(Inside cover) The Division completed construction on the ODNR Mine Safety Training Center in Cadiz. This training facility includes a simulated underground mine, class rooms, conference rooms, and storage space for Ohio’s mine rescue response equipment; it will also be utilized for regional and state mine rescue competitions. DMRM Chief, Lanny Erdos, and Abandoned Mine Land Program Administrator, Jim Bishop, recognized the project’s partners during the Open House event and tour held in May.

(Front cover) A haul truck being loaded with limestone to be taken to a crusher at Shelly Materials permit IM-0236 in Union County.
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## Mission
Provide for safe and environmentally sound development and restoration of mineral and fossil fuel extraction sites.

## Vision
We will lead change in Ohio through innovation, excellence and partnering in natural resource stewardship.

## Values
We respect and value our external customers, recognizing their diversity, knowledge and needs. We will:
- provide information and promote public awareness;
- provide timely quality services;
- practice the highest ethical standards;
- use the best available technology;
- build employee pride and encourage self-improvement;
- promote and implement teamwork and partnerships;
- practice high professional standards and responsibility.

## Introduction
The Division of Mineral Resources Management (DMRM) of the Ohio Department of Natural Resources (ODNR) provides for the safe and environmentally sound development and restoration of coal and industrial minerals extraction sites. Four diverse programs address the environmental and safety aspects related to coal and industrial minerals mining.

Program and support services include permitting, hydrology, bonding, inspection and enforcement, abandoned mine land, engineering and design services, mine safety, data and records management, geographical information systems (GIS), and central support services.

Expertise is provided by a professional and seasoned staff of geologists, environmental specialists, engineers, blasting specialists, soil scientists, hydrologists, researchers, archaeologists, hydrogeologists, inspectors, geographic and information specialists, and program managers. Division staff work diligently to maintain a high standard of regulatory effectiveness.
2018 Accomplishments

COAL REGULATORY PROGRAM
Working through the Mine Pool Workgroup, which completed coal underground mine pool evaluation guidelines in 2017, the Division provided extensive information from approximately 25 underground coal permits to Ohio University’s (OU) Voinovich School to assist the school in its evaluation of mine pool formation. Study results will be released by OU in the first quarter of 2019.

Final reclamation of Estadt Mine site exhibits reestablished streams with improved water quality capable of supporting aquatic life, buffer zones with successful tree plantings, and stable vegetated slopes.

The Estadt Mine D-1038 is a 728-acre active surface coal mining and reclamation permit located in Enoch Township, Noble County. Through innovative remining efforts, B&N Coal, Inc. remediated hundreds of acres of unusable land previously mined in the 1960s, which contained over 30,000 linear feet of unstable highwalls, poorly vegetated toxic spoils, hazardous slips, and water seeps with extremely poor quality contributing to the degradation of the entire watershed.

More information about this national award-winning coal remining operation is included on page 10 of this report.
ABANDONED MINE LAND (AML) PROGRAM
The Dessecker Mine Reclamation Project, located in Tuscarawas County, addressed public health and safety concerns associated with an abandoned underground mine (TS-391) operated by the Dessecker Coal Company for the extraction of the #6 coal. The mine was abandoned in 1969.

Multiple dangerous problems existed at the site including a highwall, two portals, a coal tipple and support structures, and a large pile of steeply sloped coal processing tailings. The highwall averaged 70 feet in height, 150 feet in width, and more than 1,400 feet in total length. Both portals were open: the production portal was 15 feet wide by 5 feet high; the ventilation portal was a corrugated metal pipe 10 feet in diameter by 10 feet long. The deteriorating and dilapidated building included a coal tipple, a conveyor and rail system, three support buildings, and a domestic coal load out. The large pile of coal processing tailings covered three acres. All of these conditions created a dangerous and hazardous situation.

The Dessecker Mine project involved a total of 20 acres for reclamation activities. Approximately 210,000 cubic yards of earthwork was necessary to eliminate the highwall and an additional 18,000 cubic yards to reclaim the tailings pile. Both dangerous portals were closed, and more than 4,000 tons of stone and gravel were used. Twenty-five tons of tires and 500 tons of debris were removed from the project site. Also 1,372 linear feet of stream channel was restored prior to the revegetation of 18 acres. The total project cost was $702,000.

The project site lies entirely within the boundaries of the Camp Tuscazoar Foundation property. Camp Tuscazoar is called “Ohio’s Most Historic Camp” due to its long history of use dating back more than 90 years. The Camp is a year-round facility and is utilized by both the Boy Scouts and the public.

To learn more about the history behind the Dessecker Mine, also known as Ohio’s Hidden Mine, view the YouTube video found on the Division of Mineral Resources Management’s homepage at minerals.ohiodnr.gov.
INDUSTRIAL MINERALS (IM) REGULATORY PROGRAM

- Throughout 2018, DMRM accepted mineral resources inspectors’ nominations of operators for the ODNR-DMRM Reclamation Awards. The Division recognized two operators at the Ohio Aggregates and Industrial Minerals Association (OAIMA) annual meeting: Barrett Paving Materials permit IM-1100 in Clark County and S&S Aggregate Company permit IM-0104 in Portage County were both awarded for exceptional reclamation work completed on industrial minerals mining permits.

(Above) Contemporaneous mining and reclamation in progress on S&S Aggregate Company IM-0104, Portage County, allows for more timely site reclamation of the sand and gravel permit.

(Above) This impoundment on Barrett Paving Materials’ sand and gravel permit IM-1100 was reclaimed to include the landowner’s request to use it as a private recreational lake.

(Above, left to right) Dave Crow, DMRM Deputy Chief; Monty Yates and Russell Trusty, Barrett Paving Materials Inc. permit IM-1100; and James Mechstroth, OAIMA. Benegar impressed neighboring landowners through his conscientious communication, attention to mining concerns and reclamation-related requests, and regular maintenance of reclaimed areas.

(Left) Pictured from left to right are Dave Crow, DMRM Deputy Chief; Dean Benegar, Site Manager and Scott Wilson, IM-0104 S&S Aggregate Company; and James Mechstroth, OAIMA. Benegar impressed neighboring landowners through his conscientious communication, attention to mining concerns and reclamation-related requests, and regular maintenance of reclaimed areas.
MINE SAFETY PROGRAM

- In May 2018, Division Mine Safety Program staff moved into the new updated ODNR Mine Safety Training Facility in Cadiz, which provides opportunities for enhanced training.

- Mine Safety Inspectors trained 5,420 miners in Annual Refresher Training (ART), first aid, and CPR as required by provisions of the Mine Act. Throughout the year, Mine Rescue Operations Coordinators also trained 634 miners in Mine Rescue. Staff also trained 50 miners in electrical ART. Staff continued to conduct required training for those contractors who provide a variety of logistical support services to the mining industry and mine sites.

- In 2018, Mine Safety certification staff conducted examinations for 134 miners seeking certifications for key positions such as Mine Foreperson, Coal Mine Electrician, and Mine Medical Responder. Of those examined, 116 were successful in receiving certification. By both state and federal statute, mines cannot operate without the presence of these certified mine individuals. Seven miners received Ohio certification under the reciprocal agreement between Ohio and the state of West Virginia.

- In 2018, Mine Rescue Training Activities - In April, program staff hosted the Spring Collegiate Mine Rescue contest which consisted of six college mine rescue teams representing five states. All teams participated in Apparatus Bench and Mine Rescue field exercises.

In June, Ohio hosted the National Mine Rescue Association (NMRA) 37th Annual Ohio Valley Mine Rescue regional Post 6 training competition utilizing the new ODNR Mine Safety Training Center in Cadiz. Twenty-four teams representing underground coal mine operators in five states participated in the event. Teams competed in working and solving Mine Rescue field problems, Apparatus Benching, First-Aid, and Pre-shift examination problems.

Also in June, nine teams from Ohio and Pennsylvania competed in the 11th Annual Ohio Mine Safety Training Competition held at the Training Center. Team events consisted of performing first aid skills in a smoke-filled environment, along with enhancing the skill sets for smoke room exploration and mapping, and instruction on the proper use of air velocity measuring equipment. In addition, the teams participated in a fire hose training exercise after they had completed the field competition.

- In October, the Mine Safety Program sent four inspectors-trainers to attend the annual Training Resources Applied to Mining (TRAM) Conference. The TRAM event is held each year at the National Mine Health & Safety Academy located at Beaver, West Virginia. At the seminar, participants attend and work in training classes that are presented by safety trainers from numerous states across the country. Ohio Surface Inspectors gather information and program training materials to be used in their upcoming Annual Refresher training classes conducted for Ohio’s miners. These classes are held in the months immediately following the TRAM so that material is fresh, updated, and interesting.

Ohio’s Annual Refresher training manual for surface miners was awarded 1st place in the printed materials category at the TRAM Conference. Developed annually by Ohio’s inspectors-trainers, it is the fourth time State training materials received TRAM’s top ranking.
INFORMATION TECHNOLOGY (IT) SECTION

- Electronic Processing System (EPS) for Coal, IM, and Mine Safety - In 2018, IT staff completed the development of the Coal Inspection Reports and IM Inspection Reports within EPS. The new system eliminates the need for the transfer of data from individual inspector computers as the data is stored in SQL Server and SharePoint and also is accessible through the web. It also allows photos and documents to be added to inspection reports. Managers have access to the system and can see in real time any and all inspection reports that have been written. Management reports have been developed to show inspections done within a month or a quarter by inspector, or by all inspectors. The coal quarterly report also analyzes inspection frequency as required by the Office of Surface Mining Reclamation and Enforcement (OSMRE). Mine Safety Surface and Underground Inspection Reports have been developed and are in beta testing at this time. Offline inspection reports are being developed for all inspection reports. This will allow inspectors to enter inspection report information when they do not have internet connectivity and submit the report when they can connect to the network.

- The IT staff also completed the development of accepting National Pollutant Discharge Elimination System (NPDES) and Quarterly Monitoring Report (QMR) water sampling reports electronically. Microsoft Excel spreadsheets were developed for the industry to use to enter the data and then upload them into EPS. Inspectors can then analyze the data from within the system. Hydrologic data from permit applications is being stored within EPS as part of the permitting process. All data is being uploaded into watersheddata.com by the George Voinovich School at Ohio University and can be viewed graphically within the website.

- Abandond Mine Land (AML) Electronic Project System (EPS) – A new type of project was created called Combined. This project type allows small projects within a locality to be combined into one project for bidding purposes. The “Child” projects are developed separately, and each has its own engineer’s estimate. The bid package for the “Parent” project combines the individual engineers’ estimates into one engineer’s estimate. The winning bidder creates Pay Requests on the individual “Child” projects as work is completed and the system combines these payments into the totals for the “Parent” project. Quantities from individual “Child” projects can be transferred from each other as needed utilizing the new Adjustment method. Project Tracking was developed to replace QuickBase for the tracking of projects from development through construction and maintenance. The Performance Report required by OSMRE was developed within EPS and uses the data within Project Tracking to complete it automatically. The Project Summary Sheet was also developed and also uses data from Project Tracking to automatically create it. An Ad hoc report was developed to allow data from Project Tracking to be selected and filtered to create a one-of-a-kind report. The report can be exported to Microsoft Excel for further manipulation.

- Complaints - DMRM receives complaints across all program areas, usually by telephone, and the information is captured using a Microsoft Access database. AML complaints are tracked using a separate Microsoft Access database that has become defunct due to not being compatible with Microsoft Access 2016. IT staff is in the process of developing a comprehensive system within EPS to capture all of the complaints received. Once a complaint is received, it will be assigned according to which program area it applies.
COAL REGULATORY PROGRAM

2018 PROGRAM UPDATES

Coal Regulatory Program

The U.S. Department of Interior’s Office of Surface Mining Reclamation and Enforcement (OSMRE) conditionally approved the state's Coal Regulatory and Permitting Program in 1982.

OSMRE determined the Ohio program, as managed by the DMRM, is:
• no less stringent than the standards specified in the Surface Mining Control and Reclamation Act (SMCRA) of 1977;
• as effective as the federal rules adopted under SMCRA; and
• adequately funded to operate the program.

OSMRE provides oversight and support to the Ohio program. Together, OSMRE and DMRM developed a performance agreement that considers the goals and objectives of both agencies, as well as action plans for regulatory program areas of concern that have not been resolved or will not be resolved within 180 days.

The Coal Regulatory Program involves two primary areas—permitting and bonding; and inspection and enforcement.

PERMITTING AND BONDING

A team of environmental and engineering professionals, blasting, soils and archaeological specialists, and hydrogeologists perform thorough reviews of each application for a coal mining and reclamation permit. Detailed reviews by experienced staff ensure that potential environmental impacts are minimized; environmental, and public health and safety measures are included; and statutory requirements and rules are met during the permitting process.

A current estimated cost of reclamation is required to be maintained on each permit; and a performance security in the form of a surety bond, certificate of deposit, letter of credit or cash must be posted to ensure that adequate funds are available to reclaim the site and remediate adverse environmental impacts in the event that the performance security is forfeited.

During 2018, staff:
• issued 3 new mining permits and 5 adjacent area permits authorizing coal mining activities on 17,756.3 acres (2,243.8 surface acres and 15,512.5 underground acres);
• invoiced $819,975 for performance security to coal mining applicants and permittees;
• processed a total of 110 releases of performance security on coal mining operations for partial and complete reclamation releases on 3,052.2 acres; and
• processed excess bond releases where performance security exceeded the outstanding liability.

Permitting and regulatory staff met quarterly with industry representatives, other regulatory agencies including the U.S. Fish and Wildlife Service, OSMRE, U.S. Army Corps of Engineers and the state and federal Environmental Protection agencies, as well as other interested parties. Rule promulgation and development of procedure directives and guidelines associated with Ohio’s coal mining law are conducted in a manner to provide input from the regulated industry and the Ohio Coal Association, as well as OSMRE, the Ohio Environmental Council, and the public.

Permitting and regulatory staff provide periodic mailings to the mining industry and consultants on topics of interest and provide training associated with law and rule changes or programmatic issues impacting the mining industry.

In 2018, a Memorandum of Understanding between the Division and the Ohio Environmental Protection Agency Division of Surface Water became effective to clearly address coordination and agency roles in the permitting and regulation of coal mining operations.

HYDROLOGY

Permitting and field hydrologists investigated 5 citizens’ private water supply complaints and assisted field inspection staff with multiple mine drainage and other hydrology-related investigations at active and reclaimed mine sites.
Also in 2018
- The Division’s permitting hydrologists sent recommendations for the issuance of three Remining Non-Numeric Modified NPDES Permit Applications for Surface Coal Mining and Reclamation Permits by the Ohio EPA;
- Hydrology staff completed internal Cumulative Hydrologic Impact Assessment (CHIA) guidelines in an effort to be able to complete more standard CHIA’s across the Division.

BLASTING
(See BLASTING under INDUSTRIAL MINERALS Program section)

FIELD INSPECTIONS AND ENFORCEMENT
Field inspection staff is required to inspect Ohio’s coal mining operations to monitor active mining and reclamation to assure compliance with the approved permit. Division inspectors enforce Ohio’s laws regulating active mining to protect the public and environment from adverse impacts.

Inspectors monitor and evaluate active mining and reclamation to ensure that permit holders restore mined lands and waters to productive uses after mining is completed. In 2018, Ohio operators completed final reclamation on 1,446 acres.

DMRM’s inspectors are required by law to perform at least one complete inspection of a permitted site every quarter and one partial inspection every month for active mines that have not completed Phase II (revegetation) reclamation requirements. Inspectors examine the mine area, as well as the area surrounding a mine, to ensure compliance with Ohio’s laws and the approved permit.

In 2018, DMRM inspectors:
- conducted 1,892 coal mining operation inspections;
- responded to 10 public complaints on coal mining operations;
- issued 13 notices of violation and other enforcement actions;
- completed 100% of required inspections;
- conducted 120 bond release inspections

recommending approval on 105 reclamation segments totaling 3,035 acres; and
- conducted three (3) SM-39 inspections releasing 25.9 acres re-affected by other activities.

RECLAMATION AWARD
The Interstate Mining Compact Commission (IMCC) annually presents two national reclamation awards for coal and non-coal minerals. The award is to recognize outstanding achievements in reclamation and identify those companies who maintain compliance with regulatory requirements. Through these awards, the IMCC recognizes companies that have taken extra efforts in implementing techniques which protect the health and safety of the general public and the environment from any adverse effects of current or past mining practices.

At the IMCC Annual Meeting held in Williamsburg, Virginia, Ohio-based B&N Coal, Inc was nationally recognized for outstanding reclamation techniques and the company’s innovative approach in remining of the Estadt Mine permit D-1038.

The Estadt Mine permit was issued on 9/17/1993 to B&N Coal, Inc. The permitted area is 728.1 acres located in Enoch Township, Noble County, Ohio. The #9 Meigs Creek coal seam is being stripped by the contour and auger methods. The entire permit was approved as remining; the Ohio Environmental Protection Agency approved a Non-Numeric Modified

Reclamation Award - (pictured left to right) Dave Crow, DMRM Deputy Chief; Craig Lovett, B & N Coal, Inc. Site Manager; Roger Osborne, B & N Coal, Inc. Vice President and Chief Engineer; Lanny E. Erdos, DMRM Chief.
NPDES permit for the site due to the extensive and severe water impacts left from previous mining.

The entire permit area was previously mined in the 1960s. The conditions found in the permit prior to the remining operation were severe and contained hundreds of acres of unusable land containing over 30,000 linear feet of unstable highwalls, poorly vegetated toxic spoils, hazardous slips, more than 30 existing pit impoundments, and water seeps with extremely poor quality contributing to the degradation of the entire watershed.

Mining on the site began in 1993 and is ongoing. To date, 384.3 acres have been affected with 292 acres achieving a final bond release. Coal production from the site has totaled 1,234,623 tons as of 10/17/2018. An estimated 26,000 feet of dangerous highwall has been eliminated to date.

The previously unusable area has been reclaimed to valuable pasture grazing land. These formerly barren acres are now capable of meeting county hay yield averages. The mine is currently working into property owned by the State of Ohio, Agricultural Research and Development Center. These properties, previously left devastated and unusable, will be grazed and studied in coordination with the Ohio State University.

The most outstanding feature of the site has been the overall improvement to the watershed as a result of the remining and reclamation of the area. Monitoring data shows pH significantly increasing in the sub watersheds. Pre-mining pH ranges of 2.5–4 are now in the 6.5–7 range. Decreases of iron from levels of 20 mg/l to ranges in the 0.5 mg/l range and manganese from levels as high as 15 mg/l down to 0.1 mg/l range have significantly increased the overall water quality of the watershed. Over 10,000 feet of previously filled, acid mine drainage (AMD)-impacted streams have been restored.

Due to the severity of the issues left from pre-law mining, the significant challenges in mining in an area with unstable walls and outcast spoils, and the high quality of reclamation, this site is well deserving of this national award.
2018 Division of Mineral Resources Management Annual Report

2018 COAL PRODUCTION

The Ohio Department of Taxation reported coal production in 2018 at 9.59 million tons, continuing a decrease from tonnage reported in the previous five years.

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PUBLIC INVOLVEMENT

Ohio law provides for public participation in the development, revision and enforcement of regulations, standards, and reclamation plans or programs. For example, after a permit application has been deemed complete for a surface or underground coal mining operation, the applicant publishes a public notice in a local newspaper identifying the public location where the application may be reviewed. The notice also provides citizens with an opportunity to provide written comments or request an informal conference regarding the permit application.
Abandoned Mine Land (AML) Program

Serious public health and safety problems and environmental concerns still exist with surface and deep coal mining that occurred prior to the reclamation standards used today. Problems vary and may include: dangerous highwalls, pit impoundments, mine subsidence, streams degraded by acid mine drainage, flooding, landslides, open mine portals and shafts.

As a result, the Abandoned Mine Land (AML) Program, with federal- and state-funded components, was created to address high priority mine-related issues. These problems are addressed through the design and construction of reclamation projects.

The AML Program, which has been managed by the Division since 1974, provides jobs and economic benefits to Ohio’s Appalachian region through reclamation and construction projects. In 2018, 61 projects were bid for construction through the AML Program totaling approximately $5.7 million. These projects occurred in 13 Ohio counties.

STATE ABANDONED MINE LAND PROGRAM

The state-funded AML Program supports numerous projects which are funded by state severance taxes on coal and on some industrial minerals. The state-funded program emphasizes environmental restoration associated with mining which occurred before April 10, 1972.

Projects primarily focus on coal-related environmental restoration, such as the restoration of streams impacted by acid mine drainage. This program is also responsible for providing supplemental funding for the reclamation of industrial minerals mining sites that were left in an unreclaimed state and where the forfeited surety bond is insufficient to complete the restoration.

In 2018, no state abandoned mine land projects were initiated.

FEDERAL ABANDONED MINE LAND PROGRAM

The federal AML Program is funded by OSMRE, which is supported by a federal severance tax on coal mined nationwide. The federal Surface Mining Control and Reclamation Act of 1977 authorized this program.

Annual grants fund the highest priority public health and safety and environmental problems associated with areas mined prior to August 3, 1977. In 2018, DMRM was awarded an AML grant for $12.6 million to support the design and/or construction of 38 non-emergency projects, 4 acid mine drainage projects, and emergency projects as they arise.

The AML Program is supported by an in-house engineering and design services group, hydrologists, and environmental specialists. DMRM engineers provide a variety of services including project design, surveying, consultant management, construction oversight, regulatory reviews and revisions, and complaint investigations. Hydrologists investigate water complaints, collect and analyze water data and participate in the design team for water related projects.

Environmental specialists manage the National Environmental Policy Act and Army Corps of Engineers permitting, eligibility determinations, project planning, as well as rights-of-entry and coordination with outside agencies.

The AML staff’s work resulted in the following accomplishments in 2018:

- reclamation of 6,000 feet of dangerous highwalls;
- stabilization of 35.7 acres of landslides and seepage;
- removal of 3 hazardous mine-related structures;
- sealing of 23 mine portals and vertical openings;
- stabilization of 15 mine subsidence sinkholes;
- maintained improved water quality at 38 acid mine drainage sites;
- contracted 61 projects to construct $5.7 million in reclamation projects.

NON-EMERGENCY PUBLIC HEALTH AND SAFETY PROJECTS

Non-emergency abandoned mine land problems are categorized by the level of risk posed to the general public and property. Priority 1 problems are deemed extremely dangerous while Priority 2 problems are also...
dangerous, but to a lesser degree. Projects are selected from the program’s inventory of abandoned mine land hazards, which are developed from mining-related complaints and field investigations.

**EMERGENCY PUBLIC HEALTH AND SAFETY PROJECTS**
The AML Program responds quickly to emergency complaints and situations resulting from abandoned mine land conditions that present immediate and substantial threats to public safety. Since 1992, Ohio’s program has administered the design and construction of emergency projects. Prior to 1992, this was a function of OSMRE.

Beginning in 2011, OSMRE no longer provided funding for this program separate from non-emergency grant funding. As a result, emergency project funding is now shared with funding for Priority 1 and 2 public health and safety problems.

In 2018, the AML Emergency Program investigated 114 potential emergency complaints. As a result of investigative efforts, 30 projects were approved to eliminate significant hazards. These projects include 18 open sinkholes, 1 mine shaft, 6 underground mine subsidences, 4 landslides and 1 mine blowout. A total of $1,180,507 was spent on emergency projects in 2018.

**ACID MINE DRAINAGE ABATEMENT PROJECTS**
The Acid Mine Drainage (AMD) Program plays an important role in restoring the quality of local watershed resources impacted by acid mine drainage. DMRM sets aside up to 30 percent of the annual grant funds for improving acid mine drainage-impacted streams. As with other restoration projects, the goal is to restore streams to pre-mining ecological conditions and construct remediation activities which will benefit the local environment.

The AMD Program (AMD set-aside) funded one project in 2018. The project is the Ilesboro Road Reclamation Project in the Raccoon Creek Watershed. This reclamation site in Hocking County, in the West Branch of Raccoon Creek, will eliminate large pre-law surface mining pits with acid mine drainage by grading the site for positive drainage and resoiling and planting vegetation. The $757,000 project was jointly funded by Ohio University Voinovich School through an Ohio EPA Section 319 Non-Point Source grant for $250,000 and by the Raccoon Creek Partnership through an OSMRE Watershed Cooperative grant for $200,000.
AML GEOTECHNICAL SERVICES
The AML Program supports a geotechnical services unit comprised of a geologist, two drilling specialists and a variety of drilling equipment. The unit performs investigations to evaluate potential mine-related problems and to assist in the design of projects.

In 2018, DMRM’s geotechnical specialists provided assistance on 30 complaint investigations and project designs by completing 2,310 feet of subsurface drilling.

Drilling activities included:
- emergency complaint investigations and designs – 18 sites totaling 1,630 feet drilled;
- non-emergency complaint investigations and designs – 12 sites totaling 680 feet drilled; and
- foam composite injection – 3 sites.
HISTORIC PRESERVATION SERVICES
In 2011, the AML Program changed how it maintains compliance with Section 106 of the National Historic Preservation Act. Previously, DMRM contracted with a historic preservation professional to conduct initial evaluations of the potential historical impacts of reclamation projects. This work is now completed by DMRM in-house environmental specialists through a programmatic agreement with the Ohio Historic Preservation Office and OSMRE. DMRM also contracts with qualified specialists to complete Phase I evaluations of sites determined to have potential for adverse impacts on historically significant sites, and determine mitigation measures.

BOND FORFEITURE PROGRAM
DMRM is responsible for the restoration of land left unreclaimed by coal and industrial minerals mine operators who did not fulfill their original reclamation obligations under existing regulations. When reclamation has not been completed, the Chief issues an Order demanding payment of forfeited bond monies held by financial institutions. If the financial assurance (bond) is a surety bond, the surety company may reclaim the site in accordance with the approved reclamation plan or pay to the State the forfeited amount of surety bond. DMRM then designs restoration plans and contracts with a third party to reclaim the impacted areas.

In addition to forfeited bond monies, severance taxes on each ton of coal and industrial minerals are collected to supplement the per-acre bond amount. These funds are used when the cost to reclaim an area exceeds the bond forfeited for that operation.

In October 2014, DMRM Coal Regulatory staff issued bond forfeiture orders to Valley Mining Inc. on six abandoned mine sites in Belmont, Tuscarawas, Guernsey, Stark, and Jefferson counties. DMRM’s Bonding Section collected forfeited bond monies. To date, five of the six forfeited sites have been released. Reclamation of D-1015 forfeiture site in Tuscarawas County started in 2018 and will be completed in 2019.

IN-HOUSE DESIGNS COMPLETED (2016-2018)

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<td>Non-emergency in-house designs</td>
<td>24</td>
<td>30</td>
<td>31</td>
</tr>
<tr>
<td>Non-emergency unit price designs</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>AMD in-house designs</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Emergency in-house designs</td>
<td>29</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>Emergency unit price designs</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Forfeiture in-house designs</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>53</td>
<td>64</td>
</tr>
</tbody>
</table>

ENGINEERING AND DESIGN SERVICES
Division engineers provide a variety of services including project design, design consultant management and construction oversight, regulatory reviews and revisions, and complaint investigations.

In 2018, staff completed 64 designs on AML non-emergency, emergency, acid mine drainage, and forfeiture projects.
(Above) Valley Mining Inc. coal permit D-1059 was retired after its reclamation under the Bond Forfeiture Program. Five of the six abandoned Valley Mining sites forfeited in 2014 have been completed to date.

(Left) Forfeiture reclamation of Valley Mining Inc. coal permit D-1015 (Tuscarawas Co.) began in 2018 and is scheduled for completion during 2019.
Industrial Minerals (IM) Regulatory Program

Ohio is a major producer of non-fuel minerals, also known as industrial minerals. The industrial minerals produced in Ohio, listed in order of highest to lowest per ton production include:

- limestone and dolomite
- sand and gravel
- salt
- sandstone and conglomerate
- shale
- clay

The state's first industrial minerals surface mining laws were enacted in 1974 with the establishment of Ohio Revised Code Chapter 1514, which required an industrial minerals operator to submit a detailed plan for mining and reclamation, and to post a reclamation assurance bond in order to obtain a permit for mining.

Surface mining refers to all or any of the processes used to extract minerals from the earth or from the surface of the land by surface excavation methods, such as open pit mining, dredging, placering or quarrying. This includes: the removal of overburden for the purpose of determining the location, quantity and quality of mineral deposits; and the incidental removal of coal at a rate of less than one-sixth the total weight and less than fifty percent of revenues of minerals and coal removed during the year.

Significant changes were made to Ohio’s surface mining laws in 2002, which incorporated requirements for groundwater hydrology modeling and blaster certification, and an updated public and interagency application notification process.

The IM Regulatory Program involves two primary areas—permitting and bonding; and inspection and enforcement.

Inspection staff, assisted by expert environmental specialists, hydrogeologists, blasting specialists and engineering staff, performs complete and thorough reviews of each application for an industrial minerals mining permit.

Detailed reviews ensure that environmental impacts are minimized, all necessary environmental safeguards are in place, and that all statutory requirements are met during the permitting process. During the permitting process, multiple agencies, including local governments, are invited to provide input and comments regarding the permit application.

A performance bond in the form of a surety bond, certificate of deposit, letter of credit, or cash must be posted to provide funds for reclamation of a mine site if an operator fails to complete reclamation. Proof of public liability insurance is also required prior to the start of mining.

PERMITTING AND BONDING

During 2018, the Division issued 6 new IM permits on 1033.3 acres and 9 amendments on 279.2 acres. Staff reviewed and approved 74 modifications to permits and 8 permit transfers.

(Below) A suction dredge boat operates on Stocker Sand & Gravel permit IM-0051 in Tuscarawas County.
In addition, the Division
• invoiced $494,687 in performance bond for IM applicants;
• invoiced $517,275 in performance bond for IM permit transfers;
• processed a total of 83 releases of performance security on IM mining operations for excess bond, partial reclamation releases and complete reclamation releases which totaled 1,211.5 acres; and
• final reclamation was completed on 600.0 acres that had been affected by mining.

IM staff makes it a priority to participate in periodic meetings with industry representatives to promote open communication, as well as provide training and clarification to assist consultants and applicants with the permitting process. Rules related to Ohio's IM mining law are written with input from the regulated industry, the Ohio Aggregates and Industrial Minerals Association, the Ohio Environmental Council, and the public.

INDUSTRIAL MINERALS PERMITTING ACTIVITY (2014-2018)

<table>
<thead>
<tr>
<th>Year</th>
<th>New Permits</th>
<th>Amendments</th>
<th>Incidental Coal</th>
<th>Modifications</th>
<th>Transfers</th>
<th>Renewals</th>
<th>Total Current Permits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>17</td>
<td>16</td>
<td>6</td>
<td>88</td>
<td>11</td>
<td>2</td>
<td>616*</td>
</tr>
<tr>
<td>2015</td>
<td>6</td>
<td>14</td>
<td>2</td>
<td>62</td>
<td>22</td>
<td>1</td>
<td>607*</td>
</tr>
<tr>
<td>2016</td>
<td>8</td>
<td>18</td>
<td>1</td>
<td>130</td>
<td>9</td>
<td>0</td>
<td>597*</td>
</tr>
<tr>
<td>2017</td>
<td>2</td>
<td>16</td>
<td>1</td>
<td>98</td>
<td>13</td>
<td>9</td>
<td>588*</td>
</tr>
<tr>
<td>2018</td>
<td>6</td>
<td>9</td>
<td>0</td>
<td>74</td>
<td>8</td>
<td>17</td>
<td>582*</td>
</tr>
</tbody>
</table>

*The decrease in total permits is reflective of older inactive sites having the final reclamation releases approved and an increase in operators adding acreage to existing permits (amendments) rather than obtaining new permits.

INDUSTRIAL MINERALS PRODUCTION IN TONS (2014-2018)

<table>
<thead>
<tr>
<th></th>
<th>CY 2014</th>
<th>FY 2015*</th>
<th>FY 2016*</th>
<th>FY 2017*</th>
<th>FY 2018*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limestone &amp; dolomite</td>
<td>64,838,092</td>
<td>59,067,700</td>
<td>66,476,000</td>
<td>62,502,315</td>
<td>67,804,000</td>
</tr>
<tr>
<td>Sand &amp; gravel</td>
<td>31,796,806</td>
<td>31,509,060</td>
<td>37,501,900</td>
<td>32,375,434</td>
<td>32,937,500</td>
</tr>
<tr>
<td>Salt</td>
<td>5,597,994</td>
<td>5,702,461</td>
<td>4,530,705</td>
<td>4,601,315</td>
<td>4,699,000</td>
</tr>
<tr>
<td>Sandstone &amp; conglomerate</td>
<td>1,631,210</td>
<td>1,497,900</td>
<td>1,910,300</td>
<td>1,726,568</td>
<td>1,775,000</td>
</tr>
<tr>
<td>Clay</td>
<td>636,260</td>
<td>651,200</td>
<td>1,055,700</td>
<td>913,277</td>
<td>935,900</td>
</tr>
<tr>
<td>Shale</td>
<td>1,070,030</td>
<td>961,100</td>
<td>1,041,300</td>
<td>675,326</td>
<td>807,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>105,570,392</td>
<td>99,389,421</td>
<td>112,515,905</td>
<td>102,794,235</td>
<td>108,958,400</td>
</tr>
</tbody>
</table>

*DMRM has changed how it reports production tonnage. Beginning with year 2015 (revised) to the present, tonnage in this table is based on the fiscal year (FY) and not the calendar year (CY) as shown for previous years.
GROUND WATER MODELING FOR DEWATERING PERMITS

Applicants are required to submit a ground water model for review or submit data for ODNR to model when an application for a new IM permit that includes dewatering is received or an amendment or modification to deepen an existing IM permit is submitted. The review and completion of ground water models is done in coordination with ODNR Division of Water Resources.

In 2018, DMRM reviewed and approved 3 ground-water modeling reports: 1 to amend acreage to an existing permit, and 2 to add dewatering to an existing permit. Three models, which included 1 modification to add dewatering, 1 amendment to add acreage, and 1 model with a modification to mine deeper and an amendment to add acreage were completed by DMRM and ODNR’s Division of Water Resources/Division of Geological Survey.

FIELD INSPECTIONS AND ENFORCEMENT

IM inspectors enforce the laws associated with permitting and regulating active IM mining to protect the public and the environment from adverse impacts. Individual inspectors may be responsible for more than 100 surface IM mine permits; their inspection regions range from 8-20 counties each.

Staff is required to inspect the IM mining operations to monitor active mining and reclamation to ensure compliance with the approved permit and that operators restore mined lands to productive uses.

During an inspection, inspectors examine the mining area, as well as the landscape surrounding the mine, to identify any issues that may require attention. Although there are no statutory requirements as to frequency of inspections, the IM Program has established a goal of conducting quarterly inspections on all mine sites annually.

In 2018, DMRM staff conducted 1,542 IM mine site inspections. Of those inspections, 29 were administrative related, 734 were partial inspections and 779 were complete inspections. The Division also responded to 17 formal complaints regarding IM mining operations during the year.

A breakdown of the Division’s investigations of complaints is as follows:
- Water well–7
- Illegal mining–2
- Blasting–6
- Compliance–2

During 2018, 19 Chief’s Orders were issued for the following categories:
- Abandonment of surface mining permit–2
- Blasting violations: flyrock–3, airblast exceedance–1, ground vibration exceedance–1, blaster certification suspension–1, and failure to monitor blasts with a seismograph–1
- Contamination of a water well–1
- Delinquent reclamation–2
- Delinquent annual reports and fees–1
- Failure to communicate with county engineer regarding streets and roads prior to conducting surface mining operation–6
- Failure to direct surface runoff to drainage control structures–1
- Failure to follow approved plan of mining and reclamation–3
- Failure to install sediment controls–2
- Failure to submit certificate of liability insurance–1
- Mining affectment beyond permit boundary–2
- Mining coal without a permit–1
- Mining without a permit–7
- Noncompliance with a Chief’s Order–1

Division mineral resources inspectors, specialists and managers utilize expanded electronic reporting and storage features created within the Electronic Processing System, being developed by in-house IT staff, to provide inclusive access to a network of regulatory records from any location statewide.
INDUSTRIAL MINERALS REGULATORY PROGRAM

BLASTING

The Blasting Program provides services primarily to four DMRM program areas: Permitting, Mine Safety, Coal Regulatory, and Industrial Minerals. Program staff investigates citizen complaints concerning blasting (ground vibration, airblast, flyrock, and alleged damage to structures); coordinates the Ohio Blaster Certification Program; reviews the blasting plan section of mining permit applications; processes citizen requests for preblast surveys; and assists inspectors, citizens, mining companies, consultants, blasters, lawyers, insurance adjusters, engineers, and various governmental agencies with blasting regulation interpretation and compliance problems.

During 2018, Blasting Program staff and assistants:
• investigated 8 new blasting annoyance and/or damage complaints (3 coal-related, 5 quarry-related);
• evaluated 3 incidents of flyrock cast beyond the permit limits (quarry-related);
• conducted seismographic monitoring of blast vibrations at 30 homes (16 coal-related, 14 quarry-related);
• processed 22 citizen requests for preblast surveys (coal only);
• reviewed and logged 38 preblast survey reports (coal only);
• reviewed 46 applications for blaster certification (12 new, 34 renewals); and
• reviewed 13 blast plans (7 coal-related, 6 quarry-related).

Despite more than an estimated 8,000 blasts in Ohio’s surface coal mines and quarries, there were no verified incidents of structural damage to homes from blast vibrations, and the three off-site flyrock incidents caused no injuries and no damage to structures.

Special projects included:
• gave presentations on long-distance seismographic monitoring at the Mine Safety and Health Administration (MSHA) Mine Blasting Safety & Application Seminar, and the West Virginia Department of Environmental Protection’s annual Blaster Refresher;
• began a field study comparing airblast measurements from different microphone deployment methods, including those used by third-party consultants;
• served on the Standards Committee of the International Society of Explosives Engineers to improve field practice guidelines and annual calibration certifications for blasting seismographs;
• continued working with a group of state and federal blasting regulators to improve blaster certification programs across the Appalachian region;
• assembled speakers and developed the program for the next Ohio Drilling & Blasting Conference, to be held on March 21, 2019;
• revised the two-page factsheet, Blasting in Ohio’s Quarries and Surface Coal Mines, to reflect a major change to the ground vibration limits applicable to surface blasting in coal mines; and
• created a new Procedure Directive, Suspension/Revocation of a Blaster’s Certification, effective May 1, 2018.
PUBLIC INVOLVEMENT
When mining is proposed in areas that have not been previously zoned for mining, or significant amendments and modifications are proposed for existing permits, DMRM provides opportunities for the public to become involved in the industrial minerals permitting process. When a permit application is deemed administratively complete, the applicant (operator) is required to publish a public notice in a local newspaper for any area that is not zoned or has not had a conditional use for mining approved within 365 days. The notice identifies a public location where the application may be reviewed and copied, as well as provides the public an opportunity to make comments or request an informal conference regarding the permit application.

Staff schedules and attends meetings with applicants, citizen groups, and individuals interested in mining activities; and provides copies of industrial minerals mining applications, permits and public record items upon request.

A collection of Ohio-shaped rocks found throughout the state on industrial minerals sites.
Mine Safety Program

Laws were established in 1872 to protect miners and the mines in which they work during the extraction of resources. The Ohio Mine Safety Program promotes safe mining practices through four major program services of mine rescue, mining inspections and safety audits, certification testing of mining officials, and the safety training of miners.

DMRM’s Mine Safety inspectors and Mine Rescue operations coordinators possess vital agency and industry experience necessary to positively interact with miners, and influence safety performance and behavior among miners and mine operators.

MINE FACILITY SAFETY INSPECTIONS AND AUDITS

Mine Safety law mandates that DMRM conduct quarterly inspections of all underground coal and industrial minerals mines and all surface coal mines.

Inspections are also conducted at surface industrial minerals (IM) mines, when the following conditions exist:

- Inspections are conducted at surface IM operations that are not regularly inspected by the Mine Safety and Health Administration (MSHA);
- Increased Mine Safety inspections are mandated for any surface IM operation that exceeds three violations per inspector day (VPID);
- Increased Mine Safety inspections are mandated immediately for any surface IM operation that has experienced a fatal or serious mining accident.

Mine Safety also conducts non-regulatory safety audits at surface IM operations for which DMRM has been requested by the mine operator to provide Annual Refresher Training (ART) for its miners. Miners are required by MSHA to receive this approved training at intervals not to exceed 12 calendar months.

During 2018, Mine Safety Inspectors conducted 145 IM safety audits, 498 regular IM and coal inspections, and 38 re-inspections.

Quarterly inspections were conducted at all 11 of Ohio’s underground mining operations. Of these, five are coal, two are salt, and four are limestone. One of these coal operations in southeastern Ohio is a large longwall mine with annual tonnage in the millions. The salt mines are located in the Cleveland and Mentor areas on the shores of Lake Erie. These underground mines extend well beneath the lake itself, several thousand feet below the surface. The annual tonnage for these operations also numbers in the millions.

Mine Safety Inspectors closely inspect oil and gas well plugging or re-plugging operations in locations where existing well bores have intersected the coal seams of active underground coal mining operations. These
locations and activities are critical in that miners will be physically mining through, or mining in close proximity to, these well bores. It is therefore imperative to ensure they are properly plugged in accordance with strict guidelines, specifications and requirements intended to ensure the safety of miners during the mining process.

SAFETY TRAINING AND CERTIFICATION
Miner safety training is critical to improving the health and safety of Ohio’s miners and the working conditions in the mines. In an effort to reduce fatalities, accidents, and mining-related illnesses, Mine Safety inspectors train miners and contractors in ways to recognize and respond to hazards, and to address health and safety concerns.

In 2018, 5420 mine workers were trained by DMRM Mine Safety staff in a variety of areas including first aid, new miner CPR and annual refresher courses; 50 miners were trained in electrical annual refresher courses; another 634 miners were trained in Mine Rescue Part 49.

Certification staff conducts testing for a variety of underground and surface mining positions, such as Mine Foreperson, Coal Mine Electrician, and Mine Medical Responder. Structured examinations mandated by state law serve to ensure that the applicant possesses the necessary applicable mining experience, and has acquired the skills and knowledge to be certified to work in these important positions.

Certification is an essential part of promoting and maintaining the safety and productivity of Ohio’s mining community. In 2018, DMRM staff certified 116 of the 134 applicants examined, of which the majority sought foreperson certification for underground and surface mining. Seven (7) miners received Ohio certification under the reciprocal agreement between Ohio and the state of West Virginia.

MINE RESCUE TRAINING COMPETITIONS
Mine Safety inspectors and Mine Rescue operations coordinators officiate and participate in the planning, administration, team support and judging of multiple training within the smoke-filled simulated underground mine during the 2018 Ohio Mine Safety Training Competition.
underground mine rescue training competitions annually throughout the geographic region of Ohio, Pennsylvania, West Virginia and northern Virginia.

Mine rescue training competitions are designed to test the knowledge and technical skills of a team, and to evaluate the team’s emergency response and preparedness level. Teams work problems related to simulated underground mine fires, explosions and other potential mine emergency scenarios. To maintain MSHA certification as a Mine Rescue team, federal law requires that the team must train a minimum of 96 hours per year and must compete in a minimum of two sanctioned mine rescue training competition exercises per year. It is important to note that an underground mine cannot operate without mine rescue team coverage provided by at least two certified mine rescue teams.

At all training competition events, mine rescue teams must compete in the mine rescue field problem exercise to receive credit toward meeting the MSHA team certification requirement. However, at many of the contests, they also compete in the ‘benching’ competition which tests a team member’s skill in the maintenance, trouble-shooting and repair of the closed circuit breathing apparatus, the Drager BG-4. Many teams also have one or more team members compete in the pre-shift examiner contest. The pre-shift tests the mine examiner’s knowledge and ability to identify, correct, report, and record hazards in a manner that would normally be done prior to the beginning of each mining shift. Some teams also enter members in the first aid competitions.

In 2018, DMRM hosted its 11th annual Ohio Mine Safety Training Competition with nine teams participating from Ohio and Pennsylvania. Since its beginning in 2008, the contest was intended to assist Ohio teams in complying with team certification requirements, and therefore was open to Ohio teams only. However, participation requirements were revised to allow mine operators with mines in both Ohio and other neighboring states, such as Pennsylvania and West Virginia, to afford their teams of the competition’s training and compliance benefit.

Ohio’s Mine Safety staff also hosted the National Mine Rescue Association (NMRA) Post 6’s Annual Ohio Valley Mine Rescue competition. In 2018, teams representing underground coal mine operators in five states participated in this important, high profile training event. Mine Safety staff routinely work as judges in a reciprocal manner with the surrounding state competitions that include state agency mine safety officials from Ohio, Pennsylvania and West Virginia, along with officials from MSHA.

**MINE RESCUE OPERATIONS**

DMRM maintains mine rescue stations strategically located in eastern Ohio near the towns of Barnesville, Glouster, and Cadiz. Each mine rescue station maintains the necessary equipment to support mine rescue teams’ response to a mine emergency incident. They also maintain emergency trailers to transport this equipment to the mine.

All mine rescue equipment is serviced, tested, calibrated, and maintained in a state of readiness. All four rescue trailers are specially equipped to service Drager BG-4 self-contained breathing apparatus at remote sites, and to provide rapid turnaround for reuse during a mine emergency. The Division also maintains foam generating fire-fighting equipment and a mobile air quality lab van in Cambridge, capable of providing
mine gas analysis and enhanced logistical support for the rescue or recovery effort.

Under an agreement with MSHA and agreements with underground mine operators, the state Mine Rescue Network provides coverage to all Ohio underground coal mines and to all underground IM operations with the exception of one limestone mine located in the southwestern part of the state, which has elected to utilize a private rescue contractor. As required under provisions of Ohio’s agreement with MSHA, each Ohio mine rescue station is thoroughly inspected for compliance every six months by MSHA inspectors. Ohio’s stations were found in compliance in 2018 and ready to respond.

Central Support Services

INFORMATION TECHNOLOGY (IT)
The Central Services IT section is responsible for providing IT support and leadership for DMRM, including project management, business analysis, and developing and maintaining the Division’s computer programs/applications such as SharePoint, the AML Electronic Project System, the Central Tracking System, the Electronic Coal Permitting System, and the Division’s Geographic Information Systems.

The staff analyzes business processes and deploys solutions to improve business efficiencies. Additionally, IT staff routinely works with employees to support all hardware and software needs, as well as coordinate computer training.

COMMUNICATIONS
Communications staff responsibilities include publications development, media relations, public inquiries and public records requests, website development, and other marketing and public affairs support.

FISCAL SERVICES
Inventory, purchasing, and fiscal responsibilities include preparing and monitoring the annual budgets and grants; developing internal budget controls and tracking all DMRM accounts; processing expenditures; revenue deposits and reconciliations; and maintaining equipment inventory and Fleet Ohio files.

HUMAN RESOURCES
Human resources and labor management responsibilities include handling all activities related to hiring, transferring, retiring or separating employees; employee certification and training; and coordinating employee benefits and training opportunities.