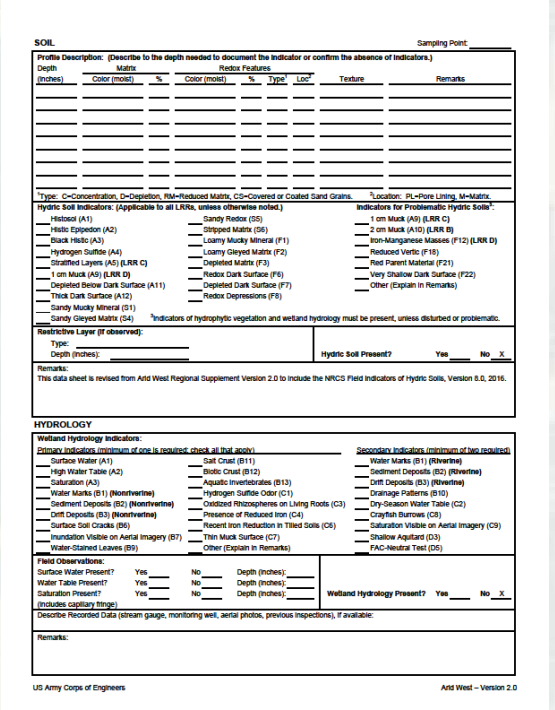
Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

US Army Corps of Engineers — Arid West – Version 2.0

Potential Review Hold-Ups

- 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;



SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

This data sheet is revised from Arid West Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ 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 (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two 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)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? Yes ___ No ___ Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

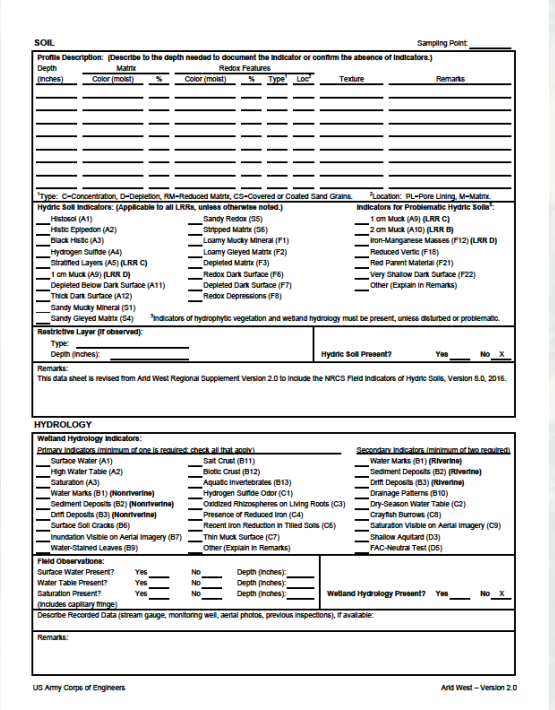
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers — Arid West – Version 2.0

Potential Review Hold-Ups

- 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.



SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
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- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

This data sheet is revised from Arid West Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ 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 (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two 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)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

US Army Corps of Engineers — Arid West – Version 2.0

Potential Review Hold-Ups

- 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)

ERDC/EL TR-WRAP-00-1

onmental Laboratory

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

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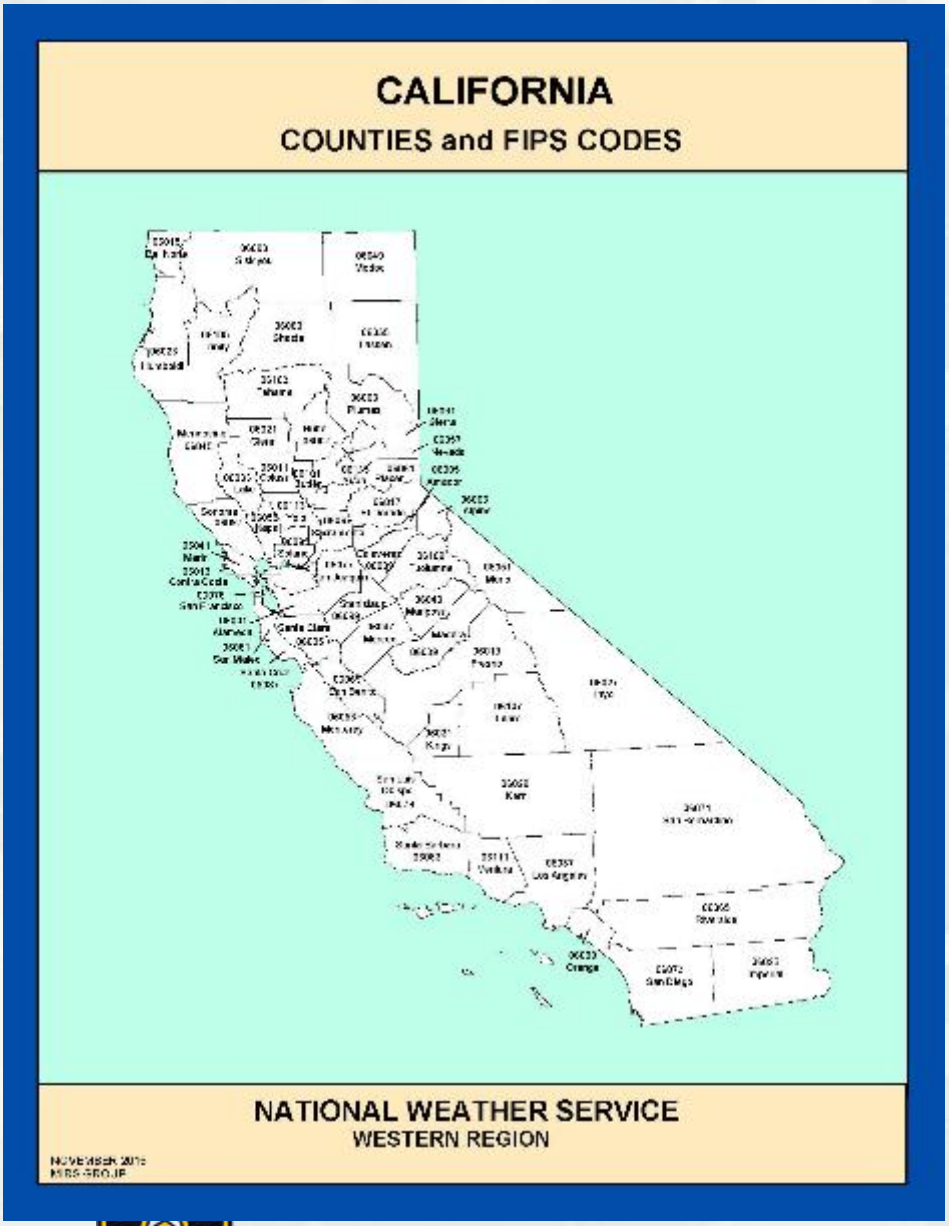
https://efotg.sc.egov.usda.gov/efotg_locator.aspx?map=US



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

File Edit View Favorites Tools Help

Suggested Sites Per Diem Rates Wi-Fi

Climate Data for Nevada County, California

1. Product

- Daily data for a month
- Daily almanac
- Monthly avgs/totals
- Monthly occurrences
- Monthly extremes
- Daily extremes
- Daily/monthly normals
- Record extremes
- Frost/freeze dates
- TAPS
- FROST
- GROWTH
- WETS

2. Location

BOWMAN DAM
DEER CREEK FOREBAY
DONNER MEM SP
FARAD
GRASS VALLEY #2
HARRY ENGLEBRIGHT DM
NEVADA CITY
SAGEHEN CREEK
TRUCKEE RS
TRUCKEE-TAHOE AP DIS

3. Thresholds

24
28
32

4. View

Go

Product Description:

The WETS table gives a month by month summary and probability analysis of temperature and precipitation. The table also provides average length of growing season using three index temperatures (32, 28, and 24 degrees Fahrenheit) at 50 and 70% probabilities.

Questions, comments

Powered by ACIS NOAA Regional Climate Centers

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BUILDING STRONG®

WETS Table - Windows Internet Explorer

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

File Edit View Favorites Tools Help

USDA F

WETS Station : BOWMAN DAM, CA1018 Creation Date: 01/1
Latitude: 3927 Longitude: 12039 Elevation: 05385
State FIPS/County(FIPS): 06057 County Name: Nevada
Start yr. - 1971 End yr. - 2000

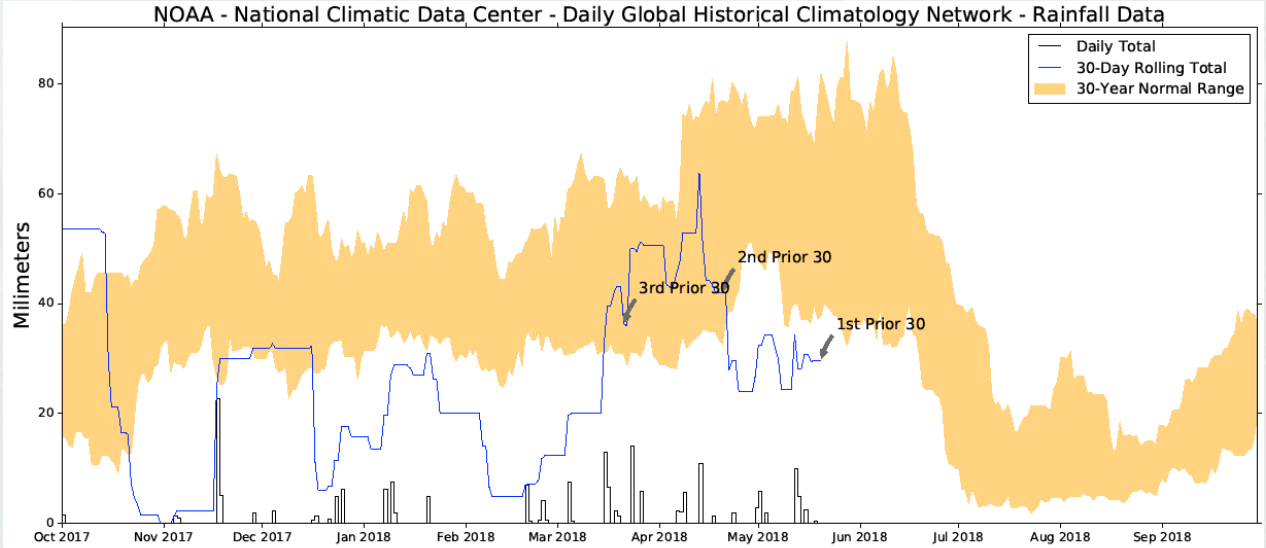
Month	Temperature (Degrees F.) avg daily max	avg daily min	avg	Precipitation (Inches) avg	30% chance will have less than	more than	avg # of days w/.1 or more
January	45.0	26.4	35.7	12.04	5.20	14.67	9
February	45.8	25.9	35.9	11.04	5.80	13.49	9
March	47.5	27.8	37.7	10.34	5.48	12.63	11
April	53.8	31.6	42.7	4.49	2.54	5.47	7
May	62.3	38.2	50.3	3.35	1.33	7.11	4
June	72.1	45.8	59.0	1.22	0.41	1.47	2
July	79.4	51.8	65.6	0.37	0.00	0.29	0
August	79.6	52.3	66.0	0.57	0.00	0.59	1
September	73.9	47.9	60.9	1.56	0.23	1.88	2
October	64.3	40.6	52.5	4.22	1.25	5.04	5
November	51.2	31.4	41.3	9.04	4.12	11.04	8
December	45.5	26.7	36.1	9.73	3.81	11.92	9
Annual	-----	-----	-----	------	54.06	78.03	
Average	60.0	37.2	48.6	------	------	------	
Average	-----	-----	-----	67.97	------	------	

GROWING SEASON DATES

Probability	Temperature 24 F or higher	28 F or higher	3
	Beginning and Ending Dat Growing Season Length		
50 percent *			
70 percent *			152

Three months prior to date of data collectio

Antecedent Rainfall



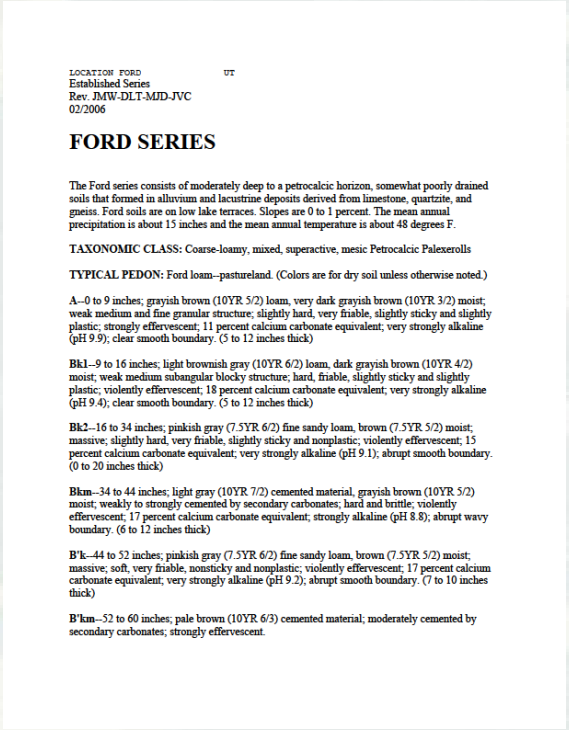
Coordinates	41.06848, -112.05469
Observation Date	2018-05-20
Elevation (ft)	4234.997
Image or Event	N/A
Source	N/A

	<30% Chance (Low)	>30% Chance (High)	Observed Rainfall	Wetness Condition	Condition Value	Month Weight	Product
1st Prior 30	37.78	81.73	29.7	Dry	1	3	3
2nd Prior 30	32.65	76.96	41.9	Normal	2	2	4
3rd Prior 30	30.84	62.85	36.3	Normal	2	1	2
Result							Drier than Normal - 9

	Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Normal Records	Rolling Records
Primary Station	FARMINGTON 3 NW	41.0203, -111.9328	4379.921	7.173	144.924	4.268	9969	0
Secondary Station	LAYTON	41.0972, -111.9972	4459.974	3.593	224.977	2.425	435	0
Tertiary Station	HOOPER 0.1 S	41.1709, -112.1249	4233.924	7.967	1.073	3.594	125	0
Quaternary Station	WEST HAVEN 2.0 SW	41.1848, -112.0901	4238.845	8.248	3.848	3.743	602	260
Quinary Station	RIVERDALE	41.15, -112.0	4399.935	6.313	164.938	3.882	1	0
Senary Station	FARMINGTON 1.8 W	40.9874, -111.9286	4238.845	8.638	3.848	3.92	29	2
Septenary Station	OGDEN SUGAR FACTORY	41.2319, -112.0283	4279.856	11.378	44.859	5.63	160	0
Octonary Station	OGDEN HINKLEY AP	41.1961, -112.0114	4470.145	9.103	235.148	6.237	31	0
Nonary Station	OGDEN PIONEER PH	41.2439, -111.9467	4350.066	13.363	115.069	7.551	1	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 (https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/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 UT
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 gneiss. 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 (pH 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, friable, slightly sticky and slightly plastic; violently effervescent; 18 percent calcium carbonate equivalent; very strongly alkaline (pH 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)

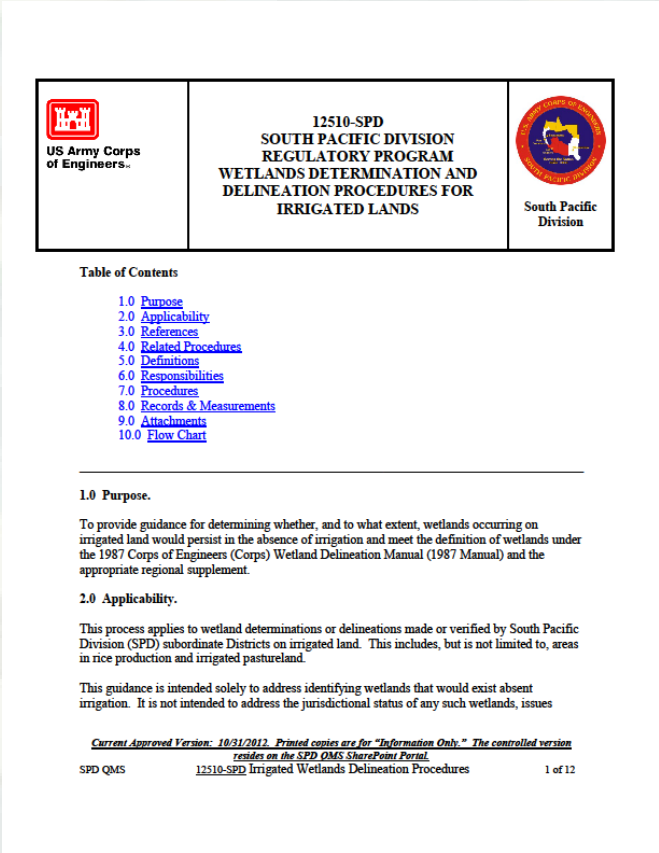
B'km--52 to 60 inches; pale brown (10YR 6/3) cemented material; moderately cemented by secondary carbonates; strongly effervescent.

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 false-positive 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

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1.0 Purpose.

To provide guidance for determining whether, and to what extent, wetlands occurring on irrigated land would persist in the absence of irrigation and meet the definition of wetlands under the 1987 Corps of Engineers (Corps) Wetland Delineation Manual (1987 Manual) and the appropriate regional supplement.

2.0 Applicability.

This process applies to wetland 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

Questions?