How to Access and Use ATTAINS Web Services

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Purpose: To explain how to use ATTAINS Web Services to access public ATTAINS data. This document explains how to generate the URL to query an ATTAINS REST service. It provides the base URL for each service, and the query parameters available for that service.

Audience: These instructions access public data, so an ATTAINS login ID is not required.

CONTENTS

1   GENERAL INFORMATION ON ATTAINS WEB SERVICES

Web services provide the ability for one computer to communicate data to another computer in a standard way. It allows for data from one system to be easily incorporated into another application, without needing to locally host the data. Many mobile device applications use web services to acquire data and then format and display the data the way the designer chooses.

ATTAINS web services are formatted using JavaScript Object Notation (JSON) and use Representational State Transfer (REST) protocols. Basically, that means you can build a query of the web service if you know the appropriate building blocks: the web address of the starting point, the name of the service, one or more data fields that you would like to query, and the search criterion you want to use for each data field that you chose.

ATTAINS web services require an exact match to the criterion you enter. You cannot search for partial matches. In addition, **case syntax for each query parameter and search criterion is important**.

Data returned from an ATTAINS JSON REST web service can be viewed in a browser such as Chrome by installing a JSON parser browser add-in (such as JSON Formatter for Chrome). This method can work for smaller amounts of data. However, for larger amounts of data, we recommend using other software that can parse the data into tabular formats such as Microsoft Excel 2016 or the Power Query extension for Excel, or R statistical software packages that can consume JSON. This document does not contain instructions for those software packages.

2 SUMMARY SERVICES

This section refers to services that provide summary information.

2.1 STATE SUMMARY SERVICE

This service provides summary information for assessed Uses for an Organization (State, Territory or Tribe) and Integrating Reporting Cycle. The Organization ID for the state, territory or tribe is required. If a Reporting Cycle isn't provided, the service will return the most recent cycle. If a Reporting Cycle is provided, the service will return a summary for the requested cycle.

Base URL and service: https://attains.epa.gov/attains-public/api/usesStateSummary?

Input Parameter	Description / Notes
organizationId*	Search criterion – Provides summary info for only the Organization Identifier provided. This is not the same as the state abbreviation. Each Organization is associated with a geographic state, but there can be multiple Organizations inside a state boundary (e.g., a state org and a tribal org), so the query must provide the specific Organization ID. The list of available Organization IDs can be obtained from the Domain values service by looking at **orgStateCode**.
reportingCycle	Search criterion – Filter the summary to a specific reporting cycle in terms of the four-digit year the reporting cycle ended (e.g., for the 4/2/2016 – 3/31/2018 reporting cycle, the four-digit reporting cycle is "2018"). If left blank, the service will return the most recent cycle.

* Denotes a required query parameter.

Example 1: If I wanted to query for a summary of Uses in the most recent cycle of data from Tennessee (Org ID: TDECWR), then I would use this URL:
https://attains.epa.gov/attains-public/api/usesStateSummary?organizationId=TDECWR

Example 2: If I wanted to query for a summary of Uses in the 2016 cycle of data from South Dakota (Org ID: SDDENR), then I would use this URL:
https://attains.epa.gov/attains-public/api/usesStateSummary?organizationId=SDDENR&reportingCycle=2016

2.2 HUC12 SUMMARY SERVICE

This service was primarily built for How's My Waterway 2.0. It provides summary information for a 12-digit Hydrologic Unit Code (HUC12), based on the Assessment Units in the HUC12. Watershed boundaries may cross state boundaries, so this service may return Assessment Units from multiple Organizations (such as neighboring states). This service returns a list of the Assessment Units in the HUC12, as well as the size and percentage of those Assessment Units that have been assessed as Good, Unknown, or Impaired. It also provides summaries by EPA IR Category for the Use Groups used in How's My Waterway 2.0.

Base URL and service: https://attains.epa.gov/attains-public/api/huc12summary?

Input Parameter	Description / Notes
huc*	Search criterion - The HUC12 to be summarized.

* Denotes a required query parameter.

Example 1: If I wanted to query for a summary of all Assessment Units in the 12-digit HUC of 020700100204 (regardless of Organization), I would use this URL:
https://attains.epa.gov/attains-public/api/huc12summary?huc=020700100204

3 DOMAIN VALUES SERVICE

This service provides information on allowed values in ATTAINS. Using the base URL without any query parameters returns a list of the various domain types. Using the base URL with a query parameter of "?domainName=" and one of the domains that was returned from just the base URL will provide the domain values (or allowed values) for that domain.

Base URL: https://attains.epa.gov/attains-public/api/domains?

Here is the list of domainName options available to use:

ActionDocumentType	LocationTypeValue	SurveyCategoryType
ActionStatusType	MethodTypeCode	SurveyDocumentType
ActionType	MetricType	SurveyStatusType
AgencyCode	OrgStateCode	SurveyUseType
AssessmentBasisCode	ParameterAttainmentCode	TrendCode
AssessmentConfidenceCode	ParameterGroupCodeType	TrophicStatusCode
AssessmentDocumentType	ParameterName	UnitType
AssessmentTypeCode	ParameterQualifierCode	UseAttainmentCode
AssessmentUnitDocumentType	ParameterStatus	UseClassType
ContactType	PollutantSourceType	UseClassUse
CycleDocumentType	ReportingCycleStatusCode	UseName
DelistingReasonCode	SizeEstimationMethodCode	UseQualifierCode
DocumentFileType	SizeSourceScaleText	WaterTypeCode
DocumentTypeCode	SourceName	WaterTypeGroup
LoadAllocationUnitCode	StateIRCategoryCode	WaterTypeUnitsCode
LocationTypeCode	StatusIndicator	

Input Parameter	Description / Notes
domainName	Search criterion – select a domain name from the list above, to obtain the valid values for that domain.
context	Search criterion – when used in conjunction with a domainName, it will return the list of values for that context. This is useful for returning a list of values that are allowed for an Organization. For example, when used in conjunction with the domainName=UseName, the context value would be the Organization ID.

Example 1: This service call does not require any query parameters. Calling it without any query parameters will return a list of the different domain names that are available. To do so, I would use this URL without any query parameters: https://attains.epa.gov/attains-public/api/domains

Example 2: If I wanted to query for allowed Parameter Names, I would use this URL:
https://attains.epa.gov/attains-public/api/domains?domainName=ParameterName

Example 3: If I wanted to query for the list of Organization IDs, I would use this URL:
https://attains.epa.gov/attains-public/api/domains?domainName=OrgStateCode

Example 4: If I wanted to query for the allowed Use Names for the state of Tennessee (Org ID: TDECWR), I would use this URL:
https://attains.epa.gov/attains-public/api/domains?domainName=UseName&context=TDECWR

4 ASSESSMENT UNITS SERVICE

This service is for retrieving basic information about the Assessment Units, such as a list of all the Assessment Unit IDs used in a state or county. This service does NOT provide assessment decision data.

- One or more of these Input Parameters must be included: assessmentUnitIdentifier OR stateCode OR organizationId. Additional Input Parameters will further refine the results.
- If multiple values are allowed for a query input parameter, they should be separated by a comma (ex: assessmentUnitIdentifier=AssessmentUnit1,AssessmentUnit2).

Base URL: https://attains.epa.gov/attains-public/api/assessmentUnits?

Input Parameter (any combination)	Description/Notes
assessmentUnitIdentifier*	Search criterion – Filters the list of assessment units to one or more specific assessment units. Multiple values can be provided.
stateCode*	Search criterion – Filters the list of assessment units to only those having a state code matches one in the provided list of states. Multiple values can be provided.
organizationId*	Search criterion – Filters the list of assessment units to only those having an organization ID that matches one in the provided list of IDs. Multiple values can be provided.
epaRegion	Search criterion – Filters the list of assessment units to only those having an EPA region that matches one in the provided list of regions. Multiple values can be provided.
HUC	Search criterion – Filters the list of assessment units to only those which have a location type of HUC and the location value matches one in the provided list of HUCs. Multiple values can be provided.
county	Search criterion – Filters the list of assessment units to only those which have a location type of county and the location value matches one in the provided list of counties. Multiple values can be provided.

Input Parameter (any combination)	Description/Notes
assessmentUnitName	Search criterion – Filters the list of assessment units to only those having an assessment unit name matching the provided value.
lastChangeLaterThanDate	Search criterion – Filters the list of assessment units to only those last changed after the provided date. Can be used in conjunction with LastChangeEarlierThanDate to retrieve assessment units changed within a date range. If LastChangeEarlierThanDate is also provided, then LastChangeLaterThanDate must be earlier than LastChangeEarlierThanDate. Date format must be like "2005-10-16T14:00:00-06:00" or "2005-10-16".
lastChangeEarlierThanDate	Search criterion – Filters the list of assessment units to only those last changed before the provided date. Can be used in conjunction with LastChangeLaterThanDate to retrieve assessment units changed within a date range. If LastChangeLaterThanDate is also provided, then LastChangeEarlierThanDate must be later than LastChangeLaterThanDate. Date format must like "2005-10-16T14:00:00-06:00" or "2005-10-16".
statusIndicator	(A="Active", R="Retired") Search Criterion – Filters the list of assessment units to only those currently in the specified status.
returnCountOnly	("Y"/"N") – Option - Causes the method to return only the count of assessment units that match the query search criteria. If you leave this blank, the default is "N".

* One or more query parameters with an asterisk must be provided.

Example 1: If I wanted to return a list of all the Assessment Units in the state of Alabama (stateCode: AL), I would use this URL:
https://attains.epa.gov/attains-public/api/assessmentUnits?stateCode=AL

Example 2: If I wanted to return just a count of the number of Assessment Units in Alabama (stateCode: AL), I would use this URL:
https://attains.epa.gov/attains-public/api/assessmentUnits?stateCode=AL&returnCountOnly=Y

Example 3: If I wanted to return a list of all the Assessment Units in Autauga County in Alabama (stateCode: AL), I would use this URL:
https://attains.epa.gov/attains-public/api/assessmentUnits?stateCode=AL&county=Autauga County

Note: A web browser may replace the space in the URL with "%20", such as in the county name, above, so the link may become:
https://attains.epa.gov/attains-public/api/assessmentUnits?stateCode=AL&county=Autauga%20County

Example 4: If I wanted to return all the basic information about Assessment Unit ID "AL03150201-0107-200" in Alabama, I would use this URL (Note: Assessment Unit IDs must be unique within the Organization ID. You can query without including the Organization ID, but if multiple Organizations have used the same Assessment Unit

ID, the service will return each matching Assessment Unit ID):
https://attains.epa.gov/attains-public/api/assessmentUnits?assessmentUnitIdentifier=AL03150201-0107-200

5 ASSESSMENTS SERVICE

This service retrieves Assessment decisions for an Organization from a single reporting cycle. It returns the result from the most recent Assessment cycle status for the cycle (e.g., EPA Final Action status if it exists, otherwise it would return results from the Organization Final Submittal status).

- One or more of these Input Parameters must be included: assessmentUnitIdentifier OR state OR organizationId. Additional Input Parameters will further refine the results.
- If multiple values are allowed for a query input parameter, they should be separated by a comma (ex: assessmentUnitIdentifier=AssessmentUnit1,AssessmentUnit2).

Base URL: https://attains.epa.gov/attains-public/api/assessments?

Input Parameter	Description / Notes
assessmentUnitIdentifier*	Search criterion – Specify which specific assessment unit assessment within the given reporting cycle to retrieve. Multiple values can be provided.
state*	Search criterion - Filter the list of reporting cycle assessments to those only from the specified state.
organizationId*	Search criterion - Filter the list of reporting cycle assessments to only those "belonging to" the specified organization.
reportingCycle	Search criterion - Filter the list of assessments to only those of a specific reporting cycle in terms of the four-digit year the reporting cycle ended (e.g. for the 6/1/2016 – 5/31/2018 reporting cycle the four-digit reporting cycle is "2018"). If left blank, the default is the current cycle relative to the current date (returns the most recent).
listedAs303d	(Y/N) – Search criterion - Filter the list of reporting cycle assessments to only those who's assessment units are on the 303d list.
use	Search criteria - Filter the list of reporting cycle assessments to only those associated with the specified uses. Multiple uses may be listed.

Input Parameter	Description / Notes
useSupport	Search criterion - Filter the list of reporting cycle assessments to only those fully supporting the specified uses or that are threatened. Multiple UseSupports may be listed. The allowed values for this parameter are X = Not Assessed, I = Insufficient Information, F = Fully Supporting, N = Not Supporting, and T = Threatened. Values X, I, F, and N filter based solely on the UseAttainmentCode field of an Assessment. However, the last value (T) filters on a combination of the UseAttainmentCode and the ThreatenedIndicator where the UseAttainmentCode = 'F' and ThreatenedIndicator = 'Y'.
parameter	Search criterion - Filter the list of reporting cycle assessments to only those associated with one or more of the specified parameters. Multiple parameters may be listed.
parameterStatusName	Search criterion - Filter the list of assessments to only those assessments where the assessment has one or more associated parameters that are in the provided status. Valid values for this criterion are: "Meeting Criteria", "Cause", "Observed Effect." Multiple parameterStatusNames may be listed.
probableSource	Search criterion - Filter the list of reporting cycle assessments to only those "having" the specified ProbableSource(s). Multiple values can be provided.
agencyCode	(E="EPA", S="State", T="Tribal") - Search criterion - Filter the list of reporting cycle assessments by the type of agency responsible for the assessment.
delistingStatus	(Y/N) – Search criterion – Filter the list of reporting cycle assessments by whether the assessment's assessment unit ID is or is not in the delisted waters list for the same reporting cycle.
irCategory	Search criterion – Filter the list of assessments to only those having one of the specified IR Categories. Multiple values can be provided.
stateIRCategoryCode	Search criterion – Filter the list of reporting cycle assessments to include only those having one of the provided codes (ON USES OR ON CAUSES).
multicategorySearch	(Y/N) – Specifies whether to search at multiple levels. If this parameter is set to "Y" then the query applies the StateIRCategoryCode at the Assessment, UseAttainment, and Parameter levels; if the parameter is set to "N" it looks only at the Assessment level.
lastChangeLaterThanDate	Search criterion – Filter the list of reporting cycle assessments to only those last changed after the provided date. Can be used in conjunction with LastChangeEarlierThanDate to retrieve assessments changed within a date range. If LastChangeEarlierThanDate is also provided, then LastChangeLaterThanDate must be earlier than LastChangeEarlierThanDate. Date format must be like "2005-10-16T14:00:00-06:00" or "2005-10-16".

Input Parameter	Description / Notes
lastChangeEarlierThanDate	Search criterion – Filter the list of reporting cycle assessments to only those last changed before the provided date. Can be used in conjunction with LastChangeLaterThanDate to retrieve assessments changed within a date range. If LastChangeLaterThanDate is also provided, then LastChangeEarlierThanDate must be later than LastChangeLaterThanDate. Date format must be like "2005-10-16T14:00:00-06:00" or "2005-10-16".
returnCountOnly	(Y/N) – Option - Causes the method to return only the count of assessments that match the query search criteria. If you leave this blank, the default is "N".

* One or more query parameters with an asterisk must be provided.

Example 1: If I wanted to get a list of the Assessment decisions for all the Assessment Units in South Dakota (Organization ID: SDDENR) for the 2016 reporting cycle, I would use this URL (leaving out the reportingCycle query parameter will return the most recent reporting cycle):
https://attains.epa.gov/attains-public/api/assessments?organizationId=SDDENR&reportingCycle=2016

Example 2: If I wanted to get a list of all the Assessment Units in South Dakota for the most recent cycle that have a Probable Source of "GRAZING IN RIPARIAN OR SHORELINE ZONES", then I would use this URL:
https://attains.epa.gov/attains-public/api/assessments?organizationId=SDDENR&probableSource=GRAZING IN RIPARIAN OR SHORELINE ZONES

Example 3: If I wanted to see the most recent Assessment decision of a specific Assessment Unit ID (such as Assessment Unit ID: "SD-CH-R-BOX_ELDER_02"), I would use this URL:
https://attains.epa.gov/attains-public/api/assessments?organizationId=SDDENR&assessmentUnitIdentifier=SD-CH-R-BOX_ELDER_02

If I wanted to see the Assessment decision for the same Assessment Unit for a different reporting cycle, I would need to specify the reporting cycle:
https://attains.epa.gov/attains-public/api/assessments?organizationId=SDDENR&reportingCycle=2016&assessmentUnitIdentifier=SD-CH-R-BOX_ELDER_02

Example 4: If I wanted to see all the Assessments in the state of Tennessee (state: TN) where the overall EPA Integrated Reporting Category is category 5, I would use this URL (since I didn't specify a Reporting Cycle, it will return the most recent reporting cycle):
https://attains.epa.gov/attains-public/api/assessments?state=TN&irCategory=5

Example 5: Similar to example 4, if I wanted to see all the Assessments in Tennessee where the overall EPA Integrated Reporting Category is category 4A, I would use this URL (since I didn't specify a Reporting Cycle, it will return the most recent reporting cycle):
https://attains.epa.gov/attains-public/api/assessments?state=TN&irCategory=4A

6 ACTIONS SERVICE

This service is for retrieving data about Actions (e.g., TMDLs, 4B Actions, Alternative Actions, Protection Approach Actions).

- One or more of these Input Parameters must be included: actionIdentifier, OR assessmentUnitIdentifier OR stateCode OR organizationIdentifier. Additional Input Parameters will further refine the results.
- If multiple values are allowed for a query input parameter, they should be separated by a comma (ex: actionIdentifier=Action1,Action2).

Base URL: https://attains.epa.gov/attains-public/api/actions?

Input Parameter	Description/Notes
actionIdentifier*	Search criterion – Specifies exactly which action to retrieve. Multiple values may be provided.
assessmentUnitIdentifier*	Search criterion – Filters the list of actions to only those associated with any (i.e. at least one) of the provided assessment unit IDs, plus any statewide actions (Statewide Actions will not be available in ATTAINS version 1). Multiple values may be provided.
stateCode*	Search criterion - Filters the list of actions to those only "belonging to" the specified state.
organizationIdentifier*	Search criterion - Filters the list of actions to only those "belonging to" one of the specified organizations. Multiple values may be specified.
parameterName	Search criterion – Filters the list of actions to only those associated with any (i.e. at least one) of the provided parameters. Multiple values may be provided.
pollutantName	Search criterion – Filters the list of actions to only those associated with any (i.e. at least one) of the provided pollutants. Multiple values may be provided.
actionTypeCode	Search criterion – Filters the list of actions to only those of the specified ActionTypeCodes. Multiple values may be specified.
agencyCode	(S=State, E=EPA, T=Tribal) – Search criterion – Filters the list of actions to only those of the specified agency code. Multiple values may be specified.
pollutantSourceTypeCode	Search criterion - Filters the list of actions to only those whose PollutantSourceTypeCode matches the value(s) passed. Multiple values may be provided.
actionStatusCode	Search criterion – Filters the list of actions to only those currently having one of the provided ActionStatusCode. Multiple values may be specified.

Input Parameter	Description/Notes
completionDateLaterThan	Search criterion – Filters the list of actions to only those having a CompletionDate later than the value passed. Date format must be like "2005-10-16T14:00:00-06:00" or "2005-10-16".
completionDateEarlierThan	Search criterion – Filters the list of actions to only those having a CompletionDate earlier than the value passed. Date format must be like "2005-10-16T14:00:00-06:00" or "2005-10-16".
tmdlDateLaterThan	Search criterion – Filters the list of actions to only those having a TMDLDate later than the value passed. Date format must be like "2005-10-16T14:00:00-06:00" or "2005-10-16".
tmdlDateEarlierThan	Search criterion – Filters the list of actions to only those having a TMDLDate earlier than the value passed. Date format must be like "2005-10-16T14:00:00-06:00" or "2005-10-16".
lastChangeLaterThanDate	Search criterion – Filters the list of actions to only those last changed after the provided date. Can be used in conjunction with LastChangeEarlierThanDate to retrieve actions changed within a date range. If LastChangeEarlierThanDate is also provided, then LastChangeLaterThanDate must be earlier than LastChangeEarlierThanDate. Date format must be like "2005-10-16T14:00:00-06:00" or "2005-10-16".
lastChangeEarlierThanDate	Search criterion – Filters the list of actions to only those last changed before the provided date. Can be used in conjunction with LastChangeLaterThanDate to retrieve actions changed within a date range. If LastChangeLaterThanDate is also provided, then LastChangeEarlierThanDate must be later than LastChangeLaterThanDate. Date format must be like "2005-10-16T14:00:00-06:00" or "2005-10-16".
returnCountOnly	(Y/N) – Option - Causes the method to return only the count of actions that match the query search criteria. If you leave this blank, the default is "N".

* One or more query parameters with an asterisk must be provided.

Example 1: If I wanted to retrieve all the Actions for the state of Alabama (state code: AL), I would use this URL:
https://attains.epa.gov/attains-public/api/actions?stateCode=AL

Example 2: If I wanted to retrieve all the information about a specific Action ID (including any documents associated with it), I would use this URL:
https://attains.epa.gov/attains-public/api/actions?actionIdentifier=R8-ND-2018-03

Example 3: If I wanted to retrieve all the Actions for the Organization ID SDDENR (South Dakota), I would use this URL:
https://attains.epa.gov/attains-public/api/actions?organizationIdentifier=SDDENR