Exercising Record of Decision Flexibility with a Contaminated Sediment Dredging Pilot Project at the Ashland/NSP Superfund Site

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Superfund Site Location

SITE LOCATION MAP

COUNTY LOCATION MAP

NOT TO SCALE

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Record of Decision (2010)


Upper Bluff/
Filled Ravine
Copper Falls
Kreher
Park
Contaminated Bay Sediments


Ashland/NSP Lakefront
Superfund Site
Phase 1
Phase 2

Phase 1 (2013-2014) - Source Control

Phase 2 – Waterway Cleanup

- Breakwater Construction
- 2016 Pilot Project
- 2017-2018 Full Scale Project

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Phase 2 - Breakwater

- Primary Purpose
  - Wave Barrier for 2016 Pilot Project
  - Full-Scale Sediment Remedy Benefits
  - Community Benefits

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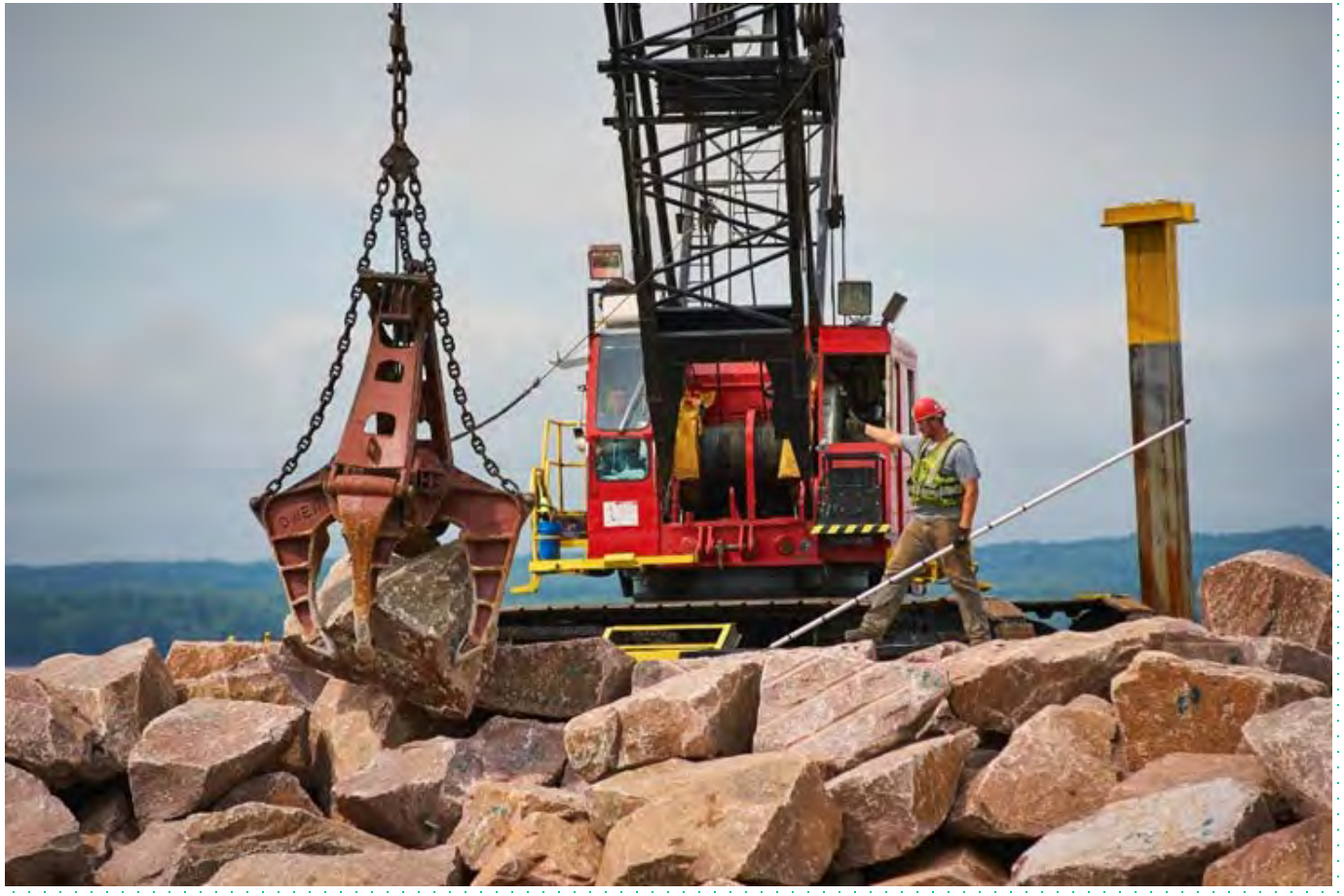
Breakwater Construction



Phase 2 - Pilot Project (2016)

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Pilot Project Objectives

- Targeted Sediment Removal
  - Pilot Study Dredge Area
- Successfully Demonstration of Dredging Technology
  - Sediment Standards
  - Water Quality Standards
  - ROD Requirements

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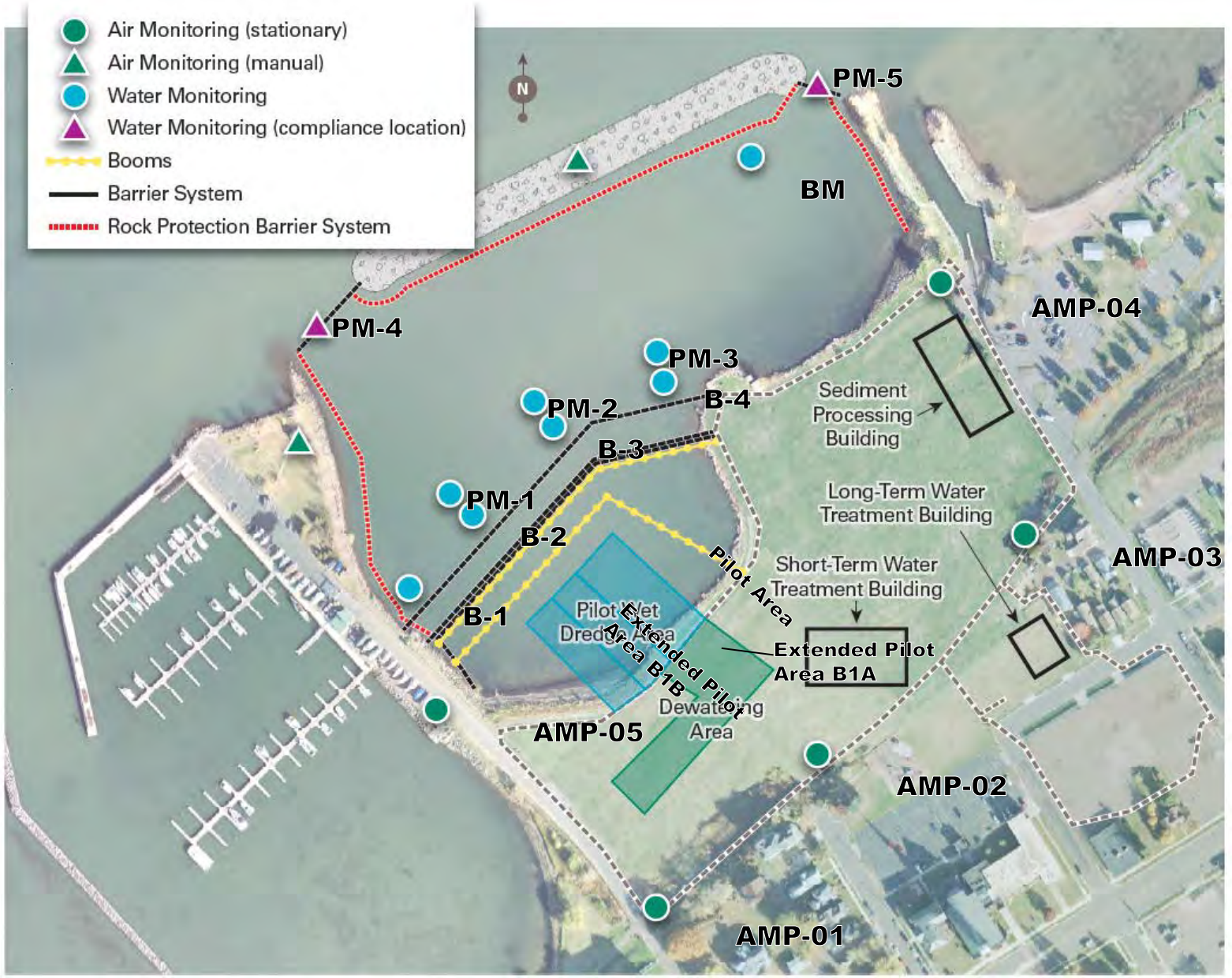
Project Design Overview



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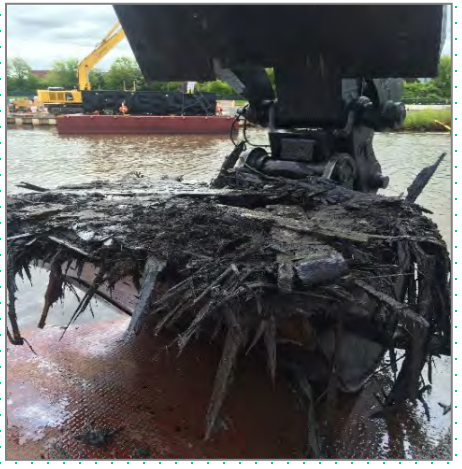
Pilot Project Overview - Summary of Work Completed

- 40,000 square foot Pilot Study Dredge Area
- 8,000cubic yards Removed
- 520 Truckloads to Sub-Title D Landfill
- 12,000 tons of Woody/Concrete Debris and Sediments
- 4 million gallons Water Treated



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Pilot Project Overview - Summary of Work Completed

- Safety a top priority for Xcel Energy and FEJV
- Excellent Safety Record
  - Zero Recordable Incidents
    - Overall Project 200,000+ Incident Free Hours
    - Pilot Project 25,000+ Incident Free Hours

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Summary of Monitoring Effort

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Pilot Project Overview - Summary of Monitoring Effort

- Extensive Monitoring Plan
  - Surface Water
  - Sediments
  - Water Treatment
  - Air Monitoring
  - Noise Monitoring

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Air Results

- 5 Fixed Monitoring Stations
  - Time-Weighted Average - 6 Indicator chemicals
    - No results over health values
  - Real-time for TVOCs and Respirable PM10
    - No values over action levels
    - 15 false alarms from off-site sources

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Odor Management

- Odor Management
  - No results over health based standards
  - Contacted 5 times on odor by members of the community

    - Immediate corrective action steps taken in each case
  - Sources primarily material handling
  - Dredging not significant odor activity

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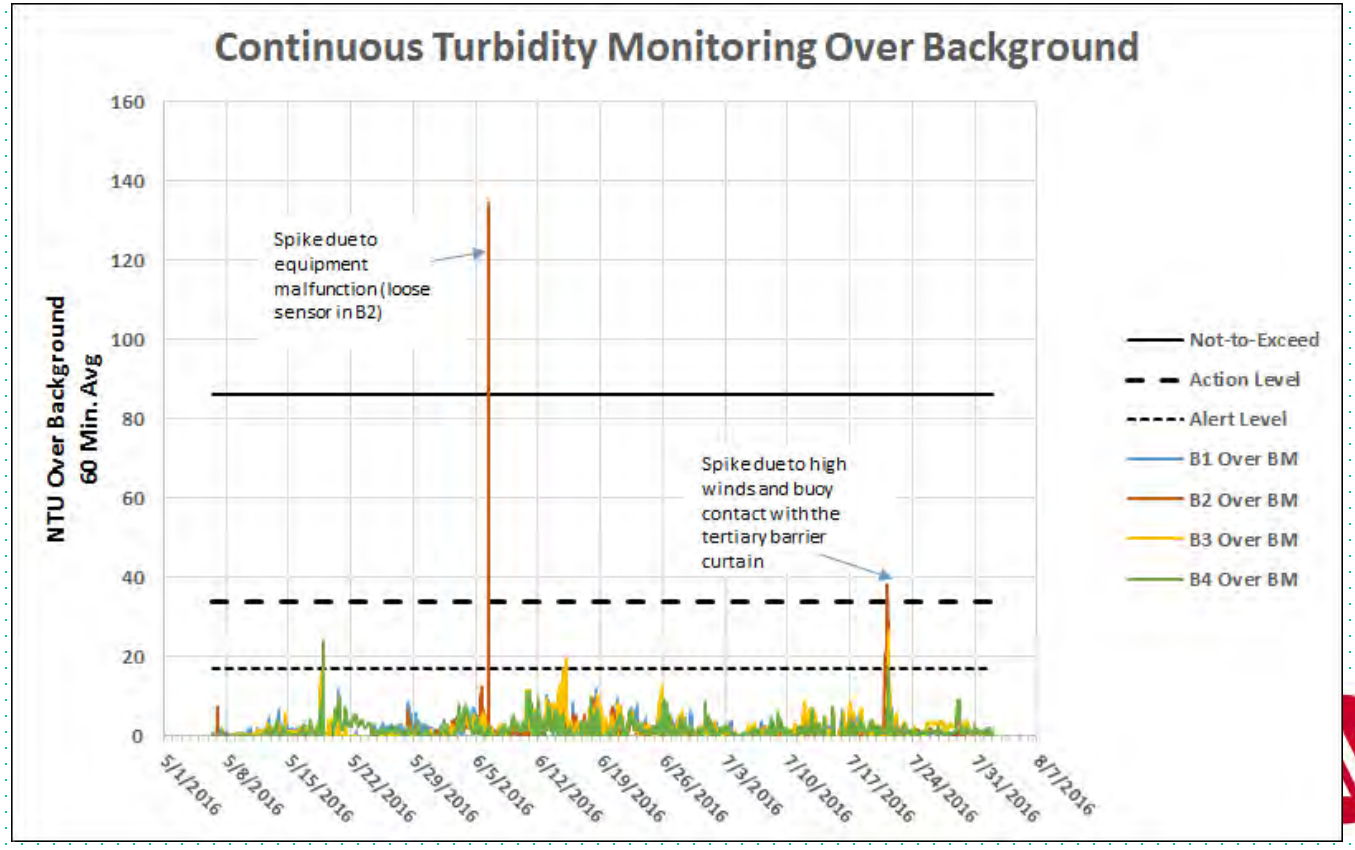
Turbidity Results

- No Results over Action Levels
  - Thousands of water samples measured



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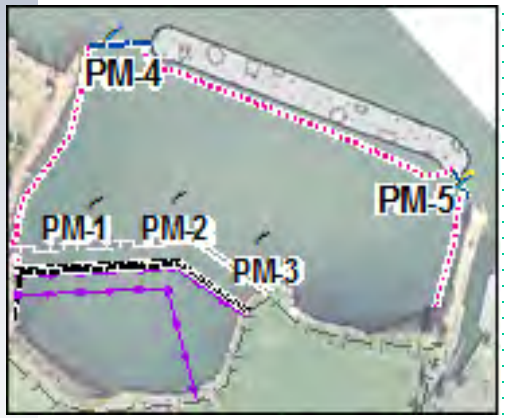
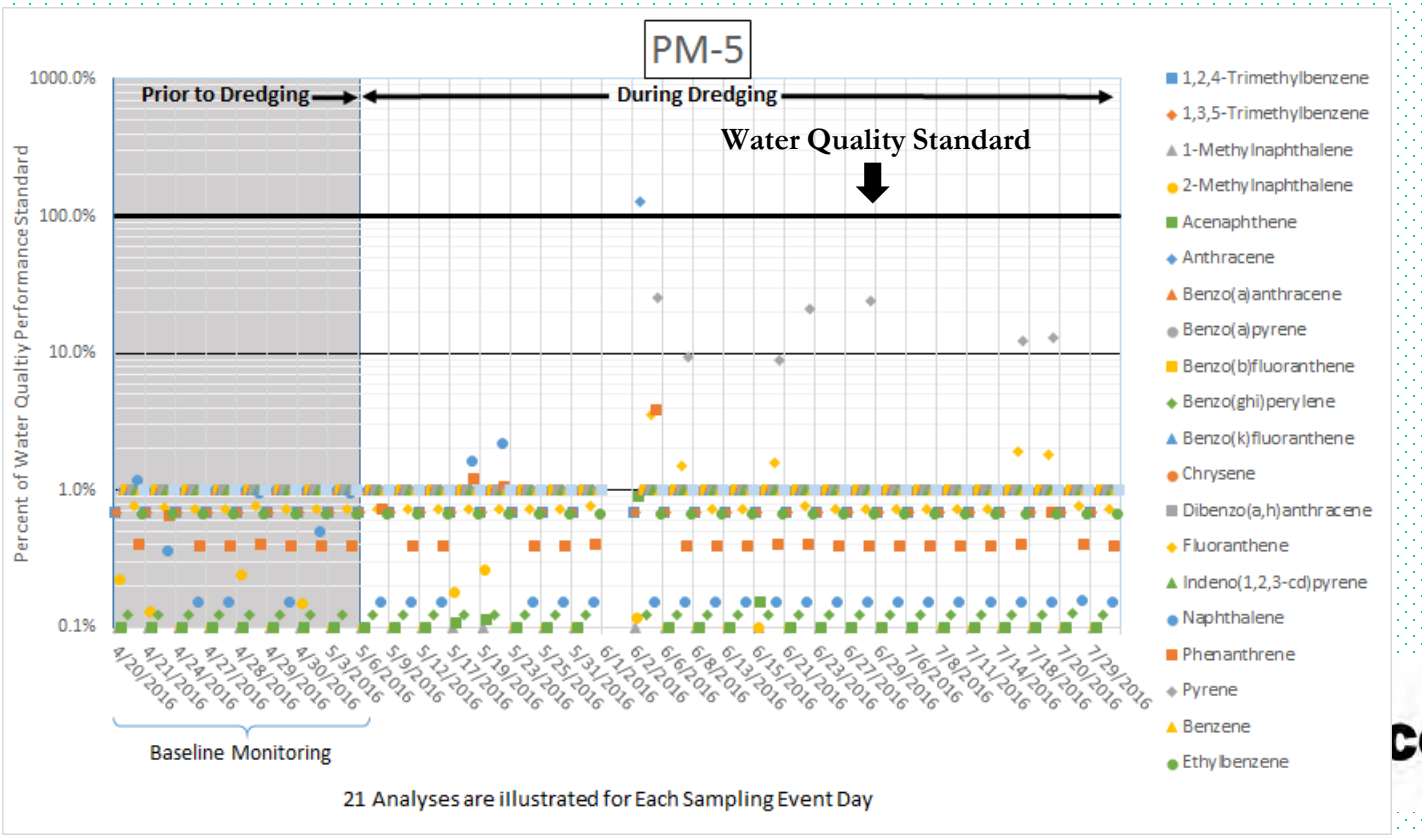
Monitoring Results – Surface Water COCs

- Over 1,300 monitoring analyses at PM-4 and PM-5, one result for one constituent above compliance value - within range of baseline conditions:





Monitoring Result - Sediment

- Mechanical and Hydraulic Dredge Design
- Post-dredge Targets
  - 9.5 ppm SWAC tPAH
  - 22 ppm Not-to-Exceed tPAH

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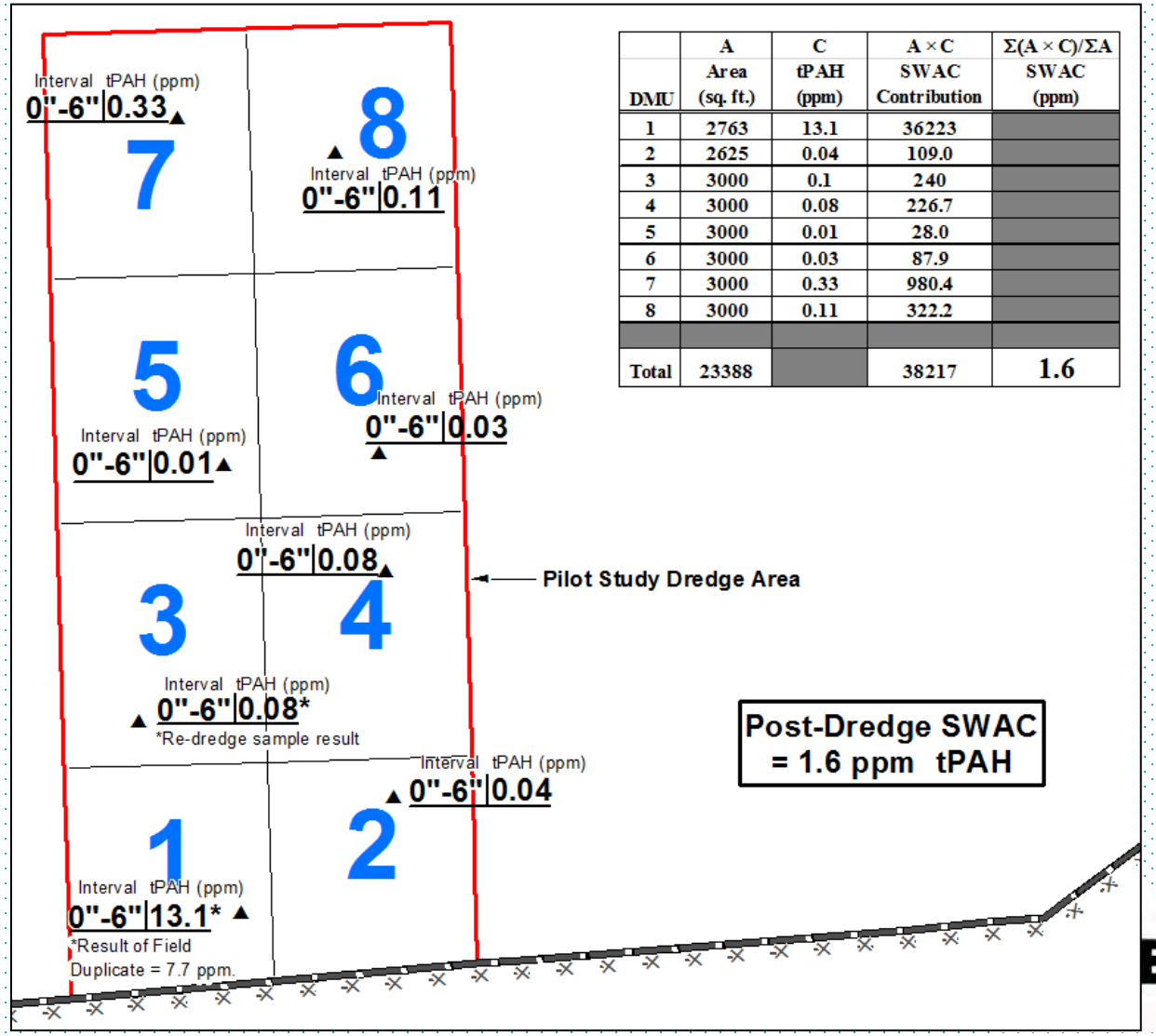
Monitoring Results - Sediment SWAC 1.6 ppm



DMU	A Area (sq. ft.)	C tPAH (ppm)	A × C SWAC Contribution	Σ(A × C)/ΣA SWAC (ppm)
1	2763	13.1	36223	
2	2625	0.04	109.0	
3	3000	0.1	240	
4	3000	0.08	226.7	
5	3000	0.01	28.0	
6	3000	0.03	87.9	
7	3000	0.33	980.4	
8	3000	0.11	322.2	
Total	23388		38217	1.6

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Monitoring Results - Sediment PAH Mass Removal

- 99.9 % Contaminant Removal

	Pre-Dredge	Post-Dredge	% Removed
	tPAH (lbs.)	tPAH (lbs.)	
Wood	48.9	0	100%
Sand	34.6	0.01	100%
Silt/Clay	0.6	0.01	98.3%
Total	84.1	0.01	**99.9%**

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December 2016 - ESD Issued

- Pilot Project Determined a Success
- Saves Xcel Energy Tens of Millions
- Allows 2017/2018 Full Scale Project

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Project Team

LATHAM & WATKINS LLP

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Joint Venture

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Xcel Energy SM

WISCONSIN DEPT. OF NATURAL RESOURCES

Ashland WISCONSIN

Lake Superior HOMETOWN

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