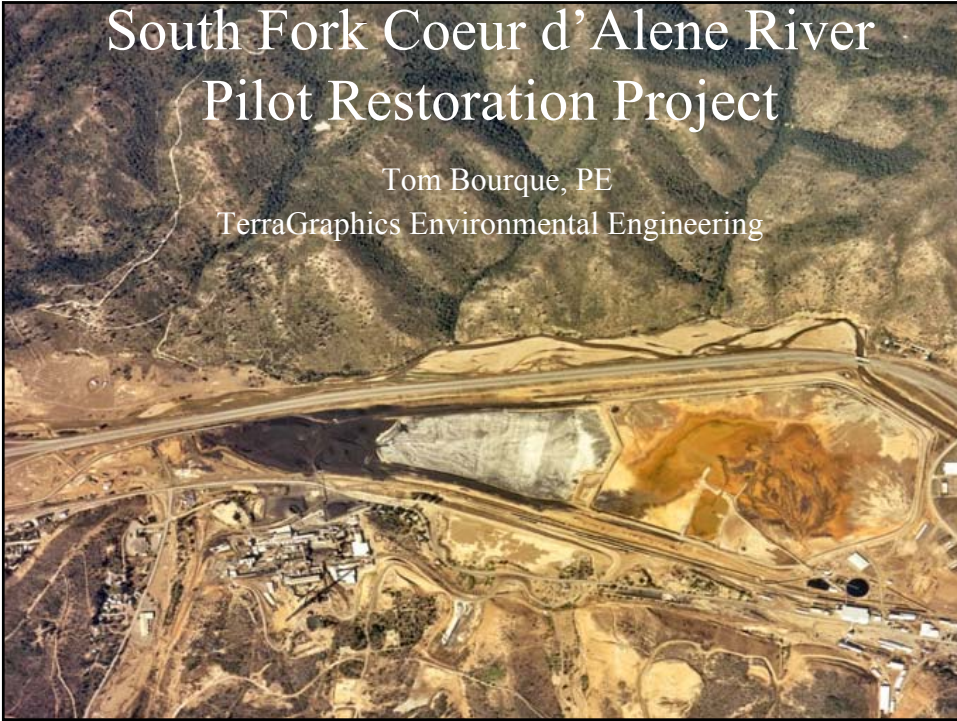
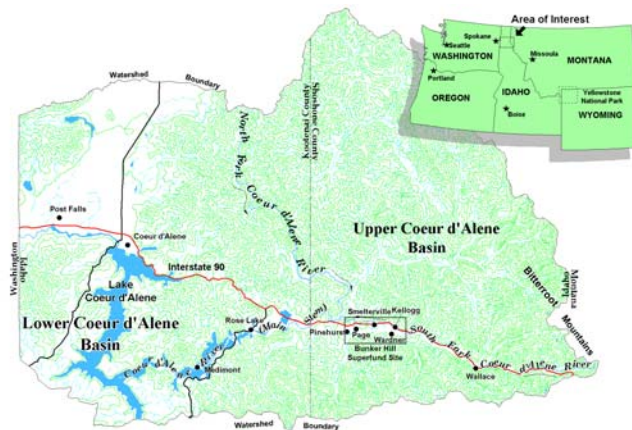


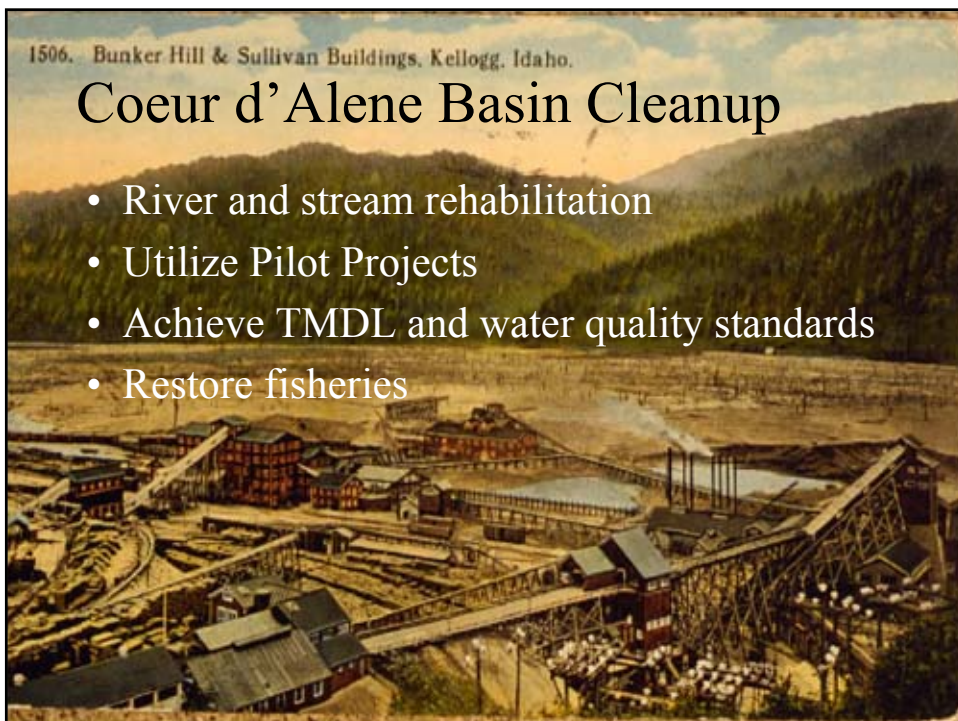
# South Fork Coeur d'Alene River Pilot Restoration Project

Tom Bourque, PE  
TerraGraphics Environmental Engineering



## Coeur d'Alene River Basin (Idaho/Basin map)





## Pilot Project Goals

- Restore natural river function to reach
- Incorporate residual pool volume
- Link large-scale removals with river reconstruction
- Consider revegetation/habitat schemes and issues
- Incorporate funding and schedule impacts

## Post-Removal Problems

- Highly disturbed reach
- Contaminated sediment/tailings excavations removed 250,000 cy from project reach
- Limited vegetation
- Incised and unbalanced



## Project Strategy

- Hydrology
- Hydraulics
- Sediment Transport
- Geomorphology
- Balanced river/floodplain topography
- Historic and Reference Reaches
- Experience



## Some of Our Problems

- Initial high velocities entering site
- Difficult revegetation
- Slope disparity
- No fines in floodplain media
- Ever-changing sediment transport

## Hydrology

- USGS gage data
- Log Pearson Type III Statistical Analysis
- Historical evidence of 100 year flow elevations
- Historical evidence of 1.5-2 year flow elevations
- Coordination with local agencies



## Hydraulic Analysis

- GPS river cross-sections/floodplain topography
- Sediment sampling
- HEC-RAS model of various return interval flows
- Calculate dominant-flow/bankfull flow channel sections and profile
- Model channel/floodplain interaction within overall flow regime

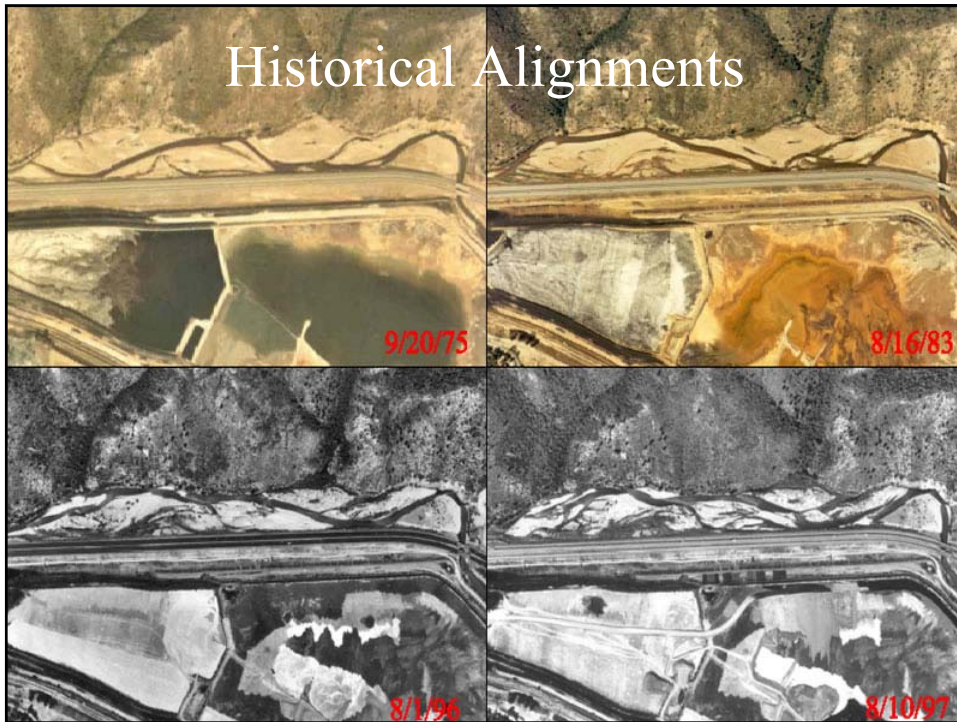


## Geomorphologic Considerations

- Controlling features at all perimeter points
- Several miles of confined channel upstream
- Incised channel with potential braiding.
- Various geomorphic relationships disrupted
- Three stable nodes within project reach

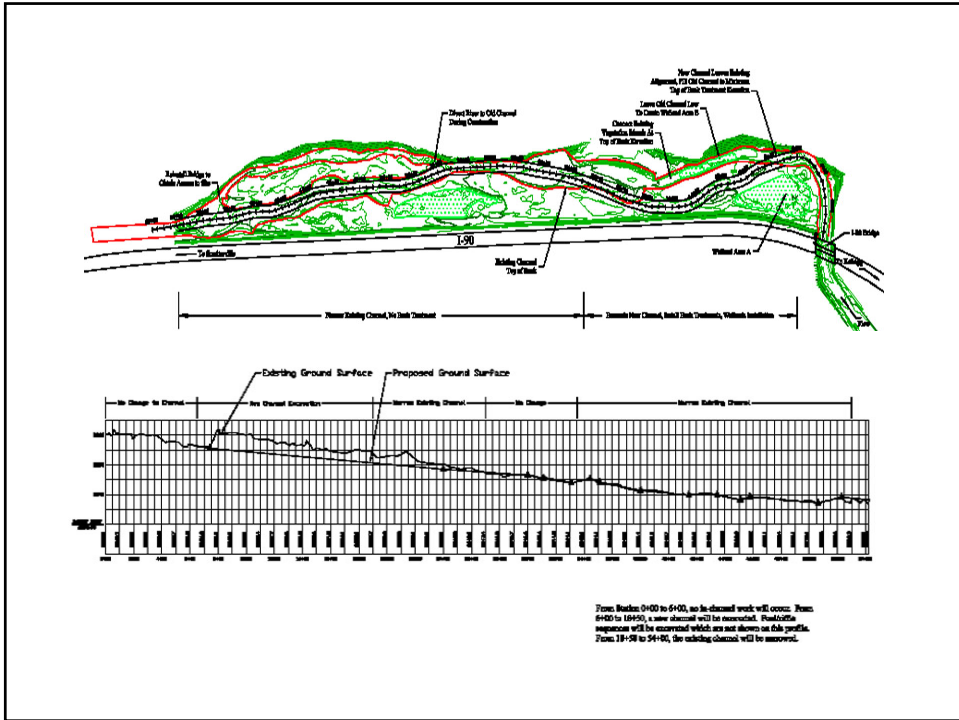
## Key Components to Approach

- Historic alignments
- Stable nodes
- Reference reach - compare hydrologic and model results for optimum section/profile
- Floodplain material balance with model results
- Geomorphic parameters and relationships
- Hydraulic factors



## Main Design Elements

- Planform
- River profile and sections
- River bank treatments
- Floodplain configuration and features
- Risks to perimeter
- Fisheries and wildlife habitat
- Wetlands and revegetation



## River bank/wetlands



## Construction Issues

- Water quality during construction a project priority
- River diversions
- Material balance and management
- Construction sequencing
- Construction material supply
- Volunteer opportunities

## River diversion during construction



## Volunteers



## What's Left to Do?



## Technical Advisory Group

- Project Officer - Idaho Department of Environment Quality
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife
- Bureau of Land Management

