# Sediment Management for Aquatic Life Protection under the Clean Water Act

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## ACADEMIC ABSTRACT

Stream sedimentation is a growing threat to freshwater ecology globally. Management and remediation of sediment-polluted waters is complicated by the multifaceted nature of this stressor, which exists in dissolved, suspended, and bedded forms. Effective sediment management for the protection of aquatic life requires an understanding of the influence of various sediment forms on biological responses and of in-channel sediment fate and transport under varying stream conditions. To address these management needs, the studies in this dissertation seek to: (1) identify the relative importance of sediment as a stressor of benthic macroinvertebrate communities in the US; (2) determine which sediment parameters are most predictive of impacts to macroinvertebrate communities in Virginia and derive associated sensitivity thresholds; and (3) investigate sediment fate and transport and the transition of sediment between suspended and bedded forms at the reach scale to inform stream restoration efforts to support healthy aquatic macroinvertebrate communities. A systematic inventory of approved US Clean Water Act Total Maximum Daily Load (TMDL) reports clearly demonstrated that sediment is the primary stressor in over 70% of waters with macroinvertebrate community impairments. Standardization of state reporting approaches and terminologies would facilitate knowledge exchange among stakeholders, increase the potential application of water quality assessment data, reveal national trends, and encourage sharing of best practices to facilitate the attainment of water quality goals. Analysis of a decade of Virginia Department of Environmental Quality sediment and macroinvertebrate community monitoring data collected within five ecoregions indicated that a combination of nine sediment parameters, reflecting dissolved, suspended, and bedded forms, explains between 20.2% and 76.4% of variance in macroinvertebrate community health (indicated by the Virginia Stream Condition Index (VSCI)) within regions, and 27.4% of the variance across combined regions. Elastic net regression identified embeddedness and conductivity as having the most influence on the VSCI. Sensitivity thresholds for embeddedness, indicative of sediment levels above which 5% of the macroinvertebrate families are extirpated from the site, were identified as 68% for combined ecoregions, 65% for the Mountain bioregion (comprised of Central Appalachian, Ridge and Valley, and Blue Ridge ecoregions), and 88% for the Piedmont bioregion (comprised of Northern Piedmont and Piedmont ecoregions). Thresholds for conductivity were identified as 366 µS/cm for combined ecoregions, 391 µS/cm for the Mountain bioregion, and 136 µS/cm for the Piedmont bioregion. These thresholds can be applied to water quality monitoring efforts to identify streams with sediment conditions that may pose unacceptable risk to macroinvertebrate communities and in the derivation of TMDLs and/or remedial targets in stream restoration programs. A reach scale sediment transport study in a small stream indicated mean suspended sediment transport velocities of ~ 0.21 m/s during floods with peak flows of ~ 55 L/s. The use of rare earth elements (REE) as fluvial particle tracers revealed individual particle transport distances ranging from 0 m to >850 m. Deposition on a unit area basis was greater in the channel than on the floodplain, and resuspension during sequential floods was evident. Approximately 80% of the tracer was deposited within the first 66 m of the reach. This study can inform future modeling efforts and the technique can be more broadly applied to improve our understanding of fine sediment transport and fate through river corridors.

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## GENERAL AUDIENCE ABSTRACT

Although sediment is a natural component of stream ecosystems, excess sediment presents a threat to natural freshwater ecosystems. Sediment management is complicated because sediment can be dissolved in the water column, suspended as particles in the water column, or rest on the bottom of the stream bed, and can move between these forms (e.g. bedded sediment can be re-suspended). Each form of sediment affects aquatic life in a specific way. To manage stream sediment in a way that protects aquatic life, we need to understand the ways different forms of sediment affect living things, and we need to be able to predict how sediment changes form under different stream conditions (for example, during high water events). To improve our understanding of these things, the studies in this dissertation set out to: (1) identify how often sediment is specifically mentioned as the primary pollutant "stressor" of the benthic macroinvertebrate community (primarily aquatic insects); (2) determine which forms of sediment have the largest negative impacts on aquatic insects in Virginia and what levels of sediment may cause harm; and (3) measure the changes of sediment between suspended and bedded forms in a small stream to provide information needed to restore the health of stream ecosystems. An inventory of published US Clean Water Act Total Maximum Daily Load (TMDL) reports, which states write to identify their impaired waters and their plans to improve those waters, revealed that sediment is an important stressor in over 70% of waters that have altered aquatic insect communities. If the language used to describe how waters are evaluated and what is causing the impairments were standardized among states, data collected under the Clean Water Act could be more broadly used to help understand water quality issues and ways to address them. Analysis of 10 years of Virginia Department of Environmental Quality sediment and aquatic insect community data collected within 5 ecoregions of the state indicates that a combination of 9 sediment parameters reflecting dissolved, suspended, and bedded forms explains between 20.2% and 76.4% of the variability in the health of the aquatic insect community within these regions. Embeddedness, which measures how much larger particles such as gravel and cobble are buried by finer particles like sand; and conductivity, which is a measure of dissolved salts in the water column, both have substantial impacts on the aquatic insect community. Sensitivity thresholds for embeddedness and conductivity indicate the levels of these parameters above which 5% of insect families are absent from a stream; therefore, these levels are considered protective of 95% of the insect community. Thresholds for embeddedness are 68% for the 5 combined ecoregions, 65% for the Mountain bioregion (comprised of Central Appalachian, Ridge and Valley, and Blue Ridge ecoregions), and 88% for the Piedmont bioregion (comprised of Northern Piedmont and Piedmont ecoregions). Thresholds for conductivity are 366 µS/cm for combined ecoregions, 391 µS/cm for the Mountain bioregion, and 136 µS/cm for the Piedmont bioregion. These thresholds can be used by water quality professionals to identify waters with sediment impairments and can be used to help identify appropriate stream restoration goals. A study of sediment movement within the channel of a small stream indicated average transport speeds of ~ 0.21 m/s during floods with peak flows of ~ 55 L/s. The use of rare earth elements (REE) to trace sediment particles revealed individual particle transport distances ranging from 0 m to >850 m. Deposition on a unit area basis was greater in the stream channel than on the floodplain, and the movement of sediment from the stream bed to the water column and back again during sequential floods was evident. Approximately 80% of the tracer was deposited within the first 66 m of the reach. This information can aid the development of models that predict the impact of stream restoration practices on in-stream habitat and improve predictions on the time it will take between the initiation of stream restoration projects and when we see improvements in the biological community.

# DEDICATION

For Michael

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# AUTHOR'S PREFACE

This dissertation represents a compilation of three separate manuscripts (Chapters 2 through 4) proceeded by an introductory chapter and followed by a chapter that identifies primary conclusions and provides recommendations for further research. The dissertation author is the primary author for the three articles. These manuscripts address the challenges of sediment management for aquatic life protection under the Clean Water Act, including the identification and prioritization of sediment impairments, determination of parameters most relevant to aquatic life, and understanding of sediment fate and transport within the fluvial system.

Chapter 2 presents a nation-wide summary of the stressors associated with macroinvertebrate community health based on an inventory of U.S. Environmental Protection Agency (US EPA) approved Total Maximum Daily Load (TMDL) reports. Nearly 650 invertebrate-impaired waters with TMDLs are currently identified across 16 states. Sediment is the most commonly identified stressor in bedded (63%) and suspended (9%) forms. This work highlights the need to improve our understanding of the mechanisms driving sediment impairments in order to design effective remediation plans, and reinforces the importance of efforts to derive sediment-specific biological indices and numerical sediment quality guidelines. Further, the challenges faced in attempts to gain a national view of common invertebrate stressors revealed the need for a common language and improved consistency in state water quality assessment and impairment reporting. Chapter 2 is published in the peer-reviewed journal *Environmental Management* (Govenor, H., L.H. Krometis, and W.C. Hession. 2017. Invertebrate-based water quality impairments and associated stressors identified through the US Clean Water Act. *Environmental Management* 60(4):598-614).

While the findings of Chapter 2 demonstrate that sediment is the primary stressor associated with macroinvertebrate community impairments, the forms of sediment driving these impairments, and thereby the forms that may warrant particular attention in monitoring and restoration activities, are unknown. Therefore, Chapter 3 evaluates the link between multiple stream sediment parameters and macroinvertebrate community response within Virginia. Elastic net regression determined that sediment embeddedness and conductivity have the strongest influence on Virginia Stream Condition Index (VSCI) scores. Threshold effects levels for embeddedness and conductivity for non-coastal streams state-wide and within the Mountain and Piedmont bioregions are identified via family-level sensitivity analyses based on extirpation. These thresholds can find application in water quality monitoring programs, Total Maximum Daily Load development, and as measurement endpoints to monitor progress toward restoration goals. Chapter 3 was submitted to *Integrated Environmental Assessment and Management* on 16 October 2017 and was accepted with minor revision on 11 December 2017: (Govenor, H., L.H. Krometis, L. Willis, and W.C. Hession. (*in revision*) Macroinvertebrate sensitivity thresholds for sediment in Virginia. *Integrated Environmental Assessment and Management*).

Building on Chapter 3's confirmation that sediment form (e.g., suspended, bedded, or dissolved) is important in predicting influence on macroinvertebrate response, Chapter 4 investigates the transition of fine sediment between suspended and bedded forms on the reach scale using a novel particle tracer technique. Rare earth elements (REE), commonly used to study landscape erosion patterns, are employed to track fine sediment fate and transport within a small stream. We measured peak suspended sediment transport of ~21 m/s during two floods with maximum flow rates of approximately 55 L/s each. Transport distances of individual particles in suspension ranged from 0 m to 850 m. Approximately 80% of injected particles entered storage with the first 66 m of the reach. Deposition per unit area was greater in the channel than in the flood plain. Some particles deposited following the first flood were re-suspended and either transported downstream or redeposited within the study reach. This work identifies REE tracing methods as having strong potential for use within the fluvial system to inform quantitative water quality and sediment transport models and provide data toward understanding lag times between management actions and downstream improvements. Submission of Chapter 4 is anticipated in January 2018 (Govenor, H., W.C. Hession, T.A. Keys, C.N. Jones, R. D. Stewart, and L.H. Krometis. (*in preparation*). Rare earth elements as tracers of fluvial fine sediment transport and deposition. For submission to: *Limnology and Oceanography: Methods*).

# CHAPTER 1. INTRODUCTION

Sustainable management of freshwater resources is essential for the survival of healthy ecosystems and human populations. In the United States (US), the management of freshwater resources is regulated under the Clean Water Act, with the stated objective to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (US Congress 2002). While the responsibility for the development and implementation of water quality monitoring programs lies with individual states, territories, and authorized tribes (hereafter, "states"), the US Environmental Protection Agency (EPA) provides program oversight and guidance. States report their assessment findings to the EPA on a biannual cycle, and the Agency then summarizes these findings to provide a national picture of water quality conditions.

States evaluate streams to determine if they can support one or more designated uses, which include fish, shellfish, and wildlife protection and propagation (i.e., aquatic life use); recreation; public water supply; industrial uses; and others. Of the nearly 900,000 miles of rivers and streams assessed nationwide for aquatic life use in the most recent reporting cycle[1], nearly 45% were classified as impaired, meaning they do not meet one or more water quality standards (US EPA 2016). Waters identified as impaired generally require the development of a Total Maximum Daily Load (TMDL) (US Congress 2002). The TMDL process involves identifying the pollutant(s) responsible for the impairment and setting quantifiable loading limits for those pollutants to bring impaired waters back into compliance with state and federal standards (US EPA 2000). While the US EPA reports the primary causes of impairment for all designated uses combined, they do not identify causes for individual designated uses. As such, primary pollutants impacting aquatic life in general or impacting specific aquatic communities (e.g., plants, invertebrates, fish) are unknown. Knowledge of the primary stressors of aquatic communities is critical for determining the most efficient management strategies to protect aquatic life and maintain ecosystem services.

Sediment is second only to pathogens as the most common cause of impairment nationally, impacting nearly 139,000 river and stream miles (US EPA 2016). River sedimentation is in large part attributable to growth in agriculture, resource extraction, and urbanization in the last century, the inputs of which are likely to increase in the future as humans continue to alter the landscape to meet societal needs (Hooke 2012). The annual cost of sediment impacts on the physical, chemical, and biological components of fluvial systems ranges from $20 to $50 billion in North America alone (Larsen et al. 2010).

Sediment management is particularly complicated because sediment is a natural and necessary component of aquatic systems, and natural "healthy" levels vary among ecological regions. In addition, sediment can take multiple forms within the stream channel. Sediment can dissolve as salts into the water column, remain suspended as particulate matter, or settle to the steam bed, and can transition between forms as flow and physiochemical traits of the water vary. While excess fine sediment is known to impact biological communities in dissolved, suspended, and bedded forms (Waters 1995; Wood and Armitage 1997), the relative importance of each of these distinct physical forms of sediment on aquatic life have not been determined. This information is

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[1] Most recent years for Impaired Waters Reports per U.S. EPA ATTAINS database range from 2006-2016 depending on state (US EPA 2016).

crucial for the establishment of appropriate restoration endpoints and monitoring regimes for at-risk surface waters. There is limited understanding of how sediment transitions between its physical forms, which renders predictions of the effectiveness of management practices on biological community responses difficult. Without accurate modeling of sediment fate and transport within fluvial systems it is also difficult to estimate lag times between the implementation of management actions and observed water quality improvements, which limits the ability of managers to predict restoration timelines and establish meaningful post-restoration monitoring regimes.

Benthic macroinvertebrate community assessment has traditionally been the most common form of biological monitoring used by states to assess aquatic life use designations under the CWA (US EPA 2002; Kenney et al. 2009). This community includes insects, mollusks, crustaceans, worms, and other visible organisms that live in close association with the bed of a water body. These communities are ideal for monitoring because of their high diversity, widespread distribution, limited mobility, and relatively long generation times (Resh 2008). They display a range of responses to a variety of stressors and play a critical role in stream ecosystems by acting as detritivores, herbivores, predators, and as a dominant prey base for upper trophic level organisms. Based on the wide-spread use of this community to assess aquatic health among states, a preliminary focus on sediment impacts on benthic macroinvertebrate communities is likely to provide the most available data for investigating the impacts of sediment and the most potential application of research findings.

This dissertation aims to address the aquatic community health management needs identified above via the following objectives:

1) Identify the primary pollutants associated with benthic macroinvertebrate community impairments under the Clean Water Act;

2) Determine which sediment parameters are most closely associated with impacts to macroinvertebrate communities in Virginia as quantified by the invertebrate-based Virginia Stream Condition Index, and derive associated sensitivity thresholds for these parameters; and

3) Investigate the transition of fine sediment among suspended and bedded forms on the reach scale to inform fate and transport modeling and estimation of lag times for watershed restoration programs.

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# CHAPTER 2. INVERTEBRATE-BASED WATER QUALITY IMPAIRMENTS AND ASSOCIATED STRESSORS IDENTIFIED THROUGH THE US CLEAN WATER ACT

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## Abstract

Macroinvertebrate community assessment is used in most US states to evaluate stream health under the Clean Water Act (CWA). While water quality assessment and impairment determinations are reported to the US Environmental Protection Agency (US EPA), there is no national summary of biological assessment findings. The objective of this work was to determine the national extent of invertebrate-based impairments and to identify pollutants primarily responsible for those impairments. Evaluation of state data in the US EPA's Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) database revealed considerable differences in reporting approaches and terminologies including differences in if and how states report specific biological assessment findings. Only 15% of waters impaired for aquatic life could be identified as having impairments determined by biological assessments (e.g., invertebrates, fish, periphyton); approximately one-third of these were associated with macroinvertebrate bioassessment. Nearly 650 invertebrate-impaired waters were identified nationwide, and sediment was the most common pollutant in bedded (63%) and suspended (9%) forms. This finding is not unexpected, given previous work on the negative impacts of sediment on aquatic life, and highlights the need to more specifically identify the mechanisms driving sediment impairments in order to design effective remediation plans. It also reinforces the importance of efforts to derive sediment-specific biological indices and numerical sediment quality guidelines. Standardization of state reporting approaches and terminology would significantly increase the potential application of water quality assessment data, reveal national trends, and encourage sharing of best practices to facilitate the attainment of water quality goals.

## Introduction

The United Nations identified the availability and effective management of clean water as one of 17 key sustainable development goals critical to the survival of people and the planet (United Nations 2016). This reflects the importance of the many services provided by aquatic ecosystems, including drinking water, power generation, food sources, waste filtration, buffering of flood flows, nutrient cycling, and recreational use (Millennium Ecosystem Assessment 2005). In the United States (US), water quality monitoring and management is regulated under the Clean Water Act (CWA). States, territories, and authorized tribes (collectively referred to hereafter as "states") are individually responsible for monitoring the chemical, physical, and biological integrity of their waters and reporting their findings to the US Environmental Protection Agency (US EPA). States, therefore, lead individual efforts to evaluate and remediate water quality issues, including those in watersheds that cross state lines, while the US EPA provides national oversight and guidance.

While water quality assessment includes evaluation of chemical, physical, and biological components of the aquatic environment, often chemical and physical assessments are limited to sampling that reflects one point in time. In contrast, biological monitoring has the advantage of reflecting cumulative effects of chemical, physical, and biological stressors in the environment accumulated over the life time of the organisms being evaluated, which can range from months to years (Rosenberg and Resh 1993; Resh 2008; Herbst et al. 2011). As a result, biological monitoring can provide a more holistic picture of stream condition than physical or chemical monitoring alone (Barbour et al. 1999).

Biological monitoring includes the assessment of one or more communities (e.g., fish, macroinvertebrates, periphyton) to determine if they are similar to those of natural reference streams representative of least disturbed conditions for a given region (US EPA 2011). While guidance has been issued to assist states in designing biological monitoring programs (US EPA 1990; Gibson 1992; Fore 2003), each state environmental agency may use the assemblages, metrics and data deemed most appropriate to determine if state waters are impaired. State monitoring approaches are indicated either in the form of a consolidated assessment and listing methodology (CALM) report (US EPA 2002a) or within a section of the prior reporting cycle's water quality assessment report.

There are advantages and disadvantages specific to each biological community used in bioassessment, as each community can provide information of distinct aspects of stream health (Resh 2008). The community or communities selected for monitoring by states is dependent on state-specific goals. Currently, the benthic macroinvertebrate community is most commonly used in CWA bioassessment; 47 of 57 US states and territories include benthic macroinvertebrate monitoring in their assessment programs (Table 2-1; Figure 2-1a and b). Benthic invertebrates include insects, mollusks, crustaceans, worms, and other visible organisms that live in close association with the bed of a water body. These communities are ideal for monitoring because of their high diversity, widespread distribution, limited mobility, and relatively long generation times (Resh 2008). They display a wide range of responses to a variety of stressors and play a critical role in stream ecosystems by acting as detritivores, herbivores, predators, and as a dominant prey base for upper trophic level organisms.

Macroinvertebrate community data are typically evaluated via calculation of state-specific multimetric indices (Table 2-1). These indices combine invertebrate metrics for a given region that are most useful in differentiating between disturbed and reference conditions to yield a single numerical value (Karr and Chu 1997). They may include measures of richness (e.g., total species, total families); density; percent abundance of specific taxa; functional feeding groups (e.g., scrapers, filter feeders, predators); behavioral characteristics (e.g., swimmers, clingers, burrowers); and other life history traits (e.g., univoltine, bivoltine). The metrics most commonly included are total taxon richness; richness of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddis flies) (EPT); the Hilsenhoff Biotic Index (Hilsenhoff 1987); percent by individuals of EPT; and richness of ephemeropterans (Carter and Resh 2013).

Table 2-1 Macroinvertebrate Community Assessment Methods Used by US States and Territories for Clean Water Act Assessments

| **US EPA Region** | **State/ Territory** | **Macroinvertebrate Community Monitoring Method - freshwater streams** | **Type** | **Consolidated Assessment and Listing Methodology Reference** | **Specific Monitoring Methodology Reference** |
|---|---|---|---|---|---|
| 1 | Connecticut | Multimetric Index | Index | *2014 State of Connecticut Integrated Water Quality Report* (Connecticut DEEP 2014) | *Calibration of the Biological Condition Gradient for High Gradient Streams of Connecticut* (Gerritsen and Jessup 2007) |
| 1 | Maine | Evaluation of macroinvertebrate indices; evaluation of aquatic life statistical decision models | Index; Linear Models | *2012 Integrated Water Quality Monitoring and Assessment Report* (Maine DEP 2012) | *Classification Attainment Evaluation Using Biological Criteria for Rivers and Streams* (Maine DEP Rule Chapter 579) |
| 1 | Massachusetts | Modified Rapid Bioassessment Protocol | Index | *Massachusetts Year 2014 Integrated List of Waters: Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act* (Massachusetts DEP 2015); *Massachusetts Consolidated Assessment and Listing Methodology (CALM) guidance Manual July 2012* (Massachusetts DEP 2012) | *Standard Operating Procedure Water Quality Monitoring in Streams Using Aquatic Macroinvertebrates. CN 39.2. Revised November 2007* (Massachusetts DEP 2007) |
| 1 | New Hampshire | Benthic Index of Biological Integrity | Index | *State of New Hampshire 2014 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology* (New Hampshire DES 2015) | *New Hampshire Department of Environmental Services (NHDES) Protocols for Macroinvertebrate Collection, Identification and Enumeration* (New Hampshire DES 2013) |
| 1 | Rhode Island | Multimetric Biological Condition Index (reference condition approach); Index score used for state Lowlands (reference site approach) | Index | *State of Rhode Island and Providence Plantations Consolidated Assessment and Listing Methodology for the Preparation of the Integrated Water Quality Monitoring and Assessment Report Pursuant to Clean Water Act Sections 303(d) and 305(b): 2014 Assessment and Listing Cycle* (Rhode Island DEM 2014) | *A Multimetric Biological Condition Index for Rhode Island Streams. Final Report.* (Tetra Tech 2012) |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 1 | Vermont | Vermont Biocriteria for Macroinvertebrate Assemblages | Index | *Vermont Surface Water Assessment and Listing Methodology* (Vermont DEC 2015) | *Methods for Determining Aquatic Life Use Status in Selected Wadeable Streams Pursuant to Applicable Water Quality Management Objectives and Criteria for Aquatic Biota Found in Vermont Water Quality Standards (WQS) Chapter 3, Section 3-01, as well as those specified in Section 3-02 (A1 and B3), Section 3-03 (A1 and B3), and Section 3-04 (A1 and B4, parts a-d)* |
| 2 | New Jersey | Coastal Plain Macroinvertebrate Index, Pinelands Macroinvertebrate Index, High Gradient Macroinvertebrate Index | Index | *Draft 2016 New Jersey Integrated Water Quality Assessment Methods* (New Jersey DEP 2015) | *Standard Operating Procedures Ambient Biological Monitoring Using Benthic Macroinvertebrates Field, Lab, Assessment Methods* (New Jersey DEP 2007); for Coastal Plains: "Assessment framework for mid-Atlantic coastal plain streams using benthic macroinvertebrates" (Maxted et al. 2000, *J.N. Am Benthol. Soc*); for Pinelands: *Development of the New Jersey Pinelands Macroinvertebrate Index (PMI)* (TetraTech, Inc. 2005); for high gradient streams: *Development of the New Jersey High Gradient Macroinvertebrate Index (HGMI)* (TetraTech Inc. 2007) |
| 2 | New York | Biological macroinvertebrate assessment; multimetric index of community structure - metrics used to calculate BAP score | Index | *The New York State Consolidated Assessment and Listing Methodology* (New York State DEC 2009) | *Standard Operating Procedure: Biological Monitoring of Surface Waters in New York State* (New York State DEC 2012) |

| **US EPA Region** | **State/ Territory** | **Macroinvertebrate Community Monitoring Method - freshwater streams** | **Type** | **Consolidated Assessment and Listing Methodology Reference** | **Specific Monitoring Methodology Reference** |
|---|---|---|---|---|---|
| 2 | Puerto Rico | Macroinvertebrate Integrity Index | Index | *Puerto Rico 305(b)/303(d) Integrated Report* (Puerto Rico EQB 2014) | Under continued development |
| 2 | Virgin Islands, U.S. | NOT ASSESSED; No organized monitoring of benthic invertebrates at this point. "When available, DRNR-DEP may use data collected/received from biological monitoring projects" | NA | *Assessment Methodology for the 2016 United States Virgin Islands Integrated Water Quality Monitoring and Assessment Report* (US Virgin Islands DEP 2016) | NA |
| 2 | Delaware | NOT ASSESSED; "goal of the program is to establish numeric biological criteria in State water quality standards… Standard methods have been developed and tested for assessing the biological community and habitat quality of nontidal streams, and draft numeric criteria are under development." (Delaware DNREC 2015) | NA | *State of Delaware 2014 Combined Watershed Assessment Report (305(b)) and Determination for the Clean Water Act Section 303(d) List of Waters Needing TMDLs* (Delaware DNREC 2015) | NA (under development) |
| 2 | District of Columbia | NOT ASSESSED; "biological/habitat" data assessed 2002-2009; "habitat data" assessed 2009-2013 (suggests no benthic data evaluated at present) | NA | *The District of Columbia Water Quality Assessment 2014 Integrated Report to the US Environmental Protection Agency and Congress Pursuant to Sections 305(b) and 303(d) Clean Water Act (P.L 97-117)* (District of Columbia DEE 2015) | NA |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 3 | Maryland | Benthic macroinvertebrate Index of Biotic Integrity | Index | *Maryland's Final 2014 Integrated Report of Surface Water Quality Submitted in Accordance with Sections 303(d), 305(b), and 314 of the Clean Water Act* (Maryland DE 2015) | *New Biological Indicators to Better Assess the Condition of Maryland Streams* (Southerland et al 2005) |
| 3 | Pennsylvania | Modified version of Rapid Bioassessment Protocol; benthic identification to genus; impairment designations based on "benchmark metric scores" - protocols distinct for limestone streams, multi-habitat pool/glide streams, and riffle/run freestone streams | Index | *2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report: Clean Water Act Section 305(b) Report and 303(d) List* (Pennsylvania DEP 2014); *Commonwealth of Pennsylvania Assessment and Listing Methodology for Integrated Water Quality Monitoring and Assessment Reporting Clean Water Act Sections 305(b)/303(d)* (Pennsylvania DEP 2015) | *An Index of Biological Integrity for "True" Limestone Streams* (Pennsylvania DEP 2009)*; Pennsylvania DEP Multihabitat Stream Assessment Protocol* (Pennsylvania DEP 2007)*; An Index of Biotic Integrity for Benthic Macroinvertebrate Communities in Pennsylvania's Wadeable, Freestone, Riffle-Run Streams* (Pennsylvania DEP 2015) |
| 3 | Virginia | Virginia Stream Condition Index; Virginia Coastal Plain Macroinvertebrate Index | Index | *Final 2014 305(b)/303(d) Water Quality Assessment Integrated Report* (Virginia DEQ 2016) | *The Virginia Coastal Plain Macroinvertebrate Index* (Virginia DEQ 2013); *A Stream Condition Index for Virginia Non-coastal Streams* (Burton and Gerritsen 2003) |
| 3 | West Virginia | West Virginia Stream Condition Index | Index | *Draft 2014 West Virginia Integrated Water Quality Monitoring and Assessment Report* (West Virginia DEP 2016) | *A Stream Condition Index for West Virginia Wadeable Streams* (Tetra Tech 2000) |
| 4 | Alabama | Rapid Bioassessment Protocol Level III Wadeable Multihabitat Bioassessments - EPT Families; Intensive Wadeable Multihabitat Bioassessment Level IV | Index | *Alabama's Water Quality Assessment and Listing Methodology* (2015) | *Rapid Bioassessment Protocols for use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition* (Barbour et al. 1999) |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 4 | Florida | Florida Stream Condition Index for macroinvertebrates | Index | *Integrated Water Quality Assessment for Florida: 2014 Sections 303(d), 305(b), and 314 Report and Listing Update* (Florida DEP 2014) | *SCI 1000. Stream Condition Index Methods* DEP-SOP-003/11 (Florida DEP 2014) |
| 4 | Georgia | Benthic macroinvertebrate bioassessments based on a multi-metric index | Index | *Georgia's 2014 305(b)/303(d) Listing Assessment Methodology* (Georgia DNR 2014) | *Macroinvertebrate Biological Assessment of Wadeable Streams in Georgia Standard Operating Procedures* (Georgia DNR 2007) |
| 4 | Kentucky | Kentucky Macroinvertebrate Bioassessment Index | Index | *Integrated Report to Congress on the Condition of Water Resources in Kentucky*, *2012* (Kentucky DEP 2013) | *The Kentucky Macroinvertebrate Bioassessment Index* (Kentucky DEP 2003) |
| 4 | Mississippi | Mississippi Benthic Index of Stream Quality | Index | *Mississippi Consolidated Assessment and Listing Methodology 2014 Assessment and Listing Cycle: Data Requirements and Assessment and Listing Methodology to Fulfill the Requirements of Sections 305(b) and 303(d) of the Clean Water Act* (Mississippi DEQ 2014) | *Development and Application of the Mississippi Benthic Index of Stream Quality (M-BISQ)* (Mississippi DEQ 2003); *Evaluation and Recalibration of the Mississippi Benthic Index of Stream Quality (MBISQ)* (Mississippi DEQ 2008) |
| 4 | North Carolina | North Carolina Biotic Index with evaluation of other community metrics | Index | *2014 Water Quality Assessment Process* (North Carolina DENR 2014) | *Standard Operating Procedures for the Collection and Analysis of Benthic Macroinvertebrates February 2016 (Version 5.0)* (North Carolina DENR 2016) |
| 4 | Tennessee | Regional multi-metric indices | Index | *Tennessee Division of Water Resources Fiscal Year 2016-2017 Surface Water Monitoring and Assessment Program Plan* (Tennessee DEC 2016) | *Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys* (Tennessee DEC 2011) |
| 5 | Illinois | Macroinvertebrate Index of Biological Integrity and Macroinvertebrate Biotic Index | Index | *Illinois Water Monitoring Strategy 2015-2020* (Illinois EPA 2014) | *Illinois Benthic Macroinvertebrate Collection Method Comparison and Stream Condition Index Revision* (Tetra Tech Inc. 2004) |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 5 | Indiana | Benthic aquatic macroinvertebrate Index of Biological Integrity | Index | *Indiana Department of Environmental Management's 2014 Consolidated Assessment and Listing Methodology* (Indiana DEM 2014) | (no methods cited) in 2010 "IDEM developed a new mIBI [macroinvertebrate index of biotic integrity] using mHAB [macroinvertebrate habitat] sampling methods that accounts for all habitat types at a given site and which is applicable in all basins in the state" (Indiana DEM 2014) |
| 5 | Michigan | Rapid bioassessment of macroinvertebrate communities | Index | *Water Quality and Pollution Control in Michigan 2014 Sections 303(d), 305(b), and 314 Integrated Report* (Michigan DEQ 2014) | Procedure 51 in *Qualitative Biological and Habitat Survey Protocols for Wadeable Streams and Rivers, April 24, 1009. Revised December 2008* (Michigan DEQ 1990); *Qualitative Biological and Habitat Survey Protocols for Nonwadeable Rivers. Policy and Procedure #WRD-SWAS-022* (Michigan DEQ 2013) |
| 5 | Minnesota | Macroinvertebrate Index of Biological Integrity | Index | *Guidance Manual for Assessing the Quality of Minnesota Surface Waters for Determination of Impairment: 305(b) Report and 303(d) List* (Minnesota Pollution Control Agency 2014) | *Development of a Macroinvertebrate-Based Index of Biological Integrity for Minnesota's Rivers and Streams* (Minnesota Pollution Control Agency 2014) |
| 5 | Ohio | Invertebrate Community Index | Index | *Ohio 2016 Integrated Water Quality Monitoring and Assessment Report* (Ohio EPA 2016) | *Biological Criteria for the Protection of Aquatic Life: Volume III. Standardized Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities* (Ohio EPA 2015) |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 5 | Wisconsin | Macroinvertebrate Index of Biological Integrity | Index | *Wisconsin 2016 Consolidated Assessment and Listing Methodology (WisCALM) for CWA Section 303(d) and 305(b) Integrated Reporting* (Wisconin DNR 2016) | Development of stream macroinvertebrate models that predict watershed and local stressors in Wisconsin. (Weigel 2003 in *Journal of the North American Benthological Society* 22:1); Development, validation, and application of a macroinvertebrate-based index of biotic integrity for nonwadeable rivers of Wisconsin. (Weigel and Dimick 2011 in *Journal of the North American Benthological Society* 30:3). |
| 6 | Arkansas | Multimetric invertebrate analysis following *Rapid Bioassessment Protocols for Use in Stream and Rivers* (EPA/444/4-89-001, 1989) | Index | *Assessment Methodology for the Preparation of the 2016 Integrated Water Quality Monitoring and Assessment Report* (Arkansas DEQ 2016) | *Arkansas' Water Quality and Compliance Monitoring Quality Assurance Project Plan* (Arkansas DEQ 2016) |
| 6 | Louisiana | NOT ASSESSED | NA | *Louisiana's 2016 Integrated Report and Section 303(d) List Methods and Rationale* (Louisiana DEQ 2016) | NA |
| 6 | New Mexico | Benthic Macroinvertebrate Stream Condition Index for Wadeable Streams | Index | *Procedures for Assessing Water Quality Standards Attainment for the State of New Mexico CWA 303(d)/305(b) Integrated Report: Assessment Protocol* (New Mexico ED 2011) | *Benthic Macroinvertebrate Stream Condition Indices for New Mexico Wadeable Streams* (Jacobi and Associates and Tetra Tech, Inc. 2006) |
| 6 | Oklahoma | Macroinvertebrate index of biological integrity following Rapid Bioassessment Protocol with comparison to regional reference metrics | Index | *Water Quality in Oklahoma: 2014 Integrated Report* (Oklahoma DEQ 2014) | *Rapid Bioassessment Protocols for use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition* (Barbour et al. 1999) |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 6 | Texas | Benthic Index of Biological Integrity | Index | *Texas Surface Water Quality Monitoring and Assessment Strategy FY 2012-2017* (Texas CEQ 2013) | *Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Da*ta (Texas CEQ 2014)[Benthic IBI metrics scoring in Appendix B] |
| 7 | Iowa | Benthic macroinvertebrate index of biotic integrity | Index | *Methodology for Iowa's 2012 Water Quality Assessment, Listing, and Reporting Pursuant to Sections 305(b) and 303(d) of the Federal Clean Water Act* (Iowa DNR 2013) | *Guidelines for Determining Section 305(b) Aquatic Life Use Support (ALUS) Using Stream Biocriteria Sampling Data for the 2006 Section 305(b) Reporting and 303(d) Listing Cycles* (Attachment 2 of Iowa DNR 2013) |
| 7 | Kansas | Macroinvertebrate biotic index, nutrient-organic Kansas biotic index, Ephemeroptera-Plecoptera-Trichoptera index (EPT), percent EPT (%EPTCNT), Total tax | Index | *2014 Kansas Integrated Water Quality Assessment* (Kansas DHE 2014) | *Proposed biotic and habitat indices for use in Kansas streams. Report No 35 of the Kansas Biological Survey* (Huggins and Moffett 1988) |
| 7 | Missouri | Aquatic invertebrate monitoring | Index | *Missouri Integrated Water Quality Report and Section 303(d) List, 2014. Clean Water Act Sections 303(d), 305(b), and 314* (Missouri DNR 2014) | *Development of Regionally Based Biological* Criteria for Streams of Missouri (Rabeni et al. 1997) |
| 7 | Nebraska | Invertebrate Community Index | Index | *2014 Water Quality Integrated Report* (Nebraska DEQ 2014) | *Nebraska Stream Biological Monitoring Program 2004-2008* (Bazata 2011) |
| 8 | Colorado | Colorado Multi Metric Index | Index | *Integrated Water Quality Monitoring and Assessment Report 2016* (Colorado DPHE 2016); *Draft Section 303(d) Listing Methodology 2016 Listing Cycle* (Colorado DPHE 2015) | *Policy 10-1 Aquatic Life Use Attainment, Methodology to Determine Use Attainment for Rivers and Streams* (Colorado DPHE 2010) |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 8 | Montana | Montana-specific Hilsenhoff Biotic Index; Observed/Expected Index (RIVPACS model) | Index; O/E | *Montana 2014 Final Water Quality Integrated Report* (Montana DEQ 2014); *Montana Statewide Water Quality Monitoring and Assessment Strategy 2009-2019* (Montana DEQ 2009) | *Sample Collection, Sorting, Taxonomic Identification, and Analysis of Benthic Macroinvertebrate Communities Standard Operating Procedure* (Montana DEQ 2012); *A Report to the DEQ Water Quality Planning Bureau on the Proper Interpretation of Two Recently Developed Bioassessment Models. Helena, Montana: Montana Department of Environmental Quality* (Feldman 2006); *Biological Indicators of Stream Condition in Montana Using Benthic Macroinvertebrates. Tetra Tech Technical report prepared for the Montana Department of Environmental Quality, Helena, Montana* (Jessup et al 2006) |
| 8 | North Dakota | Ecoregion-specific Macroinvertebrate IBI Metrics | Index | *Water Quality Assessment Methodology for North Dakota's Surface Waters* (North Dakota DH2013) | *Macroinvertebrate Index of Biotic Integrity for the Lake Agassiz Plain Ecoregion (48) of North Dakota* (North Dakota DH 2011); *Macroinvertebrate Index of Biotic Integrity for the Northern Glaciated Plain Ecoregion (46) of North Dakota* (North Dakota DH 2010) |
| 8 | South Carolina | EPT Index and North Carolina Biotic Index | Index | *State of South Carolina Integrated Report for 2014 Part I: Section 303(d) List of Impaired Waters* (South Carolina DHEC 2014) | *Standard Operating Procedures for the Collection and Analysis of Benthic Macroinvertebrates February 2016 (Version 5.0)* (North Carolina Department of Environment and Natural Resources 2016) |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 8 | South Dakota | Macroinvertebrate Index of Biological Integrity; Whittier 2007 | Index | *The 2014 South Dakota Integrated Report for Surface Water Quality Assessment* (South Dakota DENR 2014) | Current IBI approach developed with methods from "A structured approach for developing indices of biotic integrity: Three examples from streams and rivers in the western USA" *Transactions of the American Fisheries Society* 136: 718-735. (Whittier et al 2007). State-specific Index of Biological Integrity is under development in partnership with South Dakota State University |
| 8 | Utah | Observed to Expected (O/E) ratio; River Invertebrate Prediction and Classification System (RIVPACS) | O/E | *Utah's 303(d) Assessment Methodology* (Utah Department of Environmental Quality 2016) | Development and use of a system for predicting the macroinvertebrate fauna in flowing waters. (Wright 1995) adjusted for conditions in Utah |
| 8 | Wyoming | Wyoming Stream Integrity Index (WSII); Observed to Expected (O/E) ratio via River Invertebrate Prediction and Classification System (RIVPACS) | Index | *Wyoming's Methods for Determining Surface Water Quality Condition and TMDL Prioritization* (Wyoming DEQ 2014) | *The Wyoming Stream Integrity Index (WSII) - Multimetric Indices for Wadeable Streams and Large Rivers in Wyoming* (Hargett 2011); *Assessment of aquatic biological condition using WY RIVPACS with comparisons to the Wyoming Stream Integrity Index (WSII)* (Hargett 2012) |
| 9 | American Samoa | NOT ASSESSED; Macroinvertebrates were historically assessed, but are no longer assessed due to scarce communities and high variability. | Index | *Territory of American Samoa Integrated Water Quality Monitoring and Assessment Report 2016* (Tuitele et al 2016) | NA |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 9 | Arizona | Macroinvertebrate IBI | Index | *2016 Clean Water Act Assessment (July 1, 2010 to June 30, 2015) Arizona's Integrated 305(b) Assessment and 303(d) Listing Report* (Arizona DEQ 2016) | *Implementation Procedures for the Narrative Biocriteria Standard* (Arizona DEQ 2015) |
| 9 | California | Macroinvertebrate IBI | Index | *2012 California Integrated Report, Clean Water Act Sections 303(d) and 305(b)* (California SWRCB 2015) | *Standard Operating Procedures (SOP) for the Collection of Field Data for Bioassessments of California Wadeable Streams: Benthic Macroinvertebrates, Algae, and Physical Habitat* (Ode et al 2016) |
| 9 | Guam | NOT ASSESSED; (limited online information; no indication of macroinvertebrate monitoring found) | NA | Guam EPA 2012 Integrated Report | NA |
| 9 | Hawaii | NOT ASSESSED; "Biological surveys of aquatic communities, fish consumption advisories and reports of contaminated sediments are also eligible sources of listing information" (The Hawaii State Department of Health 2014) No standard invertebrate biological monitoring program. | NA | *2014 State of Hawaii Water Quality Monitoring and Assessment Report: Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress Pursuant to §303(d) and §305(b), Clean Water Act (P.L 97-117)* (The Hawaii State Department of Health 2014) | NA |
| 9 | Nevada | NOT ASSESSED; Macroinvertebrate data are collected but not used as reference site conditions are not yet established. | NA | *Nevada 2012 Water Quality Integrated Report With EPA Overlisting, Assessment Period - October 1, 2006 through September 30, 2011* (Nevada DEP 2014) | NA |

| US EPA Region | State/ Territory | Macroinvertebrate Community Monitoring Method - freshwater streams | Type | Consolidated Assessment and Listing Methodology Reference | Specific Monitoring Methodology Reference |
|---|---|---|---|---|---|
| 9 | North Mariana Islands, Commonwealth of | NOT ASSESSED; There are no rivers within the Commonwealth of North Mariana Islands. Most inland waters are intermittent. Biological monitoring is focused on coastal waters. | NA | *Final Commonwealth of the Northern Mariana Islands Integrated 305(b) and 303(d) Water Quality Assessment Report* (Bureau of Environmental and Coastal Quality 2014) | NA |
| 9 | Trust Territories | NOT ASSESSED | NA | No formal government watershed monitoring. Monitoring conducted Water and Environmental Research Institute of the Western Pacific (www.weriguam.org) | NA |
| 10 | Alaska | Benthic macroinvertebrate assemblage | Index | *Alaska Water Quality Monitoring & Assessment Strategy* (Alaska DEC 2015) | (no methods citation) "Multi-metric biological indices have been developed for two regions in Alaska, Alexander Archipelago streams and Cook Inlet Basin streams." (Alaska DEC 2015) |
| 10 | Idaho | Stream macroinvertebrate index; river macroinvertebrate index | Index | *Idaho's 2012 Integrated Report* (State of Idaho DEQ 2014); *Surface Water Ambient Monitoring Plan* (Idaho DEQ 2012) | *Idaho Small Stream Ecological Assessment Framework* (Idaho DEQ 2002); *Idaho River Ecological Assessment Framework* (Idaho DEQ 2002) |
| 10 | Oregon | Observed/Expected modeling with PREDATOR model (similar to RIVPACS) | O/E | *Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters* (Oregon DEQ 2014) | *PREDATOR: Development and Use of RIVPACS-type macroinvertebrate Models to Assess the Biotic Condition of Wadeable Oregon Streams, Technical Report DEQ08-0048-TR* (Hublber 2008) |
| 10 | Washington | Observed/Expected modeling with RIVPACS; Index of Biological Integrity | Index; O/E | *Water Quality Policy 1-11* (State of Washington DE 2012) | RIVPACS model for Western Washington |

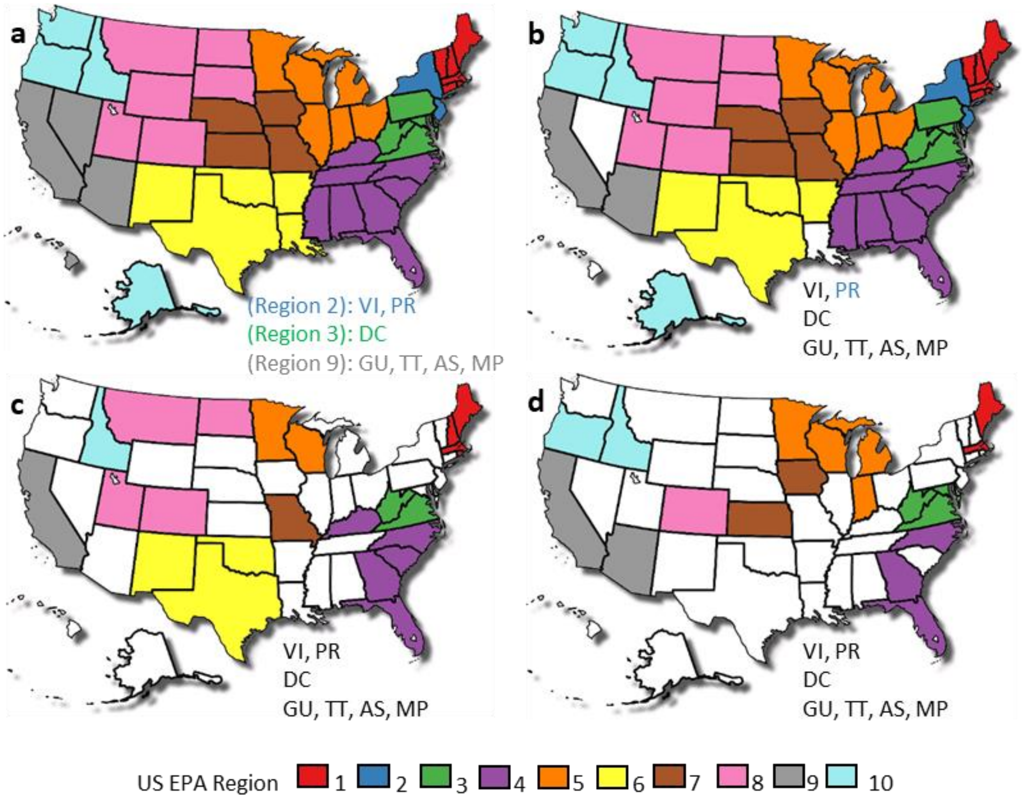

Figure 2-1. States That Conduct Macroinvertebrate Bioassessments, Have Invertebrate-Based Impairments, and Have Approved TMDLs Addressing Invertebrate-Based Impairments. a States colored by US EPA Region VI = Virgin Islands, PR = Puerto Rico, DC = District of Columbia, GU = Guam, TT = Trust Territories, AS = American Samoa, MP = Northern Marianas b States that conduct macroinvertebrate biomonitoring (colored; VI, PR, GU, TT, AS, and MP do not) c States with invertebrate-based impairments per most recent US EPA 303(b) summary (colored) d States with approved Total Maximum Daily Load reports addressing invertebrate-based impairments (colored)

Waters without observed communities comparable to natural reference conditions (i.e., in which index values are less than a predetermined threshold) are classified as impaired and are placed on state 303(d) impaired waters lists (referring to Section 303(d) of the CWA). Results of assessment and impairment determinations are reported biennially to the US EPA. While overall impairment determinations (i.e. impaired, not impaired, threatened) are summarized in national status reports (US EPA 2016a), there are no summaries of information provided by biotic assessments (e.g., number and type of assessments, number of impairments identified). Such summaries are necessary to identify impacts to aquatic life across the US that are not revealed by chemical and physical assessment alone, to provide insights into cumulative impacts of stressors, and to identify those stressors responsible for the largest impacts on particular communities of the aquatic ecosystem.

Waters placed on state 303(d) impaired waters lists require the development of Total Maximum Daily Loads (TMDLs)(US EPA 2000a), which are  loading limits of particular pollutants that should not be exceeded for the health of the water body. Since biological monitoring inherently reflects integrated effects of multiple pollutants over time, the cause(s) of observed effects (i.e. the pollutants for which TMDLs must be developed) are often not immediately apparent. To determine the most probable cause(s) of impairment, a stressor identification process can be conducted. The US EPA’s Stressor Identification Guidance Document (US EPA 2000b) outlines a recommended approach for stressor identification that includes the development of a list of candidate stressors, analysis of available evidence related to each potential stressor, and characterization of potential causal relationships between candidate stressors and observed conditions. Additional data may be gathered throughout the process until "sufficient confidence in the causal characterization is reached" (US EPA 2000b). The US EPA Causal Analysis/Diagnosis Decision Information System (CADDIS) is an online tool that helps scientists identify stressors and conduct causal assessments (US EPA 2010a).

Stressor identification guidance identifies chemical toxicants, effluent, loss of habitat, flow alterations, elevated temperature, siltation, limited dissolved oxygen, excess mineral nutrients, pathogens, and invasive species as potential aquatic life stressors (US EPA 2000b). The relative importance of each of these stressors in contributing to invertebrate-based impairments is unknown. Results of the National Rivers and Streams Assessment (NRSA) suggest that streams with excess phosphorus, nitrogen and fine sediment relative to reference streams are twice as likely to have impaired invertebrate communities (US EPA 2016b). However, the NRSA assessment is based on odds-ratios (stressor co-occurrence with impaired communities) and does not reflect findings of site-specific stressor evaluations.

Extensive human and financial resources are spent on surface water monitoring programs and TMDL development (US EPA 2001; Bosch et al. 2006). The average cost to develop a TMDL is estimated at $52,000 (ranging from $26,000 to $500,000), and annual cost estimates for pollutant sources (i.e., generators of point and nonpoint source pollution) to implement TMDL programs range from $900 million to $4.3 billion in 2000 year US dollars (US EPA 2001). No national summary of biological assessments and associated pollutants exists, rendering the prioritization of research and management efforts for aquatic life protection difficult to justify. In addition, the identification of trends among states can encourage sharing of successful best practices and may be useful in preventing further stream degradation. Therefore, to address this need, using the most recent US EPA CWA data summary for each state, this effort aims to:

(1) Quantify freshwater rivers and streams throughout the United States that are on the 303(d) list based on the assessment of the macroinvertebrate community (i.e. "invertebrate-based impairments"); and
(2) Categorize pollutants associated with these invertebrate-based impairments for formerly 303(d) listed streams that have approved TMDLs.

## Methods

### Streams on the 303(d) List due to Invertebrate-Based Impairments

State water quality monitoring data are submitted to the US EPA and summarized on the agency's Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS), an online database of the Nation's surface waters (US EPA 2016a). When impairment data are submitted to the US EPA, an accompanying cause of impairment is required. There are currently 33 approved Cause of Impairment Groups (US EPA 2016a), although additional causes can be entered. Each group contains Cause Names that states select when listing their waters. The only cause of impairment group that includes cause names referring specifically to biological monitoring is the Cause Unknown – Impaired Biota group;

this designation also indicates an impairment for which the primary stressors are unknown at the time of listing (e.g., the specific pollutant requiring load reduction via the TMDL process).

State-specific impairment data summarized in the ATTAINS public interface as of September 2016 were reviewed (website assessed 4 September 2016). Stream and river impairments classified under Cause Unknown – Impaired Biota were evaluated for each state. Waters with cause names that explicitly mentioned macroinvertebrates or insects and cause names including benthos were considered to have invertebrate-based impairments. Causes with more general designations (e.g., bioassessment, biological impairment, biology) may also include waters with invertebrate-based impairments; however, these were not included in the analysis because details on specific bioassessment methods used were not reported and may involve widely differing targets (e.g. algae, fish). Stream miles for invertebrate-impaired waters were summed and converted to kilometers to determine the total stream length with invertebrate-based impairments (Figure. 2-2).

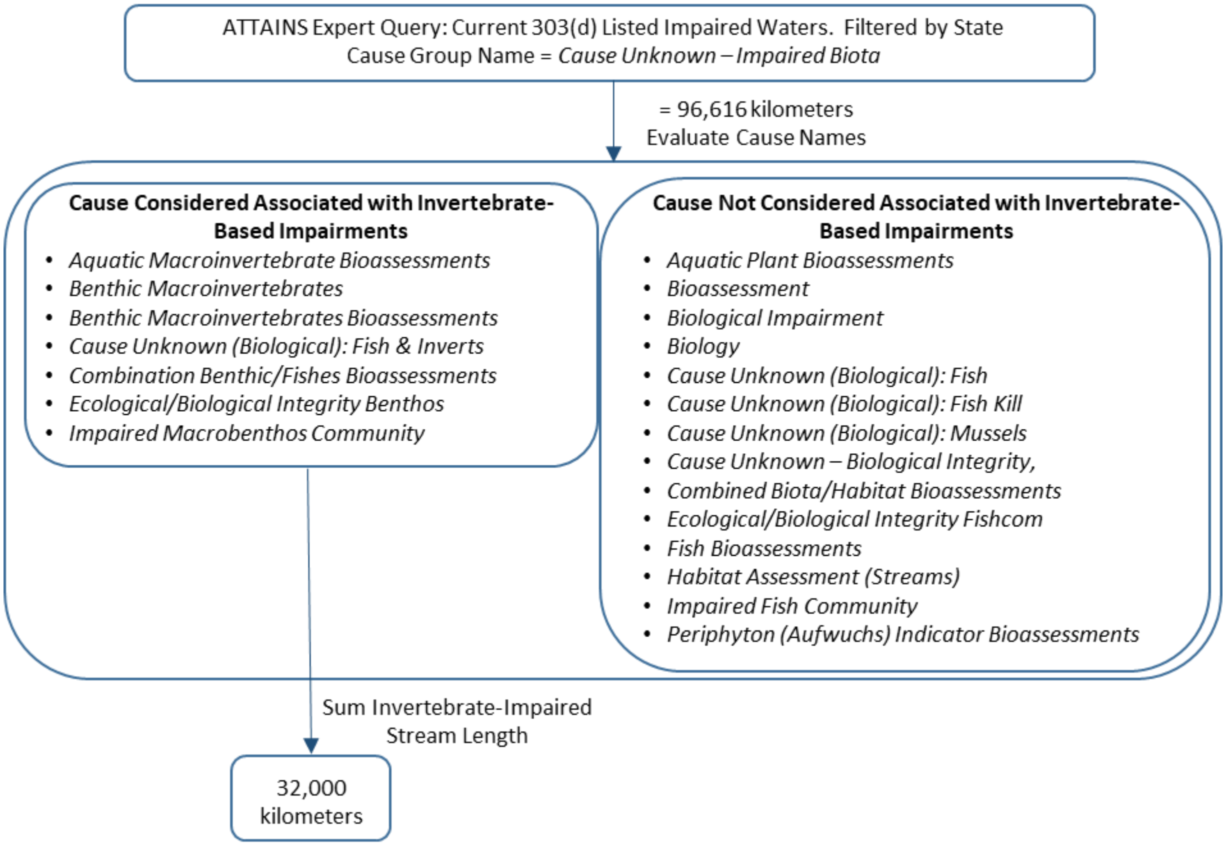

Figure 2-2 Approach Used to Estimate Current Stream Length on 303(d) Impaired Waters List with Invertebrate-Based Impairments

It is worth noting that ATTAINS summarizes 303(d) listed waters from the most recent reporting period. The website is updated as data are received from various states; however, more recent state-specific data may be available from individual state websites. In the interest of providing a summary based on US EPA-approved and disseminated information, state-specific websites were not assessed for this objective.

## Pollutants Associated with Invertebrate-Based Impairments

To determine the most common pollutants associated with invertebrate-based impairments, it was necessary to examine streams formerly on the 303(d) list that now have approved TMDLs. It is important to note that these waters are distinct from and do not include the impaired waters discussed in the prior section because once a TMDL is developed and approved, impaired waters are removed from the 303(d) list (N.B. removal does not necessarily mean that water quality objectives have been met). To determine the pollutants associated with finalized, US EPA-approved TMDLs, those associated with invertebrate-based impairments were identified and the pollutants targeted in those TMDLs were summarized (Figure. 2-3). US EPA-approved TMDL reports within the Cause Unknown – Impaired Biota group classification were identified from ATTAINS (US EPA 2016a). Reports included in this summary date from October 1995 (the earliest report date within the database) through those that were posted in the database on or before September 1, 2016.

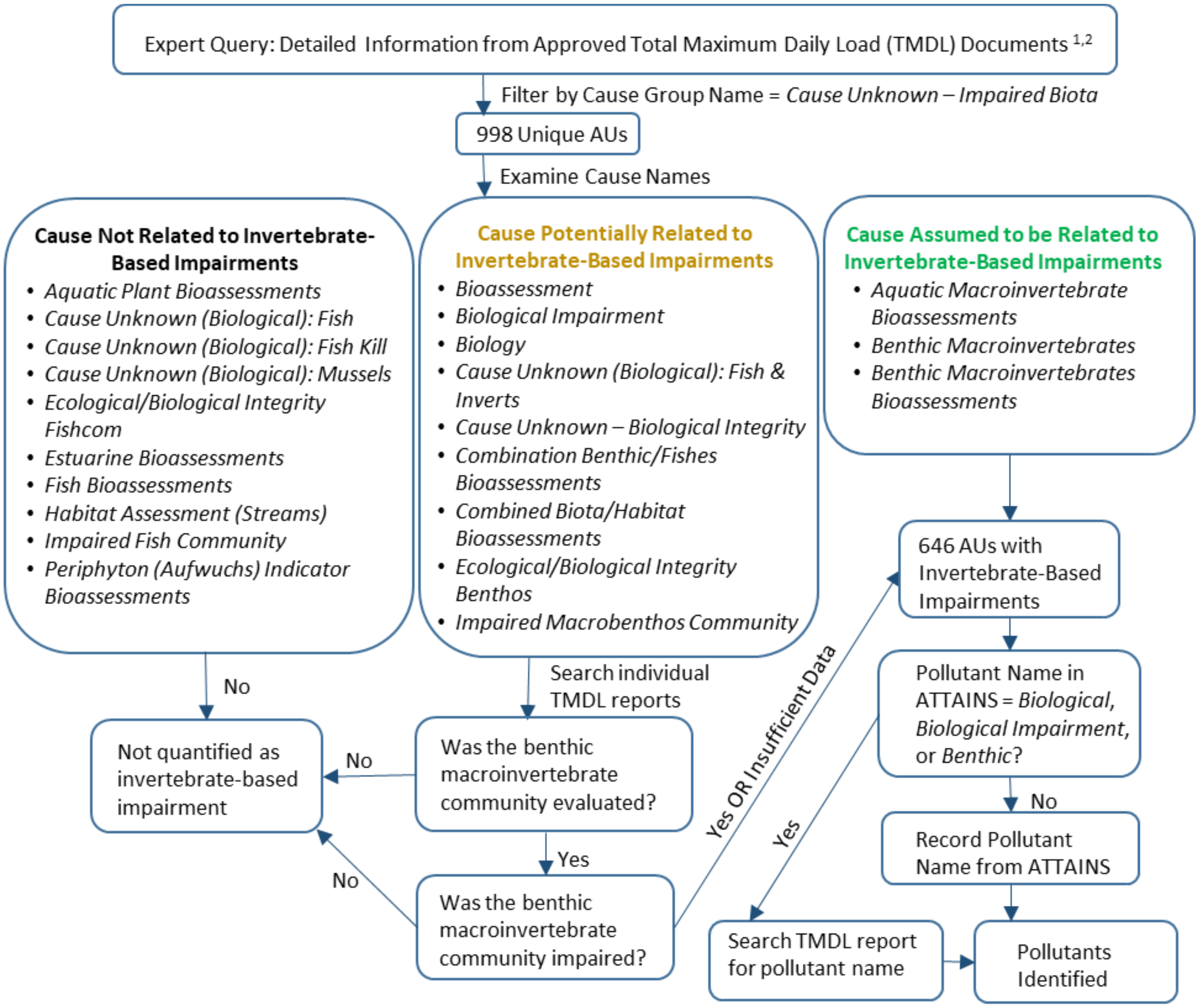

Figure 2-3 Approach Used to Identify Assessment Units with Invertebrate-Based Impairments and Associated Pollutants. AU = Assessment Unit 1Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) 2Searched and summarized by state

Unlike waters on the 303(d) list, which are summarized by stream length, TMDL reports are developed for Assessment Units (AUs), which are river or stream segments considered to have homogeneous water quality. AUs are identified based on the National Hydrography Dataset (US EPA 2005) and are delimited at points where a change in water quality may be expected, such as confluences with other water bodies, point source discharges, and impoundments. Each TMDL report categorized in ATTAINS under Cause Unknown – Impaired Biota was examined to determine if the AU was identified as impaired based on the findings of macroinvertebrate assessments. Similar to the analysis of currently impaired waters in the prior section, AUs with cause names clearly linked to macroinvertebrate assessments (i.e., including the term macroinvertebrate) were considered to have invertebrate-based impairments. In contrast to the approach used to identify currently impaired waters, those AUs with more ambiguous cause names (e.g., biological, biological integrity) or names referencing more than one biological community (e.g., fish & inverts), were evaluated further by reviewing individual TMDL reports to determine if the basis for impairment included evaluation of the benthic macroinvertebrate community. In general, if the macroinvertebrate community was assessed and the AU was impaired, it was assumed that the impairment listing was based on an impairment of the invertebrate community. In some cases, sufficient data were reported to determine that the invertebrate community was assessed and not impaired, and that the impairment listing was based on other lines of evidence; in these cases the AUs were not counted as having an invertebrate-based impairment. In cases for which insufficient data were presented to determine whether or not macroinvertebrates were included in the assessment process, it was assumed that impairments were not invertebrate-based. Cause names clearly not linked to macroinvertebrates (e.g., fish kills) were identified as not being linked to invertebrate impairments without further investigation (Figure. 2-3). Due to inconsistencies identified between TMDL reports and ATTAINS data for West Virginia, each approved TMDL classified as Cause Unknown – Impaired Biota from this state was evaluated (including those with cause names of benthic invertebrates) to determine if invertebrate impairments were present and to identify associated biotic stressors.

Once AUs associated with invertebrate-based impairments were identified, associated pollutants were identified within ATTAINS or by examining associated TMDL reports. More than one pollutant could be associated with a given AU. In some cases, specific pollutants were noted within ATTAINS, whereas in other cases the database listed biological as the pollutant, requiring further examination of the TMDL report to determine the identified pollutant. When inconsistencies between ATTAINS and final TMDL reports were identified, the information in the final approved TMDL report was assumed to be correct. The majority of WV TMDLs to address biological impairments identified pollutants that serve as surrogates for the actual biological stressors identified. For example, TMDLs for iron were established rather than TMDLs for the stressor sediment in waters where iron was a co-located impairment and loading limits for iron were determined to be greater than those needed to address the sediment impairment. Similarly, TMDLs were established for fecal coliform for waters in which organic enrichment was identified as the stressor of the macroinvertebrate community but pathogen impairment was also present. Stressors specified in approved WV TMDL reports were summarized rather than pollutants so that that this summary reflects the causal stressors rather than co-located impairments. Use of surrogate TMDLs was not evident in other states.

## Results and Discussion

### Streams on the 303(d) List Due to Invertebrate-Based Impairments

The US EPA reports that 644,086 km of streams and rivers have aquatic life use impairments (US EPA 2016a); 15% (96,616 km in 29 states; Table 1) were classified in the Cause Unknown – Impaired Biota group. One-third of the streams in this group were listed with causes that can be linked to invertebrate-based impairments (32,000 km in 23 states; Table 2-2). With the exception of US EPA Region 2, each region included listed waters in the Cause Unknown – Impaired Biota category (Figure 2-1c). ATTAINS public portal does not provide the level of detail required to determine which of the other streams impaired for aquatic life use (the 85% not categorized as Cause Unknown – Impaired Biota) were evaluated using biological community assessment. This finding demonstrates the challenges of identifying macroinvertebrate-impaired streams despite the fact that this assessment approach is used by the majority of states (state-specific invertebrate assessment methods are detailed in Table 2-1). In efforts to explain these results, the assessment and listing methodologies of the 24 state agencies that assess macroinvertebrate communities but were not identified as having invertebrate-based impairments using the described methods (Figure 2-1b and c) were evaluated to determine if state-specific approaches used to report invertebrate-based impairments (i.e., Cause Groups used) were specified.

New Jersey’s 2016 listing methodology indicates that if biological data indicate impairment, the cause is identified on the 303(d) list as Cause Unknown – Impaired Biota; and if these waters also have chemical or physical data exceeding applicable criteria, the chemical parameters and biological impairment are identified as pollutants on the 303(d) list (New Jersey DEP 2015). If this most current assessment and listing approach is consistent with that used in prior listing cycles, New Jersey’s invertebrate-impaired waters should have been identified by the methods used herein; therefore, no rivers or streams in New Jersey are currently listed as impaired based on biological data.

Five states (Mississippi, Kansas, Nebraska, Oregon, and Washington) had listings under Cause Unknown – Impaired Biota which could not be clearly linked to invertebrate assessments (causes were Biological Impairment, Biology, Cause Unknown – Biological Integrity, Biological, and Bioassessment, respectively). Although there is uncertainty in the status of invertebrate impairments in these states, it is clear that biological assessment results in at least some cases were reported under the Cause Unknown – Impaired Biota listing category. An additional three states (Indiana, Michigan, and Iowa) had no current Cause Unknown – Impaired Biota listings, but have completed invertebrate-based TMDLs (discussed in the next section) classified under this cause group listing; therefore, these state agencies also use the Cause Unknown – Impaired Biota category.

For Vermont, Tennessee, Illinois, Ohio, and Wyoming, while state agencies use biological data to identify aquatic life use impairments, “causes” of impairment are not considered to be biological. Rather, attempts are made to identify the pollutants associated with the biological impairment and then a Cause Group is selected that reflects pollutants when listing the water on the 303(d) list (Illinois EPA 2014; Vermont DEC 2014a; Wyoming DEQ 2014; Ohio EPA 2016; Tennessee DEC 2016). Vermont Department of Environmental Conservation notes that the pollutant will be listed as “undefined” if a pollutant cannot be clearly identified prior to listing

Table 2-2 Stream and River Water Quality Impairments Associated with Invertebrate-Based Assessments. Shading indicates states with invertebrate-based impairments on most recent 303(d) list. 1 Most recent impairment year data summarized in US EPA ATTAINS, accessed 4 September 2016. 2 Cause Name listed in ATTAINS includes the term "invertebrate" or "insect" or "benthos." 3 Cause Name listed in ATTAINS does not include the term "invertebrate" or "insect" or "benthos." 4 Total length nationally assessed for aquatic life use 881,537 miles (1,418,693 km) (US EPA 2016a). Total length nationally impaired for aquatic life use 400,218.8 miles (644,087 km) (US EPA 2016a).-- None listed

| | | | | | **303(d) Impaired Waters Listed Under Cause Unknown - Impaired Biota** | | | |
|---|---|---|---|---|---|---|---|---|
| **USEPA Region** | **State/ Territory** | **Assessed Waters Report Year[1]** | **Impaired Waters Report Year[1]** | **Kilometers Assessed for All Designated Uses** | **Cause Name Not Assumed to be Invertebrate-based** | **Kilometers[2]** | **Cause Name Considered to be Invertebrate-based** | **Kilometers [3]** |
| 1 | Connecticut | 2014 | 2014 | 4,566 | -- | -- | -- | -- |
| 1 | Maine | 2012 | 2012 | 51,079 | Periphyton (Aufwuchs) Indicator Bioassessments (Streams); Habitat Assessment (Streams) | 294 | Benthic Macroinvertebrates Bioassessments | 335 |
| 1 | Massachusetts | 2014 | 2014 | 4,534 | Fish Bioassessments; Habitat Assessment (Streams); Combined Biota/Habitat Bioassessments (Streams) | 333 | Aquatic Macroinvertebrate Bioassessments | 334 |
| 1 | New Hampshire | 2010 | 2010 | 27,297 | Fish Bioassessments; Habitat Assessment (Streams) | 509 | Benthic Macroinvertebrates Bioassessments | 680 |
| 1 | Rhode Island | 2014 | 2014 | 1,477 | -- | -- | Benthic Macroinvertebrate Bioassessments; Aquatic Macroinvertebrate Bioassessments | 207 |
| 1 | Vermont | 2014 | 2014 | 10,588 | -- | -- | -- | -- |

| | | | | | 303(d) Impaired Waters Listed Under Cause Unknown - Impaired Biota | | | |
|---|---|---|---|---|---|---|---|---|
| **USEPA Region** | **State/ Territory** | **Assessed Waters Report Year[1]** | **Impaired Waters Report Year[1]** | **Kilometers Assessed for All Designated Uses** | **Cause Name Not Assumed to be Invertebrate-based** | **Kilometers[2]** | **Cause Name Considered to be Invertebrate-based** | **Kilometers [3]** |
| 2 | New Jersey | 2012 | 2012 | 30,565 | -- | -- | -- | -- |
| 2 | New York | 2014 | 2014 | 83,542 | -- | -- | -- | -- |
| 2 | Puerto Rico | 2014 | 2014 | 9,743 | -- | -- | -- | -- |
| 2 | Virgin Islands, U.S. | 2012 | 2012 | 650 | -- | -- | -- | -- |
| 3 | Delaware | 2006 | 2006 | 4,033 | Habitat Assessment (Streams) | 433 | -- | -- |
| 3 | District of Columbia | 2014 | 2014 | 62 | -- | -- | -- | -- |
| 3 | Maryland | 2012 | 2012 | 36,608 | -- | -- | -- | -- |
| 3 | Pennsylvania | 2006 | 2004 | 138,457 | -- | -- | -- | -- |
| 3 | Virginia | 2014 | 2012 | 35,947 | -- | -- | Benthic Macroinvertebrates Bioassessments | 2,709 |
| 3 | West Virginia | 2010 | 2010 | 33,016 | -- | -- | Benthic Macroinvertebrates Bioassessments | 9,785 |
| 4 | Alabama | 2014 | 2014 | 20,346 | -- | -- | -- | -- |
| 4 | Florida | 2010 | 2010 | 16,859 | -- | -- | Benthic Macroinvertebrates Bioassessments | 620 |
| 4 | Georgia | 2012 | 2012 | 22,729 | Fish Bioassessments | 3,796 | Benthic Macroinvertebrates Bioassessments | 1,007 |

| | | | | | 303(d) Impaired Waters Listed Under Cause Unknown - Impaired Biota | | | |
|---|---|---|---|---|---|---|---|---|
| **USEPA Region** | **State/ Territory** | **Assessed Waters Report Year[1]** | **Impaired Waters Report Year[1]** | **Kilometers Assessed for All Designated Uses** | **Cause Name Not Assumed to be Invertebrate-based** | **Kilometers[2]** | **Cause Name Considered to be Invertebrate-based** | **Kilometers [3]** |
| 4 | Kentucky | 2012 | 2012 | 19,000 | Habitat Assessment (Streams); Combined Biota/Habitat Bioassessments (Streams); Fish Bioassessments | 830 | Combination Benthic/Fishes Bioassessments; Benthic Macroinvertebrates Bioassessments | 44 |
| 4 | Mississippi | 2014 | 2014 | 8,897 | Biological Impairment | 29,641 | -- | -- |
| 4 | North Carolina | 2014 | 2014 | 61,528 | Ecological/Biological Integrity Fishcom | 882 | Ecological/Biological Integrity Benthos | 2,451 |
| 4 | Tennessee | 2012 | 2012 | 45,708 | -- | -- | -- | -- |
| 5 | Illinois | 2010 | 2006 | 27,375 | -- | -- | -- | -- |
| 5 | Indiana | 2010 | 2008 | 38,576 | -- | -- | -- | -- |
| 5 | Michigan | 2010 | 2010 | 123,017 | -- | -- | -- | -- |
| 5 | Minnesota | 2012 | 2012 | 25,638 | Fish Bioassessments | 4,748 | Aquatic Macroinvertebrate Bioassessments | 2,967 |
| 5 | Ohio | 2010 | 2008 | 84,463 | -- | -- | -- | -- |
| 5 | Wisconsin | 2006 | 2008 | 24,353 | -- | -- | Benthic Macroinvertebrates Bioassessments; Combination Benthic/Fishes Bioassessments | 28 |
| 6 | Arkansas | 2008 | 2008 | 16,060 | -- | -- | -- | -- |

|  |  |  |  |  | 303(d) Impaired Waters Listed Under Cause Unknown - Impaired Biota |  |  |  |
|---|---|---|---|---|---|---|---|---|
| **USEPA Region** | **State/ Territory** | **Assessed Waters Report Year[1]** | **Impaired Waters Report Year[1]** | **Kilometers Assessed for All Designated Uses** | **Cause Name Not Assumed to be Invertebrate-based** | **Kilometers[2]** | **Cause Name Considered to be Invertebrate-based** | **Kilometers [3]** |
| 6 | Louisiana | 2012 | 2012 | 15,306 | -- | -- | -- | -- |
| 6 | New Mexico | 2014 | 2014 | 10,201 | -- | -- | Benthic Macroinvertebrates Bioassessments; Benthic Macroinvertebrates | 205 |
| 6 | Oklahoma | 2014 | 2014 | 22,368 | Fish Bioassessments | 2,573 | Benthic Macroinvertebrate Bioassessments | 1,198 |
| 6 | Texas | 2010 | 2010 | 37,894 | Impaired Fish Community | 341 | Impaired Macrobenthos Community | 332 |
| 7 | Iowa | 2014 | 2014 | 13,782 | -- | -- | -- | -- |
| 7 | Kansas | 2014 | 2014 | 47,211 | Biology | 8,802 | -- | -- |
| 7 | Missouri | 2014 | 2014 | 16,948 | Fish Bioassessments | 766 | Aquatic Macroinvertebrate Bioassessments; Benthic Macroinvertebrate Bioassessments | 967 |
| 7 | Nebraska | 2014 | 2014 | 16,821 | Cause Unknown - Biological Integrity | 1,987 | -- | -- |
| 8 | Colorado | 2012 | 2012 | 114,320 | -- | -- | Benthic Macroinvertebrates Bioassessments | 868 |

| | | | | | 303(d) Impaired Waters Listed Under Cause Unknown - Impaired Biota | | | |
|---|---|---|---|---|---|---|---|---|
| **USEPA Region** | **State/ Territory** | **Assessed Waters Report Year[1]** | **Impaired Waters Report Year[1]** | **Kilometers Assessed for All Designated Uses** | **Cause Name Not Assumed to be Invertebrate-based** | **Kilometers[2]** | **Cause Name Considered to be Invertebrate-based** | **Kilometers [3]** |
| 8 | Montana | 2014 | 2014 | 32,635 | Combined Biota/Habitat Bioassessments (Streams);<br>Periphyton (Aufwuchs) Indicator Bioassessments (Streams) | 39 | Benthic Macroinvertebrates Bioassessments | 100 |
| 8 | North Dakota | 2014 | 2014 | 90,159 | Fish Bioassessments | 856 | Benthic Macroinvertebrate Bioassessments;<br>Combination Benthic/Fishes Bioassessments | 2,652 |
| 8 | South Carolina | 2012 | 2012 | 9,366 | -- | -- | Benthic Macroinvertebrate Bioassessments | 1,516 |
| 8 | South Dakota | 2014 | 2014 | 9,912 | -- | -- | -- | -- |
| 8 | Utah | 2014 | 2014 | 11,277 | -- | -- | Benthic Macroinvertebrates Bioassessments | 2,650 |
| 8 | Wyoming | 2012 | 2012 | 28,184 | -- | -- | -- | -- |
| 9 | American Samoa | 2014 | 2014 | 371 | -- | -- | -- | -- |
| 9 | Arizona | 2010 | 2010 | 3,984 | -- | -- | -- | -- |
| 9 | California | 2012 | 2012 | 107,747 | -- | -- | Benthic Macroinvertebrates Bioassessments | 122 |

| USEPA Region | State/ Territory | Assessed Waters Report Year[1] | Impaired Waters Report Year[1] | Kilometers Assessed for All Designated Uses | 303(d) Impaired Waters Listed Under Cause Unknown - Impaired Biota: Cause Name Not Assumed to be Invertebrate-based | Kilometers[2] | Cause Name Considered to be Invertebrate-based | Kilometers [3] |
|---|---|---|---|---|---|---|---|---|
| 9 | Guam | 2010 | 2010 | 136 | -- | -- | -- | -- |
| 9 | Hawaii | 2014 | 2014 | 4,131 | -- | -- | -- | -- |
| 9 | Nevada | 2012 | 2012 | 8,718 | -- | -- | -- | -- |
| 9 | North Mariana Islands, Commonwealth of | 2014 | 2014 | 133 | -- | -- | -- | -- |
| 9 | Trust Territories | -- | -- | -- | -- | -- | -- | -- |
| 10 | Alaska | 2010 | 2010 | 969 | -- | -- | -- | -- |
| 10 | Idaho | 2012 | 2012 | 101,525 | Combined Biota/Habitat Bioassessments (Streams); Habitat Assessment (Streams); Fish Bioassessments; Aquatic Plant Bioassessments | 7,722 | Benthic Macroinvertebrates Bioassessments | 224 |
| 10 | Oregon | 2006 | 2006 | 74,087 | Biological | 54 | -- | -- |
| 10 | Washington | 2008 | 2008 | 3,214 | Bioassessment | 13 | -- | -- |
|  | TOTALS |  |  | 1,788,115 |  | 64,616 |  | 32,000 |
|  | Percentage of aquatic life impaired rivers and streams[4]: |  |  |  |  | 10.0% |  | 5.0% |

(Vermont DEC 2014). Illinois EPA notes that their assessment database, which follows the standardized database created by US EPA, does not store physicochemical, biological, or habitat results, but does store assessment determinations based on those data (Illinois EPA 2014). In a similar vein, Maryland Department of the Environment may initially classify streams under a biological cause classification (terminology unspecified by the Maryland CALM), but once stressors are identified using a state-specific biological stressor identification analysis, the biological listing is removed and the stream is reclassified as impaired under the identified pollutant(s) (Maryland DE 2015).

Pennsylvania's CALM specifically defines Cause Groups used by the state; Cause Unknown (distinct from Cause Unknown – Impaired Biota) is used when the cause of the impairment cannot be determined (Pennsylvania DEP 2015). The state has 88 AUs currently classified in the Cause Unknown category (US EPA 2016a). These AUs may include those with invertebrate-based impairments, but were not examined further in this assessment.

Listing methodologies for Alabama, Alaska, Arkansas, Arizona, Connecticut, New York, Puerto Rico, and South Dakota did not provide information on the Cause Group within ATTAINS selected for invertebrate-impaired waters (New York State DEC 2009; Connecticut DEEP 2014; Michigan DEQ 2014; Puerto Rico EQB 2014; South Dakota DENR 2014; Alabama DEM 2015; Alaska DEC 2015; Arizona DEQ 2015; Arkansas DEQ 2016). Arizona Department of Environmental Quality implementation procedures for the narrative biocriteria standard states that guidance for 303(d) listing will not be provided until the state's Impaired Waters Identification Rule language is updated (Arizona DEQ 2015).

The first objective of this research was to quantify freshwater rivers and streams that are listed as impaired based on assessment of the macroinvertebrate-community. The subsequent difficulties encountered in fulfilling this objective, which resulted from non-standardized state reporting approaches and terminologies, provided an unanticipated opportunity to explicitly demonstrate the challenges that may be encountered when attempting to uncover widespread water quality trends using the ATTAINS framework. As detailed above, states use a variety of approaches to list biologically-impaired waters, and the majority of these approaches do not clearly indicate that the impairment was identified based on a biological assessment of specific communities. Even when state assessment and impairment listing methods are clearly defined, methods may differ by stream segment depending on designated uses. ATTAINS does not specify the assessment methods used for individual stream segments, and this information is also not commonly included in state assessment reports. In addition, there is not a transparent way to identify additional impairments that are likely to be the results of an original invertebrate assessment that are not classified as such in the database (e.g., when the cause is identified as a pollutant at the time of listing as is done in Vermont, Tennessee, Illinois, Ohio, and Wyoming), due to the variety of other potential reasons that particular pollutants may have been identified in such listings. The methodology used herein to identify invertebrate-impaired streams was intentionally conservative so as to reduce the potential for misidentifying streams as invertebrate-impaired when they are not.

Collectively, the nuances detailed above presented a substantial obstacle to achieving a clear view of the impairment status of the benthic macroinvertebrate community both at the state and national levels, and would likewise obscure impairment trends for other biological communities which may be of value to researchers and water quality professionals.

It is important to keep in mind that state water quality assessments conducted under the CWA are not designed to indicate nation-wide water quality trends (US EPA 2016a), and that these data are providing the desired information regarding the impairment status of state waters. Scaling listing information up to reveal national insights will remain challenging due to the differences in state-specific assessment and reporting methods. However, the significant work conducted by states to gather water quality data could find far broader application with relatively small adjustments in the scope of data reported and standardization of assessment and impairment terminology. Specific recommendations are discussed in the following paragraphs.

The ATTAINS database is in the midst of a redesign as part of the establishment of a national Water Quality Framework, which seeks to integrate national data and information systems with the goal of streamlining water quality assessment and reporting, more fully supporting water quality managers, and “providing a more complete picture of the nation’s water quality” (US EPA 2014). Currently ATTAINS includes a data element for “assessment methods” that is an optional element not reported as a component of the public database. A workgroup on data elements and schema for the ATTAINS redesign concluded that this element was not useful because it is not widely used by the states or US EPA (RTI International 2014a). While this may be true for the overall purposes of the CWA assessments, increased reporting of this data element could greatly increase the applicability of the database to evaluate broader water quality questions. An “assessment type” data element (e.g., “physical/chemical,” “habitat,” “pathogen,” “biological”) is also present in the integrated reporting data template as an optional data entry; however, these data are not provided in the public database. Making these data required and including them in the public database would increase the ability of researchers and water quality professionals to evaluate freshwater status as indicated by specific assessment methods. Further, providing a data element that would indicate the specific assessment methods used, (i.e., What biological community was assessed? What physical/chemical parameters were evaluated?), would improve the usefulness of the database and make it more searchable for those interested in stressor-specific questions. Likewise, it is unclear why some data base elements are excluded from public access. A complete listing of data base elements, indications of which are required vs. optional, and points of contact for the data would enable researchers to determine what data are collected and how those data may be accessed if not available via the current internet portal. This simple act of summarizing available data and points of access may enable a substantial increase in the ability of the broader scientific community to make use of the national data to address research questions or determine national trends. Currently, a substantial familiarity with the CWA reporting process as a whole is required to determine what data may be available.

The ATTAINS redesign workgroup did suggest the addition of a new optional data element reflecting monitoring activities, which would allow database users to link monitoring data stored in the National Water Quality Portal to the specific water quality assessment being performed, but acknowledged complications involved with linking these data (RTI International 2014a). Regardless of the form, a publically reported data element indicating the type and conclusions drawn from specific monitoring data on individual water quality assessments would greatly increase the ability of regulators, water quality managers, and scientists to consolidate information such as that sought here regarding the results of biological monitoring efforts nationwide. Current efforts to standardize components of the reporting process and improve data exchange between states and the U.S. EPA (RTI International 2014b) should allow states to provide this increased level of detail without substantially increasing their reporting burden. Assessment determinations are made using a weight of evidence approach, so allowing the data structure to reflect the multiple lines of evidence used in the assessment determination and conclusions drawn from each element evaluated is important. In addition, such reporting results and conclusions drawn from specific physical and chemical monitoring would enable a nationwide evaluation of parameters that may be of particular interest for water quality managers (e.g., data on conductivity, metals, nutrients) or of relevance to tracking national trends. This would allow for a significant increase in application and usefulness of the large volume of national water quality monitoring data.

### Pollutants Associated with Invertebrate-Based Impairments

Waters currently on the 303(d) list have not had TMDLs completed and formally approved and may be at many different stages in terms of stressor identification. US EPA encourages states to develop schedules for TMDL completion within 8 to 13 years of 303(d) listing (US EPA 2000a). For consistency's sake, TMDLs in progress (i.e., not yet approved) were not included in this analysis; only final US EPA-approved TMDLs were evaluated here. For the Cause Unknown – Impaired Biota group, this excluded "draft" TMDLs for three AUs and "proposed" TMDLs for one AU (US EPA 2016a).

Twenty of the 57 states had approved TMDL reports classified within the Cause Unknown – Impaired Biota group (998 total AUs; Table 2-3). As illustrated in the preceding section, only 15% of current aquatic life impairments were classified under this cause group. As such, it is possible that the 37 states without approved TMDLs in the Cause Unknown – Impaired Biota group do have biological impairments, but that these impairments were classified under specific pollutant cause categories or changed classification from Cause Unknown – Impaired Biota to that of a particular pollutant following the stressor identification process.

Of the twenty states that had approved TMDL reports classified within Cause Unknown – Impaired Biota, 16 states had AUs with invertebrate-based impairments (678 AUs; Table 2-3; Figure 2-1d). Over half (52%) of TMDLs clearly developed for invertebrate-based impairments were from US EPA Region 3, and another 27% were from US EPA Region 4 (Figure 2-4). This heterogeneity in the number of invertebrate-related TMDLs per region reflects key differences in how states report these impairments and may also reflect different areal extents of the regions and waters they contain. In addition, this heterogeneity reflects differences in the total number of completed TMDLs for all water body types by region (Figure 2-4), which is likely due to different state- and region-specific pressures. The legal history of TMDLs provides a potential explanation of the heterogeneity in the number of TMDLs approved per US EPA region, which is likely to relate to differences in state- and regional-specific pressures to publish TMDLs resulting from citizen lawsuits. While TMDL provisions were established as part of the Clean Water Act in 1972, the initial focus of regulatory implementation was on minimizing pollutant inputs from point sources via the establishment of optimal performance standards. Development of TMDLs was accordingly quite limited early on, but increased in the late 1980s and 1990s in response to citizen lawsuits in various states. The first such suit was filed in Illinois (US EPA

Table 2-3 Summary of Pollutants Identified in Approved TMDLs for Assessment Units with Invertebrate-Based Water Quality Impairments. 1 Only states with Approved TMDLs for AUs classified under Cause Group Cause Unknown - Impaired Biota are included in this table. Includes approved TMDLs entered in to ATTAINS on or before September 1, 2016. 2 Distinct AUs contained in USEPA ATTAINS data base for Cause Unknown - Impaired Biota 3 Distinct AUs contained in USEPA ATTAINS data base for Cause Unknown - Impaired Biota with Cause linked to invertebrate-impairment; subset of prior row. 4 Individual TMDL loading limits are established for single pollutants; more than one pollutant (TMDL) may be identified for a single AU. 5 WV pollutants listed are based on the biological stressors identified in TMDL reports rather than the pollutants for which TMDLs are developed. In all cases, the sediment stressor is addressed with a surrogate TMDL for iron and organic enrichment stressor is addressed with a surrogate TMDL for fecal coliform. This is done because reductions called for to address impairments of these surrogate pollutants are estimate to be greater than or equal to those needed to address the sediment or organic enrichment impairments. AU = Assessment Unit BOD = Biological Oxygen Demand NA = Not applicable PAHs = Polycyclic Aromatic Hydrocarbons TMDL = Total Maximum Daily Load

| | **US EPA Region** | **1** | | **3** | | | **4** | | | | **5** | | | | **7** | | **8** | **9** | | **10** | | **Total** | **Percent of invertebrate-impaired AUs associated with pollutant** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **State/ Territory[1]** | **ME** | **MA** | **MD** | **VA** | **WV[5]** | **FL** | **GA** | **NC** | **MS** | **IN** | **MI** | **MN** | **WI** | **IA** | **KS** | **CO** | **AZ** | **CA** | **ID** | **OR** | | |
| | Individual AUs listed under *Cause Unknown - Impaired Biota* [2] | 46 | 3 | 1 | 150 | 178 | 1 | 283 | 6 | 145 | 79 | 18 | 11 | 4 | 2 | 27 | 1 | 1 | 9 | 29 | 4 | *998* | |
| | Individual AUs with invertebrate-based impairments[3] | 40 | 0 | 0 | 142 | 170 | 1 | 56 | 5 | 124 | 32 | 12 | 8 | 0 | 1 | 22 | 1 | 0 | 3 | 25 | 4 | *646* | |
| | Total Approved TMDLs for AUs with invertebrate-based impairments[4] | 60 | 0 | 0 | 180 | 308 | 1 | 56 | 5 | 191 | 37 | 12 | 9 | 0 | 2 | 27 | 1 | 0 | 9 | 29 | 4 | *931* | |
| **Pollutant Class** | **Pollutant** | | | | | | | | | | | | | | | | | | | | | | |
| Sediment | Sediment | 5 | NA | NA | 107 | 102 | 0 | 54 | 0 | 64 | 0 | 8 | 3 | NA | 1 | 0 | 0 | NA | 0 | 14 | 0 | *358* | 55% |
| | Sediment/Siltation | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 48 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 3 | 0 | 0 | *51* | 8% |
| Turbidity | Total Suspended Solids | 1 | NA | NA | 1 | 0 | 0 | 0 | 0 | 0 | 30 | 4 | 2 | NA | 0 | 18 | 0 | NA | 0 | 3 | 0 | *59* | 9% |
| Salinity/ Total Dissolved Solids/ Chlorides/ Sulfates | Total Dissolved Solids | 0 | NA | NA | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *17* | 3% |
| | Chlorides | 0 | NA | NA | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *4* | <1% |

|  | US EPA Region | 1 |  | 3 |  |  | 4 |  |  |  | 5 |  |  |  | 7 |  | 8 | 9 |  | 10 |  |  | Percent of invertebrate-impaired AUs associated with pollutant |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | **State/ Territory**[1] | **ME** | **MA** | **MD** | **VA** | **WV**[5] | **FL** | **GA** | **NC** | **MS** | **IN** | **MI** | **MN** | **WI** | **IA** | **KS** | **CO** | **AZ** | **CA** | **ID** | **OR** | **Total** |  |
|  | Individual AUs listed under *Cause Unknown - Impaired Biota* [2] | 46 | 3 | 1 | 150 | 178 | 1 | 283 | 6 | 145 | 79 | 18 | 11 | 4 | 2 | 27 | 1 | 1 | 9 | 29 | 4 | *998* |  |
|  | Individual AUs with invertebrate-based impairments[3] | 40 | 0 | 0 | 142 | 170 | 1 | 56 | 5 | 124 | 32 | 12 | 8 | 0 | 1 | 22 | 1 | 0 | 3 | 25 | 4 | *646* |  |
|  | Total Approved TMDLs for AUs with invertebrate-based impairments[4] | 60 | 0 | 0 | 180 | 308 | 1 | 56 | 5 | 191 | 37 | 12 | 9 | 0 | 2 | 27 | 1 | 0 | 9 | 29 | 4 | *931* |  |
| Nutrients | Nitrogen | 5 | NA | NA | 9 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | NA | 0 | 4 | 0 | NA | 3 | 0 | 0 | *43* | 7% |
|  | Nitrite/Nitrate | 0 | NA | NA | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *1* | <1% |
|  | Nutrients | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | 2 | <1% |
|  | Phosphorus | 5 | NA | NA | 19 | 0 | 0 | 0 | 0 | 26 | 7 | 0 | 0 | NA | 0 | 4 | 0 | NA | 3 | 2 | 0 | *66* | 10% |
| Organic enrichment/ Oxygen depletion | Organic enrichment | 0 | NA | NA | 4 | 118 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *123* | 19% |
|  | Dissolved Oxygen | 0 | NA | NA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *1* | <1% |
|  | Biochemical BOD | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | NA | 0 | 1 | 0 | NA | 0 | 0 | 0 | *21* | 3% |
|  | Oxygen Demand | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | 2 | <1% |
|  | Nitrogenous BOD | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *1* | <1% |
|  | Carbanaceous BOD | 0 | NA | NA | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | 9 | 1% |

| | **US EPA Region** | **1** | | **3** | | | **4** | | | | **5** | | | | **7** | | **8** | **9** | | **10** | | **Total** | **Percent of invertebrate-impaired AUs associated with pollutant** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **State/ Territory[1]** | **ME** | **MA** | **MD** | **VA** | **WV[5]** | **FL** | **GA** | **NC** | **MS** | **IN** | **MI** | **MN** | **WI** | **IA** | **KS** | **CO** | **AZ** | **CA** | **ID** | **OR** | | |
| | Individual AUs listed under *Cause Unknown - Impaired Biota* [2] | 46 | 3 | 1 | 150 | 178 | 1 | 283 | 6 | 145 | 79 | 18 | 11 | 4 | 2 | 27 | 1 | 1 | 9 | 29 | 4 | *998* | |
| | Individual AUs with invertebrate-based impairments[3] | 40 | 0 | 0 | 142 | 170 | 1 | 56 | 5 | 124 | 32 | 12 | 8 | 0 | 1 | 22 | 1 | 0 | 3 | 25 | 4 | *646* | |
| | Total Approved TMDLs for AUs with invertebrate-based impairments[4] | 60 | 0 | 0 | 180 | 308 | 1 | 56 | 5 | 191 | 37 | 12 | 9 | 0 | 2 | 27 | 1 | 0 | 9 | 29 | 4 | *931* | |
| Other cause | Pollutants in Urban Stormwater | 36 | NA | NA | 4 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *45* | 7% |
| Temperature | Temperature | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 10 | 4 | *14* | 2% |
| pH/acidity/ caustic conditions | Alkalinity | 0 | NA | NA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *1* | <1% |
| | pH | 0 | NA | NA | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *26* | 4% |
| Chlorine | Chlorine | 0 | NA | NA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *1* | <1% |
| Ammonia | Ammonia | 0 | NA | NA | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 1 | 0 | 0 | NA | 0 | 0 | 0 | 3 | <1% |
| | Ammonia Nitrogen | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | 2 | <1% |
| Metals (other than mercury) | Aluminum | 0 | NA | NA | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | 33 | 5% |
| | Cadmium | 1 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *1* | <1% |
| | Copper | 1 | NA | NA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | 2 | <1% |

|  | **US EPA Region** | **1** |  | **3** |  |  | **4** |  |  |  | **5** |  |  |  | **7** |  | **8** | **9** |  | **10** |  | **Total** | **Percent of invertebrate-impaired AUs associated with pollutant** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | **State/ Territory**[1] | **ME** | **MA** | **MD** | **VA** | **WV**[5] | **FL** | **GA** | **NC** | **MS** | **IN** | **MI** | **MN** | **WI** | **IA** | **KS** | **CO** | **AZ** | **CA** | **ID** | **OR** |  |  |
|  | Individual AUs listed under *Cause Unknown - Impaired Biota* [2] | 46 | 3 | 1 | 150 | 178 | 1 | 283 | 6 | 145 | 79 | 18 | 11 | 4 | 2 | 27 | 1 | 1 | 9 | 29 | 4 | *998* |  |
|  | Individual AUs with invertebrate-based impairments[3] | 40 | 0 | 0 | 142 | 170 | 1 | 56 | 5 | 124 | 32 | 12 | 8 | 0 | 1 | 22 | 1 | 0 | 3 | 25 | 4 | *646* |  |
|  | Total Approved TMDLs for AUs with invertebrate-based impairments[4] | 60 | 0 | 0 | 180 | 308 | 1 | 56 | 5 | 191 | 37 | 12 | 9 | 0 | 2 | 27 | 1 | 0 | 9 | 29 | 4 | *931* |  |
| Metals (other than mercury) (Cont.) | Iron | 1 | NA | NA | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *30* | 5% |
|  | Lead | 4 | NA | NA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *5* | <1% |
|  | Manganese | 0 | NA | NA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *1* | <1% |
|  | Zinc | 4 | NA | NA | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 1 | NA | 0 | 0 | 0 | *6* | <1% |
| Toxic Organics | PAHs | 0 | NA | NA | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 | 0 | NA | 0 | 0 | 0 | *6* | <1% |
| **Percent of TMDLs Linked to Sediment or Turbidity** | **by State** | **15%** | **NA** | **NA** | **76%** | **60%** | **0%** | **96%** | **0%** | **90%** | **94%** | **100%** | **63%** | **NA** | **100%** | **82%** | **0%** | **NA** | **100%** | **68%** | **0%** | **72%** | **144%** [4] |
|  | **by Region** | **15%** |  |  | **67%** |  | **89%** |  |  |  | **90%** |  |  |  | **83%** |  | **0%** | **100%** |  | **59%** |  |  |  |

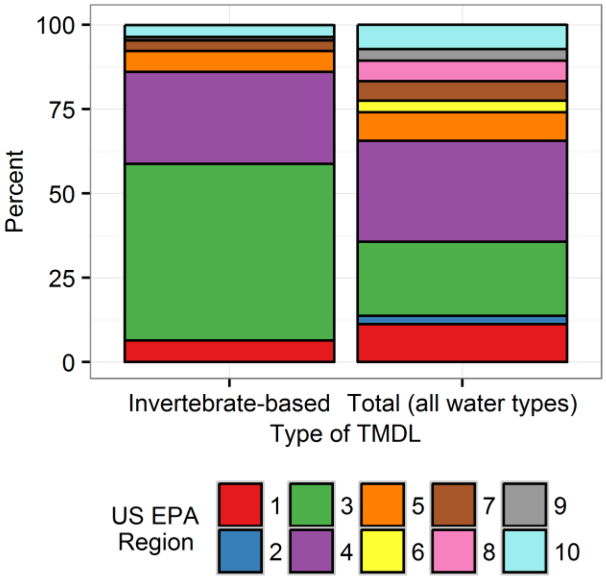

Figure 2-4 Invertebrate-Based TMDLs (Rivers and Streams) and Total Approved TMDLs (for All Water Bodies) by US EPA Region

Region 5) in 1984 (Scott v. City of Hammond, 741 F.2d 992 (7th Cir. 1984)), and involved the state being sued under the constructive submission theory, which argued that because the state had not submitted an impaired waters list to the US EPA, it had in effect submitted a list of no impaired waters requiring TMDLs. The US EPA by law was required to approve or disapprove this list, and thus it would be forced to disapprove the list and take action itself to develop an impaired waters list and TMDLs (Tuholske 2001). This litigation set the precedent that the US EPA was responsible for implementing the TMDL program when states did not act, and a suite of associated litigation followed. By the early 2000s, approximately 40 legal actions were filed by environmental groups in 38 states which resulted in court orders or consent decrees in 22 states requiring US EPA to establish TMDLs when states failed to do so. This included no states in Region 1 and Region 2, five states in Region 3, five states in Region 4, no states in Region 5, three states in Region 6, three states in Region 7, one state in Region 8, two states in Region 9, and three states in Region 10 (US EPA 2001; Houck 2002). In response to litigation regarding pollution of the Chesapeake Bay, the US EPA established the Chesapeake Bay TMDL, which addresses nitrogen, phosphorus, and sediment pollution in Bay states within Region 2 (New York) and Region 3 (Delaware, Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia; US EPA 2010b). While the US EPA previously maintained a website summarizing TMDL litigation by state, they no longer maintain the website nor provide access to an archived version of this site (Chris Lewicki, personal communication).

The 16 states that had AUs associated with invertebrate-based impairments are listed in Table 2-3 along with the pollutants targeted in associated approved TMDLs. Multiple TMDLs can be derived for an individual AU. A total of 931 TMDLs were established for the 646 invertebrate-impaired AUs.

On a national level, sediment (identified either as sediment or sediment/siltation depending on state- preferred terminology) was the most commonly identified pollutant for invertebrate-based impairments, being identified as a primary stressor for 63% of these AUs (Table 2-3; Figure 2-5). Total suspended solids (TSS), another sediment-related metric, was identified as a pollutant for an additional 9% of AUs. In total, these sediment-associated metrics were identified as primary pollutants for 72% of invertebrate-impaired AUs nationwide. Pollutants most commonly co-listed for a given AU include nutrients (nitrogen and phosphorus) and some combination of metals.

This national trend held within six of the ten US EPA Regions; sediment (in some form) was identified as the primary pollutant for the majority of invertebrate-impaired AUs in Regions 3, 4, 5, 7, 9, and 10 (Table 2-3). No TMDLs for invertebrate-based impairments were established from Regions 2 or 6. The primary pollutant for Region 1 was urban stormwater (identified for 36 of 40

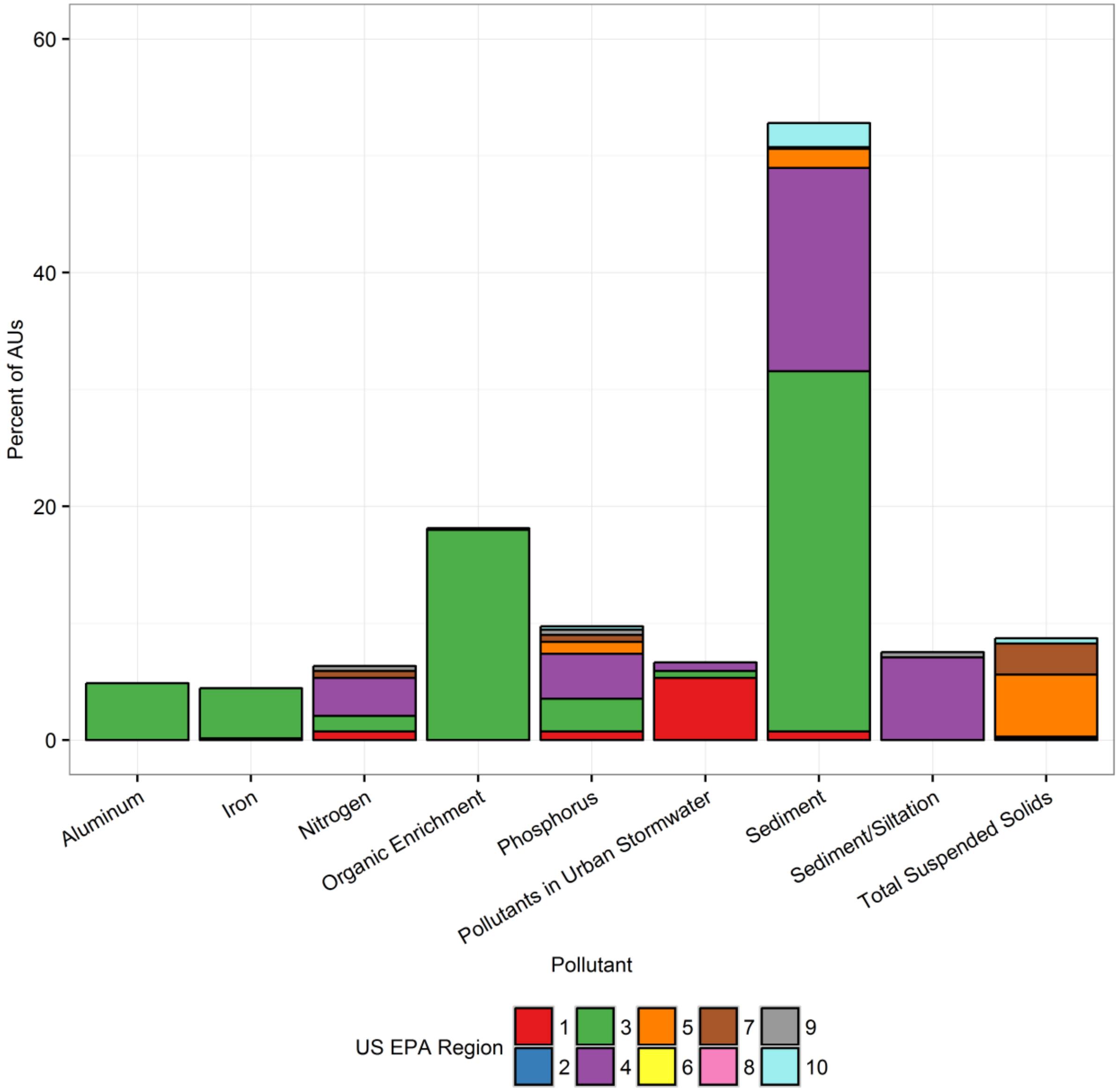

Figure 2-5 Pollutants Identified for Invertebrate-Impaired Assessment Units (AUs) in Approved TMDL Reports Coded by US EPA Region. Only pollutants identified in at least 5% of AUs are included

AUs). For Region 8, only one invertebrate-based TMDL was approved; it identified zinc as the primary pollutant. On a state-level, 10 of the 16 states that had TMDLs written for invertebrate-based impairments identified either sediment or turbidity as the primary pollutant in the majority of cases. Other pollutants that were identified in at least 5% of invertebrate-based TMDLs included organic enrichment (19% of AUs, the vast majority from West Virginia), phosphorus (10%), pollutants in urban stormwater (7%), nitrogen (7%), aluminum (5%), and iron (5%).

The identification of sediment as the primary pollutant associated with invertebrate-based impairments is in line with NRSA findings that streams with a "poor" sediment condition were twice as likely to have invertebrate-based impairments than streams not in poor sediment condition. Poor sediment condition in the NRSA report was defined as relative bed stability in the 5th percentile of reference streams. In contrast to NRSA suggestions that nitrogen and phosphorus would play a larger role than sediment in invertebrate impairments (US EPA 2016b), these nutrients were identified as stressors in only 10% (phosphorus) and 7% (nitrogen) of the AUs identified herein. The additional stressors indicated by CWA reporting as important to at least 5% of impaired waters (organic enrichment, pollutants in urban stormwater, aluminum, and iron) were not assessed in the NRSA report. These pollutants may warrant additional focus by water quality managers based on the frequency with which they have been identified as stressors on invertebrate health. This finding demonstrates a key value in further analysis of the data from CWA assessments, which provide site-specific examinations of potential causal relationships between stressors and effects, in contrast to the odds-ratio approach used in the NRSA. In addition, CWA assessments have the potential to uncover stressors of unanticipated importance that are not currently included in NRSA assessments.

## Conclusions

While the majority of states include macroinvertebrate biomonitoring as a component of their CWA surface water monitoring programs, specific bioassessment findings are not readily identifiable in the US EPA ATTAINS database due to differences in reporting approaches and state terminology. Data reported depend on data elements available in the ATTAINS structure and water quality report requirements. Standardizing terminology and requiring state agencies to report details of their biological, physical, and chemical assessment data and conclusions drawn from those data units (i.e., basis of impairment decision) within the national database framework would greatly expand the utility of this tool for identify common pollutants of concern and challenges particular to specific biological communities. This would also facilitate sharing best practices and national tracking of progress in achieving CWA goals.

To the best of the authors' knowledge, this is the first work to summarize primary pollutants of concern to macroinvertebrate communities based on national CWA findings. At present, TMDLs have been approved to address 646 individual invertebrate-impaired AUs. Sediment was overwhelmingly the most common pollutant of invertebrate-impaired waters, responsible for 72% of invertebrate-impaired AUs. Sediment impacts on aquatic life have long been recognized (Gammon 1970; Sorensen et al. 1977; Newcombe and MacDonald 1991; Waters 1995; Wood and Armitage 1997; Jones et al. 2012); however, much remains unknown regarding the mechanisms and thresholds of effects (Collins et al. 2011). A thorough understanding of sediment impacts on aquatic ecosystems is complicated by the difficulty inherent in measuring and predicting the fate and transport of sediment as well as the transient nature of sediments once they reach water bodies (Gao 2008; Droppo et al. 2014; Wohl et al. 2015). These results highlight the importance of ongoing research related to sediment impacts on the aquatic environment and efforts to derive sediment-specific biological indices and numerical sediment quality guidelines. Successful protection and restoration of sensitive aquatic communities within the United States will benefit from a consolidation of state knowledge and increased understanding of those pollutants most impacting aquatic life.

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# CHAPTER 3. MACROINVERTEBRATE SENSITIVITY THRESHOLDS FOR SEDIMENT IN VIRGINIA

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## Abstract

Sediment is the most commonly identified pollutant associated with macroinvertebrate community impairments in freshwater streams nationwide. Management of this physical stressor is complicated by the multiple measures of sediment available (e.g., suspended, dissolved, bedded), and the variability in natural “healthy” sediment loadings across ecoregions. Here we examine the relative importance of nine sediment parameters on macroinvertebrate community health as measured by the Virginia Stream Condition Index (VSCI) across five ecoregions. Combined, sediment parameters explained 27.4% of variance in the VSCI in a multi-region dataset, and from 20.2% to 76.4% of variance for individual ecoregions. Bedded sediment parameters had a stronger influence on VSCI than did dissolved or suspended parameters in the multi-region assessment. However, assessments of individual ecoregions revealed conductivity had a key influence on VSCI in the Central Appalachian, Northern Piedmont and Piedmont ecoregions. In no case was a single sediment parameter sufficient to predict VSCI scores or individual biological metrics. Given the identification of embeddedness and conductivity as key parameters for predicting community health, we developed family-level sensitivity thresholds for these parameters based on extirpation. Resulting thresholds for embeddedness were 68% for combined ecoregions, 65% for the Mountain bioregion (composed of Central Appalachian, Ridge and Valley, and Blue Ridge ecoregions), and 88% for the Piedmont bioregion (composed of Northern Piedmont and Piedmont ecoregions). Thresholds for conductivity were 366 µS/cm for combined ecoregions, 391 µS/cm for the Mountain bioregion, and 136 µS/cm for the Piedmont bioregion. These thresholds may be useful in identifying water bodies at risk of ecological degradation and confirming sediment’s role as a primary stressor in impaired waterways. Inclusion of embeddedness as a restoration endpoint may be warranted; this could be facilitated by application of more quantitative less time-intensive measurement approaches. We recommend refinement of thresholds as additional data and genus-based metrics become available.

## Introduction

Human manipulation of the landscape through agriculture, urbanization, and resource extraction continues to increase exponentially with population growth to support societal needs (Hooke 2000). These activities involve substantial earth-moving. Estimates suggest that humans move an average of 5443 kg (6 tons) of sediment annually per person, i.e. 4.0-4.5x1013 kg/yr (40-45 Gt/yr) collectively, arguably making them the greatest living agent of geomorphic change on Earth (Hooke 1994). These landscape manipulations lead to large-scale erosion and accompanying inputs of sediments into freshwater systems, which markedly impact beneficial uses (e.g., recreation, navigation, and reservoir efficiency) and reduce biological integrity. Perhaps not surprisingly, there is increasing recognition of the importance of addressing physical stressors such as sediment in addition to managing chemical stressors in aquatic systems (Burton 2017). In the United States (US), sediment has been identified as a significant cause of freshwater river and stream impairments for a variety of designated uses, and is second only to bacterial impacts in 303(d) listings under the Clean Water Act (US Environmental Protection Agency [USEPA] 2016a). In the majority of cases, Total Maximum Daily Load (TMDL) development is required to address impairments, which involves the identification of the quantity of a pollutant that can enter a receiving water without causing harm and the development of an accompanying watershed remediation plan.

Bioassessments of macroinvertebrate communities are used by the majority of states in the US to assess attainment of the "protection of aquatic life" designated use, which is most often expressed as narrative water quality criteria (USEPA 2002; Govenor et al. 2017). States assess a variety of biological metrics related to macroinvertebrate communities, and many have developed macroinvertebrate-based indices particular to their unique bioregions. Sediment and siltation are most commonly determined to be the primary pollutants of concern in TMDL reports for waters with aquatic life use impairments that were identified via macroinvertebrate bioassessments (Govenor et al. 2017). These sediment impacts are physical in nature and are distinct from the potential impacts from contaminants or nutrients that may adsorb to sediment particles.

Quantification and management of sediment can be complex because sediment exists in dissolved, suspended, and bedded (i.e., deposited) forms in the stream channel, and can change form in response to physical and chemical water quality parameters (e.g., flow, temperature, pH; see Lane 1955). Excess sediment in each of its varied forms can impact aquatic life; however, the relative importance of the various sediment parameters on biological communities has not been explicitly examined. Conventionally, water quality managers have focused primarily on measures of suspended sediment (Jones et al. 2012), with a more recent focus on dissolved solids (i.e., salts; Pond 2012; Cormier et al. 2013; Boehme et al. 2016). Suspended particulates can be quantified as total suspended solids (TSS), suspended solids concentration (SSC), and turbidity. Dissolved sediments can be quantified as total dissolved solids (TDS) or estimated using conductivity. Both suspended and dissolved measures of sediment have been associated with behavioral changes (Gammon 1970; Wood and Armitage 1997; Berry et al. 2003; Gibbins et al. 2007; Larsen and Ormerod 2010; Jones et al. 2012), reductions in growth and survival (Berry et al. 2003; Kennedy et al. 2005), and shifts in macroinvertebrate community structure (Pond 2010; Timpano et al. 2015; Boehme et al. 2016).

Despite the traditional focus on suspended sediments, increasing evidence suggests aquatic life impacts from excess bedded sediments can exceed those of suspended sediments (Jones et al. 2012; Gordon et al. 2013). Bedded sediments can be measured in terms of the grain-size distribution of the stream bed; percent cover of particular size classes; and embeddedness (i.e., the extent to which gravel, cobble, and boulders are buried by silt, sand, or mud in the stream bottom; Barbour et al. 1999). An increase in bedded sediments has been linked to shifts in community composition and decreased macroinvertebrate abundance (Sorensen et al. 1977;

Waters 1995; Wood and Armitage 1997; Berry et al. 2003; Kaller and Hartman 2004; Benoy et al. 2012; Jones et al. 2012; Sutherland et al. 2012; Burdon et al. 2013; Vadher et al. 2015).

Due to the widespread impact of sediment on water quality, the USEPA has identified the development of numeric criteria for suspended and bedded sediment as a top-ten priority in terms of the tools needed for improving national water quality management outcomes (USEPA 2003) and has provided a framework document for this purpose (US EPA 2006a). Natural sediment regimes vary among waterbody forms, sizes, and biological regions, necessitating that criteria be region-specific (USEPA 2006a). In addition, appropriate criteria will vary by the designated use of the water body (e.g., aquatic life protection, drinking water source). In a recent summary of numeric sediment criteria in the US, criteria were available in 32 states, tribal lands, or territories. Most were developed for turbidity or suspended solids (USEPA 2006a). No sediment criteria have been established in VA.

Our goal was to determine sediment-based sensitivity thresholds for benthic macroinvertebrates in Virginia non-coastal streams that would be useful for water quality professionals to aid in the identification of impaired and at-risk waters that are designated to support aquatic life, and in the development of regional management strategies. To that end, our objectives were to:

1) Identify the sediment parameters most strongly associated with stream condition as measured by the Virginia benthic macroinvertebrate index; and

2) Determine associated thresholds of effect for these sediment parameters.

## Methods

### VDEQ Probabilistic Monitoring Program Data

We used surface water quality monitoring data provided by the Virginia Department of Environmental Quality (VDEQ) Probabilistic Monitoring Program (ProbMon), which are publically available on the department’s website (www.vdeq.gov; ProbMon Data Set 2001-2014, updated March 2017 and Family Macroinvertebrate EDAS Database, updated March 2017). ProbMon monitoring stations are randomly located using the USEPA’s probability survey design program (Stevens 1997; VDEQ 2003; USEPA 2006b). VDEQ samples approximately 5% of ProbMon sites in multiple years to establish trends in water quality condition over time. Data collected from 2001 through 2014 were available at the time of our study.

At each station, VDEQ conducts physical habitat assessments using USEPA Rapid Bioassessment Protocols (RBP II) during the fall (Barbour et al. 1999; VDEQ 2003). VDEQ quantifies nine sediment parameters: specific conductance (conductivity), TDS, turbidity, TSS, particle size (%Fines, %Sand, and median particle size [logD50]), embeddedness, and relative bed stability (LRBS; “Estimate 2”from Kaufmann et al. 1999). The definitions and methods used to quantify these sediment parameters are described further in Table 3-1.

VDEQ collects benthic macroinvertebrate community data at wadeable ProbMon sites during spring (March 1 through May 31) and fall (September 1 through November 30) sampling events. One of two sampling approaches (single habitat [riffles] or multi-habitat) are used as determined

Table 3-1. Sediment Parameters Evaluated and Methods of Determination. %=percent, µS/cm = microsiemens per centimeter, DCLS = testing conducted by Virginia Division of Consolidated Laboratory Services, mg/L = milligram per liter, mm = millimeter, NTU = Nephelometric Turbidity Units, RBP = Rapid Bioassessment Protocols (Barbour et al. 1999), USGS = United States Geological Survey

| **Sediment Parameter** | **Abbreviation** | **Units** | **Definition** | **Method** | **Notes** |
|---|---|---|---|---|---|
| **Dissolved Sediment Parameter** | | | | | |
| **Total Dissolved Solids** | **TDS** | mg/L | Dry weight of material dissolved in a measured volume of water, generally the sum of cations and anions in the water; will pass through standard filter | DCLS; Standard Methods 2540 C-11 | |
| **Conductivity** | **conductivity** | µS/cm | Ability of the solution to conduct electricity, a reflection of dissolved ion concentrations | Field-measured with multi-meter, pre and post checked to within 5% of calibration standards | Pre and post checked to within +/- 5% of calibration standards (147 µS/cm or 1413 µS/cm) |
| **Suspended Sediment Parameter** | | | | | |
| **Total Suspended Solids** | **TSS** | mg/L | Dry weight of material removed from a measured volume of water passed through a standard filter (in VA 1.5 micron filter) | DCLS; Method USGS I-3765-85 | |
| **Turbidity** | **turbidity** | NTU | Intensity of light passing through a water sample | DCLS; Standard Methods 2130 B-11 | |
| **Bedded Sediment Parameter** | | | | | |
| **Embeddedness** | **embeddedness** | % | Percent burial of gravel and larger particles by sand and fines | In field using RBP | Mean of 55 measurements (5 at each of 11 reach cross sections); visual estimate by trained field personnel categorized into one of ten equal percentage bins (0-10%, 10-20%,....90-100%) |

| Sediment Parameter | Abbreviation | Units | Definition | Method | Notes |
|---|---|---|---|---|---|
| **Percent Sand** | **%Sand** | % | Percent of particles 0.06-2 mm | In field using RBP | Pebble count of 55 samples (5 at each of 11 reach cross sections) |
| **Percent Fines** | **%Fines** | % | Percent of particles <0.06 mm | In field using RBP | Pebble count of 55 samples (5 at each of 11 reach cross sections) |
| **Median Particle Size** | **$\log D_{50}$** | log(mm) | Log (base 10) of median grain size | In field using RBP | Median from pebble count of 55 samples (5 at each of 11 reach cross sections) |
| **Log Relative Bed Stability** | **LRBS** | unitless | Log of ratio of observed substrate median diameter to average critical diameter at bankfull flow | Calculated with field-measured metrics | "Estimate 2" including considerations for reach roughness (Kaufmann et al. 1999) |

by local stream geomorphology and instream characteristics (VDEQ 2008). Sampling methods follow the state's biological monitoring program standard operating procedures (VDEQ 2008), which are based on RBP II and regional guidelines (USEPA 1997; Barbour et al. 1999).

To evaluate stream health in non-coastal streams, VDEQ calculates the Virginia Stream Condition Index (VSCI) using benthic macroinvertebrate community data (Burton and Gerritsen 2003). The VSCI is an index that ranges from 1 to 100 that is calculated using eight biological metrics representing taxonomic richness, composition, diversity, pollution tolerance, and trophic classifications (Table 3-2). VDEQ calculates VSCI for spring and fall sampling events, and provides an average annual score for each site. Stations with scores less than 61 are designated as impaired upon verification of the regional biologist, and the associated reach is placed on the Virginia 303(d) list of impaired waters (VDEQ and VDCR 2014).

### Data Selection

Of the available data, we excluded observations collected prior to 2004 because they did not contain a full suite of sediment parameters. We also excluded data from stations sampled in 2004 or later that were missing one or more of the evaluated parameters. Data represent each of the seven Level III ecoregions in Virginia. We did not include data from the Middle Atlantic Coastal Plain or Southeastern Plains regions as stream condition in these regions is assessed using the Virginia Coastal Plain Macroinvertebrate Index (VDEQ 2013), and our focus was on non-coastal streams. The unique hydrology of coastal areas renders the two indices non-equivalent. For stations measured in multiple years, we included only the first year in which both invertebrate and full sediment data were available. In total, the dataset meeting all study criteria comprised 374 unique stations covering five ecoregions (Figure 3-1).

Table 3-2. Coefficients of Elastic Net Regression - Combined Ecoregional Assessment. Bold font = three most influential sediment parameters in each model. Deviance ratio = proportion of variance in the metric explained by the model. VSCI = Virginia Stream Condition Index; Total Taxa = total number of distinct taxa; EPT Taxa = number of distinct taxa belonging to Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies); %E = percent of individuals belonging to Ephemeroptera; %PT-H = percent of individuals belonging to Plecoptera plus Trichopera minus Hydropsychidae; % Chironomidae = percent of individuals belonging to  Chironomidae; % Top 2 Dom = percent abundance of individuals in two most abundant taxa; HBI = Hilsenhoff Biotic Index, an abundance-weighted average pollution tolerance (family level); %Scrapers = percent abundance of individuals whose primary functional mechanism for feeding is grazing on substrate- or periphyton-attached algae and associated material.

| | Coefficients | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Metric** | **VSCI** | **EPT Taxa** | **Total Taxa** | **%E** | **%PT-H** | **% Chironomidae** | **% Top 2 Dom** | **HBI** | **%Scrapers** |
| **Biological Representation** | Biological Condition | Taxonomic Richness | Taxonomic Richness | Composition | Composition | Composition | Diversity | Tolerance | Trophic Group |
| **Dissolved** | | | | | | | | | |
| Conductivity (log) | -9.69 | -2.49 | -2.10 | **-5.41** | **-5.42** | 2.12 | 8.16 | **0.40** | 2.15 |
| TDS (log) | 0.61 | 0.01 | -0.36 | 0.02 | -- | -1.77 | 0.52 | -0.04 | 4.14 |
| **Suspended** | | | | | | | | | |
| TSS (log) | -0.57 | -0.10 | -0.76 | 0.09 | -- | -- | 0.89 | -0.04 | 0.21 |
| Turbidity (log) | -4.72 | -1.13 | 0.53 | -3.44 | **-3.17** | 5.08 | 0.33 | 0.27 | -8.56 |
| **Bedded** | | | | | | | | | |
| Embeddedness (asin sqrt) | **-20.56** | **-2.92** | **-2.49** | **-13.11** | **-12.76** | **20.57** | **14.81** | **0.73** | **-30.28** |
| %Fines (asin sqrt) | **14.10** | **2.51** | **3.84** | -- | -- | **-4.14** | **-15.71** | 0.00 | **24.52** |
| %Sand (asin sqrt) | **15.07** | **3.61** | **5.23** | **3.57** | 2.60 | **-2.73** | **-13.41** | **-0.35** | **13.46** |
| Relative Bed Stability (log) | -1.10 | -1.04 | 0.00 | -0.47 | -- | 0.90 | -1.26 | 0.17 | 3.06 |
| Median Particle Size (log) | 4.50 | 1.83 | 1.48 | 0.82 | 0.39 | -1.11 | -3.41 | -0.21 | -2.66 |
| *Deviance Ratio* | *0.274* | *0.371* | *0.172* | *0.120* | *0.118* | *0.190* | *0.167* | *0.246* | *0.230* |
| Intercept | 86.2 | 11.59 | 17.38 | 50.5 | 51.2 | -0.62 | 35.88 | 3.37 | 35.04 |

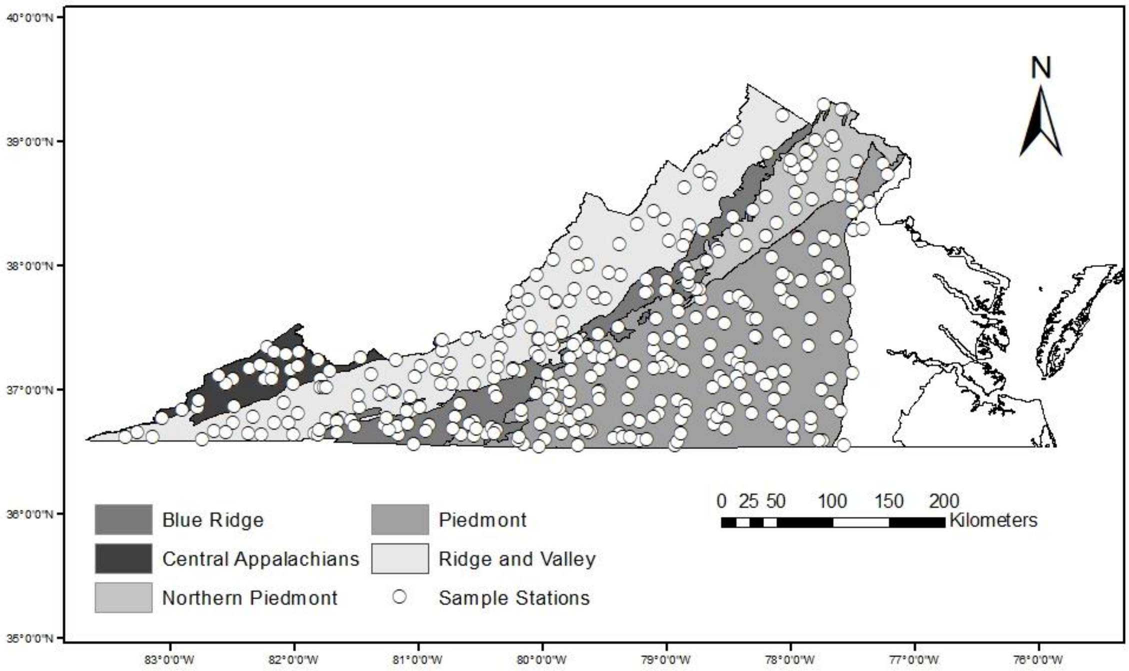


Figure 3-1. Sampling Locations Included in the Assessment and Associated Level III Ecoregions

### Identification of Sediment Parameters Associated with Stream Condition

To our knowledge, this is the first study that explicitly seeks to identify which of a variety of sediment parameters are most strongly associated with macroinvertebrate community response. We chose the annual average of the two seasonal VSCI scores (calculated by VDEQ) as the primary response variable when identifying sediment parameters associated with stream condition. Each of the nine sediment parameters discussed above, which are typical parameters measured during habitat evaluations and stream assessments in VA and other states that use RPB II protocols, was included as an independent variable: conductivity, TDS, turbidity, TSS, %Sand, %Fines, logD50, embeddedness, and LRBS. We used R version 3.1.2 (R Core Team 2016) for data analyses. Normality of sediment parameters was checked using Shapiro-Wilks tests, and data were transformed to improve normality. TDS, conductivity, TSS, and turbidity data were log transformed, while embeddedness, %Sand, and %Fines data were arcsine square root transformed. We used the glmnet package in R (Friedman et al. 2016) to conduct elastic net regression to determine the sediment parameters most strongly associated with the VSCI response. Elastic net regression is a regularized regression approach that accounts for both collinearity among input parameters (i.e., grouping) and minimization of parameters included in the model (Zou and Hastie 2005). The output includes coefficients for the sediment parameters, the y-intercept, and a deviance ratio, which is the fraction of (null) deviance explained (equivalent to $R^2$; Friedman et al. 2016). The elastic net approach may drop variables from the model in cases where they do not significantly explain the response, consistent with Least Absolute Shrinkage and Selection Operator (LASSO) regression (Bardsley et al. 2015). Model coefficients with the largest absolute values indicate parameters with the strongest influence on the response variable.

### Development of Sensitivity Thresholds for Sediment Parameters

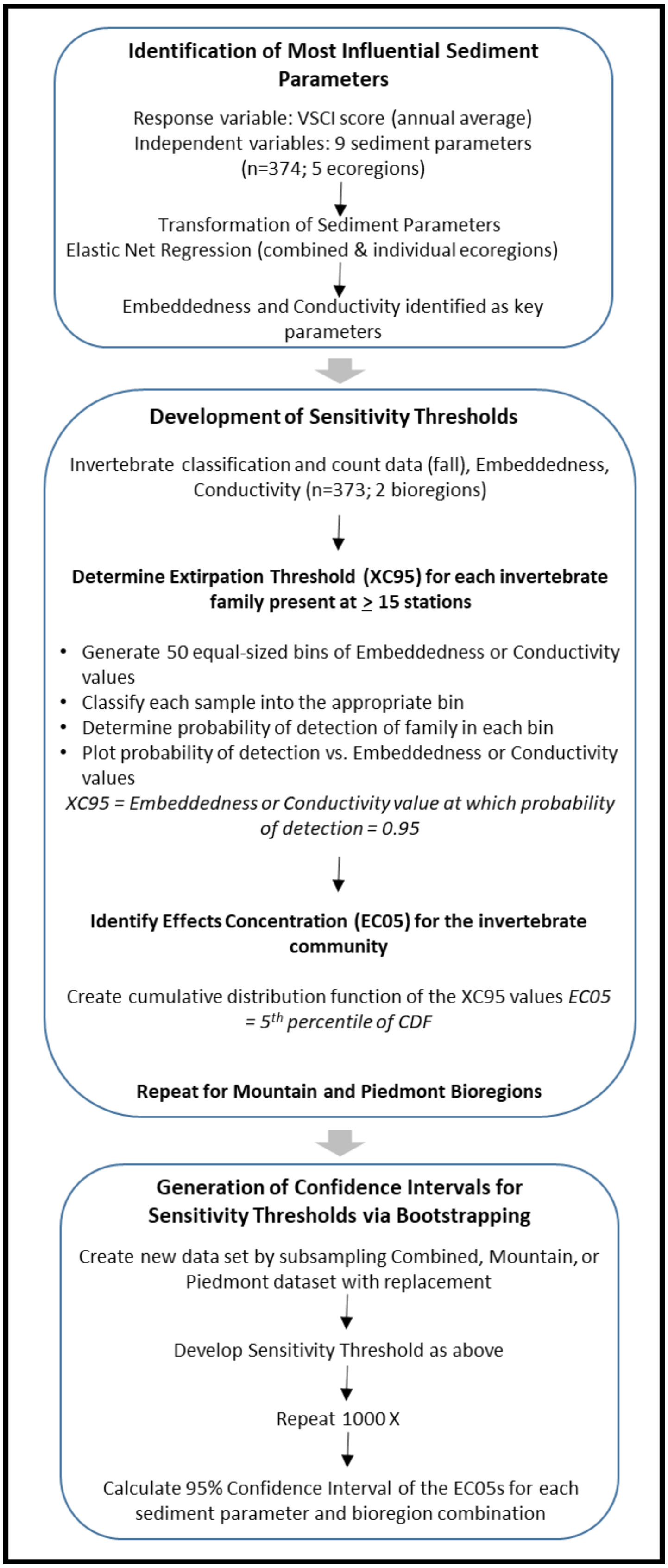
Based on the results of the elastic net regression, we identified embeddedness and conductivity as the most influential parameters impacting stream condition. Family-level invertebrate classification data from the fall season and corresponding embeddedness and conductivity data were then used to determine sensitivity thresholds for these parameters. Fall invertebrate data were used rather than spring data because fall data were collected concurrently with sediment parameters. Burton and Gerritsen (2003) found negligible differences in VSCI scores between the fall and spring index periods, and noted that the fall index period had slightly lower variability in VSCI scores based on repeated sampling at individual sites.

We developed macroinvertebrate community sensitivity thresholds separately for embeddedness and conductivity for the combined multi-region data set (n=373; one station of the 374 evaluated above did not have fall insect data and was excluded from further evaluation). In addition, we developed thresholds for each of two larger biological regions: the Mountain bioregion (n=164; includes Blue Ridge, Ridge and Valley, and Central Appalachian ecoregions) and the Piedmont bioregion (n=209; includes Northern Piedmont and Piedmont ecoregions). We did not develop threshold values for each of the five ecoregions individually due to the limited sample sizes in some regions, which would result in increased uncertainty in the threshold.

We selected extirpation as the response to develop the thresholds following the approach used by Cormier et al. (2013) to develop a benchmark for freshwater ionic strength with field data (USEPA 2011). Extirpation is “the depletion of a population to the point that it is no longer a viable resource or is unlikely to fulfill its function in the ecosystem” (USEPA 2016b). Here we define extirpation as the level of embeddedness or conductivity at which there is a 5% or lower probability of observing a family at a given site (i.e., the 95th percentile of the cumulative distribution function [CDF] of probability of occurrence for a given family [XC95]). We identified the response threshold as the level of the sediment parameter at which 5% of the families in the community are extirpated (i.e., effects concentration for the fifth percentile [EC05]). This corresponds to the embeddedness or conductivity level considered protective of 95% of macroinvertebrate families. The EC05 protectiveness level is consistent with levels used in laboratory-based methods to determine effects thresholds for water quality criteria (Stephen et al. 1985).

The threshold development process is depicted in Figure 3-2. We included macroinvertebrate families in the sensitivity analysis if they were detected at 15 or more sample stations. This number was chosen to allow potential identification of trends between sediment parameters and extirpation. Based on these criteria, we included 63 of 114 detected families in the sensitivity analysis for the combined region threshold, 41 families for the Mountain bioregion, and 49 families for the Piedmont bioregion.

Although observed embeddedness values ranged from 0 to 100%, observations were not uniformly distributed across this range. Under this condition, we may be more likely to observe a family at a given embeddedness value simply because there were more stations with that embeddedness condition. To account for this, we used a weighted CDF to estimate the XC95 for each family. First, the range of embeddedness was divided in to 50 bins, each representing a 2% range. Stations (observations) were classified into bins based upon their measured



**Identification of Most Influential Sediment Parameters**

Response variable: VSCI score (annual average)
Independent variables: 9 sediment parameters
(n=374; 5 ecoregions)

Transformation of Sediment Parameters
Elastic Net Regression (combined & individual ecoregions)

Embeddedness and Conductivity identified as key parameters

**Development of Sensitivity Thresholds**

Invertebrate classification and count data (fall), Embeddedness, Conductivity (n=373; 2 bioregions)

**Determine Extirpation Threshold (XC95) for each invertebrate family present at ≥ 15 stations**

- Generate 50 equal-sized bins of Embeddedness or Conductivity values
- Classify each sample into the appropriate bin
- Determine probability of detection of family in each bin
- Plot probability of detection vs. Embeddedness or Conductivity values

*XC95 = Embeddedness or Conductivity value at which probability of detection = 0.95*

**Identify Effects Concentration (EC05) for the invertebrate community**

Create cumulative distribution function of the XC95 values *EC05 = 5$^{th}$ percentile of CDF*

**Repeat for Mountain and Piedmont Bioregions**

**Generation of Confidence Intervals for Sensitivity Thresholds via Bootstrapping**

Create new data set by subsampling Combined, Mountain, or Piedmont dataset with replacement

Develop Sensitivity Threshold as above

Repeat 1000 X

Calculate 95% Confidence Interval of the EC05s for each sediment parameter and bioregion combination

Figure 3-2. Statistical Analysis Approach embeddedness, and each station was assigned a weight $w_i = 1/n_i$, where $n_i$ is the number of sites in the *i*th bin (per USEPA 2011). A similar approach was used for conductivity. We divided the range of observed conductivity values (9.5-1167 µS/cm) into 50 bins, each 23.2 µS/cm in size, and assigned stations weights based on the total number of sites in each bin.The cumulative probability of capturing a given family F(x) at embeddedness (or conductivity) values at or below a given value (x), was calculated as follows (adapted from Equation 1 of USEPA 2011):

$$F(x) = \frac{\sum_{i=1}^{N_b} w_i w \sum_{j=1}^{M_i} I(x_{ij}<x \textit{ and } F_{ij})}{\sum_{i=1}^{N_b} w_i \sum_{j=1}^{M_i} I(F_{ij})} \quad \text{(Eqn 1)}$$

Where x*ij* = embeddedness (conductivity) value in the *j*th sample of bin *i*
N*b* = total number of bins
M*i* = number of stations in ith bin
F*ij* is True if the family of interest was observed in the *j*th sample of bin *i*
I is an indicator function that equals 1 if the conditions are true and 0 otherwise

We used a linear two-point interpolation to identify the XC95 for each family as the embeddedness (or conductivity) level at which probability of detection was 95%. Confidence in the XC95 value was determined by visual inspection of a plot of the probability of observing the family at a given stressor level. Plots that showed increasing probability of observation or no directional response with increasing stressor were considered to have an undefined XC95 value and were qualified with a “>” (Cormier et al. 2017). To determine the EC05, we ordered the XC95 values from low to high and generated a CDF of the data. The EC05 was identified as the fifth percentile of this distribution.

We generated a 95% confidence interval for the mean EC05 using bootstrapping. For each data set (combined ecoregions, Mountain bioregion, Piedmont bioregion), we generated 1,000 bootstrap datasets by resampling the original data set n times with replacement. Here n equals the sample size of the data set (n = 373 for combined ecoregion; n=164 for Mountain; n=209 for Piedmont). Each bootstrapped data set was then processed as described above to generate an EC05 for the macroinvertebrate community. The 95% confidence interval for the EC05 was determined from the resulting distribution.

## RESULTS AND DISCUSSION

### Identification of Sediment Parameters Most Strongly Associated with Stream Condition

Sediment parameters represented a wide range of stream conditions with TDS ranging from 1-584 milligrams per liter (mg/L), conductivity ranging from 0.55-1167 µS/cm, TSS ranging from 1-306 mg/L, and turbidity ranging from 0.50-130 NTUs. Bedded traits including embeddedness, %Sand, and %Fines covered the range of possible levels (0-100 %); median particle sizes ranged from very fine silt (0.008 mm) to boulders (661 mm), and LRBS represented conditions from stream degradation (1.48) to aggradation (-3.63).

Combined, the sediment parameters explained 27.4% of the observed variance in the VSCI in the multi-region dataset (as indicated by the deviance ratio, Table 3-2). Sediment explained between 11.8% and 37.1% of variance in the biological metrics included in the VSCI, with EPT Taxa (richness) being the most influenced by sediment. Two measures of community composition (%E and %PT-H) were the least influenced by sediment.

Bedded sediment parameters had a stronger effect on VSCI than did dissolved or suspended parameters, with embeddedness, %Sand, and %Fines being the three most influential (Table 3-2). Bedded parameters also had a stronger influence on the individual biological metrics within the VSCI than did dissolved or suspended parameters. Embeddedness was among the top three most influential parameters for each of the eight biological metrics, and was the most influential parameter for %E, %PT-H, %Chironomidae, HBI, and %Scrapers. Other research has shown embeddedness to have a significant positive relationship with modified family biotic index, with larger values indicating lower stream quality, and a significant negative relationship with abundance and richness of sensitive taxa (Mebane 2001; Sutherland et al. 2012). Zweig and Rabeni (2001) developed a Deposited Sediment Biotic Index based on observations in Missouri streams; they demonstrated a positive relationship between biotic impairments and deposited sediment. Embeddedness can also lead to loss of refuges from predators (Jones et al. 2012), which may explain impacts on abundance.

Conductivity was among the top three most influential sediment parameters for %E, %PT-H, and HBI. Elevated conductivity has been associated with increased invertebrate toxicity in laboratory studies (Kennedy et al. 2005) and with shifts in community structure (Pond 2010; Timpano et al. 2015; Boehme et al. 2016). Effects of conductivity are likely to vary with salt composition and sediment source (Cormier et al. 2013; Cook et al. 2015).

Evaluation of individual ecoregions revealed stronger associations between sediment parameters and VSCI scores than were identified in the combined-region evaluation for each ecoregion except the Piedmont (Table 3-3). Regression models explained between 20.2% (Piedmont) and 76.4% (Blue Ridge) of variance in VSCI scores within ecoregions. While bedded sediment traits were still among the top three most influential parameters in each ecoregion, conductivity was also shown to be important in the Ridge and Valley, Central Appalachian, Northern Piedmont, and Piedmont ecoregions. Suspended sediment traits (both TSS and turbidity) were of primary influence on stream condition in the Blue Ridge ecoregion. Table 3-3 reveals distinct variation among the sediment parameters of most biological influence among ecoregions. The three ecoregions comprising the Mountain bioregion appear to have distinct responses to the various sediment parameters, while the two ecoregions within the Piedmont bioregion are more similar to each other in sediment responses. This reinforces that sediment is a multifaceted stressor that cannot adequately be represented by a single parameter, and reaffirms the importance of regional studies for the derivation of biologically-relevant sediment criteria.

### Sensitivity Thresholds for Embeddedness

Based on our results, we developed sensitivity thresholds for embeddedness and conductivity for the 5 combined ecoregions, the Mountain bioregion, and the Piedmont bioregion. Family-specific extirpation concentrations (XC95s) for embeddedness ranged from 62 to 99% and varied with bioregion (Table 3-4). XC95 values for Caenidae (small squaregill mayflies), Capniidae (small winter stoneflies), and Perlidae (common stoneflies) differed by more than 20% between Mountain and Piedmont bioregions. This could reflect differences in the genera present between bioregions and associated differences in sensitivities, or may indicate regional adaptations to stream conditions. We identified community sensitivity thresholds for embeddedness at 68% for the combined ecoregions, 65% for the Mountain bioregion, and 88% for the Piedmont bioregion (Figure 3-3 a-c).

We did not identify any states with quantitative benchmarks for embeddedness. There are narrative criteria prohibiting “bottom deposits” that adversely impact aquatic life in multiple states (US EPA 2006a). The Idaho Department of Environmental Quality investigated appropriate sediment targets to aid in gauging the attainment of their narrative criteria (“sediment…shall not exceed quantities… which impair beneficial uses”). They concluded that they could not recommend a specific target for embeddedness and recommended reference streams be used to establish appropriate levels (Rowe et al. 2003). No quantitative or narrative criteria for embeddedness have been established in VA.

Based on the potential significance of embeddedness on macroinvertebrate communities indicated here, embeddedness may warrant more frequent inclusion as a monitoring and restoration endpoint (see also Wharton et al. 2017). Many approaches to measure embeddedness are time-intensive and subjective, and the approach used will impact resulting estimates (McHugh and Budy 2005). Further, embeddedness measurements can be influenced by interrelationships between inorganic and organic matter (Jones et al. 2014), and in such cases may represent more than sediment condition alone. Therefore, the thresholds developed here should be interpreted and applied with caution. Less subjective, quantitative methods exist which can be used to provide more automated and repeatable embeddedness estimates (Descloux et al. 2010), for example, streambed hydraulic conductivity is a particularly promising approach which shows high correlation to fine sediment measures from frozen sediment cores (Descloux et al. 2010; Datry et al. 2015).

### Sensitivity Thresholds for Conductivity

Family-specific extirpation concentrations for conductivity ranged from 86 to 1156 µS/cm and varied with bioregion (Table 3-3). The largest variation in XC95 values between Mountain and Piedmont bioregions were found in Capniidae, Gomphidae (clubtail dragonflies), and unidentified families in the clade Hydracarina (water mites). Again, this could reflect differences in the genera present between bioregions and associated differences in sensitivities, or may indicate regional adaptations to stream conditions. Impacts of conductivity on invertebrates can be influenced by salt composition (Clements and Kotalik 2016), which will vary based on source areas (e.g., mining, agricultural, or urban landscapes, and varying underlying geologies). We identified community sensitivity thresholds for conductivity at 366 µS/cm for the combined ecoregions, 391 µS/cm for the Mountain bioregion, and 136 µS/cm for the Piedmont bioregion (Figure 3-3 d-f).

Table 3-3.Coefficients of Elastic Net Regression - Individual Ecoregional Assessments. Bold font inidcated the top three most influential sediment parameters in each model. Deviance ratio indicates the proportion of variance in the metric explained by the model.

**Coefficients for VSCI**

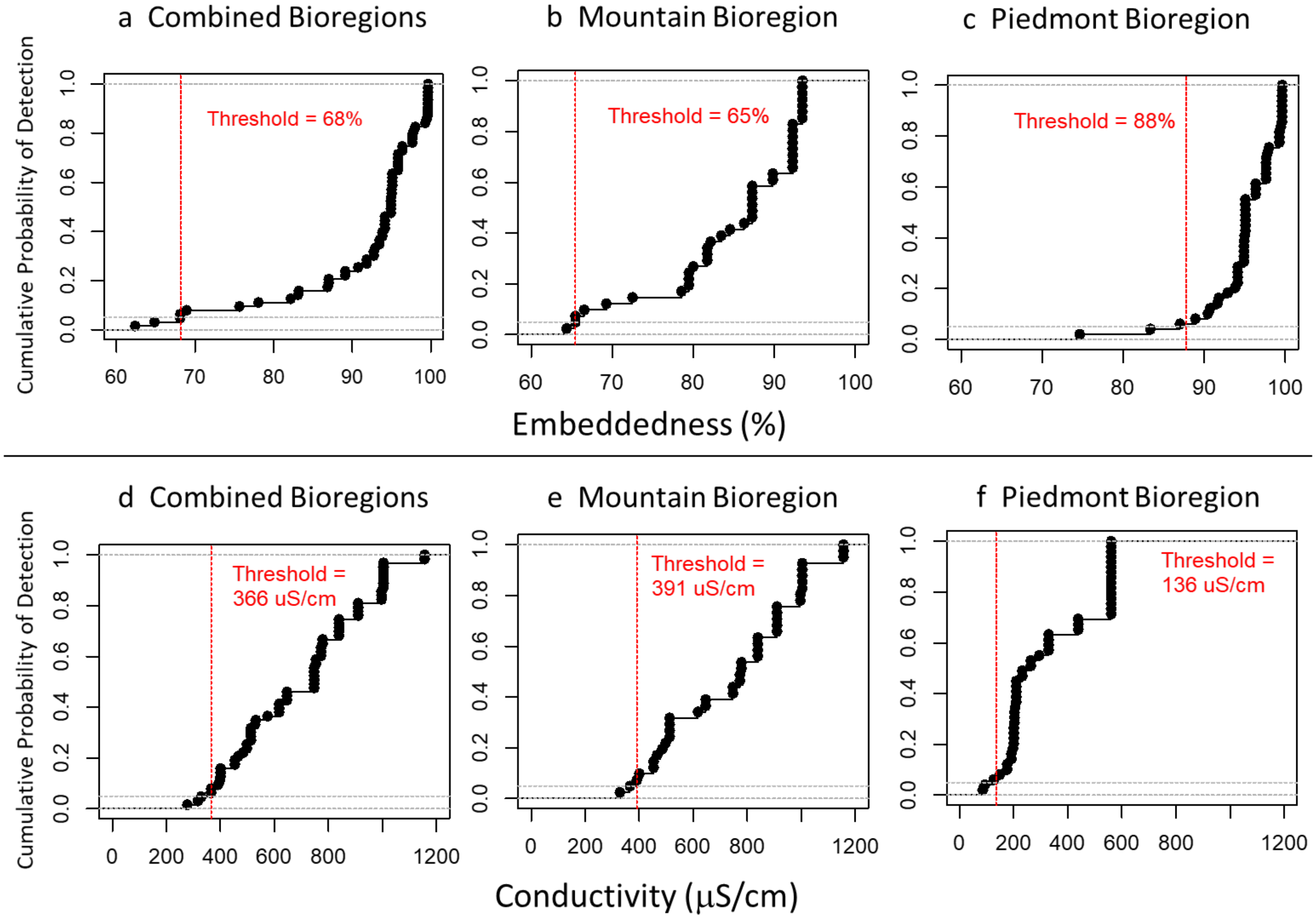
| | | Mountain Bioregion (n=164) | | | Piedmont Bioregion (n=210) | |
|---|---|---|---|---|---|---|
| **Level III Ecoregion** | **Combined Regions** | **Blue Ridge** | **Ridge and Valley** | **Central Appalachian** | **Northern Piedmont** | **Piedmont** |
| **Metric** | n=374 | n=37 | n=102 | n=25 | n=46 | n=164 |
| **Dissolved** | | | | | | |
| Conductivity (log) | -9.69 | 5.86 | **-4.62** | **-14.17** | **-18.14** | **-20.16** |
| TDS (log) | 0.61 | -0.24 | 1.67 | **-2.18** | -2.27 | -0.06 |
| **Suspended** | | | | | | |
| TSS (log) | -0.57 | **11.54** | -1.91 | -0.29 | 0.73 | -1.16 |
| Turbidity (log) | -4.71 | **-17.86** | -1.82 | -- | 2.57 | -- |
| **Bedded** | | | | | | |
| Embeddedness (asin sqrt) | **-20.56** | 0.57 | -3.98 | -- | **16.58** | **-9.27** |
| % Fines (asin sqrt) | **14.10** | -3.56 | 0.14 | -- | -0.48 | 6.10 |
| % Sand (asin sqrt) | **15.07** | 9.50 | **5.94** | -- | **6.92** | **9.66** |
| Relative Bed Stability (log) | -1.10 | -5.74 | -2.88 | **2.16** | 1.88 | 1.92 |
| Median Particle Size (log) | 4.50 | **14.48** | **6.97** | -- | 6.49 | 0.42 |
| *Deviance Ratio* | *0.274* | *0.764* | *0.342* | *0.486* | *0.341* | *0.200* |
| Intercept | 86.2 | 38.3 | 68.1 | 96.11 | 78.46 | 99.63 |

Table 3-4. Family Extirpation Concentrations and Community Effects Thresholds for Embeddedness and Conductivity. -- = Family detected in < 15 samples and not included in the threshold evaluation. XC95 = Extirpation levels as percent of embeddedness. EC05 = Effects concentration for fifth percentile of macroinvertebrate community. 95% Confidence interval on the mean EC05 generated via bootstrapping. XC95 values that are undefined are indicated by “>”.

| | 95th Percentile Extirpation Level [XC95] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Combined Regions (n=373) | | | Mountain Bioregion (n=164) | | | Piedmont Bioregion (n=209) | | |
| **Invertebrate Family** | No. Stations Detected | Embeddedness (%) | Conductivity (µS/cm) | No. Stations Detected | Embeddedness (%) | Conductivity (µS/cm) | No. Stations Detected | Embeddedness (%) | Conductivity (µS/cm) |
| Aeshnidae | 36 | >99 | 1004 | 1 | -- | -- | 35 | >98 | 210 |
| Ancylidae | 77 | >95 | >773 | 27 | 79 | 773 | 50 | >95 | >561 |
| Asellidae | 25 | 100 | 498 | 10 | -- | -- | 15 | >100 | 176 |
| Athericidae | 35 | 68 | >1004 | 29 | 67 | >1004 | 6 | -- | -- |
| Baetidae | 260 | 94 | >779 | 122 | 82 | >779 | 138 | >95 | >329 |
| Baetiscidae | 25 | >100 | 277 | 5 | -- | -- | 20 | 95 | 127 |
| Brachycentridae | 34 | 93 | 366 | 15 | 82 | 366 | 19 | 100 | 149 |
| Caenidae | 77 | 98 | 747 | 32 | 73 | >646 | 45 | >99 | >561 |
| Calopterygidae | 40 | >100 | 754 | 8 | -- | -- | 32 | >100 | >264 |
| Cambaridae | 67 | 96 | 754 | 21 | 87 | 747 | 46 | 96 | 203 |
| Capniidae | 93 | 91 | >1004 | 30 | 65 | 1004 | 63 | 91 | 231 |
| Ceratopogonidae | 54 | 95 | 513 | 25 | 93 | 513 | 29 | 99 | 176 |
| Chironomidae..A. | 359 | >95 | >910 | 160 | >87 | >910 | 199 | >95 | >561 |
| Chloroperlidae | 45 | 68 | 391 | 37 | 64 | 391 | 8 | -- | -- |
| Coenagrionidae | 69 | 99 | 773 | 23 | 92 | 773 | 46 | >100 | >561 |
| Corbiculidae | 87 | >94 | >997 | 25 | >92 | >1156 | 62 | >95 | >561 |
| Corydalidae | 154 | 89 | >839 | 64 | 93 | >839 | 90 | 90 | >439 |
| Crangonyctidae | 16 | >96 | 747 | 0 | -- | -- | 16 | 96 | >561 |
| Dixidae | 18 | 95 | 401 | 7 | -- | -- | 11 | -- | -- |
| Dryopidae | 50 | >96 | 575 | 4 | -- | -- | 46 | 94 | >329 |
| Elmidae | 346 | >95 | >910 | 155 | >87 | >910 | 191 | >95 | >561 |
| Empididae | 60 | >96 | >779 | 24 | >93 | 779 | 36 | >95 | 192 |
| Ephemerellidae | 182 | >96 | 513 | 93 | 90 | >513 | 89 | >98 | 210 |
| Ephemeridae | 16 | 83 | 513 | 12 | -- | -- | 4 | -- | -- |
| Ephemeroptera..unknown | 19 | 94 | >839 | 13 | -- | -- | 6 | -- | -- |
| Gammaridae | 15 | >100 | 398 | 2 | -- | -- | 13 | -- | -- |
| Glossosomatidae | 25 | 82 | >1004 | 18 | 86 | >1004 | 7 | -- | -- |
| Gomphidae | 102 | >95 | 1004 | 36 | 93 | 1004 | 66 | >98 | >264 |
| Heptageniidae | 335 | >95 | >839 | 151 | 85 | >839 | 184 | >95 | >561 |
| Hydracarina..unknown. | 83 | >94 | >1004 | 27 | 80 | >1004 | 56 | 94 | >295 |
| Hydropsychidae | 348 | >93 | >910 | 161 | >87 | >910 | 187 | 94 | >561 |
| Hydroptilidae | 32 | 92 | >773 | 14 | -- | -- | 18 | >95 | >210 |

| | 95th Percentile Extirpation Level [XC95] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Combined Regions (n=373) | | | Mountain Bioregion (n=164) | | | Piedmont Bioregion (n=209) | | |
| **Invertebrate Family** | No. Stations Detected | Embedded-ness (%) | Conductivity (µS/cm) | No. Stations Detected | Embedded-ness (%) | Conductivity (µS/cm) | No. Stations Detected | Embedded-ness (%) | Conductivity (µS/cm) |
| Isonychiidae | 194 | 87 | >839 | 103 | 79 | >839 | 91 | 92 | 192 |
| Lepidostomatidae | 15 | 65 | 401 | 10 | -- | -- | 5 | -- | -- |
| Leptoceridae | 50 | >100 | 618 | 5 | -- | -- | 45 | >99 | 210 |
| Leptohyphidae | 15 | >100 | 646 | 3 | -- | -- | 12 | -- | -- |
| Leptophlebiidae | 135 | >96 | 528 | 72 | 92 | 513 | 63 | >100 | 200 |
| Leuctridae | 48 | 95 | 513 | 29 | 92 | 513 | 19 | 98 | 86 |
| Limnephilidae | 39 | 93 | 453 | 21 | 92 | 453 | 18 | 96 | 94 |
| Lumbriculidae | 48 | 87 | 646 | 20 | 82 | 646 | 28 | 89 | >439 |
| Naididae | 39 | 94 | >997 | 24 | >93 | >997 | 15 | 94 | >561 |
| Oligochaeta..unknown. | 95 | >98 | >839 | 37 | 92 | >839 | 58 | >95 | 200 |
| Peltoperlidae | 35 | 76 | 401 | 25 | 69 | 401 | 10 | -- | -- |
| Perlidae | 167 | 89 | 498 | 74 | 65 | 498 | 93 | >92 | >329 |
| Perlodidae | 62 | 98 | 453 | 29 | >93 | 453 | 33 | 98 | 231 |
| Philopotamidae | 214 | >93 | 531 | 90 | 87 | 747 | 124 | 95 | >439 |
| Physidae | 35 | >98 | 747 | 5 | -- | -- | 30 | >98 | >561 |
| Planorbidae | 44 | >100 | 747 | 2 | -- | -- | 42 | >100 | >561 |
| Plecoptera..unknown. | 30 | 95 | 466 | 17 | 93 | 466 | 13 | -- | -- |
| Pleuroceridae | 112 | 92 | >485 | 64 | >83 | >485 | 48 | 93 | 200 |
| Polycentropodidae | 35 | 96 | 618 | 16 | 92 | >618 | 19 | 99 | 200 |
| Psephenidae | 175 | 78 | >1004 | 119 | 79 | >910 | 56 | 83 | >329 |
| Psychomyiidae | 15 | >95 | 366 | 5 | -- | -- | 10 | -- | -- |
| Pteronarcyidae | 40 | 87 | 329 | 22 | 79 | 329 | 18 | 87 | 206 |
| Ptilodactylidae | 31 | 95 | 317 | 6 | -- | -- | 25 | 95 | -- |
| Rhyacophilidae | 64 | 69 | 1156 | 47 | 82 | 1156 | 17 | 75 | -- |
| Simuliidae | 203 | >93 | >997 | 86 | >87 | >997 | 117 | 94 | -- |
| Sphaeriidae | 41 | >100 | >646 | 8 | -- | -- | 33 | >100 | -- |
| Taeniopterygidae | 97 | >98 | >1156 | 36 | 92 | 1156 | 61 | >98 | -- |
| Talitridae | 18 | >100 | 747 | 0 | -- | -- | 18 | >100 | -- |
| Tipulidae | 221 | >94 | >910 | 92 | >90 | >910 | 129 | 95 | -- |
| Trichoptera..unknown. | 15 | 62 | 618 | 12 | -- | -- | 3 | -- | -- |
| Tricladida..unknown. | 24 | 83 | >747 | 12 | -- | -- | 12 | -- | -- |
| **EC05 Community Sensitivity Threshold** | | **68** | **366** | | **65** | **391** | | **88** | **136** |
| Bootstrapping Mean | | 72 | 269 | | 62 | 360 | | 87 | 122 |
| 95% Confidence Interval | | 64 - 80 | 176 - 356 | | 54 - 68 | 311 - 400 | | 81 - 90 | 94 - 156 |

Figure 3-3. Macroinvertebrate Community Sensitivity Thresholds for Embeddedness and Conductivity. Vertical dashed line indicates extirpation threshold at 5% cumulative probability of detection.



The USEPA has developed a conductivity benchmark of 300 µS/cm for neutral to alkaline waters predominated by sulfate salts (USEPA 2011; Cormier et al. 2013; USEPA 2016c). VDEQ has determined dissolved sulfate, chloride, sodium, and potassium are ions that have an impact on benthic communities in the state (VDEQ 2017). VDEQ identified four categories of conductivity and associated probability of stress to aquatic life based on odds-ratios and VSCI scores: < 250 µS/cm = "none", 250-350 µS/cm = "low", 350-500 µS/cm = "medium", and > 500 µS/cm = "high" (VDEQ 2017). Our multi-region threshold of 366 µS/cm aligns with VDEQ's low-to-medium stress threshold, while our estimated mean EC05 derived from bootstrapping (269 µS/cm; Table 3-3) is closer to VDEQ's more conservative none-to-low stress boundary.

### Multiple Stressor Effects

Macroinvertebrates in the Piedmont bioregion were less sensitive to embeddedness and more sensitive to conductivity than macroinvertebrates in the Mountain bioregion (Figure 3-3). These findings may reflect the differential adaptive pressures on invertebrate populations in these ecoregions. The Piedmont bioregion contains sandier habitats with higher natural levels of embeddedness (Figure 3-4a). Similarly, surface waters in the Piedmont are less likely to exhibit high conductivity levels (Figure 3-4b). Population sensitivities in both regions are greater for the stressor less commonly encountered in the region. Differences in relative sensitivities are also evident by comparing simple linear regressions between VSCI scores and stressors for each region (Figure 3-4a and b).

Visualization of the combined embeddedness-conductivity data space (Figure 3-4c), reveals that while both stressors influence stream health, passing VSCI scores can be achieved across a range of embeddedness levels, while conductivity is a stronger predictor of VSCI when the index is simplified into passing vs. failing scores. Streams with both high conductivity and high embeddedness are the least likely to support healthy macroinvertebrate communities, which reflects the multiple stressor effects.

## CONCLUSIONS

This study is the first to quantitatively determine the sediment parameters most strongly associated with benthic macroinvertebrate community response. It is also the first to demonstrate the importance of bedded sediment forms on macroinvertebrate health and to develop a quantitative threshold for embeddedness. This work suggests that embeddedness may warrant closer consideration as a monitoring or restoration endpoint. It addition, it reaffirms the importance of conductivity to stream invertebrates, and identifies bioregion specific thresholds for VA. Distinct differences in identified thresholds for both embeddedness and conductivity between Mountain and Piedmont bioregions highlight the importance of studies based on biologically relevant spatial units rather than on political boundaries. We encourage refinement of these thresholds as additional stations are sampled and as sufficient genus-level data become available. We also recommend coordination between states to develop sediment thresholds for shared ecoregions, which will further contributed to shared stressor identification and water quality management goals.

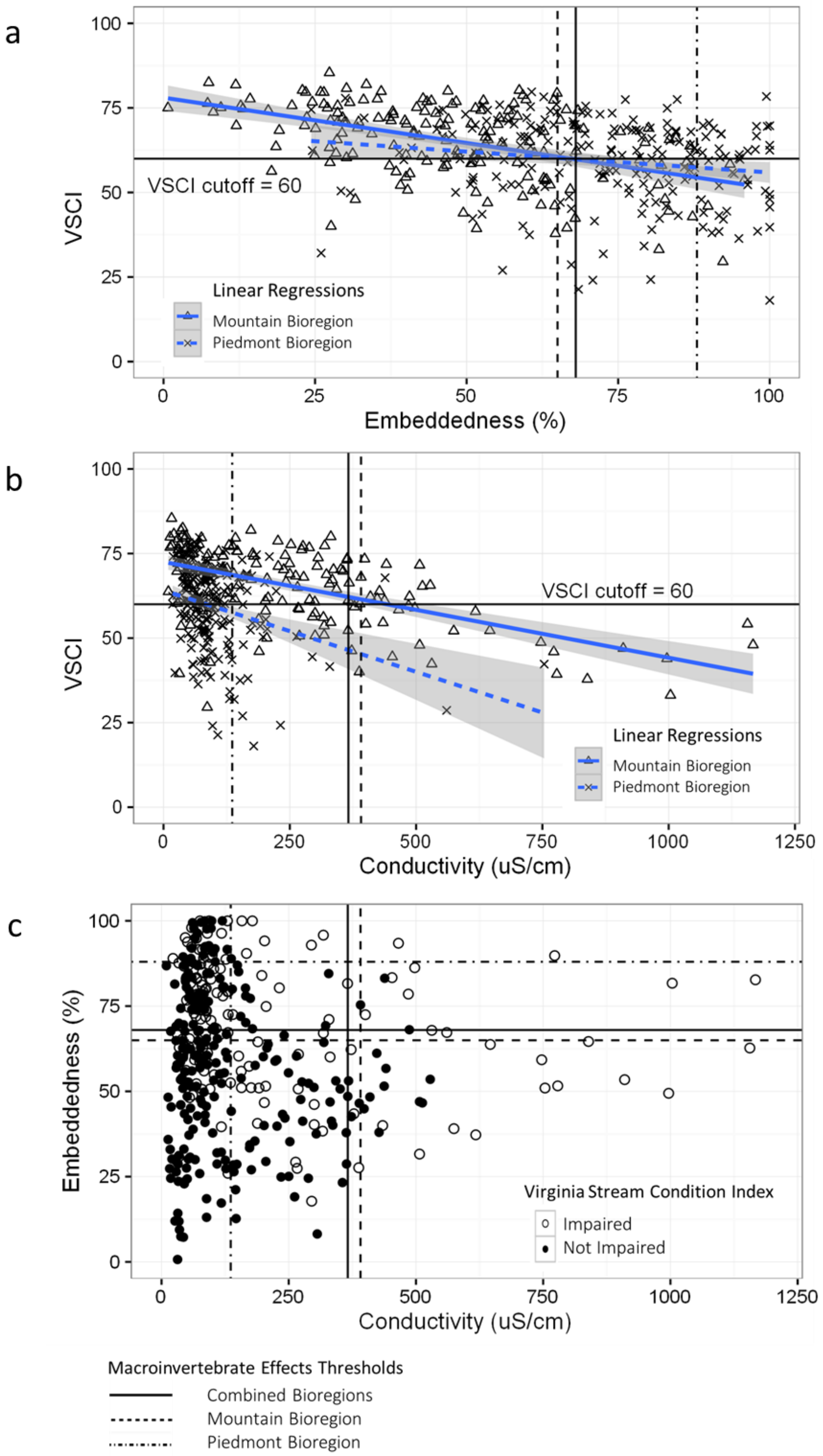


Figure 3-4. Relationships between Embeddedness, Conductivity, and VSCI

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# CHAPTER 4. RARE EARTH ELEMENTS AS TRACERS OF FLUVIAL FINE SEDIMENT TRANSPORT AND DEPOSITION

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## Abstract

Effective sediment management requires an understanding of the lag time between the implementation of best management practices and observable changes in the target water body. To begin to improve our understanding of sediment lag times, we developed a method of using locally sourced sediments labeled with rare earth elements (REE) to reveal fine sediment flow-through and storage in fluvial systems. To test our method, we conducted field-based experiments by injecting sediments labeled with lanthanum (La) and ytterbium (Yb) into a small stream during two artificial flood events (one REE per event; with and without large wood (LW) installed in the channel). We established four sampling cross sections (XS) within our detailed study reach (80 m). During the floods, we collected and quantified suspended sediments at XS1, XS3, and XS4, and sediment deposition in the stream channel and floodplain at XS1, XS2, and XS3. We also installed two down gradient (90 m and 850 m), time-integrated suspended sediment samplers to evaluate travel distance. Suspended sediment transport velocities averaged 0.21 m/s for the two floods based on peak total suspended sediment (TSS), with slightly slower transport and lower TSS concentrations when LW was in the channel. Transport distances of individual particles ranged from 0 m to at least 850 m (maximum flow rate of approximately 55 L/s). Sediment deposition per area was greater in the stream channel than in the floodplain both with and without LW. The majority of particles injected into the stream entered storage within the first 8.6 m of the reach. Some particles deposited following the first flood were re-suspended and either transported downstream or redeposited in the study reach. Future studies should increase the spatial distribution of both suspended and deposited sediment sampling points to improve quantification of the heterogeneity of transport. Our results can inform water quality and sediment transport models and begin to provide data to approximate lag times between management actions and downstream improvements. Overall, our method of utilizing REE as a sediment tracer holds promise for understanding fine sediment transport and fate through river corridors.

**Keywords:** fine sediment, fluvial sediment fate and transport, deposition, tracer, fluvial geomorphology, rare earth elements, lag time

## Introduction

Sediment imbalance is the second most common cause of freshwater river and stream impairment in the United States (US EPA 2016). Excess fine sediment can fill reservoirs, interfere with navigational channels, reduce flood control capacity (Owens 2008), and cause shifts in fish, macroinvertebrate and periphyton communities (Waters 1995; Wood and Armitage 1997; Chapman et al. 2014; Govenor et al. 2017). Sediment can also convey attached contaminants and nutrients, which have associated environmental and human health impacts (Characklis et al. 2005; Owens et al. 2005). Economic impacts of sediment contamination on surface waters are considerable; in North America alone costs of human-induced sediment loadings into freshwater systems have been estimated at 20 to 50 billion dollars annually (Miller et al. 2015).

Sediment management generally focuses on source control (US EPA 1999), which involves limiting the loading of sediments into water bodies through both treatment and restrictions on point source discharges, and the implementation of Best Management Practices (BMPs) to limit nonpoint source inputs. Reduced loadings are expected to translate into reductions of in-stream sediments as excess sediment is flushed from the channel during subsequent high-flow events. However, lag times between sediment loading reductions and water quality improvements in the reach or at the watershed outlet are highly variable and can extend decades or more (Meals et al. 2010; Pizzuto et al. 2014). This temporal disconnection between restoration investments and the return of a healthy ecosystem can render public support difficult to secure. Having reliable estimates of lag times is critical in the establishment of appropriate monitoring programs and in framing realistic expectations for stakeholders regarding the timeframe for watershed improvements (CBPSTAC, 2013).

Lag times are influenced by the specific BMP implemented as well as a variety of watershed traits including drainage area, soil types, geology, topography, channel geometry, in-stream structures, climate, and precipitation (Meals et al. 2010; Hamilton 2012; CBPSTAC 2013). These watershed traits influence sediment suspension, transport, and storage, which are key facets of sediment cycling. Previous studies of sediment fate and transport within the stream channel have predominantly focused on the transport of bed particles, which is important for understanding channel evolution (Habersack et al. 2017; Mao et al. 2017). However, an understanding of fine sediment fate and transport is necessary for predicting BMP impacts on nonpoint source pollution. While the tracking of larger-sized particles that comprise bedload can be conducted using painting of individual particles (Quinlan et al. 2015), use of radio transmitters (Mao et al. 2017), and magnet-tags (Ferguson et al. 2017), tracking of smaller particles within the steam system presents unique challenges.

The tracking of fine sediments falls into two categories: sediment fingerprinting and transport studies. Sediment fingerprinting is a technique that aims to identify landscape sources and their relative sediment loading contributions to streams. A combination of approaches is used to identify sediment sources including natural variations in mineralogy, isotopic ratios, particle size, magnetism, bacterial signatures, and other chemical, physical and biological characteristics (Guzmán et al. 2013; Haddadchi et al. 2013). Experimental approaches to sediment fingerprinting have included application of rare earth elements (REE) (Polyakov et al. 2009) to upslope soils and tracking erosion and downgradient deposition. Fingerprinting, however, is not designed to provide a detailed spatial and temporal view of sediment fate within the stream channel itself.

Fluvial sediment transport studies involve tracking fine particulates within the stream channel, and are largely accomplished by monitoring of suspended sediment concentrations and turbidity (Gao 2008; Larsen et al. 2010). For higher resolution tracing studies, artificial fluorescent particles have been injected into streams to allow more detailed, smaller scale evaluation of fine particle fate and transport (Knights et al. 2017). Historical releases of contaminated sediments have also been interpreted as decadal sediment tracer experiments (Pizzuto 2014). Stable isotopes have been identified as having the potential to serve as sediment tracers within the aquatic environment (Miller et al. 2015), and short-lived fallout radionuclides have been used to track lateral migration rates in meandering rivers (Black et al. 2010).

One promising approach for quantifying fluvial sediment transport is the use of sediment labeled with REE. REE are naturally occurring elements belonging to the lanthanides series (atomic numbers from 57 through 71). While not “rare” in terms of overall abundance, they have a low tendency to concentrate into ore deposits, resulting in limited concentrated sources (USGS 2002). A review by Guzmán et al. (2013) indicates that while several sediment tracer studies have employed REE, these studies have predominantly focused on hillslope erosion to track movement of sediments within plots or agricultural fields (Polyakov and Nearing 2004; Guzmán et al. 2013; Haddadchi et al. 2013). However, Mahler et al. (1998) used REE-labeled clay to trace fine sediment transport during a uniform flow in a small surface stream in a karst geology, and Spencer et al. (2011) used holmium-labeled clay to monitor fine sediment circulation and deposition within a stormwater detention pond. Our study builds upon that of Kreider (2012), who injected REE-labeled bank sediments into a small stream during multiple storm events to evaluate their potential application as tracers for fluvial sediment transport.

Here we used two distinct REE to track sediment transport and storage in a first-order stream during two artificial floods (one REE per flood). Our study was conducted concurrently with an evaluation of the effects of large wood (LW) on river-floodplain hydraulic connectivity within our study reach (Keys et al. *in review*). LW was present in the study reach during the second of the two flood events; therefore, we addressed the potential impacts of LW on sediment transport. However, our overall goal was to demonstrate the potential use of REE for tracking sediment fate and transport in fluvial systems to increase our understanding of lag times. Our specific goals were to:

1) Determine if REE-labeled sediment can be used to quantify transport and deposition in small streams during high-flow events;
2) Evaluate the efficacy of using multiple REEs in a series of events to detect resuspension and subsequent deposition; and
3) Estimate how far downstream REE-labeled sediments are transported in suspension and if time-integrated suspended sediment samplers are useful to track this movement.

# Methods

## Study Site

We conducted the study along Docs Branch, a first-order tributary of Stroubles Creek in Blacksburg, Virginia. The stream is in the Ridge and Valley physiographic province and is within the Virginia Tech Stream Research, Education, and Management Lab (StREAM Lab; Thompson et al. 2012; Keys et al. 2016). The primary study reach was approximately 60-m long, and begins at a 0.91-m (3-ft) HL flume (37°12’20.40” N, 80°26’09.96”W) and ends at an Acoustic Doppler Velocimeter (ADV; SonTek Argonaut-SW Firmware Version 9.3) installed in the streambed (Fig. 4-1a). The watershed upstream of the flume is approximately 100 ha of pasture and paved roads. The stream has an average width of 0.93 m at bankfull and an average channel slope of 0.01 m/m.

## Labeling of Sediment with Rare Earth Elements

We collected sediments from a nearby stream bank for use in the tracer studies. These soils are mapped as the McGary (fine, mixed, active, mesic Aeric Epiaqualfs) and Purdy (fine, mixed, active, mesic Typic Endoaquults) series (NRCS 2017). Sediments were sifted to remove particles greater than 2 mm and homogenized. REE labeling was achieved by mixing sediments with 10 mmol of either lanthanum chloride ($LaCl_3$ $7H_2O$; GFC Chemical) or ytterbium chloride ($YbCl_3$ $6H_2O$; GFC Chemical) salt solutions at a 1:10 soil to solution ratio (4.8 kg soil + 48 L solution total; 1.6 kg and 16 L solution into each of 3 18.9 L (5-gal) buckets). The sediment/salt solution was mixed 3 times on alternate days for 5 days, then allowed to settle for 8 days. The overlaying water was then decanted. Kreider (2012) demonstrated strong retention of La and Yb to these specific soils (99.97% and 99.71% for La and Yb, respectively, following five washes with stream water). Labeled sediments contained REE at concentrations 3-4 orders of magnitude greater than background levels (La-labeled sediment = 7,192 mg/kg La and Yb-labeled sediment = 8,152 mg/kg Yb) and were representative of medium silt (median diameter ($D_{50}$) = 16.7 $\mu$m).

## Artificial Flood Events

We generated two artificial flood events by blocking road culverts located 25 m upstream of the flume to create a small backwater pond followed by rapid removal of the blockage. A test flood was generated prior to the experiment (23 May 2016) to determine the extent of backwatering required to achieve desired flooding (defined by minimum flow rate) and to wet floodplain soils so that similar antecedent soil moisture conditions would be present for the subsequent experimental floods.

For Flood 1 (24 May 2016) we quickly injected La-labeled sediments (4.7 kg in stream water slurry) into the outfall nappe of the H-flume as the flood pulse reached the flume. Flood 2 (25 May 2016) was generated after we placed LW at three locations within the channel (Fig. 4-1a). LW at each location consisted of a single root wad and attached trunk (see Keys et al. *in review* for additional details). For Flood 2, we injected Yb-labeled sediments (4.7 kg) into the H-flume nappe.

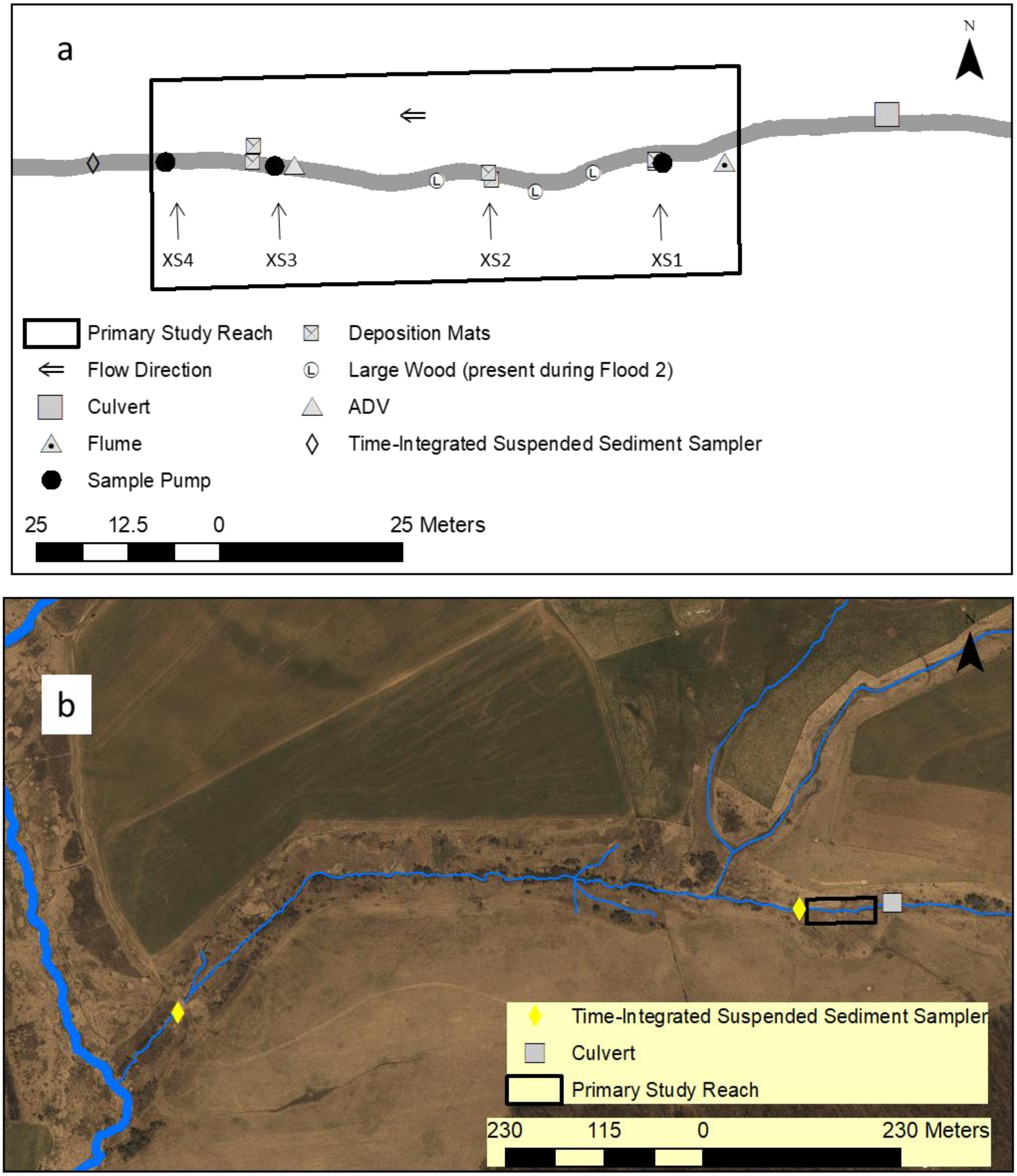

Figure 4-1. (a) Detailed View of the Main Study Reach, (b) Expanded View Showing Downstream Time-Integrated Suspended Sediment Samplers and Confluence with Stroubles Creek.

### Sediment Sampling

Transport in Suspension

Four sampling cross sections were established throughout the reach (XS1 through XS4, Fig. 4-1a). Cross sections were surveyed to generate elevation profiles (Fig. 4-2). We measured suspended sediment transport by continuously collecting water samples throughout the flood flows using small gas-powered pumps (ECHO WP-1000) at cross sections XS1, XS3, and XS4. Sample intakes were fixed to a point in the thalweg approximately 5 cm above the streambed. Total suspended solids (TSS) samples were collected by drawing stream water in to pre-labeled 18.9 L (5-gal) buckets. Sample collection began when water levels at the given sample station began to visibly rise. Time of sample initiation was noted (precision to 1 min), and buckets were filled sequentially at 30 s intervals for the first two min and at one min intervals thereafter, until 12 buckets had been filled. We then placed lids on buckets for transport to the laboratory for processing.

Following collection, each combined bucket, lid, and water sample was weighed and then allowed to sit quiescent for a minimum of 5 d, which is an order of magnitude longer than the time required for clay particles (< 4 μm in diameter) to settle in still water the depth of the sampling buckets. Following this settling period, clear water was decanted from each bucket until a depth of approximately 10 cm remained above the settled sediment. Additional water was siphoned off using a GeoProbe low-flow pump until approximately 2 cm of water remained above the sediment layer. The bucket was then agitated to form a sediment/water slurry that was decanted in to labeled 1 L containers. Buckets were rinsed with a minimal volume of tap water to wash any remaining sediments into the 1 L containers. The 1 L sample containers were allowed to sit undisturbed for a minimum of 2 d, at which point the overlying water was siphoned off to a depth of less than 1 cm. Bottles were then placed in a drying oven at 60°C for two days or until dry, and sediments were weighed to the nearest 0.01 g. Finally, sediments were homogenized manually using a mortar and pestle, and analyzed for REE and particle size as detailed below.

The labeled buckets and their accompanying lids were rinsed, allowed to air dry, and weighed so that the approximate volume of water in each sample (total mass less mass of bucket + lid) could be calculated. TSS concentrations were calculated by dividing the total dry sediment mass per sample by the estimated sample volume (g/L). Sediment breakthrough curves were generated by graphing TSS over time for each cross section.

Deposition

Sediment deposition was measured using a modified version of the turf mat approach described by VonBertrab et al. (2013). We anchored artificial turf mats (15 $cm^2$) with landscape pins in triplicate in the thalweg and nearshore floodplain (on the vegetated stream bank within 0.3 m from the water's edge) at XS1, XS2 and XS3 (Fig. 4-1a) prior to backwatering for each flood event. The morning following each flood, after waters had returned to base flow conditions, mats were collected and gently transferred into zip closure bags. Mats were rinsed and the dry mass of collected sediment was measured to an accuracy of 0.01 g after drying two days at 60°C. REE concentrations and particle size composition of the deposition samples were analyzed as detailed

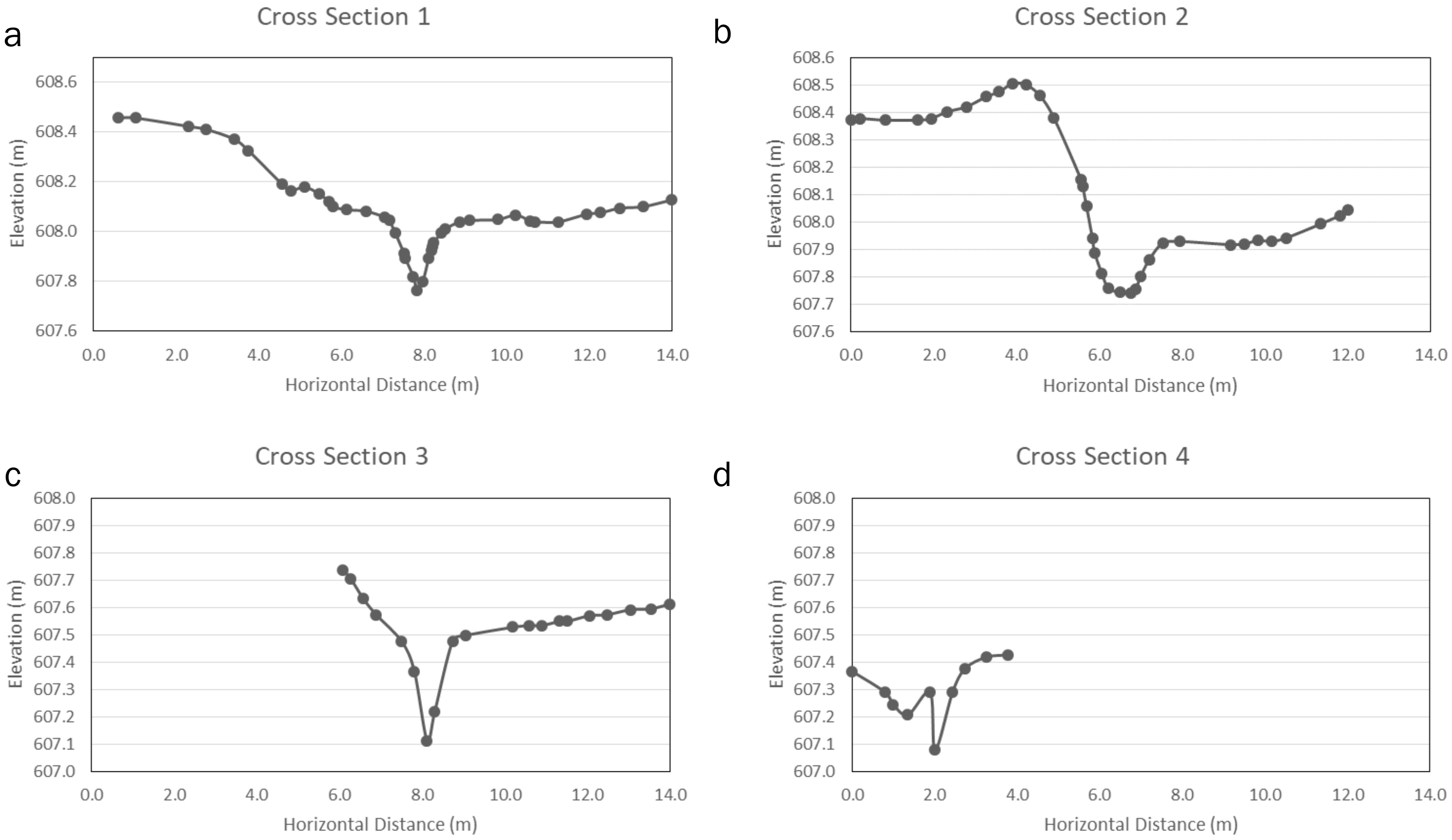

Figure 4-2. Cross Section Elevations from Each of the Sample Stations Viewed from Upstream to Downstream.

below after combining the triplicate mats into a single sample to allow sufficient mass for analysis.

Longitudinal Transport

Flow-through suspended sediment samplers were established 90 m downstream of the flume for Flood 1 and at both 90-m and 850-m downstream of the flume for Flood 2 (Fig. 4-1b). Samplers were based on a design by Phillips et al. (2000) and were deployed in triplicate at each location with inlets set approximately 2 cm above baseflow. These samplers collected suspended sediments from waters that flowed through the samplers when the flood stage was at or above the level of the inflow point. After the flow events, trapped sediments were collected by rinsing the flow-through samplers and collecting the resulting sediment slurry in 1 L containers. Sample containers were allowed to sit undisturbed for a minimum of 2 d, at which point the overlying water was siphoned off to a depth of less than 1 cm. Bottles were placed in a drying oven at 60°C for 2 d or until dry, and sediments were weighed to the nearest 0.01 g. Samples from the triplicate suspended sediment samplers were combined to allow sufficient mass for analysis of REE and particle sizes.

### Laboratory Analysis of Rare Earth Elements and Particle Sizes

To analyze REE concentrations in sediment samples, dried samples for each sample location and sample type were homogenized by hand or with a mortar and pestle to separate particles. A 0.5 g portion of each sample was digested with 10 mL concentrated nitric acid following US EPA Method 3051A using a MARS Xpress laboratory grade microwave. REE concentrations in the digestate were analyzed at the Civil and Environmental Engineering Lab at Virginia Tech via Inductively Coupled Plasma – Mass Spectrophotometry (ICP-MS) following US EPA Method 6020. The ICP-MS minimum reporting level was 0.1 ppb (corresponding to sediment concentrations of 0.33 mg/kg for the sediment sample mass and dilution used here).

Background levels of REE were determined by analyzing bed sediments collected immediately upstream of the study reach and were 21.5 ± 1.0 mg/kg La and 1.5 ± 0.1 mg/kg Yb. Background concentrations were used as a baseline to distinguish between injected sediment concentrations and those naturally occurring in the study reach.

Particle sizes were evaluated for each sample using a CILAS 1190 particle size analyzer and associated Size Expert software (Cilas 2014). Samples were prepared by mixing 1.0 g sample with 20 mL distilled water and agitating overnight.

### Estimation of Tracer Transported in Suspension

Hydrographs at XS1 during Flood 1 and Flood 2 were generated using the Hydrologic Engineering Center's River Analysis System (HEC-RES) 2-dimentional hydrodynamic model developed for the study reach by Keys et al. (*in review*). Data from the ADV, located as XS3, were used to generate a hydrograph for this cross section. Flow rates for each of ten-1 min sequential sampling intervals encompassing the time period of maximum sediment transport for each cross section-flood combination for XS1 and XS3 were multiplied by measured TSS concentrations and REE concentrations for the same sampling intervals to estimate the total mass of REE passing the cross sections in suspension over the course of a flood event. Because a portion of the REE mass can be attributed to natural background levels, background concentrations in transport were also estimated and subtracted from the total REE in transport to provide an estimate of the sediment tracer in suspension. These data were used to estimate the relative proportion of the tracer injected that was transported in suspension past a given cross section. We estimated the total mass of REE injected by multiplying the mass of labeled sediments injected (4.7 kg) by the concentration of REE in those sediments determined via laboratory analysis.

### Estimation of Tracer Deposition

We estimated tracer deposition in the channel for three sections: Flume-XS1, XS1-XS2, and XS2-XS3, by multiplying surface area of the section by average mass deposited and the REE concentration in deposited samples. The area of each section was calculated as the length of along the thalweg times the average channel width of 0.93 m. Deposition for Flume-XS1 was estimated as the average deposition on channel sample mats from XS1. Deposition for section XS1-XS2 was estimated as the average deposition on channel sample mats from XS1 and XS2. And deposition for section XS2-XS3 was estimated as the average deposition on sample mats from XS2 and XS3.

Flood plain deposition for the same three sections was estimated using the average mass deposited in floodplain samples and the REE concentrations in those samples as described above (deposition for Flume-XS1 was estimated as the average deposition on floodplain sample mats from XS1; deposition for section XS1-XS2 was estimated as the average deposition on floodplain sample mats from XS1 and XS2; and deposition for section XS2-XS3 was estimated as the average deposition on floodplain sample mats from XS2 and XS3). Because deposition mats in the floodplain were located within 0.3 m from the stream bank, and deposition is expected to be greater closer to the channel, we estimated floodplain deposition for a 0.5 m band along the right side of the channel rather than for the entire area of inundation. Based on topography, the floodplain stream right is inundated before the left bank is breached (Figure 4-2), which is why our estimates are based on a single side of the channel. This approach is likely to underestimate total floodplain deposition; however, the alternative approach (i.e., assuming our deposition data are representative of the entire area of inundation) would greatly overestimate actual deposition in the floodplain. As described for suspended sediment, because a portion of the REE mass can be attributed to natural background levels, background concentrations in deposition samples were also estimated and subtracted from the total REE deposition to provide an estimate of sediment tracer deposition.

### Statistical Analysis

#### Transport in Suspension

We compared the magnitude and timing of sediment breakthrough curves to evaluate the effects of LW and XS on the transport of sediment in suspension. We calculated mean transport velocities by dividing the distance traveled (distance of cross section from the H-flume sediment injection point) by the time the peak of the sediment pulse (maximum measured TSS concentration) reached a given cross section. TSS data and flow data for XS1 and XS3 were used to evaluate hysteresis at these cross sections.

Deposition

We utilized ANOVA to evaluate the effects of LW (i.e., Flood 1 no LW, Flood 2 with LW, XS, and LOC (channel or floodplain), and each two-way interaction on sediment deposition (g/dm$^2$). The normality assumption was tested using Shapiro-Wilks test, and deposition data were log10 transformed to meet normality assumptions prior to analysis. Pairwise differences were evaluated with Tukey Honestly Significant Differences (HSD) tests. For this and all subsequent tests, Type I error was set at $\alpha = 0.05$.

Differences in particle-size distributions for deposition data were evaluated with ANOVAs of 10th percentile ($D_{10}$), median ($D_{50}$), and 90th percentile ($D_{90}$) particle sizes on main effects (LW, XS, LOC). $D_{10}$ and $D_{50}$ distributions met normality assumptions without the need for transformation. $D_{90}$ data were log10 transformed to meet the normality assumption. As a result of the need to combine the three samples from each location for adequate mass for analysis, sample sizes were effectively reduced and two-way interactions could not be evaluated.

## Results and Discussion

### Artificial Flood Events

Floods 1 and 2 both reached approximately 55 L/s peak flow and had similar hydrographs at the upstream end of the study reach (Fig. 4-3). Using regional curves for streams in the non-urban Ridge and Valley province (Keaton et al. 2005), the estimated 1.5-yr return period flow event (i.e., bankfull flow) for a watershed of this size is 515 L/s. This is approximately 9 times the flows generated in our experimental floods, indicating that the experimental flows are representative of flows expected to occur several times per year. While hydrographs for XS1 were similar for Flood 1 and Flood 2, hydrographs for XS3 reflect lower flow rates and a delay of the flood pulse reaching this cross section when LW was present in the channel.

### Transport in Suspension

During Flood 1 (without LW), the maximum concentration of suspended sediment passed the farthest downstream sampling point (XS4) at 5.5 min and the transport velocity based on peak TSS at XS4 was 0.25 m/s (Table 4-1). Maximum sediment in transport was 2.9 g/L. For Flood 2 (with LW), the maximum TSS concentration was observed at 7.5 min, corresponding to a transport velocity of 0.18 m/s. Maximum sediment in transport at XS4 in Flood 2 was 2.0 g/L. In general, suspended sediment transport was dampened and delayed when LW was present in the channel (Fig. 4-4a and c).

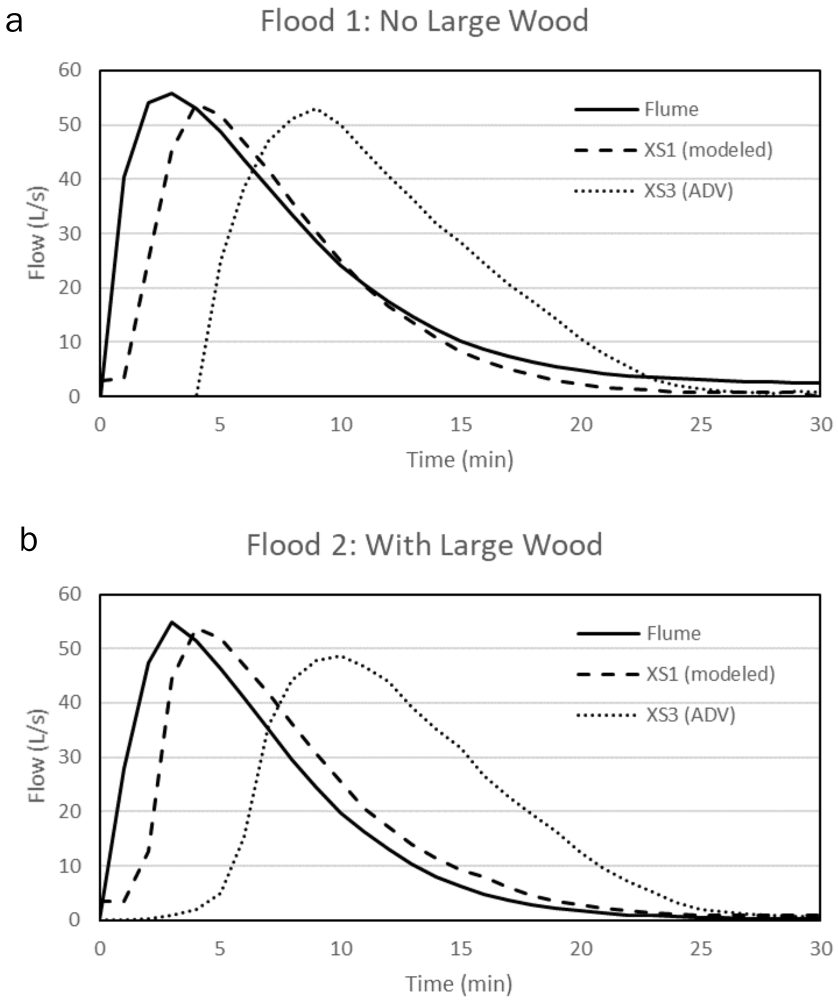

Figure 4-3. Hydrographs for (a) Flood 1 and (b) Flood 2 at the Flume, Cross Section 1 (XS1), and the Acoustic Doppler Velocimeter (ADV) located at Cross Section 3 (XS3)

Table 4-1. Characteristics of Suspended Sediment at Cross Sections (XS) 1, 2, and 3

| | Flood 1: No Large Wood | | | Flood 2: With Large Wood | | |
|---|---|---|---|---|---|---|
| **Suspended Sediment** | XS1 | XS3 | XS4 | XS1 | XS3 | XS4 |
| Distance from flume (m) | 8.6 | 66 | 81.5 | 8.6 | 66 | 81.5 |
| Time to Peak TSS (min) | 1.0 | 4.0 | 5.5 | 1.5 | 6.0 | 7.5 |
| Maximum TSS (g/L) | 27.6 | 5.0 | 2.9 | 6.5 | 3.0 | 2.0 |
| Transport velocity based on peak TSS concentration (m/s) | 0.14 | 0.275 | 0.25 | 0.19 | 0.18 | 0.18 |

In Flood 1, 18.6 kg of sediment were estimated to pass XS1 in solution (Supplemental Table S-1), which is four times the mass of tracer injected, and shows that up gradient and instream sediments were also being transported during the flood events. Of the mass of La injected into

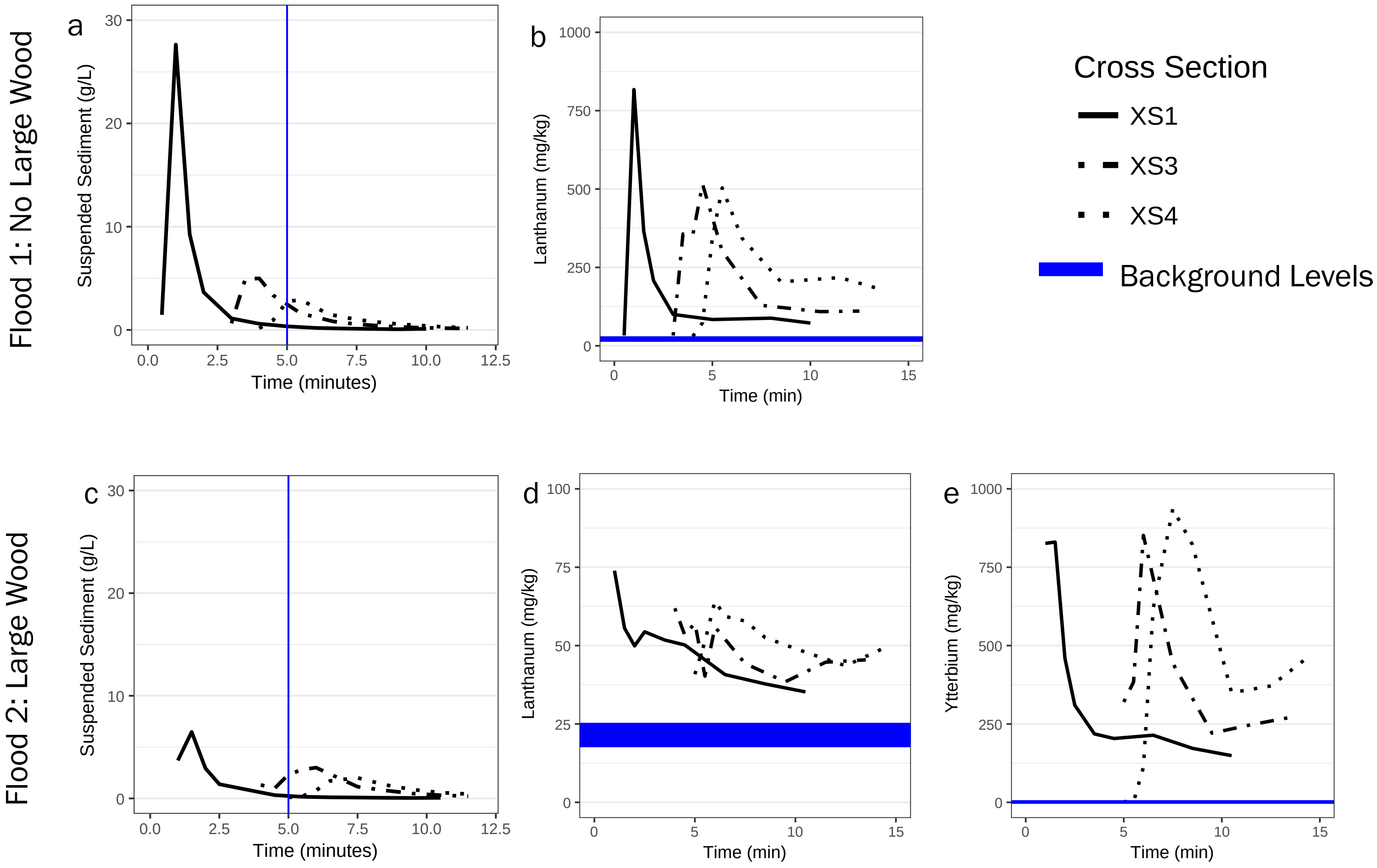

Figure 4-4. Total Suspended Sediment and Rare Earth Element Concentrations in Suspended Sediment for Flood 1 and Flood 2.

the stream, we estimate that 6,042 mg passed XS1in suspension during the first 10 min of the flood (Table S-1). This suggests that 18% of the total mass injected passed XS1 during the sediment pulse, or that 82% of the injected sediment entered storage within 8.6 m of the study reach. This is surprising given the high flow and short distance traveled within this small stream, but is similar to the findings Mahler et al. (1998) who estimated only 21% of total injected sediments traveled 15 m. However, our flow rates were much higher that Mahler et al. Our sampling points were within the main channel, approximately 5 cm from the bed, which may have impacted our estimates of REE-labeled sediment movement as follows. The injected fine sediments maybe have been concentrated higher in the flow column, while we were capturing unlabeled sediments being released from the bed within the reach between the injection point and sampling point. In addition, we did not sample suspended sediments in the lateral floodplain, which again may have had increased sediments from our injection. Regardless, these finding and our estimates of deposition (below) highlight the importance of sediment storage on lag times and the complexity of sediment transport and deposition even within single high-flow events.

Interestingly, an approximately equal mass of La was accounted for in solution (6,662 mg; 18.3%) at XS3. This suggests that either no additional sediment entered storage between XS1 and XS3 (which is contrary to depositional data), or that the TSS measurements may not be representative of the average TSS in solution for the cross section as discussed above. Elevation data for the cross sections (Fig. 4-2) show that based on topography, XS1 flows would be more evenly divided between main channel and floodplain, while XS3 flows would be more concentrated in the channel. Therefore, TSS measurements for XS3 should be more representative of the true cross section average values than those at XS1.

In Flood 2, 9.6 kg of sediment were estimated to pass XS1 in solution, which is twice the mass of tracer injected. Of the mass of Yb injected into the stream, 3,163 mg, or 8.3% of the total mass injected, passed XS1 in suspension during the first 10 minutes of the flood when the sediment pulse traversed this XS. Subsequently, 7,576 mg, or 19.8% of the total mass injected, passed XS3 during minutes 4-13, when the sediment pulse traversed XS3 (Table S-1, Figure 4-4). These data again suggest that TSS estimates based on thalweg samples are not representative of cross sectional means. The difference between estimated and true mean TSS values will increase with increasing differences between channel and floodplain TSS concentrations. Therefore, the larger difference is REE transport estimated between XS1 and XS3 in Flood 2 vs that observed in Flood 1 would suggest that this TSS differential was greater in Flood 2 with LW present in the channel. This could result from increased flows to the floodplain and higher flow heterogeneity due to increased channel roughness.

Labeled sediments were detected in suspended sediment samples for both floods at each of the TSS sample locations (XS1, XS3, and XS 4; Fig. 4-4b and e). La-labeled sediments detected in suspension during Flood 2 (Fig. 4-4d) indicate that a portion of sediment deposited following Flood 1 was entrained and transported in suspension during Flood 2. The concentration of REE in suspension increased with distance downstream from the injection point, as indicated by the steady state concentrations reached after the sediment pulse passed each cross section (Fig. 4-4b and e). Although this pattern was evident during both floods, the presence of LW in Flood 2 delayed the time until steady state was reached, suggesting the additional channel roughness resulted in greater heterogeneity in sediment transport rates.

Particle sizes of suspended sediment were reduced in Flood 2, consistent with expectations of the impact of increasing roughness on flow and transport potential (Fig. 4-5 and Table 4-1). Also consistent with expectations, positive (clockwise) hysteresis was observed at XS1 and XS3 during both Flood 1 and Flood 2, indicating that the sediment pulse preceded the flood pulse (Fig. 4-6). Positive hysteresis is commonly observed when sediment supply is depleted over the course of a flow event (Naden 2010).

## Sediment Deposition

Sediment deposition per unit area in the stream channel was greater than deposition in the floodplain during both floods (LOC $p<0.001$; Fig. 4-7a-b). This effect was driven by depositional differences at XS1 and XS2 closest to the flume where the tracer sediments were injected; deposition was equal in the channel and floodplain at XS3 (LOC x XS, $p=0.04$). Greater deposition per unit area in the channel relative to the floodplain was expected as larger total volumes of flow and sediment were transported through the channel. In addition, deposition in the channel theoretically occurred from the time of sample mat placement until collection the following morning, while deposition in the floodplain could only occur while this area was submerged during the flood events. Greater differences in deposition per unit area between channel and floodplain samples closer to the flume as opposed to downstream can be attributed to the study design, which mimics a dam break with sediment inputs limited to alluvial sources and an absence of lateral inputs from overland flow or tributaries, which would occur during a natural runoff event. Because measurements are on a per unit area basis, it is important to note that total deposition in the floodplain may exceed that in the channel due to the larger surface area of the floodplain. Keys et al. (*in review*) estimated that 265 $m^2$ of the study reach was submerged during Flood 1 and 355 $m^2$ was submerged during Flood 2.

We estimate that 200 kg of sediment was deposited within the stream channel between the flume and XS1 during Flood 1 (Table S-2). This mass is 40 times the mass of tracer injected, and likely reflects sediments moved from the upstream backwater area and instream sediments being suspended and redeposited as a result of mixing from downward flows at the flume. Of the La injected into the stream, we estimate that 26,350 mg deposited in this channel section, which is 77.5% of the total mass injected (Table S-2). This estimate aligns fairly well with our estimate that only 18% of the injected sediment passed XS1 (or 82% entered storage) within this first section of the reach. However, we also estimated that floodplain deposition in this area included 29,420 mg La, or an additional 86.5% of injected sediment. The magnitude of this estimate is driven by the high concentration of La measured on deposited sediments in this area. This results in estimates that the total mass of labeled sediment deposited exceeds the theoretical maximum deposition. This is likely due to substantial heterogeneity in sediment deposition that was not adequately sampled with our single sample point (albeit with three subsamples) over our 8.6 m reach, thereby providing inadequate estimates of average deposition when flows are not uniform (i.e., during flood events). Regardless of the overestimation, these data support the suspended sediment measurements that suggest that the majority of sediment enters storage within the first 8.6 m of the stream channel.

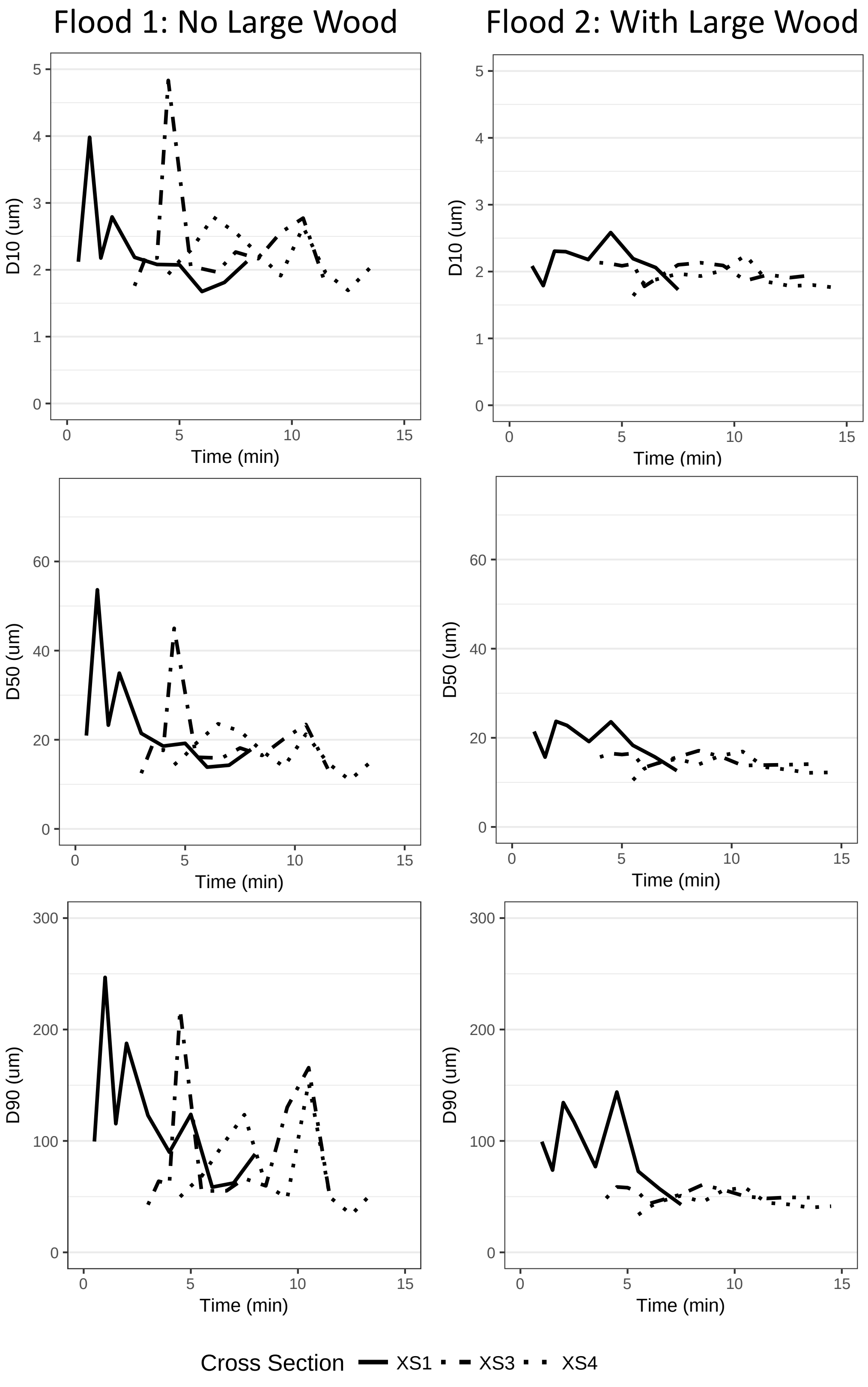

Figure 4-5. Particle Size in Suspended Sediment.

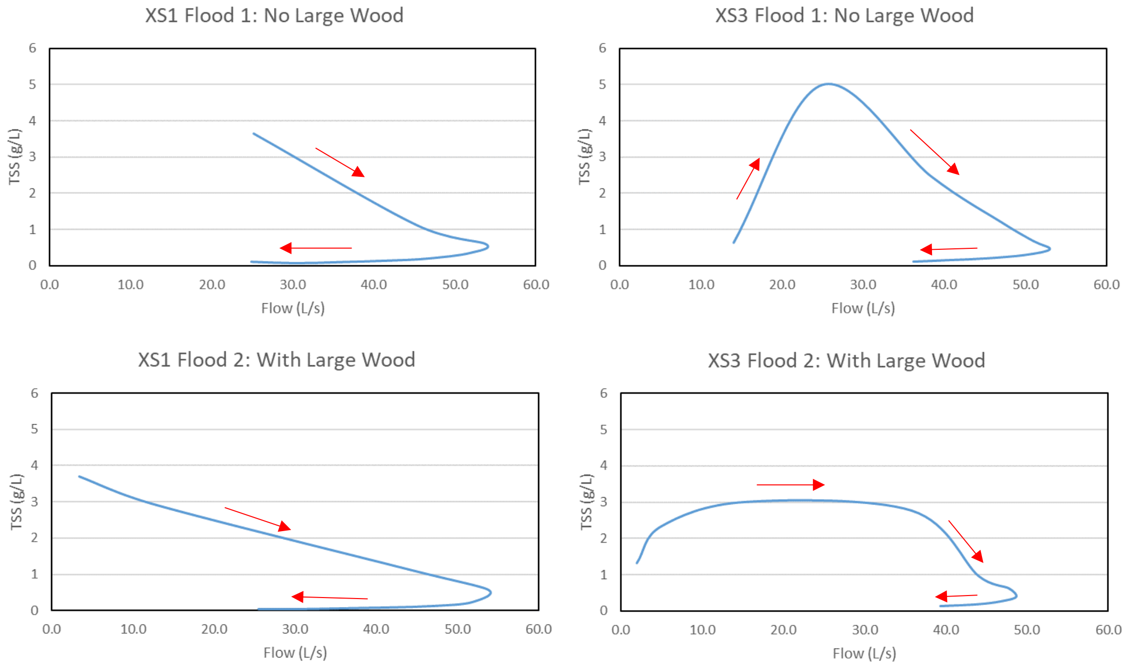

Figure 4-6. Positive Hysteresis for Suspended Sediment Transport at Cross Section 1 (XS1) and XS3. Arrows indicate direction of time.

In Flood 2, 234 kg of sediment were estimated to be deposited in the channel between the flume and XS1, which is a similar mass as was estimated for Flood 1. In this instance, we estimate that 52,830 mg of Yb was deposited, representing 139% of the injected tracer. As discussed above, additional spatial measurements of deposition would be necessary to capture the heterogeneity of deposition both in the channel and in the floodplain. Regardless, the data indicate that sediment deposition exceeds transport during moderate flow events like those represented by our experimental floods.

La-labeled sediments were recovered in deposited samples throughout the reach in both the channel and floodplain following Flood 1 (Fig. 4-7a). The same pattern was evident for Yb-labeled sediments in Flood 2 (Fig. 4-7b). Concentrations of La were greater in the floodplain deposits than in channel deposits during both floods (LOC $p = 0.0100$), and concentrations of Yb in Flood 2 (when it was added to the system) also tended to be greater in the floodplain than channel (LOC $p = 0.0688$). The recovery of La-labeled sediments after Flood 2 in both channel and floodplain samples (Fig. 4-7c), indicates that sediments deposited following Flood 1 were re-suspended and resettled during Flood 2.

We expected LW to increase both channel and floodplain deposition due to increased roughness and lower velocities and backwater areas. This was not observed for deposition on a per unit area basis (LW $p=0.38$) in our data. Increased deposition in the presence of LW is likely to require additional samples spatially, as well as sampling during subsequent high flow events.

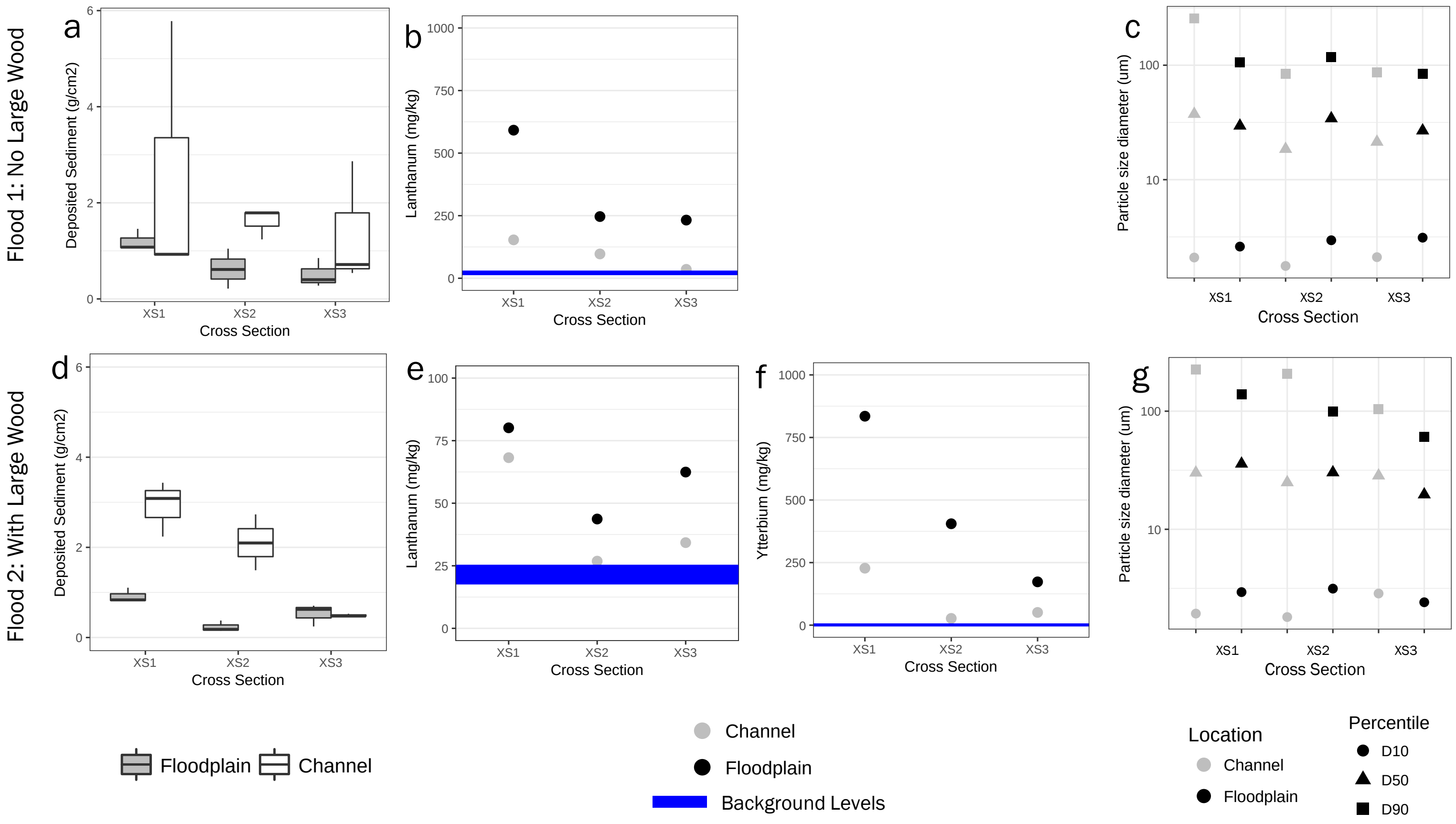

Figure 4-7. Deposited Sediment Mass, Rare Earth Element Concentrations, and Particle Size Distributions.

The median particle size ($D_{50}$) of deposited sediment was equivalent regardless of LW, XS, and LOC. However, smaller particles(i.e., $D_{10}$) were lower in the channel sediments than of the captured floodplain sediments (LOC, p=0.012). The average difference in diameters at this percentile was 0.7 μm. The relatively larger proportion of small particles in the channel may reflect the fact that lower flows are present for a longer period in the channel versus in the floodplain, allowing for greater amount of smaller particles to settle out in this area. At the upper end of the distribution, $D_{90}$ of channel sediments tended to be larger than floodplain sediments (LOC p=0.058), with effects particularly evident when LW was present in the channel (Fig. 4-7 and Table 4-2). As anticipated, the $D_{90}$ of deposited particles were larger closer to the flume where flows were greater (XS p = 0.031). In the end, our results highlight the complexity of sediment deposition and the need for additional research.

Table 4-2. Characteristics of Deposited Sediment at Cross Sections (XS) 1, 2, and 3.

| | Flood 1: No Large Wood | | | | | |
|---|---|---|---|---|---|---|
| | XS1 | | XS2 | | XS3 | |
| | Channel | Floodplain | Channel | Floodplain | Channel | Floodplain |
| g/cm$^2$ (mean±SD) n=3 | 2.5±2.3 | 1.2±0.2 | 1.6±0.3 | 0.6±0.3 | 1.4±1.1 | 0.5±0.2 |
| La (mg/kg) | 153.3 | 591.7 | 97.1 | 246.5 | 35.5 | 232.4 |
| Yb (mg/kg) | 1.5 | 1.7 | 2.1 | 3.0 | 1.6 | 2.0 |
| La (g/cm$^2$) | 3.9E-04 | 7.1E-04 | 1.6E-04 | 1.5E-04 | 4.9E-05 | 1.2E-04 |
| Yb (g/cm$^2$) | 3.7E-06 | 2.0E-05 | 3.3E-06 | 1.9E-06 | 2.2E-06 | 1.0E-06 |
| D10 (μm) | 2.1 | 2.6 | 1.8 | 3.0 | 2.1 | 3.1 |
| D50 (μm) | 37.4 | 29.6 | 18.5 | 32.3 | 21.4 | 26.8 |
| D90 (μm) | 256.3 | 106.4 | 84.2 | 118.0 | 89.9 | 84.0 |
| | Flood 2: with Large Wood | | | | | |
| | Channel | Floodplain | Channel | Floodplain | Channel | Floodplain |
| g/cm$^2$ (mean±SD) n=3 | 2.9±0.5 | 0.9±0.1 | 2.1±0.5 | 0.2±0.1 | 0.5±0.02 | 0.5±0.2 |
| La (mg/kg) | 68.2 | 80.1 | 26.8 | 43.7 | 34.2 | 62.4 |
| Yb (mg/kg) | 227.7 | 835 | 27 | 405.2 | 50.8 | 173.1 |
| La (g/cm$^2$) | 2.0E-04 | 7.4E-05 | 5.7E-05 | 1.0E-05 | 1.7E-05 | 3.30-05 |
| Yb (g/cm$^2$) | 6.6E-04 | 7.7E-04 | 5.7E-05 | 9.6E-05 | 2.5E-05 | 9.1E-05 |
| D10 (μm) | 1.9 | 2.9 | 1.8 | 3.1 | 2.9 | 2.4 |
| D50 (μm) | 30.1 | 35.9 | 24.9 | 30.3 | 28.4 | 19.7 |
| D90 (μm) | 225.3 | 138.6 | 207.2 | 98.9 | 104 | 60.7 |

## Longitudinal Transport

REE-labeled sediments were detected in the farthest down gradient time-integrated suspended sediment samplers in both floods (located at 90 m downstream for Flood 1 and both 90 m and 850 m for Flood 2). The presence of both La- and Yb-labeled sediments in samples collected at 850 m following Flood 2 demonstrates that particles newly introduced in suspension (Yb) and deposited particles that were newly entrained (La) were flushed from the study reach. Particle size distributions caught in the time-integrated samplers tended to be larger closer to the study reach (Table 4-3).

Table 4-3. Characteristics of Time-Integrated Suspended Sediment Samples.

| | Flood 1: No LW | | Flood 2: with LW | |
|---|---|---|---|---|
| | 90 m | 850 m | 90 m | 850 m |
| La (mg/kg) | 258.6 | NA | 58.4 | 31.35 |
| Yb (mg/kg) | 1.32 | NA | 443.3 | 8.78 |
| D10 (μm) | 2.45 | NA | 2.3 | 2.1 |
| D50 (μm) | 17.8 | NA | 16.9 | 14.0 |
| D90 (μm) | 61.9 | NA | 54.5 | 44.0 |

## Conclusions

### Understanding Lag Time in Watershed Management

The temporal lag between an action (BMP implementation) and response (improved water quality in a downstream waterbody) is one of biggest unknowns when it comes to watershed management programs (Meals et al. 2010; CBPSTAC 2013; Pizzuto 2014). Herein, we focus on lag times in relation to sediment, but similar issues exist for other pollutants such as nutrients and contaminants. Efforts to address lag times have been discussed as part of the Chesapeake Bay Program (through incorporation into the Chesapeake Bay Watershed Model) and estimated as part of a theoretical attempts to estimate suspended sediment length scales and travel velocities (Pizzuto et al., 2014). However, eventually we need to be able to “determine the complete distribution of suspended sediment velocities in real watersheds” (Pizzuto et al., 2014). To that end, we have developed a method of tracing fluvial transport of fine sediments using REE as tracers. We were able to quantify actual sediment velocities and measure discrete transport distances during experimental floods in a small stream. Certainly, further studies are needed to be able to truly estimate sediment lag times for use in watershed management and assessment activities. However, information gleaned from these initial studies can be used to inform and check the more theoretical attempts such as those by Pizzuto et al. (2014).

### Effectiveness of Rare Earth Elements as Particle Tracers

Ideal sediment tracers should have strong soil binding properties, high analytical sensitivity, easy and inexpensive analytical requirements, low environmental background concentrations, no interference with sediment transport, be environmentally benign, and have various forms with similar but distinguishable properties that can be used for tracking (Zhang et al. 2001; Guzmán et al. 2013). The labeling of local streambank sediments with REE for this study was straightforward and required no special equipment. REE exhibited strong binding to native soils (Kreider 2012), and could be detected at a minimum reporting level of 0.1 ppb following standard acid digestion and ICP-MS techniques. Although REE have specific gravities (La = 6.146; Yb = 6.96) 2-3 times that of most inorganic soils (which range from 2.6-2.8; Department of the Army 1999), no significant interference with sediment transport is indicated. Aquatic toxicity studies on the these elements suggest physical and oxidative damage to algal cells is possible from unbound REE oxides (Guida et al. 2017). However, due to their strong sediment-binding capacity, REE used as sediment tracers are unlikely to become biologically available. Finally, the lanthanide series contains 15 elements with similar chemical traits that are analytically differentiable, which provides multiple possibilities to use these elements experimentally.

The results of our tracer study show that REE-labeled sediments can be used to obtain transport parameter estimates useful for sediment and contaminant transport studies/models. In addition, the use of REE elements for labeling sediments in consecutive floods allowed clear identification of sediment transport and deposition in both the stream channel and floodplain. The REE-based tracer technique enabled an estimation of transport distances for individual sediment particles ranging from 0 m (La-labeled sediment deposited, re-suspended, and deposited again in XS1 over two flow events) to greater than 850 m (Yb-labeled sediment detected in the farthest downgradient sampler after a single flow event). While this indicates a large range of potential transport possibilities for individual particles, it also confirms that both storage and particle exchange are occurring, which supports findings by Pizzuto et al. (2014). We estimate approximately 80% of particles in solution settled within the first 66 m of our study reach. While we were able to detect the La-tracer in two subsequent flood events, the level of concentrations in Flood 2 had returned to levels only slightly elevated to background; this suggests that a single REE-tracer may only be detectable over a limited time period, particularly when studied at flows elevated above base flow. We also show the importance of accounting for the heterogenous distribution of sediment with depth in the water column and between channel and flood plain when designing sampling schemes. The ability to visualize resuspension in this system is novel, and contrasts with findings from an ephemeral semiarid basin wherein an erosional study suggested little re-deposition and therefore effective transport in suspension through the system (Polyakov et al. 2009).

## Contributions to Fluvial Sediment Modeling

Effective sediment modeling requires information on the travel time of the sediment pulse, both the leading edge and peak transport or centroid, and information on relative suspension and deposition levels. These data can be derived using REE tracers. Unique insights may be gained via the tracking of labeled sediments in the second storm event (i.e. the event following tracer injection). Although in this study, La-labeled sediment in Flood 2 were present at relatively low concentrations, they were detectable and provided evidence of resupension. Relative rates of storage and transport in subsequent flow events would provide data to both develop and validate models of transport decay rates.

Here we injected sediments with REE concentrations 3-4 orders of magnitude greater than background levels. Maximum concentrations collected in both deposited and suspended sediment samples were at least an order of magnitude less than injected concentrations in the flood following injection, and dropped an additional order of magnitude for suspended samples during the second flood event (i.e. for La-labeled sediments shown here). Depositional concentrations of La-labeled sediment in Flood 2 were approximately 3 times less than levels seen in Flood 1. These data suggest that the number of sequential storm events that a single labeled cohort of sediment particles can be tracked through will be limited by the ability of the sediment to adsorb the tracer, the mass of labeled sediment added to the system, and the size of the study reach.

The results of this study demonstrate the efficacy of using REE labeled sediments to track fluvial particle movement. Future work should include additional depositional studies to allow for depositional modeling farther into the flood plain. This method shows substantial potential to inform sediment fate and transport in a variety of fluvial systems.

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Table S-1. Calculations of Rare Earth Elements in Suspended Transport

| Time from flood initiation (min) | TSS (g/L) | Sediment (kg) | La (mg/kg) | Yb (mg/kg) | Flow (L/s) | Background La (mg) | Background Yb (mg) | La (mg) | Yb (mg) |
|---|---|---|---|---|---|---|---|---|---|
| Flood 1: 4.7 kg of 7193 mg/kg La Tracer Injected = 34,000 mg La Background concentrations La = 21.5 mg/kg; Yb = 1.5 mg/kg | | | | | | | | | |
| Flood 1 Cross Section 1 | | | | | | | | | |
| 1.0 | 27.637 | 5.63 | 817.33 | 1.35 | 3.40 | 121 | 8 | 4605.38 | 7.61 |
| 2.0 | 3.653 | 5.52 | 207.53 | 1.19 | 25.20 | 119 | 8 | 1146.35 | 6.57 |
| 3.0 | 1.12 | 3.04 | 99.97 | 1.34 | 45.31 | 65 | 5 | 304.37 | 4.08 |
| 4.0 | 0.597 | 1.93 | 91.885 | 1.295 | 53.80 | 41 | 3 | 177.08 | 2.50 |
| 5.0 | 0.349 | 1.09 | 83.8 | 1.25 | 51.82 | 23 | 2 | 90.93 | 1.36 |
| 6.0 | 0.198 | 0.56 | 85.95 | 1.31 | 46.72 | 12 | 1 | 47.71 | 0.73 |
| 7.0 | 0.138 | 0.34 | 85.95 | 1.31 | 41.63 | 7 | 1 | 29.62 | 0.45 |
| 8.0 | 0.099 | 0.21 | 88.1 | 1.37 | 35.96 | 5 | 0 | 18.82 | 0.29 |
| 9.0 | 0.069 | 0.13 | 80.26 | 2.685 | 30.30 | 3 | 0 | 10.07 | 0.34 |
| 10.0 | 0.107 | 0.16 | 72.42 | 4 | 24.92 | 3 | 0 | 11.59 | 0.64 |
| | | 18.61 | | Total | | *400* | *28* | *6,442* | *25* |
| | Percent of Injected REE by mass (accounting for background) | | | | | | *17.9%* | | *(Not injected)* |
| Flood 1 Cross Section 3 | | | | | | | | | |
| 3.0 | 0.64 | 0.54 | 32.66 | 2.11 | 14.05 | 12 | 1 | 17.62 | 1.14 |
| 4.0 | 4.994 | 7.48 | 353 | 1.3 | 24.96 | 161 | 11 | 2640.04 | 9.72 |
| 5.0 | 2.475 | 5.70 | 408.735 | 1.35 | 38.40 | 123 | 9 | 2330.54 | 7.70 |
| 6.0 | 1.209 | 3.41 | 258.75 | 1.375 | 47.06 | 73 | 5 | 883.31 | 4.69 |
| 7.0 | 0.688 | 2.11 | 172.27 | 1.185 | 51.03 | 45 | 3 | 362.87 | 2.50 |
| 8.0 | 0.462 | 1.47 | 123.9875 | 1.19 | 53.06 | 32 | 2 | 182.36 | 1.75 |
| 9.0 | 0.305 | 0.92 | 118.945 | 1.29 | 50.07 | 20 | 1 | 108.98 | 1.18 |
| 10.0 | 0.21 | 0.57 | 113.9025 | 1.39 | 45.26 | 12 | 1 | 64.96 | 0.79 |
| 11.0 | 0.161 | 0.39 | 109.3125 | 1.4175 | 40.65 | 8 | 1 | 42.92 | 0.56 |
| 12.0 | 0.118 | 0.26 | 110.2175 | 1.2725 | 36.23 | 6 | 0 | 28.27 | 0.33 |
| | | 22.85 | | *Total* | | | | *6,662* | *30* |
| | *Percent of Injected REE by mass (accounting for background)* | | | | | | *18.3%* | | *(Not Injected)* |

| Time from flood initiation (min) | TSS (g/L) | Sediment (kg) | La (mg/kg) | Yb (mg/kg) | Flow (L/s) | Background La (mg) | Background Yb (mg) | La (mg) | Yb (mg) |
|---|---|---|---|---|---|---|---|---|---|
| Flood 2: 4.7 kg of 8152 mg/kg Yb Tracer Injected = 38,000 mg Yb Background concentrations La = 21.5 mg/kg; Yb = 1.5 mg/kg | | | | | | | | | |
| Flood 2 Cross Section 1 | | | | | | | | | |
| 1.0 | 3.699 | 0.75 | 73.9 | 826 | 3.40 | 16 | 1 | 55.73 | 622.93 |
| 2.0 | 2.925 | 2.24 | 49.9 | 459 | 12.74 | 48 | 3 | 111.59 | 1026.47 |
| 3.0 | 1.117 | 2.98 | 53.085 | 264.3 | 44.46 | 64 | 4 | 158.17 | 787.49 |
| 4.0 | 0.5845 | 1.89 | 50.985 | 211.05 | 53.80 | 41 | 3 | 96.20 | 398.22 |
| 5.0 | 0.2415 | 0.75 | 47.8375 | 206.29 | 51.82 | 16 | 1 | 35.92 | 154.90 |
| 6.0 | 0.136 | 0.38 | 43.1125 | 211.53 | 47.01 | 8 | 1 | 16.54 | 81.14 |
| 7.0 | 0.0975 | 0.25 | 40.005 | 203.7025 | 41.91 | 5 | 0 | 9.81 | 49.94 |
| 8.0 | 0.0725 | 016 | 38.515 | 182.8075 | 36.25 | 3 | 0 | 6.07 | 28.82 |
| 9.0 | 0.0505 | 0.09 | 37.135 | 166.4875 | 30.58 | 2 | 0 | 3.44 | 15.43 |
| 10.0 | 0.0505 | 0.08 | 35.865 | 154.7425 | 25.49 | 2 | 0 | 2.77 | 11.95 |
| | | 9.56 | | *Total* | | *206* | *14* | *496* | *3,177* |
| | *Percent of Injected REE by mass (accounting for background)* | | | | | | *1.5%* | | *8.3%* |
| Flood 2 Cross Section 3 | | | | | | | | | |
| 4.0 | 1.318 | 0.15 | 61.9 | 1.68 | 1.90 | 3 | 0 | 9.32 | 0.25 |
| 5.0 | 2.329 | 0.69 | 57.2 | 320.13 | 4.93 | 15 | 1 | 39.39 | 220.48 |
| 6.0 | 2.999 | 2.76 | 55.93 | 851.6 | 15.33 | 59 | 4 | 154.32 | 2349.67 |
| 7.0 | 2.0695 | 4.44 | 50.09 | 647.53 | 35.80 | 96 | 7 | 222.64 | 2878.19 |
| 8.0 | 0.9595 | 2.54 | 42.8025 | 387.7825 | 44.07 | 55 | 4 | 108.59 | 983.82 |
| 9.0 | 0.6255 | 1.79 | 39.9075 | 276.4275 | 47.77 | 39 | 3 | 71.54 | 495.56 |
| 10.0 | 0.393 | 1.15 | 40.02 | 227.47 | 48.69 | 25 | 2 | 45.95 | 261.18 |
| 11.0 | 0.2645 | 0.74 | 43.14 | 240.91 | 46.76 | 16 | 1 | 32.01 | 178.76 |
| 12.0 | 0.186 | 0.49 | 44.89 | 253.5 | 43.90 | 11 | 1 | 21.99 | 124.19 |
| 13.0 | 0.1345 | 0.32 | 45.27 | 265.24 | 39.34 | 7 | 0 | 14.37 | 84.21 |
| | | 15.07 | | *Total* | | *324* | *23* | *720* | *7,576* |
| | *Percent of Injected REE by mass (accounting for background)* | | | | | | *2.1%* | | *19.8%* |

Table S-2. Calculations of Rare Earth Elements in Deposited Sediment

| **Flood** | 1 | 1 | 1 | 1 | 1 | 1 |
|---|---|---|---|---|---|---|
| **Area of Interest** | Flume to XS1 | Flume to XS1 | XS1-XS2 | XS1-XS2 | XS2-XS3 | XS2-XS3 |
| **Location** | Channel | Floodplain | Channel | Floodplain | Channel | Floodplain |
| **Area of Deposition (m2)** | 8.0 | 4.3 | 20.8 | 11.2 | 30.7 | 16.5 |
| **Deposition (g/cm2)** | 2.5 | 1.2 | 2.06 | 0.91 | 1.49 | 0.57 |
| **La (mg/kg)** | 153.3 | 591.7 | 125.2 | 419.1 | 66.3 | 239.45 |
| **Yb (mg/kg)** | 1.5 | 1.7 | 1.8 | 2.35 | 1.85 | 2.5 |
| **Sediment total deposited (kg)** | 199.95 | 51.60 | 428.10 | 101.92 | 457.28 | 93.23 |
| **La at background levels (g) [21.5 mg/kg]** | 4.30 | 1.11 | 9.20 | 2.19 | 9.83 | 2.00 |
| **Yb at background levels (g) [1.5 mg/kg]** | 0.30 | 0.08 | 0.64 | 0.15 | 0.69 | 0.14 |
| **La total deposited (g)** | 30.65 | 30.53 | 53.60 | 42.71 | 30.32 | 22.32 |
| **Yb total deposited (g)** | 0.30 | 0.09 | 0.77 | 0.24 | 0.85 | 0.23 |
| **La mass attributed to tracer (g)** | 26.35 | 29.42 | 44.39 | 40.52 | 20.49 | 20.32 |
| **Yb mass attributed to tracer (g)** | - | 0.01 | 0.13 | 0.09 | 0.16 | 0.09 |
| **La % of mass injected** | 77.5% | 86.5% | 130.6% | 119.2% | 60.3% | 59.8% |
| **Yb % of mass injected** | 0.0% | 0.0% | 0.3% | 0.2% | 0.4% | 0.2% |

| **Flood** | 2 | 2 | 2 | 2 | 2 | 2 |
|---|---|---|---|---|---|---|
| **Area of Interest** | Flume to XS1 | Flume to XS1 | XS1-XS2 | XS1-XS2 | XS2-XS3 | XS2-XS3 |
| **Location** | Channel | Floodplain | Channel | Floodplain | Channel | Floodplain |
| **Area of Deposition (m2)** | 8.0 | 4.3 | 20.8 | 11.2 | 30.7 | 16.5 |
| **Deposition (g/cm2)** | 2.92 | 0.92 | 2.52 | 0.58 | 1.30 | 0.38 |
| **La (mg/kg)** | 68.2 | 80.1 | 47.55 | 61.9 | 30.5 | 53.05 |
| **Yb (mg/kg)** | 227.7 | 835 | 127.35 | 620.1 | 38.9 | 289.15 |
| **Sediment total deposited (kg)** | 233.54 | 39.56 | 523.92 | 64.96 | 398.97 | 62.70 |
| **La at background levels (g)** | 5.02 | 0.85 | 11.26 | 1.40 | 8.58 | 1.35 |
| **Yb at background levels (g)** | 0.35 | 0.06 | 0.79 | 0.10 | 0.60 | 0.09 |
| **La total deposited (g)** | 15.93 | 3.17 | 24.91 | 4.02 | 12.17 | 3.33 |
| **Yb total deposited (g)** | 53.18 | 33.03 | 66.72 | 40.28 | 15.52 | 18.13 |
| **La mass attributed to tracer (g)** | 10.91 | 2.32 | 13.65 | 2.62 | 3.59 | 1.98 |
| **Yb mass attributed to tracer (g)** | 52.83 | 32.97 | 65.94 | 40.18 | 14.92 | 18.04 |
| **La % of mass injected** | 32.1% | 6.8% | 40.1% | 7.7% | 10.6% | 5.8% |
| **Yb % of mass injected** | 139.0% | 86.8% | 173.5% | 105.7% | 39.3% | 47.5% |

# CHAPTER 5. FINAL REMARKS AND SUGGESTED FUTURE RESEARCH

Stream sedimentation is a substantial and growing threat to freshwater ecosystems. The management of this stressor for the protection of aquatic life is complicated by the multiple forms sediment can take in the environment (i.e., dissolved, suspended, bedded), coupled with the wide range of effects these forms can have on aquatic organisms (Sorensen et al. 1977; Waters 1995; Wilber and Clarke 2001; Chapman et al. 2014). The papers in this dissertation demonstrate the primary role of sediment as an aquatic life stressor nationally; confirm the existence of ecoregional differences in the sensitivity of macroinvertebrate communities to the various forms of this stressor; develop sensitivity thresholds for key sediment parameters in Virginia; and demonstrate the application of Rare Earth Elements (REE) as particle tracers, which will contribute to efforts to more fully understand how sediment loadings translate into stream habitat conditions and corresponding biological effects.

Recommendations for sediment management and future study fall into the following categories:

1) Addition of sediment monitoring to water quality assessment programs;
2) Continued development of biological effects thresholds and examination of multiple stressor effects;
3) Integration of biological effects thresholds into water quality monitoring, Total Maximum Daily Load (TMDL) development and watershed restoration plans; and
4) Expansion of sediment fate and transport studies.

## Addition of Sediment Monitoring to Water Quality Assessment Programs

Sediment is second only to pathogens as the most common cause of freshwater impairments in the US (US EPA 2016); however, states are not uniformly required to monitor or report sediment conditions under the Clean Water Act. Considering the substantial and widespread impact of sediment on water quality, states should be encouraged to include monitoring of dissolved, suspended, and bedded sediment form as a component of their existing monitoring efforts. Some of these data may already be voluntarily collected in the course of habitat evaluation, but are not explicitly reported. The additional nation-wide data on sediment condition will improve estimates of the natural range of sediment parameters in various ecoregions and reveal the extent of specific sediment-related water quality management challenges. These data will also improve our ability to link sediment condition to biological effects.

## Continued Development of Biological Effects Thresholds and Examination of Multiple Stressor Effects

As observed here, the sediment parameters with the most influence on aquatic life are expected to vary among ecoregions; therefore, regional studies evaluating these relationships will continue to play an important role in determining the parameters that should be targeted for research and in restoration efforts. Stakeholder involvement will be important in identifying the biological communities targeted for protection, the desired protectiveness levels, and related management priorities.

For those sediment parameters identified as being of key importance to a given region, quantitative sediment targets are needed relating exposure levels to biological effects. Future work in developing such thresholds should maximize the use of data available throughout the ecological region of interest and not be restricted to political boundaries (i.e., state lines). When using multi-state data sets, care should be taken to consider the uncertainties that may be introduced into the assessment based on different collection and data processing approaches among states (Houston et al. 2002). Thresholds should be re-evaluated over time as additional data, or more detailed data (e.g., genus vs. family level biological metrics) become available.

Multiple stressor effects are ubiquitous in natural systems. Threshold development should also include the evaluation of multiple stressors and their interactions when data are available. For example, consideration of the influence of habitat condition on biological response to dissolved sediment (e.g., Cook et al. 2015).

## Integration of Biological Effects Thresholds into Water Quality Monitoring, Total Maximum Daily Load Development and Watershed Restoration Plans

Derived effects thresholds from this and other studies should be considered as a component of water quality monitoring and in the monitoring of restoration projects emphasizing the recovery of biological communities. In annual monitoring programs, comparison of effects thresholds to biological indices and stream impairment determinations will aid in the validation of the derived thresholds and can support stressor identification efforts. In addition, for watersheds undergoing restoration efforts, the monitoring of both biological community metrics and sediment parameters over time would reveal the influence of best management practices (BMPs) on in stream sediment condition and associated biological responses. Monitoring of restoration programs will be of key importance for providing data on timeframes between the implementation of BMPs, changes in water/sediment quality conditions, and subsequent improvements in biological condition.

While there is no question that sediment quantity alone does not determine its environmental impacts, the standard approach to sediment management continues to be the setting of TMDLs as mass-based loading limits. Often these limits are watershed loading levels that match those of reference streams with undisturbed communities (US EPA 2016). This approach is problematic because it does not account for the actual form of sediment responsible for the biological impact, or how loadings may translate into in-stream habitat condition. The establishment of regionally-specific sediment quality criteria or quantitative biological benchmarks of effect could provide an alternative endpoint to the reference watershed approach. Such benchmarks could also facilitate the identification of sediment impairments and monitoring of restoration progress.

## Expansion of Sediment Fate and Transport Studies

Translating sediment loading into stream endpoints that correspond to biological response, such as conductivity or embeddedness, requires an improved understanding of the relationship between sediment loadings and in-stream condition, and of the transition of sediment among its physical forms within the lotic environment. Estimating lag times between the implementation of BMPs and water quality improvements in stream restoration projects also requires improved understanding of sediment fate and transport under varying stream conditions. The use of REE as fluvial sediment tracers holds promise to inform modeling efforts in these areas. Future work incorporating high spatial sampling resolution and sampling of a variety of instream habitats (e.g., riffles, pools, runs) could reveal differential deposition in these areas and link loading rates to biologically-relevant restoration goals.

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# APPENDIX A. RAW DATA AND STATISTICAL CODE

## Data Chapter 3.

## Virginia Department of Environmental Quality Sediment Parameters

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1AAUA017.60 | -77.4664 | 38.49036 | P | Piedmont | 109.7 | 59 | 13.4 | 9 | -0.086 | 3.81 | 28.571 | 1.081 | 65.455 |
| 1ABED009.37 | -77.5014 | 38.5503 | P | Piedmont | 48.5 | 33 | 19 | 5 | -0.31 | 12.381 | 25.714 | 0.721 | 62.182 |
| 1ACAX003.69 | -77.56916 | 39.26055 | NP | Piedmont | 191.5 | 116 | 7.6 | 8 | 0.498 | 2.857 | 23.81 | 1.612 | 51 |
| 1ACAX003.81 | -77.5685 | 39.2577 | NP | Piedmont | 223 | 10 | 8.9 | 114 | 0.481 | 0 | 40.777 | 1.314 | 58.868 |
| 1ACER005.02 | -77.5102 | 38.65622 | NP | Piedmont | 157 | 98 | 8.4 | 6 | 1.159 | 21.905 | 9.524 | 1.072 | 51.091 |
| 1ACER012.66 | -77.5851 | 38.6402 | NP | Piedmont | 176 | 104 | 10.3 | 5 | 0.597 | 16.19 | 19.048 | 1.084 | 51.091 |
| 1ACHO003.47 | -77.35954 | 38.5183 | P | Piedmont | 115.5 | 4 | 7 | 4 | -1.207 | 14.103 | 60.256 | -0.241 | 86 |
| 1ACRM009.86 | -77.83835 | 38.88775 | NP | Piedmont | 114.9 | 80 | 6.6 | 19 | -1.069 | 16.19 | 46.667 | -0.029 | 83.091 |
| 1ACUB004.63 | -77.46379 | 38.84147 | NP | Piedmont | 753.5 | 3 | 4 | 3 | 0.526 | 8.571 | 11.429 | 1.349 | 51 |
| 1AGOO018.17 | -77.666 | 39.0299 | NP | Piedmont | 209.5 | 3 | 2.4 | 77 | -0.159 | 3.81 | 48.571 | 0.394 | 63.818 |
| 1AGOO021.28 | -77.68313 | 39.01264 | NP | Piedmont | 151.5 | 87 | 1.9 | 3 | -0.731 | 11.429 | 56.19 | -0.094 | 85.091 |
| 1AGOO036.47 | -77.86692 | 38.93869 | NP | Piedmont | 165.5 | 94 | 1.9 | 3 | -0.177 | 5.769 | 29.808 | 0.894 | 78 |
| 1AGOO039.63 | -77.8737 | 38.9294 | NP | Piedmont | 165 | 3 | 1.82 | 1 | -0.82 | 9.524 | 55.238 | 0.275 | 80.273 |
| 1AKET012.22 | -77.6661 | 38.7251 | NP | Piedmont | 329 | 144 | 11.5 | 10 | -1.082 | 43.81 | 0.952 | -0.15 | 71.091 |
| 1ALIV004.79 | -77.6395 | 38.9752 | NP | Piedmont | 126 | 5 | 5.7 | 1 | -0.187 | 19.048 | 16.19 | 0.837 | 61.455 |
| 1ALOE001.99 | -77.25797 | 38.82032 | P | Piedmont | 156.5 | 102 | 1.6 | 3 | -0.623 | 2.913 | 14.563 | 1.202 | 55.926 |
| 1ANOF004.80 | -77.65474 | 38.81286 | NP | Piedmont | 263.5 | 135 | 11.4 | 4 | 0.883 | 0 | 0.952 | 1.904 | 29.273 |
| 1ANOG000.91 | -77.65984 | 39.04457 | NP | Piedmont | 149 | 103 | 12 | 18 | -0.624 | 9.615 | 64.423 | -0.073 | 87 |
| 1AOPE028.72 | -78.06458 | 39.21035 | RV | Mountain | 747 | 3 | 1.9 | 3 | -0.67 | 18.095 | 21.905 | 0.549 | 59.273 |
| 1APIA003.51 | -77.7343 | 39.2962 | BR | Mountain | 139 | 74 | 9.9 | 11 | -0.913 | 1.905 | 66.667 | 0.289 | 80 |
| 1APOH008.54 | -77.2198 | 38.7318 | P | Piedmont | 560.5 | 475 | 2.7 | 2 | 0.022 | 4.762 | 31.429 | 1.147 | 67.273 |
| 1AXGU000.18 | -77.79316 | 39.01434 | NP | Piedmont | 438.5 | 154 | 22.6 | 35 | -0.972 | 20 | 31.429 | 0.218 | 83.182 |
| 1AXKR000.77 | -77.59046 | 39.25784 | NP | Piedmont | 183.95 | 120 | 15 | 10 | -0.435 | 1.905 | 31.429 | 1.305 | 57.636 |
| 1AXLB000.05 | -77.5038 | 38.4278 | P | Piedmont | 151.5 | 107 | 4.32 | 2 | -0.269 | 6.667 | 26.667 | 1.029 | 60.364 |
| 1AXLR000.44 | -77.60818 | 38.56211 | NP | Piedmont | 224 | 5 | 8.4 | 5 | 0.036 | 0 | 40.952 | 1.292 | 55.273 |
| 1AXMJ000.42 | -77.5055 | 38.6375 | P | Piedmont | 123.5 | 2 | 3 | 49 | 0.179 | 1.905 | 37.143 | 1.237 | 55.455 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1BBGR004.08 | -78.6994 | 38.2914 | BR | Mountain | 31.5 | 20 | 1.2 | 1 | 0.65 | 0 | 0.952 | 2.678 | 0.727 |
| 1BBRY005.09 | -79.10192 | 38.44218 | RV | Mountain | 49 | 2 | 0.7 | 2 | -0.202 | 0 | 4.762 | 1.875 | 27.545 |
| 1BCDR027.54 | -78.45979 | 39.02172 | RV | Mountain | 137 | 71 | 2.4 | 3 | -0.085 | 8.571 | 9.524 | 1.567 | 44.182 |
| 1BGSR000.58 | -78.4385 | 39.0741 | RV | Mountain | 242.5 | 80 | 1.94 | 4 | -0.02 | 18.095 | 6.667 | 1.764 | 42.182 |
| 1BHPY002.67 | -78.18595 | 38.90969 | RV | Mountain | 188.5 | 94 | 5 | 3 | -0.218 | 7.619 | 2.857 | 1.75 | 40.636 |
| 1BMDL025.92 | -78.97768 | 38.19904 | RV | Mountain | 367.5 | 11 | 6.4 | 11 | -0.241 | 25.714 | 7.619 | 0.97 | 53.091 |
| 1BMIC001.99 | -78.81454 | 38.32912 | RV | Mountain | 452.95 | 292 | 5.1 | 31 | -1.814 | 57.143 | 8.571 | -0.614 | 83.364 |
| 1BMIL006.68 | -78.7295 | 38.7678 | RV | Mountain | 387.5 | 4 | 1.3 | 189 | 0.472 | 5.714 | 5.714 | 1.649 | 27.636 |
| 1BMSS001.35 | -79.0172 | 38.3749 | RV | Mountain | 365.5 | 7 | 4.37 | 2 | -1.982 | 63.81 | 10.476 | -1.043 | 81.636 |
| 1BNFS093.80 | -78.8566 | 38.6353 | RV | Mountain | 146.5 | 67 | 0.9 | 2 | 0.865 | 0 | 1.905 | 2.183 | 12.727 |
| 1BNTH046.56 | -79.23751 | 38.33238 | RV | Mountain | 32.5 | 17 | 0.6 | 3 | 0.06 | 0 | 5.714 | 1.724 | 28.727 |
| 1BSMT001.53 | -78.63866 | 38.71154 | RV | Mountain | 391 | 176 | 18.5 | 32 | -0.997 | 30.769 | 10.577 | 0.242 | 75.37 |
| 1BSMT009.08 | -78.65511 | 38.66084 | RV | Mountain | 497.5 | 286 | 6.5 | 12 | -1.404 | 45.714 | 13.333 | -0.469 | 86.273 |
| 1BSTH005.36 | -78.83628 | 38.24433 | RV | Mountain | 268.5 | 2 | 1.7 | 2 | 0.446 | 9.524 | 2.857 | 1.643 | 50.727 |
| 1BSTH013.58 | -78.85995 | 38.16376 | RV | Mountain | 204.5 | 136 | 2.9 | 3 | 0.597 | 21.348 | 15.73 | 0.721 | 51.545 |
| 2ABLD014.73 | -79.5598 | 37.7488 | RV | Mountain | 269 | 9 | 4.08 | 2 | -0.25 | 10.476 | 17.143 | 0.971 | 60.909 |
| 2-APP080.58 | -78.09343 | 37.45096 | P | Piedmont | 98.5 | 72 | 4.2 | 4 | -1.609 | 26.667 | 73.333 | -0.901 | 100 |
| 2AXQS001.07 | -79.77361 | 37.71675 | RV | Mountain | 34.25 | 28 | 1.9 | 3 | 1.221 | 0 | 3.81 | 2.751 | 11.909 |
| 2BBAA003.06 | -78.30704 | 37.57103 | P | Piedmont | 83.5 | 92 | 47.7 | 92 | -0.644 | 11.429 | 36.19 | 0.598 | 78.545 |
| 2BCBL002.86 | -79.0001 | 37.8778 | BR | Mountain | 17 | 4 | 1.95 | 1 | -0.528 | 0.952 | 5.714 | 1.799 | 33 |
| 2-BCC001.90 | -79.90579 | 38.04966 | RV | Mountain | 117.5 | 66 | 1.4 | 3 | 0.662 | 0 | 5.714 | 2.182 | 17.273 |
| 2-BCR007.68 | -79.1005 | 37.3231 | P | Piedmont | 104 | 2 | 3.9 | 73 | -0.542 | 12.381 | 20.952 | 0.83 | 68.909 |
| 2-BFL011.64 | -78.48549 | 37.24985 | P | Piedmont | 85 | 54 | 6.9 | 4 | -1.1 | 4.762 | 94.286 | -0.527 | 100 |
| 2BGOW001.00 | -78.8438 | 37.9838 | NP | Piedmont | 50.5 | 40 | 3.97 | 6 | -0.076 | 0 | 5.714 | 1.576 | 24.364 |
| 2-BGU005.95 | -78.27443 | 37.42083 | P | Piedmont | 70.5 | 66 | 18.2 | 17 | -0.835 | 11.429 | 62.857 | -0.051 | 96.364 |
| 2-BLD012.09 | -79.49133 | 37.73282 | RV | Mountain | 289 | 150 | 5.5 | 12 | -0.142 | 13.333 | 0.952 | 1.35 | 52.364 |
| 2BMCM014.13 | -78.6722 | 38.0289 | NP | Piedmont | 54 | 2 | 2.52 | 1 | -0.959 | 13.333 | 47.619 | 0.103 | 74.636 |
| 2BPRS001.90 | -79.1456 | 37.7908 | BR | Mountain | 20.5 | 17 | 1.48 | 3 | -0.427 | 1.905 | 4.762 | 2.138 | 30.182 |
| 2-BRI007.80 | -78.42409 | 37.22255 | P | Piedmont | 59.1 | 56 | 7 | 6 | -1.368 | 11.538 | 80.769 | -0.558 | 98 |
| 2BRKR012.86 | -78.9088 | 37.7253 | P | Piedmont | 47 | 26 | 23.3 | 4 | -1.316 | 12.381 | 56.19 | 0.097 | 82.273 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-BSR012.33 | -78.3943 | 37.1725 | P | Piedmont | 95 | 81 | 11 | 5 | -0.629 | 21.905 | 60.952 | -0.271 | 84.545 |
| 2-BSR018.10 | -78.43578 | 37.10997 | P | Piedmont | 115 | 87 | 6.6 | 3 | -0.448 | 13.333 | 35.238 | 0.378 | 66.636 |
| 2-BVC003.09 | -78.7223 | 37.73594 | NP | Piedmont | 83.5 | 48 | 5.4 | 5 | -0.202 | 21.905 | 10.476 | 1.007 | 49.818 |
| 2BWTN007.39 | -78.62882 | 37.62009 | P | Piedmont | 26 | 4 | 4.3 | 4 | -1.294 | 26.667 | 15.238 | -0.006 | 81.455 |
| 2BXAC000.38 | -78.75307 | 37.58897 | P | Piedmont | 18 | 13 | 5 | 13 | 0.089 | 0 | 0.952 | 1.666 | 24.545 |
| 2BXAD000.07 | -78.4909 | 37.7458 | P | Piedmont | 57 | 58 | 3.7 | 2 | 0.062 | 0 | 22.857 | 1.7 | 45.091 |
| 2BXAP001.46 | -78.0485 | 37.7375 | P | Piedmont | 137 | 8 | 13.7 | 2 | -1.989 | 6 | 73 | -0.135 | 88.909 |
| 2BXRK001.64 | -78.7299 | 37.8114 | NP | Piedmont | 34 | 65 | 21.2 | 22 | -1.438 | 8.571 | 44.762 | 0.204 | 70 |
| 2-BYN001.90 | -78.5307 | 37.5415 | P | Piedmont | 174.5 | 57 | 9.81 | 9 | -0.973 | 21.905 | 22.857 | 0.15 | 77.273 |
| 2-CAT007.31 | -79.8369 | 37.54386 | RV | Mountain | 437.5 | 240 | 2.4 | 4 | 0.27 | 16.19 | 14.286 | 1.053 | 51.545 |
| 2-CAT028.98 | -80.03233 | 37.41429 | RV | Mountain | 334 | 4 | 3.1 | 4 | -0.195 | 25.714 | 6.667 | 1.331 | 41.273 |
| 2-CLL003.21 | -79.58306 | 37.78171 | RV | Mountain | 300 | 167 | 2.2 | 3 | 0.151 | 4.762 | 9.524 | 1.921 | 40.273 |
| 2-CRG047.95 | -80.0876 | 37.5112 | RV | Mountain | 125.5 | 47 | 2.8 | 3 | 0.204 | 1.905 | 22.857 | 1.575 | 29.818 |
| 2-CRG074.32 | -80.32894 | 37.33535 | RV | Mountain | 109 | 1 | 1.9 | 1 | 0.131 | 0 | 7.619 | 1.672 | 32 |
| 2-CSR003.94 | -80.1052 | 37.72799 | RV | Mountain | 109.165 | 50 | 1.5 | 3 | -0.786 | 6.667 | 2.857 | 1.464 | 28.727 |
| 2-CWP006.87 | -79.7391 | 37.80957 | RV | Mountain | 142.3 | 75 | 0.5 | 3 | 0.318 | 18.095 | 4.762 | 1.519 | 26.455 |
| 2-CWP042.31 | -79.63621 | 38.01378 | RV | Mountain | 148 | 74 | 1.5 | 3 | 0.256 | 6.667 | 1.905 | 1.805 | 28.636 |
| 2DAPP050.84 | -77.85718 | 37.35898 | P | Piedmont | 105 | 37 | 9.5 | 37 | -1.331 | 30.476 | 63.81 | -0.861 | 91.818 |
| 2DAPP112.19 | -78.4018 | 37.3126 | P | Piedmont | 89 | 7 | 5.82 | 1 | -0.884 | 5.714 | 78.095 | 0.099 | 84.545 |
| 2-DCK003.94 | -80.34827 | 37.46334 | RV | Mountain | 28.57 | 13 | 6.1 | 12 | -0.303 | 3.846 | 8.654 | 1.553 | 29.545 |
| 2-DDY000.75 | -79.37635 | 38.17719 | RV | Mountain | 33 | 26 | 2.4 | 3 | -0.071 | 0 | 9.615 | 1.734 | 23.636 |
| 2DFSP000.30 | -78.64152 | 37.36981 | P | Piedmont | 52.5 | 4 | 3.7 | 4 | -0.886 | 26.667 | 24.762 | -0.141 | 84.727 |
| 2DWDY005.35 | -78.04038 | 37.15533 | P | Piedmont | 118 | 9 | 8.6 | 9 | -1.53 | 14.286 | 80.952 | -0.565 | 96.364 |
| 2DXAH000.79 | -78.2824 | 37.4332 | P | Piedmont | 80.5 | 3 | 5.54 | 2 | -1.132 | 8.571 | 57.143 | -0.155 | 91.636 |
| 2-FLA012.22 | -78.04764 | 37.39142 | P | Piedmont | 119.5 | 87 | 4.6 | 3 | -2.159 | 40 | 60 | -1.121 | 100 |
| 2-HAM000.37 | -80.021 | 37.4128 | RV | Mountain | 363.5 | 10 | 3.8 | 233 | -0.35 | 1.905 | 16.19 | 1.834 | 28.727 |
| 2-HKY001.26 | -80.03744 | 37.92418 | RV | Mountain | 38 | 3 | 1.5 | 3 | -0.194 | 0.952 | 0.952 | 1.882 | 7.455 |
| 2-HRD002.06 | -78.41947 | 37.75466 | P | Piedmont | 62.5 | 4 | 5.1 | 4 | -0.959 | 26.667 | 38.095 | -0.079 | 69.636 |
| 2-HUS001.88 | -78.3453 | 37.68947 | P | Piedmont | 68.1 | 69 | 3 | 3 | -0.245 | 24.038 | 4.808 | 1.225 | 51.455 |
| 2-HYS005.45 | -79.36546 | 37.93132 | RV | Mountain | 423 | 247 | 6 | 7 | -0.75 | 33.333 | 20 | 0.688 | 61.182 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-JED008.07 | -80.1939 | 37.7974 | RV | Mountain | 288.5 | 63 | 1.57 | 1 | -0.261 | 0 | 2.857 | 1.537 | 24.545 |
| 2-JKS076.16 | -79.73117 | 38.18453 | RV | Mountain | 205 | 6 | 1.9 | 6 | 0.275 | 5.714 | 7.619 | 1.665 | 29.455 |
| 2-JOB013.77 | -80.2604 | 37.4811 | RV | Mountain | 85.5 | 24 | 4.1 | 4 | 0.258 | 1.905 | 37.143 | 1.246 | 43.091 |
| 2-JOH004.23 | -77.83358 | 37.57772 | P | Piedmont | 70 | 59 | 7.5 | 3 | -1.391 | 25.962 | 40.385 | -0.051 | 78.545 |
| 2-LIJ003.06 | -79.15891 | 37.88495 | BR | Mountain | 129.5 | 89 | 2.4 | 6 | -1.225 | 2 | 38 | 0.767 | 59.8 |
| 2-LIT004.77 | -78.3158 | 37.1737 | P | Piedmont | 99.5 | 5 | 3.6 | 65 | -2.419 | 56.19 | 15.238 | -1.109 | 89.909 |
| 2-MCM003.32 | -78.57236 | 38.1176 | NP | Piedmont | 82 | 11 | 6.9 | 11 | -0.843 | 36.19 | 54.286 | -0.807 | 90 |
| 2-MIW003.45 | -79.71186 | 37.99656 | RV | Mountain | 75 | 39 | 2.5 | 3 | 0.578 | 1.923 | 19.231 | 1.957 | 25.909 |
| 2-MRY043.42 | -79.45736 | 37.94512 | RV | Mountain | 126.5 | 58 | 3 | 3 | 0.918 | 10.577 | 5.769 | 2.068 | 27.364 |
| 2-NBS001.56 | -78.66683 | 37.23022 | P | Piedmont | 53.8 | 52 | 3.2 | 3 | -1.059 | 0.952 | 71.429 | 0.008 | 87.091 |
| 2-NUT000.62 | -77.62444 | 37.42094 | P | Piedmont | 131 | 18 | 25.5 | 18 | -1.106 | 21.905 | 40.952 | 0.291 | 72.545 |
| 2-PLP002.24 | -78.86268 | 37.38758 | P | Piedmont | 88 | 70 | 2.6 | 3 | -0.751 | 0 | 46.667 | 0.481 | 80.182 |
| 2-PMC000.59 | -79.96359 | 37.78018 | RV | Mountain | 56 | 2 | 1.6 | 2 | -0.323 | 0 | 1.905 | 1.869 | 30.727 |
| 2-POT031.78 | -80.22837 | 37.59099 | RV | Mountain | 88.5 | 5 | 5 | 5 | 1.365 | 0 | 7.619 | 2.821 | 13.091 |
| 2-PRD004.42 | -78.35498 | 38.1696 | NP | Piedmont | 76.5 | 50 | 2 | 3 | -1.41 | 20 | 60.952 | -0.377 | 75.636 |
| 2-PRS003.23 | -79.16347 | 37.78185 | BR | Mountain | 13 | 16 | 1.7 | 3 | -0.87 | 9.524 | 3.81 | 1.577 | 48.273 |
| 2-RED003.65 | -79.38351 | 37.50894 | P | Piedmont | 40.03 | 34 | 5.6 | 8 | -0.517 | 0 | 43.137 | 1.06 | 54 |
| 2-RGR001.11 | -79.8926 | 37.70515 | RV | Mountain | 306.05 | 173 | 6.3 | 15 | 0.246 | 7.368 | 2.105 | 2.534 | 8.208 |
| 2-RKF015.42 | -78.7588 | 37.81265 | NP | Piedmont | 53.5 | 41 | 2.5 | 3 | -1.014 | 26.316 | 28.421 | 0.406 | 77.5 |
| 2-RKF023.33 | -78.81607 | 37.84354 | NP | Piedmont | 71.5 | 36 | 3.8 | 3 | -0.694 | 18.095 | 24.762 | 0.639 | 64.818 |
| 2-RKF026.13 | -78.82201 | 37.86697 | NP | Piedmont | 59.5 | 38 | 2.9 | 4 | 0.085 | 4 | 46 | 1.013 | 56 |
| 2-RSM001.88 | -78.07876 | 37.81614 | P | Piedmont | 60.5 | 55 | 12.6 | 6 | -1.832 | 43.81 | 11.429 | -0.374 | 76.818 |
| 2-SDV001.02 | -78.4369 | 38.2883 | NP | Piedmont | 121.5 | 9 | 7.1 | 73 | -1.053 | 3.81 | 65.714 | 0.064 | 80.545 |
| 2-SFT019.02 | -77.51252 | 37.35981 | P | Piedmont | 79.5 | 64 | 5 | 3 | -0.715 | 16 | 54 | -0.025 | 81.2 |
| 2-SKM001.04 | -78.67313 | 38.04161 | NP | Piedmont | 120.5 | 73 | 3.2 | 3 | -0.873 | 25.714 | 18.095 | 0.279 | 78 |
| 2-SLT003.00 | -78.36879 | 37.70809 | P | Piedmont | 76.6 | 66 | 2.4 | 5 | 0.258 | 5.769 | 32.692 | 1.388 | 62.909 |
| 2-STV000.48 | -80.1868 | 37.62049 | RV | Mountain | 35.25 | 24 | 0.9 | 3 | 0.231 | 0 | 2.97 | 2.421 | 9.455 |
| 2-STW004.84 | -78.9741 | 37.4257 | P | Piedmont | 76.5 | 63 | 9.7 | 7 | 0.326 | 1.905 | 20.952 | 1.529 | 47.636 |
| 2-SWS000.90 | -79.89366 | 37.71363 | RV | Mountain | 145.5 | 60 | 1.2 | 3 | -0.694 | 5 | 0 | 1.697 | 21.182 |
| 2-TLR000.52 | -78.81464 | 37.93242 | NP | Piedmont | 42 | 35 | 1.4 | 3 | -0.854 | 17.143 | 30.476 | 0.685 | 60.727 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-TYE008.77 | -78.90328 | 37.6332 | P | Piedmont | 38 | 27 | 2.7 | 3 | 0.616 | 6.061 | 25.253 | 1.913 | 46.078 |
| 2-TYE028.94 | -79.00654 | 37.79979 | P | Piedmont | 34 | 4 | 2.6 | 4 | 0.281 | 1.905 | 9.524 | 1.804 | 30.818 |
| 2-WDC002.90 | -78.5873 | 38.15029 | NP | Piedmont | 43 | 43 | 3.8 | 3 | -0.686 | 11.429 | 23.81 | 0.9 | 59.909 |
| 2-WIC004.64 | -78.88221 | 37.47777 | P | Piedmont | 71.5 | 62 | 6.4 | 3 | -0.534 | 23.301 | 38.835 | 0.252 | 67.545 |
| 2-WLL001.83 | -79.08256 | 37.57082 | P | Piedmont | 44 | 40 | 10.4 | 4 | -0.999 | 0 | 53.333 | 0.33 | 86.727 |
| 2-WLM000.69 | -79.09801 | 37.40897 | P | Piedmont | 103.5 | 77 | 5 | 6 | 0.127 | 0.952 | 25.714 | 1.673 | 48.455 |
| 2-WLS023.10 | -78.2681 | 37.5731 | P | Piedmont | 197 | 142 | 4.2 | 8 | -0.954 | 2.857 | 78.095 | -0.037 | 84 |
| 2-XUL001.67 | -79.84575 | 37.45754 | RV | Mountain | 531 | 338 | 2.9 | 4 | 0.2 | 26.667 | 18.095 | 0.776 | 67.909 |
| 2-XVX000.62 | -77.98957 | 37.70772 | P | Piedmont | 42.5 | 52 | 9 | 7 | -1.447 | 16 | 53 | 0.064 | 89.455 |
| 3-BLU000.54 | -78.19728 | 38.24067 | NP | Piedmont | 121 | 68 | 24 | 19 | -0.679 | 24.762 | 20.952 | 0.064 | 80.545 |
| 3-BUC003.26 | -78.0043 | 38.80674 | NP | Piedmont | 88.5 | 52 | 4.3 | 13 | -1.164 | 29.703 | 23.762 | 0.004 | 73.585 |
| 3-CAE001.45 | -77.90965 | 38.70947 | NP | Piedmont | 101.5 | 65 | 8.6 | 9 | -1.338 | 33.333 | 42.857 | -0.494 | 90.727 |
| 3-CAE012.67 | -77.873 | 38.812 | NP | Piedmont | 200 | 4 | 3.3 | 89 | -0.203 | 0 | 47.619 | 0.888 | 60.182 |
| 3-FIK001.03 | -78.30489 | 38.44949 | NP | Piedmont | 43.3 | 40 | 4 | 5 | -1.121 | 4.762 | 32.381 | 0.662 | 69.545 |
| 3-HAL002.72 | -77.48892 | 38.28769 | P | Piedmont | 130.5 | 3 | 3.6 | 3 | 0.634 | 1.905 | 9.524 | 2.666 | 26 |
| 3-HAZ035.32 | -78.1917 | 38.5546 | NP | Piedmont | 40.5 | 36 | 3.61 | 4 | -0.506 | 16.19 | 29.524 | 0.731 | 64.909 |
| 3-LIA003.14 | -77.4163 | 38.3015 | P | Piedmont | 135.5 | 11 | 7.26 | 2 | -0.543 | 12.381 | 21.905 | 0.824 | 52.545 |
| 3-MTN018.83 | -77.95552 | 38.45563 | NP | Piedmont | 231.45 | 201 | 5 | 5 | -1.486 | 51.429 | 15.238 | -0.68 | 80.364 |
| 3-RAP053.02 | -78.20033 | 38.24452 | NP | Piedmont | 47.05 | 40 | 3.6 | 3 | -0.424 | 5.714 | 63.81 | 0.271 | 83.091 |
| 3-ROB004.98 | -78.10828 | 38.34871 | NP | Piedmont | 75.5 | 45 | 3.9 | 3 | -0.23 | 7.619 | 32.381 | 0.867 | 56.909 |
| 3-RPP148.18 | -77.82814 | 38.53581 | NP | Piedmont | 92 | 60 | 2.1 | 3 | 0.346 | 0.952 | 52.381 | 0.747 | 76.364 |
| 3-THU006.90 | -77.97049 | 38.78437 | NP | Piedmont | 97.3 | 68 | 10 | 18 | -1.93 | 23.077 | 66.346 | -0.673 | 97.818 |
| 3-WAF000.03 | -77.95848 | 38.5889 | NP | Piedmont | 86.5 | 48 | 4.3 | 3 | -0.345 | 1.905 | 49.524 | 0.892 | 66.909 |
| 3-XGR000.95 | -78.46591 | 38.39059 | BR | Mountain | 26 | 9 | 3.8 | 9 | -0.48 | 0 | 19.048 | 1.72 | 36.182 |
| 3-XHU000.04 | -77.9945 | 38.8492 | NP | Piedmont | 126.5 | 74 | 9 | 24 | -1.79 | 11.429 | 74.286 | -0.456 | 88.727 |
| 4AATD003.36 | -78.90749 | 36.92077 | P | Piedmont | 73.06 | 66 | 17.3 | 37 | -1.255 | 15.238 | 51.429 | -0.022 | 59.545 |
| 4ABAR001.74 | -79.21667 | 36.74819 | P | Piedmont | 70.85 | 81 | 20.4 | 5 | -1.143 | 0.99 | 80.198 | -0.067 | 86.909 |
| 4ABAU011.17 | -79.83455 | 36.78153 | P | Piedmont | 49.25 | 50 | 15.8 | 23 | -1.178 | 0.98 | 77.451 | 0.02 | 76.727 |
| 4ABCE000.87 | -79.94723 | 37.04986 | P | Piedmont | 86.05 | 56 | 4.3 | 4 | -0.359 | 0.952 | 51.429 | 1.023 | 59.273 |
| 4ABDB004.35 | -79.0461 | 36.9056 | P | Piedmont | 89 | 4 | 4.3 | 70 | -1.26 | 1.905 | 92.381 | -0.423 | 99.273 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4ABLG001.95 | -80.176 | 37.1527 | BR | Mountain | 16 | 5 | 0.61 | 1 | 0.17 | 0 | 3.81 | 2.375 | 27.364 |
| 4ABNN002.17 | -78.6383 | 36.7999 | P | Piedmont | 97 | 4 | 2.9 | 100 | -0.508 | 3.81 | 71.429 | 0.282 | 82.909 |
| 4ABOE005.27 | -79.7215 | 37.3111 | P | Piedmont | 79.5 | 6 | 4.3 | 56 | -0.023 | 0.952 | 37.143 | 1.27 | 50.636 |
| 4ABOS000.13 | -78.92692 | 36.55797 | P | Piedmont | 157.9 | 113 | 5.8 | 3 | -1.921 | 30 | 51 | -0.725 | 100 |
| 4ABST009.45 | -78.617 | 36.7319 | P | Piedmont | 105.5 | 78 | 6.58 | 3 | -1.301 | 37.143 | 43.81 | -0.508 | 88 |
| 4ABST014.94 | -78.58417 | 36.78486 | P | Piedmont | 129.5 | 96 | 7.5 | 3 | -0.538 | 22.857 | 71.429 | -0.806 | 100 |
| 4ABTF003.11 | -79.03767 | 37.2575 | P | Piedmont | 80 | 41 | 2.3 | 3 | -0.558 | 0.952 | 41.905 | 0.694 | 78.545 |
| 4ABVE002.18 | -79.77109 | 37.25852 | P | Piedmont | 84.5 | 52 | 3 | 3 | -0.636 | 4.762 | 52.381 | 0.535 | 74 |
| 4ABWB000.32 | -78.62801 | 37.01907 | P | Piedmont | 75.5 | 43 | 5.9 | 7 | -2.199 | 61.905 | 38.095 | -1.482 | 100 |
| 4ABWR029.51 | -79.8299 | 37.04922 | P | Piedmont | 86.89 | 21 | 17 | 63 | -0.744 | 25.51 | 25.51 | 0.438 | 71.863 |
| 4ABWR045.01 | -79.9169 | 37.0441 | P | Piedmont | 74.395 | 51 | 3.6 | 3 | -1.205 | 40 | 39.048 | -0.596 | 78.909 |
| 4ACEC000.82 | -79.53321 | 36.99435 | P | Piedmont | 82 | 46 | 1.2 | 3 | 0.071 | 0.952 | 21.905 | 1.479 | 58.909 |
| 4ACEC001.24 | -79.55127 | 36.98819 | P | Piedmont | 66 | 7 | 2 | 7 | 0.021 | 0 | 19.048 | 1.671 | 30 |
| 4ACLB001.90 | -78.91039 | 36.58867 | P | Piedmont | 130.5 | 115 | 7.7 | 5 | 0.763 | 0 | 57.143 | 1.345 | 67.273 |
| 4ACNT003.84 | -79.773 | 36.9207 | P | Piedmont | 57.5 | 11 | 7.8 | 11 | -0.566 | 0.952 | 56.19 | 0.654 | 62.364 |
| 4ACNT022.05 | -79.8873 | 36.859 | P | Piedmont | 48 | 66 | 10.5 | 5 | -0.612 | 4.762 | 45.714 | 0.851 | 56.182 |
| 4ADAN183.06 | -80.44737 | 36.65015 | BR | Mountain | 44.7 | 36 | 12 | 14 | 0.264 | 0.952 | 12.381 | 2.08 | 22.909 |
| 4ADAN199.71 | -80.3995 | 36.7024 | BR | Mountain | 45 | 36 | 3.72 | 5 | -0.095 | 3.81 | 32.381 | 1.495 | 43.455 |
| 4ADBC000.13 | -79.16145 | 36.60897 | P | Piedmont | 69 | 15 | 16.9 | 15 | -0.906 | 0.952 | 60 | 0.298 | 83.364 |
| 4ADEV000.64 | -78.537 | 36.849 | P | Piedmont | 107 | 90 | 13.8 | 5 | -0.811 | 25.714 | 8.571 | 0.593 | 58.364 |
| 4AFAL006.61 | -79.3799 | 36.6512 | P | Piedmont | 109 | 73 | 3.75 | 3 | -0.655 | 8.571 | 29.524 | 0.538 | 78.909 |
| 4AFRV017.85 | -78.9505 | 37.1957 | P | Piedmont | 70 | 4 | 4.95 | 1 | -0.641 | 23.81 | 18.095 | 0.224 | 73.818 |
| 4AFSF004.02 | -78.98518 | 37.22043 | P | Piedmont | 67.705 | 50 | 3.5 | 3 | -0.699 | 8.654 | 44.231 | 0.279 | 78.056 |
| 4AGEO006.26 | -79.3096 | 36.9328 | P | Piedmont | 40.5 | 47 | 8.4 | 6 | -0.6 | 16.19 | 36.19 | 0.535 | 65.273 |
| 4AGSE015.07 | -79.53624 | 37.16909 | P | Piedmont | 155.5 | 99 | 6.1 | 9 | -0.106 | 4.762 | 55.238 | 0.856 | 72 |
| 4AGSH001.28 | -80.0485 | 37.3081 | RV | Mountain | 507 | 4 | 3.1 | 208 | -1.331 | 19.048 | 17.143 | 0.685 | 31.636 |
| 4AHLL000.45 | -79.7098 | 36.5575 | P | Piedmont | 77 | 76 | 4.3 | 5 | -1.486 | 15.238 | 41.905 | 0.043 | 87.273 |
| 4AIVV002.00 | -80.36999 | 36.68264 | BR | Mountain | 54 | 7 | 3.4 | 7 | -0.213 | 12.381 | 16.19 | 1.227 | 37.182 |
| 4ALBT003.07 | -80.16526 | 36.79235 | P | Piedmont | 37.28 | 47 | 12 | 9 | -0.476 | 0 | 43.81 | 1.143 | 53.455 |
| 4ALOR007.20 | -79.45187 | 37.2942 | P | Piedmont | 205.5 | 83 | 6.3 | 10 | -0.248 | 0 | 63.81 | 0.598 | 74.909 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4ALOR008.93 | -79.453 | 37.3019 | P | Piedmont | 167 | 18 | 11.6 | 92 | -1.557 | 0.952 | 88.571 | -0.194 | 90.455 |
| 4ALPP004.52 | -77.9771 | 36.6142 | P | Piedmont | 64 | 9 | 6.93 | 3 | -0.111 | 7.619 | 29.524 | 0.673 | 72.909 |
| 4ALWF007.13 | -79.7786 | 36.75797 | P | Piedmont | 48 | 42 | 3.1 | 3 | -1.192 | 13.333 | 53.333 | 0.004 | 83.545 |
| 4AMBY001.33 | -79.839 | 36.65654 | P | Piedmont | 129.5 | 92 | 9.9 | 4 | -1.083 | 24.762 | 40 | -0.099 | 79.273 |
| 4AMEE017.24 | -79.9609 | 37.1256 | P | Piedmont | 75 | 40 | 2.59 | 8 | -0.934 | 22.857 | 15.238 | 0.627 | 58.636 |
| 4AMEY006.72 | -79.0349 | 37.1835 | P | Piedmont | 85.5 | 3 | 3.96 | 1 | -0.522 | 14.286 | 33.333 | 0.452 | 79.909 |
| 4AMFK000.52 | -79.86503 | 36.85317 | P | Piedmont | 28.625 | 31 | 7.9 | 6 | -1.497 | 40 | 12.381 | -0.107 | 69.091 |
| 4AMSP000.96 | -80.35866 | 37.26456 | RV | Mountain | 528 | 330 | 5.4 | 11 | -0.471 | 10 | 19 | 1.286 | 53.545 |
| 4AORR002.63 | -79.35614 | 37.22807 | P | Piedmont | 61.14 | 46 | 3.8 | 3 | 0.25 | 0.952 | 29.524 | 1.805 | 48.909 |
| 4APGG011.14 | -79.5383 | 36.9326 | P | Piedmont | 80 | 48 | 83.3 | 65 | -1.068 | 6.667 | 56.19 | 0.338 | 77.909 |
| 4APGG042.21 | -79.77894 | 36.98137 | P | Piedmont | 102.5 | 16 | 15.2 | 16 | -0.531 | 1.905 | 39.048 | 1.116 | 53.273 |
| 4APGG063.32 | -79.9136 | 36.9697 | P | Piedmont | 85.5 | 68 | 4.3 | 4 | -0.166 | 0 | 40 | 1.401 | 40.909 |
| 4APGG076.93 | -80.04858 | 36.9769 | P | Piedmont | 90.5 | 3 | 2.5 | 3 | -0.346 | 14.286 | 23.81 | 0.938 | 61.273 |
| 4APOP000.10 | -78.5219 | 36.6902 | P | Piedmont | 103.5 | 6 | 9.2 | 84 | 0.461 | 1.905 | 37.143 | 1.56 | 54.909 |
| 4ARAB003.64 | -79.2684 | 37.057 | P | Piedmont | 34 | 3 | 3.4 | 31 | -1.103 | 10.476 | 37.143 | 0.233 | 87.636 |
| 4ARKN003.68 | -80.01221 | 36.73002 | P | Piedmont | 50.5 | 58 | 6.4 | 3 | -0.314 | 0 | 45.714 | 1.304 | 62.727 |
| 4ARNF015.22 | -80.35212 | 37.18763 | RV | Mountain | 427.5 | 4 | 2.1 | 4 | -0.398 | 15.238 | 11.429 | 1.082 | 38 |
| 4AROA210.56 | -80.01849 | 37.27147 | RV | Mountain | 366 | 3 | 1.4 | 3 | -0.122 | 11.429 | 25.714 | 0.897 | 48.545 |
| 4AROC010.68 | -78.56411 | 37.1087 | P | Piedmont | 80.5 | 69 | 8.7 | 3 | -1.743 | 31.429 | 37.143 | -0.672 | 84.909 |
| 4ARSF007.07 | -80.2361 | 37.17282 | RV | Mountain | 299.5 | 148 | 0.6 | 3 | -0.8 | 24.762 | 15.238 | 0.219 | 51.182 |
| 4ARSF007.29 | -80.23637 | 37.16972 | RV | Mountain | 240.9 | 143 | 0.8 | 3 | -0.551 | 6.667 | 38.095 | 0.688 | 66.455 |
| 4ASCB005.38 | -79.55049 | 37.45301 | BR | Mountain | 29 | 18 | 1 | 3 | -0.362 | 0.952 | 10.476 | 1.799 | 26.455 |
| 4ASCR003.33 | -79.42603 | 36.6173 | P | Piedmont | 87 | 55 | 5.7 | 5 | -0.307 | 1.905 | 46.667 | 0.921 | 73.818 |
| 4ASDA004.94 | -79.9484 | 36.9313 | P | Piedmont | 81.5 | 7 | 9.6 | 1 | -0.317 | 0.952 | 36.19 | 1.332 | 62.909 |
| 4ASDE002.18 | -79.2961 | 36.7652 | P | Piedmont | 82.5 | 4 | 4 | 66 | -1.348 | 28.571 | 48.571 | -0.324 | 89.091 |
| 4ASDE002.65 | -79.30136 | 36.76334 | P | Piedmont | 69 | 5 | 10.2 | 5 | -0.949 | 14.286 | 45.714 | 0.265 | 83 |
| 4ASMR002.77 | -80.02584 | 36.54507 | P | Piedmont | 53.005 | 42 | 14 | 18 | -0.016 | 7.619 | 40.952 | 1.312 | 52.727 |
| 4ASMR017.72 | -80.1486 | 36.56822 | P | Piedmont | 99 | 40 | 6.8 | 9 | -0.456 | 2.857 | 53.333 | 0.845 | 68.182 |
| 4ASMR023.52 | -80.1967 | 36.5963 | P | Piedmont | 59.5 | 32 | 5.6 | 6 | -0.867 | 18.095 | 38.095 | 0.374 | 74 |
| 4ASNA002.84 | -79.05761 | 36.81822 | P | Piedmont | 77.5 | 10 | 14.3 | 10 | -1.346 | 27 | 69 | -0.89 | 99.6 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4ASRE063.69 | -80.1617 | 36.8436 | P | Piedmont | 71 | 2 | 2 | 50 | -0.441 | 0.952 | 44.762 | 0.945 | 60.727 |
| 4ASSP000.64 | -79.6023 | 36.6724 | P | Piedmont | 51 | 7 | 8.3 | 52 | -1.327 | 20 | 49.524 | -0.357 | 93.818 |
| 4ASSP004.06 | -79.62398 | 36.66458 | P | Piedmont | 49 | 6 | 6.8 | 6 | -0.984 | 1.905 | 70.476 | 0.179 | 80.545 |
| 4ATKR010.54 | -79.91355 | 37.36128 | RV | Mountain | 487 | 266 | 2.7 | 3 | -1.327 | 39.048 | 16.19 | -0.136 | 68.091 |
| 4ATKR015.40 | -79.93161 | 37.41241 | RV | Mountain | 485 | 263 | 5.3 | 4 | -2.03 | 74.286 | 1.905 | -1.041 | 78.545 |
| 4ATRB000.97 | -79.2515 | 37.192 | P | Piedmont | 60.5 | 9 | 5.62 | 3 | 0.88 | 33.333 | 9.524 | 0.464 | 73.909 |
| 4ATRD000.35 | -79.64591 | 36.67699 | P | Piedmont | 44.9 | 47 | 9.8 | 6 | -0.857 | 0 | 71.429 | 0.102 | 86.909 |
| 4AWEL000.59 | -79.50566 | 37.25668 | P | Piedmont | 82.14 | 72 | 13 | 9 | -1.124 | 20 | 37.143 | 0.1 | 79.182 |
| 4AWFE001.57 | -79.21562 | 36.59078 | P | Piedmont | 172 | 140 | 4.7 | 7 | 0.023 | 0 | 48.571 | 1.299 | 57.364 |
| 4AWLF001.20 | -79.58224 | 37.27454 | P | Piedmont | 83.5 | 6 | 5.7 | 6 | -0.37 | 4.762 | 33.333 | 1.011 | 56 |
| 4AWNN000.10 | -78.88452 | 36.76943 | P | Piedmont | 63.5 | 12 | 14.3 | 12 | -1.305 | 9.524 | 78.095 | -0.491 | 97.818 |
| 4AXMU001.98 | -79.7308 | 36.67219 | P | Piedmont | 65.995 | 53 | 3.9 | 3 | -1.163 | 2.857 | 66.667 | 0.228 | 76.182 |
| 4AXMV000.63 | -80.38733 | 37.09812 | RV | Mountain | 434.5 | 234 | 2.8 | 5 | -1.583 | 20 | 14.286 | 0.024 | 40 |
| 4AXMW001.48 | -79.97126 | 36.60565 | P | Piedmont | 18 | 16 | 2.9 | 3 | -0.885 | 0 | 49.524 | 0.708 | 67.636 |
| 4AXMX003.62 | -79.92108 | 36.78495 | P | Piedmont | 37.9 | 28 | 9.2 | 5 | -1.04 | 2.857 | 45.714 | 0.577 | 74.364 |
| 4AXMY000.22 | -79.63872 | 36.83334 | P | Piedmont | 31.65 | 41 | 2.6 | 4 | -1.466 | 12.381 | 38.095 | 0.112 | 60.545 |
| 4AXNA001.18 | -79.7672 | 37.16825 | P | Piedmont | 62 | 16 | 21.1 | 16 | -0.044 | 0.952 | 26.667 | 1.655 | 38.909 |
| 4AXNC000.10 | -79.71763 | 37.40207 | RV | Mountain | 183.5 | 3 | 2.9 | 3 | 0.376 | 0.952 | 20.952 | 1.964 | 35.455 |
| 4AXOD000.38 | -79.4763 | 37.3454 | P | Piedmont | 127.5 | 103 | 8.4 | 26 | -1.166 | 14.286 | 33.333 | 0.813 | 66.727 |
| 4AXOE001.26 | -80.3812 | 36.648 | BR | Mountain | 43 | 13 | 6.4 | 38 | -0.773 | 0 | 17.143 | 1.394 | 23.455 |
| 4AXOF001.26 | -79.7009 | 36.802 | P | Piedmont | 19 | 2 | 0.8 | 10 | -0.324 | 1.905 | 25.714 | 1.833 | 45.455 |
| 4AXOH000.06 | -79.7426 | 37.3653 | BR | Mountain | 36 | 31 | 1.38 | 5 | -1.432 | 1 | 32 | 1.03 | 58.364 |
| 4AXOL000.94 | -79.6358 | 37.3432 | P | Piedmont | 55 | 10 | 9.3 | 53 | 0.45 | 3.81 | 23.81 | 1.782 | 48.182 |
| 4AXSP001.93 | -80.1882 | 36.6272 | P | Piedmont | 44 | 36 | 7.3 | 4 | -0.67 | 3.81 | 27.619 | 1.318 | 33.091 |
| 4AXUO000.49 | -79.60538 | 37.11116 | P | Piedmont | 85.845 | 74 | 8.3 | 4 | -0.776 | 4.902 | 38.235 | 0.725 | 64.364 |
| 4AXUP000.06 | -79.09649 | 37.17479 | P | Piedmont | 54.895 | 49 | 7.4 | 4 | -1.122 | 0 | 48.571 | 0.413 | 65.455 |
| 4AXUS000.65 | -79.10054 | 36.78868 | P | Piedmont | 45.75 | 46 | 4.4 | 4 | -1.141 | 25.714 | 23.81 | 0.828 | 67.636 |
| 4AXUY000.58 | -78.877 | 36.6484 | P | Piedmont | 131.5 | 125 | 4.2 | 4 | -1.106 | 0 | 66.667 | 0.197 | 79.273 |
| 4AXVK001.44 | -78.86139 | 37.15405 | P | Piedmont | 22.5 | 4 | 5.2 | 4 | -1.454 | 16.19 | 43.81 | -0.058 | 89 |
| 4AXVN001.55 | -78.8478 | 36.8789 | P | Piedmont | 65.5 | 4 | 3.6 | 4 | -1.652 | 25.714 | 57.143 | -0.62 | 95 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4AXVO000.50 | -78.5273 | 37.075 | P | Piedmont | 93 | 15 | 13.2 | 72 | -1.298 | 6.667 | 51.429 | 0.022 | 91.636 |
| 4AXVP000.20 | -79.3518 | 36.6194 | P | Piedmont | 37.5 | 16 | 8.62 | 5 | 0.397 | 2.857 | 13.333 | 2.019 | 46 |
| 4AXVQ000.77 | -79.2937 | 36.6268 | P | Piedmont | 97 | 19 | 5.46 | 3 | 1.479 | 14.286 | 27.619 | 0.475 | 70.818 |
| 4AXVV000.54 | -78.8444 | 36.837 | P | Piedmont | 67.5 | 83 | 5.82 | 4 | -1.115 | 5.714 | 48.571 | 0.581 | 72 |
| 4BBIR002.57 | -80.5466 | 36.6331 | BR | Mountain | 30.5 | 32 | 7.5 | 27 | -1.483 | 0 | 34.286 | 1.084 | 57.818 |
| 4BELK000.96 | -80.6471 | 36.6445 | BR | Mountain | 29 | 33 | 4.9 | 12 | -1.122 | 3 | 47 | 0.8 | 56.909 |
| 5AALN001.50 | -77.8339 | 36.7074 | P | Piedmont | 59.5 | 141 | 6.2 | 4 | -1.726 | 21.905 | 62.857 | -0.376 | 92 |
| 5ABTR000.76 | -77.67635 | 37.08638 | P | Piedmont | 62 | 78 | 6.5 | 4 | -1.417 | 34.286 | 50.476 | -0.636 | 87.636 |
| 5AFNY004.78 | -78.49738 | 36.84245 | P | Piedmont | 178.5 | 126 | 4.6 | 3 | -3.632 | 99.048 | 0.952 | -2.095 | 100 |
| 5AFON016.90 | -77.5639 | 36.55529 | P | Piedmont | 202.5 | 58 | 3.6 | 3 | -1.561 | 52.475 | 39.604 | -1.049 | 94.135 |
| 5AFRC011.93 | -78.1324 | 36.9284 | P | Piedmont | 68.5 | 7 | 8.7 | 72 | -1.387 | 27.619 | 67.619 | -0.847 | 94.909 |
| 5AHRA005.94 | -77.5003 | 37.1379 | P | Piedmont | 61 | 7 | 10 | 2 | -0.756 | 71.429 | 23.81 | -1.54 | 99.455 |
| 5AKIT002.65 | -78.35788 | 36.9299 | P | Piedmont | 140 | 108 | 65 | 70 | -0.956 | 24.762 | 28.571 | 0.366 | 72.545 |
| 5ALTG001.50 | -77.9731 | 36.70452 | P | Piedmont | 57.5 | 58 | 15.7 | 6 | -1.72 | 26.667 | 31.429 | -0.062 | 81.818 |
| 5ALTL001.38 | -77.74101 | 36.59803 | P | Piedmont | 102.5 | 3 | 7.9 | 3 | -1.819 | 27.619 | 51.429 | -0.503 | 85.909 |
| 5AMHN104.12 | -78.14342 | 36.7948 | P | Piedmont | 90 | 3 | 4.3 | 3 | -0.908 | 39.048 | 57.143 | -0.966 | 96.364 |
| 5AMLL000.03 | -78.1492 | 37.142 | P | Piedmont | 294.5 | 5 | 4.7 | 113 | -1.296 | 22.857 | 50.476 | -0.509 | 92.909 |
| 5AMRS002.93 | -77.5985 | 36.8356 | P | Piedmont | 129 | 20 | 25.3 | 6 | -1.678 | 31.429 | 52.381 | -0.718 | 91.636 |
| 5ANMR029.33 | -78.41026 | 37.04884 | P | Piedmont | 79.5 | 10 | 6.1 | 10 | -0.407 | 16.19 | 18.095 | 0.429 | 74 |
| 5ANTW103.18 | -77.67222 | 36.90055 | P | Piedmont | 84.55 | 59 | 8.4 | 4 | -0.829 | 33.654 | 43.269 | -0.505 | 92 |
| 5ANTW134.52 | -78.0505 | 37.01602 | P | Piedmont | 93.5 | 68 | 7 | 4 | -0.476 | 0.99 | 99.01 | -0.477 | 100 |
| 5ANTW153.04 | -78.22985 | 37.10014 | P | Piedmont | 93 | 3 | 7 | 3 | -1.206 | 23.81 | 71.429 | -0.653 | 92.727 |
| 5ARSK003.66 | -77.77278 | 36.59609 | P | Piedmont | 66 | 79 | 5.3 | 3 | -1.626 | 31.429 | 52.381 | -0.768 | 94.909 |
| 5ARYC003.04 | -77.7524 | 37.0041 | P | Piedmont | 73.5 | 73 | 10.3 | 6 | -1.226 | 9.524 | 76.19 | -0.344 | 91.636 |
| 5ARYR001.23 | -77.83329 | 36.7754 | P | Piedmont | 107.35 | 87 | 16.1 | 13 | -1.343 | 17.143 | 33.333 | 0.339 | 68.455 |
| 5ATLR006.84 | -78.08046 | 36.74041 | P | Piedmont | 77 | 4 | 5.1 | 4 | -1.035 | 12.381 | 41.905 | 0.189 | 71.182 |
| 5AXHR000.32 | -78.3112 | 36.81238 | P | Piedmont | 95.25 | 53 | 8.8 | 15 | 0.46 | 0 | 21.905 | 1.82 | 50.727 |
| 5AXIA000.48 | -78.2007 | 37.0387 | P | Piedmont | 68.5 | 81 | 3.9 | 1 | 0.136 | 5.714 | 17.143 | 1.534 | 51.455 |
| 6ACNR018.89 | -82.48335 | 37.08717 | CA | Mountain | 1167 | 584 | 2.4 | 3 | -1.275 | 31.429 | 31.429 | -0.236 | 82.727 |
| 6ACNW000.07 | -82.2091 | 37.3507 | CA | Mountain | 996.5 | 583 | 2.93 | 14 | -0.07 | 4.762 | 15.238 | 1.421 | 49.455 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6ADIS022.34 | -81.8015 | 37.239 | CA | Mountain | 318 | 9 | 5.93 | 3 | -1.061 | 15.238 | 24.762 | 0.594 | 67.091 |
| 6ADOT000.46 | -82.54651 | 37.0518 | CA | Mountain | 1156 | 4 | 1.3 | 4 | -0.734 | 10.476 | 25.714 | 0.931 | 62.727 |
| 6AFOX001.69 | -82.16619 | 37.15916 | CA | Mountain | 227 | 124 | 1.3 | 3 | -0.026 | 4.762 | 13.333 | 1.506 | 39.818 |
| 6AFRY006.70 | -82.233 | 37.0932 | CA | Mountain | 839 | 3 | 2 | 3 | -0.785 | 17.143 | 26.667 | 0.6 | 64.636 |
| 6AGRF002.36 | -82.0172 | 37.1627 | CA | Mountain | 295 | 3 | 2.4 | 152 | 0.09 | 0 | 5.714 | 1.967 | 17.818 |
| 6ALEV138.19 | -82.15743 | 37.30723 | CA | Mountain | 646 | 275 | 0.9 | 3 | -0.22 | 11.65 | 20.388 | 0.993 | 63.774 |
| 6ALEV158.93 | -81.96278 | 37.197 | CA | Mountain | 512.5 | 2 | 1.8 | 2 | -0.32 | 5.714 | 15.238 | 1.425 | 46.636 |
| 6AMCR005.94 | -82.3514 | 37.174 | CA | Mountain | 617.5 | 2 | 1.7 | 306 | 0.408 | 0.952 | 17.143 | 2.044 | 37.273 |
| 6APAW001.22 | -82.19607 | 37.17311 | CA | Mountain | 507 | 4 | 6.3 | 4 | -0.074 | 6.667 | 22.857 | 1.386 | 47 |
| 6APNR034.58 | -82.59702 | 37.11862 | CA | Mountain | 1003.5 | 405 | 10.4 | 10 | -0.86 | 13 | 44 | 0.108 | 81.727 |
| 6ARPC002.45 | -82.26578 | 37.20776 | CA | Mountain | 778.5 | 248 | 9.1 | 7 | -0.162 | 0.952 | 21.905 | 1.558 | 51.636 |
| 6ASAT003.60 | -82.06321 | 37.29133 | CA | Mountain | 574.5 | 2 | 0.8 | 2 | 0.521 | 3.81 | 3.81 | 1.883 | 39.091 |
| 6ASAT011.43 | -81.9537 | 37.3086 | CA | Mountain | 201.5 | 4 | 2.14 | 3 | 0.293 | 3.81 | 6.667 | 1.742 | 40 |
| 6ASLV000.85 | -82.17212 | 37.09016 | CA | Mountain | 189.2 | 116 | 2 | 5 | -0.978 | 7.619 | 19.048 | 0.919 | 64.545 |
| 6BCLN320.68 | -81.7853 | 37.0923 | RV | Mountain | 342.5 | 186 | 1.44 | 2 | -1.257 | 20.952 | 17.143 | 0.555 | 53.091 |
| 6BHAR002.41 | -83.2583 | 36.6656 | RV | Mountain | 300 | 145 | 2.04 | 4 | 0.044 | 7.619 | 20 | 1.381 | 46.182 |
| 6BIDI009.04 | -81.7077 | 37.15973 | CA | Mountain | 118 | 6 | 4.2 | 6 | -0.345 | 12.381 | 17.143 | 1.237 | 52.364 |
| 6BLSR004.78 | -82.47342 | 36.87209 | CA | Mountain | 26.5 | 23 | 1.9 | 3 | 0.34 | 3.81 | 6.667 | 2.207 | 12 |
| 6BLTL003.31 | -82.0791 | 36.8975 | RV | Mountain | 378 | 21 | 13.5 | 206 | -0.354 | 12.381 | 23.81 | 1.206 | 43.455 |
| 6BLTR019.45 | -81.77873 | 37.02711 | RV | Mountain | 249.5 | 138 | 2.3 | 3 | 0.225 | 26.214 | 14.563 | 0.782 | 55.455 |
| 6BLTR022.98 | -81.7541 | 37.0263 | RV | Mountain | 250 | 5 | 2.6 | 130 | 0.234 | 3 | 18 | 1.608 | 25.091 |
| 6BLTR025.03 | -81.73936 | 37.02273 | RV | Mountain | 252.25 | 140 | 5 | 5 | 0.022 | 13.462 | 11.538 | 1.344 | 35.273 |
| 6BLUR000.60 | -81.99738 | 37.04819 | CA | Mountain | 265.2 | 124 | 6.9 | 6 | -0.644 | 9.524 | 24.762 | 0.98 | 60.364 |
| 6BMOL001.75 | -82.3226 | 36.7853 | RV | Mountain | 273.5 | 155 | 5.3 | 10 | -0.844 | 23.81 | 9.524 | 0.603 | 47.636 |
| 6BMTN003.94 | -83.3552 | 36.62298 | RV | Mountain | 336.5 | 4 | 2.2 | 4 | 0.351 | 19.231 | 11.538 | 1.409 | 40.091 |
| 6BPLL001.61 | -82.77179 | 36.86556 | CA | Mountain | 207 | 90 | 3.2 | 3 | 0.239 | 10.577 | 20.192 | 1.105 | 62.727 |
| 6BPOW184.19 | -82.76238 | 36.91498 | CA | Mountain | 910 | 516 | 2 | 3 | 0.14 | 22.857 | 12.381 | 0.89 | 53.455 |
| 6BPWL020.93 | -82.8947 | 36.8435 | CA | Mountain | 465.5 | 13 | 6.84 | 3 | -0.83 | 4.762 | 84.762 | -0.485 | 93.455 |
| 6BSTC000.04 | -83.05705 | 36.77651 | CA | Mountain | 202 | 3 | 1.7 | 3 | 0.08 | 3.81 | 4.762 | 1.764 | 46.727 |
| 6BVAL002.86 | -82.48329 | 36.73685 | RV | Mountain | 304 | 6 | 2.3 | 6 | -0.149 | 5.714 | 20 | 1.808 | 37.545 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BWAL005.97 | -83.13198 | 36.62408 | RV | Mountain | 276 | 142 | 2.6 | 3 | 0.044 | 22.115 | 15.385 | 1.066 | 52.778 |
| 6BXGD000.01 | -82.64269 | 36.66936 | RV | Mountain | 372.5 | 3 | 1.4 | 3 | -1.198 | 20 | 25.714 | 0.451 | 62.273 |
| 6CBMC006.40 | -82.54113 | 36.65935 | RV | Mountain | 331.2 | 178 | 0.9 | 3 | 0.273 | 15.385 | 17.308 | 1.694 | 46.909 |
| 6CCOV002.54 | -82.3631 | 36.6527 | RV | Mountain | 363 | 2 | 2.2 | 207 | 0.318 | 4.762 | 20 | 1.676 | 37.909 |
| 6CGAS000.45 | -82.1576 | 36.742 | RV | Mountain | 398 | 186 | 1.49 | 2 | -0.209 | 19.048 | 11.429 | 1.265 | 44.909 |
| 6CGRN003.29 | -82.04003 | 36.73839 | RV | Mountain | 400.5 | 240 | 4.8 | 18 | -1.512 | 31.068 | 28.155 | -0.304 | 72.5 |
| 6CHUT000.07 | -81.4702 | 36.85687 | RV | Mountain | 328.5 | 198 | 2.6 | 3 | -2.265 | 45.714 | 17.143 | -0.855 | 84.545 |
| 6CLAL000.19 | -81.8294 | 36.6494 | RV | Mountain | 117.5 | 57 | 1.6 | 4 | 0.453 | 0 | 15.238 | 2.227 | 32.182 |
| 6CLAL001.79 | -81.80495 | 36.64236 | RV | Mountain | 79.5 | 45 | 2.7 | 4 | -0.073 | 2.083 | 26.042 | 1.547 | 46.471 |
| 6CLIB001.06 | -81.47481 | 36.95873 | RV | Mountain | 58 | 5 | 4.5 | 5 | -0.279 | 25.714 | 10.476 | 0.793 | 51.455 |
| 6CMFH023.41 | -81.73159 | 36.76924 | RV | Mountain | 331.2 | 176 | 3.5 | 3 | -0.395 | 31.429 | 23.81 | 0.226 | 60.091 |
| 6CNFH067.13 | -81.95956 | 36.80998 | RV | Mountain | 388.55 | 163 | 4.1 | 4 | 0.18 | 11.429 | 18.095 | 1.311 | 46.545 |
| 6CPSM017.73 | -82.73862 | 36.60681 | RV | Mountain | 351 | 173 | 3 | 3 | -0.299 | 38 | 5 | 0.387 | 50.727 |
| 6CSFH082.78 | -81.79 | 36.67808 | RV | Mountain | 226.5 | 4 | 1.4 | 4 | -0.265 | 7.619 | 38.095 | 0.916 | 59.273 |
| 6CSFH098.10 | -81.6213 | 36.76533 | RV | Mountain | 176.5 | 101 | 3.1 | 3 | 0.537 | 0.98 | 9.804 | 1.976 | 27.037 |
| 6CSFH099.18 | -81.6088 | 36.7746 | RV | Mountain | 173 | 3 | 1.4 | 3 | 0.14 | 3.81 | 17.143 | 1.612 | 33.455 |
| 6CSFH104.35 | -81.53747 | 36.76073 | BR | Mountain | 156.5 | 82 | 3.6 | 3 | -0.119 | 3.81 | 20.952 | 1.269 | 53.889 |
| 6CSPO001.45 | -82.0047 | 36.647 | RV | Mountain | 319 | 199 | 3.14 | 3 | -0.544 | 18.095 | 20.952 | 0.74 | 64.364 |
| 6CSTC000.20 | -81.6495 | 36.7521 | RV | Mountain | 322.5 | 138 | 3.1 | 6 | -1.134 | 19.048 | 33.333 | 0.256 | 69.273 |
| 6CSTC000.87 | -81.64606 | 36.74492 | RV | Mountain | 173.5 | 111 | 3 | 4 | 0.171 | 1.923 | 21.154 | 1.618 | 34.364 |
| 6CSTU000.15 | -81.65308 | 36.65839 | BR | Mountain | 70.5 | 42 | 3.3 | 4 | -0.847 | 11.429 | 11.429 | 1.172 | 42.818 |
| 6CXEE000.72 | -81.51086 | 36.7137 | BR | Mountain | 9.55 | 15 | 2.7 | 3 | -1.703 | 3.03 | 56.566 | 0.33 | 86.852 |
| 6CXEO000.25 | -82.26026 | 36.63867 | RV | Mountain | 409.5 | 42 | 21.1 | 42 | -1.068 | 16.19 | 22.857 | 0.552 | 48.364 |
| 8-FRK005.53 | -78.0209 | 37.9107 | P | Piedmont | 117.5 | 90 | 6.13 | 3 | 0.149 | 2.857 | 11.429 | 1.437 | 39.636 |
| 8-LOC002.00 | -77.72204 | 37.89544 | P | Piedmont | 59 | 51 | 7.1 | 5 | -1.385 | 27.619 | 60.952 | -0.619 | 92.364 |
| 8-LRK000.11 | -77.68858 | 38.00617 | P | Piedmont | 50.5 | 70 | 19.4 | 11 | -0.378 | 9.524 | 26.667 | 1.243 | 48.545 |
| 8-NAR025.28 | -77.6171 | 37.94938 | P | Piedmont | 57.75 | 48 | 3.8 | 4 | -1.181 | 30 | 44 | -0.325 | 89 |
| 8-PGN002.42 | -77.80895 | 38.12339 | P | Piedmont | 64.9 | 43 | 6.9 | 4 | 0.118 | 15.238 | 10.476 | 1.245 | 60.545 |
| 8-POR015.70 | -77.6398 | 38.20326 | P | Piedmont | 46.6 | 50 | 6.1 | 3 | -0.683 | 26.506 | 65.06 | -0.787 | 95.091 |
| 8-POR024.64 | -77.73251 | 38.22926 | P | Piedmont | 42 | 38 | 10.2 | 4 | -0.055 | 4.762 | 23.81 | 0.96 | 50.909 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8-RDB003.36 | -78.06421 | 37.93413 | NP | Piedmont | 165.5 | 3 | 3.2 | 3 | -0.574 | 2.857 | 57.143 | 0.572 | 70.182 |
| 8-RIG003.01 | -77.9406 | 38.21874 | NP | Piedmont | 103 | 6 | 13 | 6 | -0.06 | 1.905 | 35.238 | 1.051 | 63.455 |
| 8-RIG004.13 | -77.9388 | 38.2339 | P | Piedmont | 89.5 | 54 | 5.2 | 5 | -0.192 | 3.81 | 27.619 | 1.104 | 60.545 |
| 8-SAR028.79 | -77.6899 | 37.7583 | P | Piedmont | 105 | 84 | 4.06 | 2 | -0.113 | 4.762 | 43.81 | 0.879 | 67.909 |
| 8-SAR058.13 | -77.90921 | 37.87805 | P | Piedmont | 90 | 70 | 5.6 | 3 | 0.154 | 6.667 | 29.524 | 0.922 | 57.818 |
| 8-SAR094.59 | -78.1475 | 38.0681 | NP | Piedmont | 114 | 5 | 3.36 | 1 | -0.539 | 13.333 | 38.095 | 0.998 | 55.091 |
| 8-STG000.73 | -77.52847 | 37.79976 | P | Piedmont | 65 | 3 | 5 | 3 | 0.02 | 10.476 | 20.952 | 1.392 | 59.273 |
| 8-XJE000.48 | -77.7473 | 37.8848 | P | Piedmont | 89 | 60 | 6.1 | 4 | -1.096 | 0 | 72.381 | -0.142 | 97.636 |
| 9-CPL009.78 | -81.05106 | 36.83265 | BR | Mountain | 237.85 | 129 | 3.4 | 3 | -0.316 | 19.355 | 18.28 | 0.962 | 43.275 |
| 9-CPL012.73 | -81.08703 | 36.83618 | RV | Mountain | 178.7 | 98 | 4.5 | 4 | -0.875 | 17.143 | 26.667 | 0.456 | 68.364 |
| 9-CST005.73 | -80.91134 | 36.72014 | BR | Mountain | 68.5 | 6 | 2.4 | 6 | 0.088 | 17.143 | 14.286 | 1.255 | 52.273 |
| 9-CST012.63 | -80.9337 | 36.6704 | BR | Mountain | 53.5 | 5 | 3 | 1 | -0.328 | 9.524 | 35.238 | 0.668 | 63.182 |
| 9-DEN000.39 | -80.9862 | 36.8622 | RV | Mountain | 316.5 | 6 | 3.38 | 1 | 0.567 | 13.333 | 20.952 | 1.492 | 38.364 |
| 9-ECM001.01 | -81.2707 | 36.7169 | BR | Mountain | 74.5 | 46 | 2.6 | 8 | -1.598 | 34.286 | 18.095 | 0.031 | 67.909 |
| 9-ELK013.81 | -81.1646 | 36.71078 | BR | Mountain | 92.4 | 59 | 10.4 | 13 | -1.534 | 31.429 | 40.952 | -0.548 | 87.273 |
| 9-FRS000.16 | -81.23485 | 36.67726 | BR | Mountain | 28.5 | 22 | 1.4 | 7 | -1.176 | 6.667 | 34.286 | 0.728 | 64.909 |
| 9-GSC000.44 | -80.6592 | 36.88649 | BR | Mountain | 48 | 42 | 2.5 | 5 | -0.285 | 12.745 | 20.588 | 0.97 | 52.83 |
| 9-ISL003.05 | -80.69817 | 36.78924 | BR | Mountain | 54.5 | 18 | 7.8 | 18 | -1.319 | 24.762 | 38.095 | 0.118 | 79.455 |
| 9-KNB003.98 | -81.07966 | 36.73119 | BR | Mountain | 59.5 | 42 | 3.4 | 6 | -1.529 | 26.667 | 34.286 | -0.185 | 83.455 |
| 9-KNS002.44 | -81.25101 | 36.77292 | BR | Mountain | 13 | 3 | 1.5 | 3 | -0.466 | 5 | 15 | 1.789 | 35.909 |
| 9-LEF005.25 | -80.71918 | 36.69103 | BR | Mountain | 88.2 | 62 | 3.5 | 3 | -0.433 | 8.571 | 34.286 | 1.108 | 65.455 |
| 9-LFK005.39 | -81.1713 | 37.24309 | RV | Mountain | 45.75 | 20 | 7.2 | 7 | -0.819 | 10.476 | 22.857 | 0.65 | 55.818 |
| 9-LRR012.30 | -81.4593 | 37.2569 | CA | Mountain | 318 | 3 | 3.4 | 201 | -1.811 | 13.333 | 77.143 | -0.523 | 95.818 |
| 9-LRV004.89 | -80.54406 | 37.04932 | RV | Mountain | 90.585 | 52 | 1 | 3 | -0.675 | 10.476 | 32.381 | 0.73 | 58.364 |
| 9-LRV035.03 | -80.3831 | 36.9987 | BR | Mountain | 77.475 | 49 | 1.6 | 3 | -0.645 | 28 | 43 | -0.175 | 82.157 |
| 9-LTL001.22 | -81.37725 | 37.12694 | RV | Mountain | 31.5 | 18 | 4.7 | 5 | -1.614 | 45.714 | 14.286 | -0.597 | 66.545 |
| 9-LVR007.16 | -81.0294 | 36.5681 | BR | Mountain | 88 | 79 | 4.74 | 7 | 0.066 | 4.762 | 29.524 | 1.647 | 45.636 |
| 9-LWK004.04 | -80.7681 | 37.17309 | RV | Mountain | 100.55 | 37 | 1.6 | 3 | 0.595 | 1.905 | 20 | 1.472 | 37.818 |
| 9-MLL000.90 | -80.80055 | 37.32286 | RV | Mountain | 52.5 | 4 | 1.9 | 4 | -0.003 | 0 | 2 | 2.063 | 30.167 |
| 9-PKC005.95 | -80.72747 | 37.04755 | RV | Mountain | 373.1 | 215 | 20 | 3 | 0.648 | 23.301 | 8.738 | 1.558 | 42.593 |

| StationID | Longitude_DD | Latitude_DD | EcoRegion | BioRegion | SpCond | TDS_V | Turb-V | TSS-V | LRBS | FN_PCT | SA_PCT | LSUB_DMM | Embed_PCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-PLK000.79 | -80.8103 | 37.0515 | RV | Mountain | 43 | 2 | 1.76 | 1 | 0.277 | 0.952 | 3.81 | 1.979 | 7.273 |
| 9-RDC049.02 | -81.2811 | 36.9813 | RV | Mountain | 27.5 | 3 | 1.01 | 3 | 0.104 | 1 | 19 | 1.239 | 30.182 |
| 9-RDC051.21 | -81.3108 | 36.96805 | RV | Mountain | 34 | 22 | 3.6 | 3 | 0.466 | 5.769 | 12.5 | 1.475 | 31.204 |
| 9-RHC002.85 | -80.807 | 37.4008 | CA | Mountain | 266.5 | 131 | 6.62 | 8 | 0.682 | 9.524 | 2.857 | 2.32 | 27.455 |
| 9-RIC038.67 | -80.58791 | 36.72885 | BR | Mountain | 37.5 | 27 | 1.9 | 3 | -0.101 | 7.767 | 32.039 | 1.128 | 58.679 |
| 9-RIC051.80 | -80.53131 | 36.68899 | BR | Mountain | 34.75 | 33 | 2.6 | 3 | -0.402 | 5.769 | 40.385 | 0.905 | 62.909 |
| 9-SFK002.81 | -81.18752 | 36.98483 | RV | Mountain | 88.5 | 45 | 3.6 | 3 | -0.203 | 0 | 4.762 | 1.589 | 18.545 |
| 9-SFK003.38 | -81.19332 | 36.99069 | RV | Mountain | 117 | 2 | 2.3 | 2 | -0.105 | 24.762 | 16.19 | 0.604 | 55.182 |
| 9-SMN001.14 | -80.36871 | 36.95155 | BR | Mountain | 41.6 | 33 | 3.5 | 5 | -1.369 | 7.619 | 43.81 | 0.657 | 62.727 |
| 9-SNC008.04 | -80.60808 | 37.41741 | RV | Mountain | 32 | 1 | 1 | 1 | 0.316 | 1.905 | 4.762 | 2.306 | 14.273 |
| 9-TOM006.92 | -80.50673 | 37.2327 | RV | Mountain | 441 | 201 | 7.6 | 15 | -0.692 | 24.762 | 18.095 | 0.578 | 56.727 |
| 9-WLK016.78 | -80.7374 | 37.2093 | RV | Mountain | 261.5 | 1 | 1 | 122 | 0.527 | 0 | 11.429 | 2.079 | 19.091 |
| 9-WLK033.29 | -80.8549 | 37.1627 | RV | Mountain | 235 | 103 | 2.2 | 2 | 0.73 | 1.905 | 16.19 | 2.019 | 24.909 |
| 9-WLK052.27 | -81.02101 | 37.10464 | RV | Mountain | 277.4 | 137 | 1.6 | 5 | 0.229 | 13.333 | 5.714 | 1.666 | 41.273 |
| 9-WNS001.03 | -80.97497 | 37.19211 | RV | Mountain | 141 | 3 | 3.4 | 3 | -0.024 | 12.381 | 11.429 | 1.073 | 28.455 |
| 9-XEO000.57 | -80.5419 | 36.75187 | BR | Mountain | 52 | 41 | 8.9 | 10 | -0.364 | 0 | 16.19 | 1.724 | 41.759 |
| 9-XES000.94 | -81.06278 | 36.95004 | RV | Mountain | 772.5 | 466 | 28.3 | 5 | -2.534 | 69.524 | 11.429 | -1.287 | 89.818 |
| 9-XFH000.92 | -81.1506 | 36.6384 | BR | Mountain | 86.5 | 239 | 130 | 48 | -2.395 | 41.905 | 36.19 | -0.826 | 92.273 |

**Notes**
StationID = VDEQ station identifier
Longitude_DD = longitude in decimal degrees
Latitude_DD = latitude in decimal degrees
P = Piedmont
NP = Northern Piedmont
BR = Blue Ridge
CA = Central Appalachian
RV = Ridge and Valley
SpCond = Specific conductivity in microSiemens per centimeter (uS/cm)
TDS_V = Total Dissolved Solids in milligram per liter (mg/L)
Turb-V = Turbidity in Nephelometric Turbidity Units (NTU)
TSS-V = Total Suspended Solids in milligram per liter (mg/L)
LRBS = Log base 10 of Relative Bed Stability (“estimate 2” in Kaufmann 1999); unitless
FN_PCT = Percent fines; particles < 0.06 millimeters (mm) in diameter

SA_PCT = Percent sand; particles 0.06 – 2 mm in diameter
LSUB_DMM = log base 10 of median particle size diameter in mm
Embed_PCT = Percent particle embeddedness (burial of gravel and larger particles by sand and fines)

## Virginia Department of Environmental Quality VSCI Biological Metrics

| StationID | TotTaxa | EPTTax | %Ephem | %PT-H | %Scrap | %Chiro | X%2Dom | HBI | VSCI |
|---|---|---|---|---|---|---|---|---|---|
| 1AAUA017.60 | 14.5 | 6 | 36.23 | 12.9 | 31.93 | 8.665 | 58.415 | 4.725 | 61.075 |
| 1ABED009.37 | 18 | 7 | 24.545 | 23.15 | 25.455 | 19.545 | 39.09 | 4.295 | 69.06 |
| 1ACAX003.69 | 12 | 5.5 | 32.695 | 7.15 | 22.035 | 19.745 | 69.46 | 4.325 | 53.56373431 |
| 1ACAX003.81 | 16.5 | 7.5 | 15.455 | 7.7 | 37.73 | 2.73 | 49.09 | 4.76 | 63.895 |
| 1ACER005.02 | 18.5 | 4.5 | 12.855 | 26.7 | 26.19 | 3.335 | 43.81 | 5.44 | 59.89220797 |
| 1ACER012.66 | 14.5 | 5 | 25.455 | 8.2 | 15.91 | 8.185 | 56.82 | 4.925 | 54.46 |
| 1ACHO003.47 | 21 | 6.5 | 4.09 | 10 | 7.275 | 10.91 | 48.64 | 5.355 | 53.81 |
| 1ACRM009.86 | 15 | 7.5 | 22.595 | 24.55 | 31.25 | 4.33 | 48.56 | 3.825 | 70.44 |
| 1ACUB004.63 | 15.5 | 3 | 11.365 | NA | 17.275 | 35.455 | 53.18 | 6.12 | 42.305 |
| 1AGOO018.17 | 18.5 | 7.5 | 31.82 | 22.25 | 34.09 | 5.455 | 45 | 4.155 | 74.1 |
| 1AGOO021.28 | 11.5 | 7.5 | 35.16 | 28 | 13.99 | 0 | 55.005 | 3.51 | 64.97658131 |
| 1AGOO036.47 | 13 | 6.5 | 50.505 | 13.35 | 24.825 | 0.915 | 50.045 | 3.82 | 68.535 |
| 1AGOO039.63 | 18.5 | 8.5 | 34.545 | 11.8 | 24.55 | 2.73 | 47.73 | 4.44 | 69.09 |
| 1AKET012.22 | 16.5 | 4 | 12.27 | 2.7 | 10.455 | 21.82 | 65.455 | 6.68 | 41.57 |
| 1ALIV004.79 | 18 | 8 | 44.09 | 7.75 | 23.635 | 11.365 | 47.27 | 3.93 | 68.52 |
| 1ALOE001.99 | 7.5 | 2.5 | 3.855 | NA | 1.99 | 28.605 | 88.345 | 5.87 | 27 |
| 1ANOF004.80 | 13 | 5 | 10.64 | 18.55 | 10.665 | 36.805 | 52.255 | 4.78 | 50.45297794 |
| 1ANOG000.91 | 11.5 | 7 | 47.7 | 15.05 | 21.885 | 1.98 | 49.325 | 3.945 | 67.95278259 |
| 1AOPE028.72 | 11 | 3.5 | 6.365 | NA | 69.09 | 9.545 | 80.91 | 4.575 | 48.74848394 |
| 1APIA003.51 | 16 | 9.5 | 37.73 | 19.1 | 19.09 | 2.73 | 60 | 4.13 | 69.025 |
| 1APOH008.54 | 7 | 1.5 | 0 | 2.7 | 16.98 | 47.235 | 78.77 | 5.675 | 28.65 |
| 1AXGU000.18 | 14.5 | 7 | 17.02 | 45 | 15.84 | 4.915 | 53.245 | 3.59 | 67.83 |
| 1AXKR000.77 | 17.5 | 8 | 15.2 | 38.2 | 27.22 | 12.25 | 38.75 | 3.735 | 74.68 |
| 1AXLB000.05 | 12.5 | 3.5 | 1.82 | 4.05 | 6.365 | 34.09 | 62.725 | 5.615 | 37.48 |
| 1AXLR000.44 | 20 | 10 | 15.79 | 54.4 | 7.89 | 15.79 | 66.67 | 3.4 | 69.03 |
| 1AXMJ000.42 | 14 | 8.5 | 36.415 | 34.3 | 38.255 | 2.275 | 52.34 | 3.775 | 75.915 |
| 1BBGR004.08 | 17.5 | 11.5 | 34.545 | 14.55 | 34.09 | 15.91 | 36.365 | 4.175 | 75.005 |
| 1BBRY005.09 | 17.5 | 12.5 | 32.27 | 30.95 | 3.185 | 26.365 | 44.545 | 3.815 | 71.24139668 |
| 1BCDR027.54 | 18.5 | 11 | 59.535 | 16.75 | 18.585 | 3.725 | 53.035 | 3.995 | 77.08625357 |
| 1BGSR000.58 | 19 | 10.5 | 29.545 | 12.3 | 18.18 | 19.545 | 50.455 | 4.48 | 66.62 |
| 1BHPY002.67 | 12 | 6 | 38.49 | 8.8 | 19.27 | 16.925 | 62.23 | 4.86 | 55.56375494 |
| 1BMDL025.92 | 19.5 | 9.5 | 30 | 5 | 26.36 | 20.905 | 37.73 | 5.085 | 66.31 |
| 1BMIC001.99 | 9.5 | 3 | 1.905 | 0.9 | 52.82 | 20.95 | 78.53 | 5.16 | 44.475 |
| 1BMIL006.68 | 12 | 7 | 13.18 | 5.5 | 4.545 | 38.635 | 74.545 | 5.51 | 40.04 |
| 1BMSS001.35 | 11.5 | 4.5 | 20.91 | 0.9 | 30 | 15 | 49.09 | 5.055 | 52.25 |
| 1BNFS093.80 | 12.5 | 7.5 | 42.27 | 18.6 | 50.91 | 0.455 | 45 | 3.71 | 75.61 |
| 1BNTH046.56 | 16 | 11 | 40.02 | 20.35 | 9.465 | 16.7 | 47.17 | 3.65 | 70.81702097 |
| 1BSMT001.53 | 13.5 | 8 | 34.945 | 7.9 | 51.53 | 3.92 | 57.98 | 4.03 | 67.99908248 |
| 1BSMT009.08 | 11.5 | 6.5 | 34.045 | 2.9 | 27.225 | 9.1 | 48.7 | 4.665 | 58.89336959 |
| 1BSTH005.36 | 12.5 | 7 | 30 | 9.55 | 34.545 | 29.545 | 60.455 | 4.71 | 58.54413033 |

| StationID | TotTaxa | EPTTax | %Ephem | %PT-H | %Scrap | %Chiro | X%2Dom | HBI | VSCI |
|---|---|---|---|---|---|---|---|---|---|
| 1BSTH013.58 | 13 | 3.5 | 22.61 | NA | 39.27 | 30.62 | 62.095 | 5.115 | 49.98 |
| 2ABLD014.73 | 14 | 6.5 | 28.635 | 3.6 | 15.455 | 34.09 | 62.27 | 4.895 | 50.64 |
| 2-APP080.58 | 19.5 | 10.5 | 22.48 | 9.45 | 26.74 | 36.815 | 53.62 | 4.9 | 62.505 |
| 2AXQS001.07 | 17.5 | 11.5 | 30.44 | 31.2 | 25.57 | 5.585 | 33.775 | 3.08 | 81.825 |
| 2BBAA003.06 | 19 | 8.5 | 20 | 20 | 22.275 | 21.815 | 39.095 | 4.28 | 68.25270947 |
| 2BCBL002.86 | 20.5 | 13 | 24.09 | 30.9 | 15 | 13.18 | 36.365 | 3.71 | 77.39 |
| 2-BCC001.90 | 16.5 | 8.5 | 37.64 | 8.1 | 59.47 | 9.55 | 43.42 | 4.19 | 74.255 |
| 2-BCR007.68 | 12.5 | 7.5 | 34.545 | 20.45 | 11.82 | 23.635 | 47.73 | 4.005 | 63.575 |
| 2-BFL011.64 | 15.5 | 9.5 | 18.715 | 34.25 | 14.685 | 26.12 | 41.72 | 4.065 | 69.7274803 |
| 2BGOW001.00 | 14.5 | 9.5 | 57.27 | 10.45 | 30.455 | 6.82 | 44.545 | 3.98 | 74.49 |
| 2-BGU005.95 | 15.5 | 9 | 34.95 | 10.35 | 20.675 | 26.125 | 50.64 | 4.615 | 62.28 |
| 2-BLD012.09 | 11.5 | 5.5 | 37.745 | 2.45 | 53.43 | 10.785 | 56.37 | 4.145 | 61.30192974 |
| 2BMCM014.13 | 14 | 7.5 | 34.095 | 5.45 | 18.635 | 10 | 66.82 | 4.905 | 56.47 |
| 2BPRS001.90 | 17.5 | 12 | 46.365 | 24.1 | 39.09 | 3.635 | 50.91 | 3.705 | 80.76 |
| 2-BRI007.80 | 11.5 | 4 | 17.985 | 3.65 | 14.26 | 56.965 | 72.23 | 5.44 | 38.53168593 |
| 2BRKR012.86 | 17 | 10.5 | 32.73 | 10.45 | 10.455 | 9.095 | 65 | 4.745 | 61.25 |
| 2-BSR012.33 | 18 | 8.5 | 31.815 | 17.3 | 19.545 | 18.185 | 42.27 | 4.615 | 67.75 |
| 2-BSR018.10 | 12 | 7.5 | 37.535 | 11.3 | 18.74 | 26.35 | 53.99 | 4.565 | 59.015 |
| 2-BVC003.09 | 16 | 8.5 | 45.335 | 15.05 | 36.01 | 4.215 | 51.1 | 4.28 | 73.11411404 |
| 2BWTN007.39 | 16 | 7.5 | 32.73 | 10.9 | 24.09 | 29.09 | 48.18 | 4.36 | 62.60752483 |
| 2BXAC000.38 | 16.5 | 10 | 6.365 | 43.15 | 4.545 | 31.815 | 60.455 | 3.43 | 62.37249004 |
| 2BXAD000.07 | 21.5 | 10.5 | 27.725 | 12.75 | 20 | 29.545 | 45 | 4.39 | 68.735 |
| 2BXAP001.46 | 20 | 9 | 13.635 | 32.3 | 6.82 | 21.82 | 55.91 | 3.925 | 61.77 |
| 2BXRK001.64 | 17.5 | 8 | 17.725 | 29.5 | 22.73 | 10.91 | 35 | 3.51 | 73.34 |
| 2-BYN001.90 | 15 | 8 | 37.73 | 8.65 | 47.725 | 21.365 | 54.545 | 4.33 | 68.36 |
| 2-CAT007.31 | 15.5 | 6.5 | 17.765 | 7 | 47.045 | 17.9 | 59.79 | 4.595 | 61.14020983 |
| 2-CAT028.98 | 16 | 8 | 33.18 | 11.35 | 32.725 | 12.725 | 49.09 | 4.44 | 67.19 |
| 2-CLL003.21 | 11.5 | 7.5 | 43.89 | 2.35 | 7.88 | 33.675 | 67.99 | 4.615 | 50.69802474 |
| 2-CRG047.95 | 19 | 9.5 | 20.91 | 7.75 | 45.905 | 11.365 | 38.635 | 4.335 | 70.585 |
| 2-CRG074.32 | 17 | 10 | 44.09 | 12.25 | 17.27 | 5 | 57.275 | 4.05 | 69.06343505 |
| 2-CSR003.94 | 15 | 10.5 | 41.02 | 29.2 | 19.515 | 1.745 | 53.655 | 3.61 | 75.635 |
| 2-CWP006.87 | 18.5 | 9.5 | 30.665 | 17.05 | 57.085 | 2.02 | 44.135 | 3.92 | 79.575 |
| 2-CWP042.31 | 11.5 | 8 | 33.18 | 20.55 | 23.385 | 12.38 | 50.225 | 4.28 | 65.60742209 |
| 2DAPP050.84 | 12.5 | 8 | 38.64 | 6.35 | 20.91 | 25 | 45 | 4.72 | 60.385 |
| 2DAPP112.19 | 20 | 11 | 23.64 | 12.7 | 20.91 | 24.55 | 39.09 | 4.81 | 68.23 |
| 2-DCK003.94 | 18 | 12.5 | 18.8 | 34.55 | 18.19 | 15.045 | 45.795 | 3.795 | 72.09987688 |
| 2-DDY000.75 | 16.5 | 12.5 | 38.705 | 19.55 | 27.525 | 12.25 | 57.935 | 4.13 | 72.21764562 |
| 2DFSP000.30 | 17.5 | 10 | 46.82 | 13.65 | 38.18 | 5.91 | 45.455 | 4.02 | 77.5 |
| 2DWDY005.35 | 14 | 6 | 50.905 | 3.6 | 12.725 | 34.545 | 65.91 | 4.635 | 53.715 |
| 2DXAH000.79 | 17 | 9 | 16.815 | 12.75 | 6.82 | 49.545 | 61.815 | 4.955 | 52.01 |
| 2-FLA012.22 | 17 | 8.5 | 27.18 | 16.75 | 24.79 | 34.64 | 52.095 | 4.62 | 63.96354283 |
| 2-HAM000.37 | 13.5 | 8.5 | 40.455 | 26.35 | 35.91 | 12.73 | 54.09 | 3.37 | 73.5 |

| StationID | TotTaxa | EPTTax | %Ephem | %PT-H | %Scrap | %Chiro | X%2Dom | HBI | VSCI |
|---|---|---|---|---|---|---|---|---|---|
| 2-HKY001.26 | 20 | 15.5 | 37.73 | 35.9 | 24.095 | 5 | 41.36 | 3.685 | 82.515 |
| 2-HRD002.06 | 16.5 | 8 | 42.725 | 17.75 | 42.27 | 7.73 | 49.545 | 4.065 | 75.56 |
| 2-HUS001.88 | 14.5 | 7 | 45.92 | 14.35 | 23.41 | 7.845 | 37.875 | 4.325 | 70.01788558 |
| 2-HYS005.45 | 17 | 8.5 | 17.39 | 2.8 | 37.215 | 15.59 | 45.95 | 5.095 | 61.63984505 |
| 2-JED008.07 | 16 | 10 | 45.455 | 28.65 | 14.545 | 13.635 | 38.185 | 3.77 | 76.72 |
| 2-JKS076.16 | 15 | 7.5 | 40.91 | 5 | 33.185 | 15.455 | 36.82 | 4.355 | 67.54004425 |
| 2-JOB013.77 | 20 | 12.5 | 34.09 | 12.75 | 39.545 | 21.365 | 48.185 | 4.525 | 73.945 |
| 2-JOH004.23 | 13 | 8.5 | 30.53 | 9.6 | 10.435 | 17.35 | 54.76 | 4.9 | 57.04 |
| 2-LIJ003.06 | 16 | 12 | 41.75 | 21.1 | 31.845 | 9.65 | 49.235 | 3.805 | 77.41261535 |
| 2-LIT004.77 | 15 | 6.5 | 15.455 | 29.1 | 6.815 | 20.455 | 50.91 | 4.255 | 59.42 |
| 2-MCM003.32 | 19.5 | 9.5 | 26.615 | 13.25 | 28.15 | 6.61 | 42.36 | 4.565 | 70.55 |
| 2-MIW003.45 | 20 | 12 | 24.8 | 23.6 | 37.13 | 12.28 | 30.13 | 3.75 | 79.67211506 |
| 2-MRY043.42 | 16 | 8.5 | 21.575 | 5.6 | 34.925 | 18.105 | 46.72 | 4.655 | 63.255 |
| 2-NBS001.56 | 15.5 | 7.5 | 38.1 | 3.85 | 30.635 | 16.51 | 73.88 | 4.25 | 58.765 |
| 2-NUT000.62 | 12.5 | 4.5 | 40 | 0.9 | 27.725 | 23.64 | 50.91 | 5 | 54.89060551 |
| 2-PLP002.24 | 12.5 | 7 | 18.12 | 2.2 | 28.045 | 40.71 | 60.64 | 5.035 | 49.975 |
| 2-PMC000.59 | 18 | 11 | 43.635 | 15.45 | 33.18 | 7.275 | 44.09 | 3.945 | 76.60864776 |
| 2-POT031.78 | 20 | 11 | 23.18 | 20.9 | 25.455 | 14.09 | 35 | 4.165 | 74.735 |
| 2-PRD004.42 | 13.5 | 6.5 | 27.79 | 9.1 | 35.465 | 22.54 | 50.2 | 4.655 | 61.02 |
| 2-PRS003.23 | 16 | 11 | 35.91 | 25 | 26.11 | 7.905 | 45.185 | 3.67 | 76.86988751 |
| 2-RED003.65 | 13.5 | 7.5 | 45.525 | 6.15 | 16.275 | 3.44 | 56.45 | 4.56 | 60.91421671 |
| 2-RGR001.11 | 17 | 10.5 | 55.475 | 13.9 | 24.305 | 0.72 | 51.375 | 3.82 | 73.755 |
| 2-RKF015.42 | 17 | 9.5 | 31.81 | 16.9 | 38.055 | 12.69 | 57.7 | 4.105 | 71.48 |
| 2-RKF023.33 | 15 | 9.5 | 31.6 | 27.25 | 38.4 | 3.28 | 54.855 | 3.62 | 76.03626769 |
| 2-RKF026.13 | 17.5 | 9.5 | 31.355 | 10.25 | 12.065 | 12.6 | 38.7 | 4.895 | 64.76172077 |
| 2-RSM001.88 | 14 | 4.5 | 16.1 | 12.75 | 17.595 | 23.23 | 64.305 | 5.32 | 49.73 |
| 2-SDV001.02 | 10.5 | 2.5 | 6.365 | 1.8 | 16.365 | 33.185 | 56.82 | 5.395 | 39.005 |
| 2-SFT019.02 | 13 | 7 | 32.495 | 2.2 | 21.03 | 53.715 | 72.125 | 5.315 | 47.11105353 |
| 2-SKM001.04 | 15 | 8 | 28.79 | 4 | 11.04 | 20.86 | 50.13 | 5.04 | 55.57168903 |
| 2-SLT003.00 | 22 | 11 | 5.88 | 20.6 | 34.31 | 23.53 | 42.16 | 4.68 | 71.53421647 |
| 2-STV000.48 | 18 | 13 | 36.625 | 18.15 | 22.515 | 3.48 | 46.75 | 4.1 | 75.10417464 |
| 2-STW004.84 | 14.5 | 6.5 | 37.27 | 8.15 | 37.27 | 14.09 | 40 | 4.31 | 67.165 |
| 2-SWS000.90 | 20 | 11.5 | 28.675 | 27.15 | 15.305 | 15.41 | 32.345 | 3.7 | 75.68755241 |
| 2-TLR000.52 | 13 | 6.5 | 30.625 | 5.95 | 27.975 | 6.86 | 69.19 | 4.485 | 57.225 |
| 2-TYE008.77 | 18.5 | 12 | 29.26 | 19.25 | 28.115 | 16.69 | 40.72 | 4.42 | 74.46122548 |
| 2-TYE028.94 | 14 | 7 | 25.515 | 5.1 | 13.375 | 28.5 | 68.495 | 5.04 | 49.885 |
| 2-WDC002.90 | 14.5 | 8.5 | 54.295 | 9.95 | 33.635 | 2.69 | 55.755 | 4.275 | 72.08256822 |
| 2-WIC004.64 | 16 | 10.5 | 26.475 | 22.7 | 20.74 | 14.15 | 41.235 | 4.37 | 70.99301608 |
| 2-WLL001.83 | 12 | 7 | 17.475 | 24.25 | 16.17 | 35.185 | 60.33 | 4.215 | 56.67869136 |
| 2-WLM000.69 | 14 | 7.5 | 39.47 | 6.35 | 24.815 | 19.72 | 57.29 | 4.315 | 61.00752552 |
| 2-WLS023.10 | 16 | 7 | 12.73 | 13.6 | 10.91 | 44.55 | 56.36 | 5.39 | 50.36 |
| 2-XUL001.67 | 14.5 | 6 | 11.46 | 1.75 | 19.895 | 50.94 | 70.52 | 5.615 | 42.3708741 |

| StationID | TotTaxa | EPTTax | %Ephem | %PT-H | %Scrap | %Chiro | X%2Dom | HBI | VSCI |
|---|---|---|---|---|---|---|---|---|---|
| 2-XVX000.62 | 16 | 6.5 | 22.555 | 20.05 | 26.4 | 13.14 | 44.305 | 4.255 | 66.48391339 |
| 3-BLU000.54 | 16.5 | 4.5 | 13.655 | 11.8 | 32.07 | 8.19 | 41.21 | 5.155 | 60.175 |
| 3-BUC003.26 | 16.5 | 7 | 16.505 | 7.85 | 27.445 | 26.05 | 57.285 | 4.905 | 56.42361936 |
| 3-CAE001.45 | 12 | 6.5 | 46.01 | 15.9 | 31.89 | 0.945 | 52.24 | 3.985 | 68.96 |
| 3-CAE012.67 | 18.5 | 9 | 45.905 | 15 | 11.365 | 5.91 | 54.09 | 4.29 | 66.425 |
| 3-FIK001.03 | 11.5 | 7 | 44.105 | 23.3 | 14.325 | 1.5 | 53.24 | 4.055 | 67.4014 |
| 3-HAL002.72 | 9 | 3.5 | 14.095 | 2.7 | 3.64 | 37.725 | 83.185 | 5.68 | 32.09 |
| 3-HAZ035.32 | 18.5 | 11.5 | 26.365 | 24.1 | 26.365 | 13.185 | 49.095 | 3.9 | 73.8 |
| 3-LIA003.14 | 9.5 | 2 | 3.18 | 2.7 | 14.545 | 47.73 | 69.545 | 5.7 | 43.57 |
| 3-MTN018.83 | 4 | 1 | 0 | NA | 1.565 | 0 | 96.84 | 5.98 | 24.25 |
| 3-RAP053.02 | 13.5 | 7 | 44.755 | 20.75 | 34.605 | 1.58 | 40.95 | 3.535 | 74.905 |
| 3-ROB004.98 | 11.5 | 7.5 | 54.845 | 16.55 | 31.95 | 1.46 | 50.94 | 3.775 | 71.12235148 |
| 3-RPP148.18 | 14.5 | 7 | 22.35 | 55.7 | 15.07 | 1.075 | 58.705 | 2.555 | 69.22616288 |
| 3-THU006.90 | 14.5 | 8 | 53.89 | 7.5 | 25.435 | 3.555 | 63.15 | 4.28 | 66.6831679 |
| 3-WAF000.03 | 12.5 | 3.5 | 10.95 | 15.7 | 15.57 | 24.37 | 56.56 | 5.175 | 48.77848121 |
| 3-XGR000.95 | 18 | 14 | 59.09 | 24.5 | 30.91 | 0.91 | 48.18 | 3.38 | 84.8 |
| 3-XHU000.04 | 15.5 | 5 | 18.185 | 3.6 | 20.905 | 37.275 | 63.64 | 5.14 | 47.88 |
| 4AATD003.36 | 18 | 9.5 | 34.15 | 18.1 | 17.66 | 28.505 | 52.39 | 4.34 | 66.56 |
| 4ABAR001.74 | 16 | 7 | 34.89 | 11.15 | 13.23 | 26.195 | 44.485 | 4.345 | 61.29924719 |
| 4ABAU011.17 | 16 | 7 | 24.155 | 4.4 | 9.445 | 31.345 | 56.63 | 5.14 | 51.35508817 |
| 4ABCE000.87 | 12 | 6 | 14.97 | 1 | 5.84 | 27.86 | 73.875 | 5.61 | 40.09 |
| 4ABDB004.35 | 16 | 8.5 | 8.18 | 19.55 | 5.455 | 54.545 | 63.635 | 4.77 | 50.46 |
| 4ABLG001.95 | 20.5 | 16 | 46.365 | 26.85 | 38.635 | 3.18 | 49.09 | 3.625 | 85.4 |
| 4ABNN002.17 | 16 | 6.5 | 19.545 | 4.55 | 11.36 | 52.725 | 63.64 | 5.27 | 45.98 |
| 4ABOE005.27 | 12 | 5.5 | 38.18 | 4.5 | 13.185 | 15.91 | 55.45 | 5.085 | 52.44 |
| 4ABOS000.13 | 15 | 5.5 | 31.01 | 3.55 | 6.78 | 43.905 | 54.735 | 5.305 | 48.0320781 |
| 4ABST009.45 | 15 | 8.5 | 23.635 | 17.7 | 18.635 | 22.73 | 48.18 | 4.845 | 62.26 |
| 4ABST014.94 | 20 | 6.5 | 22.405 | 1.85 | 15.99 | 47.455 | 61.63 | 5.3 | 49.42543261 |
| 4ABTF003.11 | 14.5 | 8 | 42.88 | 23.55 | 8.91 | 19.22 | 71.07 | 3.885 | 60.52347077 |
| 4ABVE002.18 | 13 | 8.5 | 26.52 | 42.1 | 11.765 | 14.935 | 49.38 | 3.415 | 66.70494755 |
| 4ABWB000.32 | 12 | 4.5 | 20.64 | 1.45 | 9.395 | 47.695 | 65.17 | 5.65 | 39.73721623 |
| 4ABWR029.51 | 15 | 7.5 | 21.865 | 6.55 | 11.655 | 8.765 | 55.805 | 4.9 | 55.61969315 |
| 4ABWR045.01 | 15 | 8 | 30.905 | 10.4 | 28.66 | 16.97 | 39.535 | 4.345 | 66.205 |
| 4ACEC000.82 | 16.5 | 9.5 | 17.015 | 22.55 | 21.75 | 18.58 | 48.9 | 4.25 | 66.56153902 |
| 4ACEC001.24 | 16 | 11 | 38.185 | 29.55 | 24.545 | 5 | 50.455 | 3.67 | 77.8725016 |
| 4ACLB001.90 | 19 | 6 | 12.805 | 2.7 | 6.135 | 43.635 | 59.55 | 5.545 | 45.215 |
| 4ACNT003.84 | 19.5 | 8.5 | 34.09 | 6.8 | 26.365 | 12.27 | 43.185 | 4.605 | 67.61191569 |
| 4ACNT022.05 | 13.5 | 6.5 | 39.545 | 3.15 | 34.09 | 13.18 | 61.365 | 4.61 | 59.66 |
| 4ADAN183.06 | 20 | 13.5 | 42.32 | 21.75 | 22.29 | 6.305 | 37.12 | 3.88 | 80.21793463 |
| 4ADAN199.71 | 20 | 12 | 35 | 15.9 | 33.18 | 17.725 | 35 | 4.175 | 76.82 |
| 4ADBC000.13 | 15 | 9 | 19.545 | 11.85 | 10.455 | 43.18 | 59.09 | 4.83 | 52.85 |
| 4ADEV000.64 | 20.5 | 7.5 | 16.365 | 15 | 18.635 | 35.91 | 49.545 | 4.77 | 60.03 |

| StationID | TotTaxa | EPTTax | %Ephem | %PT-H | %Scrap | %Chiro | X%2Dom | HBI | VSCI |
|---|---|---|---|---|---|---|---|---|---|
| 4AFAL006.61 | 12.5 | 7.5 | 10.905 | 8.2 | 6.82 | 39.095 | 70.455 | 5.425 | 43.77 |
| 4AFRV017.85 | 17 | 9 | 25 | 9.1 | 20.91 | 25.455 | 41.82 | 4.795 | 62.68 |
| 4AFSF004.02 | 12.5 | 5 | 53.57 | 5.6 | 28.995 | 9.125 | 51.585 | 4.23 | 62.42 |
| 4AGEO006.26 | 12 | 5.5 | 23.18 | 23.65 | 7.725 | 19.545 | 50.455 | 4.66 | 55.855 |
| 4AGSE015.07 | 18.5 | 9.5 | 23.695 | 18.65 | 33.22 | 9.27 | 40.425 | 4.405 | 73.12 |
| 4AGSH001.28 | 12 | 4 | 6.365 | 16.85 | 18.635 | 39.545 | 62.27 | 4.76 | 47.935 |
| 4AHLL000.45 | 13 | 6 | 5 | 25.9 | 13.18 | 30.455 | 50.905 | 4.75 | 54.725 |
| 4AIVV002.00 | 18 | 10 | 26.36 | 15.45 | 32.275 | 9.545 | 44.545 | 4.215 | 72.17 |
| 4ALBT003.07 | 18.5 | 8.5 | 52.235 | 6.85 | 44.51 | 6.215 | 53.73 | 4.135 | 74.31538247 |
| 4ALOR007.20 | 12.5 | 7.5 | 24.96 | 6.05 | 19.955 | 22.53 | 65.355 | 5.055 | 52.70124881 |
| 4ALOR008.93 | 9.5 | 5.5 | 13.64 | 3.65 | 4.09 | 33.635 | 78.18 | 5.505 | 38.05 |
| 4ALPP004.52 | 14.5 | 7 | 35.455 | 6.8 | 33.635 | 35 | 70.455 | 4.93 | 56.09 |
| 4ALWF007.13 | 17.5 | 8 | 41.86 | 6.55 | 21.545 | 8.015 | 52.67 | 4.465 | 65.29426122 |
| 4AMBY001.33 | 13.5 | 5 | 14.94 | 1.95 | 14.9 | 20.535 | 53.325 | 5.78 | 46.83719546 |
| 4AMEE017.24 | 12 | 6.5 | 31.365 | 2.25 | 14.095 | 16.365 | 55 | 5.115 | 52.37 |
| 4AMEY006.72 | 15.5 | 6.5 | 26.36 | 4.55 | 29.09 | 30.455 | 60.455 | 5.04 | 55.24 |
| 4AMFK000.52 | 18 | 11 | 31.36 | 16.35 | 28.57 | 13.315 | 43.05 | 4.155 | 73.655 |
| 4AMSP000.96 | 16.5 | 8 | 25.64 | 21.85 | 11.62 | 15.76 | 38.45 | 4.225 | 65.61 |
| 4AORR002.63 | 14.5 | 7.5 | 29.145 | 4.25 | 30.795 | 24.07 | 51.725 | 4.81 | 59.90618474 |
| 4APGG011.14 | 20 | 9.5 | 32.275 | 7.3 | 20.455 | 10.455 | 33.635 | 5.08 | 68.405 |
| 4APGG042.21 | 15.5 | 7 | 50.91 | 6.35 | 35.455 | 5.455 | 46.815 | 4.14 | 71.105 |
| 4APGG063.32 | 13.5 | 7 | 27.725 | 19.1 | 18.18 | 19.545 | 47.73 | 4.305 | 63.205 |
| 4APGG076.93 | 13.5 | 7 | 33.185 | 5.45 | 8.635 | 25 | 69.545 | 4.975 | 50.51 |
| 4APOP000.10 | 13 | 4.5 | 3.18 | 38.15 | 1.82 | 10 | 58.185 | 3.495 | 54.71 |
| 4ARAB003.64 | 14.5 | 8.5 | 26.815 | 11.85 | 15.91 | 27.275 | 56.365 | 4.82 | 57.3 |
| 4ARKN003.68 | 19 | 10.5 | 22.47 | 31.2 | 25.845 | 12.215 | 33.14 | 3.865 | 78.26421935 |
| 4ARNF015.22 | 14 | 7 | 36.82 | 2.25 | 55 | 3.18 | 63.64 | 4.275 | 63.845 |
| 4AROA210.56 | 18.5 | 7 | 21.365 | 4.55 | 42.275 | 25.455 | 50 | 4.79 | 61.235 |
| 4AROC010.68 | 15 | 5 | 15.07 | 4.3 | 10.755 | 31.26 | 68.65 | 5.505 | 43.16481917 |
| 4ARSF007.07 | 14.5 | 7 | 16.025 | 7.25 | 56.86 | 17.515 | 63.795 | 4.335 | 60.68537192 |
| 4ARSF007.29 | 16 | 8.5 | 56.17 | 6.25 | 45.985 | 3.945 | 53.745 | 3.805 | 74.455 |
| 4ASCB005.38 | 17.5 | 9.5 | 60.765 | 10.5 | 33.665 | 2.265 | 49.33 | 3.62 | 76.06652142 |
| 4ASCR003.33 | 15 | 7.5 | 25.09 | 19.75 | 9.215 | 28.39 | 54.345 | 4.595 | 58.49031861 |
| 4ASDA004.94 | 11 | 6 | 31.365 | 4.1 | 11.365 | 11.365 | 56.82 | 5.01 | 51.71 |
| 4ASDE002.18 | 10.5 | 5 | 15.91 | 27.3 | 2.725 | 42.275 | 60 | 4.965 | 44.04 |
| 4ASDE002.65 | 12.5 | 7.5 | 31.815 | 16.35 | 3.18 | 30.455 | 55.455 | 4.47 | 55.54140865 |
| 4ASMR002.77 | 18 | 10.5 | 47.95 | 17 | 28.03 | 7.61 | 45.06 | 3.705 | 75.89 |
| 4ASMR017.72 | 16 | 9 | 28.55 | 10.3 | 29.27 | 4.425 | 40.36 | 4.105 | 68.83749602 |
| 4ASMR023.52 | 22.5 | 10.5 | 21.115 | 10.55 | 47.1 | 13.535 | 52.245 | 4.2 | 73.4417308 |
| 4ASNA002.84 | 15 | 8.5 | 31.365 | 28.15 | 9.545 | 12.275 | 40.91 | 3.945 | 69.555 |
| 4ASRE063.69 | 16 | 11 | 28.18 | 21.8 | 42.73 | 4.55 | 41.82 | 3.81 | 79.74 |
| 4ASSP000.64 | 16 | 7.5 | 30 | 4.05 | 8.185 | 20.905 | 45.91 | 5.065 | 55.88 |

| StationID | TotTaxa | EPTTax | %Ephem | %PT-H | %Scrap | %Chiro | X%2Dom | HBI | VSCI |
|---|---|---|---|---|---|---|---|---|---|
| 4ASSP004.06 | 15 | 10.5 | 35.455 | 25 | 8.185 | 20 | 53.185 | 3.96 | 65.935 |
| 4ATKR010.54 | 15.5 | 7.5 | 31.475 | 2.4 | 57.2 | 19.97 | 62.78 | 4.68 | 62.26170939 |
| 4ATKR015.40 | 12.5 | 8 | 27.87 | 4.9 | 36.065 | 20.79 | 51.98 | 4.79 | 59.62179565 |
| 4ATRB000.97 | 17 | 7 | 28.18 | 7.75 | 25 | 21.365 | 40.91 | 4.695 | 62.29 |
| 4ATRD000.35 | 16.5 | 8.5 | 25.7 | 18.65 | 19.68 | 31.58 | 47.97 | 4.27 | 64.06 |
| 4AWEL000.59 | 13 | 7.5 | 23.45 | 1.05 | 19.115 | 20.8 | 55.4 | 5.12 | 52.615 |
| 4AWFE001.57 | 11.5 | 7 | 17.71 | 28.85 | 9.015 | 29.475 | 68.11 | 4.58 | 52.36 |
| 4AWLF001.20 | 12 | 5 | 35 | 0.9 | 12.275 | 13.18 | 53.635 | 4.875 | 51.41657511 |
| 4AWNN000.10 | 17.5 | 11 | 43.18 | 15.45 | 20.91 | 28.635 | 53.635 | 4.155 | 69.5558389 |
| 4AXMU001.98 | 18 | 12 | 25.41 | 32.8 | 22.13 | 14.75 | 41.8 | 3.74 | 77.46 |
| 4AXMV000.63 | 11.5 | 6 | 29.02 | 1.7 | 47.615 | 25.865 | 69.03 | 4.36 | 54.5657164 |
| 4AXMW001.48 | 15 | 8.5 | 14.795 | 30.2 | 2.38 | 34.26 | 52.99 | 4.04 | 60.06 |
| 4AXMX003.62 | 14.5 | 8 | 42.825 | 9.05 | 36.99 | 3.605 | 55.7 | 4.1 | 68.81 |
| 4AXMY000.22 | 20 | 10 | 19.395 | 21.65 | 29.89 | 14.025 | 35.68 | 3.695 | 75.34 |
| 4AXNA001.18 | 16.5 | 8 | 22.725 | 14.55 | 17.27 | 11.365 | 52.73 | 4.825 | 61.79712736 |
| 4AXNC000.10 | 20 | 9.5 | 12.725 | 30.45 | 21.82 | 22.725 | 39.545 | 4.165 | 71.97 |
| 4AXOD000.38 | 19.5 | 11 | 27.27 | 14.1 | 12.27 | 22.725 | 53.185 | 4.58 | 65.14 |
| 4AXOE001.26 | 20 | 14 | 24.09 | 31.8 | 25.455 | 13.635 | 32.725 | 3.755 | 79.615 |
| 4AXOF001.26 | 21 | 14.5 | 25.91 | 25.45 | 17.725 | 18.185 | 42.73 | 4.065 | 74.15 |
| 4AXOH000.06 | 18.5 | 12.5 | 41.36 | 15.45 | 17.275 | 3.635 | 50.455 | 4.065 | 72.54 |
| 4AXOL000.94 | 15.5 | 7.5 | 12.73 | 13.65 | 8.635 | 41.82 | 62.73 | 4.985 | 50.03 |
| 4AXSP001.93 | 20 | 10 | 26.82 | 28.2 | 21.82 | 17.73 | 42.73 | 3.75 | 72.025 |
| 4AXUO000.49 | 20 | 9 | 21.39 | 16.75 | 31.29 | 25.74 | 42.42 | 4.345 | 69.99343681 |
| 4AXUP000.06 | 13.5 | 6.5 | 19.77 | 9.05 | 9.605 | 40.96 | 66.95 | 5.17 | 47.06767709 |
| 4AXUS000.65 | 19 | 13 | 22.81 | 27.95 | 7.265 | 28.545 | 43.83 | 3.685 | 70.05 |
| 4AXUY000.58 | 18.5 | 3.5 | 4.125 | 2.8 | 4.57 | 64.59 | 71.025 | 5.87 | 34.175 |
| 4AXVK001.44 | 9.5 | 3 | 0 | 24.05 | 0 | 39.545 | 64.545 | 5.37 | 39.74 |
| 4AXVN001.55 | 20.5 | 11 | 16.82 | 24.55 | 6.365 | 39.095 | 61.815 | 4.295 | 61.2191608 |
| 4AXVO000.50 | 12.5 | 6 | 8.18 | 8.2 | 9.09 | 62.275 | 75 | 5.34 | 38.46 |
| 4AXVP000.20 | 20 | 9.5 | 16.82 | 20 | 15 | 29.095 | 43.635 | 3.985 | 66.55 |
| 4AXVQ000.77 | 9 | 3 | 3.635 | 1.8 | 4.09 | 74.545 | 87.73 | 5.765 | 24.08 |
| 4AXVV000.54 | 16 | 8.5 | 22.275 | 15 | 8.64 | 29.545 | 51.82 | 4.585 | 58.53 |
| 4BBIR002.57 | 18 | 13 | 42.725 | 26.85 | 9.545 | 10 | 42.275 | 3.95 | 76.26 |
| 4BELK000.96 | 18 | 11 | 35.455 | 14.5 | 32.275 | 6.82 | 47.275 | 4.175 | 74.195 |
| 5AALN001.50 | 21 | 11 | 37.275 | 12.25 | 24.09 | 35.455 | 54.09 | 4.435 | 67.36 |
| 5ABTR000.76 | 20 | 9 | 32.59 | 13.75 | 12.325 | 30.01 | 50.345 | 4.585 | 63.19316875 |
| 5AFNY004.78 | 7.5 | 1 | 0 | NA | 5.035 | 75.01 | 89.58 | 6.165 | 18.105 |
| 5AFON016.90 | 17.5 | 7 | 21.055 | 9.35 | 18.715 | 35.865 | 52.365 | 5.18 | 55.52545236 |
| 5AFRC011.93 | 17 | 4 | 4.545 | 1.35 | 8.635 | 56.36 | 68.18 | 5.925 | 36.39 |
| 5AHRA005.94 | 15 | 4.5 | 22.73 | 4.1 | 32.73 | 26.365 | 44.09 | 5.365 | 78.39 |
| 5AKIT002.65 | 16.5 | 4.5 | 2.185 | 1.95 | 4.085 | 66.765 | 79.8 | 5.96 | 31.85731176 |
| 5ALTG001.50 | 16 | 6.5 | 17.385 | 3.75 | 7.54 | 60.555 | 68.505 | 5.37 | 42.31021127 |

| StationID | TotTaxa | EPTTax | %Ephem | %PT-H | %Scrap | %Chiro | X%2Dom | HBI | VSCI |
|---|---|---|---|---|---|---|---|---|---|
| 5ALTL001.38 | 16 | 4.5 | 19.545 | 9.55 | 24.09 | 24.545 | 41.365 | 4.805 | 57.47 |
| 5AMHN104.12 | 13 | 8 | 27.27 | 11.8 | 14.09 | 45 | 64.09 | 4.95 | 52.255 |
| 5AMLL000.03 | 13 | 5.5 | 15.455 | 10 | 16.365 | 43.635 | 66.815 | 5.15 | 44.465 |
| 5AMRS002.93 | 19 | 6.5 | 26.365 | 20 | 7.275 | 21.82 | 43.18 | 4.305 | 62.92 |
| 5ANMR029.33 | 16 | 8 | 17.725 | 17.7 | 12.73 | 20 | 49.545 | 4.755 | 59.89132007 |
| 5ANTW103.18 | 17.5 | 8.5 | 19.09 | 15.2 | 51.36 | 12.345 | 54.62 | 4.14 | 67.23 |
| 5ANTW134.52 | 13.5 | 5 | 32.155 | 2.3 | 12.73 | 40.94 | 69.99 | 5.07 | 45.66366652 |
| 5ANTW153.04 | 19 | 10.5 | 20 | 18.15 | 15.91 | 47.275 | 59.095 | 4.72 | 60.73 |
| 5ARSK003.66 | 17 | 6.5 | 25.4 | 8.95 | 33.335 | 24.435 | 55.265 | 5.33 | 60.10011484 |
| 5ARYC003.04 | 14 | 6 | 27.27 | 1.8 | 12.73 | 58.64 | 71.82 | 5.205 | 43.18 |
| 5ARYR001.23 | 5.5 | 2 | 0.45 | NA | 0 | 47.875 | 82.665 | 5.995 | 21.365 |
| 5ATLR006.84 | 20 | 8 | 25 | 3.65 | 33.18 | 35.91 | 57.73 | 4.89 | 59.66788493 |
| 5AXHR000.32 | 14.5 | 6.5 | 7.625 | 56.3 | 1.695 | 15.61 | 67.27 | 2.725 | 59.05148184 |
| 5AXIA000.48 | 18.5 | 9 | 9.09 | 26.35 | 8.635 | 30 | 51.365 | 4.425 | 61.72 |
| 6ACNR018.89 | 9.5 | 4 | 4.285 | 11.45 | 33.88 | 27.38 | 65.76 | 4.755 | 48.00258783 |
| 6ACNW000.07 | 11.5 | 2.5 | 11.365 | 1.8 | 40 | 30.45 | 75.91 | 4.88 | 43.94 |
| 6ADIS022.34 | 11 | 6.5 | 28.18 | 3.15 | 14.545 | 15.455 | 60.455 | 5.025 | 50.89 |
| 6ADOT000.46 | 11.5 | 5.5 | 1.365 | 33.65 | 15.455 | 17.275 | 67.27 | 3.815 | 54.1918461 |
| 6AFOX001.69 | 14 | 7 | 22.53 | 22.15 | 37.805 | 6.855 | 42.895 | 3.675 | 71.2024398 |
| 6AFRY006.70 | 11 | 2.5 | 10.455 | NA | 12.73 | 34.545 | 62.275 | 5.345 | 37.86 |
| 6AGRF002.36 | 10.5 | 5 | 43.64 | 10 | 31.36 | 10.455 | 66.365 | 4.61 | 56.28 |
| 6ALEV138.19 | 15.5 | 7 | 13.355 | 15 | 15.81 | 12.25 | 56.88 | 5.81 | 52.24142857 |
| 6ALEV158.93 | 16 | 8 | 34.545 | 10.45 | 20 | 9.095 | 47.73 | 4.605 | 65.33502249 |
| 6AMCR005.94 | 13 | 6.5 | 55.91 | 3.6 | 7.275 | 13.64 | 56.82 | 4.52 | 57.86 |
| 6APAW001.22 | 16 | 9.5 | 21.82 | 35 | 12.73 | 4.545 | 48.185 | 3.77 | 71.59 |
| 6APNR034.58 | 8 | 3 | 2.04 | NA | 12.24 | 4.76 | 88.44 | 5.76 | 33.13 |
| 6ARPC002.45 | 13 | 4 | 5.56 | 0.7 | 19.255 | 31.695 | 74.1 | 5.515 | 39.33 |
| 6ASAT003.60 | 12.5 | 5 | 26.365 | 3.2 | 30 | 20.91 | 64.09 | 4.995 | 52.13399529 |
| 6ASAT011.43 | 13.5 | 5.5 | 36.82 | 2.25 | 38.18 | 14.09 | 48.185 | 4.525 | 61.08 |
| 6ASLV000.85 | 12 | 5.5 | 10.455 | 10 | 17.55 | 31.08 | 70.88 | 4.99 | 46.055 |
| 6BCLN320.68 | 12.5 | 6 | 37.725 | 3.15 | 43.185 | 9.09 | 40.455 | 4.33 | 64.42 |
| 6BHAR002.41 | 14 | 9 | 20.455 | 6.4 | 18.635 | 13.185 | 51.82 | 5.265 | 57.36 |
| 6BIDI009.04 | 17 | 9.5 | 47.725 | 28.65 | 20.91 | 9.095 | 52.275 | 3.575 | 74.315 |
| 6BLSR004.78 | 16.5 | 10 | 32.175 | 18.2 | 18.185 | 10.18 | 48.055 | 4.235 | 69.76553384 |
| 6BLTL003.31 | 12 | 6 | 25.91 | 0.9 | 53.18 | 15.45 | 51.365 | 4.65 | 59.255 |
| 6BLTR019.45 | 17.5 | 9.5 | 47.945 | 5.5 | 36.085 | 16.43 | 42.895 | 4.215 | 72.02608694 |
| 6BLTR022.98 | 14 | 8 | 51.815 | 5 | 29.09 | 15 | 37.73 | 4.225 | 68.905 |
| 6BLTR025.03 | 16.5 | 10 | 47.785 | 11.25 | 42.515 | 3.485 | 44.45 | 3.755 | 77.645 |
| 6BLUR000.60 | 13 | 8 | 42.23 | 6.8 | 30.195 | 12.595 | 51.065 | 4.32 | 64.995 |
| 6BMOL001.75 | 16 | 9.5 | 62.27 | 14.05 | 21.815 | 6.82 | 45.905 | 3.62 | 76.11 |
| 6BMTN003.94 | 15 | 7 | 36.365 | 4.55 | 51.365 | 9.09 | 41.365 | 4.225 | 70.25992669 |
| 6BPLL001.61 | 14 | 5.5 | 22.065 | 19.2 | 46.87 | 17.645 | 56.405 | 4.385 | 61.9349016 |

| StationID | TotTaxa | EPTTax | %Ephem | %PT-H | %Scrap | %Chiro | X%2Dom | HBI | VSCI |
|---|---|---|---|---|---|---|---|---|---|
| 6BPOW184.19 | 12 | 5 | 26.52 | 5 | 3.675 | 10.13 | 60.305 | 5.185 | 46.94877431 |
| 6BPWL020.93 | 19 | 9 | 10.91 | 15.45 | 14.55 | 35.91 | 49.09 | 5.16 | 58.35 |
| 6BSTC000.04 | 15 | 6 | 26.82 | 1.8 | 26.36 | 16.36 | 47.73 | 4.41 | 58.01 |
| 6BVAL002.86 | 16 | 8.5 | 25.455 | 15.45 | 36.82 | 5.455 | 40.45 | 4.365 | 71.22 |
| 6BWAL005.97 | 19.5 | 9 | 41.605 | 12.65 | 38 | 8.145 | 34.48 | 4.155 | 77.15206802 |
| 6BXGD000.01 | 13.5 | 6 | 13.635 | 2.7 | 18.635 | 3.635 | 74.095 | 6.295 | 46.275 |
| 6CBMC006.40 | 17.5 | 11.5 | 35.12 | 15.3 | 58.465 | 0.945 | 46.08 | 3.63 | 79.985 |
| 6CCOV002.54 | 15.5 | 8.5 | 51.82 | 4.55 | 44.55 | 8.18 | 50.455 | 4.155 | 73.08 |
| 6CGAS000.45 | 19.5 | 10.5 | 38.635 | 10.45 | 35.91 | 18.635 | 45 | 4.41 | 73.41 |
| 6CGRN003.29 | 9.5 | 5 | 19.05 | 4.4 | 39.03 | 2.82 | 62.6 | 4.775 | 54.185 |
| 6CHUT000.07 | 14.5 | 7 | 20.095 | 13.6 | 46.32 | 8.64 | 48.45 | 4.235 | 66.03137337 |
| 6CLAL000.19 | 18.5 | 10.5 | 43.18 | 6.8 | 23.18 | 8.635 | 36.82 | 4.32 | 70.825 |
| 6CLAL001.79 | 15 | 8.5 | 59.95 | 6.6 | 36.075 | 4.235 | 64.405 | 4.02 | 69.72347879 |
| 6CLIB001.06 | 17.5 | 10 | 36.365 | 15 | 34.09 | 15.455 | 41.815 | 3.705 | 74.895 |
| 6CMFH023.41 | 9 | 4.5 | 31.9 | 2 | 64.335 | 8.03 | 77.37 | 4.06 | 54.655 |
| 6CNFH067.13 | 15.5 | 8 | 10.25 | 8.2 | 50.56 | 23.79 | 60.18 | 4.465 | 60.135 |
| 6CPSM017.73 | 14 | 7 | 41.46 | 7.4 | 53.6 | 8.82 | 49.175 | 4.165 | 70.25417842 |
| 6CSFH082.78 | 16.5 | 10.5 | 42.275 | 15.9 | 39.545 | 4.545 | 42.725 | 3.615 | 78.70575876 |
| 6CSFH098.10 | 14.5 | 9.5 | 52.545 | 8.2 | 35.51 | 6.455 | 45.355 | 3.785 | 74.98560725 |
| 6CSFH099.18 | 17.5 | 10.5 | 46.82 | 18.2 | 38.635 | 2.73 | 39.09 | 3.71 | 81.90945824 |
| 6CSFH104.35 | 13.5 | 8 | 58.045 | 3.05 | 26.09 | 4.615 | 47.53 | 4.075 | 67.995 |
| 6CSPO001.45 | 18 | 11 | 44.09 | 15.95 | 26.815 | 5.455 | 41.82 | 3.88 | 77.31 |
| 6CSTC000.20 | 14 | 8.5 | 26.82 | 16.85 | 43.635 | 7.73 | 52.725 | 3.87 | 68.79 |
| 6CSTC000.87 | 14 | 8 | 37.055 | 6.4 | 38.14 | 6.345 | 54.825 | 4.035 | 67.34190006 |
| 6CSTU000.15 | 18.5 | 10.5 | 34.29 | 12.25 | 47.73 | 6.365 | 39.48 | 4.035 | 77.7474212 |
| 6CXEE000.72 | 12.5 | 8 | 4.825 | 71.05 | 6.74 | 7.155 | 53.95 | 2.555 | 63.735 |
| 6CXEO000.25 | 14 | 7.5 | 40 | 22.7 | 7.275 | 23.185 | 65 | 3.25 | 62.25 |
| 8-FRK005.53 | 12 | 6.5 | 24.09 | 15.9 | 16.365 | 13.185 | 42.725 | 4.685 | 59.65 |
| 8-LOC002.00 | 19 | 6 | 10.355 | 2.35 | 8.25 | 52.375 | 65.395 | 5.705 | 42.09438301 |
| 8-LRK000.11 | 17.5 | 7.5 | 58.165 | 5.25 | 10.84 | 17.16 | 63.935 | 4.57 | 61.06259701 |
| 8-NAR025.28 | 20.5 | 7 | 22.3 | 12.15 | 43.765 | 7.285 | 37.745 | 5.12 | 69.74 |
| 8-PGN002.42 | 14 | 6.5 | 18.35 | 29.3 | 18.9 | 14 | 46.11 | 4.22 | 63.63 |
| 8-POR015.70 | 15.5 | 4 | 38.715 | 1 | 31.5 | 11.315 | 43.245 | 5.285 | 59.77037697 |
| 8-POR024.64 | 16 | 7 | 36.905 | 12.9 | 38.325 | 14.805 | 46.62 | 4.395 | 68.97706346 |
| 8-RDB003.36 | 17 | 6.5 | 39.375 | 11.2 | 28.18 | 7.72 | 61.565 | 3.92 | 64.02441618 |
| 8-RIG003.01 | 14 | 6.5 | 38.635 | 14.1 | 22.275 | 8.18 | 44.09 | 4.505 | 65.24 |
| 8-RIG004.13 | 17 | 7 | 45.91 | 14.55 | 23.64 | 4.09 | 49.09 | 4.15 | 69.75 |
| 8-SAR028.79 | 20 | 9 | 29.09 | 20.9 | 12.73 | 17.27 | 36.36 | 4.38 | 70.14 |
| 8-SAR058.13 | 20 | 7 | 21.565 | 17.8 | 43.685 | 3.745 | 50.065 | 3.825 | 70.19959564 |
| 8-SAR094.59 | 22 | 8.5 | 37.725 | 9.1 | 32.725 | 20 | 39.545 | 4.52 | 71.42 |
| 8-STG000.73 | 13.5 | 5.5 | 4.545 | 29.55 | 21.36 | 22.73 | 50.455 | 4.24 | 58.5 |
| 8-XJE000.48 | 23 | 7.5 | 21.365 | 10.9 | 8.18 | 12.725 | 29.09 | 5.345 | 62.735 |

| StationID | TotTaxa | EPTTax | %Ephem | %PT-H | %Scrap | %Chiro | X%2Dom | HBI | VSCI |
|---|---|---|---|---|---|---|---|---|---|
| 9-CPL009.78 | 12.5 | 7 | 40.995 | 7.5 | 55.42 | 3.135 | 51.025 | 3.99 | 70.24 |
| 9-CPL012.73 | 14.5 | 9 | 36.475 | 12.5 | 51.925 | 8.955 | 47.475 | 4.115 | 74.23 |
| 9-CST005.73 | 12.5 | 5.5 | 38.635 | 5 | 37.27 | 18.18 | 56.36 | 4.785 | 58.81 |
| 9-CST012.63 | 13 | 4.5 | 45.905 | NA | 14.545 | 20.91 | 47.73 | 5.035 | 53.84 |
| 9-DEN000.39 | 15.5 | 8.5 | 25.91 | 4.55 | 19.09 | 34.55 | 51.365 | 5.01 | 56.12 |
| 9-ECM001.01 | 16 | 9.5 | 27.725 | 24.55 | 15.91 | 16.365 | 37.27 | 4.255 | 69.795 |
| 9-ELK013.81 | 9 | 4 | 18.68 | 12.1 | 13.16 | 30.195 | 65.135 | 5.095 | 42.825 |
| 9-FRS000.16 | 14 | 10.5 | 47.34 | 26 | 32.805 | 1.435 | 48.965 | 3.145 | 79.33211018 |
| 9-GSC000.44 | 15.5 | 8.5 | 28.32 | 9.75 | 50.855 | 13.215 | 51.995 | 4.285 | 67.91102139 |
| 9-ISL003.05 | 13.5 | 9 | 43.635 | 10.45 | 15.91 | 23.64 | 44.09 | 4.59 | 64.76545205 |
| 9-KNB003.98 | 13.5 | 6.5 | 28.91 | 12.05 | 38.595 | 6.045 | 52.56 | 4.14 | 65.62282643 |
| 9-KNS002.44 | 22 | 15.5 | 30.455 | 30.45 | 16.36 | 16.82 | 32.725 | 3.41 | 79.88 |
| 9-LEF005.25 | 15.5 | 10 | 26.97 | 23.4 | 25.925 | 11.17 | 50.575 | 3.94 | 71.35 |
| 9-LFK005.39 | 15.5 | 7.5 | 43.885 | 7.45 | 22.29 | 16.135 | 50.525 | 4.06 | 64.635 |
| 9-LRR012.30 | 13.5 | 6 | 5 | 20 | 15 | 29.09 | 53.64 | 4.44 | 53.625 |
| 9-LRV004.89 | 13 | 8 | 18.16 | 8.75 | 30.965 | 9.035 | 60.985 | 4.75 | 58.82 |
| 9-LRV035.03 | 13.5 | 6.5 | 6.585 | 15.9 | 26.835 | 9.955 | 56.125 | 4.555 | 58.03533789 |
| 9-LTL001.22 | 9 | 4 | 3.775 | 4.3 | 20.965 | 13.105 | 78.765 | 5.355 | 39.50210035 |
| 9-LVR007.16 | 18.5 | 10 | 21.82 | 15 | 39.545 | 20.455 | 43.635 | 4.335 | 70.27 |
| 9-LWK004.04 | 16.5 | 8.5 | 40.36 | 9.6 | 45.53 | 11.32 | 38.655 | 4.21 | 73.91 |
| 9-MLL000.90 | 12.5 | 9 | 60.91 | 10.9 | 27.275 | 7.275 | 52.275 | 3.995 | 70.55 |
| 9-PKC005.95 | 18.5 | 8 | 15.825 | 4.2 | 44.575 | 15.79 | 61.19 | 4.715 | 60.63093459 |
| 9-PLK000.79 | 19 | 12.5 | 30.91 | 27.7 | 14.09 | 13.18 | 39.545 | 3.55 | 76.37 |
| 9-RDC049.02 | 14 | 8.5 | 36.82 | 9.1 | 20.455 | 14.09 | 66.36 | 4.45 | 60.29 |
| 9-RDC051.21 | 11 | 5 | 13.49 | 39.2 | 21.48 | 13.065 | 57.76 | 3.48 | 61.47057153 |
| 9-RHC002.85 | 16.5 | 9 | 25.45 | 5.45 | 16.815 | 24.09 | 48.635 | 4.88 | 58.85 |
| 9-RIC038.67 | 21.5 | 11 | 22.05 | 23.65 | 40.735 | 15.03 | 36.155 | 4.21 | 80.19615651 |
| 9-RIC051.80 | 10.5 | 6.5 | 16.305 | 4.35 | 32.61 | 10.87 | 63.59 | 4.85 | 53.49127381 |
| 9-SFK002.81 | 16.5 | 9.5 | 30.095 | 15.6 | 13.33 | 26.075 | 52.7 | 4.365 | 63.53595468 |
| 9-SFK003.38 | 14.5 | 9.5 | 34.545 | 21.35 | 20.91 | 25.905 | 45 | 3.75 | 70.11499511 |
| 9-SMN001.14 | 12.5 | 6.5 | 50.265 | 7.55 | 51.92 | 2.72 | 61.665 | 4.4 | 68.04 |
| 9-SNC008.04 | 18 | 12.5 | 44.545 | 22.75 | 13.18 | 5.91 | 38.185 | 3.605 | 77.66227877 |
| 9-TOM006.92 | 17.5 | 9 | 34.555 | 7.6 | 37.88 | 8.72 | 39.675 | 4.315 | 71.805 |
| 9-WLK016.78 | 17 | 10 | 41.815 | 7.3 | 22.275 | 14.545 | 40.91 | 4.52 | 68.365 |
| 9-WLK033.29 | 12 | 7 | 34.09 | 6.35 | 26.82 | 14.545 | 47.725 | 4.41 | 60.86 |
| 9-WLK052.27 | 15 | 8.5 | 21.22 | 9.25 | 49.43 | 8.065 | 51.105 | 4.26 | 68.005 |
| 9-WNS001.03 | 14 | 7 | 15 | 33.6 | 15 | 13.635 | 52.725 | 3.775 | 61.595 |
| 9-XEO000.57 | 18 | 10 | 13.68 | 12.3 | 21.225 | 11.79 | 45.28 | 4.39 | 75.12287 |
| 9-XES000.94 | 7.5 | 2.5 | 0.5 | 7.45 | 60.78 | 19.445 | 80.22 | 4.56 | 45.95676618 |
| 9-XFH000.92 | 9 | 4 | 16.365 | 0.9 | 0.455 | 61.365 | 82.275 | 5.51 | 29.545 |

**Notes**

StationID = VDEQ station identifier
TotTaxa = Total number of distinct taxa; measure of richness
EPT Tax = Total number of distinct taxa belonging to Ephemeroptera, Plecoptera, or Trichoptera; measure of richness
%Ephem = Percent of individuals that are Ephemeroptera; measure of composition
%PT-H = Percent of individuals that are Plecoptera plus Trichoptera minus members of genus Hydropsychidae; measure of composition
%Scrap = Percent of individuals whose primarl functional mechanism for feeding is to graze on substrate- or periphyton-attached algae and associated material
%Chiro = Percent individuals that are Chironomidae; measure of composition
X%2Dom = Percent abundance of individuals in the two most ambundant taxa
HBI = Hilsenhoff Biotic Index (abundance-weighted average pollution tolerance at the family level)
VSCI = Virginia Stream Condition Index average of fall and spring values calculated by VDEQ

## Virginia Department of Environmental Quality Family-level Macroinvertebrate Count Data (Fall)

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1APIA003.51 | PIA2218R110 | 139 | 80 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BBGR004.08 | BGR2298R110 | 31.5 | 0.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BCBL002.86 | cbl5372R110 | 17 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 2 | 0 |
| 2BPRS001.90 | prs6442R110 | 20.5 | 30.182 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-LIJ003.06 | LIJ3211 | 129.5 | 59.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2-PRS003.23 | PRS5480 | 13 | 48.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 2 | 0 |
| 4ABLG001.95 | BLG6717R110 | 16 | 27.364 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4ADAN183.06 | DAN3371 | 44.7 | 22.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 |
| 4ADAN199.71 | DAN6462R110 | 45 | 43.455 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 |
| 4AIVV002.00 | IVV1654R110 | 54 | 37.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASCB005.38 | SCB5525 | 29 | 26.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 4AXOE001.26 | XOE4193R110 | 43 | 23.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 4AXOH000.06 | XOH6714R110 | 36 | 58.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4BBIR002.57 | BIR2745R110 | 30.5 | 57.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 4BELK000.96 | ELK2812R110 | 29 | 56.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH104.35 | SFH3885 | 156.5 | 53.889 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTU000.15 | STU5446 | 70.5 | 42.818 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6CXEE000.72 | XEE4084 | 9.55 | 86.852 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 2 | 0 |
| 9-CPL009.78 | CPL3887 | 237.85 | 43.275 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 9-CST005.73 | CST149R110 | 68.5 | 52.273 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 |
| 9-CST012.63 | CST4979R110 | 53.5 | 63.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-ECM001.01 | ECM2810R110 | 74.5 | 67.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 9-ELK013.81 | ELK3879 | 92.4 | 87.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-FRS000.16 | FRS5458 | 28.5 | 64.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 9-GSC000.44 | GSC4731 | 48 | 52.83 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-ISL003.05 | ISL1464R110 | 54.5 | 79.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-KNB003.98 | KNB5459 | 59.5 | 83.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-KNS002.44 | KNS142R110 | 13 | 35.909 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 9-LEF005.25 | LEF4111 | 88.2 | 65.455 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 9-LRV035.03 | LRV3372 | 77.475 | 82.157 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 47 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-LVR007.16 | LVR6581R110 | 88 | 45.636 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-RIC038.67 | RIC4730 | 37.5 | 58.679 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| 9-RIC051.80 | RIC3311 | 34.75 | 62.909 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 9-SMN001.14 | SMN4137 | 41.6 | 62.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XEO000.57 | xeo4117 | 52 | 41.759 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9-XFH000.92 | XFH3608R110 | 86.5 | 92.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AOPE028.72 | OPE1331R110 | 747 | 59.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1BBRY005.09 | BRY1332R110 | 49 | 27.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 |
| 1BCDR027.54 | CDR3215 | 137 | 44.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BGSR000.58 | gsr6405R110 | 242.5 | 42.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BHPY002.67 | HPY5341 | 188.5 | 40.636 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMDL025.92 | MDL99R110 | 367.5 | 53.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1BMIC001.99 | MIC3617 | 452.95 | 83.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMIL006.68 | mil3844R110 | 387.5 | 27.636 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMSS001.35 | mss5295R110 | 365.5 | 81.636 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BNFS093.80 | nfs6426R110 | 146.5 | 12.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BNTH046.56 | NTH4760 | 32.5 | 28.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 1BSMT001.53 | SMT5378 | 391 | 75.37 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSMT009.08 | SMT4790 | 497.5 | 86.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSTH005.36 | sth1341R110 | 268.5 | 50.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSTH013.58 | STH3631 | 204.5 | 51.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2ABLD014.73 | bld5370R110 | 269 | 60.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2AXQS001.07 | XQS4145 | 34.25 | 11.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BCC001.90 | BCC4117 | 117.5 | 17.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BLD012.09 | BLD5390 | 289 | 52.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CAT007.31 | CAT5527 | 437.5 | 51.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CAT028.98 | CAT1641R110 | 334 | 41.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CLL003.21 | CLL4770 | 300 | 40.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-CRG047.95 | CRG2657R110 | 125.5 | 29.818 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CRG074.32 | CRG1522R110 | 109 | 32 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CSR003.94 | CSR3850 | 109.165 | 28.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CWP006.87 | CWP3851 | 142.3 | 26.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-CWP042.31 | Cwp5452 | 148 | 28.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-DCK003.94 | DCK3384 | 28.57 | 29.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2-DDY000.75 | DDY3205 | 33 | 23.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2-HAM000.37 | HAM6713R110 | 355.5 | 23.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM3526R110 | 363.5 | 28.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HKY001.26 | HKY176R110 | 38 | 7.455 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HYS005.45 | HYS4773 | 423 | 61.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JED008.07 | JED6850R110 | 288.5 | 24.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 0 |
| 2-JKS076.16 | jks1344R110 | 205 | 29.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JOB013.77 | JOB3431R110 | 85.5 | 43.091 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-MIW003.45 | MIW3221 | 75 | 25.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2-MRY043.42 | MRY3647 | 126.5 | 27.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 7 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PMC000.59 | PMC1651R110 | 56 | 30.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 2-POT031.78 | POT178R110 | 88.5 | 13.091 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RGR001.11 | RGR3791 | 306.05 | 8.208 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-STV000.48 | STV3379 | 35.25 | 9.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-SWS000.90 | SWS5526 | 145.5 | 21.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 2-XUL001.67 | XUL5514 | 531 | 67.909 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4AGSH001.28 | GSH3643R110 | 507 | 31.636 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMSP000.96 | MSP5519 | 528 | 53.545 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 |
| 4ARNF015.22 | RNF1673R110 | 427.5 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AROA210.56 | ROA168R110 | 366 | 48.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARSF007.07 | RSF5520 | 299.5 | 51.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARSF007.29 | RSF3793 | 240.9 | 66.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 4ATKR010.54 | TKR4796 | 487 | 68.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4ATKR015.40 | TKR4937 | 485 | 78.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMV000.63 | XMV4939 | 434.5 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AXNC000.10 | XNC167R110 | 183.5 | 35.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 |
| 6BCLN320.68 | CLN6565R110 | 342.5 | 53.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BHAR002.41 | HAR6367R110 | 300 | 46.182 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTL003.31 | LTL3625R110 | 378 | 43.455 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTR019.45 | LTR5460 | 249.5 | 55.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BLTR022.98 | LTR4156R110 | 250 | 25.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6BLTR025.03 | LTR3877 | 252.25 | 35.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BMOL001.75 | MOL2813R110 | 273.5 | 47.636 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6BMTN003.94 | MTN1461R110 | 336.5 | 40.091 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BVAL002.86 | VAL146R110 | 304 | 37.545 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6BWAL005.97 | WAL4728 | 276 | 52.778 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 3 | 0 | 0 |
| 6BXGD000.01 | XGD141R110 | 372.5 | 62.273 | 0 | 0 | 0 | 0 | 0 | 0 | 71 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CBMC006.40 | BMC4110 | 331.2 | 46.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CCOV002.54 | COV4035R110 | 363 | 37.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CGAS000.45 | GAS6347R110 | 398 | 44.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6CGRN003.29 | GRN4751 | 400.5 | 72.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CHUT000.07 | HUT4733 | 328.5 | 84.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6CLAL000.19 | LAL2811R110 | 117.5 | 32.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 20 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLAL001.79 | LAL4729 | 79.5 | 46.471 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLIB001.06 | LIB138R110 | 58 | 51.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CMFH023.41 | MFH3876 | 331.2 | 60.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CNFH067.13 | NFH4098 | 388.55 | 46.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CPSM017.73 | PSM3310 | 351 | 50.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6CSFH082.78 | SFH1456R110 | 226.5 | 59.273 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6CSFH098.10 | SFH3309 | 176.5 | 27.037 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH099.18 | SFH1458R110 | 173 | 33.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6CSPO001.45 | SPO6628R110 | 319 | 64.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6CSTC000.20 | STC6626R110 | 322.5 | 69.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTC000.87 | STC3306 | 173.5 | 34.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6CXEO000.25 | XEO137R110 | 409.5 | 48.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 |
| 9-CPL012.73 | CPL4109 | 178.7 | 68.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-DEN000.39 | DEN5225R110 | 316.5 | 38.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LFK005.39 | LFK3886 | 45.75 | 55.818 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRV004.89 | LRV3789 | 90.585 | 58.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LTL001.22 | LTL4732 | 31.5 | 66.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LWK004.04 | LWK4138 | 100.55 | 37.818 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-MLL000.90 | MLL179R110 | 52.5 | 30.167 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-PKC005.95 | PKC3374 | 373.1 | 42.593 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-PLK000.79 | PLK5051R110 | 43 | 7.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 9-RDC049.02 | RDC4982R110 | 27.5 | 30.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-RDC051.21 | RDC4734 | 34 | 31.204 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 9-SFK002.81 | SFK3305 | 88.5 | 18.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 9-SFK003.38 | SFK1463R110 | 117 | 55.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 9-SNC008.04 | SNC1524R110 | 32 | 14.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 0 |
| 9-TOM006.92 | TOM4135 | 441 | 56.727 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK016.78 | WLK4153R110 | 261.5 | 19.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK033.29 | WLK2776R110 | 235 | 24.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK052.27 | WLK4134 | 277.4 | 41.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WNS001.03 | WNS139R110 | 141 | 28.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XES000.94 | XES5447 | 772.5 | 89.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 6ACNR018.89 | CNR5444 | 1167 | 82.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ACNW000.07 | CNW6597R110 | 996.5 | 49.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADIS022.34 | DIS5224R110 | 318 | 67.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADOT000.46 | DOT1462R110 | 1156 | 62.727 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6AFOX001.69 | FOX3298 | 227 | 39.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AFRY006.70 | FRY144R110 | 839 | 64.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AGRF002.36 | GRF3626R110 | 295 | 17.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ALEV138.19 | LEV4711 | 646 | 63.774 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ALEV158.93 | LEV1419 | 512.5 | 46.636 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AMCR005.94 | MCR4155R110 | 617.5 | 37.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6APAW001.22 | PAW140R110 | 507 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6APNR034.58 | PNR3878 | 1003.5 | 81.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ARPC002.45 | RPC3880 | 778.5 | 51.636 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT003.60 | SAT1454R110 | 574.5 | 39.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT011.43 | SAT5228R110 | 201.5 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASLV000.85 | SLV4097 | 189.2 | 64.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6BIDI009.04 | IDI147R110 | 118 | 52.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1 | 0 |
| 6BLSR004.78 | LSR3307 | 26.5 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6BLUR000.60 | LUR4099 | 265.2 | 60.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BPLL001.61 | PLL5457 | 207 | 62.727 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6BPOW184.19 | POW4715 | 910 | 53.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6BPWL020.93 | PWL5063R110 | 465.5 | 93.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| 6BSTC000.04 | STC145R110 | 202 | 46.727 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRR012.30 | LRR4047R110 | 318 | 95.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 9-RHC002.85 | RHC6708R110 | 266.5 | 27.455 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 |
| 1ACAX003.69 | CAX5269 | 191.5 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACAX003.81 | CAX3644R110 | 223 | 58.868 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACER005.02 | CER5198 | 157 | 51.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1ACER012.66 | CER6647R110 | 176 | 51.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1ACRM009.86 | CRM4022 | 114.9 | 83.091 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACUB004.63 | CUB128R110 | 753.5 | 51 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO018.17 | GOO3585R110 | 209.5 | 63.818 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO021.28 | GOO4657 | 151.5 | 85.091 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO036.47 | GOO4021 | 165.5 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO039.63 | GOO5220R110 | 165 | 80.273 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AKET012.22 | KET6822R110 | 329 | 71.091 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ALIV004.79 | LIV5323R110 | 126 | 61.455 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ANOF004.80 | NOF4647 | 263.5 | 29.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 |
| 1ANOG000.91 | NOG3146 | 149 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXGU000.18 | XGU3949 | 438.5 | 83.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXKR000.77 | XKR3592 | 183.95 | 57.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 24 | 0 | 0 |
| 2BGOW001.00 | gow6440R110 | 50.5 | 24.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2BMCM014.13 | mcm5373R110 | 54 | 74.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BVC003.09 | BVC4768 | 83.5 | 49.818 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXRK001.64 | XRK3904R110 | 34 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2-MCM003.32 | MCM102R110 | 82 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PRD004.42 | PRD4119 | 76.5 | 75.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 |
| 2-RKF015.42 | RKF3649 | 53.5 | 77.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RKF023.33 | RKF5483 | 71.5 | 64.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RKF026.13 | RKF3209 | 59.5 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2-SDV001.02 | SDV3885R110 | 121.5 | 80.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-SKM001.04 | SKM4784 | 120.5 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TLR000.52 | TLR4121 | 42 | 60.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WDC002.90 | WDC3223 | 43 | 59.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-BLU000.54 | BLU3659 | 121 | 80.545 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 |
| 3-BUC003.26 | BUC5270 | 88.5 | 73.585 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 3-CAE001.45 | CAE3579 | 101.5 | 90.727 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-CAE012.67 | CAE3645R110 | 200 | 60.182 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 0 |
| 3-FIK001.03 | FIK3273 | 43.3 | 69.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 3-HAZ035.32 | HAZ6664R110 | 40.5 | 64.909 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 3-MTN018.83 | MTN4023 | 231.45 | 80.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-RAP053.02 | RAP3946 | 47.05 | 83.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-ROB004.98 | ROB4641 | 75.5 | 56.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-RPP148.18 | RPP4658 | 92 | 76.364 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-THU006.90 | THU3147 | 97.3 | 97.818 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 |
| 3-WAF000.03 | WAF5315 | 86.5 | 66.909 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-XHU000.04 | XHU2222R110 | 126.5 | 88.727 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 2 | 0 | 0 | 0 |
| 8-RDB003.36 | RDB1336R110 | 165.5 | 70.182 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 0 |
| 8-RIG003.01 | RIG132R110 | 103 | 63.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 8-SAR094.59 | SAR5288R110 | 114 | 55.091 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1AAUA017.60 | AUA3657 | 109.7 | 65.455 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ABED009.37 | BED5615R110 | 48.5 | 62.182 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACHO003.47 | CHO127R110 | 115.5 | 86 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 1ALOE001.99 | LOE4018 | 156.5 | 55.926 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1APOH008.54 | POH2221R110 | 560.5 | 67.273 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXLB000.05 | XLB6823R110 | 151.5 | 60.364 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXMJ000.42 | XMJ4014R110 | 123.5 | 55.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 2-APP080.58 | APP4175 | 98.5 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 |
| 2BBAA003.06 | BAA1252R110 | 83.5 | 78.545 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 0 |
| 2-BCR007.68 | bcr4042R110 | 104 | 68.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 |
| 2-BFL011.64 | BFL5204 | 85 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 |
| 2-BGU005.95 | BGU3682 | 70.5 | 96.364 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-BRI007.80 | BRI3177 | 59.1 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2BRKR012.86 | rkr5374R110 | 47 | 82.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2-BSR012.33 | BSR6569R110 | 95 | 84.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| 2-BSR018.10 | BSR3679 | 115 | 66.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BWTN007.39 | WTN1304R110 | 26 | 81.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 |
| 2BXAC000.38 | XAC1302R110 | 18 | 24.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 42 | 1 | 0 |
| 2BXAD000.07 | XAD2187R110 | 57 | 45.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 2BXAP001.46 | XAP5554R110 | 137 | 88.909 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 2 | 3 | 3 | 0 |
| 2-BYN001.90 | BYN6811R110 | 174.5 | 77.273 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2DAPP050.84 | APP170R110 | 105 | 91.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2DAPP112.19 | APP4956R110 | 89 | 84.545 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 |
| 2DFSP000.30 | FSP53R110 | 52.5 | 84.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DWDY005.35 | WDY177R110 | 118 | 96.364 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DXAH000.79 | XAH4768R110 | 80.5 | 91.636 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 |
| 2-FLA012.22 | FLA3366 | 119.5 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 2-HRD002.06 | HRD98R110 | 62.5 | 69.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HUS001.88 | HUS3179 | 68.1 | 51.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-JOH004.23 | JOH3770 | 70 | 78.545 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 2-LIT004.77 | lit4041R110 | 99.5 | 89.909 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 0 |
| 2-NBS001.56 | NBS4159 | 53.8 | 87.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-NUT000.62 | NUT1477R110 | 131 | 72.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PLP002.24 | PLP4161 | 88 | 80.182 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-RED003.65 | RED3373 | 40.03 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RSM001.88 | RSM3769 | 60.5 | 76.818 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SFT019.02 | SFT5295 | 79.5 | 81.2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SLT003.00 | SLT4666 | 76.6 | 62.909 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-STW004.84 | STW2181R110 | 76.5 | 47.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-TYE008.77 | TYE3222 | 38 | 46.078 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2-TYE028.94 | TYE106R110 | 34 | 30.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WIC004.64 | WIC3230 | 71.5 | 67.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-WLL001.83 | WLL4667 | 44 | 86.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 |
| 2-WLM000.69 | WLM4668 | 103.5 | 48.455 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WLS023.10 | wls2682R110 | 197 | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-XVX000.62 | XVX3386 | 42.5 | 89.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 3-HAL002.72 | HAL130R110 | 130.5 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-LIA003.14 | LIA5014R110 | 135.5 | 52.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4AATD003.36 | ATD3687 | 73.06 | 59.545 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABAR001.74 | BAR3180 | 70.85 | 86.909 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 0 | 0 |
| 4ABAU011.17 | BAU3378 | 49.25 | 76.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 |
| 4ABCE000.87 | BCE4144 | 86.05 | 59.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABDB004.35 | BDB3563R110 | 89 | 99.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 |
| 4ABNN002.17 | BNN4026R110 | 97 | 82.909 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 |
| 4ABOE005.27 | BOE3430R110 | 79.5 | 50.636 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABOS000.13 | BOS3181 | 157.9 | 100 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 0 |
| 4ABST009.45 | BST6584R110 | 105.5 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABST014.94 | BST4575 | 129.5 | 100 | 1 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4ABTF003.11 | BTF5209 | 80 | 78.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 0 | 0 |
| 4ABVE002.18 | BVE5518 | 84.5 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 43 | 0 | 0 |
| 4ABWB000.32 | BWB5207 | 75.5 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4ABWR029.51 | BWR3380 | 86.89 | 71.863 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABWR045.01 | BWR3788 | 74.395 | 78.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACEC000.82 | CEC4940 | 82 | 58.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 4ACEC001.24 | CEC1653R110 | 66 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 4ACLB001.90 | CLB4162 | 130.5 | 67.273 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4ACNT003.84 | CNT1475R110 | 57.5 | 62.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACNT022.05 | CNT2660R110 | 48 | 56.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ADBC000.13 | dbc207R110 | 69 | 83.364 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADEV000.64 | DEV2182R110 | 107 | 58.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6 | 0 |
| 4AFAL006.61 | fal6719R110 | 109 | 78.909 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFRV017.85 | frv5264R110 | 70 | 73.818 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFSF004.02 | FSF3681 | 67.705 | 78.056 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGEO006.26 | geo2705R110 | 40.5 | 65.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AGSE015.07 | GSE4143 | 155.5 | 72 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 |
| 4AHLL000.45 | hll2643R110 | 77 | 87.273 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALBT003.07 | LBT3377 | 37.28 | 53.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4ALOR007.20 | LOR4804 | 205.5 | 74.909 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 |
| 4ALOR008.93 | LOR3453R110 | 167 | 90.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALPP004.52 | lpp5259R110 | 64 | 72.909 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 4ALWF007.13 | LWF5515 | 48 | 83.545 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AMBY001.33 | MBY5548 | 129.5 | 79.273 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 4AMEE017.24 | MEE6711R110 | 75 | 58.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AMEY006.72 | mey5261R110 | 85.5 | 79.909 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4AMFK000.52 | MFK3564 | 28.625 | 69.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 4AORR002.63 | ORR3375 | 61.14 | 48.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 23 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4APGG011.14 | PGG3524R110 | 80 | 77.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APGG042.21 | PGG182R110 | 102.5 | 53.273 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 4APGG063.32 | PGG2775R110 | 85.5 | 40.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 29 | 0 | 0 |
| 4APGG076.93 | PGG181R110 | 90.5 | 61.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 |
| 4APOP000.10 | POP3562R110 | 103.5 | 54.909 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 |
| 4ARAB003.64 | RAB3595R110 | 34 | 87.636 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 |
| 4ARKN003.68 | RKN5552 | 50.5 | 62.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AROC010.68 | ROC4665 | 80.5 | 84.909 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4ASCR003.33 | scr5424 | 87 | 73.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 |
| 4ASDA004.94 | SDA5209R110 | 81.5 | 62.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 8 | 0 | 0 |
| 4ASDE002.18 | SDE3897R110 | 82.5 | 89.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4ASDE002.65 | sde1321R110 | 69 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASMR002.77 | SMR3794 | 53.005 | 52.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 |
| 4ASMR017.72 | SMR5517 | 99 | 68.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ASMR023.52 | SMR5524 | 59.5 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 4ASNA002.84 | sna211R110 | 77.5 | 99.6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4ASRE063.69 | SRE4191R110 | 71 | 60.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 |
| 4ASSP000.64 | SSP3594R110 | 51 | 93.818 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 27 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASSP004.06 | ssp209R110 | 49 | 80.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 |
| 4ATRB000.97 | trb5262R110 | 60.5 | 73.909 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 4ATRD000.35 | TRD3684 | 44.9 | 86.909 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWEL000.59 | WEL3852 | 82.14 | 79.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AWFE001.57 | WFE4160 | 172 | 57.364 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4AWLF001.20 | WLF1526R110 | 83.5 | 56 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWNN000.10 | wnn1319R110 | 63.5 | 97.818 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMU001.98 | XMU3565 | 65.995 | 76.182 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 |
| 4AXMW001.48 | XMW4946 | 18 | 67.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMX003.62 | XMX4141 | 37.9 | 74.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4AXMY000.22 | XMY4140 | 31.65 | 60.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 |
| 4AXNA001.18 | XNA1675R110 | 62 | 38.909 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOD000.38 | XOD2659R110 | 127.5 | 66.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 |
| 4AXOF001.26 | XOF3642R110 | 19 | 45.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 4AXOL000.94 | XOL4154R110 | 55 | 48.182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXSP001.93 | XSP4351R110 | 44 | 33.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 1 | 0 |
| 4AXUO000.49 | XUO3382 | 85.845 | 64.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUP000.06 | XUP3182 | 54.895 | 65.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 0 |
| 4AXUS000.65 | XUS3686 | 45.75 | 67.636 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 |
| 4AXUY000.58 | XUY4158 | 131.5 | 79.273 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 |
| 4AXVK001.44 | xvk204R110 | 22.5 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVN001.55 | xvn1322R110 | 65.5 | 95 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVO000.50 | XVO3564R110 | 93 | 91.636 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 4AXVP000.20 | XVP4987R110 | 37.5 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| 4AXVQ000.77 | xvq5212R110 | 97 | 70.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 4AXVV000.54 | xvv6718R110 | 67.5 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| 5AALN001.50 | ALN6953R110 | 59.5 | 92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5ABTR000.76 | BTR5279 | 62 | 87.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AFNY004.78 | FNY3688 | 178.5 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 5AFON016.90 | FON4869 | 202.5 | 94.135 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AFRC011.93 | frc4043R110 | 68.5 | 94.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5AHRA005.94 | HRA5708R110 | 61 | 99.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 5AKIT002.65 | KIT3178 | 140 | 72.545 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 5ALTG001.50 | LTG5276 | 57.5 | 81.818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 |
| 5ALTL001.38 | LTL156R110 | 102.5 | 85.909 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 0 |
| 5AMHN104.12 | MHN47R110 | 90 | 96.364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMLL000.03 | mll4040R110 | 294.5 | 92.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | SpCond | Embed_PCT | Aeshnidae | Ameletidae | Amphipoda (unknown) | Ancylidae | Anisoptera (unknown) | Apataniidae | Asellidae | Athericidae | Baetidae | Baetiscidae | Belostomatidae | Blephariceridae | Brachycentridae | Branchiobdellidae | Caenidae | Calamoceratidae | Calopterygidae | Cambaridae | Capniidae | Ceratopogonidae | Chaoboridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5AMRS002.93 | MRS5710R110 | 129 | 91.636 | 1 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 7 | 0 | 0 |
| 5ANMR029.33 | NMR1303R110 | 79.5 | 74 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANTW103.18 | NTW3767 | 84.55 | 92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANTW134.52 | NTW4664 | 93.5 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANTW153.04 | NTW49R110 | 93 | 92.727 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5ARSK003.66 | RSK3388 | 66 | 94.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 5ARYC003.04 | RYC6792R110 | 73.5 | 91.636 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 |
| 5ARYR001.23 | RYR4169 | 107.35 | 68.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ATLR006.84 | TLR1518R110 | 77 | 71.182 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 |
| 5AXHR000.32 | XHR5208 | 95.25 | 50.727 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61 | 1 | 0 |
| 5AXIA000.48 | XIA2296R110 | 68.5 | 51.455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 |
| 8-FRK005.53 | FRK6260R110 | 117.5 | 39.636 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-LOC002.00 | LOC4868 | 59 | 92.364 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 |
| 8-LRK000.11 | LRK5278 | 50.5 | 48.545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 61 | 0 | 0 | 0 | 0 | 1 | 0 |
| 8-NAR025.28 | NAR3780 | 57.75 | 89 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-PGN002.42 | PGN4020 | 64.9 | 60.545 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 8-POR015.70 | POR3150 | 46.6 | 95.091 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 8-POR024.64 | POR5318 | 42 | 50.909 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RIG004.13 | RIG2223R110 | 89.5 | 60.545 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 8-SAR028.79 | SAR6824R110 | 105 | 67.909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR058.13 | SAR5322 | 90 | 57.818 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 |
| 8-STG000.73 | STG172R110 | 65 | 59.273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 26 | 0 | 0 |
| 8-XJE000.48 | XJE2224R110 | 89 | 97.636 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 9 | 0 | 0 | 0 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1APIA003.51 | PIA2218R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 20 | 0 | 0 | 0 |
| 1BBGR004.08 | BGR2298R110 | 15 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 3 |
| 2BCBL002.86 | cbl5372R110 | 10 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 2BPRS001.90 | prs6442R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 5 |
| 2-LIJ003.06 | LIJ3211 | 8 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 |
| 2-PRS003.23 | PRS5480 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 1 |
| 4ABLG001.95 | BLG6717R110 | 1 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 14 |
| 4ADAN183.06 | DAN3371 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 13 |
| 4ADAN199.71 | DAN6462R110 | 18 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 14 |
| 4AIVV002.00 | IVV1654R110 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 1 | 0 | 0 |
| 4ASCB005.38 | SCB5525 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 12 | 0 | 0 | 7 |
| 4AXOE001.26 | XOE4193R110 | 19 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 |
| 4AXOH000.06 | XOH6714R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 |
| 4BBIR002.57 | BIR2745R110 | 11 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 12 |
| 4BELK000.96 | ELK2812R110 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 2 |
| 6CSFH104.35 | SFH3885 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6CSTU000.15 | STU5446 | 9 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 6CXEE000.72 | XEE4084 | 11 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-CPL009.78 | CPL3887 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 3 |
| 9-CST005.73 | CST149R110 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 |
| 9-CST012.63 | CST4979R110 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 2 | 0 | 3 |
| 9-ECM001.01 | ECM2810R110 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 9-ELK013.81 | ELK3879 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 1 | 0 | 0 |
| 9-FRS000.16 | FRS5458 | 2 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 9 |
| 9-GSC000.44 | GSC4731 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 | 0 | 2 |
| 9-ISL003.05 | ISL1464R110 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 12 |
| 9-KNB003.98 | KNB5459 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 1 | 0 | 11 |
| 9-KNS002.44 | KNS142R110 | 25 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| 9-LEF005.25 | LEF4111 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 1 |
| 9-LRV035.03 | LRV3372 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 | 0 | 0 |
| 9-LVR007.16 | LVR6581R110 | 11 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 0 | 1 |
| 9-RIC038.67 | RIC4730 | 6 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 1 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RIC051.80 | RIC3311 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 | 0 | 0 |
| 9-SMN001.14 | SMN4137 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-XEO000.57 | xeo4117 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 |
| 9-XFH000.92 | XFH3608R110 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1AOPE028.72 | OPE1331R110 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 0 | 0 |
| 1BBRY005.09 | BRY1332R110 | 42 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1BCDR027.54 | CDR3215 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| 1BGSR000.58 | gsr6405R110 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 1 | 0 | 0 |
| 1BHPY002.67 | HPY5341 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMDL025.92 | MDL99R110 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 1 | 0 | 4 |
| 1BMIC001.99 | MIC3617 | 9 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 1 | 0 | 1 |
| 1BMIL006.68 | mil3844R110 | 39 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1BMSS001.35 | mss5295R110 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 2 | 0 | 10 |
| 1BNFS093.80 | nfs6426R110 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 2 |
| 1BNTH046.56 | NTH4760 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 8 |
| 1BSMT001.53 | SMT5378 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 6 |
| 1BSMT009.08 | SMT4790 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 12 |
| 1BSTH005.36 | sth1341R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 3 |
| 1BSTH013.58 | STH3631 | 3 | 0 | 0 | 0 | 12 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 10 |
| 2ABLD014.73 | bld5370R110 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 |
| 2AXQS001.07 | XQS4145 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-BCC001.90 | BCC4117 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 8 |
| 2-BLD012.09 | BLD5390 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 |
| 2-CAT007.31 | CAT5527 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 4 |
| 2-CAT028.98 | CAT1641R110 | 22 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 1 |
| 2-CLL003.21 | CLL4770 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-CRG047.95 | CRG2657R110 | 3 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 3 |
| 2-CRG074.32 | CRG1522R110 | 6 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 4 |
| 2-CSR003.94 | CSR3850 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 2-CWP006.87 | CWP3851 | 2 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 0 |
| 2-CWP042.31 | Cwp5452 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 4 |
| 2-DCK003.94 | DCK3384 | 16 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 7 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-DDY000.75 | DDY3205 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM6713R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 33 |
| 2-HAM000.37 | HAM3526R110 | 17 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 12 |
| 2-HKY001.26 | HKY176R110 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 2-HYS005.45 | HYS4773 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 5 |
| 2-JED008.07 | JED6850R110 | 18 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 17 |
| 2-JKS076.16 | jks1344R110 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 1 | 0 | 10 |
| 2-JOB013.77 | JOB3431R110 | 10 | 0 | 0 | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 2-MIW003.45 | MIW3221 | 18 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| 2-MRY043.42 | MRY3647 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 5 |
| 2-PMC000.59 | PMC1651R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 5 | 1 | 0 | 4 |
| 2-POT031.78 | POT178R110 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 11 |
| 2-RGR001.11 | RGR3791 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 4 |
| 2-STV000.48 | STV3379 | 8 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 2-SWS000.90 | SWS5526 | 14 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 2-XUL001.67 | XUL5514 | 35 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 26 | 0 | 0 | 5 |
| 4AGSH001.28 | GSH3643R110 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 1 |
| 4AMSP000.96 | MSP5519 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 10 |
| 4ARNF015.22 | RNF1673R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 0 | 0 | 2 |
| 4AROA210.56 | ROA168R110 | 5 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 4ARSF007.07 | RSF5520 | 3 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | 0 | 0 | 9 |
| 4ARSF007.29 | RSF3793 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 1 |
| 4ATKR010.54 | TKR4796 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 0 |
| 4ATKR015.40 | TKR4937 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 1 |
| 4AXMV000.63 | XMV4939 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | 0 | 0 | 20 |
| 4AXNC000.10 | XNC167R110 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6BCLN320.68 | CLN6565R110 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 |
| 6BHAR002.41 | HAR6367R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 10 |
| 6BLTL003.31 | LTL3625R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 1 |
| 6BLTR019.45 | LTR5460 | 16 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 10 |
| 6BLTR022.98 | LTR4156R110 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 18 |
| 6BLTR025.03 | LTR3877 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 3 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BMOL001.75 | MOL2813R110 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 6BMTN003.94 | MTN1461R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 7 |
| 6BVAL002.86 | VAL146R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 2 |
| 6BWAL005.97 | WAL4728 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 10 |
| 6BXGD000.01 | XGD141R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 6CBMC006.40 | BMC4110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 1 | 0 | 0 |
| 6CCOV002.54 | COV4035R110 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 2 |
| 6CGAS000.45 | GAS6347R110 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 1 |
| 6CGRN003.29 | GRN4751 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 |
| 6CHUT000.07 | HUT4733 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51 | 0 | 0 | 0 |
| 6CLAL000.19 | LAL2811R110 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 0 |
| 6CLAL001.79 | LAL4729 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 3 |
| 6CLIB001.06 | LIB138R110 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 10 |
| 6CMFH023.41 | MFH3876 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 73 | 0 | 0 | 0 |
| 6CNFH067.13 | NFH4098 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 |
| 6CPSM017.73 | PSM3310 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 |
| 6CSFH082.78 | SFH1456R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 2 |
| 6CSFH098.10 | SFH3309 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 1 |
| 6CSFH099.18 | SFH1458R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 3 |
| 6CSPO001.45 | SPO6628R110 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 36 |
| 6CSTC000.20 | STC6626R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 0 | 0 |
| 6CSTC000.87 | STC3306 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 0 |
| 6CXEO000.25 | XEO137R110 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9-CPL012.73 | CPL4109 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 2 |
| 9-DEN000.39 | DEN5225R110 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 9-LFK005.39 | LFK3886 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 9-LRV004.89 | LRV3789 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 |
| 9-LTL001.22 | LTL4732 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 9-LWK004.04 | LWK4138 | 8 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 9-MLL000.90 | MLL179R110 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 9-PKC005.95 | PKC3374 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 81 | 0 | 0 | 0 |
| 9-PLK000.79 | PLK5051R110 | 8 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 1 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RDC049.02 | RDC4982R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 9-RDC051.21 | RDC4734 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 22 | 0 | 0 | 0 |
| 9-SFK002.81 | SFK3305 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-SFK003.38 | SFK1463R110 | 7 | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 5 |
| 9-SNC008.04 | SNC1524R110 | 8 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 9-TOM006.92 | TOM4135 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 3 |
| 9-WLK016.78 | WLK4153R110 | 18 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 1 |
| 9-WLK033.29 | WLK2776R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 18 |
| 9-WLK052.27 | WLK4134 | 9 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 1 |
| 9-WNS001.03 | WNS139R110 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 |
| 9-XES000.94 | XES5447 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60 | 1 | 0 | 0 |
| 6ACNR018.89 | CNR5444 | 10 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 0 | 0 | 0 |
| 6ACNW000.07 | CNW6597R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 58 | 0 | 0 | 0 |
| 6ADIS022.34 | DIS5224R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 6ADOT000.46 | DOT1462R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 |
| 6AFOX001.69 | FOX3298 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 |
| 6AFRY006.70 | FRY144R110 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 6 | 0 | 0 |
| 6AGRF002.36 | GRF3626R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 |
| 6ALEV138.19 | LEV4711 | 8 | 0 | 0 | 0 | 3 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 |
| 6ALEV158.93 | LEV1419 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 |
| 6AMCR005.94 | MCR4155R110 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 |
| 6APAW001.22 | PAW140R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 1 | 0 | 0 |
| 6APNR034.58 | PNR3878 | 7 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 6ARPC002.45 | RPC3880 | 2 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 0 | 0 |
| 6ASAT003.60 | SAT1454R110 | 24 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 1 | 0 | 0 |
| 6ASAT011.43 | SAT5228R110 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 0 |
| 6ASLV000.85 | SLV4097 | 1 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 6BIDI009.04 | IDI147R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 1 |
| 6BLSR004.78 | LSR3307 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 6BLUR000.60 | LUR4099 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 2 |
| 6BPLL001.61 | PLL5457 | 6 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 |
| 6BPOW184.19 | POW4715 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BPWL020.93 | PWL5063R110 | 34 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 17 | 5 | 0 | 0 |
| 6BSTC000.04 | STC145R110 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 1 | 0 | 2 |
| 9-LRR012.30 | LRR4047R110 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2 | 0 | 3 |
| 9-RHC002.85 | RHC6708R110 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 |
| 1ACAX003.69 | CAX5269 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1ACAX003.81 | CAX3644R110 | 3 | 0 | 0 | 0 | 2 | 0 | 9 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 1 |
| 1ACER005.02 | CER5198 | 3 | 0 | 0 | 0 | 12 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 1ACER012.66 | CER6647R110 | 15 | 0 | 0 | 0 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| 1ACRM009.86 | CRM4022 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 34 | 0 | 0 | 1 |
| 1ACUB004.63 | CUB128R110 | 4 | 0 | 0 | 0 | 8 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 1AGOO018.17 | GOO3585R110 | 10 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 34 | 0 | 0 | 0 |
| 1AGOO021.28 | GOO4657 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 15 | 0 | 0 | 0 |
| 1AGOO036.47 | GOO4021 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 4 | 0 | 0 | 0 |
| 1AGOO039.63 | GOO5220R110 | 4 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 37 | 0 | 0 | 0 |
| 1AKET012.22 | KET6822R110 | 1 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 1ALIV004.79 | LIV5323R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 1ANOF004.80 | NOF4647 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 |
| 1ANOG000.91 | NOG3146 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 13 | 0 | 0 | 0 |
| 1AXGU000.18 | XGU3949 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 12 | 0 | 0 | 0 |
| 1AXKR000.77 | XKR3592 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 0 | 0 | 0 |
| 2BGOW001.00 | gow6440R110 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 6 |
| 2BMCM014.13 | mcm5373R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-BVC003.09 | BVC4768 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 2 |
| 2BXRK001.64 | XRK3904R110 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 20 | 0 | 0 | 1 |
| 2-MCM003.32 | MCM102R110 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 5 |
| 2-PRD004.42 | PRD4119 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 2 |
| 2-RKF015.42 | RKF3649 | 7 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 0 | 0 | 2 |
| 2-RKF023.33 | RKF5483 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 2 |
| 2-RKF026.13 | RKF3209 | 10 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 2-SDV001.02 | SDV3885R110 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 1 | 0 | 0 |
| 2-SKM001.04 | SKM4784 | 17 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 2 |
| 2-TLR000.52 | TLR4121 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 0 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-WDC002.90 | WDC3223 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 1 |
| 3-BLU000.54 | BLU3659 | 8 | 0 | 0 | 0 | 16 | 0 | 2 | 0 | 2 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 0 |
| 3-BUC003.26 | BUC5270 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 |
| 3-CAE001.45 | CAE3579 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 12 | 0 | 0 | 0 |
| 3-CAE012.67 | CAE3645R110 | 5 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 9 | 0 | 0 | 7 |
| 3-FIK001.03 | FIK3273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 3-HAZ035.32 | HAZ6664R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 |
| 3-MTN018.83 | MTN4023 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 3-RAP053.02 | RAP3946 | 3 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 2 |
| 3-ROB004.98 | ROB4641 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 2 |
| 3-RPP148.18 | RPP4658 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 0 | 0 |
| 3-THU006.90 | THU3147 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 |
| 3-WAF000.03 | WAF5315 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-XHU000.04 | XHU2222R110 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RDB003.36 | RDB1336R110 | 16 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 |
| 8-RIG003.01 | RIG132R110 | 9 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 8-SAR094.59 | SAR5288R110 | 20 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 1AAUA017.60 | AUA3657 | 11 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 1ABED009.37 | BED5615R110 | 18 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 |
| 1ACHO003.47 | CHO127R110 | 5 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 3 | 0 | 0 | 1 |
| 1ALOE001.99 | LOE4018 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 1APOH008.54 | POH2221R110 | 22 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 |
| 1AXLB000.05 | XLB6823R110 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXMJ000.42 | XMJ4014R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 2-APP080.58 | APP4175 | 26 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 2 |
| 2BBAA003.06 | BAA1252R110 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 1 | 0 | 8 |
| 2-BCR007.68 | bcr4042R110 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 |
| 2-BFL011.64 | BFL5204 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 1 |
| 2-BGU005.95 | BGU3682 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 1 |
| 2-BRI007.80 | BRI3177 | 87 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 2BRKR012.86 | rkr5374R110 | 5 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 16 |
| 2-BSR012.33 | BSR6569R110 | 14 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 1 | 0 | 3 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-BSR018.10 | BSR3679 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BWTN007.39 | WTN1304R110 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 11 | 0 | 0 | 0 |
| 2BXAC000.38 | XAC1302R110 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 |
| 2BXAD000.07 | XAD2187R110 | 17 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 2 | 0 | 0 |
| 2BXAP001.46 | XAP5554R110 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 7 | 0 | 0 | 0 |
| 2-BYN001.90 | BYN6811R110 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 |
| 2DAPP050.84 | APP170R110 | 28 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 2DAPP112.19 | APP4956R110 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 0 |
| 2DFSP000.30 | FSP53R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 0 |
| 2DWDY005.35 | WDY177R110 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 21 |
| 2DXAH000.79 | XAH4768R110 | 50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 3 |
| 2-FLA012.22 | FLA3366 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 1 |
| 2-HRD002.06 | HRD98R110 | 13 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 2-HUS001.88 | HUS3179 | 12 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| 2-JOH004.23 | JOH3770 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 |
| 2-LIT004.77 | lit4041R110 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |
| 2-NBS001.56 | NBS4159 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 0 | 0 |
| 2-NUT000.62 | NUT1477R110 | 16 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| 2-PLP002.24 | PLP4161 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 2 |
| 2-RED003.65 | RED3373 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 2-RSM001.88 | RSM3769 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-SFT019.02 | SFT5295 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-SLT003.00 | SLT4666 | 24 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 |
| 2-STW004.84 | STW2181R110 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 |
| 2-TYE008.77 | TYE3222 | 28 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 36 |
| 2-TYE028.94 | TYE106R110 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 1 |
| 2-WIC004.64 | WIC3230 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 8 |
| 2-WLL001.83 | WLL4667 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 |
| 2-WLM000.69 | WLM4668 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 2-WLS023.10 | wls2682R110 | 49 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 0 |
| 2-XVX000.62 | XVX3386 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 |
| 3-HAL002.72 | HAL130R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-LIA003.14 | LIA5014R110 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 |
| 4AATD003.36 | ATD3687 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABAR001.74 | BAR3180 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | 1 | 0 | 1 |
| 4ABAU011.17 | BAU3378 | 20 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 11 |
| 4ABCE000.87 | BCE4144 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 4ABDB004.35 | BDB3563R110 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 |
| 4ABNN002.17 | BNN4026R110 | 42 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 18 |
| 4ABOE005.27 | BOE3430R110 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ABOS000.13 | BOS3181 | 65 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 |
| 4ABST009.45 | BST6584R110 | 13 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ABST014.94 | BST4575 | 19 | 0 | 0 | 0 | 5 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 8 |
| 4ABTF003.11 | BTF5209 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 |
| 4ABVE002.18 | BVE5518 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4ABWB000.32 | BWB5207 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 8 |
| 4ABWR029.51 | BWR3380 | 8 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 4 |
| 4ABWR045.01 | BWR3788 | 26 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 21 | 0 | 0 | 0 |
| 4ACEC000.82 | CEC4940 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 1 |
| 4ACEC001.24 | CEC1653R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 2 |
| 4ACLB001.90 | CLB4162 | 51 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 4ACNT003.84 | CNT1475R110 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 |
| 4ACNT022.05 | CNT2660R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 0 |
| 4ADBC000.13 | dbc207R110 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 |
| 4ADEV000.64 | DEV2182R110 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 |
| 4AFAL006.61 | fal6719R110 | 26 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AFRV017.85 | frv5264R110 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 0 | 0 |
| 4AFSF004.02 | FSF3681 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 0 | 0 |
| 4AGEO006.26 | geo2705R110 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 4AGSE015.07 | GSE4143 | 2 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 1 |
| 4AHLL000.45 | hll2643R110 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 1 | 0 | 0 |
| 4ALBT003.07 | LBT3377 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 0 |
| 4ALOR007.20 | LOR4804 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 4ALOR008.93 | LOR3453R110 | 44 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 0 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4ALPP004.52 | lpp5259R110 | 19 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 |
| 4ALWF007.13 | LWF5515 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 2 |
| 4AMBY001.33 | MBY5548 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 |
| 4AMEE017.24 | MEE6711R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 |
| 4AMEY006.72 | mey5261R110 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 4AMFK000.52 | MFK3564 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 21 |
| 4AORR002.63 | ORR3375 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 0 |
| 4APGG011.14 | PGG3524R110 | 10 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4APGG042.21 | PGG182R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 |
| 4APGG063.32 | PGG2775R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 |
| 4APGG076.93 | PGG181R110 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 0 | 2 |
| 4APOP000.10 | POP3562R110 | 8 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 4ARAB003.64 | RAB3595R110 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 4ARKN003.68 | RKN5552 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 |
| 4AROC010.68 | ROC4665 | 45 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 7 |
| 4ASCR003.33 | scr5424 | 16 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 4ASDA004.94 | SDA5209R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 2 |
| 4ASDE002.18 | SDE3897R110 | 56 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 15 |
| 4ASDE002.65 | sde1321R110 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 0 | 14 |
| 4ASMR002.77 | SMR3794 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 4 |
| 4ASMR017.72 | SMR5517 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 0 |
| 4ASMR023.52 | SMR5524 | 8 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 1 | 0 | 7 |
| 4ASNA002.84 | sna211R110 | 11 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 2 |
| 4ASRE063.69 | SRE4191R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 4 |
| 4ASSP000.64 | SSP3594R110 | 17 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 4ASSP004.06 | ssp209R110 | 19 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 7 |
| 4ATRB000.97 | trb5262R110 | 11 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 0 |
| 4ATRD000.35 | TRD3684 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 4AWEL000.59 | WEL3852 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 1 |
| 4AWFE001.57 | WFE4160 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWLF001.20 | WLF1526R110 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AWNN000.10 | wnn1319R110 | 30 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 1 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4AXMU001.98 | XMU3565 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 2 |
| 4AXMW001.48 | XMW4946 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 3 | 0 | 0 | 15 |
| 4AXMX003.62 | XMX4141 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 |
| 4AXMY000.22 | XMY4140 | 23 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 |
| 4AXNA001.18 | XNA1675R110 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 |
| 4AXOD000.38 | XOD2659R110 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 8 | 0 | 0 | 5 |
| 4AXOF001.26 | XOF3642R110 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 |
| 4AXOL000.94 | XOL4154R110 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 4AXSP001.93 | XSP4351R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 6 |
| 4AXUO000.49 | XUO3382 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 |
| 4AXUP000.06 | XUP3182 | 28 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 |
| 4AXUS000.65 | XUS3686 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 4AXUY000.58 | XUY4158 | 59 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| 4AXVK001.44 | xvk204R110 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4AXVN001.55 | xvn1322R110 | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 4 |
| 4AXVO000.50 | XVO3564R110 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 3 |
| 4AXVP000.20 | XVP4987R110 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 3 | 1 | 0 | 16 |
| 4AXVQ000.77 | xvq5212R110 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 4AXVV000.54 | xvv6718R110 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 |
| 5AALN001.50 | ALN6953R110 | 22 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 5 |
| 5ABTR000.76 | BTR5279 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 5AFNY004.78 | FNY3688 | 83 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 5AFON016.90 | FON4869 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 1 |
| 5AFRC011.93 | frc4043R110 | 61 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 |
| 5AHRA005.94 | HRA5708R110 | 36 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 |
| 5AKIT002.65 | KIT3178 | 76 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 |
| 5ALTG001.50 | LTG5276 | 63 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 6 |
| 5ALTL001.38 | LTL156R110 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 19 | 0 | 0 | 19 |
| 5AMHN104.12 | MHN47R110 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 |
| 5AMLL000.03 | mll4040R110 | 41 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 5AMRS002.93 | MRS5710R110 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 5 |
| 5ANMR029.33 | NMR1303R110 | 5 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 |

| StationID | BenSampID | Chironomidae (A) | Chironomidae (B) | Chloroperlidae | Chrysomelidae | Coenagrionidae | Coleoptera (unknown) | Corbiculidae | Cordulegastridae | Corduliidae | Corixidae | Corydalidae | Crambidae | Crangonyctidae | Culicidae | Curculionidae | Dipseudopsidae | Diptera (unknown) | Dixidae | Dolichopodidae | Dryopidae | Dytiscidae | Elmidae | Empididae | Enchytraeidae | Ephemerellidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5ANTW103.18 | NTW3767 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 0 |
| 5ANTW134.52 | NTW4664 | 68 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 5ANTW153.04 | NTW49R110 | 56 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 0 | 5 |
| 5ARSK003.66 | RSK3388 | 36 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 5ARYC003.04 | RYC6792R110 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| 5ARYR001.23 | RYR4169 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5ATLR006.84 | TLR1518R110 | 26 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 32 | 0 | 0 | 11 |
| 5AXHR000.32 | XHR5208 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 5AXIA000.48 | XIA2296R110 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 2 |
| 8-FRK005.53 | FRK6260R110 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 0 |
| 8-LOC002.00 | LOC4868 | 49 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 2 |
| 8-LRK000.11 | LRK5278 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 |
| 8-NAR025.28 | NAR3780 | 5 | 0 | 0 | 0 | 4 | 0 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 |
| 8-PGN002.42 | PGN4020 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 |
| 8-POR015.70 | POR3150 | 9 | 0 | 0 | 0 | 1 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-POR024.64 | POR5318 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 |
| 8-RIG004.13 | RIG2223R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR028.79 | SAR6824R110 | 19 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 |
| 8-SAR058.13 | SAR5322 | 1 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 0 | 0 | 0 |
| 8-STG000.73 | STG172R110 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 8-XJE000.48 | XJE2224R110 | 11 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1APIA003.51 | PIA2218R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BBGR004.08 | BGR2298R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BCBL002.86 | cbl5372R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BPRS001.90 | prs6442R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-LIJ003.06 | LIJ3211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PRS003.23 | PRS5480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABLG001.95 | BLG6717R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADAN183.06 | DAN3371 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADAN199.71 | DAN6462R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AIVV002.00 | IVV1654R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASCB005.38 | SCB5525 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOE001.26 | XOE4193R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOH000.06 | XOH6714R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4BBIR002.57 | BIR2745R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4BELK000.96 | ELK2812R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 2 | 0 | 0 | 0 |
| 6CSFH104.35 | SFH3885 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTU000.15 | STU5446 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CXEE000.72 | XEE4084 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CPL009.78 | CPL3887 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CST005.73 | CST149R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CST012.63 | CST4979R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9-ECM001.01 | ECM2810R110 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-ELK013.81 | ELK3879 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-FRS000.16 | FRS5458 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-GSC000.44 | GSC4731 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-ISL003.05 | ISL1464R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-KNB003.98 | KNB5459 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 |
| 9-KNS002.44 | KNS142R110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LEF005.25 | LEF4111 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-LRV035.03 | LRV3372 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LVR007.16 | LVR6581R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-RIC038.67 | RIC4730 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RIC051.80 | RIC3311 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SMN001.14 | SMN4137 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XEO000.57 | xeo4117 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XFH000.92 | XFH3608R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AOPE028.72 | OPE1331R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1BBRY005.09 | BRY1332R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1BCDR027.54 | CDR3215 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1BGSR000.58 | gsr6405R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BHPY002.67 | HPY5341 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 2 | 0 | 0 | 0 |
| 1BMDL025.92 | MDL99R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMIC001.99 | MIC3617 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1BMIL006.68 | mil3844R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMSS001.35 | mss5295R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 6 | 0 | 0 | 0 |
| 1BNFS093.80 | nfs6426R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BNTH046.56 | NTH4760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSMT001.53 | SMT5378 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSMT009.08 | SMT4790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSTH005.36 | sth1341R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSTH013.58 | STH3631 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2ABLD014.73 | bld5370R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2AXQS001.07 | XQS4145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BCC001.90 | BCC4117 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BLD012.09 | BLD5390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CAT007.31 | CAT5527 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 1 | 1 | 0 | 0 |
| 2-CAT028.98 | CAT1641R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CLL003.21 | CLL4770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CRG047.95 | CRG2657R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CRG074.32 | CRG1522R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CSR003.94 | CSR3850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CWP006.87 | CWP3851 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CWP042.31 | Cwp5452 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-DCK003.94 | DCK3384 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-DDY000.75 | DDY3205 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM6713R110 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM3526R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HKY001.26 | HKY176R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HYS005.45 | HYS4773 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JED008.07 | JED6850R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JKS076.16 | jks1344R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JOB013.77 | JOB3431R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-MIW003.45 | MIW3221 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-MRY043.42 | MRY3647 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-PMC000.59 | PMC1651R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-POT031.78 | POT178R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RGR001.11 | RGR3791 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2-STV000.48 | STV3379 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SWS000.90 | SWS5526 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-XUL001.67 | XUL5514 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGSH001.28 | GSH3643R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMSP000.96 | MSP5519 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARNF015.22 | RNF1673R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AROA210.56 | ROA168R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARSF007.07 | RSF5520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARSF007.29 | RSF3793 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATKR010.54 | TKR4796 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATKR015.40 | TKR4937 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMV000.63 | XMV4939 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXNC000.10 | XNC167R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BCLN320.68 | CLN6565R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BHAR002.41 | HAR6367R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTL003.31 | LTL3625R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTR019.45 | LTR5460 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 18 | 0 | 0 | 2 | 0 | 0 | 0 |
| 6BLTR022.98 | LTR4156R110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTR025.03 | LTR3877 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BMOL001.75 | MOL2813R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BMTN003.94 | MTN1461R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BVAL002.86 | VAL146R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BWAL005.97 | WAL4728 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6BXGD000.01 | XGD141R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6CBMC006.40 | BMC4110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CCOV002.54 | COV4035R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CGAS000.45 | GAS6347R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CGRN003.29 | GRN4751 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CHUT000.07 | HUT4733 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLAL000.19 | LAL2811R110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLAL001.79 | LAL4729 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLIB001.06 | LIB138R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6CMFH023.41 | MFH3876 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CNFH067.13 | NFH4098 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CPSM017.73 | PSM3310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH082.78 | SFH1456R110 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH098.10 | SFH3309 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH099.18 | SFH1458R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSPO001.45 | SPO6628R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTC000.20 | STC6626R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTC000.87 | STC3306 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CXEO000.25 | XEO137R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CPL012.73 | CPL4109 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-DEN000.39 | DEN5225R110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LFK005.39 | LFK3886 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRV004.89 | LRV3789 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LTL001.22 | LTL4732 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LWK004.04 | LWK4138 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-MLL000.90 | MLL179R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-PKC005.95 | PKC3374 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-PLK000.79 | PLK5051R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RDC049.02 | RDC4982R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-RDC051.21 | RDC4734 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SFK002.81 | SFK3305 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SFK003.38 | SFK1463R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 4 | 0 | 0 | 0 |
| 9-SNC008.04 | SNC1524R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-TOM006.92 | TOM4135 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK016.78 | WLK4153R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 23 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-WLK033.29 | WLK2776R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK052.27 | WLK4134 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WNS001.03 | WNS139R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9-XES000.94 | XES5447 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ACNR018.89 | CNR5444 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ACNW000.07 | CNW6597R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADIS022.34 | DIS5224R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADOT000.46 | DOT1462R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6AFOX001.69 | FOX3298 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AFRY006.70 | FRY144R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 6AGRF002.36 | GRF3626R110 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ALEV138.19 | LEV4711 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 |
| 6ALEV158.93 | LEV1419 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6AMCR005.94 | MCR4155R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6APAW001.22 | PAW140R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6APNR034.58 | PNR3878 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ARPC002.45 | RPC3880 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT003.60 | SAT1454R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT011.43 | SAT5228R110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASLV000.85 | SLV4097 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BIDI009.04 | IDI147R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLSR004.78 | LSR3307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLUR000.60 | LUR4099 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BPLL001.61 | PLL5457 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BPOW184.19 | POW4715 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BPWL020.93 | PWL5063R110 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BSTC000.04 | STC145R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRR012.30 | LRR4047R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-RHC002.85 | RHC6708R110 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACAX003.69 | CAX5269 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACAX003.81 | CAX3644R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1ACER005.02 | CER5198 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 |
| 1ACER012.66 | CER6647R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1ACRM009.86 | CRM4022 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACUB004.63 | CUB128R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1AGOO018.17 | GOO3585R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 3 | 0 | 0 | 1 |
| 1AGOO021.28 | GOO4657 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO036.47 | GOO4021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO039.63 | GOO5220R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 12 | 0 | 0 | 1 |
| 1AKET012.22 | KET6822R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1ALIV004.79 | LIV5323R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 |
| 1ANOF004.80 | NOF4647 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ANOG000.91 | NOG3146 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXGU000.18 | XGU3949 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1AXKR000.77 | XKR3592 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2BGOW001.00 | gow6440R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BMCM014.13 | mcm5373R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BVC003.09 | BVC4768 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXRK001.64 | XRK3904R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-MCM003.32 | MCM102R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-PRD004.42 | PRD4119 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RKF015.42 | RKF3649 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RKF023.33 | RKF5483 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-RKF026.13 | RKF3209 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-SDV001.02 | SDV3885R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2-SKM001.04 | SKM4784 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TLR000.52 | TLR4121 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-WDC002.90 | WDC3223 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-BLU000.54 | BLU3659 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-BUC003.26 | BUC5270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 1 | 0 | 0 | 0 |
| 3-CAE001.45 | CAE3579 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-CAE012.67 | CAE3645R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 0 |
| 3-FIK001.03 | FIK3273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-HAZ035.32 | HAZ6664R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 3-MTN018.83 | MTN4023 | 0 | 0 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 3-RAP053.02 | RAP3946 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-ROB004.98 | ROB4641 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 1 | 0 | 0 |
| 3-RPP148.18 | RPP4658 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-THU006.90 | THU3147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-WAF000.03 | WAF5315 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-XHU000.04 | XHU2222R110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RDB003.36 | RDB1336R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 9 | 0 | 0 | 0 |
| 8-RIG003.01 | RIG132R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR094.59 | SAR5288R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 5 | 0 | 0 | 0 |
| 1AAUA017.60 | AUA3657 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ABED009.37 | BED5615R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACHO003.47 | CHO127R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1ALOE001.99 | LOE4018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1APOH008.54 | POH2221R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXLB000.05 | XLB6823R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 |
| 1AXMJ000.42 | XMJ4014R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-APP080.58 | APP4175 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BBAA003.06 | BAA1252R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-BCR007.68 | bcr4042R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BFL011.64 | BFL5204 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BGU005.95 | BGU3682 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BRI007.80 | BRI3177 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BRKR012.86 | rkr5374R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-BSR012.33 | BSR6569R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 2 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-BSR018.10 | BSR3679 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BWTN007.39 | WTN1304R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAC000.38 | XAC1302R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAD000.07 | XAD2187R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAP001.46 | XAP5554R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2-BYN001.90 | BYN6811R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DAPP050.84 | APP170R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2DAPP112.19 | APP4956R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2DFSP000.30 | FSP53R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DWDY005.35 | WDY177R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DXAH000.79 | XAH4768R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-FLA012.22 | FLA3366 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 1 | 0 | 1 |
| 2-HRD002.06 | HRD98R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HUS001.88 | HUS3179 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JOH004.23 | JOH3770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-LIT004.77 | lit4041R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-NBS001.56 | NBS4159 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-NUT000.62 | NUT1477R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 2 | 1 | 0 | 0 |
| 2-PLP002.24 | PLP4161 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RED003.65 | RED3373 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RSM001.88 | RSM3769 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SFT019.02 | SFT5295 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SLT003.00 | SLT4666 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 |
| 2-STW004.84 | STW2181R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-TYE008.77 | TYE3222 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TYE028.94 | TYE106R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-WIC004.64 | WIC3230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WLL001.83 | WLL4667 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WLM000.69 | WLM4668 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WLS023.10 | wls2682R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-XVX000.62 | XVX3386 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-HAL002.72 | HAL130R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-LIA003.14 | LIA5014R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AATD003.36 | ATD3687 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABAR001.74 | BAR3180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABAU011.17 | BAU3378 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ABCE000.87 | BCE4144 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABDB004.35 | BDB3563R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ABNN002.17 | BNN4026R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABOE005.27 | BOE3430R110 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4ABOS000.13 | BOS3181 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABST009.45 | BST6584R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABST014.94 | BST4575 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABTF003.11 | BTF5209 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ABVE002.18 | BVE5518 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABWB000.32 | BWB5207 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 3 | 0 | 0 | 0 |
| 4ABWR029.51 | BWR3380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABWR045.01 | BWR3788 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACEC000.82 | CEC4940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACEC001.24 | CEC1653R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACLB001.90 | CLB4162 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACNT003.84 | CNT1475R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ACNT022.05 | CNT2660R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADBC000.13 | dbc207R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4ADEV000.64 | DEV2182R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AFAL006.61 | fal6719R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFRV017.85 | frv5264R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFSF004.02 | FSF3681 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGEO006.26 | geo2705R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGSE015.07 | GSE4143 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4AHLL000.45 | hll2643R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALBT003.07 | LBT3377 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALOR007.20 | LOR4804 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALOR008.93 | LOR3453R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4ALPP004.52 | lpp5259R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALWF007.13 | LWF5515 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMBY001.33 | MBY5548 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMEE017.24 | MEE6711R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMEY006.72 | mey5261R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMFK000.52 | MFK3564 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AORR002.63 | ORR3375 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4APGG011.14 | PGG3524R110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 3 | 0 | 0 | 0 |
| 4APGG042.21 | PGG182R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APGG063.32 | PGG2775R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APGG076.93 | PGG181R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APOP000.10 | POP3562R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARAB003.64 | RAB3595R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARKN003.68 | RKN5552 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AROC010.68 | ROC4665 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASCR003.33 | scr5424 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDA004.94 | SDA5209R110 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDE002.18 | SDE3897R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ASDE002.65 | sde1321R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASMR002.77 | SMR3794 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASMR017.72 | SMR5517 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASMR023.52 | SMR5524 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4ASNA002.84 | sna211R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASRE063.69 | SRE4191R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASSP000.64 | SSP3594R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 4 | 0 | 0 | 0 |
| 4ASSP004.06 | ssp209R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATRB000.97 | trb5262R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ATRD000.35 | TRD3684 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWEL000.59 | WEL3852 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWFE001.57 | WFE4160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWLF001.20 | WLF1526R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AWNN000.10 | wnn1319R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4AXMU001.98 | XMU3565 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMW001.48 | XMW4946 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMX003.62 | XMX4141 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMY000.22 | XMY4140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXNA001.18 | XNA1675R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AXOD000.38 | XOD2659R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AXOF001.26 | XOF3642R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4AXOL000.94 | XOL4154R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXSP001.93 | XSP4351R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUO000.49 | XUO3382 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUP000.06 | XUP3182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUS000.65 | XUS3686 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUY000.58 | XUY4158 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVK001.44 | xvk204R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVN001.55 | xvn1322R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVO000.50 | XVO3564R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVP000.20 | XVP4987R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVQ000.77 | xvq5212R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVV000.54 | xvv6718R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AALN001.50 | ALN6953R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 1 | 0 | 0 | 0 |
| 5ABTR000.76 | BTR5279 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 0 |
| 5AFNY004.78 | FNY3688 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AFON016.90 | FON4869 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 |
| 5AFRC011.93 | frc4043R110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 |
| 5AHRA005.94 | HRA5708R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 5 | 0 | 0 |
| 5AKIT002.65 | KIT3178 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ALTG001.50 | LTG5276 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 3 | 0 | 0 | 0 |
| 5ALTL001.38 | LTL156R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 5AMHN104.12 | MHN47R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMLL000.03 | mll4040R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMRS002.93 | MRS5710R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 |
| 5ANMR029.33 | NMR1303R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 0 |

| StationID | BenSampID | Ephemeridae | Ephemeroptera (unknown) | Ephydridae | Erpobdellidae | Gammaridae | Gastropoda (unknown) | Gerridae | Glossiphoniidae | Glossosomatidae | Goeridae | Gomphidae | Gyrinidae | Haliplidae | Haplotaxidae | Hebridae | Helicopsychidae | Helodidae | Hemiptera (unknown) | Heptageniidae | Hirudinea (unknown) | Hirudinidae | Hydracarina (unknown) | Hydrobiidae | Hydrometridae | Hydrophilidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5ANTW103.18 | NTW3767 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 5ANTW134.52 | NTW4664 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 2 |
| 5ANTW153.04 | NTW49R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ARSK003.66 | RSK3388 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 3 | 0 | 0 |
| 5ARYC003.04 | RYC6792R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ARYR001.23 | RYR4169 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ATLR006.84 | TLR1518R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 0 |
| 5AXHR000.32 | XHR5208 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 5AXIA000.48 | XIA2296R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| 8-FRK005.53 | FRK6260R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-LOC002.00 | LOC4868 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 8-LRK000.11 | LRK5278 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 2 | 0 | 0 | 0 |
| 8-NAR025.28 | NAR3780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-PGN002.42 | PGN4020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-POR015.70 | POR3150 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-POR024.64 | POR5318 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RIG004.13 | RIG2223R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR028.79 | SAR6824R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR058.13 | SAR5322 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 13 | 0 | 0 |
| 8-STG000.73 | STG172R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-XJE000.48 | XJE2224R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1APIA003.51 | PIA2218R110 | 41 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BBGR004.08 | BGR2298R110 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BCBL002.86 | cbl5372R110 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BPRS001.90 | prs6442R110 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-LIJ003.06 | LIJ3211 | 24 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PRS003.23 | PRS5480 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABLG001.95 | BLG6717R110 | 17 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADAN183.06 | DAN3371 | 31 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADAN199.71 | DAN6462R110 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 4AIVV002.00 | IVV1654R110 | 18 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASCB005.38 | SCB5525 | 9 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOE001.26 | XOE4193R110 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOH000.06 | XOH6714R110 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4BBIR002.57 | BIR2745R110 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4BELK000.96 | ELK2812R110 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6CSFH104.35 | SFH3885 | 34 | 0 | 4 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTU000.15 | STU5446 | 12 | 0 | 2 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6CXEE000.72 | XEE4084 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CPL009.78 | CPL3887 | 13 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CST005.73 | CST149R110 | 21 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 9-CST012.63 | CST4979R110 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 9-ECM001.01 | ECM2810R110 | 22 | 0 | 5 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-ELK013.81 | ELK3879 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-FRS000.16 | FRS5458 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-GSC000.44 | GSC4731 | 10 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-ISL003.05 | ISL1464R110 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 9-KNB003.98 | KNB5459 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-KNS002.44 | KNS142R110 | 13 | 0 | 0 | 0 | 2 | 0 | 0 | 14 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LEF005.25 | LEF4111 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRV035.03 | LRV3372 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LVR007.16 | LVR6581R110 | 13 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-RIC038.67 | RIC4730 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RIC051.80 | RIC3311 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SMN001.14 | SMN4137 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XEO000.57 | xeo4117 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XFH000.92 | XFH3608R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AOPE028.72 | OPE1331R110 | 28 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BBRY005.09 | BRY1332R110 | 7 | 0 | 1 | 0 | 6 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BCDR027.54 | CDR3215 | 5 | 8 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BGSR000.58 | gsr6405R110 | 29 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BHPY002.67 | HPY5341 | 34 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 1BMDL025.92 | MDL99R110 | 15 | 1 | 2 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMIC001.99 | MIC3617 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMIL006.68 | mil3844R110 | 48 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMSS001.35 | mss5295R110 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1BNFS093.80 | nfs6426R110 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BNTH046.56 | NTH4760 | 22 | 1 | 4 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSMT001.53 | SMT5378 | 8 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSMT009.08 | SMT4790 | 22 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSTH005.36 | sth1341R110 | 22 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSTH013.58 | STH3631 | 7 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2ABLD014.73 | bld5370R110 | 29 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2AXQS001.07 | XQS4145 | 10 | 0 | 0 | 0 | 1 | 0 | 0 | 25 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BCC001.90 | BCC4117 | 6 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BLD012.09 | BLD5390 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CAT007.31 | CAT5527 | 19 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CAT028.98 | CAT1641R110 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CLL003.21 | CLL4770 | 33 | 0 | 13 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CRG047.95 | CRG2657R110 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CRG074.32 | CRG1522R110 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CSR003.94 | CSR3850 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CWP006.87 | CWP3851 | 17 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2-CWP042.31 | Cwp5452 | 14 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-DCK003.94 | DCK3384 | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-DDY000.75 | DDY3205 | 49 | 0 | 0 | 0 | 2 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM6713R110 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM3526R110 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HKY001.26 | HKY176R110 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HYS005.45 | HYS4773 | 25 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JED008.07 | JED6850R110 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JKS076.16 | jks1344R110 | 17 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JOB013.77 | JOB3431R110 | 7 | 0 | 5 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-MIW003.45 | MIW3221 | 9 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-MRY043.42 | MRY3647 | 20 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PMC000.59 | PMC1651R110 | 21 | 0 | 8 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2-POT031.78 | POT178R110 | 23 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RGR001.11 | RGR3791 | 38 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-STV000.48 | STV3379 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SWS000.90 | SWS5526 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-XUL001.67 | XUL5514 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4AGSH001.28 | GSH3643R110 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMSP000.96 | MSP5519 | 15 | 0 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARNF015.22 | RNF1673R110 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AROA210.56 | ROA168R110 | 9 | 2 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARSF007.07 | RSF5520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARSF007.29 | RSF3793 | 4 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATKR010.54 | TKR4796 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATKR015.40 | TKR4937 | 21 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMV000.63 | XMV4939 | 4 | 0 | 9 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXNC000.10 | XNC167R110 | 15 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BCLN320.68 | CLN6565R110 | 11 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BHAR002.41 | HAR6367R110 | 36 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTL003.31 | LTL3625R110 | 16 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTR019.45 | LTR5460 | 7 | 1 | 19 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTR022.98 | LTR4156R110 | 12 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTR025.03 | LTR3877 | 16 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BMOL001.75 | MOL2813R110 | 14 | 0 | 8 | 0 | 0 | 0 | 0 | 1 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BMTN003.94 | MTN1461R110 | 18 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BVAL002.86 | VAL146R110 | 18 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BWAL005.97 | WAL4728 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 6BXGD000.01 | XGD141R110 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CBMC006.40 | BMC4110 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CCOV002.54 | COV4035R110 | 5 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CGAS000.45 | GAS6347R110 | 13 | 0 | 5 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CGRN003.29 | GRN4751 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CHUT000.07 | HUT4733 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLAL000.19 | LAL2811R110 | 24 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLAL001.79 | LAL4729 | 26 | 1 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLIB001.06 | LIB138R110 | 5 | 0 | 3 | 0 | 0 | 0 | 0 | 23 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CMFH023.41 | MFH3876 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CNFH067.13 | NFH4098 | 10 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CPSM017.73 | PSM3310 | 5 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH082.78 | SFH1456R110 | 10 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH098.10 | SFH3309 | 6 | 0 | 13 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH099.18 | SFH1458R110 | 11 | 0 | 6 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6CSPO001.45 | SPO6628R110 | 23 | 0 | 6 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6CSTC000.20 | STC6626R110 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTC000.87 | STC3306 | 21 | 0 | 6 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CXEO000.25 | XEO137R110 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CPL012.73 | CPL4109 | 19 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-DEN000.39 | DEN5225R110 | 14 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LFK005.39 | LFK3886 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRV004.89 | LRV3789 | 35 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LTL001.22 | LTL4732 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LWK004.04 | LWK4138 | 14 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-MLL000.90 | MLL179R110 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-PKC005.95 | PKC3374 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-PLK000.79 | PLK5051R110 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RDC049.02 | RDC4982R110 | 52 | 0 | 0 | 0 | 1 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 9-RDC051.21 | RDC4734 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SFK002.81 | SFK3305 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SFK003.38 | SFK1463R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SNC008.04 | SNC1524R110 | 19 | 0 | 1 | 0 | 1 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-TOM006.92 | TOM4135 | 33 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK016.78 | WLK4153R110 | 15 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK033.29 | WLK2776R110 | 22 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK052.27 | WLK4134 | 28 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WNS001.03 | WNS139R110 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 9-XES000.94 | XES5447 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ACNR018.89 | CNR5444 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ACNW000.07 | CNW6597R110 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADIS022.34 | DIS5224R110 | 67 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADOT000.46 | DOT1462R110 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AFOX001.69 | FOX3298 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AFRY006.70 | FRY144R110 | 46 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AGRF002.36 | GRF3626R110 | 20 | 8 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6ALEV138.19 | LEV4711 | 28 | 0 | 7 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ALEV158.93 | LEV1419 | 31 | 3 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AMCR005.94 | MCR4155R110 | 27 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6APAW001.22 | PAW140R110 | 42 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6APNR034.58 | PNR3878 | 113 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6ARPC002.45 | RPC3880 | 93 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT003.60 | SAT1454R110 | 21 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT011.43 | SAT5228R110 | 12 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 6ASLV000.85 | SLV4097 | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BIDI009.04 | IDI147R110 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6BLSR004.78 | LSR3307 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLUR000.60 | LUR4099 | 27 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BPLL001.61 | PLL5457 | 2 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6BPOW184.19 | POW4715 | 61 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BPWL020.93 | PWL5063R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 6BSTC000.04 | STC145R110 | 25 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRR012.30 | LRR4047R110 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 9-RHC002.85 | RHC6708R110 | 17 | 0 | 10 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACAX003.69 | CAX5269 | 36 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACAX003.81 | CAX3644R110 | 18 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACER005.02 | CER5198 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACER012.66 | CER6647R110 | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACRM009.86 | CRM4022 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACUB004.63 | CUB128R110 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1AGOO018.17 | GOO3585R110 | 0 | 1 | 0 | 0 | 0 | 6 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO021.28 | GOO4657 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO036.47 | GOO4021 | 12 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO039.63 | GOO5220R110 | 3 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AKET012.22 | KET6822R110 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ALIV004.79 | LIV5323R110 | 14 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ANOF004.80 | NOF4647 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ANOG000.91 | NOG3146 | 31 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXGU000.18 | XGU3949 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXKR000.77 | XKR3592 | 16 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BGOW001.00 | gow6440R110 | 24 | 0 | 6 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2BMCM014.13 | mcm5373R110 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BVC003.09 | BVC4768 | 26 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXRK001.64 | XRK3904R110 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-MCM003.32 | MCM102R110 | 44 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PRD004.42 | PRD4119 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RKF015.42 | RKF3649 | 5 | 1 | 1 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RKF023.33 | RKF5483 | 7 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RKF026.13 | RKF3209 | 36 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SDV001.02 | SDV3885R110 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2-SKM001.04 | SKM4784 | 37 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TLR000.52 | TLR4121 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-WDC002.90 | WDC3223 | 28 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-BLU000.54 | BLU3659 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-BUC003.26 | BUC5270 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-CAE001.45 | CAE3579 | 14 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-CAE012.67 | CAE3645R110 | 21 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-FIK001.03 | FIK3273 | 27 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-HAZ035.32 | HAZ6664R110 | 18 | 0 | 6 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-MTN018.83 | MTN4023 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-RAP053.02 | RAP3946 | 4 | 0 | 10 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-ROB004.98 | ROB4641 | 33 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-RPP148.18 | RPP4658 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-THU006.90 | THU3147 | 9 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-WAF000.03 | WAF5315 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-XHU000.04 | XHU2222R110 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RDB003.36 | RDB1336R110 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RIG003.01 | RIG132R110 | 12 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR094.59 | SAR5288R110 | 6 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AAUA017.60 | AUA3657 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ABED009.37 | BED5615R110 | 12 | 0 | 0 | 0 | 0 | 1 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACHO003.47 | CHO127R110 | 33 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ALOE001.99 | LOE4018 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1APOH008.54 | POH2221R110 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 1AXLB000.05 | XLB6823R110 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXMJ000.42 | XMJ4014R110 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-APP080.58 | APP4175 | 9 | 0 | 4 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BBAA003.06 | BAA1252R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BCR007.68 | bcr4042R110 | 9 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BFL011.64 | BFL5204 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BGU005.95 | BGU3682 | 19 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BRI007.80 | BRI3177 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BRKR012.86 | rkr5374R110 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2-BSR012.33 | BSR6569R110 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-BSR018.10 | BSR3679 | 19 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BWTN007.39 | WTN1304R110 | 8 | 0 | 2 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAC000.38 | XAC1302R110 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAD000.07 | XAD2187R110 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAP001.46 | XAP5554R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 2-BYN001.90 | BYN6811R110 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DAPP050.84 | APP170R110 | 16 | 0 | 4 | 0 | 0 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DAPP112.19 | APP4956R110 | 13 | 0 | 2 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DFSP000.30 | FSP53R110 | 9 | 0 | 16 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DWDY005.35 | WDY177R110 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DXAH000.79 | XAH4768R110 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-FLA012.22 | FLA3366 | 7 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HRD002.06 | HRD98R110 | 19 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HUS001.88 | HUS3179 | 20 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JOH004.23 | JOH3770 | 49 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-LIT004.77 | lit4041R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-NBS001.56 | NBS4159 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-NUT000.62 | NUT1477R110 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PLP002.24 | PLP4161 | 14 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RED003.65 | RED3373 | 48 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RSM001.88 | RSM3769 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 2-SFT019.02 | SFT5295 | 5 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SLT003.00 | SLT4666 | 11 | 0 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-STW004.84 | STW2181R110 | 14 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TYE008.77 | TYE3222 | 22 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TYE028.94 | TYE106R110 | 60 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WIC004.64 | WIC3230 | 39 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WLL001.83 | WLL4667 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WLM000.69 | WLM4668 | 16 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WLS023.10 | wls2682R110 | 5 | 0 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-XVX000.62 | XVX3386 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-HAL002.72 | HAL130R110 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-LIA003.14 | LIA5014R110 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 4AATD003.36 | ATD3687 | 16 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABAR001.74 | BAR3180 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABAU011.17 | BAU3378 | 48 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABCE000.87 | BCE4144 | 93 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABDB004.35 | BDB3563R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABNN002.17 | BNN4026R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABOE005.27 | BOE3430R110 | 38 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABOS000.13 | BOS3181 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABST009.45 | BST6584R110 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABST014.94 | BST4575 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABTF003.11 | BTF5209 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABVE002.18 | BVE5518 | 11 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABWB000.32 | BWB5207 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABWR029.51 | BWR3380 | 46 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABWR045.01 | BWR3788 | 46 | 0 | 10 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACEC000.82 | CEC4940 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACEC001.24 | CEC1653R110 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACLB001.90 | CLB4162 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACNT003.84 | CNT1475R110 | 28 | 0 | 12 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACNT022.05 | CNT2660R110 | 29 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADBC000.13 | dbc207R110 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADEV000.64 | DEV2182R110 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFAL006.61 | fal6719R110 | 51 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFRV017.85 | frv5264R110 | 17 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFSF004.02 | FSF3681 | 25 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGEO006.26 | geo2705R110 | 19 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGSE015.07 | GSE4143 | 14 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AHLL000.45 | hll2643R110 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALBT003.07 | LBT3377 | 20 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALOR007.20 | LOR4804 | 61 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALOR008.93 | LOR3453R110 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4ALPP004.52 | lpp5259R110 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALWF007.13 | LWF5515 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMBY001.33 | MBY5548 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4AMEE017.24 | MEE6711R110 | 36 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMEY006.72 | mey5261R110 | 29 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMFK000.52 | MFK3564 | 40 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AORR002.63 | ORR3375 | 19 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APGG011.14 | PGG3524R110 | 19 | 4 | 5 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4APGG042.21 | PGG182R110 | 31 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APGG063.32 | PGG2775R110 | 20 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4APGG076.93 | PGG181R110 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APOP000.10 | POP3562R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARAB003.64 | RAB3595R110 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARKN003.68 | RKN5552 | 15 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AROC010.68 | ROC4665 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASCR003.33 | scr5424 | 20 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDA004.94 | SDA5209R110 | 61 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDE002.18 | SDE3897R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDE002.65 | sde1321R110 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 13 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASMR002.77 | SMR3794 | 32 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASMR017.72 | SMR5517 | 28 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASMR023.52 | SMR5524 | 4 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASNA002.84 | sna211R110 | 22 | 0 | 2 | 0 | 0 | 0 | 0 | 7 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASRE063.69 | SRE4191R110 | 15 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASSP000.64 | SSP3594R110 | 27 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASSP004.06 | ssp209R110 | 18 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 19 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATRB000.97 | trb5262R110 | 15 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATRD000.35 | TRD3684 | 8 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWEL000.59 | WEL3852 | 60 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWFE001.57 | WFE4160 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWLF001.20 | WLF1526R110 | 44 | 1 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWNN000.10 | wnn1319R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4AXMU001.98 | XMU3565 | 17 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMW001.48 | XMW4946 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMX003.62 | XMX4141 | 25 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMY000.22 | XMY4140 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXNA001.18 | XNA1675R110 | 29 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 4AXOD000.38 | XOD2659R110 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOF001.26 | XOF3642R110 | 19 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOL000.94 | XOL4154R110 | 22 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXSP001.93 | XSP4351R110 | 5 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUO000.49 | XUO3382 | 23 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUP000.06 | XUP3182 | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUS000.65 | XUS3686 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUY000.58 | XUY4158 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVK001.44 | xvk204R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVN001.55 | xvn1322R110 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVO000.50 | XVO3564R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVP000.20 | XVP4987R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVQ000.77 | xvq5212R110 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVV000.54 | xvv6718R110 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AALN001.50 | ALN6953R110 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 17 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5ABTR000.76 | BTR5279 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AFNY004.78 | FNY3688 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AFON016.90 | FON4869 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 5AFRC011.93 | frc4043R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AHRA005.94 | HRA5708R110 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AKIT002.65 | KIT3178 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ALTG001.50 | LTG5276 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ALTL001.38 | LTL156R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMHN104.12 | MHN47R110 | 14 | 1 | 0 | 0 | 0 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMLL000.03 | mll4040R110 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMRS002.93 | MRS5710R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANMR029.33 | NMR1303R110 | 24 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Hydropsychidae | Hydroptilidae | Isonychiidae | Lepidoptera (unknown) | Lepidostomatidae | Leptoceridae | Leptohyphidae | Leptophlebiidae | Lestidae | Leuctridae | Libellulidae | Libellulidae/Corduliidae | Limnephilidae | Lumbricidae | Lumbriculidae | Lutrochidae | Lymnaeidae | Macromiidae | Megaloptera (unknown) | Mesoveliidae | Metretopodidae | Molannidae | Muscidae | Naididae | Naucoridae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5ANTW103.18 | NTW3767 | 0 | 1 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANTW134.52 | NTW4664 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANTW153.04 | NTW49R110 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ARSK003.66 | RSK3388 | 9 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ARYC003.04 | RYC6792R110 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 5ARYR001.23 | RYR4169 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ATLR006.84 | TLR1518R110 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AXHR000.32 | XHR5208 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AXIA000.48 | XIA2296R110 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-FRK005.53 | FRK6260R110 | 35 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-LOC002.00 | LOC4868 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-LRK000.11 | LRK5278 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-NAR025.28 | NAR3780 | 7 | 2 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-PGN002.42 | PGN4020 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-POR015.70 | POR3150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-POR024.64 | POR5318 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RIG004.13 | RIG2223R110 | 25 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR028.79 | SAR6824R110 | 1 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR058.13 | SAR5322 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-STG000.73 | STG172R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-XJE000.48 | XJE2224R110 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1APIA003.51 | PIA2218R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BBGR004.08 | BGR2298R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BCBL002.86 | cbl5372R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 |
| 2BPRS001.90 | prs6442R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-LIJ003.06 | LIJ3211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PRS003.23 | PRS5480 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABLG001.95 | BLG6717R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 4ADAN183.06 | DAN3371 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 12 | 4 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADAN199.71 | DAN6462R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AIVV002.00 | IVV1654R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASCB005.38 | SCB5525 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOE001.26 | XOE4193R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4AXOH000.06 | XOH6714R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 5 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4BBIR002.57 | BIR2745R110 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 |
| 4BELK000.96 | ELK2812R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH104.35 | SFH3885 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTU000.15 | STU5446 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 |
| 6CXEE000.72 | XEE4084 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CPL009.78 | CPL3887 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 9-CST005.73 | CST149R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 9-CST012.63 | CST4979R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-ECM001.01 | ECM2810R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 9-ELK013.81 | ELK3879 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-FRS000.16 | FRS5458 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-GSC000.44 | GSC4731 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 9-ISL003.05 | ISL1464R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| 9-KNB003.98 | KNB5459 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-KNS002.44 | KNS142R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9-LEF005.25 | LEF4111 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRV035.03 | LRV3372 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LVR007.16 | LVR6581R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 |
| 9-RIC038.67 | RIC4730 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RIC051.80 | RIC3311 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SMN001.14 | SMN4137 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XEO000.57 | xeo4117 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| 9-XFH000.92 | XFH3608R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AOPE028.72 | OPE1331R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BBRY005.09 | BRY1332R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BCDR027.54 | CDR3215 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 1BGSR000.58 | gsr6405R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 1BHPY002.67 | HPY5341 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMDL025.92 | MDL99R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 |
| 1BMIC001.99 | MIC3617 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMIL006.68 | mil3844R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMSS001.35 | mss5295R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 1BNFS093.80 | nfs6426R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BNTH046.56 | NTH4760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 1BSMT001.53 | SMT5378 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 0 | 0 |
| 1BSMT009.08 | SMT4790 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 1BSTH005.36 | sth1341R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 1BSTH013.58 | STH3631 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 |
| 2ABLD014.73 | bld5370R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 2AXQS001.07 | XQS4145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BCC001.90 | BCC4117 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 |
| 2-BLD012.09 | BLD5390 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 0 |
| 2-CAT007.31 | CAT5527 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 2-CAT028.98 | CAT1641R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 2-CLL003.21 | CLL4770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CRG047.95 | CRG2657R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 2-CRG074.32 | CRG1522R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CSR003.94 | CSR3850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CWP006.87 | CWP3851 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 0 | 0 | 0 |
| 2-CWP042.31 | Cwp5452 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 2-DCK003.94 | DCK3384 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-DDY000.75 | DDY3205 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM6713R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM3526R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 2-HKY001.26 | HKY176R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 1 | 0 | 0 | 0 |
| 2-HYS005.45 | HYS4773 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 |
| 2-JED008.07 | JED6850R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| 2-JKS076.16 | jks1344R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 2-JOB013.77 | JOB3431R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 2-MIW003.45 | MIW3221 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 |
| 2-MRY043.42 | MRY3647 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 0 |
| 2-PMC000.59 | PMC1651R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-POT031.78 | POT178R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 |
| 2-RGR001.11 | RGR3791 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-STV000.48 | STV3379 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SWS000.90 | SWS5526 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 8 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| 2-XUL001.67 | XUL5514 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGSH001.28 | GSH3643R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMSP000.96 | MSP5519 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARNF015.22 | RNF1673R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 4AROA210.56 | ROA168R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 |
| 4ARSF007.07 | RSF5520 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 4ARSF007.29 | RSF3793 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 |
| 4ATKR010.54 | TKR4796 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 4ATKR015.40 | TKR4937 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 |
| 4AXMV000.63 | XMV4939 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXNC000.10 | XNC167R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 12 | 3 | 0 | 0 | 0 | 0 |
| 6BCLN320.68 | CLN6565R110 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 |
| 6BHAR002.41 | HAR6367R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTL003.31 | LTL3625R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| 6BLTR019.45 | LTR5460 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6BLTR022.98 | LTR4156R110 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTR025.03 | LTR3877 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BMOL001.75 | MOL2813R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 6BMTN003.94 | MTN1461R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 6BVAL002.86 | VAL146R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BWAL005.97 | WAL4728 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| 6BXGD000.01 | XGD141R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 6CBMC006.40 | BMC4110 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 |
| 6CCOV002.54 | COV4035R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 6CGAS000.45 | GAS6347R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CGRN003.29 | GRN4751 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 |
| 6CHUT000.07 | HUT4733 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 6CLAL000.19 | LAL2811R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLAL001.79 | LAL4729 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLIB001.06 | LIB138R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CMFH023.41 | MFH3876 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 2 |
| 6CNFH067.13 | NFH4098 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 0 |
| 6CPSM017.73 | PSM3310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| 6CSFH082.78 | SFH1456R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 |
| 6CSFH098.10 | SFH3309 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH099.18 | SFH1458R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 |
| 6CSPO001.45 | SPO6628R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 6CSTC000.20 | STC6626R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 6CSTC000.87 | STC3306 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CXEO000.25 | XEO137R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| 9-CPL012.73 | CPL4109 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-DEN000.39 | DEN5225R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LFK005.39 | LFK3886 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 9-LRV004.89 | LRV3789 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| 9-LTL001.22 | LTL4732 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LWK004.04 | LWK4138 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 9-MLL000.90 | MLL179R110 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-PKC005.95 | PKC3374 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 |
| 9-PLK000.79 | PLK5051R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RDC049.02 | RDC4982R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-RDC051.21 | RDC4734 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SFK002.81 | SFK3305 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SFK003.38 | SFK1463R110 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| 9-SNC008.04 | SNC1524R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9-TOM006.92 | TOM4135 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 9-WLK016.78 | WLK4153R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 9-WLK033.29 | WLK2776R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK052.27 | WLK4134 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 |
| 9-WNS001.03 | WNS139R110 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XES000.94 | XES5447 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ACNR018.89 | CNR5444 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ACNW000.07 | CNW6597R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADIS022.34 | DIS5224R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADOT000.46 | DOT1462R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AFOX001.69 | FOX3298 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AFRY006.70 | FRY144R110 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AGRF002.36 | GRF3626R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ALEV138.19 | LEV4711 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 6ALEV158.93 | LEV1419 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AMCR005.94 | MCR4155R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6APAW001.22 | PAW140R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6APNR034.58 | PNR3878 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ARPC002.45 | RPC3880 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT003.60 | SAT1454R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT011.43 | SAT5228R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASLV000.85 | SLV4097 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BIDI009.04 | IDI147R110 | 7 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLSR004.78 | LSR3307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLUR000.60 | LUR4099 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BPLL001.61 | PLL5457 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6BPOW184.19 | POW4715 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BPWL020.93 | PWL5063R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 6BSTC000.04 | STC145R110 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRR012.30 | LRR4047R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 7 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| 9-RHC002.85 | RHC6708R110 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACAX003.69 | CAX5269 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACAX003.81 | CAX3644R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACER005.02 | CER5198 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 18 | 0 | 0 | 0 | 0 |
| 1ACER012.66 | CER6647R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 1ACRM009.86 | CRM4022 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACUB004.63 | CUB128R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO018.17 | GOO3585R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO021.28 | GOO4657 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| 1AGOO036.47 | GOO4021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO039.63 | GOO5220R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 0 |
| 1AKET012.22 | KET6822R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ALIV004.79 | LIV5323R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ANOF004.80 | NOF4647 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ANOG000.91 | NOG3146 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXGU000.18 | XGU3949 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 44 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXKR000.77 | XKR3592 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BGOW001.00 | gow6440R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BMCM014.13 | mcm5373R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BVC003.09 | BVC4768 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 2BXRK001.64 | XRK3904R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-MCM003.32 | MCM102R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 |
| 2-PRD004.42 | PRD4119 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RKF015.42 | RKF3649 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 2-RKF023.33 | RKF5483 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 2-RKF026.13 | RKF3209 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 0 |
| 2-SDV001.02 | SDV3885R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SKM001.04 | SKM4784 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TLR000.52 | TLR4121 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-WDC002.90 | WDC3223 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-BLU000.54 | BLU3659 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-BUC003.26 | BUC5270 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-CAE001.45 | CAE3579 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-CAE012.67 | CAE3645R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| 3-FIK001.03 | FIK3273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-HAZ035.32 | HAZ6664R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 2 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 3-MTN018.83 | MTN4023 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-RAP053.02 | RAP3946 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 |
| 3-ROB004.98 | ROB4641 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-RPP148.18 | RPP4658 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 |
| 3-THU006.90 | THU3147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-WAF000.03 | WAF5315 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-XHU000.04 | XHU2222R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RDB003.36 | RDB1336R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RIG003.01 | RIG132R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR094.59 | SAR5288R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AAUA017.60 | AUA3657 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ABED009.37 | BED5615R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACHO003.47 | CHO127R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ALOE001.99 | LOE4018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1APOH008.54 | POH2221R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXLB000.05 | XLB6823R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXMJ000.42 | XMJ4014R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-APP080.58 | APP4175 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BBAA003.06 | BAA1252R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BCR007.68 | bcr4042R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BFL011.64 | BFL5204 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 4 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BGU005.95 | BGU3682 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-BRI007.80 | BRI3177 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BRKR012.86 | rkr5374R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BSR012.33 | BSR6569R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-BSR018.10 | BSR3679 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BWTN007.39 | WTN1304R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAC000.38 | XAC1302R110 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAD000.07 | XAD2187R110 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAP001.46 | XAP5554R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-BYN001.90 | BYN6811R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DAPP050.84 | APP170R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DAPP112.19 | APP4956R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DFSP000.30 | FSP53R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 2DWDY005.35 | WDY177R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DXAH000.79 | XAH4768R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-FLA012.22 | FLA3366 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HRD002.06 | HRD98R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 2-HUS001.88 | HUS3179 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 2-JOH004.23 | JOH3770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-LIT004.77 | lit4041R110 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-NBS001.56 | NBS4159 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-NUT000.62 | NUT1477R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PLP002.24 | PLP4161 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RED003.65 | RED3373 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RSM001.88 | RSM3769 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SFT019.02 | SFT5295 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SLT003.00 | SLT4666 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 0 | 0 | 0 |
| 2-STW004.84 | STW2181R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 2-TYE008.77 | TYE3222 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TYE028.94 | TYE106R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WIC004.64 | WIC3230 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| 2-WLL001.83 | WLL4667 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WLM000.69 | WLM4668 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-WLS023.10 | wls2682R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-XVX000.62 | XVX3386 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-HAL002.72 | HAL130R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-LIA003.14 | LIA5014R110 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AATD003.36 | ATD3687 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4ABAR001.74 | BAR3180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABAU011.17 | BAU3378 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABCE000.87 | BCE4144 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABDB004.35 | BDB3563R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4ABNN002.17 | BNN4026R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABOE005.27 | BOE3430R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABOS000.13 | BOS3181 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABST009.45 | BST6584R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABST014.94 | BST4575 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ABTF003.11 | BTF5209 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABVE002.18 | BVE5518 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABWB000.32 | BWB5207 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABWR029.51 | BWR3380 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 4ABWR045.01 | BWR3788 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 |
| 4ACEC000.82 | CEC4940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4ACEC001.24 | CEC1653R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ACLB001.90 | CLB4162 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACNT003.84 | CNT1475R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4ACNT022.05 | CNT2660R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4ADBC000.13 | dbc207R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADEV000.64 | DEV2182R110 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4AFAL006.61 | fal6719R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFRV017.85 | frv5264R110 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 4AFSF004.02 | FSF3681 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| 4AGEO006.26 | geo2705R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGSE015.07 | GSE4143 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 0 |
| 4AHLL000.45 | hll2643R110 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 3 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 |
| 4ALBT003.07 | LBT3377 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 4ALOR007.20 | LOR4804 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALOR008.93 | LOR3453R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4ALPP004.52 | lpp5259R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALWF007.13 | LWF5515 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMBY001.33 | MBY5548 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMEE017.24 | MEE6711R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4AMEY006.72 | mey5261R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 |
| 4AMFK000.52 | MFK3564 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AORR002.63 | ORR3375 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APGG011.14 | PGG3524R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 |
| 4APGG042.21 | PGG182R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 4APGG063.32 | PGG2775R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 4APGG076.93 | PGG181R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APOP000.10 | POP3562R110 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARAB003.64 | RAB3595R110 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | 1 | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ARKN003.68 | RKN5552 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 20 | 1 | 3 | 0 | 0 | 0 |
| 4AROC010.68 | ROC4665 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASCR003.33 | scr5424 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDA004.94 | SDA5209R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDE002.18 | SDE3897R110 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDE002.65 | sde1321R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASMR002.77 | SMR3794 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4ASMR017.72 | SMR5517 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 |
| 4ASMR023.52 | SMR5524 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 4ASNA002.84 | sna211R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASRE063.69 | SRE4191R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 4ASSP000.64 | SSP3594R110 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4ASSP004.06 | ssp209R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATRB000.97 | trb5262R110 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 |
| 4ATRD000.35 | TRD3684 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWEL000.59 | WEL3852 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWFE001.57 | WFE4160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWLF001.20 | WLF1526R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWNN000.10 | wnn1319R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4AXMU001.98 | XMU3565 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMW001.48 | XMW4946 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 |
| 4AXMX003.62 | XMX4141 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMY000.22 | XMY4140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4AXNA001.18 | XNA1675R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOD000.38 | XOD2659R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4AXOF001.26 | XOF3642R110 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 8 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| 4AXOL000.94 | XOL4154R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXSP001.93 | XSP4351R110 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 5 | 5 | 9 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 |
| 4AXUO000.49 | XUO3382 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4AXUP000.06 | XUP3182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUS000.65 | XUS3686 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 4AXUY000.58 | XUY4158 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVK001.44 | xvk204R110 | 6 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVN001.55 | xvn1322R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4AXVO000.50 | XVO3564R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVP000.20 | XVP4987R110 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 3 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| 4AXVQ000.77 | xvq5212R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVV000.54 | xvv6718R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5AALN001.50 | ALN6953R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ABTR000.76 | BTR5279 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AFNY004.78 | FNY3688 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AFON016.90 | FON4869 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 2 | 1 | 0 | 0 | 0 |
| 5AFRC011.93 | frc4043R110 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AHRA005.94 | HRA5708R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 5AKIT002.65 | KIT3178 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ALTG001.50 | LTG5276 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 5ALTL001.38 | LTL156R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMHN104.12 | MHN47R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMLL000.03 | mll4040R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMRS002.93 | MRS5710R110 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANMR029.33 | NMR1303R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Nemouridae | Neoephemeridae | Nepidae | Noteridae | Notonectidae | Odontoceridae | Oligochaeta (unknown) | Palaemonidae | Pelecorhynchidae | Pelecypoda (unknown) | Peltoperlidae | Perlidae | Perlodidae | Philopotamidae | Phoridae | Phryganeidae | Physidae | Piscicolidae | Planorbidae | Plecoptera (unknown) | Pleuroceridae | Polycentropodidae | Polymitarcyidae | Portunidae | Potamanthidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5ANTW103.18 | NTW3767 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | 0 | 0 | 0 | 0 |
| 5ANTW134.52 | NTW4664 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANTW153.04 | NTW49R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ARSK003.66 | RSK3388 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ARYC003.04 | RYC6792R110 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ARYR001.23 | RYR4169 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ATLR006.84 | TLR1518R110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AXHR000.32 | XHR5208 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AXIA000.48 | XIA2296R110 | 0 | 0 | 0 | 0 | 0 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-FRK005.53 | FRK6260R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-LOC002.00 | LOC4868 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 2 | 0 | 0 | 0 | 0 |
| 8-LRK000.11 | LRK5278 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-NAR025.28 | NAR3780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-PGN002.42 | PGN4020 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 11 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-POR015.70 | POR3150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-POR024.64 | POR5318 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RIG004.13 | RIG2223R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR028.79 | SAR6824R110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 16 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 8-SAR058.13 | SAR5322 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 47 | 0 | 0 | 0 | 0 |
| 8-STG000.73 | STG172R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-XJE000.48 | XJE2224R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1APIA003.51 | PIA2218R110 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BBGR004.08 | BGR2298R110 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BCBL002.86 | cbl5372R110 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BPRS001.90 | prs6442R110 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-LIJ003.06 | LIJ3211 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PRS003.23 | PRS5480 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABLG001.95 | BLG6717R110 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4ADAN183.06 | DAN3371 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4ADAN199.71 | DAN6462R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AIVV002.00 | IVV1654R110 | 7 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASCB005.38 | SCB5525 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOE001.26 | XOE4193R110 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOH000.06 | XOH6714R110 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4BBIR002.57 | BIR2745R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 4BELK000.96 | ELK2812R110 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH104.35 | SFH3885 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTU000.15 | STU5446 | 14 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CXEE000.72 | XEE4084 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CPL009.78 | CPL3887 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CST005.73 | CST149R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9-CST012.63 | CST4979R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-ECM001.01 | ECM2810R110 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-ELK013.81 | ELK3879 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-FRS000.16 | FRS5458 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-GSC000.44 | GSC4731 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9-ISL003.05 | ISL1464R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 9-KNB003.98 | KNB5459 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 9-KNS002.44 | KNS142R110 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LEF005.25 | LEF4111 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-LRV035.03 | LRV3372 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LVR007.16 | LVR6581R110 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-RIC038.67 | RIC4730 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RIC051.80 | RIC3311 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SMN001.14 | SMN4137 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XEO000.57 | xeo4117 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 9-XFH000.92 | XFH3608R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AOPE028.72 | OPE1331R110 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BBRY005.09 | BRY1332R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 |
| 1BCDR027.54 | CDR3215 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 1BGSR000.58 | gsr6405R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BHPY002.67 | HPY5341 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMDL025.92 | MDL99R110 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMIC001.99 | MIC3617 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMIL006.68 | mil3844R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BMSS001.35 | mss5295R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BNFS093.80 | nfs6426R110 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BNTH046.56 | NTH4760 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSMT001.53 | SMT5378 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSMT009.08 | SMT4790 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSTH005.36 | sth1341R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1BSTH013.58 | STH3631 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2ABLD014.73 | bld5370R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2AXQS001.07 | XQS4145 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 2-BCC001.90 | BCC4117 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BLD012.09 | BLD5390 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CAT007.31 | CAT5527 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CAT028.98 | CAT1641R110 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CLL003.21 | CLL4770 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CRG047.95 | CRG2657R110 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CRG074.32 | CRG1522R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CSR003.94 | CSR3850 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CWP006.87 | CWP3851 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-CWP042.31 | Cwp5452 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-DCK003.94 | DCK3384 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-DDY000.75 | DDY3205 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM6713R110 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HAM000.37 | HAM3526R110 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HKY001.26 | HKY176R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HYS005.45 | HYS4773 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JED008.07 | JED6850R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JKS076.16 | jks1344R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JOB013.77 | JOB3431R110 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-MIW003.45 | MIW3221 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-MRY043.42 | MRY3647 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PMC000.59 | PMC1651R110 | 16 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-POT031.78 | POT178R110 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 2-RGR001.11 | RGR3791 | 6 | 0 | 0 | 10 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-STV000.48 | STV3379 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SWS000.90 | SWS5526 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-XUL001.67 | XUL5514 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGSH001.28 | GSH3643R110 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMSP000.96 | MSP5519 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARNF015.22 | RNF1673R110 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AROA210.56 | ROA168R110 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ARSF007.07 | RSF5520 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 4ARSF007.29 | RSF3793 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATKR010.54 | TKR4796 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ATKR015.40 | TKR4937 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMV000.63 | XMV4939 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXNC000.10 | XNC167R110 | 5 | 0 | 0 | 0 | 7 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 6BCLN320.68 | CLN6565R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BHAR002.41 | HAR6367R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTL003.31 | LTL3625R110 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTR019.45 | LTR5460 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6BLTR022.98 | LTR4156R110 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLTR025.03 | LTR3877 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BMOL001.75 | MOL2813R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BMTN003.94 | MTN1461R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BVAL002.86 | VAL146R110 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BWAL005.97 | WAL4728 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6BXGD000.01 | XGD141R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CBMC006.40 | BMC4110 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6CCOV002.54 | COV4035R110 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CGAS000.45 | GAS6347R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CGRN003.29 | GRN4751 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CHUT000.07 | HUT4733 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLAL000.19 | LAL2811R110 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLAL001.79 | LAL4729 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CLIB001.06 | LIB138R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 6CMFH023.41 | MFH3876 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CNFH067.13 | NFH4098 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CPSM017.73 | PSM3310 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH082.78 | SFH1456R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH098.10 | SFH3309 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSFH099.18 | SFH1458R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSPO001.45 | SPO6628R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| 6CSTC000.20 | STC6626R110 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CSTC000.87 | STC3306 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6CXEO000.25 | XEO137R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-CPL012.73 | CPL4109 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-DEN000.39 | DEN5225R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LFK005.39 | LFK3886 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LRV004.89 | LRV3789 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LTL001.22 | LTL4732 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-LWK004.04 | LWK4138 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-MLL000.90 | MLL179R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-PKC005.95 | PKC3374 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-PLK000.79 | PLK5051R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-RDC049.02 | RDC4982R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-RDC051.21 | RDC4734 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 |
| 9-SFK002.81 | SFK3305 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SFK003.38 | SFK1463R110 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-SNC008.04 | SNC1524R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-TOM006.92 | TOM4135 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK016.78 | WLK4153R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WLK033.29 | WLK2776R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-WLK052.27 | WLK4134 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-WNS001.03 | WNS139R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-XES000.94 | XES5447 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ACNR018.89 | CNR5444 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 6ACNW000.07 | CNW6597R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADIS022.34 | DIS5224R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ADOT000.46 | DOT1462R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 |
| 6AFOX001.69 | FOX3298 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 6AFRY006.70 | FRY144R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6AGRF002.36 | GRF3626R110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ALEV138.19 | LEV4711 | 3 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ALEV158.93 | LEV1419 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 6AMCR005.94 | MCR4155R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6APAW001.22 | PAW140R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 |
| 6APNR034.58 | PNR3878 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ARPC002.45 | RPC3880 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT003.60 | SAT1454R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASAT011.43 | SAT5228R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6ASLV000.85 | SLV4097 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BIDI009.04 | IDI147R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 0 |
| 6BLSR004.78 | LSR3307 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BLUR000.60 | LUR4099 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BPLL001.61 | PLL5457 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6BPOW184.19 | POW4715 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6BPWL020.93 | PWL5063R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 6BSTC000.04 | STC145R110 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 9-LRR012.30 | LRR4047R110 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9-RHC002.85 | RHC6708R110 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 1ACAX003.69 | CAX5269 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACAX003.81 | CAX3644R110 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACER005.02 | CER5198 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 |
| 1ACER012.66 | CER6647R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACRM009.86 | CRM4022 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACUB004.63 | CUB128R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 |
| 1AGOO018.17 | GOO3585R110 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO021.28 | GOO4657 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AGOO036.47 | GOO4021 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 1AGOO039.63 | GOO5220R110 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AKET012.22 | KET6822R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 0 | 0 |
| 1ALIV004.79 | LIV5323R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ANOF004.80 | NOF4647 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 1ANOG000.91 | NOG3146 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXGU000.18 | XGU3949 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXKR000.77 | XKR3592 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BGOW001.00 | gow6440R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BMCM014.13 | mcm5373R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BVC003.09 | BVC4768 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2BXRK001.64 | XRK3904R110 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 2-MCM003.32 | MCM102R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PRD004.42 | PRD4119 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-RKF015.42 | RKF3649 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-RKF023.33 | RKF5483 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RKF026.13 | RKF3209 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SDV001.02 | SDV3885R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SKM001.04 | SKM4784 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TLR000.52 | TLR4121 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-WDC002.90 | WDC3223 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-BLU000.54 | BLU3659 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-BUC003.26 | BUC5270 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-CAE001.45 | CAE3579 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-CAE012.67 | CAE3645R110 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 3-FIK001.03 | FIK3273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-HAZ035.32 | HAZ6664R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-MTN018.83 | MTN4023 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-RAP053.02 | RAP3946 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-ROB004.98 | ROB4641 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-RPP148.18 | RPP4658 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-THU006.90 | THU3147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-WAF000.03 | WAF5315 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3-XHU000.04 | XHU2222R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RDB003.36 | RDB1336R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 8-RIG003.01 | RIG132R110 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR094.59 | SAR5288R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AAUA017.60 | AUA3657 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ABED009.37 | BED5615R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ACHO003.47 | CHO127R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 25 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1ALOE001.99 | LOE4018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1APOH008.54 | POH2221R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1AXLB000.05 | XLB6823R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 1AXMJ000.42 | XMJ4014R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| 2-APP080.58 | APP4175 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2BBAA003.06 | BAA1252R110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 2-BCR007.68 | bcr4042R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-BFL011.64 | BFL5204 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 |
| 2-BGU005.95 | BGU3682 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 2-BRI007.80 | BRI3177 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BRKR012.86 | rkr5374R110 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-BSR012.33 | BSR6569R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-BSR018.10 | BSR3679 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BWTN007.39 | WTN1304R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAC000.38 | XAC1302R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2BXAD000.07 | XAD2187R110 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2BXAP001.46 | XAP5554R110 | 2 | 0 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-BYN001.90 | BYN6811R110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DAPP050.84 | APP170R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DAPP112.19 | APP4956R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2DFSP000.30 | FSP53R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DWDY005.35 | WDY177R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2DXAH000.79 | XAH4768R110 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-FLA012.22 | FLA3366 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 |
| 2-HRD002.06 | HRD98R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-HUS001.88 | HUS3179 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-JOH004.23 | JOH3770 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 2-LIT004.77 | lit4041R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 |
| 2-NBS001.56 | NBS4159 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 2-NUT000.62 | NUT1477R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-PLP002.24 | PLP4161 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RED003.65 | RED3373 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-RSM001.88 | RSM3769 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2-SFT019.02 | SFT5295 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-SLT003.00 | SLT4666 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 2-STW004.84 | STW2181R110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-TYE008.77 | TYE3222 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 2-TYE028.94 | TYE106R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WIC004.64 | WIC3230 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 |
| 2-WLL001.83 | WLL4667 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| 2-WLM000.69 | WLM4668 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-WLS023.10 | wls2682R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-XVX000.62 | XVX3386 | 1 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 3-HAL002.72 | HAL130R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-LIA003.14 | LIA5014R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AATD003.36 | ATD3687 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABAR001.74 | BAR3180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABAU011.17 | BAU3378 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABCE000.87 | BCE4144 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABDB004.35 | BDB3563R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 4ABNN002.17 | BNN4026R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABOE005.27 | BOE3430R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABOS000.13 | BOS3181 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ABST009.45 | BST6584R110 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 1 | 0 | 0 |
| 4ABST014.94 | BST4575 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 4ABTF003.11 | BTF5209 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4ABVE002.18 | BVE5518 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 4ABWB000.32 | BWB5207 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 |
| 4ABWR029.51 | BWR3380 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4ABWR045.01 | BWR3788 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACEC000.82 | CEC4940 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACEC001.24 | CEC1653R110 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 |
| 4ACLB001.90 | CLB4162 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 |
| 4ACNT003.84 | CNT1475R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ACNT022.05 | CNT2660R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADBC000.13 | dbc207R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ADEV000.64 | DEV2182R110 | 3 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4AFAL006.61 | fal6719R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFRV017.85 | frv5264R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AFSF004.02 | FSF3681 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGEO006.26 | geo2705R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AGSE015.07 | GSE4143 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| 4AHLL000.45 | hll2643R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALBT003.07 | LBT3377 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALOR007.20 | LOR4804 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4ALOR008.93 | LOR3453R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4ALPP004.52 | lpp5259R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ALWF007.13 | LWF5515 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AMBY001.33 | MBY5548 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMEE017.24 | MEE6711R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AMEY006.72 | mey5261R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 4AMFK000.52 | MFK3564 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4AORR002.63 | ORR3375 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APGG011.14 | PGG3524R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 4APGG042.21 | PGG182R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4APGG063.32 | PGG2775R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 4APGG076.93 | PGG181R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4APOP000.10 | POP3562R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ARAB003.64 | RAB3595R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4ARKN003.68 | RKN5552 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4AROC010.68 | ROC4665 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4ASCR003.33 | scr5424 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 |
| 4ASDA004.94 | SDA5209R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDE002.18 | SDE3897R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASDE002.65 | sde1321R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| 4ASMR002.77 | SMR3794 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 4ASMR017.72 | SMR5517 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASMR023.52 | SMR5524 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 |
| 4ASNA002.84 | sna211R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 |
| 4ASRE063.69 | SRE4191R110 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4ASSP000.64 | SSP3594R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4ASSP004.06 | ssp209R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |
| 4ATRB000.97 | trb5262R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 4ATRD000.35 | TRD3684 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 4AWEL000.59 | WEL3852 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWFE001.57 | WFE4160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWLF001.20 | WLF1526R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AWNN000.10 | wnn1319R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4AXMU001.98 | XMU3565 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 4AXMW001.48 | XMW4946 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMX003.62 | XMX4141 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXMY000.22 | XMY4140 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXNA001.18 | XNA1675R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOD000.38 | XOD2659R110 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 4AXOF001.26 | XOF3642R110 | 4 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXOL000.94 | XOL4154R110 | 4 | 0 | 1 | 0 | 3 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXSP001.93 | XSP4351R110 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUO000.49 | XUO3382 | 8 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUP000.06 | XUP3182 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUS000.65 | XUS3686 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXUY000.58 | XUY4158 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4AXVK001.44 | xvk204R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4AXVN001.55 | xvn1322R110 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 4AXVO000.50 | XVO3564R110 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVP000.20 | XVP4987R110 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVQ000.77 | xvq5212R110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4AXVV000.54 | xvv6718R110 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AALN001.50 | ALN6953R110 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 5ABTR000.76 | BTR5279 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 |
| 5AFNY004.78 | FNY3688 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AFON016.90 | FON4869 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 19 | 0 | 0 |
| 5AFRC011.93 | frc4043R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5AHRA005.94 | HRA5708R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AKIT002.65 | KIT3178 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5ALTG001.50 | LTG5276 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ALTL001.38 | LTL156R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMHN104.12 | MHN47R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMLL000.03 | mll4040R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AMRS002.93 | MRS5710R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANMR029.33 | NMR1303R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |

| StationID | BenSampID | Psephenidae | Psychodidae | Psychomyiidae | Pteronarcyidae | Ptilodactylidae | Ptychopteridae | Pyralidae | Rhyacophilidae | Sciomyzidae | Scirtidae | Sericostomatidae | Sialidae | Simuliidae | Siphlonuridae | Sisyridae | Sparganophilidae | Sphaeriidae | Spongillidae | Stratiomyidae | Syrphidae | Tabanidae | Taeniopterygidae | Talitridae | Tanyderidae | Tetrastemmatidae |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5ANTW103.18 | NTW3767 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ANTW134.52 | NTW4664 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 5ANTW153.04 | NTW49R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ARSK003.66 | RSK3388 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5ARYC003.04 | RYC6792R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ARYR001.23 | RYR4169 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5ATLR006.84 | TLR1518R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 5AXHR000.32 | XHR5208 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5AXIA000.48 | XIA2296R110 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 8-FRK005.53 | FRK6260R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-LOC002.00 | LOC4868 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 |
| 8-LRK000.11 | LRK5278 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 |
| 8-NAR025.28 | NAR3780 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-PGN002.42 | PGN4020 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-POR015.70 | POR3150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-POR024.64 | POR5318 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-RIG004.13 | RIG2223R110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR028.79 | SAR6824R110 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-SAR058.13 | SAR5322 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8-STG000.73 | STG172R110 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 |
| 8-XJE000.48 | XJE2224R110 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 |

## Chapter 3. Elastic Net Regression R Code

```
#Sediment Metrics VSCI Exploration with Elastic Net Regression
#Data 2003-2014 VDEQ (final full data set)
####################################################################################
#Name: Elastic Net using GLMNET.R
#Coder: Heather Govenor
#Date: finalized 07082017
#run and output recorded in tables 070817
#Purpose: Parameter reduction and model development for VSCI using sediment metrics
#elastic net regression including loops to ID best lambda and best alpha
###################################################################################
#start writing to an output file
sink('analysis-output-ELASTICNET.txt')
rm(list = ls()) #this clears global environment
# for HG laptop
setwd("C:\\Users\\Heather\\Google Drive\\BSE Engineering\\Research Govenor\\3 2016 VDEQ Data
Analysis\\2017
analyses\\ElasticNetRegression")
x<-read.csv("OneStationPHAB2017_0708.csv")
names(x)
x<-x[which(!x$Year<2004),]#removes older data - pre 2004 have no habitat info
x<-x[which(!x$BioRegion=="Coast"),] #removes CPMI samples; coastal plain is different biometric
x<-x[which(!x$LRBS=="NA"),] #removes stations without PHAB data
x<-x[which(!x$Turb.V=="NA"),] #removed stations without PHAB data (final ones missed above)
#attach(x)
relevantmetrics<-c(1,2,3,4,5,12,14,15,18,19,22,23,36,39,44,45,54:58,60:69,72,172)
x<-x[,relevantmetrics]
#names(x)
x$TDS_V<-as.numeric(x$TDS_V)#integer to number
x$TSS.V<-as.numeric(x$TSS.V)#integer to number
#transform data -
#see 2017DEQSedimentMetricsNormalityCheck050217b R file and "REPORT" for transformation info
#Ended up doing arcsin sqrt transformation for percentage data and
#log base 10 transformation for most other data (LRBS and LSUBDMM were already on log10 scale)
x$asin.sa<-asin(sqrt(x$SA_PCT/100))
x$asin.fn<-asin(sqrt(x$FN_PCT/100))
x$Embed_PCT<-(as.numeric(x$Embed_PCT))
x$asin.embed<-asin(sqrt(x$Embed_PCT/100))
x$log10.turb<-log10(x$Turb.V)
x$log10.TDS<-log10(x$TDS_V)
x$log10.TSS<-log10(x$TSS.V)
x$log10.Cond<-log10(x$SpCond)
#names(x)
#pick out the transformed versions of metrics for analyses
# sed metrics, levels eco regions, VSCI and 8 submetrics
d<-c(1,9,10,40,39,38,37,36,35,34,32,17,21,24,25,26,27,28,29,30,31)
sedmetrics<-x[,d]#dataset of independent variables of interest only
#names(sedmetrics)
sedimentcolumns<-c(4:10,12,13) #use transformed data when avail
#columns with sediment metrics INDEPENDENT DATA SET plus VSCI
sediment<-sedmetrics[,sedimentcolumns]
#names(sediment)#verifying which data are included
summary(sedmetrics)
BlueRidge<-sedmetrics[which(sedmetrics$EcoRegion=="Blue Ridge Mountains"),]
```

```
CentralApRidgeValley<-sedmetrics[which(sedmetrics$EcoRegion=="Central Appalachian Ridges and
Valleys"),]
CentralAp<-sedmetrics[which(sedmetrics$EcoRegion=="Central Appalachians"),]
NorthPied<-sedmetrics[which(sedmetrics$EcoRegion=="Northern Piedmont"),]
Piedmont<-sedmetrics[which(sedmetrics$EcoRegion=="Piedmont"),]
####################################################################
####################################################################
citation()
citation("glmnet")
set.seed(288488992) #so i get same result each time i run this - this doesn't help with this code
##############################################################
##################### GLMNET package ###############
##############################################################
#Load the GLMNET package, which can fit the lasso, Ridge, and Elastic Net Regressions
library(glmnet)
#?glmnet
par(mfrow=c(1,1)) #sets graphical output to 1 row by 1 column reading rows first
#alpha=1:LASSO (default) - removes variables
#alpha=0:Ridge - keeps all variables
#0<alpha<1: Elastic net - mix of the two above
#nlambda set the grid of 100 lambdas (default 100)
#standardize (default) data when fitting. return value back to original sale
#nfolds (default 10) set number of folds for cross validation
#type.measure set the measure for cross validation error (default MSE)
#names(sedmetrics)
#names(sediment)
# VSCI metrics:
#EPT; total taxa; %E; %PT-H; %Chironomidae;
#% top two dominant taxa; HBI(family level); and %scrapers
################################################
################################################
########## elastic net to find best alpha and best lambda ############
#this internal alpha code and the other code too from Youjia Fang
#first do full dataset on vsci - 10 fold validation on n=374
#FOR VSCI in column 11 of each regional database
N=1001
increment=1/(N-1)
#create vector to store min cv mse and corresponding lambda in each iteration
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
#for loop, for each value of alpha, do 10-fold cv to get min cv mse and corresponding lamba
#take a while to run
# Enet for VSCI (column 13 in sedmetrics and each regional database - first do sedmetrics combo data)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,11],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
#find the minimum CV MSE and the corresponding lambda for each iteration
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}?
glmnet
?cv.glmnet
#plot the relation between cv mse and alpha values
plot(((1:N)-1)*increment,cvmse)
```

```
#find the vector index that obtain min cv mse across all alpha values
place=which(cvmse==min(cvmse))
#global minimum cv
bestcvmse<-cvmse[place]
bestcvmse
#corresponding lamba
bestlambda<-cvlambda[place]
bestlambda
#corresponding alpha
bestalpha<-(place-1)*increment
bestalpha
###now you know best aplha and lambda, plug them in
fit.enet<-glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,11],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
#show the magnitude of coefficient
plot(fit.enet,label=T)
abline(h=0)
#coefficients derived
#if alpha not equal to 1 (LASSO case) then there is no zero coefficient
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
# BY ECO REGION
#FOR VSCI in column 11 of each regional database
####for BlueRidge (n=37) DO 5 fold cross validation with smaller dataset
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(BlueRidge[,c(4:10,12,13)]),y=BlueRidge[,11],alpha=(N-
1)*increment,nlambda=100,nfold=5, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(BlueRidge[,c(4:10,12,13)]),y=BlueRidge[,11],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
####for Central App (n=25) DO 5 fold cross validation with smaller dataset
N=1001
```

```
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(CentralAp[,c(4:10,12,13)]),y=CentralAp[,11],alpha=(N-
1)*increment,nlambda=100,nfold=5, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(CentralAp[,c(4:10,12,13)]),y=CentralAp[,11],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
##Ridge and Valley n = 103; use 10 fold validation
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-
cv.glmnet(x=as.matrix(CentralApRidgeValley[,c(4:10,12,13)]),y=CentralApRidgeValley[,11],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-
glmnet(x=as.matrix(CentralApRidgeValley[,c(4:10,12,13)]),y=CentralApRidgeValley[,11],alpha=bestalpha,
lambda=bestlambda, standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
```

```
fit.enet$dev.ratio
##North Piedmont n = 46; 5 fold validation
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(NorthPied[,c(4:10,12,13)]),y=NorthPied[,11],alpha=(N-
1)*increment,nlambda=100,nfold=5, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(NorthPied[,c(4:10,12,13)]),y=NorthPied[,11],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
## Piedmont n = 146; 10 fold validation
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(Piedmont[,c(4:10,12,13)]),y=Piedmont[,11],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(Piedmont[,c(4:10,12,13)]),y=Piedmont[,11],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
```

```
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
##############################
#for the VSCI submetrics - combined eco regions
#column guides: TotTaxa = 14; EPTTax = 15; X.Ephem = 16; X.PT.Hydropsychidae = 17;
#X.Scrap = 18; X.Chiro = 19; X.2Dom = 20; HBI = 21
#FOR TotTaxa in column 14 of each regional database
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,14],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,14],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
##############################
#FOR EPTTaxa in column 15 of each regional database
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,15],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
```

```
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,15],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
###############################
#FOR X.EPhem in column 16 of database
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,16],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,16],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
###############################
#FOR X.PT.Hydropsychidae = 17 of database
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,17],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
```

```
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,17],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
###############################
#FOR X.Scrap = 18 of database
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,18],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,18],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
###############################
#FOR X.Chiro = 19 of database
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,19],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
```

```
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,19],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
##############################
#FOR X.2Dom = 20 of database
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,20],alpha=(N-
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}
plot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,20],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
##############################
#FOR HBI = 21 of database
N=1001
increment=1/(N-1)
cvmse<-rep(0,N)
cvlambda<-rep(0,N)
for (i in 1:N){
cv.enet<-cv.glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,21],alpha=(N-
```

```
1)*increment,nlambda=100,nfold=10, standardize=TRUE,
type.measure="mse")
cvmse[i]<-cv.enet$cvm[which(cv.enet$cvm==min(cv.enet$cvm))]
cvlambda[i]<-cv.enet$lambda.min
rm(cv.enet)
}p
lot(((1:N)-1)*increment,cvmse)
place=which(cvmse==min(cvmse))
bestcvmse<-cvmse[place]
bestcvmse
bestlambda<-cvlambda[place]
bestlambda
bestalpha<-(place-1)*increment
bestalpha
fit.enet<-glmnet(x=as.matrix(sedmetrics[,c(4:10,12,13)]),y=sedmetrics[,21],alpha=bestalpha,
lambda=bestlambda,
standardize=T)
plot(fit.enet,label=T)
abline(h=0)
fit.enet$beta
fit.enet$a0
fit.enet$dev.ratio
############
#stop writing output file
#start writing to an output file
sink()
##
```

## Chapter 3. R code for sensitivity threshold derivation.

```
########################################################################################
#Name: Species Sensitivity Distributions; VDEQ sediment metrics on extirpation at family level
#Coder: Heather Govenor with input from Emma Jones/Jason Hill
#Date: 06/13/17
#DATA ARE FROM FALL SAMPLING EVENTS - EARLIEST PER SAMPLE LOCATION; 2004-2014
#Purpose: SSD curves on key sediment parameters (embeddedness)
#includes handy loops to save multiple plots and files to folders
#######################################################################################

#Cumulative Probability of Detection data frames and plots for each taxa of interest
#ALL ECOREGIONS COMBINED

#Clear global environment
rm(list = ls())

#Set working directory
wd<-"C:/Users/Heather/Google Drive/BSE Engineering/Research Govenor/3 2016 VDEQ Data Analysis/2017 analyses/CPD_Embeddedness ALL REGIONS"
setwd(wd)

#Read in data file from working directory
x<-read.csv("OneStationSedimentBugsR.csv")
#names(x)
#remove coastal stations
x<-x[which(!x$BioRegion=="Coast"),]  #removes CPMI samples; coastal plain is different biometric
x<-x[which(!x$Turb.V=="NA"),] #removed stations without PHAB data
#note we get n=373 because one of the stations had no fall bug metrics (but used "avg value" from vdeq based on spring only in first enet analysis)

#Identify variables of interest from that data file
d<-c(1,18,19,30,31,32,33,38,39,40,42,44,66:222) #sedmetrics and taxa counts and bioregion and station id

#Create new dataset with only those variables of interest
taxametrics<-x[,d]
#names(taxametrics)#verify variables are what you wanted



######################################################################
#if you run this file multiple times:
#because taxainfo and taxa to evaluate list were already generated in past can just upload them now
#TaxaInfo<-read.csv("TaxaInfo.csv")
#TaxaInfo<-TaxaInfo[,2:4] #gets rid of extra column generated when it was made into table

#TaxaToEvaluateList<-read.csv("TaxaToEvaluateList.csv")
#TaxatoEvaluateList<-as.character(TaxaToEvaluateList$Taxa)#makes vector? form needed below

#df_EmbedBin<-read.csv("df_EmbedBin.csv")

######################################################################
#define what sediment variable of interest is (use name from database)
#options = SpCond, TDS_V, Turb.V, TSS.V, LRBS, FN_PCT, SA_PCT, LSUB_DMM, Embed_PCT (not transformed)
Sediment<-"Embed_PCT"    #this is so you can use file to run other parameters in future
```

```
#################################################################

#Get statistical range and mean for the sediment variable of interest
summary(taxametrics[,Sediment])
#Edit axis titles for printing
hist(taxametrics[,Sediment],main="Embeddedness Histogram", xlab="Embeddedness (%)")


#OPTION 1 for BINS
#divide evenly across observed range of sediment variable
#NumberofBreaks<-25 #choose number of breaks/ bins
#taxametrics$BinName<-cut(taxametrics[,Sediment], breaks = NumberofBreaks)
#great b/c you can adjust number of bins
#note that this bins based on the range of observed values not on a range of possible values
#taxametrics$BinName #check result

#OPTION 2 for BINS
#to specify break points that you want the intervals cut into you can do so as follows
sequence<-seq(0,100,by=2)   #defined breakpoints - 50 bins, span possible range of variable
#cut the Embed_PCT variable by using the seq defined above
taxametrics$BinName<-cut(taxametrics[,Sediment], breaks = sequence)
taxametrics$BinName  #see what you generated
#class(taxametrics$BinName) #should be factor

#Count the number of observations in each bin using table function
#?table
T<-table(taxametrics$BinName)
#as data frame generates 2 columns for the table data so can look things up from there (bin factor/ count)
T<-as.data.frame(T)
#add variable that is the center of each of the bin of sediment values
#WILL NEED TO CORRECT/ CHECK CENTROID VALUE FOR OTHER METRICS- below for
embeddedness only (and percents)
T$Centroid<-seq(1,99,by=2) #will need to adjust depending on sediment variable of interest #used for
histogram of binned data
#then use vlookup to add bins and centroids to the taxametrics table
BinTable <- T[,c("Centroid","Var1","Freq")]

  ## Emma Code ##
#Run code below to define vlookup function

  # VLOOKUP (Excel function hack) by Julin Maloof
  vlookup <- function(ref, #the value or values that you want to look for
                    table, #the table where you want to look for it; will look in first column
                    column, #the column that you want the return data to come from,
                    range=FALSE, #if there is not an exact match, return the closest?
                    larger=FALSE) #if doing a range lookup, should the smaller or larger key be used?)
  {
    if(!is.numeric(column) & !column %in% colnames(table)) {
      stop(paste("can't find column",column,"in table"))
    }
    if(range) {
      if(!is.numeric(table[,1])) {
        stop(paste("The first column of table must be numeric when using range lookup"))
      }
      table <- table[order(table[,1]),]
      index <- findInterval(ref,table[,1])
```

```
      if(larger) {
        index <- ifelse(ref %in% table[,1],index,index+1)
      }
      output <- table[index,column]
      output[!index <= dim(table)[1]] <- NA

    } else {
      output <- table[match(ref,table[,1]),column]
      output[!ref %in% table[,1]] <- NA
    }
    dim(output) <- dim(ref)
    output
  }

## End Emma code##

  names(taxametrics)
#use vlookup function to determine the weight of each station based on sediment bin it belongs to
  taxametrics$BinWeight<-1/vlookup(taxametrics$BinName,T,2)
  taxametrics$BinWeight
  #success!
#use vlookup to determine sediment metric centroid for each station
  taxametrics$binCentroid<-vlookup(taxametrics$BinName,T,3)  #Used to create histogram of binned data
  #taxametrics$binCentroid

#SO NOW WE HAVE ADDED TO THE TAXAMETRICS FILE THE BIN FACTOR FOR EACH STATION
AND THE BINWEIGHT FOR EACH STATION

  #Create a histogram of the sediment metric divided into your bins
  hist(taxametrics$binCentroid,50,xlab="Embeddedness (%)",main="Embeddedness \n in 50 Bins") #for
emdeddedness when i manually did bins
  #hist(taxametrics$binCentoid,NumberofBreaks,xlab="sediment metric (units)")
  #print this plot:

  jpeg(file="EmbedBinHistgram.jpg") #this starts writing of plot to jpeg file
    hist(taxametrics$binCentroid,50,xlab="Embeddedness (%)",main="Embeddedness \n in 50 Bins") #for
emdeddedness when i manually did bins
  dev.off()

####################################################################
####################################################################
####################################################################

#Determine which taxa will be included in your analysis based on frequency of detection (#stations)

#define variable of all taxa names on bench sheet; alternatively load a separate data file vector of taxa
names
taxa.names <- c("Aeshnidae","Ameletidae","Amphipoda..unknown.","Ancylidae","Anisoptera..unknown.",
                "Apataniidae","Asellidae","Athericidae","Baetidae","Baetiscidae",

"Belostomatidae","Blephariceridae","Brachycentridae","Branchiobdellidae","Caenidae","Calamoceratidae",

"Calopterygidae","Cambaridae","Capniidae","Ceratopogonidae","Chaoboridae","Chironomidae..A.",

"Chironomidae..B.","Chloroperlidae","Chrysomelidae","Coenagrionidae","Coleoptera..unknown.","Corbicul
idae",
```

```
            "Cordulegastridae","Corduliidae","Corixidae","Corydalidae","Crambidae","Crangonyctidae",
            "Culicidae","Curculionidae","Dipseudopsidae","Diptera..unknown.","Dixidae","Dolichopodidae",
            "Dryopidae","Dytiscidae","Elmidae","Empididae","Enchytraeidae","Ephemerellidae",

"Ephemeridae","Ephemeroptera..unknown.","Ephydridae","Erpobdellidae","Gammaridae","Gastropoda..u
nknown.",
            "Gerridae","Glossiphoniidae","Glossosomatidae","Goeridae","Gomphidae","Gyrinidae",
            "Haliplidae","Haplotaxidae","Hebridae","Helicopsychidae","Helodidae","Hemiptera..unknown.",

"Heptageniidae","Hirudinea..unknown.","Hirudinidae","Hydracarina..unknown.","Hydrobiidae","Hydrometri
dae",

"Hydrophilidae","Hydropsychidae","Hydroptilidae","Isonychiidae","Lepidoptera..unknown.","Lepidostomati
dae",
            "Leptoceridae","Leptohyphidae","Leptophlebiidae","Lestidae","Leuctridae","Libellulidae",

"Libellulidae.Corduliidae","Limnephilidae","Lumbricidae","Lumbriculidae","Lutrochidae","Lymnaeidae",

"Macromiidae","Megaloptera..unknown.","Mesoveliidae","Metretopodidae","Molannidae","Muscidae",
            "Naididae","Naucoridae","Nemouridae","Neoephemeridae","Nepidae","Noteridae",
            "Notonectidae","Odontoceridae","Oligochaeta..unknown.","Palaemonidae","Pelecorhynchidae",
"Pelecypoda..unknown.",
            "Peltoperlidae","Perlidae","Perlodidae","Philopotamidae","Phoridae","Phryganeidae",

"Physidae","Piscicolidae","Planorbidae","Plecoptera..unknown.","Pleuroceridae","Polycentropodidae",

"Polymitarcyidae","Portunidae","Potamanthidae","Psephenidae","Psychodidae","Psychomyiidae",

"Pteronarcyidae","Ptilodactylidae","Ptychopteridae","Pyralidae","Rhyacophilidae","Sciomyzidae",
            "Scirtidae","Sericostomatidae","Sialidae","Simuliidae","Siphlonuridae","Sisyridae",
            "Sparganophilidae","Sphaeriidae","Spongillidae","Stratiomyidae","Syrphidae","Tabanidae",
            "Taeniopterygidae","Talitridae","Tanyderidae","Tetrastemmatidae","Thaumaleidae","Tipulidae",

"Trichoptera..unknown.","Tricladida..unknown.","Tubificidae","Uenoidae","Unionidae","Valvatidae",
            "Veliidae","Viviparidae","Zygoptera..unknown.")

length(taxa.names) #number of taxa on the bioassessment score sheets - taxa.names is a vector


#Create new dataframe for bug, site count, denominator data
?data.frame
#set up empty variable names of appropriate length
SiteCount <-rep(NA, times = length(taxa.names))
Denominator<-rep(NA,length(taxa.names))
#?rep  Rep replicates values in X

TaxaInfo<-data.frame(Taxa=taxa.names, SiteCount=SiteCount, Denominator=Denominator)


#################BinTable <- T[,c("Centroid","Var1","Freq")]


#calculate SiteCount with loop - number of sites at which this taxon was detected
#by using length function with condition - yields # observations at which taxa count is not equal to zero

for (i in 1:length(taxa.names)){
```

```
  TaxaInfo$SiteCount[i] <- length(which(!taxametrics[,taxa.names[i]]==0))
  #site count is not equal to zero for that bug
  #This generates site counts for taxa matched to their taxa name in taxametrics df
}
#print(TaxaInfo)

#Now CALCULATE DENOMINATORS FOR EACH TAXON (=SUM WEIGHTS FOR STATIONS WHERE TAXON WAS DETECTED)
for (k in 1:length(taxa.names))
{
  TaxaInfo$Denominator[k]<-sum(taxametrics$BinWeight[taxametrics[,taxa.names[k]]>0])
}

#print(TaxaInfo)

#Write file to keep
#?write.table
write.table(TaxaInfo, file ="TaxaInfo.csv",row.names=TRUE,sep=",",col.names = NA)
#wrote file into the working directory noted above - nice
#when we write as table it gets an extra column... hmmm - remove that above when calling this file in future

#Counts of various types
# = total number observations
TotalStations<-length(taxametrics$StationID)
TotalStations
#Taxa names in database (same as lenth of taxa names variable)
NumberBugsInDatabase<-length(TaxaInfo$Taxa)
NumberBugsInDatabase
#number of taxa not detected at any site
NumberBugsNeverCaught<-length(which(TaxaInfo$SiteCount==0))
NumberBugsNeverCaught
#Taxa caught at at least 1 site
BugCaught1orMore<-NumberBugsInDatabase-NumberBugsNeverCaught
BugCaught1orMore


#Now generate a list of the taxon that are detected at at least {CriticalSiteNumber} of sites
#these are ones we will focus on for future analyses
# may need to change this number if can't see response with this number sites
CriticalSiteNumber<-15  #detected in 3.8% of sites (5% of sites yields 19 as critical number)
#proportion of sites detected in is not important - number of observations to see response matters

### Emma Code edited by hg

# using base R
test <- TaxaInfo[!is.na(TaxaInfo$SiteCount),] # get rid of NA's - we should not have any NA counts
test2 <- test[test$TaxaInfo>(CriticalSiteNumber-1),] # get rid of any rows present at less than critical site # of sites

# using dplyr
library(dplyr)
test3 <- filter(TaxaInfo,!is.na(SiteCount) & SiteCount>(CriticalSiteNumber-1))

TaxatoEvaluate <- test3
#chose the method above you want to use for filtering - test2 or 3
```

```
# Emma likes dplyr better, check out the tidyverse for good data manipulation libraries/tips
TaxatoEvaluate$Taxa<-as.character(TaxatoEvaluate$Taxa) #do we need to do this? was a factor
TaxatoEvaluateList<-TaxatoEvaluate$Taxa
### End Emma Code
length(TaxatoEvaluateList)

#####################

#generate cumuative probability of detection data
#using EPA weighted function from conductivity paper (page 15)

#checking approach
 #sum(taxametrics$BinWeight)  #should = number of bins with at least one SEDMETRIC represented
 #length(which(!T$Freq==0))  #this also should equal number of bins with at least one SEDMETRIC
represented


#Testing what values are being pulled:
#for (k in 1:length(TaxaToEvaluateList))
#k=4
#  taxa.names[k]   #taxa.names is a vector so this is the kth entry in the vector = taxa name
#  taxametrics[,taxa.names[k]] #provides the vector of count data for taxa kth on the taxa.names list
#  taxametrics$Ancylidae

##############################################################

##NOTE ON "length" function
   length(taxa.names)  #note this is vector so gives number rows (observations)
   length(taxametrics) #note this gives number columns in the data frame
   length(taxametrics$binWeight)  #note this gives number rows in the data frame


##################### TRIAL CODE FOR ONE TAXON
############################################
 #first, try with one taxon

#  NumeratorBae<-rep(NA, length(taxametrics$Embed_PCT)) #length = number of stations
#  CumProbDetectBae<-rep(NA, length(taxametrics$Embed_PCT))
#  DenominatorBae<-sum(taxametrics$BinWeight[taxametrics$Baetidae>0]) # = one value =total possible
weights (where bug detected)
#  #Denominators for all taxa were already calculated so can use vlookp to find this instead of above
equation
#
#  for (i in 1:length(taxametrics$Embed_PCT))
#  {
#   NumeratorBae[i]<-sum(taxametrics$BinWeight[taxametrics$Baetidae>0 &
!taxametrics$Embed_PCT>taxametrics$Embed_PCT[i]])
#   CumProbDetectBae[i]<-NumeratorBae[i]/DenominatorBae
#  }
#   NumeratorBae
#   CumProbDetectBae
#
#   #Baetidae dataframe
#   dfBaetidae<-
data.frame(taxametrics$Embed_PCT,taxametrics$Baetidae,taxametrics$BinWeight,NumeratorBae,
rep(DenominatorBae), CumProbDetectBae)
```

```
#   #not saving this as a separate database - but should I for identifiying cutoff? maybe should do this to
use look to name files
#
#
#   #save plot to folder
#   #where the plot will go
#   j=9  #for Baetidae
#   mypath <- file.path(wd,paste("CDF_EmbedOrder_", taxa.names[j], ".jpg", sep = ""))
#
#   jpeg(file=mypath) #this starts writing of plot to jpeg file
#
#   #Make plot of Cumulative Probability of Capture
#   plot(dfBaetidae$taxametrics.Embed_PCT, dfBaetidae$CumProbDetectBae, type = "l", xlab
="Embeddedness (%)",
#        ylab = "Cumulative Probability of Capture", main = taxa.names[j])
#
#   dev.off()
#
#   #add horizontal line at 0.95
#   #add vertical line solving for Sediment where y=0.95
#
#   #success!

#################################################
   #now do in loop for each TaxaOfInterest


#################### LOOP FOR CUMULATIVE PROB OF CAPTURE
#########################################
  #note that we did this for TaxatoEvaluateList taxa only - if you run a taxa that was not detected (which
you would come upon
   #if you used full taxa.names list, then it will kick you out of the loop)

  #set up table and variables to store the XC95 values

    XC95Interpolated<-rep(NA,length(TaxatoEvaluateList))#we will use this one
    XC95Mean<-rep(NA,length(TaxatoEvaluateList))
    dfXC95<-data.frame(TaxatoEvaluateList,XC95Interpolated,XC95Mean)

  for (j in 1:length(TaxatoEvaluateList))
  {
   #set up empty variables of length = number of stations
   BugNumerator<-rep(NA, length(taxametrics$StationID)) #length = number of stations
   BugCumProbDetect<-rep(NA, length(taxametrics$StationID))

   #find denominator for the taxa of interest
   BugDenominator<-vlookup(TaxatoEvaluateList[j],TaxaInfo,3) # = VLOOKUP from TaxaInfo

   for (i in 1:length(taxametrics$Embed_PCT)) #i is for each row entry (for each station)
   {
     BugNumerator[i]<-sum(taxametrics$BinWeight[taxametrics[,TaxatoEvaluateList[j]]>0 &
!taxametrics[,Sediment]>taxametrics[,Sediment][i]])
     BugCumProbDetect[i]<-BugNumerator[i]/BugDenominator
   }
```

```
  #dataframe
  dfBug<-data.frame(taxametrics[,Sediment],taxametrics[,TaxatoEvaluateList[j]],taxametrics$BinWeight,
BugNumerator, rep(BugDenominator), BugCumProbDetect)

  #save data frame as table
  mypathdf <- file.path(wd,paste("df_", TaxatoEvaluateList[j], ".csv", sep = ""))
  write.table(dfBug, file =mypathdf,row.names=TRUE,sep=",",col.names = NA)


  #pull the XC95 value
  #Make sure the bug database is sorted by the sediment variable
  dfBugSort <- dfBug[order(dfBug$taxametrics...Sediment.),]

  #Select a cutoff percentile
  cutoff <- 0.95

  #Find point where cumulative sum is 0.95
 ic <- 1
 while (dfBugSort$BugCumProbDetect[ic] < cutoff) {ic <- ic + 1}
 ic #returns the first value of cumulative prob detect > cutoff value

 SEDabove95<-dfBugSort$taxametrics...Sediment.[ic]
 SEDbelow95<-dfBugSort$taxametrics...Sediment.[ic-1]
 CPDabove95<-dfBugSort$BugCumProbDetect[ic]
 CPDbelow95<-dfBugSort$BugCumProbDetect[ic-1]


 #linear interpolation - x = embeddedness value
 #y = cumprobdetection values
 RiseProb<-(SEDabove95-SEDbelow95)
 RunEmbed<-(CPDabove95-CPDbelow95)
 slope<-RiseProb/RunEmbed


 # y = mx + b  intercept at lower embed
 # solve for x when y = 0.95
 # xsolving for SED = lower sed value + (y-b)/m    # y = the lowerCPD value = cutoff value

 dfXC95$XC95Interpolated[j]<-SEDbelow95+(cutoff-CPDbelow95)/slope
 dfXC95$XC95Interpolated #two point interpolation between boundries to 95th percentile

 dfXC95$XC95Mean[j]<-(SEDabove95+SEDbelow95)/2
 dfXC95$XC95Mean #mean of boundaries to 95% percentile

 #Plot Cumulative Probability of Capture with xc95
 #where the plot will go
 mypath <- file.path(wd,paste("CDF_EmbedWithXC95_", TaxatoEvaluateList[j], ".jpg", sep = ""))

 jpeg(file=mypath) #this starts writing of plot to jpeg file

 plot(dfBug$taxametrics...Sediment., dfBug$BugCumProbDetect , type = "l", xlab ="Embeddedness (%)",
     ylab = "Cumulative Probability of Capture", main = TaxatoEvaluateList[j])
 abline(h=0.95, col="red", lty="dashed")
 abline(v=dfXC95$XC95Interpolated[j], col="blue", lty="dotted")

 dev.off()
```

```
 }

 dfXC95

 EmbedXC95Interpolated<-ecdf(dfXC95$XC95Interpolated)
 EC05Interpolated<-quantile(EmbedXC95Interpolated,0.05)
 EC05Interpolated

  #write plot to file

 mypath <- file.path(wd,"EC05_AllRegions.jpg")
 jpeg(file=mypath)

 plot(EmbedXC95Interpolated,main="Embeddedness Sensitivity Threshold \n Combined
BioRegions",ylab="Cumulative Probability",xlab="Embeddedness (%)")
 abline(v=EC05Interpolated, lty="dashed", col="red")
 abline(h=0.05, lty="dashed", col="gray")
 text(75,0.85, pos=4, paste("Threshold = ", round(EC05Interpolated, digits=0), "%", sep=""), cex=1.5,
col="red")

 dev.off()

  write.table(dfXC95, file ="dfXC95.csv",row.names=TRUE,sep=",",col.names = NA)
  ##################################################
  #################################################
```

```
#################################################################
#Name: Species Sensitivity Distributions; VDEQ sediment metrics on extirpation at family level
#Coder: Heather Govenor with input from Emma Jones/Jason Hill
#Date: 06/13/17 trying to form bins for embeddedness
#DATA ARE FROM FALL SAMPLING EVENTS - EARLIEST PER SAMPLE LOCATION; 2004-2014
#Purpose: SSD curves on key sediment parameters (embeddedness)
#includes handy loops to save multiple plots and files to folders
################################################################

#(Step 2) Capture Probability per Taxa of Interest calculated by sediment metric bin
#keeping much of the upfront code here....

#Clear global environment
rm(list = ls())

#Set working directory

# for HG laptop
#wd<-"C:/HardDriveBackup/R/HeatherGovenor"
wd<-"C:/Users/Heather/Google Drive/BSE Engineering/Research Govenor/3 2016 VDEQ Data
Analysis/2017 analyses/CPD_Embeddedness"
setwd(wd)

#Read in data file from working directory
x<-read.csv("OneStationSedimentBugsR.csv")
#names(x)


#Identify variables of interest from that data file
d<-c(1,18,19,30,31,32,33,38,39,40,42,44,66:222) #sedmetrics and taxa counts and bioregion and station
id

#Create new dataset with only those variables of interest
taxametrics<-x[,d]
names(taxametrics)#verify variables are what you wanted

####################################################
#determine what sediment variable of interest is (use name from database)
#options = SpCond, TDS_V, Turb.V, TSS.V, LRBS, FN_PCT, SA_PCT, LSUB_DMM, Embed_PCT (not
transformed)
Sediment<-"Embed_PCT"    #(later change code so that it says Sediment where now calls for embed)
####################################################

#define bins for embeddedness...
#OPTION 1 for BINS
#divide evenly across observed range of sediment variable
#NumberofBreaks<-25 #choose number of breaks/ bins
#taxametrics$BinName<-cut(taxametrics[,Sediment], breaks = NumberofBreaks)
#great b/c you can adjust number of bins
#note that this bins based on the range of observed values not on a range of possible values
#taxametrics$BinName #check result

#OPTION 2 for BINS
#to specify break points that you want the intervals cut into you can do so as follows
sequence<-seq(0,100,by=2)   #defined breakpoints - 50 bins, span possible range of variable
#cut the Embed_PCT variable by using the seq defined above
```

```
taxametrics$BinName<-cut(taxametrics[,Sediment], breaks = sequence)
taxametrics$BinName  #see what you generated
#class(taxametrics$BinName) #should be factor

#Count the number of observations in each bin using table function
#?table
T<-table(taxametrics$BinName)
#as data frame generates 2 columns for the table data so can look things up from there (bin factor/ count)
T<-as.data.frame(T)
#add variable that is the center of each of the bin of sediment values
#WILL NEED TO CORRECT/ CHECK CENTROID VALUE FOR OTHER METRICS- below for embeddedness only (and percents)
T$centroid<-seq(1,99,by=2) #will need to adjust depending on sediment variable of interest #used for histogram of binned data
#then use vlookup to add bins and centroids to the taxametrics table

#write to file
#save data frame as table - do this at end with bug data added?
mypathdf <- file.path(wd,"df_EmbedBin.csv")
write.table(T, file =mypathdf,row.names=TRUE,sep=",",col.names = NA)


##############################################################
##############################################################
##############################################################

#Determine which taxa will be included in your analysis based on frequency of detection (#stations)
#reading in taxainfo that was created in original file

TaxaInfo<-read.csv("TaxaInfo.csv") #has each of the 157 taxa names on bench sheet included
names(TaxaInfo)


#Now generate a list of the taxon that are detected at at least {CriticalSiteNumber} of sites
#these are ones we will focus on for future analyses
# may need to change this number if can't see response with this number sites
CriticalSiteNumber<-15  #detected in 3.8% of sites (5% of sites yields 19 as critical number)
#proportion of sites detected in is not important - number of observations to see response matters

### Emma Code edited by hg

# using base R
test <- TaxaInfo[!is.na(TaxaInfo$SiteCount),] # get rid of NA's - we should not have any NA counts
test2 <- test[test$TaxaInfo>(CriticalSiteNumber+1),] # get rid of any rows present at less than critical site # of sites

# using dplyr
library(dplyr)
test3 <- filter(TaxaInfo,!is.na(SiteCount) & SiteCount>(CriticalSiteNumber+1))

TaxatoEvaluate <- test3
#chose the method above you want to use for filtering - test2 or 3
# Emma likes dplyr better, check out the tidyverse for good data manipulation libraries/tips
TaxatoEvaluate$Taxa<-as.character(TaxatoEvaluate$Taxa) #do we need to do this? was a factor
TaxatoEvaluateList<-TaxatoEvaluate$Taxa
### End Emma Code
```

```
#######################SKIP THIS FOR STEP 2 - ALREADY DONE
#####################

#generate cumuative probability of detection data
#using EPA weighted function from conductivity paper (page 15)

##################### LOOP FOR CAPTURE PROBABILITY FOR TAXA OF INTEREST
###########################################
 #note that we dO this for TaxatoEvaluateList taxa only


 for (j in 1:length(TaxatoEvaluateList))   # j controls calcs for each taxon
 {
  #set up empty variables of length = number of BINS
  BugNumerator<-rep(NA, length(T$centroid)) #length = number of stations
  BugCaptureProb<-rep(NA, length(T$centroid))

  #find denominator for the taxa of interest
  BugDenominator<-sum(taxametrics[,TaxatoEvaluateList[j]]) # total individuals found for that taxon

  #i is for each row entry (for each sediment bin)
  for (i in 1:length(T$centroid))
  {
    BugNumerator[i]<-sum(taxametrics[,TaxatoEvaluateList[j]][taxametrics$BinName==T$Var1[i]])
    BugCaptureProb[i]<-BugNumerator[i]/BugDenominator
  }

   #dataframe
  dfBug<-data.frame(T$Var1,T$centroid, BugNumerator, rep(BugDenominator), BugCaptureProb)

  #save data frame as table
  mypathdf <- file.path(wd,paste("dfCaptureProb_", TaxatoEvaluateList[j], ".csv", sep = ""))
  write.table(dfBug, file =mypathdf,row.names=TRUE,sep=",",col.names = NA)


  #Plot Capture Probability by SEDIMENT Bin

  #where the plot will go

  mypath <- file.path(wd,paste("CaptureProb_Embeddedness_", TaxatoEvaluateList[j], ".jpg", sep = ""))

  jpeg(file=mypath) #this starts writing of plot to jpeg file

  #Make plot of Capture Probability
  plot(dfBug$T.centroid, dfBug$BugCaptureProb , type = "p", xlab ="Embeddedness (%)",
       ylab = "Capture Probability", main = TaxatoEvaluateList[j])

  dev.off()

     #add vertical line at XC95 for that taxon
  }



  ##################################################
```

## Chapter 4. Data
## Flow at the H Flume

| Flood | TIMESTAMP | L/s | Comment |
|---|---|---|---|
| 1 | 5/24/2016 12:46 | 0.1324 | Backwatering |
| 1 | 5/24/2016 12:47 | 40.4552 | |
| 1 | 5/24/2016 12:48 | 54.0663 | |
| 1 | 5/24/2016 12:49 | 55.7545 | Peak Flow Flood 1 |
| 1 | 5/24/2016 12:50 | 53.0096 | |
| 1 | 5/24/2016 12:51 | 48.7965 | |
| 1 | 5/24/2016 12:52 | 43.5205 | |
| 1 | 5/24/2016 12:53 | 38.5060 | |
| 1 | 5/24/2016 12:54 | 33.5697 | |
| 1 | 5/24/2016 12:55 | 28.5751 | |
| 1 | 5/24/2016 12:56 | 24.1736 | |
| 1 | 5/24/2016 12:57 | 20.6439 | |
| 1 | 5/24/2016 12:58 | 17.5129 | |
| 1 | 5/24/2016 12:59 | 14.6662 | |
| 1 | 5/24/2016 13:00 | 12.2339 | |
| 1 | 5/24/2016 13:01 | 10.2833 | |
| 1 | 5/24/2016 13:02 | 8.7334 | |
| 1 | 5/24/2016 13:03 | 7.3246 | |
| 1 | 5/24/2016 13:04 | 6.3164 | |
| 1 | 5/24/2016 13:05 | 5.5081 | |
| 1 | 5/24/2016 13:06 | 4.8038 | |
| 1 | 5/24/2016 13:07 | 4.2873 | |
| 1 | 5/24/2016 13:08 | 3.8630 | |
| 1 | 5/24/2016 13:09 | 3.5409 | |
| 1 | 5/24/2016 13:10 | 3.2922 | |
| 1 | 5/24/2016 13:11 | 3.0932 | |
| 1 | 5/24/2016 13:12 | 2.9139 | |
| 1 | 5/24/2016 13:13 | 2.7838 | |
| 1 | 5/24/2016 13:14 | 2.6775 | |
| 1 | 5/24/2016 13:15 | 2.5838 | |
| 1 | 5/24/2016 13:16 | 2.4943 | |
| 1 | 5/24/2016 13:17 | 2.4507 | |
| 1 | 5/24/2016 13:18 | 2.3753 | |
| 1 | 5/24/2016 13:19 | 2.3414 | |
| 1 | 5/24/2016 13:20 | 2.2675 | |
| 1 | 5/24/2016 13:21 | 2.2455 | |
| 1 | 5/24/2016 13:22 | 2.2722 | |
| 1 | 5/24/2016 13:23 | 2.1822 | |
| 1 | 5/24/2016 13:24 | 2.1930 | |
| 1 | 5/24/2016 13:25 | 2.1437 | |

| Flood | TIMESTAMP | L/s | Comment |
|---|---|---|---|
| 1 | 5/24/2016 13:26 | 2.0994 | |
| 1 | 5/24/2016 13:27 | 2.0899 | |
| 1 | 5/24/2016 13:28 | 2.0601 | |
| 1 | 5/24/2016 13:29 | 2.0646 | |
| 1 | 5/24/2016 13:30 | 1.9944 | |
| 1 | 5/24/2016 13:31 | 1.9841 | |
| 1 | 5/24/2016 13:32 | 1.9145 | |
| 1 | 5/24/2016 13:33 | 1.9089 | |
| 1 | 5/24/2016 13:34 | 1.9151 | |
| 1 | 5/24/2016 13:35 | 1.8854 | |
| 1 | 5/24/2016 13:36 | 1.9091 | |
| 1 | 5/24/2016 13:37 | 1.8699 | |
| 1 | 5/24/2016 13:38 | 1.8661 | |
| 1 | 5/24/2016 13:39 | 1.8441 | |
| 1 | 5/24/2016 13:40 | 1.8479 | |
| 1 | 5/24/2016 13:41 | 1.8104 | |
| 1 | 5/24/2016 13:42 | 1.8212 | |
| 1 | 5/24/2016 13:43 | 1.8325 | |
| 1 | 5/24/2016 13:44 | 1.3138 | |
| 1 | 5/24/2016 13:45 | 1.3814 | |
| 1 | 5/24/2016 13:46 | 1.4273 | |
| 1 | 5/24/2016 13:47 | 1.4444 | |
| | | | |
| 2 | 5/25/2016 13:48 | #NUM! | backwatering |
| 2 | 5/25/2016 13:49 | 27.9615 | |
| 2 | 5/25/2016 13:50 | 47.4716 | |
| 2 | 5/25/2016 13:51 | 54.7596 | Peak flow Flood 2 |
| 2 | 5/25/2016 13:52 | 51.5107 | |
| 2 | 5/25/2016 13:53 | 46.2745 | |
| 2 | 5/25/2016 13:54 | 41.0432 | |
| 2 | 5/25/2016 13:55 | 35.1906 | |
| 2 | 5/25/2016 13:56 | 29.5652 | |
| 2 | 5/25/2016 13:57 | 24.3606 | |
| 2 | 5/25/2016 13:58 | 19.8460 | |
| 2 | 5/25/2016 13:59 | 16.3259 | |
| 2 | 5/25/2016 14:00 | 13.0612 | |
| 2 | 5/25/2016 14:01 | 10.3538 | |
| 2 | 5/25/2016 14:02 | 8.0022 | |
| 2 | 5/25/2016 14:03 | 6.1567 | |
| 2 | 5/25/2016 14:04 | 4.7287 | |
| 2 | 5/25/2016 14:05 | 3.6377 | |
| 2 | 5/25/2016 14:06 | 2.7842 | |

| Flood | TIMESTAMP | L/s | Comment |
|---|---|---|---|
| 2 | 5/25/2016 14:07 | 2.1632 | |
| 2 | 5/25/2016 14:08 | 1.6609 | |
| 2 | 5/25/2016 14:09 | 1.3025 | |
| 2 | 5/25/2016 14:10 | 1.0081 | |
| 2 | 5/25/2016 14:11 | 0.8073 | |
| 2 | 5/25/2016 14:12 | 0.6293 | |
| 2 | 5/25/2016 14:13 | 0.5224 | |
| 2 | 5/25/2016 14:14 | 0.4418 | |
| 2 | 5/25/2016 14:15 | 0.3527 | |
| 2 | 5/25/2016 14:16 | 0.3182 | |
| 2 | 5/25/2016 14:17 | 0.2613 | |
| 2 | 5/25/2016 14:18 | 0.2405 | |
| 2 | 5/25/2016 14:19 | 0.1987 | |
| 2 | 5/25/2016 14:20 | 0.1775 | |
| 2 | 5/25/2016 14:21 | 0.1518 | |
| 2 | 5/25/2016 14:22 | 0.1445 | |
| 2 | 5/25/2016 14:23 | 0.1256 | |
| 2 | 5/25/2016 14:24 | 0.1143 | |
| 2 | 5/25/2016 14:25 | 0.1114 | |
| 2 | 5/25/2016 14:26 | 0.0904 | |
| 2 | 5/25/2016 14:27 | 0.0825 | |
| 2 | 5/25/2016 14:28 | 0.0710 | |
| 2 | 5/25/2016 14:29 | 0.0633 | |
| 2 | 5/25/2016 14:30 | 0.0517 | |
| 2 | 5/25/2016 14:31 | 0.0541 | |
| 2 | 5/25/2016 14:32 | 0.0496 | |
| 2 | 5/25/2016 14:33 | 0.0416 | |
| 2 | 5/25/2016 14:34 | 0.0491 | |
| 2 | 5/25/2016 14:35 | 0.0363 | |
| 2 | 5/25/2016 14:36 | 0.0315 | |
| 2 | 5/25/2016 14:37 | 0.0282 | |
| 2 | 5/25/2016 14:38 | 0.0313 | |
| 2 | 5/25/2016 14:39 | 0.0227 | |
| 2 | 5/25/2016 14:40 | 0.0223 | |
| 2 | 5/25/2016 14:41 | 0.0167 | |
| 2 | 5/25/2016 14:42 | 0.0144 | |
| 2 | 5/25/2016 14:43 | 0.0145 | |
| 2 | 5/25/2016 14:44 | 0.0126 | |
| 2 | 5/25/2016 14:45 | 0.0123 | |

| Flood | channelLocation | Cross.Section | Sample ID | Location | Collection Date | Total Sediment (g) | Sediment (g/dm2) | 139La (mg/kg) | 171Yb (mg/kg) | D10 (um) | D50 (um) | D90 (um) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flood 1 | Thalweg | XS3 | F1-XS3-0-1 | F1-XS3-0 | 5/25/2016 | 8.1 | 5.40 | 35.540 | 1.600 | 2.104 | 21.364 | 86.926 |
| Flood 1 | Thalweg | XS3 | F1-XS3-0-2 |  | 5/25/2016 | 42.98 | 28.65 |  |  |  |  |  |
| Flood 1 | Thalweg | XS3 | F1-XS3-0-3 |  | 5/25/2016 | 10.74 | 7.16 |  |  |  |  |  |
| Flood 1 | Floodplain | XS3 | F1-XS3-1-1 | F1-XS3-1 | 5/25/2016 | 12.76 | 8.51 | 232.390 | 1.960 | 3.114 | 26.819 | 83.989 |
| Flood 1 | Floodplain | XS3 | F1-XS3-1-2 |  | 5/25/2016 | 6.02 | 4.01 |  |  |  |  |  |
| Flood 1 | Floodplain | XS3 | F1-XS3-1-3 |  | 5/25/2016 | 4.16 | 2.77 |  |  |  |  |  |
| Flood 1 | Thalweg | XS2 | F1-XS2-0-1 | F1-XS2-0 | 5/25/2016 | 26.87 | 17.91 | 97.120 | 2.070 | 1.763 | 18.501 | 84.178 |
| Flood 1 | Thalweg | XS2 | F1-XS2-0-2 |  | 5/25/2016 | 18.58 | 12.39 |  |  |  |  |  |
| Flood 1 | Thalweg | XS2 | F1-XS2-0-3 |  | 5/25/2016 | 26.92 | 17.95 |  |  |  |  |  |
| Flood 1 | Floodplain | XS2 | F1-XS2-1-1 | F1-XS2-1 | 5/25/2016 | 15.69 | 10.46 | 246.470 | 3.030 | 2.956 | 34.253 | 117.949 |
| Flood 1 | Floodplain | XS2 | F1-XS2-1-2 |  | 5/25/2016 | 9.2 | 6.13 |  |  |  |  |  |
| Flood 1 | Floodplain | XS2 | F1-XS2-1-3 |  | 5/25/2016 | 3.22 | 2.15 |  |  |  |  |  |
| Flood 1 | Thalweg | XS1 | F1-XS1-0-1 | F1-XS1-0 | 5/25/2016 | 13.58 | 9.05 | 153.330 | 1.470 | 2.089 | 37.430 | 256.346 |
| Flood 1 | Thalweg | XS1 | F1-XS1-0-2 |  | 5/25/2016 | 13.94 | 9.29 |  |  |  |  |  |
| Flood 1 | Thalweg | XS1 | F1-XS1-0-3 |  | 5/25/2016 | 86.72 | 57.81 |  |  |  |  |  |
| Flood 1 | Floodplain | XS1 | F1-XS1-1-1 | F1-XS1-1 | 5/25/2016 | 15.93 | 10.62 | 591.670 | 1.660 | 2.603 | 29.563 | 106.383 |
| Flood 1 | Floodplain | XS1 | F1-XS1-1-2 |  | 5/25/2016 | 16.16 | 10.77 |  |  |  |  |  |
| Flood 1 | Floodplain | XS1 | F1-XS1-1-3 |  | 5/25/2016 | 21.89 | 14.59 |  |  |  |  |  |
| Flood 2 | Thalweg | XS3 | F2-XS3-0-1 | F2-XS3-0 | 5/26/2016 | 7 | 4.67 | 34.250 | 50.850 | 2.860 | 28.444 | 103.994 |
| Flood 2 | Thalweg | XS3 | F2-XS3-0-2 |  | 5/26/2016 | 7.14 | 4.76 |  |  |  |  |  |
| Flood 2 | Thalweg | XS3 | F2-XS3-0-3 |  | 5/26/2016 | 7.9 | 5.27 |  |  |  |  |  |
| Flood 2 | Floodplain | XS3 | F2-XS3-1-1 | F2-XS3-1 | 5/26/2016 | 10.58 | 7.05 | 62.450 | 173.070 | 2.411 | 19.676 | 60.711 |
| Flood 2 | Floodplain | XS3 | F2-XS3-1-2 |  | 5/26/2016 | 9.37 | 6.25 |  |  |  |  |  |
| Flood 2 | Floodplain | XS3 | F2-XS3-1-3 |  | 5/26/2016 | 3.67 | 2.45 |  |  |  |  |  |
| Flood 2 | Thalweg | XS2 | F2-XS2-0-1 | F2-XS2-0 | 5/26/2016 | 22.38 | 14.92 | 26.850 | 26.970 | 1.807 | 24.929 | 207.258 |
| Flood 2 | Thalweg | XS2 | F2-XS2-0-2 |  | 5/26/2016 | 31.45 | 20.97 |  |  |  |  |  |
| Flood 2 | Thalweg | XS2 | F2-XS2-0-3 |  | 5/26/2016 | 40.97 | 27.31 |  |  |  |  |  |
| Flood 2 | Floodplain | XS2 | F2-XS2-1-1 | F2-XS2-1 | 5/26/2016 | 5.65 | 3.77 | 43.690 | 405.230 | 3.145 | 30.251 | 98.886 |
| Flood 2 | Floodplain | XS2 | F2-XS2-1-2 |  | 5/26/2016 | 2.26 | 1.51 |  |  |  |  |  |

| Flood | channelLocation | Cross.Section | Sample ID | Location | Collection Date | Total Sediment (g) | Sediment (g/dm2) | 139La (mg/kg) | 171Yb (mg/kg) | D10 (um) | D50 (um) | D90 (um) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flood 2 | Floodplain | XS2 | F2-XS2-1-3 |  | 5/26/2016 | 2.72 | 1.81 |  |  |  |  |  |
| Flood 2 | Thalweg | XS1 | F2-XS1-0-1 | F2-XS1-0 | 5/26/2016 | 33.59 | 22.39 | 68.200 | 227.670 | 1.933 | 30.111 | 225.343 |
| Flood 2 | Thalweg | XS1 | F2-XS1-0-2 |  | 5/26/2016 | 46.27 | 30.85 |  |  |  |  |  |
| Flood 2 | Thalweg | XS1 | F2-XS1-0-3 |  | 5/26/2016 | 51.49 | 34.33 |  |  |  |  |  |
| Flood 2 | Floodplain | XS1 | F2-XS1-1-1 | F2-XS1-1 | 5/26/2016 | 12.16 | 8.11 | 80.130 | 834.970 | 2.939 | 35.853 | 138.632 |
| Flood 2 | Floodplain | XS1 | F2-XS1-1-2 |  | 5/26/2016 | 12.53 | 8.35 |  |  |  |  |  |
| Flood 2 | Floodplain | XS1 | F2-XS1-1-3 |  | 5/26/2016 | 16.58 | 11.05 |  |  |  |  |  |

| Flood | Cross Section | Sample ID | Collection Date | Time (sec) | TSS (g/L) | 139La (mg/kg) | 171Yb (mg/kg) | D10 (um) | D50 (um) | D90 (um) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | F1-E1-1 | 5/24/2016 | 30 | 1.463 | 32.76 | 1.52 | 2.12 | 20.94 | 99.49 |
| 1 | 1 | F1-E1-2 | 5/24/2016 | 60 | 27.637 | 817.33 | 1.35 | 3.98 | 53.65 | 246.77 |
| 1 | 1 | F1-E1-3 | 5/24/2016 | 90 | 9.266 | 365.03 | 1.15 | 2.18 | 23.27 | 115.48 |
| 1 | 1 | F1-E1-4 | 5/24/2016 | 120 | 3.653 | 207.53 | 1.19 | 2.79 | 34.94 | 187.59 |
| 1 | 1 | F1-E1-5 | 5/24/2016 | 180 | 1.12 | 99.97 | 1.34 | 2.19 | 21.44 | 122.92 |
| 1 | 1 | F1-E1-6 | 5/24/2016 | 240 | 0.597 |  |  | 2.08 | 18.58 | 89.90 |
| 1 | 1 | F1-E1-7 | 5/24/2016 | 300 | 0.349 | 83.8 | 1.25 | 2.07 | 19.20 | 123.82 |
| 1 | 1 | F1-E1-8 | 5/24/2016 | 360 | 0.198 |  |  | 1.67 | 13.85 | 58.53 |
| 1 | 1 | F1-E1-9 | 5/24/2016 | 420 | 0.138 |  |  | 1.81 | 14.29 | 62.25 |
| 1 | 1 | F1-E1-10 | 5/24/2016 | 480 | 0.099 | 88.1 | 1.37 | 2.12 | 17.81 | 88.26 |
| 1 | 1 | F1-E1-11 | 5/24/2016 | 540 | 0.069 |  |  |  |  |  |
| 1 | 1 | F1-E1-12 | 5/24/2016 | 600 | 0.107 | 72.42 | 4 |  |  |  |
| 1 | 3 | F1-E3-1 | 5/24/2016 | 180 | 0.64 | 32.66 | 2.11 | 1.76 | 12.49 | 42.74 |
| 1 | 3 | F1-E3-2 | 5/24/2016 | 210 | 4.931 | 356.67 | 1.3 | 2.19 | 18.69 | 63.83 |
| 1 | 3 | F1-E3-3 | 5/24/2016 | 240 | 4.994 | 353 | 1.3 | 2.18 | 17.61 | 61.32 |
| 1 | 3 | F1-E3-4 | 5/24/2016 | 270 | 3.352 | 515.48 | 1.23 | 4.83 | 45.00 | 217.83 |
| 1 | 3 | F1-E3-5 | 5/24/2016 | 330 | 1.598 | 301.99 | 1.47 | 2.05 | 16.08 | 55.04 |
| 1 | 3 | F1-E3-6 | 5/24/2016 | 400 | 0.82 |  |  | 1.97 | 15.89 | 55.24 |
| 1 | 3 | F1-E3-7 | 5/24/2016 | 450 | 0.556 | 129.03 | 1.09 | 2.27 | 18.15 | 66.27 |
| 1 | 3 | F1-E3-8 | 5/24/2016 | 510 | 0.368 |  |  | 2.17 | 16.49 | 59.70 |
| 1 | 3 | F1-E3-9 | 5/24/2016 | 570 | 0.242 |  |  | 2.56 | 20.21 | 130.24 |
| 1 | 3 | F1-E3-10 | 5/24/2016 | 630 | 0.178 | 108.86 | 1.49 | 2.77 | 23.43 | 165.74 |
| 1 | 3 | F1-E3-11 | 5/24/2016 | 690 | 0.144 |  |  | 1.78 | 13.49 | 48.63 |
| 1 | 3 | F1-E3-12 | 5/24/2016 | 750 | 0.092 | 110.67 | 1.2 |  |  |  |
| 1 | 4 | F1-E4-1 | 5/24/2016 | 240 | 0.155 | 29.97 | 1.94 |  |  |  |
| 1 | 4 | F1-E4-2 | 5/24/2016 | 270 | 0.94 | 73.73 | 1.82 | 1.93 | 14.37 | 49.83 |
| 1 | 4 | F1-E4-3 | 5/24/2016 | 300 | 2.777 | 343.33 | 1.61 | 2.13 | 16.55 | 59.41 |
| 1 | 4 | F1-E4-4 | 5/24/2016 | 330 | 2.902 | 503.59 | 1.82 | 2.29 | 19.20 | 68.12 |
| 1 | 4 | F1-E4-5 | 5/24/2016 | 390 | 1.522 | 344.14 | 1.42 | 2.79 | 23.57 | 96.79 |

| Flood | Cross Section | Sample ID | Collection Date | Time (sec) | TSS (g/L) | 139La (mg/kg) | 171Yb (mg/kg) | D10 (um) | D50 (um) | D90 (um) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | F1-E4-6 | 5/24/2016 | 450 | 1.004 |  |  | 2.55 | 21.95 | 123.51 |
| 1 | 4 | F1-E4-7 | 5/24/2016 | 510 | 0.683 | 203.92 | 1.29 | 2.24 | 17.47 | 60.50 |
| 1 | 4 | F1-E4-8 | 5/24/2016 | 570 | 0.473 |  |  | 1.91 | 13.94 | 48.59 |
| 1 | 4 | F1-E4-9 | 5/24/2016 | 630 | 0.317 |  |  | 2.64 | 21.24 | 152.35 |
| 1 | 4 | F1-E4-10 | 5/24/2016 | 690 | 0.207 | 217.58 | 1.36 | 1.96 | 14.80 | 49.34 |
| 1 | 4 | F1-E4-11 | 5/24/2016 | 750 | 0.166 |  |  | 1.69 | 10.94 | 33.89 |
| 1 | 4 | F1-E4-12 | 5/24/2016 | 810 | 0.147 | 181.8 | 1.31 | 2.04 | 15.23 | 54.15 |
| 2 | 1 | F2-E1-1 | 5/25/2016 | 60 | 3.699 | 73.9 | 826 | 2.08 | 21.41 | 99.33 |
| 2 | 1 | F2-E1-2 | 5/25/2016 | 90 | 6.475 | 55.57 | 830.33 | 1.79 | 15.66 | 73.82 |
| 2 | 1 | F2-E1-3 | 5/25/2016 | 120 | 2.925 | 49.9 | 459 | 2.30 | 23.69 | 134.42 |
| 2 | 1 | F2-E1-4 | 5/25/2016 | 150 | 1.385 | 54.4 | 310.17 | 2.30 | 22.77 | 117.08 |
| 2 | 1 | F2-E1-5 | 5/25/2016 | 210 | 0.849 | 51.77 | 218.43 | 2.18 | 19.16 | 76.93 |
| 2 | 1 | F2-E1-6 | 5/25/2016 | 270 | 0.32 | 50.2 | 203.67 | 2.58 | 23.59 | 143.86 |
| 2 | 1 | F2-E1-7 | 5/25/2016 | 330 | 0.163 |  |  | 2.19 | 18.31 | 72.70 |
| 2 | 1 | F2-E1-8 | 5/25/2016 | 390 | 0.109 | 40.75 | 214.15 | 2.06 | 15.71 | 56.87 |
| 2 | 1 | F2-E1-9 | 5/25/2016 | 450 | 0.086 |  |  | 1.73 | 12.63 | 42.85 |
| 2 | 1 | F2-E1-10 | 5/25/2016 | 510 | 0.059 | 37.77 | 172.36 |  |  |  |
| 2 | 1 | F2-E1-11 | 5/25/2016 | 570 | 0.042 |  |  |  |  |  |
| 2 | 1 | F2-E1-12 | 5/25/2016 | 630 | 0.059 | 35.23 | 148.87 |  |  |  |
| 2 | 3 | F2-E3-1 | 5/25/2016 | 240 | 1.318 | 61.9 | 1.68 | 2.13 | 15.68 | 48.54 |
| 2 | 3 | F2-E3-2 | 5/25/2016 | 270 | 0.978 | 53.3 | 1085 | 2.12 | 16.48 | 58.68 |
| 2 | 3 | F2-E3-3 | 5/25/2016 | 300 | 2.329 | 57.2 | 320.13 | 2.09 | 16.25 | 58.05 |
| 2 | 3 | F2-E3-4 | 5/25/2016 | 330 | 2.807 | 40.25 | 384.26 | 2.11 | 16.49 | 53.88 |
| 2 | 3 | F2-E3-5 | 5/25/2016 | 360 | 2.999 | 55.93 | 851.6 | 1.78 | 13.31 | 43.69 |
| 2 | 3 | F2-E3-6 | 5/25/2016 | 450 | 1.14 | 44.25 | 443.46 | 2.10 | 15.64 | 52.06 |
| 2 | 3 | F2-E3-7 | 5/25/2016 | 510 | 0.779 |  |  | 2.13 | 17.11 | 60.69 |
| 2 | 3 | F2-E3-8 | 5/25/2016 | 570 | 0.472 | 38.46 | 220.75 | 2.09 | 15.80 | 55.97 |
| 2 | 3 | F2-E3-9 | 5/25/2016 | 630 | 0.314 |  |  | 1.86 | 13.78 | 50.22 |
| 2 | 3 | F2-E3-10 | 5/25/2016 | 690 | 0.215 | 44.7 | 247.63 | 1.95 | 13.88 | 48.42 |

| Flood | Cross Section | Sample ID | Collection Date | Time (sec) | TSS (g/L) | 139La (mg/kg) | 171Yb (mg/kg) | D10 (um) | D50 (um) | D90 (um) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 3 | F2-E3-11 | 5/25/2016 | 750 | 0.157 | | | 1.91 | 13.96 | 49.36 |
| 2 | 3 | F2-E3-12 | 5/25/2016 | 810 | 0.112 | 45.46 | 271.11 | 1.95 | 14.09 | 49.12 |
| 2 | 4 | F2-E4-1 | 5/25/2016 | 300 | 0.097 | 40.87 | 2.28 | | | |
| 2 | 4 | F2-E4-2 | 5/25/2016 | 330 | 0.207 | 51.37 | 1.78 | 1.64 | 10.50 | 33.72 |
| 2 | 4 | F2-E4-3 | 5/25/2016 | 360 | 0.785 | 64.2 | 111.8 | 1.85 | 13.01 | 40.63 |
| 2 | 4 | F2-E4-4 | 5/25/2016 | 390 | 1.704 | 59.33 | 618 | 1.88 | 14.14 | 45.56 |
| 2 | 4 | F2-E4-5 | 5/25/2016 | 450 | 2.007 | 57.83 | 936 | 1.97 | 15.29 | 50.84 |
| 2 | 4 | F2-E4-6 | 5/25/2016 | 510 | 1.319 | 52.53 | 822.33 | 1.93 | 14.02 | 45.12 |
| 2 | 4 | F2-E4-7 | 5/25/2016 | 570 | 0.855 | | | 2.02 | 16.01 | 56.03 |
| 2 | 4 | F2-E4-8 | 5/25/2016 | 630 | 0.567 | 47.91 | 350 | 2.24 | 16.92 | 57.94 |
| 2 | 4 | F2-E4-9 | 5/25/2016 | 690 | 0.424 | | | 1.84 | 13.42 | 44.49 |
| 2 | 4 | F2-E4-10 | 5/25/2016 | 750 | 0.283 | 43.56 | 371.24 | 1.78 | 12.88 | 43.07 |
| 2 | 4 | F2-E4-11 | 5/25/2016 | 810 | 0.207 | | | 1.80 | 12.14 | 40.21 |
| 2 | 4 | F2-E4-12 | 5/25/2016 | 870 | 0.143 | 49.5 | 468.24 | 1.76 | 12.24 | 41.38 |

| **Flood** | **Sample ID** | Collection Date | 139La (mg/kg) | 171Yb (mg/kg) | D10 (um) | D50 (um) | D90 (um) |
|---|---|---|---|---|---|---|---|
| 1 | F1-T123 | 5/24/2016 | 258.57 | 1.32 | 2.466 | 17.819 | 61.902 |
| 2 | F2-T123 | 5/25/2016 | 58.43 | 443.33 | 2.322 | 16.93 | 54.468 |
| 2 | F2-T456 | 5/25/2016 | 31.35 | 8.78 | 2.082 | 14.015 | 44.001 |
| | | | | | | | |
| NA | REE-La | 5/23/2016 | 7192.81 | 1.41 | 2.005 | 15.65 | 50.461 |
| NA | REE-Yb | 5/23/2016 | 25.41 | 8151.79 | 1.772 | 17.698 | 91.337 |
| NA | Stroubles1a | 5/23/2016 | 19.58 | 0.93 | 2.444 | 25.017 | 99.758 |
| NA | Stroubles1b | 5/23/2016 | 21.27 | 1.03 | 2.444 | 25.017 | 99.758 |
| NA | Stroubles2a | 5/23/2016 | 23.66 | 1.18 | 2.811 | 33.355 | 157.276 |
| NA | Stroubles2b | 5/23/2016 | 21.39 | 1.05 | 2.811 | 33.355 | 157.276 |

|  | Sample ID | La139 (mg/kg) | Yb171 (mg/kg) | D10 (um) | D50 (um) | D90 (um) |
|---|---|---|---|---|---|---|
| Deposition | F1-XS1-0 | 153.33 | 1.47 | 2.09 | 37.43 | 256.35 |
| Deposition | F1-XS1-1 | 591.67 | 1.66 | 2.60 | 29.56 | 106.38 |
| Deposition | F1-XS2-0 | 97.12 | 2.07 | 1.76 | 18.50 | 84.18 |
| Deposition | F1-XS2-1 | 246.47 | 3.03 | 2.96 | 34.25 | 117.95 |
| Deposition | F1-XS3-0 | 35.54 | 1.60 | 2.10 | 21.36 | 86.93 |
| Deposition | F1-XS3-1 | 232.39 | 1.96 | 3.11 | 26.82 | 83.99 |
| Deposition | F2-XS1-0 | 68.20 | 227.67 | 1.93 | 30.11 | 225.34 |
| Deposition | F2-XS1-1 | 80.13 | 834.97 | 2.94 | 35.85 | 138.63 |
| Deposition | F2-XS2-0 | 26.85 | 26.97 | 1.81 | 24.93 | 207.26 |
| Deposition | F2-XS2-1 | 43.69 | 405.23 | 3.15 | 30.25 | 98.89 |
| Deposition | F2-XS3-0 | 34.25 | 50.85 | 2.86 | 28.44 | 103.99 |
| Deposition | F2-XS3-1 | 62.45 | 173.07 | 2.41 | 19.68 | 60.71 |
| Suspension | F1-E1-1 | 32.76 | 1.52 | 2.12 | 20.94 | 99.49 |
| Suspension | F1-E1-2 | 817.33 | 1.35 | 3.98 | 53.65 | 246.77 |
| Suspension | F1-E1-3 | 365.03 | 1.15 | 2.18 | 23.27 | 115.48 |
| Suspension | F1-E1-4 | 207.53 | 1.19 | 2.79 | 34.94 | 187.59 |
| Suspension | F1-E1-5 | 99.97 | 1.34 | 2.19 | 21.44 | 122.92 |
| Suspension | F1-E1-6 |  |  | 2.08 | 18.58 | 89.90 |
| Suspension | F1-E1-7 | 83.8 | 1.25 | 2.07 | 19.20 | 123.82 |
| Suspension | F1-E1-8 |  |  | 1.67 | 13.85 | 58.53 |
| Suspension | F1-E1-9 |  |  | 1.81 | 14.29 | 62.25 |
| Suspension | F1-E1-10 | 88.1 | 1.37 | 2.12 | 17.81 | 88.26 |
| Suspension | F1-E1-11 |  |  |  |  |  |
| Suspension | F1-E1-12 | 72.42 | 4 |  |  |  |
| Suspension | F1-E3-1 | 32.66 | 2.11 | 1.76 | 12.49 | 42.74 |
| Suspension | F1-E3-2 | 356.67 | 1.3 | 2.19 | 18.69 | 63.83 |
| Suspension | F1-E3-3 | 353 | 1.3 | 2.18 | 17.61 | 61.32 |
| Suspension | F1-E3-4 | 515.48 | 1.23 | 4.83 | 45.00 | 217.83 |
| Suspension | F1-E3-5 | 301.99 | 1.47 | 2.05 | 16.08 | 55.04 |

|  | Sample ID | La139 (mg/kg) | Yb171 (mg/kg) | D10 (um) | D50 (um) | D90 (um) |
|---|---|---|---|---|---|---|
| Suspension | F1-E3-6 |  |  | 1.97 | 15.89 | 55.24 |
| Suspension | F1-E3-7 | 129.03 | 1.09 | 2.27 | 18.15 | 66.27 |
| Suspension | F1-E3-8 |  |  | 2.17 | 16.49 | 59.70 |
| Suspension | F1-E3-9 |  |  | 2.56 | 20.21 | 130.24 |
| Suspension | F1-E3-10 | 108.86 | 1.49 | 2.77 | 23.43 | 165.74 |
| Suspension | F1-E3-11 |  |  | 1.78 | 13.49 | 48.63 |
| Suspension | F1-E3-12 | 110.67 | 1.2 |  |  |  |
| Suspension | F1-E4-1 | 29.97 | 1.94 |  |  |  |
| Suspension | F1-E4-2 | 73.73 | 1.82 | 1.93 | 14.37 | 49.83 |
| Suspension | F1-E4-3 | 343.33 | 1.61 | 2.13 | 16.55 | 59.41 |
| Suspension | F1-E4-4 | 503.59 | 1.82 | 2.29 | 19.20 | 68.12 |
| Suspension | F1-E4-5 | 344.14 | 1.42 | 2.79 | 23.57 | 96.79 |
| Suspension | F1-E4-6 |  |  | 2.55 | 21.95 | 123.51 |
| Suspension | F1-E4-7 | 203.92 | 1.29 | 2.24 | 17.47 | 60.50 |
| Suspension | F1-E4-8 |  |  | 1.91 | 13.94 | 48.59 |
| Suspension | F1-E4-9 |  |  | 2.64 | 21.24 | 152.35 |
| Suspension | F1-E4-10 | 217.58 | 1.36 | 1.96 | 14.80 | 49.34 |
| Suspension | F1-E4-11 |  |  | 1.69 | 10.94 | 33.89 |
| Suspension | F1-E4-12 | 181.8 | 1.31 | 2.04 | 15.23 | 54.15 |
| Suspension | F2-E1-1 | 73.9 | 826 | 2.08 | 21.41 | 99.33 |
| Suspension | F2-E1-2 | 55.57 | 830.33 | 1.79 | 15.66 | 73.82 |
| Suspension | F2-E1-3 | 49.9 | 459 | 2.30 | 23.69 | 134.42 |
| Suspension | F2-E1-4 | 54.4 | 310.17 | 2.30 | 22.77 | 117.08 |
| Suspension | F2-E1-5 | 51.77 | 218.43 | 2.18 | 19.16 | 76.93 |
| Suspension | F2-E1-6 | 50.2 | 203.67 | 2.58 | 23.59 | 143.86 |
| Suspension | F2-E1-7 |  |  | 2.19 | 18.31 | 72.70 |
| Suspension | F2-E1-8 | 40.75 | 214.15 | 2.06 | 15.71 | 56.87 |
| Suspension | F2-E1-9 |  |  | 1.73 | 12.63 | 42.85 |
| Suspension | F2-E1-10 | 37.77 | 172.36 |  |  |  |

|  | Sample ID | La139 (mg/kg) | Yb171 (mg/kg) | D10 (um) | D50 (um) | D90 (um) |
|---|---|---|---|---|---|---|
| Suspension | F2-E1-11 |  |  |  |  |  |
| Suspension | F2-E1-12 | 35.23 | 148.87 |  |  |  |
| Suspension | F2-E3-1 | 61.9 | 1.68 | 2.13 | 15.68 | 48.54 |
| Suspension | F2-E3-2 | 53.3 | 1085 | 2.12 | 16.48 | 58.68 |
| Suspension | F2-E3-3 | 57.2 | 320.13 | 2.09 | 16.25 | 58.05 |
| Suspension | F2-E3-4 | 40.25 | 384.26 | 2.11 | 16.49 | 53.88 |
| Suspension | F2-E3-5 | 55.93 | 851.6 | 1.78 | 13.31 | 43.69 |
| Suspension | F2-E3-6 | 44.25 | 443.46 | 2.10 | 15.64 | 52.06 |
| Suspension | F2-E3-7 |  |  | 2.13 | 17.11 | 60.69 |
| Suspension | F2-E3-8 | 38.46 | 220.75 | 2.09 | 15.80 | 55.97 |
| Suspension | F2-E3-9 |  |  | 1.86 | 13.78 | 50.22 |
| Suspension | F2-E3-10 | 44.7 | 247.63 | 1.95 | 13.88 | 48.42 |
| Suspension | F2-E3-11 |  |  | 1.91 | 13.96 | 49.36 |
| Suspension | F2-E3-12 | 45.46 | 271.11 | 1.95 | 14.09 | 49.12 |
| Suspension | F2-E4-1 | 40.87 | 2.28 |  |  |  |
| Suspension | F2-E4-2 | 51.37 | 1.78 | 1.64 | 10.50 | 33.72 |
| Suspension | F2-E4-3 | 64.2 | 111.8 | 1.85 | 13.01 | 40.63 |
| Suspension | F2-E4-4 | 59.33 | 618 | 1.88 | 14.14 | 45.56 |
| Suspension | F2-E4-5 | 57.83 | 936 | 1.97 | 15.29 | 50.84 |
| Suspension | F2-E4-6 | 52.53 | 822.33 | 1.93 | 14.02 | 45.12 |
| Suspension | F2-E4-7 |  |  | 2.02 | 16.01 | 56.03 |
| Suspension | F2-E4-8 | 47.91 | 350 | 2.24 | 16.92 | 57.94 |
| Suspension | F2-E4-9 |  |  | 1.84 | 13.42 | 44.49 |
| Suspension | F2-E4-10 | 43.56 | 371.24 | 1.78 | 12.88 | 43.07 |
| Suspension | F2-E4-11 |  |  | 1.80 | 12.14 | 40.21 |
| Suspension | F2-E4-12 | 49.5 | 468.24 | 1.76 | 12.24 | 41.38 |
| Longitudinal | F1-T123 | 258.57 | 1.32 | 2.47 | 17.82 | 61.90 |
| Longitudinal | F2-T123 | 58.43 | 443.33 | 2.32 | 16.93 | 54.47 |
| Longitudinal | F2-T456 | 31.35 | 8.78 | 2.08 | 14.02 | 44.00 |