

# BLM AIM AquADat Local Feature Class Metadata

## Description

**Abstract:** This feature class includes monitoring data collected nationally to understand the status, condition, and trend of resources on BLM lands. Data are collected in accordance with the BLM Assessment, Inventory, and Monitoring (AIM) Strategy. The AIM Strategy specifies a probabilistic sampling design, standard core indicators and methods, electronic data capture and management, and integration with remote sensing. Attributes include the BLM aquatic core indicators: pH, conductivity, temperature, pool depth, length, frequency, streambed particles sizes, bank stability and cover, floodplain connectivity, large woody debris, macroinvertebrate biological integrity, ocular estimates of vegetative type, cover, and structure and canopy cover. In addition, the contingent indicators of total nitrogen and phosphorous, turbidity, bank angle, thalweg depth profile and quantitative vegetation estimates (see the Data Structure and Attribute Information section for exact details on attributes). Data were collected and managed by BLM Field Offices, BLM Districts, and/or affiliated field crews with support from the BLM National Operations Center. Data are stored in a centralized database (AquADat) at the BLM National Operations Center.

**Purpose:** This dataset was created to monitor the status, condition and trend of national BLM resources in accordance with BLM policies. The methodology used for the collection of these data can be found in TR 1735-2 (AIM National Aquatic Monitoring Framework: Field Protocol for Wadeable Lotic System). These data should not be used for statistical or spatial inferences without knowledge of how the sample design was drawn or without calculating spatial weights for the points based on the sample design.

**Update frequency:** Annually

## Data Access Constraints

**Access constraints:** NON-PUBLIC. BLM INTERNAL USE ONLY. Unverified Dataset. These data will be restricted to internal BLM staff, contractors and partners directly involved with developing the associated planning documents. These data might contain sensitive information, and may only be accessed by the public by filing a FOIA request, which may or may not be granted depending on the applicable FOIA exemption(s).

**Use constraints:** "NON-PUBLIC, BLM INTERNAL USE ONLY. NOT FOR DISTRIBUTION. NO WARRANTY IS MADE BY BLM AS TO THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA FOR INDIVIDUAL USE OR AGGREGATE USE WITH OTHER DATA. The User is cautioned that these data have not been verified, and have not been approved for release. The User should take reasonable measures to ensure that these data are protected from disclosure. Although these data might be available to internal BLM staff, contractors or partners; the quality and fit for use of these data should be considered unknown. The User is advised that the content of the metadata file associated with these data might be incomplete. The User assumes the entire risk associated with its use of these data. The BLM shall not be held liable for unintentional disclosure; nor for any use or misuse of the data described or contained herein. Further, the BLM assumes no liability for the current accuracy, reliability, completeness or utility of these data on any system or for any general or scientific purposes. The User bears all responsibility in determining whether these data are fit for the User's intended use. These data are neither legal documents nor land surveys, and must not be used as such. Official records can be referenced at most BLM offices. Please report any errors in the data to the BLM office from which it was obtained. Any products derived from these data should clearly identify the source as unverified data. They must also include the statement ""REVIEW AND/OR DISPLAY COPY - NOT FOR DISTRIBUTION." The BLM should be cited as the data source in any products derived from these data. Any Users wishing to modify the data are obligated to describe within the process history section of the metadata the types of modifications they have performed. The User specifically agrees not to misrepresent the data, nor to imply that changes made were approved or endorsed by BLM. This data may be updated by the BLM without notification."

## Spatial Domain

**Boundary Coordinates-  
Unprojected (geographic)**  
West -157.514027 (longitude)  
East -102.365554 (longitude)  
North 70.761066 (latitude)  
South 32.0226 (latitude)

## Point Of Contact

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## Citation

**Title:** BLM AIM AquADat Local  
Feature Class  
**Originators:** US Dept of Interior,  
Bureau of Land Management  
**Publication date:** 20170101  
**Data type:** vector digital data  
**Dataset credit:** US Department  
of the Interior - Bureau of Land  
Management Assessment,  
Inventory, and Monitoring  
Project Team; NAMC

**Data Structure and Attribute Information** (most commonly used columns are in light gray)

Data Type	Indicator or Column Heading	Description
Site Descriptors	SiteCode	Site code assigned during the design process and used by field crews and project leads to track samples. SiteCodes should be used to track design specific information; whereas MasterCode should be used to query information about a site across multiple designs or revisits.
	StreamName	Stream name based off the USGS National Hydrography Dataset (NHD) layer
	MasterCode	Code used to identify a unique location. SiteCode may (or may not) change on site revisits. However, MasterCode will remain the same across all site visits.
	UID	Unique code for an individual site visit. This is the database primary key.
	Date	Sample date (units: m/d/yyyy)
	MergeSiteCodes	List of existing monitoring sites that fall in the same location as this site. All such sites have been screened for merging using the site scouting protocol
	VisitNumber	A sequential number indicating the number of times the site has been visited up to the date of this sample.
	MidLat	Latitude of the reach midpoint in NAD 83 (units: decimal degrees)
	MidLong	Longitude of the reach midpoint in NAD 83 (units: decimal degrees)
	Project	Project associated with data collection
	Protocol	Protocol used for collecting the data (wadeable or boatable)
	State	BLM Administrative State where the site is located
	District	BLM District where the site is located
	FieldOffice	BLM Field Office where the site is located
	Stratum	The original design stratum for the site
	Targeted	Specifies whether the site was a part of a probabilistic random design (Random) or whether it was selected as a targeted site to address a specific management concern (Targeted)
	StreamOrder	Strahler stream order of the site
	StreamSizeOrder	Stream size category as defined in the design by grouping Strahler stream orders together. Generally, SS-Small Streams (Stream Order:1-2) , LS-Large Streams (Stream Order:3-4), RV-Rivers (Stream Order >5), RM-River Major (only streams designated as major rivers).

Data Type	Indicator or Column Heading	Description
Site Descriptors	StreamSizeBankfull	Stream size category as defined by bankfull width and protocol. SmallWadeable: wadeable streams <10 m bankfull width, LargeWadeable: wadeable stream >10 m bankfull width, Boatable: All boatable streams regardless of bankfull width.
	NAMC_Benchmark	NAMC assigned category used to determine default benchmarks for making indicator specific condition ratings. This field is a combination of EcoregionHybrid10 and StreamSizeBankfull.
	EcoregionHybrid10	EPA hybrid level III ecoregion
	Climate	EPA climatic zone (Mountain, Xeric, Plains)
	BRLat	Bottom of reach latitude in NAD 83 (units: decimal degrees)
	BRLong	Bottom of reach longitude in NAD 83 (units: decimal degrees)
	TRLat	Top of reach latitude in NAD 83 (units: decimal degrees)
	TRLong	Top of reach longitude in NAD 83 (units: decimal degrees)
	TotRchlen	Total length of the reach (m) measured along the thalweg as calculated by 20 times average bankfull width (wadeable) or 40 times wetted width (boatable), with a min of 150 m and a max of 4000 m. This field is provided for context for the site but sampled reach lengths may differ from this total reach length for partially sampled sites (FieldStatus= Sampled - Partial). (units: m, min: 150, max: 4000, n=1)
	FieldStatus	Whether the reach was fully sampled, partially sampled, or sampled with interrupted flow. Data from partially sampled sites or sites with interrupted flow should be examined carefully to insure crews followed the modified protocols properly.

Data Type	Indicator or Column Heading	Description
Biodiversity and Riparian Habitat Quality	PctOverheadCover	Average % overhead cover provided by stream banks, vegetation, or other objects measured mid-channel (looking 4 directions) across 11 transects (units: %, min: 0, max: 100, n= 44)
	BankOverheadCover	Average percent overhead cover provided by stream banks (left and right), vegetation or other objects measured at the scour line of the left and right banks across 11 transects (units: %, min: 0, max: 100, n= 22)
	VegComplexity	Aggregate measure of the average vegetative cover provided by three different vegetative height category: Canopy (>5m), Understory (0.5-5m), and Ground (<0.5m). Each vegetative height category is then divided into two vegetation types (e.g. woody or nonwoody). Proportional cover was binned into four classes (0.875, 0.575, 0.25, and 0.05) per vegetation type, summed across the three heights, and then averaged across the left and right banks of 11 transects. (units: none, min: 0, max: 2.6, n= 132)
	RiparianVegCanopyCover	Measure of the average riparian vegetative cover provided by canopy vegetation (>5m). Proportional cover was binned into four classes (0.875, 0.575, 0.25, and 0.05) and then averaged across the left and right banks of 11 transects. (units: none, min: 0, max: 0.88, n= 22)
	RiparianVegUnderstoryCover	Measure of the average riparian vegetative cover provided by understory vegetation (0.5-5m). Proportional cover was binned into four classes (0.875, 0.575, 0.25, and 0.05) and then averaged across the left and right banks of 11 transects. (units: none, min: 0, max: 0.88, n= 22)
	RiparianVegGroundCover	Measure of the average riparian vegetative cover provided by the ground cover vegetation (<0.5m). Proportional cover was binned into four classes (0.875, 0.575, 0.25, and 0.05) and then averaged across the left and right banks of 11 transects. (units: none, min: 0, max: 0.88, n= 22)
	NonNativeWoody	Percent of 22 vegetation plots with invasive woody vegetation present (units: %, min: 0, max: 100, n= 22)
	NativeWoody	Percent of 22 vegetation plots with native woody vegetation present (units: %, min: 0, max: 100, n= 22)
	NonNativeHerb	Percent of 22 vegetation plots with invasive herbaceous vegetation present (units: %, min: 0, max: 100, n= 22)
	NativeHerb	Percent of 22 vegetation plots with native herbaceous vegetation present (units: %, min: 0, max: 100, n= 22)
	SedgeRush	Percent of 22 vegetation plots with sedges and rushes present (units: %, min: 0, max: 100, n= 22)

Data Type	Indicator or Column Heading	Description
Biodiversity and Riparian Habitat Quality	InvasiveInvertSp	Presence or absence of invasive macroinvertebrates
	ObservedInvertRichness	Observed macroinvertebrate richness standardized to model specific operational taxonomic units (OTU) (units: # of taxa)
	ExpectedInvertRichness	Expected macroinvertebrate richness in the absence of anthropogenic impacts from the O/E model (units: # of taxa)
	OE_Macroinvertebrate	Biological condition was assessed using an observed/expected (O/E) index. O/E models compare the macroinvertebrate taxa observed at sites of unknown biological condition (i.e., 'test sites') to the assemblages expected to be found in the absence of anthropogenic stressors (see Hawkins et al. 2000 for details). The specific model used can be found in the OE_MMI_ModelUsed column and the model specific metadata can be found at <a href="http://www.usu.edu/buglab/">www.usu.edu/buglab/</a> . (units: none, min: 0, max: 1.5)
	MMI_Macroinvertebrate	Biological condition was assessed using the MMI (MultimetricIndex) model specified in the OE_MMI_ModelUsed column.
	OE_MMI_ModelUsed	The O/E or MMI model used to determine biological integrity. NAMC currently has the following models available UT, NV, CA, CO, OR, regional models for areas sampled by AREMP or PIBO programs (Northwest Forest Plan or Columbia River Basin), and a West-wide model. Generally, State based models are used if available, otherwise the West-wide model is used.
	MacroinvertebrateCount	This field indicates whether or not the site's environmental gradients were within the range of experience of the model. A fail indicates the model potentially had to extrapolate, rather than interpolate, to accommodate one or more of the habitat variables. O/E scores and condition ratings should be interpreted cautiously if a site failed the test of experience.
	ModelApplicability	Number of macroinvertebrates identified and resampled to a standardized fixed count (i.e. rarefaction). Samples with counts less than 200 macroinvertebrates can result from sampling and/or laboratory processing errors, but low counts can also be a signal of degraded biological condition. Additional samples should be taken to verify Major or Moderate departure from reference. (units: # of individuals, min: 0, max: 400)

Data Type	Indicator or Column Heading	Description
Water Quality	TotalNitrogen	Measured total nitrogen value (units: µg/L, n=1)
	PRD_TotalNitrogen	Site specific predicted values for reference nitrogen concentrations (Olson and Hawkins 2013) (units: µg/L)
	TotalPhosphorous	Measured total phosphorous value (units: µg/L, n=1)
	PRD_TotalPhosphorous	Site specific predicted values for reference phosphorus concentrations (Olson and Hawkins 2013) (units: µg/L)
	SpecificConductance	Measured specific conductance value. The specific conductance is conductivity standardized to 25 degrees C. (units: µS/cm, min: 0, max: 65500, n=1)
	PRD_SpecificConductance	Site specific predicted values for reference specific conductance values (Olson and Hawkins 2012) (units: µS/cm, min: 0, max: 65500)
	pH	Measured pH value (units: SU, min: 0, max: 14, n=1)
	InstantTemp	Instantaneous water temperature measurement (units: degrees C, n=1)
	Turbidity	Average water clarity as measured by the suspended solids in the water column (units: NTU, n=3)
Watershed Function and Instream Habitat Quality	PctPools	Percent of the sample reach (linear extent) classified as pool habitat as assessed using the core pool method (units: %, min: 0, max: 100, n=1)
	ResPoolDepth	Average residual pool depth as assessed using the core pool method (units: m, n= variable depending on number of pools)
	PoolFreq	Frequency of pools in the reach as assessed using the core pool method (units: # pools/km, n=1)
	LWD_Freq	Frequency of large woody debris within the bankfull channel of the reach (units: # pieces/ 100 m, n= 1)
	LWD_Vol	Volume of LWD within the bankfull channel of the reach (units: m <sup>3</sup> /100 m, n=1)
	PctFines	Percent of 210 particles with a b-axis < 2 mm (units: %, min: 0, max: 100, n=210)
	PctFines6	Percent of 210 particles with a b-axis < 6 mm (units: %, min: 0, max: 100, n=210)
	D16	Particle size corresponding to the 16th percentile of measured particles (units: mm, min: 1, max: 4098, n=210)
	D84	Particle size corresponding to the 84th percentile of measured particles (units: mm, min: 1, max: 4098, n=210)
	D50	Particle size corresponding to the 50th percentile of measured particles (units: mm, min: 1, max: 4098, n=210)
	GeometricMeanParticleDiam	Geometric mean bed particle diameter= exponential function[mean(log(particle diameter))]. This is a less frequently used metric of characterizing central tendency of substrate sizes, but is the main metric used by the EPA for determining relative bed stability. It is less variable than a D50 and more biologically meaningful because it is more influenced by fine sediment. (units: mm, min: 1, max: 4098, n=210)

Data Type	Indicator or Column Heading	Description
Watershed Function and Instream Habitat Quality	PoolTailFines	Average percent fine sediment (< 2mm) on the pool tail (units %, min: 0, max: 100, n= 3 per pool)
	PoolTailFines6	Average percent fine sediment (< 6mm) on the pool tail (units %, min: 0, max: 100, n=3 per pool)
	BankCover	Percent of 42 erosional banks with greater than 50% cover provided by perennial vegetation, wood or mineral substrate > 15 cm (units: %, min: 0, max: 100, n= 42)
	BankStability	Percent of 42 banks lacking visible signs of active erosion (e.g., slump, slough, fracture) (units: %, min: 0, max: 100, n= 42)
	BnkCover_Stab	Percent of 42 banks both stable (lacking visible signs of active erosions (e.g., slump, slough, fracture)) and covered (greater than 50% cover provided by perennial vegetation, wood or mineral substrate > 15 cm) (units: %, min: 0, max: 100, n= 42)
	BnkCoverBedrock	Average bank cover composed of bedrock (units: %, min: 0, max: 100, n= 42)
	BnkCoverCobble	Average bank cover composed of cobble > 15 cm (units: %, min: 0, max: 100, n= 42)
	BnkCoverLWD	Average bank cover composed of LWD (units: %, min: 0, max: 100, n= 42)
	BnkCoverVeg	Average bank cover composed of vegetation (units: %, min: 0, max: 100, n= 42)
	BankfullHeight	Average bankfull height measured from water surface across 11 transects (units: m, n = 11)
	FloodplainHeight	Average floodplain height measured from water surface across 11 transects (units: m, n = 11)
	FloodplainConnectivity	Logarithm of the difference between average bankfull height and average floodplain height= $\log(\text{FloodplainHeight} - \text{BankHeight} + 0.1)$ (units: none, min: -1, max: 2, n=11)
	InstreamHabitatComplexity	Aggregate measure of average cover provided by boulders, overhanging vegetation, live trees and roots, LWD, small woody debris, and stream banks for stream fishes measured at 11 plots. Proportional cover was binned into four classes (0.875, 0.575, 0.25, and 0.5), averaged across transects, and then summed across six types of cover. (units: none, min: 0, max: 2.3, n= 66)
	BankAngle	Measured angle of the stream bank; banks with obtuse angles = >90° and undercut banks with acute angles = <90° (units: degrees, min: 0, max: 180, n= 22)
	ThalwegDepthCV	Indicator of bed heterogeneity computed as the coefficient of variation of 100-300 thalweg depth measurements (units: none, n= 1)
	ThalwegDepthMean	Mean thalweg depth. Metric of how deep water was at the site. (units: m, min: 0, max: none, n variable depending on reach length (100 - 300))
PctDry	Percent of the reach that was dry. This is calculated as the number of dry thalweg measurements divided by the total number of thalweg measurements collected and expressed as a percentage. (units: %, min: 0, max: 100, n= variable depending on reach length (100-300))	

Data Type	Indicator or Column Heading	Description
Covariates/ Other	BankfullWidth	Average bankfull width across 11 transects (units: m, n= 11)
	WettedWidth	Average wetted width across 21 transects (units: m, n= 21)
	FloodWidth	Average flood prone width as defined as valley width at 2 times bankfull height. The larger the value the larger the floodplain is. (units: m, n= 2)
	Entrench	Entrenchment ratio = average floodprone width divided by average bankfull width. Ratios of 1-1.4 represent entrenched streams; 1.41-2.2 represent moderately entrenched streams; and ratios greater than 2.2 indicate rivers only slightly entrenched in a well-developed floodplain (Rosgen 1996). This entrenchment value can then be used with other ancillary site data such as slope and incision to determine stream type (Rosgen 1996) and the potential of the system for floodplain formation. (units: none, min: 1, max: 3, n= 1)
	Slope	Reach slope measured from the water's surface. In most cases, the reported value is an average of 2 independent measurements that were within 10% of one another. (units: %, min: 0, max: ~45, n= 2)
	Sinuosity	Reach sinuosity (reach length along the thalweg/straight line distance between BR and TR coordinates) (units: none, min: 1, max: NA, n= 1)
	BeaverFlowMod	Qualitative visual assessment of extent of beaver flow modifications within the reach (NONE, MINOR, MAJOR)
	BeaverSign	Qualitative visual assessment of frequency of beaver signs (e.g. chewed logs) within the reach (ABSENT, RARE, COMMON)
	WaterWithdrawal	Presence or absence of water withdrawals
	DateChange	Date that the site's data was updated and changed (units: m/d/yyyy)
	ReasonChange	Reason for change and field changes; detailing what data was changed and why