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May 29, 2012

Mr. Gregory F. Baker
Reclamation Program Manager
Commonwealth of Virginia
Department of Mines, Minerals, and Energy
3405 Mountain Empire Road
Big Stone Gap, VA 24219

Re: Commonwealth of Virginia, Coal Surface Mining Reclamation Fund – Actuarial Report

Dear Mr. Baker:

Enclosed is our final report on the actuarial study of the Virginia Coal Surface Mining Reclamation Fund as of June 30, 2011. If you have any questions, or require anything further please call me at (317) 889-5760.

Thank you for your assistance in our analysis and allowing Pinnacle to provide the actuarial study supporting this report.

Sincerely,

John E. Wade, ACAS, MAAA
Senior Consulting Actuary

Cc: Paul Vendetti, Pinnacle Actuarial Resources

Commonwealth of Virginia
Department of Mines, Minerals and Energy
Division of Mined Land Reclamation



Virginia Coal Surface Mining Reclamation Fund
Audit/Actuarial Analysis



*Pinnacle Actuarial Resources, Inc.
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**Commonwealth of Virginia
Department of Mines, Minerals and Energy
Division of Mined Land Reclamation**

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Commonwealth of Virginia
Department of Mines, Minerals and Energy
Division of Mined Land Reclamation

Purpose

Pinnacle Actuarial Resources Inc. (Pinnacle) has been retained by the Department of Mines, Minerals and Energy's Division of Mined Land Reclamation of the Commonwealth of Virginia to review the financial soundness of the Virginia Coal Surface Mining Reclamation Fund (Reclamation Fund or Fund). Oversight of the Reclamation Fund is the responsibility of the Coal Surface Mining Reclamation Fund Advisory Board (RFAB, Advisory Board or Board).

Distribution and Use

This report and conclusions contained herein are being provided to the Coal Surface Mining Reclamation Fund Advisory Board for its use in connection with our actuarial analysis of the current and estimated future Fund's liability in comparison with the current and estimated future assets. This report has been prepared to support the Advisory Board in complying with the Virginia legislation which established the Board as the advisory oversight organization with respect to the Fund.

We understand that copies of this report may be provided to the state auditors and other regulatory authorities along with other parties in compliance with Virginia's open records policies. Permission is hereby granted for this distribution on the condition that the entire report, including all exhibits, is distributed rather than any excerpt. These third parties should recognize that the furnishing of this report is not a substitute for their own due diligence and should place no reliance on this report or the data contained herein that would result in the creation of any duty or liability by Pinnacle to the third party.

The attached appendices in support of our findings are an integral part of this report. These sections have been prepared so they document our actuarial assumptions and judgments. Judgments about the conclusions drawn in this report should be made only after considering the

report in its entirety. We remain available to answer any questions that may arise regarding this report. We assume that the user of this report will seek such explanation on any matter in question.

Our conclusions are predicated on a number of assumptions as to future conditions and events. Those assumptions, which are documented in subsequent sections of this report, must be understood in order to place our conclusions in their appropriate context. In addition, our work is subject to inherent limitations, which are also further outlined and discussed later in this report.

Reliances and Limitations

We have prepared this report in conformity with its intended use by persons technically competent in the areas addressed and for the stated purposes only. Judgments as to conclusions, methods, and data contained in this report should be made only after studying the report in its entirety. Furthermore, we are available to explain any matter presented herein, and it is assumed that the user of this report will seek such explanation as to any matter in question.

We have relied upon data and information supplied by members of the Division of Mined Land Reclamation staff.

There is a limitation upon the accuracy of these estimates in that there is an inherent uncertainty in any actuarial estimate of future costs. This uncertainty is due to the fact that the ultimate liability for claims is subject to the outcome of events yet to occur, e.g., the likelihood of permit holders running into financial difficulty and default, the size and cost of reclamation, changes in the standards of reclamation and desired speed of reclamation. While there are no standard techniques for which to develop estimates for these specific issues, in our judgment, we have employed techniques and assumptions that are appropriate and the conclusions presented herein are reasonable, given the information currently available. However, it should be recognized that future loss emergence will likely deviate, perhaps materially, from our estimates.

We have relied on the data provided without independent audit or verification on the part of Pinnacle to develop our estimates of potential future reclamation cost. We also worked with the Division of Mined Land Reclamation staff to understand the operation of the Fund, the reclamation process and the underlying data provided but only to the extent such information may have affected our analysis. We have not anticipated any extraordinary changes to the economic, legal, or social environment which might affect the cost and frequency of default.

Our estimates are provided net of underlying performance security (also known as performance bonds or bonds). We have made no attempt to evaluate the quality of security provided. Should such providers be unable to fulfill their obligations, the Fund would be responsible for this additional reclamation cost. The RFAB may wish to consider a requirement that performance bonds only be considered if purchased from companies rated A- or higher by a rating agency.

Please note that for the purposes of this report, the Virginia specific data was provided as of November 15, 2011.

Further reliances and limitations are contained in the subsequent text, and in the exhibits accompanying the text.

Actuarial Qualifications to Issue Report

The Commonwealth of Virginia's Department of Mines, Minerals and Energy's Division of Mined Land Reclamation has retained Pinnacle Actuarial Resources, Inc to perform an actuarial valuation of the Virginia Coal Surface Mining Reclamation Fund.

John E. Wade, ACAS, MAAA, Senior Consulting Actuary, is a member of the American Academy of Actuaries and meet its Qualification Standards of Actuaries Issuing Statement of Actuarial Opinion in the United States to render the actuarial opinion contained here.

This valuation has been conducted in accordance with generally accepted actuarial principles and practices. The actuarial assumptions and methods employed in the measurement of the liability

have been selected by Pinnacle Actuarial Resources, Inc. after consultation with the staff of the Division of Mined Land Reclamation. The results shown in this report are reasonable actuarial results. However, a different set of results could also be considered reasonable actuarial results. The reason for this is that actuarial standards of practice describe a “central estimate” for each assumption, rather than a single best-estimate value. Thus, reasonable results differing from those presented in this report could have been developed by selecting different points within the best-estimate ranges for various assumptions.

Virginia Reclamation Fund Background

The Virginia Reclamation Fund was established by the Virginia Legislature in the middle of the 1980s to assist Virginia coal operators with a method to promote financial assurances to the Commonwealth. The Fund is administered within the Virginia Department of Mines, Minerals and Energy (DMME), Division of Mined Land Reclamation (DMLR) and is designed to provide funding, if necessary, to reclaim and restore land at previously mined sites. The programs are funded through coal taxes, investment income, and other minor, miscellaneous sources of income.

The Fund is overseen by the Coal Surface Mining Reclamation Fund Advisory Board. The Board and the DMME-DMLR seek actuarial services in connection with the review of the programs’ fiscal soundness.

Summary of Findings

Based upon our analysis further explained in more detail below and with the accompanying exhibits, we find that although the Reclamation Fund program has not experienced a single permit forfeiture in many years, there remains the possibility that a forfeiture could occur. Similar to a loss from a tornado or hurricane, the probability of a single forfeiture is relatively small. But if a permit forfeiture should occur, the financial cost to the Fund will be significant. With the current Fund balance of \$7.3 million, the program has sufficient resources to withstand the forfeiture of one or two smaller permits. The more significant risk to the Fund is from the exposure to companies with multiple permits and possibly from larger parent companies should they forfeit multiple permits simultaneously.

Table 1.1 provides a cash flow projection over the next 18 years on a nominal basis. This is the period of time that the current permits covered by the Reclamation Fund are anticipated to be provided reclamation protection by the Reclamation Fund.

REVENUE

The Virginia Reclamation Fund has four sources of income to support the activities of the Fund. These sources are:

1. Entrance Fees
2. Reclamation Fund Tax Revenue
3. Civil Penalties
4. Investment Income

Each time a New Permit, Acreage Amendment or CSMO Renewal is issued and is allowed to participate in the Reclamation Fund, the permit holder must pay a one-time Entrance Fee.

The Reclamation Fund collects a Reclamation Fund Tax per ton of coal extracted from a permit's site the first four quarters following initial coal production. In fiscal year 2011, the Fund received \$77,586 in Tax proceeds.

The Fund Balance is invested by the Commonwealth of Virginia as part of the General Fund. The Fund receives an investment return allocation on a quarterly basis. The interest income of the Fund in fiscal year 2011 was \$98,746.

As of June 30, 2011, the Fund Balance was \$7,283,946. This fund balance is available to pay the Administration costs of running the fund as well as any future reclamation costs from forfeited sites.

CURRENT PERMITS COVERED BY RECLAMATION FUND

As of June 30, 2011, the Virginia Reclamation Fund provided excess reclamation coverage for a total of 219 Coal Mine related permits. The following table provides a summary of the distribution of the permits based on Permit Type and Permit Status.

Virginia Reclamation Fund as of June 30, 2011				
	Active Permits	Closed No Reclamation	Closed with Reclamation	Total
Surface	90	1	23	114
Underground	42	2	15	59
Other Permits	33	1	12	46
Total	165	4	50	219

The majority of the permits covered by the Virginia Reclamation Fund are controlled by four Parent Corporations. Of all the 219 permits, 167 permits are controlled by the four largest parent companies. Table 4.2 provides additional details.

Underlying Security Type

The Virginia Reclamation Fund allows a number of types of security to be posted to cover the required amount of underlying financial security in the event of permit forfeiture. This security will be used to provide the initial funding for reclamation efforts at the permits site. These security types include:

1. Surety Bond provided by recognized Surety/Insurance company
2. Letter of Credit
3. Certificate of Deposit
4. Cash held by Virginia Department of Mines, Minerals and Energy
5. "Self – Bonding".

A majority of the permits are covered by surety or surety plus one or more of the other first four items. Of the permits in the Reclamation Fund, 185 are exclusively covered by surety companies.

Self-Bonded Permits

There are 19 permits with some form of "Self – Bonding" as part of the underlying funding available for reclamation before the Reclamation Fund would need to provide additional funding for reclamation efforts. The issues related to these permits with "Self – Bonding" will be explored further later in this report.

ACTUARIAL ESTIMATE OF FUTURE LIABILITIES

The approach used to estimate the potential long-term viability of the Reclamation Fund is based upon two main components:

1. the probability of a permit or group of permits forfeiting
2. the cost of reclamation should a permit or group of permits forfeit.

This approach is commonly referred to as a frequency and severity analysis where the frequency is the probability of forfeiture and the severity is the cost of reclamation. The coverage provided by the Reclamation Fund to permit holders could be categorized as low frequency and high severity.

Since there have been no permits forfeited to the Reclamation Fund in the past 13 years, there is no recent history on which to base the probability of forfeiture upon. Our estimates of future forfeitures are based upon information from other sources such as other states and financial rating agencies.

Unlike operating permits issued to companies not included in the Reclamation Fund that require "Full Cost Bonding" where the required bond is determined based upon the estimate of the funds required to perform reclamation in the event of a forfeiture, the permits included in the Reclamation Fund do not require, and thus do not record, an estimate of the cost of reclamation should the permit holder become financially unable to undertake the reclamation process and thus, forfeits the permit to the Fund. Therefore, there is no direct data for which to estimate the

second component of our approach. We have relied upon data from the "Full Cost" permits and data from the reclamation funds in other states.

We have separated the data into three categories based upon the type of permit:

1. Surface Mines
2. Underground Mines
3. Other Permit Type such as Preparation Plants, haul roads, tipples, etc.

We have also recognized the fact that permits may have some areas where the reclamation process is already underway. This process is commonly known as “contemporaneous reclamation”. This recognition is important in two respects. The first is the cost of reclamation efforts on acres which have achieved Phase 1 release or Phase 2 release will be much less than the reclamation cost of acres where reclamation process has not yet begun. Secondly, the number of years before those acres can achieve Phase 3 or final release is much shorter than the number of years anticipated required to achieve release for acreage currently extracting coal with no current reclamation efforts.

Recognition of Underlying Security

In the case of permit forfeiture, the Reclamation Fund would have access to the available underlying security provided by surety companies, certificates of deposit, letters of credit and cash deposited with the Commonwealth. For permits with underlying security of these types, we have adjusted the potential reclamation cost to recognize that this additional funding will be available in addition to the funds required from the Reclamation Fund.

In the case of permits in the "Self – Bonding" category, there would be no underlying funds available should a permit forfeit prior to the completion of the reclamation process. For these permits, the exposure to the Reclamation Fund is any remaining reclamation cost. We understand that new permits issued in Virginia will not have this option available. We encourage movement away from this option in a sense of equity to the other Reclamation Fund participants as well as to limit the exposure to the Fund. We recommend that any new increments on existing permits with the "Self – Bonding" option be required to provide other sources of financial security.

If forfeiture by the holder of these permits occur, the Reclamation Fund would be responsible for an estimated additional \$26.6 million over and above the amounts that the Reclamation Fund would normally be requested to cover. The underlying security by type and amounts are summarized in Table 1.2.

Projected Future Costs – Table 2

Table 2.1 provides a summary of the projected forfeiture costs and administrative expenses for each of the next 20 years.

Tables 2.2a through 2.2d provide a summary of the projected forfeiture costs over the next 18 years. We have provided projections based upon the average reclamation costs from the full bonding estimates for the permits in Virginia that are not part of the Reclamation Fund, the reclamation costs recently experienced in West Virginia and the estimated reclamation costs in Ohio that are based upon engineer estimates of reclamation costs. Projected amounts are trended 4.0 percent annually to reflect expected increases in goods and services associated with the reclamation activities.

Table 2.3 displays the projected Administrative Expenses associated with the operation of the Reclamation Fund. From 1997 through 2008, the administrative expenses were \$18,400 annually. In 2009, the expenses in this category increased to \$41,700 per year. The expenses have remained at that level through 2011. In our projections, we assume that this increased level will continue into the future. We have also increased these costs through the use on a 1.5 percent inflation rate for 2013 and subsequent years. The 1.5 percent reflects expected increases in salaries. To reflect the fact that some of the current permits will leave the Reclamation Fund through release or forfeiture, we adjust the future administration expenses based upon a ratio of the projected acres (Table 3.4) in the Fund by year divided by the current number of acres in the system.

Projected Future Revenues – Table 3

Table 3.1 provides a summary of the projected revenues anticipated to be generated from the permits currently included in the Reclamation Fund over the expected duration of these permits in the Fund. Using assumptions explained and documented later, we anticipate this activity will continue through 2029.

As part of our analysis in projecting the number and cost of future permit forfeitures, we also develop an estimate of the funds that should be available from the underlying security – bonds, certificates of deposit, letters of credit, etc. Table 3.2 calculates the anticipated bond forfeiture revenue shown in Table 3.1, column (1).

Table 3.3 provides a summary of the historic revenues of the Virginia Reclamation Fund from 1997 through 2011. The sources of income to the Fund include:

- Entrance Fees
- Reclamation Fund Tax proceeds
- Civil Penalties
- Interest Income

Current Bond Participants and Underlying Exposure - Table 4

From the information provided to Pinnacle by the Division of Mined Land Reclamation, we provide a summary of the various data used as part of our analysis.

Table 4.1 provides a summary of the number of permits in the Reclamation Fund that are held by each company. This exhibit also provides a summary of the currently posted security that would be called, in the event of forfeiture, prior to any dollars being required from the Reclamation Fund to cover reclamation costs. The 219 Bond permits are held by 44 companies.

Since many of these permit holding companies are subsidiaries of larger corporations, in Table 4.2 we provide the bond and permit number distribution summarized at the Parent Company Level. There are 42 individually owned and operated; representing 19.2 percent of the permits in the Reclamation Fund. Over 70 percent of the permits are “controlled” by three large parent companies. This fact is important if forfeitures are in any way correlated at the parent level. We assume that there is strong correlation of forfeiture at the permitted company level, whereby if a permit holder should reach a point where they can no longer finance further reclamation, the parent company is highly likely to, if not certain to, forfeit its other permits to the Reclamation Fund to complete the reclamation process.

Permits by Security Type and Mining Status - Table 5

In Table 5, we provide a summary of the permits by mining status and underlying security. Of note are the 16 Self-Bonded permits and the 3 permits with some level of self-bonding. These permits are important to the Reclamation Fund and our analysis in that they increase the amount of risk – potential cost to the Fund – beyond the level of risk from the other permits. In the case of forfeiture of one of the self-bonded permits, the Fund would be responsible for the complete (or nearly so) reclamation costs. The other permits are providing some type of underlying financial security that would be available to the Division of Mine Land Reclamation and the Fund in the event of forfeiture. For permitted acres prior to achievement of Phase 1 Release, the underlying security is \$3,000 per permitted acre. The underlying security required is reduced to \$1,200 per acre for acres achieving Phase 1 Release and to \$450 upon achievement of Phase 2 Release.

The increased “risk” assumed by the Reclamation Fund has not been reflected in an increased coal tax rate. By using the amount of security required of the other permits detailed above, we estimate the increased exposure to the Fund from these permits is approximately \$26.6 million. This estimate is not intended to be a reflection of the financial stability of the permit holder but only a measurement of the private security typically available but not in this case.

Permits by Security Type and Mining Status - Table 6

In Table 6, we provide summaries of the number of acres and the number of permits issued in each of the fiscal years from 1983 through 2011. The summaries show the information by type of permit and the current status of the permit. This detailed information is utilized in the determination of the expected number of acres to be released or forfeited over the projection period of our analysis.

Projected Permit Release Rates - Table 7

In order to project the future expected number of forfeited acres, we need to also project the number of acres that are permitted at any point in time. Table 7 provides our assumptions with respect to achievement of Phase 3 or final release.

In Table 7.1, we provide the assumptions for active mining permits. For active permits with acres currently actively mining coal, we assume that there is an 18 year period of time until these permits are fully released. To reflect that there may be some active permits at the end of the mining process, the first release is projected to occur 7 years from now with more releases obtained in each of the succeeding 11 years.

These active permits may also have some acreage which has been Phase 1 released. We assume that the first acres to achieve full release will occur 4 years from now and spreads over the next three years.

Similarly, there are acres in these permits that have achieved Phase 2 release. We assumed that final release will occur at over the next 3 years.

Table 7.2 provides the assumptions for permits that are no longer actively mining coal but have not yet begun the reclamation process. We have assumed that the first acres will achieve full release 7 years from now and the achievement of full release will be accomplished over the next 6 years. As expected this release time horizon is faster than the permits that are still actively mining. We have not listed assumptions for any acres that might have previously achieved phase release, but the definition of this category would suggest that these assumptions are not required.

Finally, we have a set of assumptions for the permits that are closed and have a significant amount of reclamation completed. In our review of the data, we found that these permits included only acreage that had achieved Phase 2 release.

Forfeiture Rates - Table 8

Due to the recent great experience in the Virginia Reclamation Fund program, we do not have any information upon which to develop expected forfeiture rates for the projection of future forfeitures in Virginia. Therefore, we have utilized the forfeiture rates experienced in the neighboring state of West Virginia as a starting point. To attempt to better reflect the difference in the programs, we have applied a judgmentally selected 10 percent adjustment factor to the West Virginia forfeiture rates to generate the lower anticipated Virginia forfeiture rates. Thus, the starting forfeiture expectations in Virginia are 0.125 percent for surface mine operations (1.25 acres per 1,000 acres forfeited in any one year), 0.05 percent for underground mining operations (0.5 acres per 1,000 permitted acres are expected to forfeited in any year) and 0.04 percent for other permit types (0.4 acres per 1,000 permitted acres are expected to forfeited in any year).

Additional Adjustment Factors to Forfeiture Rates - Table 9

In addition to the standard forfeiture rates, there are a few adjustment factors that have been applied in the West Virginia analysis that we are also including in this analysis. In order to similarly follow the West Virginia approach, we include the following adjustments in Table 9:

- Mine Status (Table 9.1) – We reflect the fact that the probability of forfeiture declines as the reclamation process moves from active mining to reclamation and on to final release.
- Permits Status (Table 9.2) – We make an adjustment to the final factor to reflect that the cost of Phase 1 and Phase 2 released acreage is much less than the cost associated with land that has not had any reclamation activity.
- Security Size (Table 9.3) – The size of a security on a permit is felt to be indirectly related to the probability of future forfeiture. The involvement of a private bonding/insurance company in the review of the financial stability of the permit holder, especially in larger bonds, is one possible benefit to the Fund. The availability of larger deposits can act similar to the bond and are usually more costly to the permit holder. Also, the smaller permitted sites (“Mom and Pop” operations) have historically had higher rates of forfeiture. The security for the permit holders is summarized on Table 4.1. We have applied the factors at the permit level rather than the permit holder level.

Projected Reclamation Costs per Acre - Table 10

Once we have developed a positive estimate of the probability of forfeiture, we need to apply the probability times the number of acres still in-force (covered by the Fund) and the average reclamation cost of an acre. We apply both the forfeiture rates and the average reclamation costs at the permit type level. From data provided by Greg Baker of the Division of Mined Land Reclamation, we obtained the required performance security (bond, deposits, etc.) for the Virginia permits that are not participating in the Reclamation Fund program. The average required security per acre and permit type is shown on Table 10. From the West Virginia and Ohio analyses recently performed by Pinnacle, we provide the average costs anticipated in those states.

Projected Investment Rates - Table 11

In order to project the future investment income in the Fund, we have utilized investment rates that are based upon the recent returns available through United States Treasuries. Table 11 displays these investment rates. The figures in bold are the actual returns quoted by the US Treasury while the other figures have been interpolated.

Shock Loss – Tables 1.1, 2.2, 3.1, and 3.2

One test of financial soundness is the ability of the Reclamation Fund to withstand a shock loss. We tested the Fund by generating the hypothetical loss if a large parent company (Alpha) were to go into default. Under this test we assumed that all Alpha mining activities would stop and the all mined areas would have to be reclaimed. We also assumed that all Alpha bonds would be forfeited.

Under this scenario, reclamation costs would go up by about \$85 million, as shown in Table 2.2a, Shock Loss. We spread the reclamation costs over an 8 year period and applied a slight cost inflation factor, bringing the total reclamation cost to about \$99 million.

If Alpha were to forfeit all permits today, however, they would also forfeit all bonds. This amounts to an additional \$41 million coming into the system (Table 3.2a Shock Loss). For purposes of our analysis we assumed these funds would be immediately available.

The net results of the shock loss are shown in Table 1.1 Shock Loss Summary. Running all the income and costs through our model, we see that the tested shock loss would cause the Fund balance to drop below zero in the fifth year. By the eighth year the Fund would be at a negative \$50 million balance, assuming all reclamation costs were paid.

Of course, there are other things to consider should such an event occur. The likelihood for another entity or entities to take over Alpha's forfeited operations is quite high. The Commonwealth would possibly broker deals for such an occurrence. The Commonwealth might also pass additional taxes unto the industry, either as permanent taxes or short term special assessments, to cover the shortfall. The concept of testing the system with a shock loss is to see what it would take to keep the system viable under a worst case (highly unlikely, but plausible) scenario. This information is useful as one considers what level of a Fund Balance is necessary to cover the unlikely scenario depicted.

A possible alternative to build up the Fund balance to be able to cover a shock loss such as described above, or even a portion of the loss generated, would be to change the Coal Tax structure. Currently the tax is collected only for the first four quarters of a new permit's mining operation. If the four quarter restriction were removed and an annual, ongoing, tax were adopted, the Reclamation Fund balance would begin to accumulate to higher levels at a pace dependent upon the tax rate and the coal production rate. In Table 3.1b we display a twenty year time horizon of collecting an annual tax of 3.5 cents per ton of coal extracted. This tax, along with the associated interest income, would generate \$12 - \$13 million dollars in twenty years, assuming an annual coal production of 20 million tons.

In the example described above, it would take twenty years to cover about a fourth of the anticipated shock loss, or eighty years to cover the entire loss. However, when one considers the likelihood of a shock loss of this nature occurring and the ability of the Commonwealth to

mitigate the impacts of the loss through tax assessments and developing deals for other companies to take over the stressed operations, a much smaller Fund balance would help balance the Commonwealth's desire for financial stability, not create an undue burden on the industry, and satisfy its own risk appetite.

At this stage in the review of the Reclamation Fund's financial soundness, we recommend that the Commonwealth pursue removing the restriction of collecting the tax revenues for the first four quarters and collect the tax revenues for the life of the mining operation. The Commonwealth might consider adopting a uniform tax rate, but the simplest approach may be just to remove the time limitation on the applicability of the tax. The Commonwealth would also have to change the language throughout its code to allow for the same, including the overall Fund balance caps that are embedded in the language.

At this time Pinnacle would not recommend changing the Reclamation Fund Entrance Fee.

Conclusion

Pinnacle offers up the following recommendations:

Pinnacle recommends movement away from the Self-Bonding option in a sense of equity to the other Reclamation Fund participants as well as to limit the exposure to the Fund. We recommend that any new increments on existing permits with the Self-Bonding option be required to provide other sources of financial security.

Pinnacle recommends removing the Fund balance caps, allowing the Fund to build up to levels that would cover the largest loss possible from the default of the largest parent in the system. As this will take many years to get to such a level, Pinnacle recommends just removing the caps at this time. Caps can be revisited once the Fund balances start to approach desired levels.

Pinnacle recommends changing the Coal Tax structure, removing the limitation of only collecting the tax on the first four quarters of operation, and replacing it with collecting the tax for all time periods of operation.

Pinnacle recommends no changes to the Coal Tax rates, other than the time period they apply.

Pinnacle recommends no changes to the Reclamation Fund Entrance Fees at this time.

Pinnacle recommends that the Reclamation Fund undergo periodic financial soundness reviews to consider and adjust the Fund's operating plan parameters as appropriate taking into consideration recent historic and projected future economic conditions.

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 1.1 <u>Summary</u>			
Fiscal Year Ending 6/30	Expenditures (1)	Revenues (2)	Projected Fund Balance (3)
2011			7,283,946
2012	147,122	231,153	7,367,977
2013	151,427	181,856	7,398,406
2014	153,190	131,064	7,376,279
2015	151,159	129,793	7,354,913
2016	151,077	127,645	7,331,481
2017	150,729	125,223	7,305,974
2018	150,414	122,648	7,278,208
2019	139,015	116,368	7,255,561
2020	126,830	110,017	7,238,748
2021	114,972	103,721	7,227,497
2022	103,522	97,599	7,221,575
2023	92,387	91,704	7,220,892
2024	33,044	86,203	7,274,051
2025	28,201	81,003	7,326,853
2026	23,289	75,823	7,379,388
2027	6,802	70,704	7,443,290
2028	4,704	65,597	7,504,182
2029	2,443	60,443	7,562,183
Total	1,730,326	2,008,563	

Footnotes:

- (1) Table 2.1 Col (3)
- (2) Table 3.1 Col (5)
- (3) Prior Col (3) + (Col (2) - Col (1))

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 1.2		
<u>Underlying Security</u>		
Security Type	Available Collateral	Self Only Collateral
	(1)	(2)
Surety	124,810,075	0
Surety and Cash	607,000	0
Surety, Cash, and Letter of Credit	367,400	0
Surety, CD, and Letter of Credit	388,100	0
Letter of Credit	634,000	0
Certificate of Deposit	384,100	0
Self Bonding	23,438,025	23,438,025
Self Bonding and Surety	3,659,400	1,768,200
Self Bonding, Surety and Cash	2,421,600	1,368,000
Total	156,709,700	26,574,225
Self Bonding Percent		16.96%
All Other Securities Percent		83.04%

Footnotes:

- | | |
|-----|-------------|
| (1) | Client Data |
| (2) | Client Data |

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 2.1 Expenditures			
Fiscal Year Ending 6/30	Reclamation (1)	Administrative (2)	Total (3)
2011			0
2012	105,422	41,700	147,122
2013	110,524	40,903	151,427
2014	114,463	38,728	153,190
2015	115,809	35,350	151,159
2016	119,793	31,284	151,077
2017	123,911	26,818	150,729
2018	128,167	22,247	150,414
2019	122,109	16,906	139,015
2020	115,159	11,671	126,830
2021	107,726	7,246	114,972
2022	99,527	3,995	103,522
2023	90,461	1,926	92,387
2024	32,249	795	33,044
2025	27,928	273	28,201
2026	23,214	75	23,289
2027	6,786	15	6,802
2028	4,702	2	4,704
2029	2,443	0	2,443
Total	1,450,392	279,934	1,730,326

Footnotes:

- (1) Table 2.2a Col (2)
- (2) Table 2.3 Col (1)
- (3) Col (1) + Col (2)

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 2.2a Reclamation Expenditures Selected		
Fiscal Year Ending 6/30	Nominal (1)	Inflated at 4% (2)
2011		
2012	103,374	105,422
2013	104,209	110,524
2014	103,772	114,463
2015	100,955	115,809
2016	100,411	119,793
2017	99,868	123,911
2018	99,326	128,167
2019	90,991	122,109
2020	82,511	115,159
2021	74,217	107,726
2022	65,931	99,527
2023	57,620	90,461
2024	19,752	32,249
2025	16,447	27,928
2026	13,145	23,214
2027	3,695	6,786
2028	2,462	4,702
2029	1,230	2,443
Total	1,139,916	1,450,392

Footnotes:

- (1) Based on Table 2.2b, Table 2.2c, Table 2.2d
- (2) Col (1) x 4% inflation

Virginia Department of Mines, Minerals and Energy
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Table 2.2b		
Reclamation Expenditures		
Based upon Virginia Average Cost		
Fiscal Year Ending 6/30	Nominal (1)	Inflated at 4% (2)
2011		
2012	103,374	105,422
2013	104,209	110,524
2014	103,772	114,463
2015	100,955	115,809
2016	100,411	119,793
2017	99,868	123,911
2018	99,326	128,167
2019	90,991	122,109
2020	82,511	115,159
2021	74,217	107,726
2022	65,931	99,527
2023	57,620	90,461
2024	19,752	32,249
2025	16,447	27,928
2026	13,145	23,214
2027	3,695	6,786
2028	2,462	4,702
2029	1,230	2,443
Total	1,139,916	1,450,392

Footnotes:

- (1) See Report for Details
- (2) Col (1) x 4% inflation

Virginia Department of Mines, Minerals and Energy
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Table 2.2c		
Reclamation Expenditures		
Based Upon West Virginia Average Cost		
Fiscal Year Ending 6/30	Nominal (1)	Inflated at 4% (2)
2011		
2012	74,413	75,887
2013	75,053	79,601
2014	74,794	82,499
2015	72,752	83,457
2016	72,353	86,319
2017	71,953	89,276
2018	71,554	92,332
2019	65,551	87,969
2020	59,438	82,956
2021	53,465	77,604
2022	47,496	71,698
2023	41,509	65,167
2024	14,230	23,233
2025	11,849	20,120
2026	9,470	16,724
2027	2,662	4,889
2028	1,774	3,388
2029	886	1,760
Total	821,202	1,044,879

Footnotes:

- (1) See Report for Details
- (2) Col (1) x 4% inflation

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Table 2.2d		
Reclamation Expenditures		
Based Upon Ohio Average Cost		
Fiscal Year Ending 6/30	Nominal (1)	Inflated at 4% (2)
2011		
2012	156,035	159,125
2013	157,196	166,722
2014	156,454	172,572
2015	152,272	174,678
2016	151,476	180,715
2017	150,681	186,957
2018	149,887	193,411
2019	137,308	184,267
2020	124,518	173,786
2021	112,000	162,568
2022	99,494	150,193
2023	86,954	136,512
2024	29,806	48,666
2025	24,819	42,144
2026	19,837	35,031
2027	5,576	10,240
2028	3,715	7,095
2029	1,856	3,686
Total	1,719,883	2,188,367

Footnotes:

- (1) See Report for Details
- (2) Col (1) x 4% inflation

Virginia Department of Mines, Minerals and Energy
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Table 2.3 <u>Administrative Expenditures</u>	
Fiscal Year Ending 6/30	Dollars (1)
2011	
2012	41,700
2013	40,903
2014	38,728
2015	35,350
2016	31,284
2017	26,818
2018	22,247
2019	16,906
2020	11,671
2021	7,246
2022	3,995
2023	1,926
2024	795
2025	273
2026	75
2027	15
2028	2
2029	0
Total	279,934

Footnotes:

- (1) Client data inflated 1.5% x
Table 3.4 Acreage Projections Col (5)

Virginia Department of Mines, Minerals and Energy
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Table 3.1 Revenues					
Fiscal Year Ending 6/30	Bond Forfeiture (1)	Coal Tax (2)	Civil Penalties (3)	Interest Income (4)	Total (5)
2011					
2012	51,331	100,083	6,889	72,850	231,153
2013	51,729	50,041	6,757	73,328	181,856
2014	51,479	0	6,398	73,187	131,064
2015	51,298	0	5,840	72,655	129,793
2016	50,623	0	5,168	71,854	127,645
2017	49,949	0	4,430	70,843	125,223
2018	49,276	0	3,675	69,697	122,648
2019	45,141	0	2,793	68,434	116,368
2020	41,009	0	1,928	67,080	110,017
2021	36,881	0	1,197	65,643	103,721
2022	32,757	0	660	64,182	97,599
2023	28,637	0	318	62,749	91,704
2024	24,522	0	131	61,550	86,203
2025	20,410	0	45	60,547	81,003
2026	16,303	0	12	59,508	75,823
2027	12,219	0	3	58,481	70,704
2028	8,141	0	0	57,455	65,597
2029	4,067	0	0	56,377	60,443
Total	625,773	150,124	46,245	1,186,421	2,008,563

Footnotes:

- (1) Table 3.2a Col (8)
- (2) Table 3.3 Row (6) for 2012; 50% for 2013
- (3) Table 3.3 Row (6) for 2012 x Table 3.4 Acreage Projections Col (5); trended 1.5% for projected years
- (4) Table 1.1 Prior Col (3) + [0.5 x (sum(Col (1) through Col (3)) - Table 1.1 Col (1)) x Table 11 Col (2)
- (5) Sum of Col (1) through Col (4)

Note: additional entrance fees are NOT considered

Virginia Department of Mines, Minerals and Energy
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Table 3.2a								
Bond Forfeiture Revenues - Total								
Fiscal Year Ending 6/30	Forfeited Acres			Forfeited Bond Amounts			Total	Adjusted for Self Bonded
	Active	Phase 1 Release	Phase 2 Release	Active	Phase 1 Release	Phase 2 Release		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2011								
2012	19.50	1.96	2.12	58,504	2,355	953	61,813	51,331
2013	19.77	1.96	1.41	59,303	2,354	635	62,293	51,729
2014	19.77	1.96	0.71	59,321	2,353	317	61,991	51,479
2015	19.81	1.96	0.00	59,421	2,352	0	61,773	51,298
2016	19.80	1.31	0.00	59,394	1,567	0	60,961	50,623
2017	19.79	0.65	0.00	59,366	783	0	60,149	49,949
2018	19.78	0.00	0.00	59,339	0	0	59,339	49,276
2019	18.12	0.00	0.00	54,359	0	0	54,359	45,141
2020	16.46	0.00	0.00	49,383	0	0	49,383	41,009
2021	14.80	0.00	0.00	44,412	0	0	44,412	36,881
2022	13.15	0.00	0.00	39,446	0	0	39,446	32,757
2023	11.50	0.00	0.00	34,485	0	0	34,485	28,637
2024	9.84	0.00	0.00	29,529	0	0	29,529	24,522
2025	8.19	0.00	0.00	24,578	0	0	24,578	20,410
2026	6.54	0.00	0.00	19,632	0	0	19,632	16,303
2027	4.90	0.00	0.00	14,715	0	0	14,715	12,219
2028	3.27	0.00	0.00	9,803	0	0	9,803	8,141
2029	1.63	0.00	0.00	4,897	0	0	4,897	4,067
Total	246.63	9.80	4.23	739,888	11,765	1,906	753,558	625,773

Footnotes:

- (1) Sum of Tables 3.2b through 3.2d Col (1)
- (2) Sum of Tables 3.2b through 3.2d Col (2)
- (3) Sum of Tables 3.2b through 3.2d Col (3)
- (4) Col (1) x 3,000
- (5) Col (2) x 3,000 x Factor of 0.40 From Table 9.2 Col (1)
- (6) Col (3) x 3,000 x Factor of 0.15 From Table 9.2 Col (1)
- (7) Sum of Col (4) through Col (6)
- (8) Col (7) x Table 1.2 Col (2) All Other Securities Percent

Virginia Department of Mines, Minerals and Energy
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Table 3.2b								
Bond Forfeiture Revenues - Active								
Fiscal Year Ending 6/30	Forfeited Acres			Forfeited Bond Amounts			Total	Adjusted for Self Bonded
	Active	Phase 1 Release	Phase 2 Release	Active	Phase 1 Release	Phase 2 Release		
	(1)	(2)	(3)	(4)	(5)	(6)		
2011								
2012	19.44	1.96	0.64	58,311	2,355	288	60,954	50,618
2013	19.70	1.96	0.43	59,110	2,354	192	61,656	51,201
2014	19.71	1.96	0.21	59,127	2,353	96	61,576	51,134
2015	19.74	1.96	0.00	59,228	2,352	0	61,580	51,138
2016	19.73	1.31	0.00	59,201	1,567	0	60,768	50,463
2017	19.72	0.65	0.00	59,173	783	0	59,956	49,789
2018	19.72	0.00	0.00	59,146	0	0	59,146	49,116
2019	18.06	0.00	0.00	54,190	0	0	54,190	45,001
2020	16.41	0.00	0.00	49,238	0	0	49,238	40,889
2021	14.76	0.00	0.00	44,292	0	0	44,292	36,781
2022	13.12	0.00	0.00	39,350	0	0	39,350	32,677
2023	11.47	0.00	0.00	34,413	0	0	34,413	28,577
2024	9.83	0.00	0.00	29,481	0	0	29,481	24,482
2025	8.18	0.00	0.00	24,554	0	0	24,554	20,390
2026	6.54	0.00	0.00	19,632	0	0	19,632	16,303
2027	4.90	0.00	0.00	14,715	0	0	14,715	12,219
2028	3.27	0.00	0.00	9,803	0	0	9,803	8,141
2029	1.63	0.00	0.00	4,897	0	0	4,897	4,067
Total	245.95	9.80	1.28	737,861	11,765	575	750,201	622,985

Footnotes:

- (1) Client data x Table 8
- (2) Client data x Table 8
- (3) Client data x Table 8
- (4) Col (1) x 3,000
- (5) Col (2) x 3,000 x Factor of 0.40 From Table 9.2 Col (1)
- (6) Col (3) x 3,000 x Factor of 0.15 From Table 9.2 Col (1)
- (7) Sum of Col (4) through Col (6)
- (8) Col (7) x Table 1.2 Col (2) All Other Securities Percent

Virginia Department of Mines, Minerals and Energy
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Table 3.2c								
Bond Forfeiture Revenues - Closed No Reclamation								
Fiscal Year Ending 6/30	Forfeited Acres			Forfeited Bond Amounts			Total	Adjusted for Self Bonded
	Active	Phase 1 Release	Phase 2 Release	Active	Phase 1 Release	Phase 2 Release		
	(1)	(2)	(3)	(4)	(5)	(6)		
2011								
2012	0.06	0.00	0.00	193	0	0	193	161
2013	0.06	0.00	0.00	193	0	0	193	161
2014	0.06	0.00	0.00	193	0	0	193	160
2015	0.06	0.00	0.00	193	0	0	193	160
2016	0.06	0.00	0.00	193	0	0	193	160
2017	0.06	0.00	0.00	193	0	0	193	160
2018	0.06	0.00	0.00	193	0	0	193	160
2019	0.06	0.00	0.00	169	0	0	169	140
2020	0.05	0.00	0.00	145	0	0	145	120
2021	0.04	0.00	0.00	120	0	0	120	100
2022	0.03	0.00	0.00	96	0	0	96	80
2023	0.02	0.00	0.00	72	0	0	72	60
2024	0.02	0.00	0.00	48	0	0	48	40
2025	0.01	0.00	0.00	24	0	0	24	20
2026	0.00	0.00	0.00	0	0	0	0	0
2027	0.00	0.00	0.00	0	0	0	0	0
2028	0.00	0.00	0.00	0	0	0	0	0
2029	0.00	0.00	0.00	0	0	0	0	0
Total	0.68	0.00	0.00	2,027	0	0	2,027	1,683

Footnotes:

- (1) Client data x Table 8
- (2) Client data x Table 8
- (3) Client data x Table 8
- (4) Col (1) x 3,000
- (5) Col (2) x 3,000 x Factor of 0.40 From Table 9.2 Col (1)
- (6) Col (3) x 3,000 x Factor of 0.15 From Table 9.2 Col (1)
- (7) Sum of Col (4) through Col (6)
- (8) Col (7) x Table 1.2 Col (2) All Other Securities Percent

Virginia Department of Mines, Minerals and Energy
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Table 3.2d								
Bond Forfeiture Revenues - Closed With Reclamation								
Fiscal Year Ending 6/30	Forfeited Acres			Forfeited Bond Amounts			Total	Adjusted for Self Bonded
	Active	Phase 1 Release	Phase 2 Release	Active	Phase 1 Release	Phase 2 Release		
	(1)	(2)	(3)	(4)	(5)	(6)		
2011								
2012	0.00	0.00	1.48	0	0	665	665	553
2013	0.00	0.00	0.99	0	0	443	443	368
2014	0.00	0.00	0.49	0	0	221	221	184
2015	0.00	0.00	0.00	0	0	0	0	0
2016	0.00	0.00	0.00	0	0	0	0	0
2017	0.00	0.00	0.00	0	0	0	0	0
2018	0.00	0.00	0.00	0	0	0	0	0
2019	0.00	0.00	0.00	0	0	0	0	0
2020	0.00	0.00	0.00	0	0	0	0	0
2021	0.00	0.00	0.00	0	0	0	0	0
2022	0.00	0.00	0.00	0	0	0	0	0
2023	0.00	0.00	0.00	0	0	0	0	0
2024	0.00	0.00	0.00	0	0	0	0	0
2025	0.00	0.00	0.00	0	0	0	0	0
2026	0.00	0.00	0.00	0	0	0	0	0
2027	0.00	0.00	0.00	0	0	0	0	0
2028	0.00	0.00	0.00	0	0	0	0	0
2029	0.00	0.00	0.00	0	0	0	0	0
Total	0.00	0.00	2.96	0	0	1,330	1,330	1,105

Footnotes:

- (1) Client data x Table 8
- (2) Client data x Table 8
- (3) Client data x Table 8
- (4) Col (1) x 3,000
- (5) Col (2) x 3,000 x Factor of 0.40 From Table 9.2 Col (1)
- (6) Col (3) x 3,000 x Factor of 0.15 From Table 9.2 Col (1)
- (7) Sum of Col (4) through Col (6)
- (8) Col (7) x Table 1.2 Col (2) All Other Securities Percent

Virginia Department of Mines, Minerals and Energy
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Table 3.3
Historical Revenues

Fiscal Year Ending 6/30	Entrance Fee (1)	Coal Tax (2)	Civil Penalties (3)	Interest Income (4)	Total (5)
1997	38,000	57,549	570	151,678	247,798
1998	37,000	62,229	407	216,970	316,606
1999	81,000	94,218	3,191	220,825	399,234
2000	51,000	113,276	0	256,818	421,094
2001	41,000	161,913	0	285,050	487,962
2002	29,000	152,874	8,138	212,626	402,639
2003	52,000	91,206	0	183,841	327,047
2004	76,000	152,466	0	90,413	318,880
2005	51,000	154,038	0	140,831	345,869
2006	52,000	80,181	0	194,709	326,890
2007	40,000	47,208	1,150	285,982	374,340
2008	38,000	83,934	0	170,152	292,086
2009	60,000	119,996	0	338,655	518,652
2010	49,000	52,569	89,876	91,805	283,251
2011	34,000	77,586	0	98,746	210,332
Total	691,000	1,443,695	102,762	2,787,424	5,024,881

(6) Selected 2012 100,083 6,889
(7) Selected Trend 1.5%

Footnotes:

- (1) Client data
- (2) Client data
- (3) Client data
- (4) Client data
- (5) Sum of Col (1) through Col (4)
- (6) Selected based on historical data
- (7) Selected based on historical data

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Table 3.4 Acreage Projections					
<u>Projected Acreage of Permits Issued On or Before June 30, 2011</u>					
All Permit Types Combined					
Fiscal Year Ending 6/30	Acreage of In Force Permits (1)	Acreage of Forfeited Permits (2)	Acreage of Released Permits (3)	End of Year In Force Acreage (4)	Percent In Force (5)
2011	57,504	0	0	57,504	
2012	57,504	24	1,909	55,571	100%
2013	55,571	23	1,908	53,640	97%
2014	53,640	22	1,906	51,712	93%
2015	51,712	22	1,552	50,139	90%
2016	50,139	21	1,551	48,566	87%
2017	48,566	20	1,549	46,997	84%
2018	46,997	20	3,925	43,052	82%
2019	43,052	18	3,923	39,111	75%
2020	39,111	16	3,921	35,173	68%
2021	35,173	15	3,919	31,239	61%
2022	31,239	13	3,918	27,309	54%
2023	27,309	11	3,916	23,382	47%
2024	23,382	10	3,914	19,458	41%
2025	19,458	8	3,912	15,538	34%
2026	15,538	7	3,885	11,647	27%
2027	11,647	5	3,882	7,760	20%
2028	7,760	3	3,880	3,877	13%
2029	3,877	2	3,875	0	7%

Footnotes:

- (1) Projected, based on client data
- (2) Col (1) x Table 8
- (3) Col (1) x Table 7.1 through Table 7.3
- (4) Col (1) - Col (2) - Col (3)
- (5) Col (1) / Col (1) year 2011

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 4.1 Permit Company		
Permit Company	Currently Posted Security	Number of Permits
	(1)	(2)
Red River Coal	26,320,700	25
Paramont Coal	23,231,000	25
The Black Diamond	6,427,800	25
A & G Coal	30,476,625	22
Twin Star	7,370,200	12
Knox Creek Coal	4,448,000	11
Clintwood Elkhorn	9,626,400	10
Maggard Branch Coal	1,143,200	10
Sigmon Coal	10,148,875	8
Norton Coal	3,902,700	8
Nine Mile Spur	9,233,100	6
The Banner	2,081,400	6
Meadow Branch Coal	766,400	4
Cumberland River Coal	6,828,700	3
Harold Keene Coal	1,419,000	3
Hobcaw Coal	403,200	3
Patrick Coal	288,600	3
Mid-Vol Coal	2,746,000	2
Pigeon Creek Processing	1,213,000	2
Nally & Hamilton Enterprises	1,187,900	2
Meg-Lynn Land	1,030,000	2
Lone Mountain Processing	393,000	2
Wellmore Energy	326,300	2
Ambrose Branch Coal	313,400	2
Coal Technology International	201,600	2
Baden Reclamation	1,698,000	1
Virginia Fuel	1,136,000	1
Alliance Coal	733,000	1
Cat Coal	312,000	1
True Energy Fuels	288,000	1
K. M. H. Energy	150,600	1
Highwall Mining	123,000	1
Caliber Energy	102,200	1
Cane Patch Mining	100,000	1
Equinor	100,000	1
Airway Resources	100,000	1
Roaring Fork Mining	75,900	1
Mill Branch Coal	63,000	1
Clintwood TTC	60,600	1
Commonwealth Mining	40,200	1
Commonwealth Tipple	40,100	1
Corbin Mining	40,000	1
Double I Coal	10,000	1
Dickenson-Russell Coal	10,000	1
Total	156,709,700	219

Footnotes:

- (1) Client data
(2) Client data

Virginia Department of Mines, Minerals and Energy
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Table 4.2 Parent Company		
Parent Company	Currently Posted Security	Number of Permits
	(1)	(2)
Alpha Natural Resources	49,240,900	75
Wellmore Coal	13,026,800	44
Southern Coal	44,138,600	38
TECO Coal	9,626,400	10
Arch Coal	7,221,700	5
Jewell Resources	1,419,000	3
BKF Solutions	201,600	2
Xinergy of Virginia	288,000	1
<i>Individually Owned</i>	31,546,700	41
Total	156,709,700	219

Footnotes:

- | | |
|-----|-------------|
| (1) | Client data |
| (2) | Client data |

Virginia Department of Mines, Minerals and Energy
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Table 5				
Number of Permits by Mine Status and Underlying Security				
Security Type	Active	Closed no Reclamation	Closed with Reclamation	Total
	(1)	(2)	(3)	(4)
Surety	137	3	45	185
Surety and Cash	3	1	0	4
Surety, Cash, and Letter of Credit	1	0	0	1
Surety, CD, and Letter of Credit	1	0	1	2
Letter of Credit	2	0	1	3
Certificate of Deposit	3	0	2	5
Self Bonding	15	0	1	16
Self Bonding and Surety	2	0	0	2
Self Bonding, Surety and Cash	1	0	0	1
Total	165	4	50	219

Footnotes:

- (1) Client data
- (2) Client data
- (3) Client data
- (4) Sum of Col (1) through Col (3)

Virginia Department of Mines, Minerals and Energy
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Table 6.1a Number of Permits by Mine Status and Year of Issuance - Surface				
Issue Year	Active (1)	Closed no Reclamation (2)	Closed with Reclamation (3)	Total (4)
1983	8	0	0	8
1984	6	0	0	6
1985	3	0	0	3
1986	3	0	1	4
1987	0	0	1	1
1988	0	0	1	1
1989	2	1	1	4
1990	0	0	0	0
1991	1	0	0	1
1992	2	0	2	4
1993	2	0	0	2
1994	2	0	1	3
1995	0	0	1	1
1996	0	0	1	1
1997	3	0	1	4
1998	2	0	2	4
1999	6	0	0	6
2000	7	0	4	11
2001	4	0	1	5
2002	2	0	3	5
2003	8	0	2	10
2004	5	0	0	5
2005	2	0	0	2
2006	5	0	1	6
2007	7	0	0	7
2008	6	0	0	6
2009	3	0	0	3
2010	0	0	0	0
2011	1	0	0	1
Total	90	1	23	114

Footnotes:

- (1) Client data
- (2) Client data
- (3) Client data
- (4) Sum of Col (1) through Col (3)

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 6.1b Number of Acres by Mine Status and Year of Issuance - Surface				
Issue Year	Active (1)	Closed no Reclamation (2)	Closed with Reclamation (3)	Total (4)
1983	3,531	0	0	3,531
1984	1,107	0	0	1,107
1985	910	0	0	910
1986	2,485	0	274	2,759
1987	0	0	12	12
1988	0	0	66	66
1989	346	148	29	523
1990	0	0	0	0
1991	126	0	0	126
1992	792	0	175	967
1993	2,658	0	0	2,658
1994	1,113	0	68	1,181
1995	0	0	100	100
1996	0	0	242	242
1997	1,659	0	49	1,708
1998	477	0	265	742
1999	1,906	0	0	1,906
2000	5,458	0	592	6,051
2001	2,584	0	73	2,656
2002	916	0	1,276	2,192
2003	3,862	0	215	4,077
2004	3,791	0	0	3,791
2005	294	0	0	294
2006	3,551	0	11	3,562
2007	2,808	0	0	2,808
2008	1,728	0	0	1,728
2009	470	0	0	470
2010	0	0	0	0
2011	61	0	0	61
Total	42,635	148	3,446	46,229

Footnotes:

- (1) Client data. Maximum of Disturbed or Bonded Acres.
- (2) Client data. Maximum of Disturbed or Bonded Acres.
- (3) Client data. Maximum of Disturbed or Bonded Acres.
- (4) Sum of Col (1) through Col (3)

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 6.2a Number of Permits by Mine Status and Year of Issuance - Underground				
Issue Year	Active (1)	Closed no Reclamation (2)	Closed with Reclamation (3)	Total (4)
1983	5	0	6	11
1984	2	0	1	3
1985	1	0	1	2
1986	1	0	2	3
1987	1	0	1	2
1988	0	0	1	1
1989	1	0	0	1
1990	1	0	0	1
1991	0	0	0	0
1992	1	0	0	1
1993	0	0	0	0
1994	0	0	0	0
1995	1	0	0	1
1996	3	0	0	3
1997	2	0	0	2
1998	2	0	0	2
1999	0	0	1	1
2000	0	0	2	2
2001	2	2	0	4
2002	3	0	0	3
2003	2	0	0	2
2004	3	0	0	3
2005	3	0	0	3
2006	3	0	0	3
2007	0	0	0	0
2008	0	0	0	0
2009	2	0	0	2
2010	2	0	0	2
2011	1	0	0	1
Total	42	2	15	59

Footnotes:

- (1) Client data
- (2) Client data
- (3) Client data
- (4) Sum of Col (1) through Col (3)

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 6.2b Number of Acres by Mine Status and Year of Issuance - Underground				
Issue Year	Active (1)	Closed no Reclamation (2)	Closed with Reclamation (3)	Total (4)
1983	385	0	60	445
1984	104	0	17	121
1985	5	0	50	55
1986	50	0	28	78
1987	17	0	8	25
1988	0	0	4	4
1989	16	0	0	16
1990	1,201	0	0	1,201
1991	0	0	0	0
1992	8	0	0	8
1993	0	0	0	0
1994	0	0	0	0
1995	4	0	0	4
1996	965	0	0	965
1997	162	0	0	162
1998	596	0	0	596
1999	0	0	12	12
2000	0	0	101	101
2001	1,108	22	0	1,130
2002	36	0	0	36
2003	28	0	0	28
2004	65	0	0	65
2005	153	0	0	153
2006	77	0	0	77
2007	0	0	0	0
2008	0	0	0	0
2009	107	0	0	107
2010	30	0	0	30
2011	27	0	0	27
Total	5,143	22	280	5,445

Footnotes:

- (1) Client data. Maximum of Disturbed or Bonded Acres.
- (2) Client data. Maximum of Disturbed or Bonded Acres.
- (3) Client data. Maximum of Disturbed or Bonded Acres.
- (4) Sum of Col (1) through Col (3)

Virginia Department of Mines, Minerals and Energy
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Table 6.3a Number of Permits by Mine Status and Year of Issuance - Other				
Issue Year	Active (1)	Closed no Reclamation (2)	Closed with Reclamation (3)	Total (4)
1983	19	0	7	26
1984	1	0	0	1
1985	2	0	0	2
1986	2	0	0	2
1987	1	0	0	1
1988	0	1	3	4
1989	1	0	1	2
1990	0	0	0	0
1991	0	0	0	0
1992	0	0	0	0
1993	1	0	0	1
1994	1	0	0	1
1995	0	0	0	0
1996	0	0	0	0
1997	0	0	0	0
1998	1	0	0	1
1999	0	0	0	0
2000	0	0	0	0
2001	2	0	0	2
2002	0	0	1	1
2003	0	0	0	0
2004	2	0	0	2
2005	0	0	0	0
2006	0	0	0	0
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0
Total	33	1	12	46

Footnotes:

- (1) Client data
- (2) Client data
- (3) Client data
- (4) Sum of Col (1) through Col (3)

Virginia Department of Mines, Minerals and Energy
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Table 6.3b Number of Acres by Mine Status and Year of Issuance - Other				
Issue Year	Active (1)	Closed no Reclamation (2)	Closed with Reclamation (3)	Total (4)
1983	2,800	0	245	3,045
1984	241	0	0	241
1985	400	0	0	400
1986	211	0	0	211
1987	657	0	0	657
1988	0	32	74	106
1989	14	0	11	25
1990	0	0	0	0
1991	0	0	0	0
1992	0	0	0	0
1993	93	0	0	93
1994	221	0	0	221
1995	0	0	0	0
1996	0	0	0	0
1997	0	0	0	0
1998	11	0	0	11
1999	0	0	0	0
2000	0	0	0	0
2001	720	0	0	720
2002	0	0	25	25
2003	0	0	0	0
2004	75	0	0	75
2005	0	0	0	0
2006	0	0	0	0
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0
Total	5,443	32	355	5,830

Footnotes:

- (1) Client data. Maximum of Disturbed or Bonded Acres.
- (2) Client data. Maximum of Disturbed or Bonded Acres.
- (3) Client data. Maximum of Disturbed or Bonded Acres.
- (4) Sum of Col (1) through Col (3)

Virginia Department of Mines, Minerals and Energy
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Table 6.4a Number of Permits by Mine Status and Year of Issuance - All Permits				
Issue Year	Active (1)	Closed no Reclamation (2)	Closed with Reclamation (3)	Total (4)
1983	32	0	13	45
1984	9	0	1	10
1985	6	0	1	7
1986	6	0	3	9
1987	2	0	2	4
1988	0	1	5	6
1989	4	1	2	7
1990	1	0	0	1
1991	1	0	0	1
1992	3	0	2	5
1993	3	0	0	3
1994	3	0	1	4
1995	1	0	1	2
1996	3	0	1	4
1997	5	0	1	6
1998	5	0	2	7
1999	6	0	1	7
2000	7	0	6	13
2001	8	2	1	11
2002	5	0	4	9
2003	10	0	2	12
2004	10	0	0	10
2005	5	0	0	5
2006	8	0	1	9
2007	7	0	0	7
2008	6	0	0	6
2009	5	0	0	5
2010	2	0	0	2
2011	2	0	0	2
Total	165	4	50	219

Footnotes:

- (1) Sum of Tables 6.1a through 6.3a Col (1)
- (2) Sum of Tables 6.1a through 6.3a Col (2)
- (3) Sum of Tables 6.1a through 6.3a Col (3)
- (4) Sum of Col (1) through Col (3)

Virginia Department of Mines, Minerals and Energy
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Table 6.4b Number of Acres by Mine Status and Year of Issuance - Total				
Issue Year	Active (1)	Closed no Reclamation (2)	Closed with Reclamation (3)	Total (4)
1983	6,716	0	305	7,021
1984	1,452	0	17	1,469
1985	1,315	0	50	1,365
1986	2,746	0	302	3,048
1987	674	0	20	694
1988	0	32	144	176
1989	376	148	40	565
1990	1,201	0	0	1,201
1991	126	0	0	126
1992	800	0	175	975
1993	2,751	0	0	2,751
1994	1,334	0	68	1,402
1995	4	0	100	104
1996	965	0	242	1,207
1997	1,822	0	49	1,871
1998	1,084	0	265	1,349
1999	1,906	0	12	1,917
2000	5,458	0	693	6,151
2001	4,411	22	73	4,506
2002	952	0	1,301	2,253
2003	3,890	0	215	4,104
2004	3,931	0	0	3,931
2005	447	0	0	447
2006	3,628	0	11	3,639
2007	2,808	0	0	2,808
2008	1,728	0	0	1,728
2009	577	0	0	577
2010	30	0	0	30
2011	88	0	0	88
Total	53,221	202	4,081	57,504

Footnotes:

- (1) Sum of Tables 6.1b through 6.3b Col (1)
- (2) Sum of Tables 6.1b through 6.3b Col (2)
- (3) Sum of Tables 6.1b through 6.3b Col (3)
- (4) Sum of Col (1) through Col (3)

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 7.1			
Release Rates for Active Permits			
Year Since Issuance	Active	Phase 1 Released	Phase 2 Released
	(1)	(2)	(3)
1	0.00%	0.00%	33.33%
2	0.00%	0.00%	50.00%
3	0.00%	0.00%	100.00%
4	0.00%	33.33%	
5	0.00%	50.00%	
6	0.00%	100.00%	
7	8.33%		
8	9.09%		
9	10.00%		
10	11.11%		
11	12.50%		
12	14.29%		
13	16.67%		
14	20.00%		
15	25.00%		
16	33.33%		
17	50.00%		
18	100.00%		
19			
20			

Footnotes:

- (1) Selection
- (2) Selection
- (3) Selection

Virginia Department of Mines, Minerals and Energy
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Table 7.2			
Release Rates for Closed without Reclamation Permits			
Year Since Issuance	Closed	Phase 1 Released	Phase 2 Released
	(1)	(2)	(3)
1	0.00%	0.00%	33.33%
2	0.00%	0.00%	50.00%
3	0.00%	0.00%	100.00%
4	0.00%	33.33%	
5	0.00%	50.00%	
6	0.00%	100.00%	
7	12.50%		
8	14.29%		
9	16.67%		
10	20.00%		
11	25.00%		
12	33.33%		
13	50.00%		
14	100.00%		
15			
16			
17			
18			
19			
20			

Footnotes:

- (1) Selection
- (2) Selection
- (3) Selection

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 7.3			
Release Rates for Closed with Reclamation Permits			
Year Since Issuance	Active	Phase 1 Released	Phase 2 Released
	(1)	(2)	(3)
1			33.33%
2			50.00%
3			100.00%
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Footnotes:

- (1) Selection
- (2) Selection
- (3) Selection

Virginia Department of Mines, Minerals and Energy
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Table 8 Forfeiture Rates			
Year Since Issuance	Surface	Underground	Other
	(1)	(2)	(3)
1	0.000%	0.000%	0.000%
2	0.000%	0.000%	0.000%
3	0.000%	0.000%	0.000%
4	0.125%	0.050%	0.040%
5	0.125%	0.050%	0.040%
6	0.125%	0.050%	0.040%
7	0.125%	0.050%	0.040%
8	0.125%	0.050%	0.040%
9	0.125%	0.050%	0.040%
10	0.125%	0.050%	0.040%
11	0.125%	0.050%	0.040%
12	0.125%	0.050%	0.040%
13	0.125%	0.050%	0.040%
14	0.125%	0.050%	0.040%
15	0.125%	0.050%	0.040%
16	0.125%	0.050%	0.040%
17	0.125%	0.050%	0.040%
18	0.125%	0.050%	0.040%
19	0.125%	0.050%	0.040%
20+	0.125%	0.050%	0.040%

Footnotes:

- (1) Selection
- (2) Selection
- (3) Selection

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Mine Status	Factor
	(1)
Active	1.00
Closed no Reclamation	0.80
Closed with Reclamation	0.67

Footnotes:

(1)

Selection

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Permit Status	Factor
	(1)
Active	1.00
Phase 1 Released	0.40
Phase 2 Released	0.15

Footnotes:

(1)

Selection

Virginia Department of Mines, Minerals and Energy
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Table 9.3 Adjustment Factors for Size of Bond	
Permit Status	Factor
	(1)
Less than \$10,000	2.50
Between \$10,000 and \$100,000	1.00
Above \$100,000	0.38

Footnotes:

(1)

Selection

Virginia Department of Mines, Minerals and Energy
Coal Surface Mining Reclamation Fund

Table 10			
<u>Average Reclamation Cost Per Acre</u>			
State	Surface	Underground	Other
Virginia	4,519.89	11,259.74	9,659.80
West Virginia	2,898.24	13,259.83	9,575.60
Ohio	7,217.71	8,899.96	14,035.29

State Footnotes:

Virginia:	Client Data
West Virginia:	West Virginia Mine Reclamation Analysis
Ohio:	Ohio Mine Reclamation Analysis

Virginia Department of Mines, Minerals and Energy
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Table 11 Projected Investment Rates Based on US Treasury Returns in Fall 2011		
Fiscal Year Ending 6/30	Investment Return (%) (1)	Discount Factors (2)
2012	0.125	99.938%
2013	0.188	99.813%
2014	0.250	99.564%
2015	0.625	99.130%
2016	1.000	98.332%
2017	1.188	97.268%
2018	1.375	96.037%
2019	1.625	94.618%
2020	1.875	92.991%
2021	2.125	91.168%
2022	2.206	89.235%
2023	2.288	87.274%
2024	2.369	85.289%
2025	2.450	83.282%
2026	2.531	81.258%
2027	2.613	79.221%
2028	2.694	77.173%
2029	2.775	75.119%
2030	2.856	73.062%
2031	2.938	71.005%
2032	3.019	68.952%
2033	3.100	66.905%
2034	3.181	64.868%
2035	3.263	62.843%
2036	3.344	60.833%
2037	3.425	58.842%
2038	3.506	56.871%
2039	3.588	54.923%
2040	3.669	53.000%
2041	3.750	51.104%

Footnotes:

- (1) Based on US Treasury Returns in Fall 2011; Returns not in **Bold** are interpolated from US Treasury Rates
- (2) Based on Col (1)