State Of California

State Water Resources Control Board

**CEDEN Web Services**

User Guide

Version 0.4

DRAFT

**Updated: June 23, 2016**



THIS PAGE INTENTIONALLY LEFT BLANK

**Version Control**

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Author | Notes |
| 0.4 | 06/23/2016 | Water Boards | Prepared for external users. |
|  |  |  |  |
|  |  |  |  |

**Contents**

[Introduction 1](#_Toc454450353)

[Test/Staging 1](#_Toc454450354)

[Web Services 2](#_Toc454450355)

[General 2](#_Toc454450356)

[Base URL 2](#_Toc454450357)

[Security 2](#_Toc454450358)

[Service Response Status 2](#_Toc454450359)

[Service Querying 3](#_Toc454450360)

[CEDEN Advanced Query Tool Services 8](#_Toc454450361)

[CEDENBenthicMonitoringStationsList 8](#_Toc454450362)

[CEDENBenthicParameterCountsList 11](#_Toc454450363)

[CEDENBenthicResultsList 13](#_Toc454450364)

[CEDENHabitatMonitoringStationsList 19](#_Toc454450365)

[CEDENHabitatParameterCountsList 22](#_Toc454450366)

[CEDENHabitatResultsList 24](#_Toc454450367)

[CEDENTissueMonitoringStationsList 29](#_Toc454450368)

[CEDENTissueParameterCountsList 32](#_Toc454450369)

[CEDENTissueResultsList 34](#_Toc454450370)

[CEDENToxicityMonitoringStationsList 41](#_Toc454450371)

[CEDENToxicityParameterCountsList 44](#_Toc454450372)

[CEDENToxicityResultsList 46](#_Toc454450373)

[CEDENWaterQualityMonitoringStationsList 55](#_Toc454450374)

[CEDENWaterQualityParameterCountsList 58](#_Toc454450375)

[CEDENWaterQualityResultsList 60](#_Toc454450376)

[Web User Interface for WSL 68](#_Toc454450377)

[Service List 69](#_Toc454450378)

[Service Details 70](#_Toc454450379)

[Service Runner 71](#_Toc454450380)

# Introduction

The State Water Resources Control Board (Water Board) contracted Windsor Solutions Inc. (Windsor) to establish web services from the California Environmental Data Exchange Network (CEDEN) to the Water Board’s web portals.

Water Board’s primary objectives for this project were to extend the CEDEN system by providing the following additional Web services to serve customers with data from CEDEN:

* Create a Web Service to provide data to the CEDEN Advanced Query Tool.
* Create a Web Service to provide data to the Safe-to-Swim portion of the My Water Quality portals.

This project created Web Services to providing data to the CEDEN Advanced Query Tool and the Safe-to-Swim portion of the My Water Quality portals.

The purpose of this document is to provide some basic guidance to those consuming these web services.

### Test/Staging

The Test/Staging environment is comprised of the following servers:

* Web/App Server:
  + DMZ IP: 172.22.33.133
  + Public IP: 134.186.197.133
  + Server Name: WB-SB-CEDENW-T
  + URL: <https://testcedenwebservices.waterboards.ca.gov>
* Database Server:
  + IP: 10.24.58.92
  + Server Name: WB-SB-SQL-T1
  + Database Instance: SQL01T;1541

# Web Services

This section of the document details the web services that are available. For each web service, the web URL, source view, HTTP method, request URL parameters, response format, response attributes and any relevant comments are detailed.

The web services described are broken in to three categories, including:

* CEDEN Advance Query Tool Services – Web services supporting the CEDEN Advanced Query Tool.

The services under each of these categories are described in detail below.

## General

### Base URL

To access the web services, the following base URL is provided:

* Test: testcedenwebservices.waterboards.ca.gov

An example of a web service call for this URL is:

* https://testcedenwebservices.waterboards.ca.gov/cedenwaterqualitymonitoringstationslist/?queryParams%3D%7B%22filter%22%3A%5B%7B%22sampleDateMin%22%3A%221%2F1%2F2015%22%2C%22sampleDateMax%22%3A%224%2F1%2F2015%22%7D%5D%2C%22top%22%3A1000%7D[[1]](#footnote-1)

### Security

Authentication and authorization for the web services will be managed via user management security module. All public facing web servers require SSL certificates. See the Security Services section of this document for further details.

### Service Response Status

All responses will be returned in JSON format. Responses will follow the standard HTTP response status codes (<https://en.wikipedia.org/wiki/List_of_HTTP_status_codes>). The most frequent status codes include:

* **200 OK/Success** - Valid query and data returned
* **400 Bad Request** - Query string was improperly formatted
* **401 Unauthorized** - Need to log in
* **403 Forbidden** - Authorized, but does not have permission to access service
* **404 Not Found** - Calling invalid service endpoint
* **50x Internal Server Error** - Some internal server error, this should not normally show up and would indicate a bug in the services

### Service Querying

This section describes the different facets of the service queries.

#### Service Request

##### Header Attributes

The following section describes the header attributes for use in WSL.

###### Accept

The Accept property can be used to specify the format in which data will be presented in a response (e.g., JSON or CSV). By default, all data is returned in JSON format, but data can be returned in a CSV format, when appropriate using this property.

CSV: text/csv

JSON: application/json, text/plain, \*/\*

*Example*

|  |
| --- |
| For JSON: Accept: application/json  For CSV: Accept: application/csv |

In the first example above, the response will be return as JSON. In the second example above, the response will be return as CSV.

##### Query Parameters

Each service can enable many service parameters. These query parameters can be defined within the “queryParameters” element. The following section describes the query parameters that are available for the service.

###### filter

The "filter" array query property allows an array of elements to be used to filter the results returned in the service response. Each element in the array is added to the filter as an OR logical operation. Each property for each element in the array is added to the filter as an AND logical operation. Any property that is associated with the element that is returned by the service can be used in the filter.

*Example*

|  |
| --- |
| http.get('/service/', { params: {  queryParams: { filter: [ { name: 'S/%', type: 'Administrator' },  { name: 'M/%', workgroup: 'Permits' },  { isActive: false } ] }  } } ); |

In the example above, notice the use of the wildcard query sequence '/%' which can appear multiple times anywhere in a query string value. This example will return all elements where:

* name starts with 'S' AND type is 'Administrator'   
  OR
* name starts with 'M' AND workgroup is 'Permits'   
  OR
* isActive is false

###### Advanced Filters

In addition to supporting property names in the query filter, one of the following five suffixes can also be appended to each property name used in the filer to enhance the query:

* 'Max' - Specifies the maximum allowed value for the property
* 'Min' - Specifies the minimum allowed value for the property
* 'Not' - Specifies a value that the property cannot be
* 'IsNull' - Specifies that the property must be null
* 'IsNotNull' - Specifies that the property cannot be null

Note: use of these advanced filters is case sensitive, so be sure to use appropriate casing (e.g., startDateMin versus startDatemin).

*Example*

|  |
| --- |
| http.get('/service/', { params: {  queryParams: { filter: [ { startDateMin: '1/1/2000', startDateMax: '1/1/2012' },  { workgroupNot: 'Permits', workgroupNot: 'Dam Safety' },  { commentTextIsNotNull: '' } ] }  } } ); |

The example above will filter the service results such that all elements are returned where the following criteria is met:

* startDate is greater than or equal to '1/1/2000' AND  
  startDate is less than or equal to '1/1/2012'   
  OR
* workgroup is not 'Permits' AND workgroup is not 'Dam Safety'   
  OR
* commentText is not null/empty

###### orderBy Property

The "orderBy" string-array query property allows an array of string elements to be used to order the results returned in the service response in ascending or descending order. Each element in the array contains the name of the property to order by, followed by an optional "asc" or "desc" qualifier; "asc" is the default if not specified. The result elements are ordered sequentially according to the order of the properties in the "orderBy" array.

*Example*

|  |
| --- |
| http.get('/service/', { params: {  queryParams: { orderBy: [ 'workgroup', 'startDate desc' ] }  } } ); |

The example above will return the service results ordered first by workgroup, then by descending startDate.

###### Top and Skip Properties

The "top" and "skip" query properties allow paging of the results returned in the service response. The "top" property indicates that, at most, "top" number of results will be returned, and the "skip" property indicates that "skip" number of results will be skipped over before "top" number of results are returned. For example, if we had a grid with a page size of 20 and we wanted to display results for the fifth page, we would use "top" = 20 and "skip" = 20 \* 4 = 80 (skip over first four pages of results to display the fifth page). Note that the use of "top" and "skip" almost always requires the use of the "orderBy" property, as well, so that results are returned in a consistent (and not random) order.

*Example*

|  |
| --- |
| http.get('/service/', { params: {  queryParams: { orderBy: [ 'workgroup', 'startDate desc' ], top: 20, skip: 80 }  } } ); |

The example above will return up to 20 service results, skipping over the first 80 results, ordered first by workgroup, then by descending startDate.

###### Distinct Property

The "distinct" string-array query property specifies that only distinct property values should be returned in the service response.

*Example*

|  |
| --- |
| http.get('/service/', { params: {  queryParams: { distinct: [ 'workgroup', 'programArea' ] }  } } ); |

The example above will return only the distinct service results for the combination of 'workgroup' and 'programArea'.

##### Additional Service Attributes

The following are the additional service attributes that are available for use, when needed.

###### Query-By-Id Property

All List and Read services can be queried by id. In this case, the id of the element to be returned is appended to the end of the service URL, like so: /service/id.

*Example*

|  |
| --- |
| http.get('/service/' + id); |

The example above will return a single element with the specified id in the queryResults array (if the element exists).

###### loadChildren Property

Loads any child arrays that are related to parent object. This attribute is only available for GET services and is dependent upon availability for the service based on the existence of a relational structure. As an example, you could load all documents associated to a given permit using this attribute.

*Example*

|  |
| --- |
| http.get('/service/', , {  loadChildren:true  } ); |

###### saveChildren Property

Saves any child arrays for a parent object. This attribute is only available for POST services and is dependent upon availability for the service based on the existence of a relational structure. As an example, you could save/resave all documents associated to a given permit in a given service call.

*Example*

|  |
| --- |
| http.post('/service/', , {  saveChildren:true  } ); |

###### includeMetadataInResponse Property

Returns all metadata in the response, describing the properties of the response. This will include properties such as data types, read only, default value, labels, etc. See Service Metadata section below for additional details of metadata types.

Note: Metadata will be returned, by default

*Example*

|  |
| --- |
| http.post('/service/', , {  includeMetadataInResponse:true  } ); |

#### Query Results

All List and Read services support complex OData-style querying, out-of-the-box using query properties passed as parameters to the GET request, as specified below. All GET requests for List and Read services return an object that contains a “queryResults” array-property; this property contains all the elements that match the request query parameters for the service.

## CEDEN Advanced Query Tool Services

The following web services exist to support the CEDEN Advanced Query Tool.

### CEDENBenthicMonitoringStationsList

Get a list of all CEDEN Benthic monitoring stations by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedenbenthicmonitoringstationslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_MONITORING\_STATIONS\_BEN\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **string** | Unique identifier assigned to each record in Benthic datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| parameterGroups | *Optional*  **string** | Name of grouping of which organism is a member. |
| parameter | *Optional*  **string** | The name of the organism that was measured. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g. samplewater. |
| lowerSampleDate | *Optional*  **date** | The lower value of a date range for sample date. |
| upperSampleDate | *Optional* **date** | The upper value of a date range for sample date. |
| upperLatitude | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| lowerLatitude | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| upperLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |
| lowerLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| stationCode | **string** | A code representing the station name and site. |
| latitude | **numeric** | Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places. |
| longitude | **numeric** | Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative). |
| sampleLocation | **string** | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations. |
| siteDescription | **string** | Description of the station. |
| county | **string** | County in which the station was surveyed. |
| samplingAgency | **string** | Refers to the organization or agency that collected the sample. |

### CEDENBenthicParameterCountsList

Get a list of all CEDEN Benthic parameters monitored at a particular monitoring station.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedenbenthicparametercountslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_PARAMETER\_COUNTS\_BEN\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** | |
| --- | --- | --- | --- |
| id | *Optional* **numeric** | | Unique identifier formed through concatenation of StationCode, ProjectCode, and FinalID values. | |
| stationCode | *Optional* **string** | | A code representing the station name and site. | |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationCode | **string** | A code representing the station name and site. |
| projectName | **string** | References the project that is associated with the sample. |
| parameterName | **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| lowerSampleDate | **date** | The lower value of dates the results were sampled at this monitoring station. |
| upperSampleDate | **date** | The upper value of dates the results were sampled at this monitoring station. |
| resultCount | **numeric** | The number of results for the parameter at this monitoring station. |

### CEDENBenthicResultsList

Get a list of all CEDEN Benthic results by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedenbenthicresultslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_RESULTS\_BEN\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **numeric** | Unique identifier assigned to each row in Benthic datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| organismGroups | *Optional*  **string** | Name of grouping of which organism is a member. |
| organism | *Optional*  **string** | The name of the organism that was measured. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g. samplewater. |
| lowerSampleDate | *Optional*  **date** | The lower value of a date range for sample date. |
| upperSampleDate | *Optional* **date** | The upper value of a date range for sample date. |
| upperLatitude | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| lowerLatitude | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| upperLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |
| lowerLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| program | **string** | The name of the program responsible for the result measurement. |
| project | **string** | References the project that is associated with the sample. |
| projectcode | **string** | References the project that is associated with the sample. |
| parentproject | **string** | References the parent project of the project that is associated with the sample. |
| stationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| stationCode | **string** | A code representing the station name and site. |
| latitude | **numeric** | Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places. |
| longitude | **numeric** | Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative). |
| datum | **string** | Represents the associated model of the Earth from which reference points are used to calculate position measurements. |
| geometryShape | **string** | Physical shape of the location. |
| sampleDate | **date** | Refers to the date the sample was collected in the field. |
| collectionTime | **string** | Refers to the time when the first sample of a sampling event at a specific station was collected in the field. |
| samplingAgency | **string** | Refers to the organization or agency that collected the sample. |
| protocolCode | **string** | Represents the sampling protocol used, which includes the set of methods, methodology and/or specifications, such as MPSLDFG\_Field\_v1.0. |
| locationCode | **string** | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations. |
| hydroModLoc | **string** |  |
| hydromod | **string** |  |
| collectionReplicate | **numeric** | Used to distinguish between replicates created at a single collection in the field. |
| collectionMethodName | **string** | Refers to the general method of collection such as Sed\_Grab, Sed\_Core, Water\_Grab, Autosampler24h, Autosampler7d. |
| sampleType | **string** | Refers to the type of sample collected or analyzed. |
| personnelCode | **numeric** | Name of the person making the FinalID. |
| sampleComments | **string** | Any notes or comments specifically related to the sample collection. |
| collectionDeviceName | **string** | Name of the CollectionDevice. |
| labSampleID | **string** | Recommended field intended to provide lab specific identification for an analyzed sample. |
| finalID | **string** | Refers to the lowest taxon level identified for the organism |
| phylum | **string** | Phylum of organism. |
| class | **string** | Class of organism. |
| orders | **string** | Order of organism. |
| family | **string** | Family of organism. |
| genus | **string** | Genus of organism. |
| species | **string** | Species of organism. |
| lifeStageName | **string** | Unique code referencing the stage of life of the organism; e.g. adult, juvenile, larvae. |
| distinctOrganism | **numeric** | An indicator whether or not this record represents a unique taxon in the sample. |
| counts | **string** | Total number of organisms recovered by lab sorter in all grids analyzed, including the count above and beyond the target total for the subsample. |
| baResult | **string** | Represents the number of individuals of a given FinalID and stage that were identified within a sample replicate. This is for unadjusted (raw) counts and is to be used for cases where a TargetOrganismCount is used. |
| unit | **string** | Refers to how the taxonomic result is measured or expressed. |
| taxonomicQualifier | **string** | These codes are used to indicate reasons why terminal identification was not achieved for a particular taxon. |
| excludedTaxa | **string** | Code representing the taxonomist's justification for excluding a specimen from analysis. |
| comments | **string** | Comments related to the BenthicResult or individual taxa count. |
| sieveSize | **string** | Size of the sieve the sample was passed through; e.g. 0.5mm, none. |
| sieveSizeUnit | **string** | Refers to how the sieve size is measured or expressed. |
| collectionDepth | **string** | Records the depth or penetration, from the surface in the water or sediment column, at which the sample was collected. |
| unitCollectionDepth | **string** | Refers to the units used in the CollectionDepth including cm (centimeters) and m (meters). |
| grabSize | **string** | Represents the total area of substrate collected for the sample, regardless of CollectionDevice area size. |
| unitGrabSize | **string** | Refers to the units used for GrabSize e.g. m2 or cm2. |
| resQualCode | **string** | Qualifies the analytical result of the sample. |
| complianceCode | **string** | Unique code referencing the Compliance with the associated QAPP. |
| county | **string** | County in which the station was surveyed. |
| regionalBoard | **string** | Regional Board ID Number from the CalWater 2.2.1 2004 GIS layer. |
| sampleID | **string** | Unique identifier supplied by the organization directing the sampling or sampling agency and is used to track the sample throughout the sampling and analysis processes. |

### CEDENHabitatMonitoringStationsList

Get a list of all CEDEN Habitat monitoring stations by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedenhabitatmonitoringstationslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_MONITORING\_STATIONS\_HAB\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **string** | Unique identifier assigned to each record in Habitat datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g. samplewater. |
| lowerSampleDate | *Optional*  **date** | The lower value of a date range for sample date. |
| upperSampleDate | *Optional* **date** | The upper value of a date range for sample date. |
| upperLatitude | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| lowerLatitude | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| upperLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |
| lowerLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| stationCode | **string** | A code representing the station name and site. |
| latitude | **numeric** | Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places. |
| longitude | **numeric** | Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative). |
| sampleLocation | **string** | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations. |
| siteDescription | **string** | Description of the station. |
| county | **string** | County in which the station was surveyed. |
| samplingAgency | **string** | Refers to the organization or agency that collected the sample. |

### CEDENHabitatParameterCountsList

Get a list of all CEDEN Habitat parameters monitored at a particular monitoring station.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedenhabitatparametercountslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_PARAMETER\_COUNTS\_HAB\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **string** | Unique identifier formed through concatenation of StationCode, Project, and Analyte values. |
| stationCode | *Optional* **string** | A code representing the station name and site. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationCode | **string** | A code representing the station name and site. |
| projectName | **string** | References the project that is associated with the sample. |
| parameterName | **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| lowerSampleDate | **date** | The lower value of a date range for sample date. |
| upperSampleDate | **date** | The upper value of a date range for sample date. |
| resultCount | **numeric** | The number of results for the parameter at this monitoring station. |

### CEDENHabitatResultsList

Get a list of all CEDEN Habitat results by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedenhabitatresultslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_RESULTS\_HAB\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **numeric** | Unique identifier assigned to each row in Habitat datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| parameterGroups | *Optional*  **string** | Name of grouping of which parameter is a member. |
| parameter | *Optional*  **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g. samplewater. |
| lowerSampleDate | *Optional*  **date** | The lower value of a date range for sample date. |
| upperSampleDate | *Optional* **date** | The upper value of a date range for sample date. |
| upperLatitude | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| lowerLatitude | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| upperLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |
| lowerLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| program | **string** | The name of the program responsible for the result measurement. |
| parentProject | **string** | References the parent project of the project that is associated with the sample. |
| project | **string** | References the project that is associated with the sample. |
| stationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| stationCode | **string** | A code representing the station name and site. |
| sampleDate | **date** | Refers to the date the sample was collected in the field. |
| collectionTime | **date** | Refers to the time when the first sample of a sampling event at a specific station was collected in the field. |
| locationCode | **string** | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations. |
| sampleTypeCode | **string** | Refers to the type of sample collected or analyzed |
| collectionReplicate | **numeric** | Used to distinguish between replicates created at a single collection in the field. |
| matrix | **string** | Refers to the sample matrix, e.g. samplewater. |
| methodName | **string** | Refers to the analysis method used by the laboratory to analyze the sample. |
| analyte | **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| unit | **string** | Refers to how the result is measured or expressed. |
| result | **string** | Final numeric result of a given analyte. |
| resultQualCode | **string** | Qualifies the analytical result of the sample. |
| variableResult | **string** | Categorical result for field observation. |
| qaCode | **string** | Applied to the result to describe any special conditions, situations or outliers that occurred during or prior to the analysis to achieve the result. |
| complianceCode | **string** | Unique code referencing the Compliance with the associated QAPP. |
| sampleComments | **string** | Any notes or comments specifically related to the sample collection. |
| collectionComments | **string** | Comments related to the habitat collection |
| resultsComments | **string** | Comments related to the habitat result. |
| eventCode | **string** | Represents the primary reason, i.e. water quality, tissue or bioassessment sampling, of the sampling event at a particular station and date. |
| protocolCode | **string** | Represents the sampling protocol used, which includes the set of methods, methodology and/or specifications, such as MPSLDFG\_Field\_v1.0. |
| sampleAgency | **string** | Refers to the organization or agency that collected the sample. |
| collectionMethodName | **string** | Refers to the general method of collection such as Field, Field\_Cont or Lentic\_CSBP. |
| latitude | **string** | Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places. |
| longitude | **string** | Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative). |
| collectionDeviceDescription | **string** | Name of the CollectionDevice. |
| occupationMethod | **string** |  |
| startingBank | **string** |  |
| distanceFromBank | **string** | The distance from the bank where the event occurred. |
| unitDistanceFromBank | **string** | The unit used to measure the distance from the bank where the event occurred. |
| streamWidth | **string** | The measurement value for the width of the stream. |
| unitStreamWidth | **string** | The unit used to measure the width of the stream. |
| stationWaterDepth | **string** | The depth of the monitoring station. |
| unitStationWaterDepth | **string** | The unit used to measure the depth of the monitoring station. |
| locationDetailComments | **string** | Comments related to the station detail inFormat/Content Typeion. |
| county | **string** | County in which the station was surveyed. |
| regional\_board | **string** | Regional Board ID Number from the CalWater 2.2.1 2004 GIS layer. |

### CEDENTissueMonitoringStationsList

Get a list of all CEDEN Tissue monitoring stations by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedentissuemonitoringstationslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_MONITORING\_STATIONS\_TIS\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **string** | Unique identifier assigned to each record in Tissue datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| parameterGroups | *Optional*  **string** | Name of grouping of which parameter is a member. |
| parameter | *Optional*  **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| species | *Optional*  **string** | The name of the species measured. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g. samplewater. |
| isQA | *Optional*  **bool** | A flag indicating whether record is a quality assurance record (True) or not (False). |
| isSampleComposite | *Optional*  **bool** | A flag indicating whether record is a sample composite record (True) or not (False). |
| lowerSampleDate | *Optional*  **date** | The lower value of a date range for sample date. |
| upperSampleDate | *Optional* **date** | The upper value of a date range for sample date. |
| upperLatitude | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| lowerLatitude | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| upperLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |
| lowerLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| stationCode | **string** | A code representing the station name and site. |
| latitude | **numeric** | Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places. |
| longitude | **numeric** | Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative). |
| sampleLocation | **string** | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations. |
| county | **string** | County in which the station was surveyed. |
| samplingAgency | **string** | Refers to the organization or agency that collected the sample. |

### CEDENTissueParameterCountsList

Get a list of all CEDEN Tissue parameters monitored at a particular monitoring station.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedentissueparametercountslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_PARAMETER\_COUNTS\_TIS\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | | **Description** | |
| --- | --- | --- | --- | --- |
| id | | *Optional* **numeric** | | Unique identifier formed through concatenation of StationCode, ProjectCode, and Analyte values. | |
| stationCode | | *Optional* **string** | | A code representing the station name and site. | |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationCode | **string** | A code representing the station name and site. |
| projectName | **string** | References the project that is associated with the sample. |
| parameterName | **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| lowerSampleDate | **date** | The lower value of dates the results were sampled at this monitoring station. |
| upperSampleDate | **date** | The upper value of dates the results were sampled at this monitoring station. |
| resultCount | **numeric** | The number of results for the parameter at this monitoring station. |

### CEDENTissueResultsList

Get a list of all CEDEN Tissue results by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedentissueresultslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_RESULTS\_TIS\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **numeric** | Unique identifier assigned to each row in Tissue datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| parameterGroups | *Optional*  **string** | Name of grouping of which parameter is a member. |
| parameter | *Optional*  **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| species | *Optional*  **string** | The name of the species measured. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g. samplewater. |
| isQA | *Optional*  **bool** | A flag indicating whether record is a quality assurance record (True) or not (False). |
| isSampleComposite | *Optional*  **bool** | A flag indicating whether record is a sample composite record (True) or not (False). |
| lowerSampleDate | *Optional*  **date** | The lower value of a date range for sample date. |
| upperSampleDate | *Optional* **date** | The upper value of a date range for sample date. |
| upperLatitude | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| lowerLatitude | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| upperLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |
| lowerLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| compositeProgramName | **string** | The name of the program responsible for the result measurement. |
| compositeParentProjectName | **string** | References the parent project of the project that is associated with the sample. |
| compositeProjectCode | **string** | References the project that is associated with the sample. |
| compositeProjectName | **string** | References the project that is associated with the sample. |
| compositeCompositeID | **string** | Unique identifier supplied by the Compositing Agency to identify the composited tissue parts. It can refer to either the original Composite or the SuperComposite where multiple Composites are combined to create a SuperComposite. |
| compositeStationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| compositeStationCode | **string** | A code representing the station name and site. |
| compositeTargetLatitude | **numeric** | Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places. |
| compositeTargetLongitude | **numeric** | Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative). |
| compositeGeometryShape | **string** | Physical shape of the location. |
| compositeSampleDate | **string** | Refers to the date the sample was collected in the field. |
| earliestDateSampled | **string** | Earliest sample date within composite. |
| compositeCompositeType | **string** | Indicates the type of composite, e.g. Normal, SuperComposite. |
| compositeCommonName | **string** |  |
| compositeFinalID | **string** | Refers to the organism name of the organism collected. |
| compositeTissuePrep | **string** | References the preparation or preservation method performed on the tissue part in order to create the composite. |
| numberFishPerComp | **numeric** | Number of fish sampled in composite. |
| compositeTissueName | **string** | Name of the tissue part used in the composite and analysis. |
| compositeSampleTypeCode | **string** | Refers to the type of sample collected or analyzed. |
| compositeReplicate | **numeric** | Composite replicate number used to distinguish between replicate composites. |
| resultReplicate | **numeric** | Used to distinguish between replicates created at a single collection in the field. |
| matrix | **string** | Refers to the sample matrix, e.g. samplewater. |
| method | **string** | Refers to the analysis method used by the laboratory to analyze the sample. |
| analyte | **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| unit | **string** | Refers to how the chemistry result is measured or expressed. |
| result | **string** | Final numeric result of a given analyte. |
| resQualCode | **string** | Qualifies the analytical result of the sample |
| mdl | **string** | MDL (method detection limit) is the lowest possible calculated detection limit associated with a given method and analyte. |
| rl | **string** | Minimum value below which data are documented as non-quantifiable. |
| qaCode | **string** | Applied to the result to describe any special conditions, situations or outliers that occurred during or prior to the analysis to achieve the result. |
| batchVerification | **string** | Unique code referencing the Verification of a Batch. |
| complianceCode | **string** | Code referencing the Compliance with the associated QAPP. |
| dilutionFactor | **string** | Factor by which a sample was diluted and is reported as a whole number. It is equal to the final volume divided by the initial volume of solution, or DF = Vf ÷ Vi. |
| labSampleID | **string** | Recommended field intended to provide lab specific identification for an analyzed sample. |
| resultComments | **string** | Holds any comments related to the tissue results or analysis of the sample. |
| prepPreservationName | **string** | References the preparation or preservation method performed on the tissue part in order to create the composite. |
| prepPreservationDate | **string** | Date and time the preparation or preservation was started. |
| digestExtractMethod | **string** | References the digestion or extraction method performed on the sample prior to analysis. |
| digestExtractDate | **string** | Date and time the digestion or extraction was started. |
| analysisDate | **string** | Date and time the sample was processed on the analytical instrument. |
| compositeComments | **string** | Describes any comments related to the Composite or SuperComposite. |
| labBatch | **string** | Unique code, provided by the laboratory, which represents a group of samples processed together |
| labBatchComments | **string** | Records any comments relating to the LabBatch as a whole. |
| analyzingAgency | **string** | Agency performing sample analysis. |
| submittingAgency | **string** | Refers to the organization or agency that collected the sample. |
| labSubmissionCode | **string** | Unique batch qualifier code assigned to the LabBatch as a whole by the analyzing laboratory which references the quality of the data in the LabBatch. |
| weightAvgG | **numeric** | Average weight in grams. |
| tlMinMM | **numeric** | Minimum total length in millimeters. |
| tlMaxMM | **numeric** | Maximum total length in millimeters. |
| tlAvgLengthMM | **numeric** | Average total length in millimeters. |
| compSizeCheck | **numeric** | Description of the grouping of organisms by size; e.g. small, large, 100-150cm |
| sexSummary | **string** | Refers to the sex of the organism; e.g. M, F, Unk. |
| latestDateSampled | **string** | Most recent date during which composite member was sampled. |
| sampleDateRangeDays | **numeric** | Number of days between minimum and maximum sample dates within composite. |
| compositeRowID | **string** |  |
| sampleID | **string** | Unique identifier supplied by the sampling agency and is used to track the sample |

### CEDENToxicityMonitoringStationsList

Get a list of all CEDEN Toxicity monitoring stations by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedentoxicitymonitoringstationslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_MONITORING\_STATIONS\_TOX\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **numeric** | Unique identifier assigned to each row in toxicity datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| parameterGroups | *Optional*  **string** | Name of grouping of which parameter is a member. |
| parameter | *Optional*  **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g. samplewater. |
| isQA | *Optional*  **bool** | A flag indicating whether record is a quality assurance record (True) or not (False). |
| lowerSampleDate | *Optional*  **date** | The lower value of a date range for sample date. |
| upperSampleDate | *Optional* **date** | The upper value of a date range for sample date. |
| upperLatitude | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| lowerLatitude | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| upperLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |
| lowerLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| stationCode | **string** | A code representing the station name and site. |
| latitude | **numeric** | Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places. |
| longitude | **numeric** | Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative). |
| sampleLocation | **string** | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations. |
| county | **string** | County in which the station was surveyed. |
| samplingAgency | **string** | Refers to the organization or agency that collected the sample. |

### CEDENToxicityParameterCountsList

Get a list of all CEDEN Toxicity parameters monitored at a particular monitoring station.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedentoxicityparametercountslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_PARAMETER\_COUNTS\_TOX\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

#### Input Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **string** | Unique identifier formed through concatenation of StationCode, Project, and Analyte values. |
| stationCode | *Optional* **string** | A code representing the station name and site. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationCode | **string** | A code representing the station name and site. |
| projectName | **string** | References the project that is associated with the sample. |
| parameterName | **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| lowerSampleDate | **date** | The lower value of dates the results were sampled at this monitoring station. |
| upperSampleDate | **date** | The upper value of dates the results were sampled at this monitoring station. |
| resultCount | **numeric** | The number of results for the parameter at this monitoring station. |

### CEDENToxicityResultsList

Get a list of all CEDEN Toxicity results by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedentoxicityresultslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_RESULTS\_TOX\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

#### Input Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **numeric** | Unique identifier assigned to each row in toxicity datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| parameterGroups | *Optional*  **string** | Name of grouping of which parameter is a member. |
| parameter | *Optional*  **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g. samplewater. |
| isQA | *Optional*  **bool** | A flag indicating whether record is a quality assurance record (True) or not (False). |
| lowerSampleDate | *Optional*  **date** | The lower value of a date range for sample date. |
| upperSampleDate | *Optional* **date** | The upper value of a date range for sample date. |
| lowerLatitude | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| upperLatitude | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| lowerLongitude | *Optional* **numeric** | The lower value of the longitude range for sample data. |
| upperLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| program | **string** | The name of the program responsible for the result measurement. |
| parentProject | **string** | References the parent project of the project that is associated with the sample. |
| project | **string** | References the project that is associated with the sample. |
| stationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| stationCode | **string** | A code representing the station name and site. |
| sampleDate | **date** | Refers to the date the sample was collected in the field |
| collectionTime | **date** | Refers to the time when the first sample of a sampling event at a specific station was collected in the field. |
| collectionDepth | **string** | Records the depth or penetration, from the surface in the water or sediment column, at which the sample was collected. |
| locationName | **string** | Describes the physical location in the waterbody where the sample was collected. |
| unitCollectionDepth | **string** | Refers to the units used in the CollectionDepth including cm (centimeters) and m (meters). |
| sampleTypeCode | **string** | Refers to the type of sample collected or analyzed. |
| collectionReplicate | **numeric** | Used to distinguish between replicates created at a single collection in the field. |
| labReplicate | **numeric** | Identifies the individual splits of the toxicity sample and is used to identify from which replicate a result originated. |
| toxBatch | **string** | The ToxBatch is a unique code, provided by the laboratory, which represents a group of samples processed together. |
| labSampleID | **string** | Field intended to provide lab specific identification for an analyzed sample. |
| matrix | **string** | Refers to the sample matrix, e.g. samplewater. |
| methodName | **string** | Refers to the analysis method used by the laboratory to analyze the sample. |
| toxTestDurCode | **string** | Indicates the duration of the toxicity test as a number and includes the associated units. |
| organismName | **string** | Refers to the scientific name of the species used in the toxicity test. |
| analyte | **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| unit | **string** | Indicates the units used in the measurement of the analyte. |
| wqSource | **string** | Differentiates between water quality measurements taken in the overlying water or interstitial water (pore water). |
| timePointName | **string** | Refers to the point in time during the test at which the measurement was recorded for water quality measurements or the day on which the end points were taken |
| result | **string** | Numeric result of test. |
| resultQualCode | **string** | Qualifies the analytical result of the sample. |
| toxResultQACode | **string** | Used to further qualify the analytical result of the sample. |
| qaCode | **string** | Applied to the result to describe any special conditions, situations or outliers that occurred during or prior to the analysis to achieve the result. |
| batchVerificationCode | **string** | Unique code referencing the Verification of a Batch. |
| complianceCode | **string** | Unique code referencing the Compliance with the associated QAPP. |
| sampleComments | **string** | Used for any notes or comments specifically related to the sample collection. |
| collectionComments | **string** | Comments related to the lab collection. |
| toxTestComments | **string** | Holds any comments related to the toxicity test results. Usually provided by the laboratories or QA personnel. |
| timePointComments | **string** |  |
| toxResultComments | **string** | Any comments necessary to describe special circumstances for the toxicity results data for the specific record. |
| toxBatchComments | **string** | Any comments relating to the tox batch as a whole. |
| eventCode | **string** | Represents the primary reason, i.e. water quality, tissue or bioassessment sampling, of the sampling event at a particular station and date. |
| protocolCode | **string** | Represents the sampling protocol used, which includes the set of methods, methodology and/or specifications, such as MPSL-DFG\_Field\_v1.0. |
| sampleAgency | **string** | Refers to the organization or agency that collected the sample. |
| groupSamples | **numeric** |  |
| collectionMethodName | **string** | Refers to the general method of collection such as Sed\_Grab, Sed\_Core, Water\_Grab, Autosampler24h, Autosampler7d. |
| collectionDeviceDescription | **string** | Name of the collection device. |
| positionWaterColumn | **string** | Position in water column where sample was taken. |
| tieNarrative | **string** | Short narrative on the results of the toxicity identification evaluation (TIE). |
| dilution | **numeric** | Recorded as a proportion of the original sample. If no dilution is performed, the default value of '100' is used. |
| toxPointMethod | **string** | Refers to the general method used in obtaining or calculating the result. |
| treatment | **string** | Refers to any treatment performed on the sample, such as a pH adjustment. |
| unitTreatment | **string** | Refers to the units used in the treatment. |
| treatmentConcentration | **numeric** | Concentration refers to the adjusted final concentration or value of the analyte applied to the toxicity sample, expressed as a number. |
| labAgency | **string** | Refers to the organization, agency or laboratory that performed the analysis on the sample. |
| submittingAgency | **string** | Organization or agency that is responsible for submission of the data to the database. |
| toxBatchStartDate | **string** | Refers to the date the toxicity test began. |
| refToxBatch | **string** | Lists the Reference Tox Batch ID run with this batch of samples. |
| organismAgeAtTestStart | **string** | OrganismAgeAtTestStart indicates the age or age range (e.g. 7 days or 7-10 days) of the test organisms at the beginning of the test. |
| labSubmissionCode | **string** | Unique batch qualifier code assigned to the tox batch as a whole by the analyzing laboratory which references the quality of the data in the tox batch. |
| occupationMethod | **string** |  |
| startingBank | **string** |  |
| distanceFromBank | **string** | The distance from the bank where the event occurred. |
| unitDistanceFromBank | **string** | The unit used to measure the distance from the bank where the event occurred. |
| streamWidth | **string** | The measurement value for the width of the stream. |
| unitStreamWidth | **string** | The unit used to measure the width of the stream. |
| stationWaterDepth | **string** | The depth of the monitoring station. |
| unitStationWaterDepth | **string** | The unit used to measure the depth of the monitoring station. |
| hydroMod | **string** |  |
| hydroModLoc | **string** |  |
| locationDetailWQComments | **string** |  |
| pctControl | **string** | Percent difference between the mean of the endpoint and the mean of the control's associated endpoint; ((Mean Control Response − Mean Sample Response) / Mean Control Response) \* 100. |
| repCount | **string** | Total number of sample replicates analyzed for the associated tox point in the toxicity test, i.e., the number of lab replicates used to calculate the mean result. |
| mean | **string** | Average result calculated from all replicates of a single sample. |
| stdDev | **string** | Statistic that indicates how tightly all the replicates are clustered around the mean in a set of data. This calculation includes all the applicable replicates from a single sample. |
| statMethod | **string** | Statistical test or method used to calculate the probability of whether a test is significant or not. Used to determine whether the sample replicates are significantly different from the control. |
| probability | **string** |  |
| alphalevel | **string** | Predetermined statistical acceptance level that is not calculated, but is chosen by the laboratory when running the statistical method. |
| evalThreshold | **string** | Programmatic level that is used to identify that an environmental sample is biologically significantly different from its associated control sample and is recorded as a percentage. |
| msd | **string** | Minimum significant difference (MSD) is a measurement that can be produced for each statistical comparison performed between sample and control, or among multiple concentrations of a sample and control. It represents the smallest significant difference from the control and is unique for each statistical comparison. |
| sigEffectCode | **string** | Indicates whether the sample result is significantly different from the control and can include whether or not it is greater or less than the evaluation threshold. |
| channelWidth | **numeric** |  |
| upstreamLength | **numeric** | Area (measured in km2) upstream that drains to the sampling point |
| downstreamLength | **numeric** |  |
| totalReach | **numeric** |  |
| county | **string** | County in which the station was surveyed. |
| regionalBoard | **string** | Regional Board ID Number from the CalWater 2.2.1 2004 GIS layer. |
| sampleID | **string** | Unique identifier supplied by the organization directing the sampling or sampling agency and is used to track the sample throughout the sampling and analysis processes. |

### CEDENWaterQualityMonitoringStationsList

Get a list of all CEDEN Water Quality monitoring stations by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedenwaterqualitymonitoringstationslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_MONITORING\_STATIONS\_WQ\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **numeric** | Unique identifier assigned to each row in water quality datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| parameterGroups | *Optional*  **string** | Name of grouping of which parameter is a member. |
| parameter | *Optional*  **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g., samplewater. |
| isQA | *Optional*  **bool** | A flag indicating whether record is a quality assurance record (True) or not (False). |
| sampleDateMin[[2]](#footnote-2) | *Optional*  **date** | The lower value of a date range for sample date. |
| sampleDateMax | *Optional* **date** | The upper value of a date range for sample date. |
| latitudeMin | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| latitudeMax | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| longitudeMin | *Optional* **numeric** | The upper value of the longitude range for sample data. |
| longitudeMax | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| stationCode | **string** | A code representing the station name and site. |
| latitude | **numeric** | Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places. |
| longitude | **numeric** | Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative). |
| sampleLocation | **string** | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations. |
| siteDescription | **string** | Description of the station. |
| county | **string** | County in which the station was surveyed. |
| samplingAgency | **string** | Refers to the organization or agency that collected the sample. |

### CEDENWaterQualityParameterCountsList

Get a list of all CEDEN Water Quality parameters monitored at a particular monitoring station.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedenwaterqualityparametercountslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_PARAMETER\_COUNTS\_WQ\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

#### Input Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **string** | Unique identifier formed through concatenation of StationCode, ProjectCode, and Analyte values. |
| stationCode | *Optional* **string** | A code representing the station name and site. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| stationCode | **string** | A code representing the station name and site. |
| projectName | **string** | References the project that is associated with the sample. |
| parameterName | **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| lowerSampleDate | **date** | The lower value of dates the results were sampled at this monitoring station. |
| upperSampleDate | **date** | The upper value of dates the results were sampled at this monitoring station. |
| resultCount | **numeric** | The number of results for the parameter at this monitoring station. |

### CEDENWaterQualityResultsList

Get a list of all CEDEN Water Quality results by parameters selected.

#### Web URL

The web URL needed to access the web service is:

* <baseURL>/cedenwaterqualityresultslist?<query parameter(s) and value(s)>

#### Supporting Database View

The database view that will provide data to this service is:

* VW\_SVC\_RESULTS\_WQ\_LIST

#### Request

##### HTTP Methods

This service uses the GET request type.

##### Header Attributes

The service will provide the following Header Attributes.

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| Content-Type | *Optional* **string** | The Format/Content Type in which the content will be returned (e.g., JSON or CSV). |

##### URL Parameters

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| id | *Optional* **numeric** | Unique identifier assigned to each row in water quality datamart. |
| stationCode | *Optional* **string** | A code representing the station name and site. |
| county | *Optional*  **string** | County in which the station was surveyed. |
| program | *Optional*  **string** | The name of the program responsible for the result measurement. |
| project | *Optional*  **string** | References the project that is associated with the sample. |
| parameterGroups | *Optional*  **string** | Name of grouping of which parameter is a member. |
| parameter | *Optional*  **string** | Name of the analyte or parameter for which the analysis is conducted and result is reported. |
| matrix | *Optional*  **string** | Refers to the sample matrix, e.g. samplewater. |
| isQA | *Optional*  **bool** | A flag indicating whether record is a quality assurance record (True) or not (False). |
| lowerSampleDate | *Optional*  **date** | The lower value of a date range for sample date. |
| upperSampleDate | *Optional* **date** | The upper value of a date range for sample date. |
| upperLatitude | *Optional* **numeric** | The upper value of the latitude range for sample data. |
| lowerLatitude | *Optional* **numeric** | The lower value of the latitude range for sample data. |
| upperLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |
| lowerLongitude | *Optional* **numeric** | The upper value of the longitude range for sample data. |

#### Response

##### Format/Content Type

JSON (default) or CSV

##### Attributes

| **Name** | **Datatype** | **Description** |
| --- | --- | --- |
| program | **string** | The name of the program responsible for the result measurement. |
| parentProject | **string** | References the parent project of the project that is associated with the sample. |
| project | **string** | References the project that is associated with the sample. |
| stationName | **string** | Represents a unique sampling site in a sampling design. A single waterbody may have multiple stations. |
| stationCode | **string** | A code representing the station name and site. |
| sampleDate | **date** | Date that sample was taken. |
| collectionTime | **date** | Time of day that sample was taken. |
| locationCode | **string** | Describes the physical location in the waterbody where the sample was collected. One sampling event may have a single or multiple locations.type within monitoring station where sample was taken. |
| collectionDepth | **string** | Depth at which sample was collected. |
| unitCollectionDepth | **string** | Unit of measure of collection depth. |
| sampleTypeCode | **string** | Type of sample taken. |
| collectionReplicate | **string** | Replicate number of sample within collection activity. |
| resultsReplicate | **string** | Replicate number of sample within results. |
| labBatch | **string** | The LabBatch is a unique code, provided by the laboratory, which represents a group of samples processed together. |
| labSampleID | **string** | Recommended field intended to provide lab specific identification for an analyzed sample. |
| matrix | **string** | Refers to the sample matrix, e.g. samplewater. |
| methodName | **string** | Name of method with which sample was collected. |
| analyte | **string** | Characteristic being measured. |
| unit | **string** | Refers to how the result is measured or expressed. |
| result | **string** | Final numeric result of a given analyte. |
| observation | **string** | A description of what was observed for a result. |
| mdl | **string** | The MDL (method detection limit) is the lowest possible calculated detection limit associated with a given method and analyte. |
| rl | **string** | Minimum value below which data are documented as non-quantifiable. It is the reporting limit for the sample analyzed, as determined by the laboratory. |
| resultQualCode | **string** | Qualifies the analytical result of the sample. |
| qaCode | **string** | Applied to the result to describe any special conditions, situations or outliers that occurred during or prior to the analysis to achieve the result. |
| batchVerification | **string** | Unique code referencing the Verification of a Batch. |
| complianceCode | **string** | Unique code referencing the Compliance with the associated QAPP. |
| sampleComments | **string** | Additional comments about sample. |
| collectionComments | **string** | Additional comments about collection. |
| resultsComments | **string** | Additional comments about results. |
| batchComments | **string** | Additional comments about batch. |
| eventCode | **string** | Represents the primary reason, i.e. water quality, tissue or bioassessment sampling, of the sampling event at a particular station and date. |
| protocolCode | **string** | Represents the sampling protocol used, which includes the set of methods, methodology and/or specifications, such as MPSLDFG\_Field\_v1.0. |
| sampleAgency | **string** | Agency performing sample analysis. |
| groupSamples | **string** |  |
| collectionMethodName | **string** | Name of method of sample collection. |
| latitude | **numeric** | Represents the targeted latitude for the sample site in decimal degrees with 5 decimal places. |
| longitude | **numeric** | Represents the targeted longitude for the sample site in decimal degrees with 5 decimal places (must be negative). |
| collectionDeviceDescription | **string** | Description of device used for collection. |
| calibrationDate | **string** | The date the collection device was calibrated. |
| positionWaterColumn | **string** | Position in water column where sample was taken. |
| prepPreservationName | **string** | References the preparation or preservation method performed on the samples prior to analysis. |
| prepPreservationDate | **string** | Date and time the preparation or preservation was started. |
| digestExtractMethod | **string** | References the digestion or extraction method performed on the sample prior to analysis. |
| digestExtractDate | **string** | Date and time the digestion or extraction was started. |
| analysisDate | **string** | Date on which sample was analyzed. |
| dilutionFactor | **string** | Factor by which a sample was diluted and is reported as a whole number. It is equal to the final volume divided by the initial volume of solution, or DF = Vf ÷ Vi. |
| expectedValue | **string** | Concentration of the analyte in a reference standard, laboratory control sample or matrix spike sample or the value expected to obtain from analysis of the QC Sample. This consists of the native sample result concentration plus the spike amount. For surrogate samples, the expected value should be 100, representing 100%. |
| labAgency | **string** | Refers to the organization, agency or laboratory that performed the analysis on the sample. |
| submittingAgency | **string** | Organization or agency that is responsible for submission of the data to the database. |
| submissionCode | **string** | A unique batch qualifier code assigned to the LabBatch as a whole by the analyzing laboratory which references the quality of the data in the LabBatch. |
| occupationMethod | **string** |  |
| startingBank | **string** |  |
| distanceFromBank | **string** | The distance from the bank where the event occurred. |
| unitDistanceFromBank | **string** | The unit used to measure the distance from the bank where the event occurred. |
| streamWidth | **string** | The measurement value for the width of the stream. |
| unitStreamWidth | **string** | The unit used to measure the width of the stream. |
| stationWaterDepth | **string** | The depth of the monitoring station. |
| unitStationWaterDepth | **string** | The unit used to measure the depth of the monitoring station. |
| hydroMod | **string** |  |
| hydroModLoc | **string** |  |
| locationDetailWQComments | **string** | Comments related to the station detail inFormat/Content Typeion. |
| channelWidth | **string** | The measurement of the width of the channel. |
| upstreamLength | **string** | Area (measured in km2) upstream that drains to the sampling point. |
| downstreamLength | **string** |  |
| totalReach | **string** |  |
| locationDetailBAComments | **string** |  |
| county | **string** | County in which the station was surveyed. |
| regionalBoard | **string** | Regional Board ID Number from the CalWater 2.2.1 2004 GIS layer. |
| sampleID | **string** | Unique identifier supplied by the organization directing the sampling or sampling agency and is used to track the sample throughout the sampling and analysis processes. |

# Web User Interface for WSL

The WSL provides a Web interface which allows for reviewing the Web service definition and will support some basic web testing features.

The Web interface for the WSL can be accessed by using public facing URL such as https://[*Public Facing* *Application Server URL*]/metadata.

This Web Interface will list all enabled Web service operations and allow you to drill in to each service. Clicking on the JSON link will allow you to view sample HTTP requests and responses for a service. From this page, clicking on the Web service name link will present an interface that will allow you to login and an exercise a service via a web UI.

The sections below will provide examples of the Metadata pages available.

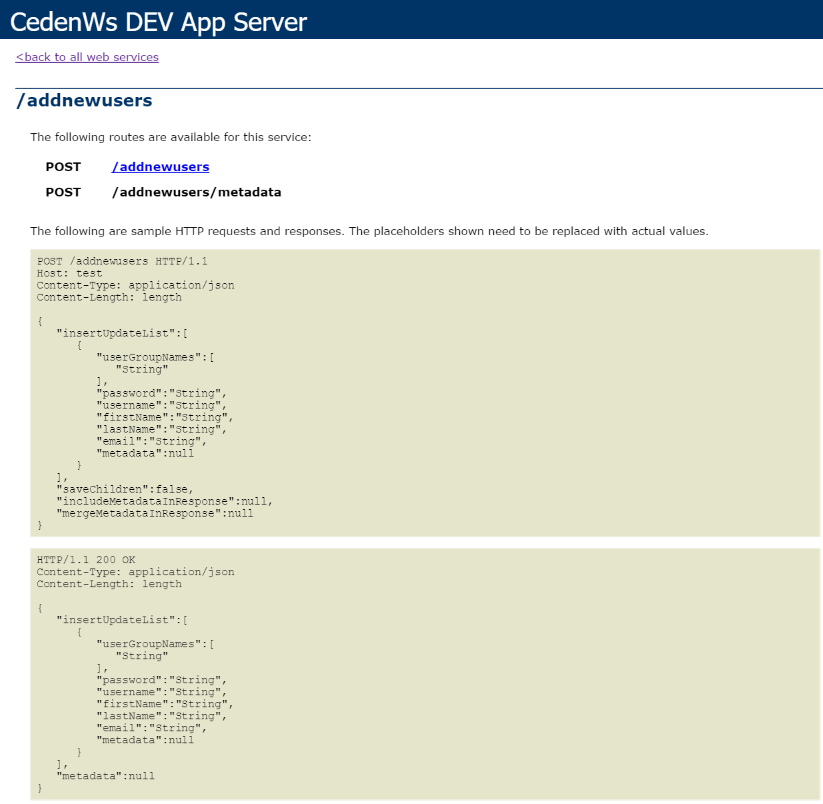
## Service List

The Service List page provides an inventory of all available services for the current WSL installation. The image provides an example of this page. This page will be opened by default when opening the Metadata interface.



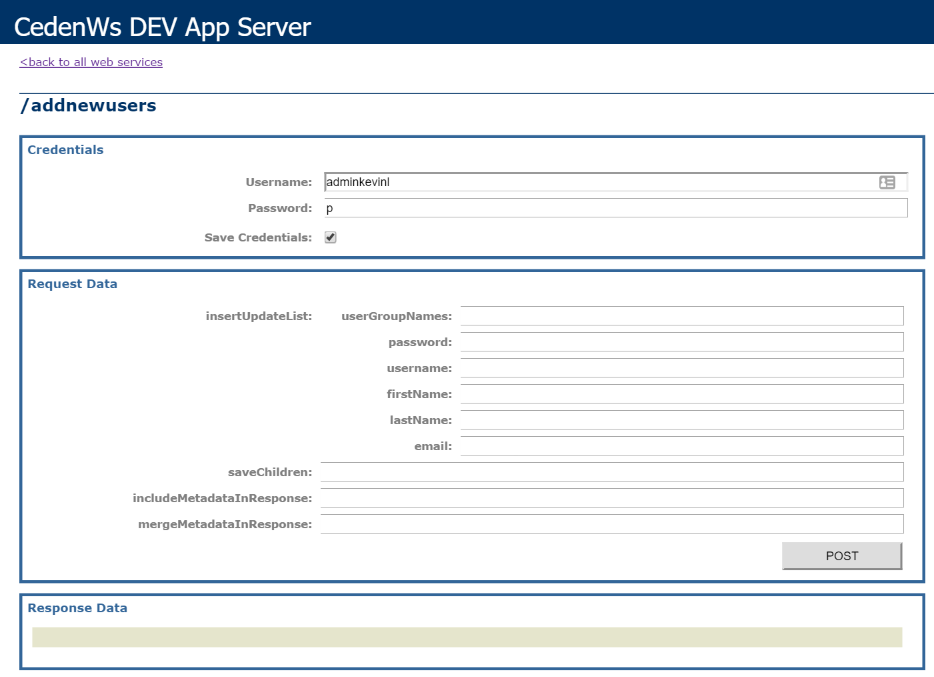
## Service Details

The Service Details page provides the details of a service including the routes for the service and an example request and response for the service. This page can be navigated to by clicking on the “JSON” link to the right of a particular service name on the Service List page.



## Service Runner

The Service Runner page provides users with the ability to exercise the basic functions of a service via a web interface. Clicking on the service name link at the top of the Service Details page will open the Service Runner page (in the image below) for the selected service. This page will allow the user to enter the user credentials for the WSL in the upper panel, enter the primary parameters for the service in the center panel and execute the service using the GET/POST/DELETE button (depending on the service type) in the center panel. Once executed, the service response will be displayed in the lower panel.



1. Note: the user will need to be authenticated to call a web service directly from a web browser. In addition, the URL will need to be encoded (e.g., spaces and special characters converted to character codes) to be properly interpreted. [↑](#footnote-ref-1)
2. The view populating the service’s fields returns a single value for sampleDate, latitude, and longitude; the min-max range may be specified in the call to the service. Any fields requiring a range filter must be named according to the convention fieldNameMin and fieldNameMax. [↑](#footnote-ref-2)