



# THRIVING TOGETHER

**Nutrient Banking and TMDL Compliance Solutions**

Jason Murnock, Client Solutions Manager



2016 | 2017



# Building a stronger economy and a better environment

*RES creates solutions to support economic development and long-term environmental sustainability.*

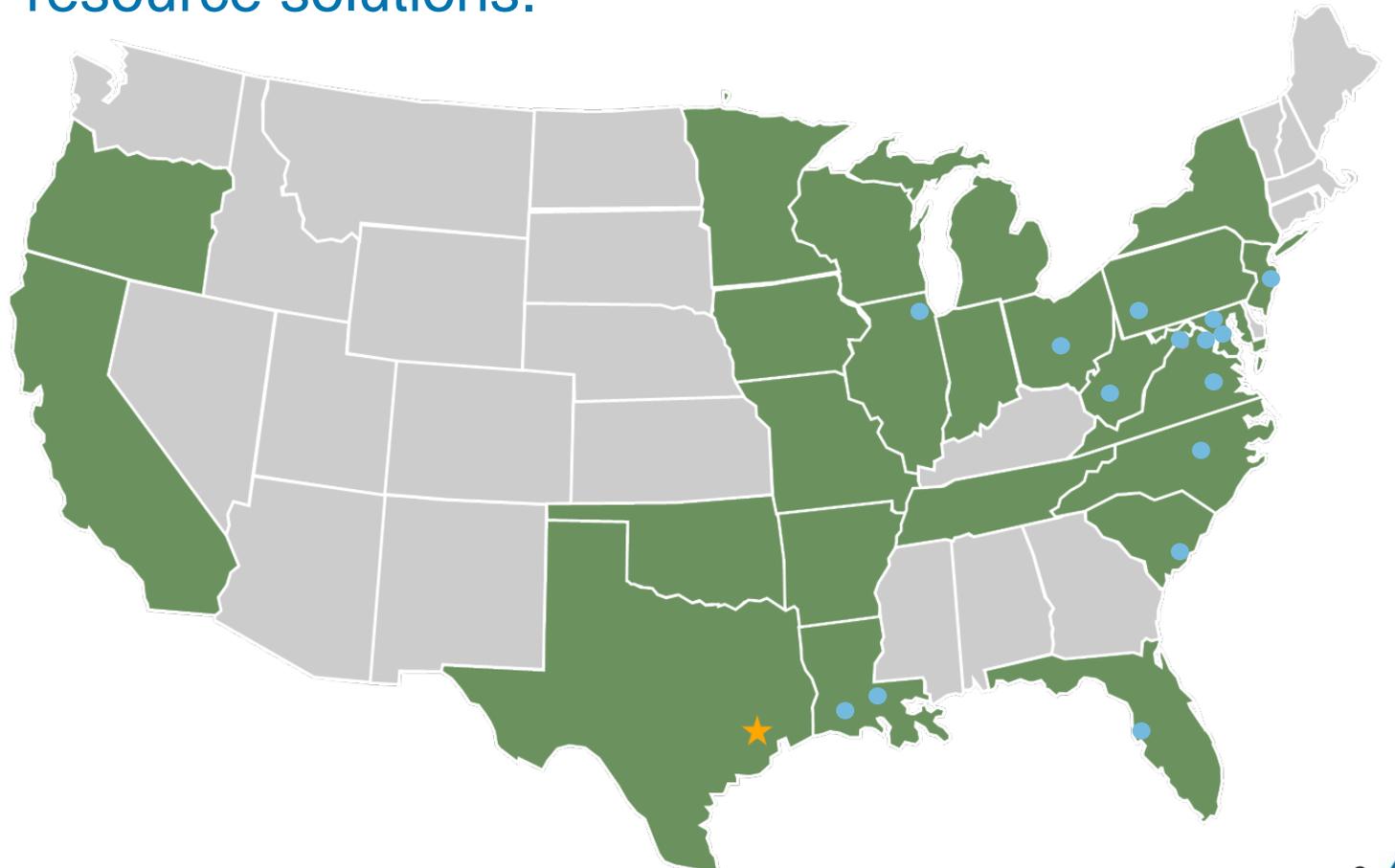
# National coverage – Local focus



Founded in Baton Rouge in 2007, RES is the nation's leading provider of ecological and water resource solutions.

Through organic growth and strategic acquisitions, RES is able to provide customized, fit-for-purpose environmental solutions.

With nearly 400 dedicated individuals across the country – RES employees are directly invested in the quality of their work.



# RES Essentials

## OUR ARENA

### Projects enhancing Biodiversity & Water Quality

- **Biodiversity** – Wetlands, stream and species mitigation and net-gain through bank credits, PRMs and resilience initiatives
- **Water Quality** – Stormwater management using green “nature-based” infrastructure to reduce pollutants and increase resilience from rainfall events

## HOW WE GOT HERE

### We helped pioneer the ecological mitigation industry and created a unique operating-company model

- Total stewardship: Buy land, design, build, monitor and maintain for long-term self-sufficiency
- Turnkey, full-delivery projects
- Fixed prices based on performance; surety bonding; mature EHS&S
- Result is a virtual transfer of liability of a client’s regulatory risk

## WHERE WE'RE GOING

### Our total stewardship approach translates well into P3 and scaled, nature-based infrastructure projects

- Driving a shift to full-delivery procurement practices
- Larger-scale and pooled projects
- Part of a national conversation on coastal resiliency



2,800+ client project permits



290+ miles of streams



58,000+ acres of wetlands



9,100+ acres of endangered species habitats



14,000,000 restorative trees planted



250+ tons of nutrient reductions

## Recognition

Fastest Growing



Eight Years in a Row 2011 - 2018

Environmental Achievement



Environmental Business Journal 2013-2015, 2018

## Milestones

- Founded 2007
- Purchased EBX 2014
- KKR investment 2016
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- Awarded largest PRM mitigation contract in U.S. history, 2018
- Today: 400+ employees, 15 operational hubs, projects in 19 states

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# 14M

restorative trees  
planted



# 2M+

marsh grass and plant  
plugs sold/planted



# 58,024

acres of restored and  
protected lands



# 9,100

acres of endangered  
species habitat  
preserved



# 350

mitigation sites,  
completed or  
in-process



# 2,843+

federal and state permits  
received using RES-  
supplied solutions



# 250+

tons of water quality  
nutrients



# 294+

miles of streams  
restored and conserved

# RES Solution Lines



## Who We Serve

- Roads & Tollways
- Municipal Public Works
- Oil & Gas
- Renewable Energy
- Power & Utilities
- Manufacturing & Heavy Industry
- Commercial Development



Wetland & Stream Mitigation



Species Habitat Mitigation



Stormwater Management & Nutrient Reduction



Corporate Sustainability Initiatives



Public Works & Coastal Resiliency

## Key Outcomes

- Predictable Costs, Fixed-Price Contracts
- Cost Savings
- Streamlined Permits
- Measurable, Verifiable Metrics
- Transfer of Regulatory Burden
- Self-Sustaining Ecosystems

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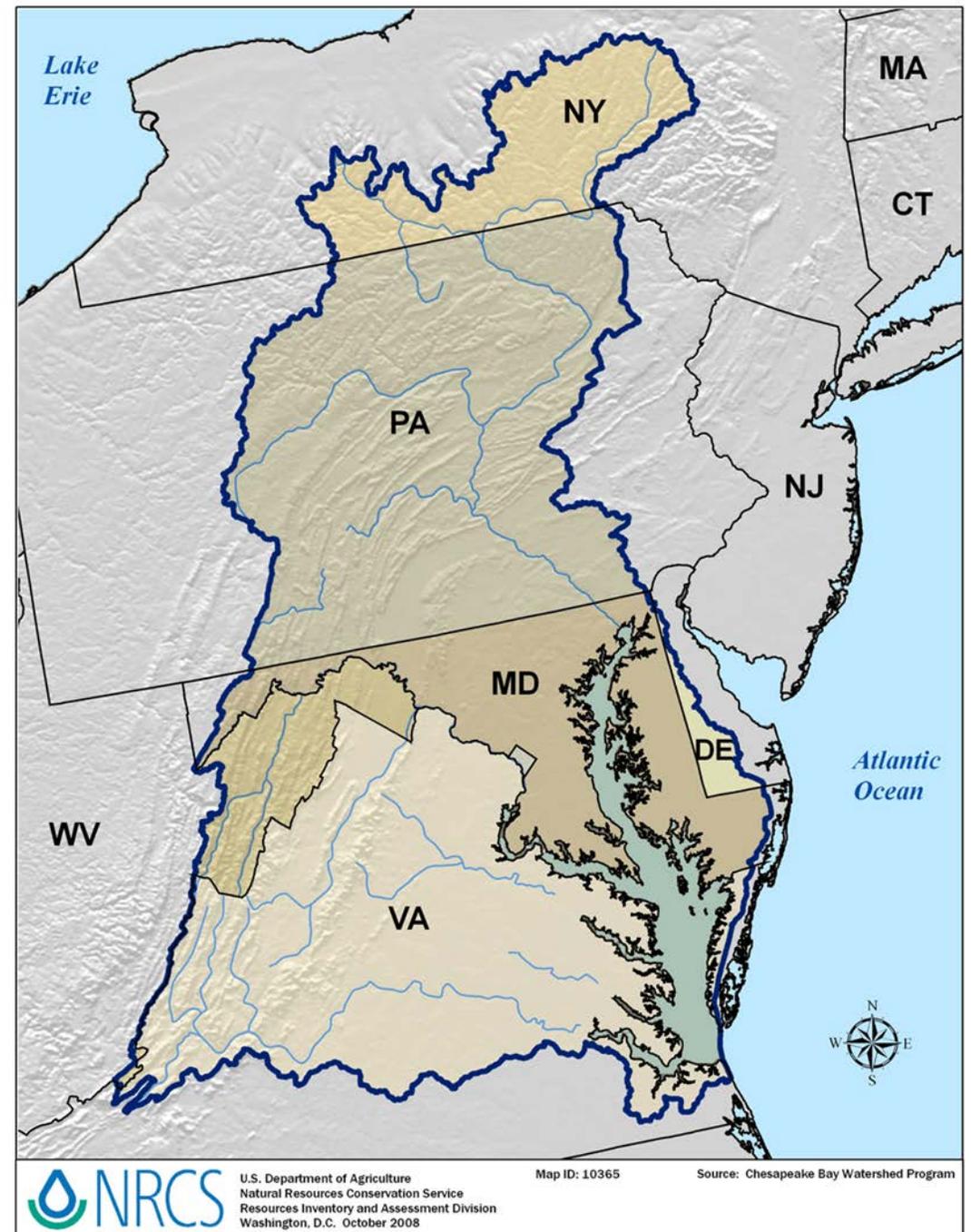
# Nutrient Credit Generation and Trading Basics

# Chesapeake Bay TMDL

- Limits on Nitrogen, Phosphorus and Sediment
- Other impaired waterways in VA have “Local TMDLs”
  - Common contaminants are Bacteria, in addition to the above
- Caps on these pollutants allow for trading



Virginia Institute of Marine Science, 2015



# Generating Credits

## Annual Credits

- Ongoing practice
- Wastewater Treatment
  - Extra capacity from WWTP
  - Enhanced treatment performance
- Street Sweeping

Vs.

## Perpetual Credits

- Constructed projects
- New or Retrofitted SWM BMPs
- Stream and Shoreline Stabilization
- Land Conversion

*Created Wetlands, Warrenton VA*



# Who Buys Credits?

- Nutrient Credits can be used by:
  - MS4
  - VSMP (new construction)
  - Industrial SW
  - VPDES
  - Enforcement



Saunders + Crouse Architects, City Center, Newport News

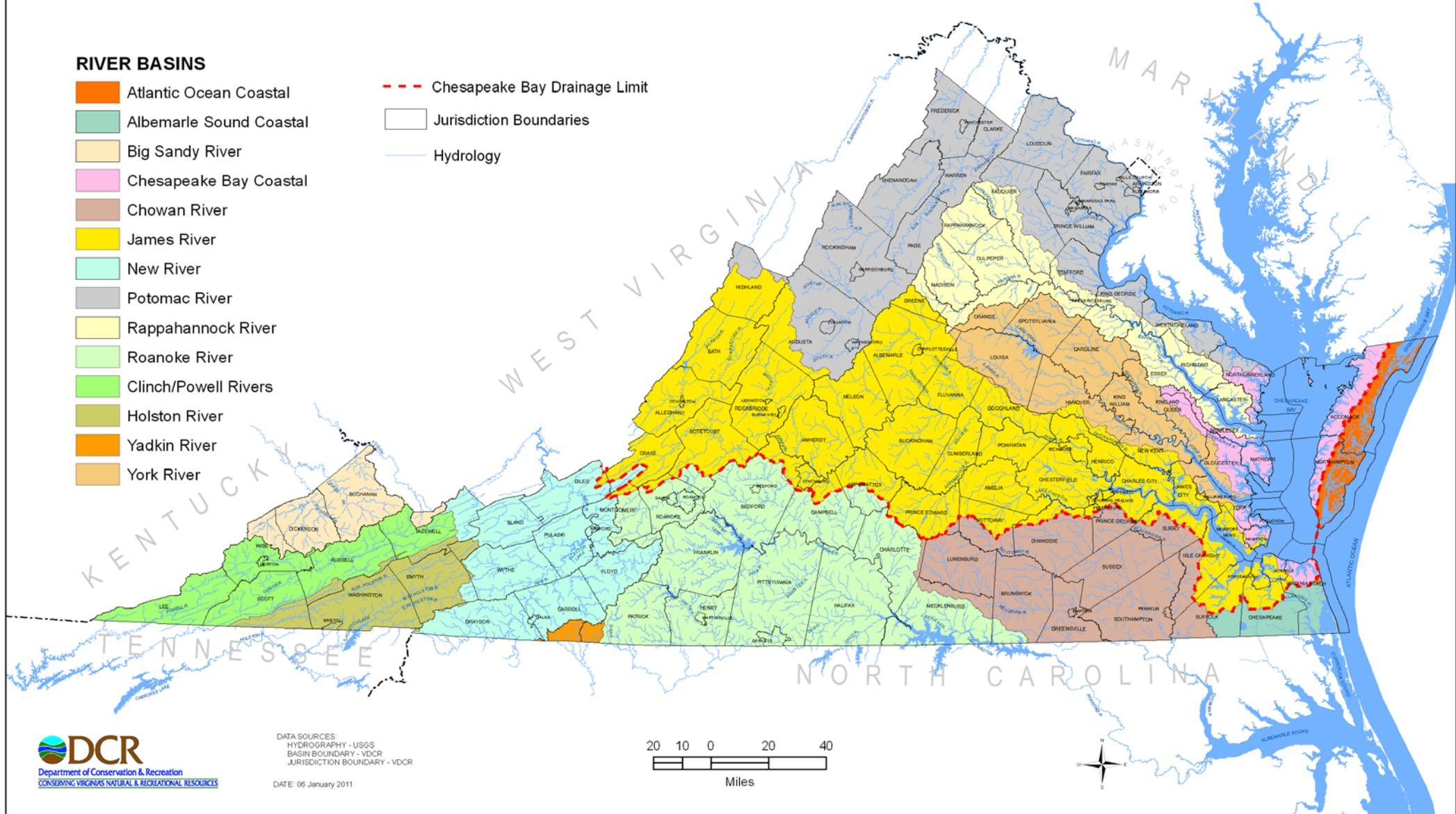


# RIVER BASINS IN VIRGINIA

## RIVER BASINS

- Atlantic Ocean Coastal
- Albemarle Sound Coastal
- Big Sandy River
- Chesapeake Bay Coastal
- Chowan River
- James River
- New River
- Potomac River
- Rappahannock River
- Roanoke River
- Clinch/Powell Rivers
- Holston River
- Yadkin River
- York River

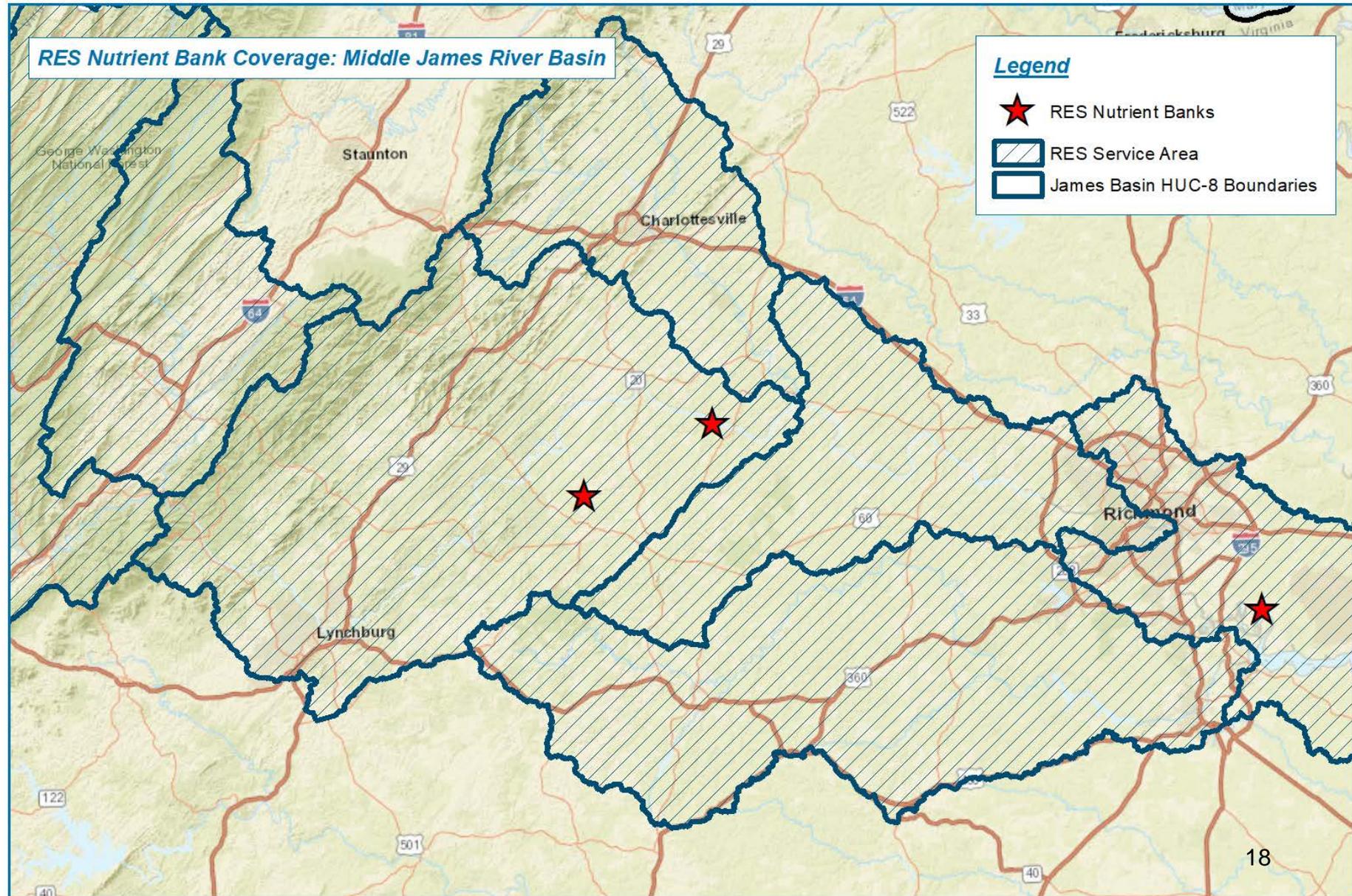
- Chesapeake Bay Drainage Limit
- Jurisdiction Boundaries
- Hydrology





# Nutrient Banking

- 8-digit HUC
- Same or Adjacent





# **Creative Solutions – MS4 Compliance**



# Howard County, MD MS4 TMDL Compliance

## *Cattail Creek Ecological Restoration, Howard County*



Nutrient Offsets to achieve Howard County's impervious acre restoration requirements under its MS4 permit

- 14+ acres of wetland
- 6,000+ linear feet of stream
- 64 Acres of impervious surface credits
- TN, TP, and TSS removal

<u>Material</u>	<u>Load</u>	<u>Annual Removal</u>	<u>20 Years</u>
TN (lbs/yr)	23,230 lbs/yr	3,149 lbs/yr	62,980 lbs
TP (lbs/yr)	3,592 lbs/yr	1,020 lbs/yr	20,400 lbs
TSS (tons/yr)	1719 tons/yr	876 tons/yr	17,520 tons



Aerial Imagery & Project Limits



# **Creative Solutions – Nutrient Banks**

# Prince William Environmental Bank

*Prince William County, VA*

- **Public-Private Partnership (P3):** Prince William County Dept. of Parks
- Design-Build Stream Restoration in Public Parks
  - Feasibility studies, permitting, design, construction, monitoring & maintenance
- County receives
  - Cash from credit sales
  - Reserved credits for county projects
  - Streams restored for free

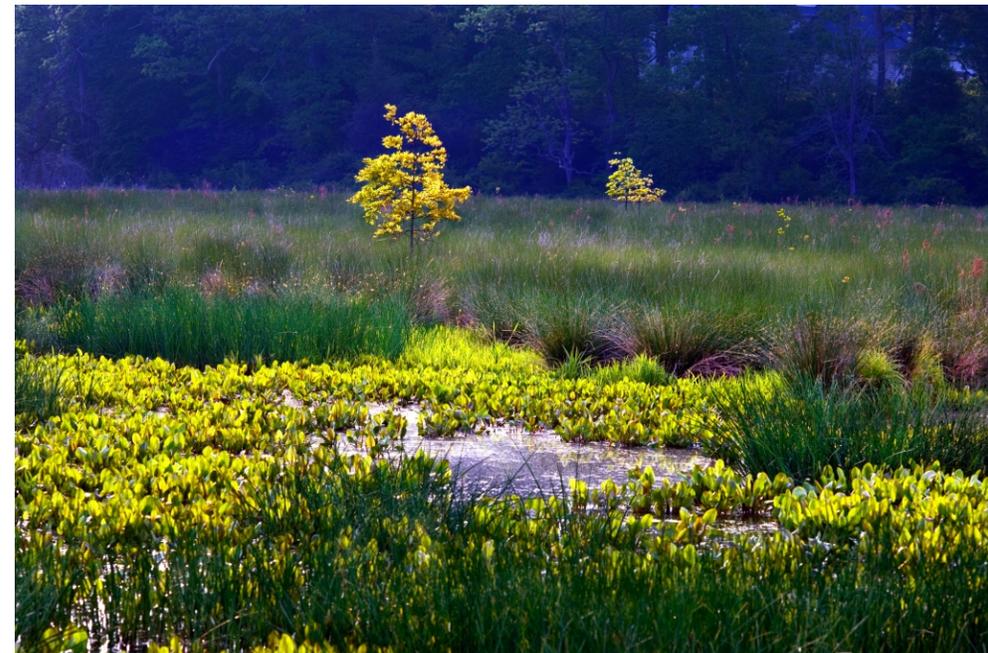


**James Long Park Stream Restoration: 7,374 LF**  
**Locust Shade Park Stream Restoration: 5,160 LF**



# Capturing Private Credit Sales

- What are the types of projects you would like to accomplish?
  - Water quality, flood storage, or resiliency projects?
  - Public land or private?
- Can they generate nutrient credits?
- How much would those credits need to be?
  - Operation and Maintenance
- How would you incentivize purchases of those credits?



# Capital Improvement Projects

- What capital improvement projects might need nutrient credits over next 10 years?
  - Transportation projects, Schools, etc.
  - A credit-generating project be completed specifically for this need (single-user bank)?
- Are infrastructure assets becoming exposed by stream or shoreline erosion?
- Can you involve Parks Department to identify restoration or stormwater projects?
- Nutrient credits can be purchased for malfunctioning SWM BMPs (quality component only)



# Discussion



Photo by Dave Harp





# THRIVING TOGETHER

Baltimore Baton Rouge Bay Area Charleston Charlottesville Chicago Columbus  
Fairfax Houston Lafayette Nashville Oak Hill Odenton Philadelphia  
Pittsburgh Raleigh Richmond Sacramento Warrenton



# Turnkey Ecological Restoration

# Design / Build

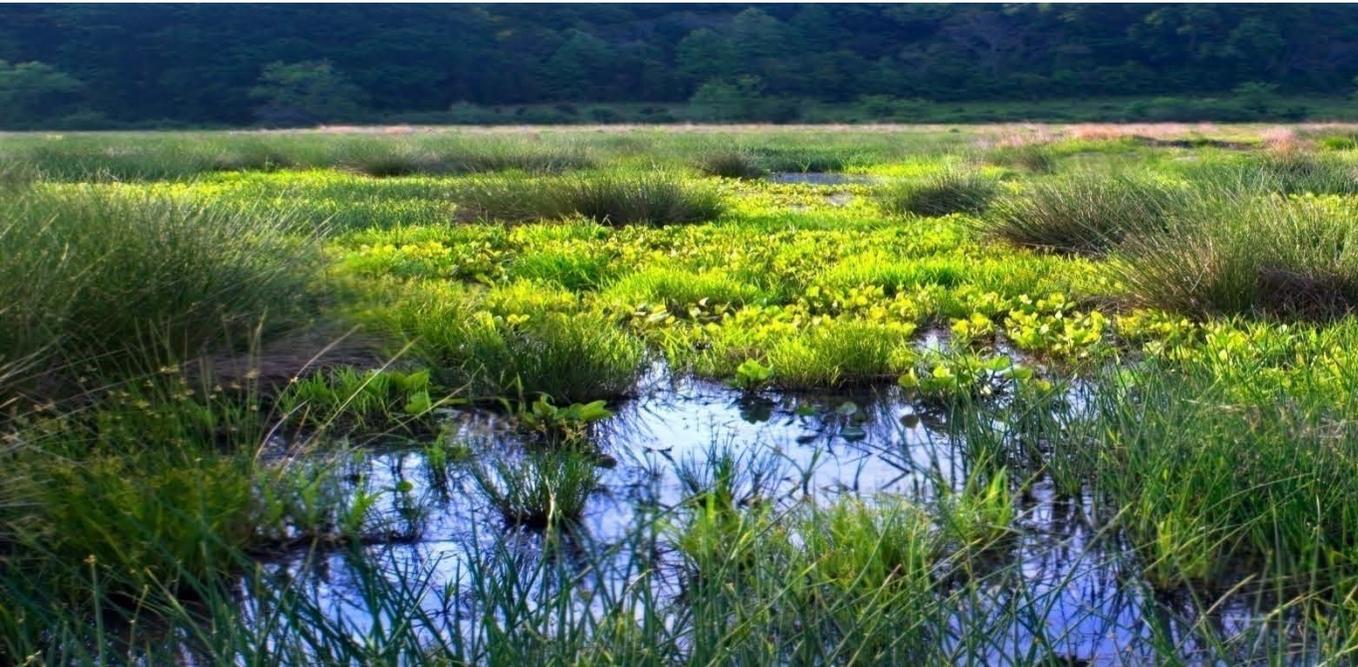
- ***Stream and Wetland Restoration***
  - Specialize in Natural Channel Design (NCD)
  - Rosgen I-IV Certified Staff
  - Regenerative Stormwater Conveyance
  - Floodplain Restoration
  
- ***Ecological Construction:***
  - 15 In-House Construction Crews
  - OSHA 30-HR Certified Superintendents & Construction Project Managers
  - Award-winning safety record



# Ecological construction capabilities

## Project Types

- Wetland Restoration & Mitigation
- Stream Restoration & Mitigation
- Stormwater Pond Retrofits
- Low-Impact Development (LID) / Raingardens
- Shoreline Stabilization
- Ponds, Lakes, and Dams



# Conservation Banks and Sites

Carolina Heelsplitter Bank:  
Freshwater Mussel Bank, South Carolina



Festina Lente Conservation Bank:  
Golden-cheeked Warbler Habitat Bank,  
Texas



Statewide Bat Conservation Bank:  
Pennsylvania

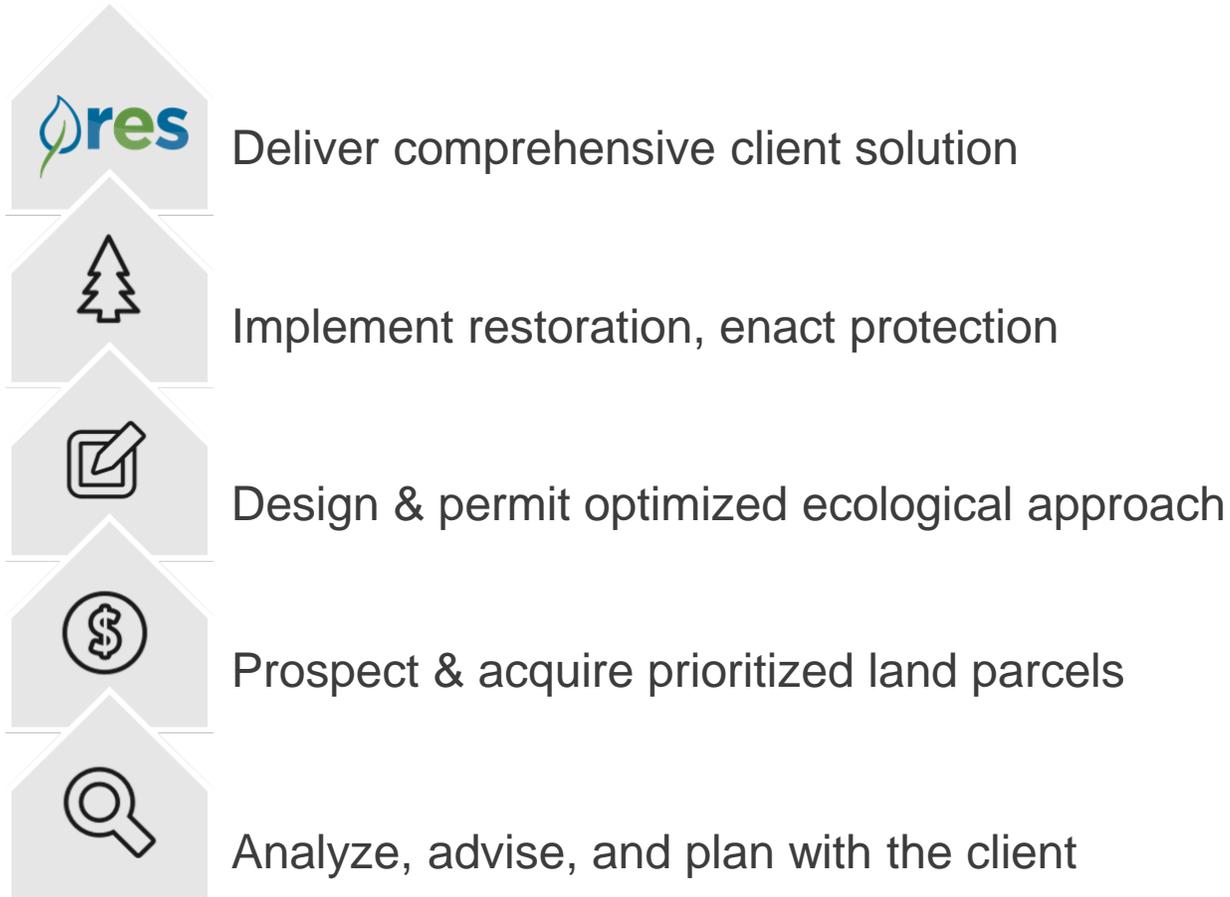


Cheat Mountain Salamander Habitat Bank:  
West Virginia



Indiana Bat and Northern long-eared Bat  
Conservation Sites: Indiana, Illinois

# RES solution delivery approach: Vertical integration



## Vertical integration enables

Quality control

Consistency

Commercial speed

Cost-effectiveness

Stewardship

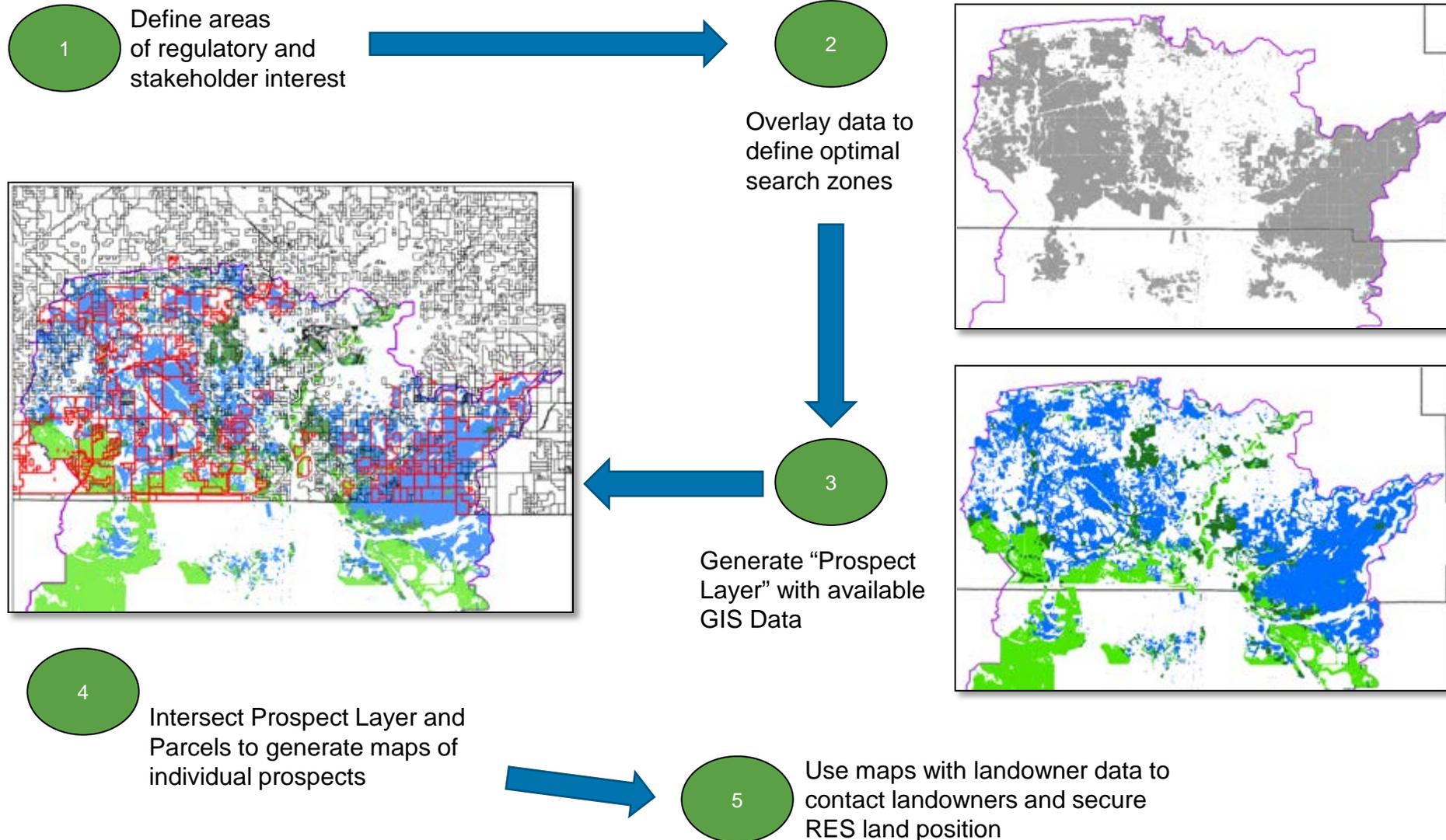
One-stop shop

# Delivery teams



# Proprietary land systems

Proprietary land search system with multiple layers and extensive parcel data allows RES to be efficient in regards to land sourcing



# RES Nurseries

## Pointe Aux Chenes, Louisiana

- Grass, plant and tree nursery
- Established in 2008
- Over 2,000,000 restoration stems grown, supplied and planted to restore Louisiana's fragile coastal barrier islands, estuaries, marshes and wetlands



## Eighty-Four, Pennsylvania

- Plant and tree nursery
- Established in 2014



# Accountable environmental stewardship

**100%** performance-based solutions  
**0** site failures, violations, or non-compliance issues



Regulatory & Field Ops work in tandem to enable site success from concept to delivery

Mitigation habitat restoration plans prepared by RES in-house resources with well-documented KPIs



Site preparation and construction pre-scheduled for resource utilization efficiency

Planting crews working RES mitigation sites for 8+ years

Seasonal rotation of site prep and planting crews

Operating in multiple habitats in multiple states



RES-grown and RES-supplied native grasses, trees, and restorative vegetation

Proactive site monitoring and maintenance to assure restorative plant survival and invasive species control



# Risk management

RLI Insurance, Swiss Re, Aspen  
A+ Rated surety underwriters



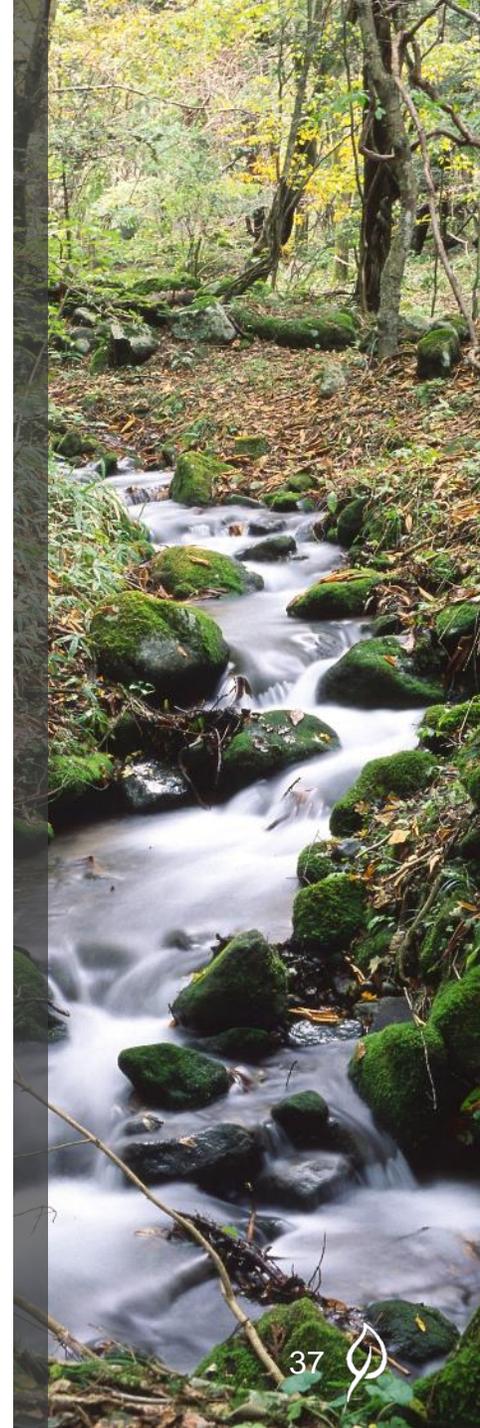
Financial  
assurances  
(per agency)  
\$MM

Regulatory Risk

Performance  
bond  
(per client needs)  
\$MM

Performance Risk

- We maintain a **strong balance sheet** and **excellent ecological performance at all restoration sites**, uniquely enabling a **surety bonding program**
- Surety bonding program allows RES to **protect our clients and guarantee performance**
- Underwriters **address risk for both agencies and permittees**
- Bonding capacity
  - **\$100M per project**
  - **\$500M aggregate**





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