south river
SCIENCE TEAM

Phase I System Characterization: Year 1 Summary

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Year I Physical and Biological Data Sets

Quarterly Storm Sampling

- Four storm events with 8 sample stations at bridges

Monthly Baseline Characterization

- 13 baseline stations in study area; 3 reference stations

Matrix/Type	March	April	May	June	July	August	September	October	November	December	January	February
Physical Media												
Surface Water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sediment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Biological Tissue												
Filamentous Algae			✓			✓				✓		✓
Aquatic Plants						✓						
Crayfish	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Corbicula			✓			✓				✓		✓
Diptera			✓			✓				✓		✓
Ephemerotera			✓			✓				✓		✓
Trichoptera			✓			✓				✓		✓
Centrarchidae			✓			✓						
Cyprinidae (pool)			✓			✓						
Cyprinidae (riffle)			✓			✓						
Aquatic Community Assessments												
Invertebrates			✓			✓				✓		✓
Fish			✓			✓						

South River Spatial Data Sets

Base Maps and Data:

- Aerial photo coverage (1937-2005)
- LiDAR based digital elevation model

River Geomorphology:

- Observed eroding banks
- Fine-grained sediment deposits
- Historic river channel migration (1937 - 2005)

Hydrologic and Hydraulic Modeling

- Floodplain inundation boundaries for various storm return periods

Habitat Characterization:

- Land use and cover types (including wetlands)
- Submerged aquatic vegetation coverage

South River Habitat Characterization

Spatial Habitat Evaluations in GIS

- Land use data from National Land Cover Data set (NLCD 2001)
  - Aerial photo interpretation and river survey for cover types
- Wetland types attached to river and in floodplain
- Submerged aquatic vegetation coverage along the South River

South River Habitat Characterization

RRM 8.7

Spring 2006

Summer 2006

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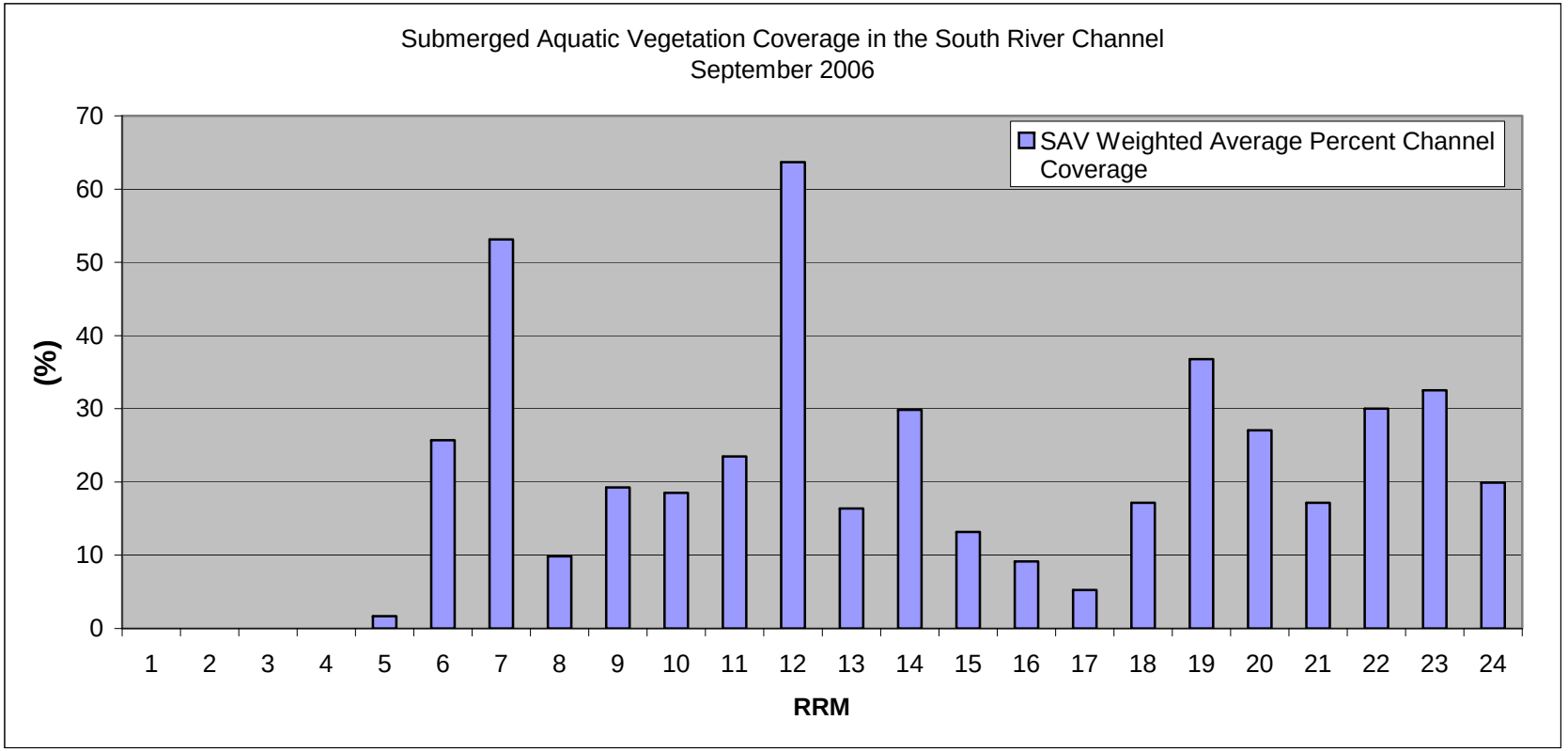
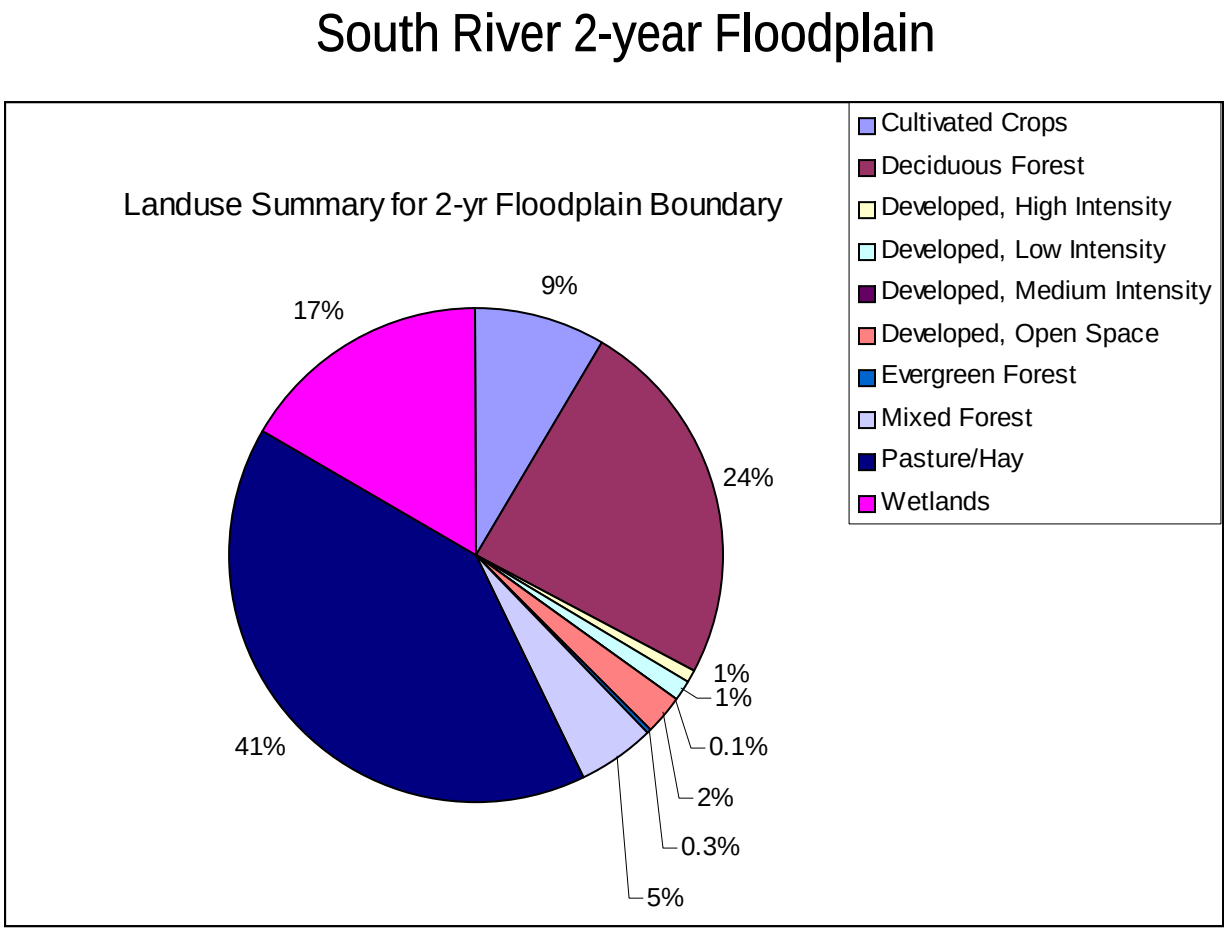
Habitat Characterization

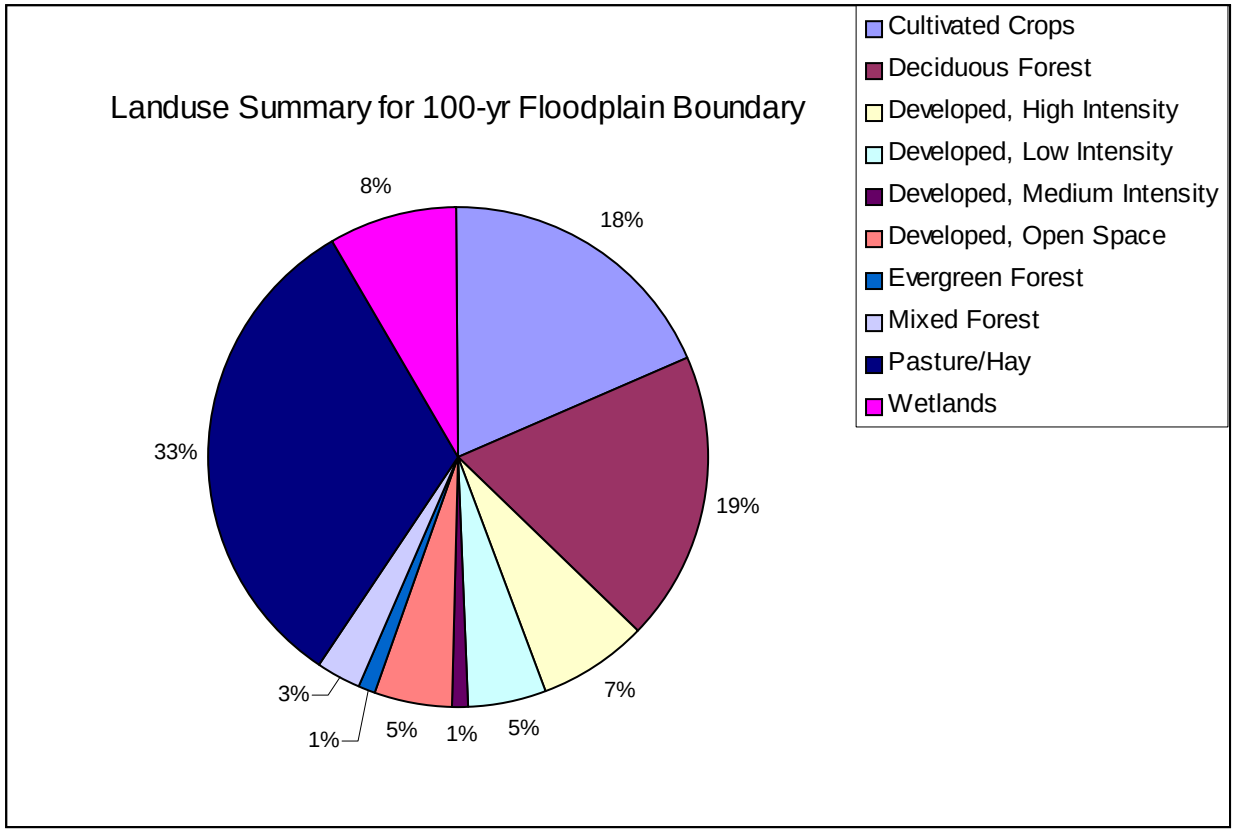


Habitat Characterization



Habitat Characterization

South River 100-year Floodplain



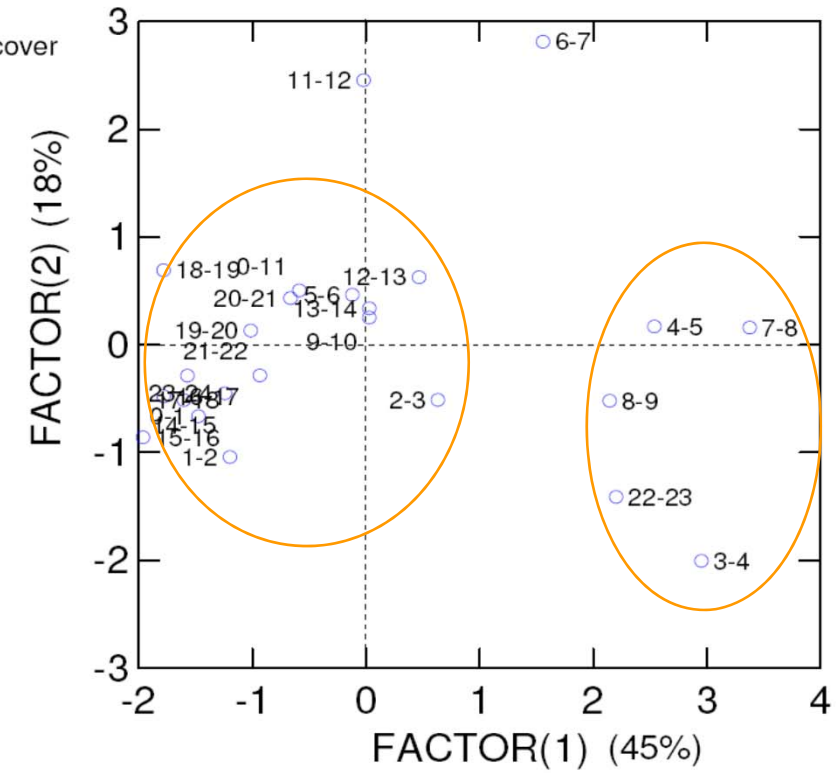
Preliminary Evaluations for Phase II Study Areas

Principle Components Analysis using geospatial data by RRM

- Overlap between historic deposits and currently observed eroding banks
- 0.3-yr flood plain used to evaluate areas frequently in connected with river including wetlands
- Volume of fine-grained deposits
- Observed eroding banks (% of channel bank)
- Submerged aquatic vegetation coverage
- Gradient

Evaluations for Phase II – RRM results

• High SAV cover



PCA indicates 2 “predominant” groups of geospatial data

- Low gradient
- High % eroding banks
- High area inundated during 0.3 year floods

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Potential Year 2 Studies for Phase I

- Collection of surface water at South River baseline stations in April and May to determine seasonal pattern in MeHg
- Characterize river features which may act as sources for THg within targeted RRMs
- Mercury bioavailability and microbial study (bioindicator work with Rutgers University)
- Adding an additional reference area along the Middle River for lower gradient river conditions

Scheduled Activities

- Meet with NRDC on May 7th and 8th
- Ongoing data evaluations for Year 1 data
- Planning for Year 2 studies