



**Honeywell**



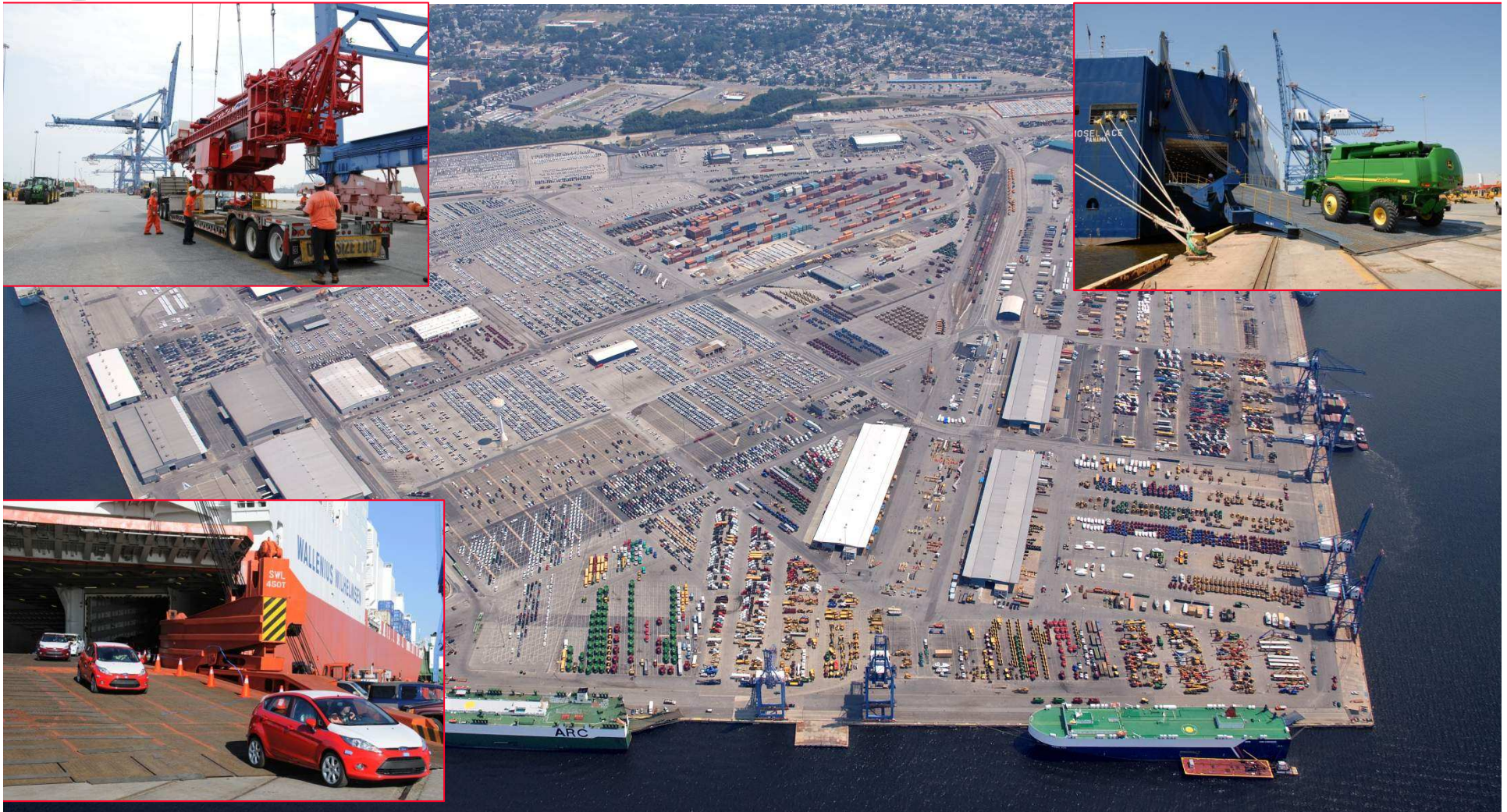
# **Dundalk Marine Terminal Remediation CMAA Public Presentation**

**February 3, 2011**



# Port of Baltimore – 15<sup>th</sup> largest port in U.S.

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***Vital Economic Engine – 16,700 direct jobs;  
\$3.7 billion in wages and \$3.2 billion in business revenue;  
22.4 million tons of cargo valued at \$30.2 billion***



“If it moves on a vessel, Dundalk can handle it.”

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## The Port’s largest and most versatile general cargo facility: the Dundalk Marine Terminal

### Economics:

- 2,450 direct jobs, \$450 million in annual wages and salaries
- Generates \$50 million in annual state and local tax revenues

### Infrastructure:

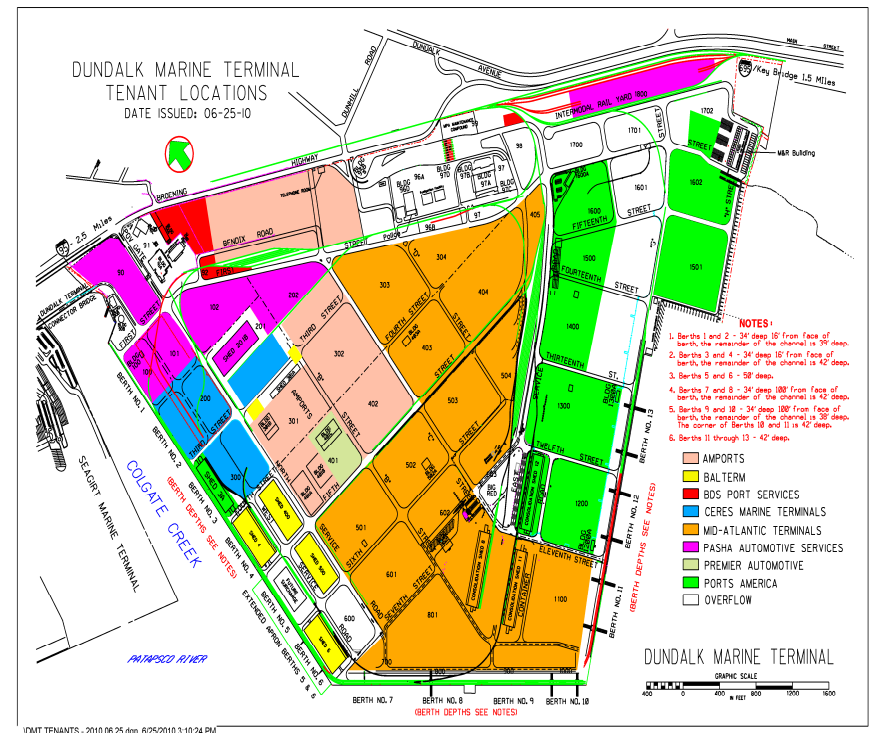
- 580 acres and 13 shipping berths
- 9 permanent container cranes, 1 mobile crane
- 9 warehouse sheds with 20 acres under roof
- Direct rail access

### What does it handle?

- Autos, Containers
- Breakbulk, Steel
- Forest products, roll-on, roll-off

### Who handles it?

- Balterm, Ceres, Ports America Chesapeake
- Amports
- Pasha
- Mid Atlantic/Wallenius Wilhelmsen Logistics





## MPA/MDE/Honeywell Agreement

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### Consent Decree – April 2006

- Established process for investigation and remedy evaluation
- Required series of Technical Reports that form basis of remedial alternatives development
- Identified criteria for evaluating remedial alternatives
  - Health, Safety, and Protectiveness
  - Federal and State environmental laws
  - Overall effectiveness
  - Degree to which remedy will interfere with ongoing Port operations
- Sets schedule up to submittal of remedial alternatives – Corrective Measures Alternative Analysis (CMAA)
- Consent Decree filed in federal court after reviews and approval by MDE; cost paid by Honeywell and MPA

***MDE will select final remedy***



## **Protecting Health and Environment—Top Priority**

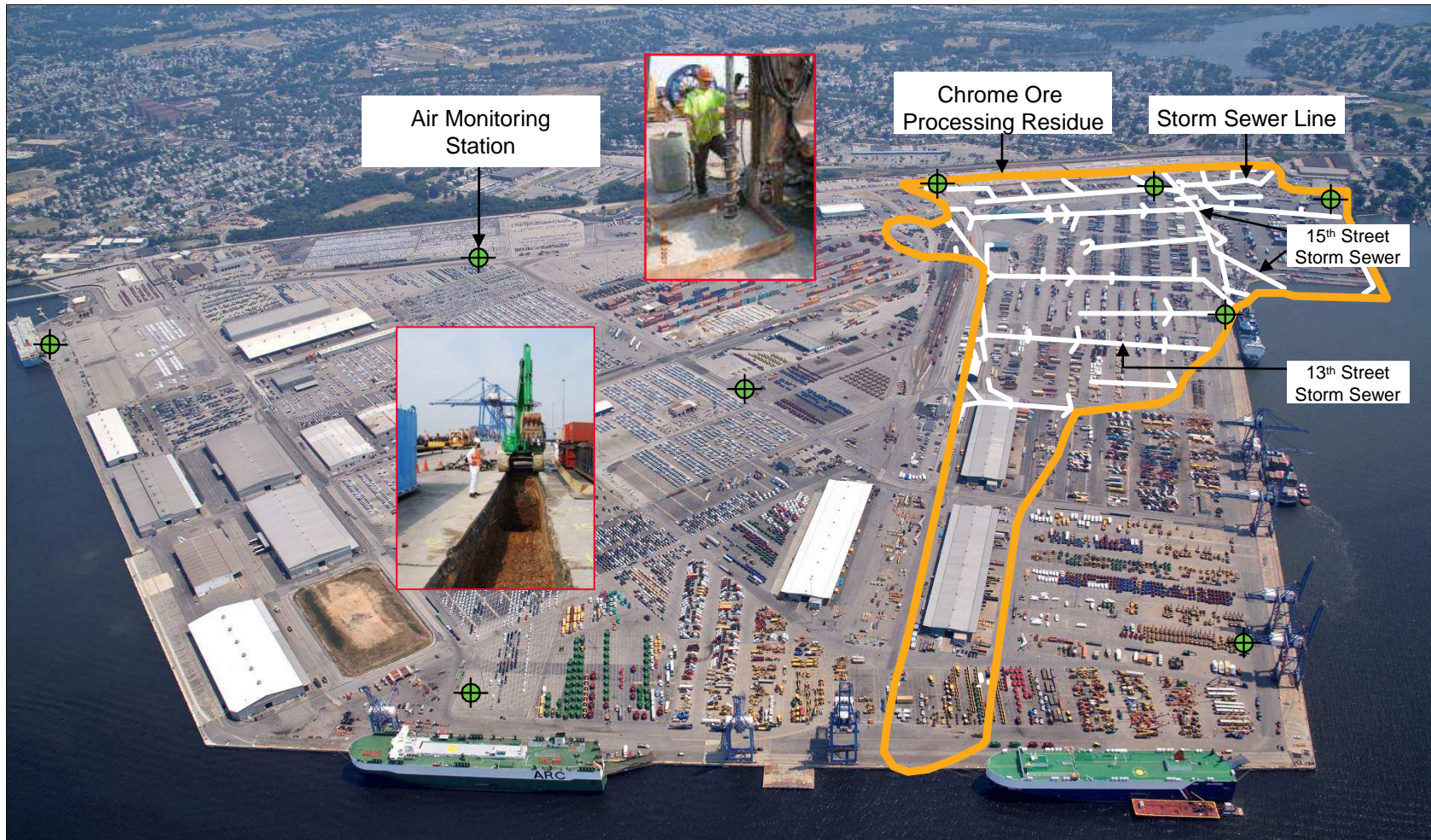
- COPR is contained within a well-defined area where it is covered with a clean soil layer and asphalt pavement cap
- Accelerated interim measures significantly reduce amount of hexavalent chromium getting into storm drains
- Groundwater is not a source of drinking water at Terminal or in local communities
- Hexavalent chromium not found in river sediments or surface water above federal criteria; hexavalent chromium naturally changes into non-hazardous form (trivalent chromium) when it reaches the river
- Human Health/Ecological Risk Assessments reviewed by MDE
- Air monitoring conducted at perimeter and work zones
- Monthly air monitoring results submitted to MDE

***Data shows that COPR has not migrated/escaped by air or groundwater from the Terminal***



# Dundalk Marine Terminal Site Investigations

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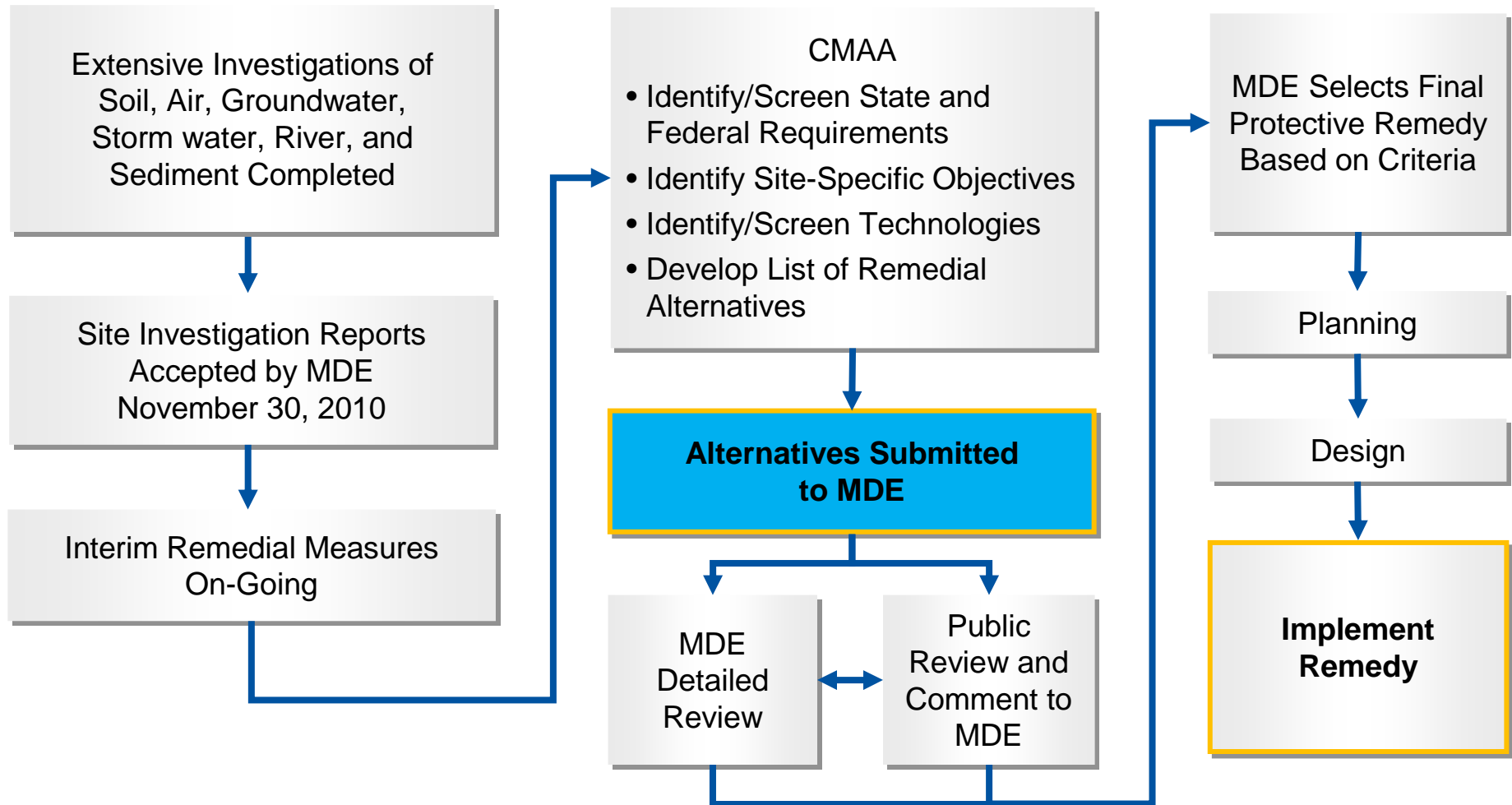


***Extensive investigation – more than 5,600 samples collected under MDE direction***



# Investigation and Remedy Selection Process

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*Opportunity for Public Input*



## Interim Remedies Achieving Results

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- Groundwater Treatment Plant has treated an average of **42 million gallons of storm water/year** since 2006; resulting water quality meets MDE requirements
- Since 2006 almost **two miles of storm drains have been relined** to prevent chromium from entering drains; advanced relining technologies being used; significant reduction of chromium moving into storm drains
- **20 acres of new blacktop cap since 2005 strengthens COPR containment**
- Extensive testing of advanced technologies underway



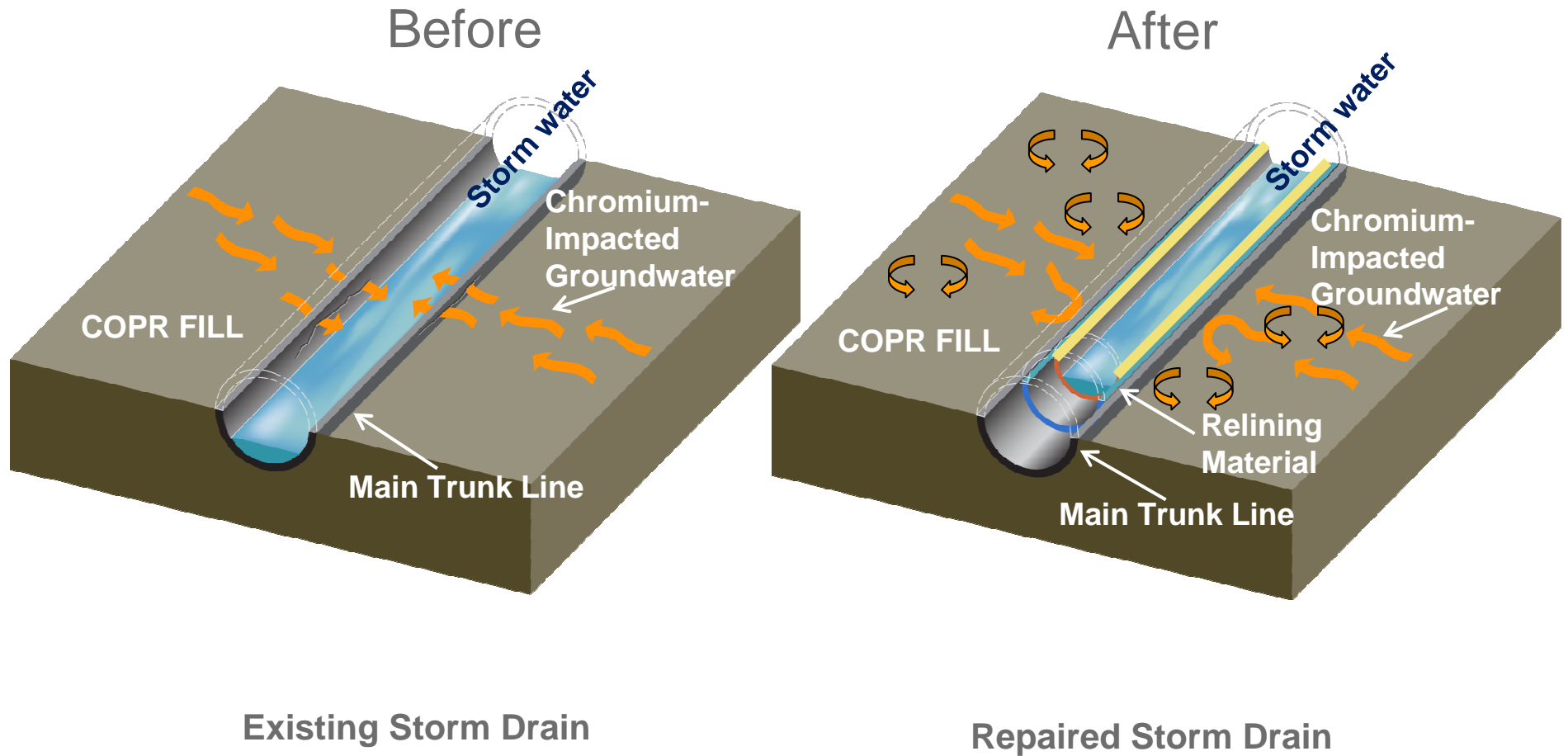
**Accelerated program for interim remedies under MDE supervision;  
agency will review before selecting final remedy**





# Impact of Storm Drain Relining

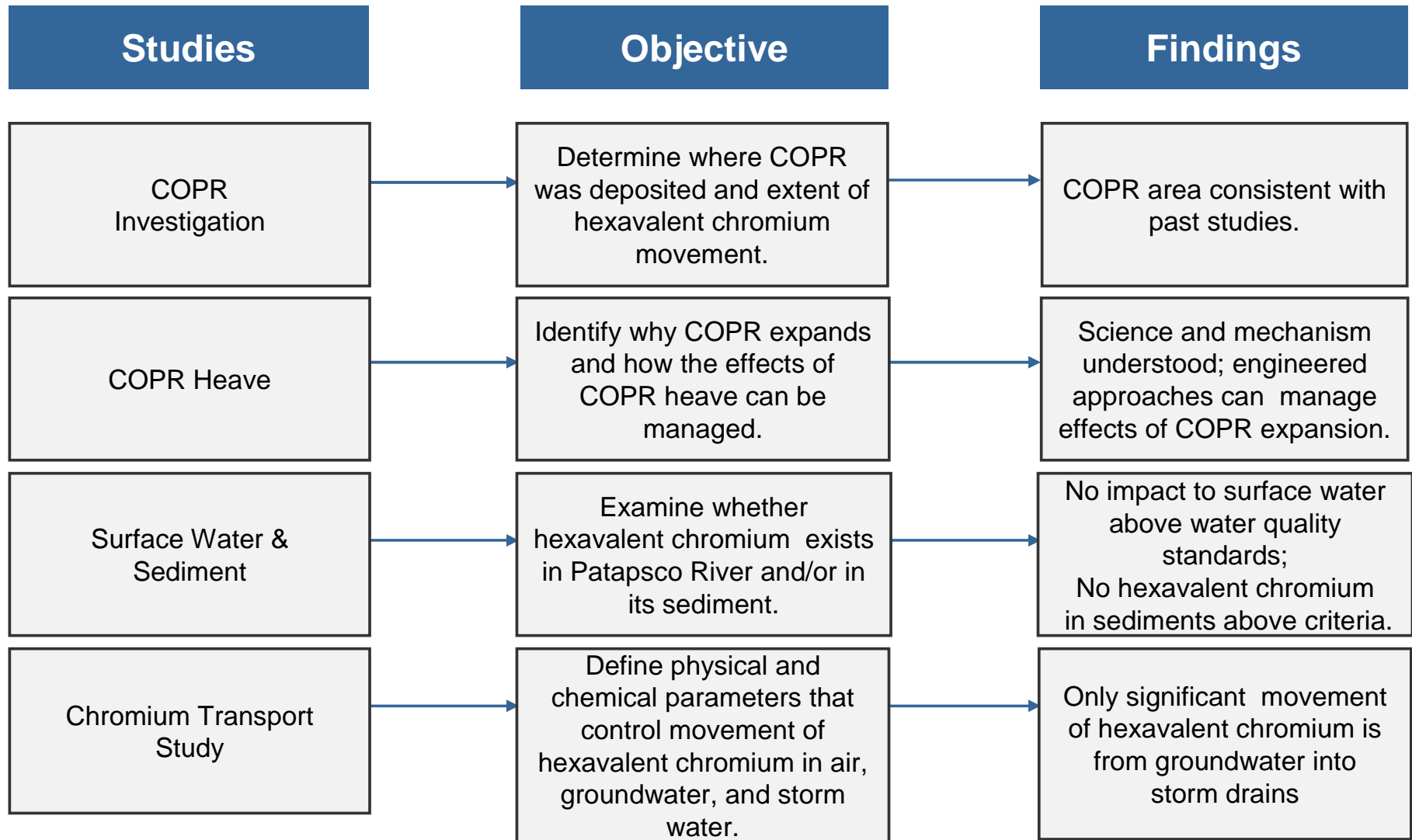
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*Relining prevents hexavalent chromium movement*



# Comprehensive Studies - Accepted by MDE





# CMAA Remedy Alternatives

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**Alternative 1** No Further Action (required by Consent Decree)

**Alternative 2** Basic Containment

**Alternative 3** Enhanced Isolation and Containment

**Alternative 4** Partial Excavation

**Alternative 5** Full Excavation (required by Consent Decree)



## Alternative 1 – No Further Action

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- Establishes baseline remedy by which others can be measured
- Required by Consent Decree
- Includes work performed before 2006 Consent Decree

*No Further Action Remedy establishes a baseline for comparison*



## Alternative 2 – Basic Containment

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- **All Components of Alternative 1**
- Includes Interim Measures from 2006 Consent Decree
- Formal blacktop cover maintenance program and drinking water monitoring

*Alternative 2 expands upon Alternative 1*



## Alternative 3 – Enhanced Isolation and Containment

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- Focuses on *preventing* contaminated groundwater from entering storm drains
- Alternatives 1 and 2 focus on the *treatment* of contaminated groundwater

- **All Components of Alternative 1**
- **All Components of Alternative 2**
- **Reline remaining storm drains to prevent contaminated groundwater from getting into drains**
- **Establish Performance Management Program**
  - Monitoring effectiveness and performance of remedy
  - Establish triggers to identify need for additional measures
  - Routine reporting of effectiveness of remedy
  - Perform measures to ensure containment
  - Maintain data on inspections and maintenance in electronic database
- **Install storm line vaults for inspection, cleaning and repair**
- **Monitor groundwater with new compliance wells**

***Alternative 3 - prevents storm water contamination;  
only movement of chromium is from groundwater to storm drains***



## Alternative 3 – Enhanced Isolation and Containment

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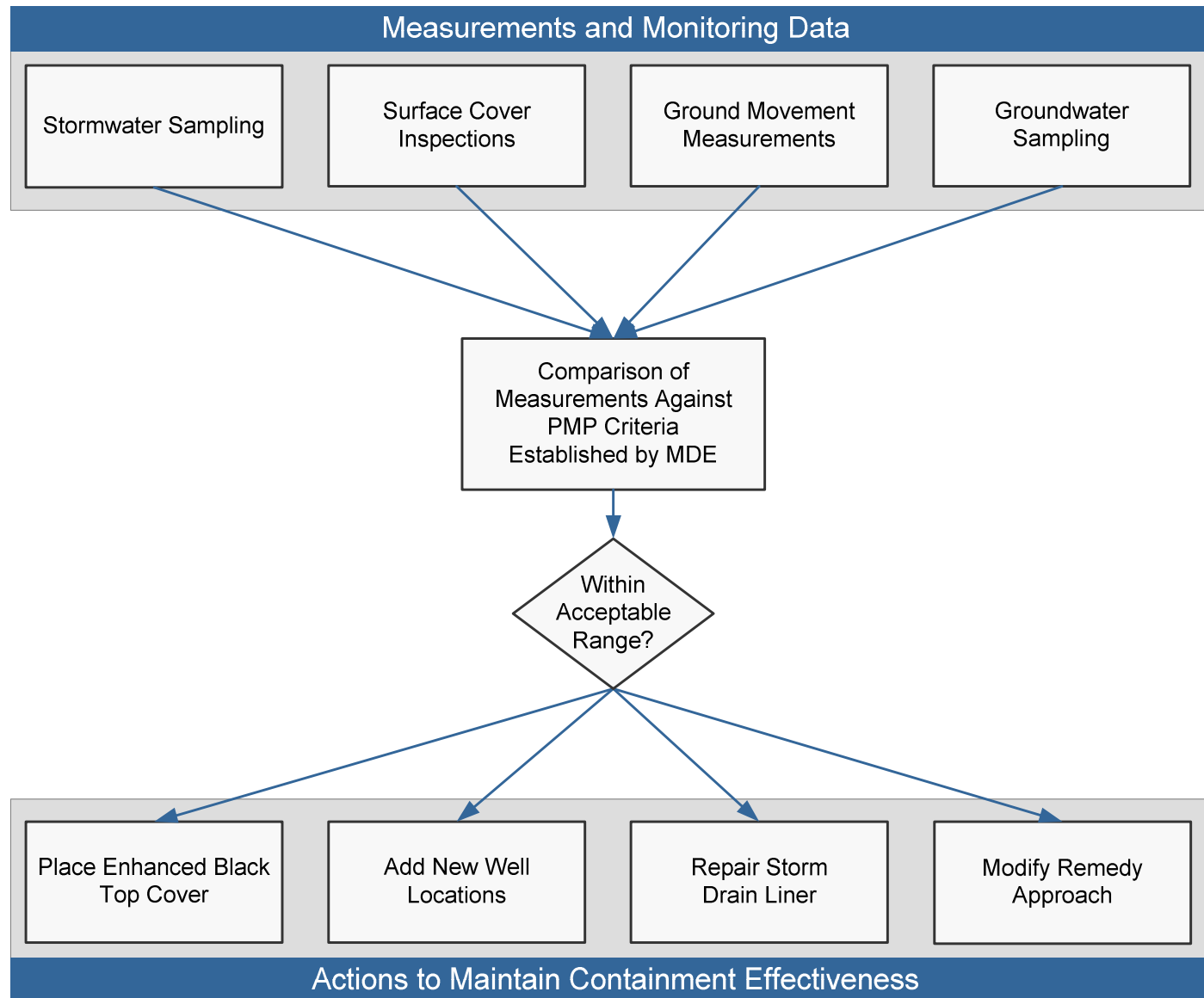
### IMPACTS

- Increases protection above Alternatives 1 and 2 by protecting storm water discharge
- Groundwater monitoring to ensure no off-site impacts
- Protects health and environment with fewer short term impacts to local communities
- Less potential for on-site injury or accident compared to excavation alternatives
- Manageable disruption to Port operations
- Prevents contamination of storm water prior to discharge to river
- May require modifications to remedy approach depending on performance data

***Alternative 3 – requires monitoring; is fully protective and results in fewer short term impacts to community, port workers and tenants***



# Performance Management Program (PMP) **Honeywell**



***Measure, Compare, and Take Action if Necessary***





## Alternative 4 – Partial Excavation

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- Provides variation of excavation alternative required by the Consent Decree

- Removal and off-site disposal of 130 acres of COPR (approx. 1.4 million tons) above groundwater table
- Implement Site Drinking Water Monitoring Plan until excavation is complete
- Collection and treatment of storm water only during excavation
- Total Implementation Time = 10 years
  - Design and Permitting = 3 years
  - Site Preparation = 2 years
  - Excavation, Disposal, Site Restoration = 5 years

***Alternative 4 – Removes substantial amount of COPR but disrupts Port operations and risks loss of Port tenants***



## Alternative 4 – Partial Excavation

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### IMPACTS

- Removes 35% of all COPR
- Major disruption to Port operations – loss of rolling 15 acres
- Results in several hundred jobs lost or threatened; added costs over seven years
- Significant increase in local truck, rail, and barge traffic for off-site disposal of COPR and importing clean fill
- Increased noise resulting from excavation of COPR
- Reduces potential for COPR movement

***Alternative 4 – Removes 35% of COPR but at potential loss of \$26.4 million in revenue and threat to several hundred jobs; likely effect on local communities***



## Alternative 5 – Full Excavation

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- An alternative required to be evaluated by the Consent Decree

- Removal and off-site disposal of all 148 acres (approx. 4.1 million tons) of COPR above and below groundwater table
- Demolition and replacement of three large on-site buildings
- Groundwater treatment, storage, and discharge required
- Installation of slurry wall during groundwater excavation
- Erosion and sediment controls during excavation activities
- Total Implementation Time = 13 years
  - Design and Permitting = 2 years
  - Site Preparation = 3 years
  - Excavation, Disposal, Site Restoration = 8 years

***Alternative 5 – removes all COPR but causes extensive Port disruptions and risk of permanent loss of Port tenants***



## Alternative 5 – Full Excavation

**Honeywell**

### IMPACTS

- Removes all COPR
- Major disruption to Port operations – loss of rolling 15 acres
- Results in several hundred jobs lost or threatened; added costs over 10 years
- Significant increase in local truck, rail, and barge traffic for off-site disposal of COPR and importing clean fill
- Increased noise resulting from excavation of COPR
- Eliminates potential for COPR movement

***Alternative 5 – Removes all COPR but at potential \$37.7 million revenue loss and threat to several hundred jobs; likely effect on local communities***



## Consent Decree Remedy Evaluation Criteria

**Honeywell**

- **Protect health and environment from chromium ore processing residue (COPR) at Port**
- **Meet all federal and state environmental laws**
- **Reduce toxicity, mobility or volume of contamination**
- **Ensure long-term protectiveness and permanence**
- **Consider short-term risks associated with implementation**
- **Consider degree to which a remedy will interfere with ongoing Port operations**
- **Be cost effective**
- **Be able to implement**

***MDE will select final remedy***



# Comparison of Alternatives

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Criteria	Alternatives				
	1 No Further Action	2 Basic Containment	3 Enhanced Containment & Isolation	4 Partial Excavation	5 Full Excavation
Overall Protection of Human Health and Environment	●	●	●	●	●
Compliance with Regulations	○	◐	●	●	●
Long-Term Effectiveness And Permanence	○	◐	●	●	●
Potential for Reducing Toxicity, Mobility, and Volume	◐	◐	◐	◐	◐
Short-Term Effectiveness	●	●	●	○	○
Ability to Implement	●	●	●	○	○
Interference with Port Operations	●	●	●	○	○
Cost Effectiveness	◐	◐	●	○	○

Highly Favorable    
 Favorable    
 Not Favorable

*Remedies evaluated against eight criteria*



# CMAA Schedule

