



Monitoring Resources

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Document and share your methods and protocols.
Plan your study plans and sample designs.
Track your monitoring locations.

DOCUMENT

Discover other's monitoring locations.
View monitoring metadata and data repository.
Export maps and spreadsheets of metadata.

DISCOVER

BPA Workflow in MonitoringResources.org

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General MonitoringResources.org Tips

Login to Edit!

If you have a question, check the FAQ or glossary found under LEARN.

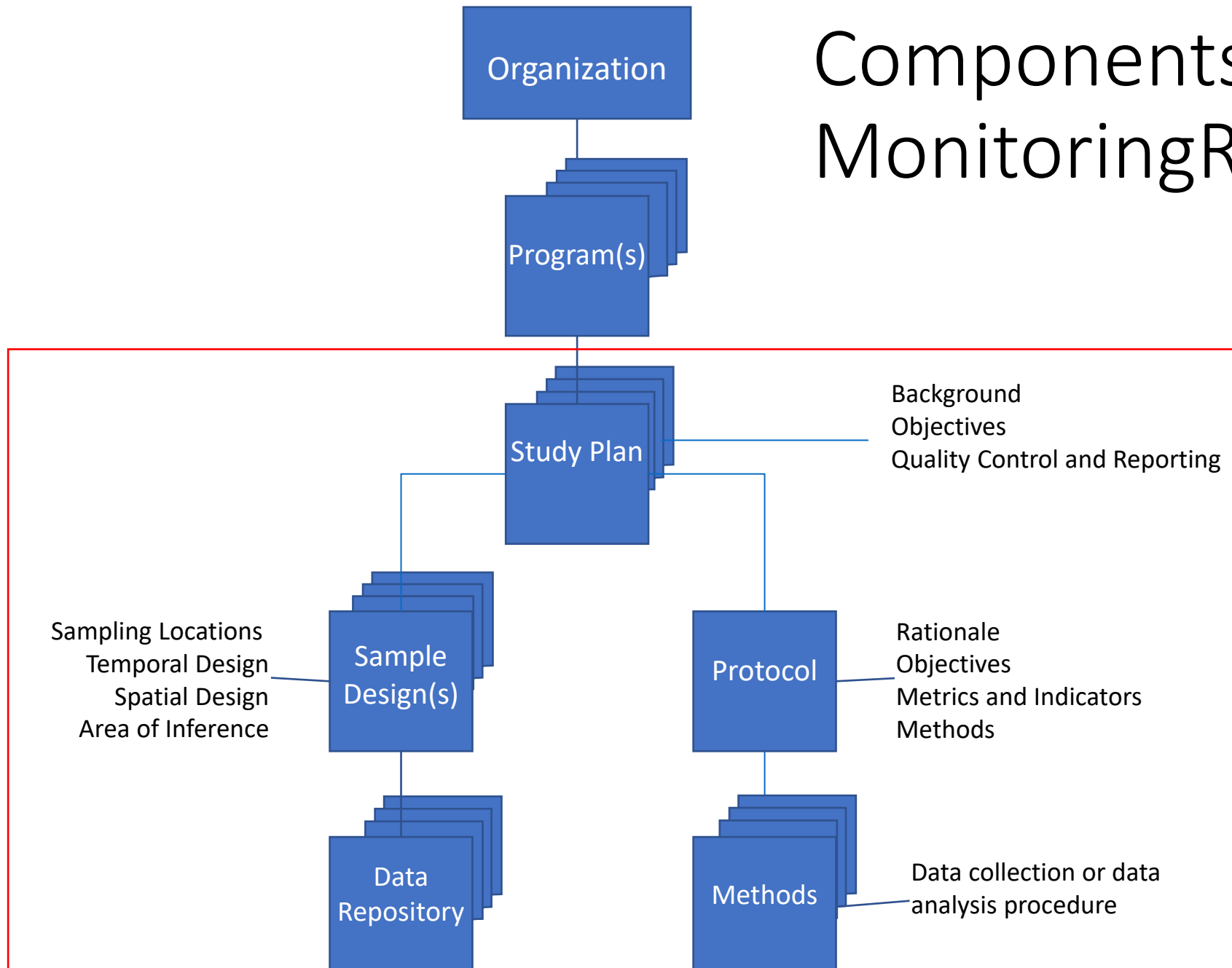
Only owners and colleagues can edit or make new versions.

Components must be Finalized (formerly called “Published”).

You can make new versions or clone Finalized content.

Within components, red asterisk fields * are required.

Components of MonitoringResources.org

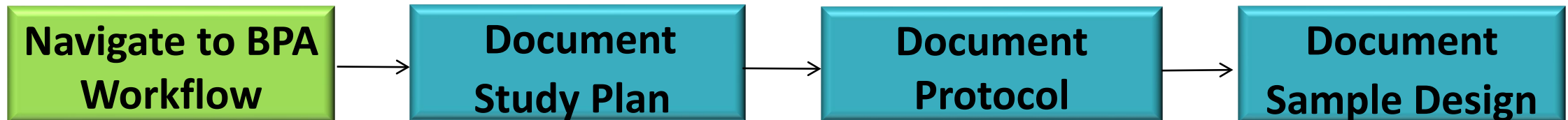


Documentation of metadata using the BPA Workflow will allow you to document all the required fields in a BPA contract (Study Plan, Protocol, Sample Design(s)) in one user friendly workflow.

Documentation Using the BPA Workflow in MonitoringResources.org

If you have a new project to document from a BPA Contract, login into MonitoringResources.org, then follow these four-steps:

1. Navigate to the BPA Workflow Documentation
2. Create a Study Plan and **link** to an existing Protocol
OR...
3. Create a Study Plan and **create** a new Protocol
4. Create One or Multiple Sample Designs

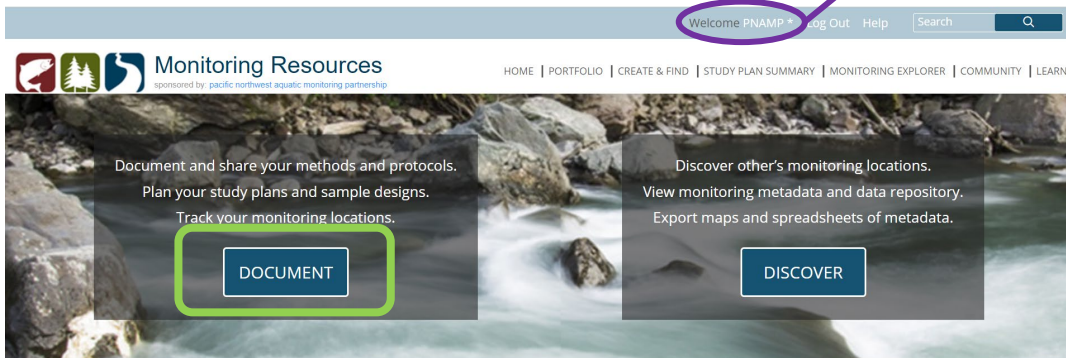


After you complete the documentation, you can perform your field work. Then, after performing field work for the season or the year, you can return to your sample design to revise planned locations to document the actual locations that you sampled, for the dates you sampled, and add post-implementation notes about each site sampled.

Navigate to the BPA Workflow

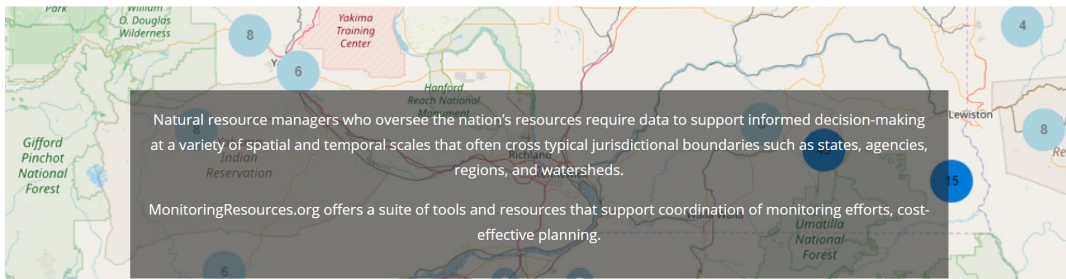
From the MonitoringResources.org homepage, click on Document

Don't forget to log in

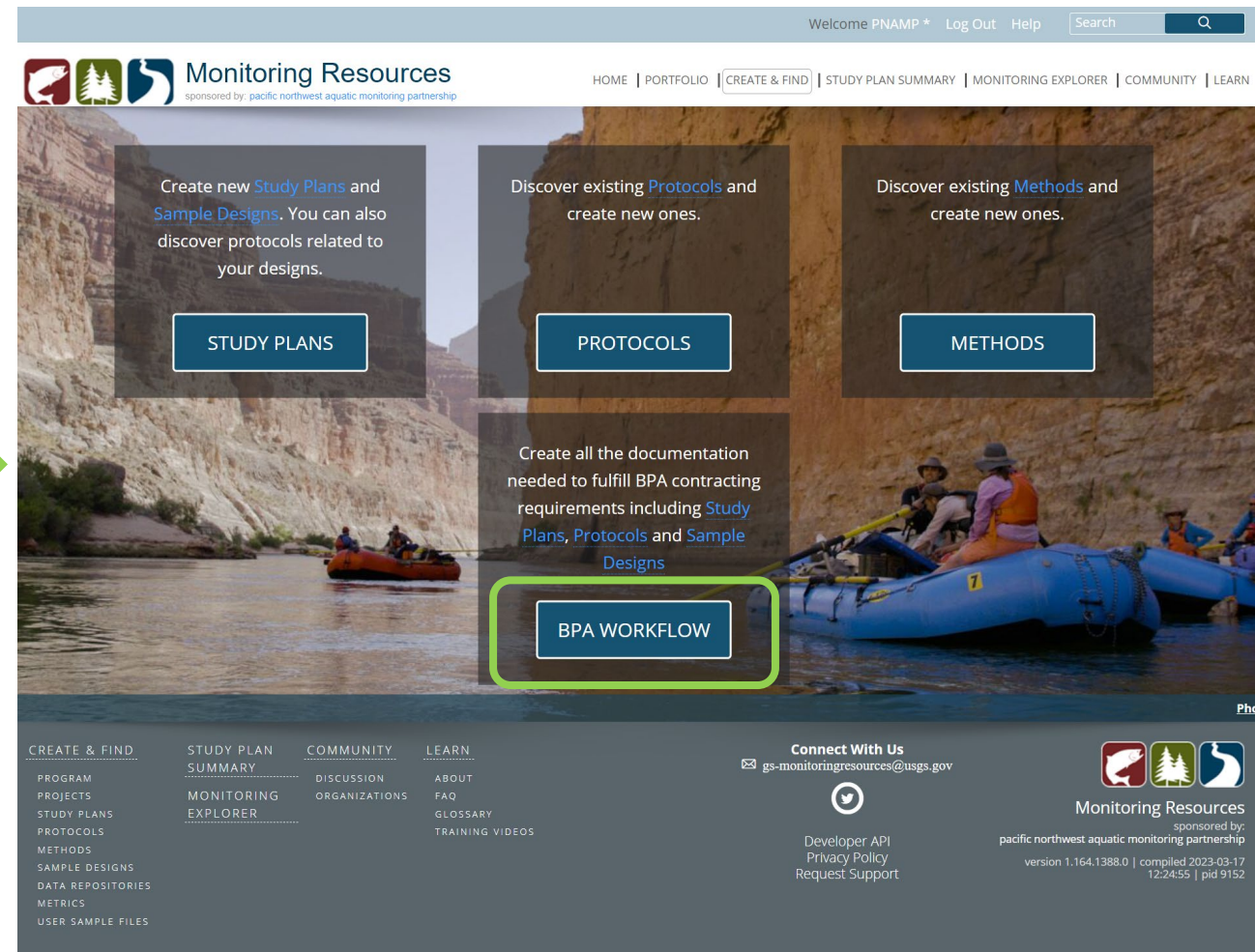


Your Recent Content

- **Sample Design:** 16883 Yearly Water Quality Samples (4/7/2023 9:57:26 PM)
- **Protocol:** 3542 AREMP 2019 Field Manual - Regional Interagency Monitoring For The Northwest Forest Plan V2.0 (3/28/2023 6:15:09 PM)
- **Method:** 7055 Calculating D50 And Percent Fines (<2mm And <6mm) From Stream Pebble Counts V1.0 (3/16/2023 9:03:04 PM)
- **Protocol:** 3339 BLM Assessment, Inventory, And Monitoring (AIM) Of Wadeable Lotic Systems V1.0 (1/31/2023 10:22:36 PM)
- **Method:** 7033 Percent Stream Slope (Or Stream Gradient) Calculation V1.0 (1/31/2023 10:16:35 PM)
- **Protocol:** 3555 EPA National Rivers And Streams Assessment V1.0 (1/26/2023 9:15:52 PM)
- **Protocol:** 3552 PIBO - Sampling Protocol For Stream Channel Attributes V2.0 (1/26/2023 9:13:09 PM)
- **Method:** 7132 Calculating Site-Level Average Bankfull Width To Depth Ratio V1.0 (1/13/2023 4:15:09 PM)




On the Document page, click on the BPA Workflow option to document your project's Study Plan, Protocol, and Sample Design(s)



Start A New Workflow

Welcome PNAMP * Log Out Help Search

 **Monitoring Resources**
sponsored by: pacific northwest aquatic monitoring partnership

HOME | PORTFOLIO | **CREATE & FIND** | STUDY PLAN SUMMARY | MONITORING EXPLORER | COMMUNITY | LEARN

Home » My BPA Workflows » Create Workflow



Create Workflow

Fill out the form below to create a new Workflow.

Basics

*Workflow Name

Save Workflow

CREATE & FIND	STUDY PLAN SUMMARY	COMMUNITY	LEARN	Connect With Us ✉ gs-monitoringresources@usgs.gov 	 Monitoring Resources sponsored by: pacific northwest aquatic monitoring partnership
PROGRAM PROJECTS STUDY PLANS PROTOCOLS METHODS SAMPLE DESIGNS DATA REPOSITORIES METRICS USER SAMPLE FILES	MONITORING EXPLORER	DISCUSSION ORGANIZATIONS	ABOUT FAQ GLOSSARY TRAINING VIDEOS		

Create your workflow by giving your workflow a name. This name is for your records only, but it should be informative so you can easily find this workflow and the contents within this workflow:

- a study plan
- one related protocol
- one or many related sample designs

You'll be able to name each document within your workflow as specifically as you would like.

After naming your workflow, hit "Save Workflow" to begin documenting the content within.

Step 1: Create a Study Plan Within the Workflow

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

▶ Step 1: Study Plan ▾

0%

Required Fields*

- Name
- Monitoring Program
- Background
- Study Plan Objectives
- Protocol

▶ Step 2: Protocol ▲

0%

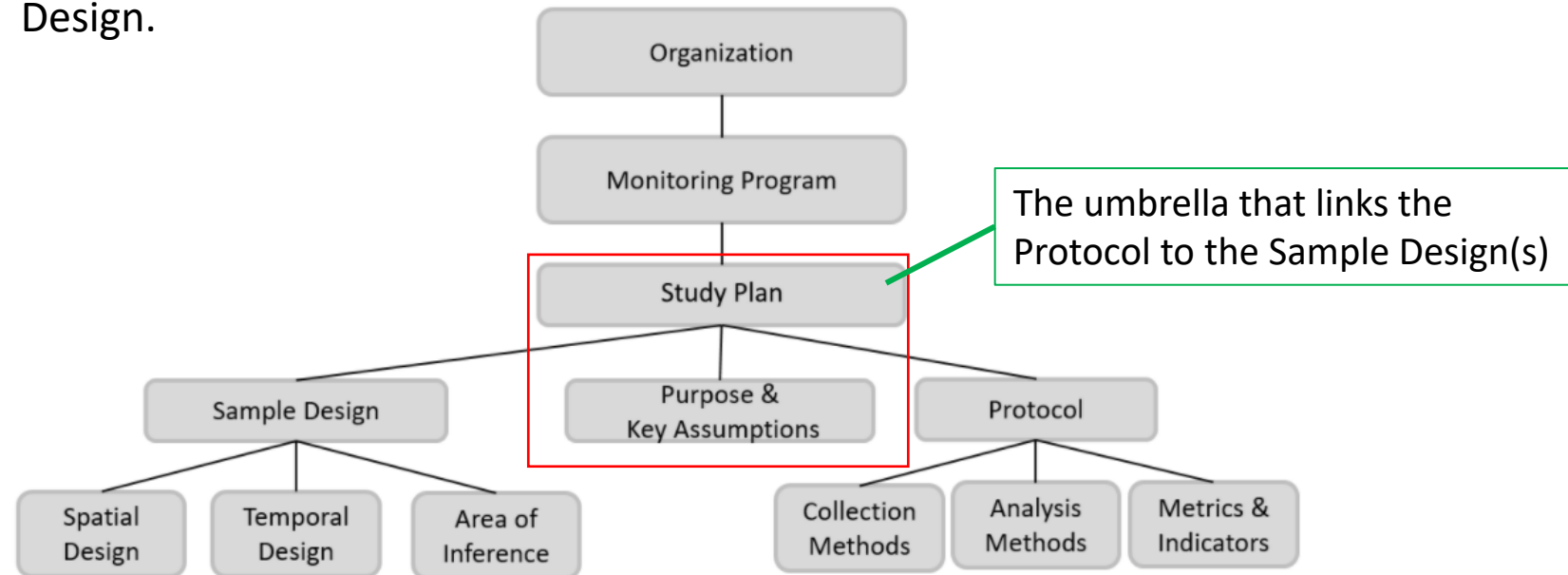
▶ Step 3: Sample Design(s) ▲

0%

But first, what is a Study Plan?

Study Plans describe why you are addressing these management or research questions and contain information specific to your project.

Study Plan objectives provide detail about results you plan to achieve by applying the selected Protocol at the locations documented in the Sample Design.



Tips for Documenting Study Plans in the Workflow

- Study Plan Objectives describe the overarching management or research questions for the work. They may include the agency name, a general location for the work, and focal species unique to your study.
 - Similarly, the Study Plan Background should include your project name, spatial and temporal details, and specific focal species or species assemblage information.
- Protocol is a required field in a Study Plan. The protocol describes how you address the study plan's questions. This is a ***one-to-one*** or ***one-to-many relationship***: one Protocol to one or many Study Plans.
 - If you're starting from scratch, you will not have a Protocol yet, that's okay! You can create a Protocol within the workflow in Step 2 "Protocol".
 - A Study Plan cannot reference multiple Protocols. However, multiple Study Plans can be linked to the same Protocol because Protocols can be general and shareable across studies.
 - Therefore, you **can add an existing finalized Protocol** to your Study Plan.
- You **cannot** add existing Sample Designs to your Study Plan because Sample Designs should be unique to your Study Plan.
 - You can create Sample Designs within the workflow in Step 3 "Sample Designs".

Step 1: Create a Study Plan Within the Workflow

BPA WORKFLOW
Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- Step 1: Study Plan 80%
 - Required Fields*
 - ✓ Name
 - ✓ Monitoring Program
 - ✓ Background
 - ✓ Study Plan Objectives
 - Protocol
- Step 2: Protocol 0%
- Step 3: Sample Design(s) 0%

Editing Study Plan

Study Plan Basics

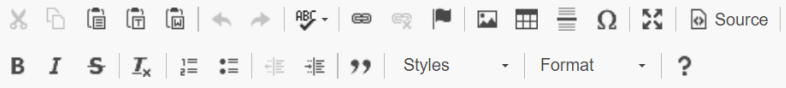
*** Study Plan Title** BLM's Assessment, Inventory, and Monitoring (AIM) of Wadeable Lotic Systems
Include specific focal species or project focus, location, organization. Example: "Oregon Department of Fish and Wildlife Steelhead Spawning Surveys in the Deschutes, Bakeoven, and Buck Hollow".

State Draft

*** Monitoring Program** Not Listed? BLM AIM

Owner PNAMP Support (pnamp.mm@gmail.com)
If this is not the appropriate Owner, [contact support](#) and they can update it for you.

*** Background**



The Bureau of Land Management (BLM) developed the National Aquatic Monitoring Framework (NAMF) (Miller et al. 2015) to monitor the condition and trend of aquatic systems as part of the Assessment, Inventory, and Monitoring (AIM) Strategy (Toevs et al. 2011). Following the AIM principles, the NAMF standardized aquatic core indicators, field sampling methodologies, electronic data capture, and the use of statistically valid sample designs for wadeable streams and rivers (i.e., lotic systems). This protocol outlines the field methodologies for the collection of the core and contingent indicators for lotic systems, as well as suggested covariates.

The BLM AIM Aquatic Core Indicator Work Group (ACIWG), with guidance from an external science

What management or research questions and hypotheses do you intend to address? Include your project name, spatial, temporal species or species assemblage information. Please refer to supplemental information such as documents, diagrams, statistical models or tables here, then upload them using Documents, Figures and Forms.

*** Study Plan Objectives**

Determine the attainment of BLM land health standards for perennial wadeable streams and rivers using a quantitative approach of eleven core indicators. Characters Remaining: 48

Determine the potential of a stream reach to assist in interpreting monitoring data. Characters Remaining: 116

Maximize compatibility with existing monitoring programs, accurately and precisely estimating condition and trend, and meeting BLM lotic data needs and state and federal regulations. Characters Remaining: 18

Identify the Monitoring Program

Background should include your project name, spatial and temporal details, and specific focal species or species assemblage information

Objectives describe the overarching management or research questions for the work. They may include the agency name, a general location for the work, and focal species unique to your study

Study Plan Summary

Throughout the workflow documentation process, you can jump over to the Study Plan Summary to see the progress on your entire workflow

Quality Control & Reporting

Personnel & Training

Schedule & Budget

Step 1: Create a Study Plan Within the Workflow

Optional fields, but can be really valuable additions to a Study Plan

Data Handling Considerations

The field data forms compatible with an optical scanner system to allow rapid entry, review, and conversion of the information recorded on a printed form into one or more electronic files and reduce the need for manual data entry. While these forms facilitate data recording by the field crew, field and sample information must be recorded accurately, consistently, and legibly. Measurement data that cannot be accurately interpreted by others besides the field teams, and/or samples with incorrect or illegible information associated with them, are lost to the program. The cost of a sampling visit, coupled with the short index period, effectively prohibits resampling a stream when the initial information recorded was inaccurate or illegible.

body p

Describe guidelines relevant to transfer, storage, quality control, or exchange of data collected or analyzed. If you have diagrams or tables, please refer to them in the text above, then [upload](#) them.

Quality Control Considerations

Quality control activities serve to ensure data will meet the performance objectives established for each method or technique used for a project. Quality control activities associated with field operations are integrated into the field procedures. Important QA activities associated with field operations include a comprehensive training program that includes practice sampling visits, and the use of a qualified museum facility or laboratory to confirm any field identifications of biological specimens. The overall sampling design includes a subset of sites (at least 1 per state per year) that are revisited twice per year for two years to obtain estimates of important components of variance for estimating status and trend (e.g., Larsen 1997, Urquhart et al., 1998) for the various ecological indicators.

body p

Describe how you verify and control the level of quality in the information you collect. For example, you may have different teams collect the same data to verify the result, or use blanks or other controls. If you have diagrams or tables, please refer to them in the text above, then [upload](#) them.

Step 1: Create a Study Plan Within the Workflow

Adding Documents, Figures, and Forms can be helpful additions to your Study Plan

Documents, Figures & Forms

Please upload documents, data collection forms, figures, maps, diagrams, essential models and equations or any supplemental materials describing your work.

+ Add A File

If you've already created and finalized a protocol, you can add it to your Study Plan!

Protocol

Add an Existing Protocol*

[Choose one]

If you can't find the Protocol

Advanced Search

Filter: BLM

BLM Assessment, Inventory, and Monitoring (AIM) of Wadeable Lotic Systems v1.0

If you haven't yet, no big deal, you can create a protocol in the workflow in Step 2.

Sample Designs

Currently there are no [Sample Designs](#) associated with this [Study Plan](#)

You cannot add an existing Sample Design to your Study Plan, Sample Designs must be unique. You can create a Sample Design and add it to your workflow in Step 3.

Save Study Plan

Request Finalizing

Hovering over the greyed-out Request Finalizing button will provide a pop-up explaining why your Study Plan cannot yet be finalized

Remember to Save your Study Plan

Step 2: Create a Protocol Within the Workflow

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- ▶ Step 1: Study Plan
 100%
- ▶ Step 2: Protocol
 50%
- ▶ Step 3: Sample Design(s)
 0%

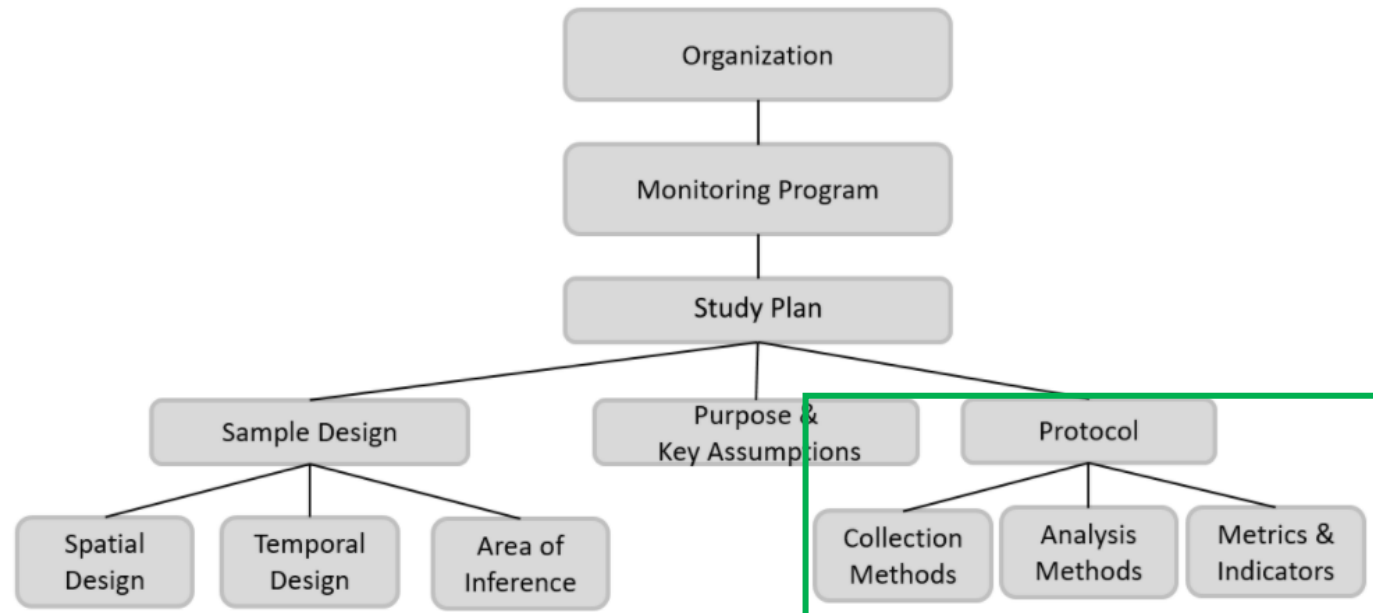
Required Fields*

- Title
- Rationale
- Objectives
- Metrics & Indicators
- Methods
- Metric Method Mapping

But first, what is a Protocol?

“A detailed plan that explains how data are to be collected, managed, analyzed, and reported, and is a key component of quality assurance for natural resource monitoring programs” (Oakley et al. 2003). Protocols are necessary to ensure that changes detected by monitoring actually are occurring in nature and not simply a result of measurements taken by different people or in slightly different ways.

You can also think of Protocols as a collection of Methods (step-by-step procedures) that aim to address the same objective(s).



Tips for Protocols in MonitoringResources.org

- A Protocol describes a planned or proposed approach for conducting work.
- A Protocol contains stepwise procedural methods used to identify/measure variables or parameters. A Protocol can document both data collection and analysis methods.
- A Protocol documents metrics and indicators (the variables and parameters determined from methods) and maps those metrics and indicators to their associated method(s).
- Implementation of your finalized Protocol may vary during the year due to unforeseen circumstances; the protocol does not need to be updated for minor inter-annual variations. Those variations can be documented in annual "Post-implementation Notes".
 - Post-implementation notes should be attached to a finalized Protocol as a **comment** and documented in a finalized annual report. See the [Monitoring Resources](#) glossary for full definitions of terms.
- **Version** your Protocol when you modify methods, add or delete methods, or remove a study element (Metric or Indicator).
 - If elements and methodology remain consistent from year to year, Protocols don't need to be updated "versioned".
 - Only owners of a Protocol can version the protocol.

Step 2: Create a Protocol Within the Workflow

If you already added a protocol in Step 1, it will automatically populate Step 2. If the protocol you added is finalized or owned by someone else, you won't be able to edit it.

You can also create a new protocol from scratch here!

Protocol title should be concise but informative

Supplemental Information is not a required field but can be a helpful addition to the Protocol

Your rationale should explain why you use this particular collection of methods to help answer your management or research questions

Achieve the protocol Objectives by executing the methods in this protocol. Good objectives meet S.M.A.R.T. criteria: specific, measurable, achievable/feasible, results-oriented, and time-limited

Protocol objectives do not need to be location specific like a Study Plan's objective

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- Step 1: Study Plan ▲
 - 100%
- Step 2: Protocol ▼
 - 50%
 - Required Fields***
 - ✓ Title
 - ✓ Rationale
 - ✓ Objectives
 - Metrics & Indicators
 - Methods
 - Metric Method Mapping
- Step 3: Sample Design(s) ▲
 - 0%

If you have already started a protocol or want to add a finalized protocol to this workflow, please go back to Step 1: Study Plan and select the existing protocol.

Basics & Objectives

State Draft ▼

Visibility Owner and colleagues ▼

*** Protocol Title** Assessment, Inventory, and Monitoring of Wadeable Lotic Systems
Protocol Title should be concise, but informative, like the title of a paper. This describes how you conduct your work. Leave out location and program details; document those in the [Study Plan](#)

Supplemental Information Upload File Use URL
Web address of an annual report, peer reviewed article, etc., that provides more detail about how you conduct your protocol.

Owner PNAMP Support (pnamp.mm@gmail.com) ▼

*** Rationale**

The Bureau of Land Management (BLM) developed the National Aquatic Monitoring Framework (NAMF) (Miller et al. 2015) to monitor the condition and trend of aquatic systems as part of the Assessment, Inventory, and Monitoring (AIM) Strategy (Toevs et al. 2011). Following the AIM principles, the NAMF standardized aquatic core indicators, field sampling methodologies, electronic data capture, and the use of statistically valid sample designs for wadeable streams and rivers (i.e., lotic systems). This protocol outlines the field methodologies for the collection of the core and contingent indicators for lotic systems, as well as suggested covariates.

Explain why you would use this particular collection of [methods](#) to help answer your management or research questions. Please refer to supplemental information such as documents, diagrams, statistical models, or tables here, then upload them using Documents, Figures and Forms. To enable screen reader support, press Ctrl+Alt+Z To learn about keyboard shortcuts, press Ctrl+slash

*** Objectives**

Determine the potential of a stream reach to assist in interpreting monitoring data. 🗑️
Characters Remaining: 116

Determine the attainment of BLM land health standards for perennial wadeable streams and rivers using a quantitative approach of eleven core indicators. 🗑️
Characters Remaining: 48

Add Objective

Achieve the [Protocol Objectives](#) by executing the methods in this protocol. Good objectives meet S.M.A.R.T. criteria: specific, measurable, achievable/feasible, results-oriented, and time-limited. Examples: "Estimate spawner abundance and escapement of wild and hatchery steelhead." and "Estimate adults per redd." Example to NOT USE - too location specific: "Estimate adults per redd in the Asotin Creek mainstem." Specify Temporal and Spatial details in your [Study Plan](#).

Step 2: Create a Protocol Within the Workflow – Metrics & Indicators







Metrics & Indicators are the variables, covariates, or parameters that you produce/measure with the methods you'll also add to your protocol

Add Metrics and/or Indicators to your Protocol

Adding Metrics & Indicators to your Protocol first, will help you add Methods to your Protocol in the next sub-step

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- Step 1: Study Plan   100%
- Step 2: Protocol   66%
- Required Fields***
 - Title
 - Rationale
 - Objectives
 - Metrics & Indicators
 - Methods
 - Metric Method Mapping
- Step 3: Sample Design(s)   0%

Add Metric / Indicator

Metrics & Indicators

Add Your Protocol's Metrics And Indicators









*To finalize your protocol you must define at least one [Metric](#) or [Indicator](#).

Please provide titles for each of your [Metrics](#) and [Indicators](#) that the [methods](#) in your Protocol will measure or estimate. They are variables, co-variates, or parameters that you produce with your methods.

A [metric](#) is a value resulting from the reduction or processing of measurements taken at a site and temporal unit at one or more times during the study period.

An [indicator](#) is a value resulting from the data reduction of [metrics](#) across sites and temporal periods, used to indicate the status, condition, or trend of a resource or ecological process. It is intended to answer questions posed by the [Objectives](#) of the Protocol.

Metrics And Indicators

	Metric/Indicator Title	Type	# of ...	Cate...	Subcategory	Subcat. Focus 1	Subcat. Fo
	Q	Q	Q	Q	Q	Q	Q
 	Sinuosity	Metric	0	Landscape	Edge/Density/Sinuosity	Habitat Type: Rivers & :	:
 	Pool Depth	Metric	0	Landscape	Depth: Pool (ID: 37)	NA	NA
 	Wetted Width	Metric	0	Landscape	Width: Wetted (ID: 45)	NA	NA
 	Bank Stability	Metric	0	Sediment/S	Bank Stability (ID: 130)	NA	NA

Step 2: Create a Protocol Within the Workflow - Methods

Methods are systematic, standard operating procedures for collecting data (Measurements) or analyzing data. Each method must be:

1. documented as one procedure in a step-wise manner
2. repeatable by others

By adding Metrics & Indicators prior to adding Methods (see pg. 16), Monitoring Resources will suggest finalized methods for your Protocol

If you can't find a finalized Method, you can create a new Method for this Protocol

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- Step 1: Study Plan (▲) 100%
- Step 2: Protocol (▼) 83%
- Step 3: Sample Design(s) (▲) 0%

Required Fields*

- ✓ Title
- ✓ Rationale
- ✓ Objectives
- ✓ Metrics & Indicators
- ✓ Methods
- Metric Method Mapping

Metrics & Indicators

Add Finalized Method methods with finalized

NOTE that every met indicator will need or indicator.

MonitoringResources your procedure that also create a new Me

[+ Add Methods](#)

Data Collecti

Habitat the Main Wadeab Finalized

Add Methods (Collection and Analysis)

Identify the Methods used to produce this metric/indicator. Show All Versions

Select from:

Suggested Methods Entire Method Library

Based on the Metrics & Indicators you added to your Protocol in the previous step, we found the following Methods that others have used to generate similar Metrics & Indicators (those in the same Metric Subcategory).

Given your Metrics / Indicators...	Check all methods that apply to each metric and indicator, then click Save.
"Pool Depth" (Metric) Landscape Form & Geomorphology • Depth: Pool (ID: 37)	<input type="checkbox"/> Basic Snorkel Survey Procedures v1.0 (ID: 136) Finalized (more...) <input type="checkbox"/> Channel Morphology: Pools v2.0 (ID: 6844) Finalized (more...) <input checked="" type="checkbox"/> Habitat Unit Descriptions Along the Main Channel Thalweg - For Wadeable Streams v1.0 (ID: 3846) Finalized (more...) <input type="checkbox"/> Physical Habitat: Substrate Size and Channel Dimensions v1.0 (ID: 77) Finalized (more...) <input type="checkbox"/> Physical Habitat: Substrate Size and Channel Dimensions v2.0 (ID: 6802) Revising (more...) <input type="checkbox"/> Topographic Point Collection v3.0 (ID: 5328) Finalized (more...)
"Sinuosity" (Metric) Landscape Form & Geomorphology • Edge/Density/Sinuosity (ID: 29) Habitat Type: Rivers & Streams	<input type="checkbox"/> Bankfull Width Calculation v1.0 (ID: 856) Finalized (more...) <input checked="" type="checkbox"/> Topographic Point Collection v3.0 (ID: 5328) Finalized (more...)
"Wetted Width" (Metric) Landscape Form & Geomorphology • Width: Wetted (ID: 45)	<input type="checkbox"/> Bankfull Width Calculation v1.0 (ID: 856) Finalized (more...) <input type="checkbox"/> Characterizing Stream Morphology, Thalweg Profile v1.0 (ID: 157) Finalized (more...) <input type="checkbox"/> Measuring Wetted Width (Abridged Version From Characterizing Stream Morphology For Determining Area) v1.0 (ID: 243) Finalized (more...) <input type="checkbox"/> Physical Habitat: Substrate Size and Channel Dimensions v1.0 (ID: 77) Finalized (more...)

Create Method

Save **Cancel**

Step 2: Create a Protocol Within the Workflow - Methods

If you can't find a suitable suggested Method based on the Metrics & Indicators you've created, you can search the Entire Method Library for finalized methods to add to your Protocol

Use keywords to narrow your search and if you know a particular Program (BLM AIM) that created the method you are looking for, you can narrow your search further.

Before adding a finalized Method to your Protocol, you can review its details to make sure it fits with your research procedure

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- Step 1: Study Plan (▲) 100%
- Step 2: Protocol (▼) 83%
- Step 3: Sample Design(s) (▲) 0%

Required Fields*

- ✓ Title
- ✓ Rationale
- ✓ Objectives

Metrics & Indicators

- ✓ Methods
- Metric Method Mapping

Add Metrics & Indicators

NOTE that every metric indicator will need one indicator.

Monitoring Resources of your procedure that you also create a new Method

⊕ Add Methods

Add Methods (Collection and Analysis)

Identify the Methods used to produce this metric/indicator. Show All Versions

Select from:

Suggested Methods Entire Method Library

Searching this the following fields: ID, Purpose, Stepwise Numbered Procedure, Literature Cited, Title, Author, Equipment and/or Analysis Software, packages. Don't see your method? Make sure it is finalized.

Pool Tail Fines

In: BLM AIM or

e.g. "genetic" or "pool" or "Peck". Available Methods: (14 matches)

Selected Methods:

- Calculate Percent of Station (... (Ebberts M. 2007)
- Calculating Percent Pool and P... (Bureau of Land Manag
- Habitat Unit Descriptions Alon... (Merritt 2009)
- Pool Qualifications and Measur... (Bureau of Land Manag
- Pool Tail Fines v3.0 (Saunders 2019)**
- Pool Tail Fines: Particles <2m... (Steve Rentmeester 2015
- Residual pool depth v1.0 (Justice 2021)
- Sampling Reaches with Beaver A... (Bureau of Land Manag

Habitat Unit Descriptions Alon... (Merritt 2009)

Topographic Point Collection v... (CHAMP (Columbia Hab

Details of highlighted Method:

Title: Pool Tail Fines v3.0

Type: Data Collection

Citation: Saunders, W.C.; Ojala, J.V.; Van Wageningen, A.; Haynes, D.; Arc Tail Fines. PIBO Forest Service - Fish and Aquatic Ecology Un

State: Finalized

Programs: BLM AIM , PIBO (USFS Pacfish/Infish Biological Opinion)

Stepwise Numbered Procedure
SAMPLING METHOD

Measure fine sediments in the first ten scour and plunge pools, workingupstream from BR. Do not measure fine sediments in dam or beaver pools. Use a 14 x 14 inch grid with 49 evenly distributed intersections. Include the top right corner of the grid for a total of 50 intersections. Take 3 grid measurements per pool (see below for placement). Visually estimate grid placement within the wetted channel. Place bottom edge of grid upstream from the pool tail crest a distance equal to 10% of the pool length or one meter, whichever is less (Figure 21). Place center of grid at 25, 50, and 75% of the distance across the wetted channel. Make sure grid is parallel to, and following, the shape of the pool tail crest. Grid placements may overlap. This is common in narrow streams.

Use the arrows to add the method to your protocol
Once method is added, click Save

Step 2: Create a Protocol Within the Workflow – Metric Method Mapping

Methods that were added to your Protocol via “Suggested Methods” based on your Metrics/Indicators will automatically be mapped

You can map a Metric or Indicator to **more than one** method. In fact, an Indicator should be mapped to both a data collection method AND a data analysis method

Add Methods to your Metrics & Indicators that don't have any associated Methods

BPA WORKFLOW
Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

Step 1: Study Plan (A) 100%

Step 2: Protocol (V) 83%

Required Fields*

- Title
- Rationale
- Objectives

Metrics & Indicators

Methods

Metric Method Mapping

Step 3: Sample Design(s) (A) 0%

Metrics & Indicators

Link Metrics and Indicators to Methods

*To finalize your protocol each metric must be mapped to at least one method, and each indicator must be mapped to at least one data collection and one data analysis method.

*To finalize your protocol there must be no unmapped methods. Remove unneeded methods in the Methods

UNMAPPED METHODS

- Pool Tail Fines v3.0

Metrics and Indicators Linked Methods

To map a metric/indicator click on the “Add Method” button and select the methods that are used to produce the method/indicator.

Metric/Indicator Title	Type	Category	Subcategory
Sinuosity	Metric	Landscape Form & Geomol	Edge/Density/Sinuosity (ID: 29)
Pool Depth	Metric	Landscape Form & Geomol	Depth: Pool (ID: 37)
Bank Stability	Metric	Sediment/Substrate/Soils	Bank Stability (ID: 130)
Pool Tail Fines < 2mm			

Data Collection Methods (1 of 1)
5328 - Topographic Point Collection v3.0

Data Analysis Methods (0 of 0)
None

Data Collection Methods (1 of 1)
3846 - Habitat Unit Descriptions Along the Main Channel Thalweg - For Wadeable Streams v1.0

Data Collection Methods (0 of 0)
None

Data Collection Methods (0 of 0)
None

Add Methods (Collection and Analysis)

Identify the Methods used to produce this metric/indicator.

Select from:

Methods Existing On Protocol Suggested Methods Entire Method Library

These are the Methods that currently exist on the Protocol

Check all methods that apply to this metric/indicator, then click Save.

- Habitat Unit Descriptions Along the Main Channel Thalweg - For Wadeable Streams v1.0 (ID: 3846) Finalized (more...)
- (unmapped) Pool Tail Fines v3.0 (ID: 6862) Finalized (more...)
- Topographic Point Collection v3.0 (ID: 5328) Finalized (more...)

Save Cancel

Step 2: Create a Protocol Within the Workflow

Citation

Has this Protocol been published (made publicly available) elsewhere, or should MonitoringResources.org serve as its publisher?

- Already published elsewhere
 First published here in MonitoringResources.org

Citation Author

PNAMP Support

Most often, this is YOU or someone you work with. Enter last name and initials for all authors. For example: Smith, J. D., & Jones, M.

Citation Publication Year

TBD

Citation Title

Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

Enter the name or title given to the Protocol in the publication. Often this is the same as the Protocol Name.

Citation Publisher

MonitoringResources.org

Citation Url

<http://www.monitoringresources.org/Document/Protocol/Details/3727>

Create a citation for your Protocol. If the Protocol has been published elsewhere, you can cite that publication.

If it is first being published in Monitoring Resources, you can select that option and the citation will be created for you.

Don't forget to Save your Protocol and Request Finalization.

If "Request Finalization" is greyed-out, you can hover over the greyed button to help determine what information is missing from your Protocol preventing it from being Finalized.

Save Protocol

Request Finalizing

Step 3: Create a Sample Design Within the Workflow

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

▶ Step 1: Study Plan 100%

▶ Step 2: Protocol 83%

▶ Step 3: Sample Design(s) 28%

Required Fields*

Wadeable Lotic Sampling

Title

Data Repositories

▶ Select Sites

▶ Area Of Inference

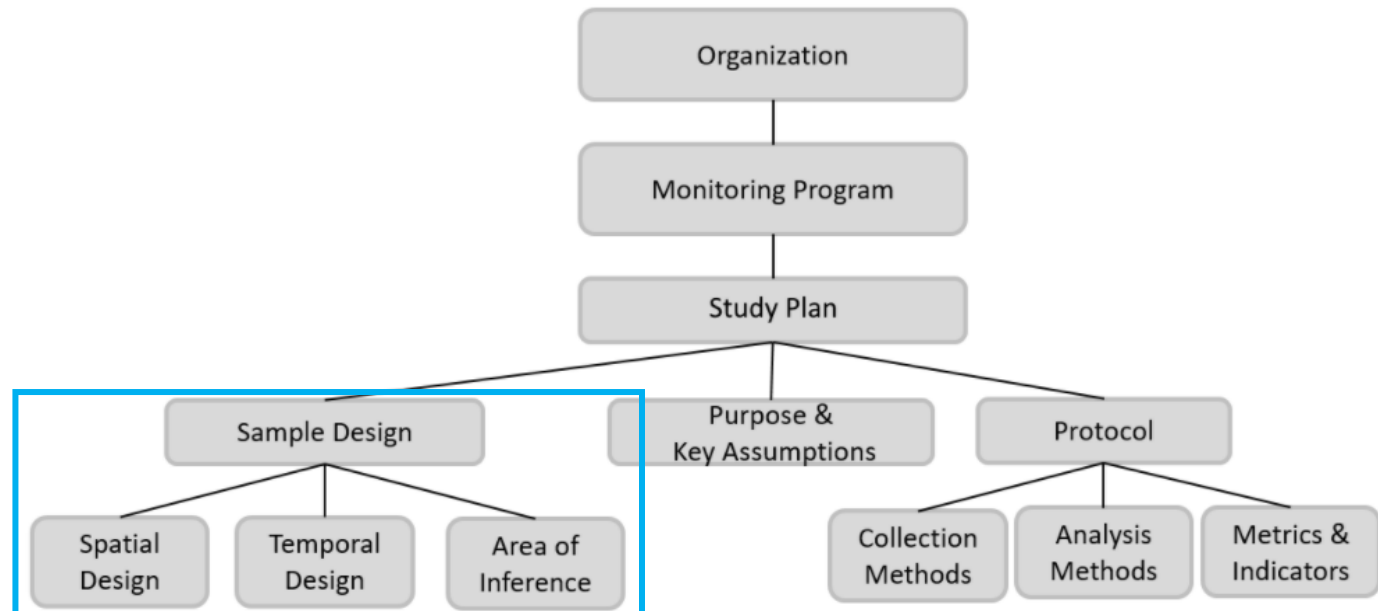
▶ Plan Schedule

▶ Finalize

But first, what is a Sample Design?

Documentation of the spatial and temporal designs applied to data collection and analysis

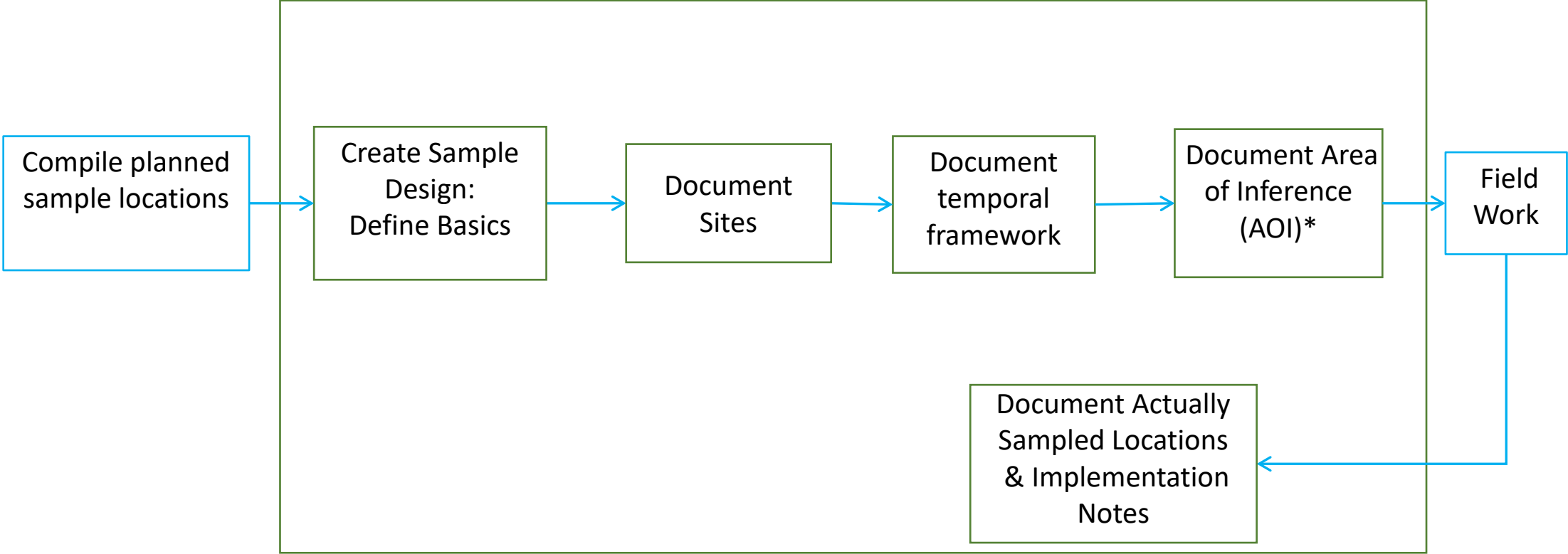
- **Spatial Design:** where metrics will be determined And how and why locations were chosen
- **Temporal Design:** the total duration (# years) and the frequency sites will be sampled



Tips for Sample Designs in MonitoringResources.org


- Document all the *planned* sampling locations for the total duration of your study. For example, if you plan to conduct your study from 2024-2029, include all planned locations across all years.
- After each field season, **return to your Sample Design** to document *actual* locations sampled, add new sites you sampled, and write any necessary post-implementation notes about each site.
 - you may have Work Elements 157 **and** 162. When a project includes both of these WEs, document both planned data collection locations and the **area of inference** in one Sample Design.
 - If you have a WE 162 with no associated WE 157 in your contract, only document area of inference in your Sample Design, and select design type Analysis: Inference.

Sample Design Workflow



*AOI is only documented for WE 162

Step 3: Create a Sample Design Within the Workflow

Study Plan Summary 






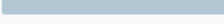
The first thing you'll do when creating a Sample Design for your workflow is to choose the Sample Design type.
(Note: You can change the Design type later if needed)

You can get more information about each Sample Design type by clicking on the hyperlinks

Once you select the type of Sample Design, you can start documenting your spatial and temporal collection procedure

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- ▶ Step 1: Study Plan   100%
- ▶ Step 2: Protocol   83%
- ▶ Step 3: Sample Design(s)   0%

Required Fields*

- [New Sample Design]

Create a new Sample Design

Select the type of Sample Design you're creating.

- [Census](#): I want to document the full set of observations belonging to my population.
- [Inference Design](#): I want to document an [area of inference](#), but no data collection locations. If you select this [spatial design](#) category, you will not be able to change to a different one later. If you selected the wrong [spatial design](#) category, you will need to return to this page and re-create your Sample Design.
- [Model Based Design](#): I want to document a [model based design](#) that relies on on selection of sites based on the need to estimate parameters or coefficients of a model that will be used to make the population estimates.
- [Opportunistic Design](#): I want to document non-random sampling locations.
- [Probabilistic Design](#): I want to document sampling locations using a probabilistic method. Examples: Simple Random Sampling or any Generalized Random Tessellation Stratified (GRTS) samples created outside of MonitoringResources.org.

Next

Step 3: Create a Sample Design Within the Workflow

After starting your Sample Design, you can still change the design title and design category before finalizing

The Data Repository (where the data is housed) is a required field. You can select as many Data Repositories as you need, but you must list at least one

Adding a Sample Design description and supplemental information are helpful but not required fields

Remember to Save your Sample Design periodically

BPA WORKFLOW
Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- Step 1: Study Plan (100%)
- Step 2: Protocol (83%)
- Step 3: Sample Design(s) (28%)

Required Fields*

- Wadeable Lotic Sampling
- Title
- Data Repositories
- Select Sites
- Area Of Inference
- Plan Schedule
- Finalize

Describe Sample

On this page, you can provide introductory information about your sample design including which [Study Plan](#) and [Data Repository](#) it supports.

*** Sample Design Title:** Wadeable Lotic Sampling
Sample design title should be concise, but informative. Describes where and when you conduct your work. Example: "Desolation Creek Stream Habitat Restoration Effectiveness Monitoring (Site Level Survey)"

Spatial Design Category: Ease of Access
If your Spatial Design Category is not listed select Other and describe your Spatial Design in the Design Type.

Study Plan: BLM's Assessment, Inventory, and Monitoring (AIM) of Wadeable Lotic Systems

*** Data Repositories:** BLM's Assessment, Inventory, and Monitoring (AIM)
Not Listed?

Owner: PNAMP Support

State: Draft

Description:

Example:
The Bureau of Land Management (BLM) developed the National Aquatic Monitoring Framework (NAMF) (Miller et al. 2015) to monitor the condition and trend of aquatic systems as part of the Assessment, Inventory, and Monitoring (AIM) Strategy (Toevs et al. 2011).
Data collection events in wadeable lotic systems conducted by BLM AIM

Documents, Figures & Forms

Please upload documents, data collection forms, figures, maps, diagrams, essential models and equations or any supplemental materials describing your work.

Step 3: Create a Sample Design Within the Workflow – Select Sites

There are multiple ways to Select Sites for your Sample Design

If you already have a list of sites, you can import those sites as a CSV file

To successfully import your sites as a CSV, there are a few guidelines you must adhere to.

- The file must contain at least 3 columns (and they must be the first 3 columns) with the following column heading names and characteristics:
 1. NAME
 - Each site name value must be unique
 2. LATITUDE
 3. LONGITUDE
 - Column values for LAT and LONG must be Double precision, present, and populated in decimal degrees for each site
 - CSV files must use projection WGS 84

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- ▶ Step 1: Study Plan (▲) 100%
- ▶ Step 2: Protocol (▲) 83%
- ▶ Step 3: Sample Design(s) (▼) 28%

Required Fields*

- ◻ Wadeable Lotic Sampling
- ✓ Title
- ✓ Data Repositories
- ▶ ◻ Select Sites
- ▶ ◻ Area Of Inference
- ▶ ◻ Plan Schedule
- ▶ ◻ Finalize

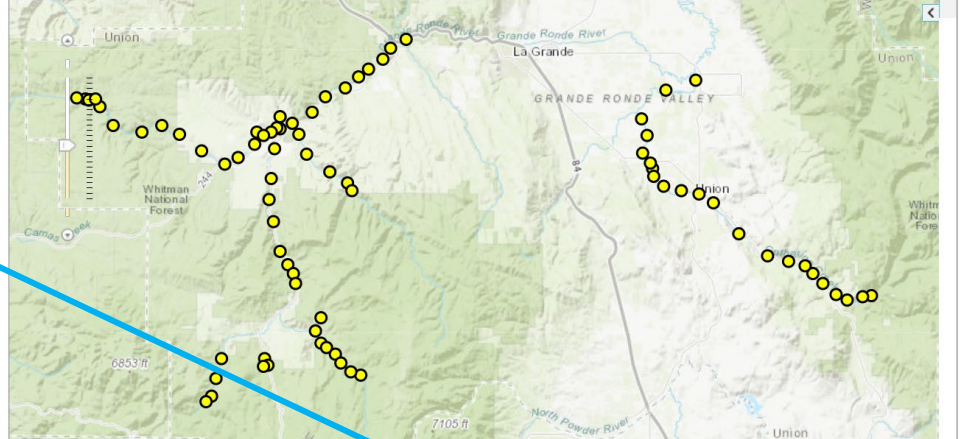
Select Sites

Select on the map, add one at a time or bulk upload a CSV of all your planned sampling locations.

Search by Site Name or use the Advanced Search to filter to your area of interest; click on your point(s) in the map. If a selected point belongs in your design, click "Add to Design" and it will be added to the table. If you can't find an appropriate site on the map, add sites one by one by clicking on the create new site, or add multiple sites at a time by importing a .csv file.

Search by Site Name: Sample Frame: ? [select one] ▼

▶ Advanced Search



78 Sites + Create New Site

	Bulk Delete?	Site Name	Latitude
	<input type="checkbox"/>	170601040507_1	45.27
	<input type="checkbox"/>	170601040507_2	45.26040
	<input type="checkbox"/>	170601040507_3	45.24553
	<input type="checkbox"/>	170601040507_4	45.23614
	<input type="checkbox"/>	170601040507_5	45.22531
	<input type="checkbox"/>	170601040704_1	45.30952
	<input type="checkbox"/>	170601040704_2	45.30008

Import Sites ?

Download Template CSV

CSV file: Sam...st.csv

CSV imported successfully.

Step 3: Create a Sample Design Within the Workflow – Select Sites

If you don't have many sites to select, you can add sites by clicking on the "Create New Site" hyperlink.

Clicking on the link produces a pop-up allowing you to add a site name, latitude, and longitude

You can import a CSV and create new sites within the same Sample Design

Step 3: Create a Sample Design Within the Workflow – Select Sites

Study Plan Summary

Lastly, if you know of a site that's already been documented in MonitoringResources.org, you can search for individual sites to add to your Sample Design

If you know the Site Name and/or Sample Frame (specific Master Sample), you can do a quick, simple search

Or, you can narrow your search with filters

If you find an existing site that is in the same location as a site in your Sample Design, you can add it to your design

BPA WORKFLOW
Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

Step 1: Study Plan 100%
Step 2: Protocol 83%
Step 3: Sample Design(s) 28%

Required Fields*

- Wadeable Lotic Sampling
- Title
- Data Repositories

Select Sites

Area Of Inference

Plan Schedule

Finalize

Select Sites

Select on the map, add one at a time or bulk upload a CSV of all your planned sampling locations.

Search by Site Name: Sample Frame:

Advanced Search

Narrow the sites to choose by using one or more filters. Multiple filters act as an "AND" function to narrow search (i.e. State Name > State Name AND County Name > State Name AND County Name AND Land Ownership)

State Name: County Name: Ecoregion L1:

Ecoregion L2: Ecoregion L3: Strahler Order:

Land Ownership: NHD Feature Type: NHD Feature Code:

MPG: Population: IMW:

Filter

3246 sites currently on map

Site Info (1 of 3)

Name: LCR00001-081855
Latitude: 45.723539
Longitude: -122.776797
Add To Design
Zoom to

78 Sites

Create New Site

Bulk Delete?	Site Name	Latitude

Import Sites

Step 3: Create a Sample Design Within the Workflow – Area of Inference

After selecting your sites, if you have a data analysis work element (WE-162) you'll need to identify an Area of Inference (AOI)

To add an AOI, zoom in on one of your sites and click on it. A pop-up will display with various AOI data layers and ranges

When you select an AOI layer it's automatically added to the list of AOIs below the map. You can add as many AOIs as needed

You can add notes to your AOIs before you save

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- Step 1: Study Plan 100%
- Step 2: Protocol 83%
- Step 3: Sample Design(s) 42%

Required Fields*

- Wadeable Lotic Sampling
 - Title
 - Data Repositories
 - Select Sites
 - Area Of Inference
 - Plan Schedule
 - Finalize

Area of Inference

What area or population will you analyze? Will you extrapolate data to a 3rd field HUC, specific reach on a stream, or a population from points along a reach? Generally, you will only make one geographical selection. If you will draw no inference, just specify the Latitude and Longitude where data points you will analyze are collected.

Click on a green site marker or double click on the map to see all possible Area of Inference data layers. Select the appropriate area and/or populations defining your area of inference or study from the pop-up box. If you will analyze more than one area of inference (e.g., 2 fish populations in HUC5), you will make multiple selections. Zoom the map and use the Layers tab to display data to improve the accuracy of your selection.

Describe any caveats in the Notes section. For example, if a river study reach is shorter than the code provided, you could describe the upper and lower bounds based on other spatial attributes. Or, enter the discrete population under study.

Rivers 100k: Bear Creek

Chinook Spring-Summer Interior Columbia Pop. Name: Grande Ronde River Upper Mainstem

Steelhead Summer-Winter Interior Columbia Pop. Name: Grande Ronde River Upper Mainstem

HUC3 - Basin: Lower Snake

HUC4 - Sub Basin: Upper Grande Ronde

HUC5 - Watershed: Beaver Creek-Grande Ronde River

HUC6 - Sub Watershed: Lower Beaver Creek

NPPC Subbasins: Grande Ronde

Currently viewing 2 of 2 Areas of Inference

Type	Name
<input type="checkbox"/>	<input type="text"/>
<input checked="" type="checkbox"/> HUC5 - Watershed	Beaver Creek-Grande Ronde River
<input checked="" type="checkbox"/> HUC5 - Watershed	Lower Catherine Creek

Notes

Characters Remaining: 1000







Step 3: Create a Sample Design Within the Workflow – Plan Schedule

If you have a simple data collection schedule for your sample design, meaning you sample every site every year, all you need to do is identify the **Start Year** and **End Year** of your sample design.

Then click Save.

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- ▶ Step 1: Study Plan 
  100%
- ▶ Step 2: Protocol 
  83%
- ▶ Step 3: Sample Design(s) 
  57%

Required Fields*

- Wadeable Lotic Sampling
- Title
- Data Repositories
- ▶ Select Sites
- ▶ Area Of Inference
- ▶ Plan Schedule
- ▶ Finalize

Plan Schedule

Indicate your start year and end year. If you have a more complex sampling schedule such as rotating panels or anything other than visiting each site once a year, check the box below and follow the instruction.

Site Name	Latitude	Longitude
170601040101_1	45.050280	-118.281332
170601040102_1	45.089650	-118.337736
170601040102_2	45.101011	-118.330582
170601040103_4	45.078909	-118.331026
170601040103_5	45.075016	-118.324076
170601040103_6	45.069264	-118.313134
170601040103_7	45.061045	-118.305705
170601040103_8	45.053960	-118.293910

Start Year **End Year**

2023 ▼ 2028 ▼

I have a routine [Panel](#) design

Save

Step 3: Create a Sample Design Within the Workflow – Plan Schedule

BPA WORKFLOW
Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- Step 1: Study Plan 100%
- Step 2: Protocol 83%
- Step 3: Sample Design(s) 57%

Required Fields*

- Wadeable Lotic Sampling
 - Title
 - Data Repositories
 - Select Sites
 - Area Of Inference
 - Plan Schedule
 - Finalize

Plan Schedule

Indicate your start year and end year. If you have a more complex sampling schedule such as rotating panels or anything other than visiting each site once a year, check the box below and follow the instruction.

Site Name	Latitude	Longitude
170601040101_1	45.050280	-118.281332
170601040102_1	45.089650	-118.337736
170601040102_2	45.101011	-118.330582
170601040103_4	45.078909	-118.331026
170601040103_5	45.075016	-118.324076
170601040103_6	45.069264	-118.313134
170601040103_7	45.061045	-118.305705
170601040103_8	45.053960	-118.293910

Start Year: 2023 End Year: 2028

I have a routine [Panel](#) design

Document Panel Design

Number Of Panels: 3
Rename Selected Panel: Odd

Panels	Year	Available Sites	Assigned Sites
Annual <input type="radio"/>	2023 <input checked="" type="checkbox"/>	170601040101_1	170601040102_1
Odd <input checked="" type="radio"/>	2024 <input type="checkbox"/>	170601040104_2	170601040102_2
Even <input type="radio"/>	2025 <input checked="" type="checkbox"/>	170601040105_2	170601040103_6
	2026 <input type="checkbox"/>	170601040105_3	170601040103_7
	2027 <input checked="" type="checkbox"/>	170601040105_4	
	2028 <input type="checkbox"/>	170601040105_5	
		170601040109_1	
		170601040109_2	

Save

If your sample design is a little more dynamic than sampling every site every year, you'll still need to define a Start and End Year, but you'll also need to check the box "I have a routine Panel design"

If some sites aren't sampled every year, you can create panels to identify which sites are sampled each year

Once all "Available Sites" have been "Assigned" to a panel, you can Save your routine panel design

Note: GRTS designs should be created outside of MonitoringResources.org

Step 3: Create a Sample Design Within the Workflow – Finalize

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- Step 1: Study Plan 100%
- Step 2: Protocol 83%
- Step 3: Sample Design(s) 71%

Required Fields*

- Wadeable Lotic Sampling
 - Title
 - Data Repositories
 - Select Sites
 - Area Of Inference
 - Plan Schedule
- Finalize

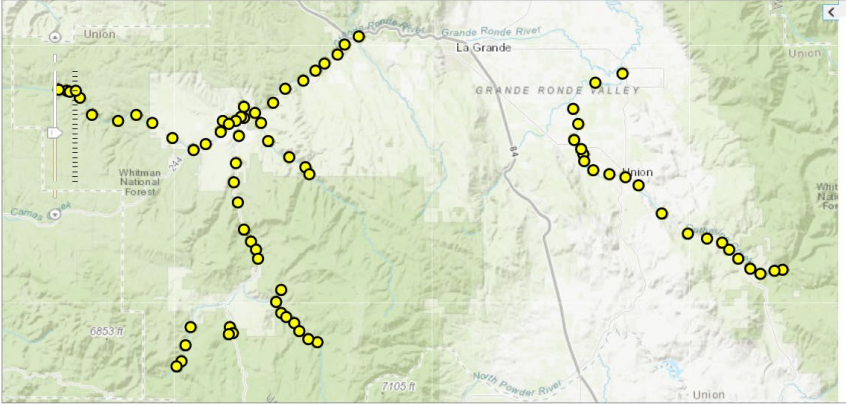
Before you finalize your Sample Design, you can review the sites, area of inference(s), and schedule to make sure everything looks accurate.

Review

This page offers a few tools for you to review the [sites](#) generated from the [sample design](#) in order to determine if they meet the needs of your particular study. If you need to modify the [sample design](#), you may click back to any of the previous steps, modify the design, and run the generation process again.

Once you're certain the design meets your needs, you'll need to Finalize the [sample design](#) in order to download a Shape file of it. Once a design is finalized, it is marked read only and may not be modified in the future.

Map of Selected Sample Sites



Sample Sites

Below is the complete list of sample sites you selected for this [sample design](#). In order to download these sites, you must finalize this design by clicking the Finalize button. This makes the selected samples available to you in a Shape file format, but will have the effect of disallowing future structural changes to this sample design. Therefore, before you finalize the design please verify that this is the set of sites you want to use in your research/study.

Currently viewing 78 of 78

Site Name	Latitude	Longitude	Sampling Years
170601040101_1	45.050280	-118.281332	2023, 2024, 2025, 2026, 2027, 2028
170601040102_1	45.089650	-118.337736	2023, 2025, 2027
170601040102_2	45.101011	-118.330582	2023, 2025, 2027
170601040103_4	45.078909	-118.331026	2024, 2026, 2028
170601040103_5	45.075016	-118.324076	2023, 2024, 2025, 2026, 2027, 2028
170601040103_6	45.069264	-118.313134	2023, 2025, 2027
170601040103_7	45.061045	-118.305705	2023, 2025, 2027
170601040103_8	45.053960	-118.293910	2024, 2026, 2028

Area of Inference

HUC5 - Watershed: Beaver Creek-Grande Ronde River
HUC5 - Watershed: Lower Catherine Creek

AOI Notes

<none>

Finalize

Study Plan Summary

Remember, you can always jump over to the Study Plan Summary to see the progress on your Entire Workflow

Step 3: Create a Sample Design Within the Workflow

BPA WORKFLOW

Workflow: Assessment, Inventory, and Monitoring of Wadeable Lotic Systems

- ▶ Step 1: Study Plan
 100%
- ▶ Step 2: Protocol
 83%
- ▶ Step 3: Sample Design(s)
 71%

Required Fields*

- ▶ Wadeable Lotic Sampling

Sample Designs

[+ Create New Sample Design](#)

Study Plan Summary

Clear Filters

Download

	▼ Sample Design ID	Sample Design Name	▼ Sample Design Owner	▼ Sample Design Program	Organiza
	🔍	🔍	🔍	🔍	🔍
	16889	Wadeable Lotic Sampling v1.0	PNAMP Support	BLM AIM	U.S. Geo

You can create more than one Sample Design in your workflow because multiple Sample Designs can be linked to a single Study Plan and use the same Protocol

Documentation Using the BPA Workflow in MonitoringResources.org

- After you complete the documentation, you can perform your field work
 - NOTE: there is no “Finalizing” of a workflow, but you should finalize each documentation type (Study Plan, Protocol, Sample Design(s)) within the workflow before field work
- After performing field work for the season or the year, you should return to your Sample Design to document the actual locations and dates that you sampled
 - Validate which planned sampling events actually occurred and add events (if necessary) that weren't planned

