THE NWPR: IMPLICATIONS, IMPLEMENTATION & JURISDICTIONAL DETERMINATION PROCESS

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US Army Corps of Engineers®

OVERVIEW OF PRESENTATION

- Introduction to NWPR & Implications in CT
- Jurisdictional Determinations
- Waters of the U.S. (WOTUS) under NWPR
- Excluded Aquatic Resources under the NWPR
- ADDENDUM: NWPR Implementation

US Army Corps of Engineers®

INTRODUCTION TO NAVIGABLE WATERS PROTECTION RULE (NWPR)

Effective since 22 June 2020

The NWPR defines the geographic extent of Waters of the U.S. for the purposes of the Clean Water Act

- Does not change how wetlands or defined or how they are delineated.
- Does not change the types of activities regulated under Section 404 of the Clean Water Act
- Does not change the U.S. Army Corps of Engineers permitting process
- Does not affect State (CT DEEP) or local permitting processes or jurisdiction.

WHAT ARE THE IMPLICATIONS OF NWPR IN CT?

- The Corps has been processing permits & reviewing requests for jurisdictional determinations under NWPR since June 2020.
- Most applicants will not notice change in the permit evaluation process of Corps jurisdiction under NWPR.
- May result in more instances of Approved Jurisdictional Determinations (AJDs), either as stand-alone actions or in association with routine evaluation of permit applications.
- Does not invalidate an AJD issued before the rule was effective. The recipient of a valid (i.e., not expired) AJD may request that the Corps reassess the parcel and the aquatic resources on it under for geographic jurisdiction under NWPR.

JURISDICTIONAL DETERMINATIONS (JDs)

What is a Jurisdictional Determination?

- Written Corps determination that a wetland and/or a waterbody is subject to regulatory jurisdiction under Section 404 of the Clean Water Act or under Section 9 or 10 of the Rivers and Harbors Act of 1899 (33 CFR 331.2).

Two Types: **Preliminary** Jurisdictional Determination (PJD)
Approved Jurisdictional Determination (AJD)

- JDs are typically made at the request of the landowner or project proponent. USACE generally does not issue a JD of any type when a JD is not requested.
- Additional information can be found in the Corps Regulatory Guidance Letter (RGL) 16-01, including a request form https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-andPermits/GuidanceLetters/.

JURISDICTIONAL DETERMINATIONS (JDs)

Approved Jurisdictional Determination (AJD)

- Used to make a definitive, official determination that an aquatic resource **is or is not** jurisdictional (33 CFR 331.2).

Preliminary Jurisdictional Determination (PJD)

- A determination that does not address questions of jurisdiction thereby treating all aquatic resources that could be jurisdictional as if they are jurisdictional for purposes of permit processing (i.e., impacts and compensatory mitigation) (33 CFR 331.2).

Criteria

- For both AJDs and PJDs aquatic resources must meet the definition of a wetland or contain an ordinary high-water mark (OHWM) as defined by USACE methodology.

- Wetland delineation data forms consistent with USACE methodology will usually be required for completion of an AJD

PRELIMINARY VS. APPROVED JDS

PRELIMINARY JURISDICTIONAL DETERMINATION

- All potential jurisdictional aquatic features are included in a PJD and treated as if they are jurisdictional, even where initial indications are that a feature may not be jurisdictional were the District to complete an AJD
- To assist the requestor in planning for a proposed project (i.e., avoidance and minimization).
- Not appealable.
- Applicant may request an AJD at any time.

APPROVED JURISDICTIONAL DETERMINATION

- Only way to determine if an aquatic feature is not geographically jurisdictional to the Corps.
- Valid for 5 Years.
- Appealable.
- Includes a basis or jurisdiction with the document demonstrating those indicators that support the approved jurisdictional determination.

RESOURCES FOR JDs

- USACE Regulations at 33 CFR 331.2
- USACE Jurisdictional Information Website:

https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-andPermits/juris_info/

- USACE Regulatory Guidance Letter (RGL) 16-01: https://www.spn.usace.army.mil/Portals/68/docs/regulatory/resources/RGL/RGL16 -01.pdf
- USACE Jurisdictional Determinations and Permit Decisions Public Interface: https://permits.ops.usace.army.mil/orm-public
- EPA's CWA Approved Jurisdictional Determination website: https://watersgeo.epa.gov/cwa/CWA-JDs/

WATERS OF THE UNITED STATES UNDER NWPR

Navigable Waters

- The term "navigable waters" means the waters of the United States, including the territorial seas

  33 USC § 1362(7)

- The term "discharge of a pollutant" and the term "discharge of pollutants" each means any addition of any pollutant to navigable waters from any point source.

  33 USC § 1362(12)

- The term "waters of the United States" means…

KEY ISSUE: The definition of "Waters of the U.S." determines the extent of federal jurisdiction under the Clean Water Act.

WOTUS under NWPR

(a) Jurisdictional Waters – 4 categories

1) Territorial seas and traditional navigable waters
2) Tributaries
3) Lakes and ponds, and impoundments of jurisdictional waters
4) Adjacent wetlands

(b) Non-Jurisdictional Waters – 12 categories

1) Waters not listed as WOTUS
2) Groundwater
3) Ephemeral features
4) Diffuse stormwater run-off
5) Ditches not identified as WOTUS
6) Prior converted cropland (PCC)
7) Artificially irrigated areas
8) Artificial lakes and ponds
9) Water-filled depressions incidental to mining or construction activity
10) Stormwater control features
11) Groundwater recharge, water reuse, and wastewater recycling structures
12) Waste treatment systems

Key Changes under NWPR

Key changes from the previous regulation:

- 4 categories of jurisdictional waters: combines categories of traditional navigable waters and territorial seas
- Interstate waters are no longer categorically jurisdictional.
- No more case-by-case (significant nexus) determinations of jurisdiction
- Tributaries must be perennial or intermittent – all ephemeral streams are non-jurisdictional
- Lakes, ponds and impoundments must contribute surface water to traditional navigable waters in a typical year
- Wetlands must be directly abutting a TNW, tributary, lake, pond or impoundment to be jurisdictional as adjacent

New terms defined in paragraph (c):

- Perennial, Intermittent, Ephemeral
- Typical Year
- Prior Converted Cropland, Waste Treatment System

(a)(2) WATERS OF THE UNITED STATES UNDER NWPR

(a)(2) Waters: Tributaries

Defined in paragraph (c)(6):

- A river, stream, or similar **naturally occuring** surface water channel that **contributes surface water flow** to an (a)(1) water **in a typical year** either **directly or through** one or more (a)(2), (3), or (4) waters.
- A tributary **must be perennial or intermittent in a typical year**.
- The **alteration or relocation** of a tributary does not modify its jurisdictional status as long as it continues to satisfy the flow conditions of this definition.
- A tributary does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through a **channelized non-jurisdictional surface water feature**, through a subterranean river, through a culvert, dam, tunnel, or similar artificial feature, or through a debris pile, boulder field, or similar natural feature.

Tributaries include those perennial or intermittent streams that flow in response to snowpack melt, like Hayes Creek in Colorado that contributes surface flow to the Crystal River.

- The term tributary **includes a ditch that either relocates a tributary, is constructed in a tributary, or is constructed in an adjacent wetland** as long as the ditch satisfies the flow conditions of this definition.

Non-Jurisdictional Connections: Culvert, Dam, Tunnel or Similar Artificial Feature

A culvert, dam, tunnel, or other similar artificial feature can convey surface water flows from upstream jurisdictional waters to downstream jurisdictional waters. If those **surface water flows are conveyed in a typical year**, jurisdiction of the upstream waters is not severed.

Tributaries: Altered or Relocated Tributaries

The alteration or relocation of a tributary does not modify its jurisdictional status as long as it continues to satisfy the flow conditions of the definition.

1. Contributes surface water flow to an (a)(1) water
2. Perennial or intermittent flow
   (In a typical year)

Ditches: When Is a Ditch a Water of the US?

As an (a)(2) water if it meets the flow conditions:

- Perennial or intermittent surface water flow in a typical year **AND**
- Contributes surface water flow to a jurisdictional water in a typical year, **AND**
  - **Relocates** a tributary,
  - Was **constructed** in a tributary,

    OR
  - Was constructed in an **adjacent** wetland

Construction in progress. Natural tributary on the left. Relocated ditch on the right. Natural tributary to be filled in after construction.

(a)(2) WATERS OF THE UNITED STATES UNDER NWPR

Tributaries:

Contribution of Surface Water Flow

A river, stream, or similar naturally occuring surface water channel that **contributes surface water flow to an (a)(1) water in a typical year either directly or through** one or more:

- (a)(2) tributaries
- (a)(3) lakes, ponds or impoundments of a jurisdictional water
- (a)(4) adjacent wetlands

Typical Year (c)(13):

- The term *typical year* means: "when precipitation and other climatic variables are within the normal periodic range (*e.g.,* seasonally, annually) for the geographic area of the applicable aquatic resource based on a rolling thirty-year period."

Intermittent Flow

The term *intermittent* means surface water flowing **continuously during certain times of the year** and **more than in direct response to precipitation** (*e.g.*, seasonally when the groundwater table is elevated or when snowpack melts).

- Intermittent flows may occur seasonally such as in the spring when evapotranspiration is low and the groundwater table is elevated. Under these conditions, the groundwater table intersects the channel bed and groundwater provides continuous base flow for weeks or months at a time even when it is not raining or has not very recently rained.
- Note that groundwater input is not a requirement in the Rule's definition of "intermittent".
- Snowpack melt and artificial sources such as effluent can also be sources of intermittent flows.

Tributaries:

Perennial or Intermittent Flow

A tributary **must be perennial or intermittent in a typical year**.

Perennial (c)(8):
- The term *perennial* means: "surface water flowing continuously year-round".

Intermittent (c)(5): :
- The term *intermittent* means: "surface water flowing continuously during certain times of the year and more than in direct response to precipitation" (*e.g.*, seasonally when the groundwater table is elevated or when snowpack melts).

Ephemeral (c)(3): :
- The term *ephemeral* means: "surface water flowing or pooling only in direct response to precipitation (*e.g.*, rain or snow fall).

The rule does not specify certain flow volumes or flow duration metrics, as the time period that encompasses intermittent flow can vary widely across the country based upon climate, hydrology, topography, soils, and other conditions.

Ephemeral vs. Intermittent

The term *ephemeral* means surface water flowing or pooling **only in direct response to precipitation** (*e.g.*, rain or snow fall).

Direct Response: flow solely caused by individual precipitation events
- Ephemeral flow may occur simply because it is raining or has very recently rained or it has recently snowed and the snow has melted.
- Ephemeral flow can be the result of a small, brief storm event, one long storm event producing rainfall for several days without pause, or several back-to-back storms.

Continuous Flow: occurring more than in direct response to precipitation.

"Seasonal" Flow = Continuous Flow
- Seasonal flow may be the result of weeks- or months-long accumulation of precipitation in the form of snowpack that melts slowly over time or an elevated groundwater table that provides baseflow to the channel bed.

(a)(3) WATERS OF THE UNITED STATES UNDER NWPR

(a)(3) Waters: Lakes and ponds, and impoundments of jurisdictional waters

Defined in paragraph (c)(6):

- The term lakes and ponds, and impoundments of jurisdictional waters means **standing bodies of open water** that **contribute surface water flow** to an (a)(1) water **in a typical year** either directly or through one or more (a)(2), (3), or (4) waters
- A lake, pond, or impoundment of a jurisdictional water does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through a channelized non-jurisdictional surface water feature, through a culvert, dike, spillway, or similar artificial feature, or through a debris pile, boulder field, or similar natural feature.
- A lake, pond, or impoundment is also jurisdictional if it is **inundated by flooding** from an (a)(1)-(3) water **in a typical year**.

Lakes, ponds, and impoundments of jurisdictional waters include open bodies of surface water that contribute surface flow to a traditional navigable water, like Christian Pond in Wyoming.

When are Lakes, Ponds and Impoundments Jurisdictional?

As an (a)(1) water if they are a TNW or territorial sea

OR

As an (a)(3) water if:

- They contribute surface water flow to an (a)(1) water in a typical year either directly or indirectly through one or more (a)(2), (3), or (4) waters or through channelized non-jurisdictional features,

  OR

- They are inundated by flooding from an (a)(1), (2), or (3) water in a typical year.

Note that impoundments must be impoundments of jurisdictional waters to meet the (a)(3) criteria above.

Impounded Wetlands

Impoundments of wetlands are jurisdictional as "impoundments of jurisdictional waters" if:

1. The wetlands being impounded meets paragraph (c)(1) - the definition of "adjacent wetlands" and

   OR

2. Meet the conditions of paragraph (a)(3) - the lakes, ponds, and impoundments of jurisdictional waters category.

NOTE:

- If an adjacent wetland is impounded and now meets the definition of paragraph (c)(6), it is jurisdictional as an (a)(3) water.
- If an adjacent wetland is impounded and continues to meet the definition paragraph (c)(1), it would remain jurisdictional as an (a)(4) wetland.

(a)(4) WATERS OF THE UNITED STATES UNDER NWPR

(a)(4) Adjacent wetlands:

Defined in paragraph (c)(1):

- **Abut**, meaning to touch at least at one point or side of, an (a)(1)-(3) water;
- Are **inundated by flooding** from an (a)(1)-(3) water in **a typical year**;
- Are physically **separated** from an (a)(1)-(3) water **only by a natural berm, bank, dune, or similar natural feature**;

  OR

- Are physically separated from an (a)(1)-(3) water only by **an artificial dike, barrier, or similar artificial structure** so long as that structure allows for a **direct hydrologic surface connection** between the wetlands and the (a)(1)-(3) water **in a typical year**, such as through a culvert, flood or tide gate, pump, or similar artificial feature.

Adjacent wetlands include wetlands with manmade structures that allow for a direct hydrologic surface connection to an (a)(1-(3) water in a typical year, like these wetlands in the Mississippi river Delta region of Louisiana.

Adjacent Wetlands:
Physical Separation

Adjacent wetlands can also be wetlands that are physically separated from an (a)(1)-(3) water only by a:

- **Natural berm, bank, dune, or similar natural feature**;

  OR

- **Artificial dike, barrier, or similar artificial structure**
  - Artificial structure must allow for a **direct hydrologic surface connection** between the wetlands and the (a)(1)-(3) water **in a typical year**,
  - Direct hydrologic surface connection such as through a culvert, flood or tide gate, pump, or similar artificial feature.
  - An adjacent wetland is **jurisdictional in its entirety** when a road or similar artificial structure divides the wetland, as long as the structure allows for a **direct hydrologic surface connection through or over that structure in a typical year.**

Adjacent Wetlands:
Definition of Adjacent

Adjacent wetlands means wetlands that:

- **Abut**, meaning to touch at least at one point or side of, an (a)(1)-(3) water;
  - Change from previous definition of adjacent (bordering, contiguous or neighboring)

  OR

- Are **inundated by flooding** from an (a)(1)-(3) water in **a typical year**;

Adjacent wetlands include wetlands with manmade structures that allow for a direct hydrologic surface connection to an (a)(1-(3) water in a typical year, like these wetlands in the Mississippi river Delta region of Louisiana.

(b)(1) - (b)(4) EXCLUDED AQUATIC RESOURCES UNDER NWPR

Exclusions Overview

Many exclusions listed in paragraph (b) reflect longstanding agency practice

- Prior converted cropland and Waste treatment systems are defined in NWPR for the first time for CWA purposes

Waters and features listed in paragraph (b) cannot be determined to be jurisdictional under any of the categories in paragraph (a)

- Note that the exclusion for ditches does not apply to (a)(1) or (a)(2) waters or when a ditch is constructed in (a)(4) waters that satisfy the conditions of paragraph (c)(1) – adjacent wetlands.
- A typical year assessment may be necessary for some waters in order to conclude the water is excluded.

Point source discharges of pollutants into excluded waters may still be subject to NPDES permitting if the excluded water conveys the pollutant to a downstream jurisdictional water.

Key Elements of Exclusions: Features Constructed in Upland

Upland is defined in paragraph (c)(14) of NWPR

- The term upland means any land area that under normal circumstances does not satisfy all three wetland factors (i.e., hydrology, hydrophytic vegetation, hydric soils) identified in paragraph (c)(16) and does not lie below the OHWM or the HTL of a jurisdictional water.
- Features constructed or excavated in upland or in non-jurisdictional waters must be constructed/excavated wholly in upland or non-jurisdictional waters to meet applicable exclusions.

Exclusions needing to be in upland or in non-jurisdictional waters:

- (b)(8) Artificial lakes and ponds
- (b)(9) Water-filled depressions incidental to mining or construction activity
- (b)(10) Stormwater control features
- (b)(11) Groundwater recharge, water reuse, and wastewater recycling structures
- (b)(12) Waste treatment systems

Excluded Waters/Features

(b)(1) Waters or water features that are not identified in paragraph (a)(1), (a)(2), (a)(3), or (a)(4);

- Categorically excludes all waters not listed as WOTUS in paragraph (a)
- Clarifies that a feature is not jurisdictional just because it is not explicitly excluded in paragraph (b).

(b)(2) Groundwater, including groundwater drained through subsurface drainage systems;

- Excludes groundwater, including groundwater drained through subsurface drainage features.
- The agencies have never interpreted WOTUS to include groundwater

Excluded Waters/Features

(b)(3) Ephemeral features, including ephemeral streams, swales, gullies, rills, and pools

- Ephemeral streams and ephemeral features are not WOTUS under NWPR.
- Ephemeral features may serve as connections between upstream relatively permanent waters and downstream jurisdictional waters
- Ephemeral is defined in the rule as: surface water flowing or pooling only in direct response to precipitation (e.g., rain or snow fall).

(b)(4) Diffuse stormwater run-off and directional sheet flow over upland;

- Diffuse run-off and directional sheet flow over upland are excluded.
- These features cannot serve as connections to enable upstream perennial and intermittent waters to be jurisdictional.

(b)(5) - (b)(9) EXCLUDED AQUATIC RESOURCES UNDER NWPR

Excluded Waters/Features

(b)(5) Ditches not identified as WOTUS in paragraph (a);

- Ditches that are not (a)(1) waters = TNW
- Ditches that are not (a)(2) waters = Tributary
- Those portions of ditches constructed in (a)(4) waters that do not satisfy the conditions of paragraph (c)(1) = Adjacent Wetlands
- Approach balances exclusion with need to preserve jurisdiction over tributaries and adjacent wetlands.
- Under Rapanos ditches excavated wholly in uplands, draining only uplands, and having less than relatively permanent flow were generally excluded.

The ditch exclusion includes many roadside ditches as well as many farm ditches.

Excluded Waters/Features

(b)(6) Prior converted cropland - Defined in paragraph (c)(9) as:

- Any area that, prior to December 23, 1985, was drained or otherwise manipulated for the purpose, or having the effect, of making production of an agricultural product possible.
- EPA and the Corps will recognize designations of prior converted cropland made by the Secretary of Agriculture.
- An area is no longer considered prior converted cropland for purposes of the Clean Water Act when the area is abandoned and has reverted to wetland as defined in paragraph (c)(16) of this section.
- Abandonment occurs when prior converted cropland is not used for, or in support of, agricultural purposes at least once in the immediately preceding five years.
- For the purposes of the Clean Water Act, the EPA Administrator shall have the final authority to determine whether prior converted cropland has been abandoned.

Excluded Waters/Features

(b)(6) Prior converted cropland (PCC):

- **Key change from previous regulation**: Only uses the abandonment principle and no longer considers "change in use"
- **USDA**: Agricultural purposes include land use that makes the production of an agricultural product possible, including but not limited to grazing and haying.
- Preamble contains additional discussion about activities that constitute "agricultural purposes": including, but not limited to, idling land for conservation uses (e.g., habitat; pollinator and wildlife management; and water storage, supply, and flood management); irrigation tailwater storage; crawfish farming; cranberry bogs; nutrient retention; and idling land for soil recovery following natural disasters like hurricanes and drought.
- Conservation practices and programs also are conducted "for or in support of agricultural purposes" and are appropriate to maintain the prior converted cropland exclusion.
- Corps and NRCS have rescinded the 2005 MOA; will be replaced with new MOA including EPA.

Excluded Waters/Features

(b)(7) Artificially irrigated areas;

- Excludes artificially irrigated areas, including fields flooded for agricultural production, that would revert to upland should application of irrigation water to that area cease;

(b)(8) Artificial lakes and ponds;

- Excludes artificial lakes and ponds, including water storage reservoirs and farm, irrigation, stock watering, and log cleaning ponds, constructed or excavated in upland or in non-jurisdictional waters, so long as those artificial lakes and ponds are not impoundments of jurisdictional waters that meet the conditions of paragraph (c)(6) of this section;

(b)(9) Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters;

- Excludes water-filled depressions constructed or excavated in upland or in non-jurisdictional waters incidental to mining or construction activity, and pits excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel;

(b)(10) - (b)(12) EXCLUDED AQUATIC RESOURCES UNDER NWPR

Excluded Waters/Features

(b)(10) Stormwater control features;

- Excludes stormwater control features constructed or excavated in upland or non-jurisdictional waters to convey, treat, infiltrate, or store stormwater run-off.
- Exclusion helps to avoid disincentives to environmentally beneficial practices such as green infrastructure for controlling stormwater.

(b)(11) Groundwater recharge, water reuse, and wastewater recycling structures;

- Excludes groundwater recharge, water reuse, and wastewater recycling structures, including detention, retention, and infiltration basins and ponds, constructed or excavated in upland or in non-jurisdictional waters.
- Exclusion helps to avoid discouraging, or creating barriers to, water reuse and recycling projects.

Excluded Waters/Features

(b)(12) Waste treatment systems – Defined in paragraph (c)(15):

- The term waste treatment system includes all components, including lagoons and treatment ponds (such as settling or cooling ponds), designed to either convey or retain, concentrate, settle, reduce, or remove pollutants, either actively or passively, from wastewater prior to discharge (or eliminating any such discharge).
- Waste treatment systems have been excluded from the definition of WOTUS since 1979. The final rule defines waste treatment systems and the components of the exclusion in the regulation for the first time.

ADDENDUM

IMPLEMENTATION

IMPLEMENTATION OF NWPR

Determining contribution of flow downstream:

- USGS Maps
- State and local maps
- Aerial photography
- Verified flow path models
- Flow path trace analysis in Geographic Information
- System (GIS)
- USGS StreamStats

Determining perennial or intermittent flow:

- NHD or local maps
- Aerial photography
- NRCS hydrologic tools and soil maps
- USGS StreamStats
- NOAA snow maps
- Verified modeling tools
- Stream Duration Assessment Methods (SDAMs)
  - EPA is working cooperatively with USACE to develop rapid, field-based methods to classify streamflow duration by region.

Northeast SDAM

Will be available publicly on the EPA's website for download • https://www.epa.gov/nwpr/implementation-resources

IMPLEMENTATION OF NWPR

Determining surface flow and surface water connections that occur in a typical year:

- The agencies have developed an Antecedent Precipitation Tool (APT) that collects NOAA precipitation from nearby weather stations and compares precipitation from the time period of interest with precipitation data from the past 30 years, that may be used to determine whether precipitation conditions fall within the normal range.

Other data sources and tools:

- Palmer Drought Severity Index https://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/psi/201811-201910 • WebWIMP - http://climate.geog.udel.edu/~wimp/ • NOAA National Snow Analysis Map - https://www.nohrsc.noaa.gov/nsa/ • NRCS Snow Telemetry – https://www.wcc.nrcs.usda.gov • Standard Precipitation Index - https://www.ncdc.noaa.gov/temp-and-precip/drought/nadm/indices • NOAA/National Weather Service Meteorological Stations • WETS tables - https://www.wcc.nrcs.usda.gov/climate/wets_doc.html • Continuous flow models • Hydrologic models • Familiar resources (aerials, topographic maps, soil surveys, etc…) • Physical and biological field indicators

THE ANTECEDENT PRECIPITATION TOOL (APT)

Developed and maintained by USACE

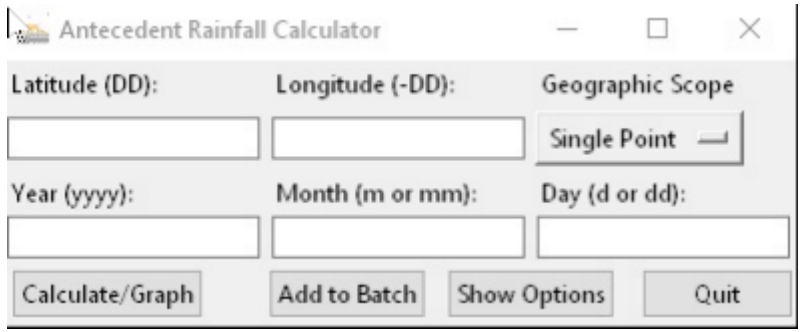
- https://github.com/jDeters-USACE/Antecedent-Precipitation-Tool/releases/tag/v1.0
- Assesses rainfall data from the preceding 30 years.
- The APT is automated and provides a consistent methodology.
- Includes information from the Web-based Water-Budget Interactive Modeling Program (WebWIMP) and Palmer Drought Severity Index.

In addition to the information generated by the APT the following should also be considered:

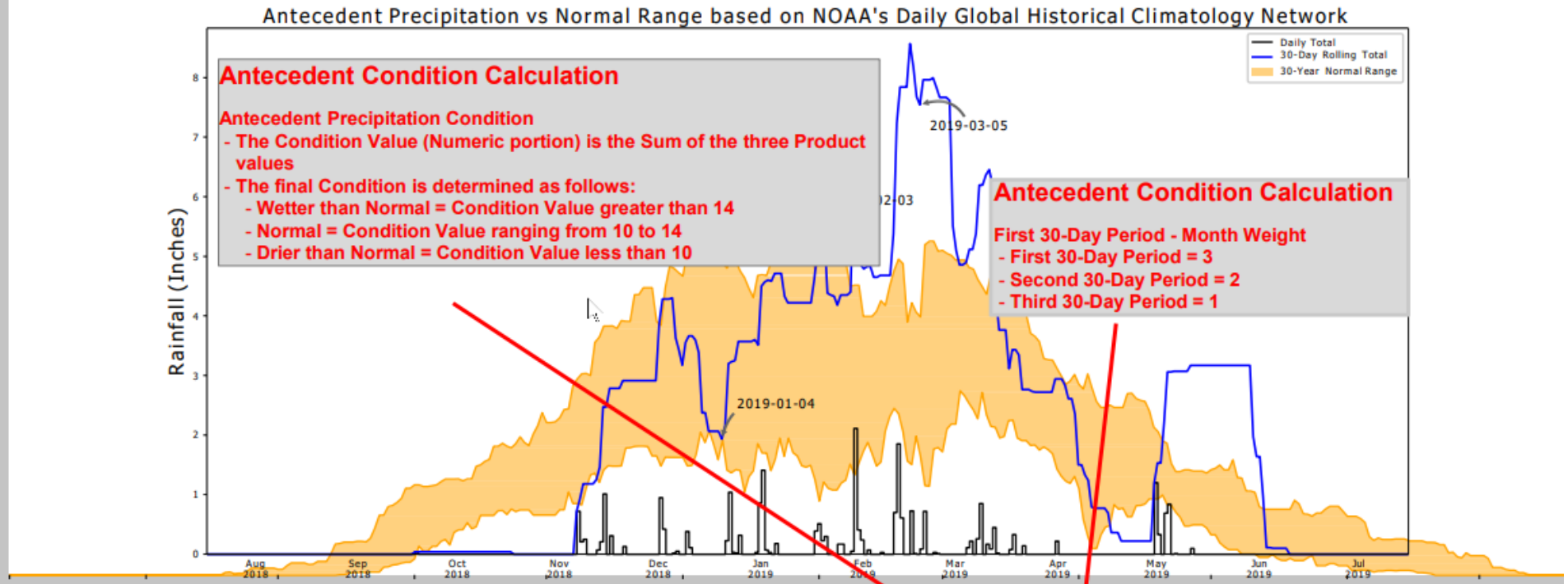
• the range of climatic variables and data available through remote tools, and

• direct on-site observations.

https://www.usace.army.mil/Missions/Civil-Works/RegulatoryProgram-and-Permits/techbio/



THE ANTECEDENT PRECIPITATION TOOL (APT)



Coordinates	38.5, -121.5
Observation Date	2019-03-05
Elevation (ft)	7.14
Drought Index (PDSI)	Moderate wetness
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2019-03-05	2.669291	4.561024	7.543307	Wet	3	3	9
2019-02-03	1.259449	4.777953	5.350394	Wet	3	2	6
2019-01-04	1.748425	5.048425	1.933071	Normal	2	1	2
Result							Wetter than Normal - 17

Figure generated using the Antecedent Rainfall Calculator

Written by Jason C. Deters
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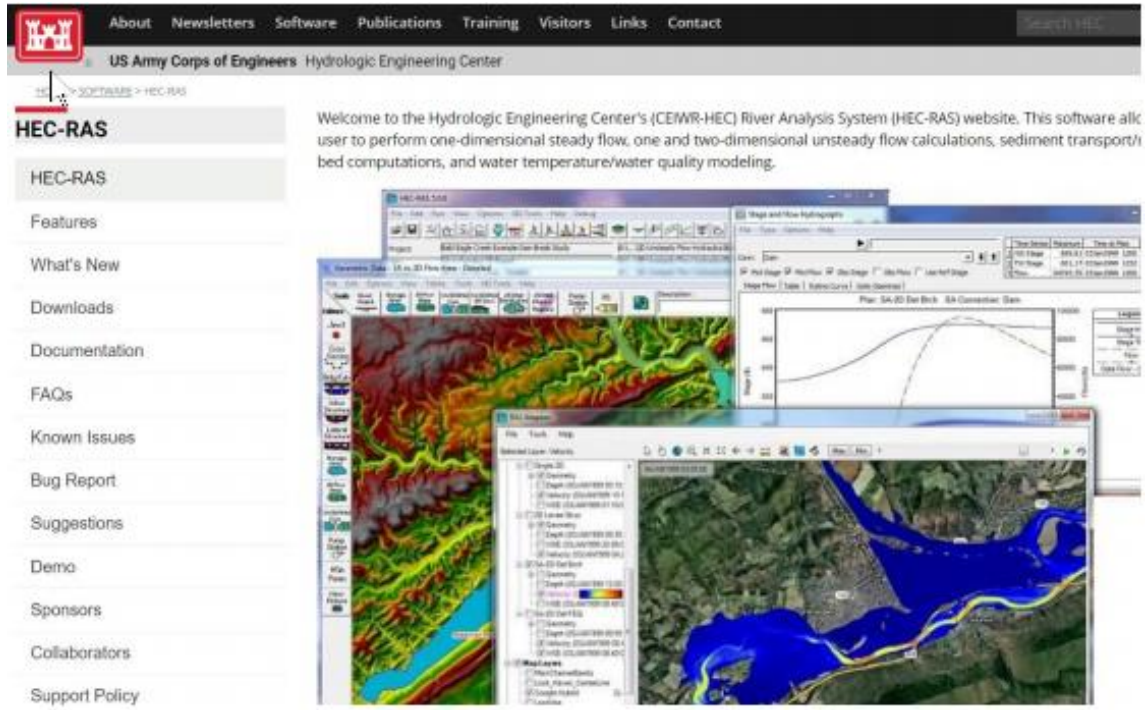
Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation	Weighted	Days (Normal)	Days (Antecedent)
SACRAMENTO EXECUTIVEAP	38.5069, -121.495	15.092	0.548*	7.952*	0.251*	11345	90
SACRAMENTO 5 ESE	38.5556, -121.4169	38.058	5.398	22.966	2.553	8	0

IMPLEMENTATION OF NWPR

Determining inundation by flooding can be determined through a combination of:

- USGS stream gage records
- Recurrence intervals of peak flows
- Wetland surface water level records
- Flood records
- Aerial photography and satellite imagery
- Inundation modeling techniques and tools
- Site visits and dated photographs



Hydrologic Engineering Center's River Analysis System (HEC -RAS):

- USACE software which allows users to perform inundation mapping and create inundation depth datasets. https://www.hec.usace.army.mil/software/hec -ras/

RESOURCES FOR NWPR

U.S. Army Corps of Engineers, New England District
Main Office
696 Virginia Road
Concord, Massachusetts
Phone: 978-318-8338

CT Permits: Cenae-r-ct@usace.army.mil

Cori M. Rose: cori.m.rose@usace.army.mil

Paul Minkin: Jeremy.p.Minkin@usace.army.mil

More Info:
https://www.epa.gov/NWPR
https://www.epa.gov/nwpr/training-and-implementation-materials

QUESTIONS?