



Major Concerns with Act 54 Reporting

Stephen P. Kunz

Senior Ecologist, Schmid & Company, Inc., Media, PA

on behalf of

CITIZENS COAL COUNCIL

Citizens Advisory Council Meeting

20 November 2012

Insanity:

Doing the same thing
over and over again
and expecting
different results.

MAJOR CONCERNS

1 PROBLEMS AND ISSUES NOT BEING ADDRESSED

Act 54 Reports

DEP Mining Program

Act 54

2 PRIOR ACT 54 REPORT ANALYSES INADEQUATE

DEP not collecting all data needed – major gaps

Act 54 Report Authors unaware

3 UPCOMING ACT 54 REPORT WILL REPEAT PROBLEMS

DEP & U. of Pitt - Unaware of problems

Don't have to wait to see, face reality

ACT 54 amended:

**Bituminous Mine
Subsidence and Land
Conservation Act**

27 April 1966

BMSLCA 1966:

To protect the public health, welfare and safety by

*regulating the mining of bituminous coal;
declaring the existence of a public interest in the support of surface structures;*

forbidding damage to specified classes of existing structures from the mining of bituminous coal;

June 22, 1994

ACT 54

AMENDMENTS

Act 54 of 1994
Amendments to the Bituminous Mine Subsidence and Land Conservation Act

Official Advance Copy

SESSION OF 1994

Act 1994-54

357

No. 1994-54

AN ACT

SB 955

Amending the act of April 27, 1966 (1st Sp.Sess., P.L.31, No.1), entitled "An act to protect the public health, welfare and safety by regulating the mining of bituminous coal; declaring the existence of a public interest in the support of surface structures; forbidding damage to specified classes of existing structures from the mining of bituminous coal; requiring permits, and in certain circumstances bonds, for the mining of bituminous coal; providing for the filing of maps or plans with recorders of deeds; providing for the giving of notice of mining operations to political subdivisions and surface landowners of record; requiring mine inspectors to accompany municipal officers and their agents on inspection trips; granting powers to public officers and affected property owners to enforce the act; requiring grantors to certify as to whether any structures on the lands conveyed are entitled to support from the underlying coal and grantees to sign an admission of a warning of the possible lack of any such right of support; providing for acquisition with compensation of coal support for existing structures

ACT 54

SIGNIFICANT CHANGE

IN LANGUAGE AND INTENT

The prevention *or restoration* of damage from mine subsidence is recognized as being related to the economic future and well-being of Pennsylvania.

ACT 54 INTENT

“The Act ... put in place a
‘you break it, you fix it’ rule...”

- James M. Seif, Secretary PADEP, June 1999

Transmittal letter of *1st Act 54 Report* to Governor,
General Assembly, EQB, and CAC

Section 18.1 of **ACT 54**

Mandated that PADEP

- ** Compile data – ongoing basis**
- ** Conduct Follow-up Analyses**
- ** Report Every 5 Years**
- ** To determine the effects of deep mining on:**
 - surface structures**
 - surface features**
 - water resources**

***ACT 54* REPORTS**

ANALYZE

Information from:

- ✓ **Permit application files**
- ✓ **Monitoring reports**
- ✓ **Enforcement files**
- ✓ **Any other appropriate source**



**ACT 54
5-YEAR
REPORTS**

The Effects of Subsidence
Resulting from Underground Bituminous Coal Mining on
Surface Structures and Features and
Water Resources

Prepared Under the Authorization of
Section 18a of the Bituminous Mine Subsidence and
Land Conservation Act

Submitted to
Governor Tom Ridge, the General Assembly and
the Citizens Advisory Council
June 1999



Pennsylvania Department of Environmental Protection
James M. Seif
Secretary
www.dep.state.pa.us

**Review
Period
1993-1998**

**First
Act 54
Report
(1999)**

The Effects of Subsidence Resulting from Underground Bituminous Coal Mining on Surface Structures and Features and Water Resources

February 2001

Supplement to the June 1999 Report

Prepared Under the Authorization of Section 18a of the Bituminous Mine Subsidence and Land Conservation Act



Tom Ridge, Governor
Commonwealth of Pennsylvania

James M. Seif, Secretary
Department of Environmental Protection

**First
Act 54
Report
Supplement
(2001)**

CAC CONCERNS WITH 1st ACT 54 REPORT

1 of 3

- concern about the Department's **commitment to** performing **its obligations** under the Act and the **credibility** of its 5-year report
- concern about the **quality and statistical validity** of the data
- **inability** of the data **to support** some of the report's **conclusions**
- **lack of a comprehensive evaluation** of deep mining's impact upon water resources and their associated social costs

continued.....

CAC CONCERNS WITH 1st ACT 54 REPORT

2 of 3

- **need for solid baseline studies** during pre-mining surveys to ensure the protection of water supplies in areas slated for mining
- **no evaluation** of how much **water** loss occurred, either through reduction in **quantity or quality**
- report only mentions **stream impacts** descriptively and briefly.... **no evaluation of the economic or environmental impacts** of the reported flow diminution, ponding and diversion

continued.....

CAC CONCERNS WITH 1st ACT 54 REPORT

3 of 3

- questioned whether the Department would be able to **quantify** how much **effort** has been made **to prevent** property damage and water loss compared to how much **money** has been spent to **make repairs and replace** water supplies **no cost information** is included in the report
- Council questions **whether Act 54 properly balances** surface owner rights against mineral rights, as it only provides them certain limited protections

Memo of Joe Pizarckek, Dir. Bureau of Mining & Reclamation to Kathleen McGinty, Secretary DEP

30 July 2003

When preparing Scope of Work for Contractor (not yet selected) for 2nd Act 54 Report

Concerns:

Coalfield citizens groups, environmental groups, the Citizens Advisory Council and certain legislators harshly criticized the 1999 report. In their view, the report simply tallied numbers of damage cases while providing little or no information regarding the severity of damage. Critics also believed that the report failed to adequately assess the effect of mining on groundwater resources, noting that many affected water supplies were replaced by connections to public water systems

Excuses:

the end of the reporting period. Data collection was hampered further by the unwillingness of some mine operators to provide details regarding damages and claim resolutions. In addition, the Department's database and geographic information system (GIS) capabilities were not developed to the extent that they could be used effectively in data analysis. Much of the information needed to prepare the report was gathered through surveys of property owners, utilities and local government agencies.

Promises:

The Department has implemented many changes aimed at improving the quality of the 2003 report. Additional subsidence agents were hired to observe conditions and assist property owners in areas above longwall mining operations. Department databases were improved to effectively track the

Promises for improvement down the road



**THE EFFECTS OF SUBSIDENCE RESULTING
FROM UNDERGROUND BITUMINOUS COAL
MINING ON SURFACE STRUCTURES AND
FEATURES AND ON WATER RESOURCES:
SECOND ACT 54 FIVE-YEAR REPORT**

**RESEARCH CONDUCTED BY
CALIFORNIA UNIVERSITY OF PENNSYLVANIA
DEPARTMENT OF EARTH SCIENCES
FOR
THE PENNSYLVANIA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

February 4, 2005

**Review
Period
1998-2003**

**Second
Act 54
Report
(2005)**

Cost: \$200,000

CAC CONCERNS WITH 2nd ACT 54 REPORT

1 of 3

- the analysis is **not very rigorous**, and in some areas is **more observational than analytical**
- **neutrality** could be improved
- The **lack of adequate baseline information** prevents any meaningful analysis of impacts

continued.....

CAC CONCERNS WITH 2nd ACT 54 REPORT

2 of 3

- **insufficient comparison and analysis** of longwall vs. room-and-pillar
- a **paucity of information** about how much water, overall, has been affected by longwall mining; **water loss** situations are dealt with on a **piecemeal** basis under Act 54 and even the 5-year report under Act 54 **does not consider cumulative, regional impacts**

continued.....

CAC CONCERNS WITH 2nd ACT 54 REPORT

3 of 3

- still concerned with the **pace of the resolution** process
- the Department needs to give serious consideration to **conducting the next study contemporaneously** with the study period in order to provide a clear, real-time picture of the situation

“California University has done a commendable job of analyzing the information contained in Department files and databases and gathering supplemental information needed to assess the effects of underground mining.”

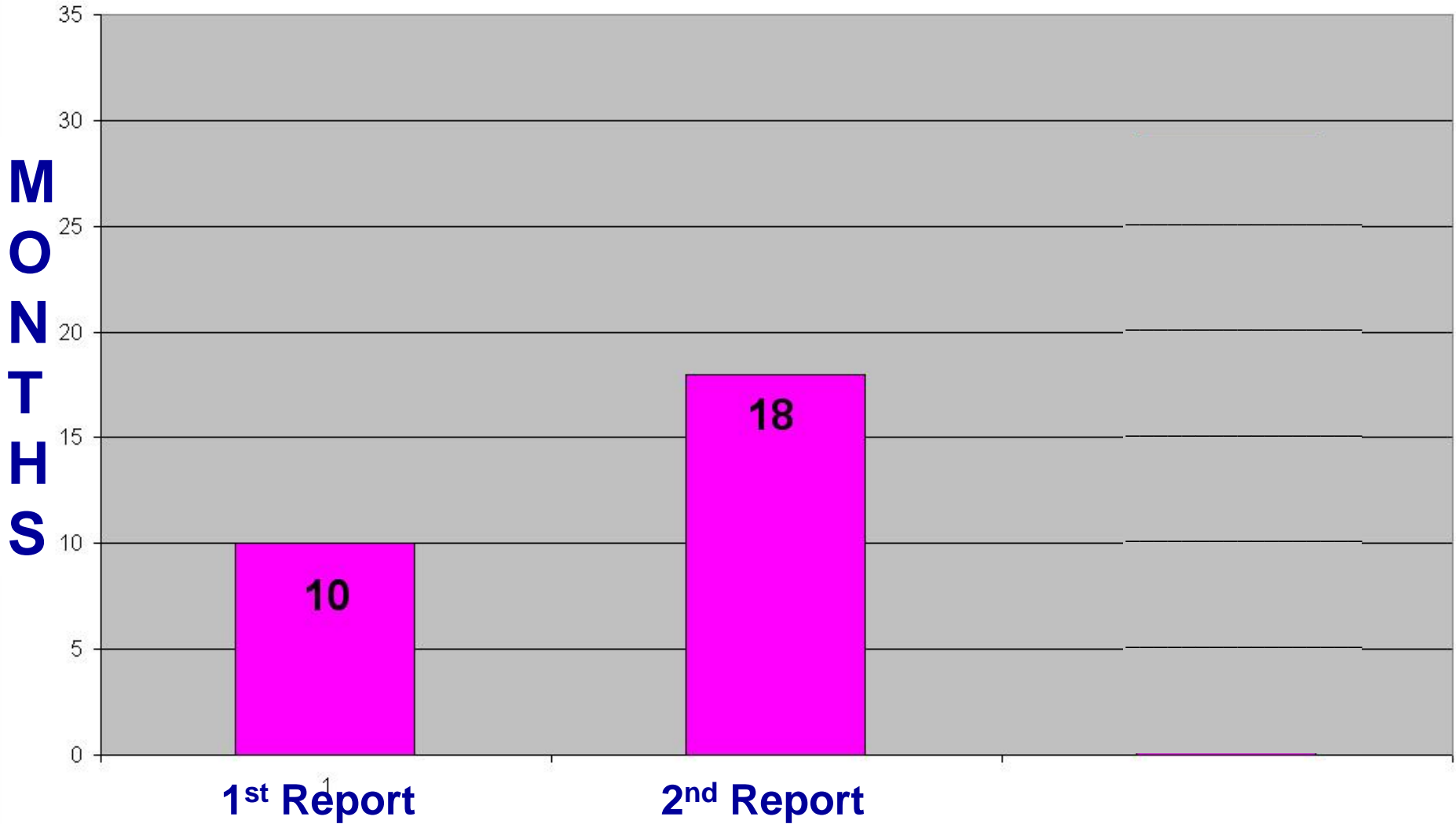
Kathleen A. McGinty, Secretary, PADEP

Transmittal letter of 2nd Act 54 Report

2 March 2005

Timeliness of Act 54 Reports

Release Date in Months After End of Review Period



Recommendation of 2nd Act 54 Report:

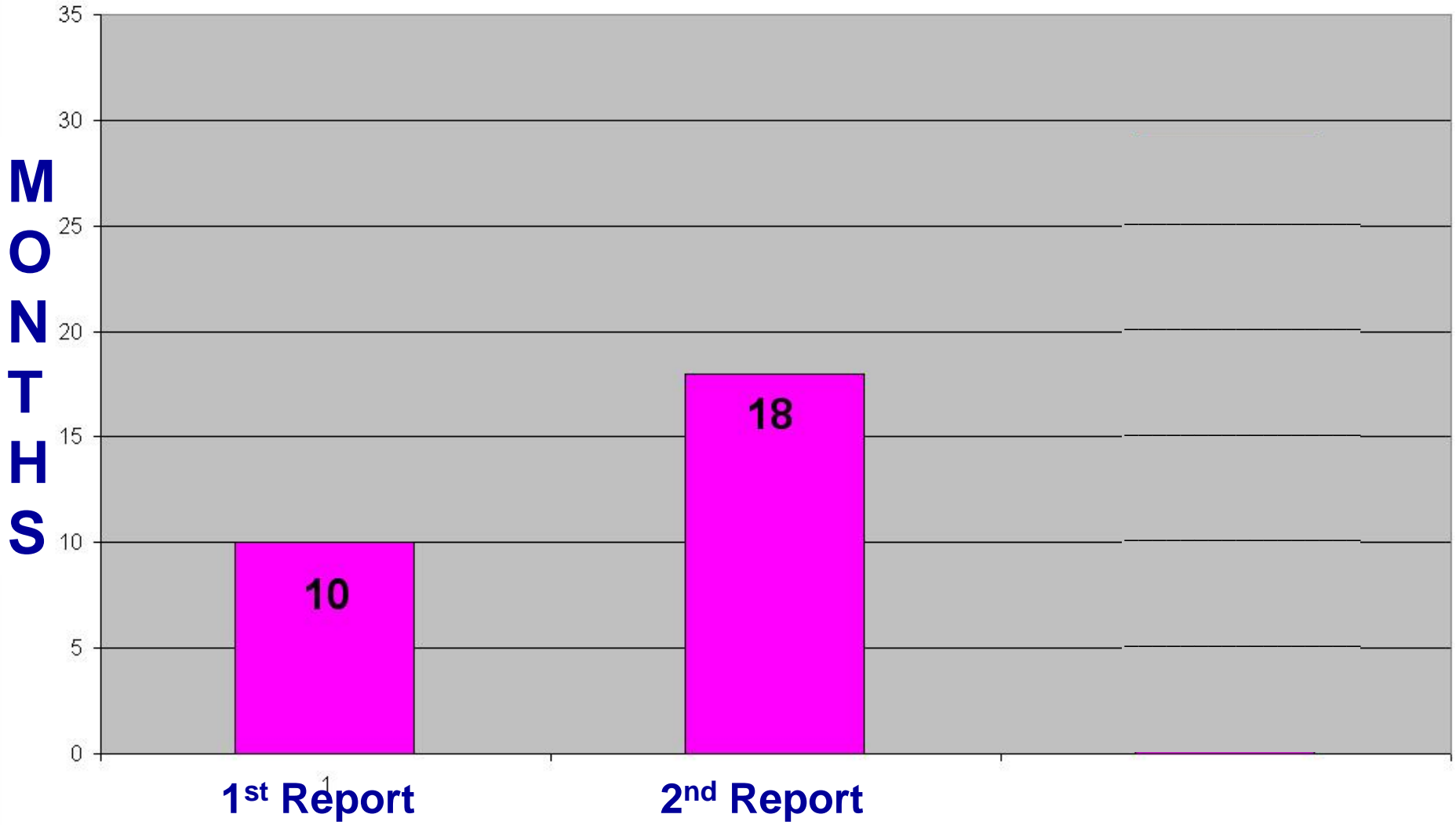
With regard to future Act 54 reports, the University recommends that the study period take place either contemporaneously with the assessment period or at increments during the assessment period. Such an approach would expedite the completion of the report upon the termination of the assessment period. (The contemporaneous writing of the report would, at the very least, aid in the accurate mapping of features)

CAC concern expressed following 2nd Act 54 Report:

*the Department needs to give serious consideration to conducting the next study **contemporaneously** with the study period in order to provide a clear, real-time picture of the situation*

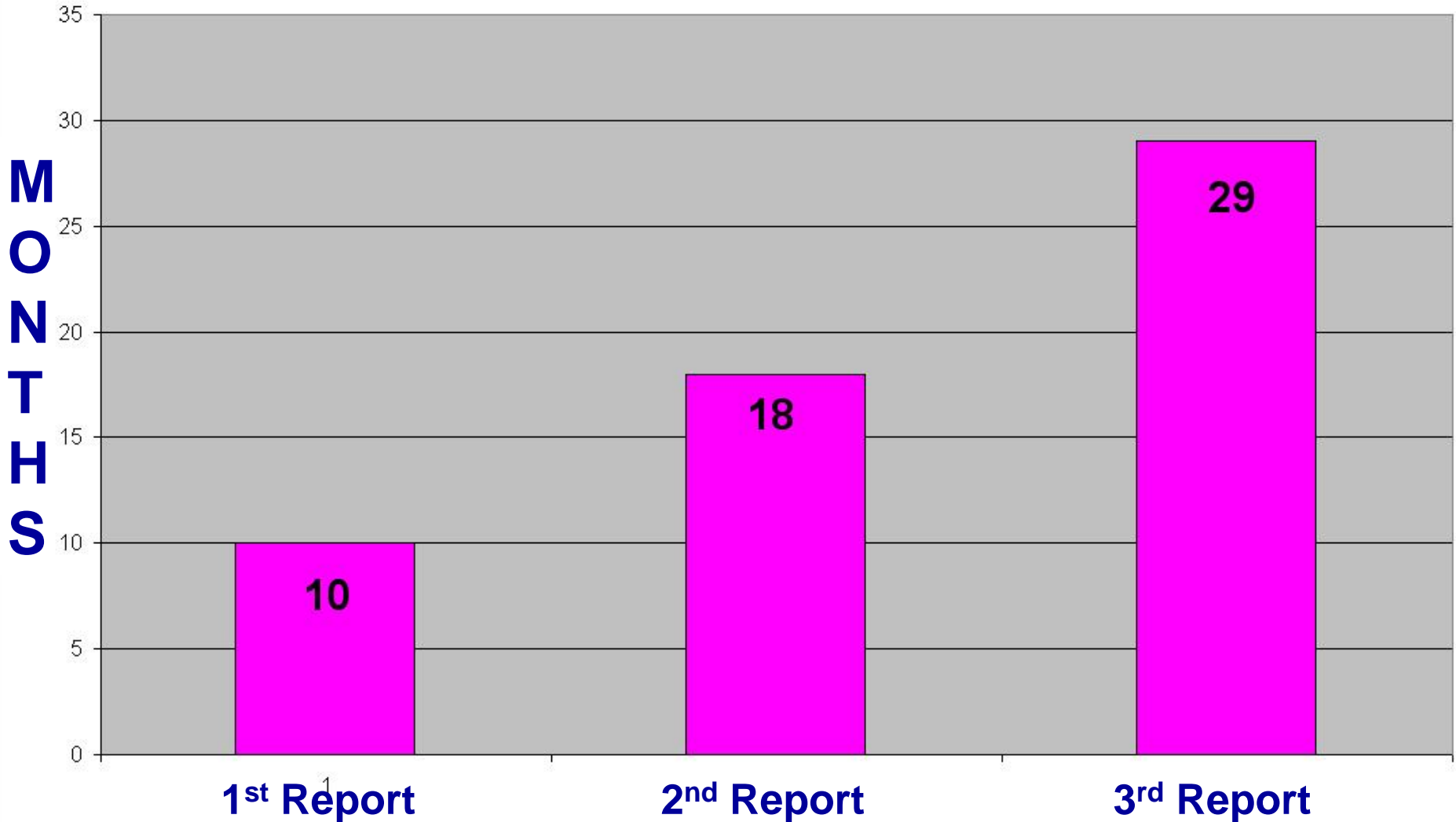
Timeliness of Act 54 Reports

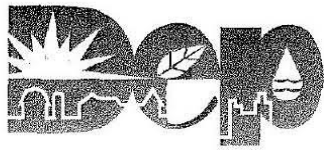
Release Date in Months After End of Review Period



Timeliness of Act 54 Reports

Release Date in Months After End of Review Period





Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building

P.O. Box 2063

Harrisburg, PA 17105-2063

November 8, 2007

Secretary

717-787-2814

Ms. Mimi Filippelli
Administrative Director
Center for Coalfield Justice
90 E. Chestnut St.
P.O. Box 1080
Washington, PA 15301

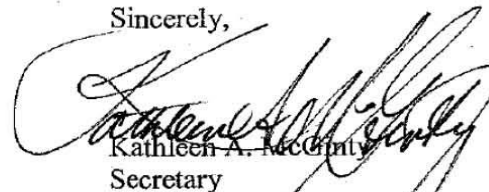
Dear Ms. Filippelli:

Thank you for your recent letter inquiring about the preparation of the next five-year report on the surface effects of underground bituminous coal mining. As you correctly note, this

Separate from DEP's inability to stimulate interest within the academic community, DEP is experiencing a funding shortfall that prevents the hiring of an outside institution to perform any sort of review and analysis at this time. This shortfall is due to insufficient state and federal grant funds from the U.S. Office of Surface Mining Reclamation and Enforcement (OSM). Unless this situation improves between now and the end of the reporting period, it may be necessary to forgo the preparation of the next report or have mining program staff prepare the report as time allows. An option under consideration is to have OSM technical experts review and analyze portions of the information. DEP is open to your suggestions on how it might move forward recognizing the lack of funds.

If you have any questions or recommendations, please feel free to contact Mr. Joseph Pizarchik, Director of the Bureau of Mining and Reclamation, by e-mail at jpizarchik@state.pa.us or by telephone at 717-787-5103.

Sincerely,



Kathleen A. Accorinti
Secretary



**The Effects of Subsidence
Resulting from
Underground Bituminous
Coal Mining on Surface
Structures and Features
and on Water Resources,
2003 to 2008**

Bituminous Mine Subsidence and
Land Conservation Act

ACT 54 Amendments
Five-Year Report
August 2003 to August 2008

Research Conducted by the University
of Pittsburgh for the Pennsylvania
Department of Environmental
Protection

Authors
Anthony Iannacchione¹,
Stephen J. Tonsor¹,
Megan Witkowski²,
Jessica Benner²,
Alison Hale²,
and Martine Shendge²

¹ - Associate Professor
² - Graduate Student



**Review
Period
2003-2008**

**Third
Act 54
Report
(2011)**

Cost: \$313,000

CAC CONCERNS WITH 3rd ACT 54 REPORT

1 of 3

- the report emphasizes data gathering rather than data analysis
- questions ... regarding ownership and availability of data used to prepare the current report; unless data is proprietary, data ... should be ... made available
- can we document that we are doing a better job at resolving impacts in a timely fashion?
- is the Department collecting the right data to be able to predict/minimize impacts?

CAC CONCERNS WITH 3rd ACT 54 REPORT

2 of 3

- each of the reports provide 5 year **snapshots** of data **rather than** assess **cumulative impacts** and **trends** ... The cumulative impacts question is critical to assessing the effects of deep mining.
- regarding water impacts, the focus in the reports has been on water supplies and stream segments, rather than an **assessment of cumulative hydrological impacts**.

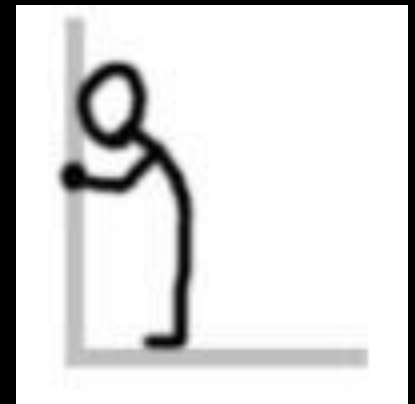
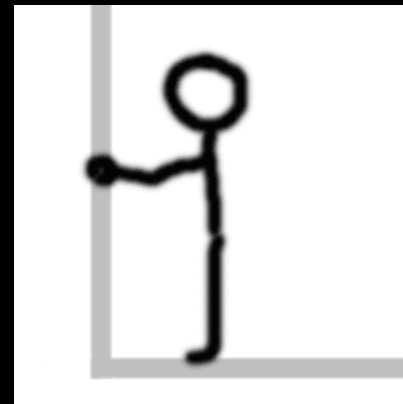
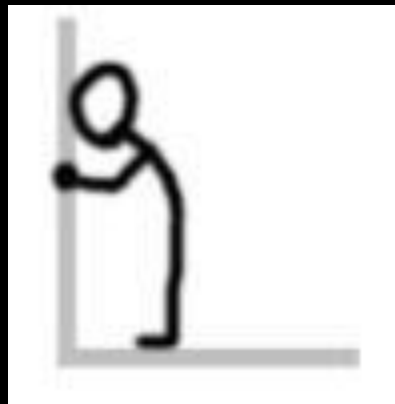
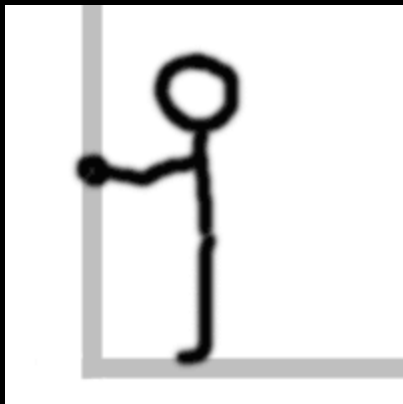
CAC CONCERNS WITH 3rd ACT 54 REPORT

3 of 3

- do reported claims capture **impacts to natural resources** (e.g. losing a spring versus damage to aquifer), as well as consider the **duration of impact** (temporary versus long term)?
- are there any **conclusions** we can reach re: **room-and-pillar versus full extraction**?
- has Act 54 and its regulations **kept up with technology** or are changes needed to accomplish better balance?

PROBLEM:

Concerns repeatedly expressed
still not being addressed





pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SECRETARY

August 20, 2012

Mr. John Walliser
Chairman
Citizens Advisory Council
P.O. Box 8459
Rachel Carson State Office Building
Harrisburg, PA 17105-8459

Dear Mr. Walliser:

Thank you and the Citizens Advisory Council (CAC) for taking the time to review and provide input on the third Act 54 Report entitled, *The Effects of Subsidence Resulting from Underground Bituminous Coal Mining on Surface Structures and Features, 2003-2008*. The information

Sincerely,

Michael L. Krancer
Secretary

Engineering under contract with DEP. DEP has reviewed the Report and has determined that its content and findings do not warrant any recommended changes to the existing statute. It is

Operations". The guidelines were partially developed to address findings outlined in the first two Act 54 reports, which together covered the ten-year period from 1993 to 2003. The Surface Water Protection guidance document was not fully implemented until 2007. It addresses

guidelines set in the policy. The third Act 54 Report noted that future stream assessments will benefit from DEP's Surface Water Protection technical guidance document. Specifically, the

As you note in your letter, there has been a steady improvement in the quality and quantity of data collected with each successive Act 54 report. This trend will not only continue but will accelerate due to the collection and analysis of the data connected with the full implementation of the Surface Water Protection guidelines.

UNIVERSITY OF PITTSBURGH

SWANSON SCHOOL OF ENGINEERING

PRINCIPAL INVESTIGATORS:

- ♦ Stephen Tonsor (Biology)
- ♦ Anthony Iannachione (Engineering)
- ♦ Daniel Bain (Geology)

**Review
Period
2008-2013**

**Fourth
Act 54
Report
(2014)**

PROPOSED

Cost: \$603,300

Attachment 1

**The University of Pittsburgh Master Agreement
Contract No. 4400004037
Project Template**

Project Name:

The Effects of Subsidence Resulting from Underground Bituminous Coal Mining on Surface Structures and Features and on Water Resources: Fourth Act 54 Five-year Report

Objective:

The objective of the project is to prepare a report that summarizes all structure damage, land damage, stream impacts, and water supply impacts that have occurred during from the period of August 21, 2008 through August 21, 2013. The information contained in the report is derived from various sources including permit applications, map records, inspectors' observations, investigation files, mine subsidence insurance records, geographic data layers, and surveys of mine operators and property owners.

15-page Work Plan Proposal

University of Pittsburgh to PADEP

Important sources of data missing:

Monitoring reports – HMRs and DMRs

CHIAs (Cumulative Hydrologic Impact Assessments)

Some data monitored or collected, but not “reported”

Data from SWRO, Dam Safety, Greensburg DMO

TGD will solve all the problems:

Cannot evaluate current condition of streams undermined prior to TGD

No post-mining assessments per TGD, so cannot evaluate restoration

Cannot assess net gain/loss of wetlands undermined per TGD

Unaware of loopholes and limitations of TGD

Important issues ignored:

Proposes use of 35° angle of influence –but, may not be valid

Should evaluate models for predictions of damage – not proposed

Should compare damages predicted vs not predicted – not proposed

Prior
Technical Guidance Document
563-2000-655

November 1997

- applied only to “perennial” streams
- focus entirely on water flow, not water quality
- assumes no adverse effects for full-extraction mining >400 feet
- many loopholes to deflect liability for flow loss or diminution

After 2nd Act 54 Report:

Revised
Technical Guidance Document

TGD 563-2000-655

***“Surface Water Protection -
Underground Bituminous Coal
Mining Operations”***

8 October 2005

Specific methods to identify/assess streams & wetlands



Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063

April 6, 2009

Secretary

717-787-2814

Ms. Raina Rippel, Director
Center for Coalfield Justice
Post Office Box 1080
96 East Chestnut Street
Washington, PA 15301

Dear Ms. Rippel:

I am writing to acknowledge your recent letter regarding the next five year report on the effects of underground coal mining. I appreciate your interest in this matter and your effort in

Re: 3rd Report
just getting
underway

In your letter, you express expectations that the report will address all of the recommendations put forth by researchers from the California University of Pennsylvania, who prepared the previous report. Let me begin by saying that **we have taken steps to address many of the concerns and recommendations raised** by the California University researchers. The following are some of the more significant improvements that were made:

- The release of **Technical Guidance 563-2000-655, Surface Water Protection – Underground Bituminous Coal Mining Operations in October 2005.** This guidance sets forth basic guidelines for the collection of pre-mining information on streams and wetlands, monitoring, and responding to mining induced effects. It also references standards used by DEP's water quality program as the basis for identifying adverse effects and evaluating the effectiveness of restoration measures. **The procedures outlined in this guidance serve to satisfy many of the researchers' concerns** about the need for better baseline information on streams and wetlands.

If you have any additional questions, please feel free to contact Joseph Pizarchik, Director of the Bureau of Mining and Reclamation, by e-mail at jpizarchik@state.pa.us or by telephone at 717-787-5103.

Sincerely,

John Hanger
Acting Secretary



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SECRETARY

August 20, 2012

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Chairman
Citizens Advisory Council
P.O. Box 8459
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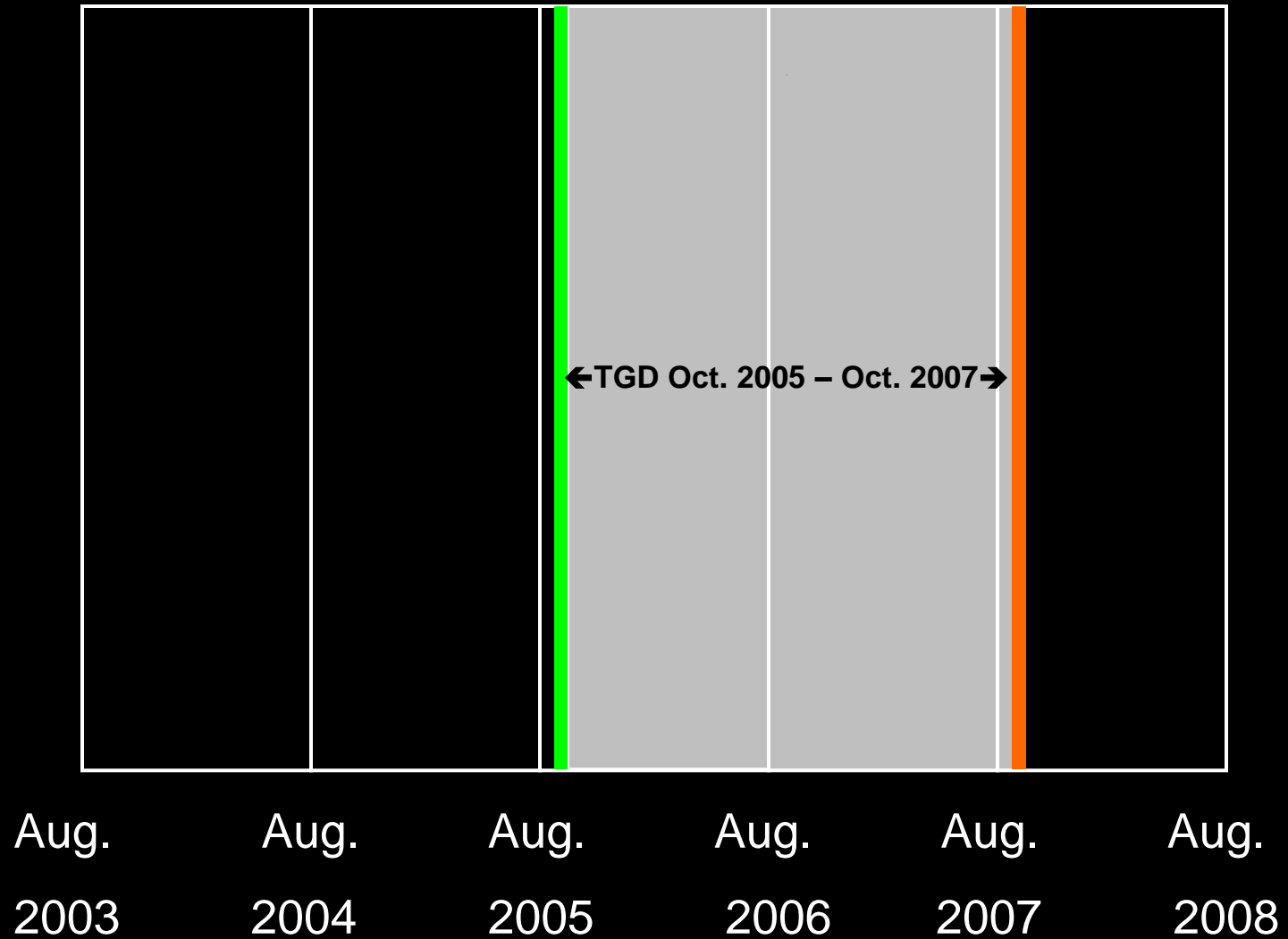
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TIMELINE

3rd Act 54 Report vs TGD





**Protection of Water Resources
From Longwall Mining
Is Needed in
Southwestern Pennsylvania**

Prepared for:
Citizens Coal Council
P.O. Box 964
Washington, PA 15301

With the support of:
Sierra Club, Pennsylvania Chapter
300 North Second Street
Harrisburg, PA 17101-1031
and
Sierra Club, Allegheny Group
425 North Craig Street
Pittsburgh, PA 15213

Prepared by: Schmid & Company, Inc., Consulting Ecologists
1201 Cedar Grove Road
Media, Pennsylvania 19063-1044
(610) 356-1416 Fax (610) 356-3629
www.schmidco.com

26 July 2010

**Schmid & Company,
Inc.**

July 2010

195 pages

**Report can be read or
downloaded at:**

Schmid & Company website
www.schmidco.com

CCC website
www.citizenscoalcouncil.org

PURPOSE

Determine **effectiveness** of the PA permit application, review, and monitoring process in **protecting water resources** from the impacts of longwall coal mining operations after full implementation of TGD

STUDY METHODOLOGY

➤ **75,000+ pages of PADEP regulatory files**

➤ **3 Major Existing Longwall Coal Mines**

- Bailey Mine (Consol)
- Emerald Mine (Emerald Coal Resources; now Alpha)
- Enlow Fork Mine (Consol)

➤ **Time period: 2007 through 2009**

- permit applications
- correspondence
- background and ongoing monitoring data
- public review and comments

Technical Guidance Document 2005

Section IV.1.a(viii)

An adversely affected stream will be considered “fully recovered” or “fully restored” if **both** of the following are met:

- A. **Flow** has returned to normal range of conditions
and
- B. **Macroinvertebrate community** has recovered to pre-mining condition (88% of premining TBS)

According to TGD Section V.1.d(v)

Stream flow measurements

- quarterly for 2 full years prior
- more frequently as undermining
nears a stream

weekly - six months prior and after

daily - two weeks prior and after

CRAFTS CREEK DEWATERING

Enlow Fork Mine **JANUARY 2008** Permit Expansion approved

Premining streamflow monitoring data (HMRs) quarterly for 5 full years then during and 1+ years after undermining

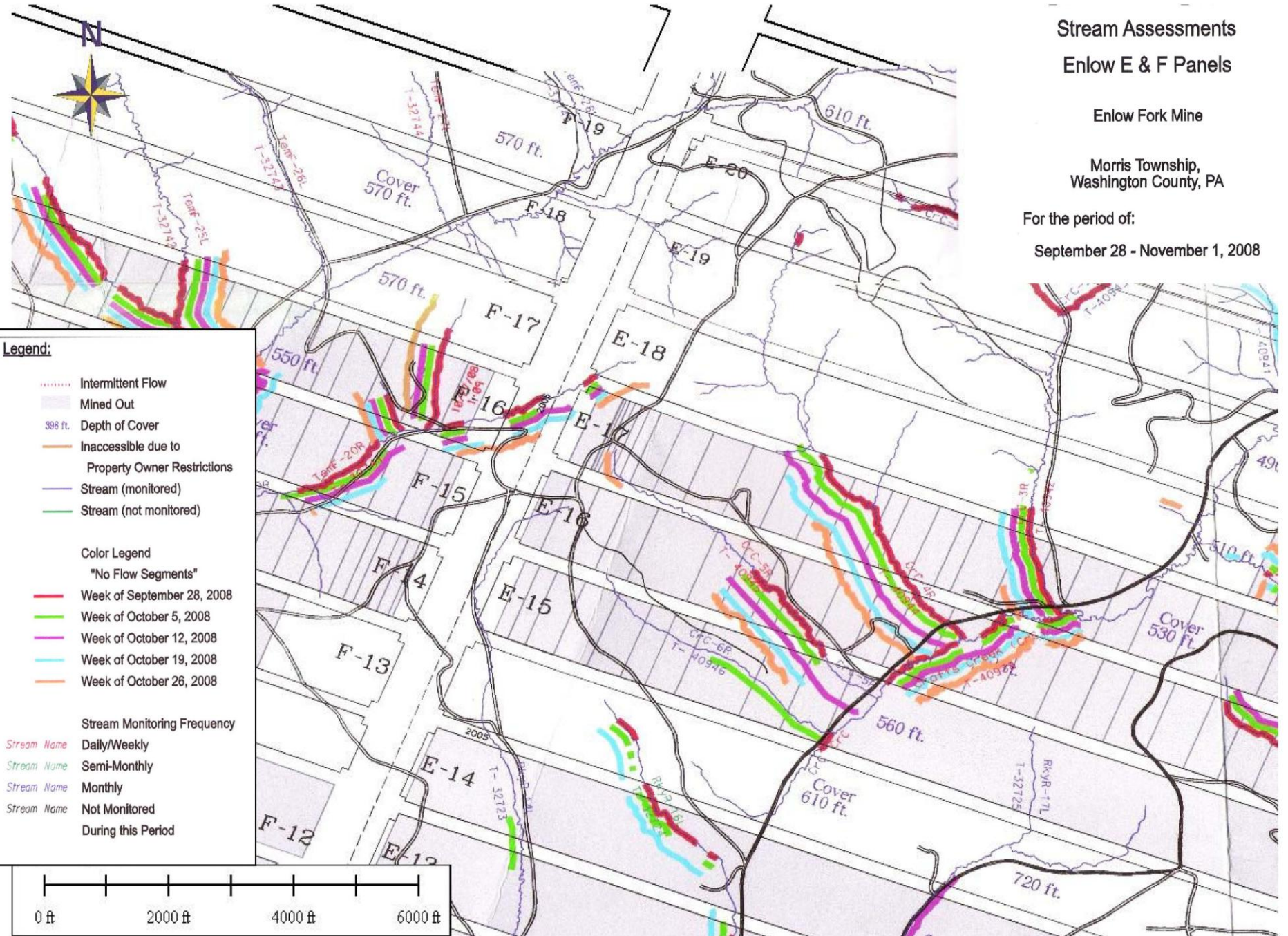
- Flow loss/fish kill occurred **November 2008** – *not predicted*
- Two more flow loss/fish kills by **January 2010** (3 in 14-month period)
- Quarterly monitoring throughout flow loss period – *no indications*
- **Weekly/daily monitoring also done – but kept in Consol's files**
- No change in plans for pending undermining of HQ headwaters

Stream Assessments Enlow E & F Panels

Enlow Fork Mine

Morris Township,
Washington County, PA

For the period of:
September 28 - November 1, 2008



Legend:

- Intermittent Flow
- Mined Out
- 308 ft. Depth of Cover
- Inaccessible due to Property Owner Restrictions
- Stream (monitored)
- Stream (not monitored)

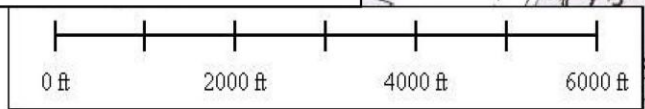
Color Legend

"No Flow Segments"

- Week of September 28, 2008
- Week of October 5, 2008
- Week of October 12, 2008
- Week of October 19, 2008
- Week of October 26, 2008

Stream Monitoring Frequency

- Stream Name Daily/Weekly
- Stream Name Semi-Monthly
- Stream Name Monthly
- Stream Name Not Monitored During this Period



WETLANDS

Previously: Inadequate Data Collection and Analysis

A 2004 study of the size and location of wetlands at **Cumberland Mine** identified **63.6 acres** of wetlands where the NWI had identified only **3.1 acres**.

From the 3rd Act 54 Report
(University of Pittsburgh, page IX-7)

Technical Guidance Document
2005

WETLANDS

Premining: Field-delineate every wetland above a longwall mine

Post-mining: 1 year later -- resurvey each wetland

- determine any changes
- verify accuracy of damage predictions
- **NEVER DONE**

TGD may not solve the problem with wetland identification

WETLAND IDENTIFICATION

600+ acre surface activities area for longwall mine

<u>Source:</u>	<u># of Wetlands</u>
National Wetland Inventory (NWI)	2
Mine Applicant Delineations	10
Corps of Engineers Inspection	27

TGD Loopholes

- “Requires” prediction of magnitude and duration of flow loss – yet never done, no model like Peng model for pooling
- Bioassessments not required for R&P with >100 feet cover
- Weekly/daily flow monitoring required, but not reported to DEP
- “*Adverse impact*” = <88% of premining total biological score – not okay for EV streams (no degradation)
- Stream restoration – success based on flow and biology, but only flow being considered
- Stream restoration efforts allowed up to 5 years before giving up
- Post-mining Wetland Assessments – not happening

LONGWALL

VS

ROOM-AND-PILLAR

We don't have to wait

Findings of Act 54 Report:

STUDY PERIOD: 2003 - 2008

	<u>LONGWALL</u>	<u>ROOM & PILLAR</u>
Number of Active Mines	8	36
Acreage Undermined	17,605	20,375
Properties Undermined	1,571	1,738

Findings of *Act 54* Report:

2003 - 2008

LONGWALL MINING

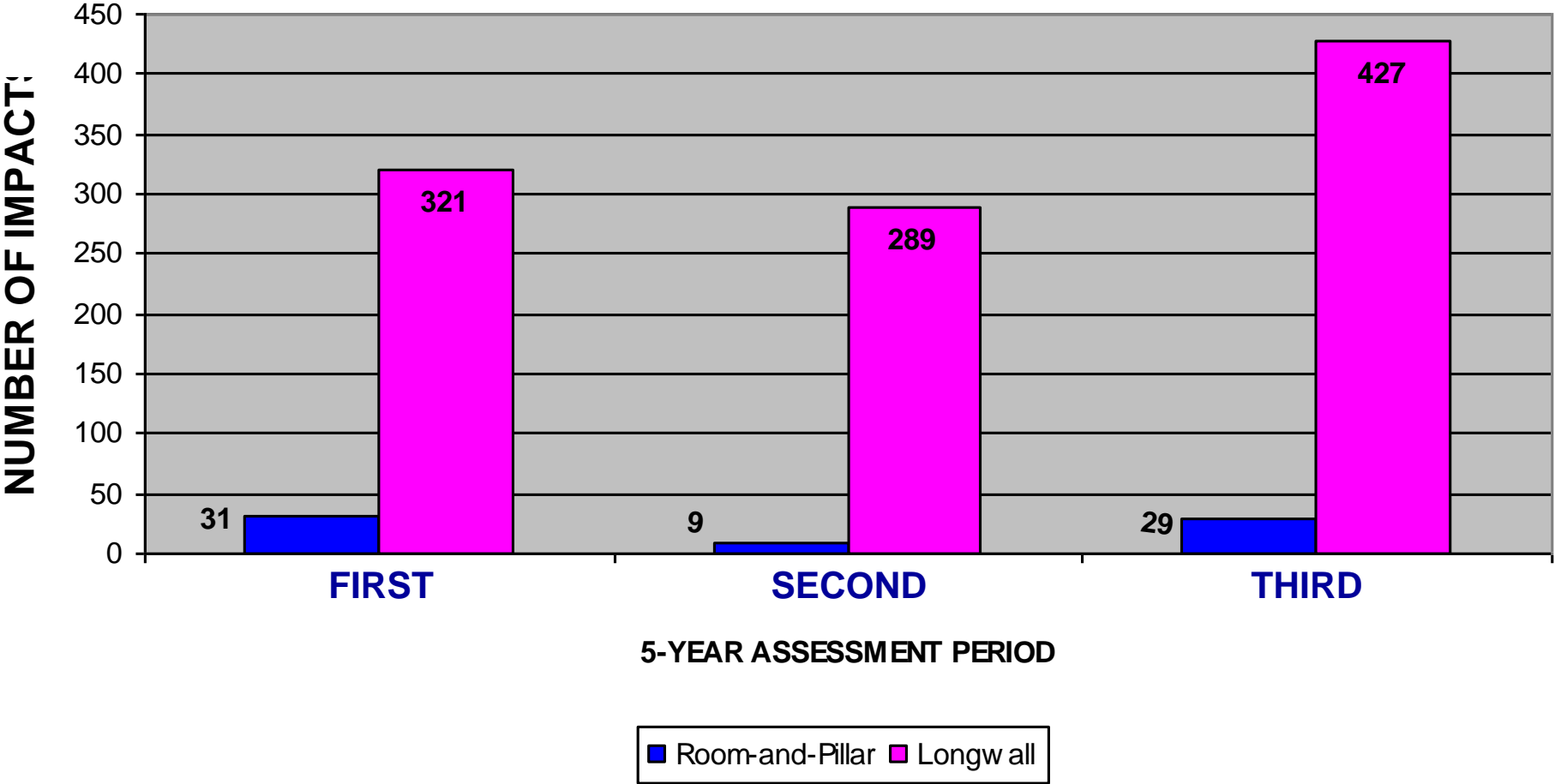
was disproportionately responsible for impacts

100% of impacts to **STREAMS** (55 of 55)

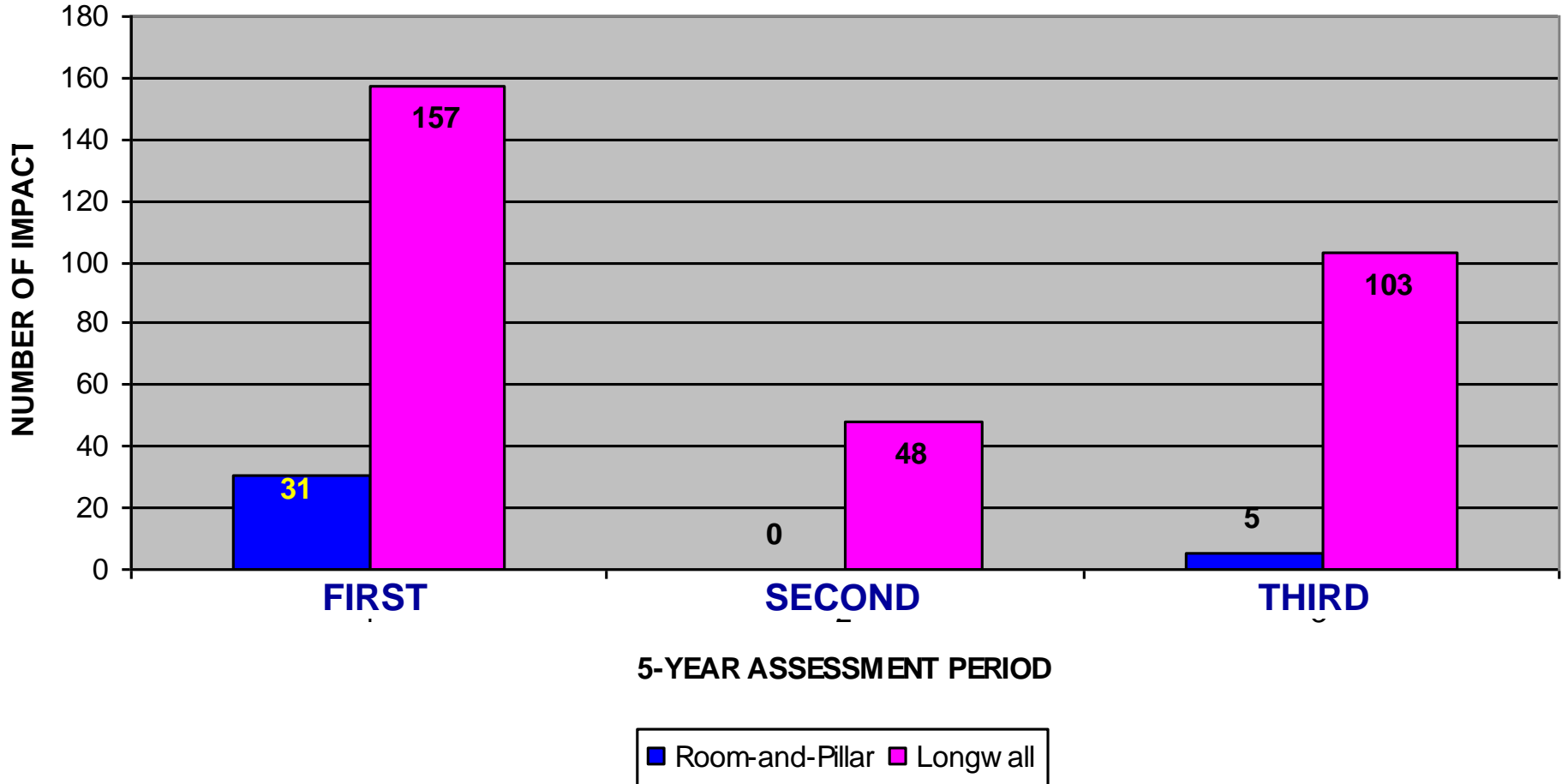
95% of impacts to **LAND** (103 of 108)

94% of impacts to **STRUCTURES** (427 of 456)

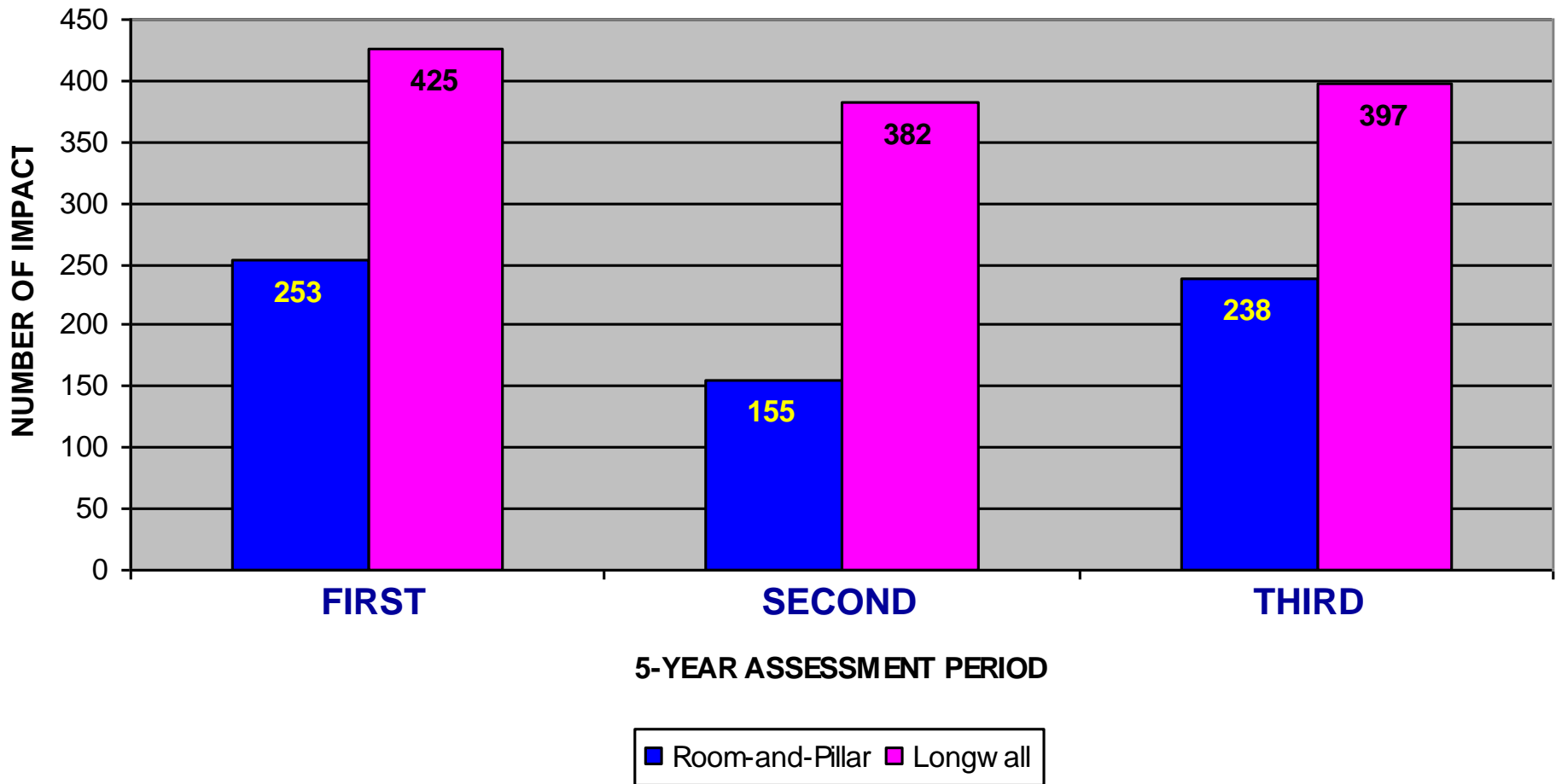
Structure Impacts



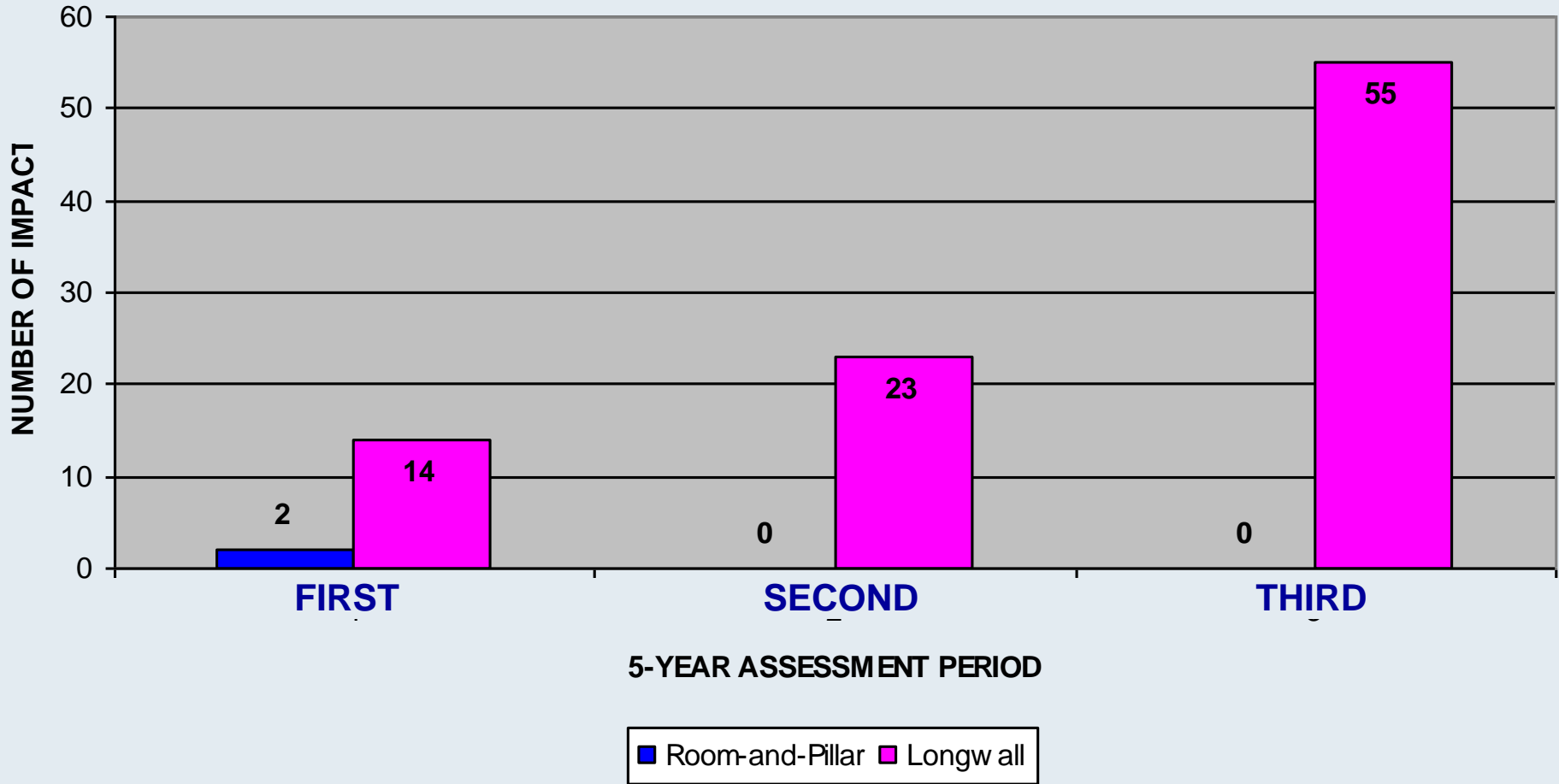
Land Impacts



Water Supply Impacts



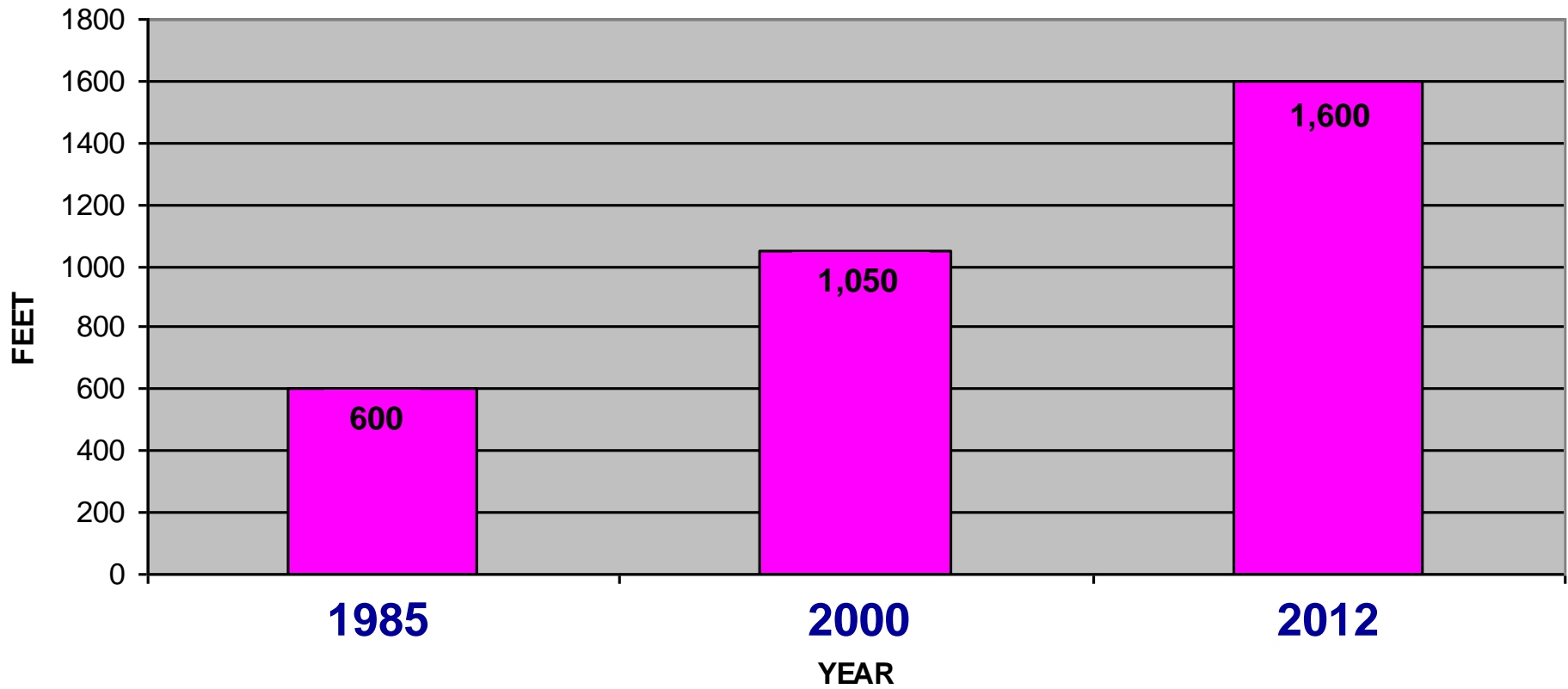
Stream Impacts



**LONGWALL MINING
TECHNOLOGY
HAS IMPROVED**

**ENVIRONMENTAL
PROTECTION
HAS NOT**

WIDTH OF LONGWALL PANELS



CRITICAL WIDTH

“When the critical width is exceeded, the maximum subsidence potential is realized.”

- University of Pittsburgh, 2011

$$L_c = W/H$$

L_c = critical width **W** = panel width **H** = depth of cover

If $L_c < 1.0$ panel is “subcritical”

If $L_c > 1.0$ panel is “supercritical”

		W	H	L_c
Gateway	'82-'83	522	763	0.7
Mine 84	2000	1,057	643	1.6
Cumberland	2008	1,354	757	1.8

SUMMARY

CAC should encourage DEP:

UNDERSTAND PROBLEMS AND ISSUES

Act 54 Reports

DEP Mining Program

Act 54

NOT REPEAT MISTAKES OF PAST ACT 54 REPORTS

Ensure all data needed is being collected

Conduct analyses, identify trends, make recommendations

ACT ON WHAT WE KNOW

Cannot wait for next report

ACT 54 INTENT

“ you break it, you fix it ”

CLEARLY

ACT 54 IS NOT WORKING

IT'S TIME TO FIX IT



THE END