



Has Improved Understanding of Environmental Impacts Outpaced the Ability of Technology to Mitigate Impacts

Tom Wang, P.E.
Anchor QEA, LLC

October 2010

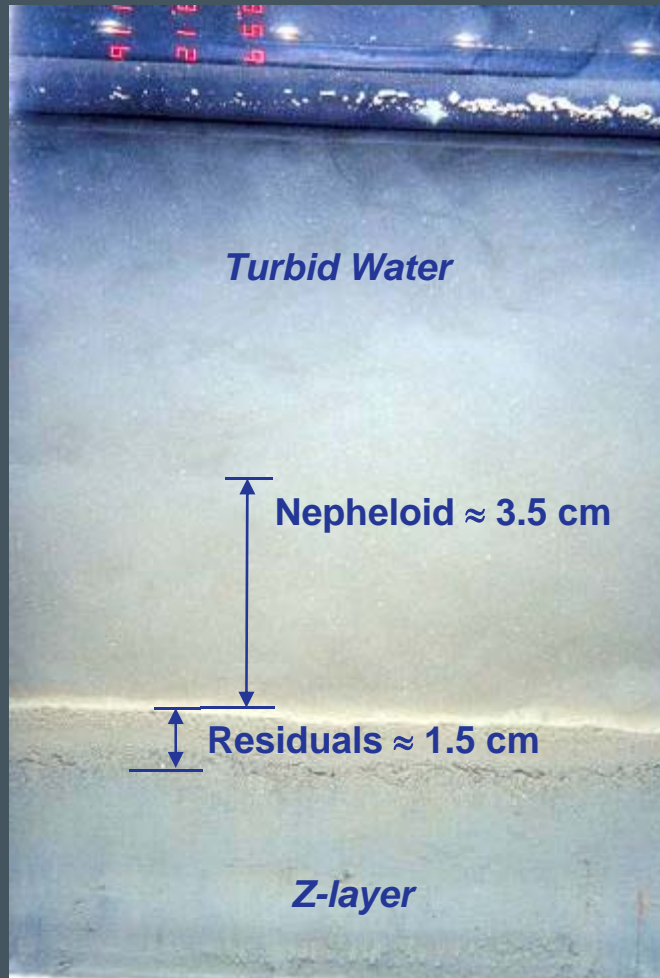
Examples of Changes in the Sciences

- USACE, EPA, NOAA, Universities contribute to the depth of knowledge
 - Studies demonstrate the potential effects of chemicals of concern (COCs); regulated COCs have significantly increased
 - Residual contamination
 - Propwash impacts
 - Bioaccumulation risks
 - Short-term resuspension effects to tissue concentrations
- Measurement
 - Laboratory detection limits continue to drop
 - New sampling methods and technologies
- Monitoring
 - Improved water quality monitoring technology (hydroacoustic vs. discrete sampling)

Example Analyte Lists

PSDDA 1988	DMMP (i.e., PSDDA) 2008
Metals = 6	Metals = 11
LPAH = 6	Organometallic Compounds (i.e., TBT) = 1
HPAH = 10	LPAH = 7
PCBs	HPAH = 11
DDT	Chlorinated Hydrocarbons = 5
	Phthalates = 6
	Phenols = 5
	Miscellaneous Extractables = 6
	Volatile Organics = 4
	Pesticides (e.g., DDT) = 6
	PCBs
	Dioxin
Total = 24 COCs	Total = 64 COCs

Generated Residuals



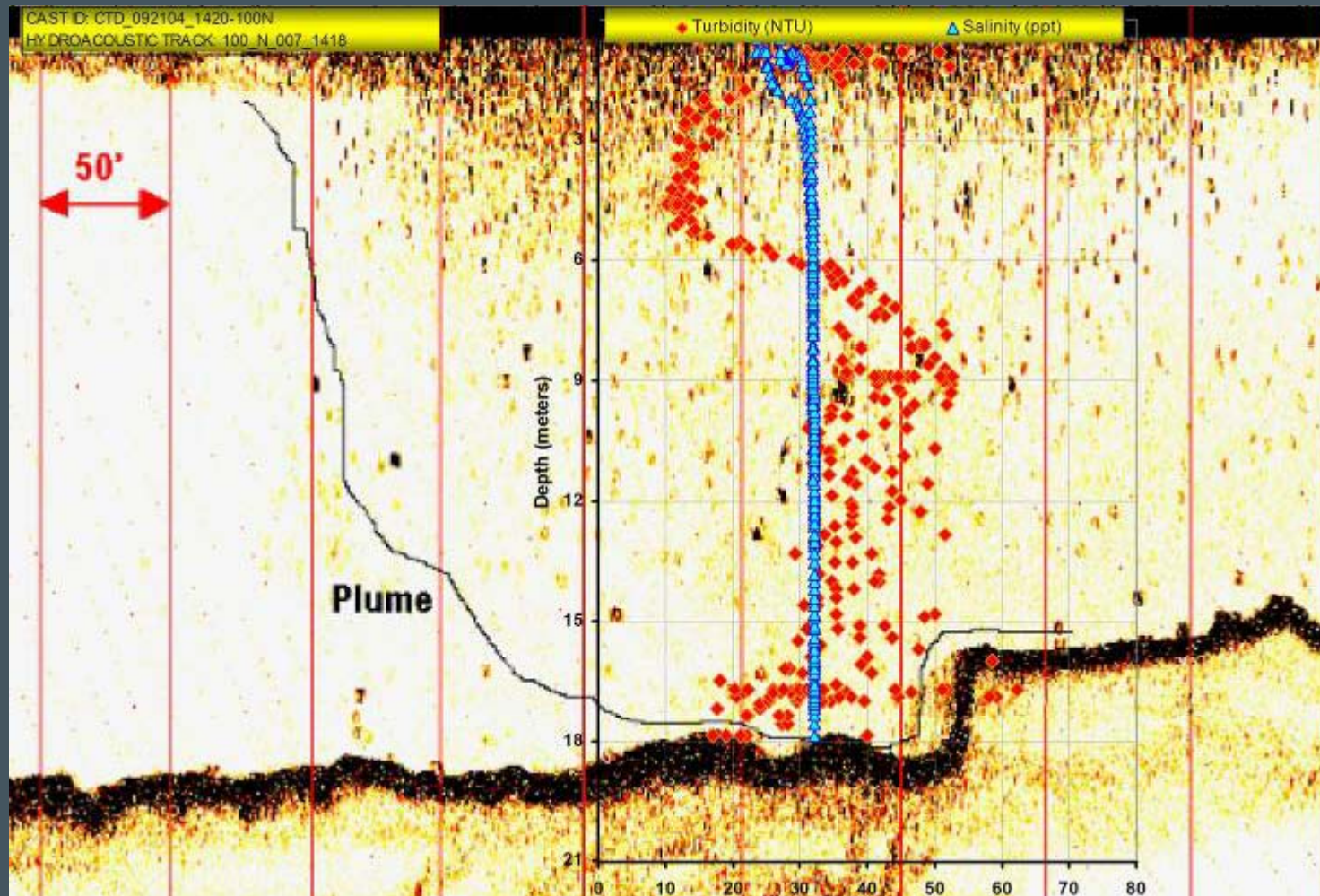
- Removal of contaminated sediments doesn't always result in cleanup success from a risk perspective
 - Risk calculations typically based on top 10 cm conc.

Propwash Impacts



Los Angeles River Estuary Confined Aquatic Disposal

Hydroacoustic Profile During Dredging



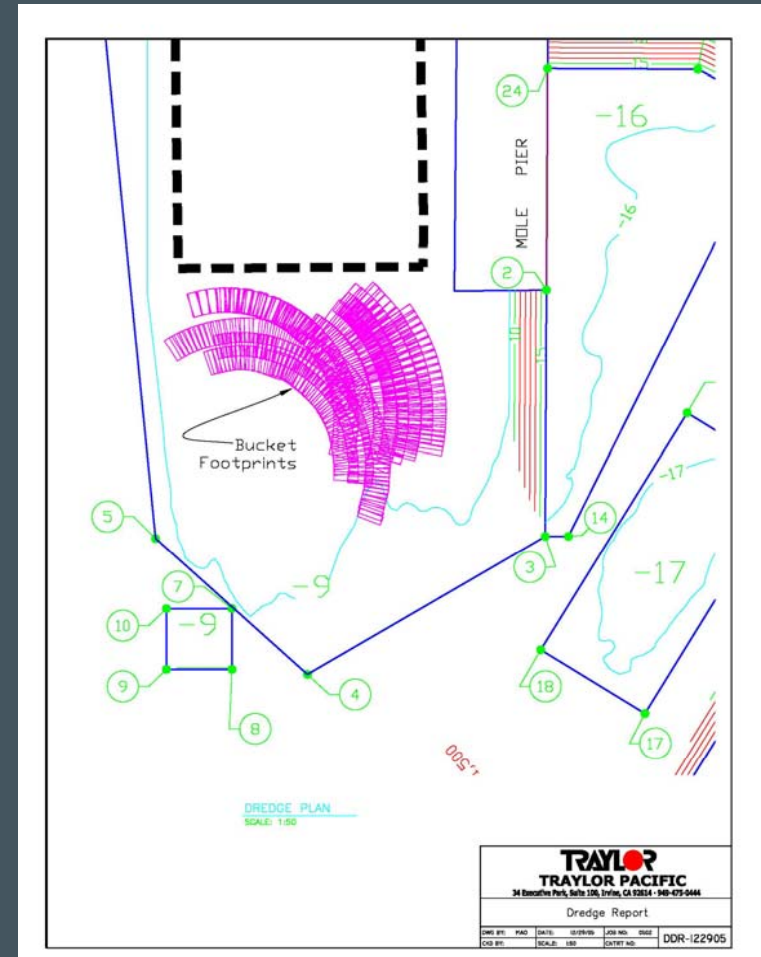
Sediment Profile Imaging



Examples of Changes in Engineering and Construction

- Improved bathymetric surveying and positioning methods
 - Multi-beam vs. single beam
 - Differential GPS
 - Real time kinematic positioning systems
- Closed buckets
- Gunderboom (full length silt curtain)
- Watertight barges
- Innovative dredging technologies
 - Limited application overall

Dredging RTK Positioning



Campbell Shipyard Remediation

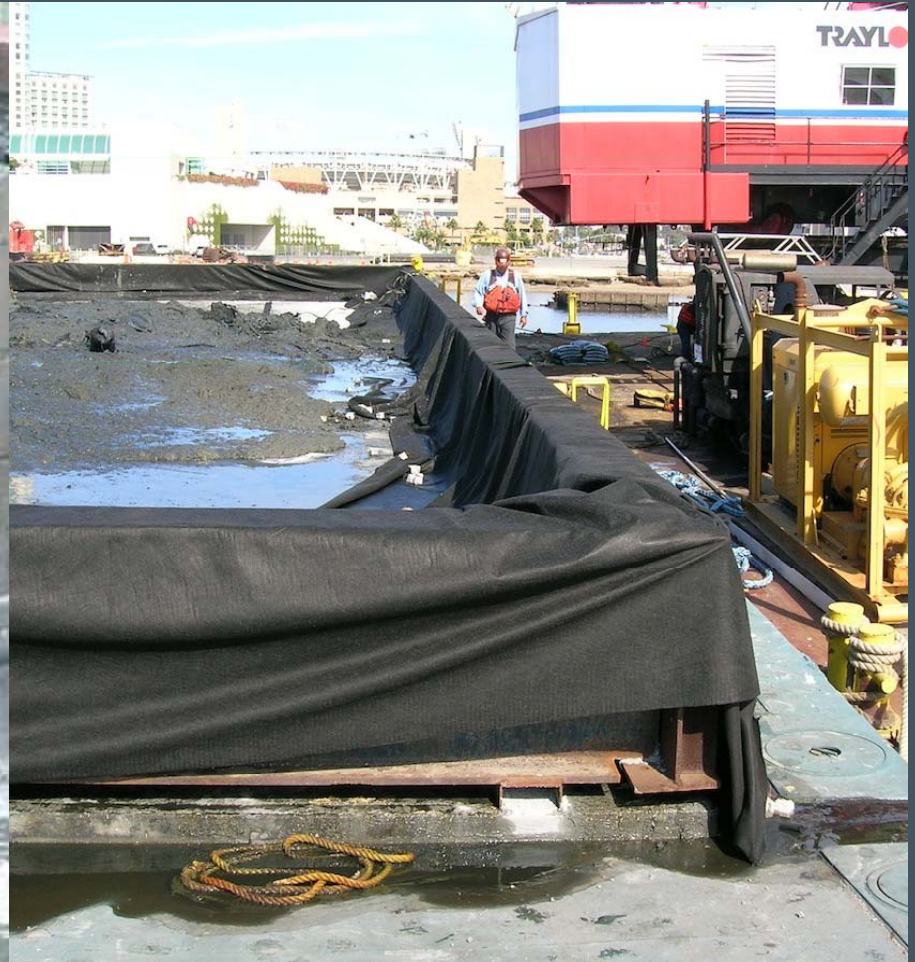
Open and Closed Buckets



Horizontal Profile Grab Bucket

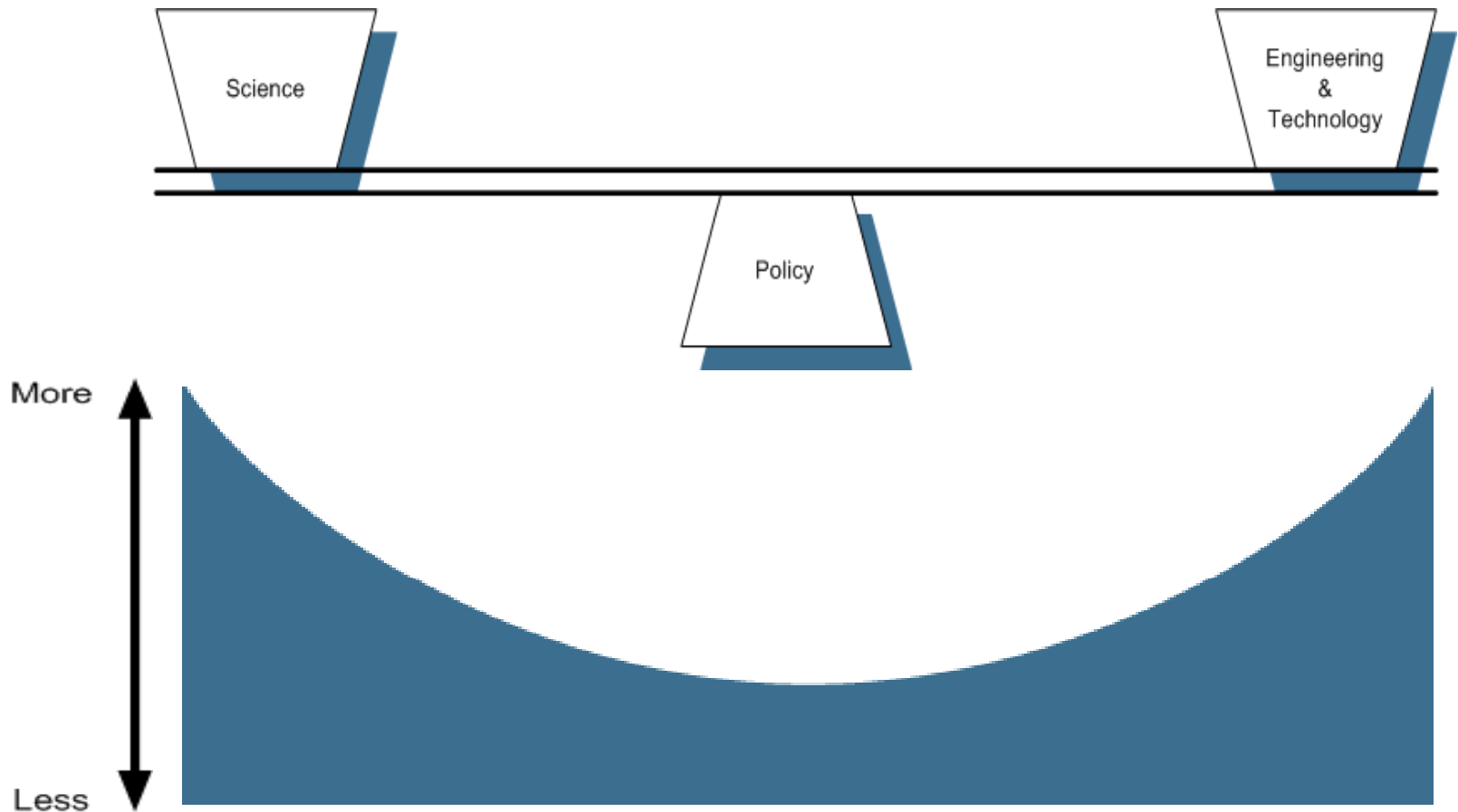


Barge Management Changes



Barge Rehandling Operations





Potential Overall Environmental Impact

Going Overboard?



Questions to Ponder

- Do environmental regulations need to be revisited to account for newer measurement and monitoring technologies?
 - Many existing environmental criteria were developed based on older technologies
- Are recent changes in regulatory policy based only on newer science, without allowing for dredging technology to catch up?
 - Puget Sound DMMP
 - WA State MTCA rule change and CA San Francisco TMDL policy

Questions to Ponder

- Are remedial dredging projects redefining the expectations for maintenance dredging performance, and is that a positive outcome?
- How can the dredging industry keep up with the ever growing science of how dredging can impact the environment?
- How can the dredging industry actively work with policy makers and regulators to help develop more balanced policy and regulations?

Open Discussion

