

Resource Questions Associated with Free Flow Axial Turbines

Jim Gibson
Devine Tarbell & Associates, Inc.

October 27, 2005



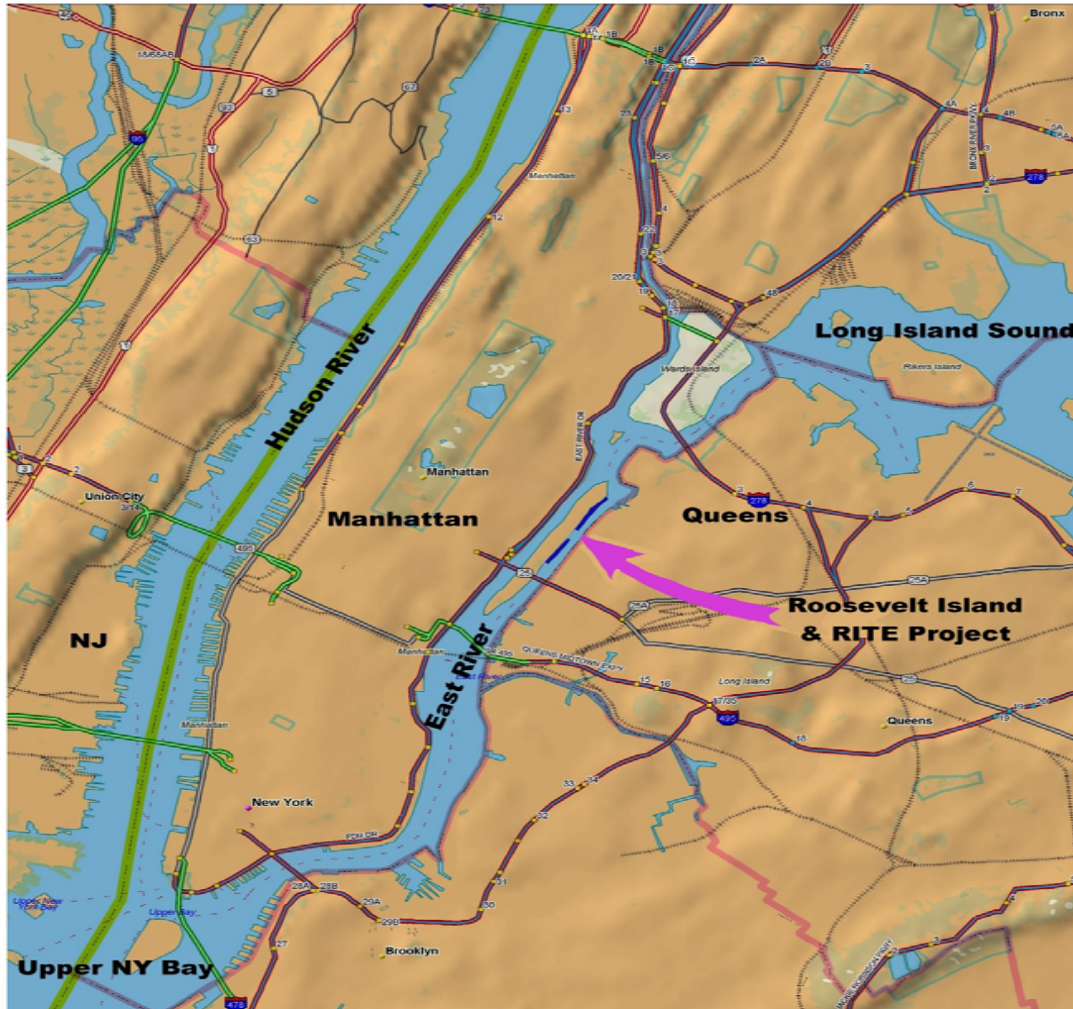
Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

Roosevelt Island Tidal Energy Project

- Verdant Power's RITE Project
- Proceeding Through Stage II Licensing Activities
- Permits Required (obtained) to Perform Studies
 - New York State Section 401 / Excavation and Fill
 - Department of State Coastal Consistency Review
 - New York SEQR and Federal NEPA Reviews
 - **Army Corps Section 404 and Section 10 Permits**
- Four Public Notices (for temporary pilot project)
- Numerous Agency and Stakeholder Meetings



Project Location



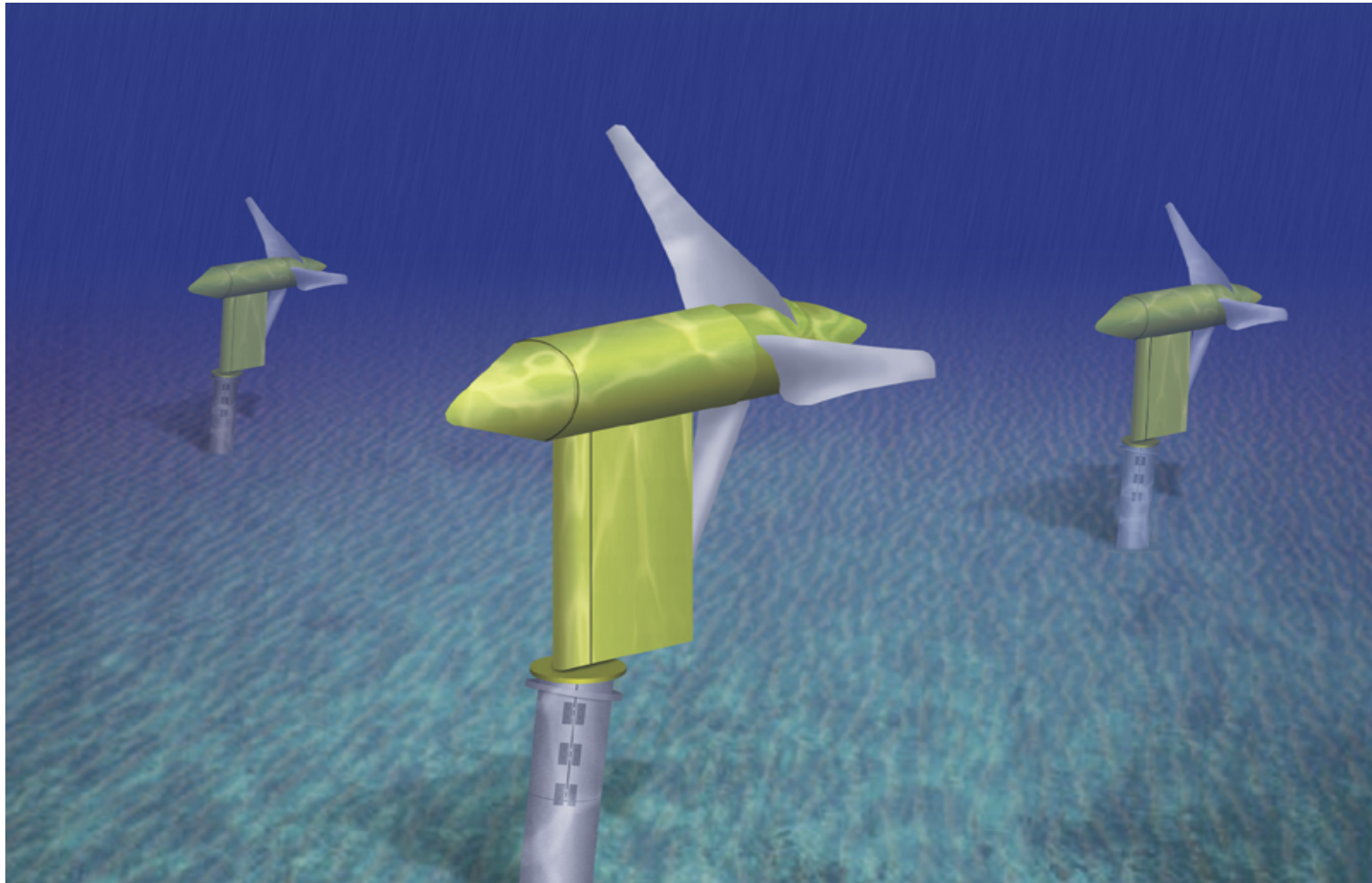


Project Location



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

“Six-Pack” Under Water



Comments Received From

- New York State Department of Environmental Conservation
- US Fish and Wildlife Service
- NOAA Fisheries (NMFS)
- US Coast Guard
- US Army Corps of Engineers
- New York State Department of State
- US Environmental Protection Agency
- New York City Department of Environmental Protection
- New York City Department of Transportation
- State Historic Preservation Office
- Riverkeeper, Keyspan, and Con Edison
- Numerous private citizens and commercial fishermen



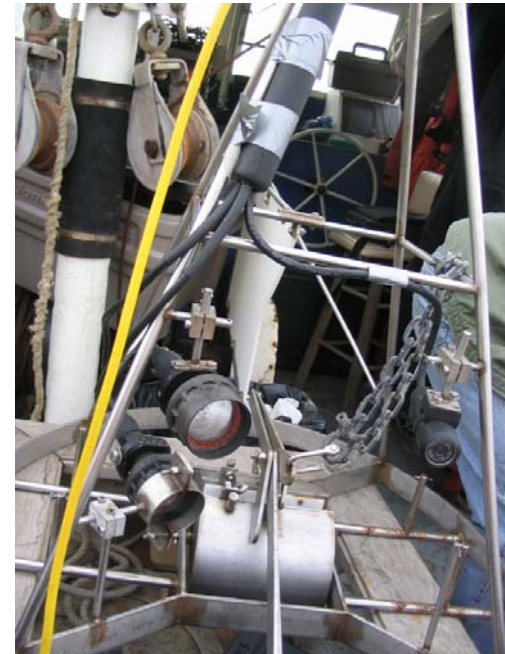
Focus of Comments

- Rare, Threatened, and Endangered Species
- Water Quality (turbidity – potential toxins)
- Recreational Resources and Commercial Fishermen
- Navigation and Security
- Temperature Changes
- Leaking Oils and Fluids
- Toxicity of Anti-fouling Measures
- Demobilization Plan



Focus of Comments

- Aquatic Birds
- Hydrodynamic / Hydraulic Impacts
- Historical and Cultural Resources
- Wetland Impacts
- Aesthetic Impacts
- Bottom Scour
- Construction Impacts
- Proximity to Bridge
- Fishery Impacts



Specific Fishery Concerns

- Strike Probability
- Shear Stress and Turbulence
- Impingement and Entrainment
- Cavitation and Pressure Changes
- Increase Predation
- Migration Patterns
- Alarm Thresholds
- Flume Testing
- Sub Sampling vs. Continuous Sampling

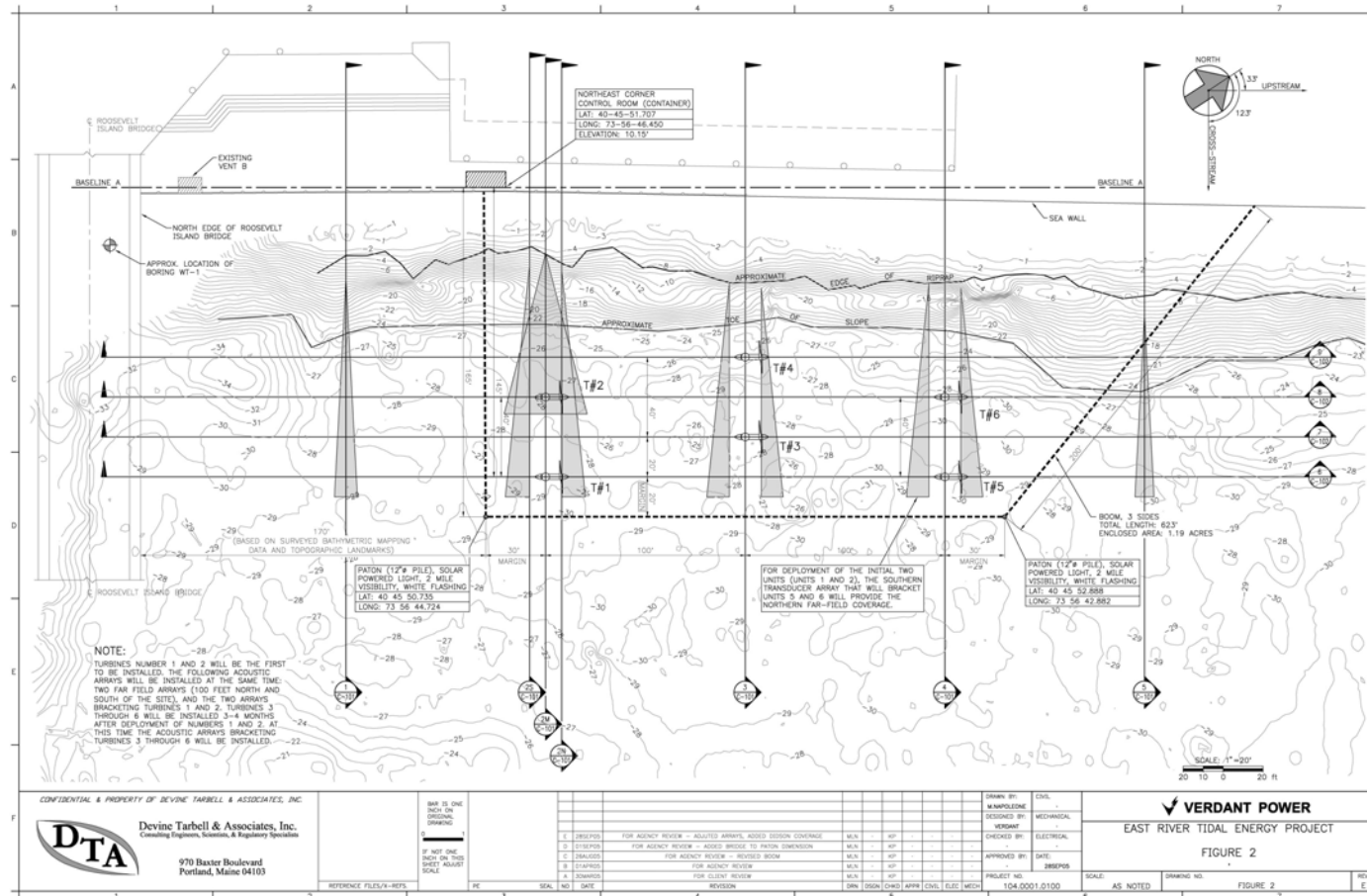


Evaluation Activities

- Alternative Analysis
- Desktop Research
- Essential Fish Habitat Assessment
- Probability Analysis
- Pre Deployment Hydroacoustic Surveys
- Post Deployment Surveys
- Noise Surveys
- Hydrodynamic Surveys
- Adaptive Management



Fixed Hydroacoustic Arrays



Questions:

Jim Gibson
Devine Tarbell & Associates, Inc.

James.Gibson@devinetarbell.com

315.641.1624 (O)

315.415.2729 (C)

315.396.2581 (B)

