

Designation: D7699/D7699M - 11

### Standard Practice for Minimum Geospatial Data for Abandoned Mine Land Problem Areas, Planning Units, Keyword Features, and Project Sites<sup>1</sup>

This standard is issued under the fixed designation D7699/D7699M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\varepsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice covers the minimum elements for the accurate location and description of geospatial data for defining Abandoned Mine Land (AML) Problem Areas, Planning Units, Keyword Features, and Project Sites.

1.1.1 This practice addresses mining geospatial data relative to the Surface Mining Control and Reclamation Act of 1977 (SMCRA).<sup>2</sup> This geospatial data shall be obtained from each state, tribal or federal coal mining regulatory authority (RA), or combinations thereof, authorized under SMCRA to reclaim the surface and underground effects of past mining operations. Abandoned mine land, as specified in SMCRA Sections 404 (coal), 409 and 411 (non-coal) and cross referenced in additional sections on eligible lands, consist of those lands and waters which were mined for coal or other minerals, or both, or impacted by processing operations prior to the enactment of SMCRA and abandoned or left in an inadequate condition of reclamation and for which there is no continuing reclamation responsibility under state or other federal laws for mitigation of adverse impacts to human health and safety or environmental resources.

1.1.2 Title IV of SMCRA establishes the national AML Reclamation Program under the Office of Surface Mining Reclamation and Enforcement (OSMRE), U.S. Department of the Interior (DOI). The program was developed to reclaim land and water resources adversely affected by past coal and non-coal mining and left abandoned or inadequately restored. During the years immediately following the enactment of SMCRA, OSMRE, states, and Indian tribes conducted surveys of eligible lands and waters and created individual inventories of problems to be addressed under Title IV. In 1990, SMCRA was amended and OSMRE was required to maintain a national inventory of high priority abandoned mine sites and provide standardized procedures for states and tribes to use in updating the data. The need for an automated nationwide inventory system led to the creation of the enhanced AML Inventory System (e-AMLIS), a compilation of the individual state, tribe, Federal Reclamation Program (FRP), and Rural Abandoned Mine Program (RAMP) inventories. The e-AMLIS documents the counts for AML problem types and the costs to remedy those problems. The system captures estimated unfunded costs, estimated construction costs when funding is made available for reclamation projects, and the actual costs for completed construction projects. It is used in support of work plan development and to record the work completed under each RA's program and to report the extent and estimated cost to reclaim remaining AML problems.

1.1.3 Each state in the United States of America has been divided into Water Cataloging Units (WCU) by the U. S. Water Resources Council. These appear in the state's Hydrologic Unit Map prepared by the U.S. Department of the Interior, U. S. Geological Survey, in cooperation with the Water Resources Council. The WCU are divided and sub-divided into successively smaller hydrologic units, which are classified into four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions). Each hydrologic unit is identified by a unique Hydrologic Unit Code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system.<sup>3</sup>

1.1.4 As used in this practice, an AML Problem Area (PA) represents a closed polygon boundary for a uniquely defined geographic area contained within an AML Planning Unit (PU) as described in the AML Inventory Manual. An AML PA is a subdivision of an AML PU that contains one or more AML keyword features together with impacted land or water resources or both. An AML PA should not cross PU boundaries.

1.1.5 As used in this practice, an AML PU represents a closed polygon boundary of a uniquely defined geographic area identified by unique numbers and names. An entire WCU may be delineated as a single PU or subdivided into multiple PUs. In general, PUs east of the Mississippi River have historically

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<sup>&</sup>lt;sup>2</sup> Public Law 95-87, the Surface Mining Control and Reclamation Act of 1977 (SMCRA), passed August 3, 1977, as amended.

<sup>&</sup>lt;sup>3</sup> Available from the U. S. Department of the Interior, U.S. Geological Survey, http://water.usgs.gov/GIS/huc.html.

corresponded to watersheds; PUs west of the Mississippi River have been defined in a number of ways, including quadrangles, grazing districts, townships, counties, or entire WCU.<sup>4</sup>

1.1.6 As used in this practice, an AML Keyword Feature is a point, line, or polygon defining the location of a specific on-the-ground feature contained within an AML Problem Area (PA) as described in the AML Inventory Manual.

1.1.7 As used in this practice, an AML Project Site is a closed polygon boundary for a uniquely defined geographic area that includes the area disturbed to achieve the reclamation. An AML Project Site may contain one or more AML keyword features together with impacted land or water resources or both.

1.2 This practice applies to pre-SMCRA AML Problem Areas, Planning Units, Keyword Features, and Project Sites that are inventoried in the e-AMLIS under the SMCRA Title IV Reauthorization to provide for identification and location of AML sites and reclamation operations and facilitate the sharing of information with the public.

1.3 Units—The values stated in either SI units or inchpound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

1.4 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1.5 This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.

### 2. Referenced Documents

2.1 ASTM Standards:<sup>5</sup>

D653 Terminology Relating to Soil, Rock, and Contained Fluids

2.2 ANSI Standards:<sup>6</sup>

ANSI INCITS 61-1986 (R2002) Geographic Point Locations for Information Interchange, Representation of (formerly ANSI X3.61-1986 (R1997))

- ANSI INCITS 320-1998 (R2003) Information Technology-Spatial Data Transfer
- 2.3 Federal Geographic Data Committee Standards<sup>7</sup>

FGDC-STD-001 Content Standard for Digital Geospatial Metadata

Project 1574-D Information Technology—Geographic Information Framework Data Content Standard, Part 5 Governmental Unit and Other Geographic Area Boundaries
2.4 Code of Federal Regulations<sup>8</sup>

2.4 Code of Federal Regulations

30 CFR Part 700 et seq, 30 CFR Parts 800 et seq. 2.5 Surface Mining Control and Reclamation Act of 1977<sup>8</sup> Section 519(c) Public Law 95-87 August 3, 1977

### 3. Terminology

3.1 Except as listed or noted below, all definitions are in accordance with Terminology D653.

Note 1—The terms defined here are consistent with terms defined in 30 CFR Part 700 et seq., 30 CFR Part 870—887.15, though not verbatim.

Note 2—Terminology and definitions for identifying geographical features and describing the data model have been adopted from the Federal Geographic Data Committee Standards (FGDC) Spatial Data Transfer Standard (ANSI INCITS 320-1998 (R2003)) and the FGDC Framework Data Content Standard (FGDC Project 1574-D) Information Technology – Part 5 Governmental unit and other geographic area boundaries.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 Abandoned Mine Land (AML), n—as specified in SMCRA Sections 404 (coal), 409 (non-coal), and 411 (non-coal) and cross referenced in additional sections on eligible lands, consists of those lands and waters which were mined for coal and other minerals or impacted by processing operations prior to the enactment of SMCRA and abandoned or left in an inadequate condition of reclamation and for which there is no continuing reclamation responsibility under state or other federal laws for mitigation of adverse impacts to human health and safety or environmental resources.

3.2.2 *AML Keyword*, *n*—a defined category of AML problem types and coded values, such as clogged stream-CS, dangerous highwall-DH, or dangerous slide-DS. AML keywords are also referred to as AML hazards, features, and problems. Refer to Table 1 for AML keywords and coded values.

3.2.3 *AML Keyword Feature*, *n*—a point, line, or polygon defining the location of a specific on-the-ground feature that meets the definition of one of the AML keywords as described in the OSMRE AML Inventory Manual. Refer to Table 1 for AML keywords and coded values.

3.2.4 AML Planning Unit (PU), n—a closed polygon defining the boundary of an area of land identified by unique numbers and names. In general, PUs east of the Mississippi River have historically corresponded to subdivision(s) of Water Cataloging Units (WCU) or watersheds; PUs west of the

<sup>&</sup>lt;sup>4</sup> As described in the Abandoned Mine Land Inventory Manual, available from U. S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement.

<sup>&</sup>lt;sup>5</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>&</sup>lt;sup>6</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

<sup>&</sup>lt;sup>7</sup> Available from Federal Geographic Data Committee, 590 National Center, Reston, VA 20192, www.fgdc.gov.

<sup>&</sup>lt;sup>8</sup> Available from U. S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, http://www.access.gpo.gov.

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### TABLE 1 AML Keywords

	Priority 1 and 2 Keywords		Units		
Abbreviation	Problem Type	Inch-Pound (English)	SI [Metric]		
CS	Clogged Streams	Miles	Kilometers		
CSL	Clogged Stream Lands	Acres	Hectares		
DH	Dangerous Highwalls	Feet	Meters		
DI	Dangerous Impoundments	Count	Count		
DPE	Dangerous Piles and Embankments	Acres	Hectares		
DS	Dangerous Slides	Acres	Hectares		
GHE	Gases: Hazardous/Explosive	Count	Count		
UMF	Underground Mine Fires	Acres	Hectares		
HEF	Hazardous Equip & Facilities	Count	Count		
HWB	Hazardous Water Bodies	Count	Count		
IRW	Industrial/Residential Waste	Acres	Hectares		
Р	Portals	Count	Count		
PWAI	Polluted Water: Agricultural & Industrial	Count	Count		
PWHC	Polluted Water: Human Consumption	Count	Count		
S	Subsidence	Acres	Hectares		
SB	Surface Burning	Acres	Hectares		
VO	Vertical Openings	Count	Count		

	Priority 3 and 403(b) Keywords		Units
Abbreviation	Problem Type	Inch-Pound	SI [Metric]
		(English)	
SA	Spoil Area	Acre	Hectare
BE	Bench	Acre	Hectare
PI	Pits	Acre	Hectare
GO	Gobs	Acre	Hectare
SL	Slurry	Acre	Hectare
HR	Haul Road	Acre	Hectare
MO	Mine Opening	Count	Count
SP	Slump	Acre	Hectare
Н	Highwall	Feet	Meter
EF	Equipment/Facility	Count	Count
DP	Industrial/Residential Waste	Acre	Hectare
WA	Water Problems	Gallons	Liter
0	Other	Count	Count
WS	403(b) Water Supplies	Count	Count

Priority 4, 5, "F", and "H" Keyword			Units		
Code	Description	· · · · ·	Inch-Pound (English)	SI [Metric]	
P4 COAL	CNF	Conservation Facilities	Count	Count	
P4 COAL	0	Other	Count	Count	
P4 COAL	RCF	Recreational Facilities	Count	Count	
P4 COAL	ROD	Roads	Feet	Meters	
P4 COAL	SGE	Pre-SMCRA Coal Research	Count	Count	
P4 COAL	SMR	Surface Mining Reclamation	Acres	Hectares	
P4 COAL	STR	Public Infra-Structure	Count	Count	
P4 COAL	UTL	Public Utilities	Count	Count	
P4 COAL	WQC	Water Quality Control	Count	Count	
P5 COAL	CNF	Conservation Facilities	Count	Count	
P5 COAL	HST	Historic Purpose	Count	Count	
P5 COAL	OSB	Open Space Benefits	Count	Count	
P5 COAL	UTL	Public Utilities	Count	Count	
P5 COAL	RCT	Recreation Purpose	Count	Count	
P5 COAL	ROD	Roads	Feet	Meters	
PF - 411(f)	UTL	Public Utilities	Count	Count	
PF - 411(f)	STR	Public (Infra) Structure	Count	Count	
PF - 411(f)	ROD	Roads	Feet	Meters	
PF - 411(f)	RCF	Recreational Facilities	Count	Count	
PF - 411(f)	CNF	Conservation facilities	Count	Count	
PF - 411(f)	0	Other	Count	Count	
H – 411(h)	H1	411(h) Non-Mining Expenditures	Count	Count	
H – 411(h)	H2	411(h) Non-Mining Expenditures	Count	Count	

Mississippi River have been defined in a number of ways, including quadrangles, grazing districts, townships, counties, or entire WCU.



3.2.5 *AML Problem Area (PA), n*—a closed polygon subdivision of an AML PU that contains one or more AML Keyword Features together with impacted land or water resources or both, identified by unique numbers and names.

3.2.6 AML problem area description (PAD), n—a collection of quantitative and qualitative data relating to sites contained within a PA subdivision of an AML PU that contains one or more Keyword Features together with impacted land or water resources or both.

3.2.7 *AML problem area ID*, *n*—a unique alpha-numeric identifier assigned to an AML PA, prefixed with state or tribal abbreviation.

3.2.8 *AML problem type, n*—a specific on-the-ground feature that meets the definition of one of the AML keywords as described in the OSMRE AML Inventory Manual. Refer to Table 1 for AML keywords and coded values.

3.2.9 *AML problem type priority, n*—the priority status of the AML problem type as described in the OSMRE AML Inventory Manual. Refer to Table 2 for AML problem type priority descriptions.

3.2.10 *AML program area, n*—a coded value representing a defined programmatic category of reclamation under the SMCRA, for example, SGA = Pre-SMCRA Coal State/Tribe Program. Refer to Table 3 for AML program area descriptions and coded values.

3.2.11 *AML project site, n*—a closed polygon defining the boundary of an area of land within which the RA has initiated an AML reclamation project. The AML project site may cross into other AML PAs and may contain within its spatial boundary one or more AML Keyword Feature.

3.2.12 attribute, n-a defined characteristic of a feature.

3.2.13 *attribute value, n*—a specific quality or quantity assigned to an attribute.

3.2.14 *domain*, *n*—a finite list or range of permissible values for a specified attribute. Domain tables may include units of measure, types, styles, status, names, methods, materials, dispositions, sources, dimensions, or data classes.

3.2.15 Enhanced AML Inventory System (e-AMLIS), n—a national database of AML PAs and associated qualitative and quantitative information developed and maintained by OS-MRE and state and tribe RAs in accordance with SMCRA Title IV mandates.

3.2.16 *feature*, *n*—a geographical representation of either a discrete real-world phenomenon, such as a building, or an abstract concept, such as a governmental boundary.

3.2.17 *feature class, n*—a logical group of related feature types.

3.2.18 *line*, n—a connected series of x, y coordinates that specifies a geographic location.

#### TABLE 2 AML Problem Type Priority

Priority 1	An AML problem meeting the conditions under Section 403(a)(1) [coal], or 411(c)(1) [noncoal] of SMCRA concerning the <u>protection of public</u> <u>health, safety, and property from extreme danger of adverse effects</u> of mining practices or adjacent land and water reclamation. Projects being recorded under State Emergency Program (SEA) and Federal Emergency Program (FEA) should select the Priority 1 keyword that best reflects the problem being addressed.
Priority 2	An AML problem meeting the conditions under Section 403(a)(2) [coal] or 411(c)(2) [non-coal] of SMCRA concerning the protection of public health and safety from adverse effects of mining practices or adjacent land and water reclamation
Priority 3	An AML problem category meeting the conditions under Section 403(a)(3) [coal] or 411(c)(3) [non-coal] of SMCRA concerning the <u>restoration of land and water resources and the environment previously degraded by adverse effects</u> of mining practices. Priority 3 is determined by the State or Tribe based upon the assessment that the site is inadequately reclaimed and is degrading land or water resources. There are no Priority Documentation Forms for land and water resources coal reclamation keywords, however, Chapter 6 (Estimating and Documenting AML Reclamation Costs) contains a supplemental sheet to upload to e-AMLIS in support of Priority 3 reclamation cost estimates.
Priority 4	Congress eliminated Priority 4 as part of the December 2006 AML reauthorization legislation. Priority 4 expenditures were those related to the protection, replacement, construction, or enhancement of public facilities adversely affected by coal mining practices. While e-AMLIS no longer allows data entry for Priority 4 problems, however, e-AMLIS does contain historic accomplishments with funding received prior to the 2006 Reauthorization sources.
Priority 5	Congress eliminated Priority 5 as part of the December 2006 AML reauthorization legislation. Priority 5 expenditures were for the development of publicly owned land adversely affected by coal mining practices including land acquired for recreation and historic purposes, conservation, reclamation purposes, and open space benefits. While e-AMLIS no longer allows data entry for Priority 5 problems, however, e-AMLIS does contain historic accomplishments with funding received prior to the 2006 Reauthorization sources.
Priority F: (PF)	Prior to AML Reauthorization and e-AMLIS modernization, Certified States and Tribes entered accomplishments under SMCRA 411(f) as "PF" Problem Types. Section 411(f) expenditures were those made because the Governor of a State or the head of a governing body of an Indian tribe determines there is a need for activities or construction of specific public facilities related to the coal or minerals industry in an area impacted by coal or minerals development.
Priority H (H)	An AML problem related to non-mining expenditures by certified States and Indian Tribes. Under rulemaking completed by OSM in November 2008, certified programs have the option of expending post-AML Reauthorization funds received under Sections 411(h)(1) and 411(h)(2) for non-mining related activities, such as transportation, education, or energy development. e-AMLIS will now record these non-mining expenditures as completed costs so that the information is available for annual reporting to Congress.
Priority B: Water Supplies - Section 403(b)	An AML problem under Section 403(b) for the for the purpose of protecting, repairing, replacing, constructing, or enhancing facilities relating to water supply, including water distribution facilities and treatment plants, to replace water supplies adversely affected by coal mining practices.

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#### TABLE 3 AML Program Area

Program Code	Program Area	Program Code	Program Area
SGA	Pre-SMCRA Coal (P1,P2, P3) State Program	EMĂ	Federal Emergency
SGB	Pre-SMCRA Coal (P3 Only) State Program	FRA	Federal Reclamation Program
SGC	Pre-SMCRA Coal (P4) State Program	FEA	Federal Emergency
SGD	Pre-SMCRA Coal (P5) State Program	CIA	Coal Interim Site Funding
SGE	Pre-SMCRA Coal (Research-Old P4) State Program	CSA	Coal Insolvent Surety Site Funding
SEA	State Emergency Program	AMA	State Acid Mine Drainage Set-Aside
RUA	Rural Abandoned Mine Program (RAMP)	PVA	Other (P1,P2,P3)
SSA	State Future Reclamation Set-Aside	NCA	Non-Coal (P1,P2,P3)
CLA	Clean Streams Initiative (ACSI)	NCC	Non-Coal (P4)
RMA	Remining	NCD	Non-Coal (P5)
ENH	Enhanced AML Rule Projects	WCA	Watershed Cooperative Agreement Program
CH1	Certified 411(h)-1	NH2	Certified 411(h)-2 Non-Coal
CH2	Certified 411(h)-2	WSB	403(b) Water Supplies
NH1	Certified 411(h)-1 Non-Coal		

3.2.19 *point, n*—a one-dimensional geometric object that specifies a geographic location.

3.2.20 *polygon*, *n*—a two-dimensional closed geometric shape that specifies a geographic area.

3.2.21 *reclamation*, *n*—those actions taken to mitigate adverse affects of mining operations.

3.2.22 *regulatory authority, n*—entity(s) with jurisdiction over the regulation of coal or non-coal mining, or both, and reclamation operations or mitigation of AML problems, or both, under a program approved by the Secretary of the United States Department of the Interior (DOI).

3.2.23 *SMCRA Entities*, *n*—State and tribal regulatory authorities established under SMCRA and recognized by a national governmental agency for the purpose of regulating a land area where coal mining operations and reclamation are conducted.

3.2.23.1 *Discussion*—A description of SMCRA governmental divisions helps in identification and organization of AML data.

3.2.23.1 Office of Surface Mining Reclamation and Enforcement (OSMRE), n—OSMRE is a federal government division established under Title II of the SMCRA within the United States Department of Interior (DOI). The SMCRA provides OSMRE a legal basis for assigning primary responsibility for regulation of coal mining operations and reclamation of abandoned mine land to the states and Indian tribes. Coal resource states or tribes that have been granted regulatory authority, known as "primacy," have the exclusive jurisdiction of the implementation of SMCRA. In the coal states that do not have primacy and some federal and Indian lands, OSMRE issues the coal mine permits, conducts the inspections, and handles the enforcement and reclamation responsibilities.

3.2.23.2 *state*, *n*—A State of the United States of America recognized by the DOI Secretary that has assumed full regulatory authority over the administration grants for the reclamation of AML problem types.

3.2.23.3 *tribe*, *n*—Any Indian tribe, band, group, or community having a governing body recognized by the DOI Secretary that has assumed full regulatory authority over the administration grants on Indian lands for the reclamation of AML problem types.

3.3 Acronyms:

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- 3.3.1 ACSI-Appalachian Clean Streams Initiative
- 3.3.2 AMD-Acid Mine Drainage

3.3.3 AML—Abandoned Mine Lands

3.3.4 DOI—Department of Interior

3.3.5 *e-AMLIS*—Enhanced Abandoned Mine Land Inventory System

3.3.6 FGDC—Federal Geographic Data Committee

3.3.7 FRP—Federal Reclamation Program

3.3.8 GIO-Geographic Information Officer

3.3.9 GIS—Geographic Information System

3.3.10 ID-Identifier

3.3.11 NAD-North American Datum

3.3.12 *OSMRE*—Office of Surface Mining Reclamation and Enforcement, U.S. Department of the Interior

- 3.3.13 P-Priority
- 3.3.14 PA—Problem Area

3.3.15 *PAD*—Problem Area Description

3.3.16 PU-Planning Unit

3.3.17 RA-Regulatory Authority

3.3.18 RAMP-Rural Abandoned Mine Program

3.3.19 SI-International system of units

3.3.20 *SMCRA*—Surface Mining Control and Reclamation Act of 1977 as amended

3.3.21 USGS—United States Geological Survey

- 3.3.22 *WCU*—Water Cataloging Units
- 3.3.23 WGS—World Geodetic System

### 4. Significance and Use

4.1 This practice addresses AML PAs, PUs, Keyword Features, and Project Sites relative to SMCRA. This practice is significant as it provides for uniformity of geospatial data pertaining to the geographic location and description of AML sites located throughout the United States.

4.2 This geospatial data standard will help ensure uniformity of data contributed by each RA and assist organizations in efforts to create, utilize, and share geospatial data relative to SMCRA. Use of this standard will result in organized and accessible data to support programmatic decisions and work plan development, increased awareness of AML problems throughout the United States, and better communication between RA and federal offices, the public, industry, and other interested parties.

4.3 The geospatial data may be served as a layer in a national dataset and map service.

### 5. Procedure

5.1 *Introduction*—The individual location and attribute characteristics listed in this section and in Tables 4-7 represent the minimum data elements necessary to develop and maintain these geospatial datasets. Geospatial data and descriptions may be obtained from state, tribal and federal RAs. The use of this standard's minimum data elements will help ensure uniformity of the geospatial data developed and maintained by RAs.

5.2 *Coordinates and Related Data*—Coordinates and related geospatial data allow AML PAs, PUs, Keyword Features, and Project Sites to be accurately positioned on the earth's surface

### TABLE 4 AML PA Attributes

Attribute	Definition	Example	Field Type	Domain	Comment
PA Name	Common name for AML PA assigned by the RA	Avondale	Text		
PA Number	Number assigned to a PA by the RA	2023	Text		
National AML PA ID	State/tribal abbreviation + AML PA number	PA2023	Text		
Contact	Source for data	Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation	Text		
Edit Date	Last time the feature record was updated or changed	08/20/2008	Date		To determine last update of data
Calculated Area	System calculated area of PA (acres)	400	Numeric		For comparison with reported value
Reported Area	Reported area of PA (acres)	400	Numeric		For comparison with calculated value



#### TABLE 5 AML PU Attributes

Attribute	Definition	Example	Field Type	Domain	Comment
State/Tribe AML PU Name	Common Name for AML PU assigned by the RA	Meander Creek	Text		
State/Tribe AML PU Number	Number assigned to a PU by the RA	25	Text		
National AML PU ID	State/tribal Abbreviation + AML PU Number	PA25	Text		
Contact	Source for Data	Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation	Text		
Edit Date	Last time the feature record was updated or changed	08/20/2008	Date		To determine last update of data
Calculated Area	System calculated area of PU (acres)	400	Numeric		For comparison with reported value
Reported Area	Reported area of PU (acres)	440	Numeric		For comparison with calculated value

### TABLE 6 AML Keyword Feature Attributes

Attribute	Definition	Example	Field Type	Domain	Comment
Keyword Feature Type	e-AMLIS problem type abbreviation	DH	Text	e-AMLIS problem type abbreviations listed in Table 1	
AML Problem Type Priority	e-AMLIS priority code	1	Text	e-AMLIS priority code listed in Table 2	
Contact	Source for data	Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation	Text		
Edit Date	Last time the feature record was updated or changed	08/20/2008	Date		To determine last update of data
Calculated Area	System calculated area of problem types represented in polygon geometries	400	Numeric		For comparison with reported value
Reported Units	Reported numeric unit or count of the AML problem type	400	Numeric		For comparison with calculated value

in a variety of recognized datums, grid systems, and geographic projections. The data are compiled from federal, state, and tribal resources that may utilize different datum, coordinate, and projection systems. All data will have identified datum, coordinate, and projection systems with associated precision or accuracy values, or both, and will be re-projected to match the spatial reference parameters utilized in a national

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TABLE 7 AML Project Site Attributes

Attribute	Definition	Example	Field Type	Domain	Comment
Project Site Name	Unique project name assigned by the RA	ELLSWORTH COAL REFUSE	Text		Project name assigned by the RA
Project Site Number	Unique number or alphanumeric designation assigned by the RA	MH-EL-01, 12345	Text		Project number assigned by the RA
Program Area	RA designated AML program type under SMCRA Title IV	SGA	Text	Program Codes listed in Table 3	
Project Type	Description of the AML Project Site type	Highwall, backfill	Text		
Completion Date	Date the AML Project Site reclamation is completed as determined by the RA	09/30/2009	Date		Date construction project was completed
National Project Site ID	National identification of state/tribal abbreviation + Project Site Name provided by OSMRE	OH-ELLSWORTH COAL REFUSE	Text		
National Project Site Number ID	National identification of state/tribal abbreviation + Project Site Number provided by OSMRE	OH-MH-EL-01, OH-12345	Text		
Contact	Source for data	Ohio Department of Natural Resources, Division of Mineral Resources Management	Text		
Edit Date	Last time the feature record was updated or changed	5/12/2009	Date		To determine last update of or change to the data

dataset. ANSI INCITS 61-1986 (R2002) contains additional guidance on representation of coordinates.

5.3 A designee within the OSMRE will serve as the data steward for the national SMCRA dataset that complies with this standard. This designee will coordinate with individual RAs for submission of state or tribal data that adhere to this standard.

5.3.1 *X-Coordinate*—Universally longitude, however, most coordinate systems are convertible to longitude.

5.3.2 *Y-Coordinate*—Universally latitude, however, most coordinate systems are convertible to latitude.

5.3.3 *Size Measurements*—Distance in feet or meters, or land area in acres or hectares, derived from the X and Y coordinate positions for length and width of AML PAs, PUs, Keyword Features, and Project Sites.

5.3.4 *Character Limitation*—Use no special characters or blanks in the layer name.

5.3.5 Consistent and Unique Naming Conventions—Use consistent and unique layer names.

5.3.6 Origin of AML PAs, PUs, Keyword Features, and Project Sites Geometry—The feature geometry and attributes must originate from the best data available to the RA.

5.3.7 *Geometry Type*—Required geometry is point, line, or polygon.

5.3.8 *Data Type*—Data can be provided as a shapefile, coverage, geodatabase feature class, or xml record set. RAs are strongly encouraged to adopt geodatabase methods where practicable to maximize efficiency and maintain data integrity.

5.3.9 *Datum and Projection*—Datum (for example, NAD27, NAD83, WGS84) and projection (for example, Lambert



Conformal, Transverse Mercator) specified in metadata record; provide the projection file, if available.

5.3.10 *Metadata*—Metadata documentation meets FGDC standards such as FGDC-STD-001 and is in .txt, .xml, or sgml format. Metadata is generally created in an FGDC text format; data in shapefile or coverage format can generate metadata documentation in .xml format.

5.4 *AML Problem Area Attributes*—Attributes associated with a PA polygon contribute to the unique identity of the site and help in analysis and retrieval of additional information. Minimum attributes for AML PA data are listed in Table 4.

5.4.1 *Introduction*—The data set is subject to change as a result of actions that may change the feature geometry or attribute data. If detailed AML PA information is needed, the appropriate RA should be contacted for additional information.

5.4.2 *Object ID*—A GIS-managed value that uniquely identifies a record or feature geometry.

5.4.3 *Problem Area Name*—The common name for the AML PA; the unique identifier assigned by the RA defining the AML PA.

5.4.4 *Problem Area Number*—The numeric identifier for the AML PA; the unique number assigned by the e-AMLIS or the RA defining the AML PA.

5.4.5 *National AML Problem Area ID*—A unique ID assigned to an AML PA, prefixed with state or tribal; this unique identifier helps in organization, retrieval, and analysis of individual state or tribal data combined into the nationwide data set.

5.4.6 *Contact*—The contact information for the RA responsible for overseeing the reclamation of AML problems and for creating or maintaining AML data.

5.4.7 *Edit Date*—Represents the last time the record was updated or changed.

5.4.8 *Calculated Area*—The calculated area of the AML PA as determined from polygon data.

5.4.9 *Reported Area*—The area of the AML PA as reported by the RA.

5.5 *AML Planning Unit Attributes*—Individual location characteristics, or attributes, are information about a particular PU polygon. Each attribute associated with a PU polygon contributes to the unique identity of the site and helps in analysis and retrieval of additional information. Minimum attributes for AML PU data are listed in Table 5.

5.5.1 *Introduction*—The data set is subject to change as a result of actions that may change the boundary area or change feature attribute data. If detailed AML PU information is needed, the appropriate RA should be contacted for additional information.

5.5.2 *Object ID*—A GIS-managed value that uniquely identifies a record or feature geometry.

5.5.3 *State/Tribe AML Planning Unit Name*—The common name for the AML PU; the unique identifier assigned by the RA defining the AML PU.

5.5.4 *State/Tribe AML Planning Unit Number*—The numeric identifier for the AML PU; the unique number assigned by the RA defining the AML PU.

5.5.5 National AML Planning Unit ID—A unique ID assigned to an AML PU, prefixed with state or tribal abbreviation; this unique identifier helps in organization, retrieval, and analysis of individual state or tribal data combined into the nationwide data set.

5.5.6 *Contact*—The contact information for the RA responsible for overseeing the reclamation of AML problems and for creating or maintaining AML data.

5.5.7 *Edit Date*—Represents the last time the record was updated or changed.

5.5.8 *Calculated Area*—The calculated area of the PU as determined from polygon data.

5.5.9 *Reported Area*—The area of the AML PU as reported by the RA.

5.6 *AML Keyword Feature Attributes*—Attributes associated with a Keyword Feature contribute to the unique identity of the site and help in analysis and retrieval of additional information. Minimum attributes for AML Keyword Feature data are listed in Table 6.

5.6.1 *Introduction*—The data set is subject to change as a result of actions that may change the feature geometry or attribute data. If detailed AML Keyword Feature information is needed, the appropriate RA should be contacted for additional information.

5.6.2 *Object ID*—A GIS-managed value that uniquely identifies a record or feature geometry.

5.6.3 *Keyword Feature Type*—An e-AMLIS keyword abbreviation for each problem type.

5.6.4 *AML Problem Type Priority*—An e-AMLIS problem type priority code.

5.6.5 *Contact*—The contact information for the RA responsible for overseeing the reclamation of AML problems and for creating or maintaining AML data.

5.6.6 *Edit Date*—Represents the last time the record was updated or changed.

5.6.7 *Calculated Area*—The calculated area of the AML Keyword Feature as determined from polygon data.

5.6.8 *Reported Unit*—The numeric unit or count of the AML Keyword Feature as reported by the RA.

5.7 *AML Project Site Attributes*—Attributes associated with a Project Site contribute to the unique identity of the site and help in analysis and retrieval of additional information. Minimum attributes for AML Project Site data are listed in Table 7.

5.7.1 *Introduction*—The data set is subject to change as a result of actions that may change the feature geometry or attribute data. If detailed AML Project Site information is needed, the appropriate RA should be contacted for additional information.

5.7.2 *Object ID*—A GIS-managed value that uniquely identifies a record or feature geometry.

5.7.3 *Project Site Name*—The common name for the AML Project Site; the unique identifier assigned by the RA defining the AML Project Site.

5.7.4 *Project Site Number*—The numeric identifier for the AML Project Site; the unique number assigned by the RA defining the AML Project Site.

5.7.5 *Program Area*—RA designated AML program area under SMCRA Title IV which funded the Project Site reclamation.



5.7.6 *Project Site Type*—RA designated description of the AML Project Site reclamation relative to the AML problem types.

5.7.7 *Completion Date*—Date the AML Project Site reclamation is completed as determined by the RA.

5.7.8 *National Project Site ID*—A unique ID assigned to an AML Project Site by OSMRE, prefixed with state or tribal abbreviation and suffixed with the AML Project Site name; this unique identifier helps in organization, retrieval, and analysis of individual state or tribal data combined into the nationwide data set.

5.7.9 National Project Site Number ID—A unique numeric ID assigned to an AML Project Site by OSMRE, prefixed with state or tribal abbreviation and suffixed with the AML Project

Site number; this unique identifier helps in organization, retrieval, and analysis of individual state or tribal data combined into the nationwide data set.

5.7.10 *Contact*—The contact information for the RA responsible for overseeing the reclamation of AML problems and for creating or maintaining AML data.

5.7.11 *Edit Date*—Represents the last time the record was updated or changed.

#### 6. Keywords

6.1 Abandoned Mine Land Inventory System; Abandoned Mine Land; Keyword Feature; Planning Unit; Problem Area; Problem Type; Project Site; SMCRA; Title IV reauthorization

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