



**Nonpoint Source (NPS) Data Management TSOP  
S-002-OWQ-WAP-TL-23-T-R1**

**Technical Standard Operating Procedure**

**Office:** Office of Water Quality

**Branch:** Watershed Assessment and Planning

**Section:** Technical and Logistical Services

**Revised:** January 25, 2023

**Revision Cycle:** 4 years

**Effective date:** December 15, 2014

## **Purpose**

This technical standard operating procedure (TSOP) provides guidance to staff of the Watershed Assessment and Planning Branch (WAPB) for the management of environmental data received from projects using federal 319(h) and 205(j) grant funds. The process contained in this TSOP includes 1) the collection of project information, 2) the identification of projects eligible for data upload to the Assessment Information Management System (AIMS), 3) the review of spatial data, project set up and schedules in AIMS, and 4) the preparation of the custom data template upload workbook sent to NPS customers. This TSOP establishes an information management flow throughout the Quality Assurance Project Plan (QAPP) developmental phase of a new project facilitating the collection and storage of environmental data received from the NPS customers.

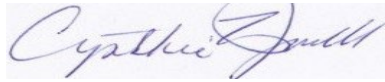
## **Scope**

Office of Water Quality (OWQ) WAPB staff assigned to provide independent scrutiny of processes for the collection and analysis of environmental measurements generated by external customers receiving federal funds for nonpoint source projects as part of the IDEM's ambient water quality monitoring program will follow this TSOP.

The TSOP also provides the secondary data coordinator a data management system and procedure for the collection of project information and data results for NPS projects. This process begins during the QAPP review or QAPP finalization, usually within the first year of a one-to-four-year contract term. This data management system identifies the projects which collect data and identify the data to be uploaded into AIMS. The process will guide the secondary data coordinator through the entry of background project information into AIMS, quality assure the spatial information for each sampling location using ArcGIS and provide customers with a custom data template (spreadsheet) of results for upload into AIMS.

## Authorizing Signatures

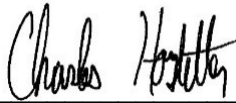
I approve and authorize this technical standard operating procedure (TSOP):



Cynthia Jewell, TSOP Implementer

1/20/2023

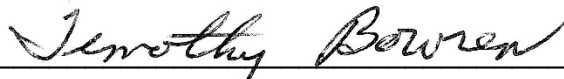
Date



Charlie Hostetter, TSOP Implementer

1/23/2023

Date



Timothy Bowren, WAPB Quality Assurance Officer  
Technical and Logistical Services Section, Office of Water Quality

1/23/2023

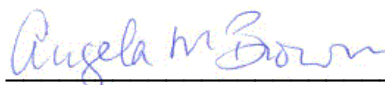
Date



Caleb Rennaker, Chief, WAPB Quality Assurance Manager  
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1/20/2023

Date



Angela Brown, Chief  
Watershed Planning and Restoration Section

1/26/2023

Date



Kristen Arnold, Branch Chief  
WAPB, Office of Water Quality

1/23/2023

Date

This TSOP is consistent with agency requirements.



Quality Assurance Staff  
Office of Program Support

1/27/2023

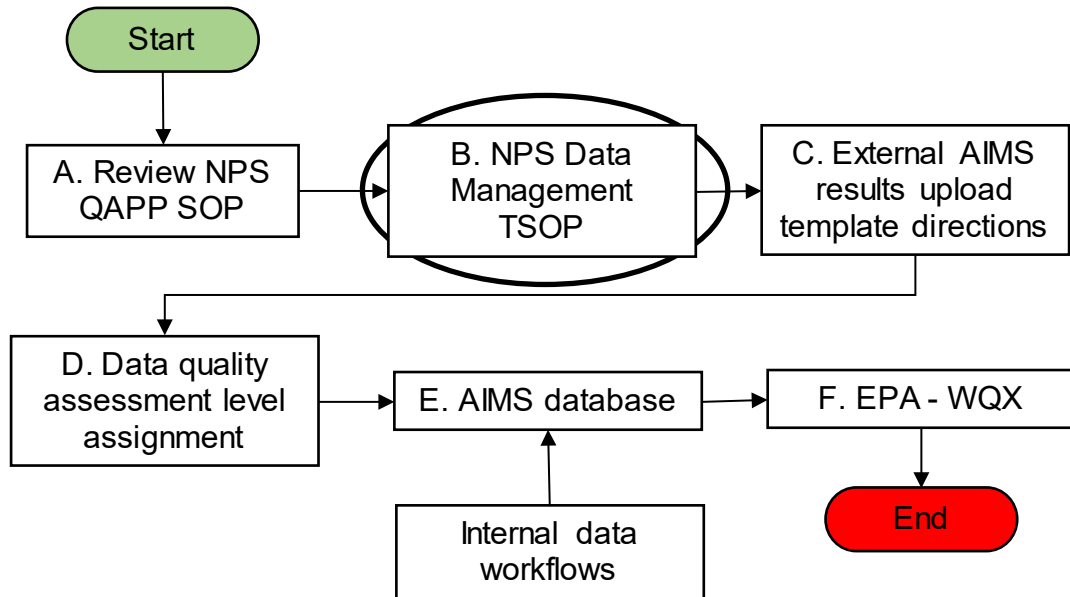
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## 1.0 Overview Flowchart

This flowchart displays the relationship between the individual components of the data management, the overall process for storage of data in AIMS, and the storage of both internal and external data in AIMS with an emphasis on external data. This TSOP focuses on the NPS data management portion circled below in green.



## 2.0 Procedure

### 2.1. Procedural Steps

Step 1. During the QAPP review process staff from the Watershed Planning and Restoration Section (WPRS) begin entering information in the NPS Project Tracking SharePoint site: <https://ingov.sharepoint.com/sites/IDEMOWQ/Watershed/Tech/Lists/NPS%20%20QAPP%20Tracking/AllItems.aspx?viewpath=%2Fsites%2FIDEMOWQ%2FWatershed%2FTech%2FLists%2FNPS%20%20QAPP%20Tracking%2FAllItems%2Easpx>

- A. Staff fill out NPS Project information in SharePoint while reviewing the project QAPP. This information is used to identify projects with data information suitable for AIMS entry in addition to capturing the information for later use.
- B. The following column titles from the NPS Project Tracking SharePoint Site are listed in column order:
  1. Content Type
  2. Funding Source

3. Title
  4. Grant Agreement Contract # (Action Register Number (ARN))
  5. FFY (Federal Fiscal Year)
  6. Project Folder Location
  7. Project Sponsor
  8. Date QAPP Received
  9. Assigned QAPP Reviewer(s)
  10. QAPP Location
  11. QAPP Status
  12. Date QAPP Approved
  13. QAPP Revision Notes
  14. ARUT Status
  15. ARUT Location
  16. Project Created in AIMS
  17. AIMS Project Name
  18. Sites Verified w/GIS
  19. Sites Added in AIMS
  20. Data Quality Reviewer(s)
  21. Date Data Received
  22. Data Quality – Macro Community
  23. Data Quality – Fish Community
  24. Data Quality – Water Chemistry
  25. Data Imported In AIMS
  26. Data Imported to WQX
  27. Notes
  28. Date QAPP Revised
  29. Attachments
- C. The WPRS staff enter data for columns 1-13. Once the QAPP Status “Approved” the project is eligible for data upload to AIMS and will need an Assessment Results Upload Template (ARUT).
- Step 2. Upon the approval of the QAPP, for projects added to the NPS Project Tracking SharePoint site, the secondary data coordinator will review the QAPP for other necessary information to develop an ARUT for the project. The information collected includes:
- A. Spatial coordinates in decimal degrees
  - B. Waterbody names
  - C. Site descriptions (usually road names)
  - D. Project site identifiers
  - E. Media types to be analyzed

- F. Parameters
- G. Methods of analysis

- Step 3. To verify sample locations, the secondary data coordinator reviews site locations provided in the final QAPP in ArcGIS Pro for visual verification and a determination if the waterbody name is correct when comparing with the GNIS name (if one is available) for the waterbody. A verification of the site description is often also completed when it includes a road name or intersection.
- A. Open ArcGIS Pro to check the sample point locations against the spatial layers in the Indiana GIO Enterprise Portal.
  - B. Geographic coordinates may need to be converted to decimal degrees.
  - C. Use tools and map layers to check if each site is located on the correct waterbody. If the locations do not appear to be correct, check with customer to either provide the correct coordinates or to provide you with enough information so that you may locate the site in ArcGIS Pro.
  - D. More Instructions for setting up in ArcGIS Pro and adding GIS layers can be found in Appendix A, 'Verification in ArcGIS for Step 3.'
  - E. Upon completion of this step, in the NPS Project Tracking, please mark the 'Sites Verified w/GIS' as 'Yes' for this project, and a check mark will appear.
- Step 4. Create AIMS Site Identifiers
- A. Open AIMS and navigate to Manage Sites
  - B. Select Create New Site
  - C. Enter the latitude and longitude in decimal degrees
  - D. Enter the Site Type (usually "stream")
  - E. Select the Stream Name for the waterbody, if the waterbody is not on the list, it will need to be added in the waterbody reference table by WAPB staff with access to modify reference tables.
  - F. Save by clicking on Save Site at the bottom of the page.
  - G. For more detailed information on this step, please see The AIMS II User Guide, Site Management section. available on the WAPB SharePoint site in the Branchwide Documents folder.
- Step 5. Assign AIMS Site Identifiers to the IDEM Site Number column in the AIMS Results Upload Template on the Instructions worksheet.
- A. Open the most recent version of the AIMS Results Upload template located on the Shared drive at

S:\IGCN\OWQ\AIMS\ARUT\_Files, personalize the file name and save it to S:\IGCN\OWQ\AIMS\ARUT\_Files in a project folder for this NPS Project. The naming convention to use is FFY + Project Name + ARN.

- B. Add a “BLANK” site as the last IDEM site number in the Sites Information Table to guide the customer in including their field blanks and equipment blanks.
- C. Transfer the latitude and longitude coordinates (in decimal degrees) from the QAPP to the Sites Information Table displayed in Figure 1 and Appendix D.
- D. Transfer the IDEM Site IDs into the IDEM site number column in the Sites Information Table.
- E. Add the NPS Site IDs (original sites number provided by the customer) to the Number column. Add the short description of each site into the Short Description column. Customers will use this table to link IDEM site ID to their site ID.
- F. Upon completion of this step, go into the NPS Project Tracking on SharePoint, and mark Sites Added in AIMS to Yes for this project, and a check mark will appear.

Step 6. Add protocols to Assessment Results Upload Template (ARUT). This information assists the customer in selecting the correct protocols on the ARUT.

- A. Laboratory parameters listed in project QAPP are identified here by group or individual parameters.
- B. Select the Parameter Category as either:
  - 1. Algal Biomass
  - 2. Bacteriology
  - 3. Dioxins
  - 4. General Chemistry
  - 5. Indices
  - 6. Metals
  - 7. Nutrients
  - 8. PBDEs
  - 9. PCBs
  - 10. Pesticides
  - 11. PFCs
  - 12. Physical
  - 13. Polynuclear Aromatic Hydrocarbons
  - 14. Radionuclides
  - 15. Semi Volatile Organics
  - 16. Volatile Organics

The most frequently used parameter categories are General Chemistry, Nutrients, Physical, Bacteriology, and Indices. For

assistance in assigning protocols see Appendix B. For additional help (e.g., new testing method or protocol needed), see the secondary data QA officer, or the lead QA officer in the WAPB.

- C. Save the .xlsx file for emailing to the customer. It should then be sent to the key personnel specified in the final QAPP and the NPS project manager, a watershed specialist. If the project includes macroinvertebrate samples that are not simply used for a Pollution Tolerance Index, then also provide the ARUT DataEntry Tool that can be found at S:\IGCN\OWQ\AIMS\ARUT\_Files. One other additional item to include in the mailing is the Certification Form for Submission of External Data Sets. It can be found in the Methods and Procedures for the Assessment of Secondary Data in Appendix 9.7.
- D. In the NPS Project Tracking, change the ARUT status to “Provided” for the project. Also copy and paste the location of the ARUT on the shared drive to the ARUT location in NPS Project Tracking.

- Step 7. The secondary data coordinator sets up customer’s project in AIMS using the project details gathered from the QAPP.
- A. The steps to add a project to AIMS can be found in on page 29 of the AIMSII User Guide, in the Creating a New Project section. Make sure that the project is under the NPS project categories.
  - B. Name the project using the fiscal contract year or (FY) + the project name used in the contract + the ARN + CWA319, if the project is funded by 319. This can be found by checking the NPS Project Tracking site on SharePoint. If the project is funded by 205j, it should just be listed as NPS.
  - C. Fill in the Program Area for the Project as “Nonpoint Source (NPS)”.
  - D. Fill in as many of the categories that you can. The information for the Project Focus, Project Purpose, Project Description, and Collection Type are gleaned from the QAPP.
  - E. Fill in the Start Date and End Date. These are the start and end dates of the NPS contract. The End Date should be at least a year later than the projects contract. If the project is extended, you will need to change the dates to reflect that schedule change. The IDEM 319 WSS/project managers will provide this information if you ask them.



- F. In the Project Members section, click on the Plus icon then select yourself as a Member and use Data Entry as the “Role.”
- G. Add information under the NPS tab. You may either request the watershed specialist or project manager to add project information or find the information through the IGCN WMS NPS Shared drive under the Project Document folders. The projects are listed under the Contract Year folder.
- H. Under the Attachment Tab, upload the QAPP Approval Letter, and the final QAPP in .pdf to AIMS to aid staff in locating this information.

**Step 8** Schedule sampling event

- A. Find your project previously established under the Nonpoint Source (NPS) program area and project list in the Manage Projects section of AIMS and click Load.
- B. Switch to the Schedule Trips option under the Project Management title bar on the left (under Manage Projects).
- C. Click on New Trip and give a start date and team name. It is not necessary to be exact on the week if it is at least on or before the actual sampling date. The Trip Type should be Sampling.
- D. Record by hand the IDEM Site IDs and match them to the project site number. You will replace the project site numbers with the IDEM IDs for the AIMSII upload Template.

Figure 1: AIMS Results Upload Template (Information Worksheet)

The IDEM Site Numbers with corresponding Project Site Information are provided below. If more lines are needed, insert them between the second and the last line of this table.

Sites Information Table					
IDEM Site Number	Latitude (Decimal Degree)	Longitude (Decimal Degree)	Short Description	Number	Waterbody
WUW-14-0012	40.79394	-85.84097	Edsall St.	W1	Charley Creek
WUW-14-0013	40.79369	-85.90027	Old US 24	W2	Kentner Creek
WUW-14-0014	40.78657	-85.90911	Old US 24	W3	Carlin Branch
WUW-14-0015	40.76713	-85.99373	just S of Old US 24	W4	Daniel Creek
WUW-14-0016	40.74828	-85.93328	W Elliot Rd.	W5	Asher Branch
WUW-14-0017	40.76744	-85.89511	Mill Creek Pike	W6	Mill Creek
WUW-14-0018	40.79212	-85.81023	Lafontaine Rd.	W7	Treaty Creek
WUW-14-0019	40.80020	-85.78283	Baumbauer Rd.	W8	Burr Creek
WUW-14-0020	40.80822	-85.75767	Baumbauer Rd.	W9	Ross Run
WUW-14-0021	40.83661	-85.71966	Schmazried Rd.	W10	Rager Creek
WUW-14-0022	40.83756	-85.72493	Washington St.	W11	Lagro Creek
WUW-14-0023	40.82545	-85.76006	Old US 24	W12	Enyeart Creek
BLANK					

**Step 9** Changes, questions, monitoring results

- A. Answer questions from the customer as soon as possible so that you do not delay the contract schedule.
- B. If there is a site change, notification will be received through the QAPP amendment process. Provide the customer with the new IDEM site numbers obtained by following the process in Steps 3 to 5.

- C. The customer or watershed coordinator will provide data results in this preformatted AIMS results upload template.
- D. The customer will submit data results either after each sampling event or at the end of the project.
- E. Once the data is received, provide this to the NPS quality assurance staff for chemistry (including bacteriology), macroinvertebrates, and fish community depending on the type of data that is provided along with the Certification Form for Submission of External Data Sets. They will determine the data quality Level, and then the data can be uploaded and imported into AIMS as described in the Assessment Information Management System Results Upload Template Instructions TSOP.

## 3.0 Roles

### 3.1 Responsibilities

- A. Secondary data coordinator is responsible for:
  - 1. Reviewing final watershed project QAPPs to gather information for the process of creating AIMS sites, assigning protocols for the project, creating project in AIMS for NPS projects with final QAPPs, and updating the NPS Project Tracking in SharePoint.
  - 2. Preparing AIMS Results Upload Template for customers.
  - 3. Receive completed ARUT from customer or watershed specialist and update the NPS Project Tracking SharePoint Site with date data received.
  - 4. Provide completed ARUT from customer to external data QAO for review and assignment of data quality assessment level.
  - 5. Upload and import data into AIMS.
  - 6. Updating this TSOP.
- B. External data QAO is responsible for:
  - 1. Assisting with QAPP development.
  - 2. Reviewing ARUT completed by customer for completeness and assignment of data quality assessment level.
- C. Project manager, watershed specialist, and QAPP reviewers are responsible for:
  - 1. Managing watershed contracts.
  - 2. Adding NPS project to the NPS Project Tracking in SharePoint.
  - 3. Coordinating project QAPP review with the external data QAO.

4. Project accountability and approving payment for completing the QAPP and Data Reporting Task.
- D. Technical and Logistical Services Section chief (QA manager) is responsible for:
  1. Overseeing the secondary data coordinator
  2. Overseeing the external data QAO.
- E. Watershed coordinator is responsible for:
  1. Completion of contract tasks including the submission of an approved QAPP.
  2. Quality assurance compliance with the approved NPS QAPP.
  3. Collecting environmental samples and field measurements according to approved NPS QAPP.
- F. Watershed Planning and Restoration Section chief is responsible for:
  1. Overseeing the project managers and projects.
  2. Final approval of NPS project QAPPs according to U.S. EPA guidelines.
- 3.2. Training requirements
  - A. EPA Quality Assurance Project Plan elements
    1. QAO
  - B. Federal 319 or 205j grant contract process
    1. Project manager or watershed specialist
  - C. Assessment Results Upload Template (ARUT) and the ARUT DataEntryTool.
    1. NPS QAO
    2. Secondary data coordinator
  - D. ESRI ArcGIS training
    1. Secondary data coordinator
  - E. AIMSII User Guide
    1. NPS QAO
    2. Secondary data coordinator

#### **4.0. Required Forms, Equipment, or Software List**

- 4.1 Forms
  - A. NPS Project Tracking
  - B. "AIMS Results Upload Template" pre-formatted spreadsheets
- 4.2 Databases and Software
  - A. ArcGIS

## B. Assessment Information Management System (AIMS)

### 5.0. Records Management

- 5.1. The AIMS Sample Data Upload Page contains a link to the final version of the customer's ARUT.
- 5.2. For NPS grant funded projects, S:\IGCN\OWQ\AIMS\ARUT\_Files contains an additional electronic copy under the fiscal year of the project's grant award and under the name of the project plus the grant ARN number.

### 6.0 Definitions

- 6.1. "205(j) Grant" – The federal Clean Water Act Section 205(j) provides funding for water quality management planning. Funds are to be used to determine the nature, extent and causes of point and nonpoint source pollution problems and to develop plans to resolve these problems. Organizations eligible for funding include municipal governments, county governments, regional planning commissions, universities, and other public organizations. For-profit entities, nonprofit organizations, private associations, and individuals are not eligible to receive this assistance. The Section 205(j) program provides for projects that gather and map information on nonpoint and point source water pollution, develop recommendations for increasing the involvement of environmental and civic organizations in watershed planning and implementation activities, and develop and implement watershed management plans. The Watershed Planning and Restoration Section administers the Section 205(j) Program for Indiana.
- 6.2. "303(d) List" – Section 303(d) of the Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with federal technology-based standards alone. States are also required to develop a priority ranking for these waters taking into account the severity of the pollution and the designated uses of the waters. Once this listing and ranking of waters is completed, the states are required to develop total maximum daily loads (TMDLs) for these waters in order to achieve compliance with the water quality standards.
- 6.3. "319 Grant" – The federal Clean Water Act Section 319(h) provides funding for various types of projects that work to reduce nonpoint source water pollution. Funds may be used to conduct assessments, develop, and implement total maximum daily loads (TMDLs) and watershed management plans, provide technical assistance, demonstrate new technology and provide education and outreach. Organizations eligible for

funding include nonprofit organizations, universities and local, state, or federal government agencies. A 40% (non-federal) in-kind or cash match of the total project cost must be provided, unless the project is a planning or implementation project in a watershed that includes waterbodies impaired by nonpoint sources of pollution as listed on the 2004 303(d) List of Impaired Waterbodies, in which case a 25% match is required. The Watershed Planning and Restoration Section administers the Section 319(h) Program for Indiana.

- 6.4. “ARN” – This is a serial numbering process used by the Watershed Assessment and Planning Branch to identify samples collected under the NPS Data QAPP. The NPS prefix is at the beginning of number assigned in order from 1 to 999,000. This results in a unique identifying number for a sampling event that links all parameters measured for that sample collected at that date and time. This number is used to identify the NPS sampling event in the Assessment Information Management System database (AIMS database).
- 6.5. “Agency staff” – Any employee or representative of the Indiana Department of Environmental Management including regular employees, temporary employees, contractors, and interns.
- 6.6. “AIMS Results Upload Template” – This term is used to describe the preformatted Excel Workbook provided to the customer for collecting their environmental data into a format that will upload information into AIMS.6.7
- 6.7. “Assessment Information Management System database (AIMS database)” – IDEM database containing information related to water chemistry, aquatic habitat, macroinvertebrate and fish communities, fish tissue analyses, sediments, algae, and *E. coli* bacteria data generated through WAPB, External Data Framework, and NPS sampling events.
- 6.8. “Associated DQI” – Associated Data Quality Indicators are verification, validation, and integrity.
- 6.9. “Comparability” – Comparability is a qualitative expression of the measure of confidence that two or more data sets may contribute to a common analysis. Comparability DQI is a qualitative indicator of the similarity of attributes of data sets.
- 6.10. “Customer” – Sponsor or persons in-charge of projects awarded NPS funds through a contract with the State.
- 6.11. “Environmental analysis” – The use of analytical chemistry and other techniques to study the environment. The purpose of this is commonly to monitor and study levels of pollutants.

- 6.12. “External data” – Refer to “Secondary data.”
- 6.13. “Metadata” – In this TSOP, the term refers to the descriptive components associated with the environmental analysis results including spatial and temporal components, analytical method numbers, parameters, analytical units, DQALs, flags, and others that are entered into the AIMS database with the environmental analysis result.
- 6.14. “mIBI” – The letters represent the macroinvertebrate Index that is used as a measure of quality by evaluating the macroinvertebrates community.
- 6.15. “Nonpoint source (NPS)” – Pollution that originates from diffuse sources over a relatively large area. Nonpoint sources can be divided into source activities related to either land or water use including failing septic tanks, improper animal-keeping practices, forest practices, and urban and rural run-off.
- 6.16. “NPS Projects” – Watershed projects funded from 319 and 205j grants and managed by Watershed Planning & Restoration Section project managers.
- 6.17. “NPS quality assurance officer (QAO)” – IDEM staff assigned to review watershed project QAPPs as part of the contract elements when environmental water quality sampling is funded using 319 or 205j grant funds. U.S. EPA guidance for QAPP development is followed.
- 6.18. “Office of Water Quality (OWQ)” – The Office of Water Quality within the Indiana Department of Environmental Management.
- 6.19. “Project manager or grant project manager (PM)” – Assist grant recipients of 319 or 205j funds with their projects, ensuring that project tasks, duties, schedules, and budgets are implemented according to contractual requirements. Project managers draft contracts, review quarterly and final reports, watershed management plans, financial claims, and conduct quarterly site visits.
- 6.20. “Quality assurance officer (QAO)” – An agency staff member in the program areas responsible for ensuring that quality assurance criteria are met.
- 6.21. “Quality assurance project plan (QAPP)” – A document describing in comprehensive detail the necessary quality assurance, quality control, and other technical activities to ensure that the results of the work performed will satisfy the stated performance criteria. Quality Assurance Project Plans (QAPPs) apply to data gathering activities associated with projects and lab procedures. QAPPs are commonly needed for laboratory

operations, remediation projects and mitigation projects. QAPPs may contain one or more standard operating procedures. A QAPP is valid for a period up to five years from the official publication date (approval date).

- 6.22. "Sample collector" – The Project staff person responsible for collecting water samples from assigned protocol.
- 6.23. "Sample unit" – A sampling unit (SU) can be defined as one of the units into which an aggregate is divided for the purpose of sampling.
- 6.24. "Sampling event" – The occasion in which environmental samples (i.e., soil, sediment, water) are collected and submitted for field and/or laboratory analysis.
- 6.25. "Secondary data (also known as acquired data or external data)" – Existing data or information used for project implementation or decision-making, which meets one of the following criteria: 1) Are compiled from other sources outside of the WAPB; 2) Were originally collected for some other purposes; 3) Are obtained from non-measurement sources such as computer databases, programs, scientific literature, and historical databases.
- 6.26. "SharePoint" – The IDEM SharePoint application is an actively updated, comprehensive employee collaboration, organization, and document sharing portal that is posted at <https://extranet.idem.in.gov/main.php?section=eservices&page=home> under IDEM
- 6.27. "Technical and Logistical Services Section (TLSS)" – A section within the Watershed Planning and Assessment Branch of the Office of Water Quality principally involved with providing technical and quality assurance support to various programs within the Branch.
- 6.28. "Watershed coordinator (WC)" – The grantee's coordinator that is responsible for managing the NPS project and coordinating all project related activities. In this TSOP, the WC is either the originator of the QAPP or is responsible for the completion of the QAPP.
- 6.29. "Watershed Planning and Restoration Section (WPRS)" – A section within the Watershed Planning and Assessment Branch of the Office of Water Quality responsible for DEM's Nonpoint Source Grant Programs and Total Maximum Daily Loads Program.

## 7.0. Quality Assurance and Quality Control

- 7.1. The QA officer reviews project QAPPs, and the QA manager will have the final approval for DQAL assignments and QA assessments of DQI.

## 8.0. References

- 8.1 AIMSII User Guide. Update 3/25/22, SharePoint, WAPB, Branchwide Documents. <https://ingov.sharepoint.com/:b:/r/sites/IDEMOWQ/Watershed/Shared%20Documents/AIMSII%20User%20Guide.pdf?csf=1&web=1&e=cIXXrK>
- 8.2 Clean Water Act of 1972, 33 U.S.C § 1251 et seq. (2002). <http://www.law.cornell.edu/uscode/text/33/1251>
- 8.3 U.S. EPA Information Standards, Draft final (2106-S-02.0) [Quality Standard for Environmental Data Collection, Production, and by Non-EPA \(External\) Organizations.](#)
- 8.4 Methods and Procedures for the Assessment of Secondary Data (Draft) B-XXX-OWQ-WAP-PM-16-S-R0
- 8.5 Assessment Information Management System Results Upload Template Instructions (2022). B-004-OWQ-WAP-TL-22-S-R1. [Assessment Information Management System Results Upload Template Instructions B-004-OWQ-WAP-TL-22-S-R1.docx](#)



## **9.0. Appendices**

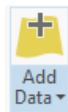
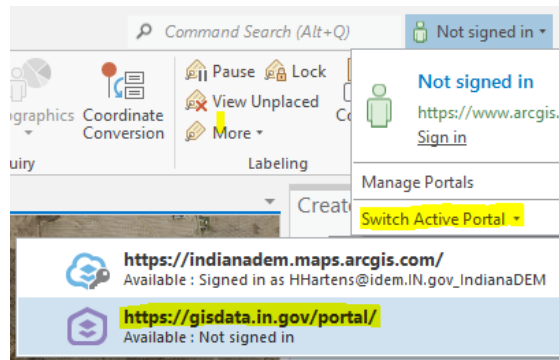
Appendix A: Visual Verification in ArcMap for Step 3

Appendix B: Parameter Categories and Protocols for Step 6

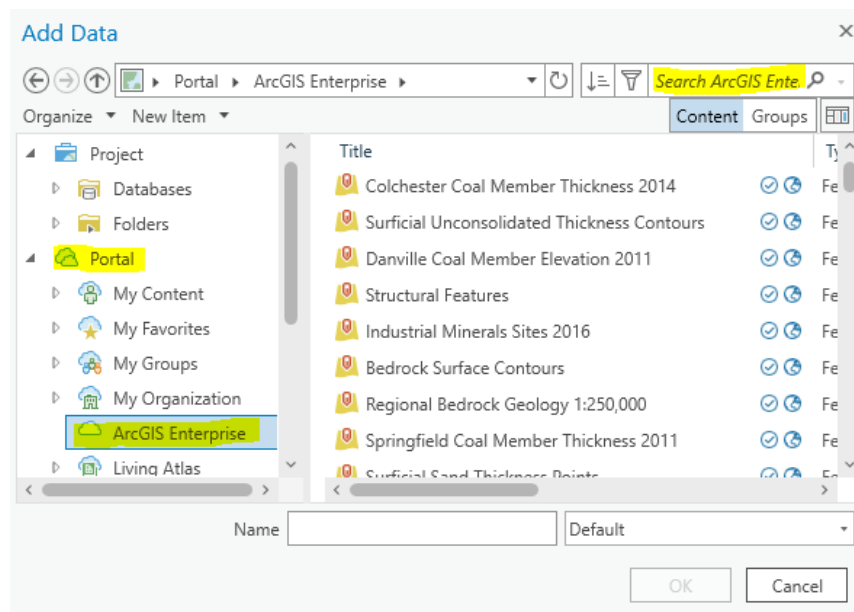
Appendix C: Customer Instructions Worksheet included as Instructions Worksheet in the ARUT.

## Appendix A: Visual Verification in ArcGIS Pro for Step 3

1. Open ArcGIS Pro to check the locations against the spatial layers in the Indiana GIO Enterprise Portal.
2. In ArcGIS Pro, ensure the Active Portal is set to <https://gisdata.in.gov/portal/> and the user is logged in with IDEM credentials.



Then, click 'Add Data' and navigate to ArcGIS Enterprise (Portal).



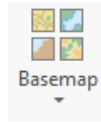
Search for the following layers and add them to the map:

National Hydrologic Dataset (NHD)

Hydrologic Units of Indiana (HUC 8, 10, and 12)

County Boundaries of Indiana

Best Available Imagery



Optional: Add a base map from Esri's base map selection.

3. If adding the sample point locations in a table format, bring the table into ArcGIS Pro and then left click it and select 'Display XY Data.'
4. In the 'Display XY Data' window, select Longitude for the X field and Latitude for the Y field. Select WGS 1984 as the Coordinate System. Click OK. The sample point locations will now display on the map.
5. Ensure all data layers are turned on. Enable Labeling for each layer by right



clicking the layer and selecting 'Label.' Or use the Select tool to confirm names of waterbodies, streams, location descriptions, or road names. Use these reference layers to determine if sample location point is in the correct location and make note of any errors found.

## Appendix B: NPS Parameter Categories and Protocols for Step 6

### NPS\_General Chemistry

#### NPS\_PROTOCOL

Chloride (16887-00-6   325.2   WATER   TOTAL   N/A   1 MG/L)
Chloride (16887-00-6   325.3   WATER   TOTAL   N/A   1 MG/L)
Chloride (16887-00-6   EPA 325.1   WATER   TOTAL   N/A   1 MG/L)
Chloride (16887-00-6   EPA 9212   WATER   TOTAL   N/A   15 MG/L)
Chloride (16887-00-6   SM4500CL-B   WATER   TOTAL   N/A   5 MG/L)
Chloride (16887-00-6   SM4500CL-C   WATER   TOTAL   N/A   1 MG/L)
Chloride (16887-00-6   SM4500CL-D   WATER   TOTAL   N/A   0.03 MG/L)
Chloride (16887-00-6   SM4500CL-E   WATER   TOTAL   N/A   1 MG/L)
DO (E-14539   360.1   WATER   TOTAL   N/A   0.05 MG/L)
DO (E-14539   ASTM D888-87   WATER   TOTAL   N/A   0 MG/L)
DO (E-14539   CHEMETRICS DO KIT K 7512   WATER   TOTAL   N/A   1 MG/L)
DO (E-14539   SM4500-OG   WATER   TOTAL   N/A   1 MG/L)
DO, Winkler (E-14539   EPA 360.2   WATER   TOTAL   N/A   0.2 MG/L)
DO, Winkler (E-14539   SM4500-OC   WATER   TOTAL   N/A   0.2 MG/L)
DO, Modified Winkler (E-14539   EPA 360.2 M   WATER   TOTAL   N/A   1 MG/L)
DO, Modified Winkler (E-14539   HACH OX-2P   WATER   TOTAL   N/A   1 MG/L)
Oil and Grease (E-10140   1664   WATER   TOTAL   N/A   5 MG/L)
Oil and Grease (E-10140   413.1   WATER   TOTAL   N/A   5 MG/L)
Oil and Grease (E-10140   SM5520C   WATER   TOTAL   N/A   5 MG/L)
pH (Field) (E-00400   150.1   WATER   TOTAL   N/A   .1 SU)
pH (Field) (E-00400   150.2   WATER   TOTAL   N/A   .1 SU)
pH (Field) (E-00400   SM 4500H   WATER   TOTAL   N/A   0.1 SU)
pH (Field) (E-00400   SM4500H-B   WATER   TOTAL   N/A   .1 SU)
pH (Field) (E-00400   WATER WORKS PH STRIPS   WATER   TOTAL   N/A   2 SU)
pH (Lab) (E-10139   150   WATER   TOTAL   N/A   0.1 SU)
pH (Lab) (E-10139   EPA 9041A   WATER   TOTAL   N/A   1 SU)
Salinity (E-1646165   SM2520B   WATER   DISSOLVED   N/A   0 PSU)
Secchi Depth (SECCHI   SECCHI   WATER   TOTAL   N/A   0.01 METERS)
Solids, Suspended Total, (TSS) (E-10151   160.2   WATER   TOTAL   N/A   6 MG/L)
Solids, Suspended Total, (TSS) (E-10151   I-3765-85   WATER   TOTAL   N/A   1 MG/L)
Solids, Suspended Total, (TSS) (E-10151   SM2540D   WATER   TOTAL   N/A   6 MG/L)
Solids, Total (TS) (E-10151   160.3   WATER   TOTAL   N/A   6 MG/L)
Solids, Total (TS) (E-10151   SM2540B   WATER   TOTAL   N/A   6 MG/L)
Solids, Total (TS) (E-10151   SM2540G   WATER   TOTAL   N/A   6 MG/L)
Solids, Total Dissolved (TDS) - Calculated as NaCl (E-10173   SM2510A   WATER   DISSOLVED   N/A   5 MG/L)
Specific Conductance (Field) (E-10184   120.1   WATER   TOTAL   N/A   1 UMHO/CM)
Specific Conductance (Field) (E-10184   HACH 8160   WATER   TOTAL   N/A   1 UMHO/CM)

Specific Conductance (Field) (E-10184 | SM2510A | WATER | TOTAL | N/A | 1 UMHO/CM)  
 Specific Conductance (Field) (E-10184 | SM2510B | WATER | TOTAL | N/A | 1 UMHO/CM)  
 Suspended Sediment Concentration (SSC) (E-17164666 | ASTM D3977-97 | WATER | TOTAL | N/A | 6 MG/L)  
 Temperature (E-TEMPERATURE | EPA 170.1 | WATER | TOTAL | N/A | 0.1 °C)  
 Temperature (E-TEMPERATURE | SM2550B(1) | WATER | TOTAL | N/A | 0.1 °C)  
 Temperature (E-TEMPERATURE | SM2550B(2) | WATER | TOTAL | N/A | 0.1 °C)  
 Turbidity (E-10617 | ISO 7027 | WATER | TOTAL | N/A | .3 FNU)  
 Turbidity (E-10617 | SM2130B MOD | WATER | TOTAL | N/A | .02 NTU)  
 Turbidity (E-10617 | TRANSPARENCY TUBE | WATER | TOTAL | N/A | 0.01 NTU)  
 Turbidity (Lab) (E-10617 | 180.1 | WATER | TOTAL | N/A | 0.05 NTU)  
 Turbidity (Lab) (E-10617 | SM2130B | WATER | TOTAL | N/A | 0.02 NTU)

#### NPS\_Nutrients

##### NPS\_PROTOCOL

CBOD5 (E-10106C5 | 405.1 | WATER | TOTAL | N/A | 2 MG/L)  
 CBOD-LR (E-10106CU | SM5210C | WATER | TOTAL | N/A | 2 MG/L)  
 COD (E-10117 | 410.4 | WATER | TOTAL | N/A | 3 MG/L)  
 COD (E-10117 | ASTM D1252-00 (B) | WATER | TOTAL | N/A | 5 MG/L)  
 Nitrogen, Ammonia (7664-41-7 | 350.1 | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Ammonia (7664-41-7 | 350.3 | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Ammonia (7664-41-7 | SM4500NH3-D | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Ammonia (7664-41-7 | SM4500NH3-F | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Ammonia (7664-41-7 | SM4500NH3-G | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Nitrate (14797-55-8 | 352.1 | WATER | TOTAL | N/A | 1 MG/L)  
 Nitrogen, Nitrate (14797-55-8 | SM4500NO3-D | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Nitrate (14797-55-8 | SM4500NO3-E | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Nitrate (14797-55-8 | WATERWORKS TEST STRIPS #480009 | WATER | TOTAL | N/A | 0-36.08 MG/L)  
 Nitrogen, Nitrate+Nitrite (E-10128 | 300.0 | WATER | DISSOLVED | N/A | 0.02 MG/L)  
 Nitrogen, Nitrate+Nitrite (E-10128 | 353.1 | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Nitrate+Nitrite (E-10128 | 353.2 | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Nitrate+Nitrite (E-10128 | EPA 353.3 | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Nitrate+Nitrite (E-10128 | SM4500NO3-H | WATER | TOTAL | N/A | .1 MG/L)  
 Nitrogen, Nitrite (14797-65-0 | 353.2 | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Nitrite (14797-65-0 | 354.1 | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Nitrite (14797-65-0 | SM4500NO2-B | WATER | TOTAL | N/A | 0.1 MG/L)  
 Nitrogen, Nitrite (14797-65-0 | WATERWORKS TEST STRIPS #480009 | WATER | TOTAL | N/A | 0.15 MG/L)  
 Nitrogen, Total (E-52450988 | ASTM D8083-16 | WATER | DISSOLVED | N/A | 0.20 MG/L)  
 Nitrogen, Total (E-52450988 | ASTM D8083-16 | WATER | TOTAL | N/A | .2 MG/L)  
 Nitrogen, Total (E-52450988 | HACH 10071 | WATER | TOTAL | N/A | 0.5 MG/L)  
 Nitrogen, Total (E-52450988 | SM4500P-J | WATER | TOTAL | N/A | 0.1 MG/L)  
 Phosphorus, ortho (14265-44-2 | 300.0 | WATER | DISSOLVED | N/A | .06 MG/L)  
 Phosphorus, ortho (14265-44-2 | 365.2 | WATER | TOTAL | N/A | 0.01 MG/L)

Phosphorus, ortho (14265-44-2   ASTM D515-82   WATER   TOTAL   N/A   0 MG/L)
Phosphorus, ortho (14265-44-2   CHEMETRICS KIT K 8510   WATER   TOTAL   N/A   0.1 MG/L)
Phosphorus, ortho (14265-44-2   SM4500P-C   WATER   TOTAL   N/A   0 MG/L)
Phosphorus, ortho (14265-44-2   SM4500P-E   WATER   DISSOLVED   N/A   0.02 MG/L)
Phosphorus, Total (7723-14-0   365.1   WATER   TOTAL   N/A   0.01 MG/L)
TBOD5 (E-10106T5   405.1   WATER   TOTAL   N/A   2 MG/L)
TBOD5 (E-10106T5   CHEMETRICS DO KIT K 7512   WATER   TOTAL   N/A   0 MG/L)
TBOD5 (E-10106T5   SM5210B   WATER   TOTAL   N/A   2 MG/L)
TKN (E-10264   351.2   WATER   TOTAL   N/A   0.1 MG/L)
TKN (E-10264   351.4   WATER   TOTAL   N/A   0.1 MG/L)
TKN (E-10264   SM 4500N(ORG)-B   WATER   TOTAL   N/A   0.1 MG/L)
TKN (E-10264   SM 4500N(ORG)-C   WATER   TOTAL   N/A   0.1 MG/L)
TKN (E-10264   SM4500N(ORG)-B   WATER   TOTAL   N/A   0.1 MG/L)
TKN (E-10264   SM4500N(ORG)-D   WATER   TOTAL   N/A   0.1 MG/L)
TOC (E-10195   SM5310C   WATER   TOTAL   N/A   1 MG/L)
UBOD (E-10106TU   SM5210C   WATER   TOTAL   N/A   2 MG/L)

NPS\_Physical

NPS\_PROTOCOL

Flow (E1643212   ASTM D3858-95   WATER   TOTAL   N/A   1 CF/SEC)
Flow (E1643212   ASTM D4408   WATER   TOTAL   N/A   1 CF/SEC)
Flow (E1643212   ASTM D4409-95(2003)   WATER   TOTAL   N/A   1 CF/SEC)
Flow (E1643212   EPA VOLUNTEE R   WATER   TOTAL   N/A   1 CF/SEC)
Flow (E1643212   RATING CURVE   WATER   TOTAL   N/A   1 CF/SEC)
Flow (E1643212   USGS   WATER   TOTAL   N/A   1 CF/SEC)
Flow (E1643212   WDV ROUGHNESS COEF   WATER   TOTAL   N/A   1 CF/SEC)
Precipitation (E1644459   GRADUATED RAIN GAUGE   WATER   TOTAL   N/A   0.01 IN/24 HRS)
Precipitation (E1644459   STANDARD NWS RAIN GAUGE   WATER   TOTAL   N/A   .01 IN/24 HRS)
Precipitation (E1644459   TIPPING BUCKET WITH HEATER   WATER   TOTAL   N/A   .01 IN/24 HRS)
Precipitation 24hr prior to monitoring event amount (E-323366   GRADUATED RAIN GAUGE   WATER   TOTAL   N/A   0.01 IN/24 HRS)
Precipitation 24hr prior to monitoring event amount (E-323366   STANDARD NWS RAIN GAUGE   WATER   TOTAL   N/A   0.01 IN/24 HRS)
Precipitation 24hr prior to monitoring event amount (E-323366   TIPPING BUCKET WITH HEATER   WATER   TOTAL   N/A   0.01 IN/24 HRS)
Precipitation 48hr prior to monitoring event amount (E-323367   GRADUATED RAIN GAUGE   WATER   TOTAL   N/A   0.01 IN/48 HRS)
Precipitation 48hr prior to monitoring event amount (E-323367   STANDARD NWS RAIN GAUGE   WATER   TOTAL   N/A   0.01 IN/48 HRS)
Precipitation 48hr prior to monitoring event amount (E-323367   TIPPING BUCKET WITH HEATER   WATER   TOTAL   N/A   0.01 IN/48 HRS)
Water Levels (   ASTM D5413A   WATER   TOTAL   N/A   0.1 FEET)
Water Levels (   ASTM D5413B   WATER   TOTAL   N/A   0.1 FEET)
Water Levels (   ASTM D5413C   WATER   TOTAL   N/A   0.1 FEET)

NPS\_Bacteriology

NPS\_PROTOCOL

Anatoxin-a (64285-06-9 | 546 | WATER | TOTAL | N/A | .1 UG/L)

Anatoxin-a (64285-06-9 | ABRAXIS-520060 | WATER | TOTAL | N/A | .15 UG/L)

Coliforms (Total) (TCOLI | AOAC 991.14 | WATER | TOTAL | N/A | 100 CFU/100ML)

Cylindrospermopsin (143545-90-8 | 546 | WATER | TOTAL | N/A | .05 UG/L)

Cylindrospermopsin (143545-90-8 | ABRAXIS-522011 | WATER | TOTAL | N/A | .05 UG/L)

E. coli (ECOLI | AOAC 991.14 | WATER | TOTAL | N/A | 100 CFU/100ML)

E. coli (ECOLI | COLISCAN EASYGEL 35C | WATER | TOTAL | N/A | 1 CFU/100ML)

E. coli (ECOLI | COLISCAN EASYGEL AMBIENT | WATER | TOTAL | N/A | 1 CFU/100ML)

E. coli (ECOLI | EPA 1103.1 | WATER | TOTAL | N/A | 1 CFU/100ML)

E. coli (ECOLI | EPA 1603 | WATER | TOTAL | N/A | 1 MPN/100ML)

E. coli (ECOLI | SM9222B | WATER | TOTAL | N/A | 1 CFU/100ML)

E. coli (ECOLI | SM9223B | WATER | TOTAL | N/A | 1 MPN/100ML)

Microcystin (total) (77238-39-2 | 546 | WATER | TOTAL | N/A | 0.15 UG/L)

Microcystin (total) (77238-39-2 | ABRAXIS-520022 | WATER | TOTAL | N/A | 1 UG/L)

Microcystin-LR (101043-37-2 | 546 | WATER | TOTAL | N/A | 0.15 UG/L)

Microcystin-LR (101043-37-2 | ABRAXIS-520011 | WATER | TOTAL | N/A | 0.15 UG/L)

Saxitoxin (35523-89-8 | 546 | WATER | TOTAL | N/A | 0.02 UG/L)

#### NPS\_Indices

#### NPS\_PROTOCOL

Fish IBI ( | IN IDEM FISH COMMUNITY | WATER | TOTAL | N/A | 1)

Habitat ( | CQHEI | WATER | TOTAL | N/A | 1)

Habitat ( | IN IDEM QHEI | WATER | TOTAL | N/A | 0)

mIBI ( | EPA 841-B-99-002 JULY 1999 | WATER | TOTAL | N/A | 1)

mIBI ( | IN IDEM HESTER-DENDY | WATER | TOTAL | N/A | 1)

mIBI ( | IN IDEM KICK | WATER | TOTAL | N/A | 1)

mIBI ( | IN IDEM MHAB | WATER | TOTAL | N/A | 1)

Pollution Tolerance Index Rating ( | PTIR | WATER | TOTAL | N/A | 1 INDEX)

Water Quality Index ( | WQI | WATER | TOTAL | N/A | N/A INDEX)

