



Course Descriptions

National Technical Training Program

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Acid-Forming Materials: Basic Principles and Concepts

Course Summary: This course is designed to provide Permitting Specialist, Inspectors and AML Specialists with basic information on the characteristics of potentially acid-forming materials, their oxidation, production of acid-mine drainage/related aquatic toxic materials and extremely acid materials, and potential for mitigation of these impacts.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand and identify the characteristics of acid forming materials in addition to their role in coal mining activities.
- Understand the chemical and physical processes involved in acid mine drainage and methods to prevent and remediate the negative impacts from them.
- Demonstrate field methods for the identification of earth materials and participate in a group presentation.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Geology
 - Fundamentals of Geology
 - Role of Geology in Coal Mining Reclamation
 - Depositional Environments
 - Pyrite Formation
 - Lithological Associations
 - Geohydrology
- Weathering and Soil-Forming Processes
 - Acid-Forming Material Oxidative Processes
 - Natural Disturbed Ecosystems
- Acid Impacted Ecosystems
 - Acid-Forming Material Impacts on Terrestrial Ecosystems
 - Acid-Forming Material Impacts on Aquatic Resources/Ecosystems
- Sampling and Characterization Methodologies and Procedure
 - Aquatic Resource Sampling and Characterization
 - Sample Handling and Preparation for Terrestrial Ecosystem Characterization
- Planning and Mitigation Options
- Mitigation of Acid Mine Drainage

WHO SHOULD ATTEND: This course is intended for permitting specialist, inspectors, and AML specialists.

FIELD EXERCISE: There is a field component of this course which requires hard hat, steel-toed boots, and safety glasses.

Advanced Blasting: Investigation and Analysis of Adverse Effects

Course Summary: This course provides advanced blasting training for regulatory personnel who evaluate the adverse effects of blasting. It focuses on gathering and analyzing information that will assist in resolving citizen complaints from ground vibrations, air blast, fly rock, and fumes.

Learning Objectives: By the end of this course, each participant will be able to:

- Write a report to resolve a blasting related citizen's complaint of annoyance or damage.
- Interpret available blast logs and vibration data.
- Estimate the potential of fly rock, levels of ground vibrations, and air blast based the location and characteristics of the complainant's house.

Prerequisites: Participants should attend Basic Blasting and Inspection course prior to this course.

Duration: 3.5 days

Topics Covered:

- Introduction - Why We Review Citizen Complaints
- Blast Log Review
 - Cross-Tabulating Data Fields
 - Blast Log in Compliance with Regulations
 - Calculate Scaled Distance and Maximum Charge
 - Signs of Elevated Ground Vibration, Air Blast, and Fly Rock
- Review of Ground Vibration and Air Blast Standards
 - Plotting Square-Root Scale Distance, Cube-Root Scale Distance
 - Regression Analysis, Spatial Relationships, & Accuracy of Measurements
 - Blast Log Evaluation Program as a Guide
 - Signature Blasts & Frequency Determination
- Structure Response
- Field Exercise - Seismic Array & Structure Response
- Damage Evaluation
 - Pre-Blast and Post-Blast Surveys - List of Available Tools and Techniques
 - Not Blast Damage, Environmental Causes of Damage, Guide for Conducting Damage Assessments, Vibration-Related Damages, and Documentation of Damage
 - Situations When No Investigation Necessary
- Safety Area, Warning Signals, & Fumes – Nitrogen Monoxide & Carbon Monoxide
- Public Relations, Customer Service, and Legal Issues

WHO SHOULD ATTEND: This course is intended for regulatory personnel who have taken the Blasting and Inspection course within the last five years and/or whose principal job is Blasting Specialist.

FIELD EXERCISE: There is a field component of this course which requires Hard Hat, and Steel-Toed Boots. Participants should also bring the following items to class: scientific calculator, engineering scale, seismograph (if available), problematic blast logs or seismic records, and photos of alleged damages.

AML Dangerous Highwalls

Course Summary: This course is a field-oriented course to assist AML staff in the selection and design of reclamation methods for dangerous highwall abatement. Several abatement methods will be presented and discussed. The intent of the class is to exchange ideas on the development of designs, plans and specifications, and cost estimating. Extensive field work is included in this course which is critical in understanding the implications of the process of designing and restoring the land in an environmentally sound and a budgetary responsible manner. The course is designed to transform classroom instruction to on the ground results. Course material will cover several abatement methods including backfilling and grading, slope reduction, retaining structures, highwall covering, fencing, guard rail, and barriers.

Learning Objectives: By the end of this course, each participant will be able to:

- Identify hazards associated with dangerous highwalls.
- Identify reclamation methods to abate hazards.
- Perform site characterization in the field.
- Develop viable reclamation alternatives, including the pros and cons of each.
- Determine methods for developing specifications, plans, drawings and bid items.
- Prepare bid documents and development of cost estimates.
- Identify construction materials and equipment.
- Develop conceptual designs, plans & specifications, and cost estimates for an AML site.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Identification of Hazards
- Identify Reclamation Methods
- Site Characterization
- Develop a Site Map
- Develop Viable Reclamation Alternatives with the Pros and Cons Associated with Each
- Develop Final Design Including Bid Specifications, Plans/Drawing and Bid Items
- Demobilization
- Method of Measurement and Payment
- Developing Cost Estimates

WHO SHOULD ATTEND: This course is intended for AML Technical Personnel including project designers, project managers, engineers, geologists, and inspectors.

FIELD EXERCISE: There is a field component of this course which requires field boots. The following items are optional but are encouraged: Laptop computer, Sturdy hiking boots, Field and Safety equipment that is normally used for site assessment, design, and/or development of surface mine reclamation (dangerous highwall) projects, and a Case study - Participants will be afforded an opportunity to present a case study of a dangerous highwall reclamation project during the class that they have developed, designed, and or inspected during the construction phase. Examples of what to bring, would be digital and or hard copies of photographs, plans and specifications the depict the chosen reclamation method.

AML Dangerous Openings

Course Summary: This is a field-oriented course to assist AML field staff in the selection and design of reclamation methods for vertical shafts, audits, and other mine openings. Course material will cover several abatement methods such as backfilling, plugs (concrete and polyurethane foam), and structural barriers (caps and grates).

Learning Objectives: By the end of this course, each participant will be able to:

- Identify hazards.
- Identify reclamation methods.
- Characterize mine sites.
- Develop reclamation methods for audits and shafts.
- Develop bid designs, plans, specifications, and cost estimation for AML Dangerous Openings.

Prerequisites: None

Duration: 4 days

Topics Covered:

- Introduction and Overview
- Definition of Terms
- Identification of Hazards
- Identify Reclamation Methods
- Site Characterization
- Develop a Site Map
- Develop Viable Reclamation Alternatives with the Pros and Cons Associated with Each
- Develop Final Design, including Bid Specifications, Plans/Drawing and Bid Items
- Demobilization
- Method of Measurement and Payment
- Develop Cost Estimates

WHO SHOULD ATTEND: This course is intended for AML Technical Personnel including project designers, project managers, engineers, geologists, and inspectors.

FIELD EXERCISE: There is a field component of this course which requires field boots, and rain gear. The following items are optional but are encouraged: Laptop computer, Sturdy hiking boots, Field and Safety equipment that is normally used for site assessment, design, and/or development of surface mine reclamation (dangerous openings) projects, and a Case study - Participants will be afforded an opportunity to present a case study of a dangerous openings reclamation project during the class that they have developed, designed, and or inspected during the construction phase. Examples of what to bring, would be digital and or hard copies of photographs, plans and specifications the depict the chosen reclamation method.

AML Fires

Course Summary: This is a field-oriented course to assist AML field staff in the selection and design of reclamation methods for both underground and refuse fires. Course material will cover several abatement methods such as excavation and extinguishment, isolation and cutoff trenches, surface covers, and injection of foaming mud.

Learning Objectives: By the end of this course, each participant will be able to:

- Identify abatement methods.
- Identify proper safety precautions.
- Classify the fire site.
- Develop fire plans, including specifications and cost estimates.

Prerequisites: None

Duration: 4 days

Topics Covered:

- Introduction and Overview
- Definition of Terms
- Identification of Hazards
- Identify Reclamation Methods
- Site Characterization
- Develop a Site Map
- Develop Viable Reclamation Alternatives with the Pros and Cons Associated with Each
- Develop Final Design, including Bid Specifications, Plans/Drawing and Bid Items
- Demobilization
- Method of Measurement and Payment
- Develop Cost Estimates

WHO SHOULD ATTEND: This course is intended for AML Technical Personnel including project designers, project managers, engineers, geologists, and inspectors.

FIELD EXERCISE: There is a field component of this course which requires field boots, and rain gear. The following items are optional but are encouraged: Laptop computer, Sturdy hiking boots, Field and Safety equipment that is normally used for site assessment, design, and/or development of surface mine reclamation (fire) projects, and a Case study - Participants will be afforded an opportunity to present a case study of a fire reclamation project during the class that they have developed, designed, and or inspected during the construction phase. Examples of what to bring, would be digital and or hard copies of photographs, plans and specifications the depict the chosen reclamation method.

AML Landslides

Course Summary: This is a field-oriented course to assist AML field staff in the selection and design of reclamation methods. Course material will cover several abatement methods such as buttresses, excavation, and retaining structures.

Learning Objectives: By the end of this course, each participant will be able to:

- Develop bid designs.
- Develop plans, specifications, and required items.
- Determine estimated costs for landslide abatement.

Prerequisites: None

Duration: 4 days

Topics Covered:

- Introduction and Overview
- Definition of Terms
- Identification of Hazards
- Identify Reclamation Methods
- Site Characterization
- Develop a Site Map
- Develop Viable Reclamation Alternatives with the Pros and Cons Associated with Each
- Develop Final Design, including Bid Specifications, Plans/Drawing and Bid Items
- Demobilization
- Method of Measurement and Payment
- Develop Cost Estimates

WHO SHOULD ATTEND: This course is intended for AML Technical Personnel including project designers, project managers, engineers, geologists, and inspectors.

FIELD EXERCISE: There is a field component of this course which requires field boots, and rain gear. The following items are optional but are encouraged: Laptop computer, Sturdy hiking boots, Field and Safety equipment that is normally used for site assessment, design, and/or development of surface mine reclamation (landslides) projects, and a Case study - Participants will be afforded an opportunity to present a case study of a landslide reclamation project during the class that they have developed, designed, and or inspected during the construction phase. Examples of what to bring, would be digital and or hard copies of photographs, plans and specifications the depict the chosen reclamation method.

AML Drilling and Grouting

Course Summary: This classroom-oriented course is designed to provide AML staff with skills to evaluate when drilling and/or grouting are appropriate responses to abandoned coal mine subsidence.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand the influence of site geology on reclamation plans.
- Identify site issues, such as site constraints, geologic challenges, drilling techniques, grout mixtures, and environmental impacts.
- Understand construction fundamentals.
- Handle unexpected conditions.
- Evaluate grouting results.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Introduction and Overview
- Definition of Terms
- Review of Basics of Geology
- Drilling for Investigation and Design
- Design Process for Drilling and Grouting
- Construction Methodologies for Drilling and Grouting
- Pre- and Post-Construction Monitoring
- Contracting Overview

WHO SHOULD ATTEND: This course is intended for AML Technical Personnel including project designers, project managers, engineers, geologists, and inspectors.

FIELD EXERCISE: There is a field component of this course which requires field boots, and rain gear. The following items are optional but are encouraged: Laptop computer, Sturdy hiking boots, Field and Safety equipment that is normally used for site assessment, design, and/or development of surface mine reclamation (landslides) projects, and a Case study - Participants will be afforded an opportunity to present a case study of a landslide reclamation project during the class that they have developed, designed, and or inspected during the construction phase. Examples of what to bring, would be digital and or hard copies of photographs, plans and specifications the depict the chosen reclamation method.

AML Realty

Course Summary: This course provides participants with detailed information and the practical experience necessary to comply with realty aspects of the Surface Mining Control and Reclamation Act and other appropriate laws, regulations, and executive orders. It's been designed to provide the foundational knowledge to competently and effectively complete real estate tasks in compliance with state and federal abandoned mine land programs.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand the legal aspects of the realty process for an AML project.
- Explore the methods to gather necessary land data and ownership information.
- Understand the types of interests and partial interests of land ownership to better represent and protect the Government and property owner interests.
- Utilize skills and knowledge to produce successful results in dealing with private landowners and public organizations.
- Understand and employ the use of appropriate documentation and obtain suitable authorizations.
- Understand the roles and the importance of communications of each discipline (realty specialist, engineers, construction and project management, etc.) for successful collaboration on a project.
- Understand the concept of police powers.
- Identify various types of public and private controls.
- Explain the function and characteristics of building codes and zoning ordinances.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Eligibility
 - Legal Authority, Legislative Authority, & Eligibility Criteria
- Scope of Work
 - Property Conditions, Encumbrances, Site Plans, and Specifications
 - How the Scope of Work Affects the Type of Authorization Needed
- Title Examination and Rights of Entry
 - Courthouse Research and Ownership Information
 - Searching Title & Mineral Rights
 - Special Agreement Rights of Entry & Dealing with Incidental Coal
 - Police Powers, Landowner Contacts, Easements, & ROWs
- Appraisals and Liens
 - Understanding the Appraisals and When They Are Required
 - Appraisals for Land Acquisition

WHO SHOULD ATTEND: This course is intended for Federal and State AML staff who have contact with landowners, especially those responsible for obtaining access to private, corporate, and public lands on projects.

FIELD EXERCISE: There is a no field component for this course.

AML Reclamation Projects

Course Summary: This course provides participants with information about the principles of abandoned mine land project development and the “rule of thumb” for the onsite administration and inspection of construction projects.

Learning Objectives: By the end of this course, each participant will be able to:

- Identify problem features, associated safety features, and priority assignment, using priority documentation forms.
- Identify common safety issues on AML Sites.
- List the basic parts of contract documents.
- Identify properties of effective and efficient construction specifications.
- Understand the purpose of a pre-bid meeting, when and where to hold a pre-bid meeting, and whether attendance should be mandatory or optional.
- Understand the purpose of a pre-construction meeting, who should attend the meeting, and what topics should be discussed.
- Identify primary responsibilities of an AML Inspector, during AML construction.
- Understand how contract items are measured and paid, the advantages and disadvantages of different measurement and payment methods, and measurement options for common work items.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Project Development
 - Historic Overview, Project Identification, & Design Development
- Project Administration
 - Pre-bid & Pre-construction Meeting
 - Construction Inspection
 - Inspection Requirements
 - Reporting and Recording
 - Final Inspection and Post Construction Monitoring
 - Basic Map Reading
- Construction Safety
- AML Hazards
 - Abandoned Structures/Equipment
- Field Exercises
 - AML Site Investigation, Active Construction Site, & Post Reclamation Maintenance

WHO SHOULD ATTEND: This course is intended for AML reclamation personnel including project specialists, bond forfeiture specialists, planners, realty specialists, regulatory staff, grantors, clerical, designers, and construction staff.

FIELD EXERCISE: There is a field component of this course which requires Hard Hat, Hard-Toed Boots, and appropriate field attire.

Applied Engineering Principles

Course Summary: This course provides participants with knowledge of basic engineering principles related to mine operation and reclamation.

Learning Objectives: By the end of this course, each participant will be able to:

- Apply engineering principles to solve mine reclamation challenges.
- Develop an understanding of engineering design methodologies, maps and plans, inspection of structures and other engineering aspects of reclamation in actual field exercises including sediment control, topsoil, spoil, and overburden handling, backfilling and grading, topsoil replacement and revegetation.
- Develop and apply principles of basic surface and underground mining methods to demonstrate the operation and reclamation features common to all mine types.
- Identify concepts of swell factors and mass balance in the context of overburden removal and pre- and post-mine topography.
- Apply principles of soil properties such as texture, porosity, and permeability in the context of moisture levels, cohesion and shear strength.
- Students will be able to access slope stability and describe options for repairing unstable slopes.
- Utilize handheld survey tools to conduct basic surveys, draw maps, and calculate areas, elevations and volumes. Measure distances and angles to calculate areas, elevations and volumes and confidently conduct basic surveys.

Prerequisites: At least six months experience on a regulatory program staff is recommended.

Duration: 3 days

Topics Covered:

- The Engineering Process
- Earth Materials including: Introduction to Soil and Rock Engineering, Soil Characterization, Materials Strength, Permeability and Pore Pressure, Surcharge Loads, Settlement, Consolidation, Density of Soil, Compaction, Durability, Coal Waste, Field Exploration, Sampling, and Logging
- Slope Stability including: Principles, Illustrations, Terminology, Exercises, & Problems
- Water Management including: Hydrology, Erosion, Hydraulics, Sediment Basins, Other Drainage Control Structures, and Inspection of Earth Dams
- Engineering Field Work including: Map and Plan Reading, Measuring Techniques, Field Methods, Roads, Mining Equipment and the Field Exercise

WHO SHOULD ATTEND: Individuals who need an understanding of basic engineering principles.

FIELD EXERCISE: There is a field component of this course which requires sturdy shoes, and rain gear. Participants need to bring the following to class: scientific calculator.

Basic Inspection Workbook

Course Summary: This self-study course provides new inspectors with an introduction to the inspection and enforcement aspects of regulatory programs. The workbook or online course are designed for use in conjunction with applicable regulatory program requirements.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand the enforcement and inspection aspects of regulatory programs.

Prerequisites: None

Duration: Self-Paced Study; No in-class sessions are held for this course.

Topics Covered:

- Overview of Surface Mining Activities
 - Sequence of Surface Mining Activities, Surface Mining Equipment, Regional Characteristics of Surface Mines, & Surface Mining Techniques
- Inspection Responsibilities
 - Preparation for an Inspection, Inspection Procedures,
- Enforcement Responsibilities
 - Enforcement Actions, Alternative Enforcement Techniques, Penalty Assessments, & Appeals and Hearings
- Materials Handling and Storage
 - Removal of Vegetation & Soil Handling Procedure
 - Removal and Storage of the Overburden
 - Special Categories of Mining
- Hydrologic Standards
 - Surface Water Hydrology
 - Inspection of Drainage Control Structures
 - Other Surface Water Concerns
 - Groundwater Hydrology
 - Acid-Mine Drainage
 - Monitoring and Water Rights
 - Water Sampling Procedures
- Blasting Standards
 - Types of Explosives, Public Safety, Control of Adverse Effects, Citizen Complaints, Blasting Records, & On-Site Inspections
- Reclamation
 - Backfilling and Grading, Replacement of Topsoil, Revegetation, & Bond Release
- Surface Effects of Underground Mining
 - Differences Between Surface and Underground Operations, Methods of Underground Mining, & Inspector Responsibilities

WHO SHOULD ATTEND: New inspectors with less than six months of surface mining experience.

FIELD EXERCISE: There is a no field component for this course. Please contact the NTPP office to enroll in the online course or to obtain copies of the self-study workbook.

Blasting and Inspection

Course Summary: This course provides training for inspectors to understand the basic principles of blasting and environmental effects. Focus will be on compliance with regulations and blast-site inspections.

Learning Objectives: By the end of this course, each participant will be able to:

- Conduct a coal mine inspection to establish compliance with the general blasting rules and the site-specific blast plan requirements contained in the permit.
- Discuss the primary objectives and methodologies of blasting with a blaster
- Interpret the blast logs.
- Evaluate vibration monitoring data through observing field conditions and the deployment of a blasting seismograph.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Introduction and Blasting Overview
- Blasting
 - Explosives Characteristics
 - Initiation Systems
 - Blast Design
 - Blast Records and Inspection
- Adverse Effects
 - Vibrations and Blasting Seismographs
 - Blast Waveform Interpretation
 - Ground Vibration Limits
 - Air Blast Limits
 - Fly Rock Limits
- Performance Standards
 - Warning Signals and Blasting Schedules
 - Pre-blast Survey
 - Permit Blast Plans
 - Inspector Safety
 - Mine Site Inspection

WHO SHOULD ATTEND: Inspectors, permit staff, entry-level personnel wanting blasting training and experienced personnel wanting refresher training.

FIELD EXERCISE: There is a no field component for this course. Participants need to bring the following to class: scientific calculator and problematic blast logs.

Bonding: Administrative and Legal Aspects

Course Summary: This class provides participants with tools and resources used to evaluate and approve bonding instruments and liability insurance

Learning Objectives: By the end of this course, each participant will be able to:

- Distinguish the characteristics between different business entities.
- Assess a certificate of liability insurance for the minimum requirements specified by 30 CFR 800.60.
- Recognize what to look for when reviewing the policy that accompanies the certificate of liability.
- Understand the three reclamation bond types.
- Recall the typical life cycle stages of a reclamation bond in the correct order.
- Understand the two most common types of alternative bonding systems.
- Understand the major categories of cost that OSMRE includes in their estimates.
- Identify and use guidance for determining cost estimates and OSMRE's bond instruments.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Introduction
 - Permittees' Form of Business
 - Authority to Sign Documents
- Surety Bonds
- Letters of Credit
- Financial Status: Banks and Sureties
- Bankruptcy/Insolvency
- Certificates of Deposit
- Bond Forfeiture
- Document Control and Maintenance
- Public Liability Insurance
- Real Property Collateral Bonds
- Securities
- Self-Bonding

WHO SHOULD ATTEND: Bonding specialists and those individuals responsible for evaluating the validity and acceptability of bonds and insurance certificates and administration of bonding insurance programs; Managers who oversee bond reviews; and Attorneys involved in bond issue litigation.

FIELD EXERCISE: There is a no field component for this course. Participants need to bring the following to class: 1-3 example bond forms from their state, a copy of the bonding sections of their regulations and statute, and a calculator.

Bonding: Cost Estimation

Course Summary: This course provides participants with the tools and resources required to calculate reclamation bond amounts. Details are presented on use of OSMRE's "Handbook for Calculation of Reclamation Bond Amounts." Participants practice in groups estimating bond costs of a "worst-case scenario" reclamation site using excel worksheets from the Handbook. Participants then estimate bond costs using a realistic scenario.

Learning Objectives: By the end of this course, each participant will be able to:

- Recall the considerations when estimating machine productivity.
- Calculate productivity and hours required for loader use.
- Calculate productivity and hours required for truck use.
- Determine equipment type and hours needed.
- Determine and identify: indirect cost, mobilization, demobilization, contingencies, overhead, and total cost.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Introduction
 - Regulatory Requirement
 - Assumptions and Methodology in Handbook
 - Major Steps for Estimating Bond Amount
 - Phase Incremental and Cumulative Bonding
- Worst-Case Reclamation Scenario
- Estimating Reclamation Costs
 - Estimate Demolition Costs & Determine Earthwork Materials Handling
 - Plan, & Estimate Earthwork Quantities
- Estimating Earthwork Costs - Example Calculations
 - Dozer Hours
 - Truck and Loader Hours
 - Scraper Hours
 - Total Earthwork Costs
- Estimating Reclamation Costs
 - Revegetation Costs
 - Other Costs
 - Indirect Costs
 - Total Costs
- Calculation of Bond Amount for Example Mine Site

WHO SHOULD ATTEND: Technical specialists calculating bonds or reclamation costs. Federal, State and Tribal personnel who are required to have a knowledge of the technical aspects of bond calculation.

FIELD EXERCISE: There is a no field component for this course. Participants do not need to bring any materials to class.

Coalfield Communications

Course Summary: The purpose of this course is to enhance communication by allowing participants to develop the skills, the proper perspective, and the necessary tools to utilize the power of effective communication in dealing with the public. This course is an interactive, hands-on forum that will empower participants to be diplomatic ambassadors and effective advocates for the companies, organizations, and causes they represent.

Learning Objectives: By the end of this course, each participant will be able to:

- Apply the principles of effective verbal communication.
- Apply changes in tone, pitch, and pacing to change the meaning of a message using paraverbal communication.
- Identify positive and negative body language gestures that change the meaning of a message through nonverbal communication.
- Apply the principles of written communication to create an effective written response.
- Understand the importance of knowing their audience to effectively convey a message.
- Understand how to avoid creating resistance to their message in their audience.
- Demonstrate an understanding of the steps involved in planning and conducting effective meetings.
- Demonstrate an understanding of the importance of having a media policy.
- Evaluate news stories to determine what makes them news-worthy.
- Create a pitch for a news story that demonstrates an understanding of how to effectively use the media to communicate a message.
- Understand the role of a spokesperson and apply the principles of interview preparation.
- Demonstrate an understanding of how to utilize the Internet and other outreach tools and techniques to extend the reach of their company, organization, or cause.
- Understand and apply the principles of effective crisis communication.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Building Trust Through Effective Communication
- Conducting Effective Public Meetings
- Media Relations
- Extending the Reach: Outreach Sessions
- Crisis Communication Exercise

WHO SHOULD ATTEND: Staff who have contact with the public and/or media.

FIELD EXERCISE: There is a no field component for this course. Participants should be prepared to interact and participate in class. Please bring examples of your office's outreach materials and personal experiences to share.

Effective Writing

Course Summary: This course emphasizes using plain English as a way of expressing written ideas clearly. Participants learn how changes to style, organization, and layout can improve the quality of their documents.

Learning Objectives: By the end of this course, each participant will be able to:

- Apply the principles of written communication to create an effective written response,
- Understand the basics of style, organization, and layout in drafting documents.
- Demonstrate an understanding of steps involved in organizing and drafting a professional written format.
- Demonstrate an understanding of OSMRE'S policies by drafting a Plain English document.
- Demonstrate an understanding of the policies and regulations to create a professional response to inquiries.
- Apply current technology to demonstrate utilizing the Internet and other outreach tools and techniques to communicate thoughts and ideas in written format.
- Understand and apply clear, concise, and structured written reports/responses to inquiries.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Reader Focus
- Writing Skills Assessment
- Plain Language
- Letters, Memos, & Emails
- Writing Process
- Grammar and Punctuation
- Sentence and Paragraph Structure
- Active and Passive Voice
- Concise Natural Writing

WHO SHOULD ATTEND: This course is intended for anyone responsible for writing or reviewing inspection, administrative, or technical documents.

FIELD EXERCISE: There is a no field component for this course. Participants do not need to bring any materials to class.

Enforcement Procedures

Course Summary: This is a foundational course for SMCRA regulatory personnel. The class addresses the background of SMCRA, the enforcement structure, the enforcement tools available, and an overview of the legal process. Participants learn how to prepare for and conduct inspections and draft NOVs and other documents. When possible, an administrative law judge will provide a judge's perspective on SMCRA proceedings. Participants will identify and draft violations and defend them in a testimony exercise. Instructors are experienced inspectors and attorneys.

Learning Objectives: By the end of this course, each participant will be able to:

- Identify good procedures writing an effective inspection report.
- Outline the stages of an enforcement action under a SMCRA regulatory program and to present the generally accepted methods for issuing and processing enforcement actions that will compel compliance with the law.
- Provide examples of alternative enforcement actions (AEAs).
- Identify what alternative enforcement actions your agency uses.
- Refute myths about the effects of bankruptcy and "the corporate shield".
- Understand some different ways SMCRA can be enforced.
- Identify what actions and conduct by a SMCRA Inspector may subject the Inspector and the agency to liability and to learn how to shield both from liability
- Understand administrative and judicial proceedings.
- Understand the law of evidence so course participants can better collect, develop and preserve evidence, and present it in administrative and judicial proceedings.
- Understand the relationship between agency personnel and agency counsel, to best effectuate the agency's duty of carrying out the law.

Prerequisites: At least 6 months on a regulatory program staff is recommended.

Duration: 3 days

Topics Covered:

- Responsibilities of Inspectors
- Preparing for Inspections
- Enforcement Actions & Alternative Enforcement Actions
- Potential Liability of Inspectors
- Administrative & Judicial Proceedings
- Preparation of Notices of Violation and Cessation Orders
- Administrative Law
- Mock Inspection and Enforcement Action
- Mock Administrative Proceedings

WHO SHOULD ATTEND: Inspectors and assessment specialists; permit reviewers, bonding specialists, program managers, new attorneys, and others who need an understanding of the enforcement program.

FIELD EXERCISE: There is a no field component for this course. Participants do not need to bring any materials to class.

Erosion and Sediment Control

Course Summary: This course provides field inspectors, permit reviewers, and AML specialists with a discussion of theory and concepts related to soil erosion and sediment control processes. Emphasis is given to identifying potential problems in permit applications and evaluating field issues.

Learning Objectives: By the end of this course, each participant will be able to:

- Identify various types of erosion and its causes.
- Describe important factors affecting water and wind erosion.
- Understand and describe concepts of soil erosion, water flow & stream channel erosion.
- Understand and discuss the effectiveness of surface roughening, revegetation, biotic soil amendments, mulching, hydraulic erosion control products (soil binders and tackifiers), rolled erosion control products (RECPs), riprap, gabions, Fabri-Form, geoweb, outlet protection, and their application in current erosion control techniques.
- Identify proper and improper use/application of riparian and vegetative buffers, wattles, straw bale barriers, silt and filter fence, compost filter socks, rock check dams, sediment traps, sumps, weep berms, etc.
- Understand the dynamics of water and sediment movement in a pond.
- Identify and discuss potential issues with design vs. actual efficiency, construction and maintenance.
- Identify applicable regulations & standards governing the prevention of erosion.
- Understand the importance of baseline data, pre- and post-mine topography and description of erosion and sediment control techniques in permit applications.
- Understand wind erosion, soil loss from wind erosion, and methods to control wind soil erosion (for Western states).
- Understand Appalachian Regional Reforestation Initiative (ARRI) Forestry Reclamation Approach (FRA) (for Eastern states).

Prerequisites: Soils and Revegetation course is recommended prior to taking this course.

Duration: 3 days

Topics Covered:

- Applicable Regulation and Performance Standards
- Problems in the Permit Application, Problems in the Field, & Concepts of Soil Erosion
- Techniques, Structures and Products for Reducing Soil Erosion
- Final Contour, Suitable Rooting Medium, and Final Grading
- Concepts of Stream Flow, Velocity, & Scour Components
- Techniques, Structures, Products to Control Stream/Channel Erosion, & Water Dynamics
- Sediment Movement in a Pond, Sediment Control, & Best Management Practices

WHO SHOULD ATTEND: Field Inspectors, AML field personnel, and permit reviewers.

FIELD EXERCISE: There is a no field component for this course. Participants do not need to bring any materials to class.

Evidence Preparation and Testimony

Course Summary: This course teaches the skills of thorough information gathering and obtaining reliable supporting evidence needed to enforce the SMCRA regulatory program. In addition, the information gathered in the field may be used in SMCRA administrative or judicial proceedings. The instructors, inspectors, and attorneys present techniques for gathering, preserving, and documenting evidence for SMCRA proceedings. Participants will also learn about aspects of SMCRA legal proceedings. Each participant presents and defends evidence in a testimony exercise with a lawyer based upon the participant's own work or a hypothetical scenario.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand how to obtain develop and present evidence.
- Develop a solid foundation in the legal implications and constraints of using physical and visual evidence.
- Practice analyzing, developing and interpreting evidence.
- Simulate giving verbal testimony with professional, peer, and self-critique.
- Understand the types of documents, their location, usefulness, and preparation for court presentation.

Prerequisites: It is required that participants complete the Enforcement Procedures course or an equivalent training prior to taking this course.

Duration: 3 days

Topics Covered:

- Evidence Management
 - Graphic Evidence Techniques
 - Photographic Evidence Techniques
 - Sketching
 - Documents
- Legal Overview of Evidence
 - Types of Evidence & Legal Requirements
- Hearsay
 - Direct Examination, Expert Testimony, & Cross-Examination
 - Discovery
- Interviewing
 - Principles of Interviewing
- Testimony
 - Presentation of Evidence
 - Cross-Examination Testimony
 - Attorney/Peer Critique

WHO SHOULD ATTEND: Inspectors, inspector supervisors, AML and technical staff who wish to refine their skills in preparing evidence and giving expert testimony.

FIELD EXERCISE: There is a no field component for this course. Participants do not need to bring any materials to class.

Excess Spoil Handling and Disposal in Steep-Slope Topography

Course Summary: This course provides participants with a basic understanding of approved spoil handling, backfilling, grading, compaction, and spoil-disposal practices with an emphasis on Eastern steep-slope mining and valley-fill construction. Typical design and construction practices are presented to provide an understanding of the relationship between permit requirements and on-the-ground performance.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand safe, proper, and legal methods of spoil handling and disposal with emphasis on excess spoil fills (valley fills/ side hill fills).
- Identifying potential landslide areas where fills might be constructed.
- Understand the Five Basic Steps of the Forestry Reclamation Approach (FRA).
- Understand how trees affect valley fills.

Prerequisites: It is recommended that participants complete the Applied Engineering Principles course and either the Permitting Hydrology course or the Surface and Groundwater Hydrology course prior to taking this course. In addition to these courses, it is recommended that attendees have at least six months of surface mining related experience.

Duration: 2.5 days

Topics Covered:

- Historical Perspective
- Geologic Principles
- Foundation Preparation and Internal Drainage Control
- Slope Stability
- Mining Methods
- Identification of Landslide Topography
- Earthwork Calculations
- Drainage Control
- Inspection of Slope Stability
- Permit Review and Interpretation
- Field Review
- Remedial Measures
- Field Instability & Erosion and Flooding
- Role of Vegetation Cover

WHO SHOULD ATTEND: Primarily inspectors, permitting specialists, and bonding specialists who need to learn more about Eastern steep-slope mining.

FIELD EXERCISE: There is a no field component for this course. Students should bring a calculator to class.

Forensic Hydrologic Investigation

Course Summary: This course provides training on how to conduct a hydrologic autopsy relating to mine problems including but not limited to: dewatering or contamination of aquifers, wells, streams, springs, pond/lakes, problems associated with increased amount of water from mine flooding, and other hydrologic problems associated with mining activities.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand and use the scientific method to conduct investigations of hydrologic impacts related to coal mining, issue reports and findings, and prepare to defend findings in court, hearings.

Prerequisites: None

Duration: 3.5 days

Topics Covered:

- Introduction and Philosophy
- Impact Determination
- Art of Interviewing
 - Data Collection and Compilation
 - Borehole Camera
 - Mining Impacts
 - Data Analysis
 - Data Analysis Exercise
- Blasting
 - Impacts on Domestic Water Wells and Springs
 - Case Studies (published and unpublished)
 - Investigating Blasting Impacts
- Report Preparation
- Preparation for Court
 - Water Replacement

WHO SHOULD ATTEND: This course is intended for geologists, hydrologists, and possibly inspectors who conduct hydrologic investigations on surface and groundwater problems related to coal mining activities.

FIELD EXERCISE: There is a no field component for this course. Students do not need to bring any materials to class.

Fundamental Biological Monitoring Concepts for Mining and Reclamation

Course Summary: This course will familiarize participants with bioassessment concepts and methods to provide a broader understanding of their application within the framework of coal mining permitting, reclamation, and inspection & enforcement. Course topics and field exercises will focus on the collection and use of benthic macroinvertebrates and RBP habitat assessment as tools to assess aquatic biological integrity. This course does not intend to rigorously train students on field collection of macroinvertebrates.

Learning Objectives: By the end of this course, each participant will be able to:

- Discuss the linkage between the ecosystem and coal mining framework.
- Recall bioassessment concepts and methods.
- Demonstrate specie sampling.
- Perform a Rapid Physical Habitat assessment.

Prerequisites: None

Duration: 2.5 days

Topics Covered:

- General Stream Ecology
- Bioassessment and Biomonitoring Fundamentals and Elements
- Overview of Sampling Methodologies
- Fish Sampling
- Macroinvertebrate Sampling
- Rapid Physical Habitat Assessment
- Water Quality
- Field Collection Experience
- Applications of Bioassessment
- Index of Biotic Integrity (IBI) Description and Interpretation
- Case Study - Causal Assessment: Impacts to the Aquatic Community Downstream of an Underground Mine Discharge with Iron Precipitate

WHO SHOULD ATTEND: This is a basic course for AML personnel (project specialists, bond forfeiture specialists, planners, realty specialists, regulatory staff, grantors, clerical, designers, and construction staff)., and regulatory personnel with an interest in natural sciences who are involved in policy development, mine-site inspection and/or permit review.

FIELD EXERCISE: There is a field component of this course which involves instream sampling. Students are required to bring their own waders or hip boots to participate.

Geology and Geochemistry of Acid-Forming Materials

Course Summary: This course is designed to provide participants with specific information, presented in a highly interactive manner, on analyzing and examining how geology and mineralogy influence water quality. A detailed discussion is presented on water chemistry, geology, and acid/alkaline weathering processes and the role they all play in mine drainage. Participants will be provided with a more detailed understanding of overburden drilling, sampling, and characterization. An advanced discussion of the methods and techniques used on the overburden samples in the form of static and kinetic tests will then be covered. Participants will use inquiry, problem-solving, and feedback methodologies using previous mining as well as the other tools learned as a prediction tool for mine drainage prevention.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand how geology and mineralogy influence water quality and the techniques available to help predict and prevent acid mine drainage during the permit review process.
- Recognize advantages and limitations of the various tools and techniques available to them during the permit review process.

Prerequisites: It is required that participants have taken advanced high school chemistry or a basic college chemistry course prior to taking this course. Additionally, at least 6 months experience on a regulatory or reclamation program staff is recommended.

Duration: 4 days

Topics Covered:

- Geological and Mineralogical Influences on Water Quality
- Acid and Alkaline Weathering Processes
- Sampling and Characterization of Overburden Materials
- Laboratory Methods for Overburden Analysis
- Acid Drainage and Water Chemistry
- Prevention Methods – Special Handling & Water Management
- Geochemical Tests for Mine Drainage Prediction
- Mitigation of Acid-Forming Materials

WHO SHOULD ATTEND: This course is intended for permitting specialists, inspectors, and AML specialists.

FIELD EXERCISE: There is a field component of this course which requires participants to bring a hard hat, steel-toed boots, and safety glasses.

Historical and Archaeological Resources

Course Summary: This course outlines a process for considering archaeological resources and historic properties that have the potential of being impacted by activities such as coal mining operations, permitting, mine establishment, and reclamation through compliance with Cultural Resource Legislation. Detailed information and guidance on compliance with Section 106 of the National Historic Preservation Act (NHPA), the interaction between NHPA and other laws such as the National Environmental Policy Act (NEPA), and the importance of consulting with Native American Tribes and States will be presented.

Learning Objectives: By the end of this course, each participant will be able to:

- Identify cultural resources and how preservation works within a federal framework.
- Understand the federal perspective on preservation especially as it intersects with OSMRE laws and directives and identify different perspectives on preservation
- Discuss existing laws aimed at protecting cultural resources over the past 100 years.
- Know names and highlights of important cultural resource laws and regulations passed in the last 100 years.
- Define the purpose and applicability of the National Historic Preservation Act (NHPA).
- Understand key concepts of Section 106 of the NHPA.
- Understand key concepts of the National Register of Historic Places and its part within the Section 106 process.
- Identify non-federal parties that participate in the historic preservation process.
- Understand emergency application of Section 106 in certain situations.
- Identify if program follows State or Federal regulations for historic preservation.
- Understand key components of each process and how it applies to their work.
- Understand the extent to which your program must protect historic properties.
- Assess the benefit of using programmatic documents or even alternative procedures.
- Explain the nexus between the National Environmental Policy Act (NEPA) and the NHPA.
- Understand how NEPA/NHPA interact, compliance is required for both laws, and that both NEPA and NHPA are consultative in nature.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Focusing on the National Historic Preservation Act (NHPA)
- Section 106 Process
- National Environmental Policy Act (NEPA) and Section 106
- Emergencies and Discoveries
- SMCRA Relationship to Section 106 – State Program Considerations
- Considerations of Burials & Cemeteries, Native American Consultations & Other Legislation

WHO SHOULD ATTEND: This course is intended for AML professionals, permitting and State program oversight staff, NEPA coordinators, program managers and inspectors whose jobs are directly related to this topic.

FIELD EXERCISE: There is a field component which requires participants to bring field clothes and sturdy boots.

Instructor Training Course

Course Summary: This course will provide subject matter experts (SMEs) and potential instructors with the knowledge and skills necessary to conduct training effectively within their areas of expertise. On the first day, participants will present a 10-minute presentation on a job-related topic as a benchmark for future presentations.

Learning Objectives: By the end of this course, each participant will be able to:

- Gain a working knowledge through practical demonstrations and exercises.
- Acquire sufficient exposure to the methods used in instructing in an adult learning environment.

Prerequisites: None

Duration: 4.5 days

Topics Covered:

- Training Methods
 - Lecture, Demonstration, Training Conference, and Practical Exercise
- Instructor Lesson Plan Development
 - Writing Learning Objectives and Evaluation
 - Lesson Plan Formats
- Personal Skills
 - Voice Development: Speech for Instructors
 - Questioning Skills
- Audiovisual Development
 - Training Media
 - Presentation Preparation & Techniques
- Understanding Roles
 - The Role of the NTPP & TIPS Instructor
 - Instructor Responsibilities
- Management Skills
 - Diversity of Learning Styles
 - Understanding Your Adult Learner and Managing Learner Interactions

WHO SHOULD ATTEND: This course is intended for potential instructors for the Office of Surface Mining Reclamation and Enforcement Technical Training and other programs.

FIELD EXERCISE: There is a no field component for this course. Students do not need to bring any materials to class.

Introduction to SMCRA Inspections

Course Summary: This course provides training for new inspectors and AML staff in methods and technologies applicable to the mining and reclamation process. The course teaches skills that are applicable to the inspection process, including the creation of documentation that supports authorities.

Learning Objectives: By the end of this course, each participant will be able to:

- Identify the main principles of Surface Mining Control and Reclamation Act (SMCRA).
- Understand the varied technical and administrative principles involved in the inspection of a mining operation.
- Recognize the value of proper documentation.
- Learn to utilize a variety of tools to obtain information, collect data and evidence, and confirm acceptable performance by mining operators.
- Apply effective methods of creating acceptable records for use in the inspection, investigation and decision making.
- Develop an appreciation for the importance of their role in the SMCRA process.

Prerequisites: At least 6 months of working experience on a regulatory or reclamation program staff is recommended before taking the course.

Duration: 4 days

Topics Covered:

- Introduction to Underground Mining
 - Course Overview and Evaluation
 - Underground Mining Methods
- Introduction to Mine Maps
 - Topographic Map Review
- Surface Effects of Underground Mining
 - Environmental Effects and Controls
- Field Exercise
 - Underground Mine Features
 - Surface Features

WHO SHOULD ATTEND: This course is intended for inspectors and AML staff who have up to three years of surface mining experience or those who interface with them (e.g. auditors, program specialists, and support or bonding personnel).

FIELD EXERCISE: There is a field component of this course which requires participants to bring a hard hat with light mount, steel-toed boots, coveralls, leg bands, miner's belt, and safety glasses. Additionally, participants should bring a calculator to class.

NOTE: It is required that participants complete the underground exercise portion of the course, unless a waiver is granted in advance. Waiver requests must be submitted in writing with justification to the NTP Division Chief no later than three months prior to the course start date.

Mine Gas Safety and Investigation

Course Summary: This course will provide information on gases commonly produced from active and abandoned mines that may pose a threat to the safety, health and well-being of government personnel and the public. Discussions will focus on the terms, characteristics, techniques, tools and equipment available to identify gases. The physiological impacts of each gas will be presented so that personnel may identify, at the earliest possible moment, the potential for dangerous environments. We will identify the mining and non-mining sources of stray gases and explore the natural and manmade pathways that lead to spaces that may be occupied by people. We will discuss case studies and encourage participants to bring their own cases to discuss and share with the class the problems with investigations and mitigations in this complex subject. The course will include a short field exercise to demonstrate equipment and investigation techniques.

Learning Objectives: By the end of this course, each participant will be able to:

- Distinguish the different gases encountered at mine sites.
- Understand the origins and characteristics of the various gases.

Prerequisites: None

Duration: 2.5 days

Topics Covered:

- Introduction to Gases
 - Physical Properties of Gasses
 - Physiological & Human Impacts
 - Gas Characteristics and Thresholds
- Equipment and Analytical Tools
- Sources
- Pathways
- Investigation Techniques
- Mitigation
- Case Histories

WHO SHOULD ATTEND: This course is intended for individuals with duties that involve field visits where dangerous gases may be encountered on active or abandoned mine sites.

FIELD EXERCISE: There is a field component of this course which requires participants to wear appropriate clothing. Additionally, participants should bring a calculator to class.

NEPA Fundamentals

Course Summary: This course provides a step-by-step overview of the National Environmental Policy Act of 1969, (NEPA) and the implementing guidelines approved by the President’s Council on Environmental Quality. The participants will learn how and why NEPA was created and discover the forces that initiated the need for this legislation. Myths about NEPA will be examined and expelled. Through numerous activities, participants will benefit from interactive hands-on experiences that incorporate OSMRE-specific project examples. This course will focus on each pathway of NEPA analysis, categorical exclusions (CEs), environmental assessments (EAs) and environmental impact statements (EISs), as defined in the 2019 OSMRE NEPA Handbook, to provide the participants with the fundamentals of NEPA compliance.

Learning Objectives: By the end of this course, each participant will be able to:

- Recall the History of National Environmental Policy Act (NEPA).
- Discuss the differences of NEPA and other environmental policy.
- Understand the three pathways of NEPA analysis.
- Understand Categorical Exclusions, Environmental Assessments, Environmental Impact Statements, Public Involvement, and Consultation.

Prerequisites: Participants who are involved with the NEPA Implementation Process.

Duration: 3 days

Topics Covered:

- NEPA History and Procedures
- Documents and Terminology
- Environmental Assessments (EA)/Categorical Exclusion (CX)
- The NEPA Process (AML and Regulatory Compliance)
- Public Involvement
- Resource Values
- Native American Values and Sacred Sites
- Hazardous Waste, Environmental Justice
- Consultation/Coordination

WHO SHOULD ATTEND: This course is intended federal, state, and Tribal managers or staff who work directly on NEPA implementation; Title IV and Title V NEPA practitioners.

FIELD EXERCISE: There is a field component of this course which requires participants to wear appropriate clothing. Additionally, participants should bring a calculator to class.

NOTE: Please indicate on the nomination form, if you are not an AML program employee, and why you feel this course is necessary.

Passive Treatment

Course Summary: This course provides information and exercises that are highly interactive and can be used to evaluate the characteristics of coal mine drainage and guide the selection and application of various passive treatment technologies designed to mitigate the impacts of discharges.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand the application of passive treatment as an abatement approach for long-term mine water treatment including the collection of base line data, site information.
- Understand stream restoration goals for the target watershed and the limitations of passive treatment, including the need for routine monitoring and maintenance for their long-term effectiveness and success.
- Apply real world experience and applications to illustrate the successes and failures of the many forms of passive treatment.

Prerequisites: It is recommended that participants complete the Acid-Forming Materials: Fundamentals and Applications Course and an AMDTREAT course prior to taking this course. Additionally, a basic understanding of chemistry is very helpful.

Duration: 3.5 days

Topics Covered:

- Passive Treatment Problem Analysis
 - Restoration Goals
 - Passive versus Active Treatment
 - Site Characterization and Basic Data Requirements
 - Water Quality Assessment and Water Quantity Assessment
- The Geochemistry of Passive Treatment
 - Acidity, Solubility, Metals (Fe, Al, Mn), and Hydrolysis
 - Precipitation, and Carbonate Chemistry
- Passive Treatment of Net Acidic Water
 - Anoxic Limestone Drains, Vertical Flow Ponds, and Other Treatment Technologies
- Passive Treatment of Net Alkaline Water
 - Iron Oxidation Principles
 - Aerobic Wetlands
- Post Construction Monitoring and Evaluation
 - Performance Evaluation, Case Studies, and Lessons Learned

WHO SHOULD ATTEND: Permitting Specialists and Inspectors; AML Project Designers and Inspectors; Persons developing, designing, reviewing, or evaluating mine drainage passive treatment systems.

FIELD EXERCISE: There is a field component of this course during which participants should expect tall grass and uneven rocky ground often in bright, hot sunlight, and should dress accordingly. Additionally, participants are encouraged to bring a calculator and case studies for presentation and discussion.

Permitting Hydrology

Course Summary: This course will emphasize reviewing probable hydrologic consequences determinations, defining material damage, and preparing cumulative hydrologic impact assessments. This course does not present material applicable to inspectors of AML program activities and is not suitable for newly hired personnel.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand the hydrologic information required for coal permitting.
- Understand the regulatory foundations for review of a Probable Hydrologic consequence (PHC) statement.
- Develop a Cumulative Hydrologic Impact Assessment (CHIA) and post mining bond release determination.

Prerequisites: This course does not present material applicable to inspectors of AML program activities and is not suitable for newly hired personnel.

Duration: 3.5 days

Topics Covered:

- Permitting Hydrology Information
- Overburden/Geology Information
- Backfill Materials Evaluation
- Surface Water Information
- Groundwater Information
- Hydrologic Baseline Data
- Probable Hydrologic Consequences (PHC)
- Hydrologic Reclamation Plan (HRP)
- Material Damage Standards
- Cumulative Hydrologic Impact Assessment (CHIA)

WHO SHOULD ATTEND: This course is intended hydrologists, hydrogeologists, engineers, and others who review hydro sections of permits and area involved in preparation of hydrologic assessments.

FIELD EXERCISE: There is no field component for this course. Students should bring a calculator to class.

Soils and Revegetation

Course Summary: This is a basic class on soils and revegetation designed to help participants conduct thorough permit reviews and site inspections. This course provides information that will help participants recognize the existence of soil or plant problems. The course will focus on soils and vegetation in four phases of mining and reclamation including pre-mining inventory, planning, operational considerations, and reclamation.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand Describing Soils, Plant and Soil Relationship, Soil Survey, Plant Identification, Soil Sampling, Revegetation Success, Field Exercises, Soil Amendments, Seedbed Preparation, Species Selection, Woody Plant Establishment, Soil Handling Practices, and Erosion Control.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Describing Soil
- Soil Survey
- Soil Sampling and Analysis
- Plant Identification
- Evaluating Vegetation Success
- Soil Environment
- Practices to Enhance Forest Development
- Species Selection
- Soil Handling Practices
- Soil Amendments
- Seedbed Preparation
- Woody Plant Establishment
- Vegetation Success
- Regional Special Topics

WHO SHOULD ATTEND: This course is intended inspectors, program staff, and AML staff.

FIELD EXERCISE: There is a field component of this course which requires participants to bring a hard hat, steel-toed boots, and safety glasses. Additionally, participants should bring a calculator to class.

Subsidence

Course Summary: This course provides participants with information to enhance their scientific knowledge and technical skills in predicting subsidence, identifying methods to protect against or minimize damages caused by subsidence, and understanding the surface effects and impacts caused by longwall and room-and-pillar underground mining methods.

Learning Objectives: By the end of this course, each participant will be able to:

- Develop their scientific knowledge and technical skills in predicting subsidence.
- Identify methods to protect against or minimize damages caused by subsidence.
- Understand the surface effects and impacts caused by longwall and room-and-pillar underground mining methods.

Prerequisites: It is required that participants complete the Underground Mining Technology course or an equivalent course prior to taking this course.

Duration: 3 days

Topics Covered:

- Introduction
- Mechanics of Subsidence
- Parameters that Characterize
- Subsidence Prediction Methods
- Requirement of Energy Policy Act (EPACT) 92
- Surface Structural Damage/Prediction
- Damage to Renewable Resources
- Damage to Water and Aquifers
- Theories on Mitigation Measures
- Methods to Minimize or Prevent Subsidence Damage
- Subsidence Monitoring – Layout of Monuments
- Design of Mine Pillars
- Case Studies and Problem Exercises

WHO SHOULD ATTEND: This course is intended Mining engineers, geologists, hydrogeologists, mine inspectors, mine permit reviewers, regulatory personnel, program managers, and attorneys dealing with subsidence cases.
NOTE THAT THIS IS NOT A CLASS FOR AML SUBSIDENCE ISSUES

FIELD EXERCISE: There is no field component for this course. Participants do not need to bring any materials to class.

Surface and Groundwater Hydrology

Course Summary: This course provides participants with information on the basic effects of surface coal mine operations on surface and groundwater hydrology.

Learning Objectives: By the end of this course, each participant will be able to:

- Demonstrate a basic understanding of hydrology.
- Understand the control of water and sediment, groundwater hydrology, effect of mining on groundwater, acid mine drainage, water treatment, monitoring.
- Analyze data interpretation in the office and in the field.

Prerequisites: It is recommended that participants have at least six months experience as program staff prior to taking this course.

Duration: 3 days

Topics Covered:

- Introduction and Basic Concepts
- Control of Water and Sediment
- Slides Presentation
- Groundwater Hydrology
- Effect of Mining on Groundwater
- Mining Effect on Groundwater
- Acid Mine Drainage
- Slides/Equipment Demo
- Surface/Groundwater Monitoring
- Data Interpretation (QA/QC)

WHO SHOULD ATTEND: This course is intended for inspectors, permit, bonding, assessment, AML program specialists, program managers, and other staff who may need a basic or refresher course.

FIELD EXERCISE: There is a field component of this course which requires participants to bring a hard hat, steel-toed boots, and safety glasses. Participants do not need to bring any materials to class.

Underground Mining Technology

Course Summary: This course provides basic information on the types of underground coal mining and on how to identify the surface effects of underground mining.

Learning Objectives: By the end of this course, each participant will be able to:

- Understand underground coal mining terminology and technology.
- Identify surface impacts resulting from underground mining.
- Explain how coal is formed and its characteristics.
- Interpret mine maps and identify key features.

Prerequisites: It is recommended that participants have at least six months experience as program staff prior to taking this course.

Duration: 3 days

Topics Covered:

- Introduction to Underground Mining
 - Course Overview and Evaluation
 - Underground Mining Methods
- Introduction to Mine Maps
 - Topographic Map Review
- Surface Effects of Underground Mining
 - Environmental Effects and Controls
- Field Exercise
 - Underground Mine Features
 - Surface Features

WHO SHOULD ATTEND: This course is intended for inspectors, permit, bonding, assessment, and AML program specialists; program managers; and other staff who may need a basic or refresher course.

FIELD EXERCISE: There is a field component of this course which requires participants to bring a hard hat with a light mount, steel-toed boots, safety glasses, coveralls, leg bands, and a miner's belt. Participants do not need to bring any materials to class.

NOTE: It is required that participants complete the underground exercise portion of the course, unless a waiver is granted in advance. Waiver requests must be submitted in writing with justification to the NTP Division Chief no later than three months prior to the course start date.

Wetlands Awareness

Course Summary: This course will familiarize participants with the basics of wetlands. Course topics and field exercises will focus on concepts and methods to gain a general understanding of wetland soils, vegetation, and hydrology. This course will focus on wetlands within the framework of coal mining permitting, reclamation, and inspection and enforcement in a broad country wide view.

Learning Objectives: By the end of this course, each participant will be able to:

- Recognize the three components of a wetland: hydrology, soils, and vegetation.
- Identify a potential wetland location in the field.
- Discuss potential components of a desktop review.
- Operate technology used in wetland delineation.
- Produce and interpret a field data sheet.

Prerequisites: None

Duration: 3 days

Topics Covered:

- Different Kinds of Wetlands
 - Wetland Classification
- Environmental Functions and Values
 - Hydrologic Balance and Water Quality
 - Fish and Wildlife Habitat
 - Wetland Mitigation
- Jurisdictional Wetlands
 - Definition and Technical Criteria
 - Delineation Procedures
- Techniques for Recognizing Wetlands
 - Hydrophytic Vegetation
 - Wetland Hydrology Indicators
 - Hydric Soils Identification
- U.S. Army Corps of Engineers
 - Section 404 of the Clean Water Act
 - Coordination Procedures
 - Permitting Requirements
- Demonstrations and Practical Exercises
- Practice Using Delineation Manual
- Field Application of Recognition Techniques

WHO SHOULD ATTEND: This course is intended for AML, and regulatory personnel with an interest in natural sciences who are involved in policy development, mine-site inspection and/or permit review. This course does not intend to rigorously train participants on wetland delineation.

FIELD EXERCISE: There is a field component of this course which requires participants to bring knee or hip boots, field boots, and rain gear. Additionally, participants should bring a calculator to class.