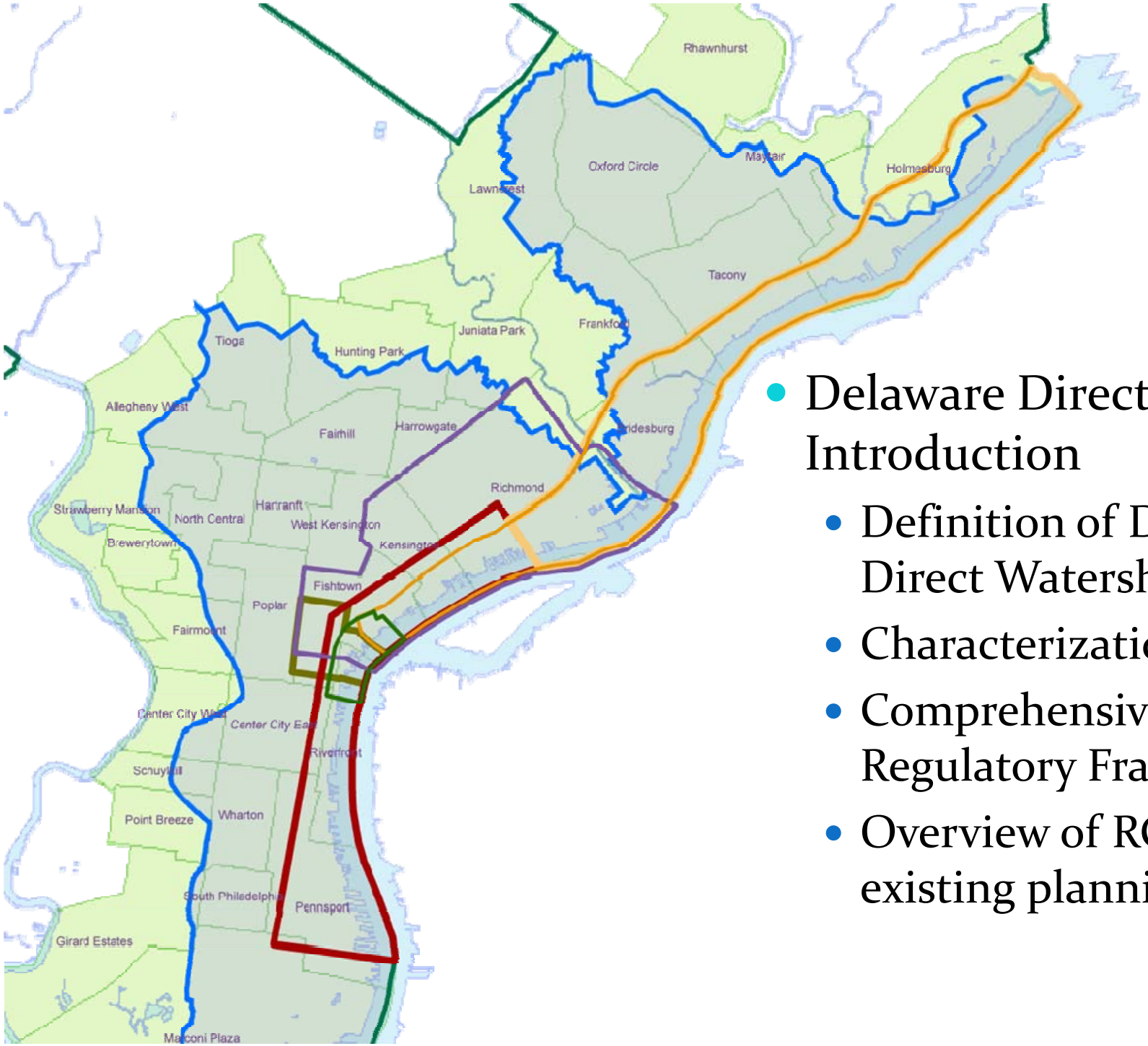
Delaware Direct Integrated Watershed Management Plan

Plan Overview and Process

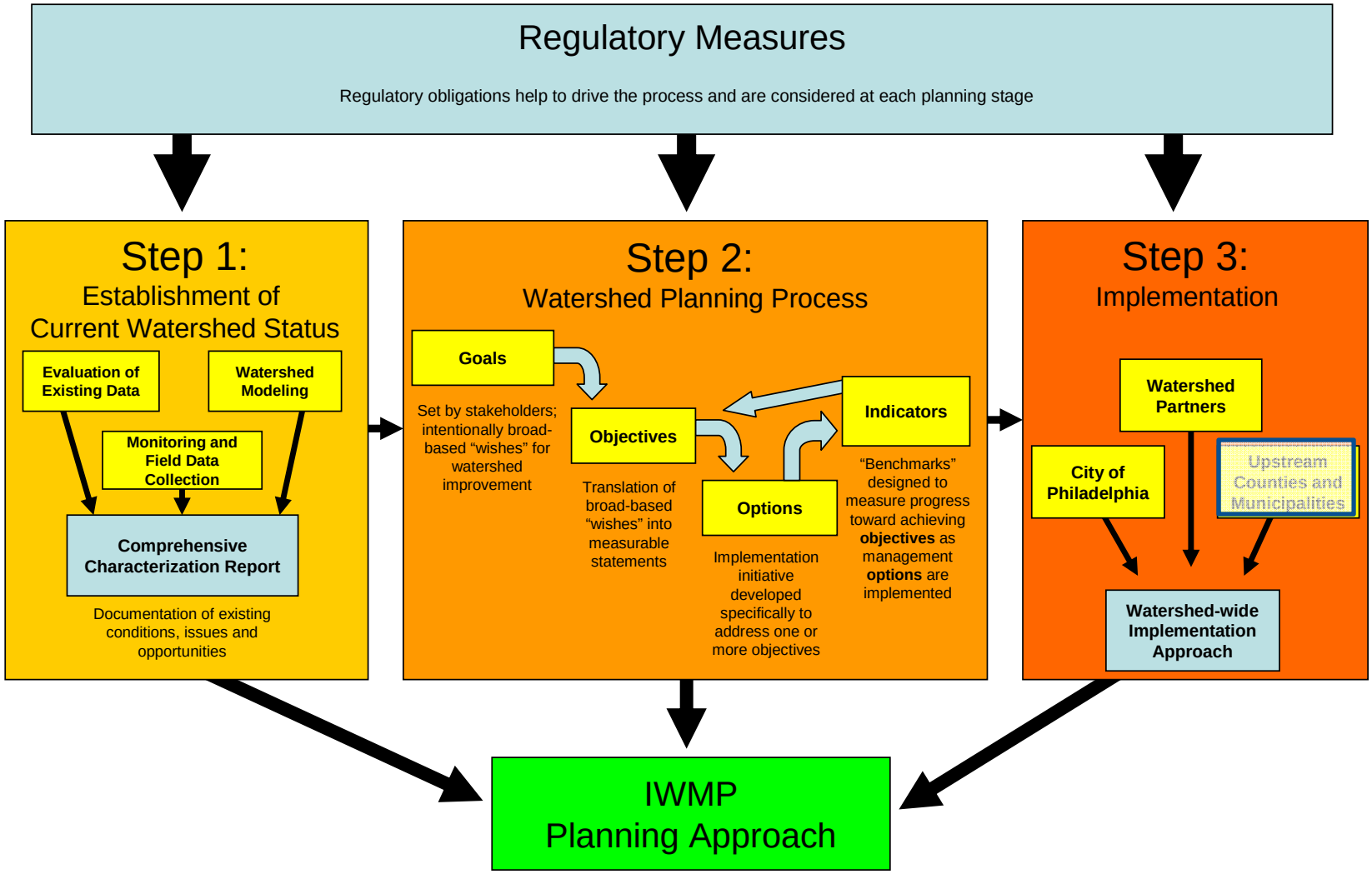
Delaware Direct Watershed Partnership

December 2, 2009



- Delaware Direct IWMP Introduction
  - Definition of Delaware Direct Watershed
  - Characterization
  - Comprehensive Regulatory Framework
  - Overview of RCP and existing planning efforts

IWMP Planning Process



Planning from clear objectives

- **Goal:** a series of "wishes" for the watershed, not specifically measurable
  - *e.g., Improve river habitat and integrity of aquatic life along the Delaware River*

- **Objective:** a measurable parameter that leads toward the establishment of a target value
  - *e.g., 80 acres of restored tidal wetland habitat*

- **Management Option:** a technique, measure, or structural control that addresses one or more objectives
  - *e.g., Create a tidal wetland at pier 53*

- **Indicator:** used to characterize the current condition of a watershed area and can be used to measure progress toward goals as management options are implemented
  - *e.g., Acres of newly established tidal wetland areas in the Delaware Direct Watershed*

Resource Characterization and Problem Identification

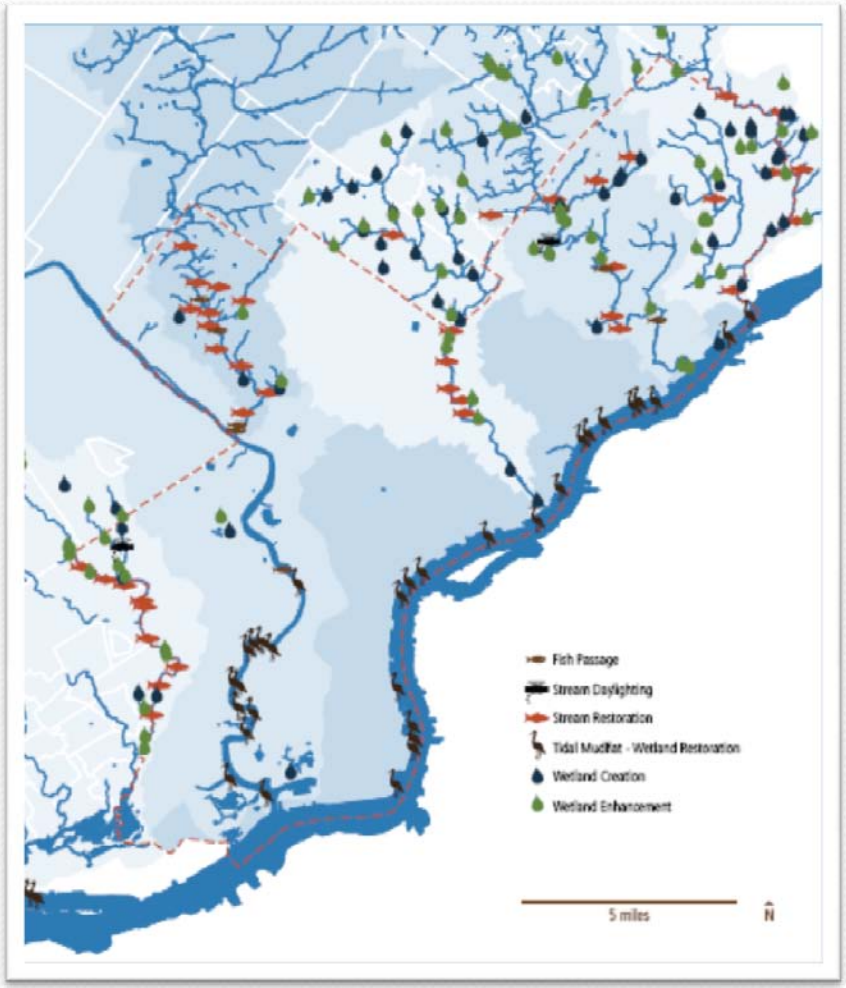
River Herring

Leptodea ochracea

- Water Quality Summary
  - Delaware River through Philadelphia
- Biological Characteristics
  - Fish Surveys (2009) indicate a high value resource between piers 53 to 70
    - 20 different species
    - Habitat for migratory species
  - Freshwater Mussels Survey

Resource Characterization and Problem Identification (cont.)

- Ecological Characteristics
  - Tidal Wetlands Survey
  - Philadelphia County Natural Heritage Inventory
  - Assessments of shoreline conditions



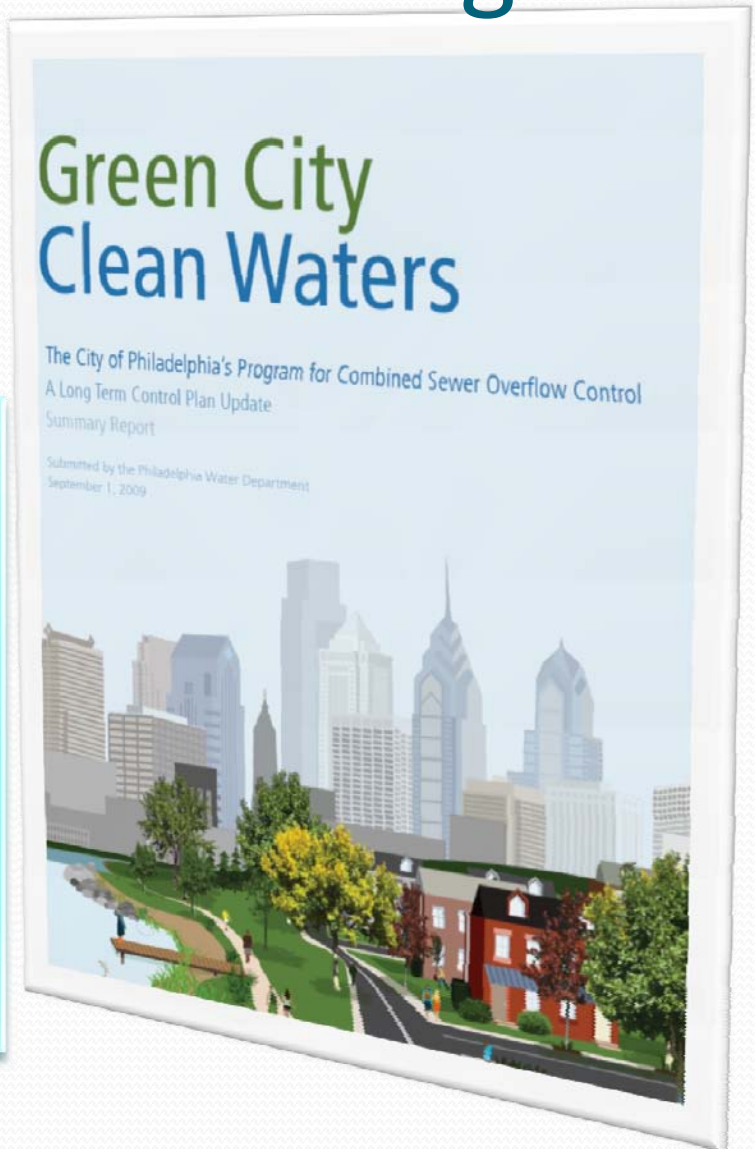
Resource Characterization and Problem Identification (cont.)

- Physical Characteristics
  - Infrastructure mapping
  - Highlight opportunities for green infrastructure
- Hydrological Issues
  - Sea Level Rise
  - Flooding
  - Channel Deepening
- Future Studies

Option Evaluation and Screening

- Long Term Control Plan Update analysis included screening of Land, Water, Infrastructure options

- Target A: Improvement of Stream Quality, Aesthetics and Recreation During Dry Weather
- Target B: Preservation and Enhancement of Healthy Living Resources
- Target C: Improvement of Wet Weather Water Quality and Quantity



Implementation Framework

- Schedule will depend on partnership opportunities and waterfront development
- **Target A: Dry Weather Water Quality and Aesthetics**
  - Floatable Removal
  - Outfall Consolidation
- **Target B: Living Resources Restoration**
  - Support of Tidal Wetland Restoration and Creation

Implementation Framework

- **Target C:Wet Weather Water Quality**
  - Sewer separation of I-95 and east to river
  - Green Stormwater Infrastructure
    - Model Neighborhoods
    - Green Programs:
      - Green Streets
      - Green Schools
      - Green Public Facilities
      - Green Parking
      - Green Public Open Space
      - Green Industry/ Business/ Commerce/ Institutions
      - Green Alleys/ Driveways/ Walkways
      - Green Homes

Green Streets

- Waterfront connection corridors
- Healthier neighborhoods
- Educates community on stormwater management
- Partnership opportunities to make complete streets

Green Parking and Green Industry/ Business/ Commerce/ Institutions

- Waterfront development will be subject to stormwater regulations
- Stormwater fees
- Improved Parking Design Focus Group

Cost – Benefit Evaluation

Implementation Target	PWD Commitment (Net Present Value)
A: Dry Weather Water Quality and Aesthetics	$40 million
B: Living Resources Restoration	$30 million
C: Wet Weather Water Quality	$270 million

Cost – Benefit Evaluation

The Investment in Sustainability: Triple Bottom Line

ECONOMIC BENEFITS

About 250 people employed in Green Jobs per year

$500 million

SOCIAL BENEFITS

Increase of over 1 million recreational user-days per year

Reduction of approximately 140 fatalities caused by excessive heat over the next 40 years

Increase in property values of 2–5% in greened neighborhoods

$1.3 billion

ENVIRONMENTAL BENEFITS

1.5 billion pounds of carbon dioxide emissions avoided or absorbed

Air quality benefits on average leading to
1–2 avoided premature deaths,
20 avoided asthma attacks, and
250 fewer missed days of work or school per year

Water quality and habitat improvements including
5-8 billion gallons of CSO avoided per year,
190 acres of wetland restored or created, and
11 miles of stream restored

Reduction of approximately 6 million kW-hr of electricity and 8 million kBTU of fuel used per year

$400 million

Delaware Direct Watershed Partnership

- **Primary Purpose:** to guide IWMP development, share resources, information, ideas, activities, program goals, and accomplishments in order to coordinate implementation planning

- **Responsibility:** Attend four meetings to share updates and provide feedback on IWMP

- **Next Steps:** Develop objectives for Watershed goals