Citation

Citation Information

Originator US Environmental Protection Agency

Publication Date 2017-01-26

Title

Gold King Mine release sampling sites (Sampling\_Sites.shp)

Publication Information

Publication Place Athens, GA

Publisher U.S. EPA Office of Research & Development (ORD) - National Exposure Research Laboratory (NERL)

Online Linkage <https://www.epa.gov/goldkingmine/data-used-support-epa-report>

Description

Abstract

This shapefile consists of locations where surface water and sediment quality data were collected in response to the Gold King Mine release of August 5, 2015. Though it is not a comprehensive list of all the sites that may have been sampled, it contains sites from a variety of data providers including federal agencies, states, tribes, and non-profit organizations. Specifically, it contains the sites for which we were able to obtain surface water and sediment quality data. The sites were sampled between August 5, 2015 and November 5, 2016, with some sites being sampled more often than others. Some sites were only sampled for sediments or only sampled for surface water, while others were sampled for both.

Purpose

This shapefile was created to map the sampling and monitoring sites being used by federal agencies, states, tribes, and non-profit organizations who were collecting surface water and sediment quality data in response to the Gold King Mine release of August 5, 2015. The shapefile was used to evaluate the environment where the samples were being collected, to understand the relationship between sites, and to approximate the distance each site was from the Gold King Mine. It was also used to create figures.

Supplemental Information

EPA-Created

Time Period of Content

Time Period Information

Range of Dates/Times

Beginning Date 2015-08-05

Ending Date 2016-11-05

Currentness Reference

Ground condition

Status

Progress Complete

Maintenance and Update Frequency notPlanned

Spatial Domain

Bounding Coordinates

West Bounding Coordinate -111.486910

East Bounding Coordinate -107.600210

North Bounding Coordinate 37.896192

South Bounding Coordinate 36.707473

Keywords

Theme

Theme Keyword Thesaurus ISO 19115 Topic Category

Theme Keyword environment

Theme Keyword inlandWaters

Theme

Theme Keyword Thesaurus EPA GIS Keyword Thesaurus

Theme Keyword Environment

Theme Keyword Response

Theme Keyword Sites

Theme Keyword Spills

Theme

Theme Keyword Thesaurus User

Theme Keyword Animas River

Theme Keyword Cement Creek

Theme Keyword Gold King Mine

Theme Keyword San Juan River

Place

Place Keyword Thesaurus None

Place Keyword Colorado

Place Keyword New Mexico

Place Keyword Utah

Access Constraints

None

Use Constraints

None. Please check sources, scale, accuracy, currency and other available information. Please confirm that you are using the most recent copy of both data and metadata. Acknowledgement of the EPA would be appreciated.

Point of Contact

Contact Information

Contact Person Primary

Contact Person Lourdes Prieto

Contact Organization U.S. Environmental Protection Agency, ORD, NERL, CED

Contact Position Physical Scientist

Contact Address

Address Type mailing and physical address

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City Athens

State or Province GA

Postal Code 30605

Contact Voice Telephone  (706) 355-8112

Contact Facsimile Telephone (706) 355-8104

Contact Electronic Mail Address [prieto.lourdes@epa.gov](mailto:prieto.lourdes@epa.gov?subject=Gold%20King%20Mine%20release%20sampling%20sites%20(Sampling_Sites.shp))

Security Information

Security Classification System http://project-open-data.github.io/schema/#accessLevel

Security Classification public

Security Handling Description Standard Technical Controls

**Data Quality  ▼**

Logical Consistency Report

The shapefile was checked for geometry problems using ArcGIS 10.4.1. No problems were found. Attribute information visually inspected for correctness.

Completeness Report

This shapefile includes sites that were sampled anytime between August 5, 2015 and November 5, 2016 in response to the Gold King Mine release of August 5, 2015. It is not a comprehensive list of all the sites that may have been sampled, instead it is a list of the sites that we were able to obtain water quality or sediment quality data for. Sites were sampled with a varying degree of regularity, with some sites being sampled more often than others. Some sites only have sediment quality data associated with them, while others have only surface water quality data. Some sites have both. This is documented in the Media column of the attributes table. The shapefile includes sites for which we did not have horizontal datum information at the time we added the site to the shapefile. The geographic coordinates of those sites were treated as being in the World Geodetic System of 1984 (WGS84) datum. Some sites had no coordinate information at the time of shapefile creation. Their location was determined using ancillary information and their geographic coordinates were generally estimated using the interactive map (https://www.epa.gov/goldkingmine/emergency-response-monitoring-data-gold-king-mine-incident) available from EPA’s “Emergency Response to August 2015 Release from Gold King Mine" webpage (http://www2.epa.gov/goldkingmine). This was documented in the Notes column of the attributes table. On occasion, a data provider assigned more than one set of geographic coordinates to a sampling location. In those instances, we picked one of the sets to represent the sampling site. The Descriptio and Notes attributes can contain empty rows.

Positional Accuracy

Horizontal Positional Accuracy

Horizontal Positional Accuracy Report

Unknown

Lineage

Process Step

Process Description

The initial shapefile was created in 2015 by opening in ArcMap the Excel table that contained the first group of sites we had chemical data for. The table was displayed as XY data, then exported to a shapefile. Other sites were added as they became available. As was the case with the first group of sites, if the horizontal datum was not known at the time we added a site, the geographic coordinates were treated as being in the World Geodetic System of 1984 (WGS84) datum. Sites whose coordinates were based on the North American Datum of 1983 (NAD83), were first converted to a temporary shapefile, re-projected to the WGS84 datum, then added to the master shapefile of sites.

Process Date 2015-2016

Process Contact

Contact Information

Contact Person Primary

Contact Person Lourdes Prieto

Contact Organization U.S. Environmental Protection Agency, ORD, NERL, CED

Contact Position Physical Scientist

Contact Address

Address Type mailing and physical address

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Process Step

Process Description

Wrote and validated metadata.

Process Date 2017-01-6

Process Contact

Contact Information

Contact Organization Primary

Contact Organization U.S. Environmental Protection Agency, ORD, NERL, CED

Contact Person Lourdes Prieto

Contact Position Physical Scientist

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**Spatial Data Organization  ▼**

Indirect Spatial Reference Method

SiteID

Direct Spatial Reference Method Point

Point and Vector Object Information

SDTS Terms Description

SDTS Point and Vector Object Type Point

Point and Vector Object Count 305

**Spatial Reference  ▼**

Horizontal Coordinate System Definition

Geographic

Latitude Resolution 8.983152841195215e-009

Longitude Resolution 8.983152841195215e-009

Geographic Coordinate Units Decimal degrees

Geodetic Model

Horizontal Datum Name World Geodetic System 1984

Ellipsoid Name WGS\_1984

Semi-major Axis 6378137.000000

Denominator of Flattening Ratio 298.257224

**Entities and Attributes  ▼**

Detailed Description

Entity Type

Entity Type Label Sampling\_Sites

Entity Type Definition

Sampling sites related to the Gold King Mine release of August 5, 2015.

Entity Type Definition Source USEPA

Attribute

Attribute Label FID

Attribute Definition

Internal feature number.

Attribute Definition Source Esri

Attribute Domain Values

Unrepresentable Domain

Sequential unique whole numbers that are automatically generated.

Attribute

Attribute Label Shape

Attribute Definition

Feature geometry.

Attribute Definition Source Esri

Attribute Domain Values

Unrepresentable Domain

Coordinates defining the features.

Attribute

Attribute Label Agency

Attribute Definition

Identifies the data provider of each sampling site. Some sites were sampled by more than one data provider.

Attribute Definition Source USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value CDPHE

Enumerated Domain Value Definition

Colorado Department of Public Health and Environment - (https://www.colorado.gov/cdphe/animas-river-water-quality-sampling-and-data)

Enumerated Domain Value Definition Source

CDPHE

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value CDPHE/EPA

Enumerated Domain Value Definition

Colorado Department of Public Health and Environment/United States Environmental Protection Agency - (https://www.colorado.gov/cdphe/animas-river-water-quality-sampling-and-data)/(http://www2.epa.gov/goldkingmine)

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value CoF

Enumerated Domain Value Definition

City of Farmington - personal communication but also in NMED website (https://www.env.nm.gov/riverwatersafety/Spill\_Map.htm)

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value EPA

Enumerated Domain Value Definition

United States Environmental Protection Agency - (http://www2.epa.gov/goldkingmine)

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value EPA/MSI

Enumerated Domain Value Definition

United States Environmental Protection Agency/Mountain Studies Institute - (http://www2.epa.gov/goldkingmine)/(http://www.mountainstudies.org/animasriver/)

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value NMED

Enumerated Domain Value Definition

New Mexico Environment Department - (https://www.env.nm.gov/riverwatersafety/Spill\_Map.htm)

Enumerated Domain Value Definition Source

NMED

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value NNEPA

Enumerated Domain Value Definition

Navajo Nation Environmental Protection Agency - via Water Quality Portal - (http://www.waterqualitydata.us/)

Enumerated Domain Value Definition Source

NNEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value RCWWN

Enumerated Domain Value Definition

The Rivers of Colorado Water Watch Network (River Watch) - via Water Quality Portal - (http://www.waterqualitydata.us/)

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value SUIT

Enumerated Domain Value Definition

Southern Ute Indian Tribe - FTP site (ftp://ftp.southernute-nsn.gov)

Enumerated Domain Value Definition Source

SUIT

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value SUIT/EPA

Enumerated Domain Value Definition

Southern Ute Indian Tribe/United States Environmental Protection Agency - (ftp://ftp.southernute-nsn.gov)/(http://www2.epa.gov/goldkingmine)

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value UDEQ

Enumerated Domain Value Definition

Utah Department of Environmental Quality - (http://www.deq.utah.gov/Topics/Water/goldkingmine/samplingresults.htm)

Enumerated Domain Value Definition Source

UDEQ

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value UMUT

Enumerated Domain Value Definition

Ute Mountain Ute Tribe - via STORET (https://ofmpub.epa.gov/storpubl/dw\_pages.querycriteria)

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value USGS

Enumerated Domain Value Definition

United States Geological Survey - personal communication and (http://water.usgs.gov/owq/gkm/wq.html)

Enumerated Domain Value Definition Source

USGS

Attribute

Attribute Label SiteID

Attribute Definition

Site identification ID. Most IDs were given by the data providers, though we modified or created our own when necessary.

Attribute Definition Source USEPA

Attribute Domain Values

Unrepresentable Domain

Can be alpha, numeric, or alphanumeric.

Attribute

Attribute Label Descriptio

Attribute Definition

Site description. Most came from data providers.

Attribute Definition Source USEPA

Attribute Domain Values

Unrepresentable Domain

Text field. Can contain empty rows.

Attribute

Attribute Label Dist\_Miles

Attribute Definition

Distance, in miles, each site was from the Gold King Mine. To estimate this distance, we used the mile markers provided in the interactive map (https://www.epa.gov/goldkingmine/emergency-response-monitoring-data-gold-king-mine-incident) available from EPA's "Emergency Response to August 2015 Release from Gold King Mine" webpage (http://www2.epa.gov/goldkingmine) as a starting point. We then used the map's measuring tool to measure the distance the sampling site in question was from the closest mile marker. If the site was downstream of the marker, the measurement was added to the distance indicated by the mile marker. If the site was upstream of the marker the measurement was subtracted from the distance indicated by the mile marker. For Reference sites (i.e. sites not in the path of the Gold King Mine plume), we took the measurement at the confluence of the reference stream (where the sample was located) and the corresponding main stream affected by the release (instead of measuring to the exact location of the site). For this reason, all sites located on the same reference stream, have the same assigned distance from the mine even though the sites are not necessarily close to each other.

Attribute Definition Source USEPA

Attribute Domain Values

Range Domain

Range Domain Minimum 0

Range Domain Maximum 413.7

Attribute

Attribute Label Dist\_km

Attribute Definition

Distance, in kilometers, each site was from the mine. Originally estimated in miles. See Dist\_Miles attribute for information on how that distance was estimated.

Attribute Definition Source USEPA

Attribute Domain Values

Range Domain

Range Domain Minimum 0

Range Domain Maximum 665.785613

Attribute

Attribute Label SiteType

Attribute Definition

Briefly describes the setting where the site appeared to be located. Mostly determined by looking at aerial imagery.

Attribute Definition Source USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Ditch

Enumerated Domain Value Definition

Indicates the site was located on a ditch.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Flood plain

Enumerated Domain Value Definition

Indicates the site was located on the flood plain.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Gravel pond

Enumerated Domain Value Definition

Indicates the site was located on a gravel pond.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Intake

Enumerated Domain Value Definition

Indicates the site was located on an intake.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Lake

Enumerated Domain Value Definition

Indicates the site was located on a lake.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Main

Enumerated Domain Value Definition

Indicates the site was in the path of the GKM plume.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Mine effluent

Enumerated Domain Value Definition

Data provider indicated sample came from the mine effluent.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Off river pond

Enumerated Domain Value Definition

Indicates the site was located on an off river pond.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Pond

Enumerated Domain Value Definition

Indicates the site was located on a pond.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Pond (treatment)

Enumerated Domain Value Definition

Indicates the site was located on a treatment pond.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value PWS

Enumerated Domain Value Definition

Indicates site was located on a public water system facility.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Reference

Enumerated Domain Value Definition

Indicates the site was not in the path of the GKM plume.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Source

Enumerated Domain Value Definition

Indicates the site was located at the Gold King Mine.

Enumerated Domain Value Definition Source

USEPA

Attribute

Attribute Label Location

Attribute Definition

Place where the site was located.

Attribute Definition Source USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Cement Creek

Enumerated Domain Value Definition

Cement Creek

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Farmington Lake

Enumerated Domain Value Definition

Farmington Lake

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Lake Powell

Enumerated Domain Value Definition

Lake Powell

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Lower Animas

Enumerated Domain Value Definition

Loosely refers to the lower portion of the Animas River.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Middle Animas

Enumerated Domain Value Definition

Loosely refers to the middle portion of the Animas River.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value North Fork Cement Creek

Enumerated Domain Value Definition

North Fork Cement Creek

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value San Juan River

Enumerated Domain Value Definition

San Juan River

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value source

Enumerated Domain Value Definition

Gold King Mine

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value Upper Animas

Enumerated Domain Value Definition

Loosely refers to the upper portion of the Animas River.

Enumerated Domain Value Definition Source

USEPA

Attribute

Attribute Label Latitude

Attribute Definition

Latitude of sample in decimal degrees. If the horizontal datum associated with the geographic coordinates was known at the time we added the site to the shapefile, this was documented in the Notes attribute. If the horizontal datum was not known at that time, the geographic coordinates were treated as being in the World Geodetic System of 1984 (WGS84) datum.

Attribute Definition Source USEPA

Attribute Domain Values

Range Domain

Range Domain Minimum 36.707467

Range Domain Maximum 37.896192

Attribute

Attribute Label Longitude

Attribute Definition

Longitude of sample in decimal degrees. If the horizontal datum associated with the geographic coordinates was known at the time we added the site to the shapefile, this was documented in the Notes attribute. If the horizontal datum was not known at that time, the geographic coordinates were treated as being in the World Geodetic System of 1984 (WGS84) datum.

Attribute Definition Source USEPA

Attribute Domain Values

Range Domain

Range Domain Minimum -111.48691

Range Domain Maximum -107.6002

Attribute

Attribute Label Media

Attribute Definition

Type of sample taken at each location.

Attribute Definition Source USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value SEDIMENT

Enumerated Domain Value Definition

sediment sample

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value SLUDGE

Enumerated Domain Value Definition

sludge sample

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value SW

Enumerated Domain Value Definition

surface water sample

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value SW, SED

Enumerated Domain Value Definition

surface water and sediment samples

Enumerated Domain Value Definition Source

USEPA

Attribute

Attribute Label Notes

Attribute Definition

Miscellaneous comments.

Attribute Definition Source USEPA

Attribute Domain Values

Unrepresentable Domain

Text field. Can contain empty rows.

Attribute

Attribute Label Activ\_Type

Attribute Definition

Classifies sites relative to the release date of the Gold King Mine plume.

Attribute Definition Source USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value event-related

Enumerated Domain Value Definition

Sites sampled between August 5 and December 31, 2015.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value monitoring

Enumerated Domain Value Definition

Sites sampled on or after January 1, 2016.

Enumerated Domain Value Definition Source

USEPA

Attribute Domain Values

Enumerated Domain

Enumerated Domain Value event-related, monitoring

Enumerated Domain Value Definition

Sites sampled during both periods.

Enumerated Domain Value Definition Source

USEPA

**Distribution Information  ▼**

Distributor

Contact Information

Contact Person Primary

Contact Person Lourdes Prieto

Contact Organization U.S. Environmental Protection Agency, ORD, NERL, CED

Contact Position Physical Scientist

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Resource Description Downloadable Data

Distribution Liability

Although these data have been processed successfully on a computer system at the Environmental Protection Agency, no warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. It is also strongly recommended that careful attention be paid to the contents of the metadata file associated with these data to evaluate data set limitations, restrictions or intended use. The U.S. Environmental Protection Agency shall not be held liable for improper or incorrect use of the data described and/or contained herein.

**Metadata Reference  ▼**

Metadata Date 2017-01-26

Metadata Future Review Date 2021-01-26

Metadata Contact

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Contact Person Lourdes Prieto

Contact Organization U.S. Environmental Protection Agency, ORD, NERL, CED

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Metadata Standard Name FGDC Content Standard for Digital Geospatial Metadata

Metadata Standard Version FGDC-STD-001-1998