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How Can the Cost Allocation Process Adapt to an Adaptive Remedy?

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What do we mean by “adaptive remedies”

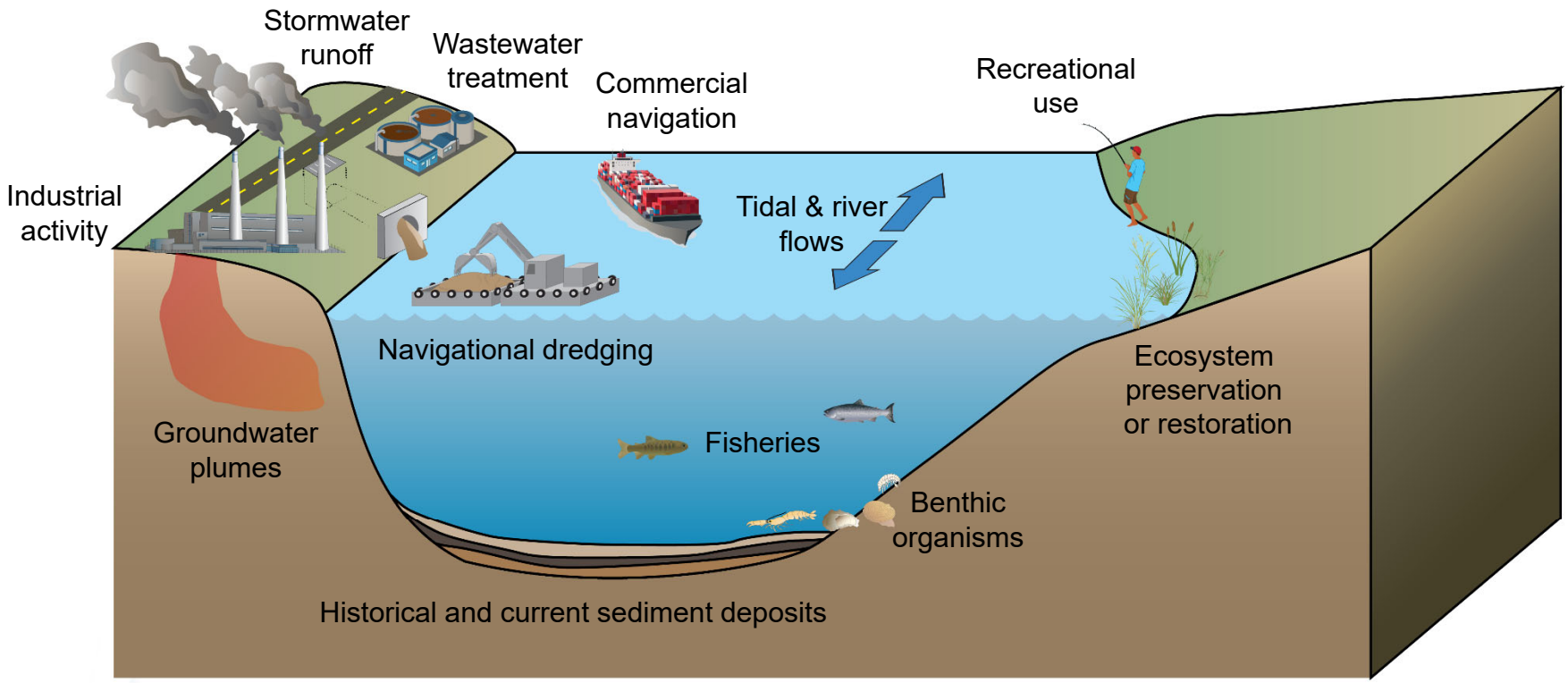
- Adapt:

  To adjust oneself to different conditions, environment, etc.

- “Adaptive Remedies” are remedies that
  - Contain flexible elements
  - Respond to new data
  - Remedial footprint evolves
  - Often rule-based remedies
  - Inclusive of formal “Adaptive Management”

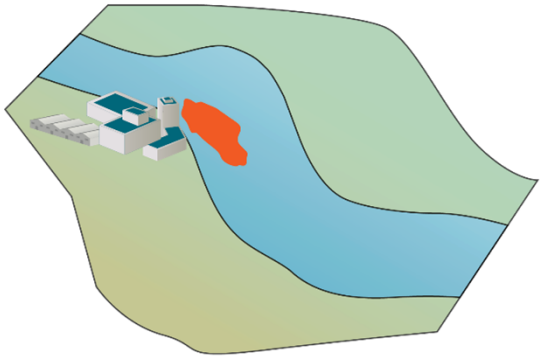
Complex Sediment Sites

- Waterways are dynamic

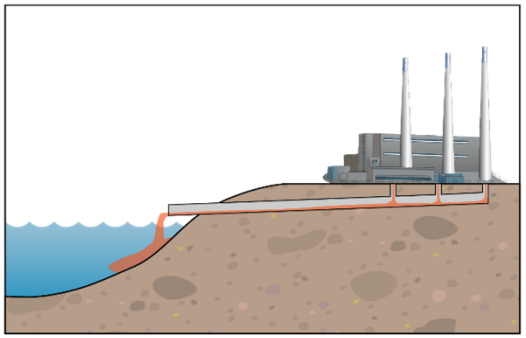


Why do we need “adaptive remedies”?

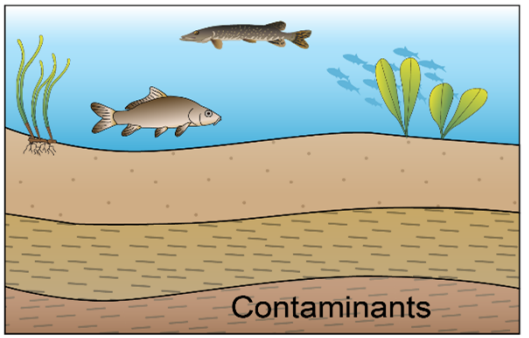
Evolving contaminant distributions



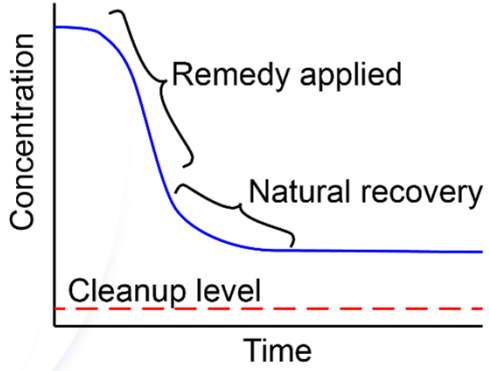
Ongoing source control



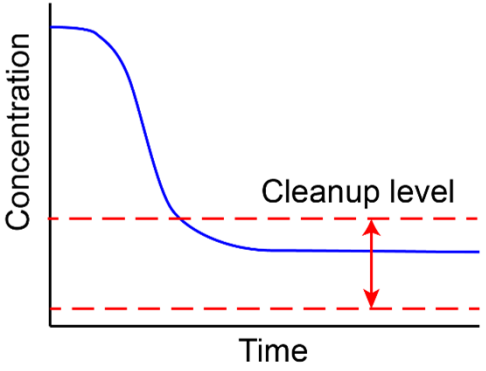
Natural recovery



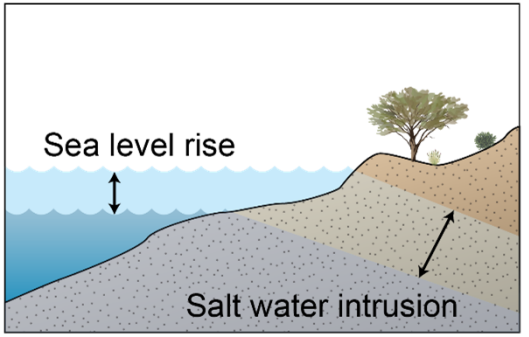
Uncertainty achieving cleanup levels



Changing cleanup levels



Climate change / unforeseen events



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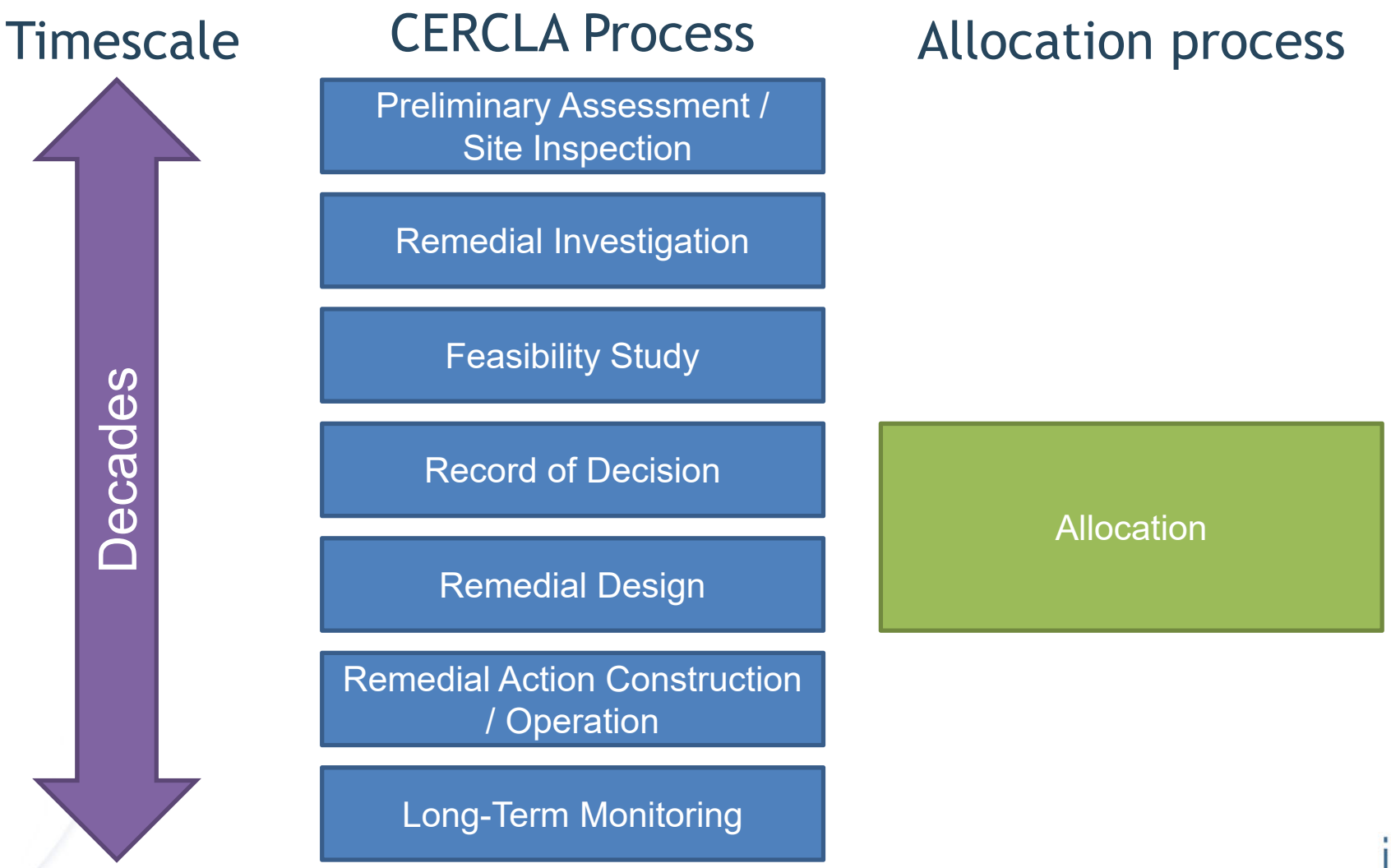
Traditional Allocation Process



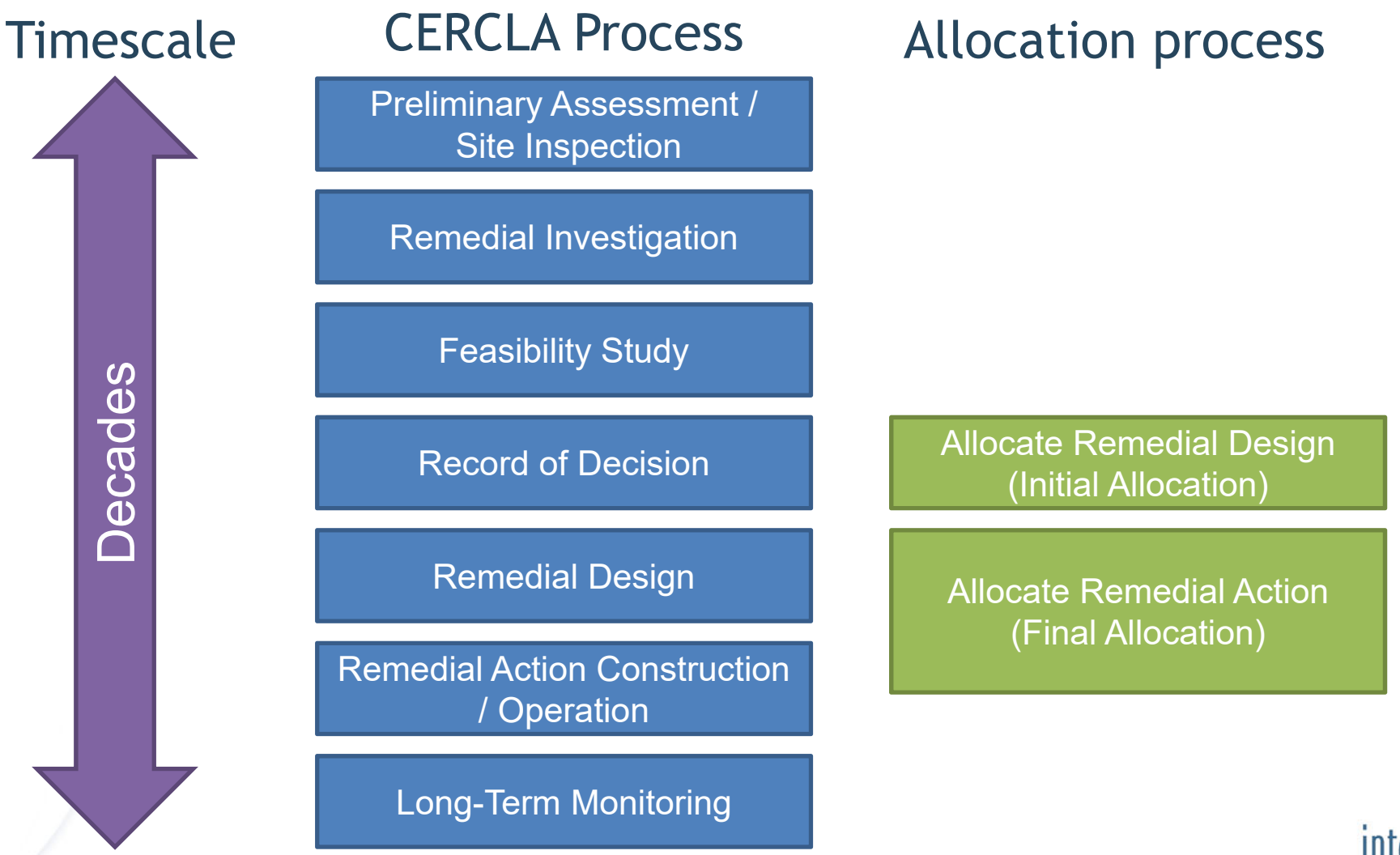
Challenges with Allocating Adaptive Remedies

- The remedy is not final
- Long timeframes (i.e. decades)
- Large PRP groups
- Unease with whole river allocation

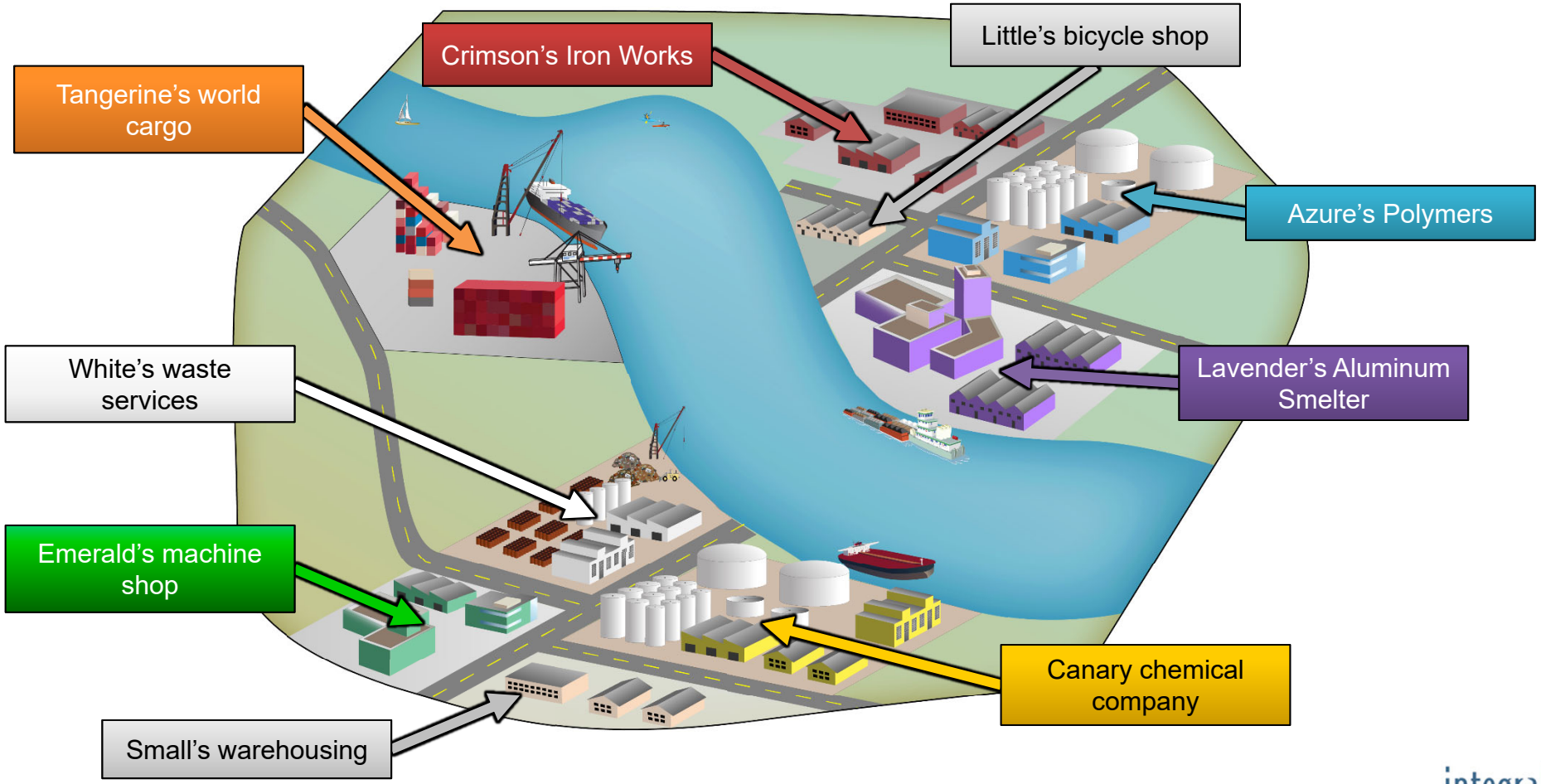
Adapting the Allocation Process

- Improved allocation of “Adaptive Remedies” should:
  - Accommodate changes
  - Incorporate available site information
  - Provide a framework
  - Avoid too much complexity

Adapting the Allocation Process: Subset the allocation in time and space

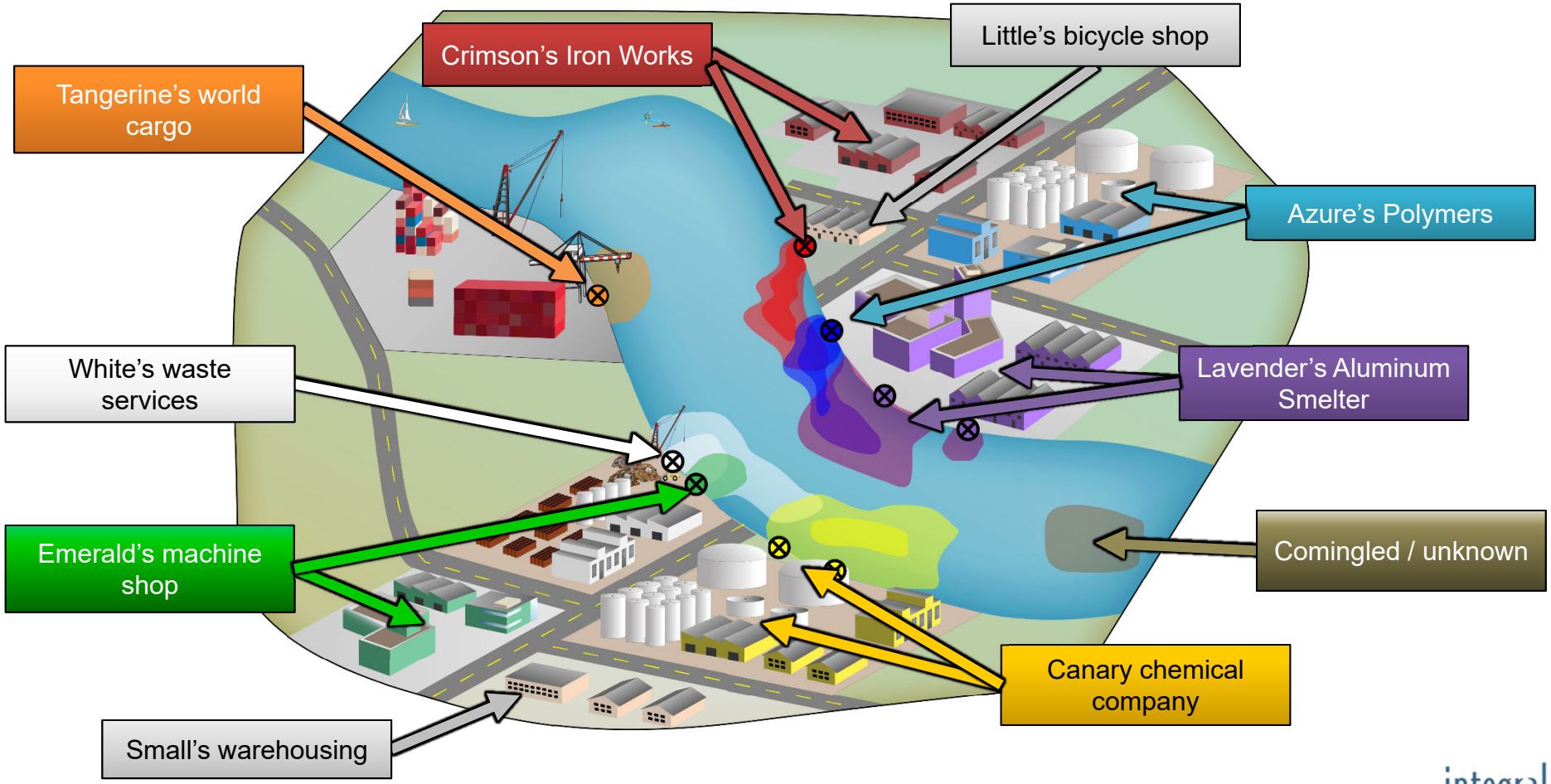


Adapting the Allocation Process: Subset the allocation in time and space



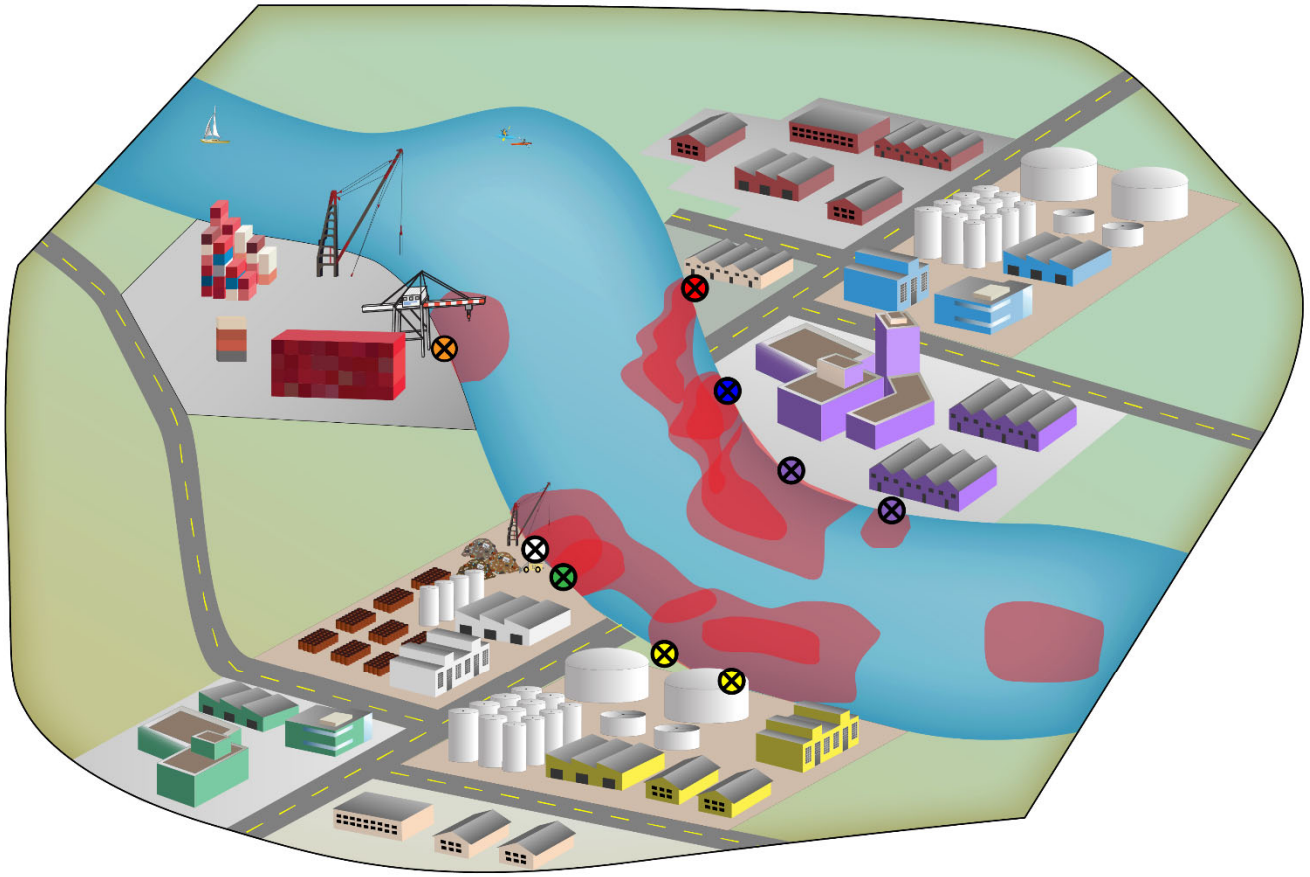
Adapting the Allocation Process: Subset the allocation in time and space

- If discharges were known:



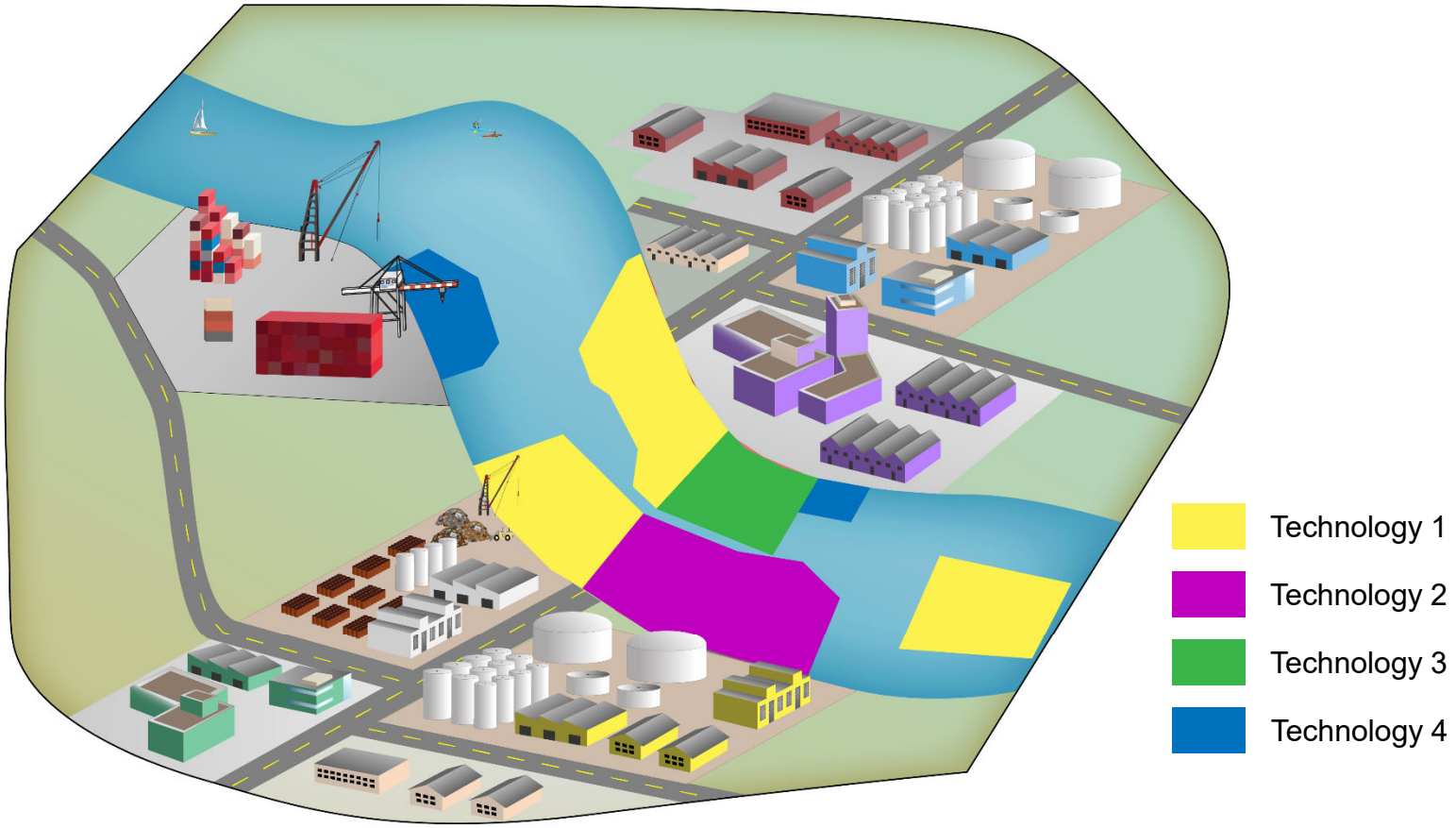
Adapting the Allocation Process: Subset the allocation in time and space

- Reality of overlapping contaminants



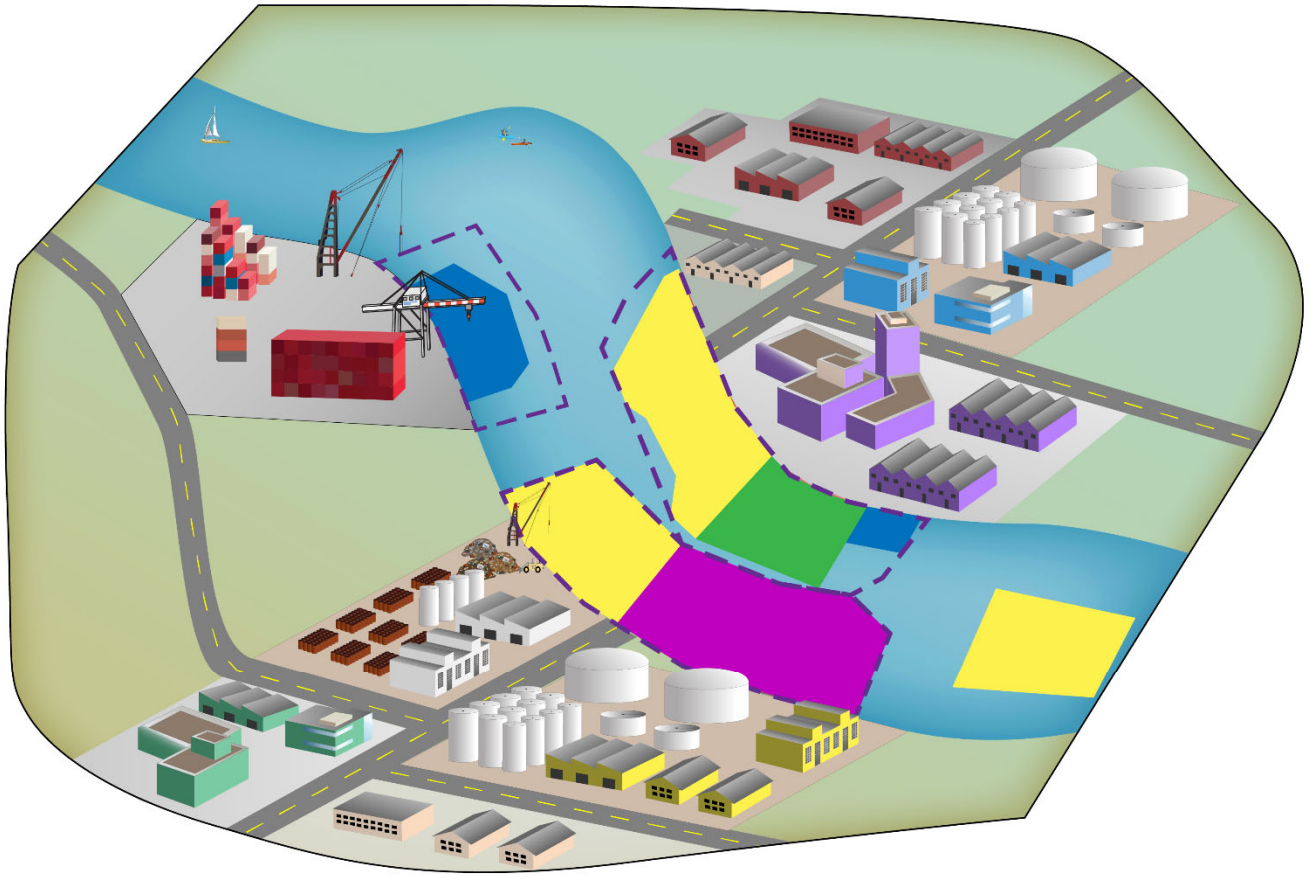
Adapting the Allocation Process: Subset the allocation in time and space

- Remedy from ROD



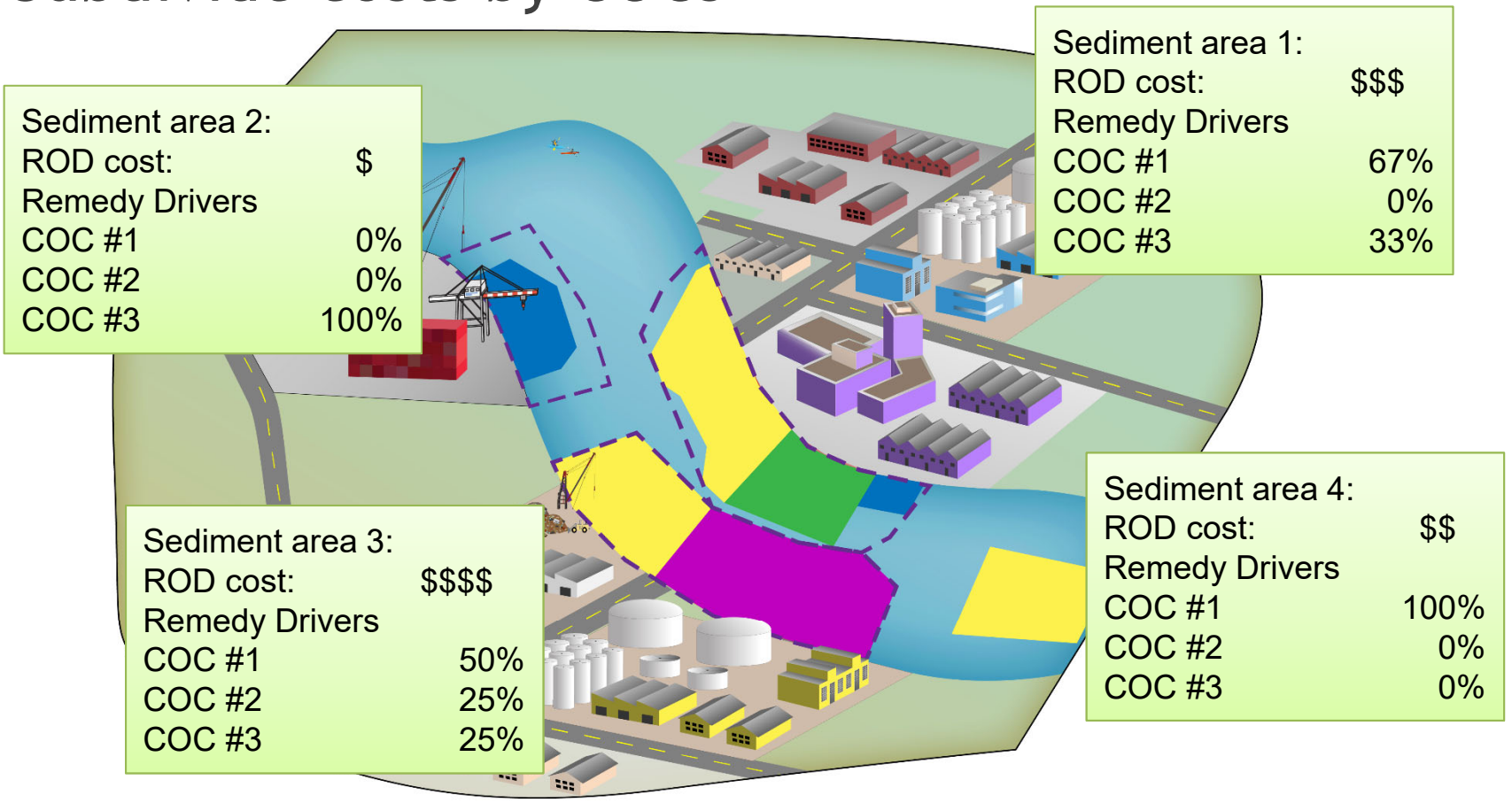
Adapting the Allocation Process: Subset the allocation in time and space

- Make geographic subdivisions

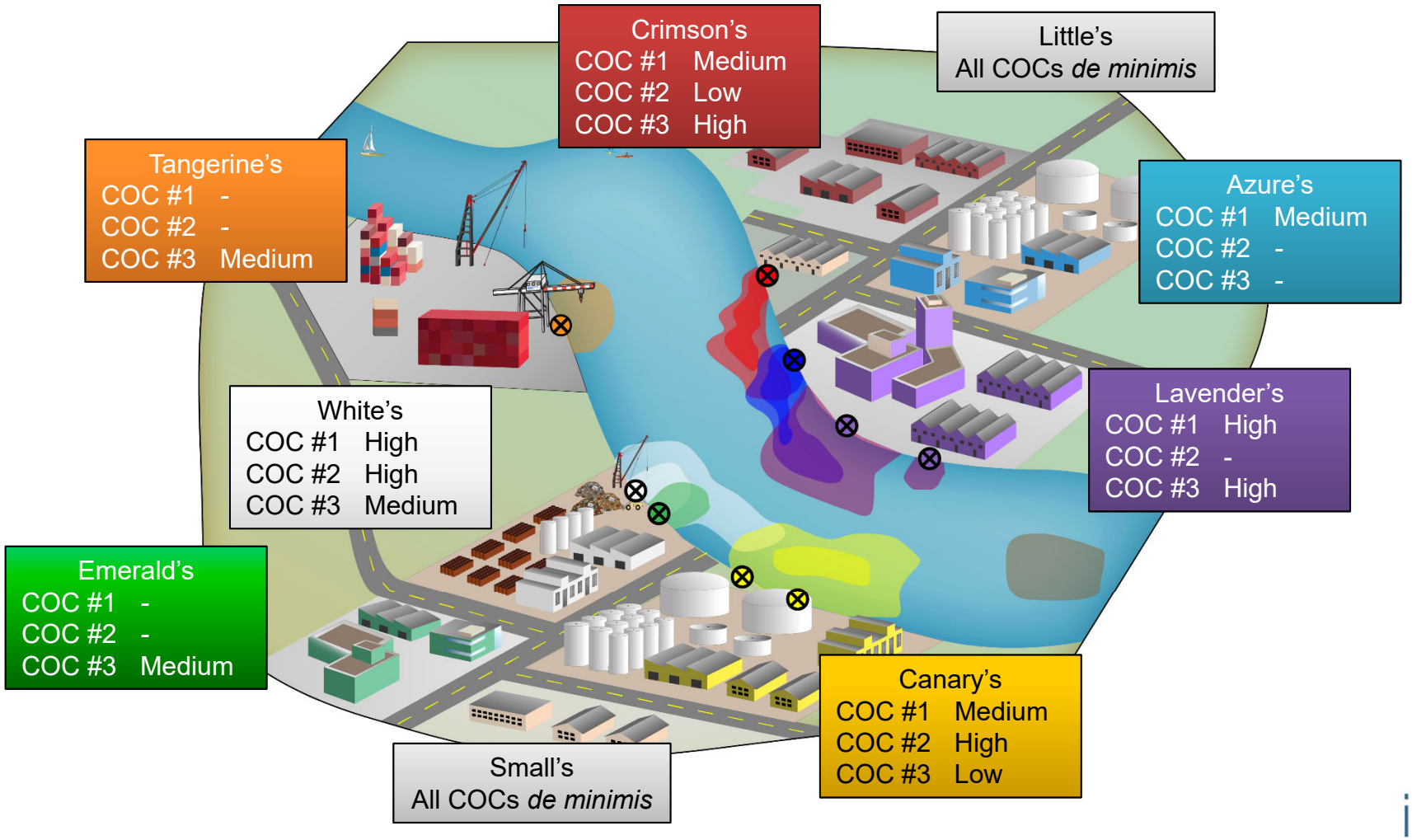


Adapting the Allocation Process: Subset the allocation in time and space

- Subdivide costs by COCs



Adapting the Allocation Process: Subset the allocation in time and space



Adapting the Allocation Process: Subset the allocation in time and space

- Allocate sediment areas

Example Sediment Area 1:

COC (Cost)	Crimson's	Azure's	Lavender's	Little's
COC #1 (cost = $$$$)	Medium Share = $	Medium Share = $	High Share = $$	-
COC #2 (cost = 0)	Low (0)	- (-)	- (-)	-
COC #3 (cost = $$)	High Share = $	- (-)	High Share = $	-
Total Area 1	**Share = $$**	**Share = $**	**Share = $$$**	***De minimis***

Adapting the Allocation Process: Subset the allocation in time and space

- Allocate sediment areas

Summary of all areas

Party	Area 1	Area 2	Area 3	Area 4	Total	Percent
Crimson's	$$			$	$$$	19%
Azure's	$				$	6%
Lavender's	$$$			$	$$$$	25%
Little's					*de minimis*	*de minimis*
Canary's			$	$	$$	13%
Small's					*de minimis*	*de minimis*
Emerald's			$		$	6%
White's			$$	$$	$$$$	25%
Tangerine's		$			$	6%
Total						**100%**

Adapting the Allocation Process: Subset the allocation in time and space

- Cash out small parties and *de minimis* parties
  - Simplifies remaining process
  - Remaining parties adjust percentages

Cashed out parties

Party	Allocation
Azure's	$
Little's	*De minimis*
Small's	*De minimis*
Emerald's	$
Tangerine's	$

Adapting the Allocation Process: Subset the allocation in time and space

- Design changes

	Area 1	Area 2	Area 3	Area 4
ROD cost	$$$	$	$$$$	$$
Cost growth during design	↑	↔	↓	↑
Final cost	$$$$	$	$$$	$$$

- Final allocation
  - Costs may differ vs. preliminary design
  - Cost differentials not uniform
  - Framework for revised allocation in place

Adapting the Allocation Process: Subset the allocation in time and space

- Comparison initial versus final allocation

Party	Allocation	Final vs. Initial
Crimson's	$$$	↑
Azure's	$	↔
Lavender's	$$$	↔
Little's	*de minimis*	
Canary's	$$	↓
Small's	*de minimis*	
Emerald's	$	↔
White's	$$$	↓
Tangerine's	$	↔

Conclusions

- Why is it better?
  - Adaptable to changed conditions
  - Small parties out faster
  - Reduced litigation costs
  - Better equity in final allocation

Questions?

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