Dundalk Marine Terminal Remediation
CMAA Public Presentation

February 3, 2011

Port of Baltimore – 15th largest port in U.S.

Honeywell

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.”

Honeywell

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:

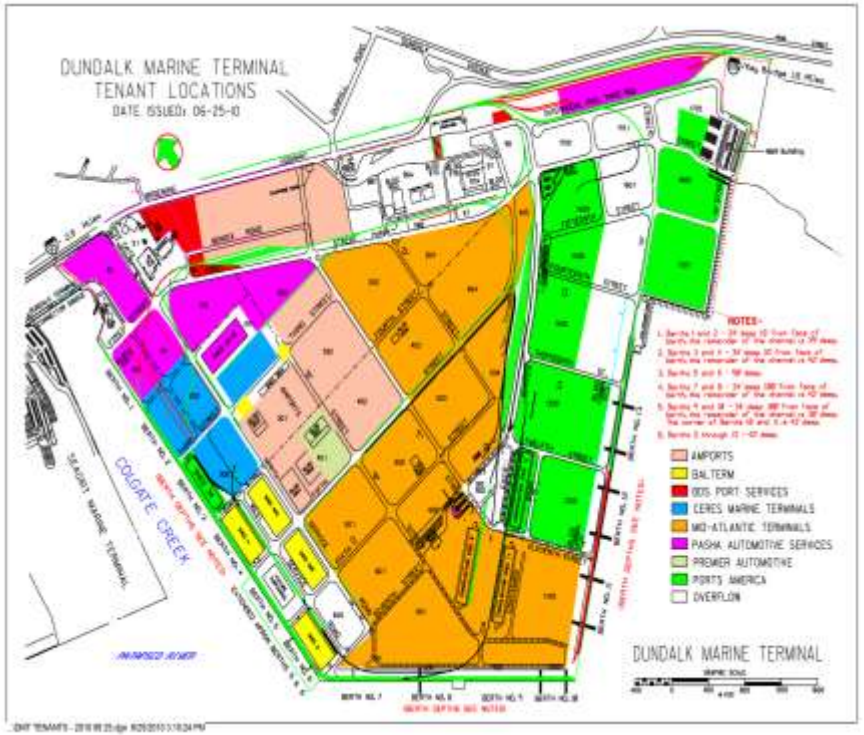
- 580 acres and 13 shipping berths
- 9 permanent container cranes, 1 mobile crane
- 9 warehouse sheds with 20 acres under roof
- Direct rail access

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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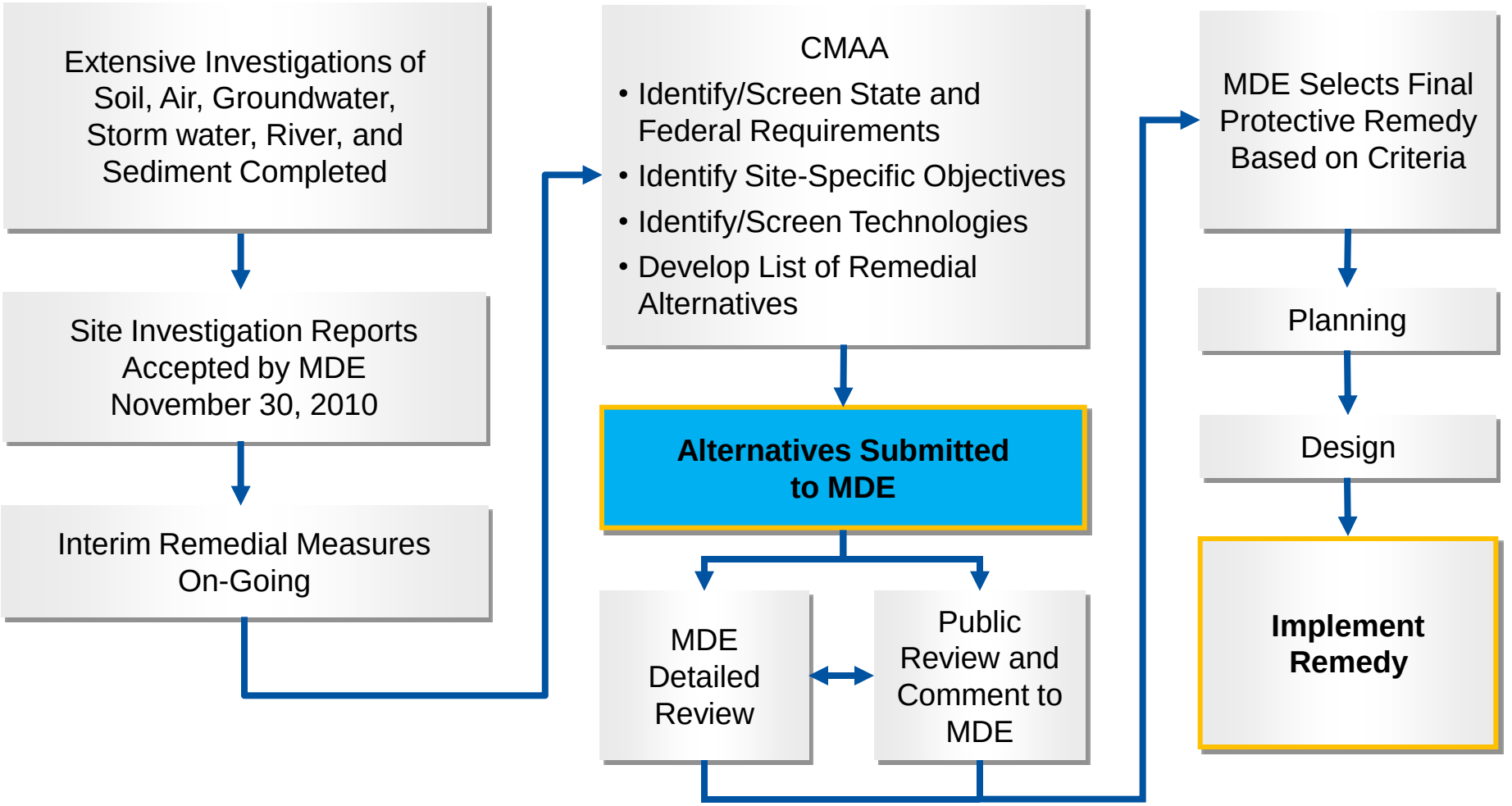

Opportunity for Public Input

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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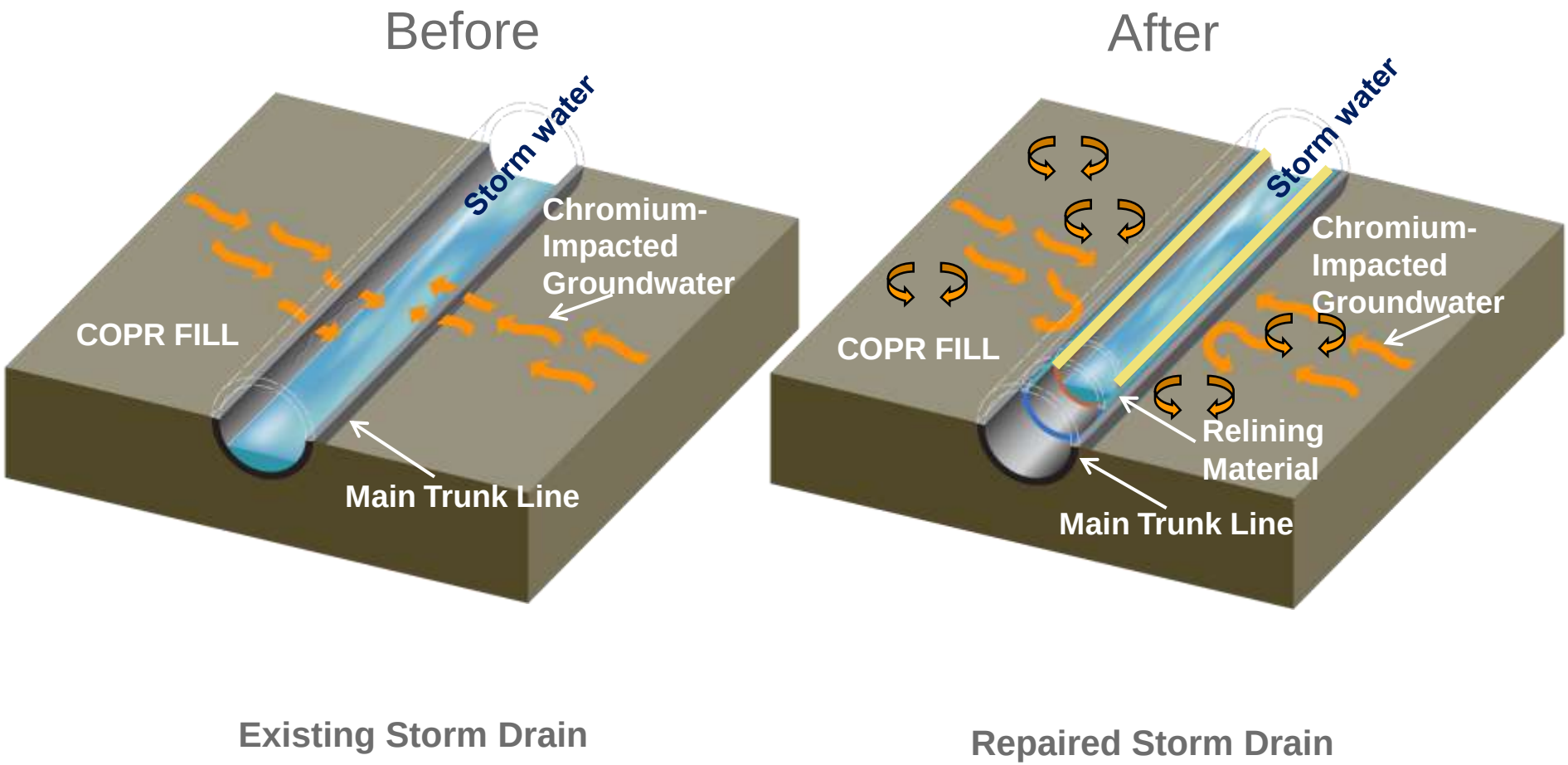

Existing Storm Drain

Repaired Storm Drain

Relining prevents hexavalent chromium movement

Comprehensive Studies - Accepted by MDE

Studies	Objective	Findings
COPR Investigation	Determine where COPR was deposited and extent of hexavalent chromium movement.	COPR area consistent with past studies.
COPR Heave	Identify why COPR expands and how the effects of COPR heave can be managed.	Science and mechanism understood; engineered approaches can manage effects of COPR expansion.
Surface Water & Sediment	Examine whether hexavalent chromium exists in Patapsco River and/or in its sediment.	No impact to surface water above water quality standards; No hexavalent chromium in sediments above criteria.
Chromium Transport Study	Define physical and chemical parameters that control movement of hexavalent chromium in air, groundwater, and storm water.	Only significant movement of hexavalent chromium is from groundwater into storm drains

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

Honeywell

- 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)

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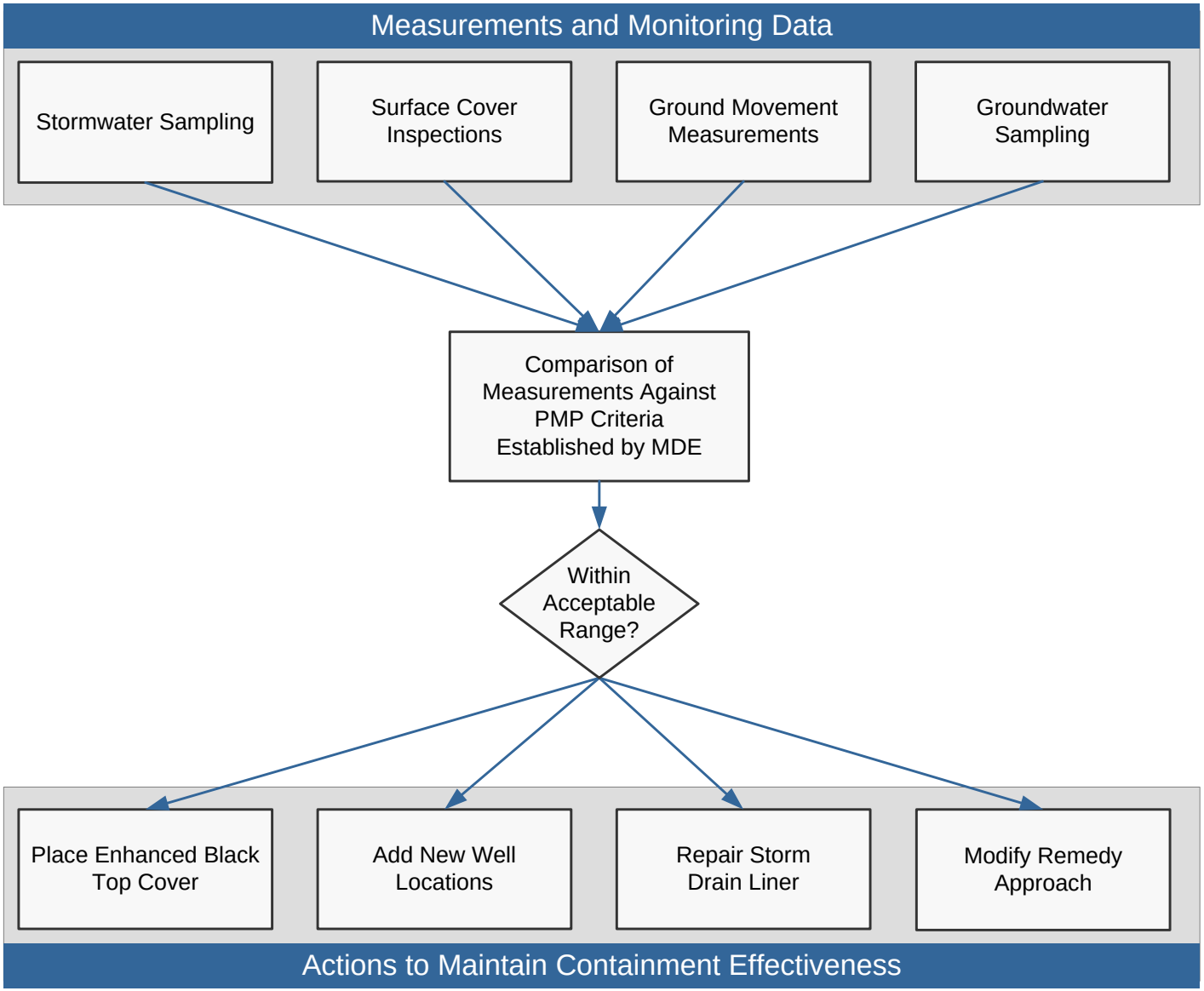

Measure, Compare, and Take Action if Necessary

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

Honeywell

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