

The N-EWN Knowledge Series

A Continuing Education Series about Engineering with Nature



Sarah Copertino
Environmental Resource Specialist
US Army Corps of Engineers

EWN Compass: Implementation Toolbox for Natural and Nature-Based Features

Integrating natural and nature-based features (NNBF) is a key element of modern, sustainable infrastructure. This seminar introduces the EWN Compass, a user-friendly ArcGIS application developed to support the efficient selection and integration of NNBF into infrastructure engineering projects.

Participants will gain centralized access to relevant resources, case studies, and environmental data through the tool. The seminar will cover the background and development of the EWN Compass, highlight the need it addresses, and provide a comprehensive walkthrough of its core features.

Save the date!

Upcoming webinars will take place the 3rd Thursday of the month.

May 21
12:30pm ET

Sarah Copertino, US Army Corps of Engineers
EWN Compass: Implementation Toolbox for Natural and Nature-Based Features

Jun. 18
12:30pm ET

Dr. Mike Beck and Dr. Borja Reguero, UC Santa Cruz
The Design and Finance of Reef and Wetland Solutions to Protect People and Nature

Jul. 16
12:30pm ET

Tyler Ortego, BC, CE, Natrx
Applying Cutting Edge Technology to Engineering with Nature

Register here: <https://bit.ly/3gR9ADL>

or scan:



1 Continuing Education Credit (CEC) is available to attendees

Recorded webinars will be posted online at: <https://n-ewn.org/resources/n-ewn-knowledge-seminars/>

Presented by:



Questions? Please contact:
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EWN Compass

Implementation Toolbox for Natural and Nature-Based Features

Sarah Copertino

U.S. Army Corps of Engineers

Omaha District



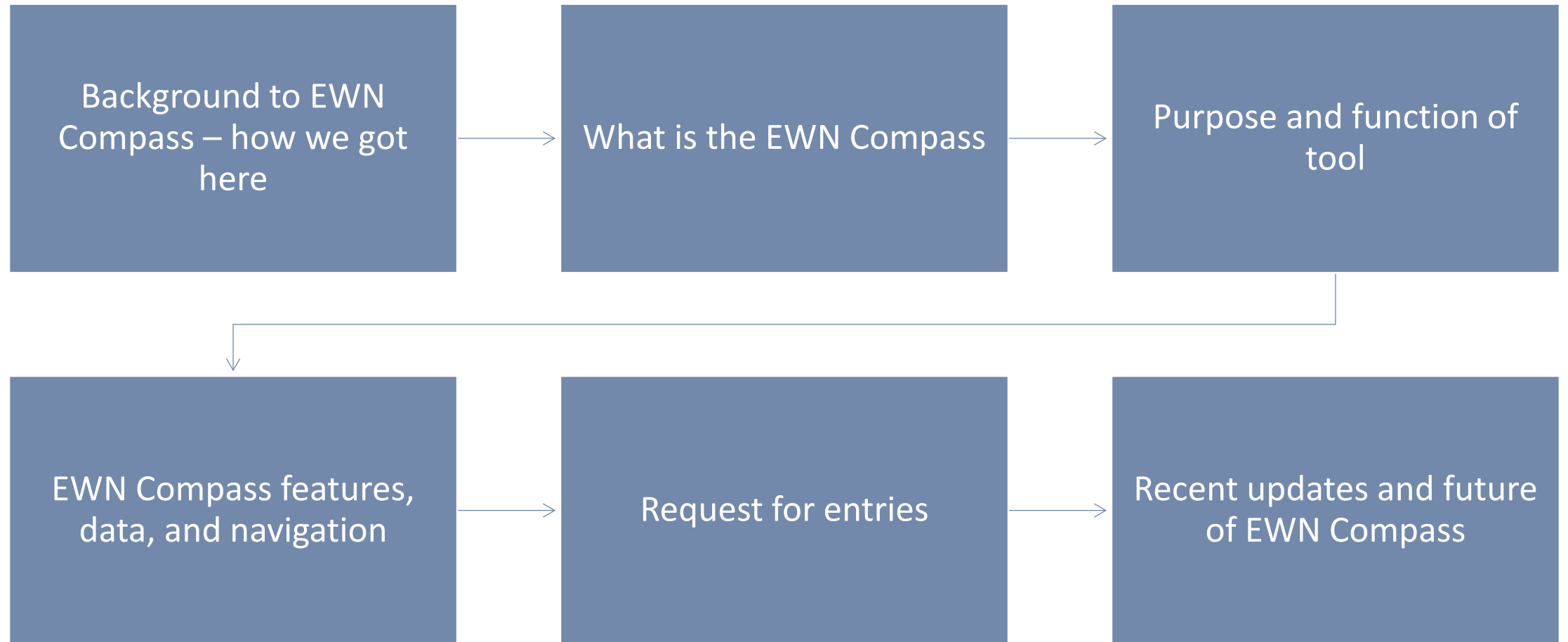
U.S. ARMY



US Army Corps
of Engineers®



Overview



The background of the slide is a dark gray color with a faint, light gray pattern of architectural blueprints. The blueprints include various technical drawings such as floor plans, structural frames, and mechanical diagrams, all rendered in a light, semi-transparent style.

Background

Why is USACE implementing natural and nature-based features (NNBF)?

- More resilient infrastructure
- Reduce conflict between environmental and engineering needs
- Non-federal sponsors request these features
- Directed to consider these features in guidance

Related USACE Guidance

Water Resources Development Act (WRDA) of 2016

- Section 1184(a)(2) defines natural feature and nature-based feature
- Natural and nature-based features shall be considered
- Required reporting to Congress on implementation of NNBF and non-structural features

WRDA 2018, 2020, 2022, and 2024

- Explicitly call for the use and consideration of natural and nature-based features

Agency Specific Procedures 33 CFR 234.7(h)

- Final array of alternatives shall contain a nature-based solution alternative


Implementing NNBF

Project delivery teams (PDTs) are excited to incorporate natural and nature-based features

Daunting to implement with uncertainty, little knowledge about how USACE implements NNBF across the enterprise

Without previous training or experience, may look to other projects as examples

How can we fill NNBF
knowledge gap and
support practitioners?





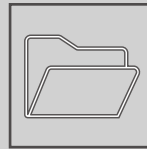
What is the EWN Compass?



Interactive, web-based map tool



Displays NNBF ideas and resources for geographic regions/features



Collection of case studies from USACE and other organizations



Platform to submit your projects incorporating NNBF

Availability of EWN Compass



Designed and published through ArcGIS Online



No login required for users



Available to USACE and non-USACE entities



GIS-based but accessible to all experience levels

Purpose of EWN Compass



Collection of up-to-date case studies

Added by members of project delivery team



Connect with other practitioners for lessons learned

Increased collaboration between PDTs, USACE districts, and organizations



Provide examples of what others have done to spark inspiration

Understand what has worked in your region and recent developments in the field



Share resources to support other teams

Replicate features that work, improve upon past designs



Support data calls within USACE

More complete & efficient upward reporting

EWN Compass and Features



NNBF Examples and Resources

EWN Compass

Welcome Introduction **Natural and Nature-Based Features** Considerations Case Studies Your Implemented NNBF Implementation Dashboard Resources Help and Information

Use this map to explore different geographic zones and the types of natural and nature-based features that might be possible to implement in your region.

Layers

- User Implemented NNBFs
- EWN ProMap Projects
- EWN Proving Grounds
- Natural and Nature-Based Feature Zones
- Resilience Opportunities - Living Atlas Data

Search projects, project types, etc.

Print template Results

Template: A3 Landscape

Title: NNBF Options

Advanced: Show print area

Print

Questions? See the Help page →

Regional NNBF Zones: Northern Rockies and Plains

Inland US NNBF Options	Potential Outcomes
Inland freshwater wetland restoration	Water quality improvements, stormwater management improvements, habitat creation/restoration, improved aesthetics
Environmental enhancement of existing infrastructure	Habitat restoration/creation and resiliency
	Habitat creation/restoration, floodplain

200 mi

Earthstar Geographics | Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS Powered by Esri

Considerations

The screenshot displays the EWN Compass web application interface. At the top, a navigation menu includes: Welcome, Introduction, Natural and Nature-Based Features, Considerations (active), Case Studies, Your Implemented NNBF, Implementation Dashboard, Resources, and Help and Information. The main map area shows the United States with various colored regions and numerous colored dots representing data points. The sidebar on the left, titled 'Layers', contains the following items:

- User Implemented NNBFs
- EWN ProMap Projects
- Resilience Opportunities - Living Atlas Data
- FEMA National Flood Hazard Layer
- EWN Proving Grounds
- Water, Air, and Habitat
- Water Resources Information
- National Levee Database
- National Register of Historic Places
- BIA Data
- Census Tracts - FEMA
- Community Resilience Challenges Index (CRCI)
- Federal Government and Boundaries

Below the layers list, the coordinates are shown as -133.444 53.067 Degrees. The 'Print template' section includes a dropdown for 'A3 Landscape', a title field containing 'NNBF Implementation Considerations', and a 'Print' button. At the bottom right, a status bar indicates 'Selected features: 0' and 'Powered by Esri | Esri, USGS | Esri, TomTom, Garmin, ... Powered by Esri'. A 200-mile scale bar is located at the bottom left of the map area.

Data

Where does the underlying data originate from?

- Utilize online feature services
- Refresh at least 1x per day
- Use published layers through federal agencies and ESRI

Purpose of feature service data layers

- Responsible agency maintains currency and accuracy
- Avoid duplicating efforts
- Saves time on data maintenance
- Avoid hosting data that is already published

See “Help and Information” page for searchable list of data sources

EWN Project Map aka “ProMap”

- Displays project points for EWN and Working with Nature (WwN) projects
- Interactive map to view project details
- Added by EWN staff after completing survey
- Some projects featured in EWN Atlases

EWN Compass

- Displays case study points and resources to implement NNBF on regional-scale
- Interactive maps to discover projects and resources
- Projects are user-added and appear on web map in real time
- Maps display points from ProMap AND user-added points to supplement data

Case Studies – Highlighted ProMap Examples

EWN Compass | Welcome | Introduction | Natural and Nature-Based Features | Considerations | Case Studies | Your Implemented NNBF | Implementation Dashboard | Resources | Help and Information

NNBF Project Category

- Beaches & Dunes
- Environmental Enhancement of Existing Infrastructure
- Estuarine & Marine Wetlands
- Freshwater Wetlands

Print template | Results

Template: A3 Landscape

Title: NNBF Case Study

Advanced

Show print area

Print

Explore the types of projects implemented in your region

Selected features: 0

USACE Project is: - All -

Project Category is: - All -

500 mi | Esri, USGS | Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS | USACE Powered by Esri

NNBF Project Survey

EWN Compass Welcome Introduction Natural and Nature-Based Features Considerations Case Studies **Your Implemented NNBF** Implementation Dashboard Resources Help and Information

See map below for where other users have implemented NNBF

1,000 mi Esri, USGS | Esri, TomTom, FAO, NOAA, USGS Powered by Esri

Implemented NNBFs

Tell us about natural and nature-based features that you have implemented! Please do not upload any information containing proprietary data, CUI, or PII, as survey results are publicly available. If you would like to update survey results at a later date, please complete the form on the "Help and Information" page describing fields to update.

Where did you implement your natural or nature-based feature(s)?*

Please place a point on the below map at your project area. Click and a pin will be dropped on the map, click again to change pin location.

Esri, USGS | Esri, TomTom, FAO, NOAA, USGS Powered by Esri

No geometry captured yet.

Did USACE implement this feature/project?*

Yes

No - other agency/organization

Project Name*

L-536 Large-scale Levee Setback

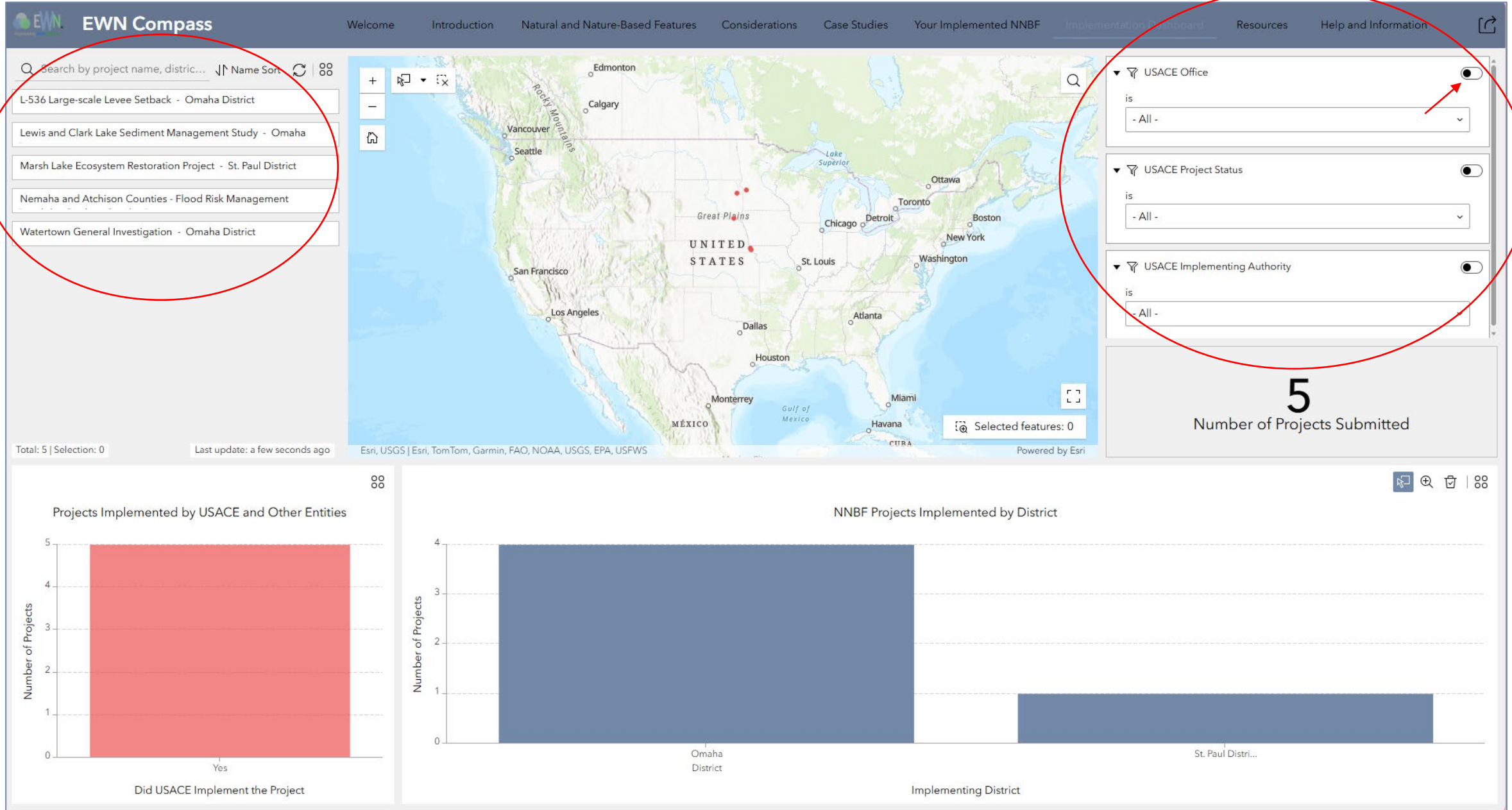
User Implemented NNBFs

Project name: L-536 Large-scale Levee Setback

Type of feature: levee setback, borrow pit wetland establishment


Authority or program feature was implemented under:

NNBF Project Dashboard









Resources

EWN Compass Welcome Introduction Natural and Nature-Based Features Considerations Case Studies Your Implemented NNBF Implementation Dashboard **Resources** Help and Information



Resources

 <p>Nature-Based Solutions Literature</p>	 <p>Nature-Based Solutions Guidance</p>	 <p>Comprehensive Benefits Evaluation For Nature-Based Solutions</p>	 <p>International Guidelines On Natural And Nature-Based Features For Flood Risk Management</p>	 <p>USACE Agency Specific Procedures To Implement The Principles, Requirements And Guidelines For Federal Investments In Water Resources</p>	 <p>WRDA 2022 Implementation Guidance</p>
<p>EWN Cadre Rolodex ← Accessible to USACE only</p>					

Help and Information

[Help](#)[Documentation and Information](#)[Data Sources](#)[Leave a Comment or Report a Technical Issue](#)

Point of Contact: Sarah Copertino (sarah.copertino@usace.army.mil)

Help

How do I see which NNBFs could be considered for implementation?

Click on the interactive map on the Natural and Nature-Based Features page to see a pop-up with a list of features. Some features have hyperlinks to example projects. In these pop-ups you will also find images and diagrams, if applicable. We are constantly adding new resources and examples to these pages and would love to share any that you provide us with from your implemented features!

What are these widgets and how do I use them?

Various "widgets" appear on each page to assist practitioners in using this data to implement NNBFs.

Print - The Print widgets produce PDFs of the map so that you can export it for future reference or to use as an example in a report or presentation. Various settings allow you to customize the size, title, and other features. The Results tab saves a list of PDFs you produce with this widget during your session. See screenshot below for step-by-step guide on how to use.

Layers - The layers widget allows the user to toggle data layers on and off to best suit their needs, allowing the map to be customizable for each person's needs. Using the print widget, various maps can be produced by toggling layers on and off. Some layers are grouped, requiring a user to click the drop-down arrow to see all individual layers in the group. Group and individual layer visibility may need to be changed to meet the user's needs. See screenshot for how-to guide.

Legend - The legend displays symbology for layers that have their visibility toggled on. On some maps, the layers toggle menu may be a small icon within the map.

Chart - The Case Studies pie chart displays the percent of projects with NNBFs by category of the project. When a user zooms in on the map, only projects in the current extent appear in the chart. This is to help the user see the breakdown of projects in their region of interest and provides information on what features one may want to consider for implementation if those types of projects are prevalent in the area.

Bookmarks - The Case Studies bookmark widget is intended to provide users with quick access to an example of a type of project they are interested in. Certain projects are highlighted in the bookmarks, but any point on this map can provide an example.

Why is a layer gray and is not appearing on the map even when check "on"?

Some layer visibility is controlled by the scale of the map. Very detailed layers may only be visible when zoomed in very close, while other very general layers may only be visible when very zoomed out (to the whole United States level, etc.). Try zooming in or out, and you will see the layer name go from gray to black, meaning it will be visible at that scaled once loaded.

Why is a layer not appearing?

This could be for a few reasons! The most likely reason is that it is a large dataset that takes time to load, so please be patient! Another common reason could be that the sub-layer is turned on but the layer above, or "parent layer" is off. The parent layer might also be turned on, but the specific sub-layers are turned off, in which case you will want to open the dropdown menu using the arrow next to the parent layer name and make sure all layers you want are turned on. Make sure all parent layers for the one you want are turned on. (See left picture below for a demo)

If the issue persists and the data does not appear, please fill out the form at the bottom of this page with the exact layer name and which page it is on so that this can be fixed immediately! Thank you!

Why do PDFs created using the print widget have a red "X" next to them on the Results tab?

Occasionally, the print widget will run into errors while creating the map PDF. In this case, a red "X" will appear next to the map name on the Print Results tab. In this case, please refresh the page and run the print widget again. Refreshing the page fixes this issue.

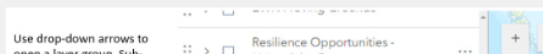
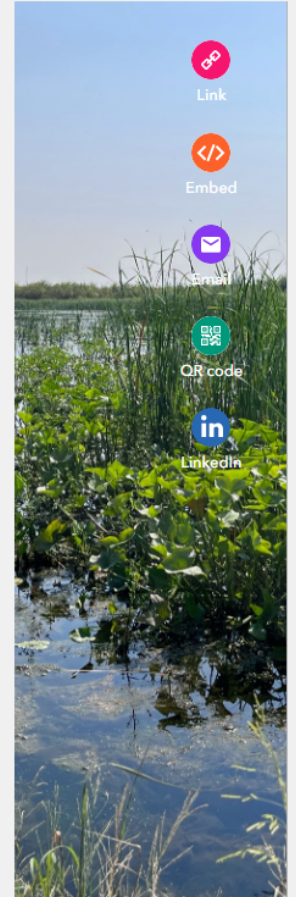
Questions or comments?

Please contact Sarah Copertino at sarah.copertino@usace.army.mil or fill out the form at the bottom of this page.

Toggle and reorder layers

Print widget

Print example



What has changed?

- Features have evolved with new ideas and needs in community of practice
- Simplified survey
 - Reduced from two surveys to one
 - Less required questions – optional questions remain for those who want to provide more data
- Interactive dashboard for quick submittal overviews
- Added definitions
- General cosmetic updates

QA/QC of entries

Receive alerts of new submittals

Entries reviewed for completeness, accuracy

Make sure entries do not contain Controlled Unclassified Information (CUI), Personal Identifiable Information (PII), or proprietary data

Can request update to any past submittals through form on last page (or over email)

Data Reporting Uses

Internal USACE – track projects incorporating NNBF at various enterprise levels

External USACE – support data collection efforts for other agencies on USACE utilization of NNBF



Submit your
projects!

Enter projects to track in a central database for data calls and to support a wide network of practitioners in understanding implementation of NNBF

I can work with groups to support data entry - please reach out if interested!





Future steps

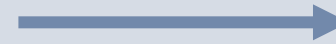
- Continue adding:
 - Resources
 - Implementation guidance on specific NNBF
 - New features to support community as needs arise and field evolves

Are there specific features, datasets, or resources that would help you or your organization?

Send me an email or complete the survey on the “Help” page, I would be happy to discuss!

Access the EWN Compass

<https://arcg.is/1jLOK00>



Desktop use recommended

Are there any questions?

Sarah Copertino

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USACE, Omaha District

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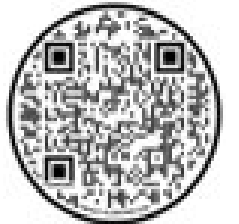
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