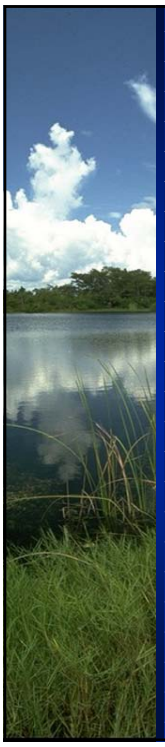
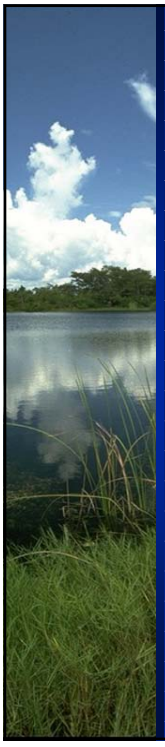


Remember the 11 Principles!

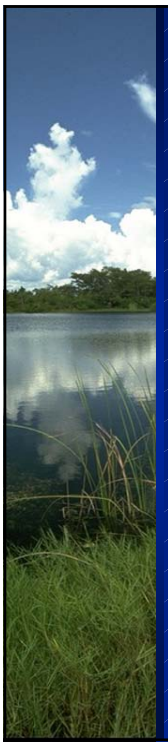
Principle Uno

Develop a conceptual site model that considers key site uncertainties and use it within an adaptive management approach to control sources and implement a cost-effective remedy that will achieve long-term protection while minimizing short-term impacts.



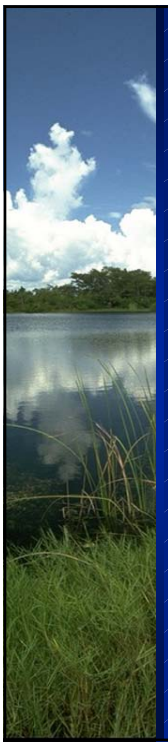
Highlight 6-2: Some Site Conditions Especially Conducive to Dredging or Excavation

- Suitable disposal sites are available and nearby
- Suitable area is available for staging and handling of dredged material
- Existing shoreline areas and infrastructure (e.g., piers, pilings, buried cables) can accommodate dredging or excavation needs
- Navigational dredging is scheduled or planned
- Water depth is adequate to accommodate dredge, but not so great as to be infeasible; or excavation in the dry is feasible
- Maneuverability and access are not unduly impeded by piers, pilings, or other structures



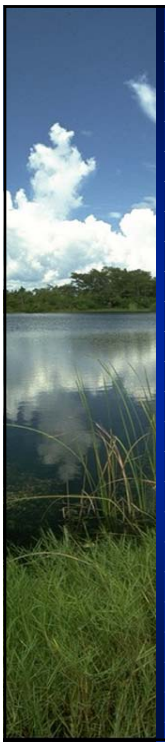
Highlight 6-2, conducive conditions cont.

- Long-term risk reduction of sediment removal outweighs sediment disturbance and habitat disruption
- Water diversion is practical, or current velocity is low or can be minimized, to reduce resuspension and downstream transport during dredging
- Contaminated sediment is underlain by clean sediment (so that over-dredging is feasible)
- Sediment contains low incidence of debris (e.g., logs, boulders, scrap material) or is amenable to effective debris removal prior to dredging or excavation
- High contaminant concentrations cover discrete areas
- Contaminants are highly correlated with sediment grain size (to facilitate separation and minimize disposal costs)



Key Advantages of Dredging

- If it can meet the desired sediment Cleanup Levels (CULs) and achieve the Remediation Goals (RGs) and RAOs, it provides the least uncertainty about long-term effectiveness
- Provides maximum flexibility about future waterbody uses.

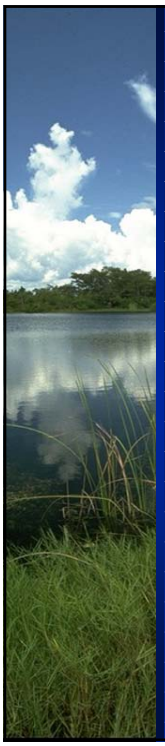


Limitations of Dredging

- Can be very expensive
- Need a disposal site
- Need large nearby handling area
- May be significant residuals
- May need to over-dredge and remove debris
- May be significant losses to resuspension or volatilization
- May be difficult to meet State WQS
- May be disruption to community

Biggest Issues

- Predicting sediment residual levels
- Predicting ecological/habitat recovery
- Predicting fish tissue RGs from sediment CULs
- Predicting downstream transport of contaminants



Highlight 6-11: Some Key Points to Remember

- Source control should be implemented to prevent re-contamination
- A proposed dredging alternative should address all aspects: removal, staging, dewatering, water treatment, sediment transport, and sediment treatment, re-use or disposal
- Transport and disposal options may be complex and controversial; investigate options early and discuss with stakeholders
- In predicting risk reduction from removing deeply buried COCs, remember that exposure/risk is caused by bioaccessible COCs

Highlight 6-11, Key points cont.

- Dredging should take advantage of skilled operators, new methods and new equipment that minimize resuspension
- Should conduct an assessment or pilot study to predict effects of resuspension and transport on downstream biota
- Should make realistic predictions of residuals, especially where over-dredging is not possible
- Excavation often results in lower residuals than dredging
- Should monitor during dredging, after to evaluate dredging effectiveness, and for the longer term to evaluate risk reduction and biota recovery