

**REPORT OF THE
SPECIAL RECLAMATION FUND
ADVISORY COUNCIL**

December 18, 2025



Table of Contents

EXECUTIVE SUMMARY	3
Recommendation	4
Notable Project	5
Membership of the Special Reclamation Fund Advisory Council	6
BACKGROUND ON THE SPECIAL RECLAMATION FUND	7
ACTUARIAL REPORT RECOMMENDATION	11
COAL CONSENSUS FORECAST SUMMARY	12
FINANCES OF THE SPECIAL RECLAMATION FUND AND THE SRWTF	13
Additional Charges to the Fund Due to NPDES Requirements	18
WVDEP Policy Relevant to the Fund	20
LITIGATION	20
SRFAC STUDY TOPICS	24
REPORT SIGNATURE PAGE	26
APPENDIX LIST	27

Appendix A: Office of Special Reclamation Graphs

Appendix B: Muddy Creek Watershed

Appendix C: Coal Consensus Forecast

Appendix D: Actuarial Study

Appendix E: Revoked Permit Inventory
 Acid Mine Drainage Inventory
 Mine Drainage Treatment Prioritization

EXECUTIVE SUMMARY

The Special Reclamation Fund Advisory Council (the “SRFAC”) was established by the Legislature in 2001 to ensure the effective, efficient, and financially stable operation of the Special Reclamation Fund (the Fund). (W.Va. Code § 22-1-17). According to W.Va. Code § 22-1-17 the SRFAC shall consist of eight members, including the Secretary of the West Virginia Department of Environmental Protection (WVDEP) or his or her designee, the Treasurer of the State of West Virginia or his or her designee, the Director of the National Mine Land Reclamation Center at West Virginia University and five members to be appointed by the governor with the advice and consent of the Senate.

The Fund is designated by the Legislature for the reclamation and rehabilitation of lands subject to permitted coal mining operations and abandoned after 1977, where the bond posted is insufficient to cover the cost of reclamation. The Fund is presently funded by a tax of 27.9 cents per ton of clean coal mined in West Virginia. From this revenue, funds based on a tax rate of 15 cents per ton are being paid into the Special Reclamation Water Trust Fund (SRWTF), while funds based on a tax rate of 12.9 cents per ton are being paid into the Fund. According to W.Va. Code § 22-3-11, “Beginning with the tax period commencing on July 1, 2009, and every two years thereafter, the special reclamation tax shall be reviewed by the Legislature to determine whether the tax should be continued: *Provided*, That the tax may not be reduced until the Fund and SRWTF have sufficient moneys to meet the reclamation responsibilities of the state established in this section.”

The SRWTF was created “for the purpose of assuring a reliable source of capital to construct, operate, and maintain water treatment systems on forfeited (revoked) sites.” (W.Va. Code § 22-3-11).

The Secretary of the WVDEP is required to conduct formal actuarial studies every two years and conduct informal reviews annually on the Fund and SRWTF. The SRFAC is also required to make a report to the Legislature every year on the financial condition of the Fund. (W.Va. Code § 22-1-17). The report is to include: “A recommendation as to whether or not any adjustments to the special reclamation tax should be made considering the cost, timeliness, and adequacy of bond-forfeiture reclamation, including water treatment and a discussion of the SRFAC 's required study issues.”

In accordance with the statutory requirements, the SRFAC submits the following:

Recommendation:

Based upon conclusions drawn from information included in this report, the SRFAC makes the following recommendations to the Legislature:

The SRFAC recommends that the present 12.9 cent per ton tax dedicated to the Fund remains in force and that the tax dedicated to the SRWTF remains at 15 cents per ton. It was previously established by the Council that the Fund would cover all costs for both land reclamation and water treatment through June 2018. Then starting in July 2018, the SRWTF would begin covering the cost for water treatment—both water capital costs and ongoing water treatment costs. Following reviews of the financial status and investment earnings of both funds it was the consensus of the Council to continue paying for all reclamation costs out of the Fund to allow SRWTF to continue building assets while earning higher yields. It was also agreed that fund transfers from the SRWTF to the Fund would occur, as needed, to maintain a Fund balance of \$10,000,000.

The SRFAC further recommends that the State Legislature form a panel to examine the elements of our state code that result in uncontrolled liabilities, and to propose a State legislative initiative to rationalize water quality regulation to meet the conditions of the Federal Clean Water Act (CWA) while adding rationality and certainty to the process.

The SRFAC recommends that the Legislature continue to examine the implications of the recent court rulings and subsequent lawsuit settlements on the Special Reclamation Fund, Abandoned Mine Lands, and voluntary efforts by citizen-led watershed groups to address historic mining reclamation related liabilities. The SRFAC further recommends that the Legislature examine the mine reclamation and bonding programs of other states as implemented in Tennessee, by the federal Office of Surface Mining to determine whether the statute and regulations creating the Fund and SRWTF in West Virginia have inappropriately interpreted SMCRA to require long-term CWA liabilities. The SRFAC further recommends the Legislature examine the separate and distinct authorities of the CWA in assessing the eligibility of future forfeitures for transfer of liabilities to SRWTF. The SRFAC is concerned about the default transfer of water treatment liability to the SRWTF when opportunities exist to pursue responsible parties under the CWA per the requirements of an NPDES (CWA Section 402) permit.

Additional recommendations from the Council include review to have Special Reclamation dollars exempt from the tax administration fee. This exemption of just a pass-through fee would assist in long-term sustainability on the fund. Another recommendation is to review other types of tax relief opportunities for operators to complete reclamation work that would otherwise be funded with Special Reclamation dollars. Similar

opportunities like the current coal tax credit available to mining companies. One more recommendation is the expedient filing and approval of SRFAC vacancies and expired terms promptly.

Notable Projects:

- Southwestern Energy (SWN) partnership for Operation & Maintenance ongoing for two sites.
- Rare Earth Elements Extraction Plant combined with new Acid Mine Drainage Treatment facility continues to be fine-tuned at site A34, near Bismarck WV.
- In 2024, a study was completed that compares the expected costs and benefits of the watershed strategy for treating AMD vs point source treatment within Muddy Creek (Ziemkiewicz, Risch). Results indicate that the 10-year capX + opX costs could be around \$ 2.6 million less using the watershed strategy and that stream recovery totaled 19.2 miles. On the other hand, previous experience using a point source (NPDES) treatment strategy resulted in much higher cost while recovering zero stream miles (table 1), even though capital costs are lowered with this strategy. In addition, costs to the SRWTF were significantly reduced by a voluntary contribution by Southwestern Energy Co. When combining this contribution with the savings from the watershed approach the 10-year costs are expected to be \$9.1 million lower.

Table 1. Summary of costs and benefits related to point source vs. watershed level treatment strategies. The example reflects the actual costs for implementing the Muddy Ck. Project and includes the voluntary contributions by Southwestern Energy Co.

2025 SRF Advisory Council Annual Report

	STRATEGY		
Cost (\$2023)	Point Source	Watershed*	Watershed**
CapX	\$19,700,000	\$25,400,000	\$25,400,00
SW Contribution[1]		(\$3,100,000)	
Net CapX	\$19,700,000	\$22,300,000	\$25,400,000
OpX per yr	\$1,410,000	\$580,000	\$580,000
SW Cont/yr		(\$340,000)	
Net OpX (10 yrs)	\$14,100,000	\$2,400,000	\$5,800,000
Total Over 10 Yrs	\$33,800,000	\$24,700,000	\$31,200,000
Savings		\$9,100,000	\$2,600,000

* with Southwestern Energy Contribution (SW)

** without Southwestern Energy Contribution (SW)

[1] Southwest paid \$2.5 million in 2017 and 2018. This value is inflated to \$3.1 million in \$2023 using the Producer Price Index (PPI) Commodity for All Final Demand from the Bureau of Labor Statistics (BLS).

Membership of the Special Reclamation Fund Advisory Council

Matthew Butler, Deputy Director for the Division of Land Restoration, is serving as the member representing the Cabinet Secretary of the WVDEP. Lindsay Marchio serves as the member representing the Treasurer of the State of West Virginia. J. Brady Gutta serves as the member representing the Director of the National Mine Land Reclamation Center at West Virginia University. John A. Deskins, Director, Bureau of Business and Economic Research at West Virginia University, serves as the Actuary/Economist member. Jason Bostic serves as the member representing the interests of the coal industry. James Kotcon serves as the member representing the interest of environmental protection organizations. Ronald Pauley serves as the member

representing the interests of coal miners. Christopher Pence serves as the member representing the interests of the general public.

BACKGROUND ON THE SPECIAL RECLAMATION FUND

In 2001 the legislation establishing the SRFAC also increased the tax on clean coal mined in West Virginia, from three to seven cents per ton (the “Continuing Tax”) and levied an additional seven cents per ton (the “Temporary Tax”), to be deposited into the Fund. The revenues of the Fund were designated to pay for reclamation on post-1977 bond-forfeited (revoked) sites.

The 2001 legislation provided for the Temporary Tax to be in effect for thirty-nine months. As a result of a 2005 actuarial report finding that the expiration of the Temporary Tax would result in nearly immediate insolvency of the Fund, the Temporary Tax was extended by the Legislature in 2005, for an additional eighteen months. A 2007 actuarial study commissioned by the SRFAC found that the failure to extend the Temporary Tax again would result in insolvency of the Fund. Accordingly, in 2008 the Legislature, through SB 751, created the SRWTF and enacted a temporary, twelve-month tax of 7.4 cents which was to be allocated between the Fund and a SRWTF. Twelve and nine-tenths cents were dedicated to the Fund and 1.5 cents was deposited into the SRWTF. An updated actuarial study in 2008 concluded that terminating the temporary tax would result in insolvency within a few years. In response, during the 2009 legislative session, the Legislature amended W.Va. Code § 22-3-11 to remove the expiration date for the Temporary Tax and provided instead for biennial review of the Tax by the Legislature. (Acts of the Legislature 2009, chapter 216).

Based upon projections under the 2011 Actuarial Analysis performed by Pinnacle Actuarial Resources, Inc. the Fund was found to be sufficiently funded under the existing 12.9 cent tax. However, the SRFAC was concerned that as the SRWTF began making payments for water capital and ongoing water treatment in Fiscal Year 2019, as projected, the SRWTF would fall into a deficit position in the second year of operation-2020. (2011 Actuarial Valuation, page 3). Declining coal production projected by the 2011 Consensus Coal Production Forecast and the significant increase in water treatment costs resulting from court rulings in two cases were contributing factors in the projected insolvency of the SRWTF. Accordingly, in 2012 the Legislature increased the special reclamation tax to 27.9 cents per ton, 15 cents of which was to be deposited into the SRWTF.

Based upon projections under the 2013 Actuarial Analysis performed by Pinnacle Actuarial Resources, Inc. the Fund was projected to be over 100 percent funded using a 20-year cash flow basis and 95.7 percent funded

2025 SRF Advisory Council Annual Report

using a 35-year cash flow basis. The SRWTF was (and is today) accumulating 15 cents per ton coal tax revenue and interest and was projected by the 2013 Actuarial Valuation to be 150.4 percent funded using a 20-year cash flow basis and 89.9 percent funded using a 35-year cash flow basis.

Based on the 2015 Actuarial Analysis conducted by Taylor & Mulder, the Fund was projected to fall to a low of \$51.5 million in 2018. This was due to paying all reclamation costs for both land and water as well as operation and maintenance costs associated with water treatment. The Fund was projected to then recover to \$187.5 million slowly by the end of the twenty-year study period, at which point an \$8.2 million liability would remain. SRWTF was expected to accumulate approximately \$120 million by 2018 before beginning to support water reclamation costs in 2019 (*However, it should be noted that as of December 31, 2017, the balance in the SRWTF had only reached \$104 million*). Afterwards, SRWTF was projected to show gains, reaching \$289.8 million by the end of the twenty-year study period with a \$110.5 million liability remaining. Both funds combined were projected to total approximately \$477.3 million at the end of the twenty-year study period with a total remaining liability of \$118.7 million.

Based on the 2017 Actuarial Analysis conducted by Pinnacle Actuarial Resources, Inc, the results indicated that on a present value basis the Fund is 97.3% funded over a twenty-year projection and 93.6% funded over a thirty five-year projection period but indicated that the fund would go into a negative balance in 2021. The SRWTF is 162.6% funded over a twenty-year projection, 151.4% funded over a thirty five-year projection period and is fully funded throughout the entire projection period. Combined the two funds are 123.4% and 115.8% funded over twenty and thirty five-year projections respectively and fully funded throughout the entire projection period. Pinnacle determined that a transfer of \$38 million in assets from the SRWTF to the Fund would keep the Fund in a positive balance position throughout the projection period without causing the SRWTF to move into a negative balance.

In 2019, the timing of the actuarial analysis changed to a twenty-year analysis as well as being performed every two years.

Taylor and Mulder 2019 projections of revenues and expenses to the Funds imply that the Funds will be solvent on a cash basis through 2039. Note that these projections assume that money will be transferred from the Water Trust Fund to the Special Reclamation Fund to maintain a minimum fund balance of \$10,000,000.

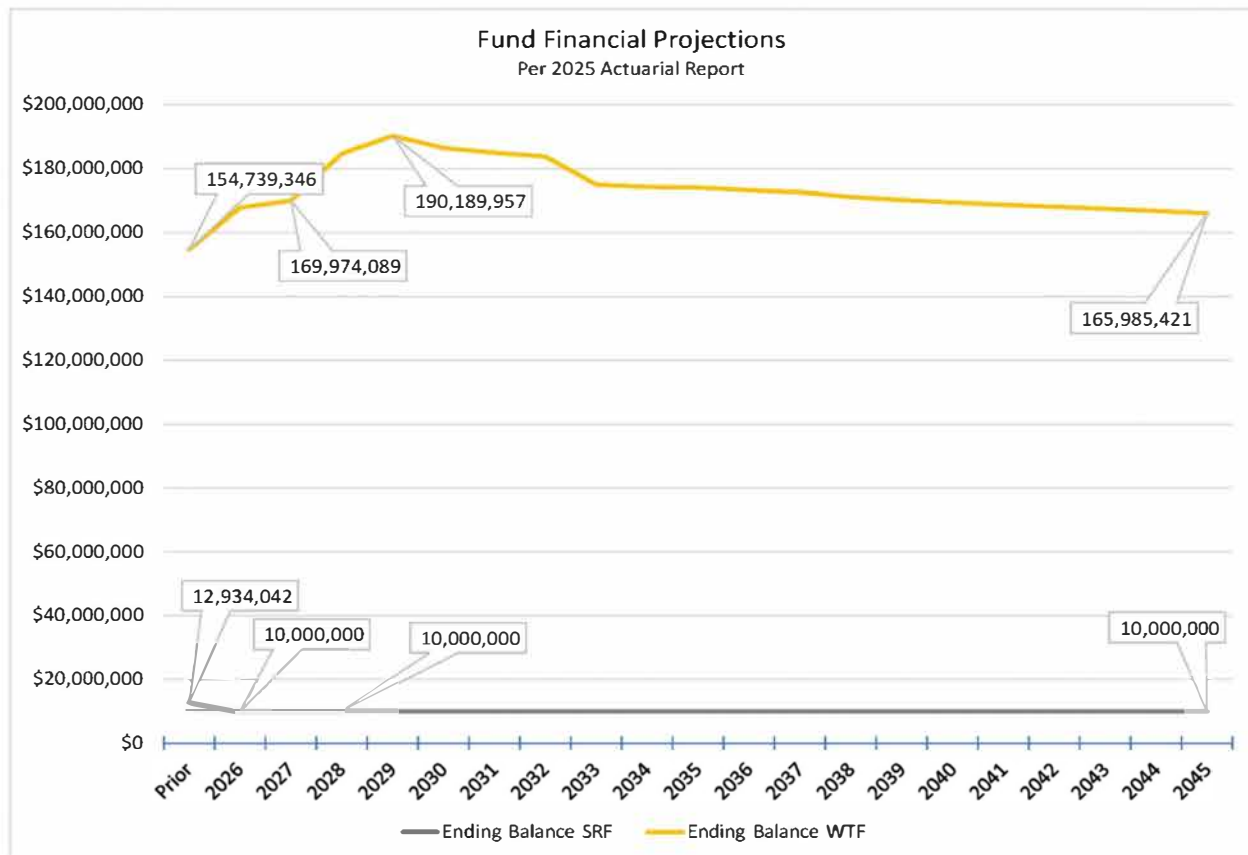
2025 SRF Advisory Council Annual Report

Taylor and Mulder 2021 projections of revenues and expenses to the Funds imply that the Funds will be solvent on a cash basis through 2039. Note that these projections assume that money will be transferred from the Water Trust Fund to the Special Reclamation Fund to maintain a minimum fund balance of \$10,000,000.

Taylor and Mulder 2023 projections of revenues and expenses to the Funds imply that the Funds will be solvent on a cash basis through 2043. Note that these projections assume that money will be transferred from the Water Trust Fund to the Special Reclamation Fund to maintain a minimum fund balance of \$10,000,000.

Taylor and Mulder 2025 projections of revenues and expenses to the Funds imply that the Funds will be Solvent on a cash basis through 2045. Note that these projections assume that money will be transferred from the Water Trust Fund to the Special Reclamation Fund to maintain a minimum fund balance of \$10,000,000. The graph below (Figure 1) shows a simplified cash flow projection for the SRF and WTF combined over the next 20 years.

2025 SRF Advisory Council Annual Report



E - 144

Figure 1

ACTUARIAL REPORT RECOMMENDATIONS (2025)

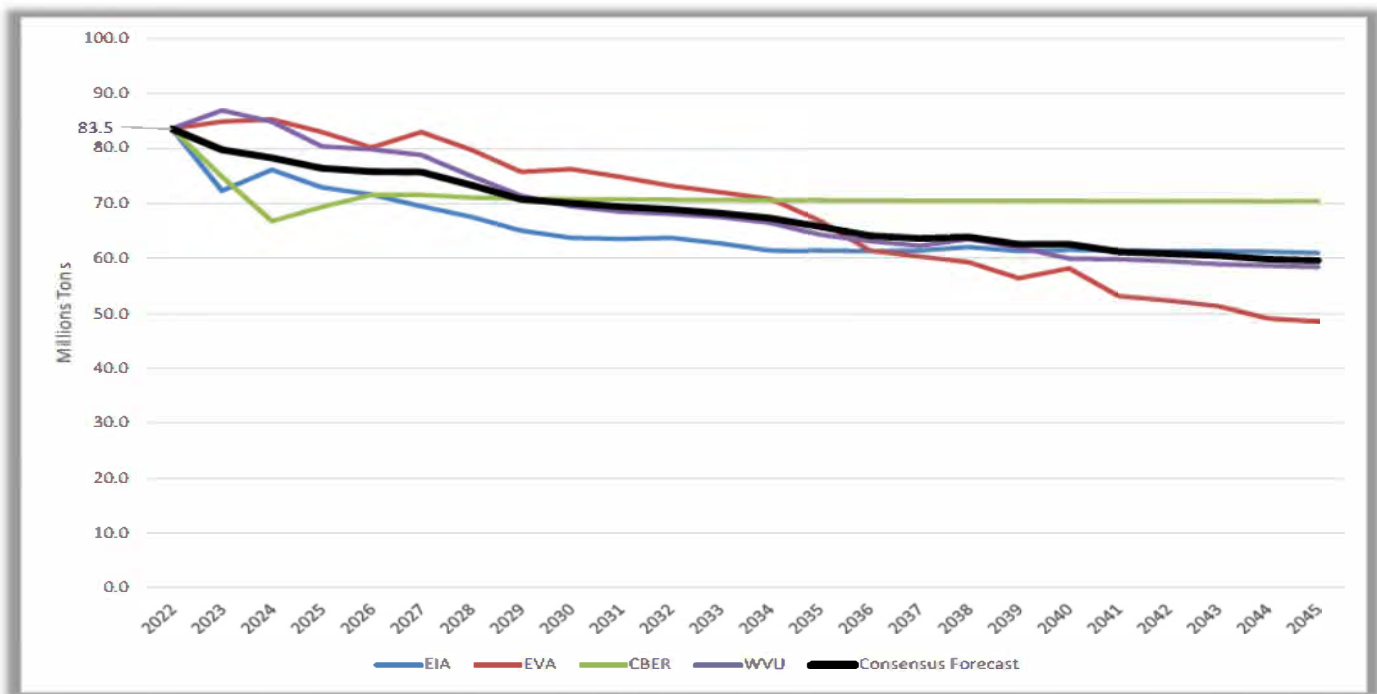
Coal Production Risks: There has been some instability in coal production forecasts and the coal market in general over the preceding decade as a result of different regulatory regimes, alternative energy adoption rates, economic events, and, most recently, the COVID-19 pandemic. Future studies may benefit from considering alternative coal production scenarios.

Permit Status History: Permit databases were evaluated as of a specific date. However, because this study estimates anticipated changes in permit status over time, it is necessary to make assumptions about how permit statuses change in order to develop forfeiture models. If records exist, it could be possible to produce more accurate models if a full history of each permit (including all status changes over time and dates when status changes occurred) were available.

COAL CONSENSUS FORECAST by Marshall University-Center for Business & Economic Research

Consensus Forecast: The four long-term forecasts produced by EIA, EVA, CBER and BBER are combined to create the 2023 Consensus Forecast for West Virginia Coal Production. For simplicity, a simple average was used to calculate the consensus forecast⁴ (Figure 6). Coal production in West Virginia is projected to decline steadily from 83.5 million tons in 2022 to 59.6 million tons in 2045.

Figure 6: Consensus and Component Forecasts 2023 (million tons)



Source: EIA, EVA, CBER, WVU, and Marshall University Department of Mathematics.

Summary: The four component models incorporate a range of possible levels of West Virginia coal production over the next 22 years, with varying forecasts that illustrate the impact of primary supply and demand variables and uncertainty over the continuation of recent trends. The consensus reduces uncertainty by combining

the forecasts into one aggregate projection. The consensus forecast predicts West Virginia will experience a gradual decline in coal production throughout the period, but at levels that are four to seven million tons per year higher than the 2021 Consensus Forecast.

FINANCES OF THE SPECIAL RECLAMATION FUND & THE SRWTF

This section of the Report to the Legislature outlines the financial status of the Fund and the SRWTF and provides comments regarding the future financial position of both. The three key factors that have the most effect on the adequacy of the Funds are the coal production levels in West Virginia, the risk of future forfeitures, and the cost of reclaiming existing and future bond-forfeited (revoked) sites.

WVDEP acknowledges that future forfeitures and any water management costs associated with them could affect funding needs of the Fund and the SRWTF. WVDEP is currently working to compile water management and treatment costs on active (still permitted) sites to better inform the actuaries and policy makers in prediction of future water management and treatment costs associated with revoked sites. Additionally, the SRFAC is continuously looking for ways to improve upon the ability to project future forfeitures, which will continue to be a focal point of the SRFAC. The Office of Surface Mining Reclamation and Enforcement (OSMRE) supports WVDEP's efforts to improve the active mine pollutant inventory to ensure the accuracy of future forfeiture cost projections and has formed a team with WVDEP to develop a work plan for obtaining additional data.

To summarize the data and analysis that follow, it should be noted that the Fund will continue to pay for all costs for both land reclamation and water treatment. Money transfers from the SRWTF to the Fund will occur as needed to maintain the Fund balance of \$10,000,000. Increased revenues for the SRWTF are attributed to the tax increase in 2012 as well as the improved investment strategy which was initiated in 2013 as described below.

In May of 2013, following numerous discussions between WVDEP personnel and members of the Investment Management Board and the Board of Treasury Investments, the SRFAC was updated on various investment options and made the following recommendations:

2025 SRF Advisory Council Annual Report

The first recommendation was in two parts:

1. That the current balance of the Water Quality (WQ) Trust Fund and all additional revenue of the WQ Trust Fund through Fiscal Year 2018 be invested in the Investment Management Board (IMB) Fixed Income Pool.
2. That the WVDEP develops plans to maximize the return on investment for future WQ Trust revenue.

The second recommendation was also in two parts:

1. That the current balance of the Special Reclamation Fund be invested in the Board of Treasury Investments West Virginia Short Term Bond Pool except for \$5 million, which should remain in the West Virginia Money Market Pool.
2. That WVDEP develops plans to maximize the return on investment for future SR Fund revenue.

In October of 2013 the balance of \$28 million from the SRWTF was transferred to the Investment Management Board Fixed Income Pool.

In June of 2013, except for \$5 million, the balance of the Fund was transferred to the West Virginia Short Term Bond Pool. The following chart depicts the investment earnings for the past 10 years utilizing the new investment strategies and results of the new strategy leading up to the current year.

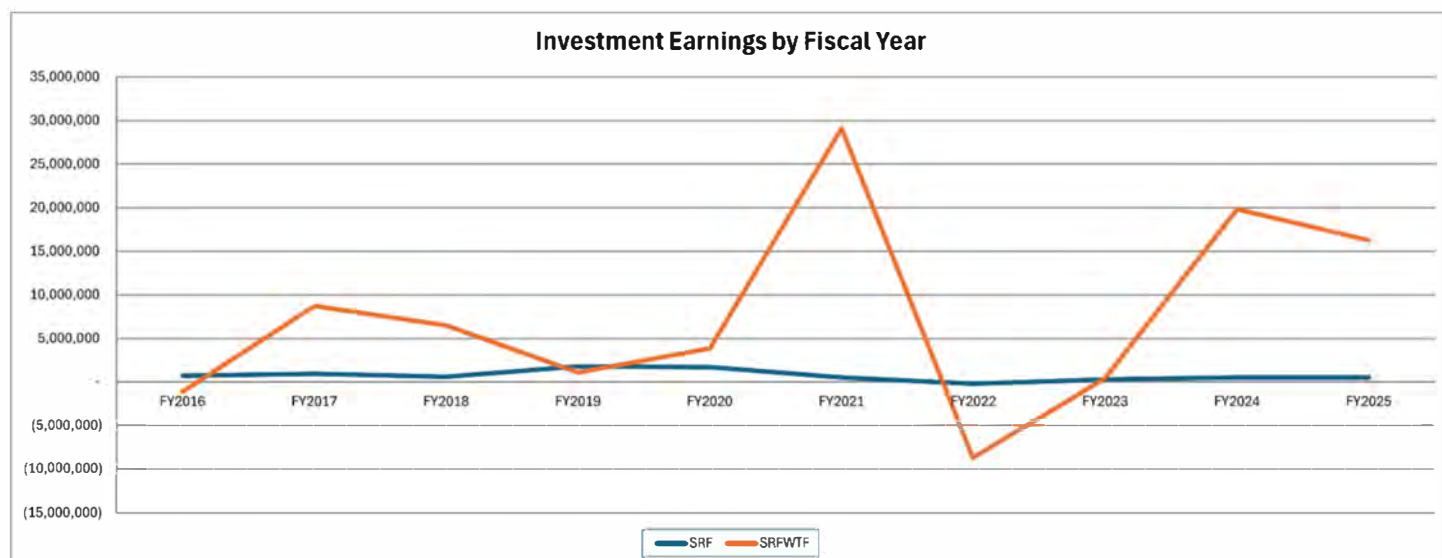


Figure 2

2025 SRF Advisory Council Annual Report

As of June 30, 2025, the Fund has accumulated assets of \$16.3 million, a 67.3% increase from 2024 values, while the SRWTF has accumulated \$195 million in assets, a 9.4% increase over 2024 SRWTF values. Increased revenues for the SRWTF are attributed to the tax increase in 2012 as well as the improved investment strategy which was initiated in 2013 as described below.

Since 2001, despite a very aggressive reclamation schedule, the Fund has been serving the people of West Virginia well through providing for the reclamation of bond-forfeited (revoked) sites. From post-1977 until legislation in 2001, there were 392 revoked permits requiring reclamation, including 103 of those requiring water reclamation and 99 additional sites requiring only water reclamation. Since passing that legislation, an additional 312 permit have been revoked, bringing the total to 803 revoked permits. Land reclamation work remains at 29 sites with 52 additional sites in the evaluation stage, and water reclamation work remains at 19 sites with 52 sites in the evaluation stage. Regarding water treatment, the Fund is treating water at 157 sites.

A complete inventory of all bond-forfeiture sites is in Appendix E, along with bond-forfeiture sites that have mine drainage related problems, and a prioritized order in which they will be addressed.

Graphic summaries of the status of the Funds are outlined in the following figures.

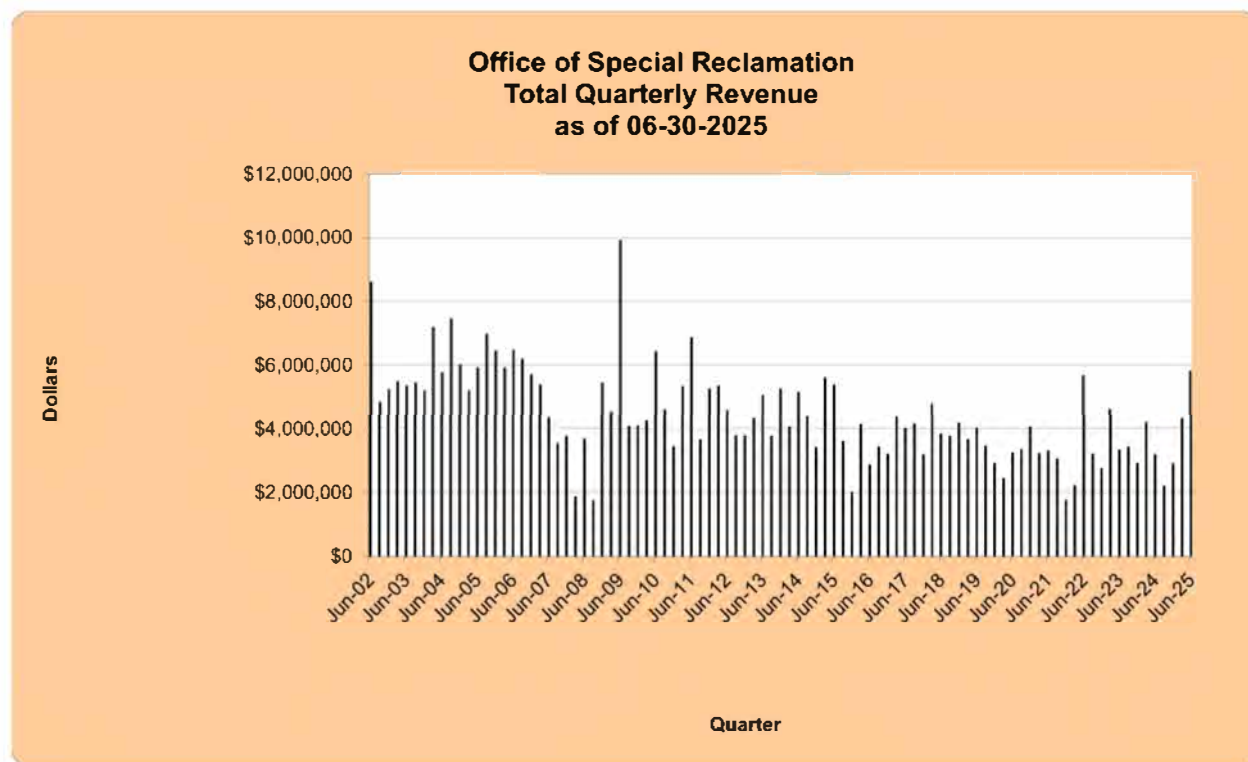


Figure 3

2025 SRF Advisory Council Annual Report

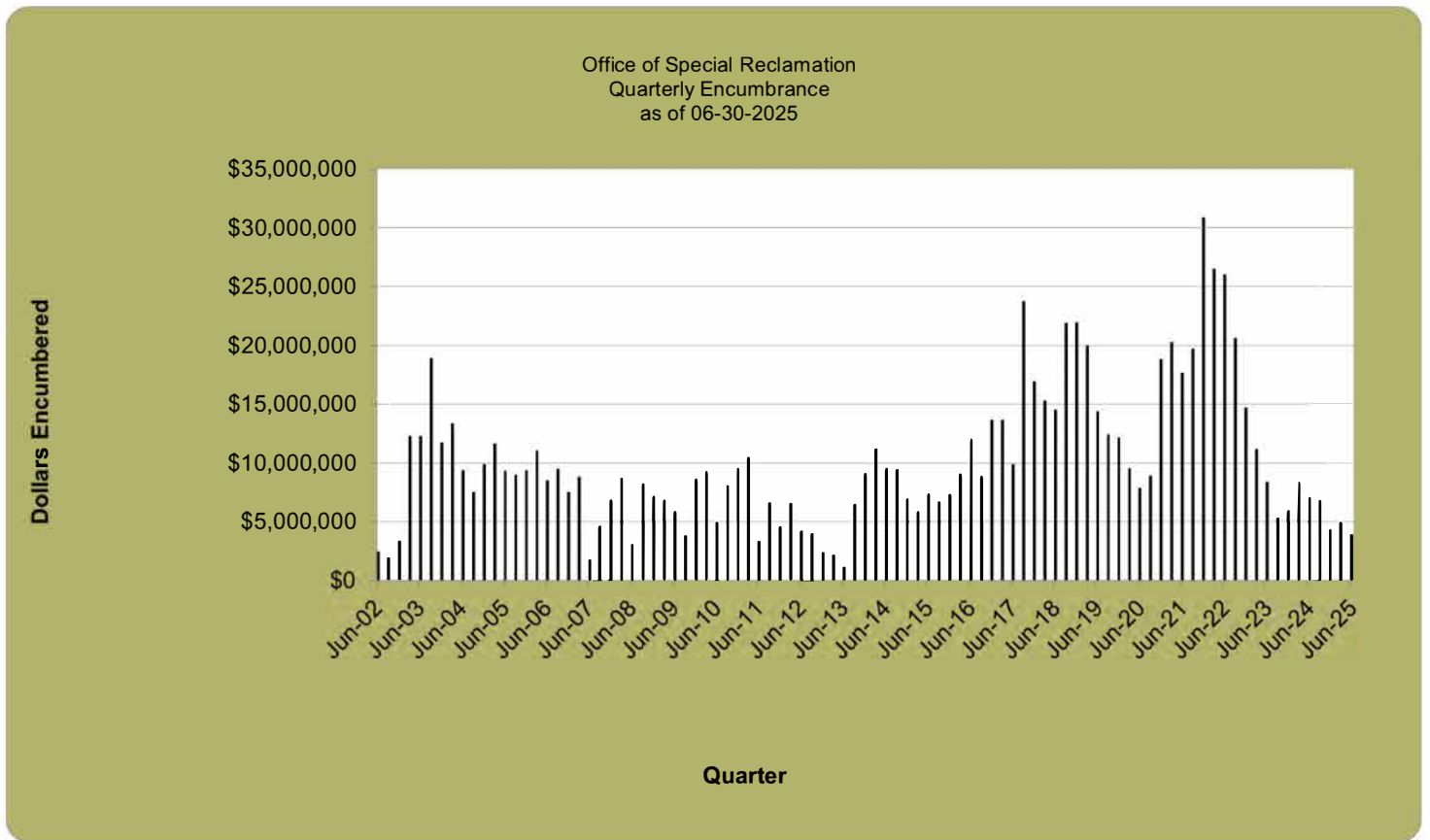


Figure 4

2025 SRF Advisory Council Annual Report

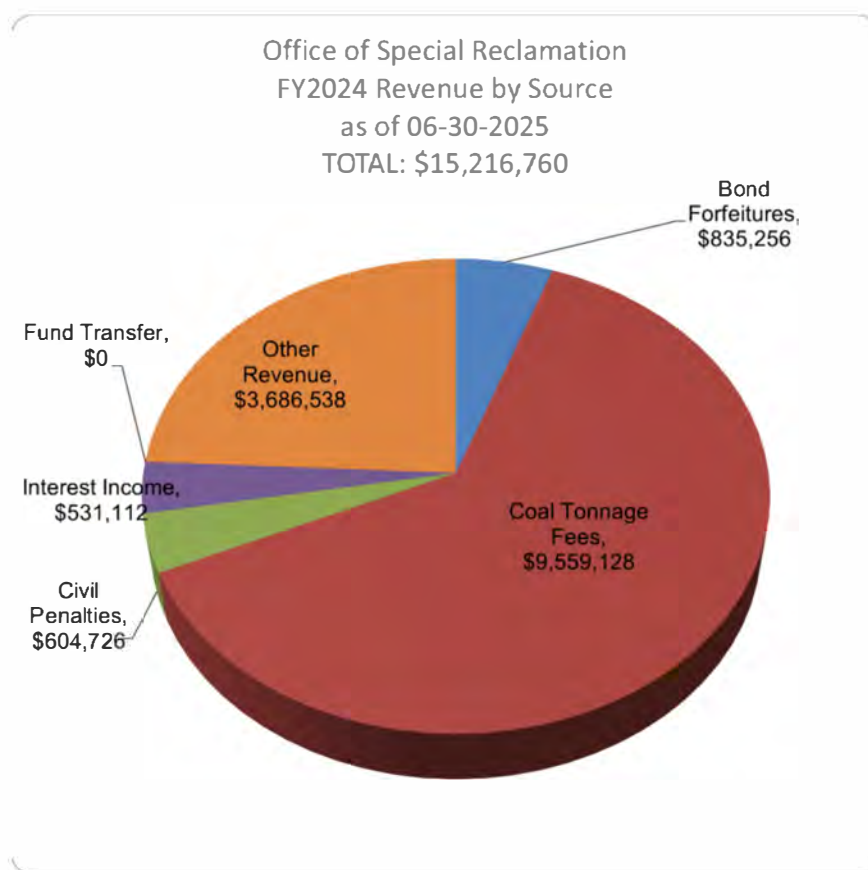


Figure 5

A complete inventory of bond-forfeiture sites that are producing mine drainage that violate effluent limitations or applicable water quality standards for long-term treatment of these sites are in Appendix E.

The current main funding mechanism for bond-forfeited (revoked) sites is the 27.9 cent tax per ton of clean coal mined, of which fifteen cents is dedicated to the SRWTF.

In 2008, the Legislature authorized, but did not separately fund, SRWTF. In reliance on the SRWTF statutory authorization, beginning in July 2008, coal tax revenues based on a tax rate of 1.5 cents per ton were being paid into the SRWTF. In addition, coal tax revenues based on 12.9 cents per ton were being paid into the Fund. In 2012 the Legislature increased the amount dedicated to the SRWTF to 15 cents per ton; but based on the funded status of the Fund at the time the Fund remained at 12.9 cents per ton.

Increased water capital cost and water treatment cost are the result of two identical lawsuits filed against the WVDEP. In 2011 and 2012 the WVDEP entered separate consent decrees with the northern and southern district courts respectively. As will be discussed later in this report, WVDEP was required to apply for and obtain NPDES permits for all the sites included in the attachment of the consent decrees plus an additional 21 sites which were included in an earlier lawsuit, for a total of 192 sites. WVDEP has fulfilled the requirements of the Consent Decree by obtaining all NPDES permits. The WVDEP estimated that it would cost approximately \$35.5 million to bring bond-forfeiture sites into compliance with the more stringent water quality-based effluent limits. Additionally, WVDEP estimated that it would cost approximately \$6.7 million to operate and maintain these treatment systems on an annual basis. The SRFAC is continuing to look at alternatives for water treatment funding.

Additional Charges to The Fund Due to NPDES Requirements

Due to NPDES requirements in 2012, the WVDEP has been faced with charging more expenditures to the Fund. These include:

- Realty – Land and/or easement purchases have been necessary to expand existing or new water treatment sites outside permit boundaries. Surveying and appraisal costs are included in these purchases.

Increased staff – As a result of having to apply for and obtain NPDES permits at all bond-forfeiture sites now and into the future, the WVDEP has found it necessary to incorporate an NPDES permitting section into the Office of Special Reclamation (OSR - The office responsible for reclamation of land and waters for bond-forfeited (revoked) sites). Five new staff members, consisting of one (1) Program Manager and four (4) field staff personnel, have been added to fulfill the NPDES requirements for the WVDEP. Additionally, to reduce surveying costs associated with realty needs and design, a licensed surveyor was hired.

Also, two (2) land agents were hired in 2018 to address realty needs, although the responsibilities and salaries are split between OSR and the Office of Abandoned Mine Lands.

- NPDES permitting fees:
 - Application fees - \$1,000/application

2025 SRF Advisory Council Annual Report

- Modification fees - \$2000/Major.mod. and \$1000/minor
 - Annual fees - \$2000/permit.
 - Reissuance fees - \$ 3000/permit
- Additional water sampling related to permit applications.
- WVDEP entered into a grant agreement with the West Virginia Land Stewardship Corporation (WVLSC) to provide contractual services in the areas of design, construction, and project oversight. The purpose of the agreement was to enhance the capacity of WVDEP professional staff to meet reclamation deadlines. It is estimated that project costs will increase by 10 to 15% for contractual services and another 1% for indirect costs associated with managing the grant. The WVLSC was created by state legislation in 2013 to lessen the burdens of government when government identifies a need for WVLSC to assist with land stewardship and the remediation of properties with known environmental issues, including former mining sites.

A pilot grant agreement, known as the LaRosa Fuels site (Permit Number S-1051-86), was approved in 2016 to evaluate the efficiency and benefits of a work-sharing partnership.

WVDEP approved a grant amendment in 2017 and provided additional funds, as well as additional permits to be reclaimed. The grant was structured as an up-front payment to provide the WVLSC with the funds needed to cover the level of liability inherent in multiple reclamation projects, which require engaging multiple engineering and construction firms simultaneously. Having the resources to cover at least the original liability estimates provided by WVDEP gave the WVLSC Board the level of certainty it needed to take on the project.

The WVLSC invested the grant funds so that they could earn interest that could be used on the project. In 2018, when it was identified that WVDEP investments were gaining a higher rate of return, the grant funds were returned to the WVDEP to maximize investment earnings. The WVLSC invoices WVDEP when expenditure regularly occurs. WVLSC had one design project in 2021 to fulfill the grant agreement, which was completed before the end of the year, and the agreement was terminated.

WVDEP Policy Relevant to the Fund

Effective May 21, 2014, the WVDEP has implemented a new policy establishing a standard procedure the WVDEP will follow to terminate the State's jurisdiction over bond-forfeited (revoked) former mining sites (Special Reclamation Sites). With a decision that the Special Reclamation Site has satisfied the applicable performance standards, WVDEP will terminate jurisdiction over the subject Special Reclamation Site. The policy limits the vulnerability of the State, and consequently the Fund, by reducing the possibility of lawsuits pertaining to damages unrelated to former mining practices or reclamation practices, i.e., due to recreation, timbering, oil & gas, etc., as well as any changes to environmental laws taking effect after reclamation of the subject Special Reclamation Site. WVDEP will retain jurisdiction of Special Reclamation Sites, or portions thereof, that are necessary for the effective treatment of mine discharges emanating from the subject Site. At the end of FY2025, the WVDEP terminated jurisdiction on 62 sites.

LITIGATION

1. The Fund through FY 2018 and the SRWTF starting in FY 2019 has acquired liability for additional water treatment because of lawsuits filed against the WVDEP, as described below.

Identical complaints were filed in the Northern and Southern District Courts, Civil Actions No. 07-cv-87 (the "Northern District Case") and No. 2:07-0410 (the "Southern District Case"), assigned to Judge Irene Keeley and Judge John T. Copenhaver, Jr., respectively. Both cases were styled *West Virginia Highland Conservancy and West Virginia Rivers Coalition v. Randy C. Huffman, Secretary, West Virginia Department of Environmental Protection*.

The two suits alleged that the West Virginia Department of Environmental Protection (WVDEP) had violated, and continued to violate, the federal Clean Water Act (the Act) by failing to obtain West Virginia National Pollutant Discharge Elimination System (WV/NPDES) permits when the WVDEP reclaims and treats water at bond-forfeited (revoked) sites as directed by state law. The Northern District Case named 18 specific bond-forfeited (revoked) sites, and the Southern District Case named 3 sites.

On March 26, 2009, the Northern District Court entered summary judgment in favor of Plaintiffs in the Northern District Case and granted a permanent injunction. The injunction requires WVDEP to apply for, process, and issue WV/NPDES permits itself for the discharge into waters and streams of pollutants from the eighteen bond-forfeited (revoked), coal mining sites at issue in the case, whose reclamation the agency is required to

manage. WVDEP appealed this decision to the United States Court of Appeals for the Fourth Circuit (“Fourth Circuit Court of Appeals”). By order dated November 8, 2010, the Fourth Circuit Court of Appeals affirmed the Northern District Court’s ruling.

Similarly, a motion for summary judgment in the Southern District Case was granted by Order dated August 24, 2009. The Southern District Court found that the Secretary of the WVDEP was “in violation of the National Pollutant Discharge Elimination System permitting requirements of the Clean Water Act.” The Southern District Court ordered the Secretary to “apply for, and obtain, NPDES permits for all sites at issue in this action,” and the parties subsequently submitted a joint stipulation agreeing to the same injunctive relief and timeframes for compliance set forth in the Northern District litigation. The Southern District Court entered final judgment on August 31, 2010.

On January 11, 2010, the same Plaintiffs (West Virginia Highlands Conservancy and West Virginia Rivers Coalition) and the Sierra Club submitted a letter giving WVDEP notice of their intent to sue WVDEP regarding discharges from 131 additional bond-forfeited (revoked) sites on the same legal basis as the previous suits. Based on the outcome of the previous litigation, WVDEP engaged in settlement negotiations with the Plaintiffs and reached agreement regarding the permitting of the 21 sites in the previous litigation and the additional 131 sites. In August 2011, the Plaintiffs filed two new suits regarding the additional sites, *West Virginia Rivers Coalition, et al v. Huffman*, Civil Action No. 1:11-cv-118 (N.D. W.Va.), and *West Virginia Rivers Coalition, et al v. Huffman*, Civil Action No. 2:11-cv-524 (S.D. W.Va.) and lodged a proposed Consent Decree with both courts. The Northern District Court entered the Consent Decree on October 12, 2011. The Southern District Court entered the Consent Decree on February 10, 2012. A list of all bond-forfeited (revoked) sites at issue in all four suits is attached to the Consent Decree as Attachment A. As required by the Consent Decree on July 2, 2012, WVDEP submitted a Final Treatment Cost Report to Plaintiffs and SRFAC, in which WVDEP determined the capital cost and annual operating and maintenance costs for water discharges from each bond-forfeiture site to meet applicable water quality-based effluent limitations. WVDEP estimated that these costs will amount to \$35.5 million for one-time capital construction costs and over \$6 million in annual operations and maintenance costs.

The Consent Decree resolves all four suits filed by the Plaintiffs regarding bond-forfeited (revoked) sites. The Consent Decree required WVDEP to obtain WV/NPDES permits for all 21 bond-forfeiture sites cited in the initial litigation by September 1, 2011. Thereafter, WVDEP issued draft WV/NPDES permits for 50 additional sites by the end of each calendar year, beginning in 2012. By December 31, 2015, the Consent Decree required

WVDEP to issue draft WV/NPDES permits for all bond-forfeited (revoked) sites listed in Attachment A of the Consent Decree and for sites that were in existence on the date the Decree was executed. Thereafter, the WVDEP shall exercise its best judgment on the timing of issuance of draft permits for sites forfeited (revoked) after the execution of the consent decree. The final draft permit was issued December 10, 2015.

2. A third case presents potential for future litigation, should the legislature not adequately fund the Fund and SRWTF. *West Virginia Highlands Conservancy v. Secretary Salazar, DOI*, Civil Action No. 2:00-1062 (S.D. W.Va.). The West Virginia Highlands Conservancy (WVHC) had filed a motion with the U.S. District Court for the Southern District of West Virginia to reopen the case and schedule further proceedings on the grounds that the recommendations of the SRFAC were not being followed regarding funding the Special Reclamation Fund. Based upon the Legislature's extension of funding through the Continuing and Temporary taxes, the case was placed on the court's inactive docket as of May 2008; however, the court allowed the possibility of a renewed motion if the Legislature does not continue to provide sufficient monies for the Fund to remain solvent.

In March 2011, the WVHC moved once again to have the litigation reopened alleging continuing problems with the Fund. A status conference was held on August 5, and the court ordered the filing of a joint status report. On August 25, 2011, the WVHC and the Defendants filed a joint status report with the court. The WVHC stated that the court should not delay reopening the case until the new actuarial report and SRFAC recommendations are issued, whereas the Defendants recommended that it was premature for the court to reopen this matter prior to the close of the 2012 legislative session.

On March 30, 2012, a status conference call was conducted by the Court. Considering the enactment of Senate Bill 579 that increased the special reclamation tax from 14.4 cents to 27.9 cents per ton of clean coal mined, the Plaintiff acknowledged that it would move to withdraw its Second Motion to reopen and refile it to address the changed circumstances that have occurred since the filing of its motion to reopen.

On April 2, 2012, the WVHC filed its Motion to withdraw its Second Motion to reopen this case with the Court. On April 5, 2012, the Court issued an Order granting the Plaintiff's Motion to withdraw its Second Motion. In addition, the Court granted the WVHC leave to file an additional motion to explain deficiencies that remain, notwithstanding the recent revenue increase in the Special Reclamation Fund. The case was closed March 11, 2003.

3. On or about April 20, 2016, the West Virginia Highlands Conservancy, West Virginia Rivers Coalition, and Sierra Club sued the West Virginia Department of Environmental Protection's (WVDEP) Special Reclamation Program alleging it was in violation of seven West Virginia National Pollution Discharge Elimination System (WVNPDES) permits issued for sites controlled by the Special Reclamation Program, four in the United States District Court for the Northern District of West Virginia¹ and three in the Southern District². The lawsuits allege that the WVDEP had discharged and continued to discharge quantities of aluminum, iron, nitrogen, ammonia, and suspended solids more than the effluent limitations in those permits. The lawsuits further allege discharges of effluent with pH outside of the permit range. On December 12, 2016, the parties met at WVDEP's headquarters in Charleston. The WVDEP explained to the Plaintiffs that a timetable for achieving compliance had already been established and were included in a corrective action plan required under the enforcement actions being carried out by the WVDEP's Division of Mining and Reclamation. On July 10, 2017, the parties filed a consent decree in the Northern District action. On April 25, 2018, the parties filed a consent decree in the Southern District. The compliance requirements found in these consent decrees are based on the schedule that the WVDEP had prepared for inclusion in the corrective action plan; no new or different requirements were added because of the litigation.

4. On June 29, 2021, Appalachian Mountain Advocates, on behalf of Sierra Club, West Virginia Highlands Conservancy, and West Virginia Rivers Coalition, delivered to the West Virginia Department of Environmental Protection ("WVDEP") a Notice of Intent ("NOI") to sue for violations of the Clean Water Act regarding WV/NPDES Permit No. WV1027301, which is associated with the Greendale bond-forfeiture site operated by the WVDEP Office of Special Reclamation. Discussions between the parties have resulted in no further legal action being taken by either party to date.

5. *Living Lands, LLC and D.C. Chapman Ventures, Inc. v. Jack Cline, Brady Cline Coal Co., Spruce Run Coal Co., Harold Ward, Secretary, West Virginia Department of Environmental Protection, Civil Action No. 3:20-cv-00275*, revolves around three primary claims. The first of which being that unlined treatment ponds, unlined AMD sludge drying pits for treated sludge, and unlined conveyance ditches allow for infiltration and pollution of groundwater; therefore, point sources require individual NPDES permits. The second being that the material in the treatment ponds and the treated sludge in the sludge drying pits are hazardous waste and/or solid waste under RCRA, therefore triggering the relevant waste handling and disposal requirements. The third being that the material in the unlined treatment ponds, unlined sludge drying pits, and unlined conveyance ditches is

AMD contaminated mining waste under CERCLA, therefore triggering financial responsibility for potential responsible parties, including but not limited to the DEP.

The implications of DEP losing on the first issue would be that similarly situated ponds across the state of West Virginia could be required to install liners and obtain NPDES permits, at a huge cost. A loss on the second issue would completely upend how the DEP, and all other entities who generate, store, or dispose of AMD sludge currently operate. A loss on the third issue would expose the DEP, as well as any other potential responsible parties in the handling history of the material, to massive financial liability for the cleanup and remediation of this site, and very likely many others. A loss on any of these claims is likely to impact similar operations in other states, as a precedent would allow for similar challenges in courts across the nation.

The case was set for trial in the United States District Court for the Southern District of West Virginia, before Judge Robert C. Chambers, on November 1, 2022. The Court has scheduled oral arguments on outstanding issues on January 30, 2023. Upon Motion made by WVDEP, Plaintiff's claims against WVDEP were dismissed in their entirety by the Court.

6. *Living Lands, LLC and D.C. Chapman Ventures, Inc. v. Harold Ward, Secretary, West Virginia Department of Environmental Protection*, Civil Action No. 3:24-cv-00356, revolves around two primary claims: (1) that an unlined conveyance ditch allows for unpermitted discharges in violation of the Clean Water Act and (2) that untreated AMD is being discharged into a treatment pond in violation of the NPDES permit and the Clean Water Act. The DEP accepted service of the complaint on August 26, 2024, and the DEP's responsive deadline is October 22, 2024. The WVDEP moved to dismiss all claims, and, on March 13, 2025, the United States District Court for the Southern District of West Virginia granted the motion. On April 11, 2025, the Plaintiffs filed their Notice to Appeal, which is now pending before the United States Court of Appeals for the Fourth Circuit, case number 25-1386.

SRFAC STUDY TOPICS

- Continue to review the current investment strategy.
- Continue to improve upon the active mine pollutant inventory.
- Review coal refuse impoundment liabilities and review the required balance in the Water Trust Fund to support long term treatment obligations.
- Review Operations & Maintenance costs at active water treatment sites

The SRFAC is continuously looking for ways to improve the ability to project future bond-forfeitures (revocations). Although limited in its current form, the DMR database of open permits is the primary source of information used for the biennial actuarial analysis of the SRF and SRWTF. The analysis also relies heavily on information obtained from bond-forfeited (revoked) permits and applied to current permits to project future bond-forfeitures (revocations).

The SRFAC would like to explore options to increase the linkages of data from past bond-forfeitures (revocations) to open permits, to improve the predictive power of historical data. Some pieces of data that may be available in the permit databases that have not been previously utilized include:

- length of time a permit had a particular status
- number of times a permit changed status
- groupings with other permits (proximity or use), including Parent Company level of existing permits
- annual coal production associated with a permit or group of permits

SRFAC recognizes that not all these pieces of data are available, even on open permits, and may no longer be available for permits that bond-forfeited (revoked) many years ago but would like to explore the ability to enhance the information available that can help quantify risk. The database will need to be cleaned and augmented prior to future in-depth study.

The SRFAC would like to recognize the WVDEP for their conscientious management of the Fund and the SRWTF and their efforts in minimizing the impacts of bankruptcies on the Funds.

2025 SRF Advisory Council Annual Report

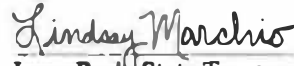
**Special Reclamation Fund Advisory Council
Annual Report to the Legislature**

Date: 12.18.2025

Matthew L Butler

Digitally signed by Matthew L Butler
DN: cn = Matthew L Butler, email = matthew.l.butler@wv.gov, c = US, o = WVDEP, ou = DLR
Date: 2025.12.18 08:25:57 -05'00'

Harold Ward, Secretary WVDEP
Ex Officio
Designee: Matthew Butler
WVDEP Deputy Director
Div. of Land Restoration
601 57th Street
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Actuary/Economist



James Kotcon
414 Tyrone Avery Road
Morgantown, WV 26508
Environmental Protection Organizations
Representative

Representative, James Kotcon, declined to sign the annual report because of his conflicting position as the member representing the Environmental Organization. They have concerns and would like to see a change in the per ton coal tax earmarked to the Special Reclamation Fund.

Appendices for 2025 SRFAC Annual Report
(All Appendices as of June 30, 2025)

A. WVDEP Graphs:

Land Projects to Be Contracted
Land Liabilities to Be Contracted
Reclamation Projects Started Since 6-30-01
Permits Revoked Since 6-30-01
Contract Dollars Encumbered Quarterly
Ending Cash Balance
Total Revenue
Revenue Collected by Source: Bonds, Civil Penalties, Tax

B. Muddy Creek Watershed

C. Coal Consensus Forecast

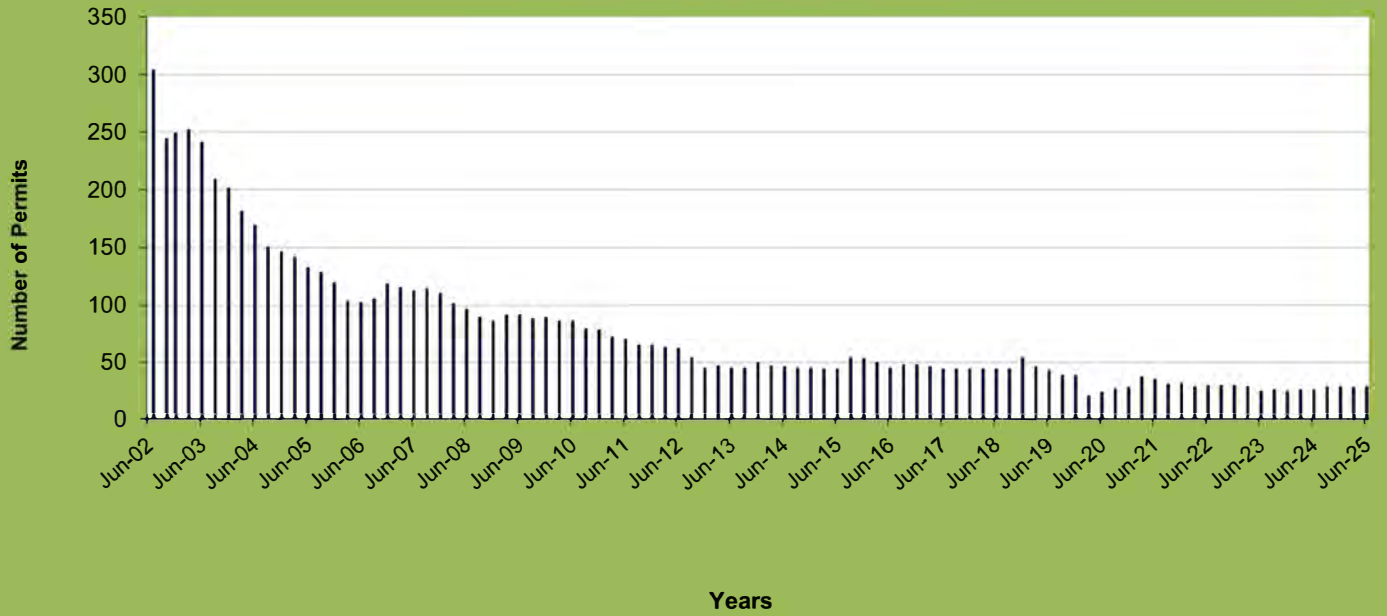
D. Actuarial Study

E. Bond-Forfeiture Inventories

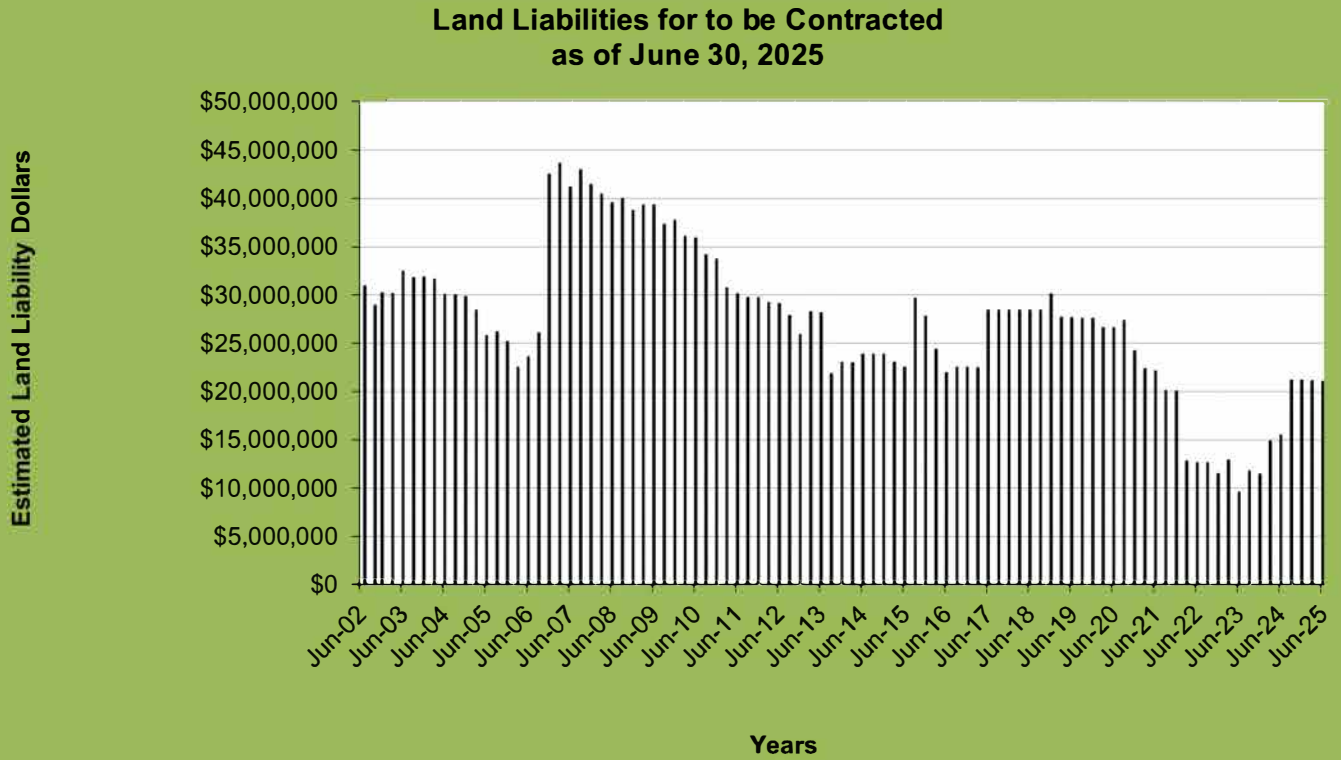
- a. Revoked Permit Inventory
- b. Acid Mine Drainage Inventory
- c. Mine Drainage Treatment Prioritization

Appendix A

**LAND PROJECTS to be CONTRACTED
as of June 30, 2025**



2025 SRF Advisory Council Annual Report

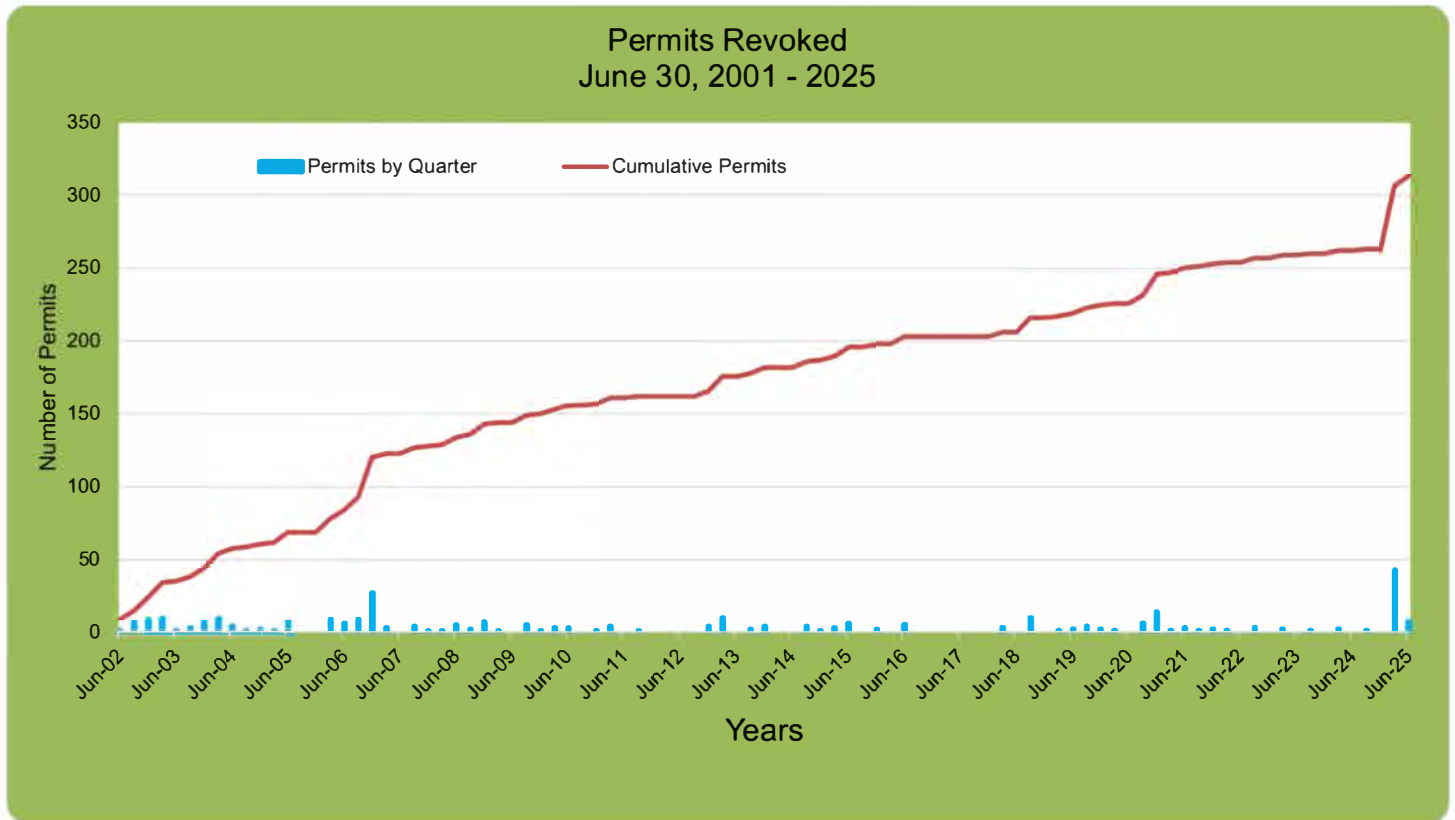


2025 SRF Advisory Council Annual Report

Reclamation Projects Started
June 30, 2001 - 2025

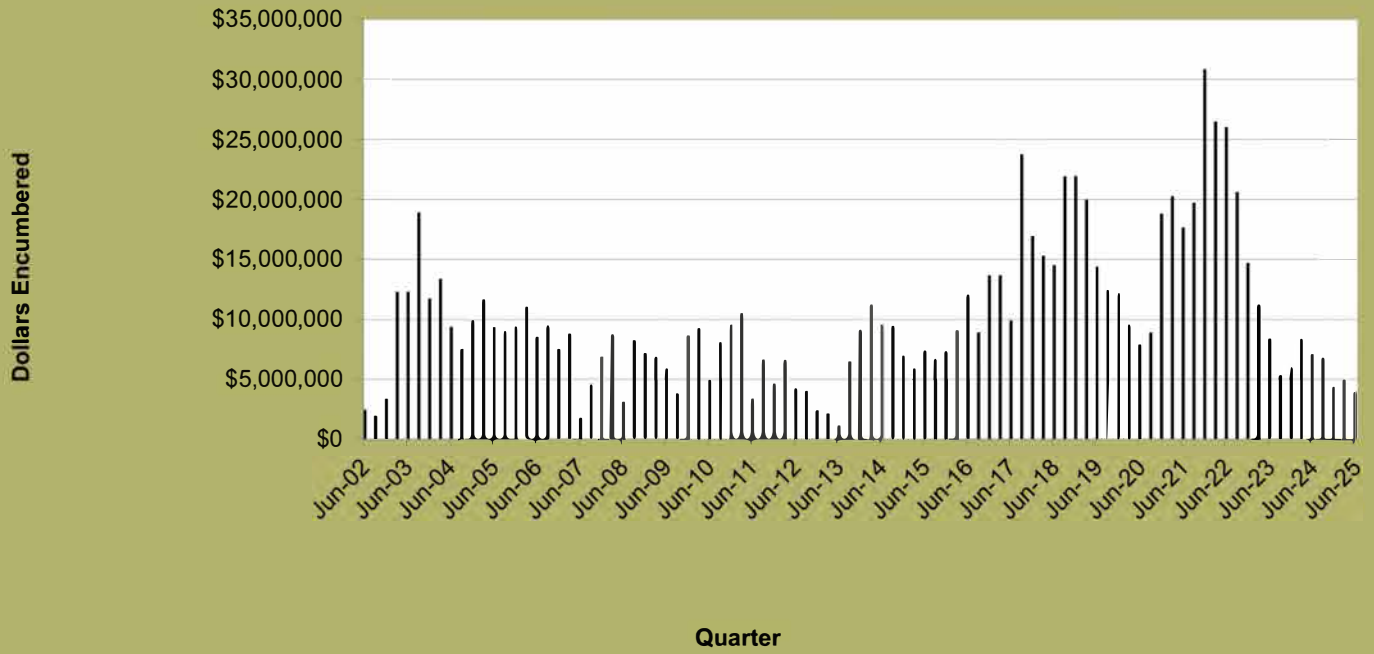


2025 SRF Advisory Council Annual Report



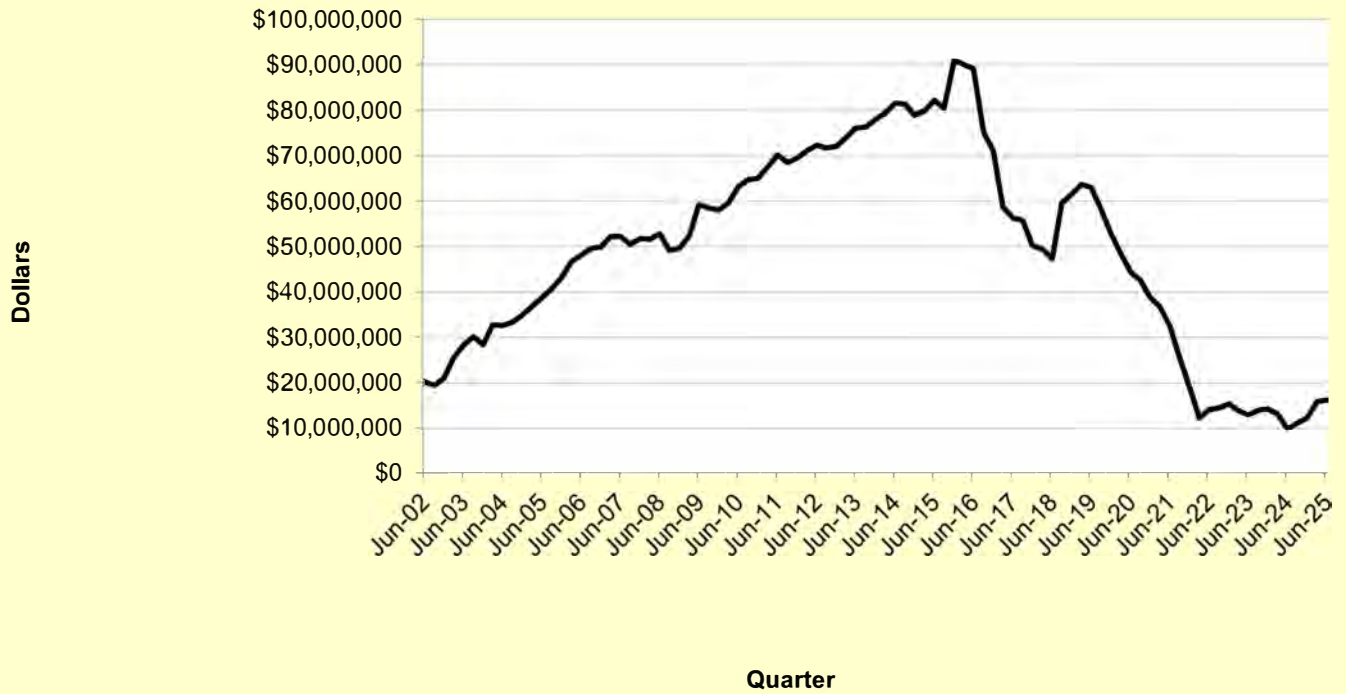
2025 SRF Advisory Council Annual Report

Office of Special Reclamation
Quarterly Encumbrance
as of 06-30-2025



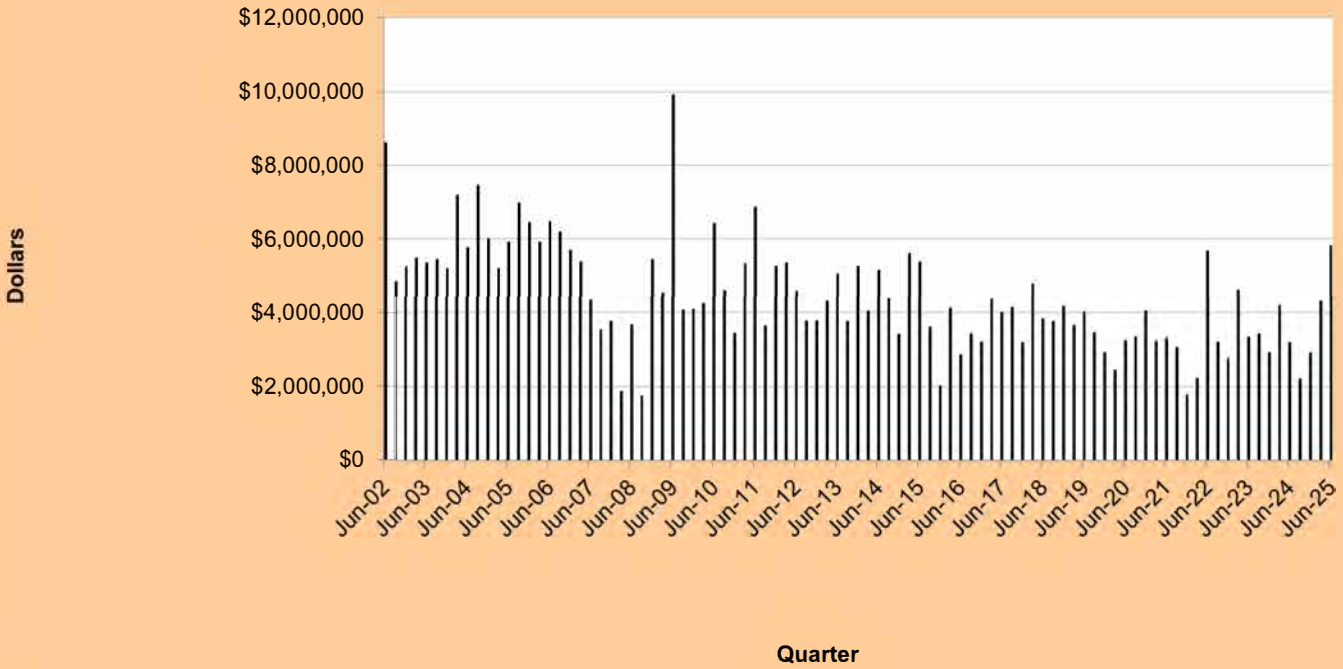
2025 SRF Advisory Council Annual Report

Office of Special Reclamation
Quarterly Ending Cash Balance
as of 06-30-2025

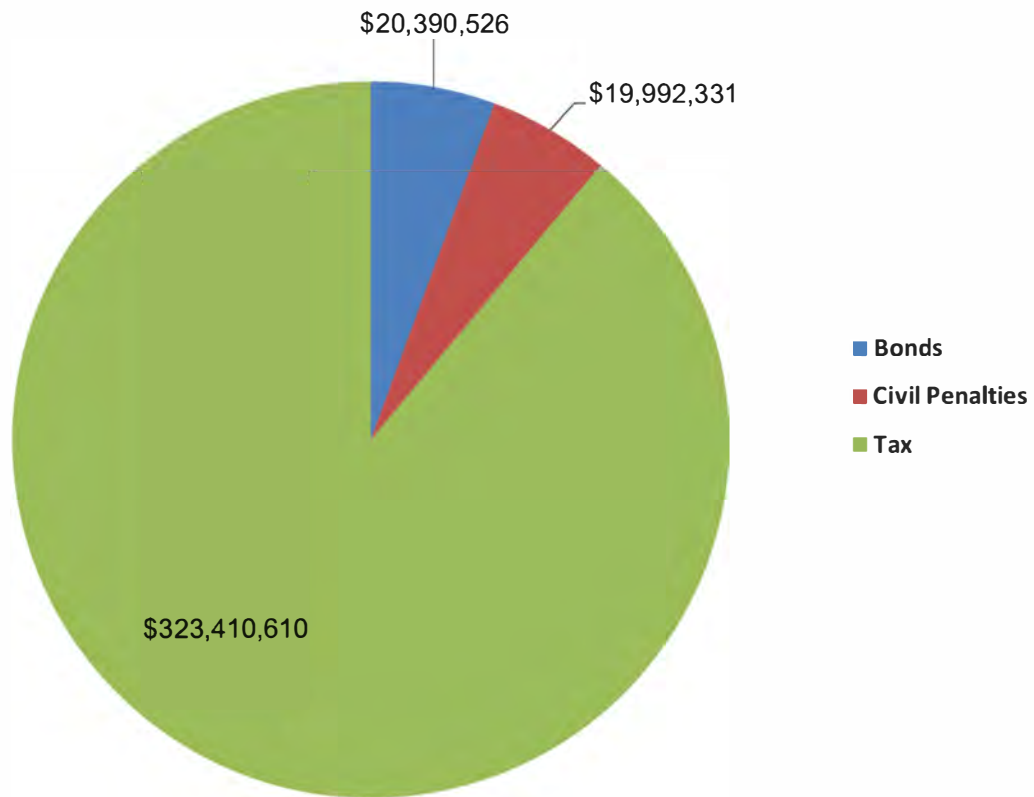


2025 SRF Advisory Council Annual Report

Office of Special Reclamation
Total Quarterly Revenue
as of 06-30-2025



**Office of Special Reclamation
Cumulative Revenue Collected from Bonds, Civil Penalties and Tax
as of 06-30-2025**



Appendix B

Evaluation of Centralized Acid Mine Drainage Treatment in the Muddy Creek Watershed, West Virginia

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Abstract

Acid mine drainage (AMD) from historic, unregulated mining in the eastern U.S. Appalachian Coal Basin has impaired thousands of stream miles. In contrast, federal and state regulations enacted in 1977 distinguished between these unregulated or abandoned coal mine lands (AML) and post-1977 or regulated discharges. The regulations also required high standards of treatment for regulated, point-source discharges. Untreated AML discharges often contribute over 80% of the AMD load to watersheds, resulting in ongoing impairment despite significant investment in the treatment of regulated discharges. This project evaluated watershed-scale restoration (WSR) with the objective of restoring the designated uses to a given watershed by treating AMD from both AML and regulated discharges based on their load contribution and the cost per recovered stream length. Results were compared to pre-project impairment levels and costs. Despite higher capital costs for WSR, lower operating costs resulted in net savings over the point source treatment strategy. Most significantly, while proving more expensive over the long term, treatment of only regulated discharges resulted in the recovery of zero stream miles. Managing AMD treatment from a watershed scale rather than at regulated discharges only may produce superior economics in similar watersheds. Furthermore, restoration is achieved more quickly with more stream miles recovered.

Keywords Mining, watershed restoration, Appalachia, water quality, economics, acid mine drainage

Introduction

Acid mine drainage (AMD) is a global pollution issue resulting from mineral extraction activities. Sulfide minerals, commonly associated with metal ores and coal seams, produce AMD when exposed to an oxidizing environment through mining processes. AMD impairs streams with acidity, sulfate, and metals such as iron and aluminum (Skousen et al. 2019). In the United States, approximately 12,400 stream miles are affected by AMD, with roughly 2,500 impaired stream miles in West Virginia (Skousen et al. 2019). Traditional AMD treatment occurs at the source where it exits the ground via a mine portal opening or a seep. Treatment generally includes the addition of an alkaline agent for pH adjustment and oxidation to allow for the precipitation of metal hydroxides. Severe sources of AMD are typically treated with continuous additions of an alkaline chemical reagent in what is known as 'active' treatment, whereas less significant sources utilize 'passive' treatment consisting of biological or geochemical processes. Common components of passive treatment systems include constructed wetlands, open limestone channels, limestone leach beds, and settling ponds (Skousen et al. 2016). Active treatment systems vary from in-

stream dosers to more expansive treatment systems which may consist of a chemical doser as well as limestone channels, aerators, mixing tanks, clarifiers, and settling ponds.

The 1977 Surface Mining Control and Reclamation Act (SMCRA) created separate programs for reclaiming abandoned mine lands (AML) (pre-1977) and regulating active coal mines (post-1977). However, there is often a combination of several AML and regulated mine sites within each watershed. The West Virginia Department of Environmental Protection's (WVDEP) Office of Special Reclamation (OSR) is responsible for treating AMD discharges from post-1977 coal mines that have transferred their surety bonds and water treatment liabilities to the State. Known as bond forfeiture sites, the cost of treating these AMD discharges to Clean Water Act (CWA) standards is high, and unfortunately, the treated water is commonly discharged to streams that are severely impaired due to AMD from AMLs. Thus, the expense of treating bond forfeiture sites rarely results in stream restoration benefits. Dimensioning efficiency as stream length restored per unit cost, there has been a recent effort toward improving the environmental performance of watershed investments utilizing watershed-scale restoration (WSR) (Leitgeb 2022; Petty et al. 2008; Throul et al. 2011). In addition to in-stream dosers, WSR taps flooded underground mine pools to transport AMD to a conventional AMD treatment facility where large volumes of AMD can be treated efficiently. This shifts treatment away from often small discharges with high capital and operating costs relative to benefit. Compliance with watershed restoration objectives is then measured at a point downstream in the watershed rather than at the point where the discharge leaves the bond forfeited property. WSR requires strategic planning and multi-organization cooperation to remediate impaired streams with strategically placed treatment.

The West Virginia Water Research Institute (WVWRI) and the West Virginia Department of Environmental Protection (WVDEP) partnered to study the watershed-scale approach to treatment as early as 2008. As a result of a cost and ecological benefit study in the Three Fork Creek watershed, four in-stream dosers were constructed by the WVDEP Office of Abandoned Mine Lands (WVDEP AML) in strategic locations following recommendations from the study (Petty et al. 2008). Three Fork Creek has recovered successfully, and as a result, was removed from the state 303(d) list of impaired waters for dissolved aluminum impairment in 2014 (WVDEP 2014). The WSR approach was later applied in the Muddy Creek watershed (Figure 1), where OSR had been treating several forfeited mine sites to discharge standards without achieving measurable improvements in the receiving streams. The treated water represented less than 5% of the AMD load in Muddy Creek and flowed into streams that had a pH near 3.0 due to the extent of AML sources in the watershed. Therefore, full restoration would be impossible if only regulated discharges were treated. In late 2015, the WVDEP commissioned WVWRI to perform a comparison of the costs and benefits of in-stream and point-source AMD treatment in Muddy Creek. The performance of WSR via in-stream dosing was evaluated by dosing impaired tributaries over a one-year period, monitoring water quality in response to treatment, and comparing results to restoration targets. The study found that in-stream dosing, paired with planned restoration projects, would restore 3.4 miles of Muddy Creek and cost less than the current at-source treatment projects which restored zero stream miles.

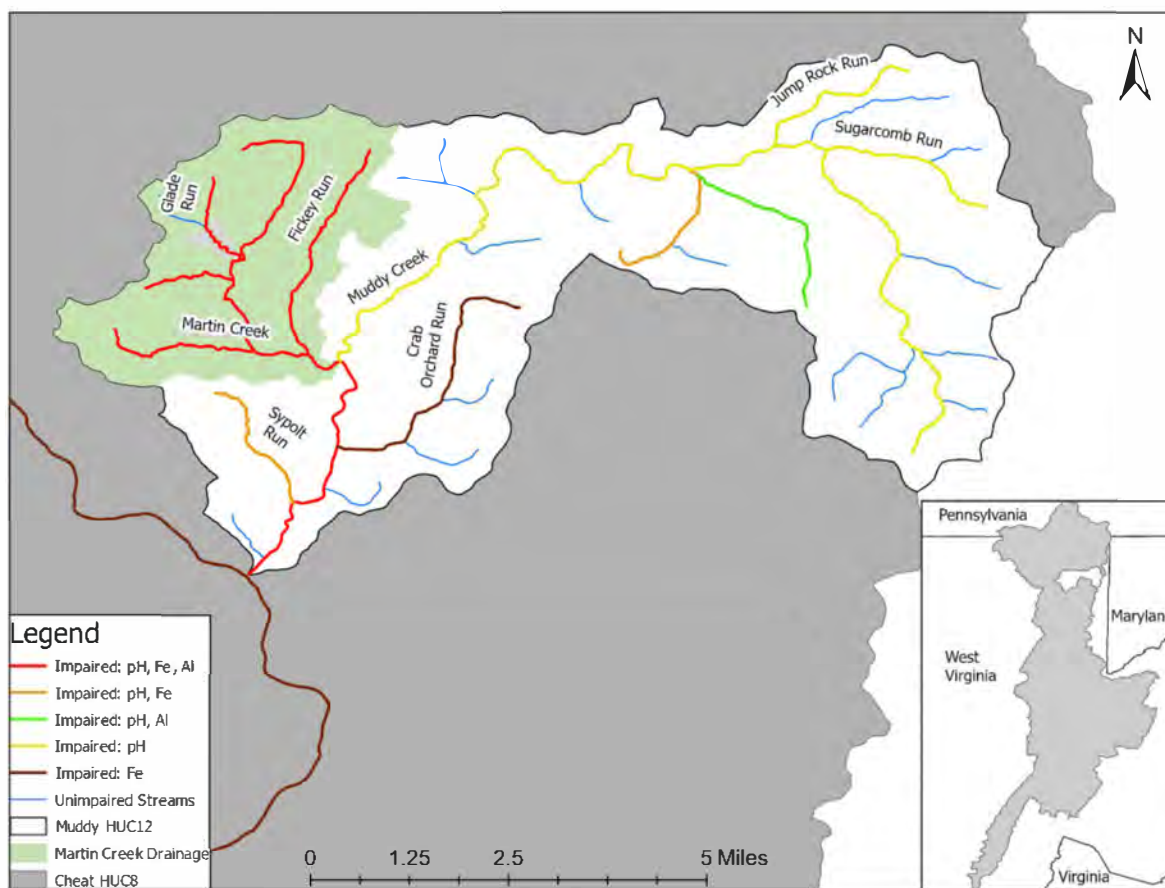


Fig. 1 Location of the Muddy Creek watershed and its stream impairments (WVDEP 2016a)

In 2017, the U.S. Environmental Protection Agency (EPA) approved a variance pursuant to CWA §303(c) and the implementing regulation of 40 CFR §131, allowing for an innovative permitting strategy to implement watershed-scale treatment in the Muddy Creek watershed in order to provide optimal water quality improvements where the designated use and criterion were previously unattainable (Cooper 2017). The variance permitted the treatment of bond forfeiture sites and abandoned mine lands together and provides instream interim water quality criteria which the WVDEP follows in its in-stream National Pollutant Discharge Elimination System (NPDES) permit at the mouth of Martin Creek. A key basis for the variance was the WVVRI study (WVDEP 2015), from which the WVDEP determined that the most effective treatment with the least amount of inadvertent impact to the stream was the use of instream lime dosers in combination with the construction of a centralized treatment facility.

Following these recommendations, WVDEP OSR, with the help of capital and operating contributions from Southwestern Energy (SWE), constructed a large treatment facility along Muddy Creek approximately 0.5 miles downstream of the confluence of Martin Creek, the highest contributor of AMD in the watershed, contributing over 24,000 lbs/yr of iron and 956 tons/yr of acidity (WVDEP 2011). In March of 2018, the Muddy Creek system (also commonly referred to as T&T) went online. The T&T facility treats AMD from four bond forfeiture sources, including three partially flooded, deep mines and one surface mine. These sources include T&T Fuels #2, Preston Energy, Viking Coal Company, and Mary Ruth Corporation. In addition, approximately 250 gallons per minute of pre-1977 AML water from a refuse coal area and one deep mine are conveyed from the headwaters of Fickey Run to the facility. The system, which has a capacity of approximately 4,500 gallons per minute, is a replacement for point-source treatment at these locations. It features an advanced computer automation system and utilizes lime slurry, polymers, a mixing tank, and two clarifiers to raise pH and remove metals. Clean water is then returned to Muddy Creek in a continuous

flow. Two in-stream lime slurry dosers located in the tributaries of Glade Run and Martin Creek provide additional treatment within the watershed. The Glade Run doser has been in place since its installation in late 2015 for the doser trial study, while the Martin Creek doser was installed in 2022.

Study Area

Muddy Creek is a 15.9-mile tributary of the Cheat River that drains 21,487 acres located in northern West Virginia (Fig. 1). Approximately 3.4 stream miles in the Muddy Creek drainage are impaired by AMD. Most of the acid load comes from the Martin Creek sub-watershed, including Fickey Run and Glade Run. According to the Lower Cheat River Watershed Based Plan, Fickey Run is impaired by two abandoned mine land (AML) and two bond forfeiture (BF) sites, while Glade Run is impaired by five AML and five BF sites (Friends of the Cheat 2020). Both Fickey Run and Glade Run flow into Martin Creek, which receives AMD from two AML sites before it joins Muddy Creek 3.2 miles above its confluence with the Cheat River. Muddy Creek, Martin Creek, Glade Run, UNT/Glade Run RM 1.06, and Fickey Run had total maximum daily loads (TMDLs) developed for aluminum, iron, and pH in 2011 (WVDEP 2011). These streams have been placed in Category 4a, for waters that already have an approved TMDL but are still not meeting standards, in the most recent USEPA-approved state Integrated Water Quality Monitoring and Assessment Report (WVDEP 2016a). Apart from the Martin Creek subwatershed, the Muddy Creek watershed is minimally impacted by AMD. Muddy Creek is a designated partial trout stream from its headwaters to its confluence with Martin Creek (WVDEP 2016a).

Fundamental to our approach is data collected by the WVDEP Watershed Assessment Branch (WAB), now known as the Water Quality Standards and Assessment Section, in coordination with OSR and in compliance with directives within the EPA-approved variance. Water chemistry monitoring occurred throughout the watershed, while macroinvertebrate surveys occurred at the mouths of treated streams, and fish surveys occurred on the mainstem of Muddy Creek. Where possible, only sites with pre- and post-treatment data were included in this study. Six water chemistry sites were selected. Among these six sites, four sites also included pre- and post-WSR macroinvertebrate surveys and two included pre- and post-WSR fish surveys. Two sites with limited fish monitoring data were included due to survey constraints. In total, seven sites were considered in this study (Fig. 2). The mouth of Muddy Creek was the only site with all three data types (chemical, macroinvertebrate, and fish surveys). This site included data from river miles (RM) 0.0 and 0.1 due to the proximity of the sites. Similarly, Muddy Creek 4.4 incorporated data collected at RM 4.6. Site 4.4 is upstream of the main AMD disturbances within the watershed and was used as a control station for comparative purposes.

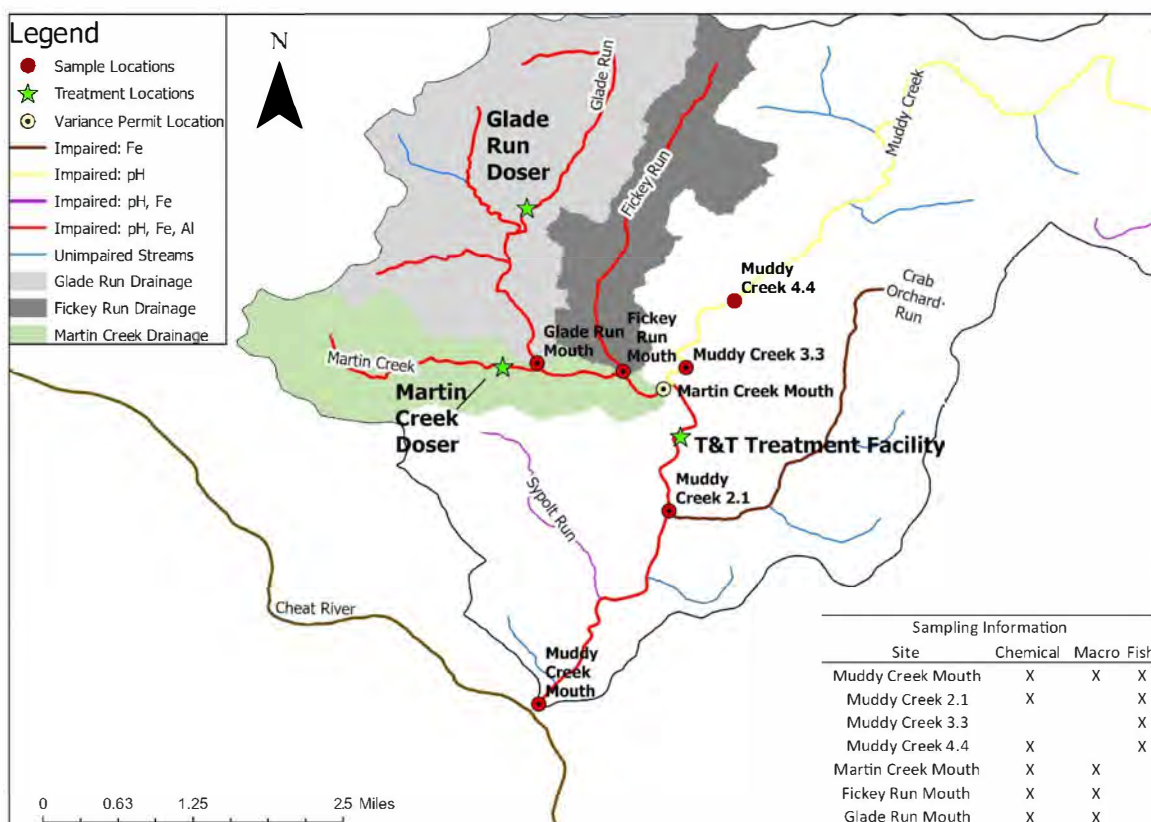


Fig. 2 Sampling and treatment facility locations within the Muddy Creek watershed

Methods

Ecological Analysis

Muddy Creek watershed data included pH (su), specific conductance ($\mu\text{S}/\text{cm}$), total aluminum (mg/L), total iron (mg/L), total manganese (mg/L), and sulfate (mg/L) from the WVDEP Water Quality Data Report (WVDEP 2023). One-half of the method detection limit for a particular analyte was substituted into the dataset whenever concentrations were reported as less than the detection limit (Fu & Wang 2012). Fish surveys and macroinvertebrate data were obtained from the WVDEP Water Quality Data Report – Benthic as well as personal communications (WVDEP 2023). Macroinvertebrate data were reported as West Virginia Stream Characterization Index (WVSCI) scores and EPT. EPT is an index that can be expressed as a percentage of the sensitive orders (E=Ephemeroptera, P=Plecoptera, T= Tricoptera) to the total taxa found. A large percentage of EPT indicates good water quality (Weber 1973). Additional WVSCI scores were gathered from two other studies in the watershed that followed the USEPA’s rapid bioassessment protocols for wadable streams and rivers (Carlson 2013; Watson & Merovich 2014). These samples were collected at the same WVDEP locations: Muddy Creek Mouth, Martin Creek Mouth, Fickey Run Mouth, and Glade Run Mouth. These additional data were necessary to contribute additional pre-treatment data.

Chemical and macroinvertebrate data were classified by sample location. Data were then categorized into two periods for each site, pre-treatment (1996 - 2014) and post-treatment (2018 - 2022). Any data collected in the years 2015 to 2017 were excluded due to trial runs of the instream dosers, which resulted in variability of data from dosers running, malfunctioning, and being moved. If a sample site did not have both pre- and post-treatment data, it was excluded from this study. Fish survey data were not categorized or statistically analyzed due to the limited number of studies completed within the watershed.

Water quality and macroinvertebrate box plots were produced to provide visual summaries of data for exploratory analysis. Box plots show the median (centerline), the variation or spread (interquartile range - the box height), the skewness (quartile skew - the relative size of box halves), and the presence or absence of unusual values and their magnitudes (outliers). A simple Mann-Whitney U test was performed on water quality and macroinvertebrate data to determine if the means of each period for each parameter were significantly different. A hypothesized mean difference of zero and an Alpha of 0.05 was set using the standard normal distribution. P values less than 0.05 indicate a significant difference between pre and post treatment. Results are shown in table form.

Economic Analysis

The operations and maintenance (O&M) costs used in the economic calculations are based on costs incurred by OSR from 2017 to 2023 and on estimates of what the point-source configuration would have cost over that same period. All construction and O&M costs, as well as projected costs for the installation of a sludge pump line, were obtained from personal communications with the WVDEP. Values from years prior to 2023 were adjusted using producer price indexes (PPIs) produced by the Bureau of Labor Statistics (BLS) and are denoted as \$2023. The index data were adjusted to use 2023 as the base year. The series "PPI industry data for new industrial building construction, not seasonally adjusted" (base year 2007) was used to adjust capital expenditures for the watershed system and estimates of capital costs for the point-source system. The series "PPI industry group data for Waste collection, not seasonally adjusted" (base year 2003) was used to adjust O&M expenditures. The PPI Commodity for All Final Demand index values were used to adjust Southwestern Energy's cash contributions to represent relative purchasing power in 2023. All PPIs used in this study are included in Appendix 1.

For O&M costs with multiple years of data (the T&T plant, the Glade Run doser, and the Martin Creek doser) the average cost through FY 2023 was used. For O&M costs, OSR expenditure data were reported for fiscal year (FY) and indexes were an average of the two calendar years (CY) included in the FY. For comparison, capital costs were modeled as having occurred in year zero of the project when expenditures took place over several years (between 2017 and 2024). Similarly, all O&M costs were modeled as having begun in year one. Some estimates of point-source configuration were old, as early as 2011, and may have been less accurate than recent estimates as they have not been tried with contractual agreements. However, for capital costs these estimates were likely to be lower than actual costs, based on DEP's self-reported variances over the years, making them conservative. Abandonment costs to remove the original point-source treatment units (largely dosers) built in the early 2000s were not included in the analysis, as the purpose is to compare the differences between building and operating the two systems.

Results

The result of this comparison is specific to the watershed scale approach. We do not compare pre to post point source treatment or post watershed to post point source treatment. Results are present for water quality, biological indicators, and economic analysis. A summary of results from the Mann-Whitney U test is displayed in Table 1. Parameters with a p-value less than 0.05 are considered significantly different.

Table 1 Results from Mann-Whitney U Test including sample count, pre- and post-treatment averages, z-test statistics, and p-value for each parameter completed at each river section within the study area

Stream Section	Parameter	Sample Count		Mean		z test Statistic	p-value	Significant?
		Pre	Post	Pre	Post			
Muddy Creek Mouth	Al, Total (mg/L)	16	8	8.10	1.37	-3.552	0.0004	Yes
	Fe, Total (mg/L)	15	8	8.22	1.02	-3.873	0.0001	Yes
	Mn, Total (mg/L)	16	5	1.78	0.73	-2.807	0.0050	Yes
	pH (su)	16	29	4.3	7.2	-5.406	0.0000	Yes
	Sulfate (mg/L)	15	8	305	263	-0.258	0.7963	No
	Specific Conductance (μS)	16	30	812	484	-3.148	0.0016	Yes
	WVSCI	5	5	32.19	63.37	-2.738	0.0062	Yes
Muddy Creek 2.1	Al, Total (mg/L)	12	6	8.28	1.96	-3.372	0.0007	Yes
	Fe, Total (mg/L)	13	7	9.50	1.44	-3.606	0.0003	Yes
	Mn, Total (mg/L)	13	5	1.58	0.97	-2.119	0.0341	Yes
	pH (su)	12	6	4.2	7.0	-3.372	0.0007	Yes
	Sulfate (mg/L)	13	7	244	272	-0.436	0.6630	No
	Specific Conductance (μS)	12	6	692	559	-0.281	0.7787	No
Muddy Creek 4.4	Al, Total (mg/L)	13	5	0.29	0.14	-1.922	0.0546	No
	Fe, Total (mg/L)	13	5	0.18	0.14	-0.444	0.6573	No
	Mn, Total (mg/L)	13	4	0.11	0.03	-2.208	0.0272	Yes
	pH (su)	13	5	7.3	7.5	-0.591	0.5542	No
	Sulfate (mg/L)	12	6	74	38	-2.154	0.0312	Yes
	Specific Conductance (μS)	13	5	220	237	-0.148	0.8825	No
Martin Creek Mouth	Al, Total (mg/L)	17	5	22.54	6.84	-3.016	0.0026	Yes
	Fe, Total (mg/L)	17	5	21.08	2.11	-3.251	0.0011	Yes
	Mn, Total (mg/L)	17	2	5.97	2.95	-1.461	0.1439	No
	pH (su)	16	5	3.2	5.1	-3.303	0.0010	Yes
	Sulfate (mg/L)	16	5	617	570	-0.578	0.5633	No
	Specific Conductance (μS)	16	5	1331	1085	-1.156	0.2477	No
	WVSCI	7	4	22.83	41.65	-1.889	0.0588	No
Fickey Run Mouth	Al, Total (mg/L)	13	5	40.0	15.5	-2.908	0.0036	Yes
	Fe, Total (mg/L)	13	5	80.33	5.84	-3.105	0.0010	Yes
	Mn, Total (mg/L)	13	2	7.69	2.75	-2.038	0.0415	Yes
	pH (su)	13	5	2.8	3.2	-3.056	0.0022	Yes
	Sulfate (mg/L)	11	5	1292	632	-0.736	0.4615	No
	Specific Conductance (μS)	13	5	1910	1279	-1.971	0.0487	Yes
Glade Run Mouth	WVSCI	4	5	12.87	19.52	-1.469	0.1416	No
	Al, Total (mg/L)	14	5	18.5	9.0	-2.037	0.0417	Yes
	Fe, Total (mg/L)	14	5	2.5	1.8	-1.157	0.2472	No
	Mn, Total (mg/L)	14	2	6.3	4.1	-1.111	0.2664	No
	pH (su)	13	5	3.4	6.4	-3.204	0.0014	Yes
	Sulfate (mg/L)	12	5	509	356	-0.527	0.5982	No
	Specific Conductance (μS)	13	5	983	925	-0.641	0.5217	No
	WVSCI	4	5	17.25	42.38	-2.449	0.0143	Yes

Water Quality

The data showed significant improvements in water quality at all sites downstream of the treatment facilities for most parameters, which can be seen in the figures below for pH (Fig. 3), sulfate (Fig. 4), and metals (Fig. 5). The mouth of Muddy Creek displayed the largest, most significant improvement in pH, with substantial improvements in aluminum, iron, and manganese. The pre-treatment pH mean was 4.3 while the post-treatment mean was 7.3 ($p < 0.0001$). There was no significant change in sulfate at Muddy Creek Mouth with a pre-treatment mean of 305 mg/L to 263 mg/L post-treatment ($p = 0.7963$). Mean aluminum

concentrations at the mouth of Muddy Creek were reduced by 83% from 8.10 mg/L pre-treatment to 1.37 mg/L post-treatment ($p=0.0004$). Mean iron concentrations were reduced by 88% from 8.22 mg/L to 1.02 mg/L ($p=0.0001$). Manganese concentrations were reduced by an average of 59% from 1.78 mg/L to 0.73 mg/L ($p<0.0001$).

Upstream of Muddy Creek Mouth, continued changes in water quality were documented. At Muddy Creek 2.1, there were significant improvements for every chemical parameter except sulfate. pH increased from a mean of 4.2 to 7.0 ($p=0.0007$). Sulfate mean concentrations were not significantly different with means of 244 mg/L for pre-treatment to 272 mg/L post-treatment ($p=0.6630$). Aluminum concentration means decreased by 76% from 8.28 mg/L to 1.96 mg/L ($p=0.0007$). Iron decreased by 85% from a mean of 9.50 mg/L to 1.44 mg/L ($p=0.0003$). Mean manganese decreased 39% from 1.58 mg/L to 0.97 mg/L ($p=0.0341$).

The control site, Muddy Creek 4.4, had no significant change in pH, aluminum, and iron. The mean pH before treatment was 7.3, while after the treatment period, pH was 7.5 ($p=0.5542$). Mean sulfate concentrations were 74 mg/L pre-treatment and 41 mg/L post-treatment ($p=0.0312$). Mean aluminum concentrations decreased by 51% from 0.29 mg/L before treatment to 0.14 mg/L post-treatment ($p=0.0546$). The mean iron concentrations for pre-treatment were 0.18 mg/L and 0.14 mg/L after treatment ($p=0.6573$), a decrease of 30%. Mean concentrations of manganese were decreased by 74% from 0.11 mg/L to 0.03 mg/L after treatment ($p=0.0272$).

Martin Creek Mouth saw significant changes in pH, aluminum, and iron. pH increased from 3.2 to 5.1 when comparing pre- and post-treatment means ($p=0.0010$). No significant change in sulfate was observed, with a pre-treatment mean of 617 mg/L to 570 mg/L ($p=0.5633$). Mean aluminum decreased by 70% from 22.54 mg/L pre-treatment to 6.84 mg/L post-treatment ($p=0.0026$). Changes in mean iron concentrations decreased by 90% from 21.08 mg/L to 2.11 mg/L ($p=0.0011$). Finally, a decrease of 51% from 5.97 mg/L to 2.95 mg/L of manganese occurred from the pre-treatment to the post-treatment period ($p=0.1439$).

Fickey Run Mouth saw a significant increase in pH from an average of 2.8 to 3.2 ($p=0.0036$). Additionally, mean metal concentrations significantly decreased post-treatment. Iron means were reduced by 93% from 80.33 mg/L to 5.84 mg/L ($p=0.0010$). Aluminum was reduced by 61% from 40.0 mg/L to 15.5 mg/L ($p=0.0036$). A reduction of manganese from 7.69 mg/L to 2.75 mg/L, a 64% decrease was calculated ($p=0.0415$). Sulfate did not display a significant change from a mean of 1,292 mg/L to 632 mg/L ($p=0.4615$).

Finally, Glade Run Mouth did not see significant changes in sulfate, iron, or manganese when comparing means for pre- and post-treatment. The mean pH increased from 3.4 to 6.4 ($p=0.0014$). Sulfate had a pre-treatment mean of 509 mg/L and a post-treatment mean of 356 mg/L ($p=0.5982$). Total aluminum decreased by 52% from 18.5 mg/L to 9.0 mg/L ($p=0.0417$). The iron means decreased 29% from 2.5 mg/L to 1.8 mg/L ($p=0.2472$). Finally, manganese decreased by 35% from 6.3 mg/L to 4.1 mg/L ($p=0.2664$).

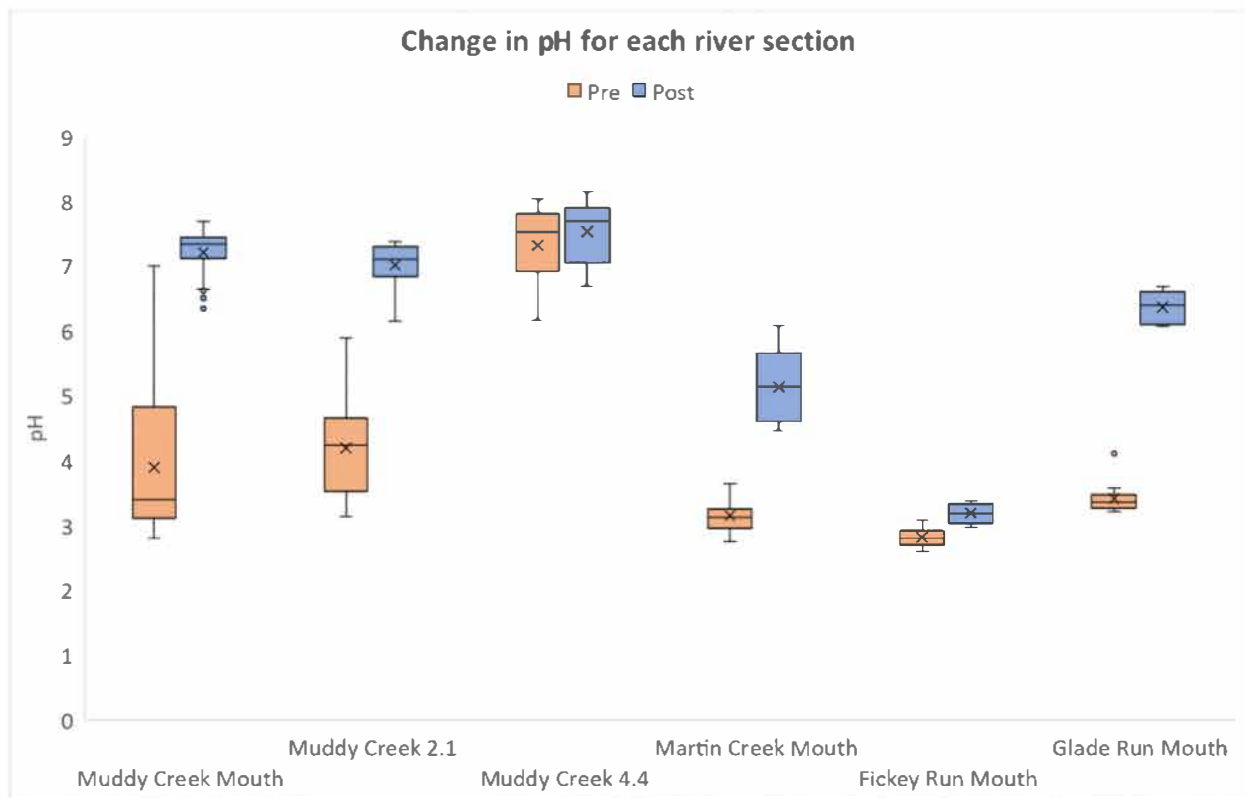


Fig. 3 Boxplots displaying the change in pH for each period and sample location

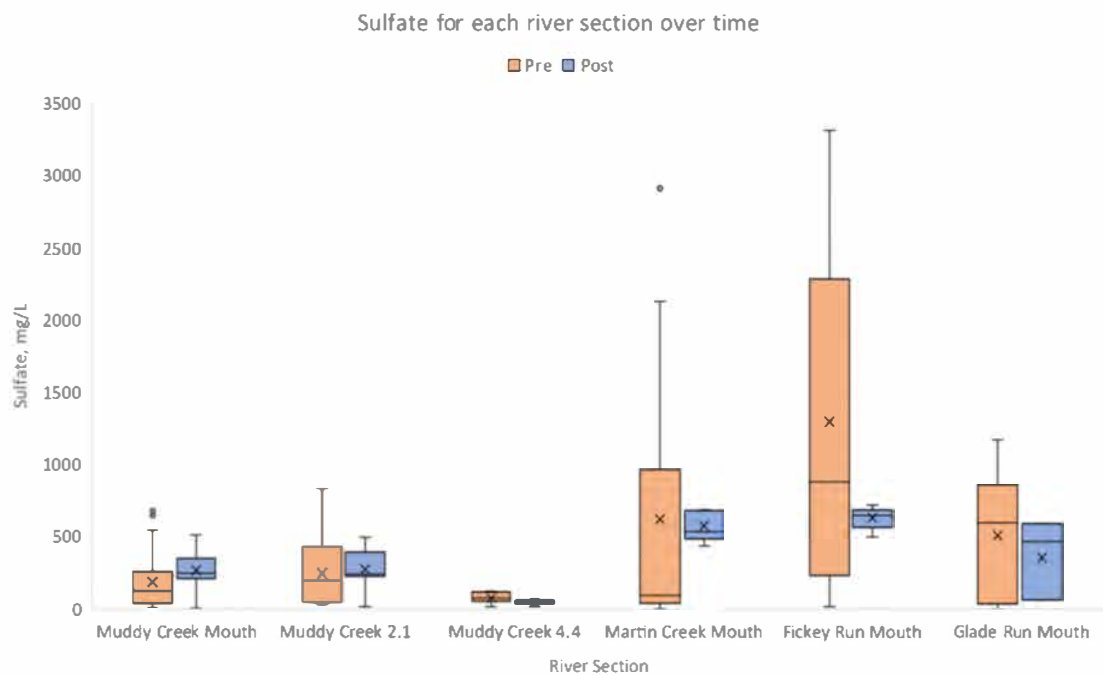


Fig. 4 Boxplots displaying the change in sulfate for each period and sample location

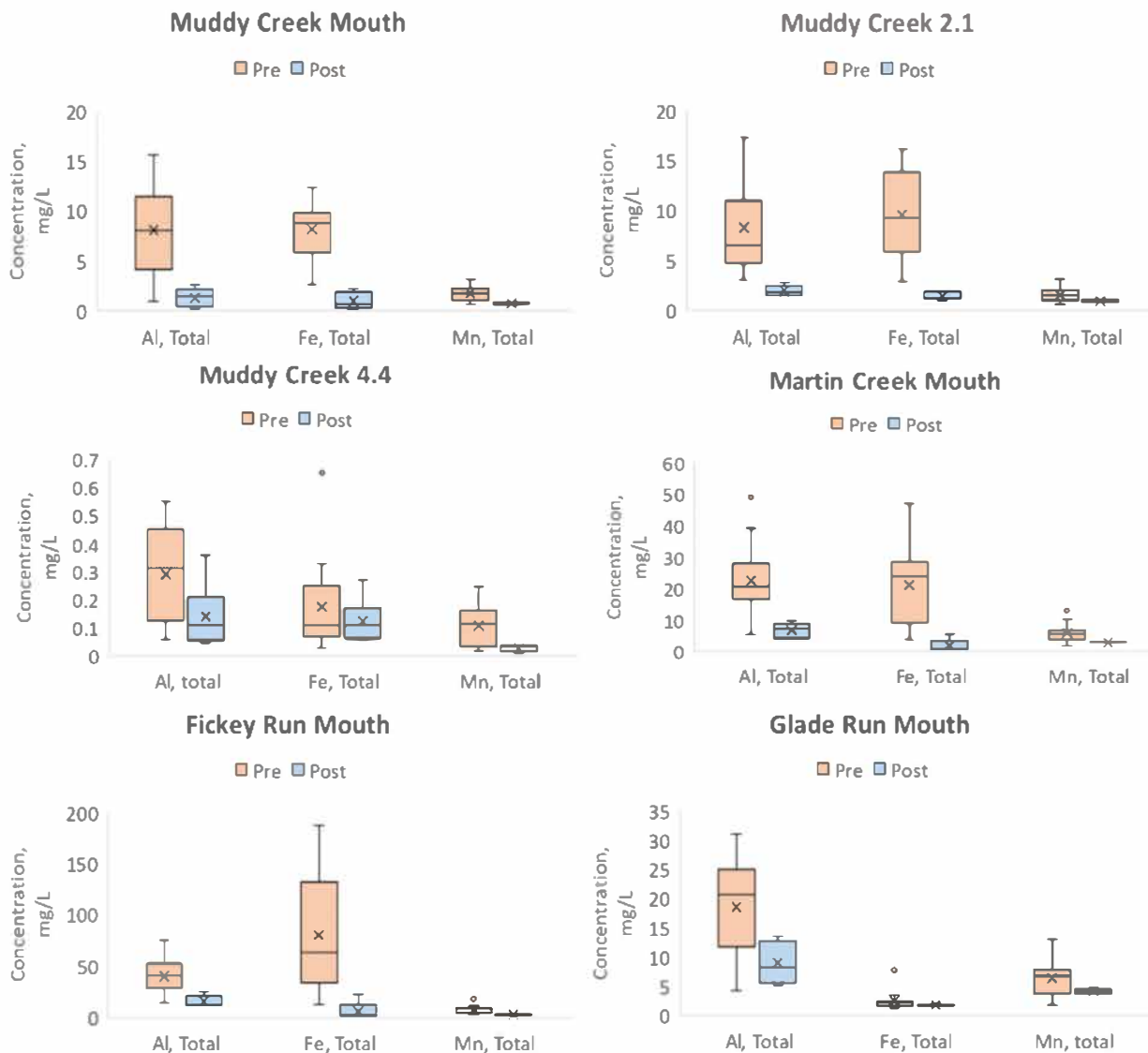


Fig. 5 Boxplots displaying the change in heavy metal concentrations for each period and sample location

Biological Indicators

Macroinvertebrate surveys were completed at the mouths of Muddy Creek, Martin Creek, Glade Run, and Fickey Run pre- (1996 to 2014) and post-treatment (2018 to 2022) (Carlson 2013; Watson & Merovich 2014; WVDEP 2023). WVSCI scores at all sites increased post-treatment, with two sites exhibiting a significant increase (Fig. 6). An increase in the WVSCI score correlates to an improvement in stream health. The WVDEP generally requires a WVSCI score greater than or equal to 72 for aquatic life uses (Warm Water Fisheries or Trout Waters) in wadable streams (WVDEP 2022). Muddy Creek Mouth saw a significant change ($p=0.0062$) with an average WVSCI score increase of 32.19 points from pre- to post-treatment. The site's average post-treatment score was 63.97, with one reading above the attainment threshold at 83.22. Glade Run Mouth also saw a significant change ($p=0.0143$) with an average WVSCI score increase from 17.25 to 42.38 post-treatment. Fickey Run Mouth did not see a significant WVSCI score change ($p=0.1416$), from an average of 12.87 pre-treatment to 19.52 post-treatment. Similarly, Martin Creek Mouth did not experience a significant WVSCI score change ($p=0.0588$); however, it had an average

WVSCI score increase of 18.82 points from 22.83 pre- to 41.65 post-treatment. Correlating to the increase in WVSCI scores, all sites also displayed an increase in the total number of taxa present, and all but Martin Creek displayed increases in the %EPT (Table 2).

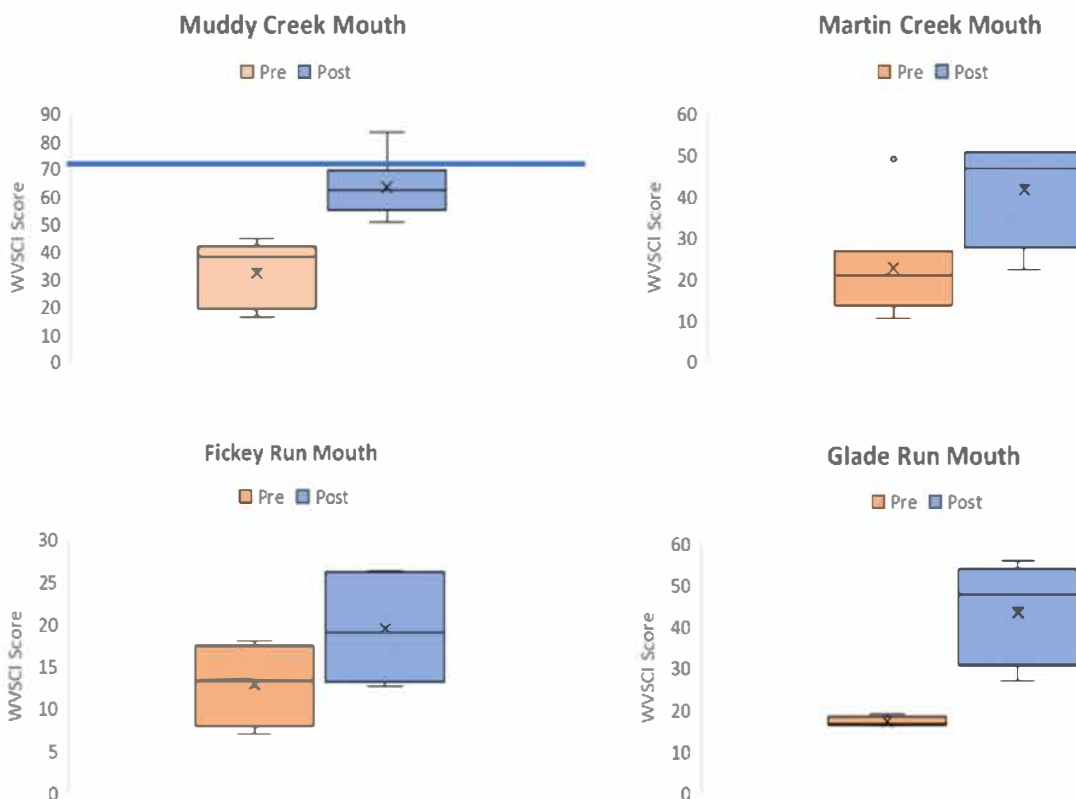


Fig. 6 Boxplots displaying the WVSCI scores of four streams within the Muddy Creek watershed during pre-treatment, doser trial, and post-treatment periods

Table 2 WVSCI scores with %EPT and total taxa

Stream Section	Parameter	Sample Count		Mean	
		Pre	Post	Pre	Post
Muddy Creek Mouth	WVSCI	5	6	32.19	63.37
	%EPT	2	6	4.89	75.47
	# Total Taxa	2	6	4.50	11.00
Martin Creek Mouth	WVSCI	7	4	17.42	41.65
	%EPT	5	4	1.08	41.73
	# Total Taxa	5	4	2.40	7.00
Fickey Run Mouth	WVSCI	4	5	12.87	19.52
	%EPT	2	5	6.25	1.88
	# Total Taxa	2	5	1.50	4.00
Glade Run Mouth	WVSCI	4	5	17.25	43.48
	%EPT	3	5	0.32	41.46
	# Total Taxa	3	5	5.00	6.80

Eleven fish community surveys were completed by WVDEP among the Muddy Creek sample stations. Four surveys were completed at Station 0.0, three surveys at Station 2.1, one survey at Station 3.3, and three surveys at Station 4.4 (Table 3). A comparable pre-treatment survey was not taken at Station 2.1, and a post-treatment survey was not taken at Station 3.3 due to low visibility within the water column. The mouth of Muddy Creek increased from zero fish pre-treatment to over 130 fish during each post-treatment survey across a combined fifteen different species. While there was no pre-treatment survey conducted at Station 2.1, post-treatment surveys show the presence of a combined six species. Notably, sensitive species such as mottled sculpin and trout were found in the downstream stations of Muddy Creek during post-treatment surveys. Zero fish were found at Station 3.3, located just upstream of the confluence of Martin Creek, during the 2015 survey. Station 4.4 provides reference conditions of the cold-water fishery in Muddy Creek upstream of the junction with Martin Creek.

Table 3 Results from Muddy Creek fish surveys pre- and post-treatment, where 2015 represents pre-treatment and 2019-2023 represent post-treatment

Mile Point	0				2.1			3.3	4.4		
Sample Year	2015	2019	2021	2023	2019	2021	2023	2015	2015	2019	2023
Bluegill	0	0	1	0	0	2	0	0	0	0	0
Brown Trout	0	0	0	0	0	0	0	0	6	1	3
Creek Chub	0	0	0	0	10	4	15	0	301	191	133
Green Sunfish	0	3	12	4	12	11	7	0	0	0	0
Greenside Darter	0	0	0	1	0	0	1	0	0	0	0
Longnose Dace	0	0	0	3	0	0	0	0	26	27	3
Mottled Sculpin	0	1	1	0	3	0	0	0	225	653	340
Rainbow Trout	0	0	0	0	1	1	1	0	0	2	12
River Chub	0	111	77	83	0	0	0	0	0	0	0
Rock Bass	0	2	0	4	0	0	0	0	0	0	0
Rosyface Shiner	0	10	38	19	0	0	0	0	0	0	0
Rosyside Dace	0	1	1	0	0	0	0	0	0	0	0
Smallmouth Bass	0	12	9	12	0	0	0	0	0	0	0
Spotfin Shiner	0	1	0	0	0	0	0	0	0	0	0
Stonecat	0	2	0	8	0	0	0	0	0	0	0
Tiger Trout Hybrid	0	0	6	0	0	0	0	0	0	0	0
Western Blacknose Dace	0	0	4	0	0	2	0	0	461	485	310
White Sucker	0	0	0	0	0	0	0	0	22	82	37
Yellow Bullhead	0	0	1	0	0	0	0	0	0	0	0
Total Species	0	9	10	8	4	5	4	0	6	7	7
Total Collected	0	143	150	134	26	20	24	0	1,041	1,441	838
Fish/meter	0	0.48	0.50	0.45	0.09	0.07	0.08	0	3.47	4.80	2.79

Economic Comparison of Approaches

As built, the Muddy Creek system had larger up-front capital costs compared to the point-source approach but will have superior economics in the long-run due to lower operating costs. The capital costs of the WSR system exceed the estimated avoided costs of building new units to treat all the OSR sites at source by about \$5.7 million (\$2023). Conversely, the annual treatment costs would average approximately \$830,000 less than a point-source approach. Many of the point-source locations are very remote and difficult to access, resulting in more expensive maintenance.

The watershed system capital costs were \$25.4 million (\$2023). These included the following:

- The primary water treatment plant (T&T) built in 2017 and the Glade Run doser used to treat a severely degraded feeder stream, with a combined cost of \$14.9 million in \$2017 (\$23.3 million in \$2023);
- A contribution of \$2.5 million by Southwestern Energy in 2017/2018 for capital expenses (\$3.1 million in \$2023);
- A sludge pump line to move sludge generated at the T&T plant - \$2 million for a planned expenditure in 2024; and
- A new doser on Martin Creek built in 2022 to pre-treat one of the more severely degraded feeder streams - \$79,000 (\$2023).

The Muddy Creek project has been able to leverage funds from Southwestern Energy (SWE), a natural gas producer in an adjacent county, adding to the benefits of the system. These contributions have been in the form of both capital and operating funds directed via the firm's ECH2O (Energy Conserving Water) program to support a commitment to water use neutrality hydro fracturing operations. This means that for each gallon of freshwater SWE uses for well stimulation, the firm will replenish or offset an equivalent amount through conservation and innovation (WVDEP 2016b).

In the first two years of the project, SWE contributed \$2.5 million to the pipeline system that transports AMD water from AML sites on Fickey Run. The firm continues to contribute \$375,000 to \$300,000 per year to offset operating expenses. If these contributions continue at \$300,000 through the 10th year of operations, SWE will have contributed \$5.6 million into the system (\$6.5 million in \$2023), and a total of \$9.1 million could have been saved over a NPDES configuration. With the SWE funds, O&M costs to OSR are reduced to \$280,000/year, saving \$1.1 million per year over the NPDES approach (Table 4). Even with higher capital costs, it is estimated that the watershed approach will begin saving money in its seventh year of operations, which corresponds with 2024 (Fig. 7). When including funds contributed by SWE, the system likely began saving in 2020, its third year of operations.

Table 4 Cost Comparisons – Point Source vs. Watershed Approach (in \$2023)

	Capital Costs	\$ O&M / Year	10-Year Costs
Watershed	\$25.4 million	\$580,000	\$31.2 million
NPDES	\$19.7 million	\$1.4 million	\$33.8 million
Watershed - NPDES	+\$5.7 million	-\$830,000	-\$2.6 million
Watershed w/ SWE	\$22.3 million	\$280,000	\$24.7 million
Watershed w/ SWE - NPDES	+\$2.6 million	-\$1.1 million	-\$9.1 million

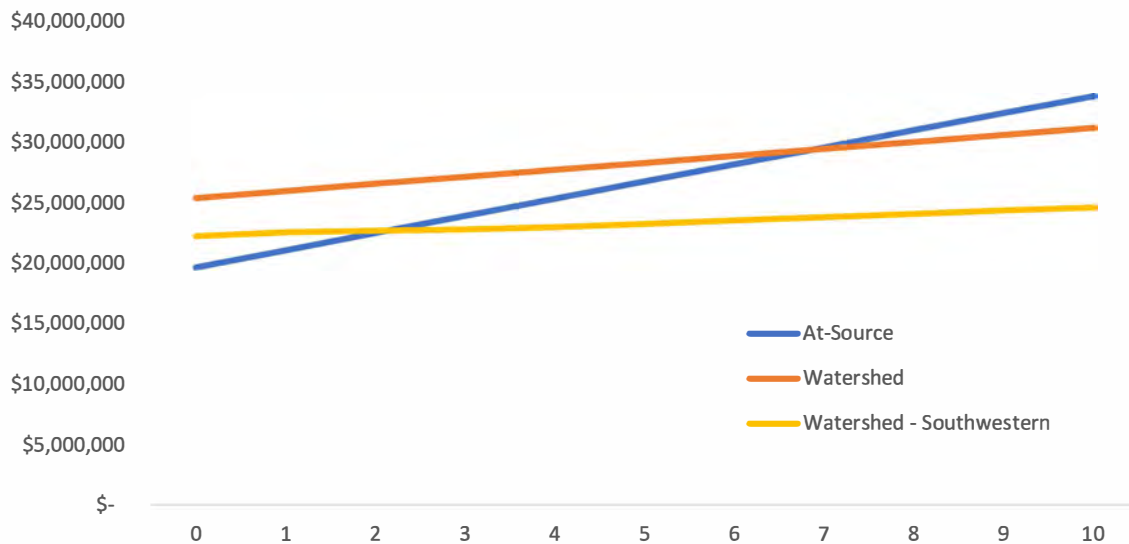


Fig. 7 Cumulative Cost Over 10 Years – Point Source vs. Watershed Approach (\$2023)

Discussion

Muddy Creek has shown significant improvements after watershed-scale treatment began, evidenced by significant water quality and biological recovery. Before treatment, the mouth of Muddy Creek had an average pH of 4.3, an average iron concentration of 8.22 mg/L, and an average aluminum concentration of 8.10 mg/L. Since the implementation of WSR, Muddy Creek has maintained an average pH of 7.2 and concentrations of 1.02 mg/L of iron and 1.37 mg/L of aluminum, correlating to mean reductions of 83% for aluminum concentrations and 88% for iron concentrations. Benthic macroinvertebrate data suggest that the mouth of Muddy Creek has reached the attainment threshold, nearly doubling its WVSCI score since treatment began. This correlates with visual improvements in iron sedimentation, which had previously destroyed habitat available for benthics. Fish survey results show promising reestablishment of the lower portion of Muddy Creek as a cold-water fishery. Where zero fish were previously documented, fish counts are now routinely above 130 individuals across a combined fifteen different species. Another notable improvement is the discovery of sensitive species such as mottled sculpin, smallmouth bass, and trout below the confluence of Martin Creek. These species are sensitive to toxic metals and pH produced from AMD (Allert et al. 2009). Sculpin have shown mortality, infertility, and avoidance in response to environmental contaminants associated with coal mining (Carline et al. 1994; Martin et al. 2020). Additionally, due to the lack of a swim bladder, mottled sculpin inhabits benthic habitats and are rather sedentary with adults tending to maintain residency within small (i.e., <0.5 m²) patches for long periods (Petty 1998). Sculpin therefore are highly susceptible to local change and often serve as an indicator species.

It is difficult to assess the fish response between the mouth of Muddy Creek and the control station at RM 4.4 since there were no pre-treatment surveys completed at Station 2.1. Results post-treatment show lower numbers than both the mouth site and the control site. This may be due to the presence of the short waterfalls located approximately 0.5 miles downstream of Station 2.1, which may slow fish migration upstream. The increase in connectivity resulting from the restoration of lower Muddy Creek will provide opportunities for fish recruitment from upper Muddy Creek as well as the Cheat River. Historically, the quality cold water fishery in upper Muddy Creek was cut off from the Cheat River below the confluence of Martin Creek. Fish communities in isolated headwaters have lower Indices of Biotic Integrity than comparable non-isolated communities, reduced species numbers, and lower numbers of individuals, despite suitable habitat (Stoertz et al. 2002). Thus, the downstream treatment of AMD will create aquatic corridors for fish immigration to improve the fishery in upper Muddy Creek as well.

Upstream of major AMD inputs in the Middle Cheat, such as Pringle Run, the Cheat River is a productive fishery. In fact, the five forks of the Cheat (Blackwater River, Shavers Fork, Dry Fork, Glady Fork, and Laurel Fork) are well-known trout fishing destinations. Prior to 2010, the segment of the Cheat River from RM 51.0 to Cheat Lake was listed as impaired for pH and metals and was considered biologically dead. Due to the treatment of acid mine drainage within several key tributaries, the Cheat River is no longer listed as impaired by pH. Regular measurements from the 1970s to 2022 demonstrate decreasing iron and aluminum concentrations and increasing alkalinity (USEPA 2022). As a result of these improvements, there has been a resurgence in fish diversity. The entire length of the Cheat River now supports fish populations, including pollution-sensitive walleye and a healthy perch population. Fish survey reports from Cheat Lake during the 1950s documented a total of 14 species, predominately within the Catostomidae (suckers) and Ictaluridae (catfish) families (Core et al. 1959). Presently, Cheat Lake supports over 46 fish species, including large and smallmouth bass, walleye, northern pike, yellow perch, channel catfish, and sunfish. Channel catfish of quality length are abundant and fast-growing in Cheat Lake (Hilling et al. 2016). Each summer, the lake hosts several bass fishing tournaments. Despite anecdotal improvements, it is difficult to fully assess the impact of Muddy Creek's treatment on the Cheat River. Pringle Run and several other AMD-polluted tributaries enter the Cheat approximately 8.8 miles upstream of Muddy Creek. In addition, there are little to no published biological surveys within the segment of the Cheat River from Pringle Run to Cheat Lake. It is significant that pre-project, Muddy Creek contributed roughly 50% of the total acid load to the Cheat River. Muddy Creek is now net alkaline.

Improvements have also been documented in the Martin Creek subwatershed as a result of centralized treatment. Specifically, the subwatershed benefits from the direct capture and conveyance of AMD from flooded mine pools to the plant and in-stream dosers in Martin Creek and Glade Run. Before treatment, the mouth of Martin Creek had an average pH of 3.2 and mean iron and aluminum concentrations each above 20 mg/L. After treatment, it has improved to an average pH of 5.1 with 70% and 90% reductions in aluminum and iron, respectively. The Fickey Run and Glade Run tributaries also displayed significant pH improvements. Additionally, Fickey Run experienced a notable 93% reduction in iron and 61% reduction in aluminum. Given the improved chemical environment, benthic macroinvertebrate assemblages also improved in all three streams, with Glade Run displaying significant improvements.

Despite significant improvements, the Martin Creek subwatershed has not yet fully recovered. The Martin Creek doser was installed in 2022, therefore its impacts are not captured in this study. Macroinvertebrate reestablishment after AMD treatment can take more than eight years due to multiple factors, including drought events, delayed or setback recovery, competitive exclusion, and lack of watershed vegetation (Gunn et al. 2009). Additionally, "sacrifice zones" occur downstream of dosers where iron and aluminum hydroxides precipitate. The length of the sacrifice zone in AMD remediated streams is dependent on the stream velocity, gradient, and alkalinity, all of which influence its ability to carry away metal sediments (Kruse et al. 2013). Within the sacrifice zone, finer sediments may negatively affect the biological recovery of the stream. McClurg et al. (2007) found a 1.2 - 1.8 mile zone of ecological impairment downstream from limestone sand treatment in acid deposition-impacted watersheds of WV. Sacrificial zones associated with AMD treatment can be much longer due to higher metal concentrations (Merovich & Petty 2007). In one Ohio stream impacted by AMD, Johnson et al. (2014) found that precipitated metals were elevated for 1.8-3.1 miles immediately downstream of the doser. The doser on Martin Creek is located approximately 1.2 miles from its mouth, thus biological recovery may be limited in this tributary due to the sacrifice zone of metal precipitation.

The combination of lime dosers and the T&T treatment facility was expected to restore the lower 3.4 miles of Muddy Creek below the confluence of Martin Creek to its designated use, thus effectively reestablishing biologic connectivity throughout the entire 15.6 miles of Muddy Creek. This analysis shows evidence that Muddy Creek is reaching this goal just five years into treatment. Routine data collected at the mouth of Muddy Creek shows that it is no longer a significant contributor of AMD-related impairments to the Cheat and is net alkaline with low metal concentrations. It has also shown WVSCI scores above the attainment threshold and a dramatic increase in fish abundance and diversity. The current variance is in effect until

July 1, 2025, though the State may adopt a subsequent water quality standards variance consistent with § 131.14 of the Water Quality Standards Regulatory Revisions Final Rule. Martin Creek has met the interim criteria at the in-stream compliance point since its implementation. However, Muddy Creek mainstem is still occasionally outside of the parameters for healthy water quality standards related to iron and aluminum. While the T&T facility is a major component of watershed treatment, additional treatment measures are needed to address additional abandoned mine land sources. Approximately 0.7 miles above Martin Creek, Muddy Creek receives AMD from several AML sources originating from the Dream Mountain Ranch. In 2024, Friends of the Cheat completed enhancements to a passive treatment system that treats these sources. The completion of enhancements to this system will contribute to the connectivity of the upper and lower portions of Muddy Creek.

Prior to the variance, OSR had been treating sources of AMD at forfeited mine sites since as early as 1995 and was responsible for ten NPDES outlets within the Muddy Creek watershed. This included construction, operations, and maintenance at nine active sites with fifteen lime dosers, and one passive system at six bond forfeiture sites, not including three other sites planned for future construction. Costs to build and operate the existing sites totalled approximately \$3.4 million for construction and nearly \$10 million for operations and maintenance (roughly \$940,000 annually) prior to the approval of the variance in 2017 (Cooper 2017).

Without an alternative permitting structure, OSR would have been required to retrofit seven existing treatment systems and construct two new sites within the Martin Creek subwatershed, all without restoration of Muddy Creek. The watershed approach allowed the OSR to save money by avoiding both capital costs associated with building new point-source treatment systems to NPDES standards and operational costs by not having to treat water at point-source for all permits in the watershed, and by not having to assume new point source operations. Many point-source locations are very remote and difficult to access, resulting in more expensive maintenance. Thus, approaching treatment from a watershed-scale rather than a point-source scale may produce superior economics in similar watersheds. Furthermore, the treatment is completed more quickly with more stream miles recovered. Additionally, centralized treatment has the potential for recovering rare earth elements (REEs) and critical materials (CMs) from the AMD treatment byproducts (Larochelle et al. 2021). This would be less practical in small passive or doser systems. Projected revenues from REE/CMs will likely offset operations and maintenance costs at the facility, based on economic studies conducted at different AMD treatment locations.

This study was limited by the availability of pre-treatment data, especially biological data, flow data to calculate pollutant loadings, and data on the receiving Cheat River. Collecting data from the Cheat River downstream of Muddy Creek is extremely difficult due to access limitations and whitewater, so available fish data was collected a considerable length downstream in Cheat Lake. Future watershed-scale treatment projects should include biological considerations, such as stream connectivity and sacrifice zones, in the early planning stages. Additionally, a plan for fish and benthic surveys should be implemented before treatment in order to assess its effect on biological recovery.

Conclusions

Watershed-scale treatment reduces the number of treatment locations while restoring the maximum number of stream miles. For less cost than the conventional point-source approach, the watershed approach treats most the acidity in the stream rather than the small fraction that originates at regulated sites. Muddy Creek provides a case study for the effectiveness of this approach. After five years of treatment, evidence shows that it has significantly improved the water quality and biological richness in Muddy Creek, thus reconnecting upper Muddy Creek with the Cheat River system. Once the largest contributor of AMD pollution into the Cheat, Muddy Creek is now net alkaline.

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Declarations

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Appendix 1: Producer Price Indexes (PPIs)

Table 5 New Industrial Building Construction Industry PPI used to inflate estimated and actual capital costs

Year	BLS PPI	Base 2023	Inflation Factor to get to \$2023				
			2011	2013	2017	2018	2022
2011	107.1	55.49	1.80				
2012	109.9	56.94					
2013	112.4	58.24		1.72			
2014	116.1	60.16					
2015	118.3	61.30					
2016	119	61.66					
2017	122	63.21			1.58		
2018	127.8	66.22				1.51	
2019	135.4	70.16					
2020	139.4	72.25					
2021	146.7	76.02					
2022	179.4	92.96					1.08
2023	193.0	100.00					

Table 6 FY PPI Index Based on CY Average of Waste Collection Industry PPI used to inflate actual O&M costs

Fiscal Year	Averaged FY PPI	Base 2023	Inflation Factor to get to \$2023			
			2019	2020	2021	2022
2019	142.9	82.07	1.22			
2020	147.3	84.61		1.18		
2021	152.1	87.38			1.14	
2022	160.1	91.97				1.09
2023	174.1	100				

Table 7 Waste Collection Industry PPI used to inflate estimated point-source O&M costs

Year	BLS PPI	Base 2023	Inflation Factor to get to \$2023							
			2011	2013	2017	2018	2019	2020	2021	2022
2011	120.6	66.04	1.51							
2012	122.1	66.86								
2013	124.1	67.96		1.47						
2014	127.0	69.55								
2015	128.5	70.37								
2016	132.2	72.39								
2017	135.2	74.04			1.35					
2018	140.8	77.10				1.30				
2019	145.0	79.40					1.26			
2020	149.7	81.95						1.22		
2021	154.6	84.68							1.18	
2022	165.6	90.70								1.10
2023	182.6	100.00								

Table 8 PPI Commodity Index for All Final Demand (BLS) used to inflate Southwestern Energy's cash contributions

Year	BLS PPI	Base 2023	Inflation Factor to get to \$2023					
			2017	2018	2019	2020	2021	2022
2017	113	79.86	1.25					
2018	116.2	82.12		1.22				
2019	118.2	83.53			1.20			
2020	118.4	83.67				1.20		
2021	126.7	89.54					1.12	
2022	138.8	98.09						1.02
2023	141.5	100.00						

Appendix C

Consensus Coal Production Forecast for West Virginia: 2023

Prepared for:

**Special Reclamation Fund Advisory Council,
West Virginia Department of Environmental Protection**

Date:

June 2023



**Center for Business and
Economic Research**

Consensus Coal Production Forecast for West Virginia: 2023

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Disclaimer:

The contents of this report reflect the views of the authors who are responsible for the accuracy of the data presented herein. The views expressed in this report are those of the authors and do not reflect the official policy or position of Marshall University or its governing bodies. The use of trade names, if applicable, does not signify endorsement.

Table of Contents

Introduction	1
Overview of West Virginia Coal Production	1
The Electricity Sector	2
Natural Gas Prices	2
Coal-Fired Power Plant Retirements	4
Prices of Coal Delivered to the Electricity Industry	4
Environmental Regulation	5
The Industrial Sector	6
Exports	6
Component Forecasts	8
Energy Information Administration (EIA)	8
Energy Ventures Analysis (EVA)	10
Marshall University Center for Business and Economic Research (CBER)	12
West Virginia University Bureau for Business and Economic Research (BBER)	13
Consensus Forecast	14
Summary	14
References	17
Appendix A: EIA Forecasts for Regional Coal Production	18
Appendix B: EIA Forecast for West Virginia	19
Appendix C: WVU BBER Forecast of Northern vs. Southern WV Production	20

Consensus Coal Production Forecast for West Virginia: 2023

Introduction

The West Virginia Consensus Coal Production Forecast is a combined production forecast comprised of four component forecasts. A consensus approach to forecasting seeks the wisdom of the crowd in producing an expectation for output from the coal industry. The Consensus Forecast is used to provide the best expectation of tax revenues to be collected for mandatory reclamation activities conducted through the Special Reclamation Fund and the Special Reclamation Water Trust Fund.

This report describes recent historical coal production trends for the State of West Virginia including the individual industries that comprise the major segments of demand for coal produced in West Virginia. Each of the component forecasts used to form the Consensus Forecast is described, with information about assumptions and resulting projected levels of production for West Virginia. The process used to produce the Consensus is also described, including the weightings applied to each of the component forecasts. The West Virginia Consensus Coal Production Forecast is calculated for the years 2023 through 2045.

Overview of West Virginia Coal Production

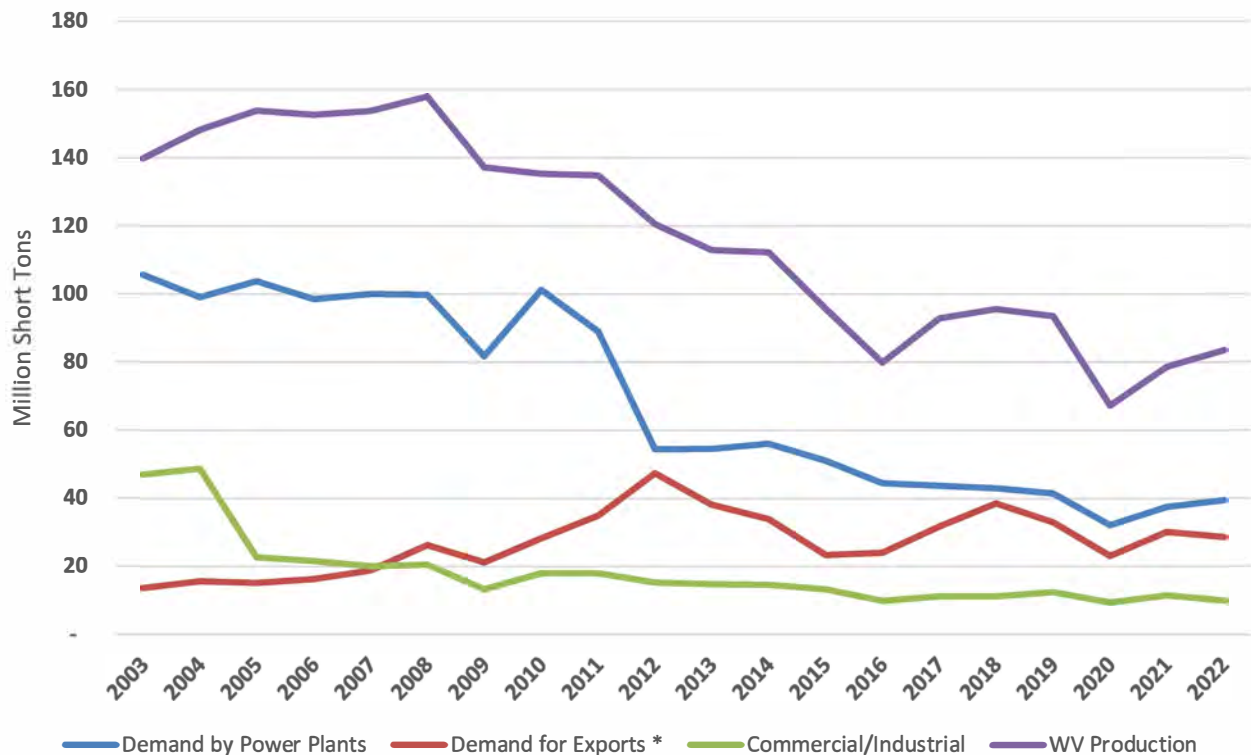
West Virginia coal production for 2022 was 83.5 million tons (EIA, 2023),¹ an increase from the 78.6 million tons produced in 2021. West Virginia's 2022 production is the highest figure since the start of the COVID-19 pandemic, though it is still below pre-pandemic levels. This increase reflects various trends and events within the coal industry's primary markets: power generation, exports, and industrial demand, as well as the return to normalcy from the COVID-19 pandemic. The demand for West Virginia coal increased 6.2% from 2021 levels, primarily from an increase in exports.

Future demand for West Virginia coal depends on several variables. These include the pace of economic recovery from the pandemic, the capacity of gas-fired electrical generators in the region and the price paid for gas by those generators, the lifespan and generation levels of the coal-fired power plants that will continue to burn coal from the State, the extent of new renewable generation, exchange rates, the rate of economic growth of countries that import

¹ 83.5 million tons is the Energy Information Administration's revised 2022 production value based on the final 2022 value published by MSHA (clean coal production reported on MSHA Form 7000-2). The West Virginia Office of Miner's Health, Safety and Training (WVOMHST) reports 2022 production of 96 million tons, but this may not be exclusively clean coal, which is the final production volume.

West Virginia coal, and the nature of compliance with environmental regulations. Recent demand trends with preliminary and estimated data for 2022 are shown in Figure 1.

Figure 1. Historical West Virginia Coal Production and Components of Demand



Source: EIA. Asterisk (*) 2022 volumes estimated by MU CBER. Other 2022 figures are preliminary by EIA.

The Electricity Sector

Preliminary coal distribution data for 2022, published by the U.S. Energy Information Administration (EIA), indicate that demand for West Virginia-produced coal by the electricity sector slightly increased in 2022, to about 39.5 million tons, compared to 37.6 million tons in 2021 (EIA 2023). This was an increase of 5.2 percent, while total US coal distribution to the electric power industry marginally increased by 2.0 percent during the same time (EIA 2023). In addition, WV distribution of coal to the electricity sector as a proportion of total US distribution has increased; in 2019 WV distributed about 7.5% of coal to the electricity sector, in 2022 that figure was 8.7%.

Natural Gas Prices

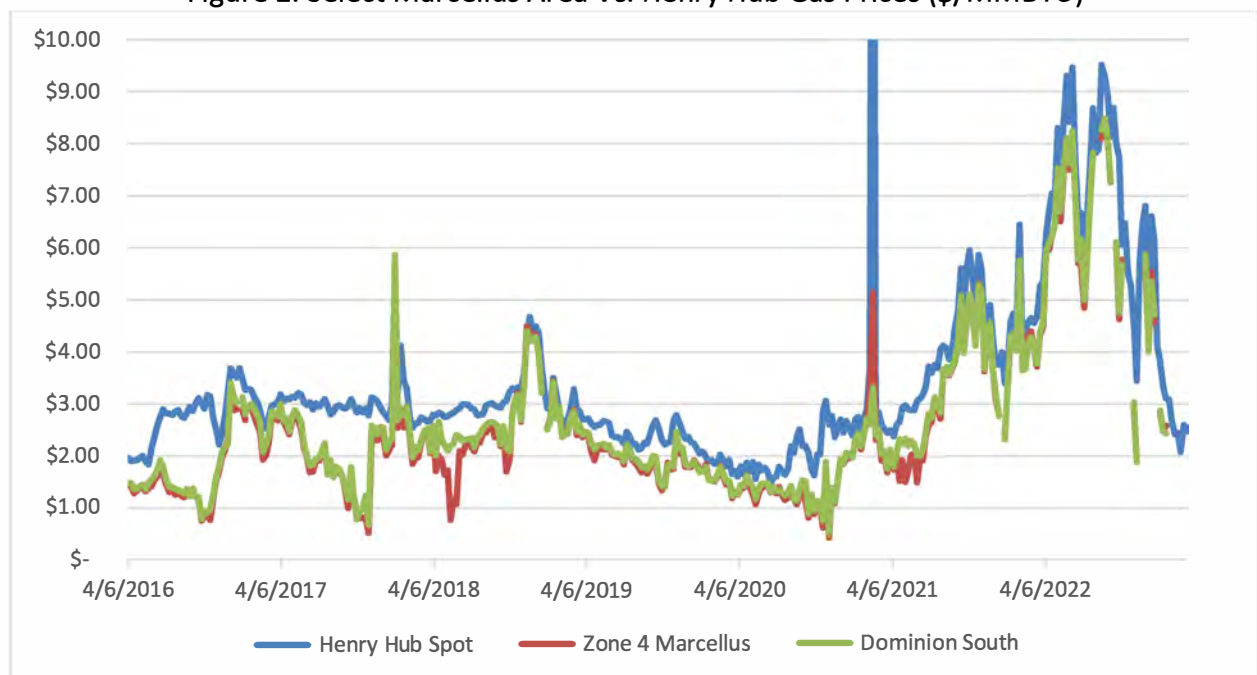
Historically, the price of natural gas has a direct relationship with the demand for coal; as natural gas prices rise, coal demand increases. From 2021 to 2022, the average price of gas delivered to the electric power sector increased sharply, averaging \$5.17/mcf in 2021 (nominal dollars) and \$7.52/mcf in 2022 (EIA 2022), a 45% increase. The past two years of natural gas

prices were significantly more expensive than recent historical prices, which averaged \$3.17/mcf from 2017 to 2020. The rise can be attributed to the Russian invasion of Ukraine and its external affects, and demand increases, due in part to the economic recovery from the COVID-19 pandemic.

The 2021 to 2022 rise in natural gas prices correlated with increases in demand for West Virginia coal by power plants, with year-over-year increases in both years. Since January 2023, natural gas prices have returned to what are historically more normal levels.

For several years, abundant gas production from the Marcellus play, combined with relatively low takeaway capacity, resulted in especially low gas prices in a primary region in which West Virginia coal competes. The price differential of the Henry Hub Spot price to the Marcellus play has diminished but persists at times, as shown in the following chart of weekly prices at the two primary Marcellus area price hubs vs. the Henry Hub (Figure 2).

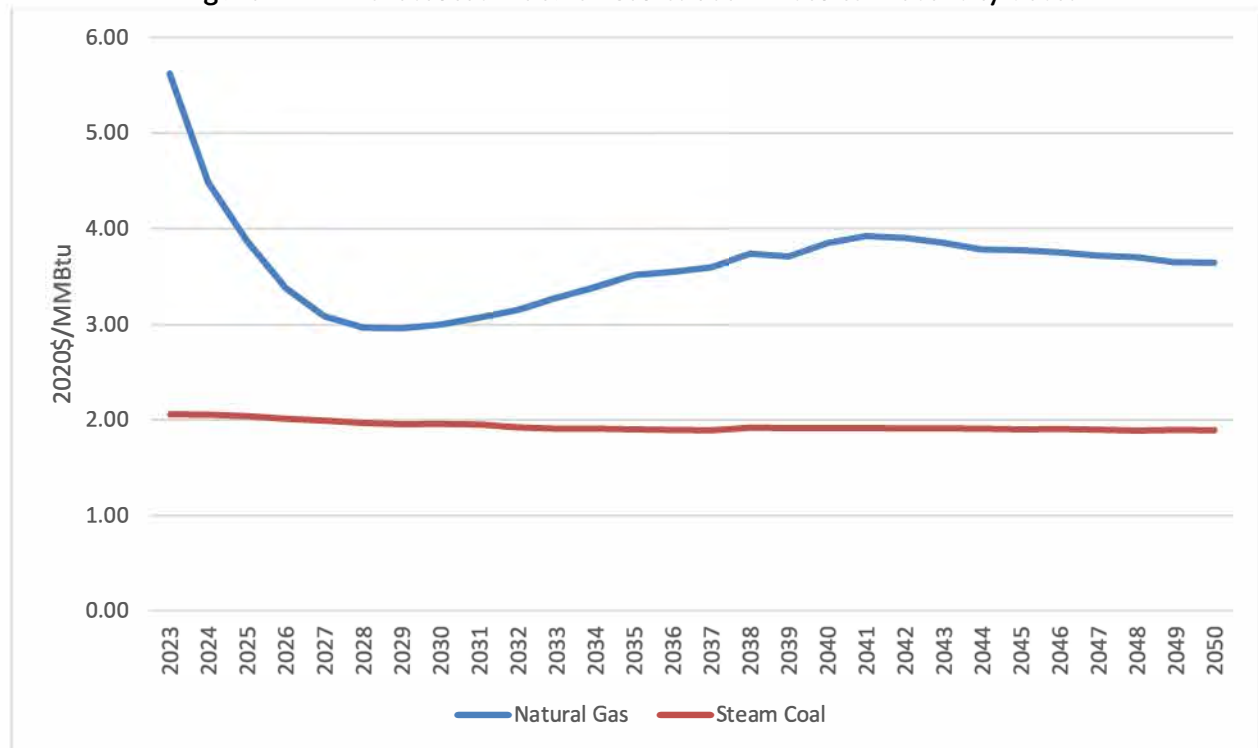
Figure 2. Select Marcellus Area Vs. Henry Hub Gas Prices (\$/MMBTU)



Source: EIA, Natural Gas Weekly.

In its Annual Energy Outlook (AEO) 2023 Reference Case analysis, the EIA projects natural gas prices to sharply decline in the short-term. Much of this is due to assumptions about future policy changes impacting supply of Russian gas that would lower prices. Long-term, the EIA projects natural gas prices to climb and maintain between \$3.50 to \$4.00. Regarding coal, the EIA projects price of steam coal to slightly decrease but consistently maintain around \$2.00/MMbtu with little to no volatility (Figure 3) (EIA 2023).

Figure 3. EIA Forecasted Natural Gas & Coal Prices to Electricity Sector



Source: EIA, AEO 2023.

Coal-Fired Power Plant Retirements

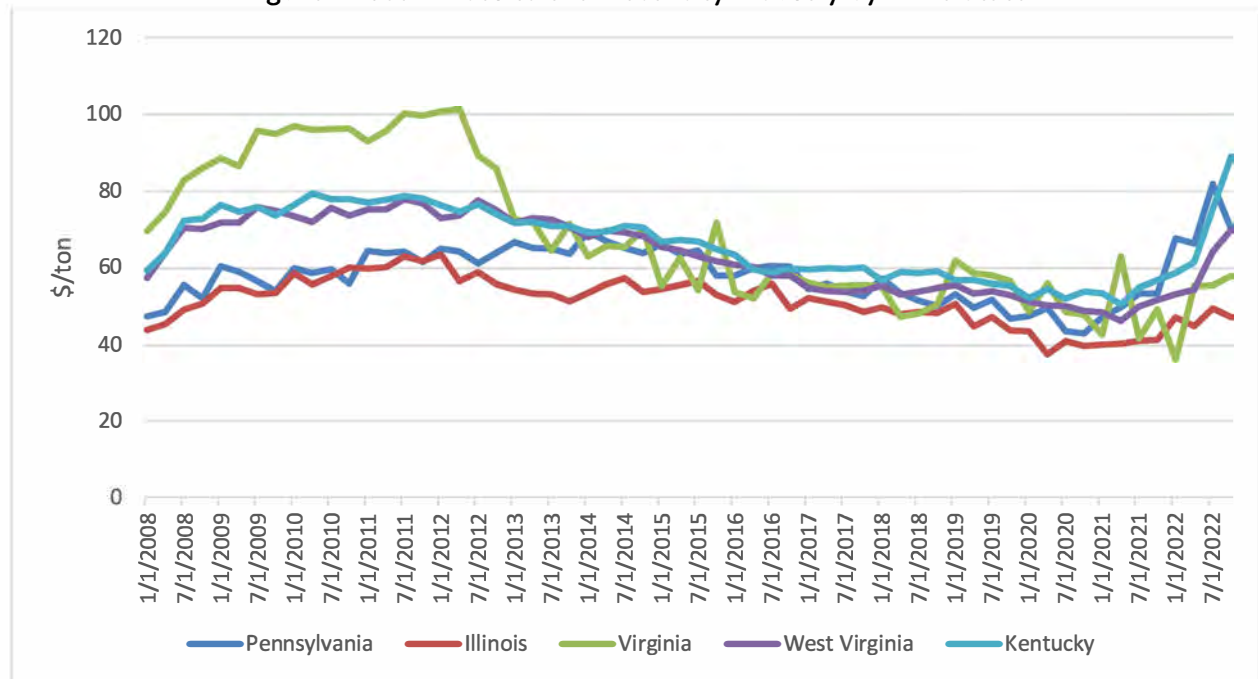
In recent years, many coal-fired power plants have retired, with several of those plants being consumers of West Virginian coal. In 2022, two major plants retired that were consumers of West Virginia coal, the William H. Zimmer plant (OH) - capacity of 1,305-megawatts (MW) - and the Morgantown Generating Station (MD) - capacity of 1,205 MW. In 2022, EIA released a report stating that coal will account for 85% of U.S. electric generating capacity retirements in 2022, with coal retiring 12.6 gigawatts of capacity.

Prices of Coal Delivered to the Electricity Industry

The price of West Virginia-produced coal delivered to power plants has largely been falling since around 2012. However, prices have increased since quarter 2 of 2021, and in quarter 4 of 2022 West Virginia experienced a spike close to the previous decade's high.

Average coal prices for regional producing states are much closer than in previous decades. Prior to 2013 West Virginia, Virginia, and Kentucky producers commanded a premium over coal produced from Pennsylvania and Illinois. By 2017 that premium had largely disappeared. However, the gap has come back for Illinois coal as that aggregate price has not increased at same levels as other states (Figure 4).

Figure 4. Coal Prices to the Electricity Industry by Mine State



Source: EIA, Quarterly Coal Report.

Environmental Regulation

The U.S. Environmental Protection Agency (EPA) has updated the Coal Combustion Residuals (CCR) rule. The rule requires power plants to monitor and inspect coal ash storage sites and to act if any leaks or other problems are detected. In November 2020, the EPA published the Part B Final Rule, which allows “facilities to demonstrate to EPA that, based on groundwater data and the design of a particular surface impoundment, the operation of the unit has and will continue to ensure there is no reasonable probability of adverse effects to human health and the environment. EPA approval would allow the unit to continue to operate.” The EPA is now proposing a process for facilities to seek additional time, if needed to address demonstrated grid reliability issues (Environmental Protection Agency, 2023).

The EPA is also proposing authority under the Clean Water Act (CWA) to reduce discharges of toxic metals and other pollutants from power plants into waterbodies. The proposed rule, Steam Electric Power Generating Effluent Guidelines (2023) would establish more stringent discharge standards for wastewaters generated at coal fired power plants. The EPA estimates the proposed regulation would reduce pollutants discharged through wastewater from coal-fired power plants by approximately 584 million pounds per year (EPA 2023).

The Inflation Reduction Act of 2022 offers funding, programs, and incentives to accelerate the transition to cleaner energy sources. This will also likely drive more deployment of clean

electricity resources - namely wind and solar power plants - which means there will be more competition for coal. Most provisions became effective on January 1, 2023 (EPA 2023).

The case Sackett vs EPA was ruled in May 2023. It concerns how the EPA determines its regulatory jurisdiction under the CWA. The decision sided with Sackett, with the majority arguing the CWA extends only to “wetlands with a continuous surface connection to bodies of water that are ‘waters of the States’ in their own right.” Justice Kavanaugh- joined by three other justices- argued that the court is “rewriting of adjacent to mean adjoining.” Kavanaugh expressed concern that regulatory power from the CWA will decline and “produce consequences for the waters of the United States and will generate regulatory uncertainty.”

The Industrial Sector

As shown In Figure 1, demand for West Virginia coal by the industrial sector (coke plants and self-generating manufacturers, including coal-fired combined heat and power plants) have fluctuated around 11 million short tons since 2016. Coke plants have increased from the 2016 volume of 8.3 million short tons to 11 million short tons and 10.1 million short tons in 2021 and 2022, respectively. On the contrary, the industrial sector has decreased from a volume of 1.7 million short tons in 2016 to 0.7 million short tons in 2022.

In 2021, the U.S. imported 28.6 million metric tons (mmt) of steel, a 42.8% increase from 20 mmt in 2020. The U.S. steel trade deficit amounted to 21 mmt, a 50% increase from 13.9 mmt in 2020. Imports from Russia (280%) showed the largest volume increase in 2022, followed by Vietnam (198%), Turkey (81%), Taiwan (54%) and Mexico (44%) (ITA, 2023).

Exports

The nation’s coal exports have risen since 2020, increasing from 69 million short tons in 2020 to 84.8 million short tons in 2022, but remains significantly less than in previous decades.

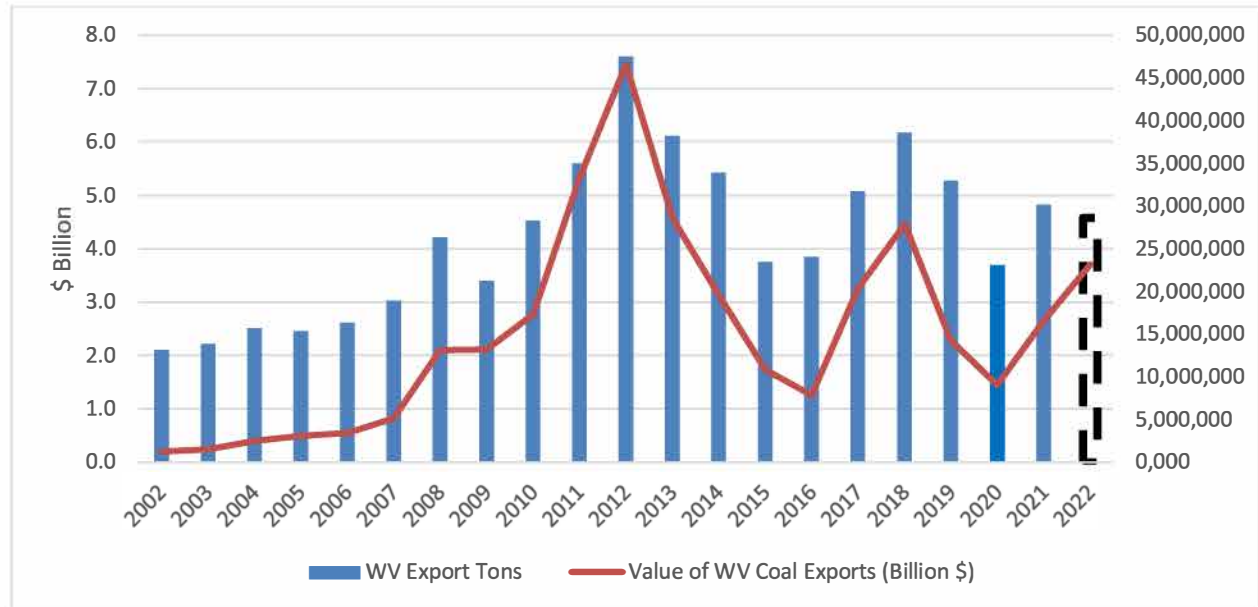
Likewise, West Virginia’s coal export volumes have increased, from 23.1 million short tons in 2020 to 28.7 million short tons in 2022. Contrary to the U.S. as a whole, West Virginia’s export volume remains relatively strong compared to historical levels back to 2002.²

The value of coal exports from West Virginia increased from \$2.7 billion in 2021 to \$3.7 billion in 2022, the second highest figure since 2014. The state maintained high-level exports to many countries in North America, Europe, South America, Africa, and Asia. The top five importing countries by value were India, the Netherlands, Brazil, Japan, and the United Kingdom (ITA,

² 2022 data for coal export tonnage by U.S. state of origin has not yet been released. CBER estimates West Virginia’s exports based on historical shares of total exports and the value of coal exports from the state.

2023). Figure 5 shows the value of West Virginia-based coal exports and associated tonnage from 2002 to 2022.

Figure 5. Value and Tonnage of West Virginia Coal Exports, 2002-2022



Source: EIA, ITA; 2022 export tonnage estimated by CBER.

Component Forecasts

Energy Information Administration (EIA)

Publication: Annual Energy Outlook 2023
Date: March 2023
Forecast Horizon: 2022-2050
Region(s): Northern Appalachia, Central Appalachia

The EIA provides a forecast of coal production by region in its 2023 Annual Energy Outlook, projecting through 2050 via its National Energy Modeling System (NEMS). NEMS uses a market-based approach that balances energy supply and demand while considering regulations and industry standards. NEMS is a modular system, with modules that represent each of the fuel supply markets, conversion sectors, and end-use consumption sectors of the energy system (EIA, 2023).

Only the EIA Reference Case figures are used for the Consensus forecast, which represents EIA's 'best assessment of how U.S. and world energy markets will operate through 2050.' This projection assumes improvement in known energy production, delivery, and consumption technology trends (Energy Information Administration, 2023).

The EIA's forecasts for Appalachia are used to create an EIA forecast for West Virginia coal production. The method used is described in Appendix B.

Key Assumptions:

Macroeconomic Issues: Real GDP growth averages 1.9% per year from 2022 to 2050.

Coal Prices: EIA projects the average mine mouth price for all coals to be about \$38/ton in 2022 (2022\$) and to rise to \$65 by 2050.

Natural Gas Prices: Henry Hub³ spot prices are expected to be about \$6.52 in 2022, sharply decline to a bottom of \$2.80, then slowly rise resulting in an expected price of \$3.77/MMBtu in 2050. The long-term annual growth would be -1.90%.

Electricity: U.S. use of coal for production of electricity is expected to decline by 4.1% annually through 2050. Coal-fired generating capacity is expected to decrease at a rate of 3.7 percent

³ The Henry Hub in Louisiana is the delivery point for the natural gas futures contract on the New York Mercantile Exchange.

per year through 2050. By comparison, combined cycle (natural gas) capacity is projected to increase by 0.6% per year and renewable capacity to increase by 4.9 percent per year.

Industrial/Commercial: Industrial self-generators (CHP plants, power plants with a non-regulatory status, and small on-site generating systems) are expected to see a decrease in coal consumption of 1.4 percent per year through 2050. Coal use in coke plants is projected to decrease by 0.5 percent per year. The commercial sector is expected to maintain flat coal consumption of one million tons per year.

Exports: U.S. coal exports are projected to rise from 85 million tons in 2022 to 130 million tons in 2025, and to continue rising to 161 million tons in 2035 and 217 million tons in 2045.

Environmental: The AEO2023 includes the effects of current legislation, environmental regulations, and international protocols including recent government actions for which implementing regulations were available as of the end of November 2022. This includes the new Federal laws and regulations such as the Inflation Reduction Act (IRA)- which provides tax credits for clean energy and more- that passed in August 2022. In addition, Illinois, North Carolina, Nebraska, and Rhode Island enacted new legislation for their clean energy standards (CES) programs. Lastly, the AEO2023 includes CES executive branch targets for Colorado, Connecticut, Louisiana, Massachusetts, Michigan, New Jersey, and Wisconsin (EIA, 2023).

Energy Ventures Analysis (EVA)

Publication: EVA Long-Term Forecast

Date: April 2023

Forecast Horizon: 2023-2050

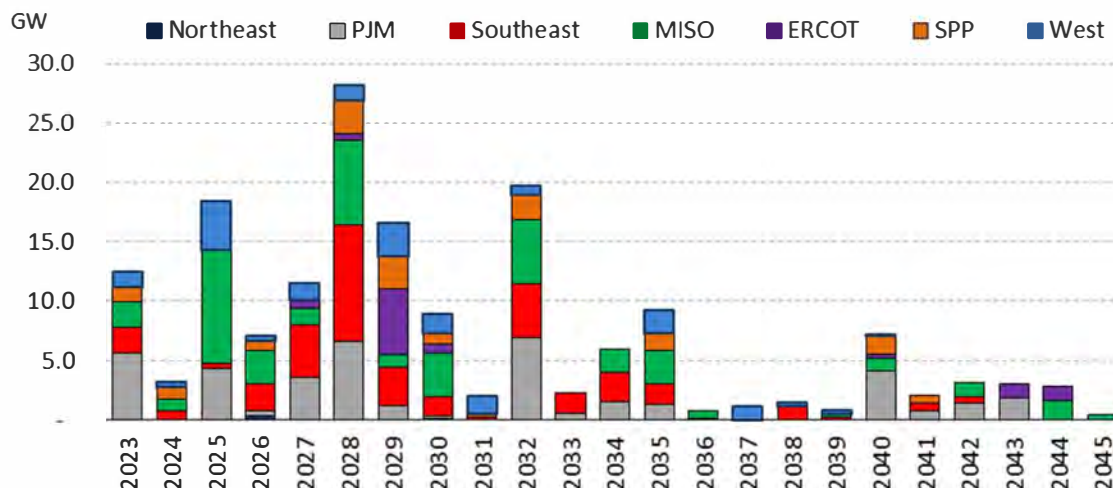
Region(s): All states

EVA utilizes the AURORAxmp 24/7 dispatch model (which EVA licenses) to calculate electricity generation by fuel type. The forecast reflects the least cost dispatch solution consistent with the operating parameters of individual units and regulatory requirements. Existing generation, planned generation deemed to be likely to be constructed, and announced retirements are reflected. In addition, the model adds and retires capacity in an economic manner and as required by law.

Key Assumptions:

Coal Plant Retirements: Due to renewed environmental pressure from the current administration, e.g., the Good Neighbor Rule, NAAQS for fine particulates, Coal Combustion Residuals, and Effluent Limitations guidelines, coal retirements will likely continue at an accelerated rate through the 2020s and early 2030s. They will congregate around EPA compliance deadlines for the various rules.

U.S. coal plant retirements by year & power market



Source: EVA 2023 Q1 modeling

Coal Prices: Coal prices vary by region, coal quality, and market and were relatively high in 2022 due to the strength in the global market and economic growth due to recovery from COVID.

Going forward real prices are expected to increase and soften modestly throughout the forecast period. Future pricing also reflects the higher cost of capital related to the reduced access to capital due to environmental, social, and governance (ESG) concerns.

Natural Gas Prices: Like coal, Henry Hub gas prices jumped in 2022, softening since then. The very mild winter of 2022/2023 reduced gas demand, resulting in lower gas prices and coal displacement in the power sector. Nominal natural gas prices are expected to increase in the long-term but will vary due to sensitivity to weather conditions.

Electricity: Growth in electricity demand is expected to average 1.0% per year. This rate of growth is higher than in prior years due to the expected impact of electric vehicles on demand. Utility demand for coal is expected to decline from about 460 million tons in 2022 to less than 100 million tons by 2050. The decline is heavier in the early years as plants are retired.

Industrial/Commercial: Demand from other sectors is also expected to decline, reflecting industrial plant conversions from coal to natural gas and reduced metallurgical coal in steelmaking as the industry continues to shift from blast furnace to electric arc furnace production. All coal supply regions are affected as industrial plants are retired. However, all domestic metallurgical coal is expected to originate in Appalachia.

Exports: U.S. export levels are a function of the competitiveness of U.S. coals which in turn is affected by the relative strength of the U.S. dollar particularly with respect to the Australian dollar as global coal trade is U.S. dollar denominated and Australia is the largest exporter of bituminous coals. The U.S. exports both steam and metallurgical coals, but U.S. metallurgical coal exports exclusively originate in Appalachia. While global metallurgical coal demand is expected to decline, some continued blast furnace production is expected through 2050.

Steam coal exports are largely expected from Northern Appalachia, the Illinois Basin, the Powder River Basin, and the Rockies. Central Appalachia is believed to be not economic long-term and therefore unlikely to participate except in unusual circumstances. While the U.S. continues to be a swing supplier, contraction in the global coal industries has given it a larger role. The war in Ukraine increased U.S. exports to Europe as Russian coal was diverted to Asia, and the loss of natural gas from the Nord Stream pipelines increased demand for coal.

Environmental: Coal Combustion Residuals (CCR) and Effluent Limitation Guidelines (ELGs) are assumed to go into effect according to their regulatory schedules. Plants which are not expected to comply are assumed to be retired. Federal carbon limitations are not assumed. Compliance is assumed with announced state/regional plans. Pennsylvania is no longer assumed to join the Regional Greenhouse Gas Initiative (RGGI). The caps in AB32 (California) are assumed to be extended through 2050. The Inflation Reduction Act is implemented.

Marshall University Center for Business and Economic Research (CBER)

Publication: CBER West Virginia Coal Production Forecast 2023

Date: April 2023

Forecast Horizon: 2023-2045

Region(s): West Virginia

MU CBER's forecast was conducted by Dr. Avishek Mallick of the Marshall University Mathematics Department. The forecast is a Vector Autoregression (VAR) model with seasonality adjustment using quarterly data from 2008-2022.

Key Assumptions:

This VAR model is a demand-based model. It forecasts coal production using several price and demand related variables (Table 1). All variables (both impulse and response) were considered endogenous and modeled as first order Autoregressive Process (AR1).

The CBER forecast does not impose any macro- or micro-economic assumptions that may be subject to exogenous shocks in the future.

Table 1. Variable Description and Data Source

Variable	Source
WV Total Coal Production	EIA
Total WV Coal Delivered to the Electricity Industry	EIA
Delivered WV Coal Prices for Power Generation	EIA
Delivered US Natural Gas Prices for Power Generation	EIA
Euro/Dollar Exchange Rate	Macrotrends

West Virginia University Bureau for Business and Economic Research (BBER)

Publication: WVU BBER Coal Production Forecast 2023

Date: May 2023

Forecast Horizon: 2023-2050

Region: Northern West Virginia and Southern West Virginia

The WVU Bureau of Business and Economic Research Coal Production Forecast is an econometric model based upon changes in factors that affect the demand and price for coal sourced from mines in Northern and Southern West Virginia between 1985 and 2022. Historical data on coal prices, production and other energy-related data are obtained from a variety of Energy Information Administration reports. Forecasts for US-level explanatory variables were taken from the S&P Global Intelligence (formerly HIS) March 2023 Long-Term Forecast and the 2023 Annual Energy Outlook from the Energy Information Administration (West Virginia University, 2023).

Consensus Forecast

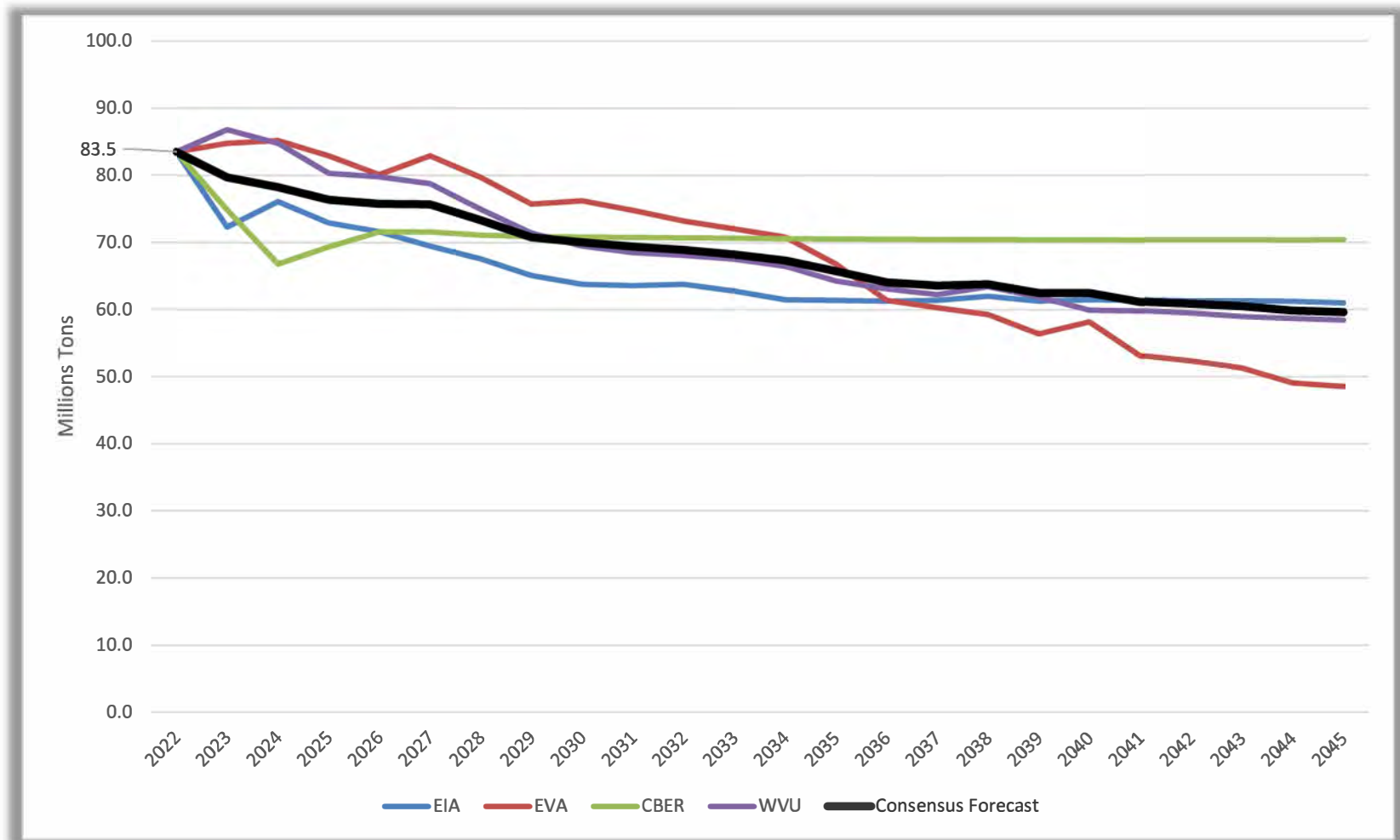
The four long-term forecasts produced by EIA, EVA, CBER, and BBER are combined to create the 2023 Consensus Forecast for West Virginia Coal Production. For simplicity, a simple average was used to calculate the consensus forecast⁴ (Figure 6 and Table 2). Coal production in West Virginia is projected to decline from 83.5 million tons in 2022 to 79.7 million tons in 2023, followed by a steady decline to about 59.6 million tons in 2045.

Summary

The four component models incorporate a range of possible levels of West Virginia coal production over the next 22 years, with varying forecasts that illustrate the impact of primary supply and demand variables and uncertainty over the continuation of recent trends. The consensus reduces uncertainty by combining the forecasts into one aggregate projection. The consensus forecast predicts West Virginia will experience a gradual decline in coal production throughout the period, but at levels that are four to seven million tons per year higher than the 2021 Consensus Forecast.

⁴ Due to the subjective nature of weight selection, a simple average approach (with same weight for all four forecasts) would generate a very similar forecast as the weighted average but does not require additional (often unrealistic) assumptions to estimate accuracy rate of historical forecasts.

Figure 6: Consensus and Component Forecasts 2023 (million tons)



Source: EIA, EVA, WVU BBER, and authors' calculations.

Table 2: Consensus Forecast for West Virginia Coal Production 2023 (million tons)

Year	Historical	2023 Forecasting Group				2023 Consensus	2021 Consensus	2019 Consensus	2017 Consensus	2016 Consensus
		EIA	EVA	CBER	BBER					
2017	92.8								86.8	76.9
2018	95.1								83.6	74.7
2019	92.4							91.1	84.1	76.7
2020	67.2							88.3	87.1	80.1
2021	78.6						79.4	84.4	86.1	78.6
2022	83.5						81.6	84.1	85.9	75.7
2023		72.3	84.8	74.8	86.8	79.7	79.3	83.3	84.7	73.1
2024		76.1	85.2	66.8	84.8	78.2	74.7	82.3	82.8	70.3
2025		72.9	82.9	69.4	80.3	76.4	72.6	81.2	81.5	69.1
2026		71.6	80.1	71.6	79.8	75.8	70.9	80.7	80.2	67.9
2027		69.5	82.9	71.6	78.7	75.7	69.3	80.0	79.3	66.2
2028		67.6	79.7	71.1	75.0	73.3	66.8	78.8	77.7	64.5
2029		65.1	75.7	70.9	71.4	70.8	64.7	78.7	76.8	63.0
2030		63.8	76.2	70.8	69.5	70.1	64.0	77.6	76.3	61.7
2031		63.6	74.8	70.7	68.5	69.4	62.7	76.8	76.1	62.1
2032		63.8	73.2	70.7	68.1	68.9	62.2	76.1	76.0	62.9
2033		62.8	72	70.6	67.6	68.2	61.9	75.3	76.6	63.3
2034		61.5	70.8	70.6	66.5	67.3	61.6	74.0	76.7	63.1
2035		61.4	66.8	70.5	64.3	65.8	61.2	73.5	76.6	62.5
2036		61.3	61.4	70.5	63.1	64.1	60.0	73.4	76.5	62.3
2037		61.4	60.3	70.5	62.3	63.6	59.6	73.1	76.1	60.4
2038		62	59.3	70.5	63.5	63.8	59.3	72.6	75.6	59.7
2039		61.3	56.4	70.4	61.9	62.5	58.8	72.0	75.8	58.6
2040		61.5	58.2	70.4	59.9	62.5	58.6	71.2	75.3	57.1
2041		61.4	53.1	70.4	59.8	61.2	57.2	70.7		
2042		61.3	52.3	70.4	59.4	60.9	56.4	70.4		
2043		61.3	51.3	70.4	58.9	60.5	56.0	70.3		
2044		61.2	49.1	70.4	58.7	59.8	55.2	70.1		
2045		61.0	48.6	70.4	58.4	59.6	54.7	69.9		

Source: EIA, EVA, WVU BBER, and authors' calculation. All forecasts were produced in 2023.

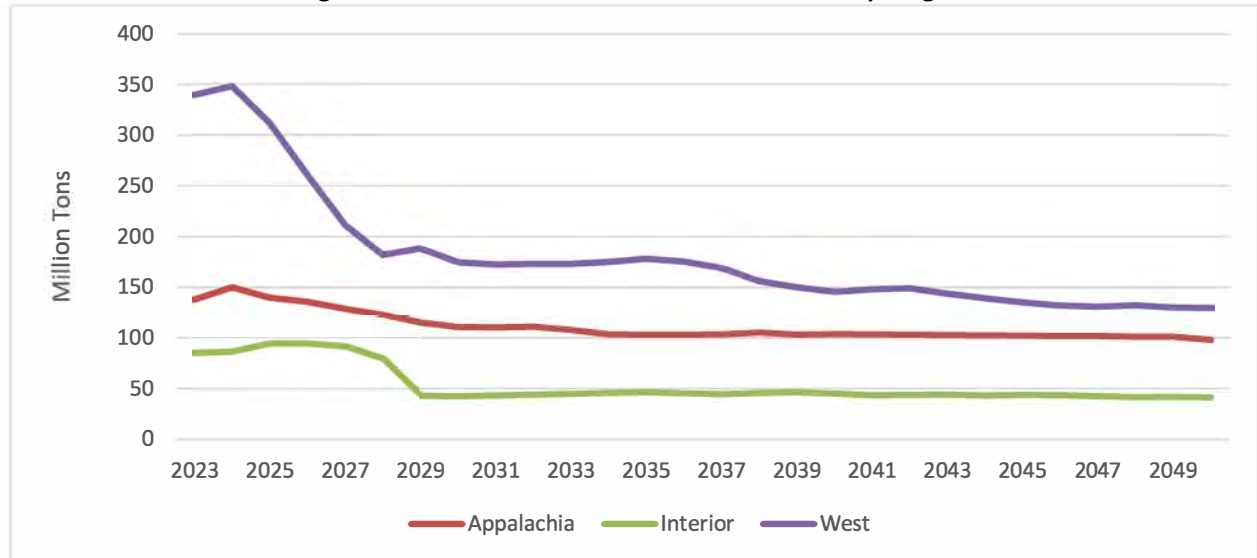
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Appendix A: EIA Forecasts for Regional Coal Production

EIA forecasts Appalachian coal production to decline gradually through 2032, with greater stability from 2032 to 2050. As shown below (Figure A1), Interior⁵ production is projected to have moderately less production compared to Appalachian production throughout the period. Northern Appalachian⁶ (Figure A2) production is expected to rapidly decrease, reducing the difference between Northern Appalachia and Central Appalachia. It is expected for Northern to decrease production from 91 million short tons to 53 million short tons by 2033 and fluctuate at similar levels through 2050. On the contrary, Central Appalachia is projected to gradually decrease production to 42 million short tons in 2033 and then 30 million short tons in 2050. There is a projected 20-million-ton difference between the two Appalachian regions for most years.

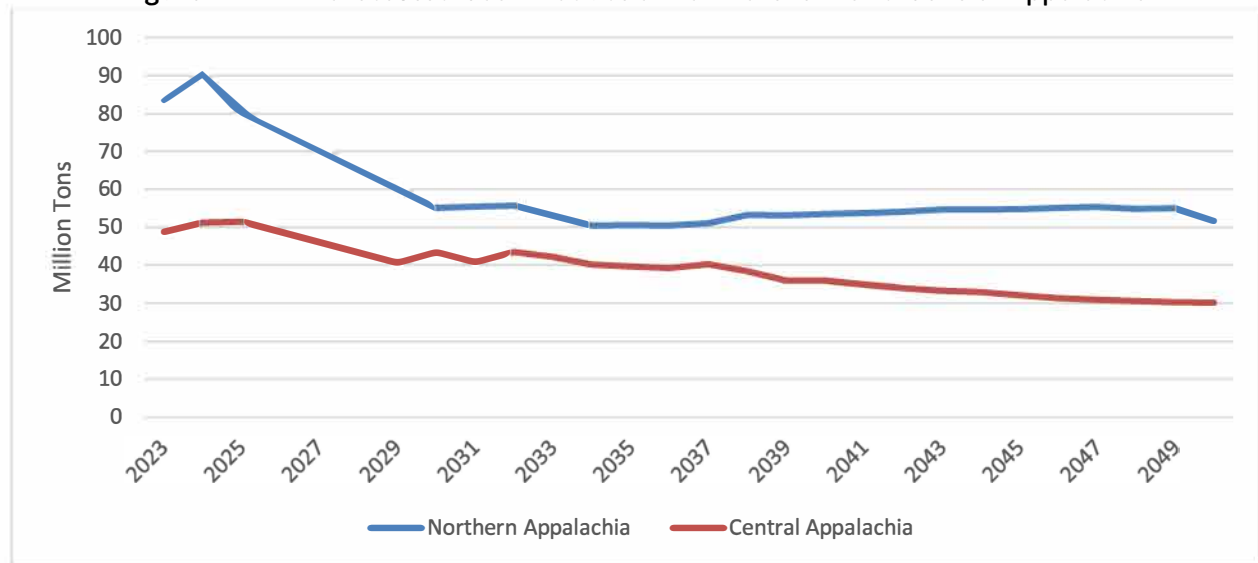
Figure A1. EIA Forecasted Coal Production by Region



⁵ Arkansas, Illinois, Indiana, Iowa, Kansas, W. Kentucky, Louisiana, Mississippi, Missouri, Oklahoma, and Texas.

⁶ Northern Appalachia includes Pennsylvania, Maryland, Ohio, and N. West Virginia. Central Appalachia includes Virginia, E. Kentucky, N. Tennessee, and S. West Virginia.

Figure A2. EIA Forecasted Coal Production for Northern and Central Appalachia

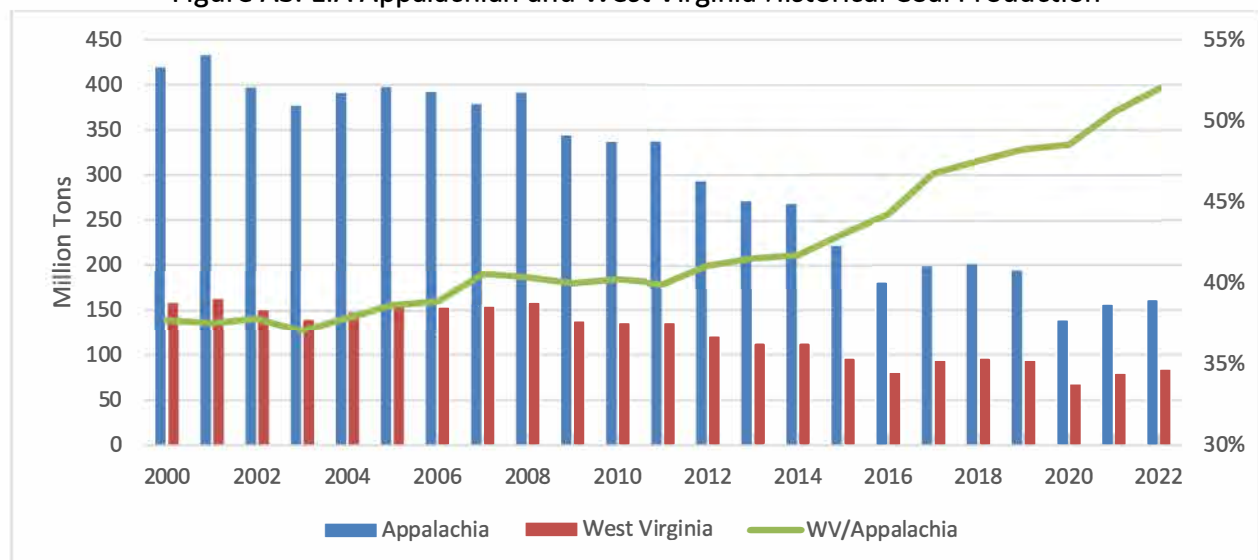


Source for Figure A1 and Figure A2: EIA AEO 2023.

Appendix B. EIA Forecast for West Virginia

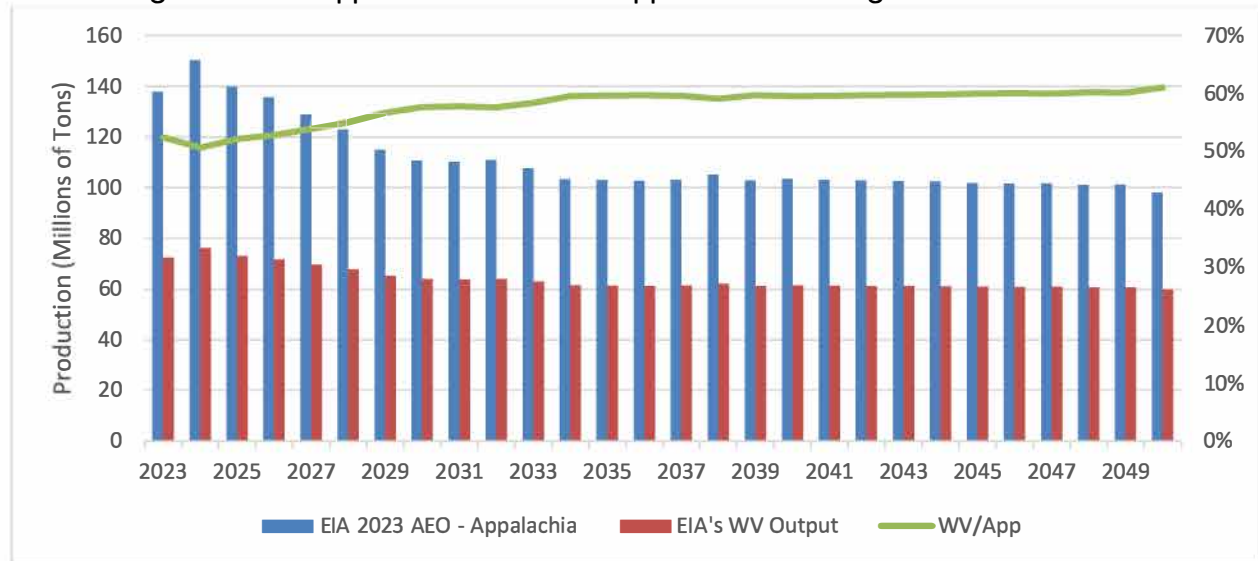
The EIA forecast for WV coal production is derived from EIA's forecast for the Appalachia region, as the agency does not publish forecasts for individual states. The WV forecast was calculated using year-adjusted WV/Appalachia coal production.

Figure A3. EIA Appalachian and West Virginia Historical Coal Production



Source: EIA AEO 2023 and CBER calculations for West Virginia production.

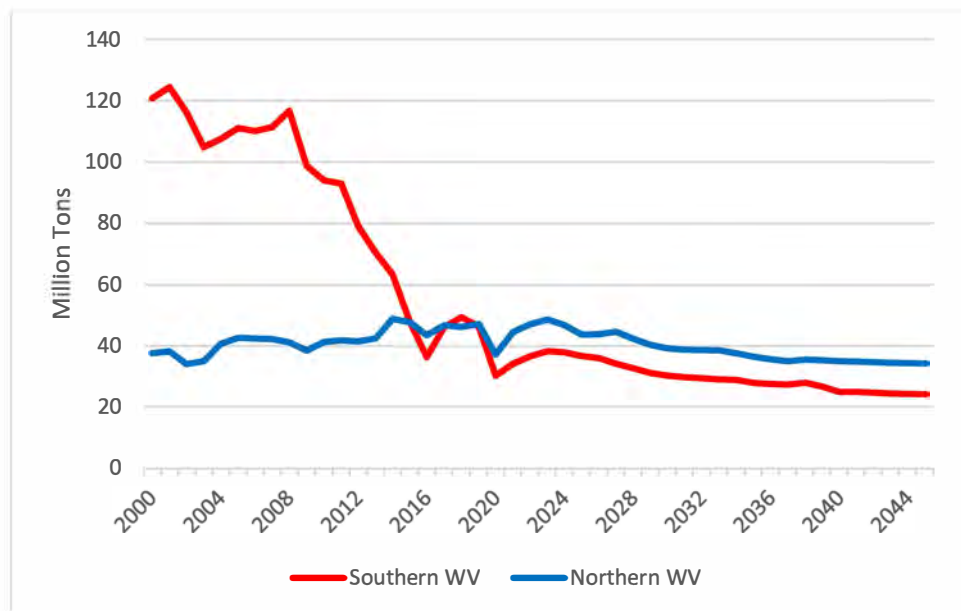
Figure A4. EIA Appalachian Forecasts Applied to West Virginia Coal Production



Source: EIA AEO 2023 and CBER calculations for West Virginia production.

Appendix C. WVU BBER Forecast of Northern vs. Southern WV Production

Figure A5. WVU BBER Forecast of Northern vs. Southern WV Production



Appendix D



Taylor & Mulder
Property and Casualty Consulting Actuaries

**West Virginia Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025**

November 2025



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Property and Casualty Consulting Actuaries

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November 10, 2025

Mr. Matthew Butler
Deputy Director
Division of Land Restoration
West Virginia Department of Environmental Protection
Office of Special Reclamation
47 School Street Suite 301
Phillipi, WV 26416
Matthew.L.Butler@wv.gov

Dear Mr. Butler,

Enclosed is the actuarial review of the West Virginia Department of Environmental Protection ("WVDEP") Special Reclamation Fund and Water Trust Fund ("SRF" and "WTF", respectively, or collectively "the Funds") as of June 30, 2025.

The first section in the text of our report is the *Executive Summary*. This section presents our conclusions and recommendations. It also describes the purpose and scope of our report, explains the distribution and use of our report, and provides the conditions and limitations underlying our work. This section of our report also includes the Background section which provides information about the Fund history.

The next section of the text of our report is the *Actuarial Analysis* that describes the sources of data, our overall methodology, the selection of factors and specific methodologies and considerations by line of business. It also describes the selection of ultimate losses. The *Exhibits* section of our report follows the text of the report and includes all of our analyses.

Please feel free to call if you have any questions regarding any aspect of our report.

Sincerely,

Daniel W. Lupton, FCAS, MAAA, CSPA, MBA

Roger Sarvate, ACAS, ASA, MAAA

Enclosures

West Virginia Office of Special Reclamation

Actuarial Reserve Study as of June 30, 2025

Contents

Executive Summary	4
Purpose and Scope	4
Conclusions	6
Overall Fund Liabilities.....	6
Funds' Assets.....	7
Financial Projections	8
Recommendations	10
Background	10
Report Distribution and Use.....	11
Conditions and Limitations	11
Appendix A: Actuarial Analysis.....	14
Sources of Data	14
Overall Methodology	15
Loss Projections.....	15
Revenue Projections	18
Administrative Expense Calculations.....	19
Appendix B: Technical Details of the Stochastic Loss Model	20
Data Pre-Processing	20
Model Form.....	20
Variable Selection and Model Validation	21
Simulation	22
Exhibits	23

Executive Summary

Purpose and Scope

Taylor & Mulder, Incorporated (“T&M”) was requested by the West Virginia Department of Environmental Protection (“WVDEP”) to conduct an actuarial review of its loss reserves as of June 30, 2025. This report contains our summary and conclusions along with a description of the analysis underlying our conclusions.

Specifically, T&M was asked by the WVDEP to conduct an actuarial analysis to include within its scope the following tasks:

- A valuation in accordance with applicable actuarial standards of practice promulgated by the Actuarial Standards Board of the American Academy of Actuaries that will determine the Program’s fiscal soundness;
- An evaluation of the present assets and liabilities of the Special Reclamation Program for a minimum of 20 years, including an annual table illustrating those assets and liabilities for underground versus surface mine permits, small versus large permits (based on bond amounts or acreage) and permits for tipples, preparation plants, and impoundments and illustrating land and water liabilities separately;
- An evaluation of the prospective assets and liabilities of the Special Reclamation Program for a minimum of 20 years, including a table illustrating estimates of underground versus surface mine permits, small versus large permits (based on bond amounts or acreage) and permits for tipples, preparation plants, and impoundments and illustrating land and water liabilities separately, including the funded status of the Water Trust Fund (“WTF”) as well as the Special Reclamation Fund (“SRF”);
- A table that combines the findings of the two previous tasks;
- An analysis and discussion of the ability of the Program to support long term and/or perpetual liabilities; and,
- A one-page executive summary of conclusions with references to the body of the report.

Note: This is a “closed” valuation of the Funds’ liabilities insofar as it considers only liabilities arising from permits that have already been issued. The estimated liabilities account for current

known reclamation projects as well as anticipated permit revocations on permits issued prior to June 30, 2025. Anticipated income is also linked to permits issued by June 30, 2025 without regard to future permits issued.

This report presents the results of those analyses. This report was prepared by:

- Daniel W. Lupton, FCAS, MAAA, CSPA, MBA, Vice President and Consulting Actuary,
- Roger Sarvate, ACAS, ASA, MAAA, Consulting Actuary

In accordance with the requirements of the Actuarial Standards of Practice in making statements of actuarial opinion, I provide the following statement:

I, Daniel W. Lupton, am Vice President and Consulting Actuary in the firm of Taylor & Mulder, Inc. I am a Fellow of the Casualty Actuarial Society in good standing and qualified to issue a Statement of Actuarial Opinion. I am also a Member of the American Academy of Actuaries.

Conclusions

Overall Fund Liabilities

The following chart shows the projected undiscounted liabilities for land reclamation costs, water capital costs, maintenance and operations costs, and administrative expenses for the next 20 years:

West Virginia Office of Special Reclamation Actuarial Reserve Study as of June 30, 2025 Special Reclamation Fund and Water Trust Fund Combined Undiscounted Liabilities			
Expense Category	Current Forfeitures	Prospective Forfeitures	Total Liability
Land Reclamation Costs	18,592,472	102,312,580	120,905,052
Water Capital Costs	17,830,534	97,008,175	114,838,709
O&M Costs*	116,374,101	25,383,868	141,757,968
Administrative Expense			57,475,699
Total Liability	152,797,108	224,704,622	434,977,428

*O&M Costs are Operation and Maintenance Costs

It should be noted that because this is a “closed” study, the above table does not include anticipated liabilities arising from permits issued after June 30, 2025.

Administrative expenses in the above table include employee benefits, contractual obligations, personnel services, and unclassified expenses other than reclamation costs. The following table shows the estimated total liability from all forfeitures (current and projected) for the next 20 years, as well as a comparison to the same values projected as of the previous study:

West Virginia Office of Special Reclamation Actuarial Reserve Study as of June 30, 2025 Special Reclamation Fund and Water Trust Fund Combined Undiscounted Liabilities			
Expense Category	Current Study	Prior Study	Difference
Land Reclamation	120,905,052	120,264,492	640,560
Water Capital	114,838,709	132,330,008	(17,491,298)
Water O&M	141,757,968	146,403,536	(4,645,568)
Administrative*	57,475,699	63,308,707	(5,833,008)
Total	434,977,428	462,306,742	(27,329,314)

Relative to the prior study, the current study anticipates higher land reclamation and administrative expenses. Water capital liabilities declined significantly due to decreases in outstanding costs for currently contracted work. For example, on an uninflated basis, the current scheduled water capital

liabilities total \$17.3 million, down from \$42.8 million. The projected future water capital liabilities through 2043 have increased from \$68.9 million to \$76.0 million. Changes in land reclamation and water O&M liabilities were likewise driven primarily by changes in current scheduled expenditures.

A detailed breakdown of these liability cash flows is provided in Exhibits E-6 through E-9.

Funds' Assets

In addition to projecting the Funds' liabilities, we also projected the Funds' assets. This was performed in the context of modeling future fiscal year cash flows. The following chart shows anticipated revenues over the next 20 years:

West Virginia Office of Special Reclamation Actuarial Reserve Study as of June 30, 2025 Projected Revenues for SRF and WTF	
Revenue Category	20 Years
Bond Forfeitures	39,866,752
Civil Penalties	7,910,667
SRF Coal Fees	101,803,210
WTF Coal Fees	118,375,826
SRF Investment Yield	5,166,126
WTF Investment Yield	170,166,880
Total	443,289,461

Note that due to the closed nature of the study, the revenues in the table above only reflect projected revenues associated with currently in-force permits. The actual anticipated revenues over that time period are considerably higher. For example, the SRF and WTF coal fees included in the table above represent only 50% of the total anticipated coal production over the next 20 years, as coal production in future years will increasingly come from permits that have not yet been issued as of June 30, 2025.

Relatedly, it should be noted that the actual investment yield will vary based on the rate at which funds must be transferred from the WTF to the SRF to pay for liabilities. Because the WTF earns a higher investment yield than the SRF (projected 4.9% as compared to 2.3%), additional revenues in the SRF (for example, from coal tonnage fees associated with new permits that are outside the scope of our study) will have a significant positive impact on total investment yield over time. This

is because less money will need to be transferred from the WTF to the SRF to pay for reclamation activities, and therefore more investment income can be earned.

Technical details regarding how each revenue category was projected are provided in **Appendix A**, below. Revenue projection details are provided in Exhibits E-3 through E-5.

Financial Projections

Our projections of revenues and expenses to the Funds imply that the Funds will be solvent on a cash basis through 2045. The chart on the following page shows a simplified cash flow projection for the SRF and WTF combined over the next 20 years.

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Financial Projection

Fiscal Year	Total	Total	Beginning Balance		WTF to SRF	Ending Balance	
Ending 6/30	Expenditures	Revenues	SRF	WTF	Transfers	SRF	WTF
Prior						12,934,042	154,739,346
2026	21,358,685	31,469,745	12,934,042	154,739,346	5,320,771	10,000,000	167,784,448
2027	26,780,338	28,969,980	10,000,000	167,784,448	15,319,615	10,000,000	169,974,089
2028	13,768,049	28,395,916	10,000,000	169,974,089	2,680,591	10,000,000	184,601,956
2029	20,287,255	25,875,256	10,000,000	184,601,956	10,787,313	10,000,000	190,189,957
2030	28,471,172	24,633,692	10,000,000	190,189,957	19,730,760	10,000,000	186,352,476
2031	24,492,688	23,039,879	10,000,000	186,352,476	16,460,861	10,000,000	184,899,667
2032	23,849,239	22,603,717	10,000,000	184,899,667	16,026,407	10,000,000	183,654,145
2033	30,684,348	21,877,792	10,000,000	183,654,145	23,215,999	10,000,000	174,847,590
2034	22,701,534	22,030,259	10,000,000	174,847,590	14,988,575	10,000,000	174,176,314
2035	22,185,210	22,005,738	10,000,000	174,176,314	14,505,717	10,000,000	173,996,842
2036	21,986,147	21,212,441	10,000,000	173,996,842	14,722,972	10,000,000	173,223,136
2037	21,462,662	20,823,495	10,000,000	173,223,136	14,408,978	10,000,000	172,583,969
2038	21,151,349	19,664,260	10,000,000	172,583,969	14,683,199	10,000,000	171,096,880
2039	20,672,319	19,721,321	10,000,000	171,096,880	14,185,104	10,000,000	170,145,882
2040	20,229,616	19,445,491	10,000,000	170,145,882	13,896,407	10,000,000	169,361,757
2041	19,757,190	19,105,903	10,000,000	169,361,757	13,612,939	10,000,000	168,710,471
2042	19,352,296	18,672,377	10,000,000	168,710,471	13,445,742	10,000,000	168,030,552
2043	18,917,805	18,275,758	10,000,000	168,030,552	13,226,260	10,000,000	167,388,505
2044	18,546,921	17,884,741	10,000,000	167,388,505	13,068,408	10,000,000	166,726,325
2045	18,322,603	17,581,699	10,000,000	166,726,325	13,010,013	10,000,000	165,985,421

Note that these projections assume that the Water Trust Fund transfers money to the Special Reclamation Fund in order to maintain a fund balance of \$10,000,000.

A detailed version of this financial projection is provided in Exhibit E-2, which shows the breakdown by type of undiscounted expenditure and revenue item.

Recommendations

Coal Production Risks: There has been some instability in coal production forecasts and the coal market in general over the preceding decade as a result of different regulatory regimes, alternative energy adoption rates, economic events, and, most recently, the COVID-19 pandemic. Future studies may benefit from considering alternative coal production scenarios.

Permit Status History: Permit databases were evaluated as of a specific date. However, because this study estimates anticipated changes in permit status over time, it is necessary to make assumptions about how permit statuses change in order to develop forfeiture models. If records exist, it could be possible to produce more accurate models if a full history of each permit (including all status changes over time and dates when status changes occurred) were available.

Background

On August 3, 1977, Congress enacted the Surface Mining Control and Reclamation Act of 1977 (“the SMCRA”) to encourage the reclamation of mined areas and return land and water resources to beneficial use. The SMCRA established a program for the regulation of mining permits and a program for reclaiming bond forfeiture sites. In West Virginia, reclamation of abandoned mine lands is performed by the West Virginia Department of Environmental Protection (“WVDEP”) Office of Special Reclamation.

Funding for the reclamation of mined areas comes from bond forfeitures, coal tonnage fees, civil penalties, and interest income. The largest of these funding sources is coal tonnage fees. Coal tonnage fees of \$0.15 per ton of coal mined are deposited in the Water Trust Fund (“WTF”) and \$0.129 per ton are deposited in the Special Reclamation Fund (“SRF”). Amounts from bond forfeitures go to the SRF.

Currently, all reclamation activities, including water treatment, are paid through the SRF, with amounts being transferred to the SRF from the WTF to fund payment of certain costs. Financial projections assume that funds will be transferred to the SRF to maintain a certain minimum balance of working capital, and that the remaining amounts will be left in the WTF to achieve a higher average investment yield.

Report Distribution and Use

This report has been prepared for internal use by the management of the WVDEP and its board, its accountants, auditors, and attorneys, and the West Virginia legislature. The WVDEP is not authorized to include this report in any marketing or request for proposal solicitations. In addition, it should be understood that T&M consultants are available to respond to any questions by authorized third parties with respect to this report.

Conditions and Limitations

The analyses contained in this report were performed using accepted loss and loss adjustment expense reserving methods adjusted to the special needs of the WVDEP and in conformance with sound actuarial standards and principles. T&M introduced assumptions and judgments that we considered appropriate in the circumstances.

With regard to projections of ultimate values, it should be understood that the emergence and settlement of claims are subject to uncertainty. While we have used our best professional judgment in all instances, projections of future ultimate losses and loss expenses are inherently uncertain because of the random nature of claims occurrences. They are also dependent upon future contingent events and are affected by many additional factors.

WVDEP claim reserving procedures, current and perceived social and economic inflation, current and future court and jury attitudes, legislative changes affecting the WVDEP, improvements in technology, and many other economic, legal, political, legislative and social factors all can have significant effects on ultimate claim costs. Therefore, we cannot warrant that actual developments

will not differ from current projections. Such differences could be upward or downward and could be significant.

In summary, the ultimate loss and loss adjustment expense levels estimated in this report are subject to potential variations in estimation due to:

- (1) the fact that the ultimate liability of WVDEP is subject to the outcome of events yet to occur;
- (2) the unanticipated changes in the legal, economic, legislative or claims adjudication environments;
- (3) statistical fluctuation in losses around the estimated or expected values when all other factors remain constant; and
- (4) the fact that the actual future loss and loss payment and reporting patterns may differ from those applied in the determination of the expected losses or there may be unanticipated changes in the loss and expense loss and expense payment and reporting patterns;

Accordingly, no assurance can be given that future loss emergence will not deviate from the estimated ultimate loss and loss adjustment expenses. However, the ultimate loss and loss adjustment expense estimates were based on a reasonable application of generally accepted actuarial procedures and techniques applied to the information available.

We reviewed the information for overall reasonableness and consistency.

T&M relied without audit or verification on historical loss, loss adjustment expense, exposure data, and other information provided by the WVDEP and its employees. T&M has relied upon the data provided and on the oral and/or written statements made regarding the quality, accuracy, and completeness of the data and information supplied. Any inaccuracies or inconsistencies in the data could have a significant effect on the conclusions drawn.

Should any inaccuracies be found in the data, T&M should be notified immediately so that the analysis can be adjusted accordingly.

With regard to projections of estimated revenues, it should be understood that the revenue streams are subject to uncertainty similar to that experienced in modeling loss projections. While we have used our best professional judgment in all instances, projections of future revenues are inherently uncertain due to potential changes in technology, the implementation of environmental requirements, the introduction of and/or enhanced use of alternative fuels, and changes in the economy among others. While T&M has used its best judgment in selecting values and trends for each category of revenue, actual revenue collected is dependent upon unknown future events and may be affected by additional factors outside of WVDEP control.

This report is limited in scope to the estimate of the level of reserve adequacy at the evaluation date of the report. It also includes projections regarding cash flow of the operations of the WVDEP under certain narrow assumptions and conditions.

This report was prepared for use by persons technically competent in insurance financial matters. Persons receiving this report should be made aware of the availability of T&M personnel to answer questions and/or amplify on any matter addressed therein.

Appendix A: Actuarial Analysis

Sources of Data

The data underlying our analysis was compiled from several sources. The following are the primary sources from which data was taken and how each data source was used:

- **Special Reclamation Database:** This database was provided by Sharon Owens, Administrative Secretary, WVDEP Division of Land Restoration. The database includes information pertaining to historical and ongoing reclamation projects in the state, including site characteristics, land use information, anticipated and actual land and water reclamation costs (both individual capital expenditures and ongoing costs), and administrative costs.
- **Permits database:** This database was provided by Matthew Butler, Chief Deputy, WVDEP Division of Mining and Reclamation, Office of Special Reclamation. This database includes data on permits issued between 1961 and June 30, 2025, including the permit status, permit location and type, bond amount, and bonded acres.
- **Special Reclamation Fund Expenditures:** This database was provided by Scott Fairchild, Financial Reporting Specialist (II) for the WVDEP. This database included SRF and WTF expenditures from July 1, 2007 to June 30, 2025.
- **Revenues for WTF and SRF** were also provided by Scott Fairchild. These databases include all revenues to the Special Reclamation Fund and Water Trust Fund from July 1, 2007 to June 30, 2025.
- **Prior Actuarial Reports:** These were provided by Mr. Sheehan to provide additional context for our projections.
- **Coal Production Decline Rates,** including an analysis of anticipated coal production decline rates, was provided by John Morgan, indicating the anticipated rate at which coal production will decline from currently in-force permits.
- **SRF and WTF Investment Allocations:** These were provided by Mr. Sheehan and were used to project anticipated SRF and WTF investment revenues based on the allocation of funds to money market, short term bonds, and IMB fund.

Overall Methodology

Loss Projections

Losses were projected using two models: a traditional deterministic model and a stochastic generalized linear model, described in greater detail below.

Based on the results of these methods, we selected anticipated payment amounts in each future fiscal year. A three-year delay was added to these payment patterns to account for the delay between a permit revocation and the commencement of reclamation activities at the site.

Current cost estimates on active reclamation activities were adjusted for historical variances between cost estimates and the final costs. These costs were then spread out over time, assuming 50% of costs will be incurred in the year that work is scheduled to commence and 50% of costs will be incurred in the following year for land reclamation and water capital costs. Water operations & maintenance costs were projected to continue each year according to current estimated annual costs subject to an annual attenuation factor of 98% starting in 2037. This is due to the fact that annual O&M costs associated with currently active reclamations are projected to show modest declines after 10 years.

All costs are then adjusted to nominal dollars using an inflation factor of 2.5%.

Deterministic Loss Model

The traditional deterministic model projects anticipated bond forfeiture and permit release rates based on historical data triangles. Permits are arranged into cohorts by year of permit issuance based on the assumption that permit releases and bond forfeitures vary based on the age of permit. From these data triangles, overall release and forfeiture rates are selected for each age of permit, then adjusted to reflect anticipated differences in rates for permits based on current status (active, inactive, or phased release). These release and forfeiture rates are applied to currently open permits, separately for surface, underground, and other mine types and separately by permit status types. A final adjustment is made based on bond size, whereby

permits backed by smaller bonds (less than \$500,000) are anticipated to be forfeited at a rate that is higher than permits backed by large bonds (greater than \$500,000.)

These adjusted forfeiture and release rates are applied to currently open permits or bonded acres to determine the number of permits and acres expected to be released or forfeited each year in the future. We then apply anticipated average costs per forfeited acre to determine future costs by year for the anticipated land reclamation costs, water capital costs, and water operations & maintenance costs.

Stochastic Loss Model

The stochastic model uses advanced statistical techniques to project future anticipated forfeiture and release rates.

The stochastic model is formally based on a kind of generalized linear model, specifically a multinomial logistic regression model. The model uses historical data about forfeited and released bonds to predict the probability that open permits will experience forfeiture or release each year in the future. In addition, the stochastic model considers the parent companies of each permit and simulates bankruptcies from parent companies. When a parent company experiences bankruptcy, we project that the probability of forfeiture for the company's permits is increased by 30% for the year following. This is based on the understanding that although parent company bankruptcies can lead to forfeitures, the permits are often sold as assets to other companies as a way of preventing further forfeitures.

Technical details of the stochastic model are provided as **Appendix B** of the report.

Comparison of Deterministic and Stochastic Models

The deterministic and stochastic loss models have unique advantages and disadvantages that we considered carefully as part of our projections.

The deterministic model has the advantage that patterns of releases and forfeitures can be easily visualized. As a result, it is possible to make selections of anticipated release and forfeiture rates that explicitly anticipate recent or future changes in rates that could affect loss projections. By comparison, the stochastic model is less intuitive, and it can be challenging to make manual adjustments to fitted model results.

However, there are several drawbacks to the deterministic model that prompted the development of the stochastic model. First, the method assumes that future forfeitures and releases are roughly statistically independent. This assumption may be incorrect. Recent years have seen increasing consolidation in coal industry. As a result, permits are controlled by a smaller set of companies. For this reason, a single bankruptcy could lead to a large number of simultaneous forfeitures. This key issue was accounted for explicitly in the stochastic model.

Relatedly, the deterministic model makes a simplifying assumption about the number of bonds that will be forfeited or released in a year. For example, for a given age, the deterministic model may project that 0.93% of a particular kind of bond will be forfeited. Realistically, this means that a given bond will be forfeited with probability 0.93% or not forfeited with probability 99.07%. However, the deterministic model projects that 0.93% of all bonds will be forfeited. That is, for a given bond of 100 acres, the deterministic model might project that 0.93 acres will be forfeited in that year, where in actuality either 0 acres or 100 acres will be forfeited. This assumption may result in excessive confidence about the accuracy of the central estimate, particularly with respect to the timing and amount of cash flows. The stochastic model, by comparison, simulates individual permit behavior directly and thereby avoids using this assumption.

A final advantage of the stochastic model is that the use of a statistical framework enables the use of model validation tools that are not generally available for traditional models. This makes it possible to directly assess the extent to which different assumptions impact model predictive performance and deliver a model that is optimized to provide the most accurate predictions possible. In the deterministic model, predictions are assumed to be accurate, and model

validation is, at best, implicit in the extent to which forfeiture or release rates are selected to mirror or diverge from historical rates.

Revenue Projections

Anticipated coal tonnage fees were modeled by considering the anticipated change in Appalachian coal production per year from the consensus coal forecast as well as the effect of the “runoff” of permits. The runoff of permits is comprised of two separate factors:

1. A factor representing the reduction in number of active permits among the current cohort of open permits. This factor was projected as part of the loss models.
2. A factor representing the reduced coal production over time among the permits that remain open. This factor was determined judgmentally based on discussions with the Board and based on analysis provided by John Morgan, as discussed above.

With respect to the second point, we assumed the following rates of decline in coal production:

	Northern Mines	Southern Mines
Underground Mines	2.5%	5.0%
Surface Mines	25.0%	10.0%

Bond forfeitures revenues were determined based on the loss models. The deterministic loss model tracked the anticipated bond dollars forfeited in each period. The stochastic loss model considered the bond dollars forfeited across different simulated scenarios. These projections were combined to select a central estimate of bond forfeiture revenues.

Civil penalties were anticipated to decline in a manner commensurate with the decline in production on the current cohort of permits.

Investment returns were projected based on historical average returns. Short term bond fund and money market fund yields were projected by assuming that returns would drift over time from current values in the direction of historical averages. IMB yields were determined based on a review of historical IMB yields, capping returns at 5.0%. Although IMB yields continue to be very strong, we continue to cap returns at 5.0% for the sake of conservatism.

Administrative Expense Calculations

Historical administrative expenses were provided to us for the years 2006 through June 30, 2025. Administrative expenses are defined as the sum of employee benefits, contractual obligations, personnel services, and other unclassified expenses.

Administrative expenses associated with the current cohort of permits were projected assuming 3% inflation each year and discounted based on the projected number of remaining permits in force from the cohort of open permits as of June 30, 2025.

Appendix B: Technical Details of the Stochastic Loss Model

Data Pre-Processing

The model was fitted on closed permits. However, the permit database only reflects the current status of the permits and the date that this status was set. Therefore, to determine the probability that a permit stays open in a given year, it was necessary to reconstruct historical permit data reflecting the fact that a permit with certain attributes was open in a given year.

For example, if a permit was issued in 1990 and released in 2000, the permit database reflects a single entry of “released” with a status year of 2000. However, inherent in that entry is an implied 10 years in which the permit had “open” status (during 1990, 1991, ... 1999).

Model Form

The stochastic loss model is a multinomial logistic model with four outcomes: “Open,” “Forfeited,” “Release,” and “Terminated.” It predicts, based on a linear predictor, the log-odds of each outcome. The model was fitted using a neural network as part of the “nnet” package in R.

The linear predictor of the model is of the following form:

$$\text{Spline}(\text{Issue Year}, 3) + \text{Permit Type} \times \text{Spline}(\text{Log}(\text{Age} + 1), 3) + \text{Permit Type} \times \text{NS}$$

Where the variables used are described as follows:

Variable	Description
Permit Type	Notes whether a permit is a surface mine, underground mine, prospect, or other
NS	Notes whether a mine is in a northern or southern county
Age	The length of time that a permit has been in force
Issue Year	The year that a permit was issued
Spline(Variable, N)	A “beta spline” function of a given variable with N-1 knots. This is a piecewise function of 3 rd degree polynomials with N different “pieces.”

Beta splines were used after initial testing revealed that high-order polynomials produced superior fit (as measured by the AIC and by cross entropy error, discussed below) but failed to provide useful results when extrapolating beyond the training dataset. We determined that this was due to

the inherent instability of high-order polynomials. We determined that spline functions produced similarly good fit over the training data and test set but generalized more robustly over the set of open permits.

Compared to the model form employed in the 2023 actuarial reserve study, this model has several simplifications, including that the previously used four-way interaction in the 2023 model between Permit Type, NS, Permits, and Permit Years has been removed, along with Cohort Acres and the previously used second-degree polynomial of Age; instead this version of the model is only using a spline of Issue Year as well as a spline of the logarithm of Age that is interacted with Permit Type.

The revised model reflects the fact that permits of different types (Surface, Underground, Other) have different average “lifespans,” and that Northern and Southern mines of different types also have different risk profiles.

Variable Selection and Model Validation

The closed permits were split randomly into 80% training data and 20% test data. After the model form was determined, the model was re-fit on the entire dataset. Model predictions were carried out on the set of open permits.

Variables tested included size of bonds, specific county, permit status, specific permit type, and bonded acres. These variables were generally rejected either because of missing data or because they resulted in over-fitting the model. The same is true of many variable interactions that were tested.

Variables were selected based on the extent to which they improved the Akaike Information Criterion (AIC) of the model over the full training data or the extent to which they improved the cross-entropy error in the test dataset. This is a measure of the degree to which the model properly categorizes permits as being open, forfeited, released, or terminated.

The model was additionally validated using plots of actual and fitted permit forfeitures and by reviewing model statistics such as t-statistics.

Initial tests of the model included the “Status Year” variable, indicating the latest year when the status of the permit was updated. This variable significantly improves the AIC and cross-entropy error when using a random sample of data, but out-of-time samples perform very poorly. This seems to be the result of the historical patterns in permit forfeiture, which causes the Status Year variable to generate significant over-fitting. For this reason, Status Year was excluded as a variable in this study.

Simulation

The final simulation was carried out in two steps. First, the baseline “status probabilities” (i.e., the probability that a permit remains open, is forfeited, etc.) were determined for each open permit for each of the 20 years in the future. Then, for each of 5,000 simulations, we carried out the following procedure:

1. Simulate whether each of the ultimate parent companies goes bankrupt in a given year using a Bernoulli probability distribution with probability 0.5%. This probability is based on default probability for high-grade credit ratings from major credit rating agencies.
2. Augment the baseline status probabilities with the simulated bankruptcies by adding 30% to the unnormalized log-odds of a permit being forfeited. This means that if a permit previously had a 10% probability of being forfeited, following the bankruptcy it would have a $(10\% + 30\%) / 130\% = 30.8\%$ probability of being forfeited. The 30% probability was based on discussion with the Board and judgment.
3. For each year in the future, the status of each permit was simulated until the permit status was no longer “open.”
4. The results of this simulation were stored, and then the process was repeated for the next simulation, starting at step 1.

Exhibits

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Executive Summary

	(1)	(2)	(3)	(4)	(5)
	Undiscounted Liabilities Arising From...				
<u>Expense Category</u>	<u>Current Forfeitures</u>	<u>Future Forfeitures</u>	<u>Total Liability</u>	<u>Previous Study</u>	<u>Difference</u>
Land Capital	18,592,472	102,312,580	120,905,052	120,264,492	640,560
Water Capital	17,830,534	97,008,175	114,838,709	132,330,008	(17,491,298)
Ongoing Water Treatment	116,374,101	25,383,868	141,757,968	146,403,536	(4,645,568)
Administration			57,475,699	63,308,707	(5,833,008)
Total	152,797,108	224,704,622	434,977,428	462,306,742	(27,329,314)

Notes:

- Col (1) - (2) from Exhibits E-6 to E-8, Cols (6) and (7)
- Col (3) Administration Expense from Exhibit E-9, Col (3)
- Col (4) from Prior Study
- Col (5) = (3) - (4)

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Financial Projection

Fiscal Year Ending 6/30	Expenditures					Revenues						Beginning Balance		WTF to SRF Transfers	Ending Balance	
	Land	Water Capital	Water Op/Maint	Admin	Total	SRF Coal Fees	WTF Coal Fees	Bond Forfeitures	Civil Penalties	SRF Investments	WTF Investments	SRF	WTF		SRF	WTF
Prior															12,934,042	154,739,346
2026	6,627,967	6,318,192	4,701,357	3,711,169	21,358,685	9,137,455	10,624,948	2,563,035	710,030	693,352	7,740,926	12,934,042	154,739,346	5,320,771	10,000,000	167,784,448
2027	9,150,880	8,963,157	4,919,699	3,746,603	26,780,338	7,926,314	9,216,644	2,540,871	615,918	377,621	8,292,613	10,000,000	167,784,448	15,319,615	10,000,000	169,974,089
2028	2,612,431	2,549,186	5,042,691	3,563,741	13,768,049	7,715,278	8,971,254	2,509,217	599,519	263,444	8,337,204	10,000,000	169,974,089	2,680,591	10,000,000	184,601,956
2029	5,966,897	5,606,105	5,318,999	3,395,254	20,287,255	6,315,534	7,343,644	2,468,262	490,752	225,395	9,031,669	10,000,000	184,601,956	10,787,313	10,000,000	190,189,957
2030	9,938,019	9,601,316	5,692,524	3,239,313	28,471,172	5,665,866	6,588,216	2,408,884	440,269	225,395	9,305,063	10,000,000	190,189,957	19,730,760	10,000,000	186,352,476
2031	7,875,192	7,520,309	6,000,944	3,096,244	24,492,688	5,066,035	5,890,738	2,346,739	393,659	225,395	9,117,314	10,000,000	186,352,476	16,460,861	10,000,000	184,899,667
2032	7,469,233	7,108,673	6,303,764	2,967,568	23,849,239	4,931,798	5,734,649	2,282,412	383,228	225,395	9,046,235	10,000,000	184,899,667	16,026,407	10,000,000	183,654,145
2033	10,643,836	10,097,470	7,088,734	2,854,308	30,684,348	4,664,766	5,424,146	2,215,710	362,478	225,395	8,985,298	10,000,000	183,654,145	23,215,999	10,000,000	174,847,590
2034	6,668,796	6,303,618	6,968,076	2,761,044	22,701,534	4,956,063	5,762,864	2,146,388	385,113	225,395	8,554,436	10,000,000	174,847,590	14,988,575	10,000,000	174,176,314
2035	6,303,130	5,938,773	7,259,931	2,683,377	22,185,210	4,991,999	5,804,650	2,074,194	387,906	225,395	8,521,594	10,000,000	174,176,314	14,505,717	10,000,000	173,996,842
2036	6,083,287	5,724,464	7,552,864	2,625,532	21,986,147	4,675,349	5,436,453	1,999,131	363,300	225,395	8,512,813	10,000,000	173,996,842	14,722,972	10,000,000	173,223,136
2037	5,756,697	5,406,662	7,718,247	2,581,056	21,462,662	4,553,573	5,294,852	1,920,879	353,838	225,395	8,474,959	10,000,000	173,223,136	14,408,978	10,000,000	172,583,969
2038	5,528,347	5,192,040	7,881,875	2,549,086	21,151,349	4,087,084	4,752,423	1,838,082	317,589	225,395	8,443,688	10,000,000	172,583,969	14,683,199	10,000,000	171,096,880
2039	5,211,105	4,892,338	8,039,072	2,529,805	20,672,319	4,182,329	4,863,173	1,754,502	324,990	225,395	8,370,932	10,000,000	171,096,880	14,185,104	10,000,000	170,145,882
2040	4,908,877	4,610,657	8,191,091	2,518,991	20,229,616	4,117,575	4,787,878	1,670,281	319,958	225,395	8,324,405	10,000,000	170,145,882	13,896,407	10,000,000	169,361,757
2041	4,589,633	4,314,458	8,337,744	2,515,355	19,757,190	4,021,026	4,675,612	1,585,374	312,456	225,395	8,286,041	10,000,000	169,361,757	13,612,939	10,000,000	168,710,471
2042	4,301,766	4,051,728	8,480,879	2,517,924	19,352,296	3,880,016	4,511,646	1,499,646	301,498	225,395	8,254,177	10,000,000	168,710,471	13,445,742	10,000,000	168,030,552
2043	3,997,649	3,774,966	8,619,412	2,525,777	18,917,805	3,752,439	4,363,302	1,422,125	291,585	225,395	8,220,912	10,000,000	168,030,552	13,226,260	10,000,000	167,388,505
2044	3,728,735	3,526,113	8,753,842	2,538,233	18,546,921	3,626,386	4,216,728	1,344,943	281,790	225,395	8,189,500	10,000,000	167,388,505	13,068,408	10,000,000	166,726,325
2045	3,542,576	3,338,485	8,886,223	2,555,320	18,322,603	3,536,325	4,112,006	1,276,079	274,792	225,395	8,157,102	10,000,000	166,726,325	13,010,013	10,000,000	165,985,421

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Coal Tonnage Fees and Civil Penalties Projections

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Coal Production in Million Tons					% Coal Production From In-Force Permits				Total	Coal Tonnage Fees from In-Force Permits			Civil
Fiscal Year	Northern		Southern		Total	Northern		Southern		In-Force	Coal Tonnage Fees from In-Force Permits			Penalties
Ending 6/30	Surface	Underground	Surface	Underground	Total	Surface	Underground	Surface	Underground	Production	SRF	WTF	Total	
2012	2.0	39.4	37.9	41.0	120.4	100%	100%	100%	100%	120.4	16,876,736	1,963,409	18,840,145	940,571
2013	1.5	40.9	32.4	37.9	112.8	100%	100%	100%	100%	112.8	15,277,933	14,605,229	29,883,163	677,771
2014	1.3	47.4	29.1	34.0	111.9	100%	100%	100%	100%	111.9	13,949,645	16,210,221	30,159,866	734,975
2015	0.9	46.9	19.4	28.4	95.6	100%	100%	100%	100%	95.6	14,936,957	17,369,799	32,306,756	2,551,755
2016	0.2	43.3	15.5	20.8	79.8	100%	100%	100%	100%	79.8	10,774,387	12,530,157	23,304,544	612,182
2017	0.1	46.6	20.1	25.9	92.8	100%	100%	100%	100%	92.8	11,174,041	12,994,938	24,168,979	822,617
2018	0.6	45.5	22.5	26.7	95.4	100%	100%	100%	100%	95.4	11,831,011	13,758,966	25,589,977	716,346
2019	0.7	46.3	22.3	23.9	93.3	100%	100%	100%	100%	93.3	12,138,331	14,116,367	26,254,698	976,343
2020	0.4	36.8	11.2	18.9	67.2	100%	100%	100%	100%	67.2	9,269,937	10,780,545	20,050,482	612,870
2021	0.4	44.1	12.9	21.1	78.5	100%	100%	100%	100%	78.5	8,771,920	10,166,395	18,938,315	877,641
2022	0.5	46.5	14.6	21.9	83.4	100%	100%	100%	100%	83.4	10,442,569	12,144,267	22,586,836	553,755
2023	0.4	44.2	16.9	23.1	84.6	100%	100%	100%	100%	84.6	11,060,255	12,862,610	23,922,866	763,239
2024	0.4	44.2	16.9	23.1	84.6	100%	100%	100%	100%	84.6	10,315,390	11,996,364	22,311,754	734,714
2025	0.3	35.7	18.4	25.2	79.5	100%	100%	100%	100%	79.5	9,559,127	11,116,861	20,675,988	604,726
2026	0.3	29.7	18.9	25.9	74.8	75%	98%	90%	95%	70.8	9,137,455	10,624,948	19,762,402	710,030
2027	0.2	23.1	19.3	26.4	68.9	56%	95%	81%	90%	61.4	7,926,314	9,216,644	17,142,958	615,918
2028	0.2	25.2	19.1	26.2	70.7	42%	93%	73%	86%	59.8	7,715,278	8,971,254	16,686,532	599,519
2029	0.2	17.2	18.8	25.8	62.0	32%	90%	66%	81%	49.0	6,315,534	7,343,644	13,659,179	490,752
2030	0.2	17.1	17.5	23.9	58.6	24%	88%	59%	77%	43.9	5,665,866	6,588,216	12,254,082	440,269
2031	0.2	16.6	16.2	22.3	55.3	18%	86%	53%	74%	39.3	5,066,035	5,890,738	10,956,773	393,659
2032	0.2	16.4	17.1	23.4	57.0	13%	84%	48%	70%	38.2	4,931,798	5,734,649	10,666,448	383,228
2033	0.2	16.6	16.9	23.1	56.7	10%	82%	43%	66%	36.2	4,664,766	5,424,146	10,088,912	362,478
2034	0.2	20.2	17.9	24.5	62.7	8%	80%	39%	63%	38.4	4,956,063	5,762,864	10,718,927	385,113
2035	0.2	23.7	17.4	23.8	65.1	6%	78%	35%	60%	38.7	4,991,999	5,804,650	10,796,649	387,906
2036	0.2	22.9	17.3	23.7	64.1	4%	76%	31%	57%	36.2	4,675,349	5,436,453	10,111,802	363,300
2037	0.2	23.8	17.3	23.7	65.1	3%	74%	28%	54%	35.3	4,553,573	5,294,852	9,848,425	353,838
2038	0.2	20.9	17.4	23.9	62.3	2%	72%	25%	51%	31.7	4,087,084	4,752,423	8,839,506	317,589
2039	0.2	24.3	17.1	23.5	65.1	2%	70%	23%	49%	32.4	4,182,329	4,863,173	9,045,503	324,990
2040	0.3	25.7	17.1	23.4	66.4	1%	68%	21%	46%	31.9	4,117,575	4,787,878	8,905,453	319,958
2041	0.3	26.8	16.9	23.1	67.1	1%	67%	19%	44%	31.2	4,021,026	4,675,612	8,696,638	312,456
2042	0.3	27.1	16.8	23.1	67.3	1%	65%	17%	42%	30.1	3,880,016	4,511,646	8,391,662	301,498
2043	0.3	27.4	16.9	23.1	67.6	1%	63%	15%	40%	29.1	3,752,439	4,363,302	8,115,741	291,585
2044	0.3	27.6	17.0	23.2	68.0	0%	62%	14%	38%	28.1	3,626,386	4,216,728	7,843,115	281,790
2045	0.3	28.0	17.2	23.6	69.1	0%	60%	12%	36%	27.4	3,536,325	4,112,006	7,648,331	274,792

Notes: Cols (1) - (4) for 2012 - 2024 from USEIA; 2025 - 2045 based on Col (5) allocated out by mine and location type
Col (5) for 2012 - 2024 from USEIA; 2025 - 2045 based on USEIA Annual Energy Outlook
Col (6) - (7) from Exhibit E-70, Cols (6) and (7)
Cols (6) through (9) based on decline rates of 25%, 2.5%, 10%, and 5%, respectively; based on analysis provided by John Morgan
Col (10) = Sum Product of Cols (1) - (4) and Cols (6) - (9)
Col (11) = (10) × 1,000,000 × \$0.129
Col (12) = (10) × 1,000,000 × \$0.150
Col (13) = (11) + (12)
Col (14) from client data for 2025 and prior; 2026 and subsequent = average of 2012 - 2025 trended out based on Col (13)

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Coal Tonnage Fees Detail

Fiscal Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ending 6/30	Coal Tonnage Fees from Permits In Force As of June 30, 2021			Total Coal Tonnage Fees			Coal Tonnage Fees from New Permits			Total Civil Penalties	New Permit Civil Penalties
	SRF	WTF	Total	SRF	WTF	Total	SRF	WTF	Total		
2012	16,876,736	1,963,409	18,840,145	16,876,736	1,963,409	18,840,145				940,571	
2013	15,277,933	14,605,229	29,883,163	15,277,933	14,605,229	29,883,163				677,771	
2014	13,949,645	16,210,221	30,159,866	13,949,645	16,210,221	30,159,866				734,975	
2015	14,936,957	17,369,799	32,306,756	14,936,957	17,369,799	32,306,756				2,551,755	
2016	10,774,387	12,530,157	23,304,544	10,774,387	12,530,157	23,304,544				612,182	
2017	11,174,041	12,994,938	24,168,979	11,174,041	12,994,938	24,168,979				822,617	
2018	11,831,011	13,758,966	25,589,977	11,831,011	13,758,966	25,589,977				716,346	
2019	12,138,331	14,116,367	26,254,698	12,138,331	14,116,367	26,254,698				976,343	
2020	9,269,937	10,780,545	20,050,482	9,269,937	10,780,545	20,050,482				612,870	
2021	8,771,920	10,166,395	18,938,315	8,771,920	10,166,395	18,938,315				877,641	
2022	10,442,569	12,144,267	22,586,836	10,442,569	12,144,267	22,586,836				553,755	
2023	11,060,255	12,862,610	23,922,866	11,060,255	12,862,610	23,922,866				763,239	
2024	10,315,390	11,996,364	22,311,754	10,315,390	11,996,364	22,311,754				734,714	
2025	9,559,127	11,116,861	20,675,988	9,559,127	11,116,861	20,675,988				604,726	
2026	9,137,455	10,624,948	19,762,402	9,653,814	11,225,365	20,879,179	516,359	600,417	1,116,776	750,154	40,124
2027	7,926,314	9,216,644	17,142,958	8,889,419	10,336,534	19,225,952	963,105	1,119,890	2,082,995	690,757	74,839
2028	7,715,278	8,971,254	16,686,532	9,120,505	10,605,239	19,725,744	1,405,227	1,633,985	3,039,213	708,713	109,194
2029	6,315,534	7,343,644	13,659,179	7,996,008	9,297,684	17,293,692	1,680,474	1,954,039	3,634,513	621,334	130,582
2030	5,665,866	6,588,216	12,254,082	7,564,707	8,796,171	16,360,878	1,898,841	2,207,955	4,106,796	587,819	147,550
2031	5,066,035	5,890,738	10,956,773	7,127,332	8,287,595	15,414,927	2,061,297	2,396,857	4,458,154	553,833	160,174
2032	4,931,798	5,734,649	10,666,448	7,350,914	8,547,575	15,898,489	2,419,116	2,812,925	5,232,041	571,206	187,979
2033	4,664,766	5,424,146	10,088,912	7,317,813	8,509,085	15,826,898	2,653,047	3,084,939	5,737,986	568,634	206,156
2034	4,956,063	5,762,864	10,718,927	8,089,073	9,405,899	17,494,973	3,133,011	3,643,035	6,776,046	628,565	243,452
2035	4,991,999	5,804,650	10,796,649	8,393,463	9,759,841	18,153,304	3,401,464	3,955,190	7,356,654	652,218	264,312
2036	4,675,349	5,436,453	10,111,802	8,270,831	9,617,246	17,888,077	3,595,482	4,180,793	7,776,275	642,689	279,389
2037	4,553,573	5,294,852	9,848,425	8,399,817	9,767,229	18,167,047	3,846,245	4,472,378	8,318,622	652,712	298,874
2038	4,087,084	4,752,423	8,839,506	8,040,970	9,349,965	17,390,934	3,953,886	4,597,542	8,551,428	624,827	307,239
2039	4,182,329	4,863,173	9,045,503	8,403,780	9,771,837	18,175,616	4,221,450	4,908,663	9,130,114	653,020	328,030
2040	4,117,575	4,787,878	8,905,453	8,563,515	9,957,576	18,521,091	4,445,940	5,169,698	9,615,638	665,432	345,474
2041	4,021,026	4,675,612	8,696,638	8,650,621	10,058,861	18,709,482	4,629,595	5,383,249	10,012,844	672,201	359,745
2042	3,880,016	4,511,646	8,391,662	8,677,424	10,090,028	18,767,452	4,797,409	5,578,382	10,375,791	674,283	372,785
2043	3,752,439	4,363,302	8,115,741	8,723,860	10,144,024	18,867,884	4,971,421	5,780,722	10,752,143	677,892	386,307
2044	3,626,386	4,216,728	7,843,115	8,776,430	10,205,152	18,981,582	5,150,044	5,988,423	11,138,468	681,977	400,187
2045	3,536,325	4,112,006	7,648,331	8,910,083	10,360,562	19,270,645	5,373,758	6,248,556	11,622,314	692,362	417,570

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Investment Return Calculations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Investment Rates					Discount Factor for	
Fiscal Year Ending 6/30	Money Market	Short Term Bond	SRF Blend	IMB Yield	SRWTF Selection	SRF	WTF
2025	3.7%	6.4%	5.4%	5.0%	5.0%	94.9%	95.2%
2026	2.6%	4.5%	3.8%	5.0%	4.9%	91.5%	90.8%
2027	2.6%	2.7%	2.6%	5.0%	4.9%	89.1%	86.5%
2028	2.6%	2.0%	2.3%	5.0%	4.9%	87.1%	82.5%
2029	2.6%	2.0%	2.3%	5.0%	4.9%	85.2%	78.6%
2030	2.6%	2.0%	2.3%	5.0%	4.9%	83.3%	75.0%
2031	2.6%	2.0%	2.3%	5.0%	4.9%	81.5%	71.5%
2032	2.6%	2.0%	2.3%	5.0%	4.9%	79.7%	68.1%
2033	2.6%	2.0%	2.3%	5.0%	4.9%	78.0%	65.0%
2034	2.6%	2.0%	2.3%	5.0%	4.9%	76.2%	61.9%
2035	2.6%	2.0%	2.3%	5.0%	4.9%	74.6%	59.0%
2036	2.6%	2.0%	2.3%	5.0%	4.9%	72.9%	56.3%
2037	2.6%	2.0%	2.3%	5.0%	4.9%	71.3%	53.7%
2038	2.6%	2.0%	2.3%	5.0%	4.9%	69.7%	51.2%
2039	2.6%	2.0%	2.3%	5.0%	4.9%	68.2%	48.8%
2040	2.6%	2.0%	2.3%	5.0%	4.9%	66.7%	46.5%
2041	2.6%	2.0%	2.3%	5.0%	4.9%	65.2%	44.3%
2042	2.6%	2.0%	2.3%	5.0%	4.9%	63.8%	42.3%
2043	2.6%	2.0%	2.3%	5.0%	4.9%	62.4%	40.3%
2044	2.6%	2.0%	2.3%	5.0%	4.9%	61.0%	38.4%
2045	2.6%	2.0%	2.3%	5.0%	4.9%	59.7%	36.6%

Notes:

- Col (1) Based on average annual money market returns
- Col (2) based on average annual change in returns, returning to long-run average over time
- Col (3) = Col (1) × 39% + Col (2) × 61%; percents based on current allocations
- Col (4) from West Virginia Investment Management Board 2025 Report, Returns Capped at 5%
- Col (5) = Col (1) × 2% + Col (2) × 2% + Col (4) × 96%; percents based on current allocations
- Col (6) = $1.0 / [1 + (3)] \times \text{Prior Year Discount}$
- Col (7) = $1.0 / [1 + (5)] \times \text{Prior Year Discount}$

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Special Reclamation Fund
Payout of Land Liabilities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Unadjusted Costs					Inflated Cost at 2.50% Annual Inflation		
Fiscal Year	Curr. Scheduled		Proj. Payout of	Proj. Payout of		Proj. Payout of	Proj. Payout of	
Ending 6/30	Liabilities	Payout Pattern	Current Liabilities	Future Liabilities	Total	Current Liabilities	Future Liabilities	Total
Prior	12,450,049							
2026	643,230	50%	6,546,639	-	6,546,639	6,627,967	-	6,627,967
2027	4,543,003	50%	8,818,141	-	8,818,141	9,150,880	-	9,150,880
2028	369,074		2,456,038	-	2,456,038	2,612,431	-	2,612,431
2029			184,537	5,288,331	5,472,868	201,195	5,765,702	5,966,897
2030			-	8,892,880	8,892,880	-	9,938,019	9,938,019
2031			-	6,875,113	6,875,113	-	7,875,192	7,875,192
2032			-	6,361,667	6,361,667	-	7,469,233	7,469,233
2033			-	8,844,416	8,844,416	-	10,643,836	10,643,836
2034				5,406,231	5,406,231		6,668,796	6,668,796
2035				4,985,165	4,985,165		6,303,130	6,303,130
2036				4,693,942	4,693,942		6,083,287	6,083,287
2037				4,333,601	4,333,601		5,756,697	5,756,697
2038				4,060,196	4,060,196		5,528,347	5,528,347
2039				3,733,857	3,733,857		5,211,105	5,211,105
2040				3,431,516	3,431,516		4,908,877	4,908,877
2041				3,130,099	3,130,099		4,589,633	4,589,633
2042				2,862,220	2,862,220		4,301,766	4,301,766
2043				2,594,998	2,594,998		3,997,649	3,997,649
2044				2,361,402	2,361,402		3,728,735	3,728,735
2045				2,188,788	2,188,788		3,542,576	3,542,576
Total	18,005,356		18,005,356	80,044,423	98,049,779	18,592,472	102,312,580	120,905,052

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Trust Fund
Payout of Water Capital Liabilities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Unadjusted Costs					Inflated Cost at 2.50% Annual Inflation		
Fiscal Year	Curr. Scheduled		Proj. Payout of	Proj. Payout of		Proj. Payout of	Proj. Payout of	
Ending 6/30	Liabilities	Payout Pattern	Current Liabilities	Future Liabilities	Total	Current Liabilities	Future Liabilities	Total
Prior	5,150,833							
2026	7,330,497	50%	6,240,665	-	6,240,665	6,318,192	-	6,318,192
2027	4,793,158	50%	8,637,244	-	8,637,244	8,963,157	-	8,963,157
2028			2,396,579	-	2,396,579	2,549,186	-	2,549,186
2029			-	5,141,949	5,141,949	-	5,606,105	5,606,105
2030			-	8,591,586	8,591,586	-	9,601,316	9,601,316
2031			-	6,565,298	6,565,298	-	7,520,309	7,520,309
2032			-	6,054,572	6,054,572	-	7,108,673	7,108,673
2033				8,390,418	8,390,418	-	10,097,470	10,097,470
2034				5,110,190	5,110,190	-	6,303,618	6,303,618
2035				4,696,994	4,696,994	-	5,938,773	5,938,773
2036				4,417,069	4,417,069	-	5,724,464	5,724,464
2037				4,070,097	4,070,097	-	5,406,662	5,406,662
2038				3,813,201	3,813,201	-	5,192,040	5,192,040
2039				3,505,454	3,505,454	-	4,892,338	4,892,338
2040				3,223,048	3,223,048	-	4,610,657	4,610,657
2041				2,942,431	2,942,431	-	4,314,458	4,314,458
2042				2,695,855	2,695,855	-	4,051,728	4,051,728
2043				2,450,448	2,450,448	-	3,774,966	3,774,966
2044				2,233,082	2,233,082	-	3,526,113	3,526,113
2045				2,062,691	2,062,691	-	3,338,485	3,338,485
Total	17,274,489		17,274,489	75,964,381	93,238,870	17,830,534	97,008,175	114,838,709

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Trust Fund
Payout of Water Operations & Maintenance Liabilities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Unadjusted Costs			Inflated Cost at 2.50% Annual Inflation		
Fiscal Year	Curr. Scheduled		Proj. Payout of	Proj. Payout of		Proj. Payout of	Proj. Payout of	
Ending 6/30	Liabilities	Payout Pattern	Current Liabilities	Future Liabilities	Total	Current Liabilities	Future Liabilities	Total
Prior	4,523,964							
2026	4,643,670	n/a	4,643,670	-	4,643,670	4,701,357	-	4,701,357
2027	4,740,812		4,740,812	-	4,740,812	4,919,699	-	4,919,699
2028	4,740,812		4,740,812	-	4,740,812	5,042,691	-	5,042,691
2029	4,740,812		4,740,812	137,802	4,878,614	5,168,758	150,241	5,318,999
2030	4,740,812		4,740,812	353,054	5,093,865	5,297,977	394,546	5,692,524
2031	4,740,812		4,740,812	498,067	5,238,879	5,430,427	570,517	6,000,944
2032	4,740,812		4,740,812	628,206	5,369,018	5,566,188	737,577	6,303,764
2033	4,740,812		4,740,812	1,149,519	5,890,331	5,705,342	1,383,392	7,088,734
2034	4,740,812		4,740,812	908,038	5,648,850	5,847,976	1,120,100	6,968,076
2035	4,740,812		4,740,812	1,001,090	5,741,902	5,994,175	1,265,756	7,259,931
2036	4,740,812		4,740,812	1,087,075	5,827,887	6,144,030	1,408,835	7,552,864
2037	4,645,996		4,645,996	1,164,247	5,810,242	6,171,678	1,546,570	7,718,247
2038	4,553,076		4,553,076	1,235,627	5,788,703	6,199,450	1,682,425	7,881,875
2039	4,462,014		4,462,014	1,298,135	5,760,149	6,227,348	1,811,724	8,039,072
2040	4,372,774		4,372,774	1,353,152	5,725,926	6,255,371	1,935,720	8,191,091
2041	4,285,318		4,285,318	1,400,967	5,686,285	6,283,520	2,054,224	8,337,744
2042	4,199,612		4,199,612	1,443,219	5,642,831	6,311,796	2,169,083	8,480,879
2043	4,115,620		4,115,620	1,479,508	5,595,127	6,340,199	2,279,213	8,619,412
2044	4,033,307		4,033,307	1,510,488	5,543,795	6,368,730	2,385,112	8,753,842
2045	3,952,641		3,952,641	1,537,731	5,490,373	6,397,389	2,488,833	8,886,223
Total	95,196,108		90,672,145	18,185,924	108,858,069	116,374,101	25,383,868	141,757,968

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Administrative Expense Projection

Fiscal Year Ending 6/30	(1) Total Admin Expense	(2) Remaining Permits	(3) Admin Expense On In-Force Permits
2026	4,263,897	87%	3,711,169
2027	4,391,814	85%	3,746,603
2028	4,523,568	79%	3,563,741
2029	4,659,276	73%	3,395,254
2030	4,799,054	67%	3,239,313
2031	4,943,025	63%	3,096,244
2032	5,091,316	58%	2,967,568
2033	5,244,056	54%	2,854,308
2034	5,401,377	51%	2,761,044
2035	5,563,419	48%	2,683,377
2036	5,730,321	46%	2,625,532
2037	5,902,231	44%	2,581,056
2038	6,079,298	42%	2,549,086
2039	6,261,677	40%	2,529,805
2040	6,449,527	39%	2,518,991
2041	6,643,013	38%	2,515,355
2042	6,842,303	37%	2,517,924
2043	7,047,572	36%	2,525,777
2044	7,258,999	35%	2,538,233
2045	7,476,769	34%	2,555,320
Total	114,572,513		57,475,699

Notes: Col (1) from client data, trended at 3% per year.
Col (2) from Exhibit E-17, Col (5)
Col (3) = (1) × (2)

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Average Reclamation Expenses - Land

	<u>Surface</u>	<u>Underground</u>	<u>Other</u>
(1) Total reclamation expenditure in 2025 dollars (i.e., inflated)	160,739,679	70,042,319	55,594,687
(2) Total disturbed acreage	37,390	3,945	4,526
(3) Average cost per disturbed acre in 2025 dollars	4,299	17,754	12,283
(4) Percent of permitted acreage that is disturbed	69.71%	73.09%	79.23%
(5) Cost per permitted acre in 2025 dollars	2,997	12,976	9,732
(6) Selected cost per acre	2,995	12,975	9,730
Previous Selection	2,685	11,610	8,785

West Virginia Department of Environmental Protection Office of Special Reclamation
 Actuarial Reserve Study as of June 30, 2025
 Average Reclamation Expenses - Water Capital

	<u>Surface</u>	<u>Underground</u>	<u>Other</u>
(1) Total expenditure in 2025 Dollars (i.e., inflated)	136,189,330	27,241,742	76,025,561
(2) Total disturbed acreage under permits with water issues	11,766	646	1,297
(3) Average cost per disturbed acre in 2025 dollars	11,575	42,174	58,597
(4) Percent of permitted acreage that is disturbed under permits with water	70.04%	84.18%	79.58%
(5) Cost Per Permitted Acre in 2025 dollars	8,107	35,503	46,635
(6) Percent of forfeited acres with water issues	31.32%	14.22%	28.54%
(7) Cost Per Disturbed Acre in 2025 dollars with water issues	3,625	5,995	16,723
(8) Cost Per Permitted Acre in 2025 dollars with water issues	2,539	5,047	13,309
(9) Selected Cost Per Acre with water issues	3,015	5,320	13,310
Previous Selection	3,490	5,595	8,145

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Average Reclamation Expenses - Water O&M

	<u>Surface</u>	<u>Underground</u>	<u>Other</u>
(1) Total Annual Expenditure in Actual Dollars for Water Forfeited Permits	3,600,543	686,089	712,356
(2) Total disturbed acreage under permits with water issues	11,766	646	1,297
(3) Total cost per disturbed acre for water issue sites	306	1,062	549
(4) Percent of permitted acreage that is disturbed under permits with water	70.04%	84.18%	79.58%
(5) Valuation Cost Per Permitted Acre	214	894	437
(6) Percent of forfeited acres with water issues	31.32%	14.22%	28.54%
(7) Valuation Cost Per Disturbed Acre with water issues	96	151	157
(8) Valuation Cost Per Permitted Acre with water issues	67	127	125
(9) Selected Valuation Cost Per Acre with water issues	80	135	130
Previous Selection	90	140	135

West Virginia Department of Environmental Protection Office of Special Reclamation
 Actuarial Reserve Study as of June 30, 2025
 Bond Size Adjustment Factor Calculation

<u>Bond Category</u>	<u>Bond Value</u>	(1) Prior Selected Factor	(2) 2015 Active + Inactive Permits	(3) 2015-25 Revoked Permits	(4) Forfeiture Probability	(5) Relativity	(6) 2025 Selected Factor
Small	Less than \$100,000	1.20	978	63	6.44%	1.27	1.25
Medium	Between \$100,000 and \$500,000	0.55	447	18	4.03%	0.80	0.80
Large	Above \$500,000	0.95	431	13	3.02%	0.60	0.60
Total			1,856	94	5.06%	1.00	

Notes: Col (1) from previous analysis
 Cols (2) and (3) from client data
 Col (4) = (3) / (2)
 Col (5) = (4) / (4 Total)
 Col (6) selected based on previous and current relativities

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Release and Forfeiture Probability Relativities by Status

	(1)	(2)	(3)	(4)	(5)	(6)
<u>Status</u>	<u>Total Permits 2015</u>	<u>Total Forfeitures 2015-25</u>	<u>Probability</u>	<u>Relativity</u>	<u>Prior Selected</u>	<u>Selected</u>
Active	1,345	61	4.54%	0.90	0.70	0.80
Inactive	266	18	6.77%	1.35	1.60	1.45
Phased Release	258	15	5.81%	1.16	1.85	1.50
Overall	1,869	94	5.03%			

<u>Status</u>	<u>Total Permits 2015</u>	<u>Total Releases 2015-25</u>	<u>Probability</u>	<u>Relativity</u>	<u>Prior Selected</u>	<u>Selected</u>
Active	1,345	183	13.61%	0.84	0.85	0.85
Inactive	266	24	9.02%	0.55	0.50	0.55
Phased Release	258	97	37.60%	2.31	2.30	2.30
Overall	1,869	304	16.27%			

Notes:

- Cols (1) and (2) from client data
- Col (3) = (2) / (1)
- Col (4) = (3) / (3 Total)
- Col (5) from previous analysis
- Col (6) selected based on previous and current relativities

**Triangle Data on Number of Permits, Forfeitures, Releases, and Terminations
By Permit Type and Issue Year**

Surface
Total Permits

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	9	8	8	8	8	8	8	8	8	7	7	7	7	7	7	6	6	4	4
1969	8	8	8	7	7	7	7	7	7	7	7	7	7	7	7	6	6	4	4
1970	13	13	12	12	12	12	12	12	12	12	12	12	12	12	10	10	8	7	5
1971	15	15	15	15	15	15	15	15	15	15	15	15	15	15	11	11	9	7	7
1972	22	22	22	21	21	21	21	21	21	21	21	21	19	11	7	4	1	1	1
1973	22	22	22	22	22	22	22	22	22	22	22	19	16	11	10	10	8	7	6
1974	39	39	39	39	39	39	39	39	38	38	37	26	22	20	16	14	12	12	12
1975	92	92	92	92	92	92	92	91	91	87	65	46	37	30	25	24	22	20	16
1976	78	78	78	78	77	77	77	76	70	52	38	33	29	26	25	19	17	17	16
1977	104	104	104	103	103	103	103	95	75	53	45	35	32	27	25	22	21	18	17
1978	138	138	138	137	137	137	130	105	78	70	56	44	43	40	36	35	31	29	26
1979	68	68	68	68	68	65	56	47	40	38	36	32	32	28	26	22	19	17	15
1980	103	103	103	103	100	94	89	84	77	71	65	58	51	42	40	37	31	30	29
1981	149	149	147	140	136	130	121	117	110	104	100	93	85	81	74	71	58	52	46
1982	86	86	82	75	68	65	62	56	53	48	41	31	26	20	15	14	10	8	6
1983	170	169	162	142	134	120	115	103	95	85	68	61	54	49	43	40	34	28	24
1984	90	89	87	81	80	77	73	68	57	52	45	37	33	26	23	19	16	15	14
1985	119	115	110	109	109	107	104	98	90	79	68	60	46	38	31	27	25	25	24
1986	106	99	96	92	90	88	84	80	72	62	58	52	47	41	37	31	28	26	24
1987	121	119	115	112	111	106	96	90	80	69	58	53	45	35	29	22	20	19	19
1988	105	103	99	98	90	83	82	75	66	57	46	42	38	30	28	28	27	27	27
1989	122	116	114	111	108	107	101	96	85	73	61	52	47	40	37	35	33	31	28
1990	82	82	79	78	73	70	67	59	57	47	39	34	33	32	31	31	30	28	27
1991	71	69	67	66	65	64	63	55	50	42	35	31	31	29	27	25	23	19	19
1992	49	48	47	46	43	42	41	39	31	22	20	16	16	14	13	11	10	9	9
1993	54	53	50	48	48	47	45	42	37	32	29	27	26	24	20	19	16	16	16
1994	42	41	39	39	38	34	30	28	28	24	23	21	21	18	18	18	15	14	14
1995	39	39	39	38	38	36	33	29	27	27	25	24	23	22	22	21	21	20	19
1996	29	29	29	29	29	29	29	29	27	26	26	26	25	24	22	22	22	21	19
1997	47	45	44	44	42	42	42	40	38	37	36	36	34	31	30	29	28	27	27
1998	36	36	35	35	35	34	33	33	31	30	30	28	28	27	27	27	27	27	27
1999	17	17	14	14	14	12	12	11	11	10	10	9	8	7	7	7	7	7	7
2000	19	19	19	19	17	16	14	13	12	12	12	11	11	11	9	9	8	8	7
2001	26	26	26	26	26	26	26	25	25	25	25	25	25	25	24	24	24	24	24
2002	23	23	22	22	22	22	22	21	21	21	20	20	20	20	20	20	20	20	20
2003	29	29	29	28	28	27	25	24	24	23	22	22	22	22	22	22	22	22	22
2004	33	33	32	32	32	31	31	31	31	31	31	31	31	31	31	30	28	28	28
2005	19	19	19	19	18	18	18	18	18	18	18	18	18	18	18	18	18	16	16
2006	16	16	16	15	15	15	15	15	15	14	13	13	13	13	13	13	13	13	13
2007	30	30	30	30	29	29	29	29	27	26	26	26	25	25	25	25	25	25	24
2008	24	24	24	24	24	24	24	24	23	22	21	21	18	18	18	18	18	18	18
2009	25	25	25	25	25	25	25	24	24	24	23	22	21	21	21	20	20	20	20
2010	15	15	15	15	15	14	14	14	14	14	14	14	13	13	12	12			
2011	21	21	21	21	21	21	21	21	21	21	20	20	20	19	18				
2012	26	26	26	25	24	24	24	24	24	24	23	23	23	22					
2013	25	25	24	23	23	23	23	23	23	23	23	23	22						
2014	22	22	22	22	22	22	22	22	22	22	21	21							
2015	16	16	15	15	15	15	15	15	15	15	14								
2016	11	11	11	11	11	11	11	11	11	11									
2017	6	6	6	6	6	5	5	5	5										
2018	9	9	9	9	9	9	9	9											
2019	9	9	9	9	9	9	9												
2020	11	11	11	11	11	11													
2021	7	7	7	7	7														
2022	15	15	15	15															
2023	15	15	15																
2024	6	6																	
2025	5																		

Surface
Total Permits

Issue Yr	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468	480	492	504	516	528	540	552	564	576
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	2	2	2	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	4	4	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	4	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	6	4	4	4	3	3	3	3	3	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
1972	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1973	5	5	3	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	12	10	10	10	7	5	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1975	15	11	9	8	6	6	5	4	4	4	4	4	4	4	4	4	3	2	2	2	2	2	2	2	2	2	2	2	2
1976	14	14	13	13	12	11	10	10	10	10	10	10	10	10	9	9	8	8	8	7	7	7	6	6	6	6	6	6	6
1977	14	14	13	12	12	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
1978	21	18	16	16	15	14	12	12	10	10	10	10	8	7	7	7	7	7	7	7	6	6	6	5	5	5	5	5	5
1979	13	11	11	11	10	8	8	7	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4
1980	28	24	19	18	15	14	12	12	11	11	7	7	7	7	7	7	7	6	6	6	6	5	3	2	2	2	2	2	2
1981	42	38	37	35	33	31	29	28	28	26	25	23	22	22	21	20	20	19	18	18	18	18	17	15	13	13	13	13	13
1982	5	5	5	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2
1983	22	20	16	16	15	15	14	13	12	11	11	11	9	9	9	9	9	9	8	7	7	7	7	7	6	6	6	6	6
1984	14	13	12	12	11	11	10	9	9	8	8	8	8	7	7	6	6	5	4	4	4	3	3	3	3	3	3	3	3
1985	18	16	16	16	13	10	10	10	10	8	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1986	23	22	22	21	18	17	17	15	15	15	14	14	14	14	14	14	13	13	13	13	12	12	12	12	12	12	12	12	12
1987	19	18	18	16	13	12	12	12	12	12	12	11	10	9	9	9	9	9	8	7	7	7	7	7	7	7	7	7	7
1988	26	24	23	20	18	16	15	15	15	15	15	15	14	14	14	14	14	14	13	13	13	13	13	13	13	13	13	13	13
1989	25	22	21	21	20	19	17	17	17	15	15	15	15	15	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14
1990	27	26	24	22	21	19	19	19	18	17	17	17	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
1991	19	16	15	15	15	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
1992	9	9	9	9	9	8	8	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1993	16	14	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
1994	14	14	14	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
1995	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
1996	19	19	18	18	18	18	17	17	16	16	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
1997	27	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
1998	26	25	24	24	24	24	24	24	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
1999	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2000	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
2001	24	24	24	24	24	24	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
2002	19	19	19	18	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
2003	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
2004	28	28	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
2005	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
2006	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
2007																													
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Surface Total Permits											
Issue Yr	518	600	612	624	636	648	660	672	684	696	708
1967	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0
1972	1	1	1	1	1	1	1	1	1	1	1
1973	0	0	0	0	0	0	0	0	0	0	0
1974	2	2	2	2	2	2	2	2	2	2	2
1975	2	2	2	2	2	2	2	2	2	2	2
1976	6	6	6	6	6	6	6	6	6	6	6
1977	8	8	8	8	8	8	8	8	8	8	8
1978											
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2019											
2020											
2021											
2022											
2023											
2024											
2025											

Surface
Total Releases

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	0
1969	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0
1970	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	2
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	2	2	0
1972	0	0	0	1	0	0	0	0	0	0	0	0	1	8	4	3	3	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	3	3	5	1	0	2	0	1
1974	0	0	0	0	0	0	0	0	0	0	1	11	4	2	4	2	1	0	0
1975	0	0	0	0	0	0	0	1	0	4	22	17	8	7	4	1	2	2	4
1976	0	0	0	0	0	0	0	1	6	18	13	5	4	2	1	6	1	0	1
1977	0	0	0	1	0	0	0	8	20	20	8	10	3	3	2	3	1	2	1
1978	0	0	0	0	0	0	6	23	22	7	14	12	1	2	3	1	4	2	2
1979	0	0	0	0	0	3	9	9	7	2	2	3	0	4	2	3	3	1	2
1980	0	0	0	0	3	6	4	5	7	6	5	6	5	8	2	3	6	1	1
1981	0	0	0	7	4	6	9	4	6	6	4	5	7	4	6	1	11	6	6
1982	0	0	3	6	7	3	3	6	3	5	4	7	5	6	4	0	4	2	1
1983	0	1	6	18	7	13	4	10	8	8	14	4	7	2	4	3	6	4	1
1984	0	1	0	4	1	3	3	5	9	5	7	8	4	7	2	4	0	1	1
1985	0	4	4	1	0	1	3	4	8	9	11	7	10	8	7	4	2	0	1
1986	1	7	2	2	0	1	3	3	6	9	4	5	4	4	3	5	3	2	2
1987	1	2	3	2	1	2	7	5	6	11	10	5	7	6	5	7	2	0	0
1988	1	2	0	1	3	3	0	6	8	7	9	4	4	7	2	0	0	0	0
1989	0	3	1	1	1	1	3	5	11	8	12	5	4	7	3	1	2	2	3
1990	0	0	0	0	4	1	3	6	2	10	7	3	1	1	0	0	1	2	1
1991	0	0	1	0	0	0	1	8	5	8	7	4	0	2	1	2	1	3	0
1992	0	0	0	0	3	1	1	1	8	7	2	4	0	2	1	2	1	0	0
1993	0	1	1	2	0	1	1	3	5	4	3	1	1	2	4	0	1	0	0
1994	0	1	1	0	0	4	1	1	0	4	1	2	0	3	0	0	3	1	0
1995	0	0	0	1	0	1	3	4	2	0	2	1	1	0	0	1	0	1	1
1996	0	0	0	0	0	0	0	0	2	1	0	0	1	0	2	0	0	1	1
1997	0	2	1	0	2	0	0	2	2	1	0	0	1	2	1	1	1	0	0
1998	0	0	0	0	0	0	1	0	2	1	0	2	0	1	0	0	0	0	0
1999	0	0	3	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0
2000	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	1	0	1
2001	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0
2004	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0
2005	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0
2006	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	1	1	0	3	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
2012	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2015	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Surface Total Releases	Issue Yr	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468	480	492	504	516	528	540	552	564	576
1967		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968		2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969		0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970		1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971		1	2	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973		1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974		0	2	0	2	0	2	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975		1	4	2	1	2	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976		2	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1977		3	0	1	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978		5	3	2	0	1	1	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979		2	2	0	0	1	2	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980		1	4	3	1	3	1	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981		3	2	1	2	2	2	2	1	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
1982		1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983		1	2	3	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984		0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985		4	2	0	0	3	1	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986		1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987		0	1	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988		1	1	0	3	1	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989		2	2	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990		0	1	2	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991		0	3	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992		0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993		0	2	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998		1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003		1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Surface
Total Releases

Issue Yr	588	600	612	624	636	648	660	672	684	696	708
1967	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0
1977	0	1	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0

Surface
Total Forfeitures

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1974	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
1975	11	0	0	0	0	0	0	0	0	0	1	0	2	0	1	0	0	0	0
1976	14	0	0	0	1	0	0	0	0	2	0	0	0	2	0	0	1	0	0
1977	14	0	0	0	0	0	0	0	5	1	0	0	0	1	1	0	0	1	0
1978	28	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1
1979	13	0	0	0	0	0	0	0	0	0	1	1	2	1	0	1	0	0	0
1980	12	0	0	0	0	0	0	0	0	0	0	1	2	1	0	2	2	0	0
1981	15	0	2	0	0	0	0	0	0	0	3	3	0	3	2	0	0	0	1
1982	7	0	1	1	0	0	0	0	0	0	0	3	0	0	1	1	0	0	0
1983	20	0	0	2	1	1	1	2	0	2	3	3	0	3	2	0	3	0	2
1984	17	0	2	2	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0
1985	14	0	1	0	0	1	0	2	0	2	0	1	4	0	1	0	0	0	0
1986	22	0	1	2	2	1	1	1	2	1	0	1	1	4	1	1	0	0	0
1987	19	0	1	1	0	3	3	1	4	0	1	0	1	1	0	0	0	1	0
1988	10	0	4	0	5	4	1	1	1	2	2	0	4	1	0	0	1	0	0
1989	12	3	1	2	2	0	3	0	0	4	0	0	1	0	0	1	0	0	0
1990	10	2	3	1	1	2	0	2	0	0	1	2	0	0	1	0	0	0	0
1991	3	2	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0
1992	3	1	1	1	0	0	0	1	0	2	0	0	0	0	0	0	1	1	0
1993	5	2	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	0
1994	0	0	1	0	1	1	3	1	0	0	0	0	0	0	0	0	0	0	0
1995	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
2003	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2008	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Surface
Total Forfeitures

[illegible]

Surface		Total Forfeitures											
Issue Yr		588	600	612	624	636	648	660	672	684	696	708	
1967		0	0	0	0	0	0	0	0	0	0	0	
1968		0	0	0	0	0	0	0	0	0	0	0	
1969		0	0	0	0	0	0	0	0	0	0	0	
1970		0	0	0	0	0	0	0	0	0	0	0	
1971		0	0	0	0	0	0	0	0	0	0	0	
1972		0	0	0	0	0	0	0	0	0	0	0	
1973		0	0	0	0	0	0	0	0	0	0	0	
1974		0	0	0	0	0	0	0	0	0	0	0	
1975		0	0	0	0	0	0	0	0	0	0	0	
1976		0	0	0	0	0	0	0	0	0	0	0	
1977		0	0	0	0	0	0	0	0	0	0	0	
1978		0	0	0	0	0	0	0	0	0	0	0	
1979		0	0	0	0	0	0	0	0	0	0	0	
1980		0	0	0	0	0	0	0	0	0	0	0	
1981		0	0	0	0	0	0	0	0	0	0	0	
1982		0	0	0	0	0	0	0	0	0	0	0	
1983		0	0	0	0	0	0	0	0	0	0	0	
1984		0	0	0	0	0	0	0	0	0	0	0	
1985		0	0	0	0	0	0	0	0	0	0	0	
1986		0	0	0	0	0	0	0	0	0	0	0	
1987		0	0	0	0	0	0	0	0	0	0	0	
1988		0	0	0	0	0	0	0	0	0	0	0	
1989		0	0	0	0	0	0	0	0	0	0	0	
1990		0	0	0	0	0	0	0	0	0	0	0	
1991		0	0	0	0	0	0	0	0	0	0	0	
1992		0	0	0	0	0	0	0	0	0	0	0	
1993		0	0	0	0	0	0	0	0	0	0	0	
1994		0	0	0	0	0	0	0	0	0	0	0	
1995		0	0	0	0	0	0	0	0	0	0	0	
1996		0	0	0	0	0	0	0	0	0	0	0	
1997		0	0	0	0	0	0	0	0	0	0	0	
1998		0	0	0	0	0	0	0	0	0	0	0	
1999		0	0	0	0	0	0	0	0	0	0	0	
2000		0	0	0	0	0	0	0	0	0	0	0	
2001		0	0	0	0	0	0	0	0	0	0	0	
2002		0	0	0	0	0	0	0	0	0	0	0	
2003		0	0	0	0	0	0	0	0	0	0	0	
2004		0	0	0	0	0	0	0	0	0	0	0	
2005		0	0	0	0	0	0	0	0	0	0	0	
2006		0	0	0	0	0	0	0	0	0	0	0	
2007		0	0	0	0	0	0	0	0	0	0	0	
2008		0	0	0	0	0	0	0	0	0	0	0	
2009		0	0	0	0	0	0	0	0	0	0	0	
2010		0	0	0	0	0	0	0	0	0	0	0	
2011		0	0	0	0	0	0	0	0	0	0	0	
2012		0	0	0	0	0	0	0	0	0	0	0	
2013		0	0	0	0	0	0	0	0	0	0	0	
2014		0	0	0	0	0	0	0	0	0	0	0	
2015		0	0	0	0	0	0	0	0	0	0	0	
2016		0	0	0	0	0	0	0	0	0	0	0	
2017		0	0	0	0	0	0	0	0	0	0	0	
2018		0	0	0	0	0	0	0	0	0	0	0	
2019		0	0	0	0	0	0	0	0	0	0	0	
2020		0	0	0	0	0	0	0	0	0	0	0	
2021		0	0	0	0	0	0	0	0	0	0	0	
2022		0	0	0	0	0	0	0	0	0	0	0	
2023		0	0	0	0	0	0	0	0	0	0	0	
2024		0	0	0	0	0	0	0	0	0	0	0	
2025		0	0	0	0	0	0	0	0	0	0	0	

Surface
Misc Terminations:

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Surface
Misc Terminations

[illegible]

Surface Misc Terminations													
Issue Yr	588	600	612	624	636	648	660	672	684	696	708		
1967	0	0	0	0	0	0	0	0	0	0	0		
1968	0	0	0	0	0	0	0	0	0	0	0		
1969	0	0	0	0	0	0	0	0	0	0	0		
1970	0	0	0	0	0	0	0	0	0	0	0		
1971	0	0	0	0	0	0	0	0	0	0	0		
1972	0	0	0	0	0	0	0	0	0	0	0		
1973	0	0	0	0	0	0	0	0	0	0	0		
1974	0	0	0	0	0	0	0	0	0	0	0		
1975	0	0	0	0	0	0	0	0	0	0	0		
1976	0	0	0	0	0	0	0	0	0	0	0		
1977	0	0	0	0	0	0	0	0	0	0	0		
1978	0	0	0	0	0	0	0	0	0	0	0		
1979	0	0	0	0	0	0	0	0	0	0	0		
1980	0	0	0	0	0	0	0	0	0	0	0		
1981	0	0	0	0	0	0	0	0	0	0	0		
1982	0	0	0	0	0	0	0	0	0	0	0		
1983	0	0	0	0	0	0	0	0	0	0	0		
1984	0	0	0	0	0	0	0	0	0	0	0		
1985	0	0	0	0	0	0	0	0	0	0	0		
1986	0	0	0	0	0	0	0	0	0	0	0		
1987	0	0	0	0	0	0	0	0	0	0	0		
1988	0	0	0	0	0	0	0	0	0	0	0		
1989	0	0	0	0	0	0	0	0	0	0	0		
1990	0	0	0	0	0	0	0	0	0	0	0		
1991	0	0	0	0	0	0	0	0	0	0	0		
1992	0	0	0	0	0	0	0	0	0	0	0		
1993	0	0	0	0	0	0	0	0	0	0	0		
1994	0	0	0	0	0	0	0	0	0	0	0		
1995	0	0	0	0	0	0	0	0	0	0	0		
1996	0	0	0	0	0	0	0	0	0	0	0		
1997	0	0	0	0	0	0	0	0	0	0	0		
1998	0	0	0	0	0	0	0	0	0	0	0		
1999	0	0	0	0	0	0	0	0	0	0	0		
2000	0	0	0	0	0	0	0	0	0	0	0		
2001	0	0	0	0	0	0	0	0	0	0	0		
2002	0	0	0	0	0	0	0	0	0	0	0		
2003	0	0	0	0	0	0	0	0	0	0	0		
2004	0	0	0	0	0	0	0	0	0	0	0		
2005	0	0	0	0	0	0	0	0	0	0	0		
2006	0	0	0	0	0	0	0	0	0	0	0		
2007	0	0	0	0	0	0	0	0	0	0	0		
2008	0	0	0	0	0	0	0	0	0	0	0		
2009	0	0	0	0	0	0	0	0	0	0	0		
2010	0	0	0	0	0	0	0	0	0	0	0		
2011	0	0	0	0	0	0	0	0	0	0	0		
2012	0	0	0	0	0	0	0	0	0	0	0		
2013	0	0	0	0	0	0	0	0	0	0	0		
2014	0	0	0	0	0	0	0	0	0	0	0		
2015	0	0	0	0	0	0	0	0	0	0	0		
2016	0	0	0	0	0	0	0	0	0	0	0		
2017	0	0	0	0	0	0	0	0	0	0	0		
2018	0	0	0	0	0	0	0	0	0	0	0		
2019	0	0	0	0	0	0	0	0	0	0	0		
2020	0	0	0	0	0	0	0	0	0	0	0		
2021	0	0	0	0	0	0	0	0	0	0	0		
2022	0	0	0	0	0	0	0	0	0	0	0		
2023	0	0	0	0	0	0	0	0	0	0	0		
2024	0	0	0	0	0	0	0	0	0	0	0		
2025	0	0	0	0	0	0	0	0	0	0	0		

Surface
Percent Forfeited

Issue Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	11.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1969	37.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	37.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1972	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1974	5.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1975	11.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1976	17.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	13.46%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1978	20.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1979	19.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1980	11.65%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1981	10.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1982	8.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1983	11.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1984	18.89%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1985	17.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1986	20.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1987	15.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1988	9.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1989	9.84%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1990	12.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1991	4.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1992	6.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1993	9.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1994	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1995	2.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1996	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1997	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2007	3.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2008	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2009	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2010	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2012	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2013	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2014	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2015	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00		

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x	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Surface																			
Percent Released																			
Issue Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	11.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%	0.00%	33.33%	0.00%
1969	0.00%	0.00%	0.00%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%	0.00%	33.33%	0.00%
1970	0.00%	0.00%	7.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.67%	0.00%	20.00%	12.50%	28.57%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	26.67%	0.00%	18.18%	22.22%	0.00%
1972	0.00%	0.00%	0.00%	4.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	42.11%	36.36%	42.86%	75.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	13.64%	15.79%	31.25%	9.09%	0.00%	20.00%	0.00%	14.29%
1974	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.63%	29.73%	15.38%	9.09%	20.00%	12.50%	7.14%	0.00%	0.00%
1975	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.09%	0.00%	0.00%	4.40%	25.29%	26.15%	17.39%	18.92%	13.33%	4.00%	8.33%	9.09%	20.00%
1976	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.30%	7.89%	25.71%	25.00%	13.16%	12.12%	6.90%	3.85%	24.00%	5.26%	0.00%	5.88%	0.00%
1977	0.00%	0.00%	0.00%	0.96%	0.00%	0.00%	7.77%	21.05%	26.67%	15.09%	22.22%	8.57%	9.38%	7.41%	12.00%	4.55%	9.52%	5.56%	0.00%
1978	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.38%	17.69%	20.95%	8.97%	20.00%	21.43%	2.27%	4.65%	7.50%	2.78%	11.43%	6.45%	6.90%
1979	0.00%	0.00%	0.00%	0.00%	4.41%	13.85%	16.07%	14.89%	5.00%	5.26%	8.33%	0.00%	12.50%	7.14%	11.54%	13.64%	5.26%	11.76%	0.00%
1980	0.00%	0.00%	0.00%	0.00%	2.91%	6.00%	4.26%	5.62%	8.33%	7.79%	7.04%	9.23%	8.62%	15.69%	4.76%	7.50%	16.22%	3.23%	3.33%
1981	0.00%	0.00%	0.00%	4.76%	2.86%	4.41%	6.92%	3.31%	5.13%	5.45%	3.85%	5.00%	7.53%	4.71%	7.41%	1.35%	15.49%	10.34%	11.54%
1982	0.00%	0.00%	3.49%	7.32%	9.33%	4.41%	4.62%	9.68%	5.36%	9.43%	8.33%	17.07%	16.13%	23.08%	20.00%	0.00%	28.57%	20.00%	12.50%
1983	0.00%	0.59%	3.55%	11.11%	4.93%	9.70%	3.33%	8.70%	7.77%	8.42%	16.47%	5.88%	11.48%	3.70%	8.16%	6.98%	15.00%	11.76%	3.57%
1984	0.00%	1.11%	0.00%	4.60%	1.23%	3.75%	3.90%	6.85%	13.24%	8.77%	13.46%	17.78%	10.81%	21.21%	7.69%	17.39%	0.00%	6.25%	6.67%
1985	0.00%	3.36%	3.48%	0.91%	0.00%	0.92%	2.80%	3.85%	8.16%	10.00%	13.92%	10.29%	16.67%	17.39%	18.42%	12.90%	7.41%	0.00%	4.00%
1986	0.94%	6.60%	2.02%	2.08%	0.00%	1.11%	3.41%	3.57%	7.50%	12.50%	6.45%	8.62%	7.69%	8.51%	7.32%	13.51%	9.68%	7.14%	7.69%
1987	0.83%	1.65%	2.52%	1.74%	0.89%	1.80%	6.60%	5.21%	6.67%	13.75%	14.49%	8.62%	13.21%	13.33%	14.29%	24.14%	9.09%	0.00%	0.00%
1988	0.95%	1.90%	0.00%	1.01%	3.06%	3.33%	0.00%	7.32%	10.67%	10.61%	15.79%	8.70%	9.52%	18.42%	6.67%	0.00%	0.00%	0.00%	0.00%
1989	0.00%	2.46%	0.86%	0.88%	0.90%	0.93%	2.80%	4.95%	11.46%	9.41%	16.44%	8.20%	7.69%	14.89%	7.50%	2.70%	5.71%	6.06%	9.68%
1990	0.00%	0.00%	0.00%	0.00%	5.13%	1.37%	4.29%	8.96%	3.39%	17.54%	14.89%	7.69%	2.94%	3.03%	0.00%	0.00%	3.23%	6.67%	3.57%
1991	0.00%	0.00%	1.45%	0.00%	0.00%	0.00%	1.56%	12.70%	9.09%	16.00%	16.67%	11.43%	0.00%	6.45%	3.45%	7.41%	4.00%	13.04%	0.00%
1992	0.00%	0.00%	0.00%	0.00%	6.52%	2.33%	2.38%	2.44%	20.51%	22.58%	9.09%	20.00%	0.00%	12.50%	7.14%	15.38%	9.09%	0.00%	0.00%
1993	0.00%	1.85%	1.89%	4.00%	0.00%	2.08%	2.13%	6.67%	11.90%	10.81%	9.38%	3.45%	3.70%	7.69%	16.67%	0.00%	5.26%	0.00%	0.00%
1994	0.00%	2.38%	2.44%	0.00%	0.00%	10.53%	2.94%	3.33%	0.00%	14.29%	4.17%	8.70%	0.00%	14.29%	0.00%	0.00%	16.67%	6.67%	0.00%
1995	0.00%	0.00%	0.00%	2.56%	0.00%	2.63%	8.33%	12.12%	6.90%	0.00%	7.41%	4.00%	4.17%	0.00%	0.00%	4.55%	0.00%	4.76%	5.00%
1996	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.90%	3.70%	0.00%	0.00%	0.00%	8.33%	0.00%	0.00%	0.00%	4.55%	4.76%
1997	0.00%	4.26%	2.22%	0.00%	4.55%	0.00%	0.00%	4.76%	5.00%	2.63%	2.70%	0.00%	2.78%	5.88%	3.23%	3.33%	3.45%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.94%	0.00%	6.06%	3.23%	0.00%	6.67%	0.00%	3.57%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	0.00%	17.65%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.09%	0.00%	10.00%	11.11%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	0.00%	0.00%	5.26%	0.00%	0.00%	7.14%	0.00%	0.00%	0.00%	8.33%	0.00%	9.09%	0.00%	0.00%	11.11%	0.00%	12.50%
2001	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	3.57%	0.00%	4.00%	0.00%	4.17%	4.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	0.00%	0.00%	3.03%	0.00%	0.00%	3.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%	3.33%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.11%	0.00%
2006	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2007	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.45%	3.70%	0.00%	0.00%	3.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2008	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.35%	4.55%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2009	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.17%	4.35%	4.55%	0.00%	0.00%	4.76%	0.00%		
2010	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.14%	0.00%	0.00%	0.00%		
2011	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	0.00%	0.00%	5.00%	0.00%				
2012	0.00%	0.00%	0.00%	0.00%	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%				
2013	0.00%	0.00%	0.00%	4.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%						
2014	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.55%	0.00%					
2015	0.00%	0.00%	6.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%								
2016	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%									
2017	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%										
2018	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%											
2019	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%													
2020	0.00%	0.00%	0.00%	0.00%	0.00%														
2021	0.00%	0.00%	0.00%	0.00%															
2022	0.00%	0.00%	0.00%																
2023	0.00%	0.00%																	
2024	0.00%	0.00%																	
2025	0.00%																		
Wtd Avg																			
5 Yr	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.90%	0.00%	1.96%	1.05%	0.00%	1.12%	0.00%	1.96%	0.00%
10 Yr	0.00%	0.00%	0.83%	0.78%	0.72%	0.00%	0.00%	0.00%	0.00%	0.98%	1.95%	0.50%	2.84%	0.49%	0.00%	0.98%	1.01%	1.09%	0.53%
15 Yr	0.00%	0.00%	0.43%	0.42%	0.40%	0.00%	0.00%	0.33%	1.28%	1.86%	0.64%	2.35%	1.01%	1.00%	0.98%	1.69%	1.04%		
All Yr	0.11%	0.92%	1.09%	1.89%	1.55%	2.12%	2.74%	5.40%	7.33%	8.57%	9.64%	8.80%	6.75%	8.57%	6.91%	5.75%	7.31%	5.14%	4.41%
All Avg Rolling	0.001108	0.001294601	0.002816	0.005289128	0.006743	0.006556	0.006275	0.008552	0.01317	0.019908	0.028197	0.030097	0.032664	0.029148	0.027453	0.023241	0.021718	0.023367	0.020972
Linear Smoothed	0.11%	0.13%	0.22%	0.32%	0.61%	0.91%	1.20%	1.49%	1.79%	2.08%	2.37%	2.67%	2.96%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%
Prior Sel	0.00%	0.14%	0.49%	0.78%	1.03%	1.23%	1.40%	1.54%	1.66%	1.76%	1.87%	1.96%	2.05%	2.14%	2.22%	2.29%	2.36%	2.42%	2.48%
Selected	0.00%	0.14%	0.49%	0.94%	0.99%	1.03%	1.09%	1.14%	1.20%	1.27%	1.33%	1.40%	1.47%	1.55%	1.62%	1.70%	1.77%	1.85%	1.92%
Active	0.00%	0.12%	0.42%	0.80%	0.84%	0.88%	0.92%</												

[illegible]

x	49	50	51	52	53	54	55	56	57	58	59
Surface											
Percent Released											
Issue Year	588	600	612	624	636	648	660	672	684	696	708
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1969	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1972	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1974	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1975	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1976	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	0.00%										
1978											
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2022											
2023											
2024											
2025											
WtdAvg											
5 Yr	0.00%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10 Yr	0.00%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
15 Yr	0.00%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
All Yr	0.00%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
All Avg Rolling	0	0.030303	0.030303	0.030303	0	0	0	0	0	0	0
Linear Smoothed	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%	2.44%
Prior Sel	1.45%	1.39%	1.34%	1.29%	1.23%	1.18%	1.14%	1.09%	1.05%	0.010061	0.009658
Selected	2.01%	1.88%	1.73%	1.56%	1.39%	1.19%	0.99%	0.77%	0.53%	0.27%	0.00%
Active	1.71%	1.59%	1.47%	1.33%	1.18%	1.01%	0.84%	0.65%	0.45%	0.23%	0.00%
Inactive	1.11%	1.03%	0.95%	0.86%	0.76%	0.66%	0.54%	0.42%	0.29%	0.15%	0.00%
Phased Release	4.63%	4.31%	3.97%	3.59%	3.19%	2.75%	2.27%	1.76%	1.21%	0.63%	0.01%

Underground
Total Permits

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1
1977	24	24	24	24	24	23	23	23	17	15	13	13	10	10	9	9	8	8	8
1978	77	77	77	76	76	75	67	49	44	36	33	33	31	29	29	28	27	26	24
1979	59	58	58	58	58	54	45	39	35	35	35	35	35	35	34	34	33	32	29
1980	88	88	88	88	88	79	70	67	64	62	58	57	56	55	54	51	45	44	42
1981	163	163	163	160	150	145	144	138	134	133	130	128	127	126	124	113	99	90	83
1982	95	95	93	90	87	84	80	78	77	76	72	71	70	65	53	44	36	34	29
1983	279	277	260	253	237	215	203	200	191	177	165	159	149	134	126	118	108	95	84
1984	162	160	156	150	139	121	117	112	106	103	98	90	88	77	73	58	55	46	46
1985	77	74	73	68	64	61	56	55	54	48	42	34	34	32	28	25	23	19	
1986	87	86	84	82	80	78	76	75	73	69	57	49	44	38	30	24	22	20	
1987	96	94	92	89	87	83	82	79	74	70	65	61	56	41	36	33	29	28	28
1988	151	147	143	137	121	113	103	94	85	81	70	64	51	43	37	33	31	28	28
1989	119	118	114	105	101	90	86	77	69	65	56	47	42	39	32	32	31	28	25
1990	47	46	44	44	41	39	38	38	32	31	27	25	24	22	18	17	16	16	15
1991	45	41	39	39	36	36	31	31	28	25	25	21	20	19	19	19	19	19	18
1992	46	46	46	44	44	43	42	42	41	35	32	31	31	28	28	26	25	24	22
1993	50	47	46	45	42	40	39	39	37	37	35	32	30	30	29	26	25	25	24
1994	54	53	52	52	50	47	46	44	44	43	42	38	37	35	33	32	30	29	28
1995	43	43	41	40	38	36	35	33	33	32	32	30	28	25	24	24	21	21	21
1996	45	44	44	44	40	37	37	36	36	34	34	31	30	29	29	28	27	27	25
1997	43	42	42	42	41	41	38	37	37	37	33	32	31	31	29	29	29	29	29
1998	37	37	37	37	34	32	30	29	29	28	25	24	24	23	23	22	19	19	19
1999	35	35	34	34	33	31	31	31	31	31	30	29	29	29	29	28	27	24	23
2000	31	31	31	31	30	30	30	27	27	27	26	25	25	24	24	24	23	20	19
2001	20	20	20	20	20	20	18	18	18	17	17	16	16	16	16	16	12	12	12
2002	26	26	26	26	26	24	24	24	22	22	20	20	19	19	18	16	16	15	13
2003	31	31	30	30	29	28	28	28	26	26	25	24	24	23	23	22	22	22	20
2004	23	22	21	21	19	19	19	18	18	16	15	15	15	15	13	13	12	12	12
2005	18	18	18	18	18	17	17	17	16	15	15	15	15	14	14	14	14	13	13
2006	20	20	20	19	19	19	18	18	18	18	18	17	17	16	16	16	16	16	15
2007	22	22	22	22	21	21	21	21	20	20	16	16	16	16	16	15	15	15	13
2008	21	21	18	18	17	16	16	16	16	15	15	15	15	14	14	12	12	12	
2009	19	19	19	19	19	19	19	19	17	17	17	17	17	17	15	15	15		
2010	26	26	26	24	24	24	22	20	20	20	20	20	19	17	17	16			
2011	18	18	17	17	17	17	16	16	16	16	15	15	15	14	14				
2012	17	17	15	14	13	10	10	10	10	10	9	8	8	7					
2013	19	18	18	17	17	17	17	17	16	16	16	16	16						
2014	29	29	29	24	23	23	23	23	23	23	22	21							
2015	9	8	8	8	8	8	8	8	8	8	8								
2016	7	7	7	7	7	6	6	6	6	6									
2017	7	7	7	7	7	7	7	7	7										
2018	5	5	5	5	5	5	5	5											
2019	4	4	4	4	4	4	4												
2020	7	7	7	7	7	7													
2021	7	7	7	7	7	7													
2022	4	4	4	4															
2023	3	3	3																
2024	0	0																	
2025	2																		

Underground
Total Permits

Issue Yr	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1977	7	6	5	5	4	4	4	4	4	4	4	3	2	2	2	2	2	2	2	2
1978	21	20	19	15	14	12	11	11	11	10	9	9	8	8	7	7	7	7	7	7
1979	28	25	25	21	21	19	19	18	18	17	16	14	14	13	11	10	10	10	10	10
1980	40	36	34	30	26	25	18	15	14	14	14	12	12	12	11	11	11	10	10	10
1981	79	66	61	55	50	45	45	42	38	38	36	36	35	35	31	31	30	30	30	30
1982	24	23	23	21	18	16	16	15	15	14	13	12	12	11	10	10	10	10	9	8
1983	79	75	73	68	63	59	52	51	51	49	49	44	44	44	44	44	44	43	42	41
1984	41	41	41	38	34	32	31	30	28	27	24	24	23	22	22	20	20	19	19	19
1985	19	19	17	15	13	11	11	11	11	10	10	10	10	9	8	8	7	7	7	7
1986	19	15	15	14	12	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9
1987	26	22	20	16	16	16	15	15	15	15	13	12	11	11	10	10	10	9	9	7
1988	26	25	25	24	23	22	20	19	19	19	19	18	18	17	17	17	17	16	16	
1989	25	23	21	21	20	19	19	19	19	19	18	18	18	17	16	16	16	16		
1990	13	13	12	12	11	11	10	10	10	10	10	10	10	10	10	10	9			
1991	17	16	14	14	14	14	14	13	12	11	11	9	9	9	9	9				
1992	22	22	21	21	19	18	17	16	16	15	15	15	15	15	14					
1993	23	19	19	19	19	19	18	18	18	18	18	18	18	18						
1994	26	25	24	24	24	17	17	17	17	16	16	16	13							
1995	20	20	20	20	19	18	18	17	16	15	15	15								
1996	23	23	20	18	18	18	17	17	17	17	17									
1997	29	28	27	26	26	25	23	23	23	22										
1998	18	17	16	16	16	16	15	15	15											
1999	23	21	20	20	20	20	20	19												
2000	19	19	18	18	18	18	18													
2001	11	11	11	11	11	11	10													
2002	11	11	10	10	9															
2003	20	18	18	15																
2004	10	10	10																	
2005	13	13																		
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2025																				

[illegible]

Underground
Total Releases

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	1	0	0	6	2	2	0	3	0	1	0	1	0	0
1978	0	0	0	0	0	0	8	15	3	7	3	0	2	2	0	1	0	1	1
1979	0	1	0	0	0	3	8	3	4	0	0	0	0	0	1	0	1	1	2
1980	0	0	0	0	7	7	3	3	2	4	1	0	1	1	1	2	6	1	2
1981	0	0	0	3	10	4	1	6	4	1	3	1	1	1	0	9	11	8	6
1982	0	0	2	2	3	3	4	2	1	1	4	1	1	3	11	9	7	2	4
1983	0	1	16	6	16	21	12	3	9	13	11	3	8	11	6	8	8	10	10
1984	0	1	3	6	10	18	2	4	6	3	5	5	1	8	2	15	3	8	0
1985	0	3	1	5	3	2	3	0	0	1	5	6	5	0	2	2	2	2	3
1986	0	1	2	2	2	2	1	1	1	9	6	5	6	7	5	0	1	1	2
1987	1	2	1	3	2	4	1	1	5	3	5	2	5	12	3	3	3	1	0
1988	4	4	3	5	15	5	8	7	7	3	6	5	9	7	6	3	1	2	0
1989	0	0	4	9	3	9	4	9	5	3	7	7	3	2	4	0	1	2	3
1990	0	1	1	0	3	2	0	0	5	1	3	2	0	2	4	1	1	0	1
1991	0	1	1	0	2	0	2	0	0	3	3	0	4	1	1	0	0	0	1
1992	0	0	0	1	0	0	1	0	1	6	2	0	0	3	0	2	1	1	2
1993	0	3	1	1	1	1	1	0	1	0	1	3	2	0	1	3	1	0	1
1994	0	0	0	0	2	3	1	2	0	1	1	4	1	2	2	1	2	1	1
1995	1	0	1	1	1	2	0	2	0	1	0	2	2	3	0	0	3	0	0
1996	0	1	0	0	2	3	0	1	0	2	0	2	1	1	0	1	1	0	1
1997	0	1	0	0	1	0	2	1	0	0	4	1	1	0	2	0	0	0	0
1998	0	0	0	0	3	1	2	1	0	1	3	0	0	1	0	1	3	0	0
1999	0	0	1	0	0	2	0	0	0	0	1	1	0	0	0	1	1	3	1
2000	0	0	0	0	1	0	0	3	0	0	1	1	0	1	0	0	1	3	1
2001	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	4	0	0
2002	0	0	0	0	0	2	0	0	2	0	2	0	1	0	1	2	0	1	2
2003	0	0	0	0	1	1	0	0	2	0	1	1	0	1	0	1	0	0	2
2004	0	1	1	0	2	0	0	1	0	2	1	0	0	0	2	0	1	0	0
2005	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	1	0
2006	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	1
2007	0	0	0	0	1	0	0	0	1	0	4	0	0	0	0	1	0	0	0
2008	0	0	3	0	1	1	0	0	0	1	0	0	0	1	0	1	0	0	0
2009	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0
2010	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0
2012	0	0	2	1	1	3	0	0	0	0	1	0	0	0	0	0	0	0	0
2013	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	5	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2015	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Underground
Total Releases

Issue Yr	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	1	1	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
1978	3	1	1	4	1	2	0	0	0	0	1	0	1	0	1	0	0	0	0	0
1979	0	1	0	4	0	2	0	1	0	1	1	1	0	1	2	1	0	0	0	0
1980	2	4	2	4	4	1	7	3	1	0	0	2	0	0	0	0	0	1	0	0
1981	4	12	5	5	5	5	0	3	4	0	2	0	1	0	4	0	1	0	0	0
1982	5	1	0	1	3	2	0	1	0	0	1	1	0	1	1	0	0	0	1	1
1983	2	3	2	4	5	3	7	0	0	2	0	2	0	0	0	0	0	1	1	1
1984	4	0	0	2	4	2	1	0	2	1	3	0	1	1	0	2	0	1	0	0
1985	0	0	1	2	2	2	0	0	0	0	0	0	0	1	1	0	1	0	0	0
1986	1	1	0	1	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1987	1	4	2	3	0	0	1	0	0	0	2	1	1	0	0	0	0	1	0	0
1988	2	1	0	0	1	1	2	1	0	0	0	1	0	1	0	0	0	0	0	0
1989	0	2	2	0	1	1	0	0	0	0	1	0	0	1	1	0	0	0	0	0
1990	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	1	2	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0
1992	0	0	1	0	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0
1993	1	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	2	1	1	0	0	7	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1995	1	0	0	0	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0
1996	2	0	3	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	1	1	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Underground
Total Releases

Issue Yr	480	492	504	516	528	540	552	564	576	588	600	612	624	636	648	660	672	684	696	708
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1978	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Underground
Total Forfeitures

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	26	0	0	1	0	1	0	3	2	1	0	0	0	0	0	0	1	0	1
1979	12	0	0	0	0	1	1	3	0	0	0	0	0	0	0	0	0	0	0
1980	19	0	0	0	2	2	0	0	0	0	0	0	0	0	0	1	0	0	1
1981	15	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2	3	1	1
1982	7	0	0	1	0	0	0	0	0	0	0	0	0	0	2	1	0	1	1
1983	27	1	1	1	0	1	0	0	0	1	1	3	2	4	2	0	2	3	1
1984	29	1	1	0	1	0	2	1	0	0	0	3	2	3	2	0	0	0	1
1985	13	0	0	0	1	1	1	0	0	0	1	0	3	0	0	2	1	0	1
1986	9	0	0	0	0	0	0	0	0	1	3	2	0	0	1	0	1	0	0
1987	11	0	1	0	0	0	0	2	0	3	3	0	0	3	2	2	1	0	0
1988	24	0	1	1	1	3	2	2	2	1	5	1	4	1	0	1	1	0	0
1989	11	1	0	0	1	2	0	0	3	1	2	2	2	1	3	0	0	1	0
1990	5	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0
1991	2	3	1	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0
1992	3	0	0	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
1993	6	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
1994	2	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1996	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	2	0	1	0	0	0	0	0	0	0	1	0	0	0	1
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2003	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Underground
Total Forfeitures

Issue Yr	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	2	1	0	1	0	1	0	1	0	1	0	3	0	0	0	0	0	0	0	0
1984	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1987	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Underground Misc Terminations

[illegible]

Underground
Percent Forfeited[illegible]

Wtd Avg.

5 Yr

10 Yr

[illegible]

All Ave Rg

Linear Sme

Prior Sel

Selected

Active
Inactive

Phased Rollout

✕

Underground
Percent Forfeited

Issue Year	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1969	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1972	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1974	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1975	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1976	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1978	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	0.00%	0.00%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1979	3.45%	7.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1980	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1981	0.00%	1.27%	0.00%	1.64%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1982	0.00%	0.00%	0.00%	4.35%	0.00%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1983	2.38%	1.27%	0.00%	1.37%	0.00%	1.59%	0.00%	1.92%	0.00%	0.00%	6.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1984	2.17%	0.00%	0.00%	2.44%	0.00%	0.00%	0.00%	3.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1985	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1986	0.00%	15.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1987	3.57%	0.00%	0.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.09%	0.00%	0.00%	0.00%	0.00%	22.22%
1988	0.00%	0.00%	0.00%	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1989	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
1990	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%			
1991	5.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
1992	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.67%					
1993	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%						
1994	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18.75%							
1995	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%								
1996	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%									
1997	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.35%										
1998	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%											
1999	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%												
2000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%													
2001	0.00%	0.00%	0.00%	0.00%	0.00%	9.09%														
2002	0.00%	0.00%	9.09%	0.00%	10.00%															
2003	0.00%	0.00%	0.00%	11.11%																
2004	0.00%	0.00%	0.00%																	
2005	0.00%	0.00%																		
2006	6.67%																			
2007																				
2008																				
2009																				
2010																				
2011																				
2012																				
2013																				
2014																				
2015																				
2016																				
2017																				
2018																				
2019																				
2020																				
2021																				
2022																				
2023																				
2024																				
2025																				
WtdAvg																				
5 Yr	1.37%	0.00%	1.45%	2.60%	1.33%	1.10%	0.00%	1.08%	0.00%	1.10%	0.00%	0.00%	4.41%	0.00%	1.47%	0.00%	1.61%	0.00%	0.00%	2.33%
10 Yr	0.57%	0.00%	0.56%	1.09%	0.55%	0.53%	0.00%	0.59%	0.00%	1.20%	0.00%	0.00%	2.22%	0.00%	1.23%	0.00%	0.57%	0.00%	0.00%	1.32%
15 Yr	0.34%	0.00%	0.37%	0.74%	0.36%	0.36%	0.00%	0.41%	0.00%	1.07%	0.00%	1.09%	1.14%	0.00%	1.24%	0.00%	0.49%	0.00%	0.00%	1.29%
All Yr	0.88%	0.95%	0.30%	1.27%	0.17%	0.38%	0.21%	0.68%	0.00%	1.31%	0.00%	1.25%	1.03%	0.00%	1.22%	0.00%	0.49%	0.00%	0.00%	1.29%
AI Avg Rolling	0.008182	0.008262	0.005658	0.007766	0.00899	0.008732	0.004162	0.004441	0.002469	0.006192	0.003894	0.005842	0.009288	0.009288	0.011642	0.004301	0.006931	0.002629	0.002629	0.005185
Linear Smoothed	0.59%	0.59%	0.59%	0.60%	0.60%	0.61%	0.61%	0.61%	0.62%	0.62%	0.63%	0.63%	0.63%	0.64%	0.64%	0.65%	0.65%	0.65%	0.66%	0.66%
Prior Sel	0.46%	0.45%	0.44%	0.42%	0.41%	0.39%	0.37%	0.36%	0.34%	0.32%	0.30%	0.29%	0.29%	0.28%	0.27%	0.27%	0.26%	0.25%	0.25%	0.24%
Selected	0.51%	0.54%	0.57%	0.60%	0.63%	0.66%	0.70%	0.73%	0.76%	0.80%	0.83%	0.86%	0.88%	0.91%	0.93%	0.96%	0.97%	0.99%	1.00%	1.01%
Active	0.41%	0.43%	0.45%	0.48%	0.51%	0.53%	0.56%	0.58%	0.61%	0.64%	0.66%	0.69%	0.71%	0.73%	0.75%	0.76%	0.78%	0.79%	0.80%	0.81%
Inactive	0.74%	0.78%	0.82%	0.87%	0.92%	0.96%	1.01%	1.06%	1.11%	1.15%	1.20%	1.24%	1.28%	1.32%	1.36%	1.39%	1.41%	1.43%	1.45%	1.46%
Phased Release	0.77%	0.81%	0.85%	0.90%	0.95%	1.00%	1.05%	1.10%	1.14%	1.19%	1.24%	1.28%	1.33%	1.37%	1.40%	1.43%	1.46%	1.48%	1.50%	1.51%
X	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39

Underground
Percent Forfeited

[illegible][illegible]

Underground
Percent Released

0.000559

Issue Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1969	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%
1972	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1974	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1975	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1976	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	0.00%	0.00%	0.00%	0.00%	0.00%	4.17%	0.00%	0.00%	26.09%	11.76%	13.33%	0.00%	23.08%	0.00%	10.00%	0.00%	11.11%	0.00%	0.00%
1978	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.67%	22.39%	6.12%	15.91%	8.33%	0.00%	6.06%	6.45%	0.00%	3.45%	0.00%	3.70%	3.85%
1979	0.00%	1.69%	0.00%	0.00%	0.00%	5.17%	14.81%	6.67%	10.26%	0.00%	0.00%	0.00%	0.00%	0.00%	2.86%	0.00%	2.94%	3.03%	6.25%
1980	0.00%	0.00%	0.00%	0.00%	7.95%	8.86%	4.29%	4.48%	3.13%	6.45%	1.72%	0.00%	1.75%	1.79%	1.82%	3.70%	11.76%	2.22%	4.55%
1981	0.00%	0.00%	0.00%	1.84%	6.25%	2.67%	0.69%	4.17%	2.90%	0.75%	2.26%	0.77%	0.78%	0.79%	0.00%	7.26%	9.73%	8.08%	6.67%
1982	0.00%	0.00%	2.11%	2.15%	3.33%	3.45%	4.76%	2.50%	1.28%	1.30%	5.26%	1.39%	1.41%	4.29%	16.92%	16.98%	15.91%	5.56%	11.76%
1983	0.00%	0.36%	5.78%	2.31%	6.32%	8.86%	5.58%	1.48%	4.50%	6.81%	6.21%	1.82%	5.03%	7.38%	4.48%	6.35%	6.78%	9.26%	10.53%
1984	0.00%	0.62%	1.88%	3.85%	6.67%	12.95%	1.65%	3.42%	5.36%	2.83%	4.85%	5.10%	1.11%	9.09%	2.60%	20.55%	5.17%	14.55%	0.00%
1985	0.00%	3.90%	1.35%	6.85%	4.41%	3.13%	4.92%	0.00%	0.00%	1.82%	9.26%	12.50%	11.90%	0.00%	5.88%	6.25%	7.14%	8.00%	13.04%
1986	0.00%	1.15%	2.33%	2.38%	2.44%	2.50%	2.56%	1.32%	1.33%	1.37%	13.04%	10.53%	10.20%	13.64%	18.42%	16.67%	0.00%	4.17%	9.09%
1987	1.04%	2.08%	1.06%	3.26%	2.25%	4.60%	1.20%	1.22%	6.33%	4.05%	7.14%	3.08%	8.20%	21.43%	7.32%	8.33%	9.09%	3.45%	0.00%
1988	2.65%	2.65%	2.04%	3.50%	10.95%	4.13%	7.08%	6.80%	7.45%	3.53%	7.41%	7.14%	14.06%	13.73%	13.95%	8.11%	3.03%	6.45%	0.00%
1989	0.00%	0.00%	3.39%	7.89%	2.86%	8.91%	4.44%	10.47%	6.49%	4.35%	10.77%	12.50%	6.38%	4.76%	10.26%	0.00%	3.13%	6.45%	10.71%
1990	0.00%	2.13%	2.17%	0.00%	6.82%	4.88%	0.00%	0.00%	13.16%	3.13%	9.68%	7.41%	0.00%	8.33%	18.18%	5.56%	5.88%	0.00%	6.25%
1991	0.00%	2.22%	2.44%	0.00%	5.13%	0.00%	5.56%	0.00%	0.00%	9.68%	10.71%	0.00%	16.00%	4.76%	5.00%	0.00%	0.00%	0.00%	5.26%
1992	0.00%	0.00%	0.00%	2.17%	0.00%	0.00%	2.33%	0.00%	2.38%	14.63%	5.71%	0.00%	0.00%	9.68%	0.00%	7.14%	3.85%	4.00%	8.33%
1993	0.00%	6.00%	2.13%	2.22%	2.38%	2.50%	0.00%	0.00%	2.56%	0.00%	2.70%	8.57%	6.25%	0.00%	3.33%	10.34%	3.85%	0.00%	4.00%
1994	0.00%	0.00%	0.00%	0.00%	3.85%	6.00%	2.13%	4.35%	0.00%	2.27%	2.33%	9.52%	2.63%	5.41%	5.71%	3.03%	6.25%	3.33%	3.45%
1995	2.33%	0.00%	2.33%	2.44%	2.50%	5.26%	0.00%	5.71%	0.00%	3.03%	0.00%	6.25%	6.67%	10.71%	0.00%	0.00%	12.50%	0.00%	0.00%
1996	0.00%	2.22%	0.00%	0.00%	4.55%	7.50%	0.00%	2.70%	0.00%	5.56%	0.00%	5.88%	3.23%	3.33%	0.00%	3.45%	3.57%	0.00%	3.70%
1997	0.00%	2.33%	0.00%	0.00%	2.38%	0.00%	4.88%	2.63%	0.00%	0.00%	10.81%	3.03%	3.13%	0.00%	6.45%	0.00%	0.00%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	0.00%	8.11%	2.94%	6.25%	3.33%	0.00%	3.45%	10.71%	0.00%	0.00%	4.17%	0.00%	4.35%	13.64%	0.00%	0.00%
1999	0.00%	0.00%	2.86%	0.00%	0.00%	6.06%	0.00%	0.00%	0.00%	3.23%	3.33%	0.00%	0.00%	0.00%	0.00%	3.45%	3.57%	11.11%	4.17%
2000	0.00%	0.00%	0.00%	0.00%	3.23%	0.00%	0.00%	10.00%	0.00%	0.00%	3.70%	3.85%	0.00%	4.00%	0.00%	0.00%	4.17%	13.04%	5.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%	7.69%	0.00%	0.00%	8.33%	0.00%	9.09%	0.00%	5.00%	0.00%	5.26%	11.11%	0.00%	6.25%	13.33%
2003	0.00%	0.00%	0.00%	0.00%	3.33%	3.45%	0.00%	0.00%	7.14%	0.00%	3.85%	4.00%	0.00%	4.17%	0.00%	4.35%	0.00%	0.00%	9.09%
2004	0.00%	4.35%	4.55%	0.00%	9.52%	0.00%	0.00%	5.26%	0.00%	11.11%	6.25%	0.00%	0.00%	0.00%	13.33%	0.00%	7.69%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	0.00%	5.56%	0.00%	0.00%	5.88%	6.25%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	7.14%	0.00%
2006	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%	5.56%	0.00%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%	6.25%
2007	0.00%	0.00%	0.00%	0.00%	4.55%	0.00%	0.00%	0.00%	4.76%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	6.25%	0.00%	0.00%	0.00%
2008	0.00%	0.00%	14.29%	0.00%	5.56%	5.88%	0.00%	0.00%	0.00%	6.25%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	7.14%	0.00%	0.00%
2009	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.53%	0.00%	0.00%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%		
2010	0.00%	0.00%	0.00%	7.69%	0.00%	0.00%	8.33%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
2011	0.00%	0.00%	5.56%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%	0.00%	6.25%	0.00%	0.00%	6.67%	0.00%				
2012	0.00%	0.00%	11.76%	6.67%	7.14%	23.08%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%						
2013	0.00%	5.26%	0.00%	5.56%	0.00%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%	0.00%	0.00%						
2014	0.00%	0.00%	0.00%	17.24%	4.17%	0.00%	0.00%	0.00%	0.00%	0.00%	4.35%	0.00%							
2015	0.00%	11.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%							
2016	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%								
2017	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%										
2018	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%										
2019	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%												
2020	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%													
2021	0.00%	0.00%	0.00%	0.00%	0.00%														
2022	0.00%	0.00%	0.00%	0.00%															
2023	0.00%	0.00%	0.00%																
2024	0.00%	0.00%																	
2025	0.00%																		
Wtd Avg																			
5 Yr	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%	1.64%	0.00%	4.11%	0.00%	0.00%	2.70%	1.28%	2.56%	0.00%	1.45%	3.85%
10 Yr	0.00%	1.89%	0.00%	6.25%	2.00%	3.70%	2.48%	1.50%	2.11%	0.66%	4.29%	0.61%	0.00%	3.11%	2.42%	3.09%	3.68%	4.73%	4.17%
15 Yr	0.00%	1.23%	1.68%	4.71%	2.00%	2.40%	1.88%	1.34%	2.87%	1.59%	4.25%	1.50%	0.37%	2.55%	2.08%	2.70%	4.76%	3.05%	3.34%
All Yr	0.26%	0.99%	1.92%	2.37%	4.33%	4.96%	3.67%	3.92%	3.64%	5.76%	3.71%	4.03%	5.53%	4.81%	6.52%	6.17%	5.25%	5.44%	
All Avg Rolling	0.002585	0.005464596	0.006642	0.017539093	0.021055	0.030058	0.025638	0.024092	0.020875	0.019089	0.029032	0.025103	0.023868	0.020106	0.024083	0.032807	0.033408	0.036647	0.038247
Linear Smoothed	1.01%	1.15%	1.29%	1.43%	1.58%	1.72%	1.86%	2.00%	2.14%	2.28%	2.42%	2.56%	2.71%	2.85%	2.99%	3.13%	3.27%	3.41%	3.75%
Prior Sel	0.50%	0.81%	1.10%	1.37%	1.62%	1.85%	2.06%	2.26%	2.44%	2.60%	2.75%	2.88%	2.99%	3.09%	3.18%	3.25%	3.31%	3.35%	3.38%
Selected	0.51%	0.83%	1.13%	1.40%	1.66%	1.89%	2.10%	2.29%	2.46%	2.62%	2.75%	2.87%	2.98%	3.06%	3.13%	3.19%	3.23%	3.26%	3.28%
Active	0.44%	0.71%	0.96%	1.19%	1.41%	1.60%	1.78%	1.95%	2.09%	2.22%	2.34%	2.44%	2.53%	2.60%	2.66%	2.71%	2.75%	2.77%	2.78%
Inactive	0.28%	0.46%	0.62%	0.77%	0.91%	1.04%	1.15%	1.26%	1.35%	1.44%	1.51%	1.58%	1.64%	1.68%	1.72%	1.75%	1.78%	1.79%	1.80%
Phased Release	1.18%	1.91%	2.60%	3.23%</															

Underground
Percent Released

Issue Year	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1969	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1972	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1974	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1975	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1976	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	12.50%	14.29%	16.67%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1978	12.50%	4.76%	5.00%	21.05%	6.67%	14.29%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	11.11%	0.00%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%
1979	0.00%	3.57%	0.00%	16.00%	0.00%	9.52%	0.00%	5.26%	0.00%	5.56%	5.88%	6.25%	0.00%	7.14%	15.38%	9.09%	0.00%	0.00%	0.00%	0.00%
1980	4.76%	10.00%	5.56%	11.76%	13.33%	3.85%	28.00%	16.67%	6.67%	0.00%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	9.09%	0.00%	0.00%	0.00%
1981	4.82%	15.19%	7.58%	8.20%	9.09%	10.00%	0.00%	6.67%	9.52%	0.00%	5.26%	0.00%	2.78%	0.00%	11.43%	0.00%	3.23%	0.00%	0.00%	0.00%
1982	17.24%	4.17%	0.00%	4.35%	14.29%	11.11%	0.00%	6.25%	0.00%	0.00%	7.14%	7.69%	0.00%	8.33%	9.09%	0.00%	0.00%	10.00%	11.11%	11.11%
1983	2.38%	3.80%	2.67%	5.48%	7.35%	4.76%	11.86%	0.00%	0.00%	3.92%	0.00%	4.08%	0.00%	0.00%	0.00%	0.00%	0.00%	2.27%	2.33%	2.38%
1984	8.70%	0.00%	0.00%	0.00%	4.88%	10.53%	5.88%	3.13%	0.00%	6.67%	3.57%	11.11%	0.00%	4.17%	4.35%	0.00%	9.09%	0.00%	5.00%	0.00%
1985	0.00%	0.00%	5.26%	11.76%	13.33%	15.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	11.11%	0.00%	12.50%	0.00%	0.00%	0.00%
1986	5.00%	5.26%	0.00%	6.67%	14.29%	16.67%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1987	3.57%	15.38%	9.09%	15.00%	0.00%	0.00%	6.25%	0.00%	0.00%	0.00%	13.33%	7.69%	8.33%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%
1988	7.14%	3.85%	0.00%	0.00%	4.17%	4.35%	9.09%	5.00%	0.00%	0.00%	0.00%	5.26%	0.00%	5.56%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%
1989	0.00%	8.00%	8.70%	0.00%	4.76%	5.00%	0.00%	0.00%	0.00%	0.00%	5.26%	0.00%	0.00%	5.56%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%
1990	13.33%	0.00%	7.69%	0.00%	8.33%	0.00%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1991	0.00%	5.88%	12.50%	0.00%	0.00%	0.00%	0.00%	7.14%	7.69%	0.00%	0.00%	18.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1992	0.00%	0.00%	4.55%	0.00%	4.76%	5.26%	5.56%	5.88%	0.00%	6.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1993	4.17%	17.39%	0.00%	0.00%	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1994	7.14%	3.85%	4.00%	0.00%	0.00%	29.17%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1995	4.76%	0.00%	0.00%	0.00%	5.00%	5.26%	0.00%	5.56%	5.88%	6.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1996	8.00%	0.00%	13.04%	10.00%	0.00%	0.00%	5.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1997	0.00%	3.45%	3.57%	3.70%	0.00%	3.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1998	5.26%	5.56%	5.88%	0.00%	0.00%	0.00%	6.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	8.70%	4.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2002	15.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	10.00%	0.00%	5.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2007	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2008	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2009	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2010	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2012	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2013	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2014	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2015	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2016	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2017	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2018	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2019	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2020	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2021	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2022	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2023	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2024	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2025	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
WtdAvg	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5 Yr	5.48%	3.08%	1.45%	1.30%	0.00%	1.10%	4.12%	1.08%	1.12%	2.20%	0.00%	2.67%	0.00%	1.43%	1.47%	0.00%	0.00%	3.39%	0.00%	1.16%
10 Yr	3.43%	3.39%	3.93%	2.17%	0.55%	5.26%	3.28%	1.78%	1.21%	1.80%	1.94%	2.78%	0.74%	2.84%	1.23%	1.29%	1.14%	2.87%	1.23%	1.32%
15 Yr	4.07%	4.21%	4.40%	1.48%	1.82%	4.38%	3.83%	2.05%	1.61%	2.14%	2.65%	2.54%	1.14							

Underground
Percent Released

[illegible]

Other
Total Permits

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1969	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1970	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1971	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3
1972	6	6	6	6	6	6	6	6	6	6	6	6	5	4	4	4	4	4	4
1973	7	7	7	7	7	7	7	7	7	7	7	6	5	5	5	5	5	4	4
1974	14	14	14	14	14	14	13	13	13	13	11	8	7	7	6	5	5	5	4
1975	22	22	22	22	22	22	22	22	22	18	12	11	6	5	4	4	4	4	4
1976	21	21	21	21	21	21	21	21	19	14	11	9	9	7	7	7	7	7	7
1977	19	19	19	18	18	18	18	16	15	11	11	11	11	11	11	11	11	10	10
1978	20	19	19	17	17	17	16	12	11	10	10	10	10	10	10	10	9	9	9
1979	17	17	17	17	17	15	13	11	10	10	10	10	10	10	10	10	10	7	6
1980	35	34	33	33	32	30	26	23	23	23	23	23	22	22	22	21	19	19	19
1981	118	118	118	116	114	113	111	110	110	110	107	107	103	102	100	98	95	91	90
1982	55	54	53	52	51	48	47	46	44	44	40	40	38	36	33	30	28	27	24
1983	199	194	190	182	169	157	153	151	149	138	132	117	112	110	101	97	96	89	83
1984	117	115	113	108	103	96	94	93	89	85	76	74	72	68	65	64	58	57	53
1985	66	66	63	61	59	57	57	52	47	44	37	36	32	31	30	27	26	24	24
1986	64	61	59	57	57	55	47	42	35	32	30	28	21	21	21	21	21	21	21
1987	77	75	70	64	61	50	43	37	31	26	21	19	18	16	16	16	16	16	16
1988	114	109	104	101	89	69	59	42	34	34	28	23	21	19	17	15	15	14	14
1989	122	120	120	96	72	55	41	29	27	25	22	20	19	17	14	14	14	14	14
1990	139	137	97	63	39	20	13	12	11	11	11	10	10	10	10	9	9	8	8
1991	197	157	102	66	40	24	23	19	17	17	17	16	16	16	15	14	14	11	11
1992	165	126	93	56	38	33	25	25	22	22	21	20	20	20	19	19	17	17	17
1993	164	141	90	48	38	33	28	27	27	24	23	23	21	20	19	19	19	17	16
1994	113	82	47	33	27	23	22	22	21	20	20	20	19	18	18	18	16	16	16
1995	149	117	65	38	22	15	15	13	13	13	13	12	11	11	11	11	10	10	10
1996	129	85	52	27	17	9	9	9	8	8	6	6	6	5	5	5	4	4	4
1997	161	128	81	50	34	31	30	25	20	20	19	19	19	18	18	16	15	15	15
1998	162	112	59	33	19	17	12	11	8	8	7	7	7	7	7	7	7	7	6
1999	140	110	68	45	33	19	14	8	8	7	7	7	7	7	7	7	7	7	6
2000	117	94	66	38	23	15	11	9	7	5	5	5	5	4	3	3	3	3	3
2001	125	91	66	35	23	17	13	9	8	7	7	7	7	7	7	7	7	6	6
2002	110	96	57	37	24	20	14	12	11	11	10	9	9	9	9	9	8	8	8
2003	80	65	47	24	18	10	9	9	9	8	8	8	7	7	7	7	6	6	6
2004	127	99	76	36	20	14	14	12	12	12	12	12	12	12	12	9	9	9	9
2005	128	115	69	30	19	13	10	8	5	5	5	4	3	3	3	3	3	3	3
2006	197	165	85	30	22	19	12	10	10	9	9	8	7	7	7	7	7	7	7
2007	183	139	80	41	28	18	13	9	9	9	9	7	6	6	6	6	6	6	6
2008	191	161	102	49	27	17	14	13	12	11	11	10	10	10	9	8	8	8	
2009	176	140	79	41	20	12	11	10	9	8	7	7	6	5	5	5	5		
2010	143	124	63	32	23	20	16	13	13	11	9	9	9	9	9	9	9		
2011	171	157	96	45	32	18	14	8	5	4	4	4	4	3	3				
2012	162	141	75	46	31	26	17	13	8	8	8	8	8	8					
2013	132	107	72	40	32	22	21	20	18	18	18	17	17						
2014	82	65	32	21	12	8	6	6	6	6	6	5							
2015	67	52	33	17	11	10	10	10	10	10	10								
2016	30	24	14	9	8	6	6	6	6	6									
2017	43	37	17	9	7	6	6	6	6										
2018	57	42	19	5	4	3	3	3											
2019	62	47	18	7	5	4	4												
2020	58	40	9	6	5	5													
2021	35	31	16	8	6														
2022	38	35	24	6															
2023	55	51	27																
2024	45	40																	
2025	56																		

Other
Total Permits

Issue Yr	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
1969	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
1971	3	3	3	3	3	3	3	2	2	2	2	2	2	0	0	0	0	0	0	0
1972	4	4	4	4	4	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1
1973	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1974	4	4	4	4	4	3	2	2	2	2	2	2	2	1	1	1	1	1	1	1
1975	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2
1976	7	7	7	6	6	6	6	6	6	5	5	5	5	4	4	4	4	4	4	4
1977	9	9	7	6	6	6	5	4	4	4	4	4	4	4	4	4	4	4	4	4
1978	8	6	6	6	4	4	3	3	3	3	3	3	3	3	3	3	3	2	2	2
1979	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
1980	19	19	19	18	17	17	16	16	16	16	16	15	15	15	12	11	11	11	11	11
1981	88	83	81	77	75	72	69	69	68	68	66	65	65	63	62	61	60	59	59	58
1982	22	21	21	21	20	20	19	18	18	18	18	17	16	16	15	12	12	12	11	10
1983	80	76	74	73	69	67	63	61	59	58	57	56	56	55	55	53	51	50	48	46
1984	52	51	50	50	49	49	49	49	48	48	47	47	46	44	44	44	44	44	43	43
1985	23	23	23	22	22	22	22	21	21	20	20	19	19	19	19	18	18	18	18	18
1986	20	20	18	18	18	18	18	18	18	17	17	17	16	14	14	13	13	13	13	13
1987	16	15	15	14	13	13	13	13	13	12	12	12	12	11	10	9	8	7	7	6
1988	14	13	13	13	12	12	10	10	10	10	10	10	10	10	10	10	10	10	10	
1989	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14		
1990	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8			
1991	10	10	9	9	9	8	8	8	8	8	7	7	6	6	6	6				
1992	16	16	16	16	16	16	16	16	15	14	14	14	13	13	10					
1993	16	15	15	15	14	14	14	14	14	14	13	13	13	12						
1994	16	16	16	16	16	16	16	16	16	16	15	15	15							
1995	10	10	10	10	10	10	10	10	10	9	9	9								
1996	4	4	4	4	4	4	4	4	4	4	4									
1997	15	14	14	14	14	14	14	13	13	12										
1998	6	6	6	6	6	6	6	6	5											
1999	6	6	6	6	6	6	6	6	6											
2000	3	3	3	3	2	2	2	6												
2001	6	6	6	6	6	6														
2002	8	8	8	8	7															
2003	6	6	6	6																
2004	9	9	9																	
2005	3	3																		
2006	7																			
2007																				
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2022																				
2023																				
2024																				
2025																				

Other Total Permits																					
Issue Yr	480	492	504	516	528	540	552	564	576	588	600	612	624	636	648	660	672	684	696	708	
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1972	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1973	3	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1974	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1975	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1976	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	
1977	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
1978	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
1979	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
1980	11	10	9	9	9	9	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
1981	54	52	51	48	48	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	
1982	10	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
1983	46	46	46	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	
1984	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	
1985	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
1986	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
1987																					
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Other
Total Releases

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0
1974	0	0	0	0	0	0	0	0	0	0	2	3	1	0	1	1	0	0	1
1975	0	0	0	0	0	0	0	0	0	4	5	1	5	1	1	0	0	0	0
1976	0	0	0	0	0	0	0	0	1	5	3	2	0	2	0	0	0	0	0
1977	0	0	0	0	0	0	0	1	1	3	0	0	0	0	0	0	0	1	0
1978	0	0	0	0	0	0	1	4	1	1	0	0	0	0	0	0	1	0	0
1979	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	3	1
1980	0	0	0	0	1	2	2	3	0	0	0	0	1	0	0	1	2	0	0
1981	0	0	0	2	1	1	2	1	0	3	0	4	0	1	1	3	4	1	1
1982	0	0	1	0	1	2	1	1	2	0	4	0	1	2	3	3	1	1	3
1983	0	4	4	8	12	12	4	1	2	9	5	13	3	1	9	3	1	4	4
1984	0	2	2	5	5	7	2	1	4	4	7	2	2	2	3	1	4	1	4
1985	0	0	3	2	2	2	0	5	5	3	6	1	4	0	1	2	0	2	0
1986	0	2	2	2	0	2	7	5	5	3	2	5	0	0	0	0	0	0	0
1987	0	2	5	4	3	11	7	6	6	4	4	2	1	1	0	0	0	0	0
1988	2	5	4	3	12	19	9	17	7	0	5	5	1	1	2	1	0	1	0
1989	0	1	0	24	24	16	13	12	2	3	1	1	1	2	1	0	0	0	0
1990	0	2	40	33	23	19	7	1	1	0	0	1	0	0	0	1	0	1	0
1991	0	40	55	36	25	15	1	4	1	0	0	1	0	0	1	1	0	0	0
1992	2	39	33	37	18	4	8	0	3	0	1	1	0	0	1	0	2	0	0
1993	2	23	49	41	10	5	5	1	0	3	1	0	2	1	1	0	0	2	1
1994	3	31	35	14	6	4	1	0	1	0	0	0	1	1	0	0	1	0	0
1995	6	32	52	27	16	7	0	2	0	0	0	1	1	0	0	0	1	0	0
1996	4	44	33	25	10	8	0	0	0	2	0	0	0	0	0	0	1	0	0
1997	6	33	47	31	16	3	1	5	5	0	1	0	0	1	0	1	1	0	0
1998	12	50	53	25	13	2	3	1	3	0	1	0	0	0	0	0	0	0	1
1999	15	30	42	23	12	13	5	6	0	1	0	0	0	0	0	0	0	0	1
2000	4	23	28	27	15	8	4	2	1	2	0	0	0	0	0	0	0	0	0
2001	6	34	25	31	11	4	4	4	1	0	0	0	0	0	0	0	0	1	0
2002	6	14	38	20	13	4	6	2	1	0	1	1	0	0	0	0	0	0	0
2003	3	15	18	23	6	8	0	0	0	0	1	0	0	0	0	0	1	0	0
2004	9	28	23	40	16	6	0	2	0	0	0	0	0	0	0	2	0	0	0
2005	6	13	45	39	11	6	3	2	3	0	0	1	1	0	0	0	0	0	0
2006	6	32	80	55	8	3	7	2	0	1	0	1	1	0	0	0	0	0	0
2007	8	44	59	39	13	10	4	3	0	0	0	2	0	0	0	0	0	0	0
2008	4	29	59	52	22	9	3	1	1	1	0	0	0	0	0	1	0	0	0
2009	5	36	61	38	20	8	0	1	1	0	0	0	1	1	0	0	0	0	0
2010	4	19	61	31	9	3	4	3	0	1	2	0	0	0	0	0	0	0	0
2011	1	14	61	51	13	14	4	6	1	1	0	0	0	0	0	0	0	0	0
2012	0	21	66	29	15	5	9	2	4	0	0	0	0	0	0	0	0	0	0
2013	3	25	35	32	8	10	1	0	2	0	0	0	0	0	0	0	0	0	0
2014	3	17	33	11	9	4	2	0	0	0	0	0	0	0	0	0	0	0	0
2015	3	15	19	16	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	2	6	10	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	3	6	20	8	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	1	15	23	14	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	4	15	29	11	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	18	31	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	2	4	15	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	3	11	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	4	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Other
Total Releases

Issue Yr	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
1975	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0
1976	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1977	1	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
1979	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
1981	2	4	2	4	1	1	3	0	1	0	2	1	0	1	3	1	1	0	0	1
1982	2	1	0	0	1	0	1	1	0	0	1	1	0	0	1	1	1	1	0	1
1983	3	4	2	1	4	2	4	2	0	1	1	1	0	1	1	3	0	0	1	2
1984	1	0	1	0	1	0	0	0	0	0	0	1	0	1	0	2	2	1	1	0
1985	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0
1986	1	0	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
1987	0	1	0	1	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0
1988	0	1	0	0	1	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	1	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1992	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	1	0	0	1	0	0	0	1	1	0	0	1	0	0	1	1	0	0	1
1994	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	1	1	0
1998	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Other
Total Releases

Issue Yr	480	492	504	516	528	540	552	564	576	588	600	612	624	636	648	660	672	684	696	708
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	3	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Other
Total Forfeitures

Issue Yr	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
1972	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1975	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1976	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1977	4	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
1978	5	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	4	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
1980	3	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
1981	5	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0
1982	15	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0
1983	21	1	0	0	1	0	0	1	0	2	1	2	2	1	0	1	0	3	2
1984	16	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	2	0	0
1985	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1986	17	1	0	0	0	0	1	0	2	0	0	0	2	0	0	0	0	0	0
1987	12	0	0	2	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0
1988	10	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1989	16	1	0	0	0	1	1	0	0	0	0	1	0	1	0	1	0	0	0
1990	9	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1992	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	5	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1997	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
1998	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0
2001	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
2005	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2008	0	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
2009	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
2014	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2016	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Other
Total Forfeitures

Issue Yr	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	1	0	0	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
1984	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
1985	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Other
Total Forfeitures

[illegible]

[illegible]

Other
Percent Forfeited

Issue Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1969	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1972	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1974	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	7.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1975	18.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1976	9.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	21.05%	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%	5.56%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1978	25.00%	5.00%	0.00%	10.53%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1979	23.53%	0.00%	0.00%	0.00%	0.00%	5.88%	6.67%	7.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1980	8.57%	2.86%	2.94%	0.00%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1981	4.24%	0.00%	0.00%	0.00%	0.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.97%	0.98%	1.00%	0.00%	0.00%	0.00%
1982	27.27%	1.82%	0.00%	1.89%	0.00%	1.96%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	0.00%	0.00%	0.00%	0.00%	3.33%	0.00%	0.00%
1983	10.55%	0.50%	0.00%	0.00%	0.55%	0.00%	0.00%	0.65%	0.00%	1.34%	0.72%	1.52%	1.71%	0.89%	0.00%	0.99%	0.00%	3.13%	2.25%
1984	13.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.35%	0.00%	2.78%	0.00%	0.00%	0.00%	3.13%	0.00%	0.00%
1985	18.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.27%	0.00%	0.00%	3.13%	0.00%	3.33%	3.70%	0.00%	0.00%	0.00%
1986	26.56%	1.56%	0.00%	0.00%	0.00%	0.00%	1.82%	0.00%	4.76%	0.00%	0.00%	0.00%	7.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1987	15.58%	0.00%	0.00%	2.86%	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%	3.85%	0.00%	0.00%	5.56%	0.00%	0.00%	0.00%	0.00%	0.00%
1988	8.77%	0.00%	0.92%	0.00%	0.00%	1.12%	1.45%	0.00%	2.38%	0.00%	2.94%	0.00%	4.35%	4.76%	0.00%	5.88%	0.00%	0.00%	0.00%
1989	13.11%	0.82%	0.00%	0.00%	0.00%	1.39%	1.82%	0.00%	0.00%	0.00%	0.00%	4.55%	0.00%	0.00%	11.76%	0.00%	0.00%	0.00%	0.00%
1990	6.47%	0.00%	0.00%	1.03%	1.59%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1991	1.02%	0.00%	0.00%	0.00%	1.52%	2.50%	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.43%	0.00%
1992	3.03%	0.00%	0.00%	0.00%	0.00%	2.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1993	3.05%	0.00%	1.42%	1.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1994	0.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.56%	0.00%	0.00%
1995	0.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1996	0.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.11%	0.00%	0.00%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%
1997	0.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	1.69%	3.03%	0.00%	11.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	0.00%	0.00%	0.00%	0.00%	3.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	0.00%	1.52%	0.00%	0.00%	0.00%	0.00%	11.11%	0.00%	0.00%	0.00%	20.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	2.86%	8.70%	0.00%	0.00%	0.00%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	1.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.11%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	0.00%	0.00%	0.00%
2005	0.00%	0.00%	0.87%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	0.51%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2007	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.56%	7.69%	0.00%	0.00%	0.00%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2008	0.00%	0.52%	0.00%	0.98%	0.00%	3.70%	0.00%	0.00%	0.00%	0.00%	0.00%	9.09%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%
2009	0.00%	0.00%	0.00%	0.00%	2.44%	0.00%	8.33%	0.00%	0.00%	11.11%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2010	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%				
2012	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.76%	7.69%	0.00%	0.00%	0.00%	0.00%	0.00%					
2013	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	0.00%	0.00%	0.00%	5.56%	0.00%						
2014	2.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.67%							
2015	0.00%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%								
2016	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%								
2017	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%									
2018	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%										
2019	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%												
2020	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%													
2021	0.00%	0.00%	0.00%	0.00%	0.00%														
2022	0.00%	0.00%	0.00%	0.00%															
2023	0.00%	0.00%	0.00%																
2024	0.00%	0.00%																	
2025	0.00%																		
Wtd Avg	0.001964																		
5 Yr	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.44%	0.00%	2.70%	3.03%	0.00%	0.00%	0.00%	0.00%
10 Yr	0.00%	0.00%	0.00%	0.00%	0.60%	0.00%	0.00%	2.73%	2.86%	2.08%	1.06%	3.49%	1.16%	1.39%	1.41%	1.35%	1.56%	0.00%	0.00%
15 Yr	0.18%	0.00%	0.00%	0.15%	0.53%	0.37%	0.99%	2.31%	1.96%	1.40%	0.72%	2.34%	1.64%	1.87%	1.75%	0.88%	0.91%	0.00%	0.00%
All Yr	3.35%	0.13%	0.14%	0.36%	0.39%	0.61%	0.88%	0.66%	0.79%	0.79%	0.84%	0.69%	0.98%	1.32%	0.69%	0.73%	0.92%	0.96%	0.34%
All Avg Rolling	0.033466	0.004579147	0.003167	0.000653036	0.001804	0.002511	0.003644	0.007132	0.011088	0.013088	0.010531	0.014891	0.014479	0.018356	0.014958	0.014271	0.011026	0.006088	0.003909
Linear Smoothed	0.00%	0.00%	0.17%	0.29%	0.41%	0.53%	0.65%	0.77%	0.89%	1.01%	1.75%	1.60%	1.45%	1.30%	1.15%	1.00%	0.86%	0.71%	0.56%
Prior Sel	0.00%	0.00%	0.05%	0.27%	0.49%	0.85%	1.23%	1.57%	1.81%	1.93%	1.94%	1.86%	1.72%	1.55%	1.37%	1.19%	1.04%	0.89%	0.76%
Selected	0.00%	0.00%	0.05%	0.65%	0.64%	0.63%	0.62%	0.61%	0.60%	0.60%	0.59%	0.59%	0.59%	0.59%	0.59%	0.60%	0.60%	0.60%	0.61%
Active	0.00%	0.00%	0.04%	0.52%	0.51%	0.50%	0.49%	0.49%	0.48%	0.48%	0.48%	0.47%	0.47%	0.47%	0.48%	0.48%	0.48%	0.48%	0.49%
Inactive	0.00%	0.00%	0.07%	0.94%	0.92%	0.91%	0.89%	0.88%	0.87%	0.87%	0.86%	0.86%	0.86%	0.86%	0.86%	0.87%	0.87%	0.88%	0.88%
Phased Release	0.00%	0.00%	0.07%	0.97%	0.95%	0.94%	0.92%	0.											

Other
Percent Forfeited

Issue Year	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1969	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1972	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1974	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1975	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1976	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1978	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1979	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1980	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1981	0.00%	1.14%	0.00%	0.00%	2.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1982	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1983	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1984	0.00%	1.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.04%	0.00%	2.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1985	4.17%	0.00%	0.00%	4.35%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1986	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1987	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	14.29%
1988	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1989	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1990	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1991	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1992	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1993	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1994	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1995	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1996	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1997	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	0.00%			0.00%	12.50%			16.67%		7.69%				7.69%	15.38%					
2007																				
2008																				
2009																				
2010																				
2011																				
2012																				
2013																				
2014																				
2015																				
2016																				
2017																				
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2019																				
2020																				
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Wtd Avg																				
5 Yr	0.00%	0.00%	0.00%	0.00%	3.45%	0.00%	0.00%	0.00%	2.04%	1.79%	0.00%	0.00%	0.00%	1.85%	3.92%	2.08%	0.00%	0.00%	0.00%	0.78%
10 Yr	0.00%	0.00%	0.00%	0.00%	1.14%	0.00%	0.00%	0.00%	0.92%	0.90%	0.00%	0.00%	0.00%	1.27%	1.03%	0.51%	0.00%	0.00%	0.00%	0.46%
15 Yr	0.00%	0.00%	0.00%	0.00%	0.68%	0.00%	0.00%	0.00%	0.91%	1.11%	0.37%	0.00%	0.30%	0.96%	0.68%	0.36%	0.00%	0.00%	0.00%	0.43%
All Yr	0.18%	0.37%	0.00%	0.20%	0.62%	0.43%	0.00%	0.23%	0.96%	0.74%	0.26%	0.00%	0.28%	0.89%	0.64%	0.34%	0.00%	0.00%	0.00%	0.43%
All Avg Rolling	0.01213	0.00739	0.000456	0.000474	0.005065	0.005427	0.005261	0.005556	0.004218	0.008003	0.008335	0.004311	0.001012	0.004629	0.009851	0.012109	0.007566	0.002743	0.001047	0.002797
Linear Smoothed	0.41%	0.26%	0.11%	-0.04%	-0.19%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%
Prior All	0.65%	0.55%	0.53%	0.52%	0.51%	0.49%	0.48%	0.47%	0.46%	0.45%	0.44%	0.43%	0.41%	0.40%	0.39%	0.38%	0.37%	0.37%	0.36%	0.35%
Selected	0.61%	0.62%	0.62%	0.63%	0.64%	0.64%	0.65%	0.65%	0.66%	0.66%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.66%	0.66%
Active	0.49%	0.49%	0.50%	0.50%	0.51%	0.51%	0.52%	0.52%	0.53%	0.53%	0.53%	0.53%	0.54%	0.54%	0.54%	0.54%	0.54%	0.53%	0.53%	0.52%
Inactive	0.89%	0.90%	0.91%	0.91%	0.92%	0.93%	0.94%	0.95%	0.95%	0.96%	0.96%	0.97%	0.97%	0.97%	0.98%	0.97%	0.97%	0.97%	0.96%	0.95%
Phased Release	0.92%	0.93%	0.94%	0.94%	0.95%	0.96%	0.97%	0.98%	0.99%	0.99%	1.00%	1.00%	1.01%	1.01%	1.01%	1.01%	1.00%	1.00%	0.99%	0.98%
x	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39

Other
Percent Forfeited

Issue Year	480	492	504	516	528	540	552	564	576	588	600	612	624	636	648	660	672	684	696	708
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1969	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1972	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1974	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1975	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1976	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1978	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1979	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1980	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1981	1.72%	3.70%	0.00%	0.00%	0.00%	10.42%														
1982	0.00%	0.00%	0.00%	0.00%	0.00%															
1983	0.00%	0.00%	0.00%	0.00%																
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WtdAvg																				
5 Yr	0.00%	1.18%	0.00%	0.00%	0.00%	7.58%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10 Yr	0.48%	1.02%	0.00%	0.00%	0.00%	6.67%	7.41%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
15 Yr	0.45%	0.99%	0.00%	0.00%	0.00%	6.67%	7.41%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
All Yr	0.45%	0.99%	0.00%	0.00%	0.00%	6.67%	7.41%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
All Avg Rolling	0.003948	0.006374	0.004624	0.003473	0	0.02298	0.049074	0.049074	0.026094	0	0	0	0	0	0	0	0	0	0	0
Linear Smoothed	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%	-0.34%
Prior Sel	0.34%	0.33%	0.32%	0.31%	0.31%	0.30%	0.29%	0.28%	0.28%	0.27%	0.26%	0.26%	0.25%	0.24%	0.24%	0.23%	0.23%	0.22%	0.002146	0.002092
Selected	0.65%	0.64%	0.63%	0.61%	0.60%	0.58%	0.56%	0.54%	0.51%	0.49%	0.46%	0.42%	0.39%	0.35%	0.31%	0.26%	0.21%	0.16%	0.11%	0.05%
Active	0.52%	0.51%	0.50%	0.49%	0.48%	0.46%	0.45%	0.43%	0.41%	0.39%	0.37%	0.34%	0.31%	0.28%	0.25%	0.21%	0.17%	0.13%	0.09%	0.04%
Inactive	0.94%	0.93%	0.91%	0.89%	0.87%	0.84%	0.81%	0.78%	0.74%	0.71%	0.66%	0.61%	0.56%	0.51%	0.45%	0.38%	0.31%	0.23%	0.15%	0.07%
Phased Release	0.97%	0.96%	0.94%	0.92%	0.90%	0.87%	0.84%	0.81%	0.77%	0.73%	0.68%	0.64%	0.58%	0.52%	0.46%	0.39%	0.32%	0.24%	0.16%	0.07%
x	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59

Other
Percent Released

Issue Year	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1969	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1972	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.67%	20.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%	16.67%	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%
1974	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	15.38%	27.27%	12.50%	0.00%	14.29%	16.67%	0.00%	0.00%	20.00%
1975	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18.18%	27.78%	8.33%	45.45%	16.67%	20.00%	0.00%	0.00%	0.00%	0.00%
1976	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	26.32%	21.43%	18.18%	0.00%	22.22%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.56%	6.25%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.09%	0.00%
1978	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.88%	25.00%	8.33%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%
1979	0.00%	0.00%	0.00%	0.00%	0.00%	5.88%	6.67%	7.69%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	30.00%	14.29%
1980	0.00%	0.00%	0.00%	0.00%	3.03%	6.25%	6.67%	11.54%	0.00%	0.00%	0.00%	4.35%	0.00%	0.00%	4.55%	9.52%	0.00%	0.00%	0.00%
1981	0.00%	0.00%	0.00%	1.69%	0.86%	0.88%	1.77%	0.90%	0.00%	2.73%	0.00%	3.74%	0.00%	0.98%	1.00%	3.06%	4.21%	1.10%	0.00%
1982	0.00%	0.00%	1.85%	0.00%	1.92%	3.92%	2.08%	2.13%	4.35%	0.00%	9.09%	0.00%	2.50%	5.26%	8.33%	9.09%	3.33%	3.57%	11.11%
1983	0.00%	2.01%	2.06%	4.21%	6.59%	7.10%	2.55%	0.65%	1.32%	6.04%	3.62%	9.85%	2.56%	0.89%	8.18%	2.97%	1.03%	4.17%	4.49%
1984	0.00%	1.71%	1.74%	4.42%	4.63%	6.80%	2.08%	1.06%	4.30%	4.49%	8.24%	2.63%	2.70%	2.78%	4.41%	1.54%	6.25%	1.72%	7.02%
1985	0.00%	0.00%	4.55%	3.17%	3.28%	3.39%	0.00%	8.77%	9.62%	6.38%	13.64%	2.70%	11.11%	0.00%	3.23%	6.67%	0.00%	7.69%	0.00%
1986	0.00%	3.13%	3.28%	3.39%	0.00%	3.51%	12.73%	10.64%	11.90%	8.57%	6.25%	6.67%	17.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1987	0.00%	2.60%	6.67%	5.71%	4.69%	18.03%	14.00%	13.95%	16.22%	12.90%	15.38%	9.52%	5.26%	5.56%	0.00%	0.00%	0.00%	0.00%	0.00%
1988	1.75%	4.39%	3.67%	2.88%	11.88%	21.35%	13.04%	28.81%	16.67%	0.00%	14.71%	17.86%	4.35%	4.76%	10.53%	5.88%	0.00%	6.67%	0.00%
1989	0.00%	0.82%	0.00%	20.00%	25.00%	22.22%	23.64%	29.27%	6.90%	7.41%	12.00%	4.55%	5.00%	10.53%	5.88%	0.00%	0.00%	0.00%	0.00%
1990	0.00%	1.44%	29.20%	34.02%	36.51%	48.72%	35.00%	7.69%	8.33%	0.00%	0.00%	9.09%	0.00%	0.00%	0.00%	10.00%	0.00%	11.11%	0.00%
1991	0.00%	20.30%	35.03%	35.29%	37.88%	37.50%	4.17%	17.39%	5.26%	0.00%	0.00%	5.88%	0.00%	0.00%	6.25%	6.67%	0.00%	0.00%	0.00%
1992	1.21%	23.64%	26.19%	39.78%	32.14%	10.53%	24.24%	0.00%	12.00%	0.00%	4.55%	4.76%	0.00%	0.00%	5.00%	0.00%	10.53%	0.00%	0.00%
1993	1.22%	14.02%	34.75%	45.56%	20.83%	13.16%	15.15%	3.57%	0.00%	11.11%	4.17%	0.00%	8.70%	4.76%	5.00%	0.00%	10.53%	5.88%	0.00%
1994	2.65%	27.43%	42.68%	29.79%	18.18%	14.81%	4.35%	0.00%	4.55%	0.00%	0.00%	0.00%	5.00%	5.26%	0.00%	0.00%	5.56%	0.00%	0.00%
1995	4.03%	21.48%	44.44%	41.54%	42.11%	31.82%	0.00%	13.33%	0.00%	0.00%	0.00%	7.69%	8.33%	0.00%	0.00%	0.00%	9.09%	0.00%	0.00%
1996	3.10%	34.11%	38.82%	48.08%	37.04%	47.06%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	0.00%	0.00%
1997	3.73%	20.50%	36.72%	38.27%	32.00%	8.82%	3.23%	16.67%	20.00%	0.00%	5.00%	0.00%	0.00%	5.26%	0.00%	5.56%	6.25%	0.00%	0.00%
1998	7.41%	30.86%	47.32%	42.37%	39.39%	10.53%	17.65%	8.33%	27.27%	0.00%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%
1999	10.71%	21.43%	38.18%	33.82%	26.67%	39.39%	26.32%	42.86%	0.00%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%
2000	4.42%	19.66%	29.79%	40.91%	39.47%	34.78%	26.67%	18.18%	11.11%	28.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	4.80%	27.20%	27.47%	46.97%	31.43%	17.39%	23.53%	30.77%	11.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%	0.00%
2002	5.45%	12.73%	39.58%	35.09%	35.14%	16.67%	30.00%	14.29%	8.33%	0.00%	9.09%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	3.75%	18.75%	27.69%	48.94%	25.00%	44.44%	0.00%	0.00%	0.00%	11.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%	0.00%	0.00%
2004	7.09%	22.05%	23.23%	52.63%	44.44%	30.00%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%
2005	4.69%	10.16%	39.13%	56.52%	36.67%	31.58%	23.08%	20.00%	37.50%	0.00%	0.00%	20.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	3.05%	16.24%	48.48%	64.71%	26.67%	13.64%	16.67%	0.00%	10.00%	0.00%	0.00%	11.11%	12.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2007	4.37%	24.04%	42.45%	48.75%	31.71%	35.71%	22.22%	23.08%	0.00%	0.00%	0.00%	22.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2008	2.09%	15.18%	36.65%	50.98%	44.90%	33.33%	17.65%	7.14%	7.69%	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%	11.11%	0.00%	0.00%	0.00%
2009	2.84%	20.45%	43.57%	48.10%	48.78%	40.00%	0.00%	9.09%	10.00%	0.00%	0.00%	0.00%	14.29%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%
2010	2.80%	13.29%	49.19%	49.21%	28.13%	13.04%	20.00%	18.75%	0.00%	7.69%	18.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011	0.58%	8.19%	38.85%	53.13%	28.89%	43.75%	22.22%	42.86%	12.50%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2012	0.00%	12.96%	46.81%	38.67%	32.61%	16.13%	34.62%	11.76%	30.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2013	2.27%	18.94%	32.71%	44.44%	20.00%	31.25%	4.55%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2014	3.66%	20.73%	50.77%	34.38%	42.86%	33.33%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2015	4.48%	22.39%	36.54%	48.48%	29.41%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2016	6.67%	20.00%	41.67%	35.71%	11.11%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2017	6.98%	13.95%	54.05%	47.06%	22.22%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2018	1.75%	26.32%	54.76%	73.68%	20.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2019	6.45%	24.19%	61.70%	61.11%	28.57%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2020	0.00%	31.03%	77.50%	33.33%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2021	5.71%	11.43%	48.39%	50.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2022	0.00%	7.89%	31.43%	75.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2023	0.00%	7.27%	47.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2024	2.22%	11.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2025	5.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Wtd Avg																			
5 Yr	2.62%	14.72%	53.92%	62.79%	22.86%	17.24%	0.00%	0.00%	4.17%	0.00%	0.00%	0.00%	2.22%	2.70%	0.00%	2.78%	0.00%	0.00%	0.00%
10 Yr	3.34%	18.57%	50.71%	49.61%	27.38%	26.53%	16.26%	10.91%	8.57%	3.13%	2.13%	4.65%	3.49%	1.39%	0.00%	4.05%	1.56%	1.56%	3.23%
15 Yr	2.38%	15.85%	45.65%	48.88%	32.71%	26.97%	18.32%	12.72%	7.84%	2.80%	2.90%	3.91%	2.46%	0.93%	0.00%	3.51%	3.64%	0.86%	2.42%
All Yr	2.63%	15.19%	30.38%	31.18%	20.01%	16.07%	9.64%	8.91%	4.04%	4.75%	6.22%	4.82%	4.64%	2.25%	3.47%	2.76%	2.91%	3.53%	2.89%
All Avg Rolling	0.026281	0.094121001	0.2133	0.364544114	0.396737	0.31852	0.194984	0.13											

Other
Percent Released

Issue Year	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468
1967	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1968	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
1969	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1970	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1971	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1972	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	33.33%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1973	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1974	0.00%	0.00%	0.00%	0.00%	25.00%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1975	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	0.00%
1976	0.00%	0.00%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1977	10.00%	0.00%	22.22%	14.29%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1978	11.11%	25.00%	0.00%	0.00%	33.33%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	0.00%
1979	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1980	0.00%	0.00%	0.00%	5.26%	5.56%	0.00%	5.88%	0.00%	0.00%	0.00%	6.25%	0.00%	0.00%	20.00%	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%
1981	2.22%	4.55%	2.41%	4.94%	1.30%	1.33%	4.17%	0.00%	1.45%	0.00%	2.94%	1.52%	0.00%	1.54%	1.59%	1.61%	1.64%	1.67%	0.00%	1.69%
1982	8.33%	4.55%	0.00%	0.00%	4.76%	0.00%	5.00%	5.26%	0.00%	0.00%	5.56%	0.00%	0.00%	6.25%	20.00%	0.00%	0.00%	8.33%	9.09%	0.00%
1983	3.61%	5.00%	2.63%	1.35%	5.48%	2.90%	5.97%	3.17%	0.00%	1.69%	1.72%	1.75%	0.00%	1.79%	0.00%	3.64%	3.77%	1.96%	2.00%	4.17%
1984	1.89%	0.00%	1.96%	0.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.13%	2.17%	0.00%	0.00%	0.00%	0.00%	2.27%	0.00%
1985	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.55%	0.00%	0.00%	0.00%	5.00%	0.00%	0.00%	0.00%	5.26%	0.00%	0.00%	0.00%	0.00%
1986	4.76%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.56%	0.00%	0.00%	5.88%	12.50%	0.00%	7.14%	0.00%	0.00%	0.00%	0.00%
1987	0.00%	6.25%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	9.09%	0.00%	11.11%	12.50%	0.00%	0.00%
1988	0.00%	7.14%	0.00%	0.00%	7.69%	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1989	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1990	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1991	9.09%	0.00%	10.00%	0.00%	0.00%	11.11%	0.00%	0.00%	0.00%	0.00%	12.50%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1992	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.25%	6.67%	0.00%	0.00%	7.14%	0.00%	7.69%	0.00%	0.00%	0.00%	0.00%	0.00%
1993	0.00%	6.25%	0.00%	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	0.00%	7.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1994	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1995	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1996	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1997	0.00%	6.67%	0.00%	0.00%	0.00%	0.00%	7.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1998	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
1999	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2000	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2004	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2005	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2006	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
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WtdAvg																				
5 Yr	0.00%	0.00%	0.00%	0.00%	3.45%	0.00%	3.13%	0.00%	2.04%	0.00%	3.51%	0.00%	3.51%	0.00%	1.96%	0.00%	1.85%	1.59%	1.09%	1.55%
10 Yr	0.00%	1.52%	0.00%	0.00%	2.27%	0.00%	1.04%	0.00%	1.83%	0.90%	2.75%	0.00%	2.33%	2.55%	1.03%	3.59%	1.65%	1.24%	1.31%	1.84%
15 Yr	0.76%	1.49%	0.73%	0.00%	2.03%	0.67%	1.86%	0.56%	0.91%	1.11%	1.48%	1.22%	1.22%	1.91%	2.36%	3.20%	1.49%	1.92%	1.24%	1.73%
All Yr	2.31%	2.95%	1.92%	1.99%	2.89%	1.52%	3.36%	1.40%	0.96%	1.24%	1.57%	1.34%	1.40%	2.08%	2.24%	3.40%	1.44%	1.89%	1.22%	1.72%
All Avg Rolling	0.014628	0.014636	0.00973	0.008834	0.01273	0.012343	0.018511	0.011282	0.01425	0.009133	0.015257	0.012608	0.016936	0.014625	0.018813	0.020269	0.020186	0.019393	0.014945	0.01529
Linear Smoothed	1.92%	1.80%	1.69%	1.57%	1.46%	1.34%	1.23%	1.11%	1.00%	0.88%	1.74%	1.72%	1.70%	1.69%	1.67%	1.65%	1.64%	1.62%	1.60%	1.59%
Prior Sel	1.61%	1.31%	1.07%	0.89%	0.76%	0.68%	0.65%	0.65%	0.69%	0.77%	0.87%	1.00%	1.15%	1.31%	1.49%	1.67%	1.86%	2.04%	2.22%	2.40%
Selected	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%	1.43%
Active	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%	1.22%
Inactive	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%	0.79%
Phased Release	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%	3.29%

Other
Percent Released

[illegible]

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Remaining Acres Projections
All Mine Types

Fiscal Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>Ending 6/30</u>	<u>Deterministic</u>	<u>Stochastic</u>	<u>Stochastic</u>		<u>% Remaining In Force</u>		
	<u>Model</u>	<u>Mean</u>	<u>Median</u>	<u>Selected</u>	<u>Total</u>	<u>Surface</u>	<u>Underground</u>
2025	320,229	320,229	320,229	320,229	100%	100%	100%
2026	312,588	278,718	278,908	278,718	87%	87%	87%
2027	305,134	241,047	241,233	273,184	85%	85%	85%
2028	297,913	206,535	206,651	252,282	79%	79%	78%
2029	290,980	175,717	175,728	233,354	73%	73%	72%
2030	284,302	147,994	148,001	216,152	67%	68%	67%
2031	277,861	123,302	123,313	200,587	63%	63%	62%
2032	271,641	101,728	101,662	186,652	58%	58%	58%
2033	265,628	83,091	82,970	174,299	54%	54%	54%
2034	259,812	67,642	67,574	163,693	51%	51%	51%
2035	254,188	54,908	54,721	154,455	48%	48%	48%
2036	248,753	44,723	44,694	146,723	46%	46%	46%
2037	243,506	36,652	36,568	140,037	44%	43%	44%
2038	238,448	30,253	30,100	134,274	42%	42%	43%
2039	233,582	25,231	25,172	129,377	40%	40%	42%
2040	228,909	21,306	21,234	125,072	39%	39%	40%
2041	224,421	18,209	18,087	121,254	38%	37%	40%
2042	220,117	15,714	15,568	117,842	37%	36%	39%
2043	215,995	13,710	13,539	114,767	36%	35%	38%
2044	212,051	12,070	11,897	111,974	35%	34%	38%
2045	208,280	10,738	10,609	109,444	34%	33%	37%

Notes: Col (1) from Exhibit E-86, Col (20), (35), (50), etc.
Col (2) from Exhibit E-139, Col (16)
Col (3) from Exhibit E-139, Col (14)
Col (5) = Col (4) / [Col (4) 2019 Total]
Col (6) and (7) based on Col (5), Distributed according to Exhibit E-86

Land - Total

Fiscal Year Ending 6/30	In Force				Forfeited				Released				Remaining % Acres In Force
	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	
2025	273,151	27,431	19,648	320,229									100%
2026	267,226	26,943	18,419	312,588	1,043	189	130	1,362	4,881	299	1,099	6,279	98%
2027	261,387	26,462	17,285	305,134	1,023	184	119	1,326	4,816	297	1,015	6,128	95%
2028	255,682	25,991	16,241	297,913	993	179	109	1,280	4,712	293	936	5,941	93%
2029	250,172	25,528	15,280	290,980	960	173	99	1,232	4,550	289	862	5,701	91%
2030	244,828	25,075	14,399	284,302	920	167	90	1,177	4,424	286	790	5,500	89%
2031	239,635	24,633	13,594	277,861	880	161	82	1,124	4,313	282	723	5,317	87%
2032	234,580	24,200	12,860	271,641	841	155	75	1,071	4,214	277	659	5,150	85%
2033	229,654	23,778	12,195	265,628	802	149	68	1,019	4,124	273	597	4,994	83%
2034	224,849	23,368	11,595	259,812	763	143	61	967	4,041	268	540	4,849	81%
2035	220,164	22,969	11,055	254,188	724	136	55	916	3,961	263	484	4,708	79%
2036	215,599	22,582	10,572	248,753	685	130	49	864	3,879	258	434	4,571	78%
2037	211,158	22,206	10,142	243,506	647	123	44	814	3,795	253	386	4,433	76%
2038	206,843	21,843	9,762	238,448	608	116	39	763	3,707	247	340	4,294	74%
2039	202,660	21,493	9,429	233,582	570	109	35	714	3,613	241	298	4,153	73%
2040	198,614	21,156	9,139	228,909	531	102	31	665	3,514	235	259	4,008	71%
2041	194,703	20,831	8,886	224,421	498	96	28	621	3,413	229	225	3,867	70%
2042	190,928	20,520	8,669	220,117	468	90	25	583	3,307	222	193	3,721	69%
2043	187,289	20,221	8,486	215,995	441	84	22	547	3,199	215	161	3,575	67%
2044	183,788	19,934	8,329	212,051	416	79	20	515	3,085	208	138	3,430	66%
2045	180,427	19,660	8,193	208,280	392	74	18	484	2,969	200	118	3,287	65%
2046	177,205	19,398	8,076	204,679	369	70	16	455	2,853	192	101	3,146	64%
2047	174,125	19,149	7,974	201,249	347	65	15	426	2,733	184	87	3,004	63%
2048	171,190	18,912	7,887	197,988	326	60	13	399	2,610	178	74	2,862	62%
2049	168,399	18,685	7,810	194,894	305	56	12	372	2,486	171	64	2,721	61%
2050	165,753	18,470	7,744	191,967	284	51	11	347	2,361	164	55	2,581	60%
2051	163,254	18,266	7,684	189,204	266	47	10	323	2,234	156	49	2,439	59%
2052	160,900	18,074	7,632	186,606	248	43	10	300	2,106	149	43	2,298	58%
2053	158,689	17,894	7,585	184,168	230	39	9	279	1,980	141	38	2,159	58%
2054	156,624	17,725	7,544	181,893	214	36	8	258	1,851	133	33	2,017	57%
2055	154,696	17,568	7,506	179,770	199	32	8	240	1,728	125	30	1,883	56%
2056	152,901	17,421	7,472	177,794	185	29	7	222	1,610	117	27	1,754	56%
2057	151,227	17,286	7,441	175,953	173	27	7	206	1,501	109	24	1,635	55%
2058	149,662	17,161	7,411	174,234	161	24	7	192	1,404	101	22	1,527	54%
2059	148,208	17,044	7,384	172,636	150	22	7	179	1,305	94	21	1,420	54%
2060	146,862	16,936	7,359	171,157	139	20	7	165	1,207	87	19	1,313	53%

Land - Surface

Fiscal Year Ending 6/30	In Force				Forfeited				Released				Remaining % Active Acres
	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	
2025	206,855	15,972	16,120	238,947									100%
2026	202,700	15,702	15,095	233,497	691	91	83	865	3,464	180	942	4,585	98%
2027	198,529	15,434	14,147	228,110	677	87	75	839	3,493	181	873	4,548	95%
2028	194,367	15,168	13,272	222,806	657	83	67	807	3,506	182	807	4,496	93%
2029	190,229	14,905	12,467	217,601	632	80	60	773	3,505	183	744	4,433	91%
2030	186,133	14,645	11,730	212,507	604	76	54	734	3,493	184	684	4,360	89%
2031	182,084	14,388	11,056	207,527	576	73	49	698	3,473	184	625	4,282	87%
2032	178,088	14,134	10,442	202,664	549	70	44	662	3,447	184	570	4,201	85%
2033	174,150	13,885	9,887	197,922	523	67	39	628	3,415	183	516	4,114	83%
2034	170,279	13,639	9,387	193,306	497	63	35	595	3,374	182	465	4,022	81%
2035	166,480	13,399	8,940	188,818	472	60	31	564	3,327	180	417	3,924	79%
2036	162,759	13,163	8,540	184,462	448	58	28	533	3,272	179	372	3,823	77%
2037	159,122	12,931	8,186	180,240	425	55	25	504	3,212	176	329	3,718	75%
2038	155,573	12,705	7,876	176,155	402	52	22	476	3,147	174	288	3,609	74%
2039	152,118	12,485	7,606	172,209	381	49	20	450	3,075	171	250	3,496	72%
2040	148,763	12,271	7,374	168,408	360	47	17	424	2,995	167	215	3,377	70%
2041	145,511	12,063	7,174	164,748	340	44	16	399	2,912	164	184	3,261	69%
2042	142,368	11,862	7,006	161,235	320	42	14	376	2,823	159	155	3,137	67%
2043	139,336	11,667	6,867	157,871	301	40	12	354	2,730	155	126	3,011	66%
2044	136,423	11,481	6,751	154,654	284	37	11	332	2,630	149	105	2,884	65%
2045	133,628	11,302	6,654	151,583	266	35	10	312	2,528	144	87	2,759	63%
2046	130,953	11,131	6,571	148,656	250	33	9	293	2,424	138	73	2,635	62%
2047	128,402	10,968	6,502	145,872	234	31	9	274	2,317	132	60	2,509	61%
2048	125,977	10,812	6,445	143,234	220	29	8	257	2,206	127	49	2,382	60%
2049	123,679	10,663	6,397	140,739	205	27	8	241	2,093	122	40	2,255	59%
2050	121,508	10,521	6,357	138,386	192	26	7	225	1,979	116	33	2,128	58%
2051	119,468	10,387	6,322	136,177	179	24	7	210	1,861	110	28	1,999	57%
2052	117,558	10,261	6,293	134,111	167	23	7	196	1,743	104	23	1,869	56%
2053	115,777	10,143	6,267	132,187	155	21	7	183	1,626	97	19	1,741	55%
2054	114,128	10,033	6,246	130,408	144	20	6	170	1,504	90	15	1,609	55%
2055	112,604	9,932	6,228	128,764	134	18	6	159	1,390	83	12	1,485	54%
2056	111,201	9,839	6,211	127,251	125	17	6	148	1,279	76	10	1,365	53%
2057	109,907	9,755	6,197	125,859	116	15	6	138	1,178	68	8	1,254	53%
2058	108,712	9,680	6,184	124,575	109	14	6	129	1,086	61	7	1,155	52%
2059	107,617	9,611	6,172	123,400	101	13	6	120	994	55	6	1,055	52%
2060	106,620	9,550	6,161	122,331	94	12	6	113	903	49	5	956	51%

Land - Underground

Fiscal Year Ending 6/30	Gross Liability				Gross Liability - Three Year Delay				Net Liability				Remaining % Active Acres
	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	
2025	23,709	4,385	1,956	30,051									100%
2026	23,148	4,282	1,823	29,253	154	43	30	228	406	60	103	570	97%
2027	22,615	4,182	1,702	28,499	151	43	29	223	382	57	92	531	95%
2028	22,110	4,084	1,594	27,789	147	43	27	218	358	54	81	493	92%
2029	21,633	3,990	1,496	27,120	143	43	26	212	334	51	72	457	90%
2030	21,183	3,900	1,409	26,492	139	42	24	205	311	48	64	423	88%
2031	20,761	3,813	1,330	25,904	134	42	22	198	288	45	56	390	86%
2032	20,366	3,730	1,260	25,356	128	41	21	190	267	42	49	358	84%
2033	19,998	3,650	1,198	24,846	122	40	20	182	246	40	43	328	83%
2034	19,657	3,574	1,142	24,373	116	39	18	173	225	37	38	300	81%
2035	19,342	3,502	1,093	23,937	109	38	17	163	206	34	33	273	80%
2036	19,053	3,434	1,049	23,536	101	37	15	153	188	31	28	248	78%
2037	18,789	3,370	1,011	23,170	92	35	14	141	171	29	25	225	77%
2038	18,550	3,309	978	22,837	84	34	12	130	155	27	21	203	76%
2039	18,334	3,253	948	22,535	75	32	11	119	141	24	18	183	75%
2040	18,141	3,199	923	22,263	66	31	10	107	127	22	16	165	74%
2041	17,967	3,150	901	22,018	59	30	9	97	115	20	13	148	73%
2042	17,808	3,103	881	21,792	55	28	8	92	104	18	11	133	73%
2043	17,661	3,059	865	21,585	53	27	7	87	95	17	9	121	72%
2044	17,524	3,018	851	21,393	50	26	6	82	86	15	8	109	71%
2045	17,399	2,980	839	21,218	47	25	5	77	78	13	7	98	71%
2046	17,284	2,945	829	21,058	45	23	5	72	71	12	6	88	70%
2047	17,178	2,913	820	20,912	42	22	4	67	64	11	5	79	70%
2048	17,083	2,884	813	20,779	39	20	4	62	57	9	4	70	69%
2049	16,996	2,857	807	20,660	36	18	3	57	51	8	3	62	69%
2050	16,918	2,833	802	20,553	33	17	3	52	45	7	2	55	68%
2051	16,847	2,811	798	20,456	30	16	2	48	40	6	2	48	68%
2052	16,784	2,792	794	20,370	28	14	2	44	36	5	2	43	68%
2053	16,727	2,775	792	20,293	26	13	1	40	32	5	1	37	68%
2054	16,675	2,760	790	20,224	24	11	1	36	28	4	1	33	67%
2055	16,629	2,746	789	20,164	22	10	1	32	24	3	1	28	67%
2056	16,588	2,735	788	20,111	20	9	0	29	21	3	0	24	67%
2057	16,551	2,726	787	20,064	18	7	0	26	18	2	0	21	67%
2058	16,519	2,717	787	20,023	16	6	0	23	16	2	0	18	67%
2059	16,491	2,710	786	19,988	14	5	0	20	14	1	0	15	67%
2060	16,467	2,705	786	19,957	13	5	0	17	12	1	0	13	66%

Land - Other

Fiscal Year Ending 6/30	Gross Liability				Gross Liability - Three Year Delay				Net Liability				Remaining % Active Acres
	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	
2025	42,587	7,073	1,572	51,232									100%
2026	41,378	6,959	1,501	49,838	198	55	16	270	1,011	59	54	1,124	97%
2027	40,242	6,847	1,436	48,525	195	54	15	264	941	58	50	1,050	95%
2028	39,205	6,739	1,375	47,318	189	52	14	255	849	56	47	952	92%
2029	38,309	6,633	1,316	46,259	184	51	13	248	711	55	45	811	90%
2030	37,512	6,531	1,261	45,303	177	49	12	238	621	54	43	718	88%
2031	36,790	6,432	1,208	44,430	170	47	11	228	551	52	41	645	87%
2032	36,127	6,336	1,158	43,621	164	45	10	218	500	51	40	591	85%
2033	35,506	6,243	1,110	42,859	157	42	9	209	464	50	38	553	84%
2034	34,914	6,154	1,065	42,133	150	40	8	199	441	49	37	527	82%
2035	34,342	6,068	1,023	41,433	144	38	8	189	428	48	35	511	81%
2036	33,787	5,985	983	40,754	137	35	7	178	419	48	34	500	80%
2037	33,246	5,905	944	40,096	129	33	6	168	411	47	32	491	78%
2038	32,720	5,828	908	39,457	122	30	5	157	404	46	31	482	77%
2039	32,208	5,755	874	38,838	114	27	4	145	398	46	30	474	76%
2040	31,710	5,686	842	38,238	106	24	3	134	392	45	29	466	75%
2041	31,225	5,619	811	37,656	99	22	3	124	386	45	28	458	74%
2042	30,753	5,555	782	37,090	93	19	3	115	380	44	27	451	72%
2043	30,292	5,494	754	36,540	87	17	2	107	374	44	26	444	71%
2044	29,841	5,435	727	36,003	82	16	2	100	368	43	25	437	70%
2045	29,400	5,378	701	35,478	78	15	2	95	363	43	24	430	69%
2046	28,968	5,322	676	34,966	74	13	2	90	358	42	23	423	68%
2047	28,544	5,268	652	34,464	71	12	2	85	352	42	22	417	67%
2048	28,130	5,216	629	33,975	67	11	2	80	347	41	21	410	66%
2049	27,724	5,165	607	33,496	64	10	1	75	342	41	21	404	65%
2050	27,327	5,116	585	33,028	60	9	1	70	337	41	20	398	64%
2051	26,938	5,068	565	32,571	56	7	1	65	332	40	19	392	64%
2052	26,558	5,022	545	32,124	53	6	1	60	328	40	19	386	63%
2053	26,185	4,976	526	31,688	49	6	1	56	323	40	18	381	62%
2054	25,821	4,932	508	31,261	46	5	1	52	319	39	17	375	61%
2055	25,463	4,889	490	30,842	43	4	1	49	314	39	17	370	60%
2056	25,112	4,847	473	30,433	41	4	1	46	310	38	16	364	59%
2057	24,769	4,805	457	30,030	38	4	1	43	305	38	16	359	59%
2058	24,431	4,764	441	29,636	36	4	1	40	301	38	15	354	58%
2059	24,100	4,723	426	29,249	34	3	1	38	297	37	15	349	57%
2060	23,775	4,682	411	28,869	32	3	1	35	293	37	14	344	56%

West Virginia Department of Environmental Protection Office of Special Reclamatic
Actuarial Reserve Study as of June 30, 2025
Bond Forfeiture Projections
All Mine Types

	(1)	(2)	(3)	(4)
	Bond Forfeiture Recoveries			
Fiscal Year	Deterministic	Stochastic	Stochastic	
<u>Ending 6/30</u>	<u>Model</u>	<u>Mean</u>	<u>Median</u>	<u>Selected</u>
2026	2,563,035	11,284,840	10,038,192	2,563,035
2027	2,540,871	5,690,015	4,371,385	2,540,871
2028	2,509,217	4,779,727	3,423,510	2,509,217
2029	2,468,262	4,454,061	3,168,271	2,468,262
2030	2,408,884	4,058,531	2,805,744	2,408,884
2031	2,346,739	3,701,586	2,383,688	2,346,739
2032	2,282,412	3,302,260	2,090,386	2,282,412
2033	2,215,710	3,040,540	1,793,554	2,215,710
2034	2,146,388	2,726,346	1,538,250	2,146,388
2035	2,074,194	2,561,743	1,395,540	2,074,194
2036	1,999,131	2,291,031	1,164,744	1,999,131
2037	1,920,879	1,999,673	927,320	1,920,879
2038	1,838,082	1,738,282	731,800	1,838,082
2039	1,754,502	1,600,787	657,140	1,754,502
2040	1,670,281	1,386,664	480,200	1,670,281
2041	1,585,374	1,252,756	371,720	1,585,374
2042	1,499,646	1,117,406	321,240	1,499,646
2043	1,422,125	978,019	215,760	1,422,125
2044	1,344,943	868,573	155,800	1,344,943
2045	1,276,079	775,327	101,000	1,276,079
Total	39,866,752	59,608,166	38,135,244	39,866,752

Notes: Col (1) from Exhibit E-77, Col (17), (32), etc.
Col (2) from Exhibit E-139, Col (8)
Col (3) from Exhibit E-139, Col (6)

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Cost Projections
All Mine Types

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Land Reclamation Costs					Water Capital Costs					Water O&M Costs				
Fiscal Year	Deterministic	Stochastic	Stochastic	Three-Year		Deterministic	Stochastic	Stochastic	Three-Year		Deterministic	Stochastic	Stochastic	Three-Year	
Ending 6/30	Model	Mean	Median	Selected	Delay	Model	Mean	Median	Selected	Delay	Model	Mean	Median	Selected	Delay
2026	7,770,535	13,382,791	12,516,794	10,576,663	0	7,095,636	13,472,158	12,600,378	10,283,897	0	135,002	357,470	334,338	275,604	0
2027	7,600,501	6,817,694	5,655,863	7,209,098	0	6,935,329	6,863,221	5,693,632	6,899,275	0	266,519	539,579	485,413	430,504	0
2028	7,378,189	5,704,070	4,712,872	6,541,129	0	6,720,479	5,742,160	4,744,344	6,231,320	0	393,649	691,941	611,300	565,630	0
2029	7,150,088	5,214,321	4,252,556	6,182,204	5,288,331	6,506,507	5,249,141	4,280,953	5,877,824	5,141,949	516,232	831,222	724,890	690,782	137,802
2030	6,877,912	4,628,717	3,708,349	5,753,314	8,892,880	6,243,385	4,659,627	3,733,113	5,451,506	8,591,586	633,580	954,861	823,945	804,128	353,054
2031	6,604,223	4,208,238	3,262,229	5,406,231	6,875,113	5,984,039	4,236,340	3,284,013	5,110,190	6,565,298	745,764	1,067,268	911,083	908,038	498,067
2032	6,326,851	3,643,479	2,799,292	4,985,165	6,361,667	5,726,178	3,667,809	2,817,985	4,696,994	6,054,572	852,826	1,164,589	985,855	1,001,090	628,206
2033	6,043,411	3,344,473	2,495,958	4,693,942	8,844,416	5,467,331	3,366,807	2,512,626	4,417,069	8,390,418	954,776	1,253,924	1,052,525	1,087,075	1,149,519
2034	5,752,359	2,914,843	2,127,618	4,333,601	5,406,231	5,205,887	2,934,308	2,141,826	4,070,097	5,110,190	1,051,601	1,331,783	1,109,356	1,164,247	908,038
2035	5,451,713	2,668,678	1,916,710	4,060,196	4,985,165	4,939,904	2,686,499	1,929,510	3,813,201	4,696,994	1,143,261	1,403,067	1,160,554	1,235,627	1,001,090
2036	5,141,249	2,326,464	1,558,343	3,733,857	4,693,942	4,668,908	2,342,000	1,568,750	3,505,454	4,417,069	1,227,016	1,465,209	1,202,179	1,298,135	1,087,075
2037	4,825,580	2,037,453	1,297,090	3,431,516	4,333,601	4,395,037	2,051,059	1,305,751	3,223,048	4,070,097	1,302,998	1,519,632	1,236,826	1,353,152	1,164,247
2038	4,503,860	1,756,338	1,055,198	3,130,099	4,060,196	4,116,796	1,768,066	1,062,245	2,942,431	3,813,201	1,371,343	1,566,546	1,265,012	1,400,967	1,235,627
2039	4,178,426	1,546,013	920,573	2,862,220	3,733,857	3,835,372	1,556,337	926,721	2,695,855	3,505,454	1,432,215	1,607,842	1,289,601	1,443,219	1,298,135
2040	3,849,676	1,340,320	729,822	2,594,998	3,431,516	3,551,625	1,349,270	734,695	2,450,448	3,223,048	1,485,784	1,643,643	1,309,096	1,479,508	1,353,152
2041	3,573,623	1,149,181	566,684	2,361,402	3,130,099	3,309,309	1,156,855	570,468	2,233,082	2,942,431	1,532,892	1,674,339	1,324,232	1,510,488	1,400,967
2042	3,348,083	1,029,494	481,326	2,188,788	2,862,220	3,089,013	1,036,368	484,541	2,062,691	2,695,855	1,574,267	1,701,838	1,337,089	1,537,731	1,443,219
2043	3,151,467	898,565	356,779	2,025,016	2,594,998	2,896,809	904,566	359,162	1,900,687	2,450,448	1,610,454	1,725,840	1,346,619	1,560,971	1,479,508
2044	2,970,245	791,326	276,199	1,880,785	2,361,402	2,725,977	796,610	278,043	1,761,294	2,233,082	1,641,854	1,746,977	1,353,997	1,580,943	1,510,488
2045	2,800,599	690,780	199,572	1,745,689	2,188,788	2,571,266	695,393	200,905	1,633,330	2,062,691	1,668,815	1,765,429	1,359,328	1,597,857	1,537,731
Total	105,298,589	66,093,239	50,889,827	85,695,914	80,044,423	95,984,788	66,534,596	51,229,659	81,259,692	75,964,381	21,540,848	26,012,999	21,223,239	22,925,695	18,185,924

Notes: Col (1) from Exhibit E-73, Col (4)
Col (2) from Exhibit E-142, Col (16)
Col (3) from Exhibit E-142, Col (14)
Col (6) from Exhibit E-95, Col (4)
Col (7) from Exhibit E-143, Col (16)
Col (8) from Exhibit E-143, Col (14)
Col (11) from Exhibit E-117, Col (12)
Col (12) from Exhibit E-144, Col (16)
Col (13) from Exhibit E-144, Col (14)
Cols (5), (10), and (15) based on (4), (9), and (14), respectively, with a three-year delay on payments

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Land Reclamation Cost Projection - Deterministic Model
Land Total - All Mine Types

Fiscal Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Gross Liability				Gross Liability - Three Year Delay				Net Liability				Net Liability - Three Year Delay			
Ending 6/30	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	5,997,421	1,373,257	399,857	7,770,535	0	0	0	0	3,858,110	1,027,347	322,044	5,207,500	0	0	0	0
2027	5,882,269	1,346,367	371,866	7,600,501	0	0	0	0	3,759,689	1,002,341	297,601	5,059,631	0	0	0	0
2028	5,715,388	1,317,436	345,365	7,378,189	0	0	0	0	3,618,556	975,763	274,654	4,868,972	0	0	0	0
2029	5,545,111	1,284,794	320,182	7,150,088	2,998,711	686,628	199,929	3,885,267	3,482,858	946,020	252,948	4,681,826	1,929,055	513,673	161,022	2,603,750
2030	5,331,620	1,250,102	296,189	6,877,912	5,939,845	1,359,812	385,861	7,685,518	3,321,753	914,850	232,425	4,469,028	3,808,900	1,014,844	309,822	5,133,565
2031	5,117,789	1,213,164	273,270	6,604,223	5,798,828	1,331,902	358,615	7,489,345	3,162,318	882,124	213,043	4,257,484	3,689,123	989,052	286,127	4,964,301
2032	4,901,731	1,173,806	251,314	6,326,851	5,630,250	1,301,115	332,774	7,264,138	3,002,104	847,735	194,600	4,044,439	3,550,707	960,891	263,801	4,775,399
2033	4,681,295	1,131,868	230,247	6,043,411	8,104,176	1,892,499	456,280	10,452,955	2,839,076	811,585	177,040	3,827,700	5,063,182	1,387,860	358,899	6,809,941
2034	4,454,969	1,087,438	209,951	5,752,359	5,117,789	1,213,164	273,270	6,604,223	2,671,923	773,822	160,226	3,605,971	3,162,318	882,124	213,043	4,257,484
2035	4,221,064	1,040,370	190,279	5,451,713	4,901,731	1,173,806	251,314	6,326,851	2,499,116	734,358	144,045	3,377,519	3,002,104	847,735	194,600	4,044,439
2036	3,978,222	991,609	171,419	5,141,249	4,681,295	1,131,868	230,247	6,043,411	2,319,474	693,936	128,709	3,142,118	2,839,076	811,585	177,040	3,827,700
2037	3,730,769	941,377	153,434	4,825,580	4,454,969	1,087,438	209,951	5,752,359	2,137,580	652,805	114,316	2,904,701	2,671,923	773,822	160,226	3,605,971
2038	3,479,071	887,974	136,815	4,503,860	4,221,064	1,040,370	190,279	5,451,713	1,954,991	609,560	101,227	2,665,778	2,499,116	734,358	144,045	3,377,519
2039	3,223,284	833,391	121,752	4,178,426	3,978,222	991,609	171,419	5,141,249	1,768,103	566,246	89,576	2,423,924	2,319,474	693,936	128,709	3,142,118
2040	2,962,576	779,374	107,726	3,849,676	3,730,769	941,377	153,434	4,825,580	1,575,918	524,660	78,817	2,179,396	2,137,580	652,805	114,316	2,904,701
2041	2,746,121	731,408	96,094	3,573,623	3,479,071	887,974	136,815	4,503,860	1,428,387	489,671	70,191	1,988,250	1,954,991	609,560	101,227	2,665,778
2042	2,578,062	684,302	85,719	3,348,083	3,223,284	833,391	121,752	4,178,426	1,330,092	455,792	62,554	1,848,438	1,768,103	566,246	89,576	2,423,924
2043	2,434,072	641,125	76,270	3,151,467	2,962,576	779,374	107,726	3,849,676	1,248,513	425,316	55,512	1,729,342	1,575,918	524,660	78,817	2,179,396
2044	2,302,208	600,272	67,765	2,970,245	2,746,121	731,408	96,094	3,573,623	1,178,527	397,564	49,210	1,625,302	1,428,387	489,671	70,191	1,988,250
2045	2,175,333	565,218	60,047	2,800,599	2,578,062	684,302	85,719	3,348,083	1,109,278	371,828	43,413	1,524,519	1,330,092	455,792	62,554	1,848,438

Notes: Col (1) - (3) from Exhibit E-77, Col (15), (30), etc.
Col (4) = (1) + (2) + (3)
Col (9) - (11) from Exhibit E-77, Col (18), (33), etc.
Col (12) = (9) + (10) + (11)
Col (5) - (8) and (13) - (16) based on (1) - (4) and (9) - (12), with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Land Reclamation Cost Projection - Deterministic Model
Surface Mines

Fiscal Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Gross Liability				Gross Liability - Three Year Delay				Net Liability				Net Liability - Three Year Delay			
Ending 6/30	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	2,069,808	271,200	124,442	2,465,450	0	0	0	0	830,362	210,931	82,853	1,124,146	0	0	0	0
2027	2,029,039	260,160	112,075	2,401,273	0	0	0	0	801,316	201,964	73,373	1,076,653	0	0	0	0
2028	1,966,938	249,377	100,816	2,317,131	0	0	0	0	760,291	193,216	64,906	1,018,413	0	0	0	0
2029	1,893,769	238,851	90,581	2,223,201	1,034,904	135,600	62,221	1,232,725	713,853	184,686	57,281	955,820	415,181	105,465	41,426	562,073
2030	1,808,218	228,583	81,287	2,118,088	2,049,423	265,680	118,259	2,433,361	668,802	176,374	50,426	895,601	815,839	206,447	78,113	1,100,399
2031	1,724,856	218,570	72,855	2,016,282	1,997,988	254,768	106,445	2,359,202	625,403	168,280	44,386	838,068	780,804	197,590	69,139	1,047,533
2032	1,643,840	208,813	65,212	1,917,866	1,930,353	244,114	95,698	2,270,166	583,686	160,402	39,006	783,094	737,072	188,951	61,093	987,116
2033	1,565,041	199,311	58,286	1,822,639	2,755,103	348,008	126,577	3,229,688	543,518	152,740	34,182	730,441	1,025,728	268,717	79,066	1,373,511
2034	1,488,468	190,063	52,045	1,730,575	1,724,856	218,570	72,855	2,016,282	504,907	145,293	29,902	680,103	625,403	168,280	44,386	838,068
2035	1,414,126	181,066	46,392	1,641,584	1,643,840	208,813	65,212	1,917,866	467,858	138,060	26,106	632,024	583,686	160,402	39,006	783,094
2036	1,342,015	172,421	41,393	1,555,829	1,565,041	199,311	58,286	1,822,639	432,370	131,139	22,877	586,386	543,518	152,740	34,182	730,441
2037	1,272,386	164,023	36,876	1,473,285	1,488,468	190,063	52,045	1,730,575	398,777	124,426	20,072	543,276	504,907	145,293	29,902	680,103
2038	1,205,124	155,870	32,815	1,393,808	1,414,126	181,066	46,392	1,641,584	367,894	117,920	17,568	503,383	467,858	138,060	26,106	632,024
2039	1,140,058	147,959	29,246	1,317,262	1,342,015	172,421	41,393	1,555,829	338,639	111,619	15,435	465,693	432,370	131,139	22,877	586,386
2040	1,077,182	140,287	26,055	1,243,524	1,272,386	164,023	36,876	1,473,285	311,197	105,518	13,563	430,278	398,777	124,426	20,072	543,276
2041	1,016,935	132,851	23,340	1,173,126	1,205,124	155,870	32,815	1,393,808	285,684	99,626	12,050	397,361	367,894	117,920	17,568	503,383
2042	958,802	125,646	20,868	1,105,317	1,140,058	147,959	29,246	1,317,262	261,989	93,943	10,697	366,629	338,639	111,619	15,435	465,693
2043	902,982	118,669	18,648	1,040,299	1,077,182	140,287	26,055	1,243,524	239,993	88,447	9,482	337,922	311,197	105,518	13,563	430,278
2044	849,195	111,912	16,861	977,968	1,016,935	132,851	23,340	1,173,126	219,397	83,134	8,634	311,166	285,684	99,626	12,050	397,361
2045	797,877	105,371	15,383	918,632	958,802	125,646	20,868	1,105,317	200,769	78,000	8,009	286,778	261,989	93,943	10,697	366,629

Notes: Col (1) - (3) from Exhibit E-77, Col (15), (30), etc.
Col (4) = (1) + (2) + (3)
Col (9) - (11) from Exhibit E-77, Col (18), (33), etc.
Col (12) = (9) + (10) + (11)
Col (5) - (8) and (13) - (16) based on (1) - (4) and (9) - (12), with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Land Reclamation Cost Projection - Deterministic Model
Underground Mines

Fiscal Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Gross Liability				Gross Liability - Three Year Delay				Net Liability				Net Liability - Three Year Delay			
Ending 6/30	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	2,000,894	562,512	196,009	2,759,415	0	0	0	0	1,663,183	401,892	165,398	2,230,473	0	0	0	0
2027	1,960,569	561,954	185,632	2,708,154	0	0	0	0	1,620,693	398,899	155,496	2,175,088	0	0	0	0
2028	1,912,738	558,515	175,452	2,646,706	0	0	0	0	1,571,919	393,277	145,881	2,111,077	0	0	0	0
2029	1,860,492	553,829	165,446	2,579,766	1,000,447	281,256	98,005	1,379,707	1,519,358	386,727	136,529	2,042,614	831,591	200,946	82,699	1,115,236
2030	1,802,097	547,730	155,587	2,505,414	1,980,731	562,233	190,821	2,733,785	1,462,272	379,145	127,419	1,968,836	1,641,938	400,395	160,447	2,202,780
2031	1,737,799	540,067	145,845	2,423,711	1,936,654	560,235	180,542	2,677,430	1,400,150	370,437	118,523	1,889,110	1,596,306	396,088	150,688	2,143,082
2032	1,667,034	530,697	136,188	2,333,919	1,886,615	556,172	170,449	2,613,236	1,332,551	360,515	109,811	1,802,878	1,545,638	390,002	141,205	2,076,846
2033	1,589,226	519,485	126,578	2,235,289	2,732,343	824,644	238,310	3,795,297	1,259,017	349,295	101,293	1,709,605	2,221,951	572,508	195,684	2,990,143
2034	1,503,776	506,559	116,972	2,127,308	1,737,799	540,067	145,845	2,423,711	1,179,101	336,952	92,887	1,608,940	1,400,150	370,437	118,523	1,889,110
2035	1,410,062	491,820	107,323	2,009,206	1,667,034	530,697	136,188	2,333,919	1,092,260	323,432	84,544	1,500,235	1,332,551	360,515	109,811	1,802,878
2036	1,307,429	476,018	97,649	1,881,096	1,589,226	519,485	126,578	2,235,289	997,950	309,270	76,287	1,383,507	1,259,017	349,295	101,293	1,709,605
2037	1,199,890	459,152	88,301	1,747,342	1,503,776	506,559	116,972	2,127,308	900,300	294,477	68,471	1,263,248	1,179,101	336,952	92,887	1,608,940
2038	1,088,567	440,036	79,751	1,608,354	1,410,062	491,820	107,323	2,009,206	800,545	278,149	61,550	1,140,244	1,092,260	323,432	84,544	1,500,235
2039	973,570	420,702	72,008	1,466,279	1,307,429	476,018	97,649	1,881,096	695,967	262,355	55,427	1,013,748	997,950	309,270	76,287	1,383,507
2040	853,707	402,256	64,872	1,320,835	1,199,890	459,152	88,301	1,747,342	584,907	248,233	49,873	883,013	900,300	294,477	68,471	1,263,248
2041	762,589	385,298	58,246	1,206,134	1,088,567	440,036	79,751	1,608,354	502,052	235,746	44,691	782,489	800,545	278,149	61,550	1,140,244
2042	718,519	369,080	52,004	1,139,602	973,570	420,702	72,008	1,466,279	465,718	224,106	39,707	729,530	695,967	262,355	55,427	1,013,748
2043	685,670	352,442	45,884	1,083,996	853,707	402,256	64,872	1,320,835	441,509	212,363	34,813	688,685	584,907	248,233	49,873	883,013
2044	651,164	335,830	40,054	1,027,048	762,589	385,298	58,246	1,206,134	415,171	200,940	30,126	646,237	502,052	235,746	44,691	782,489
2045	615,923	318,176	34,575	968,674	718,519	369,080	52,004	1,139,602	387,780	188,904	25,709	602,393	465,718	224,106	39,707	729,530

Notes: Col (1) - (3) from Exhibit E-77, Col (15), (30), etc.
Col (4) = (1) + (2) + (3)
Col (9) - (11) from Exhibit E-77, Col (18), (33), etc.
Col (12) = (9) + (10) + (11)
Col (5) - (8) and (13) - (16) based on (1) - (4) and (9) - (12), with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Land Reclamation Cost Projection - Deterministic Model
Other

Fiscal Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Gross Liability				Gross Liability - Three Year Delay				Net Liability				Net Liability - Three Year Delay			
Ending 6/30	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	1,926,720	539,545	79,405	2,545,670	0	0	0	0	1,364,564	414,524	73,793	1,852,881	0	0	0	0
2027	1,892,661	524,254	74,159	2,491,074	0	0	0	0	1,337,680	401,478	68,732	1,807,890	0	0	0	0
2028	1,835,712	509,544	69,097	2,414,352	0	0	0	0	1,286,346	389,269	63,867	1,739,482	0	0	0	0
2029	1,790,851	492,114	64,155	2,347,120	963,360	269,773	39,703	1,272,835	1,249,646	374,608	59,138	1,683,392	682,282	207,262	36,896	926,441
2030	1,721,305	473,789	59,316	2,254,410	1,909,690	531,900	76,782	2,518,372	1,190,679	359,331	54,581	1,604,591	1,351,122	408,001	71,262	1,830,386
2031	1,655,134	454,527	54,570	2,164,231	1,864,186	516,899	71,628	2,452,713	1,136,765	343,407	50,134	1,530,305	1,312,013	395,374	66,299	1,773,686
2032	1,590,856	434,296	49,913	2,075,066	1,813,281	500,829	66,626	2,380,736	1,085,866	326,818	45,783	1,458,467	1,267,996	381,939	61,503	1,711,437
2033	1,527,028	413,072	45,383	1,985,483	2,616,731	719,846	91,393	3,427,970	1,036,540	309,549	41,565	1,387,654	1,815,502	546,635	84,150	2,446,287
2034	1,462,725	390,816	40,934	1,894,475	1,655,134	454,527	54,570	2,164,231	987,914	291,577	37,437	1,316,928	1,136,765	343,407	50,134	1,530,305
2035	1,396,876	367,483	36,564	1,800,923	1,590,856	434,296	49,913	2,075,066	938,998	272,866	33,395	1,245,259	1,085,866	326,818	45,783	1,458,467
2036	1,328,778	343,170	32,376	1,704,324	1,527,028	413,072	45,383	1,985,483	889,153	253,528	29,545	1,172,226	1,036,540	309,549	41,565	1,387,654
2037	1,258,493	318,203	28,258	1,604,953	1,462,725	390,816	40,934	1,894,475	838,503	233,902	25,772	1,098,178	987,914	291,577	37,437	1,316,928
2038	1,185,381	292,069	24,249	1,501,698	1,396,876	367,483	36,564	1,800,923	786,551	213,491	22,109	1,022,151	938,998	272,866	33,395	1,245,259
2039	1,109,656	264,730	20,498	1,394,884	1,328,778	343,170	32,376	1,704,324	733,497	192,272	18,714	944,483	889,153	253,528	29,545	1,172,226
2040	1,031,687	236,831	16,799	1,285,317	1,258,493	318,203	28,258	1,604,953	679,814	170,909	15,382	866,105	838,503	233,902	25,772	1,098,178
2041	966,597	213,258	14,508	1,194,364	1,185,381	292,069	24,249	1,501,698	640,651	154,299	13,450	808,400	786,551	213,491	22,109	1,022,151
2042	900,742	189,575	12,847	1,103,164	1,109,656	264,730	20,498	1,394,884	602,386	137,743	12,150	752,279	733,497	192,272	18,714	944,483
2043	845,421	170,014	11,738	1,027,172	1,031,687	236,831	16,799	1,285,317	567,011	124,506	11,218	702,735	679,814	170,909	15,382	866,105
2044	801,849	152,530	10,850	965,229	966,597	213,258	14,508	1,194,364	543,960	113,490	10,450	667,899	640,651	154,299	13,450	808,400
2045	761,533	141,671	10,089	913,293	900,742	189,575	12,847	1,103,164	520,729	104,924	9,695	635,348	602,386	137,743	12,150	752,279

Notes: Col (1) - (3) from Exhibit E-77, Col (15), (30), etc.
Col (4) = (1) + (2) + (3)
Col (9) - (11) from Exhibit E-77, Col (18), (33), etc.
Col (12) = (9) + (10) + (11)
Col (5) - (8) and (13) - (16) based on (1) - (4) and (9) - (12), with a three-year delay

2026																	
Permit Issue Year	Mine Type	Mine Status	Permit Count	Current Bonded Acres	Forfeiture Rate	Adjustment Factor Permit Bond/Side	Release Rate	Forfeited Permit Count	Released Permit Count	Forfeited Acres	Released Acres	Avg Recd Cost/Per Acres	Adjustment Factor Permit Status	Gross Cost	Current Security Amount	Forfeited Security Amount	Net Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1967	Surface	Active	-	-	0.047%	0.00	0.003%	-	-	-	-	2,995.00	1.00	-	-	-	-
1968	Surface	Active	-	-	0.056%	0.00	0.233%	-	-	-	-	2,995.00	1.00	-	-	-	-
1969	Surface	Active	-	-	0.066%	0.00	0.449%	-	-	-	-	2,995.00	1.00	-	-	-	-
1970	Surface	Active	-	-	0.076%	0.00	0.651%	-	-	-	-	2,995.00	1.00	-	-	-	-
1971	Surface	Active	-	-	0.086%	0.00	0.839%	-	-	-	-	2,995.00	1.00	-	-	-	-
1972	Surface	Active	1	400.00	0.095%	1.25	1.015%	0.00	0.01	0.48	4.06	2,995.00	1.00	1,429.78	-	-	1,429.78
1973	Surface	Active	-	-	0.105%	0.00	1.178%	-	-	-	-	2,995.00	1.00	-	-	-	-
1974	Surface	Active	-	-	0.115%	0.00	1.328%	-	-	-	-	2,995.00	1.00	-	32,250.00	-	-
1975	Surface	Active	-	-	0.125%	0.00	1.467%	-	-	-	-	2,995.00	1.00	-	-	-	-
1976	Surface	Active	-	-	0.135%	0.00	1.594%	-	-	-	-	2,995.00	1.00	-	-	-	-
1977	Surface	Active	6	1,107.97	0.144%	0.88	1.705%	0.01	0.10	1.41	18.94	2,995.00	1.00	4,234.14	-	-	4,234.14
1978	Surface	Active	4	855.12	0.154%	0.70	1.814%	0.01	0.07	0.92	15.51	2,995.00	1.00	2,765.23	-	-	2,765.23
1979	Surface	Active	1	-	0.164%	1.25	1.908%	0.00	0.02	-	-	2,995.00	1.00	-	4,698,614.00	-	-
1980	Surface	Active	1	47.92	0.174%	1.25	1.992%	0.00	0.02	0.10	0.95	2,995.00	1.00	311.86	4,267,664.00	9,273.29	-
1981	Surface	Active	8	1,999.01	0.184%	1.00	2.066%	0.01	0.17	3.67	41.30	2,995.00	1.00	10,993.90	180,000.00	330.13	10,663.37
1982	Surface	Active	2	7.44	0.193%	1.25	2.130%	0.00	0.04	0.02	0.16	2,995.00	1.00	53.88	1,278,360.00	3,090.81	-
1983	Surface	Active	2	1,708.83	0.203%	0.60	2.186%	0.00	0.04	2.08	37.35	2,995.00	1.00	6,240.36	2,187,000.00	2,666.63	3,573.73
1984	Surface	Active	-	-	0.213%	0.00	2.232%	-	-	-	-	2,995.00	1.00	-	-	117,920.00	-
1985	Surface	Active	5	2,611.31	0.223%	0.85	2.270%	0.01	0.11	4.95	59.26	2,995.00	1.00	14,811.74	4,960,960.00	9,395.43	5,416.31
1986	Surface	Active	8	2,532.60	0.233%	0.95	2.299%	0.02	0.18	5.60	58.23	2,995.00	1.00	16,761.15	-	-	16,761.15
1987	Surface	Active	3	1,371.12	0.242%	0.82	2.321%	0.01	0.07	2.71	31.82	2,995.00	1.00	8,129.20	2,104,472.00	4,166.00	3,963.21
1988	Surface	Active	7	1,562.99	0.252%	0.96	2.335%	0.02	0.16	3.80	36.49	2,995.00	1.00	11,383.98	4,733,480.00	11,511.23	-
1989	Surface	Active	8	2,773.31	0.262%	0.76	2.342%	0.02	0.19	5.49	64.95	2,995.00	1.00	16,456.79	6,575,880.00	13,028.78	3,428.01
1990	Surface	Active	12	2,703.07	0.272%	0.86	2.342%	0.03	0.28	6.34	63.31	2,995.00	1.00	18,977.51	1,843,680.00	4,321.86	14,655.65
1991	Surface	Active	8	1,554.45	0.282%	0.98	2.336%	0.02	0.19	4.27	36.31	2,995.00	1.00	12,781.49	4,545,756.00	12,479.98	301.51
1992	Surface	Active	6	3,683.68	0.291%	0.63	2.323%	0.02	0.14	6.80	85.58	2,995.00	1.00	20,359.43	5,123,800.00	9,455.38	10,904.05
1993	Surface	Active	11	4,151.89	0.301%	0.93	2.305%	0.03	0.25	11.65	95.70	2,995.00	1.00	34,897.06	7,741,411.00	21,725.32	13,171.73
1994	Surface	Active	6	1,389.47	0.311%	0.70	2.281%	0.02	0.14	3.02	31.70	2,995.00	1.00	9,058.57	13,802,840.00	30,045.70	-
1995	Surface	Active	13	8,653.77	0.321%	0.85	2.252%	0.04	0.29	23.49	194.92	2,995.00	1.00	70,345.61	9,246,082.00	25,095.31	45,250.30
1996	Surface	Active	12	6,686.27	0.331%	0.83	2.219%	0.04	0.27	18.42	148.36	2,995.00	1.00	55,163.22	6,069,575.00	16,719.65	38,443.57
1997	Surface	Active	23	11,098.71	0.340%	0.89	2.181%	0.08	0.50	33.59	242.06	2,995.00	1.00	100,593.07	17,134,500.00	51,852.56	48,740.51
1998	Surface	Active	20	11,215.25	0.350%	0.75	2.139%	0.07	0.43	25.35	239.88	2,995.00	1.00	87,917.14	16,839,314.00	44,074.98	43,842.16
1999	Surface	Active	4	2,008.81	0.360%	0.65	2.093%	0.01	0.08	4.70	42.05	2,995.00	1.00	14,076.31	36,680,966.00	85,821.09	-
2000	Surface	Active	6	4,010.07	0.370%	0.78	2.044%	0.02	0.12	11.49	81.96	2,995.00	1.00	34,415.34	43,021,280.00	123,278.28	-
2001	Surface	Active	20	7,502.63	0.380%	0.84	1.992%	0.08	0.40	23.78	149.43	2,995.00	1.00	71,212.32	6,779,680.00	21,485.92	49,726.40
2002	Surface	Active	13	5,919.92	0.389%	0.75	1.937%	0.05	0.25	17.20	114.66	2,995.00	1.00	51,507.06	13,384,272.00	38,882.02	12,625.04
2003	Surface	Active	19	8,056.67	0.399%	0.85	1.880%	0.08	0.36	27.33	151.43	2,995.00	1.00	81,863.35	29,505,600.00	100,101.89	-
2004	Surface	Active	23	13,148.60	0.409%	0.85	1.820%	0.09	0.42	45.70	239.35	2,995.00	1.00	136,881.34	19,791,240.00	68,792.47	68,088.87
2005	Surface	Active	15	4,062.35	0.419%	1.00	1.759%	0.06	0.26	17.07	71.47	2,995.00	1.00	51,115.19	33,523,439.00	140,839.46	-
2006	Surface	Active	10	5,139.07	0.429%	0.84	1.697%	0.04	0.17	18.39	87.22	2,995.00	1.00	55,073.45	30,665,880.00	109,727.71	-
2007	Surface	Active	20	5,069.99	0.438%	0.87	1.634%	0.09	0.33	19.22	82.84	2,995.00	1.00	57,572.00	11,223,245.50	42,552.58	15,019.43
2008	Surface	Active	17	9,470.87	0.448%	0.70	1.570%	0.08	0.27	29.71	148.70	2,995.00	1.00	88,976.64	16,276,950.00	51,057.83	37,918.81
2009	Surface	Active	18	6,648.17	0.458%	0.85	1.506%	0.08	0.27	25.79	100.12	2,995.00	1.00	77,246.70	16,272,504.00	63,129.94	14,116.76
2010	Surface	Active	10	4,950.00	0.468%	0.92	1.442%	0.05	0.14	21.30	71.38	2,995.00	1.00	63,803.73	15,484,319.00	66,628.07	-
2011	Surface	Active	12	1,769.33	0.478%	0.88	1.378%	0.06	0.17	7.46	24.38	2,995.00	1.00	22,351.71	16,362,067.20	69,014.95	-
2012	Surface	Active	22	7,481.98	0.487%	0.89	1.315%	0.11	0.29	32.48	98.40	2,995.00	1.00	97,285.36	4,692,576.00	20,372.55	76,912.80
2013	Surface	Active	22	8,035.98	0.497%	0.91	1.253%	0.11	0.28	36.41	100.72	2,995.00	1.00	109,036.75	6,932,984.00	31,409.24	77,627.51
2014	Surface	Active	20	7,227.57	0.507%	0.79	1.193%	0.10	0.24	28.94	86.22	2,995.00	1.00	86,683.79	15,790,710.51	63,233.97	23,449.82
2015	Surface	Active	12	4,331.94	0.517%	0.83	1.134%	0.06	0.14	18.56	49.13	2,995.00	1.00	55,584.88	20,651,980.00	88,478.78	-
2016	Surface	Active	9	3,393.59	0.526%	0.81	1.078%	0.05	0.10	14.48	36.55	2,995.00	1.00	43,378.44	18,007,704.00	76,901.02	-
2017	Surface	Active	4	1,137.87	0.536%	0.93	1.024%	0.02	0.04	5.64	11.65	2,995.00	1.00	16,905.66	9,533,304.00	47,291.82	-
2018	Surface	Active	8	3,677.40	0.546%	0.84	0.972%	0.04	0.08	16.82	35.75	2,995.00	1.00	50,371.62	6,329,288.00	28,946.97	21,424.65
2019	Surface	Active	8	4,475.81	0.556%	0.98	0.924%	0.04	0.07	24.26	41.36	2,995.00	1.00	72,653.96	2,701,600.00	14,642.39	58,011.58
2020	Surface	Active	11	4,151.29	0.566%	0.77	0.879%	0.06	0.10	18.04	36.51	2,995.00	1.00	54,027.90	10,013,968.00	43,512.93	10,514.97
2021	Surface	Active	7	3,857.52	0.575%	0.75	0.839%	0.04	0.06	16.65	32.35	2,995.00	1.00	49,865.26	3,479,160.00	15,016.46	34,848.80
2022	Surface	Active	14	5,405.21	0.585%	0.88	0.802%	0.08	0.11	27.68	43.35	2,995.00	1.00	82,905.07	7,805,500.00	39,973.52	42,931.55
2023	Surface	Active	15	4,057.34	0.299%	0.88	0.418%	0.04	0.06	10.73	16.96	2,995.00	1.00	32,123.95	5,963,680.00	15,765.40	16,358.55
2024	Surface	Active	6	2,351.57	0.143%	0.92	0.122%	0.01	0.01	3.08	2.88	2,995.00	1.00	9,224.91	4,567,360.00	5,982.36	3,242.55
2025	Surface	Active	5	1,400.13	0.000%	1.15	0.000%	(0.00)	0.00	(0.00)	0.00	2,995.00	1.00	(0.00)	4,152,060.00	(0.00)	-

Permit Issue Year	Mine Type	Mine Status	Permit Count	Current Bonded Acres	Adjustment		Released Permit Count	Released Permit Count	Forfeited Acres	Released Acres	AvgRed Cost per Acres	Adjustment		Gross Cost	Current Security Amount	Forfeited Security Amount	Net Cost
					Forfeiture Rate	Factor BondSize						Factor Permit Status	Factor Permit Status				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1967	Surface	Inactive			0.084%	0.00	0.002%	-	-	-	-	2,995.00	1.00		\$0		
1968	Surface	Inactive			0.102%	0.00	0.0151%	-	-	-	-	2,995.00	1.00				
1969	Surface	Inactive			0.120%	0.00	0.290%	-	-	-	-	2,995.00	1.00				
1970	Surface	Inactive			0.138%	0.00	0.421%	-	-	-	-	2,995.00	1.00				
1971	Surface	Inactive			0.155%	0.00	0.543%	-	-	-	-	2,995.00	1.00				
1972	Surface	Inactive			0.173%	0.00	0.657%	-	-	-	-	2,995.00	1.00				
1973	Surface	Inactive			0.191%	0.00	0.762%	-	-	-	-	2,995.00	1.00				
1974	Surface	Inactive			0.209%	0.00	0.839%	-	-	-	-	2,995.00	1.00				
1975	Surface	Inactive			0.226%	0.00	0.949%	-	-	-	-	2,995.00	1.00				
1976	Surface	Inactive	1	163.80	0.244%	1.25	1.021%	0.00	0.01	0.50	1.69	2,995.00	1.00	1,496.65			1,496.65
1977	Surface	Inactive			0.262%	0.00	1.106%	-	-	-	-	2,995.00	1.00				
1978	Surface	Inactive			0.280%	0.00	1.174%	-	-	-	-	2,995.00	1.00		442,000.00		
1979	Surface	Inactive			0.297%	0.00	1.235%	-	-	-	-	2,995.00	1.00				
1980	Surface	Inactive			0.315%	0.00	1.289%	-	-	-	-	2,995.00	1.00				
1981	Surface	Inactive			0.333%	0.00	1.337%	-	-	-	-	2,995.00	1.00				
1982	Surface	Inactive			0.351%	0.00	1.379%	-	-	-	-	2,995.00	1.00				
1983	Surface	Inactive			0.368%	0.00	1.414%	-	-	-	-	2,995.00	1.00				
1984	Surface	Inactive			0.386%	0.00	1.444%	-	-	-	-	2,995.00	1.00				
1985	Surface	Inactive			0.404%	0.00	1.469%	-	-	-	-	2,995.00	1.00				
1986	Surface	Inactive			0.422%	0.00	1.488%	-	-	-	-	2,995.00	1.00				
1987	Surface	Inactive	2	415.61	0.439%	0.91	1.502%	0.01	0.03	1.69	6.24	2,995.00	1.00	5,058.64			5,058.64
1988	Surface	Inactive	1	1,304.38	0.457%	0.60	1.511%	0.00	0.02	3.58	19.71	2,995.00	1.00	10,714.35	759,360.00	2,082.63	8,631.71
1989	Surface	Inactive	1	-	0.475%	1.25	1.515%	0.00	0.02	-	-	2,995.00	1.00	-	992,200.00	-	-
1990	Surface	Inactive			0.493%	0.00	1.515%	-	-	-	-	2,995.00	1.00		2,142,480.00	-	-
1991	Surface	Inactive			0.510%	0.00	1.511%	-	-	-	-	2,995.00	1.00		352,000.00	-	-
1992	Surface	Inactive			0.528%	0.00	1.503%	-	-	-	-	2,995.00	1.00		240,240.00	-	-
1993	Surface	Inactive			0.546%	0.00	1.491%	-	-	-	-	2,995.00	1.00		-	-	-
1994	Surface	Inactive			0.564%	0.00	1.476%	-	-	-	-	2,995.00	1.00		-	-	-
1995	Surface	Inactive	1	605.35	0.581%	0.60	1.457%	0.01	0.01	2.11	8.82	2,995.00	1.00	6,324.38			6,324.38
1996	Surface	Inactive			0.599%	0.00	1.436%	-	-	-	-	2,995.00	1.00		-	-	-
1997	Surface	Inactive			0.617%	0.00	1.411%	-	-	-	-	2,995.00	1.00		5,382,120.00	-	-
1998	Surface	Inactive	1	846.89	0.635%	0.60	1.384%	0.01	0.01	3.22	11.72	2,995.00	1.00	9,658.50			9,658.50
1999	Surface	Inactive	1	1,728.99	0.652%	1.25	1.354%	0.01	0.01	14.10	23.42	2,995.00	1.00	42,229.63			42,229.63
2000	Surface	Inactive			0.670%	0.00	1.323%	-	-	-	-	2,995.00	1.00		4,041,240.00	-	-
2001	Surface	Inactive			0.688%	0.00	1.289%	-	-	-	-	2,995.00	1.00		25,000.00	-	-
2002	Surface	Inactive	3	1,146.85	0.706%	0.67	1.253%	0.02	0.04	5.40	14.37	2,995.00	1.00	16,159.05			16,159.05
2003	Surface	Inactive	1	1,408.90	0.723%	0.60	1.216%	0.01	0.01	6.12	17.14	2,995.00	1.00	18,315.74			18,315.74
2004	Surface	Inactive	2	1,577.54	0.741%	0.60	1.178%	0.01	0.02	7.02	18.58	2,995.00	1.00	21,011.42	6,165,760.00	27,419.84	-
2005	Surface	Inactive			0.759%	0.00	1.138%	-	-	-	-	2,995.00	1.00		5,050,380.00	-	-
2006	Surface	Inactive	1	244.59	0.777%	0.80	1.098%	0.01	0.01	1.52	2.69	2,995.00	1.00	4,551.75	16,262,680.00	101,049.58	-
2007	Surface	Inactive	2	1,356.24	0.794%	0.70	1.057%	0.02	0.02	7.54	14.34	2,995.00	1.00	22,589.19			22,589.19
2008	Surface	Inactive	1	118.60	0.812%	1.25	1.016%	0.01	0.01	1.20	1.20	2,995.00	1.00	3,606.29	294,402.00	2,988.96	617.33
2009	Surface	Inactive	1	42.43	0.830%	1.25	0.974%	0.01	0.01	0.44	0.41	2,995.00	1.00	1,318.38	229,000.00	2,375.79	-
2010	Surface	Inactive	5	679.59	0.848%	0.93	0.933%	0.02	0.02	5.33	6.34	2,995.00	1.00	15,960.29	91,028.69	713.80	15,246.49
2011	Surface	Inactive	5	1,679.64	0.865%	0.68	0.892%	0.04	0.04	9.89	14.98	2,995.00	1.00	29,606.04	1,072,084.00	6,309.52	23,296.53
2012	Surface	Inactive			0.883%	0.00	0.851%	-	-	-	-	2,995.00	1.00		3,756,040.00	-	-
2013	Surface	Inactive			0.901%	0.00	0.811%	-	-	-	-	2,995.00	1.00		3,612,480.00	-	-
2014	Surface	Inactive	1	262.00	0.919%	1.25	0.772%	0.01	0.01	3.01	2.02	2,995.00	1.00	9,011.72			9,011.72
2015	Surface	Inactive	2	624.70	0.937%	0.80	0.734%	0.02	0.01	4.68	4.58	2,995.00	1.00	14,017.54	263,200.00	1,971.92	12,045.62
2016	Surface	Inactive	2	776.75	0.954%	0.70	0.697%	0.02	0.01	5.19	5.42	2,995.00	1.00	15,539.88	354,960.00	2,371.09	13,168.78
2017	Surface	Inactive	1	154.63	0.972%	1.25	0.662%	0.01	0.01	1.88	1.02	2,995.00	1.00	5,627.03	951,240.00	11,557.90	-
2018	Surface	Inactive	1	351.08	0.990%	0.60	0.629%	0.01	0.01	2.08	2.21	2,995.00	1.00	6,244.47	2,719,440.00	16,149.99	-
2019	Surface	Inactive	1	452.10	1.008%	0.80	0.598%	0.01	0.01	3.64	2.70	2,995.00	1.00	10,914.04	630,000.00	5,078.02	5,836.02
2020	Surface	Inactive			1.025%	0.00	0.569%	-	-	-	-	2,995.00	1.00		569,400.00	-	-
2021	Surface	Inactive			1.043%	0.00	0.543%	-	-	-	-	2,995.00	1.00		510,000.00	-	-
2022	Surface	Inactive	1	31.34	1.061%	1.25	0.519%	0.01	0.01	0.42	0.16	2,995.00	1.00	1,244.65			1,244.65
2023	Surface	Inactive			0.542%	0.00	0.270%	-	-	-	-	2,995.00	1.00		-	-	-
2024	Surface	Inactive			0.259%	0.00	0.079%	-	-	-	-	2,995.00	1.00		-	-	-
2025	Surface	Inactive			0.000%	0.00	0.000%	-	-	-	-	2,995.00	1.00		-	-	-

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	Adjustment				Forfeited Permit Count (9)	Released Permit Count (10)	Forfeited Acres (11)	Released Acres (12)	Avg Recl Cost per Acre (13)	Adjustment		Gross Cost (15)	Current Security Amount (16)	Forfeited Security Amount (17)	Net Cost (18)
					Factor Permit Bond Size (7)	Rate (6)	Release Rate (8)	Factor Permit Status (14)											
1967	Surface	Phased Released	-	-	0.087%	0.00	0.009%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
1968	Surface	Phased Released	-	-	0.106%	0.00	0.631%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
1969	Surface	Phased Released	-	-	0.124%	0.00	1.214%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
1970	Surface	Phased Released	-	-	0.142%	0.00	1.761%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
1971	Surface	Phased Released	-	-	0.161%	0.00	2.271%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
1972	Surface	Phased Released	-	-	0.179%	0.00	2.746%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
1973	Surface	Phased Released	-	-	0.197%	0.00	3.187%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
1974	Surface	Phased Released	2	116.05	0.216%	1.25	3.594%	0.00	0.07	0.31	4.17	2,995.00	0.50	468.67	-	-	468.67	-	-
1975	Surface	Phased Released	2	7.80	0.234%	1.25	3.969%	0.00	0.08	0.02	0.31	2,995.00	0.50	34.18	-	-	34.18	-	-
1976	Surface	Phased Released	4	476.17	0.252%	1.25	4.313%	0.01	0.17	1.50	20.54	2,995.00	0.50	2,250.41	98,250.00	310.07	1,940.34	-	-
1977	Surface	Phased Released	2	48.00	0.271%	1.25	4.626%	0.01	0.09	0.16	2.22	2,995.00	0.50	243.35	30,600.00	103.60	139.75	-	-
1978	Surface	Phased Released	1	158.81	0.289%	1.25	4.909%	0.00	0.05	0.57	7.80	2,995.00	0.50	859.73	112,250.00	405.79	453.94	-	-
1979	Surface	Phased Released	3	538.00	0.308%	1.25	5.164%	0.15	0.15	2.07	27.78	2,995.00	0.50	3,097.47	14,750.00	56.71	3,040.76	-	-
1980	Surface	Phased Released	1	253.42	0.326%	1.25	5.391%	0.00	0.05	1.03	13.66	2,995.00	0.50	1,546.15	50,000.00	203.71	1,342.44	-	-
1981	Surface	Phased Released	5	1,267.32	0.344%	0.94	5.591%	0.02	0.28	4.10	70.85	2,995.00	0.50	6,142.18	122,400.00	396.14	5,746.03	-	-
1982	Surface	Phased Released	-	-	0.363%	0.00	5.765%	-	-	-	-	-	2,995.00	0.50	-	64,750.00	-	-	-
1983	Surface	Phased Released	4	225.01	0.381%	1.25	5.914%	0.02	0.24	1.07	13.31	2,995.00	0.50	1,604.88	1,571,520.00	7,485.04	-	-	-
1984	Surface	Phased Released	3	2,302.75	0.399%	0.82	6.039%	0.01	0.18	7.51	139.06	2,995.00	0.50	11,247.78	-	-	11,247.78	-	-
1985	Surface	Phased Released	2	1,270.29	0.418%	1.03	6.141%	0.01	0.12	5.44	78.01	2,995.00	0.50	8,145.67	169,802.37	727.11	7,418.56	-	-
1986	Surface	Phased Released	4	1,041.15	0.436%	1.03	6.211%	0.02	0.25	4.65	64.77	2,995.00	0.50	6,969.83	2,241,760.00	10,021.46	-	-	-
1987	Surface	Phased Released	4	760.81	0.454%	1.14	6.280%	0.02	0.25	3.93	47.78	2,995.00	0.50	5,890.15	349,670.00	1,807.76	4,082.39	-	-
1988	Surface	Phased Released	5	480.30	0.473%	1.25	6.318%	0.02	0.32	2.84	30.34	2,995.00	0.50	4,251.34	545,288.00	3,223.09	1,028.25	-	-
1989	Surface	Phased Released	5	1,098.64	0.491%	1.16	6.337%	0.02	0.32	6.26	69.62	2,995.00	0.50	9,374.88	442,636.00	2,522.26	6,852.62	-	-
1990	Surface	Phased Released	4	764.18	0.510%	1.25	6.337%	0.02	0.25	4.87	48.43	2,995.00	0.50	7,289.53	111,000.00	707.07	6,582.47	-	-
1991	Surface	Phased Released	5	1,006.45	0.528%	1.07	6.320%	0.03	0.32	5.69	63.61	2,995.00	0.50	8,514.27	254,550.00	1,438.01	7,076.26	-	-
1992	Surface	Phased Released	-	-	0.546%	0.00	6.286%	-	-	-	-	-	2,995.00	0.50	-	212,376.00	-	-	-
1993	Surface	Phased Released	2	669.04	0.565%	1.25	6.237%	0.01	0.12	4.72	41.73	2,995.00	0.50	7,072.05	537,148.00	3,791.58	3,280.47	-	-
1994	Surface	Phased Released	5	345.90	0.583%	1.07	6.173%	0.03	0.31	2.16	21.35	2,995.00	0.50	3,231.60	-	-	3,231.60	-	-
1995	Surface	Phased Released	3	484.30	0.601%	1.03	6.095%	0.02	0.18	3.01	29.52	2,995.00	0.50	4,507.22	37,350.00	232.12	4,275.09	-	-
1996	Surface	Phased Released	3	583.38	0.620%	1.10	6.004%	0.02	0.18	3.98	35.03	2,995.00	0.50	5,956.11	1,136,483.00	7,748.31	-	-	-
1997	Surface	Phased Released	3	169.48	0.638%	0.88	5.901%	0.02	0.18	0.96	10.00	2,995.00	0.50	1,430.69	563,096.00	3,174.25	-	-	-
1998	Surface	Phased Released	2	336.07	0.657%	1.03	5.788%	0.01	0.12	2.26	19.45	2,995.00	0.50	3,386.71	727,285.00	4,894.25	-	-	-
1999	Surface	Phased Released	1	14.87	0.675%	1.25	5.664%	0.01	0.06	0.13	0.84	2,995.00	0.50	187.86	1,568,000.00	13,228.09	-	-	-
2000	Surface	Phased Released	1	19.70	0.693%	1.25	5.531%	0.01	0.06	0.17	1.09	2,995.00	0.50	255.65	581,056.00	5,035.36	-	-	-
2001	Surface	Phased Released	3	491.55	0.712%	1.10	5.389%	0.02	0.16	3.85	26.49	2,995.00	0.50	5,762.18	10,640.00	83.29	5,678.89	-	-
2002	Surface	Phased Released	1	48.20	0.730%	1.25	5.241%	0.01	0.05	0.44	2.53	2,995.00	0.50	658.64	-	-	658.64	-	-
2003	Surface	Phased Released	1	7.48	0.748%	1.25	5.086%	0.01	0.05	-	-	-	2,995.00	0.50	-	493,344.06	-	-	-
2004	Surface	Phased Released	2	470.13	0.767%	0.93	4.926%	0.02	0.10	3.33	23.16	2,995.00	0.50	4,993.17	142,806.00	1,012.83	3,980.34	-	-
2005	Surface	Phased Released	1	51.50	0.785%	1.25	4.761%	0.01	0.05	0.51	2.45	2,995.00	0.50	756.86	-	-	756.86	-	-
2006	Surface	Phased Released	1	60.78	0.803%	1.25	4.592%	0.01	0.05	0.61	2.79	2,995.00	0.50	914.14	596,000.00	5,985.93	-	-	-
2007	Surface	Phased Released	2	263.63	0.822%	1.03	4.421%	0.02	0.09	2.22	11.66	2,995.00	0.50	3,325.66	39,520.00	332.92	2,992.75	-	-
2008	Surface	Phased Released	-	-	0.840%	0.00	4.248%	-	-	-	-	-	2,995.00	0.50	-	49,200.00	-	-	-
2009	Surface	Phased Released	1	137.75	0.859%	0.80	4.075%	0.01	0.04	0.95	5.61	2,995.00	0.50	1,416.88	141,840.00	974.26	442.62	-	-
2010	Surface	Phased Released	-	-	0.877%	0.00	3.901%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2011	Surface	Phased Released	1	158.51	0.895%	1.25	3.729%	0.01	0.04	1.77	5.91	2,995.00	0.50	2,656.53	228,336.00	2,555.44	101.09	-	-
2012	Surface	Phased Released	-	-	0.914%	0.00	3.559%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2013	Surface	Phased Released	-	-	0.932%	0.00	3.391%	-	-	-	-	-	2,995.00	0.50	-	115,616.00	-	-	-
2014	Surface	Phased Released	-	-	0.950%	0.00	3.228%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2015	Surface	Phased Released	-	-	0.969%	0.00	3.069%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2016	Surface	Phased Released	-	-	0.987%	0.00	2.916%	-	-	-	-	-	2,995.00	0.50	-	20,800.00	-	-	-
2017	Surface	Phased Released	-	-	1.006%	0.00	2.770%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2018	Surface	Phased Released	-	-	1.024%	0.00	2.631%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2019	Surface	Phased Released	-	-	1.042%	0.00	2.501%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2020	Surface	Phased Released	-	-	1.061%	0.00	2.380%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2021	Surface	Phased Released	-	-	1.079%	0.00	2.269%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2022	Surface	Phased Released	-	-	1.097%	0.00	2.170%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2023	Surface	Phased Released	-	-	0.561%	0.00	1.131%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2024	Surface	Phased Released	-	-	0.268%	0.00	0.331%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-
2025	Surface	Phased Released	-	-	0.000%	0.00	0.000%	-	-	-	-	-	2,995.00	0.50	-	-	-	-	-

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Land Reclamation Cost Projection - Deterministic Model

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	Adjustment				Forfeited Permit Count (9)	Released Permit Count (10)	Forfeited Acres (11)	Released Acres (12)	Avg Recd Cost per Acres (13)	Adjustment		Gross Cost (15)	Current Security Amount (16)	Forfeited Security Amount (17)	Net Cost (18)	
					Factor Permit Bond \$/Acre (7)	Forfeiture Rate (6)	Release Rate (8)	Factor Permit Status (14)												
1967	Underground	Active	-	-	0.000%	0.00	0.001%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1968	Underground	Active	-	-	0.000%	0.00	0.018%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1969	Underground	Active	-	-	0.052%	0.00	0.043%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1970	Underground	Active	-	-	0.150%	0.00	0.077%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1971	Underground	Active	-	-	0.241%	0.00	0.119%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1972	Underground	Active	-	-	0.323%	0.00	0.169%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1973	Underground	Active	-	-	0.398%	0.00	0.225%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1974	Underground	Active	-	-	0.466%	0.00	0.289%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1975	Underground	Active	-	-	0.526%	0.00	0.359%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1976	Underground	Active	-	-	0.580%	0.00	0.434%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1977	Underground	Active	-	-	0.628%	0.00	0.514%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1978	Underground	Active	-	-	0.669%	0.00	0.599%	-	-	-	-	-	12,975.00	1.00	-	-	-	-	-	
1979	Underground	Active	7	703.10	0.704%	1.03	0.688%	0.05	0.05	5.09	4.84	12,975.00	1.00	-	66,069.16	-	-	66,069.16	-	
1980	Underground	Active	4	202.41	0.734%	1.03	0.781%	0.03	0.03	1.52	1.58	12,975.00	1.00	-	19,753.14	-	-	19,753.14	-	
1981	Underground	Active	16	709.57	0.758%	1.17	0.876%	0.12	0.14	6.29	6.22	12,975.00	1.00	-	81,573.56	4,969,512.00	44,031.20	37,542.36	-	
1982	Underground	Active	2	33.93	0.777%	1.25	0.975%	0.02	0.02	0.33	0.33	12,975.00	1.00	-	4,277.48	476,640.00	4,631.13	-	-	
1983	Underground	Active	29	7,263.70	0.792%	0.88	1.075%	0.23	0.31	50.56	78.08	12,975.00	1.00	-	656,063.72	4,014,640.00	27,946.50	628,117.23	-	
1984	Underground	Active	16	2,621.92	0.801%	0.95	1.177%	0.13	0.19	19.96	30.86	12,975.00	1.00	-	259,018.32	255,520.00	1,945.49	257,072.83	-	
1985	Underground	Active	3	49.00	0.807%	1.25	1.280%	0.02	0.04	0.49	0.63	12,975.00	1.00	-	6,413.05	31,680,303.43	319,558.45	-	-	
1986	Underground	Active	5	236.31	0.808%	1.16	1.383%	0.07	0.07	2.22	3.27	12,975.00	1.00	-	28,753.59	13,453,220.00	126,162.09	-	-	
1987	Underground	Active	5	203.45	0.806%	1.16	1.487%	0.04	0.07	1.90	3.02	12,975.00	1.00	-	24,685.49	138,280.00	1,293.11	23,392.38	-	
1988	Underground	Active	4	157.83	0.800%	1.14	1.590%	0.03	0.06	1.44	2.51	12,975.00	1.00	-	18,644.51	406,240.00	3,698.60	14,945.92	-	
1989	Underground	Active	11	317.75	0.791%	1.17	1.692%	0.09	0.19	2.94	5.38	12,975.00	1.00	-	38,116.01	400,160.00	3,699.54	34,416.46	-	
1990	Underground	Active	4	131.40	0.779%	1.14	1.793%	0.03	0.07	1.17	2.36	12,975.00	1.00	-	15,117.03	505,062.00	4,478.25	10,638.78	-	
1991	Underground	Active	3	36.67	0.765%	1.25	1.891%	0.02	0.06	0.35	0.69	12,975.00	1.00	-	4,549.17	264,309.00	2,527.12	2,022.05	-	
1992	Underground	Active	9	960.01	0.748%	1.01	1.987%	0.07	0.18	7.22	19.08	12,975.00	1.00	-	93,676.99	305,240.00	2,295.57	91,381.41	-	
1993	Underground	Active	13	1,009.71	0.729%	1.05	2.080%	0.09	0.27	7.70	21.01	12,975.00	1.00	-	99,882.59	73,520.00	560.52	99,322.07	-	
1994	Underground	Active	9	604.69	0.708%	1.00	2.170%	0.06	0.20	4.28	13.12	12,975.00	1.00	-	55,531.09	5,922,375.83	41,917.18	13,613.92	-	
1995	Underground	Active	9	318.33	0.685%	1.00	2.255%	0.06	0.20	2.18	7.18	12,975.00	1.00	-	28,300.67	2,677,680.00	18,347.23	9,953.44	-	
1996	Underground	Active	10	242.07	0.661%	1.12	2.336%	0.07	0.23	1.78	5.66	12,975.00	1.00	-	23,158.55	1,902,184.00	14,025.41	9,133.13	-	
1997	Underground	Active	11	247.41	0.636%	1.17	2.412%	0.07	0.27	1.84	5.97	12,975.00	1.00	-	23,862.42	691,160.00	5,137.70	18,724.73	-	
1998	Underground	Active	12	572.18	0.611%	1.01	2.483%	0.07	0.30	3.52	14.21	12,975.00	1.00	-	45,707.90	692,496.00	4,263.52	41,444.38	-	
1999	Underground	Active	11	327.70	0.584%	1.19	2.547%	0.06	0.28	2.28	8.35	12,975.00	1.00	-	29,588.66	776,800.93	5,405.69	24,182.97	-	
2000	Underground	Active	13	369.33	0.558%	1.18	2.605%	0.07	0.34	2.43	9.62	12,975.00	1.00	-	31,564.67	1,851,364.00	12,194.70	19,369.97	-	
2001	Underground	Active	3	112.63	0.531%	1.10	2.656%	0.02	0.08	0.66	2.99	12,975.00	1.00	-	8,542.08	294,440.00	1,721.07	6,821.01	-	
2002	Underground	Active	7	222.94	0.505%	1.19	2.699%	0.04	0.19	1.34	6.02	12,975.00	1.00	-	17,328.49	640,680.00	3,838.01	13,490.48	-	
2003	Underground	Active	8	591.90	0.480%	0.95	2.734%	0.04	0.22	4.52	27.12	12,975.00	1.00	-	58,642.29	665,160.00	3,030.83	55,611.46	-	
2004	Underground	Active	6	411.39	0.455%	1.07	2.761%	0.03	0.17	2.00	11.36	12,975.00	1.00	-	25,899.69	771,760.00	3,744.69	22,155.00	-	
2005	Underground	Active	9	364.13	0.431%	1.10	2.778%	0.04	0.25	1.73	10.12	12,975.00	1.00	-	22,412.34	4,405,880.00	20,900.47	1,511.87	-	
2006	Underground	Active	7	290.00	0.409%	0.99	2.786%	0.03	0.20	1.18	8.08	12,975.00	1.00	-	15,279.59	8,885,339.00	36,081.16	-	-	
2007	Underground	Active	10	591.88	0.388%	1.08	2.784%	0.04	0.28	2.47	16.48	12,975.00	1.00	-	32,064.30	994,100.00	4,150.60	27,913.70	-	
2008	Underground	Active	4	98.24	0.370%	1.25	2.771%	0.01	0.11	0.45	2.72	12,975.00	1.00	-	5,890.76	1,295,640.00	5,987.70	-	-	
2009	Underground	Active	8	370.51	0.353%	1.08	2.747%	0.03	0.22	1.42	10.18	12,975.00	1.00	-	18,340.57	9,229,820.00	35,251.06	-	-	
2010	Underground	Active	9	258.10	0.339%	1.08	2.711%	0.03	0.24	0.94	7.00	12,975.00	1.00	-	12,242.86	284,440.00	1,039.87	11,202.99	-	
2011	Underground	Active	8	204.25	0.328%	1.19	2.664%	0.03	0.21	0.80	5.44	12,975.00	1.00	-	10,373.83	789,800.00	3,091.62	7,282.20	-	
2012	Underground	Active	6	172.75	0.320%	1.18	2.603%	0.02	0.16	0.65	4.50	12,975.00	1.00	-	8,417.89	397,040.00	1,491.12	6,926.77	-	
2013	Underground	Active	13	505.93	0.315%	1.11	2.530%	0.04	0.33	1.77	12.80	12,975.00	1.00	-	22,956.06	582,960.00	2,038.63	20,917.43	-	
2014	Underground	Active	21	727.51	0.313%	1.12	2.442%	0.07	0.51	2.55	17.77	12,975.00	1.00	-	33,148.35	509,120.00	1,787.87	31,360.48	-	
2015	Underground	Active	8	183.96	0.315%	1.19	2.341%	0.03	0.19	0.69	4.31	12,975.00	1.00	-	8,989.41	1,333,320.00	5,021.51	3,967.89	-	
2016	Underground	Active	5	197.47	0.322%	0.98	2.225%	0.02	0.11	0.62	4.39	12,975.00	1.00	-	8,083.27	1,448,440.00	4,569.61	3,513.66	-	
2017	Underground	Active	7	161.03	0.333%	1.25	2.094%	0.02	0.15	0.67	3.37	12,975.00	1.00	-	8,689.44	343,600.00	1,429.00	7,260.44	-	
2018	Underground	Active	3	29.25	0.348%	1.25	1.947%	0.01	0.06	0.13	0.57	12,975.00	1.00	-	1,651.50	321,800.00	1,400.33	251.17	-	
2019	Underground	Active	4	149.13	0.368%	1.14	1.784%	0.01	0.07	0.62	2.66	12,975.00	1.00	-	8,109.34	169,120.00	708.77	7,400.57	-	
2020	Underground	Active	7	141.50	0.394%	1.19	1.604%	0.03	0.11	0.66	2.27	12,975.00	1.00	-	8,575.19	145,360.00	678.93	7,896.26	-	
2021	Underground	Active	7	81.77	0.425%	1.25	1.407%	0.03	0.10	0.43	1.15	12,975.00	1.00	-	5,634.09	388,840.00	2,064.87	3,569.21	-	
2022	Underground	Active	4	43.22	0.461%	1.25	1.192%	0.02	0.05	0.25	0.52	12,975.00	1.00	-	3,234.64	302,840.00	1,746.81	1,487.82	-	
2023	Underground	Active	2	65.04	0.195%	1.25	0.959%	0.00	0.02	0.16	0.62	12,975.00	1.00	-	2,059.96	210,480.00	519.79	1,546.18	-	
2024	Underground	Active	-	-	0.089%	0.00	0.708%	-	-	-	-	-	12,975.00	1.00	-	-	103,800.00	-	-	-
2025	Underground	Active	2	16.05	0.000%	1.25	0.437%	(0.00)	0.01	(0.00)	0.07	12,975.00	1.00	-	(0.00)	148,000.00	(0.00)	-	-	

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	Adjustment			Forfeited Permit Count (9)	Released Permit Count (10)	Forfeited Acres (11)	Released Acres (12)	Avg Recd Cost per Acre (13)	Adjustment		Gross Cost (15)	Current Security Amount (16)	Forfeited Security Amount (17)	Net Cost (18)
					Factor Permit BondSize (7)	Rate (6)	Release Rate (8)						Factor Permit Status (14)					
1967	Underground	Inactive	-	-	0.000%	0.00	0.001%	-	-	-	-	12,975.00	1.00	-	-	\$0	-	-
1968	Underground	Inactive	-	-	0.000%	0.00	0.011%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1969	Underground	Inactive	-	-	0.094%	0.00	0.028%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1970	Underground	Inactive	-	-	0.273%	0.00	0.050%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1971	Underground	Inactive	-	-	0.436%	0.00	0.077%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1972	Underground	Inactive	-	-	0.586%	0.00	0.109%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1973	Underground	Inactive	-	-	0.721%	0.00	0.146%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1974	Underground	Inactive	-	-	0.844%	0.00	0.187%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1975	Underground	Inactive	-	-	0.954%	0.00	0.232%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1976	Underground	Inactive	1	26.50	1.051%	0.80	0.281%	0.01	0.00	0.22	0.07	12,975.00	1.00	2,892.15	-	-	2,892.15	-
1977	Underground	Inactive	-	-	1.137%	0.00	0.333%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1978	Underground	Inactive	2	117.89	1.212%	0.80	0.388%	0.02	0.01	1.14	0.46	12,975.00	1.00	14,833.20	345,280.00	3,348.28	11,484.92	-
1979	Underground	Inactive	-	-	1.276%	0.00	0.445%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
1980	Underground	Inactive	-	-	1.330%	0.00	0.505%	-	-	-	-	12,975.00	1.00	-	504,898.00	-	-	-
1981	Underground	Inactive	4	210.92	1.374%	0.91	0.567%	0.05	0.02	2.64	1.20	12,975.00	1.00	34,313.20	-	-	34,313.20	-
1982	Underground	Inactive	2	125.56	1.409%	0.70	0.631%	0.03	0.01	1.24	0.79	12,975.00	1.00	16,066.51	-	-	16,066.51	-
1983	Underground	Inactive	6	260.82	1.435%	0.95	0.696%	0.09	0.04	3.56	1.81	12,975.00	1.00	46,130.53	820,330.00	11,182.24	34,948.29	-
1984	Underground	Inactive	-	-	1.453%	0.00	0.762%	-	-	-	-	12,975.00	1.00	-	206,640.00	-	-	-
1985	Underground	Inactive	1	220.21	1.463%	0.60	0.828%	0.01	0.01	1.93	1.82	12,975.00	1.00	25,074.06	857,297.00	7,523.35	17,550.70	-
1986	Underground	Inactive	1	43.54	1.465%	0.80	0.895%	0.01	0.01	0.51	0.39	12,975.00	1.00	6,622.29	-	-	6,622.29	-
1987	Underground	Inactive	1	40.89	1.461%	0.80	0.962%	0.01	0.01	0.48	0.39	12,975.00	1.00	6,201.71	574,600.00	6,716.64	-	-
1988	Underground	Inactive	5	55.35	1.451%	1.25	1.029%	0.07	0.05	1.00	0.57	12,975.00	1.00	13,023.14	291,298.00	5,282.36	7,740.78	-
1989	Underground	Inactive	-	-	1.434%	0.00	1.095%	-	-	-	-	12,975.00	1.00	-	160,756.00	-	-	-
1990	Underground	Inactive	3	25.64	1.413%	1.10	1.160%	0.04	0.03	0.40	0.30	12,975.00	1.00	5,170.21	1,198,546.00	18,626.78	-	-
1991	Underground	Inactive	3	362.42	1.386%	0.82	1.224%	0.04	0.04	4.10	4.43	12,975.00	1.00	53,240.98	613,387.00	6,944.82	46,296.16	-
1992	Underground	Inactive	2	119.31	1.356%	1.03	1.286%	0.03	0.03	1.66	1.53	12,975.00	1.00	21,509.48	231,443.00	3,215.80	18,293.67	-
1993	Underground	Inactive	1	20.36	1.321%	0.80	1.346%	0.01	0.01	0.22	0.27	12,975.00	1.00	2,791.54	1,482,676.00	15,667.67	-	-
1994	Underground	Inactive	2	100.78	1.283%	0.80	1.404%	0.03	0.03	1.03	1.41	12,975.00	1.00	13,419.79	21,240.00	217.98	13,201.81	-
1995	Underground	Inactive	2	91.94	1.242%	1.03	1.453%	0.02	0.03	1.17	1.34	12,975.00	1.00	15,185.37	429,518.00	5,467.58	9,717.80	-
1996	Underground	Inactive	3	51.05	1.199%	1.25	1.512%	0.04	0.05	0.76	0.77	12,975.00	1.00	9,923.83	289,680.00	4,340.05	5,583.78	-
1997	Underground	Inactive	7	316.01	1.153%	0.94	1.561%	0.08	0.11	3.41	4.93	12,975.00	1.00	44,249.56	1,484,496.54	16,020.64	28,228.92	-
1998	Underground	Inactive	1	72.14	1.107%	0.60	1.607%	0.01	0.02	0.48	1.16	12,975.00	1.00	6,215.27	129,280.00	858.44	5,356.83	-
1999	Underground	Inactive	5	348.05	1.059%	1.03	1.648%	0.05	0.08	3.80	5.74	12,975.00	1.00	49,263.71	1,569,441.00	17,120.76	32,142.95	-
2000	Underground	Inactive	3	173.12	1.011%	0.88	1.686%	0.03	0.05	1.55	2.92	12,975.00	1.00	20,061.87	580,678.20	5,186.24	14,875.64	-
2001	Underground	Inactive	3	93.58	0.963%	1.03	1.719%	0.03	0.05	0.93	1.61	12,975.00	1.00	12,084.22	1,809,283.00	18,006.72	-	-
2002	Underground	Inactive	1	47.21	0.916%	0.60	1.746%	0.01	0.02	0.26	0.82	12,975.00	1.00	3,365.55	764,400.00	4,199.86	-	-
2003	Underground	Inactive	6	222.92	0.869%	1.03	1.769%	0.05	0.11	1.99	3.94	12,975.00	1.00	25,773.32	91,081.00	811.60	24,961.72	-
2004	Underground	Inactive	4	249.94	0.824%	0.80	1.786%	0.03	0.07	1.65	4.46	12,975.00	1.00	21,390.25	1,004,239.64	6,623.84	14,766.40	-
2005	Underground	Inactive	3	112.09	0.782%	1.10	1.798%	0.02	0.05	0.96	2.01	12,975.00	1.00	12,504.77	1,542,844.00	13,265.49	-	-
2006	Underground	Inactive	6	182.12	0.741%	1.03	1.803%	0.04	0.11	1.38	3.28	12,975.00	1.00	17,955.05	787,000.00	5,979.93	11,975.11	-
2007	Underground	Inactive	3	107.80	0.704%	0.95	1.801%	0.02	0.05	0.72	1.94	12,975.00	1.00	9,354.06	365,320.00	2,443.13	6,910.92	-
2008	Underground	Inactive	5	88.05	0.670%	1.16	1.793%	0.03	0.09	0.68	1.58	12,975.00	1.00	8,880.51	569,719.00	4,428.55	4,451.96	-
2009	Underground	Inactive	5	85.24	0.640%	1.16	1.777%	0.03	0.09	0.63	1.52	12,975.00	1.00	8,213.71	336,520.00	2,499.19	5,714.52	-
2010	Underground	Inactive	7	120.44	0.615%	1.25	1.754%	0.04	0.12	0.93	2.11	12,975.00	1.00	12,009.48	221,000.00	1,698.39	10,311.09	-
2011	Underground	Inactive	6	126.97	0.594%	1.18	1.723%	0.04	0.10	0.89	2.19	12,975.00	1.00	11,504.84	323,520.00	2,259.30	9,245.54	-
2012	Underground	Inactive	1	32.84	0.579%	0.80	1.684%	0.01	0.02	0.15	0.55	12,975.00	1.00	1,974.78	591,982.00	2,743.57	-	-
2013	Underground	Inactive	3	53.70	0.570%	1.03	1.637%	0.02	0.05	0.32	0.88	12,975.00	1.00	4,105.59	437,142.00	2,575.82	1,529.76	-
2014	Underground	Inactive	-	-	0.568%	0.00	1.580%	-	-	-	-	12,975.00	1.00	-	322,898.00	-	-	-
2015	Underground	Inactive	-	-	0.572%	0.00	1.515%	-	-	-	-	12,975.00	1.00	-	130,520.00	-	-	-
2016	Underground	Inactive	1	13.42	0.583%	1.25	1.440%	0.01	0.01	0.10	0.19	12,975.00	1.00	1,269.99	35,040.00	255.57	1,014.42	-
2017	Underground	Inactive	-	-	0.603%	0.00	1.355%	-	-	-	-	12,975.00	1.00	-	31,960.00	-	-	-
2018	Underground	Inactive	2	46.96	0.631%	1.25	1.260%	0.01	0.03	0.37	0.59	12,975.00	1.00	4,805.73	30,800.00	242.93	4,562.80	-
2019	Underground	Inactive	-	-	0.668%	0.00	1.154%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
2020	Underground	Inactive	-	-	0.714%	0.00	1.038%	-	-	-	-	12,975.00	1.00	-	61,360.00	-	-	-
2021	Underground	Inactive	-	-	0.770%	0.00	0.910%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
2022	Underground	Inactive	-	-	0.836%	0.00	0.771%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
2023	Underground	Inactive	1	19.71	0.354%	1.25	0.621%	0.00	0.01	0.09	0.12	12,975.00	1.00	1,131.47	-	-	1,131.47	-
2024	Underground	Inactive	-	-	0.162%	0.00	0.458%	-	-	-	-	12,975.00	1.00	-	-	-	-	-
2025	Underground	Inactive	-	-	0.000%	0.00	0.283%	-	-	-	-	12,975.00	1.00	-	-	-	-	-

West Virginia Department of Environmental Protection Office of Special Reclamation
 Actuarial Reserve Study as of June 30, 2025
 Land Reclamation Cost Projection - Deterministic Model

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	Adjustment				Forfeited Permit Count (9)	Released Permit Count (10)	Adjustment		Avg Red Cost per Acre (13)	Factor Permit Status (14)	Gross Cost (15)	Current Security Amount (16)	Forfeited Security Amount (17)	Net Cost (18)
					Forfeiture Rate (6)	Bond Size (7)	Release Rate (8)	Forfeited Acres (11)			Released Acres (12)							
1967	Underground	Phased Released	-	-	0.000%	-	0.00	0.004%	-	-	-	-	12,975.00	0.50	-	-	-	-
1968	Underground	Phased Released	-	-	0.000%	-	0.00	0.047%	-	-	-	-	12,975.00	0.50	-	-	-	-
1969	Underground	Phased Released	-	-	0.098%	-	0.00	0.016%	-	-	-	-	12,975.00	0.50	-	-	-	-
1970	Underground	Phased Released	-	-	0.282%	-	0.00	0.208%	-	-	-	-	12,975.00	0.50	-	-	-	-
1971	Underground	Phased Released	-	-	0.451%	-	0.00	0.321%	-	-	-	-	12,975.00	0.50	-	-	-	-
1972	Underground	Phased Released	-	-	0.606%	-	0.00	0.456%	-	-	-	-	12,975.00	0.50	-	-	-	-
1973	Underground	Phased Released	-	-	0.746%	-	0.00	0.610%	-	-	-	-	12,975.00	0.50	-	-	-	-
1974	Underground	Phased Released	-	-	0.873%	-	0.00	0.782%	-	-	-	-	12,975.00	0.50	-	-	-	-
1975	Underground	Phased Released	-	-	0.987%	-	0.00	0.970%	-	-	-	-	12,975.00	0.50	-	-	-	-
1976	Underground	Phased Released	-	-	1.088%	-	0.00	1.174%	-	-	-	-	12,975.00	0.50	-	-	-	-
1977	Underground	Phased Released	-	-	1.177%	-	0.00	1.391%	-	-	-	-	12,975.00	0.50	-	-	-	-
1978	Underground	Phased Released	3	10.58	1.254%	1.25	1.621%	0.04	0.05	0.17	0.17	12,975.00	0.50	1,075.86	-	-	1,075.86	-
1979	Underground	Phased Released	2	59.68	1.320%	1.25	1.830%	0.04	0.04	0.98	1.11	12,975.00	0.50	6,389.36	-	-	6,389.36	-
1980	Underground	Phased Released	5	87.19	1.376%	1.25	2.112%	0.07	0.11	1.50	1.84	12,975.00	0.50	9,728.10	24,300.00	417.92	9,310.19	-
1981	Underground	Phased Released	6	66.33	1.421%	1.18	2.371%	0.09	0.14	1.11	1.57	12,975.00	0.50	7,187.07	101,728.00	1,699.04	5,488.02	-
1982	Underground	Phased Released	1	59.82	1.457%	1.25	2.637%	0.01	0.03	1.09	1.58	12,975.00	0.50	7,070.04	50,000.00	910.89	6,159.15	-
1983	Underground	Phased Released	3	51.27	1.484%	1.25	2.909%	0.04	0.09	0.95	1.49	12,975.00	0.50	6,171.50	192,120.00	3,564.70	2,606.80	-
1984	Underground	Phased Released	1	43.00	1.503%	1.25	3.185%	0.02	0.03	0.81	1.37	12,975.00	0.50	5,240.07	80,296.00	1,508.29	3,731.78	-
1985	Underground	Phased Released	2	7.93	1.513%	1.25	3.463%	0.03	0.07	0.15	0.27	12,975.00	0.50	973.00	64,464.00	1,219.21	-	-
1986	Underground	Phased Released	2	89.96	1.516%	1.25	3.743%	0.03	0.07	1.70	3.37	12,975.00	0.50	11,058.16	130,720.00	2,476.84	8,581.32	-
1987	Underground	Phased Released	1	23.37	1.512%	1.25	4.023%	0.02	0.04	0.44	0.94	12,975.00	0.50	2,864.61	30,720.00	580.43	2,284.18	-
1988	Underground	Phased Released	7	215.56	1.501%	1.25	4.302%	0.11	0.30	4.04	9.27	12,975.00	0.50	26,233.70	119,136.00	2,234.89	23,998.81	-
1989	Underground	Phased Released	5	80.68	1.484%	1.25	4.578%	0.07	0.23	1.50	3.69	12,975.00	0.50	9,708.64	77,960.00	1,446.06	8,262.58	-
1990	Underground	Phased Released	2	18.31	1.462%	1.25	4.850%	0.03	0.10	0.33	0.89	12,975.00	0.50	2,170.15	215,880.00	3,943.99	-	-
1991	Underground	Phased Released	3	23.22	1.434%	1.25	5.117%	0.04	0.15	0.42	1.19	12,975.00	0.50	2,700.56	54,320.00	973.81	1,726.75	-
1992	Underground	Phased Released	3	62.39	1.402%	1.25	5.377%	0.04	0.16	1.09	3.35	12,975.00	0.50	7,094.92	20,000.00	350.58	6,744.34	-
1993	Underground	Phased Released	4	68.38	1.366%	1.25	5.629%	0.05	0.23	1.17	3.85	12,975.00	0.50	7,577.19	30,000.00	512.42	7,064.77	-
1994	Underground	Phased Released	2	18.79	1.327%	1.25	5.871%	0.03	0.12	0.31	1.10	12,975.00	0.50	2,022.14	37,960.00	629.70	1,392.44	-
1995	Underground	Phased Released	4	85.60	1.285%	1.14	6.103%	0.05	0.24	1.25	5.22	12,975.00	0.50	8,115.50	68,453.40	1,000.37	7,115.14	-
1996	Underground	Phased Released	4	133.37	1.240%	1.25	6.322%	0.05	0.25	2.07	8.43	12,975.00	0.50	13,410.19	20,000.00	309.98	13,100.21	-
1997	Underground	Phased Released	4	119.99	1.193%	1.25	6.528%	0.05	0.26	1.79	7.88	12,975.00	0.50	11,609.49	63,832.00	951.98	10,657.51	-
1998	Underground	Phased Released	2	64.00	1.145%	1.25	6.718%	0.02	0.13	0.92	4.30	12,975.00	0.50	5,941.77	93,746.00	1,341.56	4,600.21	-
1999	Underground	Phased Released	3	269.40	1.096%	1.10	6.893%	0.03	0.21	3.25	18.57	12,975.00	0.50	21,063.56	105,712.00	1,274.03	19,789.53	-
2000	Underground	Phased Released	2	59.65	1.046%	1.25	7.049%	0.02	0.14	0.78	4.20	12,975.00	0.50	5,059.57	65,384.00	854.86	4,204.70	-
2001	Underground	Phased Released	4	36.60	0.996%	1.25	7.186%	0.04	0.29	0.46	2.63	12,975.00	0.50	2,957.19	253,000.00	3,150.95	-	-
2002	Underground	Phased Released	1	48.55	0.947%	1.25	7.303%	0.01	0.07	0.57	3.55	12,975.00	0.50	3,729.61	49,536.19	586.57	3,143.04	-
2003	Underground	Phased Released	1	12.65	0.899%	1.25	7.398%	0.01	0.07	0.14	0.94	12,975.00	0.50	922.55	52,072.00	585.37	337.19	-
2004	Underground	Phased Released	-	-	0.853%	0.00	7.470%	-	-	-	-	12,975.00	0.50	-	15,840.00	-	-	-
2005	Underground	Phased Released	1	21.73	0.809%	1.25	7.517%	0.01	0.08	0.22	1.63	12,975.00	0.50	1,424.88	29,770.00	300.90	1,123.98	-
2006	Underground	Phased Released	-	-	0.767%	0.00	7.539%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2007	Underground	Phased Released	-	-	0.728%	0.00	7.533%	-	-	-	-	12,975.00	0.50	-	11,220.00	-	-	-
2008	Underground	Phased Released	3	63.64	0.693%	1.25	7.498%	0.02	0.22	0.55	4.77	12,975.00	0.50	3,577.54	-	-	3,577.54	-
2009	Underground	Phased Released	2	54.60	0.662%	1.25	7.433%	0.01	0.15	0.45	4.06	12,975.00	0.50	2,932.47	-	-	2,932.47	-
2010	Underground	Phased Released	-	-	0.636%	0.00	7.336%	-	-	-	-	12,975.00	0.50	-	37,420.00	-	-	-
2011	Underground	Phased Released	-	-	0.615%	0.00	7.207%	-	-	-	-	12,975.00	0.50	-	72,624.00	-	-	-
2012	Underground	Phased Released	-	-	0.599%	0.00	7.044%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2013	Underground	Phased Released	-	-	0.590%	0.00	6.845%	-	-	-	-	12,975.00	0.50	-	31,200.00	-	-	-
2014	Underground	Phased Released	-	-	0.587%	0.00	6.609%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2015	Underground	Phased Released	-	-	0.592%	0.00	6.334%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2016	Underground	Phased Released	-	-	0.604%	0.00	6.020%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2017	Underground	Phased Released	-	-	0.624%	0.00	5.665%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2018	Underground	Phased Released	-	-	0.653%	0.00	5.268%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2019	Underground	Phased Released	-	-	0.691%	0.00	4.826%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2020	Underground	Phased Released	-	-	0.739%	0.00	4.340%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2021	Underground	Phased Released	-	-	0.797%	0.00	3.807%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2022	Underground	Phased Released	-	-	0.865%	0.00	3.225%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2023	Underground	Phased Released	-	-	0.366%	0.00	2.595%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2024	Underground	Phased Released	-	-	0.168%	0.00	1.914%	-	-	-	-	12,975.00	0.50	-	-	-	-	-
2025	Underground	Phased Released	-	-	0.000%	0.00	1.181%	-	-	-	-	12,975.00	0.50	-	-	-	-	-

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Land Reclamation Cost Projection - Deterministic Model

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	2026										Gross Cost (15)	Current Security Amount (16)	Forfeited Security Amount (17)	Net Cost (18)
					Forfeiture Rate (6)	Factor Permit Bond Size (7)	Release Rate (8)	Forfeited Permit Count (9)	Released Permit Count (10)	Forfeited Acres (11)	Released Acres (12)	Avg Red Cost per Acre (13)	Factor Permit Status (14)					
1967	Other	Active	-	-	0.038%	0.00	1.216%	-	-	-	-	9,730.00	1.00	-	-	-	-	
1968	Other	Active	-	-	0.085%	0.00	1.216%	-	-	-	-	9,730.00	1.00	-	-	-	-	
1969	Other	Active	-	-	0.129%	0.00	1.216%	-	-	-	-	9,730.00	1.00	-	-	-	-	
1970	Other	Active	-	-	0.171%	0.00	1.216%	-	-	-	-	9,730.00	1.00	-	-	-	-	
1971	Other	Active	-	-	0.210%	0.00	1.216%	-	-	-	-	9,730.00	1.00	-	-	-	-	
1972	Other	Active	-	20.00	0.246%	1.25	1.216%	0.00	0.01	0.06	0.24	9,730.00	1.00	597.64	-	-	597.64	
1973	Other	Active	-	-	0.279%	0.00	1.216%	-	-	-	-	9,730.00	1.00	-	-	-	-	
1974	Other	Active	1	36.25	0.310%	1.25	1.216%	0.00	0.01	0.14	0.44	9,730.00	1.00	1,367.46	20,000.00	77.54	1,289.92	
1975	Other	Active	1	6.20	0.339%	1.25	1.216%	0.00	0.01	0.03	0.08	9,730.00	1.00	255.44	-	-	255.44	
1976	Other	Active	-	-	0.365%	0.00	1.216%	-	-	-	-	9,730.00	1.00	-	29,000.00	-	-	
1977	Other	Active	3	85.99	0.389%	1.25	1.216%	0.01	0.04	0.42	1.05	9,730.00	1.00	4,068.61	10,500.00	51.06	4,017.55	
1978	Other	Active	-	-	0.411%	0.00	1.216%	-	-	-	-	9,730.00	1.00	-	-	-	-	
1979	Other	Active	2	72.25	0.431%	1.25	1.216%	0.01	0.02	0.39	0.88	9,730.00	1.00	3,784.63	235,000.00	1,265.15	2,519.49	
1980	Other	Active	6	171.38	0.449%	1.25	1.216%	0.03	0.07	0.96	2.68	9,730.00	1.00	9,348.59	-	-	9,348.59	
1981	Other	Active	31	4,390.77	0.464%	0.94	1.216%	0.14	0.38	19.11	53.41	9,730.00	1.00	185,926.67	65,000.00	282.88	185,643.79	
1982	Other	Active	5	539.33	0.479%	0.94	1.216%	0.02	0.06	2.43	6.56	9,730.00	1.00	23,603.88	476,240.00	2,142.11	21,461.77	
1983	Other	Active	34	3,836.07	0.491%	0.92	1.216%	0.17	0.41	17.25	46.66	9,730.00	1.00	167,858.64	21,471,990.00	96,564.31	71,294.33	
1984	Other	Active	33	4,369.90	0.502%	0.87	1.216%	0.17	0.40	19.00	53.16	9,730.00	1.00	184,832.47	1,681,960.00	7,311.55	177,520.91	
1985	Other	Active	12	1,485.04	0.511%	0.96	1.216%	0.06	0.15	7.27	18.06	9,730.00	1.00	70,722.85	10,423,950.00	51,020.08	19,702.78	
1986	Other	Active	13	1,384.69	0.518%	1.00	1.216%	0.07	0.16	7.15	16.84	9,730.00	1.00	69,575.59	12,111,900.00	66,159.39	3,416.20	
1987	Other	Active	6	968.10	0.525%	0.85	1.216%	0.03	0.07	4.32	11.78	9,730.00	1.00	42,008.88	4,684,180.00	20,890.15	21,118.73	
1988	Other	Active	8	613.83	0.530%	1.06	1.216%	0.04	0.10	3.43	7.47	9,730.00	1.00	33,412.17	4,968,880.00	27,797.28	5,614.89	
1989	Other	Active	10	617.50	0.533%	1.08	1.216%	0.05	0.12	3.54	7.51	9,730.00	1.00	34,449.82	3,831,720.00	21,970.04	12,479.78	
1990	Other	Active	7	400.79	0.536%	1.12	1.216%	0.04	0.09	2.41	4.88	9,730.00	1.00	23,438.79	1,712,000.00	10,289.85	13,148.93	
1991	Other	Active	6	491.29	0.537%	1.14	1.216%	0.03	0.07	3.01	5.98	9,730.00	1.00	29,333.52	306,000.00	1,877.74	27,455.79	
1992	Other	Active	6	293.26	0.538%	1.03	1.216%	0.03	0.07	1.62	3.57	9,730.00	1.00	15,736.74	422,600.00	2,330.66	13,406.08	
1993	Other	Active	8	761.88	0.538%	0.94	1.216%	0.04	0.10	3.87	9.27	9,730.00	1.00	37,619.54	1,374,480.00	6,975.13	30,644.41	
1994	Other	Active	14	2,293.13	0.537%	0.88	1.216%	0.08	0.17	10.77	27.89	9,730.00	1.00	104,757.87	941,160.00	4,418.84	100,339.02	
1995	Other	Active	7	997.92	0.535%	0.97	1.216%	0.04	0.09	5.18	12.14	9,730.00	1.00	50,436.93	2,199,520.00	11,425.31	39,011.62	
1996	Other	Active	3	1,971.02	0.532%	0.67	1.216%	0.02	0.04	6.99	23.98	9,730.00	1.00	68,046.98	6,683,200.00	23,713.16	44,333.82	
1997	Other	Active	9	739.12	0.529%	1.00	1.216%	0.05	0.11	3.91	8.99	9,730.00	1.00	38,056.39	5,426,912.00	28,717.89	9,338.50	
1998	Other	Active	3	622.19	0.526%	1.10	1.216%	0.02	0.04	3.60	7.57	9,730.00	1.00	35,005.00	9,725,550.00	56,235.21	-	
1999	Other	Active	5	415.45	0.522%	1.07	1.216%	0.03	0.06	2.32	5.05	9,730.00	1.00	22,567.27	2,628,640.00	14,675.01	7,892.25	
2000	Other	Active	2	339.23	0.518%	0.70	1.216%	0.01	0.02	1.23	4.13	9,730.00	1.00	11,957.88	788,520.00	2,856.67	9,101.21	
2001	Other	Active	5	385.64	0.513%	0.98	1.216%	0.03	0.06	1.94	4.69	9,730.00	1.00	18,868.78	960,360.00	4,829.29	14,039.50	
2002	Other	Active	7	801.13	0.509%	1.06	1.216%	0.04	0.09	4.34	9.75	9,730.00	1.00	42,191.58	927,680.00	5,021.21	37,170.37	
2003	Other	Active	5	887.86	0.504%	0.99	1.216%	0.03	0.06	4.43	10.80	9,730.00	1.00	43,101.95	781,920.00	3,901.23	39,200.72	
2004	Other	Active	9	1,214.52	0.499%	0.98	1.216%	0.04	0.11	5.96	14.77	9,730.00	1.00	58,032.44	2,116,407.00	10,393.28	47,639.16	
2005	Other	Active	3	75.34	0.495%	1.10	1.216%	0.01	0.04	0.41	0.92	9,730.00	1.00	3,991.18	4,634,054.00	25,230.39	-	
2006	Other	Active	7	491.96	0.491%	1.03	1.216%	0.03	0.09	2.48	5.98	9,730.00	1.00	24,160.80	3,776,432.00	19,061.20	5,099.59	
2007	Other	Active	5	368.47	0.487%	1.07	1.216%	0.02	0.06	1.92	4.48	9,730.00	1.00	18,673.36	188,600.00	982.31	17,691.05	
2008	Other	Active	7	599.63	0.483%	1.09	1.217%	0.03	0.09	3.17	7.29	9,730.00	1.00	30,809.17	1,329,340.00	7,019.72	23,789.45	
2009	Other	Active	4	197.78	0.480%	1.14	1.217%	0.02	0.05	1.08	2.41	9,730.00	1.00	10,508.82	1,111,940.00	6,067.20	4,441.62	
2010	Other	Active	9	1,140.63	0.477%	1.03	1.218%	0.04	0.11	5.60	13.89	9,730.00	1.00	54,466.07	1,605,520.00	7,879.24	46,586.83	
2011	Other	Active	3	310.19	0.476%	0.95	1.221%	0.01	0.04	1.40	3.79	9,730.00	1.00	13,634.98	180,000.00	813.18	12,821.80	
2012	Other	Active	7	161.25	0.474%	1.25	1.233%	0.03	0.09	0.96	1.99	9,730.00	1.00	9,302.03	4,421,620.00	26,214.80	-	
2013	Other	Active	17	2,081.52	0.474%	1.00	1.273%	0.08	0.22	9.89	26.51	9,730.00	1.00	96,253.08	443,560.00	2,108.01	94,145.07	
2014	Other	Active	5	212.39	0.474%	1.12	1.409%	0.02	0.07	1.13	2.99	9,730.00	1.00	10,977.57	372,980.00	1,981.28	8,996.30	
2015	Other	Active	8	1,106.93	0.476%	1.03	1.856%	0.04	0.17	5.44	20.55	9,730.00	1.00	52,940.77	3,781,480.00	18,587.42	34,353.35	
2016	Other	Active	6	1,513.50	0.478%	1.18	3.243%	0.03	0.19	8.50	49.08	9,730.00	1.00	82,732.08	662,720.00	3,723.13	79,008.95	
2017	Other	Active	5	369.58	0.482%	1.16	6.814%	0.02	0.34	2.07	25.18	9,730.00	1.00	20,093.43	2,851,300.00	15,932.20	4,161.23	
2018	Other	Active	2	21.89	0.486%	1.25	12.850%	0.01	0.26	0.13	2.81	9,730.00	1.00	1,295.21	292,180.00	1,776.77	-	
2019	Other	Active	4	5.94	0.493%	1.25	18.262%	0.02	0.73	0.04	1.08	9,730.00	1.00	355.86	252,280.00	1,553.34	-	
2020	Other	Active	5	562.96	0.500%	1.16	20.967%	0.03	1.05	3.27	118.94	9,730.00	1.00	31,773.29	18,530.00	107.31	31,665.98	
2021	Other	Active	6	74.26	0.509%	1.25	21.935%	0.03	1.32	0.47	16.29	9,730.00	1.00	4,597.16	4,000.00	25.45	4,571.71	
2022	Other	Active	6	465.40	0.519%	1.10	22.239%	0.03	1.33	2.66	103.50	9,730.00	1.00	25,876.59	151,140.00	920.81	24,955.77	
2023	Other	Active	27	723.68	0.038%	1.25	25.229%	0.01	6.81	0.34	182.58	9,730.00	1.00	3,313.15	86,500.00	40.70	3,272.45	
2024	Other	Active	39	273.27	0.000%	1.25	15.346%	-	5.98	-	41.94	9,730.00	1.00	-	486,140.00	-	-	
2025	Other	Active	56	618.50	0.000%	1.24	0.000%	-	0.00	-	0.00	9,730.00	1.00	-	238,280.00	-	-	

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	Forfeiture Rate (6)	Adjustment		Forfeited Permit Count (9)	Released Permit Count (10)	Forfeited Acres (11)	Released Acres (12)	Avg Recd Cost per Acre (13)	Adjustment		Gross Cost (15)	Current Security Amount (16)	Forfeited Security Amount (17)	Net Cost (18)
						Factor Permit Bond Size (7)	Release Rate (8)						Factor Permit Status (14)	Cost Acre (14)				
1967	Other	Inactive	-	-	0.069%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	\$0	-	-
1968	Other	Inactive	-	-	0.154%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
1969	Other	Inactive	-	-	0.235%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
1970	Other	Inactive	-	-	0.310%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
1971	Other	Inactive	-	-	0.380%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
1972	Other	Inactive	-	-	0.445%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
1973	Other	Inactive	-	-	0.506%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
1974	Other	Inactive	-	-	0.562%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
1975	Other	Inactive	-	-	0.614%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
1976	Other	Inactive	1	14.48	0.662%	1.25	0.787%	0.01	0.01	0.12	0.11	9,730.00	1.00	1,165.10	-	-	1,165.10	-
1977	Other	Inactive	1	52.00	0.705%	1.25	0.787%	0.01	0.01	0.46	0.41	9,730.00	1.00	4,459.43	-	-	4,459.43	-
1978	Other	Inactive	-	-	0.745%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	15,000.00	-	-	-
1979	Other	Inactive	-	-	0.781%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
1980	Other	Inactive	1	114.75	0.813%	0.80	0.787%	0.01	0.01	0.75	0.90	9,730.00	1.00	7,261.01	-	-	7,261.01	-
1981	Other	Inactive	8	859.57	0.842%	0.89	0.787%	0.07	0.06	6.42	6.77	9,730.00	1.00	62,480.46	10,000.00	74.71	62,405.75	-
1982	Other	Inactive	2	130.80	0.867%	1.03	0.787%	0.02	0.02	1.16	1.03	9,730.00	1.00	11,313.85	340,400.00	3,026.07	8,287.78	-
1983	Other	Inactive	6	888.39	0.890%	0.82	0.787%	0.05	0.05	6.45	6.99	9,730.00	1.00	62,806.49	1,839,840.00	13,368.05	49,438.44	-
1984	Other	Inactive	5	495.53	0.909%	0.85	0.787%	0.05	0.04	3.83	3.90	9,730.00	1.00	37,258.17	374,000.00	2,890.08	34,368.09	-
1985	Other	Inactive	5	1,248.52	0.926%	0.86	0.787%	0.05	0.04	9.94	9.83	9,730.00	1.00	96,711.25	6,471,353.00	51,518.56	45,192.69	-
1986	Other	Inactive	-	-	0.940%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	7,029,082.00	-	-	-
1987	Other	Inactive	-	-	0.951%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	3,795,300.00	-	-	-
1988	Other	Inactive	2	34.27	0.960%	1.25	0.787%	0.02	0.02	0.41	0.27	9,730.00	1.00	4,001.22	-	-	4,001.22	-
1989	Other	Inactive	1	87.34	0.967%	1.25	0.787%	0.01	0.01	1.06	0.69	9,730.00	1.00	10,269.34	-	-	10,269.34	-
1990	Other	Inactive	1	425.33	0.971%	0.60	0.787%	0.01	0.01	2.48	3.35	9,730.00	1.00	24,121.37	30,000.00	174.86	23,946.51	-
1991	Other	Inactive	-	-	0.974%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	1,188,600.00	-	-	-
1992	Other	Inactive	4	354.26	0.975%	1.09	0.787%	0.04	0.03	3.76	2.79	9,730.00	1.00	36,556.73	1,548,000.00	16,417.36	20,139.37	-
1993	Other	Inactive	3	192.03	0.975%	1.10	0.787%	0.03	0.02	2.06	1.51	9,730.00	1.00	20,031.33	-	-	20,031.33	-
1994	Other	Inactive	1	381.64	0.973%	0.60	0.787%	0.01	0.01	2.23	3.00	9,730.00	1.00	21,668.71	1,070,000.00	6,243.82	15,424.89	-
1995	Other	Inactive	2	593.99	0.969%	0.93	0.787%	0.02	0.02	5.33	4.68	9,730.00	1.00	51,813.27	262,080.00	2,349.54	49,463.73	-
1996	Other	Inactive	1	152.16	0.965%	0.80	0.787%	0.01	0.01	1.17	1.20	9,730.00	1.00	11,425.56	961,360.00	7,419.08	4,006.48	-
1997	Other	Inactive	2	593.50	0.959%	0.70	0.787%	0.02	0.02	3.98	4.67	9,730.00	1.00	38,771.21	2,176,080.00	14,610.02	24,161.20	-
1998	Other	Inactive	2	131.05	0.953%	1.03	0.787%	0.02	0.02	1.28	1.03	9,730.00	1.00	12,452.41	483,560.00	4,722.30	7,730.10	-
1999	Other	Inactive	-	-	0.946%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	184,000.00	-	-	-
2000	Other	Inactive	-	-	0.938%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	368,160.00	-	-	-
2001	Other	Inactive	1	144.00	0.930%	0.80	0.787%	0.01	0.01	1.07	1.13	9,730.00	1.00	10,424.76	-	-	10,424.76	-
2002	Other	Inactive	-	-	0.922%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	117,000.00	-	-	-
2003	Other	Inactive	1	20.00	0.913%	1.25	0.787%	0.01	0.01	0.23	0.16	9,730.00	1.00	2,221.96	144,000.00	1,644.20	577.75	-
2004	Other	Inactive	-	-	0.905%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2005	Other	Inactive	-	-	0.897%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2006	Other	Inactive	-	-	0.889%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	56,000.00	-	-	-
2007	Other	Inactive	1	26.00	0.882%	1.25	0.787%	0.01	0.01	0.29	0.20	9,730.00	1.00	2,789.96	51,000.00	562.45	2,227.51	-
2008	Other	Inactive	-	-	0.876%	0.00	0.787%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2009	Other	Inactive	1	19.80	0.870%	1.25	0.787%	0.01	0.01	0.22	0.16	9,730.00	1.00	2,095.43	-	-	2,095.43	-
2010	Other	Inactive	-	-	0.865%	0.00	0.788%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2011	Other	Inactive	-	-	0.862%	0.00	0.790%	-	-	-	-	9,730.00	1.00	-	20,000.00	-	-	-
2012	Other	Inactive	1	66.26	0.860%	0.80	0.798%	0.01	0.01	0.46	0.53	9,730.00	1.00	4,433.92	-	-	4,433.92	-
2013	Other	Inactive	-	-	0.859%	0.00	0.824%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2014	Other	Inactive	-	-	0.860%	0.00	0.912%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2015	Other	Inactive	-	-	0.862%	0.00	1.201%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2016	Other	Inactive	-	-	0.867%	0.00	2.098%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2017	Other	Inactive	1	16.37	0.873%	1.25	4.409%	0.01	0.04	0.18	0.72	9,730.00	1.00	1,738.30	-	-	1,738.30	-
2018	Other	Inactive	1	11.88	0.882%	1.25	8.315%	0.01	0.08	0.13	0.99	9,730.00	1.00	1,274.06	-	-	1,274.06	-
2019	Other	Inactive	-	-	0.893%	0.00	11.616%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2020	Other	Inactive	-	-	0.906%	0.00	13.567%	-	-	-	-	9,730.00	1.00	-	12,000.00	-	-	-
2021	Other	Inactive	-	-	0.923%	0.00	14.193%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2022	Other	Inactive	-	-	0.942%	0.00	14.390%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2023	Other	Inactive	-	-	0.968%	0.00	16.325%	-	-	-	-	9,730.00	1.00	-	-	-	-	-
2024	Other	Inactive	1	19.50	0.000%	1.25	9.930%	-	0.10	-	1.94	9,730.00	1.00	-	-	-	-	-
2025	Other	Inactive	-	-	0.000%	0.00	0.000%	-	-	-	-	9,730.00	1.00	-	-	-	-	-

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	Forfeiture Rate (6)	Adjustment		Forfeited Permit Count (9)	Released Permit Count (10)	Forfeited Acres (11)	Released Acres (12)	Avg Recl Cost per Acre (13)	Adjustment		Gross Cost (15)	Current Security Amount (16)	Forfeited Security Amount (17)	Net Cost (18)
						Factor Permit Bond Size (7)	Release Rate (8)						Factor Permit Status (14)	Permit Status (14)				
1967	Other	Phased Released	-	-	0.071%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1968	Other	Phased Released	-	-	0.160%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1969	Other	Phased Released	-	-	0.243%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1970	Other	Phased Released	-	-	0.320%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1971	Other	Phased Released	-	-	0.393%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1972	Other	Phased Released	-	-	0.461%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1973	Other	Phased Released	1	9.00	0.523%	1.25	3.291%	0.01	0.03	0.06	0.30	9,730.00	0.50	286.49	-	-	286.49	-
1974	Other	Phased Released	-	-	0.582%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1975	Other	Phased Released	-	-	0.635%	-	3.291%	-	-	-	-	9,730.00	0.50	-	10,000.00	-	-	-
1976	Other	Phased Released	2	27.88	0.684%	1.25	3.291%	0.01	0.07	0.24	0.92	9,730.00	0.50	1,160.33	-	-	1,160.33	-
1977	Other	Phased Released	-	-	0.729%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1978	Other	Phased Released	1	12.76	0.770%	1.25	3.291%	0.01	0.03	0.12	0.42	9,730.00	0.50	597.82	10,000.00	96.30	501.52	-
1979	Other	Phased Released	2	58.69	0.808%	1.25	3.291%	0.02	0.07	0.59	1.93	9,730.00	0.50	2,882.18	-	-	2,882.18	-
1980	Other	Phased Released	-	-	0.841%	-	3.291%	-	-	-	-	9,730.00	0.50	-	10,000.00	-	-	-
1981	Other	Phased Released	4	475.54	0.871%	1.14	3.291%	0.03	0.13	4.71	15.65	9,730.00	0.50	22,915.34	20,000.00	198.10	22,717.24	-
1982	Other	Phased Released	2	201.26	0.897%	1.25	3.291%	0.02	0.07	2.36	6.62	9,730.00	0.50	10,980.94	10,000.00	112.15	10,868.79	-
1983	Other	Phased Released	4	201.70	0.920%	1.14	3.291%	0.04	0.13	2.11	6.64	9,730.00	0.50	10,273.22	204,860.00	2,144.74	8,128.48	-
1984	Other	Phased Released	4	75.79	0.940%	1.25	3.291%	0.04	0.13	0.89	2.49	9,730.00	0.50	4,334.59	59,200.00	695.94	3,638.64	-
1985	Other	Phased Released	1	43.00	0.958%	1.25	3.291%	0.01	0.03	0.51	1.42	9,730.00	0.50	2,504.12	188,104.00	2,251.65	252.46	-
1986	Other	Phased Released	-	-	0.972%	-	3.291%	-	-	-	-	9,730.00	0.50	-	71,000.00	-	-	-
1987	Other	Phased Released	-	-	0.984%	-	3.291%	-	-	-	-	9,730.00	0.50	-	17,200.00	-	-	-
1988	Other	Phased Released	-	-	0.993%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1989	Other	Phased Released	3	62.20	1.000%	1.25	3.291%	0.03	0.10	0.78	2.05	9,730.00	0.50	3,782.80	-	-	3,782.80	-
1990	Other	Phased Released	-	-	1.005%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1991	Other	Phased Released	-	-	1.008%	-	3.291%	-	-	-	-	9,730.00	0.50	-	20,200.00	-	-	-
1992	Other	Phased Released	-	-	1.009%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1993	Other	Phased Released	1	68.65	1.008%	1.25	3.291%	0.01	0.03	0.87	2.26	9,730.00	0.50	4,209.12	-	-	4,209.12	-
1994	Other	Phased Released	-	-	1.006%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1995	Other	Phased Released	-	-	1.003%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1996	Other	Phased Released	-	-	0.998%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1997	Other	Phased Released	1	31.16	0.992%	1.25	3.291%	0.01	0.03	0.39	1.03	9,730.00	0.50	1,880.15	-	-	1,880.15	-
1998	Other	Phased Released	-	-	0.986%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
1999	Other	Phased Released	1	179.00	0.978%	0.80	3.291%	0.01	0.03	1.40	5.89	9,730.00	0.50	6,815.39	14,525.14	113.68	6,701.71	-
2000	Other	Phased Released	-	-	0.970%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2001	Other	Phased Released	-	-	0.962%	-	3.291%	-	-	-	-	9,730.00	0.50	-	249,600.00	-	-	-
2002	Other	Phased Released	-	-	0.954%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2003	Other	Phased Released	-	-	0.945%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2004	Other	Phased Released	-	-	0.936%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2005	Other	Phased Released	-	-	0.928%	-	3.291%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2006	Other	Phased Released	-	-	0.920%	-	3.292%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2007	Other	Phased Released	-	-	0.913%	-	3.292%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2008	Other	Phased Released	1	9.90	0.906%	1.25	3.292%	0.01	0.03	0.11	0.33	9,730.00	0.50	545.44	-	-	545.44	-
2009	Other	Phased Released	-	-	0.900%	-	3.293%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2010	Other	Phased Released	-	-	0.895%	-	3.295%	-	-	-	-	9,730.00	0.50	-	10,000.00	-	-	-
2011	Other	Phased Released	-	-	0.892%	-	3.305%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2012	Other	Phased Released	-	-	0.889%	-	3.337%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2013	Other	Phased Released	-	-	0.888%	-	3.446%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2014	Other	Phased Released	-	-	0.889%	-	3.812%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2015	Other	Phased Released	1	115.00	0.892%	1.25	5.023%	0.01	0.05	1.28	5.78	9,730.00	0.50	6,237.47	-	-	6,237.47	-
2016	Other	Phased Released	-	-	0.896%	-	8.775%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2017	Other	Phased Released	-	-	0.903%	-	18.438%	-	-	-	-	9,730.00	0.50	-	16,800.00	-	-	-
2018	Other	Phased Released	-	-	0.912%	-	34.771%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2019	Other	Phased Released	-	-	0.924%	-	49.414%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2020	Other	Phased Released	-	-	0.938%	-	56.734%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2021	Other	Phased Released	-	-	0.954%	-	59.354%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2022	Other	Phased Released	-	-	0.974%	-	60.175%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2023	Other	Phased Released	-	-	0.071%	-	68.266%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2024	Other	Phased Released	-	-	0.000%	-	41.524%	-	-	-	-	9,730.00	0.50	-	-	-	-	-
2025	Other	Phased Released	-	-	0.000%	-	0.000%	-	-	-	-	9,730.00	0.50	-	-	-	-	-

Permit Issue Year	Mine Type	Mine Status	Permit Count	Adjustment										Adjustment										Adjustment															
				Current		Bonded		Adjusted		Adjusted		Factor		Release		Permitted		Released		Released		Acgr		Factor		Current		Forfeited		Gross		Current		Forfeited		Net		Adjusted	
				Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres	Count	Acres		
(1)	(2)	(3)	(4)	(5)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)					
1967	Surface	Active	-	-	-	-	0.05%	-	0.00%	-	-	-	-	2,995.00	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1968	Surface	Active	-	-	-	-	0.05%	-	0.00%	-	-	-	-	2,995.00	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1969	Surface	Active	-	-	-	-	0.06%	-	0.23%	-	-	-	-	2,995.00	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1970	Surface	Active	-	-	-	-	0.07%	-	0.45%	-	-	-	-	2,995.00	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1971	Surface	Active	-	-	-	-	0.08%	-	0.65%	-	-	-	-	2,995.00	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1972	Surface	Active	1	400.00	0.99	395.46	0.09%	1.25	0.84%	0.00	0.01	0.42	1.32	2,995.00	1	1,268.56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.98					
1973	Surface	Active	-	-	-	-	0.10%	-	1.01%	-	-	-	-	2,995.00	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1974	Surface	Active	-	-	-	-	0.11%	-	1.18%	-	-	-	-	2,995.00	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1975	Surface	Active	-	-	-	-	0.12%	-	1.39%	-	-	-	-	2,995.00	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1976	Surface	Active	-	-	-	-	0.12%	-	1.47%	-	-	-	-	2,995.00	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1977	Surface	Active	6	1,107.97	5.89	1,087.62	0.13%	0.13%	0.88	1.59%	0.01	0.09	1.29	17.33	2,995.00	1	3,874.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.79					
1978	Surface	Active	4	855.12	3.92	838.68	0.14%	0.70	1.71%	0.01	0.07	0.85	14.34	2,995.00	1	2,539.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.86					
1979	Surface	Active	1	-	0.98	-	0.15%	1.25	1.81%	0.00	0.02	-	-	2,995.00	1	4,698.61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.95					
1980	Surface	Active	1	47.92	0.98	46.86	0.16%	1.25	1.91%	0.00	0.02	0.10	0.89	2,995.00	1	287.78	4,258.390.71	873.786	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.01					
1981	Surface	Active	8	1,999.01	7.12	1,954.49	0.17%	0.10	1.16	1.40	0.16	1.40	30.93	2,995.00	1	10,173.34	1,073.34	31,335.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.85					
1982	Surface	Active	2	7.44	1.95	7.26	0.18%	1.25	2.07%	0.00	0.04	0.02	0.15	2,995.00	1	493.93	1,275,269.19	297,196	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.98					
1983	Surface	Active	2	1,708.83	1.95	1,669.40	0.19%	0.60	2.13%	0.00	0.04	1.94	35.57	2,995.00	1	5,802.52	2,184,333.37	253,507	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,267.52					
1984	Surface	Active	-	-	-	-	0.20%	-	2.19%	-	-	-	-	2,995.00	1	117,920.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.91					
1985	Surface	Active	5	2,611.31	4.88	2,547.10	0.21%	0.85	2.23%	0.01	0.11	4.61	56.85	2,995.00	1	13,812.38	4,951,564.57	896,372	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,847.01					
1986	Surface	Active	8	2,533.60	7.80	2,468.78	0.22%	0.95	2.27%	0.02	0.18	5.23	56.03	2,995.00	1	15,650.72	5,200,306.00	988,732	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.86					
1987	Surface	Active	3	1,371.12	2.92	1,336.59	0.23%	0.82	2.30%	0.01	0.07	4.17	34.03	2,995.00	1	10,659.74	3,600,306.00	988,732	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.85					
1988	Surface	Active	7	1,562.99	6.82	1,522.70	0.24%	0.96	2.32%	0.02	0.16	3.56	35.34	2,995.00	1	10,659.74	4,721,968.77	110,872	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.64					
1989	Surface	Active	8	2,773.71	7.29	2,702.87	0.25%	0.76	2.33%	0.02	0.15	3.51	63.11	2,995.00	1	15,439.12	5,652,851.22	125,618	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.59					
1990	Surface	Active	12	2,703.07	11.69	2,633.43	0.26%	0.86	2.34%	0.03	0.27	5.95	61.67	2,995.00	1	17,822.22	1,839,358.14	410,628	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11.38					
1991	Surface	Active	8	1,554.45	7.79	1,513.88	0.27%	0.98	2.34%	0.02	0.18	4.01	35.45	2,995.00	1	12,014.83	4,533,276.02	125,618	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.07					
1992	Surface	Active	6	3,668.68	5.84	3,591.30	0.28%	0.63	2.34%	0.02	0.14	4.40	83.88	2,995.00	1	19,181.58	5,114,344.72	510,644	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10,060.94					
1993	Surface	Active	11	4,151.89	10.71	4,044.54	0.29%	0.53	2.35%	0.03	0.25	10.98	92.95	2,995.00	1	32,889.07	7,719,665.68	20,952.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10,443					
1994	Surface	Active	6	1,389.47	5.84	1,354.75	0.30%	0.70	2.30%	0.02	0.13	2.86	31.23	2,995.00	1	8,553.98	13,777,794.30	290,585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.69					
1995	Surface	Active	13	8,653.77	12.67	8,435.36	0.31%	0.85	2.28%	0.04	0.29	22.20	192.43	2,995.00	1	66,476.10	9,220,986.69	242,589	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.34					
1996	Surface	Active	12	6,686.27	16.69	6,519.49	0.32%	0.83	2.25%	0.04	0.26	17.43	146.85	2,995.00	1	52,193.29	6,052,853.35	161,479	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36,013.81					
1997	Surface	Active	23	11,098.71	22.42	10,823.07	0.33%	0.88	2.22%	0.07	0.50	31.81	240.15	2,995.00	1	95,271.46	17,082,647.44	50,207.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21.85					
1998	Surface	Active	20	11,215.25	19.50	10,946.61	0.34%	0.75	2.24%	0.07	0.43	27.85	238.72	2,995.00	1	83,406.06	16,795,239.02	42,729.78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40,662.71					
1999	Surface	Active	4	2,008.81	3.90	1,962.06	0.35%	0.65	2.14%	0.01	0.08	4.40	41.57	2,995.00	1	13,374.57	36,595,144.81	83,292	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.91					
2000	Surface	Active	6	7,510.07	5.86	3,916.62	0.36%	0.78	2.09%	0.02	0.12	10.93	81.98	2,995.00	1	32,722.72	42,898,007.12	119,668.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.71					
2001	Surface	Active	20	4,002.63	19.53	7,329.42	0.37%	0.84	2.04%	0.07	0.40	22.63	149.81	2,995.00	1	67,772.64	6,758,194.08	208,651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,905					
2002	Surface	Active	13	5,919.92	12.27	7,878.00	0.38%	0.75	1.99%	0.05	0.25	16.39	115.28	2,995.00	1	49,092.68	13,345,389.98	97,933.57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,299.10					
2003	Surface	Active	19	8,056.67	18.57	7,747.96	0.39%	0.85	1.94%	0.07	0.36	26.67	152.58	2,995.00	1	70,082.21	29,405,544.11	37,731.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18.14					
2004	Surface	Active	23	13,480.65	22.49	12,863.55	0.40%	0.85	1.89%	0.09	0.47	24.78	130.74	2,995.00	1	91,721.15	49,721,153.74	63,794.68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21.67					
2005	Surface	Active	15	4,062.93	14.67	3,973.81	0.41%	1.00	1.82%	0.06	0.27	16.30	72.34	2,995.00	1	48,831.28	33,382,599.54	136,965.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.35					
2006	Surface	Active	10	5,139.07	9.79	5,033.46	0.42%	0.84	1.76%	0.04	0.17	17.60	88.85	2,995.00	1	52,708.51	30,556,152.29	106,835.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14.57					
2007	Surface	Active	20	5,069.99	19.59	4,967.93	0.43%	0.87	1.70%	0.08	0.33	18.41	84.31	2,995.00	1	55,152.16	11,180,692.92	414,477	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13,708.39					
2008	Surface	Active	17	9,470.87	16.66	9,292.46	0.43%	0.70	1.63%	0.07	0.27	28.51	151.83	2,995.00	1	85,391.94	16,225,892.17	497,948	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.31					
2009	Surface	Active	18	6,648.33	17.65	6,522.26	0.45%	0.85	1.57%	0.08	0.28	24.76	102.41	2,995.00	1	74,162.37	16,209,374.02	613,932.62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						

Permit Issue Year	Mine Type	Mine Status	2027															Adjustment					Adjustment					Adjustment				
			Permit Count	Current Bonded Acres	Adjusted Permit Count	Adjusted Acres	Forfeiture Rate	Factor Permit Bond Size	Release Rate	Forfeited Permit Count	Released Permit Count	Forfeited Acres	Released Acres	Agreed Counter Acres	Factor Permit Status	Gross Cost	Current Security Amount	Forfeited Security Amount	Net Cost	Adjusted Permit Count												
(1)	(2)	(3)	(4)	(5)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)												
1967	Surface	Inactive	-	-	-	-	0.08%	-	0.00%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1968	Surface	Inactive	-	-	-	-	0.08%	-	0.00%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1969	Surface	Inactive	-	-	-	-	0.10%	-	0.15%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1970	Surface	Inactive	-	-	-	-	0.12%	-	0.29%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1971	Surface	Inactive	-	-	-	-	0.14%	-	0.42%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1972	Surface	Inactive	-	-	-	-	0.16%	-	0.54%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1973	Surface	Inactive	-	-	-	-	0.17%	-	0.66%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1974	Surface	Inactive	-	-	-	-	0.19%	-	0.76%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1975	Surface	Inactive	-	-	-	-	0.21%	-	0.86%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1976	Surface	Inactive	1	163.80	0.99	161.61	0.23%	1.25	0.95%	0.00	0.01	0.46	1.53	2,995.00	1	1,369.24	-	0	1,369.24	0.98												
1977	Surface	Inactive	-	-	-	-	0.24%	-	1.03%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1978	Surface	Inactive	-	-	-	-	0.26%	-	1.11%	-	-	-	-	2,995.00	1	-	442,000.00	0	-	-												
1979	Surface	Inactive	-	-	-	-	0.28%	-	1.17%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1980	Surface	Inactive	-	-	-	-	0.30%	-	1.23%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1981	Surface	Inactive	-	-	-	-	0.32%	-	1.29%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1982	Surface	Inactive	-	-	-	-	0.33%	-	1.34%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1983	Surface	Inactive	-	-	-	-	0.35%	-	1.38%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1984	Surface	Inactive	-	-	-	-	0.37%	-	1.41%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1985	Surface	Inactive	-	-	-	-	0.39%	-	1.44%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1986	Surface	Inactive	-	-	-	-	0.40%	-	1.47%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1987	Surface	Inactive	2	415.61	1.96	407.68	0.42%	0.93	1.49%	0.01	0.03	1.59	6.06	2,995.00	1	4,761.60	-	0	4,761.60	1.92												
1988	Surface	Inactive	1	1,304.38	0.98	1,281.10	0.44%	0.60	1.25%	0.00	0.01	3.38	19.24	2,995.00	1	10,114.37	757,277.37	1996,251	8,118.12	0.96												
1989	Surface	Inactive	1	-	0.98	-	0.46%	1.25	1.51%	0.00	0.01	-	-	2,995.00	1	-	992,200.00	0	-	0.96												
1990	Surface	Inactive	-	-	-	-	0.47%	-	1.52%	-	-	-	-	2,995.00	1	-	2,142,480.00	0	-	-												
1991	Surface	Inactive	-	-	-	-	0.49%	-	1.52%	-	-	-	-	2,995.00	1	-	352,000.00	0	-	-												
1992	Surface	Inactive	-	-	-	-	0.51%	-	1.51%	-	-	-	-	2,995.00	1	-	240,240.00	0	-	-												
1993	Surface	Inactive	-	-	-	-	0.53%	-	1.50%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1994	Surface	Inactive	-	-	-	-	0.55%	-	1.49%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1995	Surface	Inactive	1	605.35	0.98	594.42	0.56%	0.60	1.48%	0.01	0.01	2.01	8.77	2,995.00	1	6,020.49	-	0	6,020.49	0.96												
1996	Surface	Inactive	-	-	-	-	0.58%	-	1.46%	-	-	-	-	2,995.00	1	-	-	0	-	-												
1997	Surface	Inactive	-	-	-	-	0.60%	-	1.44%	-	-	-	-	2,995.00	1	-	5,382,120.00	0	-	-												
1998	Surface	Inactive	1	846.89	0.98	831.94	0.62%	0.60	1.41%	0.01	0.01	3.08	11.74	2,995.00	1	9,222.60	-	0	9,222.60	0.96												
1999	Surface	Inactive	1	1,728.99	0.98	1,691.47	0.63%	1.25	1.38%	0.01	0.01	13.42	23.41	2,995.00	1	40,188.94	-	0	40,188.94	0.96												
2000	Surface	Inactive	-	-	-	-	0.65%	-	1.35%	-	-	-	-	2,995.00	1	-	4,041,240.00	0	-	-												
2001	Surface	Inactive	-	-	-	-	0.67%	-	1.32%	-	-	-	-	2,995.00	1	-	25,000.00	0	-	-												
2002	Surface	Inactive	3	1,146.85	2.94	1,127.08	0.69%	0.67	1.29%	0.02	0.04	5.17	14.53	2,995.00	1	15,480.94	-	0	15,480.94	2.88												
2003	Surface	Inactive	1	1,408.90	0.98	1,385.65	0.71%	0.60	1.25%	0.01	0.01	5.87	17.37	2,995.00	1	17,571.35	-	0	17,571.35	0.96												
2004	Surface	Inactive	2	1,577.54	1.96	1,551.94	0.72%	0.60	1.22%	0.01	0.02	6.74	18.87	2,995.00	1	20,175.30	6,138,340.16	266,943.94	-	1.92												
2005	Surface	Inactive	-	-	-	-	0.74%	-	1.18%	-	-	-	-	2,995.00	1	-	5,050,380.00	0	-	-												
2006	Surface	Inactive	1	244.59	0.98	240.38	0.76%	0.80	1.14%	0.01	0.01	1.46	2.74	2,995.00	1	4,371.21	16,161,630.42	981,259.92	-	0.96												
2007	Surface	Inactive	2	1,356.24	1.96	1,334.36	0.78%	0.70	1.10%	0.02	0.02	7.25	14.65	2,995.00	1	21,728.01	-	0	21,728.01	1.93												
2008	Surface	Inactive	1	118.60	0.98	116.19	0.79%	1.25	1.06%	0.01	0.01	1.15	1.23	2,995.00	1	3,455.80	291,413.04	289,933.92	561.87	0.96												
2009	Surface	Inactive	1	42.43	0.98	41.58	0.81%	1.25	1.02%	0.01	0.01	0.42	0.42	2,995.00	1	1,264.22	226,624.21	230,038.86	-	0.96												
2010	Surface	Inactive	2	679.59	1.96	667.92	0.83%	0.93	0.97%	0.02	0.02	5.13	6.51	2,995.00	1	15,357.66	90,314.89	693,366.64	14,664.30	1.93												
2011	Surface	Inactive	5	1,679.64	4.91	1,654.78	0.85%	0.68	0.93%	0.04	0.05	9.54	15.44	2,995.00	1	28,569.36	1,065,774.48	614,693.63	22,425.66	4.82												
2012	Surface	Inactive	-	-	-	-	0.87%	-	0.89%	-	-	-	-	2,995.00	1	-	3,756,040.00	0	-	-												
2013	Surface	Inactive	-	-	-	-	0.88%	-	0.85%	-	-	-	-	2,995.00	1	-	3,612,480.00	0	-	-												
2014	Surface	Inactive	1	262.00	0.98	256.97	0.90%	1.25	0.81%	0.01	0.01	2.89	2.08	2,995.00	1	8,667.84	-	0	8,667.84	0.97												
2015	Surface	Inactive	2	624.70	1.97	615.44	0.92%	0.80	0.77%	0.02	0.02	4.52	4.75	2,995.00	1	13,547.80	261,228.08	192,037.11	11,627.76	1.93												
2016	Surface	Inactive	2	776.75	1.97	766.15	0.94%	0.70	0.73%	0.02	0.01	5.02	5.62	2,995.00	1	15,042.48	352,588.91	231,142.88	12,731.05	1.93												
2017	Surface	Inactive	1	154.63	0.98	151.73	0.95%	1.25	0.70%	0.01	0.01	1.81	1.06	2,995.00	1	5,420.53	939,682.10	11,208.88	-	0.97												
2018	Surface	Inactive	1	351.08	0.98	346.79	0.97%	0.60	0.66%	0.01	0.01	2.02	2.30	2,995.00	1	6,057.44	2,703,290.01	157,666.05	-	0.97												
2019	Surface	Inactive	1	452.10	0.98	445.75	0.99%	0.80	0.63%	0.01	0.01	3.53	2.80	2,995.00	1	10,571.15	624,921.98	494,813.14	5,622.83	0.97												
2020	Surface	Inactive	-	-	-	-	1.01%	-	0.60%	-	-	-	-	2,995.00	1	-	569,400.00	0	-	-												
2021	Surface	Inactive	-	-	-	-	1.03%	-	0.57%	-	-	-	-	2,995.00	1	-	510,000.00	0	-	-												
2022	Surface	Inactive	1	31.34	0.98	30.76	1.04%	1.25	0.54%	0.01	0.01	0.40	0.17	2,995.00	1	1,201.24	-	0	1,201.24	0.97												
2023	Surface	Inactive	-	-	-	-	1.06%	-	0.52%	-	-	-	-	2,995.00	1	-	-	0	-	-												
2024	Surface	Inactive	-	-	-	-	0.54%	-	0.27%	-	-	-	-	2,995.00	1	-	-	0	-	-												
2025	Surface	Inactive	-	-	-	-	0.26%	-	0.08%	-	-	-	-	2,995.00	1	-	-	0	-	-												

2027																				
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	Adjusted Permit Count (19)	Adjusted Acres (20)	Forfeiture Rate (21)	Adjustment Factor Bond/Size (22)	Release Rate (23)	Forfeited Permit Count (24)	Released Permit Count (25)	Forfeited Acres (26)	Released Acres (27)	Avgred Costper Acres (28)	Adjustment Factor Status (29)	Gross Cost (30)	Adjustment Current Security Amount (31)	Forfeited Security Amount (32)	Net Cost (33)	Adjusted Permit Count (34)
1967	Surface	Phased Released	-	-	-	-	0.09%	-	0.01%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
1968	Surface	Phased Released	-	-	-	-	0.09%	-	0.01%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
1969	Surface	Phased Released	-	-	-	-	0.11%	-	0.03%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
1970	Surface	Phased Released	-	-	-	-	1.21%	-	1.21%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
1971	Surface	Phased Released	-	-	-	-	0.14%	-	1.76%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
1972	Surface	Phased Released	-	-	-	-	0.16%	-	2.27%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
1973	Surface	Phased Released	-	-	-	-	0.18%	-	2.75%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
1974	Surface	Phased Released	2	116.05	1.92	111.57	0.20%	1.25	3.19%	0.00	0.06	0.28	3.56	2,995.00	0.5	412.21	-	0	412.21	1.86
1975	Surface	Phased Released	2	7.80	1.92	7.47	0.22%	1.25	3.59%	0.00	0.07	0.02	0.27	2,995.00	0.5	30.16	-	0	30.16	1.84
1976	Surface	Phased Released	4	476.17	3.82	454.13	0.23%	1.25	3.97%	0.01	0.15	1.33	18.03	2,995.00	0.5	1,990.15	97,939.93	286,613.1	1,703.53	3.66
1977	Surface	Phased Released	2	48.00	1.90	45.62	0.25%	1.25	4.31%	0.00	0.08	0.14	1.97	2,995.00	0.5	215.59	30,496.40	96,245.9	119.34	1.82
1978	Surface	Phased Released	1	158.81	0.95	150.44	0.27%	1.25	4.63%	0.00	0.04	0.51	6.96	2,995.00	0.5	762.71	111,844.21	378,652.5	384.05	0.90
1979	Surface	Phased Released	3	538.00	2.84	508.15	0.29%	1.25	4.91%	0.01	0.14	1.84	24.95	2,995.00	0.5	2,750.93	14,693.29	53,117.67	2,697.81	2.69
1980	Surface	Phased Released	1	253.42	0.94	238.73	0.31%	1.25	5.16%	0.00	0.05	0.92	12.33	2,995.00	0.5	1,374.44	49,796.29	191,498.8	1,182.99	0.89
1981	Surface	Phased Released	5	1,267.32	4.70	1,192.37	0.33%	0.94	5.39%	0.02	0.25	3.65	64.27	2,995.00	0.5	5,470.66	122,003.86	373,797.5	5,096.86	4.43
1982	Surface	Phased Released	-	-	-	-	0.34%	-	5.59%	-	-	-	-	2,995.00	0.5	-	64,750.00	0	-	-
1983	Surface	Phased Released	4	225.01	3.75	210.63	0.36%	1.25	5.76%	0.01	0.22	0.95	12.14	2,995.00	0.5	1,429.91	1,564,034.96	7090.333	-	3.52
1984	Surface	Phased Released	3	2,302.75	2.81	2,156.17	0.38%	0.82	5.91%	0.01	0.17	6.71	127.51	2,995.00	0.5	10,047.54	-	0	10,047.54	2.63
1985	Surface	Phased Released	2	1,270.29	1.87	1,186.84	0.40%	1.03	6.04%	0.01	0.11	4.86	71.67	2,995.00	0.5	7,275.98	169,075.26	692,169	6,583.81	1.75
1986	Surface	Phased Released	4	1,041.15	3.73	971.73	0.42%	1.03	6.28%	0.02	0.23	4.16	59.67	2,995.00	0.5	6,231.14	2,231,738.54	95,565.32	-	3.49
1987	Surface	Phased Released	4	760.81	3.73	709.10	0.44%	1.14	6.22%	0.02	0.23	3.52	44.11	2,995.00	0.5	5,267.98	347,862.24	1725.745	3,542.24	3.48
1988	Surface	Phased Released	5	480.30	4.66	447.12	0.45%	1.25	6.28%	0.02	0.29	2.54	28.08	2,995.00	0.5	3,803.91	542,064.91	3079.594	724.31	4.35
1989	Surface	Phased Released	5	1,098.64	4.66	1,022.76	0.47%	1.16	6.32%	0.02	0.29	5.61	64.62	2,995.00	0.5	8,401.10	440,113.74	2414.124	5,986.97	4.34
1990	Surface	Phased Released	4	764.18	3.73	710.89	0.49%	1.25	6.34%	0.02	0.24	4.37	45.05	2,995.00	0.5	6,536.75	110,292.93	677,241.2	5,859.51	3.47
1991	Surface	Phased Released	5	1,006.45	4.66	937.16	0.51%	1.07	6.34%	0.02	0.30	5.11	59.39	2,995.00	0.5	7,652.26	253,111.99	1380.142	6,272.12	4.34
1992	Surface	Phased Released	-	-	-	-	0.53%	-	6.32%	-	-	-	-	2,995.00	0.5	-	212,376.00	0	-	-
1993	Surface	Phased Released	2	669.04	1.86	622.59	0.55%	1.25	6.29%	0.01	0.12	4.25	39.14	2,995.00	0.5	6,367.00	533,356.42	3642.364	2,724.63	1.74
1994	Surface	Phased Released	5	345.90	4.66	322.39	0.56%	1.07	6.24%	0.03	0.29	1.95	20.11	2,995.00	0.5	2,917.08	-	0	2,917.08	4.35
1995	Surface	Phased Released	3	484.30	2.80	451.77	0.58%	1.03	6.17%	0.02	0.17	2.72	27.89	2,995.00	0.5	4,076.09	37,117.88	223,635.4	3,852.46	2.61
1996	Surface	Phased Released	3	583.38	2.80	544.38	0.60%	1.10	6.09%	0.02	0.17	3.60	33.18	2,995.00	0.5	5,393.18	1,128,734.69	7467.433	-	2.61
1997	Surface	Phased Released	3	169.48	2.80	158.52	0.62%	0.88	6.00%	0.02	0.17	0.87	9.52	2,995.00	0.5	1,299.68	559,921.75	3065.514	-	2.62
1998	Surface	Phased Released	2	336.07	1.87	314.36	0.64%	1.03	5.90%	0.01	0.11	2.06	18.55	2,995.00	0.5	3,079.39	722,390.75	4725.313	-	1.75
1999	Surface	Phased Released	1	14.87	0.94	13.90	0.66%	1.25	5.79%	0.01	0.05	0.11	0.80	2,995.00	0.5	170.85	1,554,771.91	12759.53	-	0.88
2000	Surface	Phased Released	1	19.70	0.94	18.44	0.67%	1.25	5.66%	0.01	0.05	0.16	1.04	2,995.00	0.5	232.96	576,020.64	4859.474	-	0.88
2001	Surface	Phased Released	3	491.55	2.82	461.21	0.69%	1.10	5.53%	0.02	0.16	3.52	25.51	2,995.00	0.5	5,266.98	10,556.71	80,505.23	5,186.47	2.64
2002	Surface	Phased Released	1	48.20	0.94	45.23	0.71%	1.25	5.39%	0.01	0.05	0.40	2.44	2,995.00	0.5	602.56	-	0	602.56	0.88
2003	Surface	Phased Released	1	-	0.94	-	0.73%	1.25	5.24%	0.01	0.05	-	-	2,995.00	0.5	-	493,244.06	0	-	0.89
2004	Surface	Phased Released	2	470.13	1.89	443.64	0.75%	0.93	5.09%	0.01	0.10	3.07	22.56	2,995.00	0.5	4,598.94	141,793.17	981,559.1	3,617.38	1.78
2005	Surface	Phased Released	1	51.50	0.94	48.54	0.77%	1.25	4.93%	0.01	0.05	0.47	2.39	2,995.00	0.5	696.71	-	0	696.71	0.89
2006	Surface	Phased Released	1	60.78	0.95	57.38	0.79%	1.25	4.76%	0.01	0.05	0.56	2.73	2,995.00	0.5	843.25	590,014.07	5790.342	-	0.89
2007	Surface	Phased Released	2	263.63	1.90	249.75	0.80%	1.03	4.59%	0.02	0.09	2.06	11.47	2,995.00	0.5	3,080.19	39,187.08	322,732.4	2,757.46	1.79
2008	Surface	Phased Released	-	-	-	-	0.82%	-	4.42%	-	-	-	-	2,995.00	0.5	-	49,200.00	0	-	-
2009	Surface	Phased Released	1	137.75	0.95	131.19	0.84%	0.80	4.25%	0.01	0.04	0.88	5.57	2,995.00	0.5	1,320.54	140,865.74	946,864.6	373.68	0.90
2010	Surface	Phased Released	-	-	-	-	0.86%	-	4.07%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2011	Surface	Phased Released	1	158.51	0.95	150.83	0.88%	1.25	3.90%	0.01	0.04	1.65	5.88	2,995.00	0.5	2,475.88	225,780.56	2474.999	0.88	0.91
2012	Surface	Phased Released	-	-	-	-	0.90%	-	3.73%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2013	Surface	Phased Released	-	-	-	-	0.91%	-	3.56%	-	-	-	-	2,995.00	0.5	-	115,616.00	0	-	-
2014	Surface	Phased Released	-	-	-	-	0.93%	-	3.39%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2015	Surface	Phased Released	-	-	-	-	0.95%	-	3.23%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2016	Surface	Phased Released	-	-	-	-	0.97%	-	3.07%	-	-	-	-	2,995.00	0.5	-	20,800.00	0	-	-
2017	Surface	Phased Released	-	-	-	-	0.99%	-	2.92%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2018	Surface	Phased Released	-	-	-	-	1.01%	-	2.77%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2019	Surface	Phased Released	-	-	-	-	1.02%	-	2.63%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2020	Surface	Phased Released	-	-	-	-	1.04%	-	2.50%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2021	Surface	Phased Released	-	-	-	-	1.06%	-	2.38%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2022	Surface	Phased Released	-	-	-	-	1.08%	-	2.27%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2023	Surface	Phased Released	-	-	-	-	1.10%	-	2.17%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2024	Surface	Phased Released	-	-	-	-	0.56%	-	1.13%	-	-	-	-	2,995.00	0.5	-	-	0	-	-
2025	Surface	Phased Released	-	-	-	-	0.27%	-	0.33%	-	-	-	-	2,995.00	0.5	-	-	0	-	-

Permit Issue Year	Mine Type	Mine Status	Permit Count	2027										2028										2029									
				Current Bonded Acres	Adjusted 'ermitt Acres	Adjusted Acres	Forfeiture Rate	Factor Permit Bondsize	Release Rate	Forfeited 'ermitt Acres	Released 'ermitt Acres	Forfeited Acres	Released Acres	Avg released Acres	Factor Permit Status	Gross Cost	Current Security Amount	Forfeited Security Amount	Net Cost	Adjusted 'ermitt Acres													
(1)	(2)	(3)	(4)	(5)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)													
1967	Underground	Active	-	-	-	-	0.00%	-	0.00%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1968	Underground	Active	-	-	-	-	0.00%	-	0.00%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1969	Underground	Active	-	-	-	-	0.00%	-	0.00%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1970	Underground	Active	-	-	-	-	0.05%	-	0.04%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1971	Underground	Active	-	-	-	-	0.15%	-	0.08%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1972	Underground	Active	-	-	-	-	0.24%	-	0.12%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1973	Underground	Active	-	-	-	-	0.32%	-	0.17%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1974	Underground	Active	-	-	-	-	0.40%	-	0.23%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1975	Underground	Active	-	-	-	-	0.47%	-	0.29%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1976	Underground	Active	-	-	-	-	0.53%	-	0.36%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1977	Underground	Active	-	-	-	-	0.58%	-	0.43%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1978	Underground	Active	-	-	-	-	0.63%	-	0.51%	-	-	-	-	12,975.00	1	-	-	0	-	-													
1979	Underground	Active	7	703.10	6.90	693.17	0.71%	1.03	0.69%	0.05	0.04	4.77	4.15	12,975.00	1	61,667.73	-	61,667.73	6.82	6.82													
1980	Underground	Active	4	202.41	3.94	199.31	0.70%	1.03	0.69%	0.03	0.03	1.44	1.37	12,975.00	1	18,663.56	-	18,663.56	3.88	3.88													
1981	Underground	Active	16	709.57	15.74	697.06	0.73%	1.17	0.78%	0.12	0.12	5.98	5.44	12,975.00	1	77,566.61	4,925,480.80	4,224.87	35,324.74	15.50													
1982	Underground	Active	2	33.93	1.96	33.27	0.76%	1.25	0.88%	0.01	0.02	0.32	0.29	12,975.00	1	4,090.63	472,008.87	-	447.86	2.96													
1983	Underground	Active	29	7,263.70	28.46	7,135.05	0.78%	0.88	0.97%	0.22	0.28	48.77	69.54	12,975.00	1	632,752.14	3,986,693.50	27248.46	605,503.68	27.93													
1984	Underground	Active	16	2,621.92	15.68	2,571.10	0.79%	0.95	1.07%	0.12	0.17	19.34	27.64	12,975.00	1	250,890.93	253,574.51	190,075.00	248,985.93	15.39													
1985	Underground	Active	3	49.00	2.94	47.88	0.80%	1.25	1.18%	0.02	0.03	0.48	0.56	12,975.00	1	6,233.56	31,860.74	31,417.85	2,881.00	2.88													
1986	Underground	Active	5	236.31	4.89	230.83	0.81%	1.16	1.28%	0.04	0.06	2.16	2.95	12,975.00	1	28,034.91	13,327,057.91	124,075.00	-	4.39													
1987	Underground	Active	5	203.45	4.89	198.52	0.81%	1.16	1.38%	0.04	0.07	1.86	2.75	12,975.00	1	24,155.71	136,986.89	128,641.61	22,871.07	4.78													
1988	Underground	Active	4	157.83	3.90	153.88	0.81%	1.14	1.49%	0.03	0.06	1.41	2.29	12,975.00	1	18,309.24	402,541.40	3691.312	1,617,931.38	4.80													
1989	Underground	Active	11	317.75	10.73	309.44	0.80%	1.17	1.59%	0.09	0.17	2.89	4.92	12,975.00	1	37,539.77	396,460.46	370,619.91	33,832.86	10.47													
1990	Underground	Active	4	131.40	3.90	127.88	0.79%	1.14	1.69%	0.03	0.07	1.15	2.16	12,975.00	1	14,837.01	500,583.75	4506.425	10,430.59	3.84													
1991	Underground	Active	3	36.67	2.92	35.63	0.78%	1.25	1.79%	0.02	0.05	0.35	0.64	12,975.00	1	5,450.97	261,781.28	250,715.15	1,953.26	2.85													
1992	Underground	Active	9	960.01	8.75	933.71	0.76%	1.01	1.89%	0.07	0.17	7.18	17.66	12,975.00	1	93,811.65	302,944.43	233,009.00	90,851.56	8.82													
1993	Underground	Active	13	1,009.71	12.63	981.01	0.75%	1.05	1.99%	0.09	0.25	7.68	19.49	12,975.00	1	99,590.68	72,959.48	570,484.87	99,019.83	12.25													
1994	Underground	Active	9	604.69	8.74	587.29	0.73%	1.00	2.08%	0.06	0.18	4.28	12.22	12,975.00	1	55,532.80	5,880,458.65	42854.99	12,677.70	8.50													
1995	Underground	Active	9	318.33	8.74	308.97	0.71%	1.00	2.17%	0.06	0.19	2.19	6.70	12,975.00	1	28,373.87	2,659,332.77	18822.13	9,551.74	8.48													
1996	Underground	Active	10	242.07	9.70	234.63	0.71%	1.11	2.06%	0.07	0.22	1.79	5.29	12,975.00	1	23,752.11	1,888,158.58	14425.10	8,832.90	8.48													
1997	Underground	Active	11	247.41	10.66	239.60	0.66%	1.17	2.34%	0.07	0.25	1.85	5.60	12,975.00	1	24,015.79	68,022.30	529,923.52	18,716.72	10.34													
1998	Underground	Active	12	572.18	11.63	554.45	0.64%	1.01	2.41%	0.07	0.28	3.56	13.38	12,975.00	1	46,158.74	688,232.38	441,895.81	41,742.84	11.27													
1999	Underground	Active	11	327.70	10.66	317.07	0.61%	1.19	2.48%	0.07	0.26	2.31	7.87	12,975.00	1	29,915.15	71,395.24	590,222.22	24,905.90	10.33													
2000	Underground	Active	13	369.33	12.59	357.28	0.58%	1.18	2.55%	0.07	0.32	2.47	10.10	12,975.00	1	31,984.45	1,839,160.30	126,685.25	19,294.80	12.15													
2001	Underground	Active	3	112.63	2.90	108.98	0.71%	1.20	2.00%	0.03	0.08	0.67	2.84	12,975.00	1	8,676.86	292,718.93	1796.213	6,880.74	3.00													
2002	Underground	Active	7	222.94	6.78	215.59	0.53%	1.19	2.60%	0.04	0.18	1.36	5.73	12,975.00	1	17,624.63	36,841.99	401,559.20	13,612.07	6.56													
2003	Underground	Active	8	991.90	7.74	966.26	0.51%	0.95	2.70%	0.04	0.21	4.61	25.92	12,975.00	1	59,800.53	662,128.17	3177,984	56,625.25	7.45													
2004	Underground	Active	6	411.39	5.81	398.04	0.48%	1.07	2.73%	0.03	0.16	2.04	10.88	12,975.00	1	26,422.32	7,684,051.31	392,925.29	24,930.56	7.51													
2005	Underground	Active	9	364.13	8.71	352.29	0.45%	1.10	2.76%	0.04	0.24	1.76	9.73	12,975.00	1	22,871.88	4,384,975.53	21,941.43	930.39	8.43													
2006	Underground	Active	7	290.00	6.78	280.74	0.43%	1.10	2.78%	0.03	0.19	1.20	7.80	12,975.00	1	15,596.73	8,849,362.64	37,889.07	6,851.66	7.51													
2007	Underground	Active	10	591.88	9.68	572.93	0.41%	1.08	2.79%	0.04	0.27	2.52	15.96	12,975.00	1	32,684.27	989,945.40	435,524.52	28,331.74	9.37													
2008	Underground	Active	4	98.24	3.87	95.06	0.39%	1.25	2.78%	0.02	0.11	0.46	2.65	12,975.00	1	5,988.32	1,289,652.30	2,661.162	-	9.35													
2009	Underground	Active	8	370.51	7.75	358.92	0.37%	1.08	2.77%	0.03	0.21	1.43	9.95	12,975.00	1	18,616.30	9,194,568.94	367,554.4	-	7.51													
2010	Underground	Active	9	258.10	8.73	250.16	0.35%	1.08	2.75%	0.03	0.24	0.95	6.87	12,975.00	1	12,366.77	383,400.13	1078,902	11,277.87	8.45													
2011	Underground	Active	8	204.25	7.76	198.01	0.34%	1.13	2.71%	0.03	0.21	0.80	5.37	12,975.00	1	10,403.19	786,921.33	3183,557	7,217.64	7.54													
2012	Underground	Active	6	172.75	5.82	167.61	0.31%	1.19	2.83%	0.01	0.12	0.65	4.40	12,975.00	1	8,176.99	1,524,458.58	1,685,619.58	5,651.86	5.65													
2013	Underground	Active	13	505.93	12.63	491.36	0.32%	1.11	2.60%	0.04	0.33	1.75	12.79	12,975.00	1	22,650.32	580,908.37	206,587.45	12,266.45	12.26													
2014	Underground	Active	21	727.51	20.42	707.19	0.31%	1.12	2.53%	0.06	0.52	2.50	17.89	12,975.00	1	32,734.90	507,332.13	1789,943	30,581.46	18.84													
2015	Underground	Active	8	183.96	7.79	178.96	0.31%	1.19	2.44%	0.02	0.19	0.67	4.37	12,975.00	1	8,680.06	1,328,298.49	4965,387	7,141.67	7.51													
2016	Underground	Active	5	197.47	4.87	192.45	0.32%	0.98	2.34%	0.02	0.11	0.60	4.51	12,975.00	1	7,720.51	1,443,870.39	4464,175	3,256.34	4.74													
2017	Underground	Active	3	161.03	6.83	158.68	0.31%	1.25	2.39%	0.01	0.15	0.29	3.49	12,975.00	1	6,510.78	1,840,762.64	6,815.66	6,815.66	6.82													
2018	Underground	Active	3	29.25	2.93	28.55	0.33%	1.25	2.09%	0.01	0.06	0.12	0.60	12,975.00	1	1,570.78	320,395.67	332,508	208.27	2.88													
2019	Underground	Active	4	149.13	3.91	145.85	0.35%	1.14	1.95%	0.01	0.08	0.58	2.84	12,975.00	1	7,493.58	168,411.23	666,896	6,826.63	3.82													
2020	Underground	Active	7	141.50	6.86	138.57	0.37%	1.19	1.78%	0.03	0.12	0.61	2.47	12,975.00	1	7,854.48	144,681.07	632,503	7,222.42	6.71													
2021	Underground	Active	7	81.77	6.87	80.19	0.39%	1.25	1.60%	0.03	0.11	0.39	1.29	12,975.00	1	5,122.86	386,775.13	1,904,446	3,128.42	6.73													
2022	Underground	Active	4	43.22	3.93	42.46	0.42%	1.25	1.41%	0.02	0.02	0.39	0.60	12,975.00	1	2,925.25	301,093.19	1598,906	3,264.34	3.88													
2023	Underground	Active	2	65.04	1.98	64.26	0.46%	1.25	1.19%	0.01	0.02	0.37	0.77	12,975.00	1	4,809.10	129,665.21	1211,194.94	3,597.94	3.88													
2024	Underground	Active	-	-	-	-	0.20%	-	0.96%	-	-	-	-	12,975.00	1	-	103,800.00	-	-	-													
2025	Underground	Active	2	16.05	1.99	15.58	0.09%	1.25	0.71%	0.00	0.01	0.02	0.11	12,975.00	1	239.16	1,080,000	165,5735	66.39	1.98													

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	2027										2028									
				Current Bonded Acres (5)	Adjusted Vermin Count (19)	Adjusted Acres (20)	Forfeited Bats (21)	Adjustment Factor Permit Bonded (22)	Release Bats (23)	Forfeited Vermin Count (24)	Released Bats (25)	Forfeited Acres (26)	Released Acres (27)	Adjusted Vermin Count (28)	Adjusted Factor Permit Status (29)	Gross Cost (30)	Current Security Amount (31)	Forfeited Security Amount (32)	Net Cost (33)	Adjusted Vermin Count (34)			
1967	Underground	Inactive	-	-	-	-	0.00%	-	0.00%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1968	Underground	Inactive	-	-	-	-	0.00%	-	0.00%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1969	Underground	Inactive	-	-	-	-	0.00%	-	0.01%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1970	Underground	Inactive	-	-	-	-	0.09%	-	0.03%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1971	Underground	Inactive	-	-	-	-	0.27%	-	0.05%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1972	Underground	Inactive	-	-	-	-	0.44%	-	0.08%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1973	Underground	Inactive	-	-	-	-	0.59%	-	0.11%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1974	Underground	Inactive	-	-	-	-	0.72%	-	0.15%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1975	Underground	Inactive	-	-	-	-	0.84%	-	0.19%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1976	Underground	Inactive	1	26.50	0.99	26.20	0.95%	0.80	0.23%	0.01	0.00	0.20	0.06	12,975.00	1	2,594.02	-	0	2,594.02	0.97			
1977	Underground	Inactive	-	-	-	-	1.05%	-	0.28%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1978	Underground	Inactive	2	117.89	1.97	116.29	1.14%	0.80	0.33%	0.02	0.01	1.06	0.39	12,975.00	1	13,729.42	341,931.72	311,304	10,618.12	1.94			
1979	Underground	Inactive	-	-	-	-	1.21%	-	0.39%	-	-	-	12,975.00	1	-	-	0	-	-	-			
1980	Underground	Inactive	-	-	-	-	1.38%	-	0.45%	-	-	-	12,975.00	1	-	504,898.00	0	-	-	-			
1981	Underground	Inactive	4	210.92	3.92	207.08	1.23%	0.91	0.51%	0.05	0.02	2.51	1.05	12,975.00	1	32,608.28	-	0	32,608.28	3.85			
1982	Underground	Inactive	2	126.56	1.96	123.53	1.37%	0.70	0.57%	0.03	0.01	1.19	0.70	12,975.00	1	15,416.32	-	0	15,416.32	1.92			
1983	Underground	Inactive	6	265.82	5.87	255.45	1.41%	0.95	0.63%	0.08	0.04	3.42	1.61	12,975.00	1	44,361.13	809,147.76	10829.7	33,531.43	5.75			
1984	Underground	Inactive	-	-	-	-	1.43%	-	0.70%	-	-	-	12,975.00	1	-	206,640.00	0	-	-	-			
1985	Underground	Inactive	1	220.21	0.98	216.45	1.45%	0.60	0.76%	0.01	0.01	1.89	1.65	12,975.00	1	24,478.35	849,773.65	7406.493	0	17,071.86	0.96		
1986	Underground	Inactive	1	43.54	0.98	42.64	1.46%	0.80	0.83%	0.01	0.01	0.50	0.35	12,975.00	1	6,473.55	-	0	6,473.55	0.95			
1987	Underground	Inactive	1	40.89	0.98	40.02	1.47%	0.80	0.90%	0.01	0.01	0.47	0.36	12,975.00	1	6,086.71	567,883.36	6656.896	-	0	0.95		
1988	Underground	Inactive	5	55.35	4.88	53.78	1.46%	1.25	0.96%	0.07	0.05	0.98	0.52	12,975.00	1	12,744.12	286,015.64	523.92	7,520.20	4.76			
1989	Underground	Inactive	-	-	-	-	1.45%	-	1.03%	-	-	-	12,975.00	1	-	160,756.00	0	-	-	-			
1990	Underground	Inactive	3	256.4	2.92	24.94	1.43%	1.10	1.09%	0.04	0.03	0.39	0.07	12,975.00	1	5,106.82	1,179,519.22	1861.74	-	2.85			
1991	Underground	Inactive	3	362.42	2.92	353.88	1.41%	0.82	1.16%	0.04	0.03	4.08	4.10	12,975.00	1	52,978.84	606,418	6997.204	45,981.43	2.85			
1992	Underground	Inactive	2	119.31	1.95	116.12	1.39%	1.03	1.22%	0.03	0.02	1.65	1.42	12,975.00	1	21,403.81	228,227.20	3243.194	18,166.62	1.90			
1993	Underground	Inactive	1	20.36	0.97	19.87	1.36%	0.80	1.29%	0.01	0.01	0.22	0.26	12,975.00	1	2,795.98	1,467,008.33	15909.05	-	0.95			
1994	Underground	Inactive	2	100.78	1.95	98.33	1.32%	1.03	1.35%	0.03	0.03	1.04	1.32	12,975.00	1	13,482.02	1,022,028	222.143	13,589.87	1.89			
1995	Underground	Inactive	2	91.94	1.95	89.43	1.28%	1.03	1.40%	0.02	0.03	1.18	1.26	12,975.00	1	15,257.32	424,050.42	5575.306	9,684.11	1.89			
1996	Underground	Inactive	3	51.05	2.92	49.51	1.24%	1.25	1.46%	0.04	0.04	0.77	0.72	12,975.00	1	9,979.02	285,338.45	4409.125	5,543.51	2.84			
1997	Underground	Inactive	7	316.01	6.81	307.67	1.20%	0.94	1.51%	0.08	0.10	3.45	4.65	12,975.00	1	44,771.05	1,468,475.90	16469.34	28,301.71	6.63			
1998	Underground	Inactive	1	72.14	0.97	70.50	1.51%	0.60	1.56%	0.01	0.02	0.49	1.10	12,975.00	1	6,330.20	128,421.56	888.6827	5,441.52	0.95			
1999	Underground	Inactive	5	348.05	4.86	338.52	1.11%	1.03	1.61%	0.05	0.08	3.86	5.44	12,975.00	1	50,066.77	1,552,320.24	17694.72	32,072.03	4.74			
2000	Underground	Inactive	3	173.12	2.92	168.66	1.06%	0.88	1.65%	0.03	0.05	1.58	2.78	12,975.00	1	20,472.63	57,491.96	5383.996	13,888.65	2.83			
2001	Underground	Inactive	3	93.58	2.92	91.04	1.03%	1.03	1.69%	0.03	0.05	0.95	1.53	12,975.00	1	12,341.69	1,791,276.28	18715.23	12,064.98	2.84			
2002	Underground	Inactive	1	47.21	0.97	46.13	0.96%	0.60	1.72%	0.01	0.02	0.27	0.79	12,975.00	1	3,458.54	760,200.14	4393.058	-	0.95			
2003	Underground	Inactive	6	222.92	5.84	216.99	0.92%	1.03	1.75%	0.05	0.10	2.04	3.79	12,975.00	1	26,426.14	90,269.40	847,2816	25,578.86	5.69			
2004	Underground	Inactive	4	249.94	3.90	243.83	0.87%	0.80	1.77%	0.03	0.07	1.70	4.31	12,975.00	1	22,002.32	997,615.80	6938.145	10,064.18	3.79			
2005	Underground	Inactive	3	112.09	2.92	109.11	0.82%	1.10	1.79%	0.02	0.05	0.99	1.95	12,975.00	1	12,839.62	1,529,578.51	13872.26	12,869.18	2.85			
2006	Underground	Inactive	5	182.14	5.85	177.45	1.03%	1.03	1.80%	0.05	0.11	4.42	3.19	12,975.00	1	18,446.09	781,000.67	6257.457	15,084.99	5.70			
2007	Underground	Inactive	3	107.80	2.92	105.14	0.74%	0.95	1.80%	0.02	0.05	0.70	1.50	12,975.00	1	6,605.95	362,876.87	2555.528	7,051.42	2.85			
2008	Underground	Inactive	5	88.05	4.88	85.79	0.70%	1.16	1.80%	0.03	0.09	0.70	1.55	12,975.00	1	9,084.63	565,290.45	46,115	4,473.28	7.85			
2009	Underground	Inactive	5	85.24	4.88	83.09	0.67%	1.16	1.79%	0.03	0.09	0.65	1.49	12,975.00	1	8,380.45	334,020.81	2596.419	5,784.03	6.75			
2010	Underground	Inactive	7	120.44	6.83	117.40	0.64%	1.25	1.78%	0.04	0.12	0.94	2.09	12,975.00	1	12,190.51	219,301.61	175,022	10,435.48	4.67			
2011	Underground	Inactive	6	126.97	5.86	123.90	0.61%	1.18	1.75%	0.04	0.10	0.90	2.17	12,975.00	1	11,612.76	321,260.70	230,768	9,291.99	5.87			
2012	Underground	Inactive	1	32.84	0.98	32.13	0.59%	0.80	1.73%	0.01	0.02	0.15	0.55	12,975.00	1	1,982.40	1,982.40	3801.00	0	0.96			
2013	Underground	Inactive	3	53.70	2.93	52.50	0.58%	1.03	1.68%	0.02	0.05	0.31	0.88	12,975.00	1	4,078.15	434,566.18	2601.443	1,476.71	2.72			
2014	Underground	Inactive	-	-	-	-	0.57%	-	1.64%	-	-	-	12,975.00	1	-	322,898.00	0	-	-	-			
2015	Underground	Inactive	-	-	-	-	0.57%	-	1.58%	-	-	-	12,975.00	1	-	130,520.00	0	-	-	-			
2016	Underground	Inactive	1	13.42	0.98	13.13	0.57%	1.25	1.51%	0.01	0.01	0.09	0.20	12,975.00	1	1,217.62	34,784.43	248,6337	968.99	0.96			
2017	Underground	Inactive	-	-	-	-	0.58%	-	1.48%	-	-	-	12,975.00	1	-	16,446.00	0	-	-	-			
2018	Underground	Inactive	2	46.96	1.96	46.00	0.60%	1.25	1.35%	0.01	0.03	0.35	0.62	12,975.00	1	4,498.86	30,557.07	230.339	4,268.52	1.82			
2019	Underground	Inactive	-	-	-	-	0.63%	-	1.26%	-	-	-	12,975.00	1	-	-	0	-	-	-			
2020	Underground	Inactive	-	-	-	-	0.67%	-	1.15%	-	-	-	12,975.00	1	-	61,360.00	0	-	-	-			
2021	Underground	Inactive	-	-	-	-	0.71%	-	1.04%	-	-	-	12,975.00	1	-	-	0	-	-	-			
2022	Underground	Inactive	-	-	-	-	0.77%	-	0.91%	-	-	-	12,975.00	1	-	-	0	-	-	-			
2023	Underground	Inactive	1	19.71	0.99	19.50	0.84%	1.25	0.77%	0.01	0.01	0.20	0.15	12,975.00	1	2,645.23	-	0	2,645.23	0.97			
2024	Underground	Inactive	-	-	-	-	0.35%	-	0.62%	-	-	-	12,975.00	1	-	-	0	-	-	-			
2025	Underground	Inactive	-	-	-	-	0.16%	-	0.46%	-	-	-	12,975.00	1	-	-	0	-	-	-			

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	2027										Avg rec'd Cost per Acres (28)	Adjustment Factor Permit Status (29)	Gross Cost (30)	Adjustment		Forfeited Security Amount (32)	Net Cost (33)	Adjusted Permit Count (34)
					Adjusted Permit Count (19)	Adjusted Acres (20)	Forfeiture Rate (21)	Factor Permit Bond/Size (22)	Release Rate (23)	Forfeited Permit Count (24)	Released Permit Count (25)	Forfeited Acres (26)	Released Acres (27)	Current Security Amount (31)								
1967	Underground	Phased Released	-	-	-	-	-	0.00%	-	0.00%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1968	Underground	Phased Released	-	-	-	-	-	0.00%	-	0.00%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1969	Underground	Phased Released	-	-	-	-	-	0.00%	-	0.05%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1970	Underground	Phased Released	-	-	-	-	-	0.10%	-	0.12%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1971	Underground	Phased Released	-	-	-	-	-	0.28%	-	0.21%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1972	Underground	Phased Released	-	-	-	-	-	0.45%	-	0.32%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1973	Underground	Phased Released	-	-	-	-	-	0.61%	-	0.46%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1974	Underground	Phased Released	-	-	-	-	-	0.75%	-	0.61%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1975	Underground	Phased Released	-	-	-	-	-	0.87%	-	0.78%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1976	Underground	Phased Released	-	-	-	-	-	0.99%	-	0.97%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1977	Underground	Phased Released	-	-	-	-	-	1.09%	-	1.17%	-	-	-	12,975.00	0.5	-	-	0	-	-		
1978	Underground	Phased Released	3	10.58	2.91	10.24	1.18%	1.25	1.39%	0.03	0.04	0.15	0.14	12,975.00	0.5	977.32	-	0	977.32	2.84		
1979	Underground	Phased Released	2	59.68	1.94	57.58	1.25%	1.25	1.62%	0.02	0.03	0.90	0.93	12,975.00	0.5	5,855.62	-	0	5,855.62	1.88		
1980	Underground	Phased Released	5	87.19	4.83	83.85	1.32%	1.25	1.86%	0.06	0.09	1.38	1.56	12,975.00	0.5	8,976.86	23,882.08	394.1154	8,582.75	4.67		
1981	Underground	Phased Released	6	66.33	5.77	63.65	1.38%	1.18	2.11%	0.08	0.12	1.03	1.34	12,975.00	0.5	6,675.48	100,028.96	1617.103	5,058.38	5.57		
1982	Underground	Phased Released	1	59.82	0.96	57.15	1.42%	1.25	2.37%	0.01	0.02	1.02	1.36	12,975.00	0.5	6,587.94	49,089.11	872.211	5,715.73	0.92		
1983	Underground	Phased Released	8	51.27	2.87	48.83	1.46%	1.25	2.64%	0.04	0.08	0.89	1.29	12,975.00	0.5	5,770.84	188,555.30	3435.081	2,335.76	2.75		
1984	Underground	Phased Released	1	43.00	0.95	40.82	1.48%	1.25	2.91%	0.01	0.03	0.76	1.19	12,975.00	0.5	4,913.96	78,787.71	1461.869	3,452.09	0.91		
1985	Underground	Phased Released	2	7.93	1.90	7.51	1.50%	1.25	3.18%	0.03	0.06	0.14	0.24	12,975.00	0.5	914.62	63,244.79	1187.999	-	1.81		
1986	Underground	Phased Released	2	89.96	1.89	84.80	1.51%	1.25	3.46%	0.03	0.07	1.61	2.94	12,975.00	0.5	10,415.66	128,243.16	2425.473	7,990.19	1.89		
1987	Underground	Phased Released	1	23.37	0.94	21.99	1.52%	1.25	3.74%	0.01	0.04	0.42	0.82	12,975.00	0.5	2,702.86	30,139.57	571.0748	2,131.78	0.89		
1988	Underground	Phased Released	7	215.56	6.59	202.24	1.51%	1.25	4.02%	0.10	0.27	3.82	8.14	12,975.00	0.5	24,790.23	116,901.11	2208.761	22,581.47	6.23		
1989	Underground	Phased Released	5	80.68	4.70	75.49	1.50%	1.25	4.30%	0.07	0.20	1.42	3.25	12,975.00	0.5	9,187.12	76,513.94	1435.339	7,751.78	4.42		
1990	Underground	Phased Released	2	18.31	1.87	17.09	1.48%	1.25	4.58%	0.03	0.09	0.32	0.78	12,975.00	0.5	2,056.21	211,936.01	3931.154	-	1.76		
1991	Underground	Phased Released	3	23.22	2.80	21.62	1.46%	1.25	4.85%	0.04	0.14	0.39	1.05	12,975.00	0.5	2,561.93	53,346.19	974.6013	1,587.33	2.63		
1992	Underground	Phased Released	3	62.39	2.80	57.94	1.43%	1.25	5.12%	0.04	0.14	1.04	2.96	12,975.00	0.5	6,738.80	19,649.42	352.2612	6,386.54	2.61		
1993	Underground	Phased Released	4	68.38	3.72	63.36	1.40%	1.25	5.38%	0.05	0.20	1.11	3.41	12,975.00	0.5	7,205.55	29,487.58	516.8853	6,688.67	3.47		
1994	Underground	Phased Released	2	18.79	1.86	17.38	1.37%	1.25	5.63%	0.03	0.10	0.30	0.98	12,975.00	0.5	1,925.33	37,330.30	637.6216	1,287.71	1.73		
1995	Underground	Phased Released	4	85.60	3.70	79.12	1.33%	1.14	5.87%	0.05	0.22	1.19	4.65	12,975.00	0.5	7,748.89	67,453.03	1018.24	6,730.65	3.44		
1996	Underground	Phased Released	4	133.37	3.70	122.87	1.28%	1.25	6.10%	0.05	0.23	1.97	7.50	12,975.00	0.5	12,801.18	19,690.02	316.2054	12,484.97	3.42		
1997	Underground	Phased Released	4	119.99	3.69	110.37	1.24%	1.25	6.32%	0.05	0.23	1.71	6.98	12,975.00	0.5	11,097.35	62,880.02	974.5677	10,122.78	3.41		
1998	Underground	Phased Released	2	64.00	1.84	58.78	1.19%	1.25	6.53%	0.02	0.12	0.88	3.84	12,975.00	0.5	5,687.61	92,404.44	1378.109	4,309.50	1.70		
1999	Underground	Phased Released	3	269.40	2.76	247.58	1.14%	1.10	6.72%	0.03	0.19	3.12	16.63	12,975.00	0.5	20,227.48	104,437.97	1315.223	18,912.26	2.54		
2000	Underground	Phased Released	2	59.65	1.84	54.67	1.10%	1.25	6.89%	0.02	0.13	0.75	3.77	12,975.00	0.5	4,856.95	64,529.14	883.7511	3,973.20	1.69		
2001	Underground	Phased Released	4	36.60	3.67	33.51	1.05%	1.25	7.05%	0.04	0.26	0.44	2.36	12,975.00	0.5	2,842.68	249,849.05	3266.655	-	3.38		
2002	Underground	Phased Released	1	48.55	0.92	44.43	1.00%	1.25	7.19%	0.01	0.07	0.55	3.19	12,975.00	0.5	3,589.78	48,949.62	609.6356	2,980.15	0.84		
2003	Underground	Phased Released	1	12.65	0.92	11.57	0.95%	1.25	7.30%	0.01	0.07	0.14	0.85	12,975.00	0.5	888.95	51,486.63	609.6648	279.29	0.84		
2004	Underground	Phased Released	-	-	-	-	-	0.90%	-	7.40%	-	-	-	12,975.00	0.5	-	15,840.00	0	-	-		
2005	Underground	Phased Released	1	21.73	0.92	19.88	0.85%	1.25	7.47%	0.01	0.07	0.21	1.48	12,975.00	0.5	1,374.80	29,469.10	314.1831	1,060.62	0.84		
2006	Underground	Phased Released	-	-	-	-	-	0.81%	-	7.52%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2007	Underground	Phased Released	-	-	-	-	-	0.77%	-	7.54%	-	-	-	12,975.00	0.5	-	11,220.00	0	-	-		
2008	Underground	Phased Released	3	63.64	2.75	58.32	0.73%	1.25	7.53%	0.02	0.21	0.53	4.39	12,975.00	0.5	3,443.95	-	0	3,443.95	2.53		
2009	Underground	Phased Released	2	54.60	1.84	50.09	0.69%	1.25	7.50%	0.01	0.14	0.43	3.76	12,975.00	0.5	2,815.80	-	0	2,815.80	1.69		
2010	Underground	Phased Released	-	-	-	-	-	0.66%	-	7.43%	-	-	-	12,975.00	0.5	-	37,420.00	0	-	-		
2011	Underground	Phased Released	-	-	-	-	-	0.64%	-	7.34%	-	-	-	12,975.00	0.5	-	72,624.00	0	-	-		
2012	Underground	Phased Released	-	-	-	-	-	0.61%	-	7.21%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2013	Underground	Phased Released	-	-	-	-	-	0.60%	-	7.04%	-	-	-	12,975.00	0.5	-	31,200.00	0	-	-		
2014	Underground	Phased Released	-	-	-	-	-	0.59%	-	6.84%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2015	Underground	Phased Released	-	-	-	-	-	0.59%	-	6.61%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2016	Underground	Phased Released	-	-	-	-	-	0.59%	-	6.33%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2017	Underground	Phased Released	-	-	-	-	-	0.60%	-	6.02%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2018	Underground	Phased Released	-	-	-	-	-	0.62%	-	5.67%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2019	Underground	Phased Released	-	-	-	-	-	0.65%	-	5.27%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2020	Underground	Phased Released	-	-	-	-	-	0.69%	-	4.83%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2021	Underground	Phased Released	-	-	-	-	-	0.74%	-	4.34%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2022	Underground	Phased Released	-	-	-	-	-	0.80%	-	3.81%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2023	Underground	Phased Released	-	-	-	-	-	0.87%	-	3.23%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2024	Underground	Phased Released	-	-	-	-	-	0.37%	-	2.60%	-	-	-	12,975.00	0.5	-	-	0	-	-		
2025	Underground	Phased Released	-	-	-	-	-	0.17%	-	1.91%	-	-	-	12,975.00	0.5	-	-	0	-	-		

West Virginia Department of Environmental Protection Office of Special Reclam
Actuarial Reserve Studies as of June 30, 2025
Land Reclamation Cost Projection - Deterministic Model

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	Adjustment										Avg red Cost per Acre (28)	Adjustment Factor Security Status (29)	Gross Cost (30)	Adjustment Current Security Amount (31)	Forfeited Security Amount (32)	Net Cost (33)	Adjusted Permit Count (34)
					Adjusted Permit Count (19)	Adjusted Acres (20)	Forfeiture Rate (21)	Factor Permit Bond/Disse (22)	Release Rate (23)	Forfeited Permit Count (24)	Released Permit Count (25)	Forfeited Acres (26)	Released Acres (27)								
1967	Other	Active	-	-	-	-	0.04%	-	1.22%	-	-	-	-	9,730.00	1	-	-	0	-	-	
1968	Other	Active	-	-	-	-	0.04%	-	1.22%	-	-	-	-	9,730.00	1	-	-	0	-	-	
1969	Other	Active	-	-	-	-	0.09%	-	1.22%	-	-	-	-	9,730.00	1	-	-	0	-	-	
1970	Other	Active	-	-	-	-	0.13%	-	1.22%	-	-	-	-	9,730.00	1	-	-	0	-	-	
1971	Other	Active	-	-	-	-	0.17%	-	1.22%	-	-	-	-	9,730.00	1	-	-	0	-	-	
1972	Other	Active	1	20.00	0.99	19.70	0.21%	1.25	1.22%	0.00	0.01	0.05	0.24	9,730.00	1	502.17	-	0	502.17	0.97	
1973	Other	Active	-	-	-	-	0.25%	-	1.22%	-	-	-	-	9,730.00	1	-	-	0	-	-	
1974	Other	Active	1	36.25	0.98	35.67	0.28%	1.25	1.22%	0.00	0.01	0.12	0.43	9,730.00	1	1,211.09	19,922.46	69.52208	1,141.57	0.97	
1975	Other	Active	1	6.20	0.98	6.10	0.31%	1.25	1.22%	0.00	0.01	0.02	0.07	9,730.00	1	230.05	-	0	230.05	0.97	
1976	Other	Active	-	-	-	-	0.34%	-	1.22%	-	-	-	-	9,730.00	1	-	29,000.00	0	-	-	
1977	Other	Active	3	85.99	2.95	84.53	0.37%	1.25	1.22%	0.01	0.04	0.39	1.03	9,730.00	1	3,752.38	10,448.94	47.67344	3,704.70	2.91	
1978	Other	Active	-	-	-	-	0.39%	-	1.22%	-	-	-	-	9,730.00	1	-	-	0	-	-	
1979	Other	Active	2	72.25	1.97	70.98	0.41%	1.25	1.22%	0.01	0.02	0.36	0.86	9,730.00	1	3,547.30	233,734.85	1200.492	2,346.81	1.94	
1980	Other	Active	6	171.38	5.90	168.33	0.43%	1.25	1.22%	0.03	0.07	0.91	2.05	9,730.00	1	8,817.78	-	0	8,817.78	5.80	
1981	Other	Active	31	4,300.77	30.48	4,318.25	0.45%	0.94	1.22%	0.14	0.37	18.15	52.53	9,730.00	1	176,590.98	64,717.12	271.9988	176,318.99	29.97	
1982	Other	Active	5	539.33	4.92	530.34	0.46%	0.94	1.22%	0.02	0.06	2.32	6.45	9,730.00	1	22,526.92	474,097.89	2069.663	20,457.25	4.83	
1983	Other	Active	34	3,836.07	33.42	3,772.16	0.48%	0.92	1.22%	0.16	0.41	16.54	45.89	9,730.00	1	160,905.05	21,375,425.69	93709.15	67,195.90	32.85	
1984	Other	Active	33	4,369.90	32.43	4,297.75	0.49%	0.87	1.22%	0.16	0.39	18.28	52.28	9,730.00	1	177,897.99	1,674,648.45	7124.28	170,773.71	31.88	
1985	Other	Active	12	1,485.04	11.79	1,459.71	0.50%	0.96	1.22%	0.06	0.14	7.02	17.76	9,730.00	1	68,271.12	10,372,929.92	49860.87	18,410.25	11.59	
1986	Other	Active	13	1,384.69	12.77	1,360.70	0.51%	1.00	1.22%	0.07	0.16	6.92	16.58	9,730.00	1	67,358.51	12,745,340.61	64844.04	2,514.47	12.55	
1987	Other	Active	6	968.10	5.90	952.01	0.52%	0.85	1.22%	0.03	0.07	4.19	11.58	9,730.00	1	40,816.59	4,663,289.85	20548.32	20,268.27	5.79	
1988	Other	Active	8	613.83	7.86	602.93	0.52%	1.06	1.22%	0.04	0.10	3.34	7.33	9,730.00	1	32,511.36	4,941,082.72	27382.81	5,128.55	7.72	
1989	Other	Active	10	617.50	9.83	606.45	0.53%	1.08	1.22%	0.05	0.12	3.45	7.38	9,730.00	1	33,596.34	3,809,749.96	21691.12	11,905.22	9.65	
1990	Other	Active	7	400.79	6.88	393.51	0.53%	1.12	1.22%	0.04	0.08	2.35	4.79	9,730.00	1	22,901.52	1,701,710.15	10178.55	12,722.97	6.76	
1991	Other	Active	6	491.29	5.89	482.30	0.54%	1.14	1.22%	0.03	0.07	2.95	5.87	9,730.00	1	28,714.58	304,122.26	1860.893	26,853.69	5.79	
1992	Other	Active	6	293.26	5.89	288.08	0.54%	1.03	1.22%	0.03	0.07	1.59	3.50	9,730.00	1	15,442.48	420,269.34	2315.398	13,127.08	5.79	
1993	Other	Active	8	761.88	7.86	748.75	0.54%	0.94	1.22%	0.04	0.10	3.80	9.11	9,730.00	1	36,993.84	1,367,504.87	6944.02	30,049.82	7.72	
1994	Other	Active	14	2,293.13	13.75	2,254.47	0.54%	0.88	1.22%	0.07	0.17	10.61	27.42	9,730.00	1	103,210.14	936,741.16	4407.423	98,802.72	13.51	
1995	Other	Active	7	997.92	6.88	980.60	0.54%	0.97	1.22%	0.04	0.08	5.11	11.93	9,730.00	1	49,733.79	2,188,094.69	11405.49	38,328.30	6.76	
1996	Other	Active	3	1,971.02	2.95	1,940.05	0.53%	0.67	1.22%	0.02	0.04	6.92	23.60	9,730.00	1	67,292.07	6,659,486.84	23739.89	43,552.18	2.90	
1997	Other	Active	9	739.12	8.84	726.22	0.53%	1.00	1.22%	0.05	0.11	3.87	8.83	9,730.00	1	37,607.64	5,398,194.11	28780.6	8,877.04	8.69	
1998	Other	Active	3	622.19	2.95	611.02	0.53%	1.10	1.22%	0.02	0.04	3.56	7.43	9,730.00	1	34,606.97	9,669,314.79	56284.41	-	2.90	
1999	Other	Active	5	415.45	4.91	408.08	0.53%	1.07	1.22%	0.03	0.06	2.30	4.96	9,730.00	1	22,332.65	2,613,964.99	14702.29	7,630.36	4.83	
2000	Other	Active	2	339.23	1.97	333.87	0.52%	0.70	1.22%	0.01	0.02	1.22	4.06	9,730.00	1	11,864.73	785,663.33	2869.446	8,995.28	1.93	
2001	Other	Active	5	385.64	4.91	379.01	0.52%	0.98	1.22%	0.03	0.06	1.92	4.61	9,730.00	1	18,704.17	955,530.71	4846.407	13,857.76	4.83	
2002	Other	Active	7	801.13	6.88	787.05	0.51%	1.06	1.22%	0.04	0.08	4.30	9.57	9,730.00	1	41,821.11	922,658.79	5038.744	36,782.37	6.76	
2003	Other	Active	5	887.86	4.91	872.63	0.51%	0.99	1.22%	0.02	0.06	4.39	10.61	9,730.00	1	42,749.39	778,018.77	3917.211	38,832.18	4.83	
2004	Other	Active	9	1,214.52	8.85	1,193.78	0.50%	0.98	1.22%	0.04	0.11	5.92	14.52	9,730.00	1	57,562.95	2,106,013.72	10436.78	47,126.18	8.69	
2005	Other	Active	3	75.34	2.95	74.01	0.50%	1.10	1.22%	0.01	0.04	0.41	0.90	9,730.00	1	3,956.11	4,608,823.61	25318.34	-	2.90	
2006	Other	Active	7	491.96	6.88	483.49	0.49%	1.03	1.22%	0.03	0.08	2.46	5.88	9,730.00	1	23,950.10	3,757,370.80	19128.84	4,821.25	6.76	
2007	Other	Active	5	368.47	4.91	362.07	0.49%	1.07	1.22%	0.02	0.06	1.90	4.40	9,730.00	1	18,497.87	187,617.69	985.1259	17,512.74	4.83	
2008	Other	Active	7	599.63	6.88	589.17	0.49%	1.09	1.22%	0.03	0.08	3.13	7.17	9,730.00	1	30,495.78	1,322,320.28	7034.348	23,461.43	6.76	
2009	Other	Active	4	197.78	3.93	194.29	0.48%	1.14	1.22%	0.02	0.05	1.07	2.36	9,730.00	1	10,390.64	1,104,972.80	6073.282	4,317.36	3.87	
2010	Other	Active	9	1,140.63	8.85	1,121.14	0.48%	1.03	1.22%	0.04	0.11	5.53	13.64	9,730.00	1	53,824.46	1,597,640.76	7882.896	45,941.56	8.70	
2011	Other	Active	3	310.19	2.95	305.00	0.48%	0.95	1.22%	0.01	0.04	1.38	3.71	9,730.00	1	13,461.88	179,186.82	812.8283	12,649.05	2.90	
2012	Other	Active	7	161.25	6.88	158.31	0.48%	1.25	1.22%	0.03	0.08	0.94	1.93	9,730.00	1	9,156.07	4,395,405.20	26127.59	-	6.76	
2013	Other	Active	17	2,081.52	16.70	2,045.12	0.47%	1.00	1.23%	0.08	0.21	9.73	25.22	9,730.00	1	94,659.07	441,451.99	2099.975	92,559.09	16.42	
2014	Other	Active	5	212.39	4.91	208.27	0.47%	1.12	1.27%	0.02	0.06	1.11	2.65	9,730.00	1	10,754.79	370,998.72	1968.957	8,785.83	4.82	
2015	Other	Active	9	1,106.93	8.79	1,080.94	0.47%	1.03	1.41%	0.04	0.12	5.30	15.23	9,730.00	1	51,546.15	3,762,892.58	18441.82	33,104.34	8.62	
2016	Other	Active	6	1,513.50	5.78	1,455.91	0.48%	1.18	1.86%	0.03	0.11	8.14	27.03	9,730.00	1	79,177.75	658,996.87	3683.308	75,494.44	5.64	
2017	Other	Active	4	369.58	4.64	342.33	0.48%	1.16	3.24%	0.02	0.15	1.90	11.10	9,730.00	1	18,473.87	2,835,367.80	15725.64	2,748.23	4.46	
2018	Other	Active	2	21.89	1.73	18.94	0.48%	1.25	6.81%	0.01	0.12	0.11	1.29	9,730.00	1	1,109.86	290,403.23	1748.583	-	1.61	
2019	Other	Active	4	5.94	3.25	4.82	0.49%	1.25	12.85%	0.02	0.42	0.03	0.62	9,730.00	1	285.12	250,726.66	1524.692	-	2.82	
2020	Other	Active	5	562.96	3.93	441.66	0.49%	1.16	18.26%	0.02	0.72	2.52	80.66	9,730.00	1	24,554.53	18,392.69	105.0938	24,449.44	3.19	
2021	Other	Active	6	74.26	4.65	57.50	0.50%	1.25	20.97%	0.02	0.98	0.36	12.06	9,730.00	1	3,496.98	3,974.55	24.84345	3,472.14	3.65	
2022	Other	Active	6	465.40	4.63	359.24	0.51%	1.10	21.94%	0.02	1.02	2.01	78.80	9,730.00	1	19,57070					

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Permit Count (4)	Current Bonded Acres (5)	2027										Gross Cost (30)	Adjustment		Net Cost (33)	Adjusted Permit Count (34)			
					Adjusted Permit Count (19)	Adjusted Acres (20)	Forfeiture Rate (21)	Factor Permit Bond/Size (22)	Release Rate (23)	Forfeited Permit Count (24)	Released Permit Count (25)	Forfeited Acres (26)	Released Acres (27)	Avg recd Security Cost per Acre (28)		Factor Permit Status (29)	Current Security Amount (31)			Forfeited Security Amount (32)		
1967	Other	Inactive	-	-	-	-	0.07%	-	0.79%	-	-	-	-	9,730.00	1	-	-	0	-	-		
1968	Other	Inactive	-	-	-	-	0.07%	-	0.79%	-	-	-	-	9,730.00	1	-	-	0	-	-		
1969	Other	Inactive	-	-	-	-	0.15%	-	0.79%	-	-	-	-	9,730.00	1	-	-	0	-	-		
1970	Other	Inactive	-	-	-	-	0.23%	-	0.79%	-	-	-	-	9,730.00	1	-	-	0	-	-		
1971	Other	Inactive	-	-	-	-	0.31%	-	0.79%	-	-	-	-	9,730.00	1	-	-	0	-	-		
1972	Other	Inactive	-	-	-	-	0.38%	-	0.79%	-	-	-	-	9,730.00	1	-	-	0	-	-		
1973	Other	Inactive	-	-	-	-	0.45%	-	0.79%	-	-	-	-	9,730.00	1	-	-	0	-	-		
1974	Other	Inactive	-	-	-	-	0.51%	-	0.79%	-	-	-	-	9,730.00	1	-	-	0	-	-		
1975	Other	Inactive	-	-	-	-	0.56%	-	0.79%	-	-	-	-	9,730.00	1	-	-	0	-	-		
1976	Other	Inactive	1	14.48	0.99	14.25	0.61%	1.25	0.79%	0.01	0.01	0.11	0.11	9,730.00	1	1,063.83	-	-	0	1,063.83	0.97	
1977	Other	Inactive	1	52.00	0.99	51.13	0.66%	1.25	0.79%	0.01	0.01	0.42	0.40	9,730.00	1	4,114.26	-	-	0	4,114.26	0.97	
1978	Other	Inactive	-	-	-	-	0.71%	-	0.79%	-	-	-	-	9,730.00	1	-	15,000.00	-	0	-	-	
1979	Other	Inactive	-	-	-	-	0.74%	-	0.79%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	
1980	Other	Inactive	1	114.75	0.98	113.10	0.78%	0.80	0.79%	0.01	0.01	0.71	0.89	9,730.00	1	6,872.40	-	-	0	6,872.40	0.97	
1981	Other	Inactive	8	859.57	7.87	846.38	0.81%	0.89	0.79%	0.06	0.06	6.11	6.66	9,730.00	1	59,414.09	9,925.29	71,606.61	59,342.48	7.74	1.93	
1982	Other	Inactive	2	130.80	1.97	128.61	0.84%	1.03	0.79%	0.02	0.02	1.11	1.01	9,730.00	1	10,796.56	337,373.93	2910.832	7,861.73	1.93	5.80	
1983	Other	Inactive	6	888.39	5.90	874.94	0.87%	0.82	0.79%	0.05	0.05	6.20	6.89	9,730.00	1	60,298.06	1,826,471.95	12936.71	47,361.35	5.80	1.93	
1984	Other	Inactive	5	495.53	4.92	487.80	0.89%	0.85	0.79%	0.04	0.04	3.69	3.84	9,730.00	1	35,893.62	371,109.92	2806.498	33,087.12	4.83	1.93	
1985	Other	Inactive	5	1,248.52	4.91	1,228.75	0.91%	0.86	0.79%	0.04	0.04	9.61	9.67	9,730.00	1	93,475.09	6,419,834.44	50192.88	43,282.21	4.83	1.93	
1986	Other	Inactive	-	-	-	-	0.93%	-	0.79%	-	-	-	-	9,730.00	1	-	7,029,082.00	-	0	-	-	-
1987	Other	Inactive	-	-	-	-	0.94%	-	0.79%	-	-	-	-	9,730.00	1	-	3,795,300.00	-	0	-	-	-
1988	Other	Inactive	2	34.27	1.97	33.59	0.95%	1.25	0.79%	0.02	0.02	0.40	0.26	9,730.00	1	3,884.97	-	-	0	3,884.97	1.93	-
1989	Other	Inactive	1	87.34	0.98	85.60	0.96%	1.25	0.79%	0.01	0.01	1.03	0.67	9,730.00	1	9,993.95	-	-	0	9,993.95	0.97	-
1990	Other	Inactive	1	425.33	0.98	419.50	0.97%	0.60	0.79%	0.01	0.01	2.43	3.30	9,730.00	1	23,675.88	29,825.14	172,997.8	23,502.88	0.97	-	
1991	Other	Inactive	-	-	-	-	0.97%	-	0.79%	-	-	-	-	9,730.00	1	-	1,188,600.00	-	0	-	-	-
1992	Other	Inactive	4	354.26	3.93	347.71	0.97%	1.09	0.79%	0.04	0.03	3.68	2.74	9,730.00	1	35,844.05	1,531,582.64	16226.39	19,617.67	3.86	2.90	
1993	Other	Inactive	3	192.03	2.95	188.46	0.98%	1.10	0.79%	0.03	0.02	2.02	1.48	9,730.00	1	19,671.04	-	-	0	19,671.04	2.90	-
1994	Other	Inactive	1	381.64	0.98	376.41	0.97%	0.60	0.79%	0.01	0.01	2.20	2.96	9,730.00	1	21,417.04	1,063,756.18	6220.546	15,196.49	0.97	-	
1995	Other	Inactive	2	593.99	1.96	583.99	0.97%	0.93	0.79%	0.02	0.02	5.25	4.60	9,730.00	1	51,118.11	259,730.46	2336.575	48,781.54	1.93	-	
1996	Other	Inactive	1	152.16	0.98	149.79	0.97%	0.80	0.79%	0.01	0.01	1.16	1.18	9,730.00	1	11,300.23	953,940.92	7396.372	3,903.86	0.97	-	
1997	Other	Inactive	2	593.50	1.97	584.84	0.96%	0.70	0.79%	0.02	0.02	3.95	4.60	9,730.00	1	38,425.99	2,161,469.98	14595.58	23,830.41	1.93	-	
1998	Other	Inactive	2	131.05	1.97	128.74	0.96%	1.03	0.79%	0.02	0.02	1.27	1.01	9,730.00	1	12,314.70	478,837.70	4707.496	7,607.20	1.93	-	
1999	Other	Inactive	-	-	-	-	0.95%	-	0.79%	-	-	-	-	9,730.00	1	-	184,000.00	-	0	-	-	-
2000	Other	Inactive	-	-	-	-	0.95%	-	0.79%	-	-	-	-	9,730.00	1	-	368,160.00	-	0	-	-	-
2001	Other	Inactive	1	144.00	0.98	141.80	0.94%	0.80	0.79%	0.01	0.01	1.06	1.12	9,730.00	1	10,353.60	-	-	0	10,353.60	0.97	-
2002	Other	Inactive	-	-	-	-	0.93%	-	0.79%	-	-	-	-	9,730.00	1	-	117,000.00	-	0	-	-	-
2003	Other	Inactive	1	20.00	0.98	19.61	0.92%	1.25	0.79%	0.01	0.01	0.23	0.15	9,730.00	1	2,198.99	142,355.80	1640.268	558.72	0.97	-	
2004	Other	Inactive	-	-	-	-	0.91%	-	0.79%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2005	Other	Inactive	-	-	-	-	0.91%	-	0.79%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2006	Other	Inactive	-	-	-	-	0.90%	-	0.79%	-	-	-	-	9,730.00	1	-	56,000.00	-	0	-	-	-
2007	Other	Inactive	1	26.00	0.98	25.51	0.89%	1.25	0.79%	0.01	0.01	0.28	0.20	9,730.00	1	2,759.45	50,437.55	560.759	2,198.69	0.97	-	
2008	Other	Inactive	-	-	-	-	0.88%	-	0.79%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2009	Other	Inactive	1	19.80	0.98	19.43	0.88%	1.25	0.79%	0.01	0.01	0.21	0.15	9,730.00	1	2,069.50	-	-	0	2,069.50	0.97	-
2010	Other	Inactive	-	-	-	-	0.87%	-	0.79%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2011	Other	Inactive	-	-	-	-	0.87%	-	0.79%	-	-	-	-	9,730.00	1	-	20,000.00	-	0	-	-	-
2012	Other	Inactive	1	66.26	0.98	65.28	0.86%	0.80	0.79%	0.01	0.01	0.45	0.52	9,730.00	1	4,379.47	-	-	0	4,379.47	0.97	-
2013	Other	Inactive	-	-	-	-	0.86%	-	0.80%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2014	Other	Inactive	-	-	-	-	0.86%	-	0.82%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2015	Other	Inactive	-	-	-	-	0.86%	-	0.91%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2016	Other	Inactive	-	-	-	-	0.86%	-	1.20%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2017	Other	Inactive	1	16.37	0.95	15.47	0.87%	1.25	2.10%	0.01	0.02	0.17	0.32	9,730.00	1	1,630.50	-	-	0	1,630.50	0.92	-
2018	Other	Inactive	1	11.88	0.91	10.76	0.87%	1.25	4.41%	0.01	0.04	0.12	0.47	9,730.00	1	1,142.72	-	-	0	1,142.72	0.86	-
2019	Other	Inactive	-	-	-	-	0.88%	-	8.31%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2020	Other	Inactive	-	-	-	-	0.89%	-	11.82%	-	-	-	-	9,730.00	1	-	12,000.00	-	0	-	-	-
2021	Other	Inactive	-	-	-	-	0.91%	-	13.57%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2022	Other	Inactive	-	-	-	-	0.92%	-	14.19%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2023	Other	Inactive	-	-	-	-	0.94%	-	14.39%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-
2024	Other	Inactive	1	19.50	0.90	17.56	0.07%	1.25	16.32%	0.00	0.15	0.01	2.87	9,730.00	1	145.74	-	-	0	145.74	0.75	-
2025	Other	Inactive	-	-	-	-	0.00%	-	9.91%	-	-	-	-	9,730.00	1	-	-	-	0	-	-	-

Permit Issue Year	Mine Type	Mine Status	Permit Count	Current Bonded Acres	2027										Avg recd Cost per Acres	Adjustment Factor	Permit Status	Gross Cost	Adjustment Current Security Amount	Forfeited Security Amount	Net Cost	Adjusted Permit Count
					Adjusted Permit Count	Adjusted Acres	Forfeiture Rate	Factor Permit Bond Size	Release Rate	Forfeited Permit Count	Released Permit Count	Forfeited Acres	Released Acres									
1967	Other	Phased Released	-	-	-	-	0.07%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	0	-	-		
1968	Other	Phased Released	-	-	-	-	0.07%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	0	-	-		
1969	Other	Phased Released	-	-	-	-	0.16%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	0	-	-		
1970	Other	Phased Released	-	-	-	-	0.24%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	0	-	-		
1971	Other	Phased Released	-	-	-	-	0.32%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	0	-	-		
1972	Other	Phased Released	-	-	-	-	0.39%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	0	-	-		
1973	Other	Phased Released	1	9.00	0.96	8.64	0.46%	1.25	3.29%	0.00	0.03	0.05	0.28	9,730.00	0.5	242.18	-	0	242.18	0.93		
1974	Other	Phased Released	-	-	-	-	0.52%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	0	-	-		
1975	Other	Phased Released	-	-	-	-	0.58%	-	3.29%	-	-	-	-	9,730.00	0.5	-	10,000.00	-	0	-		
1976	Other	Phased Released	2	27.88	1.92	26.72	0.64%	1.25	3.29%	0.01	0.06	0.21	0.88	9,730.00	0.5	1,032.19	-	0	1,032.19	1.85		
1977	Other	Phased Released	-	-	-	-	0.68%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	0	-	-		
1978	Other	Phased Released	1	12.76	0.96	12.22	0.73%	1.25	3.29%	0.01	0.03	0.11	0.40	9,730.00	0.5	541.92	9,903.70	90.29913	451.62	0.92		
1979	Other	Phased Released	2	58.69	1.92	56.17	0.77%	1.25	3.29%	0.01	0.06	0.54	1.85	9,730.00	0.5	2,631.43	-	0	2,631.43	1.84		
1980	Other	Phased Released	-	-	-	-	0.81%	-	3.29%	-	-	-	-	9,730.00	0.5	-	10,000.00	-	0	-		
1981	Other	Phased Released	4	475.54	3.83	455.18	0.84%	1.14	3.29%	0.03	0.13	4.35	14.98	9,730.00	0.5	21,182.62	19,801.90	189.4187	20,993.20	3.68		
1982	Other	Phased Released	2	201.26	1.92	192.38	0.87%	1.25	3.29%	0.02	0.06	2.09	6.33	9,730.00	0.5	10,187.19	9,887.85	107.6259	10,079.56	1.84		
1983	Other	Phased Released	4	201.70	3.83	192.95	0.90%	1.14	3.29%	0.03	0.13	1.97	6.35	9,730.00	0.5	9,580.04	202,715.26	2068.841	7,511.19	3.67		
1984	Other	Phased Released	4	75.79	3.83	72.40	0.92%	1.25	3.29%	0.04	0.13	0.83	2.38	9,730.00	0.5	4,052.51	58,504.06	673.0735	3,379.44	3.67		
1985	Other	Phased Released	1	43.00	0.96	41.07	0.94%	1.25	3.29%	0.01	0.03	0.48	1.35	9,730.00	0.5	2,348.88	185,852.35	2184.848	164.03	0.92		
1986	Other	Phased Released	-	-	-	-	0.96%	-	3.29%	-	-	-	-	9,730.00	0.5	-	71,000.00	-	0	-		
1987	Other	Phased Released	-	-	-	-	0.97%	-	3.29%	-	-	-	-	9,730.00	0.5	-	17,200.00	-	0	-		
1988	Other	Phased Released	-	-	-	-	0.98%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
1989	Other	Phased Released	3	62.20	2.87	59.38	0.99%	1.25	3.29%	0.03	0.09	0.74	1.95	9,730.00	0.5	3,585.72	-	-	3,585.72	2.75		
1990	Other	Phased Released	-	-	-	-	1.00%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
1991	Other	Phased Released	-	-	-	-	1.00%	-	3.29%	-	-	-	-	9,730.00	0.5	-	20,200.00	-	0	-		
1992	Other	Phased Released	-	-	-	-	1.01%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
1993	Other	Phased Released	1	68.65	0.96	65.53	1.01%	1.25	3.29%	0.01	0.03	0.83	2.16	9,730.00	0.5	4,020.02	-	0	4,020.02	0.92		
1994	Other	Phased Released	-	-	-	-	1.01%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
1995	Other	Phased Released	-	-	-	-	1.01%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
1996	Other	Phased Released	-	-	-	-	1.00%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
1997	Other	Phased Released	1	31.16	0.96	29.75	1.00%	1.25	3.29%	0.01	0.03	0.37	0.98	9,730.00	0.5	1,805.29	-	-	1,805.29	0.92		
1998	Other	Phased Released	-	-	-	-	0.99%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
1999	Other	Phased Released	1	179.00	0.96	171.71	0.99%	0.80	3.29%	0.01	0.03	1.35	5.61	9,730.00	0.5	6,586.65	14,411.46	113.632	6,473.02	0.92		
2000	Other	Phased Released	-	-	-	-	0.98%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2001	Other	Phased Released	-	-	-	-	0.97%	-	3.29%	-	-	-	-	9,730.00	0.5	-	249,600.00	-	0	-		
2002	Other	Phased Released	-	-	-	-	0.96%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2003	Other	Phased Released	-	-	-	-	0.95%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2004	Other	Phased Released	-	-	-	-	0.94%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2005	Other	Phased Released	-	-	-	-	0.94%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2006	Other	Phased Released	-	-	-	-	0.93%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2007	Other	Phased Released	-	-	-	-	0.92%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2008	Other	Phased Released	1	9.90	0.96	9.46	0.91%	1.25	3.29%	0.01	0.03	0.11	0.31	9,730.00	0.5	525.17	-	0	525.17	0.92		
2009	Other	Phased Released	-	-	-	-	0.91%	-	3.29%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2010	Other	Phased Released	-	-	-	-	0.90%	-	3.29%	-	-	-	-	9,730.00	0.5	-	10,000.00	-	0	-		
2011	Other	Phased Released	-	-	-	-	0.90%	-	3.30%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2012	Other	Phased Released	-	-	-	-	0.89%	-	3.30%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2013	Other	Phased Released	-	-	-	-	0.89%	-	3.34%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2014	Other	Phased Released	-	-	-	-	0.89%	-	3.45%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2015	Other	Phased Released	1	115.00	0.94	107.94	0.89%	1.25	3.81%	0.01	0.04	1.20	4.12	9,730.00	0.5	5,837.44	-	0	5,837.44	0.90		
2016	Other	Phased Released	-	-	-	-	0.89%	-	5.02%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2017	Other	Phased Released	-	-	-	-	0.90%	-	8.78%	-	-	-	-	9,730.00	0.5	-	16,800.00	-	0	-		
2018	Other	Phased Released	-	-	-	-	0.90%	-	18.44%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2019	Other	Phased Released	-	-	-	-	0.91%	-	34.77%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2020	Other	Phased Released	-	-	-	-	0.92%	-	49.41%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2021	Other	Phased Released	-	-	-	-	0.94%	-	56.73%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2022	Other	Phased Released	-	-	-	-	0.95%	-	59.35%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2023	Other	Phased Released	-	-	-	-	0.97%	-	60.17%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2024	Other	Phased Released	-	-	-	-	0.07%	-	68.27%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		
2025	Other	Phased Released	-	-	-	-	0.00%	-	41.52%	-	-	-	-	9,730.00	0.5	-	-	-	0	-		

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model
Water Capital Total - All Mine Types

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fiscal Year	Gross Liability				Gross Liability - Three Year Delay			
Ending 6/30	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	5,539,660	1,241,714	314,262	7,095,636	0	0	0	0
2027	5,435,495	1,209,454	290,381	6,935,329	0	0	0	0
2028	5,275,465	1,177,067	267,948	6,720,479	0	0	0	0
2029	5,119,019	1,140,706	246,782	6,506,507	2,769,830	620,857	157,131	3,547,818
2030	4,913,820	1,102,802	226,763	6,243,385	5,487,578	1,225,584	302,322	7,015,483
2031	4,713,020	1,063,230	207,789	5,984,039	5,355,480	1,193,260	279,164	6,827,904
2032	4,514,521	1,021,892	189,766	5,726,178	5,197,242	1,158,887	257,365	6,613,493
2033	4,315,980	978,696	172,656	5,467,331	7,473,330	1,673,155	350,154	9,496,638
2034	4,115,896	933,642	156,349	5,205,887	4,713,020	1,063,230	207,789	5,984,039
2035	3,912,556	886,624	140,724	4,939,904	4,514,521	1,021,892	189,766	5,726,178
2036	3,704,729	838,183	125,997	4,668,908	4,315,980	978,696	172,656	5,467,331
2037	3,494,396	788,659	111,982	4,395,037	4,115,896	933,642	156,349	5,205,887
2038	3,281,028	736,864	98,904	4,116,796	3,912,556	886,624	140,724	4,939,904
2039	3,064,790	683,576	87,006	3,835,372	3,704,729	838,183	125,997	4,668,908
2040	2,845,692	630,126	75,808	3,551,625	3,494,396	788,659	111,982	4,395,037
2041	2,658,643	583,441	67,224	3,309,309	3,281,028	736,864	98,904	4,116,796
2042	2,491,967	537,142	59,904	3,089,013	3,064,790	683,576	87,006	3,835,372
2043	2,346,630	496,537	53,643	2,896,809	2,845,692	630,126	75,808	3,551,625
2044	2,218,731	459,007	48,239	2,725,977	2,658,643	583,441	67,224	3,309,309
2045	2,097,473	430,330	43,463	2,571,266	2,491,967	537,142	59,904	3,089,013

Notes: Cols (1) - (3) from Exhibit E-99, Col (12), (21), etc.
Col (4) = (1) + (2) + (3)
Cols (5) - (8) based on (1) - (4) with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model
Surface Mines

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fiscal Year	Gross Liability				Gross Liability - Three Year Delay			
Ending 6/30	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	2,083,630	273,011	125,273	2,481,914	0	0	0	0
2027	2,042,588	261,897	112,823	2,417,308	0	0	0	0
2028	1,980,073	251,042	101,489	2,332,604	0	0	0	0
2029	1,906,415	240,446	91,186	2,238,047	1,041,815	136,505	62,637	1,240,957
2030	1,820,293	230,109	81,830	2,132,232	2,063,109	267,454	119,048	2,449,611
2031	1,736,375	220,030	73,342	2,029,746	2,011,330	256,470	107,156	2,374,956
2032	1,654,818	210,208	65,648	1,930,673	1,943,244	245,744	96,337	2,285,326
2033	1,575,492	200,642	58,676	1,834,810	2,773,501	350,332	127,422	3,251,255
2034	1,498,408	191,332	52,392	1,742,132	1,736,375	220,030	73,342	2,029,746
2035	1,423,569	182,275	46,702	1,652,547	1,654,818	210,208	65,648	1,930,673
2036	1,350,977	173,572	41,670	1,566,219	1,575,492	200,642	58,676	1,834,810
2037	1,280,883	165,118	37,122	1,483,123	1,498,408	191,332	52,392	1,742,132
2038	1,213,171	156,910	33,034	1,403,116	1,423,569	182,275	46,702	1,652,547
2039	1,147,671	148,947	29,441	1,326,059	1,350,977	173,572	41,670	1,566,219
2040	1,084,375	141,224	26,229	1,251,828	1,280,883	165,118	37,122	1,483,123
2041	1,023,726	133,738	23,496	1,180,960	1,213,171	156,910	33,034	1,403,116
2042	965,205	126,486	21,008	1,112,698	1,147,671	148,947	29,441	1,326,059
2043	909,012	119,461	18,773	1,047,246	1,084,375	141,224	26,229	1,251,828
2044	854,865	112,659	16,974	984,498	1,023,726	133,738	23,496	1,180,960
2045	803,206	106,075	15,486	924,767	965,205	126,486	21,008	1,112,698

Notes: Cols (1) - (3) from Exhibit E-99, Col (12), (21), etc.
Col (4) = (1) + (2) + (3)
Cols (5) - (8) based on (1) - (4) with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model
Underground Mines

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fiscal Year	Gross Liability				Gross Liability - Three Year Delay			
Ending 6/30	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	820,405	230,641	80,368	1,131,413	0	0	0	0
2027	803,871	230,412	76,113	1,110,395	0	0	0	0
2028	784,260	229,002	71,939	1,085,200	0	0	0	0
2029	762,837	227,080	67,836	1,057,754	410,202	115,320	40,184	565,707
2030	738,894	224,580	63,794	1,027,268	812,138	230,526	78,240	1,120,904
2031	712,531	221,438	59,799	993,768	794,065	229,707	74,026	1,097,798
2032	683,516	217,596	55,840	956,952	773,548	228,041	69,887	1,071,477
2033	651,613	212,999	51,899	916,512	1,120,313	338,120	97,712	1,556,145
2034	616,577	207,699	47,961	872,237	712,531	221,438	59,799	993,768
2035	578,153	201,656	44,004	823,813	683,516	217,596	55,840	956,952
2036	536,071	195,177	40,038	771,285	651,613	212,999	51,899	916,512
2037	491,978	188,261	36,205	716,444	616,577	207,699	47,961	872,237
2038	446,333	180,423	32,700	659,456	578,153	201,656	44,004	823,813
2039	399,182	172,496	29,524	601,203	536,071	195,177	40,038	771,285
2040	350,036	164,933	26,599	541,568	491,978	188,261	36,205	716,444
2041	312,676	157,980	23,882	494,538	446,333	180,423	32,700	659,456
2042	294,606	151,330	21,322	467,259	399,182	172,496	29,524	601,203
2043	281,138	144,508	18,813	444,459	350,036	164,933	26,599	541,568
2044	266,990	137,697	16,423	421,110	312,676	157,980	23,882	494,538
2045	252,540	130,458	14,176	397,175	294,606	151,330	21,322	467,259

Notes: Cols (1) - (3) from Exhibit E-99, Col (12), (21), etc.
Col (4) = (1) + (2) + (3)
Cols (5) - (8) based on (1) - (4) with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model
Other

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fiscal Year	Gross Liability				Gross Liability - Three Year Delay			
Ending 6/30	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	2,635,626	738,062	108,621	3,482,310	0	0	0	0
2027	2,589,036	717,145	101,445	3,407,626	0	0	0	0
2028	2,511,133	697,023	94,520	3,302,675	0	0	0	0
2029	2,449,766	673,179	87,760	3,210,706	1,317,813	369,031	54,311	1,741,155
2030	2,354,633	648,113	81,140	3,083,885	2,612,331	727,604	105,033	3,444,968
2031	2,264,115	621,763	74,648	2,960,525	2,550,084	707,084	97,982	3,355,150
2032	2,176,187	594,089	68,278	2,838,553	2,480,450	685,101	91,140	3,256,691
2033	2,088,875	565,055	62,080	2,716,010	3,579,516	984,702	125,020	4,689,238
2034	2,000,911	534,611	55,995	2,591,518	2,264,115	621,763	74,648	2,960,525
2035	1,910,834	502,692	50,017	2,463,544	2,176,187	594,089	68,278	2,838,553
2036	1,817,681	469,434	44,289	2,331,404	2,088,875	565,055	62,080	2,716,010
2037	1,721,535	435,280	38,655	2,195,470	2,000,911	534,611	55,995	2,591,518
2038	1,621,523	399,531	33,171	2,054,224	1,910,834	502,692	50,017	2,463,544
2039	1,517,937	362,133	28,040	1,908,110	1,817,681	469,434	44,289	2,331,404
2040	1,411,280	323,969	22,980	1,758,229	1,721,535	435,280	38,655	2,195,470
2041	1,322,242	291,723	19,846	1,633,811	1,621,523	399,531	33,171	2,054,224
2042	1,232,155	259,326	17,574	1,509,056	1,517,937	362,133	28,040	1,908,110
2043	1,156,480	232,568	16,056	1,405,104	1,411,280	323,969	22,980	1,758,229
2044	1,096,876	208,651	14,843	1,320,369	1,322,242	291,723	19,846	1,633,811
2045	1,041,727	193,797	13,801	1,249,324	1,232,155	259,326	17,574	1,509,056

Notes: Cols (1) - (3) from Exhibit E-99, Col (12), (21), etc.
Col (4) = (1) + (2) + (3)
Cols (5) - (8) based on (1) - (4) with a three-year delay

2026												
			Adjustment				Adjustment					
Permit	Mine	Mine	Current	Forfeiture	Factor	Release	Forfeited	Released	Avg Recl			
Issue	Type	Status	Bonded	Rate	Permit	Rate	Acres	Acres	Cost per	Permit	Gross	
Year	Type	Status	Acres		Bond Size				Acres	Status	Cost	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1967	Surface	Active	-	0.047%	0.00	0.003%	-	-	3,015.00	1.00	-	
1968	Surface	Active	-	0.056%	0.00	0.233%	-	-	3,015.00	1.00	-	
1969	Surface	Active	-	0.066%	0.00	0.449%	-	-	3,015.00	1.00	-	
1970	Surface	Active	-	0.076%	0.00	0.651%	-	-	3,015.00	1.00	-	
1971	Surface	Active	-	0.086%	0.00	0.839%	-	-	3,015.00	1.00	-	
1972	Surface	Active	400.00	0.095%	1.25	1.015%	0.48	4.06	3,015.00	1.00	1,439.32	
1973	Surface	Active	-	0.105%	0.00	1.178%	-	-	3,015.00	1.00	-	
1974	Surface	Active	-	0.115%	0.00	1.328%	-	-	3,015.00	1.00	-	
1975	Surface	Active	-	0.125%	0.00	1.467%	-	-	3,015.00	1.00	-	
1976	Surface	Active	-	0.135%	0.00	1.594%	-	-	3,015.00	1.00	-	
1977	Surface	Active	1,107.97	0.144%	0.88	1.709%	1.41	18.94	3,015.00	1.00	4,262.42	
1978	Surface	Active	855.12	0.154%	0.70	1.814%	0.92	15.51	3,015.00	1.00	2,783.69	
1979	Surface	Active	-	0.164%	1.25	1.908%	-	-	3,015.00	1.00	-	
1980	Surface	Active	47.92	0.174%	1.25	1.992%	0.10	0.95	3,015.00	1.00	313.94	
1981	Surface	Active	1,999.01	0.184%	1.00	2.066%	3.67	41.30	3,015.00	1.00	11,067.31	
1982	Surface	Active	7.44	0.193%	1.25	2.130%	0.02	0.16	3,015.00	1.00	54.23	
1983	Surface	Active	1,708.83	0.203%	0.60	2.186%	2.08	37.35	3,015.00	1.00	6,282.03	
1984	Surface	Active	-	0.213%	0.00	2.232%	-	-	3,015.00	1.00	-	
1985	Surface	Active	2,611.31	0.223%	0.85	2.270%	4.95	59.26	3,015.00	1.00	14,910.65	
1986	Surface	Active	2,532.60	0.233%	0.95	2.299%	5.60	58.23	3,015.00	1.00	16,873.08	
1987	Surface	Active	1,371.12	0.242%	0.82	2.321%	2.71	31.82	3,015.00	1.00	8,183.49	
1988	Surface	Active	1,562.99	0.252%	0.96	2.335%	3.80	36.49	3,015.00	1.00	11,460.00	
1989	Surface	Active	2,773.31	0.262%	0.76	2.342%	5.49	64.95	3,015.00	1.00	16,566.68	
1990	Surface	Active	2,703.07	0.272%	0.86	2.342%	6.34	63.31	3,015.00	1.00	19,104.24	
1991	Surface	Active	1,554.45	0.282%	0.98	2.336%	4.27	36.31	3,015.00	1.00	12,866.84	
1992	Surface	Active	3,683.68	0.291%	0.63	2.323%	6.80	85.58	3,015.00	1.00	20,495.39	
1993	Surface	Active	4,151.89	0.301%	0.93	2.305%	11.65	95.70	3,015.00	1.00	35,130.09	
1994	Surface	Active	1,389.47	0.311%	0.70	2.281%	3.02	31.70	3,015.00	1.00	9,119.06	
1995	Surface	Active	8,653.77	0.321%	0.85	2.252%	23.49	194.92	3,015.00	1.00	70,815.37	
1996	Surface	Active	6,686.27	0.331%	0.83	2.219%	18.42	148.36	3,015.00	1.00	55,531.59	
1997	Surface	Active	11,098.71	0.340%	0.89	2.181%	33.59	242.06	3,015.00	1.00	101,264.81	
1998	Surface	Active	11,215.25	0.350%	0.75	2.139%	29.35	239.88	3,015.00	1.00	88,504.23	
1999	Surface	Active	2,008.81	0.360%	0.65	2.093%	4.70	42.05	3,015.00	1.00	14,170.31	
2000	Surface	Active	4,010.07	0.370%	0.78	2.044%	11.49	81.96	3,015.00	1.00	34,645.16	
2001	Surface	Active	7,502.63	0.380%	0.84	1.992%	23.78	149.43	3,015.00	1.00	71,687.86	
2002	Surface	Active	5,919.92	0.389%	0.75	1.937%	17.20	114.66	3,015.00	1.00	51,851.01	
2003	Surface	Active	8,056.67	0.399%	0.85	1.880%	27.33	151.43	3,015.00	1.00	82,410.01	
2004	Surface	Active	13,148.60	0.409%	0.85	1.820%	45.70	239.35	3,015.00	1.00	137,795.40	
2005	Surface	Active	4,062.35	0.419%	1.00	1.759%	17.07	71.47	3,015.00	1.00	51,456.52	
2006	Surface	Active	5,139.07	0.429%	0.84	1.697%	18.39	87.22	3,015.00	1.00	55,441.21	
2007	Surface	Active	5,069.99	0.438%	0.87	1.634%	19.22	82.84	3,015.00	1.00	57,956.46	
2008	Surface	Active	9,470.87	0.448%	0.70	1.570%	29.71	148.70	3,015.00	1.00	89,570.81	
2009	Surface	Active	6,648.17	0.458%	0.85	1.506%	25.79	100.12	3,015.00	1.00	77,762.54	
2010	Surface	Active	4,950.90	0.468%	0.92	1.442%	21.30	71.38	3,015.00	1.00	64,229.80	
2011	Surface	Active	1,769.33	0.478%	0.88	1.378%	7.46	24.38	3,015.00	1.00	22,500.97	
2012	Surface	Active	7,481.98	0.487%	0.89	1.315%	32.48	98.40	3,015.00	1.00	97,935.01	
2013	Surface	Active	8,035.98	0.497%	0.91	1.253%	36.41	100.72	3,015.00	1.00	109,764.87	
2014	Surface	Active	7,227.57	0.507%	0.79	1.193%	28.94	86.22	3,015.00	1.00	87,262.64	
2015	Surface	Active	4,331.94	0.517%	0.83	1.134%	18.56	49.13	3,015.00	1.00	55,956.07	
2016	Surface	Active	3,391.59	0.526%	0.81	1.078%	14.48	36.55	3,015.00	1.00	43,668.11	
2017	Surface	Active	1,137.87	0.536%	0.93	1.024%	5.64	11.65	3,015.00	1.00	17,018.55	
2018	Surface	Active	3,677.40	0.546%	0.84	0.972%	16.82	35.75	3,015.00	1.00	50,707.99	
2019	Surface	Active	4,475.81	0.556%	0.98	0.924%	24.26	41.36	3,015.00	1.00	73,139.13	
2020	Surface	Active	4,151.29	0.566%	0.77	0.879%	18.04	36.51	3,015.00	1.00	54,388.68	
2021	Surface	Active	3,857.52	0.575%	0.75	0.839%	16.65	32.35	3,015.00	1.00	50,198.25	
2022	Surface	Active	5,405.21	0.585%	0.88	0.802%	27.68	43.35	3,015.00	1.00	83,458.69	
2023	Surface	Active	4,057.34	0.299%	0.88	0.418%	10.73	16.96	3,015.00	1.00	32,338.47	
2024	Surface	Active	2,351.57	0.143%	0.92	0.122%	3.08	2.88	3,015.00	1.00	9,286.51	
2025	Surface	Active	1,400.13	0.000%	1.16	0.000%	(0.00)	0.00	3,015.00	1.00	(0.00)	

Permit Issue Year	Mine Type	Mine Status	Current Bonded Acres	2026					Avg Recl Cost per Acre	Adjustment Factor Permit Status	Gross Cost
				Forfeiture Rate	Factor Bond Size	Release Rate	Forfeited Acres	Released Acres			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1967	Surface	Inactive	-	0.084%	0.00	0.002%	-	-	3,015.00	1.00	-
1968	Surface	Inactive	-	0.102%	0.00	0.151%	-	-	3,015.00	1.00	-
1969	Surface	Inactive	-	0.120%	0.00	0.290%	-	-	3,015.00	1.00	-
1970	Surface	Inactive	-	0.138%	0.00	0.421%	-	-	3,015.00	1.00	-
1971	Surface	Inactive	-	0.155%	0.00	0.543%	-	-	3,015.00	1.00	-
1972	Surface	Inactive	-	0.173%	0.00	0.657%	-	-	3,015.00	1.00	-
1973	Surface	Inactive	-	0.191%	0.00	0.762%	-	-	3,015.00	1.00	-
1974	Surface	Inactive	-	0.209%	0.00	0.859%	-	-	3,015.00	1.00	-
1975	Surface	Inactive	-	0.226%	0.00	0.949%	-	-	3,015.00	1.00	-
1976	Surface	Inactive	163.80	0.244%	1.25	1.031%	0.50	1.69	3,015.00	1.00	1,506.65
1977	Surface	Inactive	-	0.262%	0.00	1.106%	-	-	3,015.00	1.00	-
1978	Surface	Inactive	-	0.280%	0.00	1.174%	-	-	3,015.00	1.00	-
1979	Surface	Inactive	-	0.297%	0.00	1.235%	-	-	3,015.00	1.00	-
1980	Surface	Inactive	-	0.315%	0.00	1.289%	-	-	3,015.00	1.00	-
1981	Surface	Inactive	-	0.333%	0.00	1.337%	-	-	3,015.00	1.00	-
1982	Surface	Inactive	-	0.351%	0.00	1.379%	-	-	3,015.00	1.00	-
1983	Surface	Inactive	-	0.368%	0.00	1.414%	-	-	3,015.00	1.00	-
1984	Surface	Inactive	-	0.386%	0.00	1.444%	-	-	3,015.00	1.00	-
1985	Surface	Inactive	-	0.404%	0.00	1.469%	-	-	3,015.00	1.00	-
1986	Surface	Inactive	-	0.422%	0.00	1.488%	-	-	3,015.00	1.00	-
1987	Surface	Inactive	415.61	0.439%	0.93	1.502%	1.69	6.24	3,015.00	1.00	5,092.42
1988	Surface	Inactive	1,304.38	0.457%	0.60	1.511%	3.58	19.71	3,015.00	1.00	10,785.89
1989	Surface	Inactive	-	0.475%	1.25	1.515%	-	-	3,015.00	1.00	-
1990	Surface	Inactive	-	0.493%	0.00	1.515%	-	-	3,015.00	1.00	-
1991	Surface	Inactive	-	0.510%	0.00	1.511%	-	-	3,015.00	1.00	-
1992	Surface	Inactive	-	0.528%	0.00	1.503%	-	-	3,015.00	1.00	-
1993	Surface	Inactive	-	0.546%	0.00	1.491%	-	-	3,015.00	1.00	-
1994	Surface	Inactive	-	0.564%	0.00	1.476%	-	-	3,015.00	1.00	-
1995	Surface	Inactive	605.35	0.581%	0.60	1.457%	2.11	8.82	3,015.00	1.00	6,366.62
1996	Surface	Inactive	-	0.599%	0.00	1.436%	-	-	3,015.00	1.00	-
1997	Surface	Inactive	-	0.617%	0.00	1.411%	-	-	3,015.00	1.00	-
1998	Surface	Inactive	846.89	0.635%	0.60	1.384%	3.22	11.72	3,015.00	1.00	9,723.00
1999	Surface	Inactive	1,728.99	0.652%	1.25	1.354%	14.10	23.42	3,015.00	1.00	42,511.63
2000	Surface	Inactive	-	0.670%	0.00	1.323%	-	-	3,015.00	1.00	-
2001	Surface	Inactive	-	0.688%	0.00	1.289%	-	-	3,015.00	1.00	-
2002	Surface	Inactive	1,146.85	0.706%	0.67	1.253%	5.40	14.37	3,015.00	1.00	16,266.96
2003	Surface	Inactive	1,408.90	0.723%	0.60	1.216%	6.12	17.14	3,015.00	1.00	18,438.05
2004	Surface	Inactive	1,577.54	0.741%	0.60	1.178%	7.02	18.58	3,015.00	1.00	21,151.73
2005	Surface	Inactive	-	0.759%	0.00	1.138%	-	-	3,015.00	1.00	-
2006	Surface	Inactive	244.59	0.777%	0.80	1.098%	1.52	2.69	3,015.00	1.00	4,582.14
2007	Surface	Inactive	1,356.24	0.794%	0.70	1.057%	7.54	14.34	3,015.00	1.00	22,740.04
2008	Surface	Inactive	118.60	0.812%	1.25	1.016%	1.20	1.20	3,015.00	1.00	3,630.37
2009	Surface	Inactive	42.43	0.830%	1.25	0.974%	0.44	0.41	3,015.00	1.00	1,327.19
2010	Surface	Inactive	679.59	0.848%	0.93	0.933%	5.33	6.34	3,015.00	1.00	16,066.87
2011	Surface	Inactive	1,679.64	0.865%	0.68	0.892%	9.89	14.98	3,015.00	1.00	29,803.75
2012	Surface	Inactive	-	0.883%	0.00	0.851%	-	-	3,015.00	1.00	-
2013	Surface	Inactive	-	0.901%	0.00	0.811%	-	-	3,015.00	1.00	-
2014	Surface	Inactive	262.00	0.919%	1.25	0.772%	3.01	2.02	3,015.00	1.00	9,071.90
2015	Surface	Inactive	624.70	0.937%	0.80	0.734%	4.68	4.58	3,015.00	1.00	14,111.15
2016	Surface	Inactive	776.75	0.954%	0.70	0.697%	5.19	5.42	3,015.00	1.00	15,643.65
2017	Surface	Inactive	154.63	0.972%	1.25	0.662%	1.88	1.02	3,015.00	1.00	5,664.61
2018	Surface	Inactive	351.08	0.990%	0.60	0.629%	2.08	2.21	3,015.00	1.00	6,286.17
2019	Surface	Inactive	452.10	1.008%	0.80	0.598%	3.64	2.70	3,015.00	1.00	10,986.92
2020	Surface	Inactive	-	1.025%	0.00	0.569%	-	-	3,015.00	1.00	-
2021	Surface	Inactive	-	1.043%	0.00	0.543%	-	-	3,015.00	1.00	-
2022	Surface	Inactive	31.34	1.061%	1.25	0.519%	0.42	0.16	3,015.00	1.00	1,252.96
2023	Surface	Inactive	-	0.542%	0.00	0.270%	-	-	3,015.00	1.00	-
2024	Surface	Inactive	-	0.259%	0.00	0.079%	-	-	3,015.00	1.00	-
2025	Surface	Inactive	-	0.000%	0.00	0.000%	-	-	3,015.00	1.00	-

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model

			2026									
			Adjustment								Adjustment	
Permit Issue	Mine Type	Mine Status	Current Bonded Acres	Forfeiture Rate	Factor Permit Bond Size	Release Rate	Forfeited Acres	Released Acres	Avg Recl Cost per Acre	Factor Permit Status	Gross Cost	
Year (1)	Type (2)	Status (3)	Acres (4)	Rate (5)	Bond Size (6)	Rate (7)	Acres (8)	Acres (9)	Acres (10)	Status (11)	Cost (12)	
1967	Surface	Phased Released	-	0.087%	0.00	0.009%	-	-	3,015.00	0.50	-	
1968	Surface	Phased Released	-	0.106%	0.00	0.631%	-	-	3,015.00	0.50	-	
1969	Surface	Phased Released	-	0.124%	0.00	1.214%	-	-	3,015.00	0.50	-	
1970	Surface	Phased Released	-	0.142%	0.00	1.761%	-	-	3,015.00	0.50	-	
1971	Surface	Phased Released	-	0.161%	0.00	2.271%	-	-	3,015.00	0.50	-	
1972	Surface	Phased Released	-	0.179%	0.00	2.746%	-	-	3,015.00	0.50	-	
1973	Surface	Phased Released	-	0.197%	0.00	3.187%	-	-	3,015.00	0.50	-	
1974	Surface	Phased Released	116.05	0.216%	1.25	3.594%	0.31	4.17	3,015.00	0.50	471.80	
1975	Surface	Phased Released	7.80	0.234%	1.25	3.969%	0.02	0.31	3,015.00	0.50	34.41	
1976	Surface	Phased Released	476.17	0.252%	1.25	4.313%	1.50	20.54	3,015.00	0.50	2,265.44	
1977	Surface	Phased Released	48.00	0.271%	1.25	4.626%	0.16	2.22	3,015.00	0.50	244.98	
1978	Surface	Phased Released	158.81	0.289%	1.25	4.909%	0.57	7.80	3,015.00	0.50	865.48	
1979	Surface	Phased Released	538.00	0.308%	1.25	5.164%	2.07	27.78	3,015.00	0.50	3,118.15	
1980	Surface	Phased Released	253.42	0.326%	1.25	5.391%	1.03	13.66	3,015.00	0.50	1,556.48	
1981	Surface	Phased Released	1,267.32	0.344%	0.94	5.591%	4.10	70.85	3,015.00	0.50	6,183.19	
1982	Surface	Phased Released	-	0.363%	0.00	5.765%	-	-	3,015.00	0.50	-	
1983	Surface	Phased Released	225.01	0.381%	1.25	5.914%	1.07	13.31	3,015.00	0.50	1,615.60	
1984	Surface	Phased Released	2,302.75	0.399%	0.82	6.039%	7.51	139.06	3,015.00	0.50	11,322.89	
1985	Surface	Phased Released	1,270.29	0.418%	1.03	6.141%	5.44	78.01	3,015.00	0.50	8,200.06	
1986	Surface	Phased Released	1,041.15	0.436%	1.03	6.221%	4.65	64.77	3,015.00	0.50	7,016.37	
1987	Surface	Phased Released	760.81	0.454%	1.14	6.280%	3.93	47.78	3,015.00	0.50	5,929.49	
1988	Surface	Phased Released	480.30	0.473%	1.25	6.318%	2.84	30.34	3,015.00	0.50	4,279.73	
1989	Surface	Phased Released	1,098.64	0.491%	1.16	6.337%	6.26	69.62	3,015.00	0.50	9,437.49	
1990	Surface	Phased Released	764.18	0.510%	1.25	6.337%	4.87	48.43	3,015.00	0.50	7,338.21	
1991	Surface	Phased Released	1,006.45	0.528%	1.07	6.320%	5.69	63.61	3,015.00	0.50	8,571.12	
1992	Surface	Phased Released	-	0.546%	0.00	6.286%	-	-	3,015.00	0.50	-	
1993	Surface	Phased Released	669.04	0.565%	1.25	6.237%	4.72	41.73	3,015.00	0.50	7,119.27	
1994	Surface	Phased Released	345.90	0.583%	1.07	6.173%	2.16	21.35	3,015.00	0.50	3,253.18	
1995	Surface	Phased Released	484.30	0.601%	1.03	6.095%	3.01	29.52	3,015.00	0.50	4,537.32	
1996	Surface	Phased Released	583.38	0.620%	1.10	6.004%	3.98	35.03	3,015.00	0.50	5,995.88	
1997	Surface	Phased Released	169.48	0.638%	0.88	5.901%	0.96	10.00	3,015.00	0.50	1,440.24	
1998	Surface	Phased Released	336.07	0.657%	1.03	5.788%	2.26	19.45	3,015.00	0.50	3,409.33	
1999	Surface	Phased Released	14.87	0.675%	1.25	5.664%	0.13	0.84	3,015.00	0.50	189.11	
2000	Surface	Phased Released	19.70	0.693%	1.25	5.531%	0.17	1.09	3,015.00	0.50	257.36	
2001	Surface	Phased Released	491.55	0.712%	1.10	5.389%	3.85	26.49	3,015.00	0.50	5,800.66	
2002	Surface	Phased Released	48.20	0.730%	1.25	5.241%	0.44	2.53	3,015.00	0.50	663.04	
2003	Surface	Phased Released	-	0.748%	1.25	5.086%	-	-	3,015.00	0.50	-	
2004	Surface	Phased Released	470.13	0.767%	0.93	4.926%	3.33	23.16	3,015.00	0.50	5,026.52	
2005	Surface	Phased Released	51.50	0.785%	1.25	4.761%	0.51	2.45	3,015.00	0.50	761.91	
2006	Surface	Phased Released	60.78	0.803%	1.25	4.592%	0.61	2.79	3,015.00	0.50	920.25	
2007	Surface	Phased Released	263.63	0.822%	1.03	4.421%	2.22	11.66	3,015.00	0.50	3,347.87	
2008	Surface	Phased Released	-	0.840%	0.00	4.248%	-	-	3,015.00	0.50	-	
2009	Surface	Phased Released	137.75	0.859%	0.80	4.075%	0.95	5.61	3,015.00	0.50	1,426.34	
2010	Surface	Phased Released	-	0.877%	0.00	3.901%	-	-	3,015.00	0.50	-	
2011	Surface	Phased Released	158.51	0.895%	1.25	3.729%	1.77	5.91	3,015.00	0.50	2,674.27	
2012	Surface	Phased Released	-	0.914%	0.00	3.559%	-	-	3,015.00	0.50	-	
2013	Surface	Phased Released	-	0.932%	0.00	3.391%	-	-	3,015.00	0.50	-	
2014	Surface	Phased Released	-	0.950%	0.00	3.228%	-	-	3,015.00	0.50	-	
2015	Surface	Phased Released	-	0.969%	0.00	3.069%	-	-	3,015.00	0.50	-	
2016	Surface	Phased Released	-	0.987%	0.00	2.916%	-	-	3,015.00	0.50	-	
2017	Surface	Phased Released	-	1.006%	0.00	2.770%	-	-	3,015.00	0.50	-	
2018	Surface	Phased Released	-	1.024%	0.00	2.631%	-	-	3,015.00	0.50	-	
2019	Surface	Phased Released	-	1.042%	0.00	2.501%	-	-	3,015.00	0.50	-	
2020	Surface	Phased Released	-	1.061%	0.00	2.380%	-	-	3,015.00	0.50	-	
2021	Surface	Phased Released	-	1.079%	0.00	2.269%	-	-	3,015.00	0.50	-	
2022	Surface	Phased Released	-	1.097%	0.00	2.170%	-	-	3,015.00	0.50	-	
2023	Surface	Phased Released	-	0.561%	0.00	1.131%	-	-	3,015.00	0.50	-	
2024	Surface	Phased Released	-	0.268%	0.00	0.331%	-	-	3,015.00	0.50	-	
2025	Surface	Phased Released	-	0.000%	0.00	0.000%	-	-	3,015.00	0.50	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model

Permit Issue Year	Mine Type	Mine Status	Current Bonded Acres	2026					Avg Recl Cost per Acre	Adjustment Factor Permit Status	Gross Cost
				Forfeiture Rate	Factor Permit Bond Size	Release Rate	Forfeited Acres	Released Acres			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1967	Underground	Active	-	0.000%	0.00	0.001%	-	-	5,320.00	1.00	-
1968	Underground	Active	-	0.000%	0.00	0.018%	-	-	5,320.00	1.00	-
1969	Underground	Active	-	0.052%	0.00	0.043%	-	-	5,320.00	1.00	-
1970	Underground	Active	-	0.150%	0.00	0.077%	-	-	5,320.00	1.00	-
1971	Underground	Active	-	0.241%	0.00	0.119%	-	-	5,320.00	1.00	-
1972	Underground	Active	-	0.323%	0.00	0.169%	-	-	5,320.00	1.00	-
1973	Underground	Active	-	0.398%	0.00	0.225%	-	-	5,320.00	1.00	-
1974	Underground	Active	-	0.466%	0.00	0.289%	-	-	5,320.00	1.00	-
1975	Underground	Active	-	0.526%	0.00	0.359%	-	-	5,320.00	1.00	-
1976	Underground	Active	-	0.580%	0.00	0.434%	-	-	5,320.00	1.00	-
1977	Underground	Active	-	0.628%	0.00	0.514%	-	-	5,320.00	1.00	-
1978	Underground	Active	-	0.669%	0.00	0.599%	-	-	5,320.00	1.00	-
1979	Underground	Active	703.10	0.704%	1.03	0.688%	5.09	4.84	5,320.00	1.00	27,089.63
1980	Underground	Active	202.41	0.734%	1.03	0.781%	1.52	1.58	5,320.00	1.00	8,099.17
1981	Underground	Active	709.57	0.758%	1.17	0.876%	6.29	6.22	5,320.00	1.00	33,446.73
1982	Underground	Active	33.93	0.777%	1.25	0.975%	0.33	0.33	5,320.00	1.00	1,753.85
1983	Underground	Active	7,263.70	0.792%	0.88	1.075%	50.56	78.08	5,320.00	1.00	268,998.77
1984	Underground	Active	2,621.92	0.801%	0.95	1.177%	19.96	30.86	5,320.00	1.00	106,202.50
1985	Underground	Active	49.00	0.807%	1.25	1.280%	0.49	0.63	5,320.00	1.00	2,629.47
1986	Underground	Active	236.31	0.808%	1.16	1.383%	2.22	3.27	5,320.00	1.00	11,789.53
1987	Underground	Active	203.45	0.806%	1.16	1.487%	1.90	3.02	5,320.00	1.00	10,121.53
1988	Underground	Active	157.83	0.800%	1.14	1.590%	1.44	2.51	5,320.00	1.00	7,644.61
1989	Underground	Active	317.75	0.791%	1.17	1.692%	2.94	5.38	5,320.00	1.00	15,628.30
1990	Underground	Active	131.40	0.779%	1.14	1.793%	1.17	2.36	5,320.00	1.00	6,198.27
1991	Underground	Active	36.67	0.765%	1.25	1.891%	0.35	0.69	5,320.00	1.00	1,865.25
1992	Underground	Active	960.01	0.748%	1.01	1.987%	7.22	19.08	5,320.00	1.00	38,409.37
1993	Underground	Active	1,009.71	0.729%	1.05	2.080%	7.70	21.01	5,320.00	1.00	40,953.79
1994	Underground	Active	604.69	0.708%	1.00	2.170%	4.28	13.12	5,320.00	1.00	22,768.82
1995	Underground	Active	318.33	0.685%	1.00	2.255%	2.18	7.18	5,320.00	1.00	11,603.82
1996	Underground	Active	242.07	0.661%	1.12	2.336%	1.78	5.66	5,320.00	1.00	9,495.45
1997	Underground	Active	247.41	0.636%	1.17	2.412%	1.84	5.97	5,320.00	1.00	9,784.05
1998	Underground	Active	572.18	0.611%	1.01	2.483%	3.52	14.21	5,320.00	1.00	18,741.12
1999	Underground	Active	327.70	0.584%	1.19	2.547%	2.28	8.35	5,320.00	1.00	12,131.92
2000	Underground	Active	369.33	0.558%	1.18	2.605%	2.43	9.62	5,320.00	1.00	12,942.12
2001	Underground	Active	112.63	0.531%	1.10	2.656%	0.66	2.99	5,320.00	1.00	3,502.42
2002	Underground	Active	222.94	0.505%	1.19	2.699%	1.34	6.02	5,320.00	1.00	7,105.02
2003	Underground	Active	991.90	0.480%	0.95	2.734%	4.52	27.12	5,320.00	1.00	24,044.47
2004	Underground	Active	411.39	0.455%	1.07	2.761%	2.00	11.36	5,320.00	1.00	10,619.37
2005	Underground	Active	364.13	0.431%	1.10	2.778%	1.73	10.12	5,320.00	1.00	9,189.49
2006	Underground	Active	290.00	0.409%	0.99	2.786%	1.18	8.08	5,320.00	1.00	6,264.93
2007	Underground	Active	591.88	0.388%	1.08	2.784%	2.47	16.48	5,320.00	1.00	13,146.98
2008	Underground	Active	98.24	0.370%	1.25	2.771%	0.45	2.72	5,320.00	1.00	2,415.32
2009	Underground	Active	370.51	0.353%	1.08	2.747%	1.42	10.18	5,320.00	1.00	7,528.19
2010	Underground	Active	258.10	0.339%	1.08	2.711%	0.94	7.00	5,320.00	1.00	5,019.81
2011	Underground	Active	204.25	0.328%	1.19	2.664%	0.80	5.44	5,320.00	1.00	4,253.47
2012	Underground	Active	172.75	0.320%	1.18	2.603%	0.65	4.50	5,320.00	1.00	3,451.50
2013	Underground	Active	505.93	0.315%	1.11	2.530%	1.77	12.80	5,320.00	1.00	9,412.43
2014	Underground	Active	727.51	0.313%	1.12	2.442%	2.55	17.77	5,320.00	1.00	13,591.46
2015	Underground	Active	183.96	0.315%	1.19	2.341%	0.69	4.31	5,320.00	1.00	3,685.83
2016	Underground	Active	197.47	0.322%	0.98	2.225%	0.62	4.39	5,320.00	1.00	3,314.30
2017	Underground	Active	161.03	0.333%	1.25	2.094%	0.67	3.37	5,320.00	1.00	3,562.84
2018	Underground	Active	29.25	0.348%	1.25	1.947%	0.13	0.57	5,320.00	1.00	677.15
2019	Underground	Active	149.13	0.368%	1.14	1.784%	0.62	2.66	5,320.00	1.00	3,324.99
2020	Underground	Active	141.50	0.394%	1.19	1.604%	0.66	2.27	5,320.00	1.00	3,516.00
2021	Underground	Active	81.77	0.425%	1.25	1.407%	0.43	1.15	5,320.00	1.00	2,310.08
2022	Underground	Active	43.22	0.461%	1.25	1.192%	0.25	0.52	5,320.00	1.00	1,326.26
2023	Underground	Active	65.04	0.195%	1.25	0.959%	0.16	0.62	5,320.00	1.00	844.62
2024	Underground	Active	-	0.089%	0.00	0.708%	-	-	5,320.00	1.00	-
2025	Underground	Active	16.05	0.000%	1.25	0.437%	(0.00)	0.07	5,320.00	1.00	(0.00)

			2026									
Permit Issue	Mine Type	Mine Status	Adjustment					Adjustment				
			Current Bonded Acres	Forfeiture Rate	Factor Permit Bond Size	Release Rate	Forfeited Acres	Released Acres	Avg Recl Cost per Acre	Factor Permit Status	Gross Cost	
Year (1)	Type (2)	Status (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1967	Underground	Inactive	-	0.000%	0.00	0.001%	-	-	5,320.00	1.00	-	
1968	Underground	Inactive	-	0.000%	0.00	0.011%	-	-	5,320.00	1.00	-	
1969	Underground	Inactive	-	0.094%	0.00	0.028%	-	-	5,320.00	1.00	-	
1970	Underground	Inactive	-	0.273%	0.00	0.050%	-	-	5,320.00	1.00	-	
1971	Underground	Inactive	-	0.436%	0.00	0.077%	-	-	5,320.00	1.00	-	
1972	Underground	Inactive	-	0.586%	0.00	0.109%	-	-	5,320.00	1.00	-	
1973	Underground	Inactive	-	0.721%	0.00	0.146%	-	-	5,320.00	1.00	-	
1974	Underground	Inactive	-	0.844%	0.00	0.187%	-	-	5,320.00	1.00	-	
1975	Underground	Inactive	-	0.954%	0.00	0.232%	-	-	5,320.00	1.00	-	
1976	Underground	Inactive	26.50	1.051%	0.80	0.281%	0.22	0.07	5,320.00	1.00	1,185.84	
1977	Underground	Inactive	-	1.137%	0.00	0.333%	-	-	5,320.00	1.00	-	
1978	Underground	Inactive	117.89	1.212%	0.80	0.388%	1.14	0.46	5,320.00	1.00	6,081.90	
1979	Underground	Inactive	-	1.276%	0.00	0.445%	-	-	5,320.00	1.00	-	
1980	Underground	Inactive	-	1.330%	0.00	0.505%	-	-	5,320.00	1.00	-	
1981	Underground	Inactive	210.92	1.374%	0.91	0.567%	2.64	1.20	5,320.00	1.00	14,069.07	
1982	Underground	Inactive	125.56	1.409%	0.70	0.631%	1.24	0.79	5,320.00	1.00	6,587.58	
1983	Underground	Inactive	260.82	1.435%	0.95	0.696%	3.56	1.81	5,320.00	1.00	18,914.41	
1984	Underground	Inactive	-	1.453%	0.00	0.762%	-	-	5,320.00	1.00	-	
1985	Underground	Inactive	220.21	1.463%	0.60	0.828%	1.93	1.82	5,320.00	1.00	10,280.85	
1986	Underground	Inactive	43.54	1.465%	0.80	0.895%	0.51	0.39	5,320.00	1.00	2,715.27	
1987	Underground	Inactive	40.89	1.461%	0.80	0.962%	0.48	0.39	5,320.00	1.00	2,542.82	
1988	Underground	Inactive	55.35	1.451%	1.25	1.029%	1.00	0.57	5,320.00	1.00	5,339.74	
1989	Underground	Inactive	-	1.434%	0.00	1.095%	-	-	5,320.00	1.00	-	
1990	Underground	Inactive	25.64	1.413%	1.10	1.160%	0.40	0.30	5,320.00	1.00	2,119.89	
1991	Underground	Inactive	362.42	1.386%	0.82	1.224%	4.10	4.43	5,320.00	1.00	21,829.83	
1992	Underground	Inactive	119.31	1.356%	1.03	1.286%	1.66	1.53	5,320.00	1.00	8,819.30	
1993	Underground	Inactive	20.36	1.321%	0.80	1.346%	0.22	0.27	5,320.00	1.00	1,144.58	
1994	Underground	Inactive	100.78	1.283%	0.80	1.404%	1.03	1.41	5,320.00	1.00	5,502.37	
1995	Underground	Inactive	91.94	1.242%	1.03	1.459%	1.17	1.34	5,320.00	1.00	6,226.30	
1996	Underground	Inactive	51.05	1.199%	1.25	1.512%	0.76	0.77	5,320.00	1.00	4,068.96	
1997	Underground	Inactive	316.01	1.153%	0.94	1.561%	3.41	4.93	5,320.00	1.00	18,143.17	
1998	Underground	Inactive	72.14	1.107%	0.60	1.607%	0.48	1.16	5,320.00	1.00	2,548.38	
1999	Underground	Inactive	348.05	1.059%	1.03	1.648%	3.80	5.74	5,320.00	1.00	20,199.07	
2000	Underground	Inactive	173.12	1.011%	0.88	1.686%	1.55	2.92	5,320.00	1.00	8,225.75	
2001	Underground	Inactive	93.58	0.963%	1.03	1.719%	0.93	1.61	5,320.00	1.00	4,954.76	
2002	Underground	Inactive	47.21	0.916%	0.60	1.746%	0.26	0.82	5,320.00	1.00	1,379.94	
2003	Underground	Inactive	222.92	0.869%	1.03	1.769%	1.99	3.94	5,320.00	1.00	10,567.56	
2004	Underground	Inactive	249.94	0.824%	0.80	1.786%	1.65	4.46	5,320.00	1.00	8,770.41	
2005	Underground	Inactive	112.09	0.782%	1.10	1.798%	0.96	2.01	5,320.00	1.00	5,127.19	
2006	Underground	Inactive	182.12	0.741%	1.03	1.803%	1.38	3.28	5,320.00	1.00	7,361.92	
2007	Underground	Inactive	107.80	0.704%	0.95	1.801%	0.72	1.94	5,320.00	1.00	3,835.34	
2008	Underground	Inactive	88.05	0.670%	1.16	1.793%	0.68	1.58	5,320.00	1.00	3,641.18	
2009	Underground	Inactive	85.24	0.640%	1.16	1.777%	0.63	1.52	5,320.00	1.00	3,367.78	
2010	Underground	Inactive	120.44	0.615%	1.25	1.754%	0.93	2.11	5,320.00	1.00	4,924.12	
2011	Underground	Inactive	126.97	0.594%	1.18	1.723%	0.89	2.19	5,320.00	1.00	4,717.21	
2012	Underground	Inactive	32.84	0.579%	0.80	1.684%	0.15	0.55	5,320.00	1.00	809.70	
2013	Underground	Inactive	53.70	0.570%	1.03	1.637%	0.32	0.88	5,320.00	1.00	1,683.37	
2014	Underground	Inactive	-	0.568%	0.00	1.580%	-	-	5,320.00	1.00	-	
2015	Underground	Inactive	-	0.572%	0.00	1.515%	-	-	5,320.00	1.00	-	
2016	Underground	Inactive	13.42	0.583%	1.25	1.440%	0.10	0.19	5,320.00	1.00	520.72	
2017	Underground	Inactive	-	0.603%	0.00	1.355%	-	-	5,320.00	1.00	-	
2018	Underground	Inactive	46.96	0.631%	1.25	1.260%	0.37	0.59	5,320.00	1.00	1,970.44	
2019	Underground	Inactive	-	0.668%	0.00	1.154%	-	-	5,320.00	1.00	-	
2020	Underground	Inactive	-	0.714%	0.00	1.038%	-	-	5,320.00	1.00	-	
2021	Underground	Inactive	-	0.770%	0.00	0.910%	-	-	5,320.00	1.00	-	
2022	Underground	Inactive	-	0.836%	0.00	0.771%	-	-	5,320.00	1.00	-	
2023	Underground	Inactive	19.71	0.354%	1.25	0.621%	0.09	0.12	5,320.00	1.00	463.92	
2024	Underground	Inactive	-	0.162%	0.00	0.458%	-	-	5,320.00	1.00	-	
2025	Underground	Inactive	-	0.000%	0.00	0.283%	-	-	5,320.00	1.00	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model

Permit Issue Year	Mine Type	Mine Status	Current Bonded Acres	2026						Adjustment		Gross Cost
				Forfeiture Rate	Factor Permit Bond Size	Release Rate	Forfeited Acres	Released Acres	Avg Recl Cost per Acre	Factor Permit Status		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1967	Underground	Phased Released	-	0.000%	0.00	0.004%	-	-	5,320.00	0.50	-	
1968	Underground	Phased Released	-	0.000%	0.00	0.047%	-	-	5,320.00	0.50	-	
1969	Underground	Phased Released	-	0.098%	0.00	0.116%	-	-	5,320.00	0.50	-	
1970	Underground	Phased Released	-	0.282%	0.00	0.208%	-	-	5,320.00	0.50	-	
1971	Underground	Phased Released	-	0.451%	0.00	0.321%	-	-	5,320.00	0.50	-	
1972	Underground	Phased Released	-	0.606%	0.00	0.456%	-	-	5,320.00	0.50	-	
1973	Underground	Phased Released	-	0.746%	0.00	0.610%	-	-	5,320.00	0.50	-	
1974	Underground	Phased Released	-	0.873%	0.00	0.782%	-	-	5,320.00	0.50	-	
1975	Underground	Phased Released	-	0.987%	0.00	0.970%	-	-	5,320.00	0.50	-	
1976	Underground	Phased Released	-	1.088%	0.00	1.174%	-	-	5,320.00	0.50	-	
1977	Underground	Phased Released	-	1.177%	0.00	1.391%	-	-	5,320.00	0.50	-	
1978	Underground	Phased Released	10.58	1.254%	1.25	1.621%	0.17	0.17	5,320.00	0.50	441.12	
1979	Underground	Phased Released	59.68	1.320%	1.25	1.862%	0.98	1.11	5,320.00	0.50	2,619.76	
1980	Underground	Phased Released	87.19	1.376%	1.25	2.112%	1.50	1.84	5,320.00	0.50	3,988.71	
1981	Underground	Phased Released	66.33	1.421%	1.18	2.371%	1.11	1.57	5,320.00	0.50	2,946.84	
1982	Underground	Phased Released	59.82	1.457%	1.25	2.637%	1.09	1.58	5,320.00	0.50	2,898.85	
1983	Underground	Phased Released	51.27	1.484%	1.25	2.909%	0.95	1.49	5,320.00	0.50	2,530.43	
1984	Underground	Phased Released	43.00	1.503%	1.25	3.185%	0.81	1.37	5,320.00	0.50	2,148.53	
1985	Underground	Phased Released	7.93	1.513%	1.25	3.463%	0.15	0.27	5,320.00	0.50	398.95	
1986	Underground	Phased Released	89.96	1.516%	1.25	3.743%	1.70	3.37	5,320.00	0.50	4,534.06	
1987	Underground	Phased Released	23.37	1.512%	1.25	4.023%	0.44	0.94	5,320.00	0.50	1,174.55	
1988	Underground	Phased Released	215.56	1.501%	1.25	4.302%	4.04	9.27	5,320.00	0.50	10,756.32	
1989	Underground	Phased Released	80.68	1.484%	1.25	4.578%	1.50	3.69	5,320.00	0.50	3,980.73	
1990	Underground	Phased Released	18.31	1.462%	1.25	4.850%	0.33	0.89	5,320.00	0.50	889.80	
1991	Underground	Phased Released	23.22	1.434%	1.25	5.117%	0.42	1.19	5,320.00	0.50	1,107.28	
1992	Underground	Phased Released	62.39	1.402%	1.25	5.377%	1.09	3.35	5,320.00	0.50	2,909.05	
1993	Underground	Phased Released	68.38	1.366%	1.25	5.629%	1.17	3.85	5,320.00	0.50	3,106.79	
1994	Underground	Phased Released	18.79	1.327%	1.25	5.871%	0.31	1.10	5,320.00	0.50	829.12	
1995	Underground	Phased Released	85.60	1.285%	1.14	6.103%	1.25	5.22	5,320.00	0.50	3,327.51	
1996	Underground	Phased Released	133.37	1.240%	1.25	6.322%	2.07	8.43	5,320.00	0.50	5,498.44	
1997	Underground	Phased Released	119.99	1.193%	1.25	6.528%	1.79	7.83	5,320.00	0.50	4,760.12	
1998	Underground	Phased Released	64.00	1.145%	1.25	6.718%	0.92	4.30	5,320.00	0.50	2,436.24	
1999	Underground	Phased Released	269.40	1.096%	1.10	6.893%	3.25	18.57	5,320.00	0.50	8,636.47	
2000	Underground	Phased Released	59.65	1.046%	1.25	7.049%	0.78	4.20	5,320.00	0.50	2,074.52	
2001	Underground	Phased Released	36.60	0.996%	1.25	7.186%	0.46	2.63	5,320.00	0.50	1,212.51	
2002	Underground	Phased Released	48.55	0.947%	1.25	7.303%	0.57	3.55	5,320.00	0.50	1,529.21	
2003	Underground	Phased Released	12.65	0.899%	1.25	7.398%	0.14	0.94	5,320.00	0.50	378.26	
2004	Underground	Phased Released	-	0.853%	0.00	7.470%	-	-	5,320.00	0.50	-	
2005	Underground	Phased Released	21.73	0.809%	1.25	7.517%	0.22	1.63	5,320.00	0.50	584.23	
2006	Underground	Phased Released	-	0.767%	0.00	7.539%	-	-	5,320.00	0.50	-	
2007	Underground	Phased Released	-	0.728%	0.00	7.533%	-	-	5,320.00	0.50	-	
2008	Underground	Phased Released	63.64	0.693%	1.25	7.498%	0.55	4.77	5,320.00	0.50	1,466.86	
2009	Underground	Phased Released	54.60	0.662%	1.25	7.433%	0.45	4.06	5,320.00	0.50	1,202.37	
2010	Underground	Phased Released	-	0.636%	0.00	7.336%	-	-	5,320.00	0.50	-	
2011	Underground	Phased Released	-	0.615%	0.00	7.207%	-	-	5,320.00	0.50	-	
2012	Underground	Phased Released	-	0.599%	0.00	7.044%	-	-	5,320.00	0.50	-	
2013	Underground	Phased Released	-	0.590%	0.00	6.845%	-	-	5,320.00	0.50	-	
2014	Underground	Phased Released	-	0.587%	0.00	6.609%	-	-	5,320.00	0.50	-	
2015	Underground	Phased Released	-	0.592%	0.00	6.334%	-	-	5,320.00	0.50	-	
2016	Underground	Phased Released	-	0.604%	0.00	6.020%	-	-	5,320.00	0.50	-	
2017	Underground	Phased Released	-	0.624%	0.00	5.665%	-	-	5,320.00	0.50	-	
2018	Underground	Phased Released	-	0.653%	0.00	5.268%	-	-	5,320.00	0.50	-	
2019	Underground	Phased Released	-	0.691%	0.00	4.826%	-	-	5,320.00	0.50	-	
2020	Underground	Phased Released	-	0.739%	0.00	4.340%	-	-	5,320.00	0.50	-	
2021	Underground	Phased Released	-	0.797%	0.00	3.807%	-	-	5,320.00	0.50	-	
2022	Underground	Phased Released	-	0.865%	0.00	3.226%	-	-	5,320.00	0.50	-	
2023	Underground	Phased Released	-	0.366%	0.00	2.595%	-	-	5,320.00	0.50	-	
2024	Underground	Phased Released	-	0.168%	0.00	1.914%	-	-	5,320.00	0.50	-	
2025	Underground	Phased Released	-	0.000%	0.00	1.181%	-	-	5,320.00	0.50	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model

			2026									
Permit Issue Year	Mine Type	Mine Status	Adjustment							Avg Recl Cost per Acre	Adjustment	
			Current Bonded Acres	Forfeiture Rate	Factor Permit Bond Size	Release Rate	Forfeited Acres	Released Acres	Factor Permit Status		Gross Cost	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
1967	Other	Active	-	0.038%	0.00	1.216%	-	-	13,310.00	1.00	-	
1968	Other	Active	-	0.085%	0.00	1.216%	-	-	13,310.00	1.00	-	
1969	Other	Active	-	0.129%	0.00	1.216%	-	-	13,310.00	1.00	-	
1970	Other	Active	-	0.171%	0.00	1.216%	-	-	13,310.00	1.00	-	
1971	Other	Active	-	0.210%	0.00	1.216%	-	-	13,310.00	1.00	-	
1972	Other	Active	20.00	0.246%	1.25	1.216%	0.06	0.24	13,310.00	1.00	817.54	
1973	Other	Active	-	0.279%	0.00	1.216%	-	-	13,310.00	1.00	-	
1974	Other	Active	36.25	0.310%	1.25	1.216%	0.14	0.44	13,310.00	1.00	1,870.60	
1975	Other	Active	6.20	0.339%	1.25	1.216%	0.03	0.08	13,310.00	1.00	349.42	
1976	Other	Active	-	0.365%	0.00	1.216%	-	-	13,310.00	1.00	-	
1977	Other	Active	85.99	0.389%	1.25	1.216%	0.42	1.05	13,310.00	1.00	5,565.59	
1978	Other	Active	-	0.411%	0.00	1.216%	-	-	13,310.00	1.00	-	
1979	Other	Active	72.25	0.431%	1.25	1.216%	0.39	0.88	13,310.00	1.00	5,177.13	
1980	Other	Active	171.38	0.449%	1.25	1.216%	0.96	2.08	13,310.00	1.00	12,788.26	
1981	Other	Active	4,390.77	0.464%	0.94	1.216%	19.11	53.41	13,310.00	1.00	254,335.46	
1982	Other	Active	539.33	0.479%	0.94	1.216%	2.43	6.56	13,310.00	1.00	32,288.55	
1983	Other	Active	3,836.07	0.491%	0.92	1.216%	17.25	46.66	13,310.00	1.00	229,619.58	
1984	Other	Active	4,369.90	0.502%	0.87	1.216%	19.00	53.16	13,310.00	1.00	252,838.66	
1985	Other	Active	1,485.04	0.511%	0.96	1.216%	7.27	18.06	13,310.00	1.00	96,744.21	
1986	Other	Active	1,384.69	0.518%	1.00	1.216%	7.15	16.84	13,310.00	1.00	95,174.83	
1987	Other	Active	968.10	0.525%	0.85	1.216%	4.32	11.78	13,310.00	1.00	57,465.39	
1988	Other	Active	613.83	0.530%	1.06	1.216%	3.43	7.47	13,310.00	1.00	45,705.65	
1989	Other	Active	617.50	0.533%	1.08	1.216%	3.54	7.51	13,310.00	1.00	47,125.09	
1990	Other	Active	400.79	0.536%	1.12	1.216%	2.41	4.88	13,310.00	1.00	32,062.72	
1991	Other	Active	491.29	0.537%	1.14	1.216%	3.01	5.98	13,310.00	1.00	40,126.33	
1992	Other	Active	293.26	0.538%	1.03	1.216%	1.62	3.57	13,310.00	1.00	21,526.82	
1993	Other	Active	761.88	0.538%	0.94	1.216%	3.87	9.27	13,310.00	1.00	51,461.06	
1994	Other	Active	2,293.13	0.537%	0.88	1.216%	10.77	27.89	13,310.00	1.00	143,301.87	
1995	Other	Active	997.92	0.535%	0.97	1.216%	5.18	12.14	13,310.00	1.00	68,994.41	
1996	Other	Active	1,971.02	0.532%	0.67	1.216%	6.99	23.98	13,310.00	1.00	93,083.79	
1997	Other	Active	739.12	0.529%	1.00	1.216%	3.91	8.99	13,310.00	1.00	52,058.64	
1998	Other	Active	622.19	0.526%	1.10	1.216%	3.60	7.57	13,310.00	1.00	47,884.53	
1999	Other	Active	415.45	0.522%	1.07	1.216%	2.32	5.05	13,310.00	1.00	30,870.53	
2000	Other	Active	339.23	0.518%	0.70	1.216%	1.23	4.13	13,310.00	1.00	16,357.60	
2001	Other	Active	385.64	0.513%	0.98	1.216%	1.94	4.69	13,310.00	1.00	25,811.26	
2002	Other	Active	801.13	0.509%	1.06	1.216%	4.34	9.75	13,310.00	1.00	57,715.30	
2003	Other	Active	887.86	0.504%	0.99	1.216%	4.43	10.80	13,310.00	1.00	58,960.63	
2004	Other	Active	1,214.52	0.499%	0.98	1.216%	5.96	14.77	13,310.00	1.00	79,384.56	
2005	Other	Active	75.34	0.495%	1.10	1.216%	0.41	0.92	13,310.00	1.00	5,459.67	
2006	Other	Active	491.96	0.491%	1.03	1.216%	2.48	5.98	13,310.00	1.00	33,050.38	
2007	Other	Active	368.47	0.487%	1.07	1.216%	1.92	4.48	13,310.00	1.00	25,543.93	
2008	Other	Active	599.63	0.483%	1.09	1.217%	3.17	7.29	13,310.00	1.00	42,144.92	
2009	Other	Active	197.78	0.480%	1.14	1.217%	1.08	2.41	13,310.00	1.00	14,375.38	
2010	Other	Active	1,140.63	0.477%	1.03	1.218%	5.60	13.89	13,310.00	1.00	74,506.00	
2011	Other	Active	310.19	0.476%	0.95	1.221%	1.40	3.79	13,310.00	1.00	18,651.76	
2012	Other	Active	161.25	0.474%	1.25	1.233%	0.96	1.99	13,310.00	1.00	12,724.56	
2013	Other	Active	2,081.52	0.474%	1.00	1.273%	9.89	26.51	13,310.00	1.00	131,667.88	
2014	Other	Active	212.39	0.474%	1.12	1.409%	1.13	2.99	13,310.00	1.00	15,016.60	
2015	Other	Active	1,106.93	0.476%	1.03	1.856%	5.44	20.55	13,310.00	1.00	72,419.49	
2016	Other	Active	1,513.50	0.478%	1.18	3.243%	8.50	49.08	13,310.00	1.00	113,172.04	
2017	Other	Active	369.58	0.482%	1.16	6.814%	2.07	25.18	13,310.00	1.00	27,486.49	
2018	Other	Active	21.89	0.486%	1.25	12.850%	0.13	2.81	13,310.00	1.00	1,771.76	
2019	Other	Active	5.94	0.493%	1.25	18.262%	0.04	1.08	13,310.00	1.00	486.80	
2020	Other	Active	562.96	0.500%	1.16	20.967%	3.27	118.04	13,310.00	1.00	43,463.78	
2021	Other	Active	74.26	0.509%	1.25	21.935%	0.47	16.29	13,310.00	1.00	6,288.61	
2022	Other	Active	465.40	0.519%	1.10	22.239%	2.66	103.50	13,310.00	1.00	35,397.47	
2023	Other	Active	723.68	0.038%	1.25	25.229%	0.34	182.58	13,310.00	1.00	4,532.17	
2024	Other	Active	273.27	0.000%	1.25	15.346%	-	41.94	13,310.00	1.00	-	
2025	Other	Active	618.50	0.000%	1.24	0.000%	-	0.00	13,310.00	1.00	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model

Permit Issue Year	Mine Type	Mine Status	Current Bonded Acres	2026					Avg Recl Cost per Acre	Adjustment Factor Permit Status	Gross Cost
				Forfeiture Rate	Permit Bond Size	Release Rate	Forfeited Acres	Released Acres			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1967	Other	Inactive	-	0.069%	0.00	0.787%	-	-	13,310.00	1.00	-
1968	Other	Inactive	-	0.154%	0.00	0.787%	-	-	13,310.00	1.00	-
1969	Other	Inactive	-	0.235%	0.00	0.787%	-	-	13,310.00	1.00	-
1970	Other	Inactive	-	0.310%	0.00	0.787%	-	-	13,310.00	1.00	-
1971	Other	Inactive	-	0.380%	0.00	0.787%	-	-	13,310.00	1.00	-
1972	Other	Inactive	-	0.445%	0.00	0.787%	-	-	13,310.00	1.00	-
1973	Other	Inactive	-	0.506%	0.00	0.787%	-	-	13,310.00	1.00	-
1974	Other	Inactive	-	0.562%	0.00	0.787%	-	-	13,310.00	1.00	-
1975	Other	Inactive	-	0.614%	0.00	0.787%	-	-	13,310.00	1.00	-
1976	Other	Inactive	14.48	0.662%	1.25	0.787%	0.12	0.11	13,310.00	1.00	1,593.78
1977	Other	Inactive	52.00	0.705%	1.25	0.787%	0.46	0.41	13,310.00	1.00	6,100.20
1978	Other	Inactive	-	0.745%	0.00	0.787%	-	-	13,310.00	1.00	-
1979	Other	Inactive	-	0.781%	0.00	0.787%	-	-	13,310.00	1.00	-
1980	Other	Inactive	114.75	0.813%	0.80	0.787%	0.75	0.90	13,310.00	1.00	9,932.58
1981	Other	Inactive	859.57	0.842%	0.89	0.787%	6.42	6.77	13,310.00	1.00	85,469.15
1982	Other	Inactive	130.80	0.867%	1.03	0.787%	1.16	1.03	13,310.00	1.00	15,476.61
1983	Other	Inactive	888.39	0.890%	0.82	0.787%	6.45	6.99	13,310.00	1.00	85,915.15
1984	Other	Inactive	495.53	0.909%	0.85	0.787%	3.83	3.90	13,310.00	1.00	50,966.73
1985	Other	Inactive	1,248.52	0.926%	0.86	0.787%	9.94	9.83	13,310.00	1.00	132,294.63
1986	Other	Inactive	-	0.940%	0.00	0.787%	-	-	13,310.00	1.00	-
1987	Other	Inactive	-	0.951%	0.00	0.787%	-	-	13,310.00	1.00	-
1988	Other	Inactive	34.27	0.960%	1.25	0.787%	0.41	0.27	13,310.00	1.00	5,473.40
1989	Other	Inactive	87.34	0.967%	1.25	0.787%	1.06	0.69	13,310.00	1.00	14,047.79
1990	Other	Inactive	425.33	0.971%	0.60	0.787%	2.48	3.35	13,310.00	1.00	32,996.45
1991	Other	Inactive	-	0.974%	0.00	0.787%	-	-	13,310.00	1.00	-
1992	Other	Inactive	354.26	0.975%	1.09	0.787%	3.76	2.79	13,310.00	1.00	50,007.20
1993	Other	Inactive	192.03	0.975%	1.10	0.787%	2.06	1.51	13,310.00	1.00	27,401.54
1994	Other	Inactive	381.64	0.973%	0.60	0.787%	2.23	3.00	13,310.00	1.00	29,641.37
1995	Other	Inactive	593.99	0.969%	0.93	0.787%	5.33	4.68	13,310.00	1.00	70,877.14
1996	Other	Inactive	152.16	0.965%	0.80	0.787%	1.17	1.20	13,310.00	1.00	15,629.42
1997	Other	Inactive	593.50	0.959%	0.70	0.787%	3.98	4.67	13,310.00	1.00	53,036.47
1998	Other	Inactive	131.05	0.953%	1.03	0.787%	1.28	1.03	13,310.00	1.00	17,034.07
1999	Other	Inactive	-	0.946%	0.00	0.787%	-	-	13,310.00	1.00	-
2000	Other	Inactive	-	0.938%	0.00	0.787%	-	-	13,310.00	1.00	-
2001	Other	Inactive	144.00	0.930%	0.80	0.787%	1.07	1.13	13,310.00	1.00	14,260.39
2002	Other	Inactive	-	0.922%	0.00	0.787%	-	-	13,310.00	1.00	-
2003	Other	Inactive	20.00	0.913%	1.25	0.787%	0.23	0.16	13,310.00	1.00	3,039.49
2004	Other	Inactive	-	0.905%	0.00	0.787%	-	-	13,310.00	1.00	-
2005	Other	Inactive	-	0.897%	0.00	0.787%	-	-	13,310.00	1.00	-
2006	Other	Inactive	-	0.889%	0.00	0.787%	-	-	13,310.00	1.00	-
2007	Other	Inactive	26.00	0.882%	1.25	0.787%	0.29	0.20	13,310.00	1.00	3,816.48
2008	Other	Inactive	-	0.876%	0.00	0.787%	-	-	13,310.00	1.00	-
2009	Other	Inactive	19.80	0.870%	1.25	0.787%	0.22	0.16	13,310.00	1.00	2,866.41
2010	Other	Inactive	-	0.865%	0.00	0.788%	-	-	13,310.00	1.00	-
2011	Other	Inactive	-	0.862%	0.00	0.790%	-	-	13,310.00	1.00	-
2012	Other	Inactive	66.26	0.860%	0.80	0.798%	0.46	0.53	13,310.00	1.00	6,065.30
2013	Other	Inactive	-	0.859%	0.00	0.824%	-	-	13,310.00	1.00	-
2014	Other	Inactive	-	0.860%	0.00	0.912%	-	-	13,310.00	1.00	-
2015	Other	Inactive	-	0.862%	0.00	1.201%	-	-	13,310.00	1.00	-
2016	Other	Inactive	-	0.867%	0.00	2.098%	-	-	13,310.00	1.00	-
2017	Other	Inactive	16.37	0.873%	1.25	4.409%	0.18	0.72	13,310.00	1.00	2,377.88
2018	Other	Inactive	11.88	0.882%	1.25	8.315%	0.13	0.99	13,310.00	1.00	1,742.83
2019	Other	Inactive	-	0.893%	0.00	11.816%	-	-	13,310.00	1.00	-
2020	Other	Inactive	-	0.906%	0.00	13.567%	-	-	13,310.00	1.00	-
2021	Other	Inactive	-	0.923%	0.00	14.193%	-	-	13,310.00	1.00	-
2022	Other	Inactive	-	0.942%	0.00	14.390%	-	-	13,310.00	1.00	-
2023	Other	Inactive	-	0.068%	0.00	16.325%	-	-	13,310.00	1.00	-
2024	Other	Inactive	19.50	0.000%	1.25	9.930%	-	1.94	13,310.00	1.00	-
2025	Other	Inactive	-	0.000%	0.00	0.000%	-	-	13,310.00	1.00	-

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model

			2026							Adjustment	
Permit Issue	Mine	Mine	Current Bonded	Adjustment					Avg Recl Cost per	Factor	
Year	Type	Status	Acres	Forfeiture Rate	Permit Bond Size	Release Rate	Forfeited Acres	Released Acres	Acre	Permit Status	Gross Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1967	Other	Phased Released	-	0.071%	0.00	3.291%	-	-	13,310.00	0.50	-
1968	Other	Phased Released	-	0.160%	0.00	3.291%	-	-	13,310.00	0.50	-
1969	Other	Phased Released	-	0.243%	0.00	3.291%	-	-	13,310.00	0.50	-
1970	Other	Phased Released	-	0.320%	0.00	3.291%	-	-	13,310.00	0.50	-
1971	Other	Phased Released	-	0.393%	0.00	3.291%	-	-	13,310.00	0.50	-
1972	Other	Phased Released	-	0.461%	0.00	3.291%	-	-	13,310.00	0.50	-
1973	Other	Phased Released	9.00	0.523%	1.25	3.291%	0.06	0.30	13,310.00	0.50	391.90
1974	Other	Phased Released	-	0.582%	0.00	3.291%	-	-	13,310.00	0.50	-
1975	Other	Phased Released	-	0.635%	0.00	3.291%	-	-	13,310.00	0.50	-
1976	Other	Phased Released	27.88	0.684%	1.25	3.291%	0.24	0.92	13,310.00	0.50	1,587.25
1977	Other	Phased Released	-	0.729%	0.00	3.291%	-	-	13,310.00	0.50	-
1978	Other	Phased Released	12.76	0.770%	1.25	3.291%	0.12	0.42	13,310.00	0.50	817.78
1979	Other	Phased Released	58.69	0.808%	1.25	3.291%	0.59	1.93	13,310.00	0.50	3,942.63
1980	Other	Phased Released	-	0.841%	0.00	3.291%	-	-	13,310.00	0.50	-
1981	Other	Phased Released	475.54	0.871%	1.14	3.291%	4.71	15.65	13,310.00	0.50	31,346.68
1982	Other	Phased Released	201.26	0.897%	1.25	3.291%	2.26	6.62	13,310.00	0.50	15,021.21
1983	Other	Phased Released	201.70	0.920%	1.14	3.291%	2.11	6.64	13,310.00	0.50	14,053.09
1984	Other	Phased Released	75.79	0.940%	1.25	3.291%	0.89	2.49	13,310.00	0.50	5,929.43
1985	Other	Phased Released	43.00	0.958%	1.25	3.291%	0.51	1.42	13,310.00	0.50	3,425.47
1986	Other	Phased Released	-	0.972%	0.00	3.291%	-	-	13,310.00	0.50	-
1987	Other	Phased Released	-	0.984%	0.00	3.291%	-	-	13,310.00	0.50	-
1988	Other	Phased Released	-	0.993%	0.00	3.291%	-	-	13,310.00	0.50	-
1989	Other	Phased Released	62.20	1.000%	1.25	3.291%	0.78	2.05	13,310.00	0.50	5,174.62
1990	Other	Phased Released	-	1.005%	0.00	3.291%	-	-	13,310.00	0.50	-
1991	Other	Phased Released	-	1.008%	0.00	3.291%	-	-	13,310.00	0.50	-
1992	Other	Phased Released	-	1.009%	0.00	3.291%	-	-	13,310.00	0.50	-
1993	Other	Phased Released	68.65	1.008%	1.25	3.291%	0.87	2.26	13,310.00	0.50	5,757.81
1994	Other	Phased Released	-	1.006%	0.00	3.291%	-	-	13,310.00	0.50	-
1995	Other	Phased Released	-	1.003%	0.00	3.291%	-	-	13,310.00	0.50	-
1996	Other	Phased Released	-	0.998%	0.00	3.291%	-	-	13,310.00	0.50	-
1997	Other	Phased Released	31.16	0.992%	1.25	3.291%	0.39	1.03	13,310.00	0.50	2,571.91
1998	Other	Phased Released	-	0.986%	0.00	3.291%	-	-	13,310.00	0.50	-
1999	Other	Phased Released	179.00	0.978%	0.80	3.291%	1.40	5.89	13,310.00	0.50	9,323.00
2000	Other	Phased Released	-	0.970%	0.00	3.291%	-	-	13,310.00	0.50	-
2001	Other	Phased Released	-	0.962%	0.00	3.291%	-	-	13,310.00	0.50	-
2002	Other	Phased Released	-	0.954%	0.00	3.291%	-	-	13,310.00	0.50	-
2003	Other	Phased Released	-	0.945%	0.00	3.291%	-	-	13,310.00	0.50	-
2004	Other	Phased Released	-	0.936%	0.00	3.291%	-	-	13,310.00	0.50	-
2005	Other	Phased Released	-	0.928%	0.00	3.291%	-	-	13,310.00	0.50	-
2006	Other	Phased Released	-	0.920%	0.00	3.292%	-	-	13,310.00	0.50	-
2007	Other	Phased Released	-	0.913%	0.00	3.292%	-	-	13,310.00	0.50	-
2008	Other	Phased Released	9.90	0.906%	1.25	3.292%	0.11	0.33	13,310.00	0.50	746.13
2009	Other	Phased Released	-	0.900%	0.00	3.293%	-	-	13,310.00	0.50	-
2010	Other	Phased Released	-	0.895%	0.00	3.295%	-	-	13,310.00	0.50	-
2011	Other	Phased Released	-	0.892%	0.00	3.305%	-	-	13,310.00	0.50	-
2012	Other	Phased Released	-	0.889%	0.00	3.337%	-	-	13,310.00	0.50	-
2013	Other	Phased Released	-	0.888%	0.00	3.446%	-	-	13,310.00	0.50	-
2014	Other	Phased Released	-	0.889%	0.00	3.812%	-	-	13,310.00	0.50	-
2015	Other	Phased Released	115.00	0.892%	1.25	5.023%	1.28	5.78	13,310.00	0.50	8,532.46
2016	Other	Phased Released	-	0.896%	0.00	8.775%	-	-	13,310.00	0.50	-
2017	Other	Phased Released	-	0.903%	0.00	18.438%	-	-	13,310.00	0.50	-
2018	Other	Phased Released	-	0.912%	0.00	34.771%	-	-	13,310.00	0.50	-
2019	Other	Phased Released	-	0.924%	0.00	49.414%	-	-	13,310.00	0.50	-
2020	Other	Phased Released	-	0.938%	0.00	56.734%	-	-	13,310.00	0.50	-
2021	Other	Phased Released	-	0.954%	0.00	59.354%	-	-	13,310.00	0.50	-
2022	Other	Phased Released	-	0.974%	0.00	60.175%	-	-	13,310.00	0.50	-
2023	Other	Phased Released	-	0.071%	0.00	68.266%	-	-	13,310.00	0.50	-

			2027										Adjustment	
Permit			Current	Adjustment							Avg recl	Adjustment		
Issue	Mine	Mine	Bonded	Adjusted	Forfeiture	Factor	Release	Forfeited	Released	Cost per	Permit	Gross		
Year	Type	Status	Acres	Acres	Rate	Permit	Rate	Acres	Acres	Acres	Status	Cost		
(1)	(2)	(3)	(4)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)		
1967	Surface	Active	-	-	0.05%	-	0.00%	-	-	3,015.00	1	-		
1968	Surface	Active	-	-	0.05%	-	0.00%	-	-	3,015.00	1	-		
1969	Surface	Active	-	-	0.06%	-	0.23%	-	-	3,015.00	1	-		
1970	Surface	Active	-	-	0.07%	-	0.45%	-	-	3,015.00	1	-		
1971	Surface	Active	-	-	0.08%	-	0.65%	-	-	3,015.00	1	-		
1972	Surface	Active	400.00	395.46	0.09%	1.25	0.84%	0.42	3.32	3,015.00	1	1,277.03		
1973	Surface	Active	-	-	0.10%	-	1.01%	-	-	3,015.00	1	-		
1974	Surface	Active	-	-	0.11%	-	1.18%	-	-	3,015.00	1	-		
1975	Surface	Active	-	-	0.12%	-	1.33%	-	-	3,015.00	1	-		
1976	Surface	Active	-	-	0.12%	-	1.47%	-	-	3,015.00	1	-		
1977	Surface	Active	1,107.97	1,087.62	0.13%	0.88	1.59%	1.29	17.33	3,015.00	1	3,900.41		
1978	Surface	Active	855.12	838.68	0.14%	0.70	1.71%	0.85	14.34	3,015.00	1	2,556.82		
1979	Surface	Active	-	-	0.15%	1.25	1.81%	-	-	3,015.00	1	-		
1980	Surface	Active	47.92	46.86	0.16%	1.25	1.91%	0.10	0.89	3,015.00	1	289.71		
1981	Surface	Active	1,999.01	1,954.04	0.17%	1.00	1.99%	3.40	38.93	3,015.00	1	10,241.27		
1982	Surface	Active	7.44	7.26	0.18%	1.25	2.07%	0.02	0.15	3,015.00	1	50.27		
1983	Surface	Active	1,708.83	1,669.40	0.19%	0.60	2.13%	1.94	35.57	3,015.00	1	5,841.27		
1984	Surface	Active	-	-	0.20%	-	2.19%	-	-	3,015.00	1	-		
1985	Surface	Active	2,611.31	2,547.10	0.21%	0.85	2.23%	4.61	56.85	3,015.00	1	13,904.62		
1986	Surface	Active	2,532.60	2,468.78	0.22%	0.95	2.27%	5.23	56.03	3,015.00	1	15,755.23		
1987	Surface	Active	1,371.12	1,336.59	0.23%	0.82	2.30%	2.54	30.73	3,015.00	1	7,655.01		
1988	Surface	Active	1,562.99	1,522.70	0.24%	0.96	2.32%	3.56	35.34	3,015.00	1	10,730.92		
1989	Surface	Active	2,773.31	2,702.87	0.25%	0.76	2.33%	5.15	63.11	3,015.00	1	15,542.22		
1990	Surface	Active	2,703.07	2,633.43	0.26%	0.86	2.34%	5.95	61.67	3,015.00	1	17,941.23		
1991	Surface	Active	1,554.45	1,513.88	0.27%	0.98	2.34%	4.01	35.45	3,015.00	1	12,095.06		
1992	Surface	Active	3,683.68	3,591.30	0.28%	0.63	2.34%	6.40	83.88	3,015.00	1	19,309.67		
1993	Surface	Active	4,151.89	4,044.54	0.29%	0.93	2.32%	10.98	93.96	3,015.00	1	33,108.70		
1994	Surface	Active	1,389.47	1,354.75	0.30%	0.70	2.30%	2.86	31.23	3,015.00	1	8,611.10		
1995	Surface	Active	8,653.77	8,435.36	0.31%	0.85	2.28%	22.20	192.43	3,015.00	1	66,920.01		
1996	Surface	Active	6,686.27	6,519.49	0.32%	0.83	2.25%	17.43	146.85	3,015.00	1	52,541.83		
1997	Surface	Active	11,098.71	10,823.07	0.33%	0.89	2.22%	31.81	240.15	3,015.00	1	95,907.66		
1998	Surface	Active	11,215.25	10,946.01	0.34%	0.75	2.18%	27.85	238.72	3,015.00	1	83,962.97		
1999	Surface	Active	2,008.81	1,962.06	0.35%	0.65	2.14%	4.47	41.97	3,015.00	1	13,463.88		
2000	Surface	Active	4,010.07	3,916.62	0.36%	0.78	2.09%	10.93	81.98	3,015.00	1	32,941.23		
2001	Surface	Active	7,502.63	7,329.42	0.37%	0.84	2.04%	22.63	149.81	3,015.00	1	68,225.21		
2002	Surface	Active	5,919.92	5,788.06	0.38%	0.75	1.99%	16.39	115.28	3,015.00	1	49,420.51		
2003	Surface	Active	8,056.67	7,877.90	0.39%	0.85	1.94%	26.07	152.58	3,015.00	1	78,603.63		
2004	Surface	Active	13,148.60	12,863.55	0.40%	0.85	1.88%	43.64	241.78	3,015.00	1	131,578.57		
2005	Surface	Active	4,062.35	3,973.81	0.41%	1.00	1.82%	16.30	72.34	3,015.00	1	49,157.36		
2006	Surface	Active	5,139.07	5,033.46	0.42%	0.84	1.76%	17.60	88.56	3,015.00	1	53,060.48		
2007	Surface	Active	5,069.99	4,967.93	0.43%	0.87	1.70%	18.41	84.31	3,015.00	1	55,520.45		
2008	Surface	Active	9,470.87	9,292.46	0.44%	0.70	1.63%	28.51	151.83	3,015.00	1	85,962.17		
2009	Surface	Active	6,648.17	6,522.26	0.45%	0.85	1.57%	24.76	102.41	3,015.00	1	74,657.61		
2010	Surface	Active	4,950.90	4,858.21	0.46%	0.92	1.51%	20.47	73.16	3,015.00	1	61,707.12		
2011	Surface	Active	1,769.33	1,737.48	0.47%	0.88	1.44%	7.18	25.05	3,015.00	1	21,642.62		
2012	Surface	Active	7,481.98	7,351.10	0.48%	0.89	1.38%	31.27	101.31	3,015.00	1	94,287.29		
2013	Surface	Active	8,035.98	7,898.86	0.49%	0.91	1.32%	35.08	103.88	3,015.00	1	105,765.49		
2014	Surface	Active	7,227.57	7,112.41	0.50%	0.79	1.25%	27.93	89.14	3,015.00	1	84,212.55		
2015	Surface	Active	4,331.94	4,264.25	0.51%	0.83	1.19%	17.92	50.87	3,015.00	1	54,037.25		
2016	Surface	Active	3,391.59	3,340.56	0.52%	0.81	1.13%	14.00	37.89	3,015.00	1	42,210.66		
2017	Surface	Active	1,137.87	1,120.58	0.53%	0.93	1.08%	5.46	12.08	3,015.00	1	16,453.75		
2018	Surface	Active	3,677.40	3,624.83	0.54%	0.84	1.02%	16.28	37.10	3,015.00	1	49,086.31		
2019	Surface	Active	4,475.81	4,410.19	0.55%	0.98	0.97%	23.48	42.88	3,015.00	1	70,796.64		
2020	Surface	Active	4,151.29	4,096.74	0.56%	0.77	0.92%	17.49	37.86	3,015.00	1	52,744.37		
2021	Surface	Active	3,857.52	3,808.52	0.57%	0.75	0.88%	16.16	33.49	3,015.00	1	48,716.82		
2022	Surface	Active	5,405.21	5,334.18	0.58%	0.88	0.84%	26.86	44.74	3,015.00	1	80,983.16		
2023	Surface	Active	4,057.34	4,029.66	0.59%	0.88	0.80%	20.83	32.32	3,015.00	1	62,812.13		
2024	Surface	Active	2,351.57	2,345.61	0.30%	0.92	0.42%	6.43	9.80	3,015.00	1	19,400.84		
2025	Surface	Active	1,400.13	1,400.13	0.14%	1.16	0.12%	2.32	1.71	3,015.00	1	6,996.96		

2027													
Permit Issue Year	Mine Type	Mine Status	Current Bonded Acres	Adjustment							Avg recl Cost per Acre	Adjustment	
				Adjusted Acres	Forfeiture Rate	Factor Permit Bond Size	Release Rate	Forfeited Acres	Released Acres	Factor Permit Status		Gross Cost	
(1)	(2)	(3)	(4)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	
1967	Surface	Inactive	-	-	0.08%	-	0.00%	-	-	3,015.00	1	-	
1968	Surface	Inactive	-	-	0.08%	-	0.00%	-	-	3,015.00	1	-	
1969	Surface	Inactive	-	-	0.10%	-	0.15%	-	-	3,015.00	1	-	
1970	Surface	Inactive	-	-	0.12%	-	0.29%	-	-	3,015.00	1	-	
1971	Surface	Inactive	-	-	0.14%	-	0.42%	-	-	3,015.00	1	-	
1972	Surface	Inactive	-	-	0.16%	-	0.54%	-	-	3,015.00	1	-	
1973	Surface	Inactive	-	-	0.17%	-	0.66%	-	-	3,015.00	1	-	
1974	Surface	Inactive	-	-	0.19%	-	0.76%	-	-	3,015.00	1	-	
1975	Surface	Inactive	-	-	0.21%	-	0.86%	-	-	3,015.00	1	-	
1976	Surface	Inactive	163.80	161.61	0.23%	1.25	0.95%	0.46	1.53	3,015.00	1	1,378.39	
1977	Surface	Inactive	-	-	0.24%	-	1.03%	-	-	3,015.00	1	-	
1978	Surface	Inactive	-	-	0.26%	-	1.11%	-	-	3,015.00	1	-	
1979	Surface	Inactive	-	-	0.28%	-	1.17%	-	-	3,015.00	1	-	
1980	Surface	Inactive	-	-	0.30%	-	1.23%	-	-	3,015.00	1	-	
1981	Surface	Inactive	-	-	0.32%	-	1.29%	-	-	3,015.00	1	-	
1982	Surface	Inactive	-	-	0.33%	-	1.34%	-	-	3,015.00	1	-	
1983	Surface	Inactive	-	-	0.35%	-	1.38%	-	-	3,015.00	1	-	
1984	Surface	Inactive	-	-	0.37%	-	1.41%	-	-	3,015.00	1	-	
1985	Surface	Inactive	-	-	0.39%	-	1.44%	-	-	3,015.00	1	-	
1986	Surface	Inactive	-	-	0.40%	-	1.47%	-	-	3,015.00	1	-	
1987	Surface	Inactive	415.61	407.68	0.42%	0.93	1.49%	1.59	6.06	3,015.00	1	4,793.40	
1988	Surface	Inactive	1,304.38	1,281.10	0.44%	0.60	1.50%	3.38	19.24	3,015.00	1	10,181.91	
1989	Surface	Inactive	-	-	0.46%	1.25	1.51%	-	-	3,015.00	1	-	
1990	Surface	Inactive	-	-	0.47%	-	1.52%	-	-	3,015.00	1	-	
1991	Surface	Inactive	-	-	0.49%	-	1.52%	-	-	3,015.00	1	-	
1992	Surface	Inactive	-	-	0.51%	-	1.51%	-	-	3,015.00	1	-	
1993	Surface	Inactive	-	-	0.53%	-	1.50%	-	-	3,015.00	1	-	
1994	Surface	Inactive	-	-	0.55%	-	1.49%	-	-	3,015.00	1	-	
1995	Surface	Inactive	605.35	594.42	0.56%	0.60	1.48%	2.01	8.77	3,015.00	1	6,060.70	
1996	Surface	Inactive	-	-	0.58%	-	1.46%	-	-	3,015.00	1	-	
1997	Surface	Inactive	-	-	0.60%	-	1.44%	-	-	3,015.00	1	-	
1998	Surface	Inactive	846.89	831.94	0.62%	0.60	1.41%	3.08	11.74	3,015.00	1	9,284.19	
1999	Surface	Inactive	1,728.99	1,691.47	0.63%	1.25	1.38%	13.42	23.41	3,015.00	1	40,457.31	
2000	Surface	Inactive	-	-	0.65%	-	1.35%	-	-	3,015.00	1	-	
2001	Surface	Inactive	-	-	0.67%	-	1.32%	-	-	3,015.00	1	-	
2002	Surface	Inactive	1,146.85	1,127.08	0.69%	0.67	1.29%	5.17	14.53	3,015.00	1	15,584.32	
2003	Surface	Inactive	1,408.90	1,385.65	0.71%	0.60	1.25%	5.87	17.37	3,015.00	1	17,688.69	
2004	Surface	Inactive	1,577.54	1,551.94	0.72%	0.60	1.22%	6.74	18.87	3,015.00	1	20,310.03	
2005	Surface	Inactive	-	-	0.74%	-	1.18%	-	-	3,015.00	1	-	
2006	Surface	Inactive	244.59	240.38	0.76%	0.80	1.14%	1.46	2.74	3,015.00	1	4,400.40	
2007	Surface	Inactive	1,356.24	1,334.36	0.78%	0.70	1.10%	7.25	14.65	3,015.00	1	21,873.10	
2008	Surface	Inactive	118.60	116.19	0.79%	1.25	1.06%	1.15	1.23	3,015.00	1	3,478.88	
2009	Surface	Inactive	42.43	41.58	0.81%	1.25	1.02%	0.42	0.42	3,015.00	1	1,272.66	
2010	Surface	Inactive	679.59	667.92	0.83%	0.93	0.97%	5.13	6.51	3,015.00	1	15,460.22	
2011	Surface	Inactive	1,679.64	1,654.78	0.85%	0.68	0.93%	9.54	15.44	3,015.00	1	28,760.14	
2012	Surface	Inactive	-	-	0.87%	-	0.89%	-	-	3,015.00	1	-	
2013	Surface	Inactive	-	-	0.88%	-	0.85%	-	-	3,015.00	1	-	
2014	Surface	Inactive	262.00	256.97	0.90%	1.25	0.81%	2.89	2.08	3,015.00	1	8,725.72	
2015	Surface	Inactive	624.70	615.44	0.92%	0.80	0.77%	4.52	4.75	3,015.00	1	13,638.27	
2016	Surface	Inactive	776.75	766.15	0.94%	0.70	0.73%	5.02	5.62	3,015.00	1	15,142.93	
2017	Surface	Inactive	154.63	151.73	0.95%	1.25	0.70%	1.81	1.06	3,015.00	1	5,456.72	
2018	Surface	Inactive	351.08	346.79	0.97%	0.60	0.66%	2.02	2.30	3,015.00	1	6,097.89	
2019	Surface	Inactive	452.10	445.75	0.99%	0.80	0.63%	3.53	2.80	3,015.00	1	10,641.74	
2020	Surface	Inactive	-	-	1.01%	-	0.60%	-	-	3,015.00	1	-	
2021	Surface	Inactive	-	-	1.03%	-	0.57%	-	-	3,015.00	1	-	
2022	Surface	Inactive	31.34	30.76	1.04%	1.25	0.54%	0.40	0.17	3,015.00	1	1,209.26	
2023	Surface	Inactive	-	-	1.06%	-	0.52%	-	-	3,015.00	1	-	
2024	Surface	Inactive	-	-	0.54%	-	0.27%	-	-	3,015.00	1	-	
2025	Surface	Inactive	-	-	0.26%	-	0.08%	-	-	3,015.00	1	-	

2027													
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	Adjustment						Adjustment			Gross Cost (21)
				Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Avg recl Cost per Acre (19)	Factor Permit Status (20)		
1967	Surface	Phased Released	-	-	0.09%	-	0.01%	-	-	3,015.00	0.5	-	
1968	Surface	Phased Released	-	-	0.09%	-	0.01%	-	-	3,015.00	0.5	-	
1969	Surface	Phased Released	-	-	0.11%	-	0.63%	-	-	3,015.00	0.5	-	
1970	Surface	Phased Released	-	-	0.12%	-	1.21%	-	-	3,015.00	0.5	-	
1971	Surface	Phased Released	-	-	0.14%	-	1.76%	-	-	3,015.00	0.5	-	
1972	Surface	Phased Released	-	-	0.16%	-	2.27%	-	-	3,015.00	0.5	-	
1973	Surface	Phased Released	-	-	0.18%	-	2.75%	-	-	3,015.00	0.5	-	
1974	Surface	Phased Released	116.05	111.57	0.20%	1.25	3.19%	0.28	3.56	3,015.00	0.5	414.97	
1975	Surface	Phased Released	7.80	7.47	0.22%	1.25	3.59%	0.02	0.27	3,015.00	0.5	30.36	
1976	Surface	Phased Released	476.17	454.13	0.23%	1.25	3.97%	1.33	18.03	3,015.00	0.5	2,003.44	
1977	Surface	Phased Released	48.00	45.62	0.25%	1.25	4.31%	0.14	1.97	3,015.00	0.5	217.03	
1978	Surface	Phased Released	158.81	150.44	0.27%	1.25	4.63%	0.51	6.96	3,015.00	0.5	767.80	
1979	Surface	Phased Released	538.00	508.15	0.29%	1.25	4.91%	1.84	24.95	3,015.00	0.5	2,769.30	
1980	Surface	Phased Released	253.42	238.73	0.31%	1.25	5.16%	0.92	12.33	3,015.00	0.5	1,383.62	
1981	Surface	Phased Released	1,267.32	1,192.37	0.33%	0.94	5.39%	3.65	64.27	3,015.00	0.5	5,507.19	
1982	Surface	Phased Released	-	-	0.34%	-	5.59%	-	-	3,015.00	0.5	-	
1983	Surface	Phased Released	225.01	210.63	0.36%	1.25	5.76%	0.95	12.14	3,015.00	0.5	1,439.46	
1984	Surface	Phased Released	2,302.75	2,156.17	0.38%	0.82	5.91%	6.71	127.51	3,015.00	0.5	10,114.63	
1985	Surface	Phased Released	1,270.29	1,186.84	0.40%	1.03	6.04%	4.86	71.67	3,015.00	0.5	7,324.56	
1986	Surface	Phased Released	1,041.15	971.73	0.42%	1.03	6.14%	4.16	59.67	3,015.00	0.5	6,272.75	
1987	Surface	Phased Released	760.81	709.10	0.44%	1.14	6.22%	3.52	44.11	3,015.00	0.5	5,303.16	
1988	Surface	Phased Released	480.30	447.12	0.45%	1.25	6.28%	2.54	28.08	3,015.00	0.5	3,829.31	
1989	Surface	Phased Released	1,098.64	1,022.76	0.47%	1.16	6.32%	5.61	64.62	3,015.00	0.5	8,457.20	
1990	Surface	Phased Released	764.18	710.89	0.49%	1.25	6.34%	4.37	45.05	3,015.00	0.5	6,580.40	
1991	Surface	Phased Released	1,006.45	937.16	0.51%	1.07	6.34%	5.11	59.39	3,015.00	0.5	7,703.36	
1992	Surface	Phased Released	-	-	0.53%	-	6.32%	-	-	3,015.00	0.5	-	
1993	Surface	Phased Released	669.04	622.59	0.55%	1.25	6.29%	4.25	39.14	3,015.00	0.5	6,409.52	
1994	Surface	Phased Released	345.90	322.39	0.56%	1.07	6.24%	1.95	20.11	3,015.00	0.5	2,936.56	
1995	Surface	Phased Released	484.30	451.77	0.58%	1.03	6.17%	2.72	27.89	3,015.00	0.5	4,103.31	
1996	Surface	Phased Released	583.38	544.38	0.60%	1.10	6.09%	3.60	33.18	3,015.00	0.5	5,429.20	
1997	Surface	Phased Released	169.48	158.52	0.62%	0.88	6.00%	0.87	9.52	3,015.00	0.5	1,308.36	
1998	Surface	Phased Released	336.07	314.36	0.64%	1.03	5.90%	2.06	18.55	3,015.00	0.5	3,099.85	
1999	Surface	Phased Released	14.87	13.90	0.66%	1.25	5.79%	0.11	0.80	3,015.00	0.5	171.99	
2000	Surface	Phased Released	19.70	18.44	0.67%	1.25	5.66%	0.16	1.04	3,015.00	0.5	234.51	
2001	Surface	Phased Released	491.55	461.21	0.69%	1.10	5.53%	3.52	25.51	3,015.00	0.5	5,302.15	
2002	Surface	Phased Released	48.20	45.23	0.71%	1.25	5.39%	0.40	2.44	3,015.00	0.5	606.59	
2003	Surface	Phased Released	-	-	0.73%	1.25	5.24%	-	-	3,015.00	0.5	-	
2004	Surface	Phased Released	470.13	443.64	0.75%	0.93	5.09%	3.07	22.56	3,015.00	0.5	4,629.65	
2005	Surface	Phased Released	51.50	48.54	0.77%	1.25	4.93%	0.47	2.39	3,015.00	0.5	701.36	
2006	Surface	Phased Released	60.78	57.38	0.79%	1.25	4.76%	0.56	2.73	3,015.00	0.5	848.88	
2007	Surface	Phased Released	263.63	249.75	0.80%	1.03	4.59%	2.06	11.47	3,015.00	0.5	3,100.76	
2008	Surface	Phased Released	-	-	0.82%	-	4.42%	-	-	3,015.00	0.5	-	
2009	Surface	Phased Released	137.75	131.19	0.84%	0.80	4.25%	0.88	5.57	3,015.00	0.5	1,329.36	
2010	Surface	Phased Released	-	-	0.86%	-	4.07%	-	-	3,015.00	0.5	-	
2011	Surface	Phased Released	158.51	150.83	0.88%	1.25	3.90%	1.65	5.88	3,015.00	0.5	2,492.41	
2012	Surface	Phased Released	-	-	0.90%	-	3.73%	-	-	3,015.00	0.5	-	
2013	Surface	Phased Released	-	-	0.91%	-	3.56%	-	-	3,015.00	0.5	-	
2014	Surface	Phased Released	-	-	0.93%	-	3.39%	-	-	3,015.00	0.5	-	
2015	Surface	Phased Released	-	-	0.95%	-	3.23%	-	-	3,015.00	0.5	-	
2016	Surface	Phased Released	-	-	0.97%	-	3.07%	-	-	3,015.00	0.5	-	
2017	Surface	Phased Released	-	-	0.99%	-	2.92%	-	-	3,015.00	0.5	-	
2018	Surface	Phased Released	-	-	1.01%	-	2.77%	-	-	3,015.00	0.5	-	
2019	Surface	Phased Released	-	-	1.02%	-	2.63%	-	-	3,015.00	0.5	-	
2020	Surface	Phased Released	-	-	1.04%	-	2.50%	-	-	3,015.00	0.5	-	
2021	Surface	Phased Released	-	-	1.06%	-	2.38%	-	-	3,015.00	0.5	-	
2022	Surface	Phased Released	-	-	1.08%	-	2.27%	-	-	3,015.00	0.5	-	
2023	Surface	Phased Released	-	-	1.10%	-	2.17%	-	-	3,015.00	0.5	-	
2024	Surface	Phased Released	-	-	0.56%	-	1.13%	-	-	3,015.00	0.5	-	
2025	Surface	Phased Released	-	-	0.27%	-	0.33%	-	-	3,015.00	0.5	-	

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	2027							Adjustment		
				Adjustment							Avg recl Cost per Acre (19)	Factor Permit Status (20)	Gross Cost (21)
				Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)				
1967	Underground	Active	-	-	0.00%	-	0.00%	-	-	5,320.00	1	-	
1968	Underground	Active	-	-	0.00%	-	0.00%	-	-	5,320.00	1	-	
1969	Underground	Active	-	-	0.00%	-	0.02%	-	-	5,320.00	1	-	
1970	Underground	Active	-	-	0.05%	-	0.04%	-	-	5,320.00	1	-	
1971	Underground	Active	-	-	0.15%	-	0.08%	-	-	5,320.00	1	-	
1972	Underground	Active	-	-	0.24%	-	0.12%	-	-	5,320.00	1	-	
1973	Underground	Active	-	-	0.32%	-	0.17%	-	-	5,320.00	1	-	
1974	Underground	Active	-	-	0.40%	-	0.23%	-	-	5,320.00	1	-	
1975	Underground	Active	-	-	0.47%	-	0.29%	-	-	5,320.00	1	-	
1976	Underground	Active	-	-	0.53%	-	0.36%	-	-	5,320.00	1	-	
1977	Underground	Active	-	-	0.58%	-	0.43%	-	-	5,320.00	1	-	
1978	Underground	Active	-	-	0.63%	-	0.51%	-	-	5,320.00	1	-	
1979	Underground	Active	703.10	693.17	0.67%	1.03	0.60%	4.77	4.15	5,320.00	1	25,366.96	
1980	Underground	Active	202.41	199.31	0.70%	1.03	0.69%	1.44	1.37	5,320.00	1	7,652.42	
1981	Underground	Active	709.57	697.06	0.73%	1.17	0.78%	5.98	5.44	5,320.00	1	31,803.80	
1982	Underground	Active	33.93	33.27	0.76%	1.25	0.88%	0.32	0.29	5,320.00	1	1,677.24	
1983	Underground	Active	7,263.70	7,135.05	0.78%	0.88	0.97%	48.77	69.54	5,320.00	1	259,440.57	
1984	Underground	Active	2,621.92	2,571.10	0.79%	0.95	1.07%	19.34	27.64	5,320.00	1	102,870.96	
1985	Underground	Active	49.00	47.88	0.80%	1.25	1.18%	0.48	0.56	5,320.00	1	2,551.78	
1986	Underground	Active	236.31	230.83	0.81%	1.16	1.28%	2.16	2.95	5,320.00	1	11,494.85	
1987	Underground	Active	203.45	198.52	0.81%	1.16	1.38%	1.86	2.75	5,320.00	1	9,904.31	
1988	Underground	Active	157.83	153.88	0.81%	1.14	1.49%	1.41	2.29	5,320.00	1	7,507.14	
1989	Underground	Active	317.75	309.44	0.80%	1.17	1.59%	2.89	4.92	5,320.00	1	15,392.03	
1990	Underground	Active	131.40	127.88	0.79%	1.14	1.69%	1.15	2.16	5,320.00	1	6,124.46	
1991	Underground	Active	36.67	35.63	0.78%	1.25	1.79%	0.35	0.64	5,320.00	1	1,846.72	
1992	Underground	Active	960.01	933.71	0.76%	1.01	1.89%	7.18	17.66	5,320.00	1	38,206.27	
1993	Underground	Active	1,009.71	981.01	0.75%	1.05	1.99%	7.68	19.49	5,320.00	1	40,834.10	
1994	Underground	Active	604.69	587.29	0.73%	1.00	2.08%	4.28	12.22	5,320.00	1	22,769.52	
1995	Underground	Active	318.33	308.97	0.71%	1.00	2.17%	2.19	6.70	5,320.00	1	11,633.83	
1996	Underground	Active	242.07	234.63	0.69%	1.12	2.26%	1.79	5.29	5,320.00	1	9,536.31	
1997	Underground	Active	247.41	239.60	0.66%	1.17	2.34%	1.85	5.60	5,320.00	1	9,846.94	
1998	Underground	Active	572.18	554.45	0.64%	1.01	2.41%	3.56	13.38	5,320.00	1	18,925.97	
1999	Underground	Active	327.70	317.07	0.61%	1.19	2.48%	2.31	7.87	5,320.00	1	12,265.79	
2000	Underground	Active	369.33	357.28	0.58%	1.18	2.55%	2.47	9.10	5,320.00	1	13,114.24	
2001	Underground	Active	112.63	108.98	0.56%	1.10	2.61%	0.67	2.84	5,320.00	1	3,557.68	
2002	Underground	Active	222.94	215.59	0.53%	1.19	2.66%	1.36	5.73	5,320.00	1	7,226.44	
2003	Underground	Active	991.90	960.26	0.51%	0.95	2.70%	4.61	25.92	5,320.00	1	24,519.37	
2004	Underground	Active	411.39	398.04	0.48%	1.07	2.73%	2.04	10.88	5,320.00	1	10,833.66	
2005	Underground	Active	364.13	352.29	0.45%	1.10	2.76%	1.76	9.73	5,320.00	1	9,377.89	
2006	Underground	Active	290.00	280.74	0.43%	0.99	2.78%	1.20	7.80	5,320.00	1	6,394.96	
2007	Underground	Active	591.88	572.93	0.41%	1.08	2.79%	2.52	15.96	5,320.00	1	13,401.18	
2008	Underground	Active	98.24	95.06	0.39%	1.25	2.78%	0.46	2.65	5,320.00	1	2,455.33	
2009	Underground	Active	370.51	358.92	0.37%	1.08	2.77%	1.43	9.95	5,320.00	1	7,633.04	
2010	Underground	Active	258.10	250.16	0.35%	1.08	2.75%	0.95	6.87	5,320.00	1	5,066.51	
2011	Underground	Active	204.25	198.01	0.34%	1.19	2.71%	0.80	5.37	5,320.00	1	4,265.51	
2012	Underground	Active	172.75	167.60	0.33%	1.18	2.66%	0.65	4.46	5,320.00	1	3,435.51	
2013	Underground	Active	505.93	491.36	0.32%	1.11	2.60%	1.75	12.79	5,320.00	1	9,287.07	
2014	Underground	Active	727.51	707.19	0.31%	1.12	2.53%	2.50	17.89	5,320.00	1	13,273.72	
2015	Underground	Active	183.96	178.96	0.31%	1.19	2.44%	0.67	4.37	5,320.00	1	3,558.99	
2016	Underground	Active	197.47	192.45	0.32%	0.98	2.34%	0.60	4.51	5,320.00	1	3,165.56	
2017	Underground	Active	161.03	156.99	0.32%	1.25	2.22%	0.63	3.49	5,320.00	1	3,360.80	
2018	Underground	Active	29.25	28.55	0.33%	1.25	2.09%	0.12	0.60	5,320.00	1	631.75	
2019	Underground	Active	149.13	145.85	0.35%	1.14	1.95%	0.58	2.84	5,320.00	1	3,072.49	
2020	Underground	Active	141.50	138.57	0.37%	1.19	1.78%	0.61	2.47	5,320.00	1	3,220.49	
2021	Underground	Active	81.77	80.19	0.39%	1.25	1.60%	0.39	1.29	5,320.00	1	2,100.47	
2022	Underground	Active	43.22	42.46	0.42%	1.25	1.41%	0.23	0.60	5,320.00	1	1,199.41	
2023	Underground	Active	65.04	64.26	0.46%	1.25	1.19%	0.37	0.77	5,320.00	1	1,971.82	
2024	Underground	Active	-	-	0.20%	-	0.96%	-	-	5,320.00	1	-	
2025	Underground	Active	16.05	15.98	0.09%	1.25	0.71%	0.02	0.11	5,320.00	1	95.11	

2027												
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	Adjustment					Adjustment			
				Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Avg recl Cost per Acre (19)	Factor Permit Status (20)	Gross Cost (21)
1967	Underground	Inactive	-	-	0.00%	-	0.00%	-	-	5,320.00	1	-
1968	Underground	Inactive	-	-	0.00%	-	0.00%	-	-	5,320.00	1	-
1969	Underground	Inactive	-	-	0.00%	-	0.01%	-	-	5,320.00	1	-
1970	Underground	Inactive	-	-	0.09%	-	0.03%	-	-	5,320.00	1	-
1971	Underground	Inactive	-	-	0.27%	-	0.05%	-	-	5,320.00	1	-
1972	Underground	Inactive	-	-	0.44%	-	0.08%	-	-	5,320.00	1	-
1973	Underground	Inactive	-	-	0.59%	-	0.11%	-	-	5,320.00	1	-
1974	Underground	Inactive	-	-	0.72%	-	0.15%	-	-	5,320.00	1	-
1975	Underground	Inactive	-	-	0.84%	-	0.19%	-	-	5,320.00	1	-
1976	Underground	Inactive	26.50	26.20	0.95%	0.80	0.23%	0.20	0.06	5,320.00	1	1,063.60
1977	Underground	Inactive	-	-	1.05%	-	0.28%	-	-	5,320.00	1	-
1978	Underground	Inactive	117.89	116.29	1.14%	0.80	0.33%	1.06	0.39	5,320.00	1	5,629.33
1979	Underground	Inactive	-	-	1.21%	-	0.39%	-	-	5,320.00	1	-
1980	Underground	Inactive	-	-	1.28%	-	0.45%	-	-	5,320.00	1	-
1981	Underground	Inactive	210.92	207.08	1.33%	0.91	0.51%	2.51	1.05	5,320.00	1	13,370.03
1982	Underground	Inactive	125.56	123.53	1.37%	0.70	0.57%	1.19	0.70	5,320.00	1	6,320.99
1983	Underground	Inactive	260.82	255.45	1.41%	0.95	0.63%	3.42	1.61	5,320.00	1	18,188.92
1984	Underground	Inactive	-	-	1.43%	-	0.70%	-	-	5,320.00	1	-
1985	Underground	Inactive	220.21	216.45	1.45%	0.60	0.76%	1.89	1.65	5,320.00	1	10,036.59
1986	Underground	Inactive	43.54	42.64	1.46%	0.80	0.83%	0.50	0.35	5,320.00	1	2,654.28
1987	Underground	Inactive	40.89	40.02	1.47%	0.80	0.90%	0.47	0.36	5,320.00	1	2,495.67
1988	Underground	Inactive	55.35	53.78	1.46%	1.25	0.96%	0.98	0.52	5,320.00	1	5,225.33
1989	Underground	Inactive	-	-	1.45%	-	1.03%	-	-	5,320.00	1	-
1990	Underground	Inactive	25.64	24.94	1.43%	1.10	1.09%	0.39	0.27	5,320.00	1	2,093.89
1991	Underground	Inactive	362.42	353.88	1.41%	0.82	1.16%	4.08	4.10	5,320.00	1	21,722.26
1992	Underground	Inactive	119.31	116.12	1.39%	1.03	1.22%	1.65	1.42	5,320.00	1	8,778.44
1993	Underground	Inactive	20.36	19.87	1.36%	0.80	1.29%	0.22	0.26	5,320.00	1	1,146.41
1994	Underground	Inactive	100.78	98.33	1.32%	0.80	1.35%	1.04	1.32	5,320.00	1	5,527.89
1995	Underground	Inactive	91.94	89.43	1.28%	1.03	1.40%	1.18	1.26	5,320.00	1	6,255.79
1996	Underground	Inactive	51.05	49.51	1.24%	1.25	1.46%	0.77	0.72	5,320.00	1	4,089.16
1997	Underground	Inactive	316.01	307.67	1.20%	0.94	1.51%	3.45	4.65	5,320.00	1	18,356.99
1998	Underground	Inactive	72.14	70.50	1.15%	0.60	1.56%	0.49	1.10	5,320.00	1	2,595.50
1999	Underground	Inactive	348.05	338.52	1.11%	1.03	1.61%	3.86	5.44	5,320.00	1	20,528.34
2000	Underground	Inactive	173.12	168.66	1.06%	0.88	1.65%	1.58	2.78	5,320.00	1	8,394.17
2001	Underground	Inactive	93.58	91.04	1.01%	1.03	1.69%	0.95	1.53	5,320.00	1	5,060.33
2002	Underground	Inactive	47.21	46.13	0.96%	0.60	1.72%	0.27	0.79	5,320.00	1	1,418.07
2003	Underground	Inactive	222.92	216.99	0.92%	1.03	1.75%	2.04	3.79	5,320.00	1	10,835.23
2004	Underground	Inactive	249.94	243.83	0.87%	0.80	1.77%	1.70	4.31	5,320.00	1	9,021.38
2005	Underground	Inactive	112.09	109.11	0.82%	1.10	1.79%	0.99	1.95	5,320.00	1	5,264.49
2006	Underground	Inactive	182.12	177.45	0.78%	1.03	1.80%	1.42	3.19	5,320.00	1	7,563.58
2007	Underground	Inactive	107.80	105.14	0.74%	0.95	1.80%	0.74	1.90	5,320.00	1	3,939.03
2008	Underground	Inactive	88.05	85.79	0.70%	1.16	1.80%	0.70	1.55	5,320.00	1	3,726.84
2009	Underground	Inactive	85.24	83.09	0.67%	1.16	1.79%	0.65	1.49	5,320.00	1	3,436.15
2010	Underground	Inactive	120.44	117.40	0.64%	1.25	1.78%	0.94	2.09	5,320.00	1	4,998.34
2011	Underground	Inactive	126.97	123.90	0.61%	1.18	1.75%	0.90	2.17	5,320.00	1	4,761.46
2012	Underground	Inactive	32.84	32.13	0.59%	0.80	1.72%	0.15	0.55	5,320.00	1	812.85
2013	Underground	Inactive	53.70	52.50	0.58%	1.03	1.68%	0.31	0.88	5,320.00	1	1,672.12
2014	Underground	Inactive	-	-	0.57%	-	1.64%	-	-	5,320.00	1	-
2015	Underground	Inactive	-	-	0.57%	-	1.58%	-	-	5,320.00	1	-
2016	Underground	Inactive	13.42	13.13	0.57%	1.25	1.51%	0.09	0.20	5,320.00	1	499.25
2017	Underground	Inactive	-	-	0.58%	-	1.44%	-	-	5,320.00	1	-
2018	Underground	Inactive	46.96	46.00	0.60%	1.25	1.35%	0.35	0.62	5,320.00	1	1,844.62
2019	Underground	Inactive	-	-	0.63%	-	1.26%	-	-	5,320.00	1	-
2020	Underground	Inactive	-	-	0.67%	-	1.15%	-	-	5,320.00	1	-
2021	Underground	Inactive	-	-	0.71%	-	1.04%	-	-	5,320.00	1	-
2022	Underground	Inactive	-	-	0.77%	-	0.91%	-	-	5,320.00	1	-
2023	Underground	Inactive	19.71	19.50	0.84%	1.25	0.77%	0.20	0.15	5,320.00	1	1,084.60
2024	Underground	Inactive	-	-	0.35%	-	0.62%	-	-	5,320.00	1	-
2025	Underground	Inactive	-	-	0.16%	-	0.46%	-	-	5,320.00	1	-

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	2027							Adjustment		Gross Cost (21)
				Adjustment							Avg recl Cost per Acre (19)	Factor Permit Status (20)	
				Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)				
1967	Underground	Phased Released	-	-	0.00%	-	0.00%	-	-	5,320.00	0.5	-	
1968	Underground	Phased Released	-	-	0.00%	-	0.00%	-	-	5,320.00	0.5	-	
1969	Underground	Phased Released	-	-	0.00%	-	0.05%	-	-	5,320.00	0.5	-	
1970	Underground	Phased Released	-	-	0.10%	-	0.12%	-	-	5,320.00	0.5	-	
1971	Underground	Phased Released	-	-	0.28%	-	0.21%	-	-	5,320.00	0.5	-	
1972	Underground	Phased Released	-	-	0.45%	-	0.32%	-	-	5,320.00	0.5	-	
1973	Underground	Phased Released	-	-	0.61%	-	0.46%	-	-	5,320.00	0.5	-	
1974	Underground	Phased Released	-	-	0.75%	-	0.61%	-	-	5,320.00	0.5	-	
1975	Underground	Phased Released	-	-	0.87%	-	0.78%	-	-	5,320.00	0.5	-	
1976	Underground	Phased Released	-	-	0.99%	-	0.97%	-	-	5,320.00	0.5	-	
1977	Underground	Phased Released	-	-	1.09%	-	1.17%	-	-	5,320.00	0.5	-	
1978	Underground	Phased Released	10.58	10.24	1.18%	1.25	1.39%	0.15	0.14	5,320.00	0.5	400.72	
1979	Underground	Phased Released	59.68	57.58	1.25%	1.25	1.62%	0.90	0.93	5,320.00	0.5	2,400.92	
1980	Underground	Phased Released	87.19	83.85	1.32%	1.25	1.86%	1.38	1.56	5,320.00	0.5	3,680.69	
1981	Underground	Phased Released	66.33	63.65	1.38%	1.18	2.11%	1.03	1.34	5,320.00	0.5	2,737.08	
1982	Underground	Phased Released	59.82	57.15	1.42%	1.25	2.37%	1.02	1.36	5,320.00	0.5	2,701.18	
1983	Underground	Phased Released	51.27	48.83	1.46%	1.25	2.64%	0.89	1.29	5,320.00	0.5	2,366.15	
1984	Underground	Phased Released	43.00	40.82	1.48%	1.25	2.91%	0.76	1.19	5,320.00	0.5	2,014.82	
1985	Underground	Phased Released	7.93	7.51	1.50%	1.25	3.18%	0.14	0.24	5,320.00	0.5	375.01	
1986	Underground	Phased Released	89.96	84.89	1.51%	1.25	3.46%	1.61	2.94	5,320.00	0.5	4,270.62	
1987	Underground	Phased Released	23.37	21.99	1.52%	1.25	3.74%	0.42	0.82	5,320.00	0.5	1,108.22	
1988	Underground	Phased Released	215.56	202.24	1.51%	1.25	4.02%	3.82	8.14	5,320.00	0.5	10,164.47	
1989	Underground	Phased Released	80.68	75.49	1.50%	1.25	4.30%	1.42	3.25	5,320.00	0.5	3,766.90	
1990	Underground	Phased Released	18.31	17.09	1.48%	1.25	4.58%	0.32	0.78	5,320.00	0.5	843.09	
1991	Underground	Phased Released	23.22	21.62	1.46%	1.25	4.85%	0.39	1.05	5,320.00	0.5	1,050.44	
1992	Underground	Phased Released	62.39	57.94	1.43%	1.25	5.12%	1.04	2.96	5,320.00	0.5	2,763.04	
1993	Underground	Phased Released	68.38	63.36	1.40%	1.25	5.38%	1.11	3.41	5,320.00	0.5	2,954.42	
1994	Underground	Phased Released	18.79	17.38	1.37%	1.25	5.63%	0.30	0.98	5,320.00	0.5	789.42	
1995	Underground	Phased Released	85.60	79.12	1.33%	1.14	5.87%	1.19	4.65	5,320.00	0.5	3,177.19	
1996	Underground	Phased Released	133.37	122.87	1.28%	1.25	6.10%	1.97	7.50	5,320.00	0.5	5,248.73	
1997	Underground	Phased Released	119.99	110.37	1.24%	1.25	6.32%	1.71	6.98	5,320.00	0.5	4,550.13	
1998	Underground	Phased Released	64.00	58.78	1.19%	1.25	6.53%	0.88	3.84	5,320.00	0.5	2,332.03	
1999	Underground	Phased Released	269.40	247.58	1.14%	1.10	6.72%	3.12	16.63	5,320.00	0.5	8,293.66	
2000	Underground	Phased Released	59.65	54.67	1.10%	1.25	6.89%	0.75	3.77	5,320.00	0.5	1,991.44	
2001	Underground	Phased Released	36.60	33.51	1.05%	1.25	7.05%	0.44	2.36	5,320.00	0.5	1,165.55	
2002	Underground	Phased Released	48.55	44.43	1.00%	1.25	7.19%	0.55	3.19	5,320.00	0.5	1,471.88	
2003	Underground	Phased Released	12.65	11.57	0.95%	1.25	7.30%	0.14	0.85	5,320.00	0.5	364.49	
2004	Underground	Phased Released	-	-	0.90%	-	7.40%	-	-	5,320.00	0.5	-	
2005	Underground	Phased Released	21.73	19.88	0.85%	1.25	7.47%	0.21	1.48	5,320.00	0.5	563.70	
2006	Underground	Phased Released	-	-	0.81%	-	7.52%	-	-	5,320.00	0.5	-	
2007	Underground	Phased Released	-	-	0.77%	-	7.54%	-	-	5,320.00	0.5	-	
2008	Underground	Phased Released	63.64	58.32	0.73%	1.25	7.53%	0.53	4.39	5,320.00	0.5	1,412.08	
2009	Underground	Phased Released	54.60	50.09	0.69%	1.25	7.50%	0.43	3.76	5,320.00	0.5	1,154.53	
2010	Underground	Phased Released	-	-	0.66%	-	7.43%	-	-	5,320.00	0.5	-	
2011	Underground	Phased Released	-	-	0.64%	-	7.34%	-	-	5,320.00	0.5	-	
2012	Underground	Phased Released	-	-	0.61%	-	7.21%	-	-	5,320.00	0.5	-	
2013	Underground	Phased Released	-	-	0.60%	-	7.04%	-	-	5,320.00	0.5	-	
2014	Underground	Phased Released	-	-	0.59%	-	6.84%	-	-	5,320.00	0.5	-	
2015	Underground	Phased Released	-	-	0.59%	-	6.61%	-	-	5,320.00	0.5	-	
2016	Underground	Phased Released	-	-	0.59%	-	6.33%	-	-	5,320.00	0.5	-	
2017	Underground	Phased Released	-	-	0.60%	-	6.02%	-	-	5,320.00	0.5	-	
2018	Underground	Phased Released	-	-	0.62%	-	5.67%	-	-	5,320.00	0.5	-	
2019	Underground	Phased Released	-	-	0.65%	-	5.27%	-	-	5,320.00	0.5	-	
2020	Underground	Phased Released	-	-	0.69%	-	4.83%	-	-	5,320.00	0.5	-	
2021	Underground	Phased Released	-	-	0.74%	-	4.34%	-	-	5,320.00	0.5	-	
2022	Underground	Phased Released	-	-	0.80%	-	3.81%	-	-	5,320.00	0.5	-	
2023	Underground	Phased Released	-	-	0.87%	-	3.23%	-	-	5,320.00	0.5	-	
2024	Underground	Phased Released	-	-	0.37%	-	2.60%	-	-	5,320.00	0.5	-	
2025	Underground	Phased Released	-	-	0.17%	-	1.91%	-	-	5,320.00	0.5	-	

West Virginia Department of Environmental Protection Office of Spill
Actuarial Reserve Study as of June 30, 2025
Water Capital Cost Projection - Deterministic Model

			2027							Adjustment		
Permit Issue	Mine	Mine	Current	Adjustment				Adjustment				
Year	Type	Status	Bonded Acres	Adjusted Acres	Forfeiture Rate	Factor Permit Bond Size	Release Rate	Forfeited Acres	Released Acres	Avg recl Cost per Acre	Factor Permit Status	Gross Cost
(1)	(2)	(3)	(4)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
1967	Other	Active	-	-	0.04%	-	1.22%	-	-	13,310.00	1	-
1968	Other	Active	-	-	0.04%	-	1.22%	-	-	13,310.00	1	-
1969	Other	Active	-	-	0.09%	-	1.22%	-	-	13,310.00	1	-
1970	Other	Active	-	-	0.13%	-	1.22%	-	-	13,310.00	1	-
1971	Other	Active	-	-	0.17%	-	1.22%	-	-	13,310.00	1	-
1972	Other	Active	20.00	19.70	0.21%	1.25	1.22%	0.05	0.24	13,310.00	1	686.94
1973	Other	Active	-	-	0.25%	-	1.22%	-	-	13,310.00	1	-
1974	Other	Active	36.25	35.67	0.28%	1.25	1.22%	0.12	0.43	13,310.00	1	1,656.70
1975	Other	Active	6.20	6.10	0.31%	1.25	1.22%	0.02	0.07	13,310.00	1	314.69
1976	Other	Active	-	-	0.34%	-	1.22%	-	-	13,310.00	1	-
1977	Other	Active	85.99	84.53	0.37%	1.25	1.22%	0.39	1.03	13,310.00	1	5,133.01
1978	Other	Active	-	-	0.39%	-	1.22%	-	-	13,310.00	1	-
1979	Other	Active	72.25	70.98	0.41%	1.25	1.22%	0.36	0.86	13,310.00	1	4,852.47
1980	Other	Active	171.38	168.33	0.43%	1.25	1.22%	0.91	2.05	13,310.00	1	12,062.14
1981	Other	Active	4,390.77	4,318.25	0.45%	0.94	1.22%	18.15	52.53	13,310.00	1	241,564.85
1982	Other	Active	539.33	530.34	0.46%	0.94	1.22%	2.32	6.45	13,310.00	1	30,815.34
1983	Other	Active	3,836.07	3,772.16	0.48%	0.92	1.22%	16.54	45.89	13,310.00	1	220,107.53
1984	Other	Active	4,369.90	4,297.75	0.49%	0.87	1.22%	18.28	52.28	13,310.00	1	243,352.75
1985	Other	Active	1,485.04	1,459.71	0.50%	0.96	1.22%	7.02	17.76	13,310.00	1	93,390.40
1986	Other	Active	1,384.69	1,360.70	0.51%	1.00	1.22%	6.92	16.55	13,310.00	1	92,142.01
1987	Other	Active	968.10	952.01	0.52%	0.85	1.22%	4.19	11.58	13,310.00	1	55,834.41
1988	Other	Active	613.83	602.93	0.52%	1.06	1.22%	3.34	7.33	13,310.00	1	44,473.40
1989	Other	Active	617.50	606.45	0.53%	1.08	1.22%	3.45	7.38	13,310.00	1	45,957.58
1990	Other	Active	400.79	393.51	0.53%	1.12	1.22%	2.35	4.79	13,310.00	1	31,327.77
1991	Other	Active	491.29	482.30	0.54%	1.14	1.22%	2.95	5.87	13,310.00	1	39,279.65
1992	Other	Active	293.26	288.08	0.54%	1.03	1.22%	1.59	3.50	13,310.00	1	21,124.30
1993	Other	Active	761.88	748.75	0.54%	0.94	1.22%	3.80	9.11	13,310.00	1	50,605.14
1994	Other	Active	2,293.13	2,254.47	0.54%	0.88	1.22%	10.61	27.42	13,310.00	1	141,184.69
1995	Other	Active	997.92	980.60	0.54%	0.97	1.22%	5.11	11.93	13,310.00	1	68,032.55
1996	Other	Active	1,971.02	1,940.05	0.53%	0.67	1.22%	6.92	23.60	13,310.00	1	92,051.13
1997	Other	Active	739.12	726.22	0.53%	1.00	1.22%	3.87	8.83	13,310.00	1	51,444.77
1998	Other	Active	622.19	611.02	0.53%	1.10	1.22%	3.56	7.43	13,310.00	1	47,340.05
1999	Other	Active	415.45	408.08	0.53%	1.07	1.22%	2.30	4.96	13,310.00	1	30,549.60
2000	Other	Active	339.23	333.87	0.52%	0.70	1.22%	1.22	4.06	13,310.00	1	16,230.17
2001	Other	Active	385.64	379.01	0.52%	0.98	1.22%	1.92	4.61	13,310.00	1	25,586.07
2002	Other	Active	801.13	787.05	0.51%	1.06	1.22%	4.30	9.57	13,310.00	1	57,208.53
2003	Other	Active	887.86	872.63	0.51%	0.99	1.22%	4.39	10.61	13,310.00	1	58,478.36
2004	Other	Active	1,214.52	1,193.78	0.50%	0.98	1.22%	5.92	14.52	13,310.00	1	78,742.33
2005	Other	Active	75.34	74.01	0.50%	1.10	1.22%	0.41	0.90	13,310.00	1	5,411.70
2006	Other	Active	491.96	483.49	0.49%	1.03	1.22%	2.46	5.88	13,310.00	1	32,762.16
2007	Other	Active	368.47	362.07	0.49%	1.07	1.22%	1.90	4.40	13,310.00	1	25,303.87
2008	Other	Active	599.63	589.17	0.49%	1.09	1.22%	3.13	7.17	13,310.00	1	41,716.22
2009	Other	Active	197.78	194.29	0.48%	1.14	1.22%	1.07	2.36	13,310.00	1	14,213.72
2010	Other	Active	1,140.63	1,121.14	0.48%	1.03	1.22%	5.53	13.64	13,310.00	1	73,628.31
2011	Other	Active	310.19	305.00	0.48%	0.95	1.22%	1.38	3.71	13,310.00	1	18,414.96
2012	Other	Active	161.25	158.31	0.48%	1.25	1.22%	0.94	1.93	13,310.00	1	12,524.89
2013	Other	Active	2,081.52	2,045.12	0.47%	1.00	1.23%	9.73	25.22	13,310.00	1	129,487.38
2014	Other	Active	212.39	208.27	0.47%	1.12	1.27%	1.11	2.65	13,310.00	1	14,711.84
2015	Other	Active	1,106.93	1,080.94	0.47%	1.03	1.41%	5.30	15.23	13,310.00	1	70,511.75
2016	Other	Active	1,513.50	1,455.91	0.48%	1.18	1.86%	8.14	27.03	13,310.00	1	108,309.95
2017	Other	Active	369.58	342.33	0.48%	1.16	3.24%	1.90	11.10	13,310.00	1	25,271.04
2018	Other	Active	21.89	18.94	0.48%	1.25	6.81%	0.11	1.29	13,310.00	1	1,518.22
2019	Other	Active	5.94	4.82	0.49%	1.25	12.85%	0.03	0.62	13,310.00	1	390.02
2020	Other	Active	562.96	441.66	0.49%	1.16	18.26%	2.52	80.66	13,310.00	1	33,588.99
2021	Other	Active	74.26	57.50	0.50%	1.25	20.97%	0.36	12.06	13,310.00	1	4,783.64
2022	Other	Active	465.40	359.24	0.51%	1.10	21.94%	2.01	78.80	13,310.00	1	26,771.32
2023	Other	Active	723.68	540.76	0.52%	1.25	22.24%	3.51	120.26	13,310.00	1	46,738.03
2024	Other	Active	273.27	231.33	0.04%	1.25	25.23%	0.11	58.36	13,310.00	1	1,448.77
2025	Other	Active	618.50	618.50	0.00%	1.24	15.35%	-	94.91	13,310.00	1	-

2027													
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	Adjustment							Avg recl Cost per Acre (19)	Adjustment	
				Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Factor Permit Status (20)		Gross Cost (21)	
1967	Other	Inactive	-	-	0.07%	-	0.79%	-	-	13,310.00	1	-	
1968	Other	Inactive	-	-	0.07%	-	0.79%	-	-	13,310.00	1	-	
1969	Other	Inactive	-	-	0.15%	-	0.79%	-	-	13,310.00	1	-	
1970	Other	Inactive	-	-	0.23%	-	0.79%	-	-	13,310.00	1	-	
1971	Other	Inactive	-	-	0.31%	-	0.79%	-	-	13,310.00	1	-	
1972	Other	Inactive	-	-	0.38%	-	0.79%	-	-	13,310.00	1	-	
1973	Other	Inactive	-	-	0.45%	-	0.79%	-	-	13,310.00	1	-	
1974	Other	Inactive	-	-	0.51%	-	0.79%	-	-	13,310.00	1	-	
1975	Other	Inactive	-	-	0.56%	-	0.79%	-	-	13,310.00	1	-	
1976	Other	Inactive	14.48	14.25	0.61%	1.25	0.79%	0.11	0.11	13,310.00	1	1,455.24	
1977	Other	Inactive	52.00	51.13	0.66%	1.25	0.79%	0.42	0.40	13,310.00	1	5,628.03	
1978	Other	Inactive	-	-	0.71%	-	0.79%	-	-	13,310.00	1	-	
1979	Other	Inactive	-	-	0.74%	-	0.79%	-	-	13,310.00	1	-	
1980	Other	Inactive	114.75	113.10	0.78%	0.80	0.79%	0.71	0.89	13,310.00	1	9,401.00	
1981	Other	Inactive	859.57	846.38	0.81%	0.89	0.79%	6.11	6.66	13,310.00	1	81,274.57	
1982	Other	Inactive	130.80	128.61	0.84%	1.03	0.79%	1.11	1.01	13,310.00	1	14,768.98	
1983	Other	Inactive	888.39	874.94	0.87%	0.82	0.79%	6.20	6.89	13,310.00	1	82,483.78	
1984	Other	Inactive	495.53	487.80	0.89%	0.85	0.79%	3.69	3.84	13,310.00	1	49,100.11	
1985	Other	Inactive	1,248.52	1,228.75	0.91%	0.86	0.79%	9.61	9.67	13,310.00	1	127,867.78	
1986	Other	Inactive	-	-	0.93%	-	0.79%	-	-	13,310.00	1	-	
1987	Other	Inactive	-	-	0.94%	-	0.79%	-	-	13,310.00	1	-	
1988	Other	Inactive	34.27	33.59	0.95%	1.25	0.79%	0.40	0.26	13,310.00	1	5,314.38	
1989	Other	Inactive	87.34	85.60	0.96%	1.25	0.79%	1.03	0.67	13,310.00	1	13,671.06	
1990	Other	Inactive	425.33	419.50	0.97%	0.60	0.79%	2.43	3.30	13,310.00	1	32,387.04	
1991	Other	Inactive	-	-	0.97%	-	0.79%	-	-	13,310.00	1	-	
1992	Other	Inactive	354.26	347.71	0.97%	1.09	0.79%	3.68	2.74	13,310.00	1	49,032.31	
1993	Other	Inactive	192.03	188.46	0.98%	1.10	0.79%	2.02	1.48	13,310.00	1	26,908.70	
1994	Other	Inactive	381.64	376.41	0.97%	0.60	0.79%	2.20	2.96	13,310.00	1	29,297.10	
1995	Other	Inactive	593.99	583.99	0.97%	0.93	0.79%	5.25	4.60	13,310.00	1	69,926.22	
1996	Other	Inactive	152.16	149.79	0.97%	0.80	0.79%	1.16	1.18	13,310.00	1	15,457.98	
1997	Other	Inactive	593.50	584.84	0.96%	0.70	0.79%	3.95	4.60	13,310.00	1	52,564.23	
1998	Other	Inactive	131.05	128.74	0.96%	1.03	0.79%	1.27	1.01	13,310.00	1	16,845.69	
1999	Other	Inactive	-	-	0.95%	-	0.79%	-	-	13,310.00	1	-	
2000	Other	Inactive	-	-	0.95%	-	0.79%	-	-	13,310.00	1	-	
2001	Other	Inactive	144.00	141.80	0.94%	0.80	0.79%	1.06	1.12	13,310.00	1	14,163.05	
2002	Other	Inactive	-	-	0.93%	-	0.79%	-	-	13,310.00	1	-	
2003	Other	Inactive	20.00	19.61	0.92%	1.25	0.79%	0.23	0.15	13,310.00	1	3,008.08	
2004	Other	Inactive	-	-	0.91%	-	0.79%	-	-	13,310.00	1	-	
2005	Other	Inactive	-	-	0.91%	-	0.79%	-	-	13,310.00	1	-	
2006	Other	Inactive	-	-	0.90%	-	0.79%	-	-	13,310.00	1	-	
2007	Other	Inactive	26.00	25.51	0.89%	1.25	0.79%	0.28	0.20	13,310.00	1	3,774.74	
2008	Other	Inactive	-	-	0.88%	-	0.79%	-	-	13,310.00	1	-	
2009	Other	Inactive	19.80	19.43	0.88%	1.25	0.79%	0.21	0.15	13,310.00	1	2,830.94	
2010	Other	Inactive	-	-	0.87%	-	0.79%	-	-	13,310.00	1	-	
2011	Other	Inactive	-	-	0.87%	-	0.79%	-	-	13,310.00	1	-	
2012	Other	Inactive	66.26	65.28	0.86%	0.80	0.79%	0.45	0.52	13,310.00	1	5,990.83	
2013	Other	Inactive	-	-	0.86%	-	0.80%	-	-	13,310.00	1	-	
2014	Other	Inactive	-	-	0.86%	-	0.82%	-	-	13,310.00	1	-	
2015	Other	Inactive	-	-	0.86%	-	0.91%	-	-	13,310.00	1	-	
2016	Other	Inactive	-	-	0.86%	-	1.20%	-	-	13,310.00	1	-	
2017	Other	Inactive	16.37	15.47	0.87%	1.25	2.10%	0.17	0.32	13,310.00	1	2,230.41	
2018	Other	Inactive	11.88	10.76	0.87%	1.25	4.41%	0.12	0.47	13,310.00	1	1,563.16	
2019	Other	Inactive	-	-	0.88%	-	8.31%	-	-	13,310.00	1	-	
2020	Other	Inactive	-	-	0.89%	-	11.82%	-	-	13,310.00	1	-	
2021	Other	Inactive	-	-	0.91%	-	13.57%	-	-	13,310.00	1	-	
2022	Other	Inactive	-	-	0.92%	-	14.19%	-	-	13,310.00	1	-	
2023	Other	Inactive	-	-	0.94%	-	14.39%	-	-	13,310.00	1	-	
2024	Other	Inactive	19.50	17.56	0.07%	1.25	16.32%	0.01	2.87	13,310.00	1	199.37	
2025	Other	Inactive	-	-	0.00%	-	9.93%	-	-	13,310.00	1	-	

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	2027							Avg recl Cost per Acre (19)	Adjustment	
				Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Factor Permit Status (20)		Gross Cost (21)	
1967	Other	Phased Released	-	-	0.07%	-	3.29%	-	-	13,310.00	0.5	-	
1968	Other	Phased Released	-	-	0.07%	-	3.29%	-	-	13,310.00	0.5	-	
1969	Other	Phased Released	-	-	0.16%	-	3.29%	-	-	13,310.00	0.5	-	
1970	Other	Phased Released	-	-	0.24%	-	3.29%	-	-	13,310.00	0.5	-	
1971	Other	Phased Released	-	-	0.32%	-	3.29%	-	-	13,310.00	0.5	-	
1972	Other	Phased Released	-	-	0.39%	-	3.29%	-	-	13,310.00	0.5	-	
1973	Other	Phased Released	9.00	8.64	0.46%	1.25	3.29%	0.05	0.28	13,310.00	0.5	331.29	
1974	Other	Phased Released	-	-	0.52%	-	3.29%	-	-	13,310.00	0.5	-	
1975	Other	Phased Released	-	-	0.58%	-	3.29%	-	-	13,310.00	0.5	-	
1976	Other	Phased Released	27.88	26.72	0.64%	1.25	3.29%	0.21	0.88	13,310.00	0.5	1,411.97	
1977	Other	Phased Released	-	-	0.68%	-	3.29%	-	-	13,310.00	0.5	-	
1978	Other	Phased Released	12.76	12.22	0.73%	1.25	3.29%	0.11	0.40	13,310.00	0.5	741.32	
1979	Other	Phased Released	58.69	56.17	0.77%	1.25	3.29%	0.54	1.85	13,310.00	0.5	3,599.62	
1980	Other	Phased Released	-	-	0.81%	-	3.29%	-	-	13,310.00	0.5	-	
1981	Other	Phased Released	475.54	455.18	0.84%	1.14	3.29%	4.35	14.98	13,310.00	0.5	28,976.42	
1982	Other	Phased Released	201.26	192.38	0.87%	1.25	3.29%	2.09	6.33	13,310.00	0.5	13,935.40	
1983	Other	Phased Released	201.70	192.95	0.90%	1.14	3.29%	1.97	6.35	13,310.00	0.5	13,104.86	
1984	Other	Phased Released	75.79	72.40	0.92%	1.25	3.29%	0.83	2.38	13,310.00	0.5	5,543.57	
1985	Other	Phased Released	43.00	41.07	0.94%	1.25	3.29%	0.48	1.35	13,310.00	0.5	3,213.11	
1986	Other	Phased Released	-	-	0.96%	-	3.29%	-	-	13,310.00	0.5	-	
1987	Other	Phased Released	-	-	0.97%	-	3.29%	-	-	13,310.00	0.5	-	
1988	Other	Phased Released	-	-	0.98%	-	3.29%	-	-	13,310.00	0.5	-	
1989	Other	Phased Released	62.20	59.38	0.99%	1.25	3.29%	0.74	1.95	13,310.00	0.5	4,905.02	
1990	Other	Phased Released	-	-	1.00%	-	3.29%	-	-	13,310.00	0.5	-	
1991	Other	Phased Released	-	-	1.00%	-	3.29%	-	-	13,310.00	0.5	-	
1992	Other	Phased Released	-	-	1.01%	-	3.29%	-	-	13,310.00	0.5	-	
1993	Other	Phased Released	68.65	65.53	1.01%	1.25	3.29%	0.83	2.16	13,310.00	0.5	5,499.12	
1994	Other	Phased Released	-	-	1.01%	-	3.29%	-	-	13,310.00	0.5	-	
1995	Other	Phased Released	-	-	1.01%	-	3.29%	-	-	13,310.00	0.5	-	
1996	Other	Phased Released	-	-	1.00%	-	3.29%	-	-	13,310.00	0.5	-	
1997	Other	Phased Released	31.16	29.75	1.00%	1.25	3.29%	0.37	0.98	13,310.00	0.5	2,469.52	
1998	Other	Phased Released	-	-	0.99%	-	3.29%	-	-	13,310.00	0.5	-	
1999	Other	Phased Released	179.00	171.71	0.99%	0.80	3.29%	1.35	5.65	13,310.00	0.5	9,010.10	
2000	Other	Phased Released	-	-	0.98%	-	3.29%	-	-	13,310.00	0.5	-	
2001	Other	Phased Released	-	-	0.97%	-	3.29%	-	-	13,310.00	0.5	-	
2002	Other	Phased Released	-	-	0.96%	-	3.29%	-	-	13,310.00	0.5	-	
2003	Other	Phased Released	-	-	0.95%	-	3.29%	-	-	13,310.00	0.5	-	
2004	Other	Phased Released	-	-	0.94%	-	3.29%	-	-	13,310.00	0.5	-	
2005	Other	Phased Released	-	-	0.94%	-	3.29%	-	-	13,310.00	0.5	-	
2006	Other	Phased Released	-	-	0.93%	-	3.29%	-	-	13,310.00	0.5	-	
2007	Other	Phased Released	-	-	0.92%	-	3.29%	-	-	13,310.00	0.5	-	
2008	Other	Phased Released	9.90	9.46	0.91%	1.25	3.29%	0.11	0.31	13,310.00	0.5	718.40	
2009	Other	Phased Released	-	-	0.91%	-	3.29%	-	-	13,310.00	0.5	-	
2010	Other	Phased Released	-	-	0.90%	-	3.29%	-	-	13,310.00	0.5	-	
2011	Other	Phased Released	-	-	0.90%	-	3.30%	-	-	13,310.00	0.5	-	
2012	Other	Phased Released	-	-	0.89%	-	3.30%	-	-	13,310.00	0.5	-	
2013	Other	Phased Released	-	-	0.89%	-	3.34%	-	-	13,310.00	0.5	-	
2014	Other	Phased Released	-	-	0.89%	-	3.45%	-	-	13,310.00	0.5	-	
2015	Other	Phased Released	115.00	107.94	0.89%	1.25	3.81%	1.20	4.12	13,310.00	0.5	7,985.24	
2016	Other	Phased Released	-	-	0.89%	-	5.02%	-	-	13,310.00	0.5	-	
2017	Other	Phased Released	-	-	0.90%	-	8.78%	-	-	13,310.00	0.5	-	
2018	Other	Phased Released	-	-	0.90%	-	18.44%	-	-	13,310.00	0.5	-	
2019	Other	Phased Released	-	-	0.91%	-	34.77%	-	-	13,310.00	0.5	-	
2020	Other	Phased Released	-	-	0.92%	-	49.41%	-	-	13,310.00	0.5	-	
2021	Other	Phased Released	-	-	0.94%	-	56.73%	-	-	13,310.00	0.5	-	
2022	Other	Phased Released	-	-	0.95%	-	59.35%	-	-	13,310.00	0.5	-	
2023	Other	Phased Released	-	-	0.97%	-	60.17%	-	-	13,310.00	0.5	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water O&M Cost Projection - Deterministic Model
Water O&M Total - All Mine Types

Fiscal Year Ending 6/30	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Incremental Yearly Liability				Incremental Yearly Liability - Three Year Delay			
	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	101,848	20,306	12,849	135,002	0	0	0	0
2027	99,884	19,801	11,832	131,517	0	0	0	0
2028	96,967	19,280	10,883	127,130	0	0	0	0
2029	93,870	18,717	9,996	122,583	50,924	10,153	6,424	67,501
2030	90,048	18,135	9,165	117,348	100,866	20,053	12,340	133,259
2031	86,268	17,530	8,385	112,183	98,426	19,540	11,358	129,324
2032	82,509	16,902	7,652	107,062	95,418	18,999	10,440	124,857
2033	78,742	16,248	6,960	101,950	136,983	27,494	14,163	178,639
2034	74,948	15,569	6,308	96,825	86,268	17,530	8,385	112,183
2035	71,107	14,864	5,689	91,660	82,509	16,902	7,652	107,062
2036	67,204	14,143	5,108	86,455	78,742	16,248	6,960	101,950
2037	63,286	13,410	4,563	81,258	74,948	15,569	6,308	96,825
2038	59,354	12,644	4,061	76,059	71,107	14,864	5,689	91,660
2039	55,408	11,866	3,609	70,883	67,204	14,143	5,108	86,455
2040	51,439	11,097	3,191	65,727	63,286	13,410	4,563	81,258
2041	48,012	10,407	2,847	61,266	59,354	12,644	4,061	76,059
2042	45,121	9,729	2,540	57,391	55,408	11,866	3,609	70,883
2043	42,549	9,108	2,265	53,922	51,439	11,097	3,191	65,727
2044	40,171	8,521	2,024	50,717	48,012	10,407	2,847	61,266
2045	37,895	8,018	1,811	47,724	45,121	9,729	2,540	57,391

Notes: Col (1) - (3) from Exhibit E-121, Col (12), (21), etc.
Col (4) = (1) + (2) + (3)
Col (5) - (8) based on (1) - (4) with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water O&M Cost Projection - Deterministic Model
Surface Mines

Fiscal Year Ending 6/30	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Incremental Yearly Liability				Incremental Yearly Liability - Three Year Delay			
	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	55,287	7,244	6,648	69,179	0	0	0	0
2027	54,198	6,949	5,987	67,134	0	0	0	0
2028	52,539	6,661	5,386	64,586	0	0	0	0
2029	50,585	6,380	4,839	61,804	27,644	3,622	3,324	34,590
2030	48,300	6,106	4,343	58,748	54,743	7,097	6,318	68,157
2031	46,073	5,838	3,892	55,803	53,369	6,805	5,687	65,860
2032	43,909	5,578	3,484	52,970	51,562	6,521	5,112	63,195
2033	41,804	5,324	3,114	50,242	73,592	9,296	6,762	89,650
2034	39,759	5,077	2,780	47,616	46,073	5,838	3,892	55,803
2035	37,773	4,836	2,478	45,088	43,909	5,578	3,484	52,970
2036	35,847	4,606	2,211	42,664	41,804	5,324	3,114	50,242
2037	33,987	4,381	1,970	40,338	39,759	5,077	2,780	47,616
2038	32,190	4,163	1,753	38,107	37,773	4,836	2,478	45,088
2039	30,452	3,952	1,562	35,967	35,847	4,606	2,211	42,664
2040	28,773	3,747	1,392	33,912	33,987	4,381	1,970	40,338
2041	27,164	3,549	1,247	31,959	32,190	4,163	1,753	38,107
2042	25,611	3,356	1,115	30,082	30,452	3,952	1,562	35,967
2043	24,120	3,170	996	28,286	28,773	3,747	1,392	33,912
2044	22,683	2,989	901	26,573	27,164	3,549	1,247	31,959
2045	21,312	2,815	822	24,949	25,611	3,356	1,115	30,082

Notes: Col (1) - (3) from Exhibit E-121, Col (12), (21), etc.
Col (4) = (1) + (2) + (3)
Col (5) - (8) based on (1) - (4) with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water O&M Cost Projection - Deterministic Model
Underground Mines

Fiscal Year Ending 6/30	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Incremental Yearly Liability				Incremental Yearly Liability - Three Year Delay			
	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	20,819	5,853	4,079	30,750	0	0	0	0
2027	20,399	5,847	3,863	30,109	0	0	0	0
2028	19,901	5,811	3,651	29,363	0	0	0	0
2029	19,358	5,762	3,443	28,563	10,409	2,926	2,039	15,375
2030	18,750	5,699	3,238	27,687	20,609	5,850	3,971	30,429
2031	18,081	5,619	3,035	26,735	20,150	5,829	3,757	29,736
2032	17,345	5,522	2,834	25,701	19,630	5,787	3,547	28,963
2033	16,535	5,405	2,634	24,574	28,429	8,580	4,959	41,968
2034	15,646	5,271	2,434	23,351	18,081	5,619	3,035	26,735
2035	14,671	5,117	2,233	22,022	17,345	5,522	2,834	25,701
2036	13,603	4,953	2,032	20,588	16,535	5,405	2,634	24,574
2037	12,484	4,777	1,837	19,099	15,646	5,271	2,434	23,351
2038	11,326	4,578	1,660	17,564	14,671	5,117	2,233	22,022
2039	10,130	4,377	1,498	16,005	13,603	4,953	2,032	20,588
2040	8,883	4,185	1,350	14,418	12,484	4,777	1,837	19,099
2041	7,934	4,009	1,212	13,155	11,326	4,578	1,660	17,564
2042	7,476	3,840	1,082	12,398	10,130	4,377	1,498	16,005
2043	7,134	3,667	955	11,756	8,883	4,185	1,350	14,418
2044	6,775	3,494	833	11,103	7,934	4,009	1,212	13,155
2045	6,408	3,310	719	10,438	7,476	3,840	1,082	12,398

Notes: Col (1) - (3) from Exhibit E-121, Col (12), (21), etc.
Col (4) = (1) + (2) + (3)
Col (5) - (8) based on (1) - (4) with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water O&M Cost Projection - Deterministic Model
Other

Fiscal Year Ending 6/30	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Incremental Yearly Liability				Incremental Yearly Liability - Three Year Delay			
	Active	Inactive	Phase Released	Total	Active	Inactive	Phase Released	Total
2026	25,742	7,209	2,122	35,073	0	0	0	0
2027	25,287	7,004	1,982	34,273	0	0	0	0
2028	24,526	6,808	1,846	33,181	0	0	0	0
2029	23,927	6,575	1,714	32,216	12,871	3,604	1,061	17,536
2030	22,998	6,330	1,585	30,913	25,515	7,107	2,052	34,673
2031	22,114	6,073	1,458	29,645	24,907	6,906	1,914	33,727
2032	21,255	5,803	1,334	28,391	24,227	6,691	1,780	32,699
2033	20,402	5,519	1,213	27,134	34,961	9,618	2,442	47,021
2034	19,543	5,222	1,094	25,859	22,114	6,073	1,458	29,645
2035	18,663	4,910	977	24,550	21,255	5,803	1,334	28,391
2036	17,753	4,585	865	23,204	20,402	5,519	1,213	27,134
2037	16,814	4,251	755	21,821	19,543	5,222	1,094	25,859
2038	15,838	3,902	648	20,388	18,663	4,910	977	24,550
2039	14,826	3,537	548	18,911	17,753	4,585	865	23,204
2040	13,784	3,164	449	17,397	16,814	4,251	755	21,821
2041	12,914	2,849	388	16,151	15,838	3,902	648	20,388
2042	12,035	2,533	343	14,911	14,826	3,537	548	18,911
2043	11,295	2,272	314	13,881	13,784	3,164	449	17,397
2044	10,713	2,038	290	13,041	12,914	2,849	388	16,151
2045	10,175	1,893	270	12,337	12,035	2,533	343	14,911

Notes: Col (1) - (3) from Exhibit E-121, Col (12), (21), etc.
Col (4) = (1) + (2) + (3)
Col (5) - (8) based on (1) - (4) with a three-year delay

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic Mode

			2026										
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	Forfeiture Rate (5)	Adjustment				Avg Recl Cost per Acre (10)	Adjustment		Gross Cost (12)	
					Factor Permit Bond Size (6)	Release Rate (7)	Forfeited Acres (8)	Released Acres (9)		Factor Permit Status (11)			
1967	Surface	Active	-	0.047%	0.00	0.003%	-	-	80.00	1.00	-	-	
1968	Surface	Active	-	0.056%	0.00	0.233%	-	-	80.00	1.00	-	-	
1969	Surface	Active	-	0.066%	0.00	0.449%	-	-	80.00	1.00	-	-	
1970	Surface	Active	-	0.076%	0.00	0.651%	-	-	80.00	1.00	-	-	
1971	Surface	Active	-	0.086%	0.00	0.839%	-	-	80.00	1.00	-	-	
1972	Surface	Active	400.00	0.095%	1.25	1.015%	0.48	4.06	80.00	1.00	38.19	-	
1973	Surface	Active	-	0.105%	0.00	1.178%	-	-	80.00	1.00	-	-	
1974	Surface	Active	-	0.115%	0.00	1.328%	-	-	80.00	1.00	-	-	
1975	Surface	Active	-	0.125%	0.00	1.467%	-	-	80.00	1.00	-	-	
1976	Surface	Active	-	0.135%	0.00	1.594%	-	-	80.00	1.00	-	-	
1977	Surface	Active	1,107.97	0.144%	0.88	1.709%	1.41	18.94	80.00	1.00	113.10	-	
1978	Surface	Active	855.12	0.154%	0.70	1.814%	0.92	15.51	80.00	1.00	73.86	-	
1979	Surface	Active	-	0.164%	1.25	1.908%	-	-	80.00	1.00	-	-	
1980	Surface	Active	47.92	0.174%	1.25	1.992%	0.10	0.95	80.00	1.00	8.33	-	
1981	Surface	Active	1,999.01	0.184%	1.00	2.066%	3.67	41.30	80.00	1.00	293.66	-	
1982	Surface	Active	7.44	0.193%	1.25	2.130%	0.02	0.16	80.00	1.00	1.44	-	
1983	Surface	Active	1,708.83	0.203%	0.60	2.186%	2.08	37.35	80.00	1.00	166.69	-	
1984	Surface	Active	-	0.213%	0.00	2.232%	-	-	80.00	1.00	-	-	
1985	Surface	Active	2,611.31	0.223%	0.85	2.270%	4.95	59.26	80.00	1.00	395.64	-	
1986	Surface	Active	2,532.60	0.233%	0.95	2.299%	5.60	58.23	80.00	1.00	447.71	-	
1987	Surface	Active	1,371.12	0.242%	0.82	2.321%	2.71	31.82	80.00	1.00	217.14	-	
1988	Surface	Active	1,562.99	0.252%	0.96	2.335%	3.80	36.49	80.00	1.00	304.08	-	
1989	Surface	Active	2,773.31	0.262%	0.76	2.342%	5.49	64.95	80.00	1.00	439.58	-	
1990	Surface	Active	2,703.07	0.272%	0.86	2.342%	6.34	63.31	80.00	1.00	506.91	-	
1991	Surface	Active	1,554.45	0.282%	0.98	2.336%	4.27	36.31	80.00	1.00	341.41	-	
1992	Surface	Active	3,683.68	0.291%	0.63	2.323%	6.80	85.58	80.00	1.00	543.82	-	
1993	Surface	Active	4,151.89	0.301%	0.93	2.305%	11.65	95.70	80.00	1.00	932.14	-	
1994	Surface	Active	1,389.47	0.311%	0.70	2.281%	3.02	31.70	80.00	1.00	241.97	-	
1995	Surface	Active	8,653.77	0.321%	0.85	2.252%	23.49	194.92	80.00	1.00	1,879.01	-	
1996	Surface	Active	6,686.27	0.331%	0.83	2.219%	18.42	148.36	80.00	1.00	1,473.47	-	
1997	Surface	Active	11,098.71	0.340%	0.89	2.181%	33.59	242.06	80.00	1.00	2,686.96	-	
1998	Surface	Active	11,215.25	0.350%	0.75	2.139%	29.35	239.88	80.00	1.00	2,348.37	-	
1999	Surface	Active	2,008.81	0.360%	0.65	2.093%	4.70	42.05	80.00	1.00	376.00	-	
2000	Surface	Active	4,010.07	0.370%	0.78	2.044%	11.49	81.96	80.00	1.00	919.27	-	
2001	Surface	Active	7,502.63	0.380%	0.84	1.992%	23.78	149.43	80.00	1.00	1,902.17	-	
2002	Surface	Active	5,919.92	0.389%	0.75	1.937%	17.20	114.66	80.00	1.00	1,375.81	-	
2003	Surface	Active	8,056.67	0.399%	0.85	1.880%	27.33	151.43	80.00	1.00	2,186.67	-	
2004	Surface	Active	13,148.60	0.409%	0.85	1.820%	45.70	239.35	80.00	1.00	3,656.26	-	
2005	Surface	Active	4,062.35	0.419%	1.00	1.759%	17.07	71.47	80.00	1.00	1,365.35	-	
2006	Surface	Active	5,139.07	0.429%	0.84	1.697%	18.39	87.22	80.00	1.00	1,471.08	-	
2007	Surface	Active	5,069.99	0.438%	0.87	1.634%	19.22	82.84	80.00	1.00	1,537.82	-	
2008	Surface	Active	9,470.87	0.448%	0.70	1.570%	29.71	148.70	80.00	1.00	2,376.67	-	
2009	Surface	Active	6,648.17	0.458%	0.85	1.506%	25.79	100.12	80.00	1.00	2,063.35	-	
2010	Surface	Active	4,950.90	0.468%	0.92	1.442%	21.30	71.38	80.00	1.00	1,704.27	-	
2011	Surface	Active	1,769.33	0.478%	0.88	1.378%	7.46	24.38	80.00	1.00	597.04	-	
2012	Surface	Active	7,481.98	0.487%	0.89	1.315%	32.48	98.40	80.00	1.00	2,598.61	-	
2013	Surface	Active	8,035.98	0.497%	0.91	1.253%	36.41	100.72	80.00	1.00	2,912.50	-	
2014	Surface	Active	7,227.57	0.507%	0.79	1.193%	28.94	86.22	80.00	1.00	2,315.43	-	
2015	Surface	Active	4,331.94	0.517%	0.83	1.134%	18.56	49.13	80.00	1.00	1,484.74	-	
2016	Surface	Active	3,391.59	0.526%	0.81	1.078%	14.48	36.55	80.00	1.00	1,158.69	-	
2017	Surface	Active	1,137.87	0.536%	0.93	1.024%	5.64	11.65	80.00	1.00	451.57	-	
2018	Surface	Active	3,677.40	0.546%	0.84	0.972%	16.82	35.75	80.00	1.00	1,345.49	-	
2019	Surface	Active	4,475.81	0.556%	0.98	0.924%	24.26	41.36	80.00	1.00	1,940.67	-	
2020	Surface	Active	4,151.29	0.566%	0.77	0.879%	18.04	36.51	80.00	1.00	1,443.15	-	
2021	Surface	Active	3,857.52	0.575%	0.75	0.839%	16.65	32.35	80.00	1.00	1,331.96	-	
2022	Surface	Active	5,405.21	0.585%	0.88	0.802%	27.68	43.35	80.00	1.00	2,214.49	-	
2023	Surface	Active	4,057.34	0.299%	0.88	0.418%	10.73	16.96	80.00	1.00	858.07	-	
2024	Surface	Active	2,351.57	0.143%	0.92	0.122%	3.08	2.88	80.00	1.00	246.41	-	
2025	Surface	Active	1,400.13	0.000%	1.16	0.000%	(0.00)	0.00	80.00	1.00	(0.00)	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic Mode

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	2026							Adjustment		
			Current Bonded Acres (4)	Forfeiture Rate (5)	Factor Permit Bond Size (6)	Release Rate (7)	Forfeited Acres (8)	Released Acres (9)	Avg Recl Cost per Acre (10)	Factor Permit Status (11)	Gross Cost (12)	
1967	Surface	Inactive	-	0.084%	0.00	0.002%	-	-	80.00	1.00	-	
1968	Surface	Inactive	-	0.102%	0.00	0.151%	-	-	80.00	1.00	-	
1969	Surface	Inactive	-	0.120%	0.00	0.290%	-	-	80.00	1.00	-	
1970	Surface	Inactive	-	0.138%	0.00	0.421%	-	-	80.00	1.00	-	
1971	Surface	Inactive	-	0.155%	0.00	0.543%	-	-	80.00	1.00	-	
1972	Surface	Inactive	-	0.173%	0.00	0.657%	-	-	80.00	1.00	-	
1973	Surface	Inactive	-	0.191%	0.00	0.762%	-	-	80.00	1.00	-	
1974	Surface	Inactive	-	0.209%	0.00	0.859%	-	-	80.00	1.00	-	
1975	Surface	Inactive	-	0.226%	0.00	0.949%	-	-	80.00	1.00	-	
1976	Surface	Inactive	163.80	0.244%	1.25	1.031%	0.50	1.69	80.00	1.00	39.98	
1977	Surface	Inactive	-	0.262%	0.00	1.106%	-	-	80.00	1.00	-	
1978	Surface	Inactive	-	0.280%	0.00	1.174%	-	-	80.00	1.00	-	
1979	Surface	Inactive	-	0.297%	0.00	1.235%	-	-	80.00	1.00	-	
1980	Surface	Inactive	-	0.315%	0.00	1.289%	-	-	80.00	1.00	-	
1981	Surface	Inactive	-	0.333%	0.00	1.337%	-	-	80.00	1.00	-	
1982	Surface	Inactive	-	0.351%	0.00	1.379%	-	-	80.00	1.00	-	
1983	Surface	Inactive	-	0.368%	0.00	1.414%	-	-	80.00	1.00	-	
1984	Surface	Inactive	-	0.386%	0.00	1.444%	-	-	80.00	1.00	-	
1985	Surface	Inactive	-	0.404%	0.00	1.469%	-	-	80.00	1.00	-	
1986	Surface	Inactive	-	0.422%	0.00	1.488%	-	-	80.00	1.00	-	
1987	Surface	Inactive	415.61	0.439%	0.93	1.502%	1.69	6.24	80.00	1.00	135.12	
1988	Surface	Inactive	1,304.38	0.457%	0.60	1.511%	3.58	19.71	80.00	1.00	286.19	
1989	Surface	Inactive	-	0.475%	1.25	1.515%	-	-	80.00	1.00	-	
1990	Surface	Inactive	-	0.493%	0.00	1.515%	-	-	80.00	1.00	-	
1991	Surface	Inactive	-	0.510%	0.00	1.511%	-	-	80.00	1.00	-	
1992	Surface	Inactive	-	0.528%	0.00	1.503%	-	-	80.00	1.00	-	
1993	Surface	Inactive	-	0.546%	0.00	1.491%	-	-	80.00	1.00	-	
1994	Surface	Inactive	-	0.564%	0.00	1.476%	-	-	80.00	1.00	-	
1995	Surface	Inactive	605.35	0.581%	0.60	1.457%	2.11	8.82	80.00	1.00	168.93	
1996	Surface	Inactive	-	0.599%	0.00	1.436%	-	-	80.00	1.00	-	
1997	Surface	Inactive	-	0.617%	0.00	1.411%	-	-	80.00	1.00	-	
1998	Surface	Inactive	846.89	0.635%	0.60	1.384%	3.22	11.72	80.00	1.00	257.99	
1999	Surface	Inactive	1,728.99	0.652%	1.25	1.354%	14.10	23.42	80.00	1.00	1,128.00	
2000	Surface	Inactive	-	0.670%	0.00	1.323%	-	-	80.00	1.00	-	
2001	Surface	Inactive	-	0.688%	0.00	1.289%	-	-	80.00	1.00	-	
2002	Surface	Inactive	1,146.85	0.706%	0.67	1.253%	5.40	14.37	80.00	1.00	431.63	
2003	Surface	Inactive	1,408.90	0.723%	0.60	1.216%	6.12	17.14	80.00	1.00	489.24	
2004	Surface	Inactive	1,577.54	0.741%	0.60	1.178%	7.02	18.58	80.00	1.00	561.24	
2005	Surface	Inactive	-	0.759%	0.00	1.138%	-	-	80.00	1.00	-	
2006	Surface	Inactive	244.59	0.777%	0.80	1.098%	1.52	2.69	80.00	1.00	121.58	
2007	Surface	Inactive	1,356.24	0.794%	0.70	1.057%	7.54	14.34	80.00	1.00	603.38	
2008	Surface	Inactive	118.60	0.812%	1.25	1.016%	1.20	1.20	80.00	1.00	96.33	
2009	Surface	Inactive	42.43	0.830%	1.25	0.974%	0.44	0.41	80.00	1.00	35.22	
2010	Surface	Inactive	679.59	0.848%	0.93	0.933%	5.33	6.34	80.00	1.00	426.32	
2011	Surface	Inactive	1,679.64	0.865%	0.68	0.892%	9.89	14.98	80.00	1.00	790.81	
2012	Surface	Inactive	-	0.883%	0.00	0.851%	-	-	80.00	1.00	-	
2013	Surface	Inactive	-	0.901%	0.00	0.811%	-	-	80.00	1.00	-	
2014	Surface	Inactive	262.00	0.919%	1.25	0.772%	3.01	2.02	80.00	1.00	240.71	
2015	Surface	Inactive	624.70	0.937%	0.80	0.734%	4.68	4.58	80.00	1.00	374.43	
2016	Surface	Inactive	776.75	0.954%	0.70	0.697%	5.19	5.42	80.00	1.00	415.09	
2017	Surface	Inactive	154.63	0.972%	1.25	0.662%	1.88	1.02	80.00	1.00	150.30	
2018	Surface	Inactive	351.08	0.990%	0.60	0.629%	2.08	2.21	80.00	1.00	166.80	
2019	Surface	Inactive	452.10	1.008%	0.80	0.598%	3.64	2.70	80.00	1.00	291.53	
2020	Surface	Inactive	-	1.025%	0.00	0.569%	-	-	80.00	1.00	-	
2021	Surface	Inactive	-	1.043%	0.00	0.543%	-	-	80.00	1.00	-	
2022	Surface	Inactive	31.34	1.061%	1.25	0.519%	0.42	0.16	80.00	1.00	33.25	
2023	Surface	Inactive	-	0.542%	0.00	0.270%	-	-	80.00	1.00	-	
2024	Surface	Inactive	-	0.259%	0.00	0.079%	-	-	80.00	1.00	-	
2025	Surface	Inactive	-	0.000%	0.00	0.000%	-	-	80.00	1.00	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic Mode

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	2026								Adjustment		Gross Cost (12)
			Current Bonded Acres (4)	Forfeiture Rate (5)	Adjustment				Avg Recl Cost per Acre (10)	Factor Permit Status (11)			
					Permit Bond Size (6)	Release Rate (7)	Forfeited Acres (8)	Released Acres (9)					
1967	Surface	Phased Released	-	0.087%	0.00	0.009%	-	-	80.00	1.00	-		
1968	Surface	Phased Released	-	0.106%	0.00	0.631%	-	-	80.00	1.00	-		
1969	Surface	Phased Released	-	0.124%	0.00	1.214%	-	-	80.00	1.00	-		
1970	Surface	Phased Released	-	0.142%	0.00	1.761%	-	-	80.00	1.00	-		
1971	Surface	Phased Released	-	0.161%	0.00	2.271%	-	-	80.00	1.00	-		
1972	Surface	Phased Released	-	0.179%	0.00	2.746%	-	-	80.00	1.00	-		
1973	Surface	Phased Released	-	0.197%	0.00	3.187%	-	-	80.00	1.00	-		
1974	Surface	Phased Released	116.05	0.216%	1.25	3.594%	0.31	4.17	80.00	1.00	25.04		
1975	Surface	Phased Released	7.80	0.234%	1.25	3.969%	0.02	0.31	80.00	1.00	1.83		
1976	Surface	Phased Released	476.17	0.252%	1.25	4.313%	1.50	20.54	80.00	1.00	120.22		
1977	Surface	Phased Released	48.00	0.271%	1.25	4.626%	0.16	2.22	80.00	1.00	13.00		
1978	Surface	Phased Released	158.81	0.289%	1.25	4.909%	0.57	7.80	80.00	1.00	45.93		
1979	Surface	Phased Released	538.00	0.308%	1.25	5.164%	2.07	27.78	80.00	1.00	165.47		
1980	Surface	Phased Released	253.42	0.326%	1.25	5.391%	1.03	13.66	80.00	1.00	82.60		
1981	Surface	Phased Released	1,267.32	0.344%	0.94	5.591%	4.10	70.85	80.00	1.00	328.13		
1982	Surface	Phased Released	-	0.363%	0.00	5.765%	-	-	80.00	1.00	-		
1983	Surface	Phased Released	225.01	0.381%	1.25	5.914%	1.07	13.31	80.00	1.00	85.74		
1984	Surface	Phased Released	2,302.75	0.399%	0.82	6.039%	7.51	139.06	80.00	1.00	600.88		
1985	Surface	Phased Released	1,270.29	0.418%	1.03	6.141%	5.44	78.01	80.00	1.00	435.16		
1986	Surface	Phased Released	1,041.15	0.436%	1.03	6.221%	4.65	64.77	80.00	1.00	372.34		
1987	Surface	Phased Released	760.81	0.454%	1.14	6.280%	3.93	47.78	80.00	1.00	314.67		
1988	Surface	Phased Released	480.30	0.473%	1.25	6.318%	2.84	30.34	80.00	1.00	227.12		
1989	Surface	Phased Released	1,098.64	0.491%	1.16	6.337%	6.26	69.62	80.00	1.00	500.83		
1990	Surface	Phased Released	764.18	0.510%	1.25	6.337%	4.87	48.43	80.00	1.00	389.42		
1991	Surface	Phased Released	1,006.45	0.528%	1.07	6.320%	5.69	63.61	80.00	1.00	454.85		
1992	Surface	Phased Released	-	0.546%	0.00	6.286%	-	-	80.00	1.00	-		
1993	Surface	Phased Released	669.04	0.565%	1.25	6.237%	4.72	41.73	80.00	1.00	377.81		
1994	Surface	Phased Released	345.90	0.583%	1.07	6.173%	2.16	21.35	80.00	1.00	172.64		
1995	Surface	Phased Released	484.30	0.601%	1.03	6.095%	3.01	29.52	80.00	1.00	240.79		
1996	Surface	Phased Released	583.38	0.620%	1.10	6.004%	3.98	35.03	80.00	1.00	318.19		
1997	Surface	Phased Released	169.48	0.638%	0.88	5.901%	0.96	10.00	80.00	1.00	76.43		
1998	Surface	Phased Released	336.07	0.657%	1.03	5.788%	2.26	19.45	80.00	1.00	180.93		
1999	Surface	Phased Released	14.87	0.675%	1.25	5.664%	0.13	0.84	80.00	1.00	10.04		
2000	Surface	Phased Released	19.70	0.693%	1.25	5.531%	0.17	1.09	80.00	1.00	13.66		
2001	Surface	Phased Released	491.55	0.712%	1.10	5.389%	3.85	26.49	80.00	1.00	307.83		
2002	Surface	Phased Released	48.20	0.730%	1.25	5.241%	0.44	2.53	80.00	1.00	35.19		
2003	Surface	Phased Released	-	0.748%	1.25	5.086%	-	-	80.00	1.00	-		
2004	Surface	Phased Released	470.13	0.767%	0.93	4.926%	3.33	23.16	80.00	1.00	266.75		
2005	Surface	Phased Released	51.50	0.785%	1.25	4.761%	0.51	2.45	80.00	1.00	40.43		
2006	Surface	Phased Released	60.78	0.803%	1.25	4.592%	0.61	2.79	80.00	1.00	48.84		
2007	Surface	Phased Released	263.63	0.822%	1.03	4.421%	2.22	11.66	80.00	1.00	177.66		
2008	Surface	Phased Released	-	0.840%	0.00	4.248%	-	-	80.00	1.00	-		
2009	Surface	Phased Released	137.75	0.859%	0.80	4.075%	0.95	5.61	80.00	1.00	75.69		
2010	Surface	Phased Released	-	0.877%	0.00	3.901%	-	-	80.00	1.00	-		
2011	Surface	Phased Released	158.51	0.895%	1.25	3.729%	1.77	5.91	80.00	1.00	141.92		
2012	Surface	Phased Released	-	0.914%	0.00	3.559%	-	-	80.00	1.00	-		
2013	Surface	Phased Released	-	0.932%	0.00	3.391%	-	-	80.00	1.00	-		
2014	Surface	Phased Released	-	0.950%	0.00	3.228%	-	-	80.00	1.00	-		
2015	Surface	Phased Released	-	0.969%	0.00	3.069%	-	-	80.00	1.00	-		
2016	Surface	Phased Released	-	0.987%	0.00	2.916%	-	-	80.00	1.00	-		
2017	Surface	Phased Released	-	1.006%	0.00	2.770%	-	-	80.00	1.00	-		
2018	Surface	Phased Released	-	1.024%	0.00	2.631%	-	-	80.00	1.00	-		
2019	Surface	Phased Released	-	1.042%	0.00	2.501%	-	-	80.00	1.00	-		
2020	Surface	Phased Released	-	1.061%	0.00	2.380%	-	-	80.00	1.00	-		
2021	Surface	Phased Released	-	1.079%	0.00	2.269%	-	-	80.00	1.00	-		
2022	Surface	Phased Released	-	1.097%	0.00	2.170%	-	-	80.00	1.00	-		
2023	Surface	Phased Released	-	0.561%	0.00	1.131%	-	-	80.00	1.00	-		
2024	Surface	Phased Released	-	0.268%	0.00	0.331%	-	-	80.00	1.00	-		
2025	Surface	Phased Released	-	0.000%	0.00	0.000%	-	-	80.00	1.00	-		

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic Mode

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	2026							Adjustment		
			Current Bonded Acres (4)	Forfeiture Rate (5)	Factor		Released Acres (9)	Avg Recl Cost per Acre (10)	Factor Permit Status (11)	Gross Cost (12)		
					Permit Bond Size (6)	Release Rate (7)						
											Forfeited Acres (8)	
1967	Underground	Active	-	0.000%	0.00	0.001%	-	-	135.00	1.00	-	
1968	Underground	Active	-	0.000%	0.00	0.018%	-	-	135.00	1.00	-	
1969	Underground	Active	-	0.052%	0.00	0.043%	-	-	135.00	1.00	-	
1970	Underground	Active	-	0.150%	0.00	0.077%	-	-	135.00	1.00	-	
1971	Underground	Active	-	0.241%	0.00	0.119%	-	-	135.00	1.00	-	
1972	Underground	Active	-	0.323%	0.00	0.169%	-	-	135.00	1.00	-	
1973	Underground	Active	-	0.398%	0.00	0.225%	-	-	135.00	1.00	-	
1974	Underground	Active	-	0.466%	0.00	0.289%	-	-	135.00	1.00	-	
1975	Underground	Active	-	0.526%	0.00	0.359%	-	-	135.00	1.00	-	
1976	Underground	Active	-	0.580%	0.00	0.434%	-	-	135.00	1.00	-	
1977	Underground	Active	-	0.628%	0.00	0.514%	-	-	135.00	1.00	-	
1978	Underground	Active	-	0.669%	0.00	0.599%	-	-	135.00	1.00	-	
1979	Underground	Active	703.10	0.704%	1.03	0.688%	5.09	4.84	135.00	1.00	687.42	
1980	Underground	Active	202.41	0.734%	1.03	0.781%	1.52	1.58	135.00	1.00	205.52	
1981	Underground	Active	709.57	0.758%	1.17	0.876%	6.29	6.22	135.00	1.00	848.74	
1982	Underground	Active	33.93	0.777%	1.25	0.975%	0.33	0.33	135.00	1.00	44.51	
1983	Underground	Active	7,263.70	0.792%	0.88	1.075%	50.56	78.08	135.00	1.00	6,826.10	
1984	Underground	Active	2,621.92	0.801%	0.95	1.177%	19.96	30.86	135.00	1.00	2,694.99	
1985	Underground	Active	49.00	0.807%	1.25	1.280%	0.49	0.63	135.00	1.00	66.73	
1986	Underground	Active	236.31	0.808%	1.16	1.383%	2.22	3.27	135.00	1.00	299.17	
1987	Underground	Active	203.45	0.806%	1.16	1.487%	1.90	3.02	135.00	1.00	256.84	
1988	Underground	Active	157.83	0.800%	1.14	1.590%	1.44	2.51	135.00	1.00	193.99	
1989	Underground	Active	317.75	0.791%	1.17	1.692%	2.94	5.38	135.00	1.00	396.58	
1990	Underground	Active	131.40	0.779%	1.14	1.793%	1.17	2.36	135.00	1.00	157.29	
1991	Underground	Active	36.67	0.765%	1.25	1.891%	0.35	0.69	135.00	1.00	47.33	
1992	Underground	Active	960.01	0.748%	1.01	1.987%	7.22	19.08	135.00	1.00	974.67	
1993	Underground	Active	1,009.71	0.729%	1.05	2.080%	7.70	21.01	135.00	1.00	1,039.24	
1994	Underground	Active	604.69	0.708%	1.00	2.170%	4.28	13.12	135.00	1.00	577.78	
1995	Underground	Active	318.33	0.685%	1.00	2.255%	2.18	7.18	135.00	1.00	294.46	
1996	Underground	Active	242.07	0.661%	1.12	2.336%	1.78	5.66	135.00	1.00	240.96	
1997	Underground	Active	247.41	0.636%	1.17	2.412%	1.84	5.97	135.00	1.00	248.28	
1998	Underground	Active	572.18	0.611%	1.01	2.483%	3.52	14.21	135.00	1.00	475.57	
1999	Underground	Active	327.70	0.584%	1.19	2.547%	2.28	8.35	135.00	1.00	307.86	
2000	Underground	Active	369.33	0.558%	1.18	2.605%	2.43	9.62	135.00	1.00	328.42	
2001	Underground	Active	112.63	0.531%	1.10	2.656%	0.66	2.99	135.00	1.00	88.88	
2002	Underground	Active	222.94	0.505%	1.19	2.699%	1.34	6.02	135.00	1.00	180.30	
2003	Underground	Active	991.90	0.480%	0.95	2.734%	4.52	27.12	135.00	1.00	610.15	
2004	Underground	Active	411.39	0.455%	1.07	2.761%	2.00	11.36	135.00	1.00	269.48	
2005	Underground	Active	364.13	0.431%	1.10	2.778%	1.73	10.12	135.00	1.00	233.19	
2006	Underground	Active	290.00	0.409%	0.99	2.786%	1.18	8.08	135.00	1.00	158.98	
2007	Underground	Active	591.88	0.388%	1.08	2.784%	2.47	16.48	135.00	1.00	333.62	
2008	Underground	Active	98.24	0.370%	1.25	2.771%	0.45	2.72	135.00	1.00	61.29	
2009	Underground	Active	370.51	0.353%	1.08	2.747%	1.42	10.18	135.00	1.00	191.03	
2010	Underground	Active	258.10	0.339%	1.08	2.711%	0.94	7.00	135.00	1.00	127.38	
2011	Underground	Active	204.25	0.328%	1.19	2.664%	0.80	5.44	135.00	1.00	107.94	
2012	Underground	Active	172.75	0.320%	1.18	2.603%	0.65	4.50	135.00	1.00	87.58	
2013	Underground	Active	505.93	0.315%	1.11	2.530%	1.77	12.80	135.00	1.00	238.85	
2014	Underground	Active	727.51	0.313%	1.12	2.442%	2.55	17.77	135.00	1.00	344.90	
2015	Underground	Active	183.96	0.315%	1.19	2.341%	0.69	4.31	135.00	1.00	93.53	
2016	Underground	Active	197.47	0.322%	0.98	2.225%	0.62	4.39	135.00	1.00	84.10	
2017	Underground	Active	161.03	0.333%	1.25	2.094%	0.67	3.37	135.00	1.00	90.41	
2018	Underground	Active	29.25	0.348%	1.25	1.947%	0.13	0.57	135.00	1.00	17.18	
2019	Underground	Active	149.13	0.368%	1.14	1.784%	0.62	2.66	135.00	1.00	84.37	
2020	Underground	Active	141.50	0.394%	1.19	1.604%	0.66	2.27	135.00	1.00	89.22	
2021	Underground	Active	81.77	0.425%	1.25	1.407%	0.43	1.15	135.00	1.00	58.62	
2022	Underground	Active	43.22	0.461%	1.25	1.192%	0.25	0.52	135.00	1.00	33.66	
2023	Underground	Active	65.04	0.195%	1.25	0.959%	0.16	0.62	135.00	1.00	21.43	
2024	Underground	Active	-	0.089%	0.00	0.708%	-	-	135.00	1.00	-	
2025	Underground	Active	16.05	0.000%	1.25	0.437%	(0.00)	0.07	135.00	1.00	(0.00)	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic Mode

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	2026							Avg Recl Cost per Acre (10)	Adjustment Factor Permit Status (11)	Gross Cost (12)
			Current Bonded Acres (4)	Forfeiture Rate (5)	Adjustment							
					Permit Bond Size (6)	Release Rate (7)	Forfeited Acres (8)	Released Acres (9)				
1967	Underground	Inactive	-	0.000%	0.00	0.001%	-	-	135.00	1.00	-	
1968	Underground	Inactive	-	0.000%	0.00	0.011%	-	-	135.00	1.00	-	
1969	Underground	Inactive	-	0.094%	0.00	0.028%	-	-	135.00	1.00	-	
1970	Underground	Inactive	-	0.273%	0.00	0.050%	-	-	135.00	1.00	-	
1971	Underground	Inactive	-	0.436%	0.00	0.077%	-	-	135.00	1.00	-	
1972	Underground	Inactive	-	0.586%	0.00	0.109%	-	-	135.00	1.00	-	
1973	Underground	Inactive	-	0.721%	0.00	0.146%	-	-	135.00	1.00	-	
1974	Underground	Inactive	-	0.844%	0.00	0.187%	-	-	135.00	1.00	-	
1975	Underground	Inactive	-	0.954%	0.00	0.232%	-	-	135.00	1.00	-	
1976	Underground	Inactive	26.50	1.051%	0.80	0.281%	0.22	0.07	135.00	1.00	30.09	
1977	Underground	Inactive	-	1.137%	0.00	0.333%	-	-	135.00	1.00	-	
1978	Underground	Inactive	117.89	1.212%	0.80	0.388%	1.14	0.46	135.00	1.00	154.33	
1979	Underground	Inactive	-	1.276%	0.00	0.445%	-	-	135.00	1.00	-	
1980	Underground	Inactive	-	1.330%	0.00	0.505%	-	-	135.00	1.00	-	
1981	Underground	Inactive	210.92	1.374%	0.91	0.567%	2.64	1.20	135.00	1.00	357.02	
1982	Underground	Inactive	125.56	1.409%	0.70	0.631%	1.24	0.79	135.00	1.00	167.17	
1983	Underground	Inactive	260.82	1.435%	0.95	0.696%	3.56	1.81	135.00	1.00	479.97	
1984	Underground	Inactive	-	1.453%	0.00	0.762%	-	-	135.00	1.00	-	
1985	Underground	Inactive	220.21	1.463%	0.60	0.828%	1.93	1.82	135.00	1.00	260.89	
1986	Underground	Inactive	43.54	1.465%	0.80	0.895%	0.51	0.39	135.00	1.00	68.90	
1987	Underground	Inactive	40.89	1.461%	0.80	0.962%	0.48	0.39	135.00	1.00	64.53	
1988	Underground	Inactive	55.35	1.451%	1.25	1.029%	1.00	0.57	135.00	1.00	135.50	
1989	Underground	Inactive	-	1.434%	0.00	1.095%	-	-	135.00	1.00	-	
1990	Underground	Inactive	25.64	1.413%	1.10	1.160%	0.40	0.30	135.00	1.00	53.79	
1991	Underground	Inactive	362.42	1.386%	0.82	1.224%	4.10	4.43	135.00	1.00	553.95	
1992	Underground	Inactive	119.31	1.356%	1.03	1.286%	1.66	1.53	135.00	1.00	223.80	
1993	Underground	Inactive	20.36	1.321%	0.80	1.346%	0.22	0.27	135.00	1.00	29.04	
1994	Underground	Inactive	100.78	1.283%	0.80	1.404%	1.03	1.41	135.00	1.00	139.63	
1995	Underground	Inactive	91.94	1.242%	1.03	1.459%	1.17	1.34	135.00	1.00	158.00	
1996	Underground	Inactive	51.05	1.199%	1.25	1.512%	0.76	0.77	135.00	1.00	103.25	
1997	Underground	Inactive	316.01	1.153%	0.94	1.561%	3.41	4.93	135.00	1.00	460.40	
1998	Underground	Inactive	72.14	1.107%	0.60	1.607%	0.48	1.16	135.00	1.00	64.67	
1999	Underground	Inactive	348.05	1.059%	1.03	1.648%	3.80	5.74	135.00	1.00	512.57	
2000	Underground	Inactive	173.12	1.011%	0.88	1.686%	1.55	2.92	135.00	1.00	208.74	
2001	Underground	Inactive	93.58	0.963%	1.03	1.719%	0.93	1.61	135.00	1.00	125.73	
2002	Underground	Inactive	47.21	0.916%	0.60	1.746%	0.26	0.82	135.00	1.00	35.02	
2003	Underground	Inactive	222.92	0.869%	1.03	1.769%	1.99	3.94	135.00	1.00	268.16	
2004	Underground	Inactive	249.94	0.824%	0.80	1.786%	1.65	4.46	135.00	1.00	222.56	
2005	Underground	Inactive	112.09	0.782%	1.10	1.798%	0.96	2.01	135.00	1.00	130.11	
2006	Underground	Inactive	182.12	0.741%	1.03	1.803%	1.38	3.28	135.00	1.00	186.82	
2007	Underground	Inactive	107.80	0.704%	0.95	1.801%	0.72	1.94	135.00	1.00	97.33	
2008	Underground	Inactive	88.05	0.670%	1.16	1.793%	0.68	1.58	135.00	1.00	92.40	
2009	Underground	Inactive	85.24	0.640%	1.16	1.777%	0.63	1.52	135.00	1.00	85.46	
2010	Underground	Inactive	120.44	0.615%	1.25	1.754%	0.93	2.11	135.00	1.00	124.95	
2011	Underground	Inactive	126.97	0.594%	1.18	1.723%	0.89	2.19	135.00	1.00	119.70	
2012	Underground	Inactive	32.84	0.579%	0.80	1.684%	0.15	0.55	135.00	1.00	20.55	
2013	Underground	Inactive	53.70	0.570%	1.03	1.637%	0.32	0.88	135.00	1.00	42.72	
2014	Underground	Inactive	-	0.568%	0.00	1.580%	-	-	135.00	1.00	-	
2015	Underground	Inactive	-	0.572%	0.00	1.515%	-	-	135.00	1.00	-	
2016	Underground	Inactive	13.42	0.583%	1.25	1.440%	0.10	0.19	135.00	1.00	13.21	
2017	Underground	Inactive	-	0.603%	0.00	1.355%	-	-	135.00	1.00	-	
2018	Underground	Inactive	46.96	0.631%	1.25	1.260%	0.37	0.59	135.00	1.00	50.00	
2019	Underground	Inactive	-	0.668%	0.00	1.154%	-	-	135.00	1.00	-	
2020	Underground	Inactive	-	0.714%	0.00	1.038%	-	-	135.00	1.00	-	
2021	Underground	Inactive	-	0.770%	0.00	0.910%	-	-	135.00	1.00	-	
2022	Underground	Inactive	-	0.836%	0.00	0.771%	-	-	135.00	1.00	-	
2023	Underground	Inactive	19.71	0.354%	1.25	0.621%	0.09	0.12	135.00	1.00	11.77	
2024	Underground	Inactive	-	0.162%	0.00	0.458%	-	-	135.00	1.00	-	
2025	Underground	Inactive	-	0.000%	0.00	0.283%	-	-	135.00	1.00	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
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Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	2026							Avg Recl Cost per Acre (10)	Adjustment Factor Permit Status (11)	Gross Cost (12)
			Current Bonded Acres (4)	Forfeiture Rate (5)	Adjustment				Released Acres (9)			
					Permit Bond Size (6)	Release Rate (7)	Forfeited Acres (8)					
1967	Underground	Phased Released	-	0.000%	0.00	0.004%	-	-	135.00	1.00	-	
1968	Underground	Phased Released	-	0.000%	0.00	0.047%	-	-	135.00	1.00	-	
1969	Underground	Phased Released	-	0.098%	0.00	0.116%	-	-	135.00	1.00	-	
1970	Underground	Phased Released	-	0.282%	0.00	0.208%	-	-	135.00	1.00	-	
1971	Underground	Phased Released	-	0.451%	0.00	0.321%	-	-	135.00	1.00	-	
1972	Underground	Phased Released	-	0.606%	0.00	0.456%	-	-	135.00	1.00	-	
1973	Underground	Phased Released	-	0.746%	0.00	0.610%	-	-	135.00	1.00	-	
1974	Underground	Phased Released	-	0.873%	0.00	0.782%	-	-	135.00	1.00	-	
1975	Underground	Phased Released	-	0.987%	0.00	0.970%	-	-	135.00	1.00	-	
1976	Underground	Phased Released	-	1.088%	0.00	1.174%	-	-	135.00	1.00	-	
1977	Underground	Phased Released	-	1.177%	0.00	1.391%	-	-	135.00	1.00	-	
1978	Underground	Phased Released	10.58	1.254%	1.25	1.621%	0.17	0.17	135.00	1.00	22.39	
1979	Underground	Phased Released	59.68	1.320%	1.25	1.862%	0.98	1.11	135.00	1.00	132.96	
1980	Underground	Phased Released	87.19	1.376%	1.25	2.112%	1.50	1.84	135.00	1.00	202.43	
1981	Underground	Phased Released	66.33	1.421%	1.18	2.371%	1.11	1.57	135.00	1.00	149.56	
1982	Underground	Phased Released	59.82	1.457%	1.25	2.637%	1.09	1.58	135.00	1.00	147.12	
1983	Underground	Phased Released	51.27	1.484%	1.25	2.909%	0.95	1.49	135.00	1.00	128.42	
1984	Underground	Phased Released	43.00	1.503%	1.25	3.185%	0.81	1.37	135.00	1.00	109.04	
1985	Underground	Phased Released	7.93	1.513%	1.25	3.463%	0.15	0.27	135.00	1.00	20.25	
1986	Underground	Phased Released	89.96	1.516%	1.25	3.743%	1.70	3.37	135.00	1.00	230.11	
1987	Underground	Phased Released	23.37	1.512%	1.25	4.023%	0.44	0.94	135.00	1.00	59.61	
1988	Underground	Phased Released	215.56	1.501%	1.25	4.302%	4.04	9.27	135.00	1.00	545.90	
1989	Underground	Phased Released	80.68	1.484%	1.25	4.578%	1.50	3.69	135.00	1.00	202.03	
1990	Underground	Phased Released	18.31	1.462%	1.25	4.850%	0.33	0.89	135.00	1.00	45.16	
1991	Underground	Phased Released	23.22	1.434%	1.25	5.117%	0.42	1.19	135.00	1.00	56.20	
1992	Underground	Phased Released	62.39	1.402%	1.25	5.377%	1.09	3.35	135.00	1.00	147.64	
1993	Underground	Phased Released	68.38	1.366%	1.25	5.629%	1.17	3.85	135.00	1.00	157.68	
1994	Underground	Phased Released	18.79	1.327%	1.25	5.871%	0.31	1.10	135.00	1.00	42.08	
1995	Underground	Phased Released	85.60	1.285%	1.14	6.103%	1.25	5.22	135.00	1.00	168.88	
1996	Underground	Phased Released	133.37	1.240%	1.25	6.322%	2.07	8.43	135.00	1.00	279.06	
1997	Underground	Phased Released	119.99	1.193%	1.25	6.528%	1.79	7.83	135.00	1.00	241.58	
1998	Underground	Phased Released	64.00	1.145%	1.25	6.718%	0.92	4.30	135.00	1.00	123.64	
1999	Underground	Phased Released	269.40	1.096%	1.10	6.893%	3.25	18.57	135.00	1.00	438.32	
2000	Underground	Phased Released	59.65	1.046%	1.25	7.049%	0.78	4.20	135.00	1.00	105.29	
2001	Underground	Phased Released	36.60	0.996%	1.25	7.186%	0.46	2.63	135.00	1.00	61.54	
2002	Underground	Phased Released	48.55	0.947%	1.25	7.303%	0.57	3.55	135.00	1.00	77.61	
2003	Underground	Phased Released	12.65	0.899%	1.25	7.398%	0.14	0.94	135.00	1.00	19.20	
2004	Underground	Phased Released	-	0.853%	0.00	7.470%	-	-	135.00	1.00	-	
2005	Underground	Phased Released	21.73	0.809%	1.25	7.517%	0.22	1.63	135.00	1.00	29.65	
2006	Underground	Phased Released	-	0.767%	0.00	7.539%	-	-	135.00	1.00	-	
2007	Underground	Phased Released	-	0.728%	0.00	7.533%	-	-	135.00	1.00	-	
2008	Underground	Phased Released	63.64	0.693%	1.25	7.498%	0.55	4.77	135.00	1.00	74.45	
2009	Underground	Phased Released	54.60	0.662%	1.25	7.433%	0.45	4.06	135.00	1.00	61.02	
2010	Underground	Phased Released	-	0.636%	0.00	7.336%	-	-	135.00	1.00	-	
2011	Underground	Phased Released	-	0.615%	0.00	7.207%	-	-	135.00	1.00	-	
2012	Underground	Phased Released	-	0.599%	0.00	7.044%	-	-	135.00	1.00	-	
2013	Underground	Phased Released	-	0.590%	0.00	6.845%	-	-	135.00	1.00	-	
2014	Underground	Phased Released	-	0.587%	0.00	6.609%	-	-	135.00	1.00	-	
2015	Underground	Phased Released	-	0.592%	0.00	6.334%	-	-	135.00	1.00	-	
2016	Underground	Phased Released	-	0.604%	0.00	6.020%	-	-	135.00	1.00	-	
2017	Underground	Phased Released	-	0.624%	0.00	5.665%	-	-	135.00	1.00	-	
2018	Underground	Phased Released	-	0.653%	0.00	5.268%	-	-	135.00	1.00	-	
2019	Underground	Phased Released	-	0.691%	0.00	4.826%	-	-	135.00	1.00	-	
2020	Underground	Phased Released	-	0.739%	0.00	4.340%	-	-	135.00	1.00	-	
2021	Underground	Phased Released	-	0.797%	0.00	3.807%	-	-	135.00	1.00	-	
2022	Underground	Phased Released	-	0.865%	0.00	3.226%	-	-	135.00	1.00	-	
2023	Underground	Phased Released	-	0.366%	0.00	2.595%	-	-	135.00	1.00	-	
2024	Underground	Phased Released	-	0.168%	0.00	1.914%	-	-	135.00	1.00	-	
2025	Underground	Phased Released	-	0.000%	0.00	1.181%	-	-	135.00	1.00	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic Mode

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	2026							Adjustment		Gross Cost (12)
			Current Bonded Acres (4)	Forfeiture Rate (5)	Adjustment				Avg Recl Cost per Acre (10)	Factor Permit Status (11)		
					Permit Bond Size (6)	Release Rate (7)	Forfeited Acres (8)	Released Acres (9)				
1967	Other	Active	-	0.038%	0.00	1.216%	-	-	130.00	1.00	-	
1968	Other	Active	-	0.085%	0.00	1.216%	-	-	130.00	1.00	-	
1969	Other	Active	-	0.129%	0.00	1.216%	-	-	130.00	1.00	-	
1970	Other	Active	-	0.171%	0.00	1.216%	-	-	130.00	1.00	-	
1971	Other	Active	-	0.210%	0.00	1.216%	-	-	130.00	1.00	-	
1972	Other	Active	20.00	0.246%	1.25	1.216%	0.06	0.24	130.00	1.00	7.98	
1973	Other	Active	-	0.279%	0.00	1.216%	-	-	130.00	1.00	-	
1974	Other	Active	36.25	0.310%	1.25	1.216%	0.14	0.44	130.00	1.00	18.27	
1975	Other	Active	6.20	0.339%	1.25	1.216%	0.03	0.08	130.00	1.00	3.41	
1976	Other	Active	-	0.365%	0.00	1.216%	-	-	130.00	1.00	-	
1977	Other	Active	85.99	0.389%	1.25	1.216%	0.42	1.05	130.00	1.00	54.36	
1978	Other	Active	-	0.411%	0.00	1.216%	-	-	130.00	1.00	-	
1979	Other	Active	72.25	0.431%	1.25	1.216%	0.39	0.88	130.00	1.00	50.57	
1980	Other	Active	171.38	0.449%	1.25	1.216%	0.96	2.08	130.00	1.00	124.90	
1981	Other	Active	4,390.77	0.464%	0.94	1.216%	19.11	53.41	130.00	1.00	2,484.12	
1982	Other	Active	539.33	0.479%	0.94	1.216%	2.43	6.56	130.00	1.00	315.37	
1983	Other	Active	3,836.07	0.491%	0.92	1.216%	17.25	46.66	130.00	1.00	2,242.72	
1984	Other	Active	4,369.90	0.502%	0.87	1.216%	19.00	53.16	130.00	1.00	2,469.50	
1985	Other	Active	1,485.04	0.511%	0.96	1.216%	7.27	18.06	130.00	1.00	944.91	
1986	Other	Active	1,384.69	0.518%	1.00	1.216%	7.15	16.84	130.00	1.00	929.58	
1987	Other	Active	968.10	0.525%	0.85	1.216%	4.32	11.78	130.00	1.00	561.27	
1988	Other	Active	613.83	0.530%	1.06	1.216%	3.43	7.47	130.00	1.00	446.41	
1989	Other	Active	617.50	0.533%	1.08	1.216%	3.54	7.51	130.00	1.00	460.28	
1990	Other	Active	400.79	0.536%	1.12	1.216%	2.41	4.88	130.00	1.00	313.16	
1991	Other	Active	491.29	0.537%	1.14	1.216%	3.01	5.98	130.00	1.00	391.92	
1992	Other	Active	293.26	0.538%	1.03	1.216%	1.62	3.57	130.00	1.00	210.25	
1993	Other	Active	761.88	0.538%	0.94	1.216%	3.87	9.27	130.00	1.00	502.62	
1994	Other	Active	2,293.13	0.537%	0.88	1.216%	10.77	27.89	130.00	1.00	1,399.64	
1995	Other	Active	997.92	0.535%	0.97	1.216%	5.18	12.14	130.00	1.00	673.87	
1996	Other	Active	1,971.02	0.532%	0.67	1.216%	6.99	23.98	130.00	1.00	909.16	
1997	Other	Active	739.12	0.529%	1.00	1.216%	3.91	8.99	130.00	1.00	508.46	
1998	Other	Active	622.19	0.526%	1.10	1.216%	3.60	7.57	130.00	1.00	467.69	
1999	Other	Active	415.45	0.522%	1.07	1.216%	2.32	5.05	130.00	1.00	301.52	
2000	Other	Active	339.23	0.518%	0.70	1.216%	1.23	4.13	130.00	1.00	159.77	
2001	Other	Active	385.64	0.513%	0.98	1.216%	1.94	4.69	130.00	1.00	252.10	
2002	Other	Active	801.13	0.509%	1.06	1.216%	4.34	9.75	130.00	1.00	563.71	
2003	Other	Active	887.86	0.504%	0.99	1.216%	4.43	10.80	130.00	1.00	575.87	
2004	Other	Active	1,214.52	0.499%	0.98	1.216%	5.96	14.77	130.00	1.00	775.36	
2005	Other	Active	75.34	0.495%	1.10	1.216%	0.41	0.92	130.00	1.00	53.33	
2006	Other	Active	491.96	0.491%	1.03	1.216%	2.48	5.98	130.00	1.00	322.81	
2007	Other	Active	368.47	0.487%	1.07	1.216%	1.92	4.48	130.00	1.00	249.49	
2008	Other	Active	599.63	0.483%	1.09	1.217%	3.17	7.29	130.00	1.00	411.63	
2009	Other	Active	197.78	0.480%	1.14	1.217%	1.08	2.41	130.00	1.00	140.41	
2010	Other	Active	1,140.63	0.477%	1.03	1.218%	5.60	13.89	130.00	1.00	727.71	
2011	Other	Active	310.19	0.476%	0.95	1.221%	1.40	3.79	130.00	1.00	182.17	
2012	Other	Active	161.25	0.474%	1.25	1.233%	0.96	1.99	130.00	1.00	124.28	
2013	Other	Active	2,081.52	0.474%	1.00	1.273%	9.89	26.51	130.00	1.00	1,286.01	
2014	Other	Active	212.39	0.474%	1.12	1.409%	1.13	2.99	130.00	1.00	146.67	
2015	Other	Active	1,106.93	0.476%	1.03	1.856%	5.44	20.55	130.00	1.00	707.33	
2016	Other	Active	1,513.50	0.478%	1.18	3.243%	8.50	49.08	130.00	1.00	1,105.36	
2017	Other	Active	369.58	0.482%	1.16	6.814%	2.07	25.18	130.00	1.00	268.46	
2018	Other	Active	21.89	0.486%	1.25	12.850%	0.13	2.81	130.00	1.00	17.30	
2019	Other	Active	5.94	0.493%	1.25	18.262%	0.04	1.08	130.00	1.00	4.75	
2020	Other	Active	562.96	0.500%	1.16	20.967%	3.27	118.04	130.00	1.00	424.51	
2021	Other	Active	74.26	0.509%	1.25	21.935%	0.47	16.29	130.00	1.00	61.42	
2022	Other	Active	465.40	0.519%	1.10	22.239%	2.66	103.50	130.00	1.00	345.73	
2023	Other	Active	723.68	0.038%	1.25	25.229%	0.34	182.58	130.00	1.00	44.27	
2024	Other	Active	273.27	0.000%	1.25	15.346%	-	41.94	130.00	1.00	-	
2025	Other	Active	618.50	0.000%	1.24	0.000%	-	0.00	130.00	1.00	-	

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic Mode

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	2026								Avg Recl Cost per Acre (10)	Adjustment Factor Permit Status (11)	Gross Cost (12)
			Current Bonded Acres (4)	Forfeiture Rate (5)	Adjustment				Released Acres (9)				
					Permit Bond Size (6)	Release Rate (7)	Forfeited Acres (8)						
1967	Other	Inactive	-	0.069%	0.00	0.787%	-	-	130.00	1.00	-		
1968	Other	Inactive	-	0.154%	0.00	0.787%	-	-	130.00	1.00	-		
1969	Other	Inactive	-	0.235%	0.00	0.787%	-	-	130.00	1.00	-		
1970	Other	Inactive	-	0.310%	0.00	0.787%	-	-	130.00	1.00	-		
1971	Other	Inactive	-	0.380%	0.00	0.787%	-	-	130.00	1.00	-		
1972	Other	Inactive	-	0.445%	0.00	0.787%	-	-	130.00	1.00	-		
1973	Other	Inactive	-	0.506%	0.00	0.787%	-	-	130.00	1.00	-		
1974	Other	Inactive	-	0.562%	0.00	0.787%	-	-	130.00	1.00	-		
1975	Other	Inactive	-	0.614%	0.00	0.787%	-	-	130.00	1.00	-		
1976	Other	Inactive	14.48	0.662%	1.25	0.787%	0.12	0.11	130.00	1.00	15.57		
1977	Other	Inactive	52.00	0.705%	1.25	0.787%	0.46	0.41	130.00	1.00	59.58		
1978	Other	Inactive	-	0.745%	0.00	0.787%	-	-	130.00	1.00	-		
1979	Other	Inactive	-	0.781%	0.00	0.787%	-	-	130.00	1.00	-		
1980	Other	Inactive	114.75	0.813%	0.80	0.787%	0.75	0.90	130.00	1.00	97.01		
1981	Other	Inactive	859.57	0.842%	0.89	0.787%	6.42	6.77	130.00	1.00	834.79		
1982	Other	Inactive	130.80	0.867%	1.03	0.787%	1.16	1.03	130.00	1.00	151.16		
1983	Other	Inactive	888.39	0.890%	0.82	0.787%	6.45	6.99	130.00	1.00	839.14		
1984	Other	Inactive	495.53	0.909%	0.85	0.787%	3.83	3.90	130.00	1.00	497.80		
1985	Other	Inactive	1,248.52	0.926%	0.86	0.787%	9.94	9.83	130.00	1.00	1,292.13		
1986	Other	Inactive	-	0.940%	0.00	0.787%	-	-	130.00	1.00	-		
1987	Other	Inactive	-	0.951%	0.00	0.787%	-	-	130.00	1.00	-		
1988	Other	Inactive	34.27	0.960%	1.25	0.787%	0.41	0.27	130.00	1.00	53.46		
1989	Other	Inactive	87.34	0.967%	1.25	0.787%	1.06	0.69	130.00	1.00	137.21		
1990	Other	Inactive	425.33	0.971%	0.60	0.787%	2.48	3.35	130.00	1.00	322.28		
1991	Other	Inactive	-	0.974%	0.00	0.787%	-	-	130.00	1.00	-		
1992	Other	Inactive	354.26	0.975%	1.09	0.787%	3.76	2.79	130.00	1.00	488.42		
1993	Other	Inactive	192.03	0.975%	1.10	0.787%	2.06	1.51	130.00	1.00	267.63		
1994	Other	Inactive	381.64	0.973%	0.60	0.787%	2.23	3.00	130.00	1.00	289.51		
1995	Other	Inactive	593.99	0.969%	0.93	0.787%	5.33	4.68	130.00	1.00	692.26		
1996	Other	Inactive	152.16	0.965%	0.80	0.787%	1.17	1.20	130.00	1.00	152.65		
1997	Other	Inactive	593.50	0.959%	0.70	0.787%	3.98	4.67	130.00	1.00	518.01		
1998	Other	Inactive	131.05	0.953%	1.03	0.787%	1.28	1.03	130.00	1.00	166.37		
1999	Other	Inactive	-	0.946%	0.00	0.787%	-	-	130.00	1.00	-		
2000	Other	Inactive	-	0.938%	0.00	0.787%	-	-	130.00	1.00	-		
2001	Other	Inactive	144.00	0.930%	0.80	0.787%	1.07	1.13	130.00	1.00	139.28		
2002	Other	Inactive	-	0.922%	0.00	0.787%	-	-	130.00	1.00	-		
2003	Other	Inactive	20.00	0.913%	1.25	0.787%	0.23	0.16	130.00	1.00	29.69		
2004	Other	Inactive	-	0.905%	0.00	0.787%	-	-	130.00	1.00	-		
2005	Other	Inactive	-	0.897%	0.00	0.787%	-	-	130.00	1.00	-		
2006	Other	Inactive	-	0.889%	0.00	0.787%	-	-	130.00	1.00	-		
2007	Other	Inactive	26.00	0.882%	1.25	0.787%	0.29	0.20	130.00	1.00	37.28		
2008	Other	Inactive	-	0.876%	0.00	0.787%	-	-	130.00	1.00	-		
2009	Other	Inactive	19.80	0.870%	1.25	0.787%	0.22	0.16	130.00	1.00	28.00		
2010	Other	Inactive	-	0.865%	0.00	0.788%	-	-	130.00	1.00	-		
2011	Other	Inactive	-	0.862%	0.00	0.790%	-	-	130.00	1.00	-		
2012	Other	Inactive	66.26	0.860%	0.80	0.798%	0.46	0.53	130.00	1.00	59.24		
2013	Other	Inactive	-	0.859%	0.00	0.824%	-	-	130.00	1.00	-		
2014	Other	Inactive	-	0.860%	0.00	0.912%	-	-	130.00	1.00	-		
2015	Other	Inactive	-	0.862%	0.00	1.201%	-	-	130.00	1.00	-		
2016	Other	Inactive	-	0.867%	0.00	2.098%	-	-	130.00	1.00	-		
2017	Other	Inactive	16.37	0.873%	1.25	4.409%	0.18	0.72	130.00	1.00	23.22		
2018	Other	Inactive	11.88	0.882%	1.25	8.315%	0.13	0.99	130.00	1.00	17.02		
2019	Other	Inactive	-	0.893%	0.00	11.816%	-	-	130.00	1.00	-		
2020	Other	Inactive	-	0.906%	0.00	13.567%	-	-	130.00	1.00	-		
2021	Other	Inactive	-	0.923%	0.00	14.193%	-	-	130.00	1.00	-		
2022	Other	Inactive	-	0.942%	0.00	14.390%	-	-	130.00	1.00	-		
2023	Other	Inactive	-	0.068%	0.00	16.325%	-	-	130.00	1.00	-		
2024	Other	Inactive	19.50	0.000%	1.25	9.930%	-	1.94	130.00	1.00	-		
2025	Other	Inactive	-	0.000%	0.00	0.000%	-	-	130.00	1.00	-		

West Virginia Department of Environmental Protection Office of Special Reclamation
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic Mode

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	2026								Avg Recl Cost per Acre (10)	Adjustment Factor Permit Status (11)	Gross Cost (12)
			Current Bonded Acres (4)	Forfeiture Rate (5)	Adjustment		Release Rate (7)	Forfeited Acres (8)	Released Acres (9)				
					Factor Bond Size (6)								
1967	Other	Phased Released	-	0.071%	0.00	3.291%	-	-	-	130.00	1.00	-	
1968	Other	Phased Released	-	0.160%	0.00	3.291%	-	-	-	130.00	1.00	-	
1969	Other	Phased Released	-	0.243%	0.00	3.291%	-	-	-	130.00	1.00	-	
1970	Other	Phased Released	-	0.320%	0.00	3.291%	-	-	-	130.00	1.00	-	
1971	Other	Phased Released	-	0.393%	0.00	3.291%	-	-	-	130.00	1.00	-	
1972	Other	Phased Released	-	0.461%	0.00	3.291%	-	-	-	130.00	1.00	-	
1973	Other	Phased Released	9.00	0.523%	1.25	3.291%	0.06	0.30	-	130.00	1.00	7.66	
1974	Other	Phased Released	-	0.582%	0.00	3.291%	-	-	-	130.00	1.00	-	
1975	Other	Phased Released	-	0.635%	0.00	3.291%	-	-	-	130.00	1.00	-	
1976	Other	Phased Released	27.88	0.684%	1.25	3.291%	0.24	0.92	-	130.00	1.00	31.01	
1977	Other	Phased Released	-	0.729%	0.00	3.291%	-	-	-	130.00	1.00	-	
1978	Other	Phased Released	12.76	0.770%	1.25	3.291%	0.12	0.42	-	130.00	1.00	15.97	
1979	Other	Phased Released	58.69	0.808%	1.25	3.291%	0.59	1.93	-	130.00	1.00	77.02	
1980	Other	Phased Released	-	0.841%	0.00	3.291%	-	-	-	130.00	1.00	-	
1981	Other	Phased Released	475.54	0.871%	1.14	3.291%	4.71	15.65	-	130.00	1.00	612.33	
1982	Other	Phased Released	201.26	0.897%	1.25	3.291%	2.26	6.62	-	130.00	1.00	293.43	
1983	Other	Phased Released	201.70	0.920%	1.14	3.291%	2.11	6.64	-	130.00	1.00	274.52	
1984	Other	Phased Released	75.79	0.940%	1.25	3.291%	0.89	2.49	-	130.00	1.00	115.83	
1985	Other	Phased Released	43.00	0.958%	1.25	3.291%	0.51	1.42	-	130.00	1.00	66.91	
1986	Other	Phased Released	-	0.972%	0.00	3.291%	-	-	-	130.00	1.00	-	
1987	Other	Phased Released	-	0.984%	0.00	3.291%	-	-	-	130.00	1.00	-	
1988	Other	Phased Released	-	0.993%	0.00	3.291%	-	-	-	130.00	1.00	-	
1989	Other	Phased Released	62.20	1.000%	1.25	3.291%	0.78	2.05	-	130.00	1.00	101.08	
1990	Other	Phased Released	-	1.005%	0.00	3.291%	-	-	-	130.00	1.00	-	
1991	Other	Phased Released	-	1.008%	0.00	3.291%	-	-	-	130.00	1.00	-	
1992	Other	Phased Released	-	1.009%	0.00	3.291%	-	-	-	130.00	1.00	-	
1993	Other	Phased Released	68.65	1.008%	1.25	3.291%	0.87	2.26	-	130.00	1.00	112.47	
1994	Other	Phased Released	-	1.006%	0.00	3.291%	-	-	-	130.00	1.00	-	
1995	Other	Phased Released	-	1.003%	0.00	3.291%	-	-	-	130.00	1.00	-	
1996	Other	Phased Released	-	0.998%	0.00	3.291%	-	-	-	130.00	1.00	-	
1997	Other	Phased Released	31.16	0.992%	1.25	3.291%	0.39	1.03	-	130.00	1.00	50.24	
1998	Other	Phased Released	-	0.986%	0.00	3.291%	-	-	-	130.00	1.00	-	
1999	Other	Phased Released	179.00	0.978%	0.80	3.291%	1.40	5.89	-	130.00	1.00	182.12	
2000	Other	Phased Released	-	0.970%	0.00	3.291%	-	-	-	130.00	1.00	-	
2001	Other	Phased Released	-	0.962%	0.00	3.291%	-	-	-	130.00	1.00	-	
2002	Other	Phased Released	-	0.954%	0.00	3.291%	-	-	-	130.00	1.00	-	
2003	Other	Phased Released	-	0.945%	0.00	3.291%	-	-	-	130.00	1.00	-	
2004	Other	Phased Released	-	0.936%	0.00	3.291%	-	-	-	130.00	1.00	-	
2005	Other	Phased Released	-	0.928%	0.00	3.291%	-	-	-	130.00	1.00	-	
2006	Other	Phased Released	-	0.920%	0.00	3.292%	-	-	-	130.00	1.00	-	
2007	Other	Phased Released	-	0.913%	0.00	3.292%	-	-	-	130.00	1.00	-	
2008	Other	Phased Released	9.90	0.906%	1.25	3.292%	0.11	0.33	-	130.00	1.00	14.58	
2009	Other	Phased Released	-	0.900%	0.00	3.293%	-	-	-	130.00	1.00	-	
2010	Other	Phased Released	-	0.895%	0.00	3.295%	-	-	-	130.00	1.00	-	
2011	Other	Phased Released	-	0.892%	0.00	3.305%	-	-	-	130.00	1.00	-	
2012	Other	Phased Released	-	0.889%	0.00	3.337%	-	-	-	130.00	1.00	-	
2013	Other	Phased Released	-	0.888%	0.00	3.446%	-	-	-	130.00	1.00	-	
2014	Other	Phased Released	-	0.889%	0.00	3.812%	-	-	-	130.00	1.00	-	
2015	Other	Phased Released	115.00	0.892%	1.25	5.023%	1.28	5.78	-	130.00	1.00	166.67	
2016	Other	Phased Released	-	0.896%	0.00	8.775%	-	-	-	130.00	1.00	-	
2017	Other	Phased Released	-	0.903%	0.00	18.438%	-	-	-	130.00	1.00	-	
2018	Other	Phased Released	-	0.912%	0.00	34.771%	-	-	-	130.00	1.00	-	
2019	Other	Phased Released	-	0.924%	0.00	49.414%	-	-	-	130.00	1.00	-	
2020	Other	Phased Released	-	0.938%	0.00	56.734%	-	-	-	130.00	1.00	-	
2021	Other	Phased Released	-	0.954%	0.00	59.354%	-	-	-	130.00	1.00	-	
2022	Other	Phased Released	-	0.974%	0.00	60.175%	-	-	-	130.00	1.00	-	
2023	Other	Phased Released	-	0.071%	0.00	68.266%	-	-	-	130.00	1.00	-	

West Virginia Department of Environmental Protection Office of S
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic

2027												
			Adjustment							Adjustment		
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Avg recl Cost per Acre (19)	Factor Permit Status (20)	Gross Cost (21)
1967	Surface	Active	-	-	0.05%	-	0.00%	-	-	80.00	1	-
1968	Surface	Active	-	-	0.05%	-	0.00%	-	-	80.00	1	-
1969	Surface	Active	-	-	0.06%	-	0.23%	-	-	80.00	1	-
1970	Surface	Active	-	-	0.07%	-	0.45%	-	-	80.00	1	-
1971	Surface	Active	-	-	0.08%	-	0.65%	-	-	80.00	1	-
1972	Surface	Active	400.00	395.46	0.09%	1.25	0.84%	0.42	3.32	80.00	1	33.88
1973	Surface	Active	-	-	0.10%	-	1.01%	-	-	80.00	1	-
1974	Surface	Active	-	-	0.11%	-	1.18%	-	-	80.00	1	-
1975	Surface	Active	-	-	0.12%	-	1.33%	-	-	80.00	1	-
1976	Surface	Active	-	-	0.12%	-	1.47%	-	-	80.00	1	-
1977	Surface	Active	1,107.97	1,087.62	0.13%	0.88	1.59%	1.29	17.33	80.00	1	103.49
1978	Surface	Active	855.12	838.68	0.14%	0.70	1.71%	0.85	14.34	80.00	1	67.84
1979	Surface	Active	-	-	0.15%	1.25	1.81%	-	-	80.00	1	-
1980	Surface	Active	47.92	46.86	0.16%	1.25	1.91%	0.10	0.89	80.00	1	7.69
1981	Surface	Active	1,999.01	1,954.04	0.17%	1.00	1.99%	3.40	38.93	80.00	1	271.74
1982	Surface	Active	7.44	7.26	0.18%	1.25	2.07%	0.02	0.15	80.00	1	1.33
1983	Surface	Active	1,708.83	1,669.40	0.19%	0.60	2.13%	1.94	35.57	80.00	1	154.99
1984	Surface	Active	-	-	0.20%	-	2.19%	-	-	80.00	1	-
1985	Surface	Active	2,611.31	2,547.10	0.21%	0.85	2.23%	4.61	56.85	80.00	1	368.95
1986	Surface	Active	2,532.60	2,468.78	0.22%	0.95	2.27%	5.23	56.03	80.00	1	418.05
1987	Surface	Active	1,371.12	1,336.59	0.23%	0.82	2.30%	2.54	30.73	80.00	1	203.12
1988	Surface	Active	1,562.99	1,522.70	0.24%	0.96	2.32%	3.56	35.34	80.00	1	284.73
1989	Surface	Active	2,773.31	2,702.87	0.25%	0.76	2.33%	5.15	63.11	80.00	1	412.40
1990	Surface	Active	2,703.07	2,633.43	0.26%	0.86	2.34%	5.95	61.67	80.00	1	476.05
1991	Surface	Active	1,554.45	1,513.88	0.27%	0.98	2.34%	4.01	35.45	80.00	1	320.93
1992	Surface	Active	3,683.68	3,591.30	0.28%	0.63	2.34%	6.40	83.88	80.00	1	512.36
1993	Surface	Active	4,151.89	4,044.54	0.29%	0.93	2.32%	10.98	93.96	80.00	1	878.51
1994	Surface	Active	1,389.47	1,354.75	0.30%	0.70	2.30%	2.86	31.23	80.00	1	228.49
1995	Surface	Active	8,653.77	8,435.36	0.31%	0.85	2.28%	22.20	192.43	80.00	1	1,775.66
1996	Surface	Active	6,686.27	6,519.49	0.32%	0.83	2.25%	17.43	146.85	80.00	1	1,394.14
1997	Surface	Active	11,098.71	10,823.07	0.33%	0.89	2.22%	31.81	240.15	80.00	1	2,544.81
1998	Surface	Active	11,215.25	10,946.01	0.34%	0.75	2.18%	27.85	238.72	80.00	1	2,227.87
1999	Surface	Active	2,008.81	1,962.06	0.35%	0.65	2.14%	4.47	41.97	80.00	1	357.25
2000	Surface	Active	4,010.07	3,916.62	0.36%	0.78	2.09%	10.93	81.98	80.00	1	874.06
2001	Surface	Active	7,502.63	7,329.42	0.37%	0.84	2.04%	22.63	149.81	80.00	1	1,810.29
2002	Surface	Active	5,919.92	5,788.06	0.38%	0.75	1.99%	16.39	115.28	80.00	1	1,311.32
2003	Surface	Active	8,056.67	7,877.90	0.39%	0.85	1.94%	26.07	152.58	80.00	1	2,085.67
2004	Surface	Active	13,148.60	12,863.55	0.40%	0.85	1.88%	43.64	241.78	80.00	1	3,491.31
2005	Surface	Active	4,062.35	3,973.81	0.41%	1.00	1.82%	16.30	72.34	80.00	1	1,304.34
2006	Surface	Active	5,139.07	5,033.46	0.42%	0.84	1.76%	17.60	88.56	80.00	1	1,407.91
2007	Surface	Active	5,069.99	4,967.93	0.43%	0.87	1.70%	18.41	84.31	80.00	1	1,473.18
2008	Surface	Active	9,470.87	9,292.46	0.44%	0.70	1.63%	28.51	151.83	80.00	1	2,280.92
2009	Surface	Active	6,648.17	6,522.26	0.45%	0.85	1.57%	24.76	102.41	80.00	1	1,980.96
2010	Surface	Active	4,950.90	4,858.21	0.46%	0.92	1.51%	20.47	73.16	80.00	1	1,637.34
2011	Surface	Active	1,769.33	1,737.48	0.47%	0.88	1.44%	7.18	25.05	80.00	1	574.27
2012	Surface	Active	7,481.98	7,351.10	0.48%	0.89	1.38%	31.27	101.31	80.00	1	2,501.82
2013	Surface	Active	8,035.98	7,898.86	0.49%	0.91	1.32%	35.08	103.88	80.00	1	2,806.38
2014	Surface	Active	7,227.57	7,112.41	0.50%	0.79	1.25%	27.93	89.14	80.00	1	2,234.50
2015	Surface	Active	4,331.94	4,264.25	0.51%	0.83	1.19%	17.92	50.87	80.00	1	1,433.82
2016	Surface	Active	3,391.59	3,340.56	0.52%	0.81	1.13%	14.00	37.89	80.00	1	1,120.02
2017	Surface	Active	1,137.87	1,120.58	0.53%	0.93	1.08%	5.46	12.08	80.00	1	436.58
2018	Surface	Active	3,677.40	3,624.83	0.54%	0.84	1.02%	16.28	37.10	80.00	1	1,302.46
2019	Surface	Active	4,475.81	4,410.19	0.55%	0.98	0.97%	23.48	42.88	80.00	1	1,878.52
2020	Surface	Active	4,151.29	4,096.74	0.56%	0.77	0.92%	17.49	37.86	80.00	1	1,399.52
2021	Surface	Active	3,857.52	3,808.52	0.57%	0.75	0.88%	16.16	33.49	80.00	1	1,292.65
2022	Surface	Active	5,405.21	5,334.18	0.58%	0.88	0.84%	26.86	44.74	80.00	1	2,148.81
2023	Surface	Active	4,057.34	4,029.66	0.59%	0.88	0.80%	20.83	32.32	80.00	1	1,666.66
2024	Surface	Active	2,351.57	2,345.61	0.30%	0.92	0.42%	6.43	9.80	80.00	1	514.78
2025	Surface	Active	1,400.13	1,400.13	0.14%	1.16	0.12%	2.32	1.71	80.00	1	185.66

Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	2027								Adjustment		
			Current Bonded Acres (4)	Adjusted Acres (13)	Forfeiture Rate (14)	Adjustment Factor		Released Acres (18)	Avg recd Cost per Acre (19)	Factor Permit Status (20)	Gross Cost (21)		
						Permit Bond Size (15)	Release Rate (16)					Forfeited Acres (17)	
1967	Surface	Inactive	-	-	0.08%	-	0.00%	-	-	80.00	1	-	
1968	Surface	Inactive	-	-	0.08%	-	0.00%	-	-	80.00	1	-	
1969	Surface	Inactive	-	-	0.10%	-	0.15%	-	-	80.00	1	-	
1970	Surface	Inactive	-	-	0.12%	-	0.29%	-	-	80.00	1	-	
1971	Surface	Inactive	-	-	0.14%	-	0.42%	-	-	80.00	1	-	
1972	Surface	Inactive	-	-	0.16%	-	0.54%	-	-	80.00	1	-	
1973	Surface	Inactive	-	-	0.17%	-	0.66%	-	-	80.00	1	-	
1974	Surface	Inactive	-	-	0.19%	-	0.76%	-	-	80.00	1	-	
1975	Surface	Inactive	-	-	0.21%	-	0.86%	-	-	80.00	1	-	
1976	Surface	Inactive	163.80	161.61	0.23%	1.25	0.95%	0.46	1.53	80.00	1	36.57	
1977	Surface	Inactive	-	-	0.24%	-	1.03%	-	-	80.00	1	-	
1978	Surface	Inactive	-	-	0.26%	-	1.11%	-	-	80.00	1	-	
1979	Surface	Inactive	-	-	0.28%	-	1.17%	-	-	80.00	1	-	
1980	Surface	Inactive	-	-	0.30%	-	1.23%	-	-	80.00	1	-	
1981	Surface	Inactive	-	-	0.32%	-	1.29%	-	-	80.00	1	-	
1982	Surface	Inactive	-	-	0.33%	-	1.34%	-	-	80.00	1	-	
1983	Surface	Inactive	-	-	0.35%	-	1.38%	-	-	80.00	1	-	
1984	Surface	Inactive	-	-	0.37%	-	1.41%	-	-	80.00	1	-	
1985	Surface	Inactive	-	-	0.39%	-	1.44%	-	-	80.00	1	-	
1986	Surface	Inactive	-	-	0.40%	-	1.47%	-	-	80.00	1	-	
1987	Surface	Inactive	415.61	407.68	0.42%	0.93	1.49%	1.59	6.06	80.00	1	127.19	
1988	Surface	Inactive	1,304.38	1,281.10	0.44%	0.60	1.50%	3.38	19.24	80.00	1	270.17	
1989	Surface	Inactive	-	-	0.46%	1.25	1.51%	-	-	80.00	1	-	
1990	Surface	Inactive	-	-	0.47%	-	1.52%	-	-	80.00	1	-	
1991	Surface	Inactive	-	-	0.49%	-	1.52%	-	-	80.00	1	-	
1992	Surface	Inactive	-	-	0.51%	-	1.51%	-	-	80.00	1	-	
1993	Surface	Inactive	-	-	0.53%	-	1.50%	-	-	80.00	1	-	
1994	Surface	Inactive	-	-	0.55%	-	1.49%	-	-	80.00	1	-	
1995	Surface	Inactive	605.35	594.42	0.56%	0.60	1.48%	2.01	8.77	80.00	1	160.81	
1996	Surface	Inactive	-	-	0.58%	-	1.46%	-	-	80.00	1	-	
1997	Surface	Inactive	-	-	0.60%	-	1.44%	-	-	80.00	1	-	
1998	Surface	Inactive	846.89	831.94	0.62%	0.60	1.41%	3.08	11.74	80.00	1	246.35	
1999	Surface	Inactive	1,728.99	1,691.47	0.63%	1.25	1.38%	13.42	23.41	80.00	1	1,073.49	
2000	Surface	Inactive	-	-	0.65%	-	1.35%	-	-	80.00	1	-	
2001	Surface	Inactive	-	-	0.67%	-	1.32%	-	-	80.00	1	-	
2002	Surface	Inactive	1,146.85	1,127.08	0.69%	0.67	1.29%	5.17	14.53	80.00	1	413.51	
2003	Surface	Inactive	1,408.90	1,385.65	0.71%	0.60	1.25%	5.87	17.37	80.00	1	469.35	
2004	Surface	Inactive	1,577.54	1,551.94	0.72%	0.60	1.22%	6.74	18.87	80.00	1	538.91	
2005	Surface	Inactive	-	-	0.74%	-	1.18%	-	-	80.00	1	-	
2006	Surface	Inactive	244.59	240.38	0.76%	0.80	1.14%	1.46	2.74	80.00	1	116.76	
2007	Surface	Inactive	1,356.24	1,334.36	0.78%	0.70	1.10%	7.25	14.65	80.00	1	580.38	
2008	Surface	Inactive	118.60	116.19	0.79%	1.25	1.06%	1.15	1.23	80.00	1	92.31	
2009	Surface	Inactive	42.43	41.58	0.81%	1.25	1.02%	0.42	0.42	80.00	1	33.77	
2010	Surface	Inactive	679.59	667.92	0.83%	0.93	0.97%	5.13	6.51	80.00	1	410.22	
2011	Surface	Inactive	1,679.64	1,654.78	0.85%	0.68	0.93%	9.54	15.44	80.00	1	763.12	
2012	Surface	Inactive	-	-	0.87%	-	0.89%	-	-	80.00	1	-	
2013	Surface	Inactive	-	-	0.88%	-	0.85%	-	-	80.00	1	-	
2014	Surface	Inactive	262.00	256.97	0.90%	1.25	0.81%	2.89	2.08	80.00	1	231.53	
2015	Surface	Inactive	624.70	615.44	0.92%	0.80	0.77%	4.52	4.75	80.00	1	361.88	
2016	Surface	Inactive	776.75	766.15	0.94%	0.70	0.73%	5.02	5.62	80.00	1	401.80	
2017	Surface	Inactive	154.63	151.73	0.95%	1.25	0.70%	1.81	1.06	80.00	1	144.79	
2018	Surface	Inactive	351.08	346.79	0.97%	0.60	0.66%	2.02	2.30	80.00	1	161.80	
2019	Surface	Inactive	452.10	445.75	0.99%	0.80	0.63%	3.53	2.80	80.00	1	282.37	
2020	Surface	Inactive	-	-	1.01%	-	0.60%	-	-	80.00	1	-	
2021	Surface	Inactive	-	-	1.03%	-	0.57%	-	-	80.00	1	-	
2022	Surface	Inactive	31.34	30.76	1.04%	1.25	0.54%	0.40	0.17	80.00	1	32.09	
2023	Surface	Inactive	-	-	1.06%	-	0.52%	-	-	80.00	1	-	
2024	Surface	Inactive	-	-	0.54%	-	0.27%	-	-	80.00	1	-	
2025	Surface	Inactive	-	-	0.26%	-	0.08%	-	-	80.00	1	-	

West Virginia Department of Environmental Protection Office of S
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic

2027													
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	Adjustment							Adjustment		Gross Cost (21)
				Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Avg red Cost per Acre (19)	Factor Permit Status (20)		
1967	Surface	Phased Released	-	-	0.09%	-	0.01%	-	-	80.00	1	-	
1968	Surface	Phased Released	-	-	0.09%	-	0.01%	-	-	80.00	1	-	
1969	Surface	Phased Released	-	-	0.11%	-	0.63%	-	-	80.00	1	-	
1970	Surface	Phased Released	-	-	0.12%	-	1.21%	-	-	80.00	1	-	
1971	Surface	Phased Released	-	-	0.14%	-	1.76%	-	-	80.00	1	-	
1972	Surface	Phased Released	-	-	0.16%	-	2.27%	-	-	80.00	1	-	
1973	Surface	Phased Released	-	-	0.18%	-	2.75%	-	-	80.00	1	-	
1974	Surface	Phased Released	116.05	111.57	0.20%	1.25	3.19%	0.28	3.56	80.00	1	22.02	
1975	Surface	Phased Released	7.80	7.47	0.22%	1.25	3.59%	0.02	0.27	80.00	1	1.61	
1976	Surface	Phased Released	476.17	454.13	0.23%	1.25	3.97%	1.33	18.03	80.00	1	106.32	
1977	Surface	Phased Released	48.00	45.62	0.25%	1.25	4.31%	0.14	1.97	80.00	1	11.52	
1978	Surface	Phased Released	158.81	150.44	0.27%	1.25	4.63%	0.51	6.96	80.00	1	40.75	
1979	Surface	Phased Released	538.00	508.15	0.29%	1.25	4.91%	1.84	24.95	80.00	1	146.96	
1980	Surface	Phased Released	253.42	238.73	0.31%	1.25	5.16%	0.92	12.33	80.00	1	73.43	
1981	Surface	Phased Released	1,267.32	1,192.37	0.33%	0.94	5.39%	3.65	64.27	80.00	1	292.26	
1982	Surface	Phased Released	-	-	0.34%	-	5.59%	-	-	80.00	1	-	
1983	Surface	Phased Released	225.01	210.63	0.36%	1.25	5.76%	0.95	12.14	80.00	1	76.39	
1984	Surface	Phased Released	2,302.75	2,156.17	0.38%	0.82	5.91%	6.71	127.51	80.00	1	536.76	
1985	Surface	Phased Released	1,270.29	1,186.84	0.40%	1.03	6.04%	4.86	71.67	80.00	1	388.70	
1986	Surface	Phased Released	1,041.15	971.73	0.42%	1.03	6.14%	4.16	59.67	80.00	1	332.88	
1987	Surface	Phased Released	760.81	709.10	0.44%	1.14	6.22%	3.52	44.11	80.00	1	281.43	
1988	Surface	Phased Released	480.30	447.12	0.45%	1.25	6.28%	2.54	28.08	80.00	1	203.21	
1989	Surface	Phased Released	1,098.64	1,022.76	0.47%	1.16	6.32%	5.61	64.62	80.00	1	448.81	
1990	Surface	Phased Released	764.18	710.89	0.49%	1.25	6.34%	4.37	45.05	80.00	1	349.21	
1991	Surface	Phased Released	1,006.45	937.16	0.51%	1.07	6.34%	5.11	59.39	80.00	1	408.80	
1992	Surface	Phased Released	-	-	0.53%	-	6.32%	-	-	80.00	1	-	
1993	Surface	Phased Released	669.04	622.59	0.55%	1.25	6.29%	4.25	39.14	80.00	1	340.14	
1994	Surface	Phased Released	345.90	322.39	0.56%	1.07	6.24%	1.95	20.11	80.00	1	155.84	
1995	Surface	Phased Released	484.30	451.77	0.58%	1.03	6.17%	2.72	27.89	80.00	1	217.75	
1996	Surface	Phased Released	583.38	544.38	0.60%	1.10	6.09%	3.60	33.18	80.00	1	288.12	
1997	Surface	Phased Released	169.48	158.52	0.62%	0.88	6.00%	0.87	9.52	80.00	1	69.43	
1998	Surface	Phased Released	336.07	314.36	0.64%	1.03	5.90%	2.06	18.55	80.00	1	164.50	
1999	Surface	Phased Released	14.87	13.90	0.66%	1.25	5.79%	0.11	0.80	80.00	1	9.13	
2000	Surface	Phased Released	19.70	18.44	0.67%	1.25	5.66%	0.16	1.04	80.00	1	12.45	
2001	Surface	Phased Released	491.55	461.21	0.69%	1.10	5.53%	3.52	25.51	80.00	1	281.37	
2002	Surface	Phased Released	48.20	45.23	0.71%	1.25	5.39%	0.40	2.44	80.00	1	32.19	
2003	Surface	Phased Released	-	-	0.73%	1.25	5.24%	-	-	80.00	1	-	
2004	Surface	Phased Released	470.13	443.64	0.75%	0.93	5.09%	3.07	22.56	80.00	1	245.69	
2005	Surface	Phased Released	51.50	48.54	0.77%	1.25	4.93%	0.47	2.39	80.00	1	37.22	
2006	Surface	Phased Released	60.78	57.38	0.79%	1.25	4.76%	0.56	2.73	80.00	1	45.05	
2007	Surface	Phased Released	263.63	249.75	0.80%	1.03	4.59%	2.06	11.47	80.00	1	164.55	
2008	Surface	Phased Released	-	-	0.82%	-	4.42%	-	-	80.00	1	-	
2009	Surface	Phased Released	137.75	131.19	0.84%	0.80	4.25%	0.88	5.57	80.00	1	70.55	
2010	Surface	Phased Released	-	-	0.86%	-	4.07%	-	-	80.00	1	-	
2011	Surface	Phased Released	158.51	150.83	0.88%	1.25	3.90%	1.65	5.88	80.00	1	132.27	
2012	Surface	Phased Released	-	-	0.90%	-	3.73%	-	-	80.00	1	-	
2013	Surface	Phased Released	-	-	0.91%	-	3.56%	-	-	80.00	1	-	
2014	Surface	Phased Released	-	-	0.93%	-	3.39%	-	-	80.00	1	-	
2015	Surface	Phased Released	-	-	0.95%	-	3.23%	-	-	80.00	1	-	
2016	Surface	Phased Released	-	-	0.97%	-	3.07%	-	-	80.00	1	-	
2017	Surface	Phased Released	-	-	0.99%	-	2.92%	-	-	80.00	1	-	
2018	Surface	Phased Released	-	-	1.01%	-	2.77%	-	-	80.00	1	-	
2019	Surface	Phased Released	-	-	1.02%	-	2.63%	-	-	80.00	1	-	
2020	Surface	Phased Released	-	-	1.04%	-	2.50%	-	-	80.00	1	-	
2021	Surface	Phased Released	-	-	1.06%	-	2.38%	-	-	80.00	1	-	
2022	Surface	Phased Released	-	-	1.08%	-	2.27%	-	-	80.00	1	-	
2023	Surface	Phased Released	-	-	1.10%	-	2.17%	-	-	80.00	1	-	
2024	Surface	Phased Released	-	-	0.56%	-	1.13%	-	-	80.00	1	-	
2025	Surface	Phased Released	-	-	0.27%	-	0.33%	-	-	80.00	1	-	

2027												
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Adjustment Factor							Adjustment		
			Current Bonded Acres (4)	Adjusted Acres (13)	Forfeiture Rate (14)	Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Avg recl Cost per Acre (19)	Permit Status (20)	Gross Cost (21)
1967	Underground	Active	-	-	0.00%	-	0.00%	-	-	135.00	1	-
1968	Underground	Active	-	-	0.00%	-	0.00%	-	-	135.00	1	-
1969	Underground	Active	-	-	0.00%	-	0.02%	-	-	135.00	1	-
1970	Underground	Active	-	-	0.05%	-	0.04%	-	-	135.00	1	-
1971	Underground	Active	-	-	0.15%	-	0.08%	-	-	135.00	1	-
1972	Underground	Active	-	-	0.24%	-	0.12%	-	-	135.00	1	-
1973	Underground	Active	-	-	0.32%	-	0.17%	-	-	135.00	1	-
1974	Underground	Active	-	-	0.40%	-	0.23%	-	-	135.00	1	-
1975	Underground	Active	-	-	0.47%	-	0.29%	-	-	135.00	1	-
1976	Underground	Active	-	-	0.53%	-	0.36%	-	-	135.00	1	-
1977	Underground	Active	-	-	0.58%	-	0.43%	-	-	135.00	1	-
1978	Underground	Active	-	-	0.63%	-	0.51%	-	-	135.00	1	-
1979	Underground	Active	703.10	693.17	0.67%	1.03	0.60%	4.77	4.15	135.00	1	643.71
1980	Underground	Active	202.41	199.31	0.70%	1.03	0.69%	1.44	1.37	135.00	1	194.19
1981	Underground	Active	709.57	697.06	0.73%	1.17	0.78%	5.98	5.44	135.00	1	807.05
1982	Underground	Active	33.93	33.27	0.76%	1.25	0.88%	0.32	0.29	135.00	1	42.56
1983	Underground	Active	7,263.70	7,135.05	0.78%	0.88	0.97%	48.77	69.54	135.00	1	6,583.55
1984	Underground	Active	2,621.92	2,571.10	0.79%	0.95	1.07%	19.34	27.64	135.00	1	2,610.45
1985	Underground	Active	49.00	47.88	0.80%	1.25	1.18%	0.48	0.56	135.00	1	64.75
1986	Underground	Active	236.31	230.83	0.81%	1.16	1.28%	2.16	2.95	135.00	1	291.69
1987	Underground	Active	203.45	198.52	0.81%	1.16	1.38%	1.86	2.75	135.00	1	251.33
1988	Underground	Active	157.83	153.88	0.81%	1.14	1.49%	1.41	2.29	135.00	1	190.50
1989	Underground	Active	317.75	309.44	0.80%	1.17	1.59%	2.89	4.92	135.00	1	390.59
1990	Underground	Active	131.40	127.88	0.79%	1.14	1.69%	1.15	2.16	135.00	1	155.41
1991	Underground	Active	36.67	35.63	0.78%	1.25	1.79%	0.35	0.64	135.00	1	46.86
1992	Underground	Active	960.01	933.71	0.76%	1.01	1.89%	7.18	17.66	135.00	1	969.52
1993	Underground	Active	1,009.71	981.01	0.75%	1.05	1.99%	7.68	19.49	135.00	1	1,036.20
1994	Underground	Active	604.69	587.29	0.73%	1.00	2.08%	4.28	12.22	135.00	1	577.80
1995	Underground	Active	318.33	308.97	0.71%	1.00	2.17%	2.19	6.70	135.00	1	295.22
1996	Underground	Active	242.07	234.63	0.69%	1.12	2.26%	1.79	5.29	135.00	1	241.99
1997	Underground	Active	247.41	239.60	0.66%	1.17	2.34%	1.85	5.60	135.00	1	249.88
1998	Underground	Active	572.18	554.45	0.64%	1.01	2.41%	3.56	13.38	135.00	1	480.26
1999	Underground	Active	327.70	317.07	0.61%	1.19	2.48%	2.31	7.87	135.00	1	311.26
2000	Underground	Active	369.33	357.28	0.58%	1.18	2.55%	2.47	9.10	135.00	1	332.79
2001	Underground	Active	112.63	108.98	0.56%	1.10	2.61%	0.67	2.84	135.00	1	90.28
2002	Underground	Active	222.94	215.59	0.53%	1.19	2.66%	1.36	5.73	135.00	1	183.38
2003	Underground	Active	991.90	960.26	0.51%	0.95	2.70%	4.61	25.92	135.00	1	622.20
2004	Underground	Active	411.39	398.04	0.48%	1.07	2.73%	2.04	10.88	135.00	1	274.91
2005	Underground	Active	364.13	352.29	0.45%	1.10	2.76%	1.76	9.73	135.00	1	237.97
2006	Underground	Active	290.00	280.74	0.43%	0.99	2.78%	1.20	7.80	135.00	1	162.28
2007	Underground	Active	591.88	572.93	0.41%	1.08	2.79%	2.52	15.96	135.00	1	340.07
2008	Underground	Active	98.24	95.06	0.39%	1.25	2.78%	0.46	2.65	135.00	1	62.31
2009	Underground	Active	370.51	358.92	0.37%	1.08	2.77%	1.43	9.95	135.00	1	193.70
2010	Underground	Active	258.10	250.16	0.35%	1.08	2.75%	0.95	6.87	135.00	1	128.57
2011	Underground	Active	204.25	198.01	0.34%	1.19	2.71%	0.80	5.37	135.00	1	108.24
2012	Underground	Active	172.75	167.60	0.33%	1.18	2.66%	0.65	4.46	135.00	1	87.18
2013	Underground	Active	505.93	491.36	0.32%	1.11	2.60%	1.75	12.79	135.00	1	235.67
2014	Underground	Active	727.51	707.19	0.31%	1.12	2.53%	2.50	17.89	135.00	1	336.83
2015	Underground	Active	183.96	178.96	0.31%	1.19	2.44%	0.67	4.37	135.00	1	90.31
2016	Underground	Active	197.47	192.45	0.32%	0.98	2.34%	0.60	4.51	135.00	1	80.33
2017	Underground	Active	161.03	156.99	0.32%	1.25	2.22%	0.63	3.49	135.00	1	85.28
2018	Underground	Active	29.25	28.55	0.33%	1.25	2.09%	0.12	0.60	135.00	1	16.03
2019	Underground	Active	149.13	145.85	0.35%	1.14	1.95%	0.58	2.84	135.00	1	77.97
2020	Underground	Active	141.50	138.57	0.37%	1.19	1.78%	0.61	2.47	135.00	1	81.72
2021	Underground	Active	81.77	80.19	0.39%	1.25	1.60%	0.39	1.29	135.00	1	53.30
2022	Underground	Active	43.22	42.46	0.42%	1.25	1.41%	0.23	0.60	135.00	1	30.44
2023	Underground	Active	65.04	64.26	0.46%	1.25	1.19%	0.37	0.77	135.00	1	50.04
2024	Underground	Active	-	-	0.20%	-	0.96%	-	-	135.00	1	-
2025	Underground	Active	16.05	15.98	0.09%	1.25	0.71%	0.02	0.11	135.00	1	2.41

2027													
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Adjustment								Adjustment		Gross Cost (21)
			Current Bonded Acres (4)	Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Avg recl Cost per Acre (19)	Factor Permit Status (20)		
1967	Underground	Inactive	-	-	0.00%	-	0.00%	-	-	135.00	1	-	
1968	Underground	Inactive	-	-	0.00%	-	0.00%	-	-	135.00	1	-	
1969	Underground	Inactive	-	-	0.00%	-	0.01%	-	-	135.00	1	-	
1970	Underground	Inactive	-	-	0.09%	-	0.03%	-	-	135.00	1	-	
1971	Underground	Inactive	-	-	0.27%	-	0.05%	-	-	135.00	1	-	
1972	Underground	Inactive	-	-	0.44%	-	0.08%	-	-	135.00	1	-	
1973	Underground	Inactive	-	-	0.59%	-	0.11%	-	-	135.00	1	-	
1974	Underground	Inactive	-	-	0.72%	-	0.15%	-	-	135.00	1	-	
1975	Underground	Inactive	-	-	0.84%	-	0.19%	-	-	135.00	1	-	
1976	Underground	Inactive	26.50	26.20	0.95%	0.80	0.23%	0.20	0.06	135.00	1	26.99	
1977	Underground	Inactive	-	-	1.05%	-	0.28%	-	-	135.00	1	-	
1978	Underground	Inactive	117.89	116.29	1.14%	0.80	0.33%	1.06	0.39	135.00	1	142.85	
1979	Underground	Inactive	-	-	1.21%	-	0.39%	-	-	135.00	1	-	
1980	Underground	Inactive	-	-	1.28%	-	0.45%	-	-	135.00	1	-	
1981	Underground	Inactive	210.92	207.08	1.33%	0.91	0.51%	2.51	1.05	135.00	1	339.28	
1982	Underground	Inactive	125.56	123.53	1.37%	0.70	0.57%	1.19	0.70	135.00	1	160.40	
1983	Underground	Inactive	260.82	255.45	1.41%	0.95	0.63%	3.42	1.61	135.00	1	461.56	
1984	Underground	Inactive	-	-	1.43%	-	0.70%	-	-	135.00	1	-	
1985	Underground	Inactive	220.21	216.45	1.45%	0.60	0.76%	1.89	1.65	135.00	1	254.69	
1986	Underground	Inactive	43.54	42.64	1.46%	0.80	0.83%	0.50	0.35	135.00	1	67.35	
1987	Underground	Inactive	40.89	40.02	1.47%	0.80	0.90%	0.47	0.36	135.00	1	63.33	
1988	Underground	Inactive	55.35	53.78	1.46%	1.25	0.96%	0.98	0.52	135.00	1	132.60	
1989	Underground	Inactive	-	-	1.45%	-	1.03%	-	-	135.00	1	-	
1990	Underground	Inactive	25.64	24.94	1.43%	1.10	1.09%	0.39	0.27	135.00	1	53.13	
1991	Underground	Inactive	362.42	353.88	1.41%	0.82	1.16%	4.08	4.10	135.00	1	551.22	
1992	Underground	Inactive	119.31	116.12	1.39%	1.03	1.22%	1.65	1.42	135.00	1	222.76	
1993	Underground	Inactive	20.36	19.87	1.36%	0.80	1.29%	0.22	0.26	135.00	1	29.09	
1994	Underground	Inactive	100.78	98.33	1.32%	0.80	1.35%	1.04	1.32	135.00	1	140.28	
1995	Underground	Inactive	91.94	89.43	1.28%	1.03	1.40%	1.18	1.26	135.00	1	158.75	
1996	Underground	Inactive	51.05	49.51	1.24%	1.25	1.46%	0.77	0.72	135.00	1	103.77	
1997	Underground	Inactive	316.01	307.67	1.20%	0.94	1.51%	3.45	4.65	135.00	1	465.83	
1998	Underground	Inactive	72.14	70.50	1.15%	0.60	1.56%	0.49	1.10	135.00	1	65.86	
1999	Underground	Inactive	348.05	338.52	1.11%	1.03	1.61%	3.86	5.44	135.00	1	520.93	
2000	Underground	Inactive	173.12	168.66	1.06%	0.88	1.65%	1.58	2.78	135.00	1	213.01	
2001	Underground	Inactive	93.58	91.04	1.01%	1.03	1.69%	0.95	1.53	135.00	1	128.41	
2002	Underground	Inactive	47.21	46.13	0.96%	0.60	1.72%	0.27	0.79	135.00	1	35.98	
2003	Underground	Inactive	222.92	216.99	0.92%	1.03	1.75%	2.04	3.79	135.00	1	274.95	
2004	Underground	Inactive	249.94	243.83	0.87%	0.80	1.77%	1.70	4.31	135.00	1	228.93	
2005	Underground	Inactive	112.09	109.11	0.82%	1.10	1.79%	0.99	1.95	135.00	1	133.59	
2006	Underground	Inactive	182.12	177.45	0.78%	1.03	1.80%	1.42	3.19	135.00	1	191.93	
2007	Underground	Inactive	107.80	105.14	0.74%	0.95	1.80%	0.74	1.90	135.00	1	99.96	
2008	Underground	Inactive	88.05	85.79	0.70%	1.16	1.80%	0.70	1.55	135.00	1	94.57	
2009	Underground	Inactive	85.24	83.09	0.67%	1.16	1.79%	0.65	1.49	135.00	1	87.20	
2010	Underground	Inactive	120.44	117.40	0.64%	1.25	1.78%	0.94	2.09	135.00	1	126.84	
2011	Underground	Inactive	126.97	123.90	0.61%	1.18	1.75%	0.90	2.17	135.00	1	120.83	
2012	Underground	Inactive	32.84	32.13	0.59%	0.80	1.72%	0.15	0.55	135.00	1	20.63	
2013	Underground	Inactive	53.70	52.50	0.58%	1.03	1.68%	0.31	0.88	135.00	1	42.43	
2014	Underground	Inactive	-	-	0.57%	-	1.64%	-	-	135.00	1	-	
2015	Underground	Inactive	-	-	0.57%	-	1.58%	-	-	135.00	1	-	
2016	Underground	Inactive	13.42	13.13	0.57%	1.25	1.51%	0.09	0.20	135.00	1	12.67	
2017	Underground	Inactive	-	-	0.58%	-	1.44%	-	-	135.00	1	-	
2018	Underground	Inactive	46.96	46.00	0.60%	1.25	1.35%	0.35	0.62	135.00	1	46.81	
2019	Underground	Inactive	-	-	0.63%	-	1.26%	-	-	135.00	1	-	
2020	Underground	Inactive	-	-	0.67%	-	1.15%	-	-	135.00	1	-	
2021	Underground	Inactive	-	-	0.71%	-	1.04%	-	-	135.00	1	-	
2022	Underground	Inactive	-	-	0.77%	-	0.91%	-	-	135.00	1	-	
2023	Underground	Inactive	19.71	19.50	0.84%	1.25	0.77%	0.20	0.15	135.00	1	27.52	
2024	Underground	Inactive	-	-	0.35%	-	0.62%	-	-	135.00	1	-	
2025	Underground	Inactive	-	-	0.16%	-	0.46%	-	-	135.00	1	-	

2027													
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	Adjustment							Adjustment		
				Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Avg recl Cost per Acre (19)	Factor Permit Status (20)	Gross Cost (21)	
1967	Underground	Phased Released	-	-	0.00%	-	0.00%	-	-	135.00	1	-	-
1968	Underground	Phased Released	-	-	0.00%	-	0.00%	-	-	135.00	1	-	-
1969	Underground	Phased Released	-	-	0.00%	-	0.05%	-	-	135.00	1	-	-
1970	Underground	Phased Released	-	-	0.10%	-	0.12%	-	-	135.00	1	-	-
1971	Underground	Phased Released	-	-	0.28%	-	0.21%	-	-	135.00	1	-	-
1972	Underground	Phased Released	-	-	0.45%	-	0.32%	-	-	135.00	1	-	-
1973	Underground	Phased Released	-	-	0.61%	-	0.46%	-	-	135.00	1	-	-
1974	Underground	Phased Released	-	-	0.75%	-	0.61%	-	-	135.00	1	-	-
1975	Underground	Phased Released	-	-	0.87%	-	0.78%	-	-	135.00	1	-	-
1976	Underground	Phased Released	-	-	0.99%	-	0.97%	-	-	135.00	1	-	-
1977	Underground	Phased Released	-	-	1.09%	-	1.17%	-	-	135.00	1	-	-
1978	Underground	Phased Released	10.58	10.24	1.18%	1.25	1.39%	0.15	0.14	135.00	1	-	20.34
1979	Underground	Phased Released	59.68	57.58	1.25%	1.25	1.62%	0.90	0.93	135.00	1	-	121.85
1980	Underground	Phased Released	87.19	83.85	1.32%	1.25	1.86%	1.38	1.56	135.00	1	-	186.80
1981	Underground	Phased Released	66.33	63.65	1.38%	1.18	2.11%	1.03	1.34	135.00	1	-	138.91
1982	Underground	Phased Released	59.82	57.15	1.42%	1.25	2.37%	1.02	1.36	135.00	1	-	137.09
1983	Underground	Phased Released	51.27	48.83	1.46%	1.25	2.64%	0.89	1.29	135.00	1	-	120.09
1984	Underground	Phased Released	43.00	40.82	1.48%	1.25	2.91%	0.76	1.19	135.00	1	-	102.26
1985	Underground	Phased Released	7.93	7.51	1.50%	1.25	3.18%	0.14	0.24	135.00	1	-	19.03
1986	Underground	Phased Released	89.96	84.89	1.51%	1.25	3.46%	1.61	2.94	135.00	1	-	216.74
1987	Underground	Phased Released	23.37	21.99	1.52%	1.25	3.74%	0.42	0.82	135.00	1	-	56.24
1988	Underground	Phased Released	215.56	202.24	1.51%	1.25	4.02%	3.82	8.14	135.00	1	-	515.87
1989	Underground	Phased Released	80.68	75.49	1.50%	1.25	4.30%	1.42	3.25	135.00	1	-	191.18
1990	Underground	Phased Released	18.31	17.09	1.48%	1.25	4.58%	0.32	0.78	135.00	1	-	42.79
1991	Underground	Phased Released	23.22	21.62	1.46%	1.25	4.85%	0.39	1.05	135.00	1	-	53.31
1992	Underground	Phased Released	62.39	57.94	1.43%	1.25	5.12%	1.04	2.96	135.00	1	-	140.23
1993	Underground	Phased Released	68.38	63.36	1.40%	1.25	5.38%	1.11	3.41	135.00	1	-	149.94
1994	Underground	Phased Released	18.79	17.38	1.37%	1.25	5.63%	0.30	0.98	135.00	1	-	40.06
1995	Underground	Phased Released	85.60	79.12	1.33%	1.14	5.87%	1.19	4.65	135.00	1	-	161.25
1996	Underground	Phased Released	133.37	122.87	1.28%	1.25	6.10%	1.97	7.50	135.00	1	-	266.38
1997	Underground	Phased Released	119.99	110.37	1.24%	1.25	6.32%	1.71	6.98	135.00	1	-	230.93
1998	Underground	Phased Released	64.00	58.78	1.19%	1.25	6.53%	0.88	3.84	135.00	1	-	118.35
1999	Underground	Phased Released	269.40	247.58	1.14%	1.10	6.72%	3.12	16.63	135.00	1	-	420.92
2000	Underground	Phased Released	59.65	54.67	1.10%	1.25	6.89%	0.75	3.77	135.00	1	-	101.07
2001	Underground	Phased Released	36.60	33.51	1.05%	1.25	7.05%	0.44	2.36	135.00	1	-	59.15
2002	Underground	Phased Released	48.55	44.43	1.00%	1.25	7.19%	0.55	3.19	135.00	1	-	74.70
2003	Underground	Phased Released	12.65	11.57	0.95%	1.25	7.30%	0.14	0.85	135.00	1	-	18.50
2004	Underground	Phased Released	-	-	0.90%	-	7.40%	-	-	135.00	1	-	-
2005	Underground	Phased Released	21.73	19.88	0.85%	1.25	7.47%	0.21	1.48	135.00	1	-	28.61
2006	Underground	Phased Released	-	-	0.81%	-	7.52%	-	-	135.00	1	-	-
2007	Underground	Phased Released	-	-	0.77%	-	7.54%	-	-	135.00	1	-	-
2008	Underground	Phased Released	63.64	58.32	0.73%	1.25	7.53%	0.53	4.39	135.00	1	-	71.67
2009	Underground	Phased Released	54.60	50.09	0.69%	1.25	7.50%	0.43	3.76	135.00	1	-	58.59
2010	Underground	Phased Released	-	-	0.66%	-	7.43%	-	-	135.00	1	-	-
2011	Underground	Phased Released	-	-	0.64%	-	7.34%	-	-	135.00	1	-	-
2012	Underground	Phased Released	-	-	0.61%	-	7.21%	-	-	135.00	1	-	-
2013	Underground	Phased Released	-	-	0.60%	-	7.04%	-	-	135.00	1	-	-
2014	Underground	Phased Released	-	-	0.59%	-	6.84%	-	-	135.00	1	-	-
2015	Underground	Phased Released	-	-	0.59%	-	6.61%	-	-	135.00	1	-	-
2016	Underground	Phased Released	-	-	0.59%	-	6.33%	-	-	135.00	1	-	-
2017	Underground	Phased Released	-	-	0.60%	-	6.02%	-	-	135.00	1	-	-
2018	Underground	Phased Released	-	-	0.62%	-	5.67%	-	-	135.00	1	-	-
2019	Underground	Phased Released	-	-	0.65%	-	5.27%	-	-	135.00	1	-	-
2020	Underground	Phased Released	-	-	0.69%	-	4.83%	-	-	135.00	1	-	-
2021	Underground	Phased Released	-	-	0.74%	-	4.34%	-	-	135.00	1	-	-
2022	Underground	Phased Released	-	-	0.80%	-	3.81%	-	-	135.00	1	-	-
2023	Underground	Phased Released	-	-	0.87%	-	3.23%	-	-	135.00	1	-	-
2024	Underground	Phased Released	-	-	0.37%	-	2.60%	-	-	135.00	1	-	-
2025	Underground	Phased Released	-	-	0.17%	-	1.91%	-	-	135.00	1	-	-

West Virginia Department of Environmental Protection Office of 5
Actuarial Reserve Study as of June 30, 2025
Water Operations & Maintenance Cost Projection - Deterministic

2027												
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Adjustment							Adjustment		
			Current Bonded Acres (4)	Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Avg recl Cost per Acre (19)	Factor Permit Status (20)	Gross Cost (21)
1967	Other	Active	-	-	0.04%	-	1.22%	-	-	130.00	1	-
1968	Other	Active	-	-	0.04%	-	1.22%	-	-	130.00	1	-
1969	Other	Active	-	-	0.09%	-	1.22%	-	-	130.00	1	-
1970	Other	Active	-	-	0.13%	-	1.22%	-	-	130.00	1	-
1971	Other	Active	-	-	0.17%	-	1.22%	-	-	130.00	1	-
1972	Other	Active	20.00	19.70	0.21%	1.25	1.22%	0.05	0.24	130.00	1	6.71
1973	Other	Active	-	-	0.25%	-	1.22%	-	-	130.00	1	-
1974	Other	Active	36.25	35.67	0.28%	1.25	1.22%	0.12	0.43	130.00	1	16.18
1975	Other	Active	6.20	6.10	0.31%	1.25	1.22%	0.02	0.07	130.00	1	3.07
1976	Other	Active	-	-	0.34%	-	1.22%	-	-	130.00	1	-
1977	Other	Active	85.99	84.53	0.37%	1.25	1.22%	0.39	1.03	130.00	1	50.13
1978	Other	Active	-	-	0.39%	-	1.22%	-	-	130.00	1	-
1979	Other	Active	72.25	70.98	0.41%	1.25	1.22%	0.36	0.86	130.00	1	47.39
1980	Other	Active	171.38	168.33	0.43%	1.25	1.22%	0.91	2.05	130.00	1	117.81
1981	Other	Active	4,390.77	4,318.25	0.45%	0.94	1.22%	18.15	52.53	130.00	1	2,359.39
1982	Other	Active	539.33	530.34	0.46%	0.94	1.22%	2.32	6.45	130.00	1	300.98
1983	Other	Active	3,836.07	3,772.16	0.48%	0.92	1.22%	16.54	45.89	130.00	1	2,149.81
1984	Other	Active	4,369.90	4,297.75	0.49%	0.87	1.22%	18.28	52.28	130.00	1	2,376.85
1985	Other	Active	1,485.04	1,459.71	0.50%	0.96	1.22%	7.02	17.76	130.00	1	912.15
1986	Other	Active	1,384.69	1,360.70	0.51%	1.00	1.22%	6.92	16.55	130.00	1	899.96
1987	Other	Active	968.10	952.01	0.52%	0.85	1.22%	4.19	11.58	130.00	1	545.34
1988	Other	Active	613.83	602.93	0.52%	1.06	1.22%	3.34	7.33	130.00	1	434.38
1989	Other	Active	617.50	606.45	0.53%	1.08	1.22%	3.45	7.38	130.00	1	448.87
1990	Other	Active	400.79	393.51	0.53%	1.12	1.22%	2.35	4.79	130.00	1	305.98
1991	Other	Active	491.29	482.30	0.54%	1.14	1.22%	2.95	5.87	130.00	1	383.65
1992	Other	Active	293.26	288.08	0.54%	1.03	1.22%	1.59	3.50	130.00	1	206.32
1993	Other	Active	761.88	748.75	0.54%	0.94	1.22%	3.80	9.11	130.00	1	494.27
1994	Other	Active	2,293.13	2,254.47	0.54%	0.88	1.22%	10.61	27.42	130.00	1	1,378.96
1995	Other	Active	997.92	980.60	0.54%	0.97	1.22%	5.11	11.93	130.00	1	664.48
1996	Other	Active	1,971.02	1,940.05	0.53%	0.67	1.22%	6.92	23.60	130.00	1	899.07
1997	Other	Active	739.12	726.22	0.53%	1.00	1.22%	3.87	8.83	130.00	1	502.47
1998	Other	Active	622.19	611.02	0.53%	1.10	1.22%	3.56	7.43	130.00	1	462.37
1999	Other	Active	415.45	408.08	0.53%	1.07	1.22%	2.30	4.96	130.00	1	298.38
2000	Other	Active	339.23	333.87	0.52%	0.70	1.22%	1.22	4.06	130.00	1	158.52
2001	Other	Active	385.64	379.01	0.52%	0.98	1.22%	1.92	4.61	130.00	1	249.90
2002	Other	Active	801.13	787.05	0.51%	1.06	1.22%	4.30	9.57	130.00	1	558.76
2003	Other	Active	887.86	872.63	0.51%	0.99	1.22%	4.39	10.61	130.00	1	571.16
2004	Other	Active	1,214.52	1,193.78	0.50%	0.98	1.22%	5.92	14.52	130.00	1	769.08
2005	Other	Active	75.34	74.01	0.50%	1.10	1.22%	0.41	0.90	130.00	1	52.86
2006	Other	Active	491.96	483.49	0.49%	1.03	1.22%	2.46	5.88	130.00	1	319.99
2007	Other	Active	368.47	362.07	0.49%	1.07	1.22%	1.90	4.40	130.00	1	247.15
2008	Other	Active	599.63	589.17	0.49%	1.09	1.22%	3.13	7.17	130.00	1	407.45
2009	Other	Active	197.78	194.29	0.48%	1.14	1.22%	1.07	2.36	130.00	1	138.83
2010	Other	Active	1,140.63	1,121.14	0.48%	1.03	1.22%	5.53	13.64	130.00	1	719.13
2011	Other	Active	310.19	305.00	0.48%	0.95	1.22%	1.38	3.71	130.00	1	179.86
2012	Other	Active	161.25	158.31	0.48%	1.25	1.22%	0.94	1.93	130.00	1	122.33
2013	Other	Active	2,081.52	2,045.12	0.47%	1.00	1.23%	9.73	25.22	130.00	1	1,264.72
2014	Other	Active	212.39	208.27	0.47%	1.12	1.27%	1.11	2.65	130.00	1	143.69
2015	Other	Active	1,106.93	1,080.94	0.47%	1.03	1.41%	5.30	15.23	130.00	1	688.69
2016	Other	Active	1,513.50	1,455.91	0.48%	1.18	1.86%	8.14	27.03	130.00	1	1,057.87
2017	Other	Active	369.58	342.33	0.48%	1.16	3.24%	1.90	11.10	130.00	1	246.82
2018	Other	Active	21.89	18.94	0.48%	1.25	6.81%	0.11	1.29	130.00	1	14.83
2019	Other	Active	5.94	4.82	0.49%	1.25	12.85%	0.03	0.62	130.00	1	3.81
2020	Other	Active	562.96	441.66	0.49%	1.16	18.26%	2.52	80.66	130.00	1	328.07
2021	Other	Active	74.26	57.50	0.50%	1.25	20.97%	0.36	12.06	130.00	1	46.72
2022	Other	Active	465.40	359.24	0.51%	1.10	21.94%	2.01	78.80	130.00	1	261.48
2023	Other	Active	723.68	540.76	0.52%	1.25	22.24%	3.51	120.26	130.00	1	456.49
2024	Other	Active	273.27	231.33	0.04%	1.25	25.23%	0.11	58.36	130.00	1	14.15
2025	Other	Active	618.50	618.50	0.00%	1.24	15.35%	-	94.91	130.00	1	-

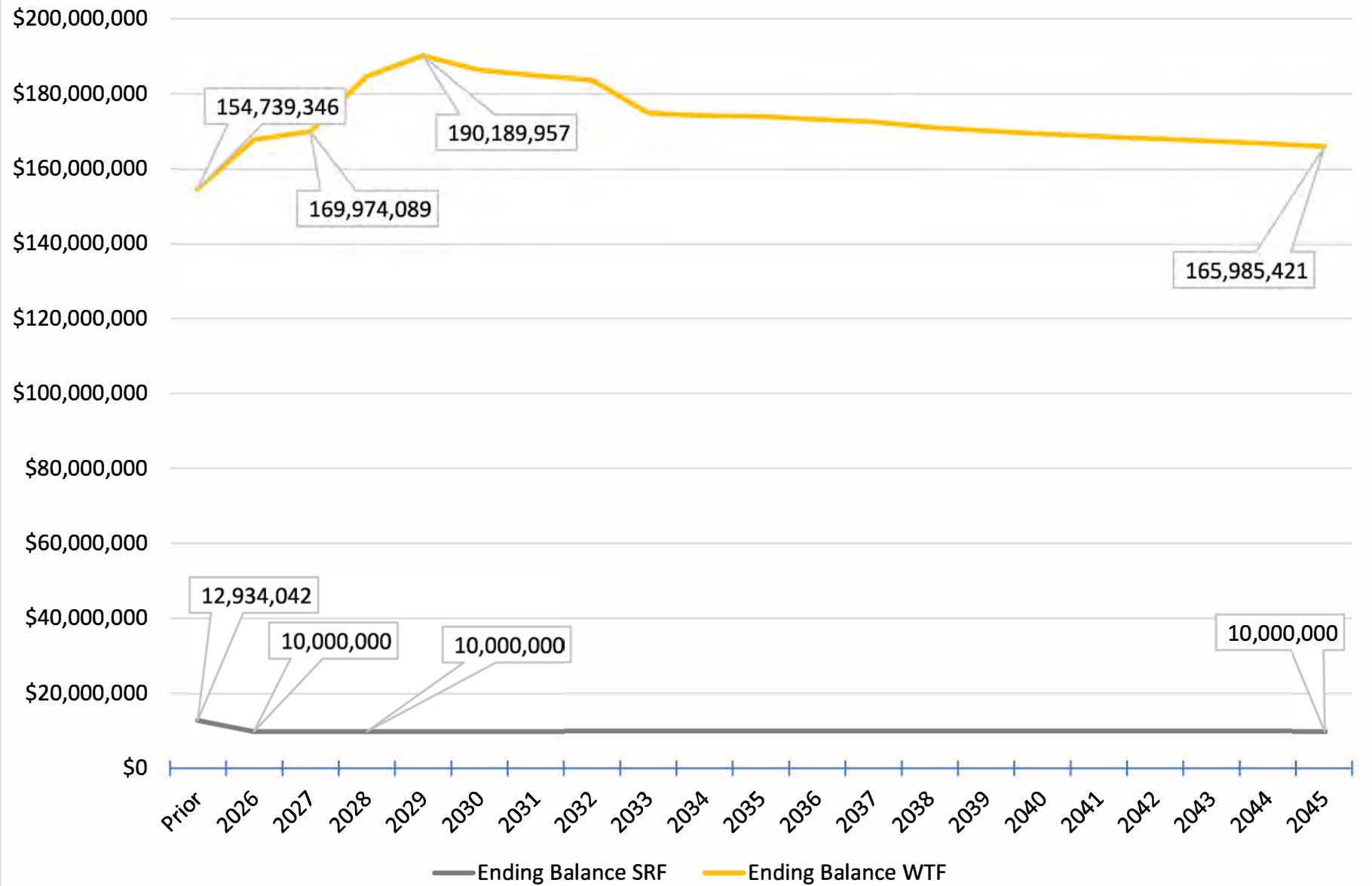
2027												
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Adjustment								Adjustment	
			Current Bonded Acres (4)	Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)	Avg red Cost per Acre (19)	Permit Status (20)	Gross Cost (21)
1967	Other	Inactive	-	-	0.07%	-	0.79%	-	-	130.00	1	-
1968	Other	Inactive	-	-	0.07%	-	0.79%	-	-	130.00	1	-
1969	Other	Inactive	-	-	0.15%	-	0.79%	-	-	130.00	1	-
1970	Other	Inactive	-	-	0.23%	-	0.79%	-	-	130.00	1	-
1971	Other	Inactive	-	-	0.31%	-	0.79%	-	-	130.00	1	-
1972	Other	Inactive	-	-	0.38%	-	0.79%	-	-	130.00	1	-
1973	Other	Inactive	-	-	0.45%	-	0.79%	-	-	130.00	1	-
1974	Other	Inactive	-	-	0.51%	-	0.79%	-	-	130.00	1	-
1975	Other	Inactive	-	-	0.56%	-	0.79%	-	-	130.00	1	-
1976	Other	Inactive	14.48	14.25	0.61%	1.25	0.79%	0.11	0.11	130.00	1	14.21
1977	Other	Inactive	52.00	51.13	0.66%	1.25	0.79%	0.42	0.40	130.00	1	54.97
1978	Other	Inactive	-	-	0.71%	-	0.79%	-	-	130.00	1	-
1979	Other	Inactive	-	-	0.74%	-	0.79%	-	-	130.00	1	-
1980	Other	Inactive	114.75	113.10	0.78%	0.80	0.79%	0.71	0.89	130.00	1	91.82
1981	Other	Inactive	859.57	846.38	0.81%	0.89	0.79%	6.11	6.66	130.00	1	793.82
1982	Other	Inactive	130.80	128.61	0.84%	1.03	0.79%	1.11	1.01	130.00	1	144.25
1983	Other	Inactive	888.39	874.94	0.87%	0.82	0.79%	6.20	6.89	130.00	1	805.63
1984	Other	Inactive	495.53	487.80	0.89%	0.85	0.79%	3.69	3.84	130.00	1	479.57
1985	Other	Inactive	1,248.52	1,228.75	0.91%	0.86	0.79%	9.61	9.67	130.00	1	1,248.90
1986	Other	Inactive	-	-	0.93%	-	0.79%	-	-	130.00	1	-
1987	Other	Inactive	-	-	0.94%	-	0.79%	-	-	130.00	1	-
1988	Other	Inactive	34.27	33.59	0.95%	1.25	0.79%	0.40	0.26	130.00	1	51.91
1989	Other	Inactive	87.34	85.60	0.96%	1.25	0.79%	1.03	0.67	130.00	1	133.53
1990	Other	Inactive	425.33	419.50	0.97%	0.60	0.79%	2.43	3.30	130.00	1	316.33
1991	Other	Inactive	-	-	0.97%	-	0.79%	-	-	130.00	1	-
1992	Other	Inactive	354.26	347.71	0.97%	1.09	0.79%	3.68	2.74	130.00	1	478.90
1993	Other	Inactive	192.03	188.46	0.98%	1.10	0.79%	2.02	1.48	130.00	1	262.82
1994	Other	Inactive	381.64	376.41	0.97%	0.60	0.79%	2.20	2.96	130.00	1	286.15
1995	Other	Inactive	593.99	583.99	0.97%	0.93	0.79%	5.25	4.60	130.00	1	682.98
1996	Other	Inactive	152.16	149.79	0.97%	0.80	0.79%	1.16	1.18	130.00	1	150.98
1997	Other	Inactive	593.50	584.84	0.96%	0.70	0.79%	3.95	4.60	130.00	1	513.40
1998	Other	Inactive	131.05	128.74	0.96%	1.03	0.79%	1.27	1.01	130.00	1	164.53
1999	Other	Inactive	-	-	0.95%	-	0.79%	-	-	130.00	1	-
2000	Other	Inactive	-	-	0.95%	-	0.79%	-	-	130.00	1	-
2001	Other	Inactive	144.00	141.80	0.94%	0.80	0.79%	1.06	1.12	130.00	1	138.33
2002	Other	Inactive	-	-	0.93%	-	0.79%	-	-	130.00	1	-
2003	Other	Inactive	20.00	19.61	0.92%	1.25	0.79%	0.23	0.15	130.00	1	29.38
2004	Other	Inactive	-	-	0.91%	-	0.79%	-	-	130.00	1	-
2005	Other	Inactive	-	-	0.91%	-	0.79%	-	-	130.00	1	-
2006	Other	Inactive	-	-	0.90%	-	0.79%	-	-	130.00	1	-
2007	Other	Inactive	26.00	25.51	0.89%	1.25	0.79%	0.28	0.20	130.00	1	36.87
2008	Other	Inactive	-	-	0.88%	-	0.79%	-	-	130.00	1	-
2009	Other	Inactive	19.80	19.43	0.88%	1.25	0.79%	0.21	0.15	130.00	1	27.65
2010	Other	Inactive	-	-	0.87%	-	0.79%	-	-	130.00	1	-
2011	Other	Inactive	-	-	0.87%	-	0.79%	-	-	130.00	1	-
2012	Other	Inactive	66.26	65.28	0.86%	0.80	0.79%	0.45	0.52	130.00	1	58.51
2013	Other	Inactive	-	-	0.86%	-	0.80%	-	-	130.00	1	-
2014	Other	Inactive	-	-	0.86%	-	0.82%	-	-	130.00	1	-
2015	Other	Inactive	-	-	0.86%	-	0.91%	-	-	130.00	1	-
2016	Other	Inactive	-	-	0.86%	-	1.20%	-	-	130.00	1	-
2017	Other	Inactive	16.37	15.47	0.87%	1.25	2.10%	0.17	0.32	130.00	1	21.78
2018	Other	Inactive	11.88	10.76	0.87%	1.25	4.41%	0.12	0.47	130.00	1	15.27
2019	Other	Inactive	-	-	0.88%	-	8.31%	-	-	130.00	1	-
2020	Other	Inactive	-	-	0.89%	-	11.82%	-	-	130.00	1	-
2021	Other	Inactive	-	-	0.91%	-	13.57%	-	-	130.00	1	-
2022	Other	Inactive	-	-	0.92%	-	14.19%	-	-	130.00	1	-
2023	Other	Inactive	-	-	0.94%	-	14.39%	-	-	130.00	1	-
2024	Other	Inactive	19.50	17.56	0.07%	1.25	16.32%	0.01	2.87	130.00	1	1.95
2025	Other	Inactive	-	-	0.00%	-	9.93%	-	-	130.00	1	-

2027												
Permit Issue Year (1)	Mine Type (2)	Mine Status (3)	Current Bonded Acres (4)	Adjustment						Avg recd Cost per Acre (19)	Adjustment	
				Adjusted Acres (13)	Forfeiture Rate (14)	Factor Permit Bond Size (15)	Release Rate (16)	Forfeited Acres (17)	Released Acres (18)		Permit Status (20)	Gross Cost (21)
1967	Other	Phased Released	-	-	0.07%	-	3.29%	-	-	130.00	1	-
1968	Other	Phased Released	-	-	0.07%	-	3.29%	-	-	130.00	1	-
1969	Other	Phased Released	-	-	0.16%	-	3.29%	-	-	130.00	1	-
1970	Other	Phased Released	-	-	0.24%	-	3.29%	-	-	130.00	1	-
1971	Other	Phased Released	-	-	0.32%	-	3.29%	-	-	130.00	1	-
1972	Other	Phased Released	-	-	0.39%	-	3.29%	-	-	130.00	1	-
1973	Other	Phased Released	9.00	8.64	0.46%	1.25	3.29%	0.05	0.28	130.00	1	6.47
1974	Other	Phased Released	-	-	0.52%	-	3.29%	-	-	130.00	1	-
1975	Other	Phased Released	-	-	0.58%	-	3.29%	-	-	130.00	1	-
1976	Other	Phased Released	27.88	26.72	0.64%	1.25	3.29%	0.21	0.88	130.00	1	27.58
1977	Other	Phased Released	-	-	0.68%	-	3.29%	-	-	130.00	1	-
1978	Other	Phased Released	12.76	12.22	0.73%	1.25	3.29%	0.11	0.40	130.00	1	14.48
1979	Other	Phased Released	58.69	56.17	0.77%	1.25	3.29%	0.54	1.85	130.00	1	70.32
1980	Other	Phased Released	-	-	0.81%	-	3.29%	-	-	130.00	1	-
1981	Other	Phased Released	475.54	455.18	0.84%	1.14	3.29%	4.35	14.98	130.00	1	566.03
1982	Other	Phased Released	201.26	192.38	0.87%	1.25	3.29%	2.09	6.33	130.00	1	272.22
1983	Other	Phased Released	201.70	192.95	0.90%	1.14	3.29%	1.97	6.35	130.00	1	255.99
1984	Other	Phased Released	75.79	72.40	0.92%	1.25	3.29%	0.83	2.38	130.00	1	108.29
1985	Other	Phased Released	43.00	41.07	0.94%	1.25	3.29%	0.48	1.35	130.00	1	62.77
1986	Other	Phased Released	-	-	0.96%	-	3.29%	-	-	130.00	1	-
1987	Other	Phased Released	-	-	0.97%	-	3.29%	-	-	130.00	1	-
1988	Other	Phased Released	-	-	0.98%	-	3.29%	-	-	130.00	1	-
1989	Other	Phased Released	62.20	59.38	0.99%	1.25	3.29%	0.74	1.95	130.00	1	95.82
1990	Other	Phased Released	-	-	1.00%	-	3.29%	-	-	130.00	1	-
1991	Other	Phased Released	-	-	1.00%	-	3.29%	-	-	130.00	1	-
1992	Other	Phased Released	-	-	1.01%	-	3.29%	-	-	130.00	1	-
1993	Other	Phased Released	68.65	65.53	1.01%	1.25	3.29%	0.83	2.16	130.00	1	107.42
1994	Other	Phased Released	-	-	1.01%	-	3.29%	-	-	130.00	1	-
1995	Other	Phased Released	-	-	1.01%	-	3.29%	-	-	130.00	1	-
1996	Other	Phased Released	-	-	1.00%	-	3.29%	-	-	130.00	1	-
1997	Other	Phased Released	31.16	29.75	1.00%	1.25	3.29%	0.37	0.98	130.00	1	48.24
1998	Other	Phased Released	-	-	0.99%	-	3.29%	-	-	130.00	1	-
1999	Other	Phased Released	179.00	171.71	0.99%	0.80	3.29%	1.35	5.65	130.00	1	176.00
2000	Other	Phased Released	-	-	0.98%	-	3.29%	-	-	130.00	1	-
2001	Other	Phased Released	-	-	0.97%	-	3.29%	-	-	130.00	1	-
2002	Other	Phased Released	-	-	0.96%	-	3.29%	-	-	130.00	1	-
2003	Other	Phased Released	-	-	0.95%	-	3.29%	-	-	130.00	1	-
2004	Other	Phased Released	-	-	0.94%	-	3.29%	-	-	130.00	1	-
2005	Other	Phased Released	-	-	0.94%	-	3.29%	-	-	130.00	1	-
2006	Other	Phased Released	-	-	0.93%	-	3.29%	-	-	130.00	1	-
2007	Other	Phased Released	-	-	0.92%	-	3.29%	-	-	130.00	1	-
2008	Other	Phased Released	9.90	9.46	0.91%	1.25	3.29%	0.11	0.31	130.00	1	14.03
2009	Other	Phased Released	-	-	0.91%	-	3.29%	-	-	130.00	1	-
2010	Other	Phased Released	-	-	0.90%	-	3.29%	-	-	130.00	1	-
2011	Other	Phased Released	-	-	0.90%	-	3.30%	-	-	130.00	1	-
2012	Other	Phased Released	-	-	0.89%	-	3.30%	-	-	130.00	1	-
2013	Other	Phased Released	-	-	0.89%	-	3.34%	-	-	130.00	1	-
2014	Other	Phased Released	-	-	0.89%	-	3.45%	-	-	130.00	1	-
2015	Other	Phased Released	115.00	107.94	0.89%	1.25	3.81%	1.20	4.12	130.00	1	155.99
2016	Other	Phased Released	-	-	0.89%	-	5.02%	-	-	130.00	1	-
2017	Other	Phased Released	-	-	0.90%	-	8.78%	-	-	130.00	1	-
2018	Other	Phased Released	-	-	0.90%	-	18.44%	-	-	130.00	1	-
2019	Other	Phased Released	-	-	0.91%	-	34.77%	-	-	130.00	1	-
2020	Other	Phased Released	-	-	0.92%	-	49.41%	-	-	130.00	1	-
2021	Other	Phased Released	-	-	0.94%	-	56.73%	-	-	130.00	1	-
2022	Other	Phased Released	-	-	0.95%	-	59.35%	-	-	130.00	1	-
2023	Other	Phased Released	-	-	0.97%	-	60.17%	-	-	130.00	1	-

West Virginia Department of Environmental Protection Office of Special Reclamation
 Actuarial Reserve Study as of June 30, 2025
 Financial Projection

Fiscal Year	Total	Total	Beginning Balance		WTF to SRF	Ending Balance	
Ending 6/30	Expenditures	Revenues	SRF	WTF	Transfers	SRF	WTF
Prior						12,934,042	154,739,346
2026	21,358,685	31,469,745	12,934,042	154,739,346	5,320,771	10,000,000	167,784,448
2027	26,780,338	28,969,980	10,000,000	167,784,448	15,319,615	10,000,000	169,974,089
2028	13,768,049	28,395,916	10,000,000	169,974,089	2,680,591	10,000,000	184,601,956
2029	20,287,255	25,875,256	10,000,000	184,601,956	10,787,313	10,000,000	190,189,957
2030	28,471,172	24,633,692	10,000,000	190,189,957	19,730,760	10,000,000	186,352,476
2031	24,492,688	23,039,879	10,000,000	186,352,476	16,460,861	10,000,000	184,899,667
2032	23,849,239	22,603,717	10,000,000	184,899,667	16,026,407	10,000,000	183,654,145
2033	30,684,348	21,877,792	10,000,000	183,654,145	23,215,999	10,000,000	174,847,590
2034	22,701,534	22,030,259	10,000,000	174,847,590	14,988,575	10,000,000	174,176,314
2035	22,185,210	22,005,738	10,000,000	174,176,314	14,505,717	10,000,000	173,996,842
2036	21,986,147	21,212,441	10,000,000	173,996,842	14,722,972	10,000,000	173,223,136
2037	21,462,662	20,823,495	10,000,000	173,223,136	14,408,978	10,000,000	172,583,969
2038	21,151,349	19,664,260	10,000,000	172,583,969	14,683,199	10,000,000	171,096,880
2039	20,672,319	19,721,321	10,000,000	171,096,880	14,185,104	10,000,000	170,145,882
2040	20,229,616	19,445,491	10,000,000	170,145,882	13,896,407	10,000,000	169,361,757
2041	19,757,190	19,105,903	10,000,000	169,361,757	13,612,939	10,000,000	168,710,471
2042	19,352,296	18,672,377	10,000,000	168,710,471	13,445,742	10,000,000	168,030,552
2043	18,917,805	18,275,758	10,000,000	168,030,552	13,226,260	10,000,000	167,388,505
2044	18,546,921	17,884,741	10,000,000	167,388,505	13,068,408	10,000,000	166,726,325
2045	18,322,603	17,581,699	10,000,000	166,726,325	13,010,013	10,000,000	165,985,421

Fund Financial Projections Per 2025 Actuarial Report



Appendix E

REVOKED PERMIT INVENTORY**JUNE 1, 1977 - JUNE 30, 2025**

COMPANY	PERMIT	COUNTY	DATE REVOKED
ASSET MINING, LLC.	S-5030-95	Boone	2013-12-06
B. L. & S. COAL COMPANY	S-1017-86	Marion	2021-03-29
BLUE RIDGE MINING, LLC	U-4007-07	McDowell	2022-09-26
BROOKS RUN MINING CO., LLC	U-2006-11	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	U-2005-93	Webster	2025-03-10
BROOKS RUN MINING CO., LLC	S-2006-10	Webster	2025-04-01
BROOKS RUN MINING CO., LLC	U-1019-91	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	U-0359-00	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	U-0512-00	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	S-1026-90	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	S-2002-05	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	S-2004-87	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	R-0620-00	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	S-0071-85	Webster	2025-03-10
BROOKS RUN MINING CO., LLC	O-2003-01	Nicholas	2025-03-03
BROOKS RUN MINING CO., LLC	P-0526-00	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	I-0482-00	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	O-1058-91	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	H-0471-00	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	H-0529-00	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	H-0562-00	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	D-0047-81	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	D-0110-82	Webster	2025-03-10
BROOKS RUN MINING CO., LLC	D-0007-82	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	U-2012-08	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	S-2009-12	Webster	2025-04-01
BROOKS RUN MINING CO., LLC	O-2007-87	Webster	2025-04-01
BROOKS RUN MINING CO., LLC	P-0612-00	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	U-0620-00	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	O-1030-91	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	U-2014-00	Braxton	2025-03-01
BROOKS RUN MINING CO., LLC	U-2016-89	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	U-2021-00	Nicholas	2025-03-03
BROOKS RUN MINING CO., LLC	U-3071-86	Nicholas	2025-03-03
BROOKS RUN MINING CO., LLC	U-2010-05	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	U-2010-00	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	U-2001-05	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	U-2004-01	Nicholas	2025-03-03
BROOKS RUN MINING CO., LLC	O-2018-10	Webster	2025-04-01
BROOKS RUN MINING CO., LLC	S-2010-02	Webster	2025-03-01

REVOKED PERMIT INVENTORY

JUNE 1, 1977 - JUNE 30, 2025

COMPANY	PERMIT	COUNTY	DATE REVOKED
BROOKS RUN MINING CO., LLC	U-2014-98	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	U-2011-05	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	U-2004-93	Webster	2025-03-10
BROOKS RUN MINING CO., LLC	U-2006-09	Webster	2025-03-03
BROOKS RUN MINING CO., LLC	U-1026-91	Braxton	2025-03-03
BROOKS RUN MINING CO., LLC	U-0516-00	Webster	2025-03-03
BUFFALO COAL COMPANY, INC.	S-61-85	Tucker	2008-07-10
BUFFALO COAL COMPANY, INC.	S-2007-96	Tucker	2008-07-10
BUFFALO COAL COMPANY, INC.	S-74-76	Tucker	2008-07-10
BUFFALO COAL COMPANY, INC.	S-2003-88	Tucker	2008-08-20
CLUB COAL, INC.	S-1002-94	Harrison	2023-02-28
COAL VALLEY, LLC	O-2005-10	Harrison	2023-08-28
COVINGTON COAL COMPANY, LLC	S-5017-02	Kanawha	2020-01-13
DEVELOPMENT PERMITS, LLC	S-3015-09	Kanawha	2025-02-13
DFM COAL, LLC	S-4004-01	Mingo	2020-09-28
EAGLE RIDGE DEVELOPMENT GROUP, LLC	S-3035-07	Nicholas	2016-06-22
ENERGY MARKETING CO. INC.	UO-520	Barbour	2013-02-27
ENERGY MARKETING CO. INC.	U-74-83	Barbour	2013-03-04
ERP ENVIRONMENTAL FUND, INC.	R-746	Marion	2020-07-13
ERP ENVIRONMENTAL FUND, INC.	EM-125	Marion	2020-07-13
ERP ENVIRONMENTAL FUND, INC.	O-1001-87	Marion	2020-07-13
ERP ENVIRONMENTAL FUND, INC.	R-747	Marion	2020-07-13
ERUN COAL SALES, INC.	U-4010-08	McDowell	2022-09-21
GOLD RESOURCES, LLC	S-1003-97	Harrison	2014-09-08
GOLDEN FALCON RESOURCES, INC.	U-61-84	McDowell	2002-10-04
GREENTHORN, LLC	S-5013-00	Logan	2019-12-13
INDUSTRIAL REBUILDERS, INC.	O-2008-12	Harrison	2023-10-05
KANAWHA DEVELOPMENT CORPORATION	O-14-81	Fayette	2013-01-17
KANAWHA DEVELOPMENT CORPORATION	O-38-84	Fayette	2013-01-17
KEYSTONE COAL RESERVES, LLC	S-2007-10	Tucker	2024-07-12
LANDMARK CORPORATION	S-5069-88	Boone	2001-01-30
MARY RUTH CORPORATION	S-1015-88	Preston	2013-01-17
MYRTLE D. CORPORATION	U-4011-96	McDowell	2025-02-13
OMEGA MINING COMPANY	S-15-84	Monongalia	2018-01-11
PINNACLE MINING COMPANY LLC	O-4008-92	Wyoming	2025-06-19
PINNACLE MINING COMPANY, LLC	O-4010-97	Wyoming	2025-06-19
PINNACLE MINING COMPANY, LLC	U-0204-83	Wyoming	2025-06-19
POWDER MILL PROCESSING INC.	S-5027-08	Wayne	2021-10-12
POWDER MILL PROCESSING INC.	O-5008-07	Wayne	2021-10-12
POWDER MILL PROCESSING INC.	U-5017-08	Wayne	2021-10-12

REVOKED PERMIT INVENTORY

JUNE 1, 1977 - JUNE 30, 2025

COMPANY	PERMIT	COUNTY	DATE REVOKED
QUINTAIN DEVELOPMENT, LLC	S-5033-96	Mingo	2000-01-24
ROYAL COAL CO.	P-688	Fayette	1990-01-01
ROYAL SCOT MINERALS, INC.	S-3076-86	Greenbrier	2000-04-26
S & M ENERGY RESOURCES, LLC	U-4004-10	Wyoming	2022-09-21
SHAFFER BROTHER CONSTRUCTION, INC.	S-2011-10	Monongalia	2015-05-11
SHAFFER BROTHER CONSTRUCTION, INC.	S-2012-06	Monongalia	2015-05-11
UNITED COALS, INC	U-1003-00	Harrison	2023-03-20
UPPER KANAWHA VALLEY DEVELOPMENT	S-3010-01	Kanawha	2025-03-03
UPPER KANAWHA VALLEY DEVELOPMENT	S-3013-00	Kanawha	2025-02-13
A S & K, INC.	S-1011-89	Monongalia	1991-08-23
AMANDA NICOLE FUELS, INC.	S-1018-88	Preston	1992-06-12
APPALACHIAN FUELS, LLC	S-3041-88	Clay	2011-07-25
ASSET MINING, LLC.	S-5030-95	Boone	2013-12-06
B & S CONTRACTING, INC.	U-3055-87	Nicholas	1995-04-24
B & S CONTRACTING, INC.	O-3086-87	Nicholas	1995-04-24
BARRENSHE COAL CO.	UO-694	McDowell	1993-08-17
BARRETT FUEL CORP.	R-737	Raleigh	1996-03-15
BELLE CONTRACTING, INC.	S-6020-87	Putnam	1989-11-14
BENHAM GROUP, LTD.	120-79	Boone	1990-01-01
BOLINGREEN MINING COMPANY	S-1024-88	Preston	2000-02-10
BOOMERANG COAL, INC.	S-2015-06	Randolph	2011-03-08
BORGMAN COAL CO.	EM-32	Preston	1991-10-01
BRADY CLINE COAL CO.	EM-97	Nicholas	1994-08-23
BUFFALO COAL COMPANY, INC.	S-2006-86	Grant	2008-07-10
BUFFALO COAL COMPANY, INC.	S-2011-92	Preston	2008-07-10
BUFFALO COAL COMPANY, INC.	S-2003-03	Grant	2008-07-10
BUFFALO COAL COMPANY, INC.	S-53-80	Grant	2006-09-29
BUFFALO COAL COMPANY, INC.	S-2001-86	Grant	2006-09-29
BUFFALO COAL COMPANY, INC.	S-52-80	Grant	2006-09-29
BUFFALO COAL COMPANY, INC.	S-2003-88	Tucker	2008-08-20
BUFFALO COAL COMPANY, INC.	S-122-80	Tucker	2006-09-29
C. C. CONLEY & SONS, INC.	S-3046-91	Nicholas	2000-12-07
CARSON ONE MINING, LLC	O-4-84	Upshur	2010-10-01
CHESTNUT RIDGE COAL CORP.	S-28-83	Mineral	1993-11-15
CHEYENNE SALES CO., INC.	S-2009-96	Upshur	2009-09-22
CHEYENNE SALES COMPANY, INC.	O-11-83	Upshur	2009-07-09
CHICOPEE COAL COMPANY, INC.	S-3002-98	Nicholas	2006-06-23
CHICOPEE COAL COMPANY, INC.	S-3006-99	Nicholas	2006-03-28
COAL X, INC.	UO-396	Logan	1986-01-01
CRANE COAL CO., INC.	S-27-83	Preston	1992-01-03

REVOKED PERMIT INVENTORY

JUNE 1, 1977 - JUNE 30, 2025

COMPANY	PERMIT	COUNTY	DATE REVOKED
DAUGHERTY COAL COMPANY, INC.	246-74	Preston	1989-08-01
DAUGHERTY COAL COMPANY, INC.	192-77	Preston	1989-07-01
DAUGHERTY COAL COMPANY, INC.	S-73-83	Preston	1989-07-17
DAUGHERTY COAL COMPANY, INC.	65-77	Preston	1989-07-12
DAUGHERTY COAL COMPANY, INC.	124-79	Preston	1989-08-18
DAUGHERTY COAL COMPANY, INC.	S-1009-86	Preston	1989-07-17
DECONDOR COAL CO.	U-147-82	Preston	2008-11-25
DEEPGREEN WV, INC.	O-164-83	McDowell	2015-10-05
DELTA MINING, INC.	U-2024-87	Upshur	1993-03-18
DLM COAL CO.	P-426	Upshur	1985-09-16
DLM COAL CO.	H-232	Upshur	1985-10-01
DLM COAL CO.	12-78	Upshur	1985-09-16
DLM COAL CO.	164-77	Upshur	1985-09-16
DLM COAL CO.	2-80	Upshur	1985-09-13
DLM COAL CO.	R-423	Upshur	1985-09-16
DLM COAL CO.	71-75	Upshur	1985-10-01
DLM COAL CO.	1-78	Upshur	1985-09-16
DLM COAL CO.	23-76	Upshur	1985-10-01
DLM COAL CO.	135-78	Upshur	1985-09-16
DLM COAL CO.	58-77	Upshur	1985-09-16
DLM COAL CO.	138-74	Upshur	1985-09-03
DUSTY COALS, INC.	S-119-85	Nicholas	1987-08-10
E. J. & L. CO., INC.	S-3041-87	Raleigh	1990-05-09
EAGLE RIDGE DEVELOPMENT GROUP, LLC	S-3016-08	Fayette	2016-06-22
EASTERN ENERGY INVEST.	S-6029-86	Kanawha	1994-05-02
ED-E DEVELOPMENT CO., INC.	S-10-81	Monongalia	1993-01-23
EDWARD E. THOMPSON	S-1041-89	Monongalia	1994-02-15
ENERGY MARKETING CO. INC.	U-72-83	Barbour	2013-02-27
ENERGY MARKETING COMPANY INC	O-44-83	Barbour	2010-06-07
F & M COAL CO.	S-1044-87	Preston	1992-04-30
F & M COAL CO.	46-79	Preston	1992-09-24
F & M COAL CO.	S-1026-87	Preston	1992-04-30
F & M COAL CO.	S-57-84	Preston	1992-03-13
F & M COAL CO.	S-1073-86	Preston	1992-03-13
FALCON LAND COMPANY, INC.	P-656	Nicholas	2005-04-05
FARKAS COAL CO.	34-81	Monongalia	1988-07-01
FREEPORT MINING CORPORATION	S-1005-95	Preston	2003-07-08
FRUSH ENTERPRISES, INC.	S-1008-89	Harrison	1992-11-10
GAULEY COAL SALES CO.	O-43-84	Nicholas	1994-08-23
GLADE RUN MINING CO.	3-72	Grant	1983-10-03

REVOKED PERMIT INVENTORY

JUNE 1, 1977 - JUNE 30, 2025

COMPANY	PERMIT	COUNTY	DATE REVOKED
GLADY FORK MINING, INC.	D-35-82	Upshur	2004-06-07
GLORY COAL CO., INC.	UO-744	Harrison	1985-12-01
GOLDEN PRODUCTS CO.	S-1009-88	Monongalia	1991-03-01
GREEN MOUNTAIN ENERGY	U-4013-91	Wyoming	1997-03-19
GREENDALE COALS, INC.	S-75-83	Clay	1987-04-01
HALLELUJAH MINING	40-81	Preston	1992-09-24
HARVEY ENERGY CORP.	S-11-82	Fayette	1991-09-16
HARVEY ENERGY CORP.	S-35-81	Fayette	1991-09-16
HAWKS NEST MINING CO.	O-1-81	Kanawha	1993-12-07
HIDDEN VALLEY COAL CO.	S-60-84	Preston	1989-08-29
HUNT COAL, INC.	U-5071-86	Logan	1989-06-14
INTER-STATE LUMBER COMPANY, INC.	176-77	Preston	1995-07-31
INTER-STATE LUMBER COMPANY, INC.	S-52-83	Preston	1995-07-31
INTER-STATE LUMBER COMPANY, INC.	S-112-80	Preston	1995-07-31
INTER-STATE LUMBER COMPANY, INC.	S-96-82	Preston	1995-07-31
J & N PROCESSING COMPANY, LLC	O-58-83	Raleigh	2001-06-29
J. E. B., INC.	S-1063-86	Preston	1991-11-01
J. E. B., INC.	S-61-82	Preston	1991-11-01
J.A.L. COAL CO., INC.	S-23-82	Monongalia	1997-03-12
JINKS MINING COMPANY	U-3031-93	Nicholas	2000-02-24
JONES COAL INC	S-1030-86	Preston	1992-07-24
JONES COAL INC	S-9-83	Preston	1992-11-17
KEISTER COAL COMPANY, INC.	184-77	Barbour	1983-09-01
KEYSTONE COAL, INC.	U-186-83	Mingo	1998-03-17
KEYSTONE COAL, INC.	S-84-83	Mingo	1998-03-17
KODIAK LAND CO., INC.	S-3052-87	Fayette	1992-05-19
LAKEVIEW COAL COMPANY	S-55-84	Monongalia	1997-01-23
LANDMARK CORPORATION	S-34-82	Boone	2001-01-30
LANDMARK CORPORATION	S-5069-88	Boone	2001-01-30
LAROSA FUEL CO., INC.	S-1051-86	Marion	2009-07-24
LEVEL LAND MINING CORPORATION	S-3031-90	Fayette	2006-11-08
LILLYBROOK COAL CO.	S-86-85	Raleigh	1990-06-01
LOBO CAPITOL, INC.	UO-204	Preston	1985-08-07
LODESTAR ENERGY, INC.	R-5-84	Wyoming	2004-05-24
LODESTAR ENERGY, INC.	S-19-85	Nicholas	2004-01-21
LODESTAR ENERGY, INC.	S-3006-89	Nicholas	2004-01-21
LODESTAR ENERGY, INC.	S-3083-86	Nicholas	2004-01-21
LOW ASH COAL CO.	UO-389	Wyoming	1985-02-01
M & T MINING CO.	S-3026-89	Nicholas	1994-02-09
MANGUS COAL, INC.	S-1036-91	Preston	2008-03-14

REVOKED PERMIT INVENTORY

JUNE 1, 1977 - JUNE 30, 2025

COMPANY	PERMIT	COUNTY	DATE REVOKED
MARY RUTH CORPORATION	S-1015-88	Preston	2013-01-17
MAURICE JENNINGS	53-78	Preston	2004-12-10
MAURICE JENNINGS	S-61-83	Preston	2004-11-30
MERIDAN OF VIRGINIA, INC.	S-4005-89	McDowell	1992-09-14
MOHIGAN MINING CO.	U-109-83	Monongalia	1992-06-30
MORGANTOWN ENERGY EXPORT COMPANY	U-8-83	Monongalia	1994-06-14
MOUNTAINEER FUELS, INC.	U-3083-87	Nicholas	1998-01-30
NATIONAL CONSTRUCTION COMPANY, INC.	S-2004-86	Barbour	1998-12-07
PIERCE COAL & CONSTRUCTION, INC.	71-80	Upshur	1982-12-01
PINNACLE CREEK MINING CORP.	R-721	Wyoming	1994-12-07
POWDER MILL PROCESSING INC.	S-5027-08	Wayne	2021-10-12
POWDER MILL PROCESSING INC.	U-5017-08	Wayne	2021-10-12
PRESTON ENERGY, INC.	O-86-82	Preston	1994-05-25
PRESTON ENERGY, INC.	O-43-85	Preston	1994-05-24
PRESTON ENERGY, INC.	UO-235	Preston	1994-03-18
PRESTON ENERGY, INC.	O-1035-87	Preston	1994-05-05
PRIMROSE COAL, INC.	7-81	Preston	2011-03-23
PRINCESS SUSAN COAL CO.	S-6-85	Kanawha	1993-12-07
PUPS CREEK COALS, INC.	S-3006-94	Raleigh	1999-12-06
RALEIGH COMMERCIAL DEVELOPMENT	149-79	Fayette	1987-01-21
ROBLEE COAL COMPANY	U-2001-00	Upshur	2010-04-22
ROBLEE COAL COMPANY	U-2026-87	Barbour	2010-03-16
ROBLEE COAL COMPANY	U-1001-91	Upshur	2010-01-11
ROBLEE COAL COMPANY	O-1009-93	Upshur	2009-11-09
ROCKVILLE MINING CO.	237-76	Preston	1994-01-12
ROCKVILLE MINING CO.	S-65-82	Preston	1994-01-12
ROCKVILLE MINING CO.	65-78	Preston	1994-01-12
ROCKVILLE MINING CO.	S-91-85	Preston	1994-01-12
ROCKVILLE MINING CO.	S-1035-86	Preston	1994-01-12
ROYAL COAL CO.	P-688	Fayette	1990-01-01
ROYAL SCOT MINERALS, INC.	56-81	Greenbrier	2000-04-27
ROYAL SCOT MINERALS, INC.	U-40-85	Greenbrier	2000-04-27
ROYAL SCOT MINERALS, INC.	S-90-82	Greenbrier	2000-04-27
ROYAL SCOT MINERALS, INC.	U-3046-88	Greenbrier	2000-04-27
ROYAL SCOT MINERALS, INC.	R-3078-86	Greenbrier	2000-04-27
ROYAL SCOT MINERALS, INC.	31-72	Greenbrier	1999-04-28
S. KELLY INDUSTRIES	51-78	Monongalia	1985-06-13
SAN SUE COAL CO.	19-75	Nicholas	1989-01-13
SHAFER BROTHER CONSTRUCTION, INC.	S-2002-12	Monongalia	2015-05-11
SHARON COAL CO.	S-1028-87	Preston	2011-03-23

REVOKED PERMIT INVENTORY

JUNE 1, 1977 - JUNE 30, 2025

COMPANY	PERMIT	COUNTY	DATE REVOKED
SOLITAIRE COAL CORPORATION, INC.	S-87-85	Webster	1989-06-23
SOUTHERN EAGLE MINING CORPORATION	U-32-84	Randolph	1985-02-06
STAR INDUSTRIES, INC.	R-3-81	Raleigh	1987-05-27
STEWARTOWN COAL CORP.	67-78	Monongalia	1988-06-28
SUMMERSVILLE FIVE BLOCK	S-3051-88	Nicholas	1994-11-01
T & J COAL, INC.	P-177-85	Preston	1987-05-29
T & T FUELS, INC.	EM-113	Preston	1995-10-31
T & T FUELS, INC.	U-125-83	Preston	1995-12-04
THE MASTELLER COAL COMPANY	S-125-82	Mineral	2004-05-03
THE MASTELLER COAL COMPANY	S-10-85	Mineral	2003-12-10
TRIPLE A COALS, INC.	U-3046-87	Nicholas	1998-12-17
TRIPLE A COALS, INC.	S-3028-87	Nicholas	1998-12-17
TRIPLE A COALS, INC.	S-96-85	Nicholas	1998-12-17
VALLEY MINING CO., INC.	S-64-83	Monongalia	1992-06-12
VALLEY MINING CO., INC.	S-17-82	Monongalia	1992-09-24
VICKIE ENERGY, INC.	U-53-85	Pocahontas	1995-01-11
VIKING COAL COMPANY	UO-519	Preston	2001-01-18
VMS, LTD.	S-1045-87	Monongalia	1994-04-04
W & E LOGGING & COAL	S-20-82	Nicholas	1986-05-05
WERNER MINING CO., INC.	S-2003-86	Barbour	1992-05-20
WETER CO.	S-71-79	Preston	1995-07-10
WOCAP ENERGY RESOURCES, INC.	S-26-85	Preston	1993-12-14
X W CORP.	S-6013-87	Clay	1989-04-20
Z & F DEVELOPMENT CO.	S-21-84	Monongalia	1985-11-06
ZINN COAL CO.	60-79	Preston	1991-04-16

Total as of June 30, 2025 = 265

LAND
WATER

Current list of all permits that require reclamation or require ongoing water treatment a the end of FY 2025

ACID MINE DRAINAGE INVENTORY

OFFICE	PERMIT	COMPANY	COUNTY	DATE REVOKED	WATER STATUS
N	S-1011-89	A S & K, INC.	Monongalia	1991-08-23	TBC
N	S-1018-88	AMANDA NICOLE FUELS, INC.	Preston	1992-06-12	ACT
C	S-3041-88	APPALACHIAN FUELS, LLC	Clay	2011-07-25	P
C	S-5030-95	ASSET MINING, LLC.	Boone	2013-12-06	ACT
C	U-3055-87	B & S CONTRACTING, INC.	Nicholas	1995-04-24	TBRT
S	O-3086-87	B & S CONTRACTING, INC.	Nicholas	1995-04-24	NA
S	UO-694	BARRENSHE COAL CO.	McDowell	1993-08-17	P
S	R-737	BARRETT FUEL CORP.	Raleigh	1996-03-15	P2
C	S-6020-87	BELLE CONTRACTING, INC.	Putnam	1989-11-14	P
C	120-79	BENHAM GROUP, LTD.	Boone	1990-01-01	P
N	S-1024-88	BOLINGREEN MINING COMPANY	Preston	2000-02-10	ACT
N	S-2015-06	BOOMERANG COAL, INC.	Randolph	2011-03-08	P
N	EM-32	BORGMAN COAL CO.	Preston	1991-10-01	ACT2
C	EM-97	BRADY CLINE COAL CO.	Nicholas	1994-08-23	TBRT
S	UO-435	BRENKEE COAL CO.	McDowell	1986-11-12	NA
N	BUFFC12021	BUFFALO C1 COMPLEX	Grant	2021-03-25	ACT
N	S-2006-86	BUFFALO COAL COMPANY, INC.	Grant	2008-07-10	P
N	S-2011-92	BUFFALO COAL COMPANY, INC.	Preston	2008-07-10	P
N	S-2003-03	BUFFALO COAL COMPANY, INC.	Grant	2008-07-10	NA
N	S-53-80	BUFFALO COAL COMPANY, INC.	Grant	2006-09-29	NA
N	S-2001-86	BUFFALO COAL COMPANY, INC.	Grant	2006-09-29	ACT
N	S-52-80	BUFFALO COAL COMPANY, INC.	Grant	2006-09-29	NA
N	S-2003-88	BUFFALO COAL COMPANY, INC.	Tucker	2008-08-20	ACT2
N	S-122-80	BUFFALO COAL COMPANY, INC.	Tucker	2006-09-29	P
C	S-3046-91	C. C. CONLEY & SONS, INC.	Nicholas	2000-12-07	P
N	O-4-84	CARSON ONE MINING, LLC	Upshur	2010-10-01	ACT
N	S-28-83	CHESTNUT RIDGE COAL CORP.	Mineral	1993-11-15	ACT
N	S-2009-96	CHEYENNE SALES CO., INC.	Upshur	2009-09-22	NA
N	O-11-83	CHEYENNE SALES COMPANY, INC.	Upshur	2009-07-09	P
C	S-3002-98	CHICOPEE COAL COMPANY, INC.	Nicholas	2006-06-23	P
C	S-3006-99	CHICOPEE COAL COMPANY, INC.	Nicholas	2006-03-28	P
C	S-73-85	CHICOPEE COAL COMPANY, INC.	Clay	2003-01-31	NA
S	S-126-82	CLASSIC RES., INC.	Fayette	1986-05-12	NA
C	UO-396	COAL X, INC.	Logan	1986-01-01	ACT
N	S-27-83	CRANE COAL CO., INC.	Preston	1992-01-03	P
N	17-81	DAUGHERTY COAL COMPANY, INC.	Preston	1989-04-01	NA
N	246-74	DAUGHERTY COAL COMPANY, INC.	Preston	1989-08-01	NA
N	192-77	DAUGHERTY COAL COMPANY, INC.	Preston	1989-07-01	ACT
N	S-73-83	DAUGHERTY COAL COMPANY, INC.	Preston	1989-07-17	NA
N	65-77	DAUGHERTY COAL COMPANY, INC.	Preston	1989-07-12	TBRT
N	124-79	DAUGHERTY COAL COMPANY, INC.	Preston	1989-08-18	NA
N	S-1009-86	DAUGHERTY COAL COMPANY, INC.	Preston	1989-07-17	ACT
N	U-147-82	DECONDOR COAL CO.	Preston	2008-11-25	ACT
S	O-164-83	DEEPGREEN WV, INC.	McDowell	2015-10-05	P
N	U-2024-87	DELTA MINING, INC.	Upshur	1993-03-18	ACT
N	P-426	DLM COAL CO.	Upshur	1985-09-16	NA
N	H-232	DLM COAL CO.	Upshur	1985-10-01	NA
N	12-78	DLM COAL CO.	Upshur	1985-09-16	ACT

ACID MINE DRAINAGE INVENTORY

OFFICE	PERMIT	COMPANY	COUNTY	DATE REVOKED	WATER STATUS
N	164-77	DLM COAL CO.	Upshur	1985-09-16	ACT2
N	2-80	DLM COAL CO.	Upshur	1985-09-13	ACT
N	R-423	DLM COAL CO.	Upshur	1985-09-16	ACT
N	71-75	DLM COAL CO.	Upshur	1985-10-01	NA
N	1-78	DLM COAL CO.	Upshur	1985-09-16	ACT
N	23-76	DLM COAL CO.	Upshur	1985-10-01	NA
N	135-78	DLM COAL CO.	Upshur	1985-09-16	NA
N	58-77	DLM COAL CO.	Upshur	1985-09-16	ACT2
N	138-74	DLM COAL CO.	Upshur	1985-09-03	ACT2
S	S-119-85	DUSTY COALS, INC.	Nicholas	1987-08-10	TBRT
S	S-3041-87	E. J. & L. CO., INC.	Raleigh	1990-05-09	P
C	S-3016-08	EAGLE RIDGE DEVELOPMENT GROUP, LLC	Fayette	2016-06-22	P
C	S-6029-86	EASTERN ENERGY INVEST.	Kanawha	1994-05-02	ACT
N	S-10-81	ED-E DEVELOPMENT CO., INC.	Monongalia	1993-01-23	ACT
N	S-1032-86	ED-E DEVELOPMENT CO., INC.	Preston	1993-03-29	ACT
N	S-1041-89	EDWARD E. THOMPSON	Monongalia	1994-02-15	ACT2
N	U-72-83	ENERGY MARKETING CO. INC.	Barbour	2013-02-27	RT
N	O-44-83	ENERGY MARKETING COMPANY INC	Barbour	2010-06-07	NA
N	S-1044-87	F & M COAL CO.	Preston	1992-04-30	ACT2
N	46-79	F & M COAL CO.	Preston	1992-09-24	P
N	S-1026-87	F & M COAL CO.	Preston	1992-04-30	P
N	S-57-84	F & M COAL CO.	Preston	1992-03-13	ACT
N	S-1073-86	F & M COAL CO.	Preston	1992-03-13	ACT
S	P-656	FALCON LAND COMPANY, INC.	Nicholas	2005-04-05	ACT2
N	34-81	FARKAS COAL CO.	Monongalia	1988-07-01	ACT
N	S-1005-95	FREEPORT MINING CORPORATION	Preston	2003-07-08	ACT
N	S-1008-89	FRUSH ENTERPRISES, INC.	Harrison	1992-11-10	ACT2
S	O-43-84	GAULEY COAL SALES CO.	Nicholas	1994-08-23	P
N	3-72	GLADE RUN MINING CO.	Grant	1983-10-03	P
N	D-35-82	GLADY FORK MINING, INC.	Upshur	2004-06-07	ACT
N	UO-744	GLORY COAL CO., INC.	Harrison	1985-12-01	P
C	S-121-85	GOLD STAR MINING CORP.	Boone	1987-07-15	NA
N	S-1009-88	GOLDEN PRODUCTS CO.	Monongalia	1991-03-01	P
S	U-4013-91	GREEN MOUNTAIN ENERGY	Wyoming	1997-03-19	P
C	S-75-83	GREENDALE COALS, INC.	Clay	1987-04-01	ACT
N	40-81	HALLELUJAH MINING	Preston	1992-09-24	ACT
S	S-11-82	HARVEY ENERGY CORP.	Fayette	1991-09-16	P2
S	S-35-81	HARVEY ENERGY CORP.	Fayette	1991-09-16	TBRT
C	O-1-81	HAWKS NEST MINING CO.	Kanawha	1993-12-07	ACT
N	S-60-84	HIDDEN VALLEY COAL CO.	Preston	1989-08-29	ACT
C	U-5071-86	HUNT COAL, INC.	Logan	1989-06-14	ACT
N	S-39-82	INTER-STATE LUMBER COMPANY, INC.	Preston	1995-07-31	UC
N	176-77	INTER-STATE LUMBER COMPANY, INC.	Preston	1995-07-31	ACT
N	S-52-83	INTER-STATE LUMBER COMPANY, INC.	Preston	1995-07-31	ACT
N	S-112-80	INTER-STATE LUMBER COMPANY, INC.	Preston	1995-07-31	P
N	S-96-82	INTER-STATE LUMBER COMPANY, INC.	Preston	1995-07-31	P
S	O-58-83	J & N PROCESSING COMPANY, LLC	Raleigh	2001-06-29	P
N	S-1063-86	J. E. B., INC.	Preston	1991-11-01	ACT

ACID MINE DRAINAGE INVENTORY

OFFICE	PERMIT	COMPANY	COUNTY	DATE REVOKED	WATER STATUS
N	S-61-82	J. E. B., INC.	Preston	1991-11-01	ACT
N	S-23-82	J.A.L. COAL CO., INC.	Monongalia	1997-03-12	P
S	U-3031-93	JINKS MINING COMPANY	Nicholas	2000-02-24	P
N	S-1030-86	JONES COAL INC	Preston	1992-07-24	P
N	S-9-83	JONES COAL INC	Preston	1992-11-17	P
N	184-77	KEISTER COAL COMPANY, INC.	Barbour	1983-09-01	ACT
C	U-186-83	KEYSTONE COAL, INC.	Mingo	1998-03-17	P
C	S-84-83	KEYSTONE COAL, INC.	Mingo	1998-03-17	TBC
S	S-3052-87	KODIAK LAND CO., INC.	Fayette	1992-05-19	P
N	S-55-84	LAKEVIEW COAL COMPANY	Monongalia	1997-01-23	P
C	S-34-82	LANDMARK CORPORATION	Boone	2001-01-30	P
C	S-5069-88	LANDMARK CORPORATION	Boone	2001-01-30	P
N	S-1051-86	LAROSA FUEL CO., INC.	Marion	2009-07-24	ACT
S	S-3031-90	LEVEL LAND MINING CORPORATION	Fayette	2006-11-08	P
S	S-86-85	LILLYBROOK COAL CO.	Raleigh	1990-06-01	RT
N	UO-204	LOBO CAPITOL, INC.	Preston	1985-08-07	NA
S	R-5-84	LODESTAR ENERGY, INC.	Wyoming	2004-05-24	TBRT
S	S-19-85	LODESTAR ENERGY, INC.	Nicholas	2004-01-21	P
C	S-3006-89	LODESTAR ENERGY, INC.	Nicholas	2004-01-21	P
C	S-3083-86	LODESTAR ENERGY, INC.	Nicholas	2004-01-21	P
S	UO-389	LOW ASH COAL CO.	Wyoming	1985-02-01	TBRT
C	S-3026-89	M & T MINING CO.	Nicholas	1994-02-09	P
N	S-1036-91	MANGUS COAL, INC.	Preston	2008-03-14	NA
N	MAR1-2020	MARTINKA WATER TREATMENT COMPLEX	Marion	2020-07-13	ACT
N	S-1015-88	MARY RUTH CORPORATION	Preston	2013-01-17	NA
N	53-78	MAURICE JENNINGS	Preston	2004-12-10	NA
N	S-61-83	MAURICE JENNINGS	Preston	2004-11-30	NA
S	S-4005-89	MERIDAN OF VIRGINIA, INC.	McDowell	1992-09-14	TBC
N	U-109-83	MOHIGAN MINING CO.	Monongalia	1992-06-30	P
N	U-8-83	MORGANTOWN ENERGY EXPORT COMPANY	Monongalia	1994-06-14	P
S	U-3083-87	MOUNTAINEER FUELS, INC.	Nicholas	1998-01-30	P
N	S-2004-86	NATIONAL CONSTRUCTION COMPANY, INC.	Barbour	1998-12-07	P
N	D-79-82	OMEGA MINING CO. INC.	Monongalia	1994-10-07	UC
N	71-80	PIERCE COAL & CONSTRUCTION, INC.	Upshur	1982-12-01	ACT
S	R-721	PINNACLE CREEK MINING CORP.	Wyoming	1994-12-07	TBRT
C	S-5027-08	POWDER MILL PROCESSING INC.	Wayne	2021-10-12	TBC
C	U-5017-08	POWDER MILL PROCESSING INC.	Wayne	2021-10-12	TBC
N	O-86-82	PRESTON ENERGY, INC.	Preston	1994-05-25	ACT
N	O-43-85	PRESTON ENERGY, INC.	Preston	1994-05-24	ACT
N	UO-235	PRESTON ENERGY, INC.	Preston	1994-03-18	NA
N	O-1035-87	PRESTON ENERGY, INC.	Preston	1994-05-05	ACT
N	7-81	PRIMROSE COAL, INC.	Preston	2011-03-23	ACT
C	S-6-85	PRINCESS SUSAN COAL CO.	Kanawha	1993-12-07	P
S	S-3006-94	PUPS CREEK COALS, INC.	Raleigh	1999-12-06	P
S	149-79	RALEIGH COMMERCIAL DEVELOPMENT	Fayette	1987-01-21	P
N	U-2001-00	ROBLEE COAL COMPANY	Upshur	2010-04-22	P
N	U-2026-87	ROBLEE COAL COMPANY	Barbour	2010-03-16	P
N	U-1001-91	ROBLEE COAL COMPANY	Upshur	2010-01-11	P

ACID MINE DRAINAGE INVENTORY

OFFICE	PERMIT	COMPANY	COUNTY	DATE REVOKED	WATER STATUS
N	O-1009-93	ROBLEE COAL COMPANY	Upshur	2009-11-09	P
N	237-76	ROCKVILLE MINING CO.	Preston	1994-01-12	ACT
N	S-65-82	ROCKVILLE MINING CO.	Preston	1994-01-12	ACT
N	65-78	ROCKVILLE MINING CO.	Preston	1994-01-12	ACT
N	S-91-85	ROCKVILLE MINING CO.	Preston	1994-01-12	NA
N	S-1035-86	ROCKVILLE MINING CO.	Preston	1994-01-12	ACT
S	P-688	ROYAL COAL CO.	Fayette	1990-01-01	TBC
S	D-32-81	ROYAL SCOT MINERALS, INC.	Greenbrier	2000-04-27	UC
S	56-81	ROYAL SCOT MINERALS, INC.	Greenbrier	2000-04-27	P2
S	U-40-85	ROYAL SCOT MINERALS, INC.	Greenbrier	2000-04-27	P
S	S-90-82	ROYAL SCOT MINERALS, INC.	Greenbrier	2000-04-27	P2
S	U-3046-88	ROYAL SCOT MINERALS, INC.	Greenbrier	2000-04-27	TBC
S	R-3078-86	ROYAL SCOT MINERALS, INC.	Greenbrier	2000-04-27	P
S	31-72	ROYAL SCOT MINERALS, INC.	Greenbrier	1999-04-28	ACT2
N	51-78	S. KELLY INDUSTRIES	Monongalia	1985-06-13	ACT2
C	19-75	SAN SUE COAL CO.	Nicholas	1989-01-13	P
N	S-2002-12	SHAFFER BROTHER CONSTRUCTION, INC.	Monongalia	2015-05-11	TBC
N	S-1028-87	SHARON COAL CO.	Preston	2011-03-23	P
S	EM-29	SMITH & STOVER	Raleigh	1984-05-17	UC
C	S-87-85	SOLITAIRE COAL CORPORATION, INC.	Webster	1989-06-23	P
N	U-32-84	SOUTHERN EAGLE MINING CORPORATION	Randolph	1985-02-06	P
S	R-3-81	STAR INDUSTRIES, INC.	Raleigh	1987-05-27	ACT
N	67-78	STEWARTOWN COAL CORP.	Monongalia	1988-06-28	ACT
C	S-3051-88	SUMMERSVILLE FIVE BLOCK	Nicholas	1994-11-01	ACT
N	P-177-85	T & J COAL, INC.	Preston	1987-05-29	ACT
N	EM-113	T & T FUELS, INC.	Preston	1995-10-31	ACT
N	U-125-83	T & T FUELS, INC.	Preston	1995-12-04	ACT
N	S-125-82	THE MASTELLER COAL COMPANY	Mineral	2004-05-03	ACT
N	S-10-85	THE MASTELLER COAL COMPANY	Mineral	2003-12-10	P
S	U-3046-87	TRIPLE A COALS, INC.	Nicholas	1998-12-17	P
S	S-3028-87	TRIPLE A COALS, INC.	Nicholas	1998-12-17	P2
S	S-96-85	TRIPLE A COALS, INC.	Nicholas	1998-12-17	P
N	S-64-83	VALLEY MINING CO., INC.	Monongalia	1992-06-12	ACT2
N	S-17-82	VALLEY MINING CO., INC.	Monongalia	1992-09-24	ACT
S	U-53-85	VICKIE ENERGY, INC.	Pocahontas	1995-01-11	TBRT
N	UO-519	VIKING COAL COMPANY	Preston	2001-01-18	NA
N	S-1045-87	VMS, LTD.	Monongalia	1994-04-04	ACT2
S	S-20-82	W & E LOGGING & COAL	Nicholas	1986-05-05	P
N	S-2003-86	WERNER MINING CO., INC.	Barbour	1992-05-20	P
N	S-71-79	WETER CO.	Preston	1995-07-10	P
N	S-26-85	WOCAP ENERGY RESOURCES, INC.	Preston	1993-12-14	ACT3
C	S-6013-87	X W CORP.	Clay	1989-04-20	P
N	S-21-84	Z & F DEVELOPMENT CO.	Monongalia	1985-11-06	ACT
N	60-79	ZINN COAL CO.	Preston	1991-04-16	P

Mine Drainage Treatment Prioritization 2025

COMPANY	PERMIT	Acid Loading TPY
INTER-STATE LUMBER COMPANY, INC.	S-39-82	17.3
SHAHER BROTHER CONSTRUCTION, INC.	S-2002-12	2.97
MERIDAN OF VIRGINIA, INC.	S-4005-89	0.284
KEYSTONE COAL, INC.	S-84-83	0.08