

Comments on the 6th PADEP Bituminous Mine Subsidence and Land Conservation Act Report
(“Act 54” Report on Underground Coal Mining, 2018-2022)
presented to the PADEP Citizens Advisory Council on 14 October 2025
by James A. Schmid, Ph. D., on behalf of the Citizens Coal Council of Washington, Pennsylvania

For the benefit of many new members of this Council, I offer some background for my comments.

BACKGROUND

Bituminous coal has been mined underground in Pennsylvania since the mid-1700s, to be burnt for heat, metal production, and electricity. Underground mining using traditional “room-and-pillar” (R&P) extraction removes some 35 to 60% of the coal present beneath surface properties owned mostly NOT by coal operators. Pillars of coal hold up the mine roof, sometimes reinforced by wooden frameworks. Mine collapse long posed both an immediate hazard to workers and a long-term, unpredictable hazard to surface features lasting many years after mine closure. Both mine void collapse and acid mine drainage (AMD) that poisons streams have been addressed in recent decades by mine engineers responding to regulations. Modern R&P mining damage is essentially confined to mine surface activity sites. A greater percentage extraction of coal resource occurs using high extraction “pillar removal” at some R&P mines.

- Coal refuse disposal directly into Pennsylvania streams was prohibited in 1913.
- AMD pollution was addressed by the Pennsylvania Clean Streams Law in 1937, amended in the 1940s and 1960s, and again to align with the federal Clean Water Act in the 1970s and 1980s.
- Pennsylvania mine subsidence insurance against legacy coal mine damage was established in 1961 to supplement typical homeowners’ insurance.
- The Bituminous Mine Subsidence and Land Conservation Act of 1966 (BMSLCA) prohibited damage from surface subsidence in order to protect Pennsylvania homes, public and quasi-public buildings (churches, hospitals, schools), and cemeteries. It was amended in 1980 to align with federal surface mining requirements.

LONGWALL MINING (LWM) AND INTENTIONAL SUBSIDENCE TO SURFACE FEATURES

“Longwall” mining (LWM) technology was developed in the mid-20th century to increase coal recovery beyond 70% by using fewer miners, automated roof jacks and coal shearers, and continuous haulage to speed up coal removal from unsupported panels between conservatively R&P-mined gate entries that do not collapse. The roofs of rectangular panels hundreds of feet wide and thousands of feet long then are allowed to collapse behind movable hydraulic jacks that temporarily protect miners and equipment as coal is removed. LWM roof collapse translates into subsidence of overlying rock layers that can extend all the way up to the land surface. The uneven surface subsidence damage to structures, roads, water supplies, streams, and wetlands extends far beyond the limits of the longwall mine’s industrial surface activities.

LWM technology is especially well suited to extract the 6-foot-thick horizontal Pittsburgh coal seam beneath Washington and Greene Counties in southwestern Pennsylvania. BMSLCA had disallowed intentional surface subsidence. In the 1980s operators challenged Pennsylvania’s prohibition on surface subsidence, losing every case that sought to overturn BMSLCA in PA and federal courts.

Underground mining of bituminous coal at present takes place in 10 counties of western Pennsylvania. Longwall mining, which causes most of the mining impacts, is used only in Washington and Greene Counties. Prior to Act 545 there was some longwall mining farther east in Cambria, Indiana, and Armstrong Counties using panels much smaller than those employed today.



YELLOW = LONGWALL MINING IN USE

Operators then sought to persuade the public and elected officials that longwall mines' surface subsidence would occur immediately after mining, while those mines were still active and operators were still present who could take measures to lessen subsidence damage and repair or restore all actual damages promptly. The industry wrote legislation for discussion by a Deep Mine Mediation Project, begun in 1986 to enable LWM. That Project's final consensus proposal formed the basis (almost *verbatim*) of what was to become the adopted BMSLCA amendments known as Act 54 of 1994. Avoidance and minimization of damage to surface features were no longer required; instead, damage was allowed but post-mining repairs were expected for damages to structures and water supplies. The 1966 BMSLCA had not addressed environmental damages, and Act 54 did not either. Act 54 did not weaken or otherwise change the legal protections afforded to streams, wetlands, or other water resources, specifically including the PA Clean Streams Law. Pennsylvania Department of Environmental Protection (PADEP) permit application modules on paper began to "require" identification of resources at risk.¹ LWM subsidence damages to streams, wetlands, groundwater, and other natural resources overlying coal deposits, although widespread, have been much less carefully regulated by PADEP than damages to structures. PADEP staff are rewarded for promptly approving permit applications²

¹ Act 54 "put in place a 'you break it, you fix it' rule for many types of structures that could be damaged by deep mining...", explained PADEP Secretary James Seif in his June 1999 letter transmitting the first Act 54 Five-Year Assessment to Governor Tom Ridge, the General Assembly, the Citizens Advisory Council, and the Environmental Quality Board. Damages cannot be identified or assessed, however, in the absence of thorough pre-mining inventory of features at risk. Every Act 54 five-year report has documented critical inventory deficiencies in mining permit applications approved by PADEP.

² The Governor's July 2012 Executive Order concerning PADEP permit decisions includes a Section 5 that reads as follows: "**Staff Evaluation.** The Department shall establish performance standards for staff engaged in permit reviews and consider compliance with the review deadlines a factor in any job performance evaluations." Effective protection of people and environment was not mentioned.

compiled by mine operators---permit information with incomplete inventories that are seldom checked and virtually never used for enforcement or deterrence.

Due to the controversies about anticipated effects of LWM, the General Assembly wisely mandated in Act 54 that PADEP prepare reports at 5-year intervals identifying and analyzing the impacts and repairs that actually resulted from the underground mining it newly authorized. These reports are to provide the basis for improving the legislation and the executive implementation of mining permits. PADEP was authorized to secure the assistance of outside professionals when preparing its Act 54 reports. After 30 years, six reports are now available.

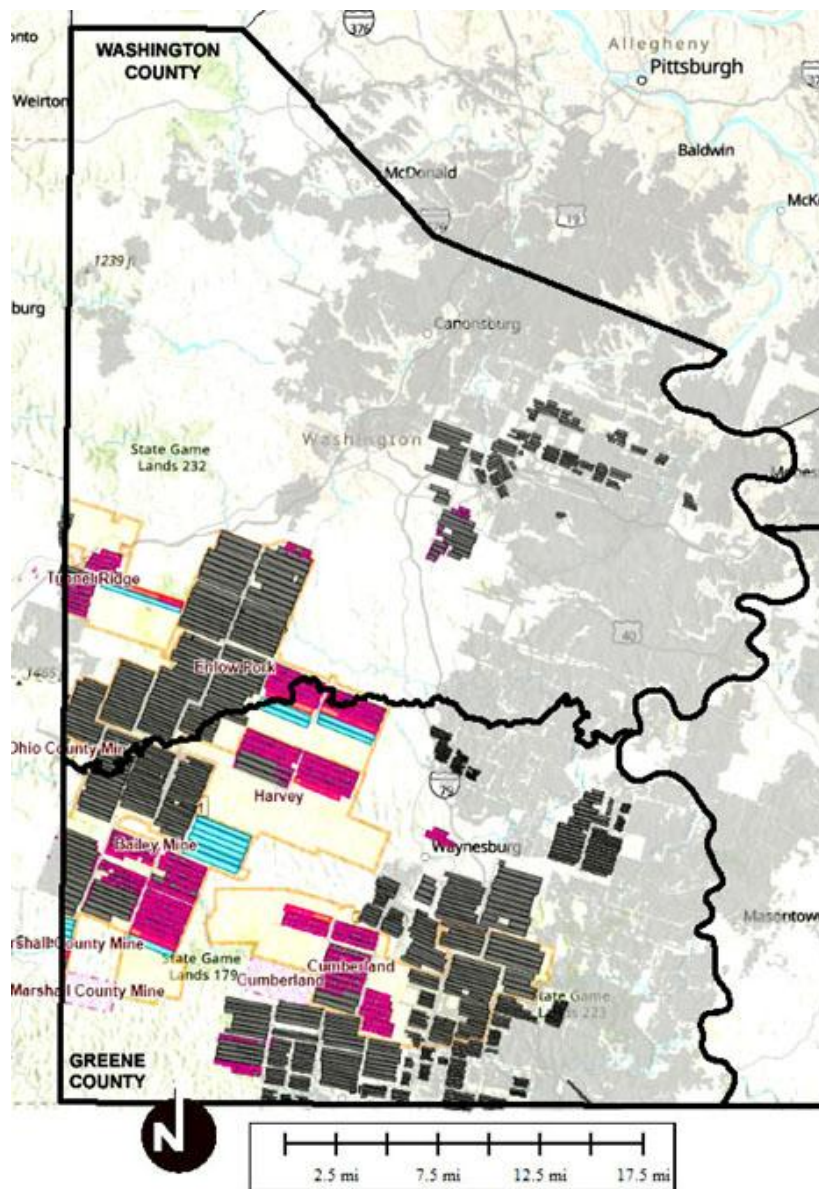
THE ACT 54 REPORTS DOCUMENT CHRONIC & HABITUAL SYSTEMIC FAILURES BY PADEP

The first report on impacts of mining during the 1993-1998 period was prepared in-house by PADEP staff and severely criticized for lack of objectivity, thoroughness, and overall credibility, even after a supplement was issued. The next four reports were prepared by California University of Pennsylvania (2nd, 1998-2003) and University of Pittsburgh (3rd, 2003-2008; 4th, 2008-2013; and 5th, 2013-2018). Those reports sought to put together PADEP information from permits and enforcement, to identify impacts and data gaps more comprehensively, and to offer some impact analysis and recommendations for damage reduction. Each report demonstrates the absence of inventory information from mining permits that is critically important if impacts were to be assessed credibly. Even though they missed opportunities for cumulative analysis, these reports represent by far the most detailed assessment of longwall mining impacts available in the United States. The 6th Report, like the 1st, was prepared by anonymous PADEP staff. It represents a major step backward.

This Council spent considerable time and effort reviewing the first five reports, including taking its own field trips, soliciting public comments and holding public hearings. It then provided carefully reasoned comments to PADEP along with recommendations for avoiding and repairing future mining impacts. Act 54 report recommendations, as well as comments from the public and from this Council, have been studiously ignored by PADEP. The environmental inventory information specified by PADEP coal mine application modules and by long-existing PADEP technical guidance is still lacking from mining permit applications, and thus practicable impact assessment on many resources is precluded. Moreover, PADEP still is unable to link its pre-application permit data efficiently with its post-mining enforcement (BUMIS) data. It is clear from the contracts of university preparers of five-year reports that most of their cost stemmed from the enormous labor necessary to link up the scattered information available to PADEP in order to begin to address the impacts of underground mining.

Why are Citizens Coal Council and its grassroots members disappointed with this 6th Report? It consists of about 30 pages of text (including 6 pages of findings and 2 pages of recommendations), along with 190 pages of charts drawn from its BUMIS database with 153 pages of mine maps in an appendix. What is seriously wrong with the report is that it not only lacks the mandated analysis of mining impacts but also lacks credibility of the factual data it presents. Clearly, ever-increasing damage is occurring to the people and resources of the Commonwealth. Even simple things such as 6th Report data tables, however, often are mislabeled or wrongly cited and contradict each other, rendering important parts of the report unintelligible and incoherent. Here are specific examples from the 6th Report in context with previous Act 54 five-year reports. Our written review contains many more similar comments, but these comments paint a clear picture..

But first, I want to point out the extent of underground (primarily longwall) mining in the sacrifice zone of Washington and Greene Counties. Enormous areas are affected. The 2025 PADEP online map of currently approved mining outlines mine permit areas in orange, approved mining in red, pending approvals in blue, mined-out panels as black bars, and legacy mined-out areas as gray.



1. Our **Table 1** provides historical trend information on the number of mines and extent of mining, by mining method, expanded beyond the 6th Report's limited comparisons with only the 5th Report period to show 20-year trends. The 6th Report data cannot be interpreted, however, because of the 21% overlap of 5th and 6th Report time periods adopted by PADEP (a major change of report period). PADEP could easily have shown the extent of mining in each 5-year period on its 6-month mine maps. No longer-term trend data were presented, although they are readily available in PADEP's prior Act 54 reports. The overlap in reporting periods unnecessarily makes the 6th Report numbers inaccurate. There is no way for any reader to correct them. Yet there is no mention of the fundamental problem with these basic data in the 6th Report. This is not rocket science. It reflects simple incompetence. Changing report periods could be acceptable, but not if resulting overlap undermines the credibility of reported trends.

NUMBER OF MINES AND ACREAGE UNDERMINED DURING ASSESSMENT PERIOD

TABLE 1



Data presented below for 3rd through 5th periods were *not mentioned* in the 6th Report, except for the number of mines in the 5th Assessment Period.

■ Longwall Mine □ Traditional room-and-pillar mine ■ Room-and-pillar mine with pillar removal ("full-retreat" mining)



2. Our **Table 2** shows that that most recorded impacts once again are due overwhelmingly to longwall mining, not to R&P or pillar-removal mines. This has been true in every Act 54 report. Did mine impacts really increase 31% (486 to 711) from the 5th to the 6th period despite fewer mines and fewer acres undermined? Room-and-pillar mining impacts rose sevenfold (from 30 to 206) from mining of virtually the same acreage by a third fewer mines from 5th to 6th periods. PADEP never noticed that its 6th Report numbers do not add up and offered no explanation for this worsening trend.

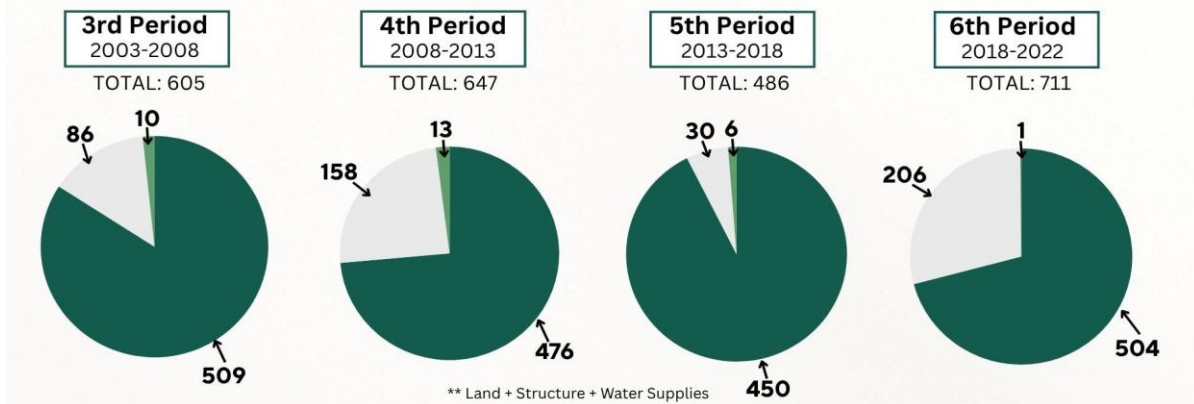
MINE-LIABLE IMPACTS DURING ASSESSMENT PERIOD

TABLE 2



Number of mine-liable impacts** from active mines by type of mining. Data presented below for 3rd through 5th periods were *not included in 6th Report*.

■ Longwall Mine □ Traditional room-and-pillar mine ■ Room-and-pillar mine with pillar removal ("full-retreat" mining)



3. The 6th Report focuses on total damage claims while claiming that a quarter were not related to mining. Damages judged by PADEP as not related to underground mining were not removed from the statistics, thereby overstating the number of actual damages and the proportion of damages that were “resolved” to the satisfaction of PADEP. Our **Table 3** shows that only 47% (475 of 1,007) of 6th-period mine-related damage claims (all categories) were “resolved” within the period. Prompt repairs and recoveries are not assured after LWM mining damage. This has been a chronic problem with PADEP’s performance of its legal duties under Act 54. Yet it gets no attention from 6th Report authors.

4. Our **Table 4** begins with the last column of Table 3. It shows that 6th-period actual damage resolutions were primarily (68%) secret agreements with landowners or (16%) outright operator purchases of damaged properties. Only 7% of damages were repaired or recovered----NOT what Act 54 promised. Repairs are the smallest group, not the largest (which would be expected if promised actions had been taken). PADEP claims that it cannot inquire into the details of operator-landowner agreements or sales of damaged properties. But it has “shadow inspectors” in the field observing the progress of longwall panels. Those inspectors easily could keep track of damages repaired and structures simply demolished.

TABLE 3. Status of damage claims reported during the 6th Act 54 Period (2018-2022).

Category	Total Claims	Not Mine-Related*	Unresolved**	Resolved Mine-Related Claims
Structures	455	66 (15%)	129 (28%)	260 (57%)
Water Loss	273	86 (32%)	83 (30%)	104 (38%)
Water Contamination	173	90 (52%)	36 (21%)	47 (27%)
Land	106	16 (15%)	26 (25%)	64 (60%)
TOTAL	1,007	258 (26%)	274 (27%)	475 (47%)

* includes “no liability”, “withdrawn”, “not covered by BMSCLA”, “referred to another Division”

** includes “claim form not returned to DEP”, “owner did not respond”, or a blank

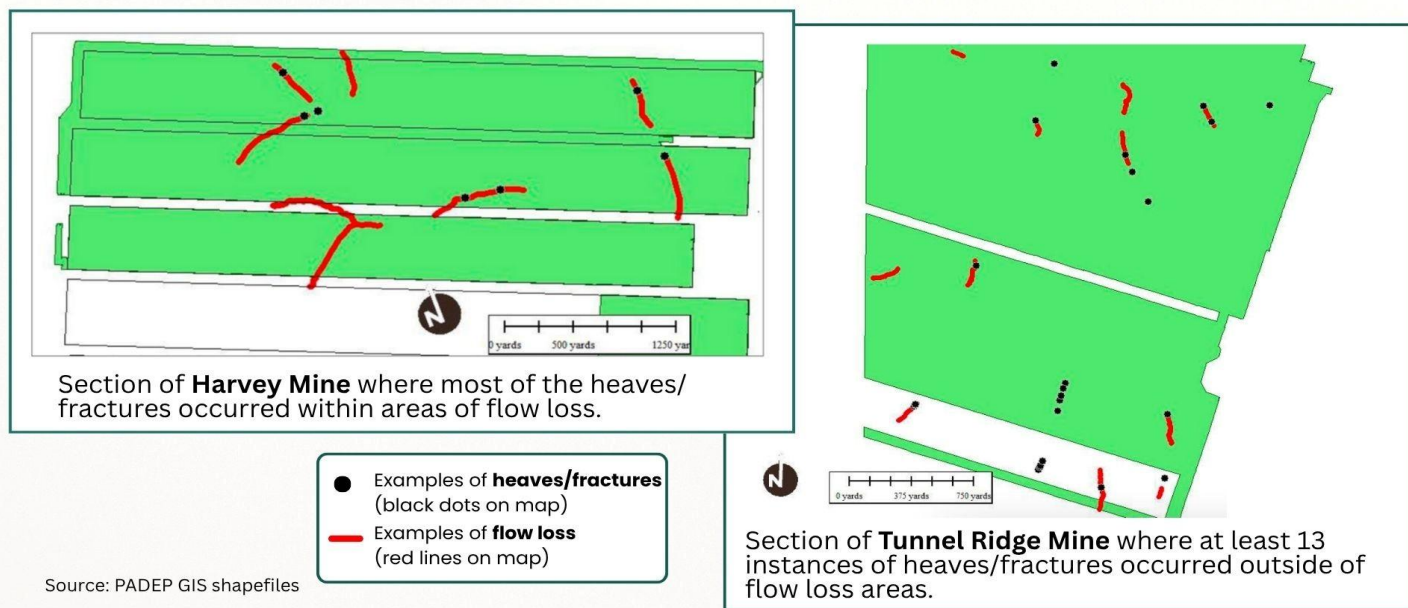
TABLE 4. Type of resolution for mine-related claims settled during the 6th Act 54 Period (2018-2022). Note that “Repair” represents the smallest category of resolution.

Resolved Category	Mine-Related Claims	Repair	Property Purchase	Agreement	Other/ Misc.**
Structures	260	4 (1.5%)	53 (20%)	194 (75%)	9
Water Loss	104	9* (9%)	6 (6%)	70 (67%)	19
Water Contam.	47	3* (6%)	2 (4%)	28 (60%)	14
Land	64	18 (28%)	13 (20%)	30 (47%)	3
TOTAL	475	34 (7%)	74 (16%)	322 (68%)	45 (9%)

5. As an ecologist I am much concerned with the protection of streams and wetlands. Where the rocks forming a headwater streambed are heaved and fractured by longwall mine subsidence, that stream is likely to lose flow. Flow may or may not return. Our **Figure 1** from the 6th Report shows a segment of the Harvey Mine where stream flow loss and heaves/fractures occur together, as expected. A segment of the Tunnel Ridge Mine, however, shows a highly suspicious and unanalyzed lack of association between many recorded LWM heave/fracture incidents and flow loss in streams. This highlights the disconnect between permit information and BUMIS information. This odd situation was not noticed by PADEP or mentioned in its 6th Report. Like its predecessors, the 6th Report is silent regarding designated and existing uses of streams as well as long-term mining damage to aquatic habitat.

THE DISCONNECT BETWEEN PERMIT INFORMATION AND BUMIS INFORMATION

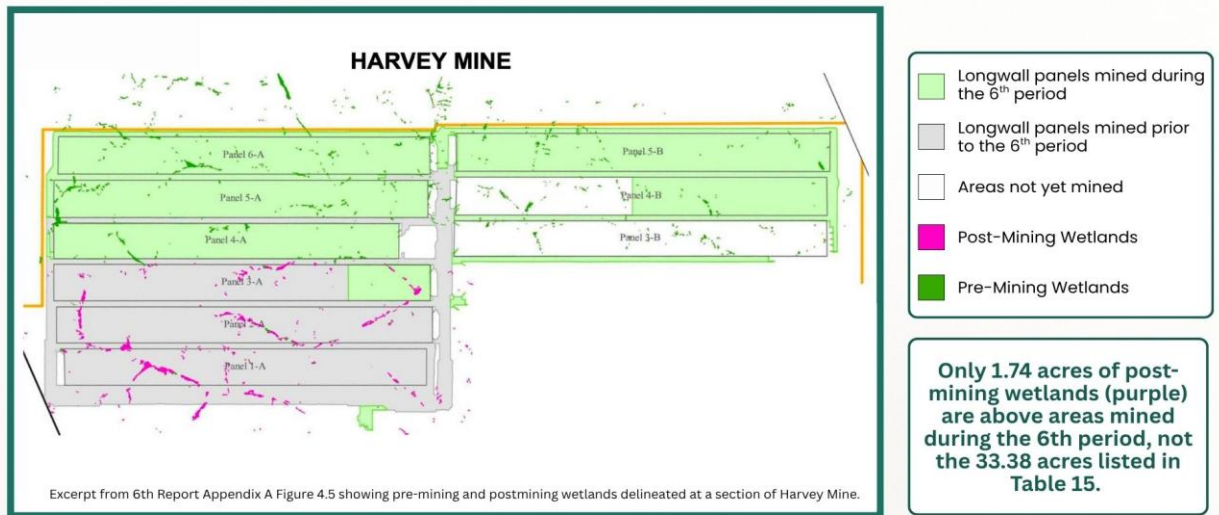
FIGURE 1



6. In the 6th Report, as in all its predecessors, the information concerning wetlands is a jumbled mess. The 6th Report does not even tally accurately the sparse information it displays. Our hard-to-read **Figures 2 and 3** example excerpts from the 6th Report show LWM wetlands claimed as absent pre-mining that suddenly appear post-mining, documenting PADEP's failure to field-check pre-mining delineations or report wetlands accurately and highlighting the continued ignorance of wetlands on the part of its mining staff. PADEP staff virtually never verify operator wetland delineations and have never asked permit applicants to seek U.S. Army Corps of Engineers verification. It is not possible to compare pre-mining wetlands with post-mining wetlands in **Figure 2**. By measurement the figure shows 1.74 acres of wetland above the (green) panels mined during the 6th period, NOT the 33.38 acres that the 6th Report claims. Clearly, the 6th Report authors have no understanding of or interest in wetlands.

FAILURE TO FIELD-CHECK PRE-MINING DELINEATIONS OR REPORT WETLANDS ACCURATELY

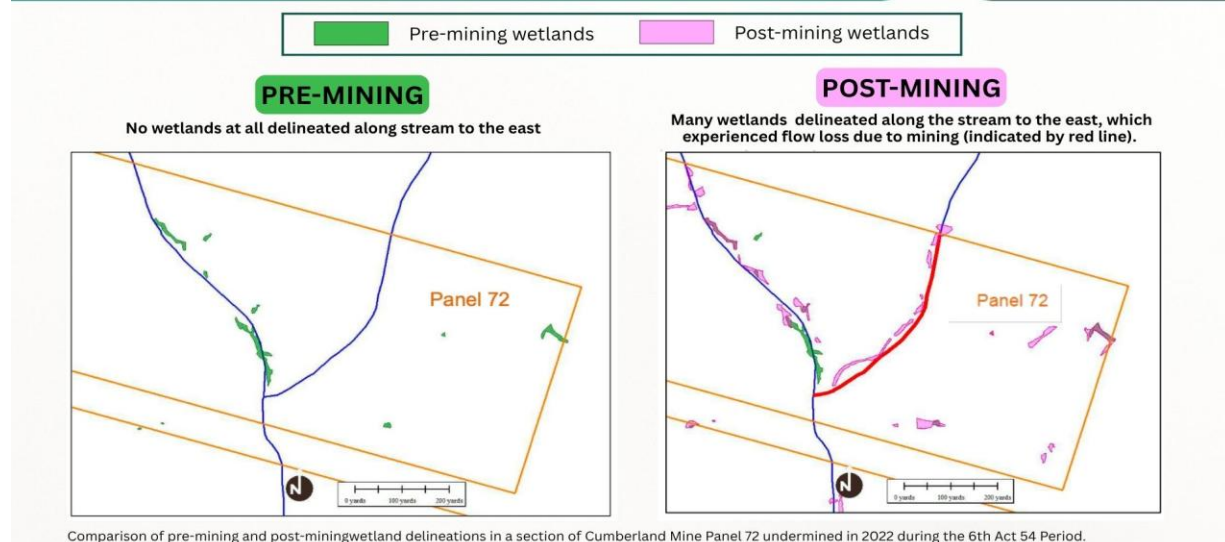
FIGURE 2



Our **Figure 3** excerpt provides another example of a problematic field condition not mentioned in the 6th Report. In Figure 3 there were riparian wetlands along the western (left) tributary stream that crosses Panel 72. Those wetlands are claimed to have increased post-mining. Perhaps. Meanwhile, there were no reported wetlands pre-mining along the eastern tributary that crosses Cumberland Mine Panel 72, although PADEP made no attempt to verify this claim. Post-mining, riparian wetlands have become abundant along the eastern (right) tributary. But this stream is colored red, meaning it was dewatered by longwall panel subsidence during the 6th period. It is not credible that riparian wetlands would develop promptly along a dewatered stream. But 6th Report authors offer no explanation of a problem they do not even recognize.

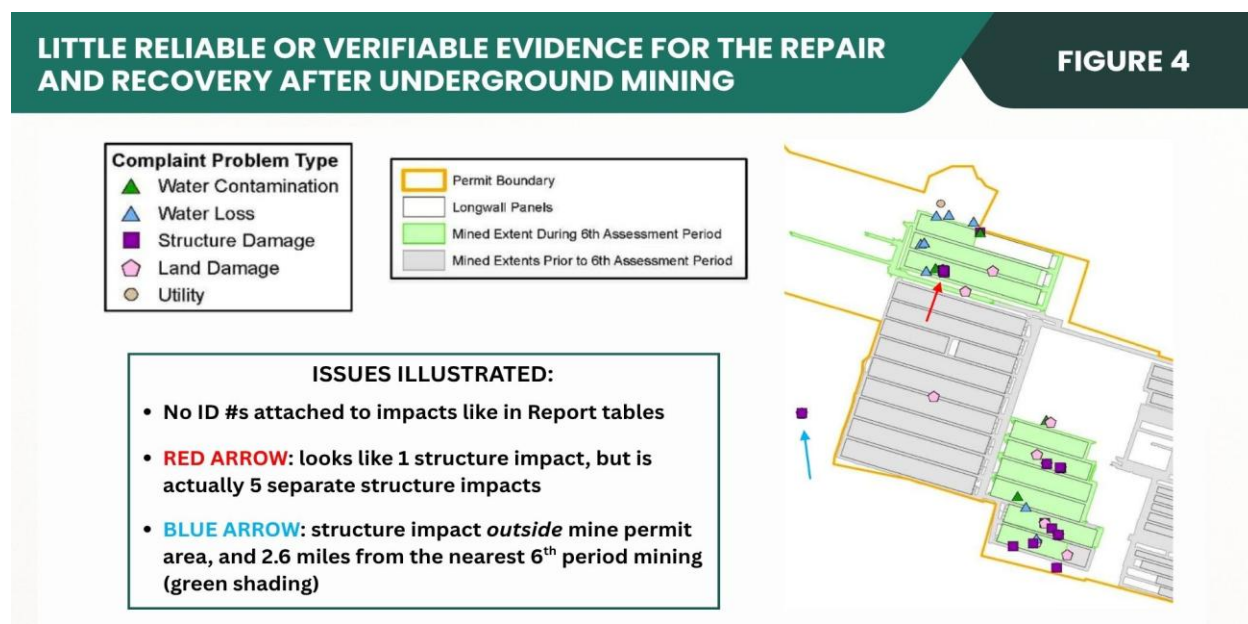
FAILURE TO FIELD-CHECK PRE-MINING DELINEATIONS OR REPORT WETLANDS ACCURATELY

FIGURE 3



7. The structure damage and other impacts shown in our **Figure 4** cannot be traced in the 6th Report to sort out data conflicts ignored by PADEP report authors. Despite the request of OSM reviewers, PADEP failed to provide identification numbers on maps that would link incidents with locations on the ground. From our Right to Know Law information we could determine that this graphic apparently piles five separate buildings into the symbol to which our red arrow points. That cannot be ascertained from the 6th Report. More damages here are tallied in the 6th Report than shown on this drawing from the Cumberland Mine.

Possibly more important, our blue arrow points to structural damage apparently deemed mine-responsible by PADEP. This structure is located more than 3,500 feet outside the mine permit boundary, where there was no required pre-mining inventory. It also is located more than 2.5 miles distant from any 6th period mining (green panels). Prior five-year Act 54 reports have examined such “far-field” impacts, about which the 6th Report remains totally silent, although these impacts still occur. As previously mentioned, non-disclosure agreements for two-thirds of “resolved” LWM damages means that there is little reliable or verifiable evidence for the repair and recovery after underground mining as anticipated by Act 54.



Excerpt from Appendix A Figure 2.2 “Complaints – Cumberland Mine”.

8. The 6th Report fails to disclose how long recorded damages took to be “resolved,” whether the length of resolution time differed by type/method or depth of mining, or whether resolution times have changed (shortened/lengthened) over the reported five-year periods. These should be key conclusions.

9. No data were provided regarding predicted LWM hydrologic damages to streams or whether any such operator predictions proved accurate, and this recurring problem in five-year reports was not mentioned.

10. Data on start and end dates for specific stream flow augmentation are provided, but the 6th Report is entirely silent on the specifics of any actual remediation for LWM stream pooling impacts. It also is silent regarding how the start of any remediation (for either flow loss or pooling) related to when the stream was damaged, what type(s) of remediation was implemented, when any damaged stream segment was fully restored, the status of each stream’s remediation at the end of the period, how many stream of remediation efforts had exceeded the prescribed 5-year limit, what ecological changes resulted, or how any those factors have changed over time. Out of sight keeps all these LWM impacts out of mind, beyond the scrutiny and purview of the General Assembly, the Governor, the Attorney General, and the public.

11. The 82 LWM Stream Recovery Evaluations (SREs) from operator consultants submitted during the 5th five-year period were reviewed by the 5th Report, and dismal conclusions were set forth in it. SREs then were reexamined at length by this Council in its 2021 Act 54 review of the 5th Report, and many concerns were expressed to PADEP. Nothing was said about SREs in the 6th Report, except for a claim that a PADEP review of SREs was underway and was expected to be published in 2024. That did not happen. There is still no evidence for timely post-mining recovery of LWM-impacted streams in Pennsylvania.

12. Cumulative Hydrologic Impact Assessments (CHIAs) once again were ignored by the 6th Report. By now, there should be many such PADEP-generated assessments on the hydrologic impacts of underground mining. PADEP, however, continues not to require even the hydrologic information specified in its old technical guidance and fails to update that obsolete guidance, despite the oft-restated concerns of this Council and of others about LWM mining impacts on hydrology. PADEP continues to generate perfunctory checkoff boxes instead of CHIAs, although excellent prototype CHIAs are available. It does not take seriously the Department's mandated responsibility to analyze hydrologic impacts of underground mining.

13. Avoidable discrepancies in posted raw BUMIS data brought to PADEP's attention during the 6th period could have been eliminated but were not, thus precluding serious analysis of LWM impacts in its 6th Report. On behalf of CCC we posted fourteen pages of comments in May 2021 (as solicited by PADEP online) and twelve pages in December 2021, before the 6th Report writing was begun. The latest PADEP online posting of disorganized BUMIS data (only stream impacts) was made during July 2024. Wetland data were last updated online in 2021. Clearly, supplying the public with timely, credible information on underground mining impacts, whether online or in five-year reports, is not a priority for PADEP.

14. The 6th Report authors' claimed inability (on p. 123) to compare 5th-period-damaged structures with 6th-period-undermined properties is inexcusable, showing inept laziness when skimming disorganized data. "Company liable" structure damages, which the 6th Report says increased by 125 (54%, from 232 in the 5th period to 357 in the 6th), despite a 37% *decrease* in the total number of active mines from 49 to 31 and 12% decline of mined acreage, are identified but not explained. The reader can conclude only that PADEP is failing to do its job of protecting the people and resources of the Commonwealth.

15. Virtually no PADEP responses were made in the 6th Report to recommendations contained in prior Act 54 reports themselves, to recommendations made in comments by the federal Office of Surface Mining Reclamation and Enforcement (OSMRE) on the draft of the 6th Report itself, or to recommendations previously made by the public or by this Council, especially in the Council's 123-page comments on the 5th Act 54 Report. Ms. Hill's statement today that PADEP considers the past several five-year reports as too broadly conceived and thus too expensive ring hollow.

16. PADEP management was unable to respond to most of the serious questions raised in the Citizens Coal Council's letter to the PADEP Secretary dated 12 February 2021 during the seven extended telephone conferences with CCC held during the period May 2021 through January 2022. Those questions were based on the 5th five-year report. CCC is still waiting for substantive responses to those questions.

17. Like its predecessors, this 6th Report documents that PADEP is failing to comply with the law and failing to protect Commonwealth residents and resources from damage by underground mining. It shows once more a chronic failure of PADEP's organizational structure, data management, and performance when reviewing permit applications and enforcing "requirements". As in the past, this Council should first invite input and comments from the public, undertake field examinations, and then prepare its own comments and recommendations to the Secretary, the Governor, the General Assembly, and the public on this 6th Report.