PPL Corporation

How the Ash Spill at Martin's Creek made us look at risk differently

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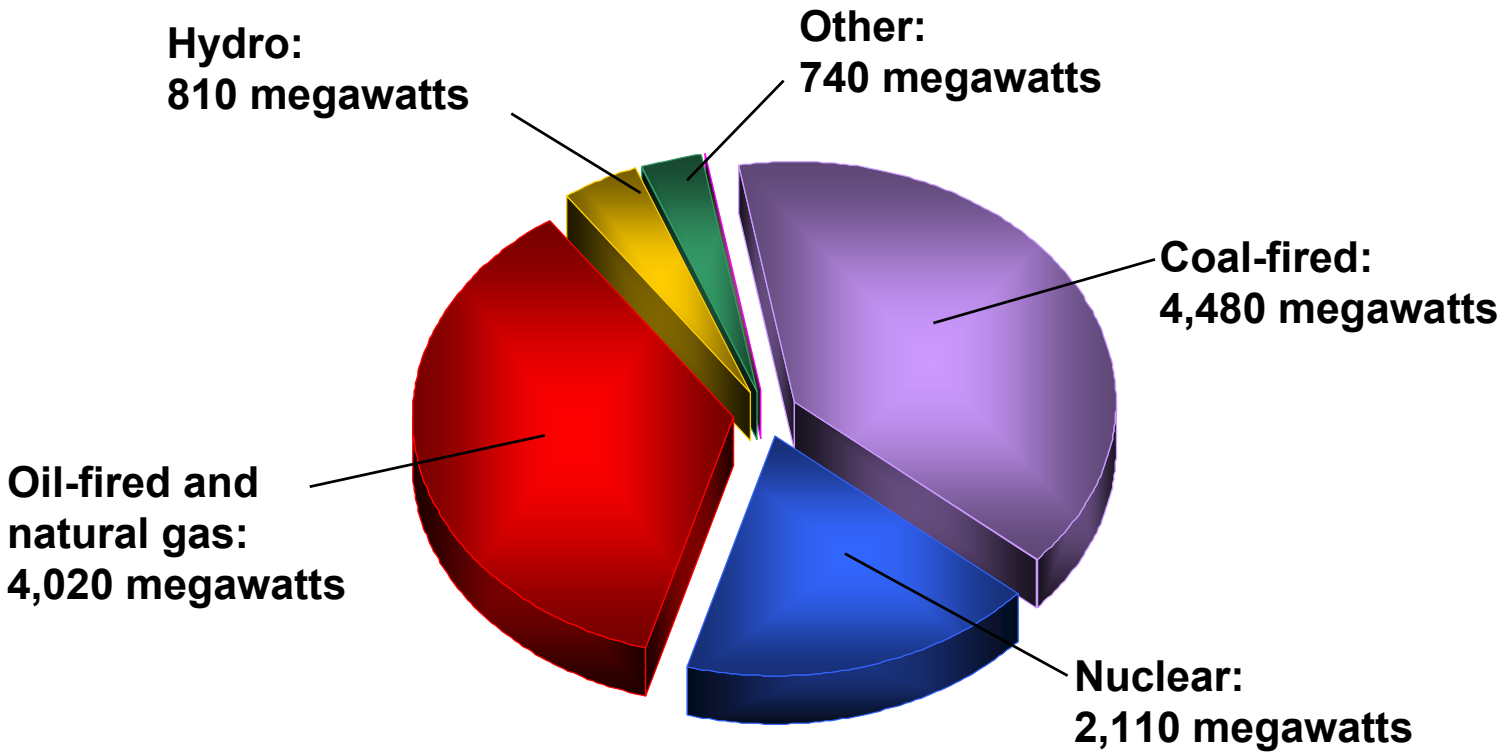
Summary/Overview

- Who We Are
- What Happened on August 23, 2005?
- What we've done in the past 260 days?
- What's next?
- Corporate Environmental Risk Assessment

Who is PPL Corp.?

- PPL is a worldwide energy company with operations on three continents
- Company generates about 11,500 megawatts of electricity at plants in more than 30 locations in seven states
- Operates electric deliver companies in the United Kingdom, Latin America and the United States.
- Ceres member since 1997

Generation Mix



The Ash Spill

- August 23, 2005
- 100 million gallons of water and fly ash to the Delaware River, tributary creek and surrounding environs
- Leak not stopped until early on August 26
- Fly ash
  - Byproduct of coal combustion
  - Predominantly silica
  - Trace amounts of Heavy metals
    - Arsenic, selenium, mercury
- No fish kill, no human impact

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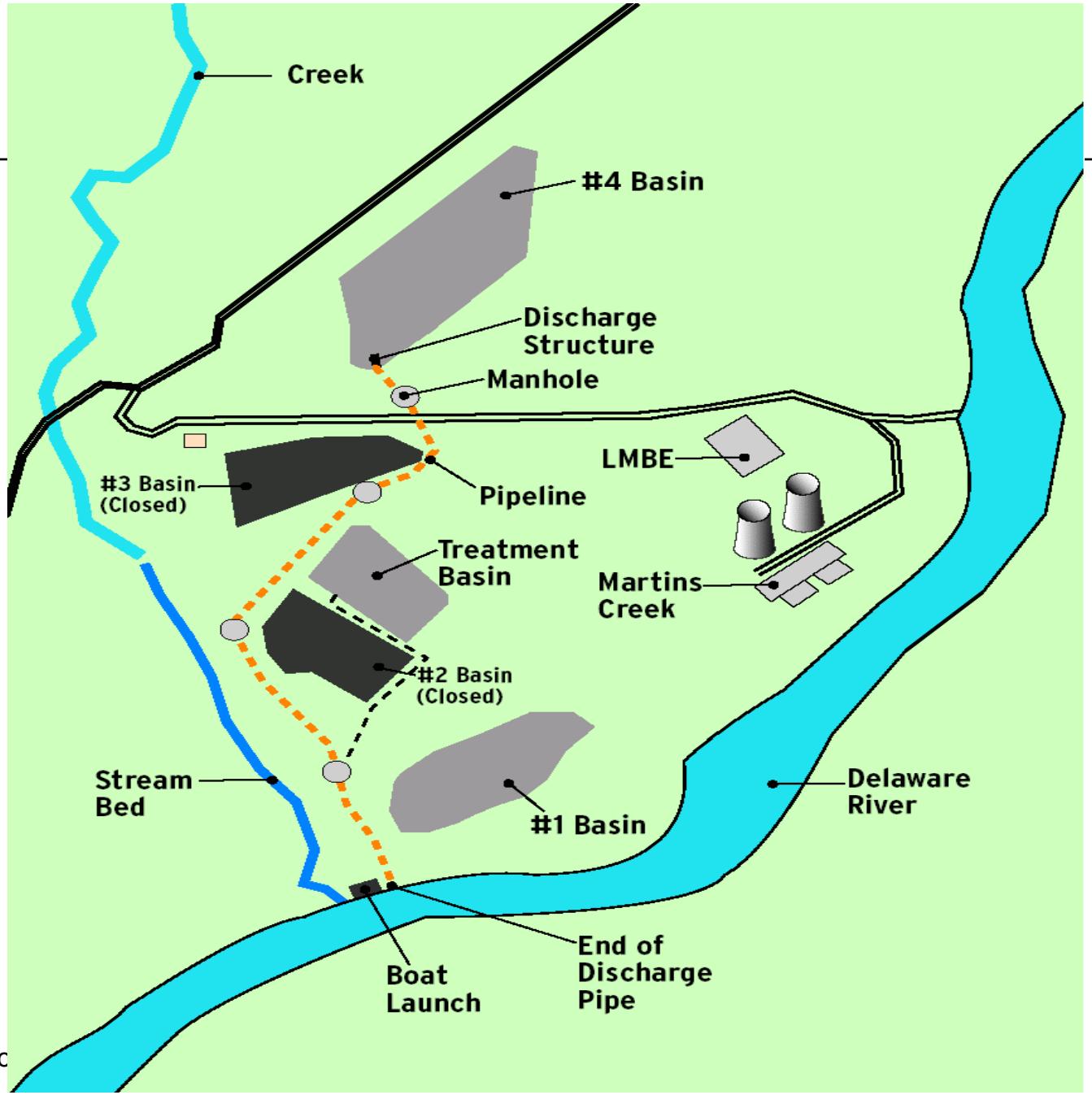
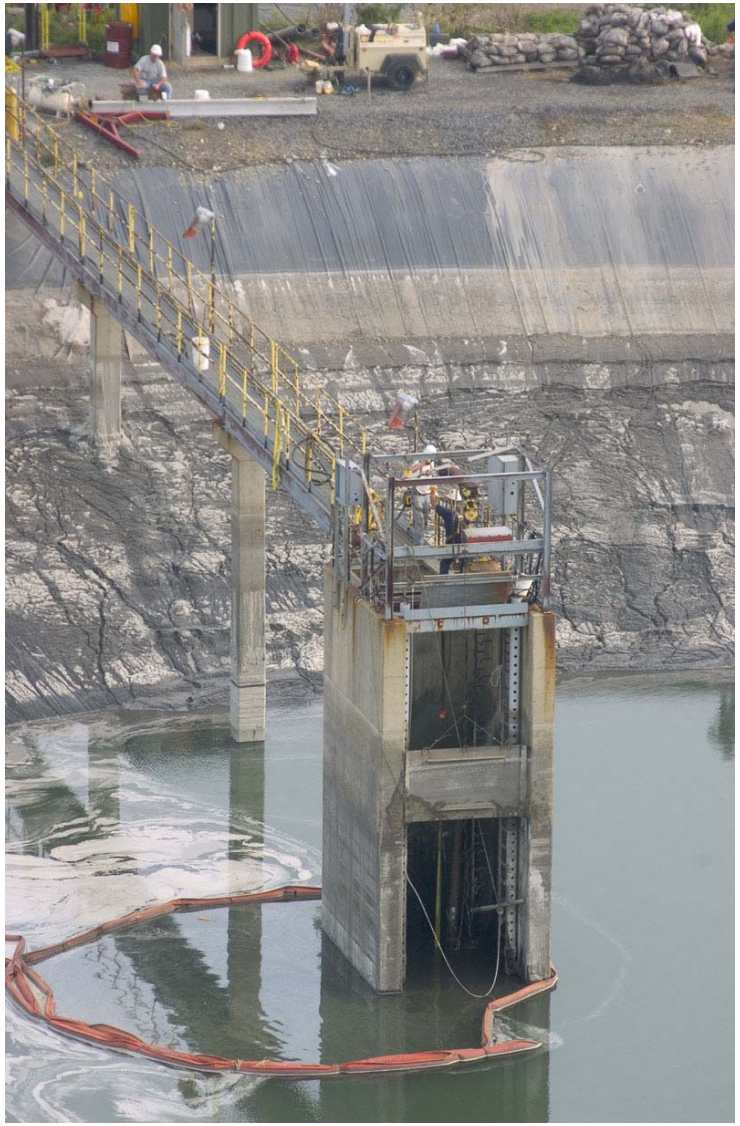
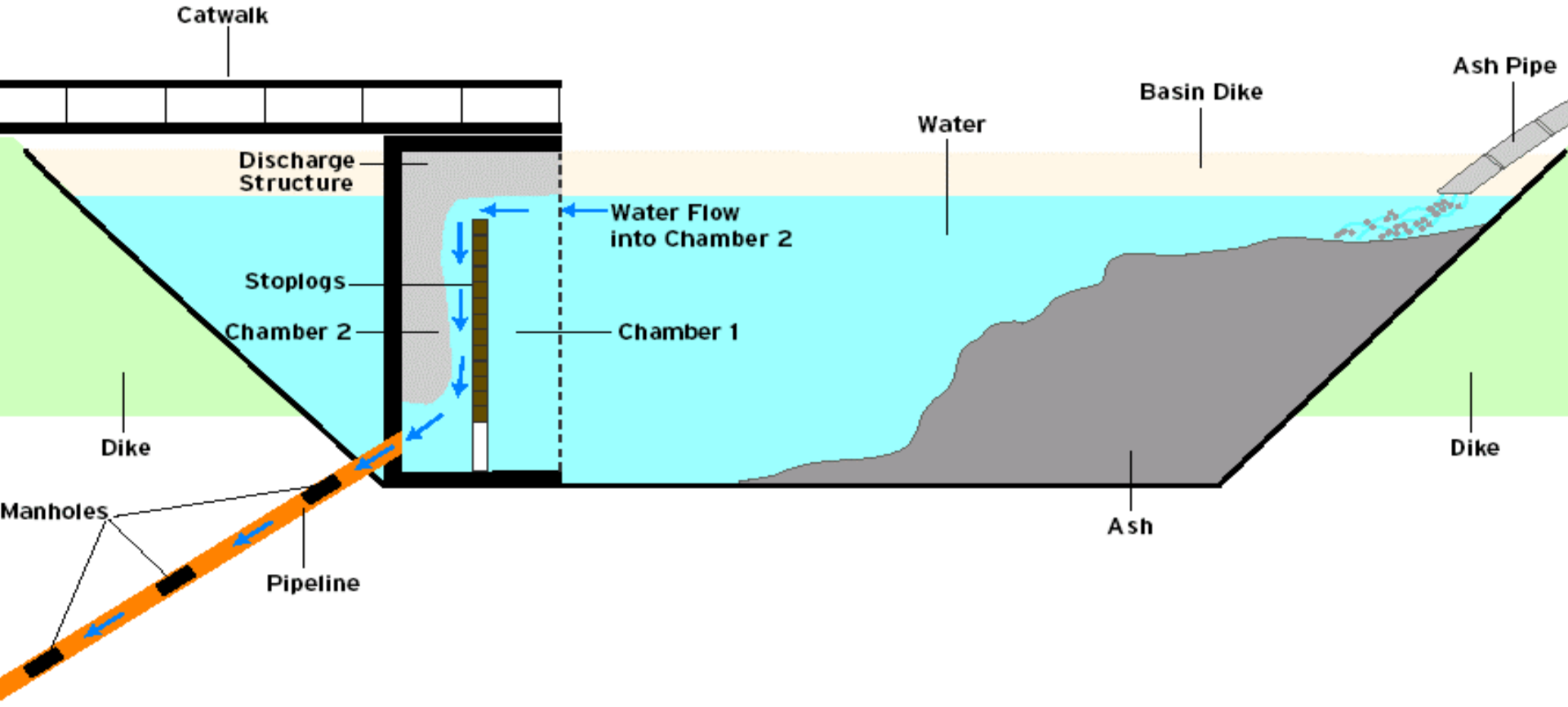

Creek
#4 Basin
Discharge Structure
Manhole
LMBE
#3 Basin (Closed)
Pipeline
Treatment Basin
Martins Creek
#2 Basin (Closed)
Stream Bed
Delaware River
#1 Basin
Boat Launch
End of Discharge Pipe

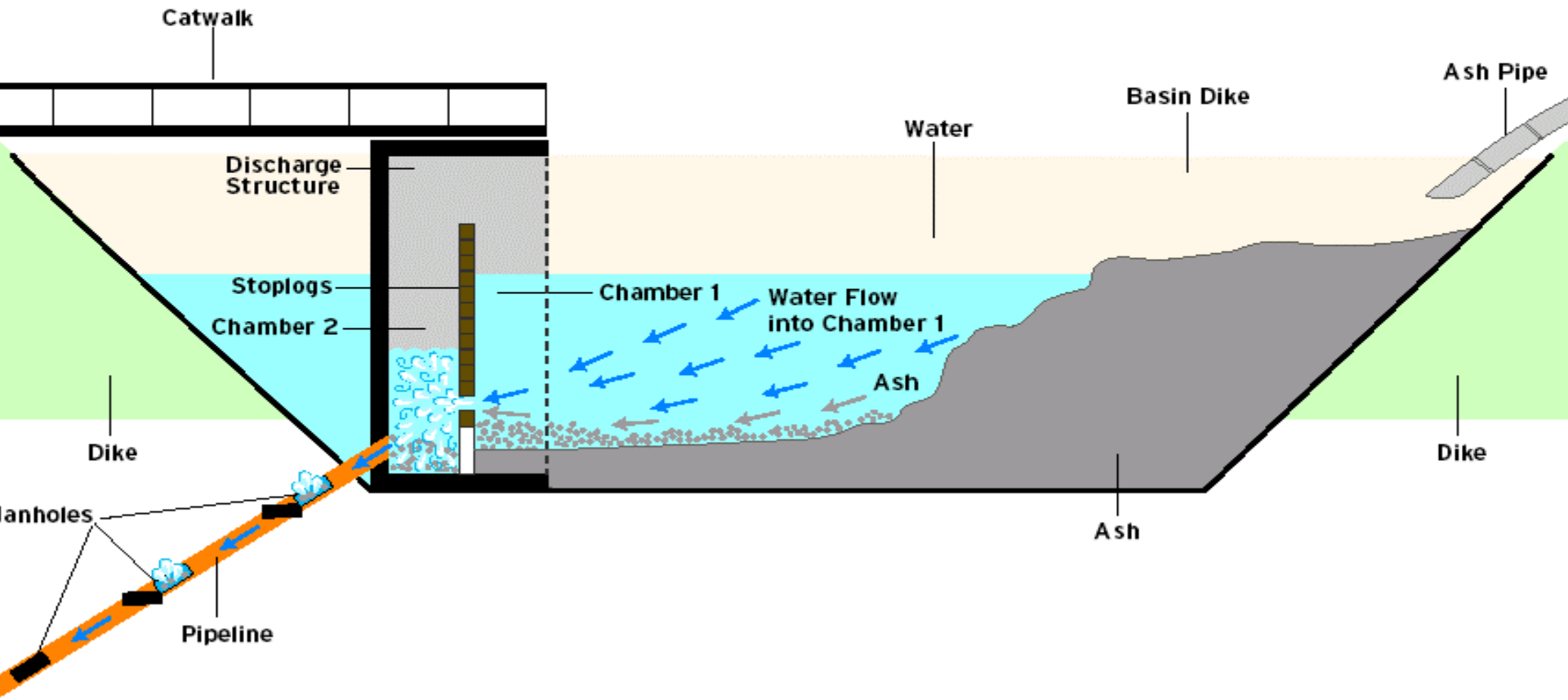
The discharge structure



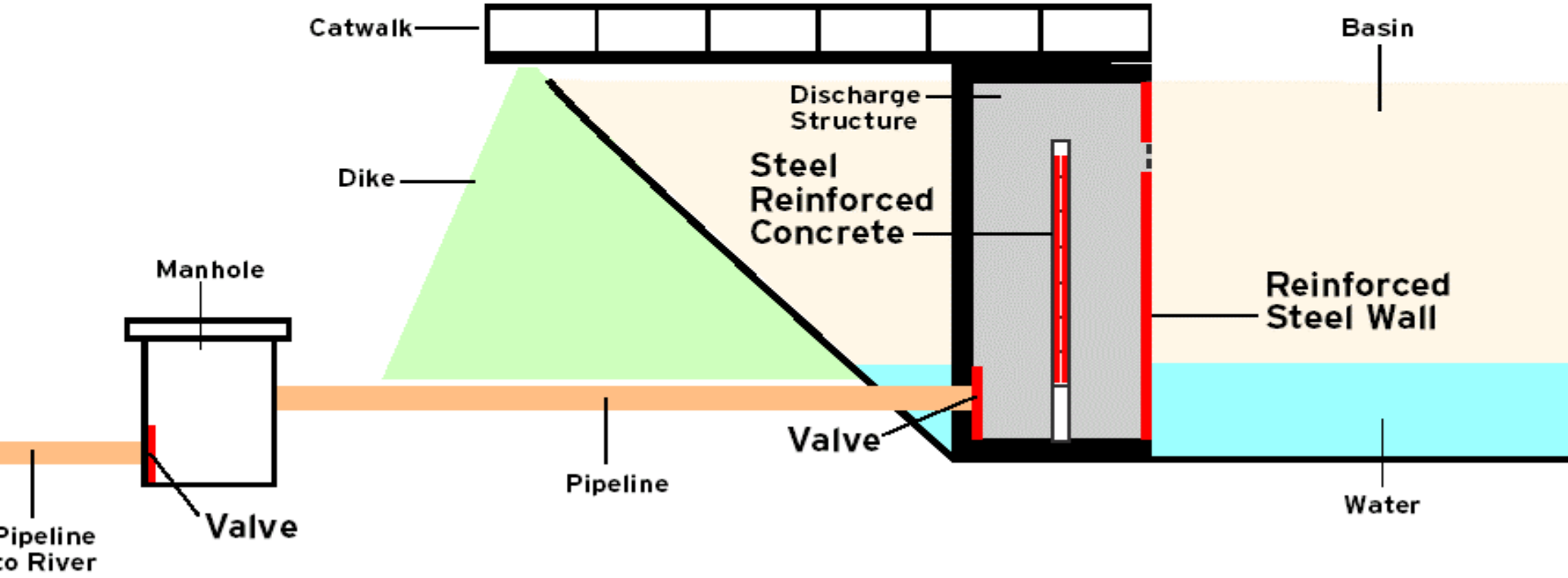
Normal Flow in #4 Basin



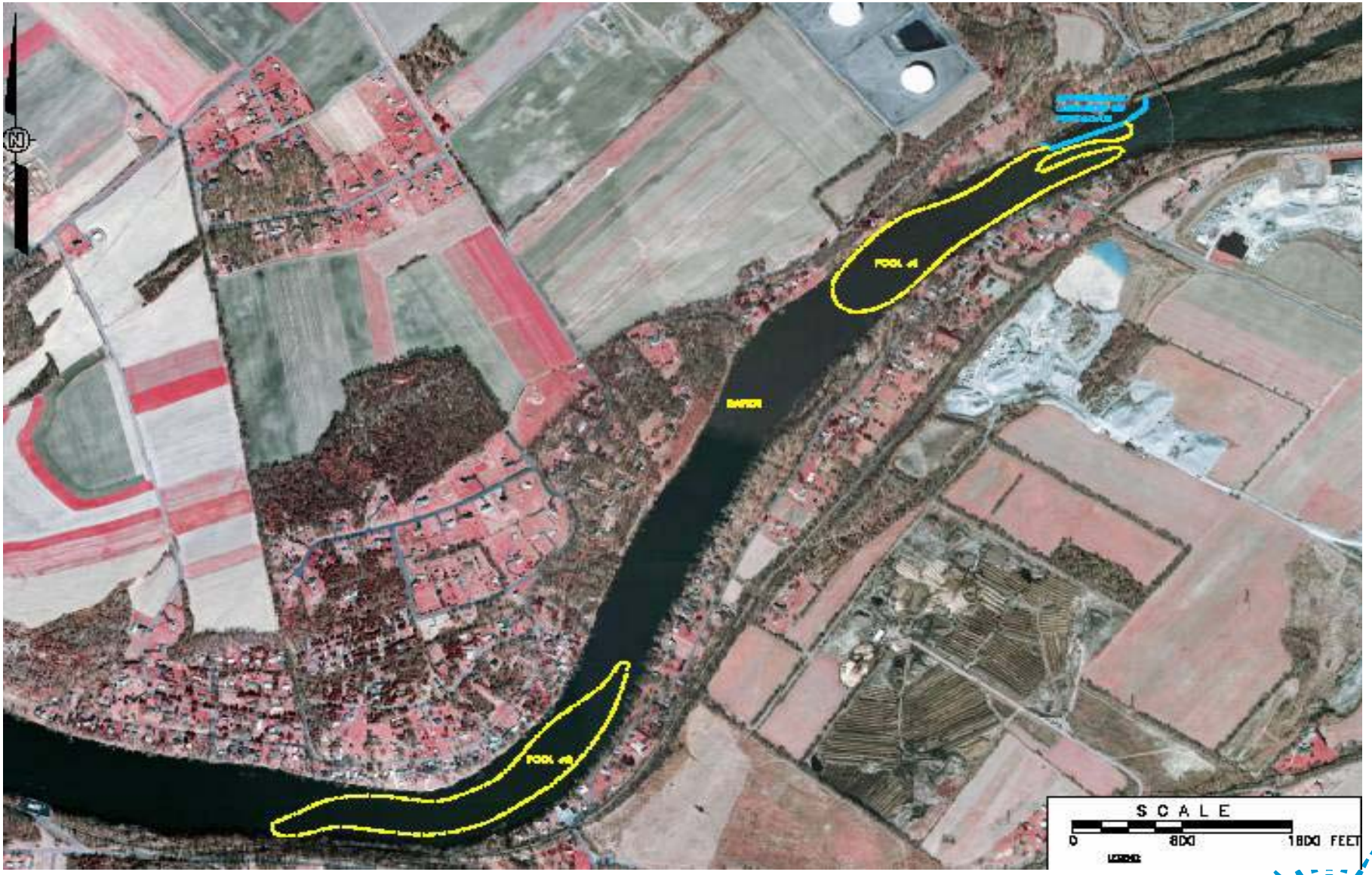
Flow in #4 Basin When The Stoplog Failed



Permanent Barriers in #4 Basin



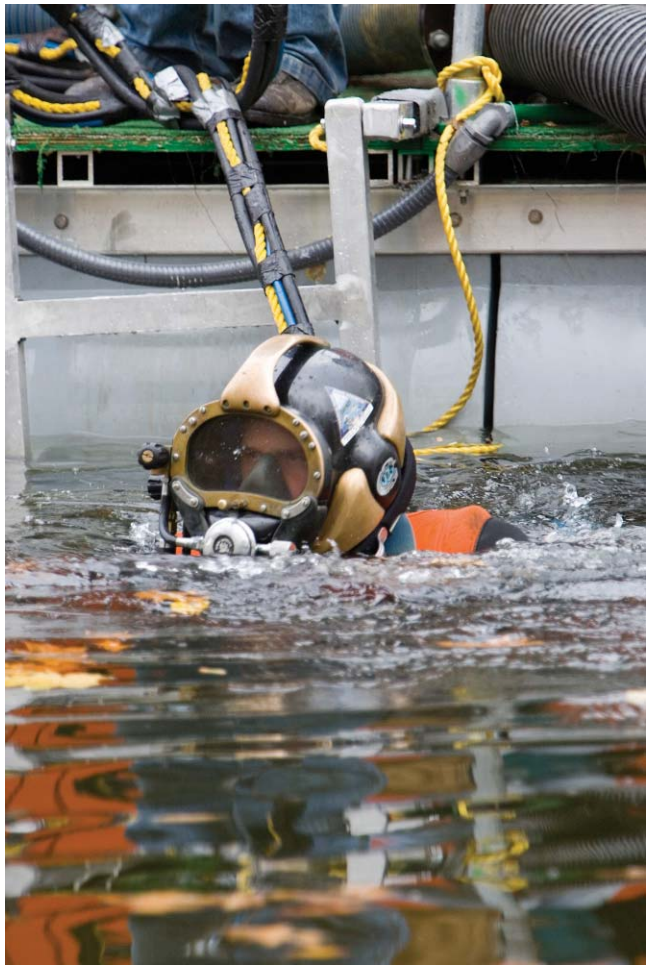
Enclosed Portadam Area



Primary Fly Ash Deposition Pools

AK-3 Diver Platform/Barge

Diver



And then the rain came.

What's Next

- High Water – reassess
  - Continued vacuuming
  - Completed in March 2006
- Complete long term biological assessment
- Complete Corporate wide Environmental Risk assessment.

Assess, Analyze and Communicate quickly

- River Water Sampling – 10,000 samples
- Residential wells Sampling – 300 wells, Quarterly, 2 yrs
  - Bottled water
- Basin 1 Assessment
- Basin 4 Assessment
- Air quality sampling
- Biological assessment
- Shoreline sediment sample & remediation
- Sediment samples
- Boat and dock cleaning

Reach out to the Community

- Public Communications
  - Website, letters, 866 number, newsletter
  - Public meetings
    - Township meetings
    - Environmental Advisory Committee meetings
  - Private tours
  - MC Environmental Advisory Committee
    - Sierra Club, Watershed, CCD, Clean Water Action, EAC's
- Regulatory Interface
  - Federal, State, local
  - Natural Resource Damage Assessment

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Learn from Mistakes

- Have people in place if an emergency calls you away
- Put your best foot forward.
  - Create a quick adhocracy to think through what's next, implications of what can go wrong. Think ahead – contingency planning.
- Don't make do. Get the help you need.
- Don't try to manage the response from anywhere but the site.
- Check your sources of information and check them again. Be vigilant. Challenge the assumptions.
- Be prepared to manage contractors – we have dozens of them, from biologists to food service

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Learn from Mistakes

- Communicate and then communicate some more. And when you think you are done communicate some more.
- Keep your press people as informed as you are.
- W. Pauli, I don't mind you publishing quickly, I mind you publishing more quickly than you think."
- Stay on message, stay focused.
- Be patient and calm. When in doubt, brew up.
- Keep it light – there is plenty of stress to go around. Don't compound it.
- Be persistent. Keep at it, as Yogi Berra says "It ain't over till it's over" …. And it ain't over yet.

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Creating a culture of safety

- Communication
  - Must be timely
  - Must be clear
  - Must be redundant
- Staff must to encouraged to express minority opinions
  - Designate a devils advocate
- Everyone must understand the details, the limits, the design parameters
- Face facts
- Manage change

Refining the culture

- Training
  - Emergency response procedures
    - We didn't know all of our neighbors
- Communications Systems
  - Learn from mistakes, share with employees, with other facilities, with industry, with other industries
- Retain Knowledge
  - In procedures
- Create an inquisitive environment, intellectual curiosity
- Past success does not equal future success

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Energy Industry is not different than Other Industries

- The power and utility industry has significant risks that need to be managed, the same as other industries.
- The value of risk management and generally accepted engineering and maintenance standards are not limited to the chemical industry.
- The concept is goal setting and performing beyond normal compliance requirements, to establish a high performance culture that effectively manages overall EHS risk.
- Did we understand the risks of all aspects of our facilities before August 23, 2005?

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Integration and Culture

- A company's success in the EHS area must be measured by not only achieving compliance with laws, but sustainability, however you define it.
- Often, broader management issues and opportunities need to be examined to improve EHS culture and compliance.
- EHS success requires refined management systems and supporting accountability metrics that are part of the company culture.

Corporate Environmental Risk Assessment

- Scope
- Introduction
- Initial Beta Test Findings
  - Montour
  - Montana Hydroelectric Facilities
  - Williamsport
- Lessons Learned & Next Steps
- Project Schedule

The Scope of Current Risk Evaluation

- Risks are evaluated considering the following parameters:
  - Enterprise wide
  - Critical systems and subsystems
  - Controlled and uncontrolled events
  - Routine and non-routine conditions –release scenarios
  - Direct effects to media – air, water, land
  - Receptors
  - Safeguards
    - Physical, operational and procedural
    - Evaluated redundancy and effectiveness

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Introduction

- PPL is analysizing potential High Consequence Environmental Events (HCEE)
- A High Consequence Environmental Event is a catastrophic release an environmental medium which may impact human health or the environment, or otherwise affect PPL's relationship with the community, regulatory agencies, and other interested parties
- Initial project work started in December 2005 and focused on:
  - project scope and risk assessment methodology
  - Performing a beta test of the methodology at three types of facilities
- Beta tests were conducted at the following facilities:
  - Montour: week of January 9
  - Williamsport: January 12
  - Montana Hydroelectric (3 sites): week of January 13
- Shaw prepared draft reports for all facilities and is reviewing the reports with PPL
- Analysis of the remaining sites begins the week of March 13

Beta Test Findings - Montour

- 44 potential scenarios evaluated
- 29 determined to have potential for high consequence
- Highest Risk Areas:
  - Ammonia System - Incident involving release from staged railcar on plant property but outside range of ammonia detectors
  - Ash Basin - Berm failure
  - River Water Make-up Line - Long term undetected leaks resulting in development of sink holes along RR line (RR used for delivery of coal and anhydrous ammonia)
  - River Water Intake Pump Transformer – Release of oil directly into Susquehanna River (mitigation measures taken by plant – sealed drain in transformer containment)
  - Mitigation options include extended monitoring of ammonia system and additional analysis of berm integrity

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Beta Test Findings – Montana Hydroelectric Facilities

- 3 hydroelectric plants were evaluated:
- 18 potential scenarios were evaluated
- 11 were determined to have potential for high consequence
- Highest Risk Areas
  - Oil Systems (transformers, lube oil, etc.) releases could flow directly to floor drains and the river
  - Sediment accumulation at the dams from up-river
  - Mitigation options include replacement of some legacy oil systems, improvement in containment and permanent seal of some floor drains

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Beta Test Findings – Williamsport

- 7 potential scenarios were identified
- 5 were determined to have potential for high consequence
- High Risk Areas:
  - No. 2 Fuel Oil Fill Line Rupture – due to accident at scrap metal yard adjacent to facility
  - Oil Tank Fire or Failure
  - Oil Leak at Transfer Station – Delivery hose leak due to failure in connection between tank truck and unloading station
  - Transformer Oil - release of up to 3,860 gallons
  - Mitigation options include increased barriers, containment and supervision

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Lessons Learned and Next Steps

- Extended pilot to refine risk ranking methodology
- Developed detailed risk ranking guidelines and revised scenario format to increase information for each HCEE and facilitate review
- Eliminated the probability factor in the risk rating equation
- Developed project plan and schedule for balance of the project:
  - Refined and focused pre-visit preparation and on-site evaluation
  - Revised level of effort estimates based upon facility type
  - Reduced hours for hydro and combustion turbine sites visits
  - Increased PPL involvement in report review for each facility

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Project Schedule

- Schedule
  - Finalize all beta test reports week of March 6
  - Implement site visits and reporting for Phase I-III facilities on a parallel track to expedite schedule
  - Initiate review of remaining sites week of March 13
  - Complete all site visits by week of April 24
  - Deliver final report in early May

Identification and Mitigation of Risk

- Objectives and targets are tied into monitoring and planning, which in turn are based on identification of risks or “aspects.”
- ISO 14001 use the term ‘aspects” but for practical purposes “aspects” is synonymous with risks.
- Significance has been determined based on the availability of controls

Summary

- The Martins Creek episode changed the way the company looks at environmental risk.
- And the way we think about our neighbors
- Transitioning from a “What is” mentality to a “what if” one.
- Risk management is a natural outcrop from environmental management.