Informing Gulf Coast (DWH-NRDA) Ecological Restoration Options with the Recovery Potential Screening Tool

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A Quick History of DWH-NRDA

• 2010: Deepwater Horizon drilling unit exploded and released over 3 million barrels of oil in 87 days

• Federal and State Trustees conducted a Natural Resource Damage Assessment (NRDA) and restoration plan

• Trustee Implementation Groups (TIGs) were established in each state to implement projects funded by the $8.1 billion settlement
A Challenging Decision Process

• Project evaluation and selection is:
  – A multi-year process
  – Involves many TIG member agencies/organizations (16)
  – Involves large numbers of project ideas (e.g., 1240 projects proposed in FL alone)

• As a participating Trustee, EPA contributed geospatial, comparative assessments of project themes and options
  – Recovery Potential Screening (RPS) Tool
  – Iterative analyses in 5 Gulf States
What is Recovery Potential Screening?

An approach and tool to help compare relative conditions across large numbers of watersheds

Geospatial indicators/indices of:
- ecological condition
- exposure to stressors
- social context

Contributes a systematic yet flexible approach to early-stage comparative assessment
Some Example RPS Uses in States

- **General Watershed Health**
  - Restoration
  - Protection

- **Stormwater**
  - Restoration
  - Protection

- **Nutrients**
  - Restoration
  - Protection

**Identify TMDL/303(d) Vision restoration priorities (CT, others)**

**Support NPS/319 state program five year plan (MI, MA)**

**Compare Deepwater Horizon NRDA nutrients restoration project options**
Products from RPS Statewide Tools

302 indicators on HUC12 watersheds

4 auto-calculated indices and ranks

customizable graphs

customizable mapping
General Approach in Each Gulf State

- Initially examine all HUC12s for coastal proximity and potential influence

- Filter down to a subset of HUCs that also meet a high nutrient loading source threshold

- Then focus on those that also have ecological and social attributes that could aid restoration success
Louisiana DWH-NRDA, 2017

Filtering down to HUC12s of high interest for nutrients…..

Statewide

1275 HUC12s

In 3 Coastal Ecoregions

318 HUC12s

Also >25% Ag

119 HUC12s

Also NPS priority

31 HUC12s
Indicators selected for initial RPS screening and comparison (customized for each major nutrients project theme)

<table>
<thead>
<tr>
<th>Ecological metrics</th>
<th>Stressor metrics</th>
<th>Social metrics</th>
</tr>
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<tbody>
<tr>
<td>PHWA Landscape Condition sub-index</td>
<td>% Agriculture in WS</td>
<td>State NPS Priority Subsegmt</td>
</tr>
<tr>
<td>PHWA Hydrologic Condition sub-index</td>
<td>% Agriculture in RZ</td>
<td>DW Source Protection Area</td>
</tr>
<tr>
<td>PHWA Geomorphic Condition sub-index</td>
<td>% Cropland in WS</td>
<td>Ratio TMDLs to Impairments</td>
</tr>
<tr>
<td>PHWA Habitat Condition sub-index</td>
<td>% Cropland in RZ</td>
<td>% Streamlength w/TMDLs</td>
</tr>
<tr>
<td>PHWA Biological Condition sub-index</td>
<td>% Pasture/Hay in RZ</td>
<td>% Waterbody area w/TMDLs</td>
</tr>
<tr>
<td>PHWA Water Quality sub-index</td>
<td>Ag water demand</td>
<td>NPS Control Projects Count</td>
</tr>
<tr>
<td></td>
<td>Synth N fertilizer applic</td>
<td>Nutrients NPS Project Presence</td>
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<td></td>
<td>Impaired segments count</td>
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<tr>
<td></td>
<td>% streamlength nutrient impaired</td>
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<tr>
<td></td>
<td>% waterbody area nutrient impaired</td>
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<td></td>
<td>Manure application in WS</td>
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* Indicator selection can be refined by correlation analysis. Final indicators can be weighted.
RPS Analyses for Alternative Nutrients Management Themes/Areas

1. Florida Parishes: Dairies nutrient management and BMPs

2. Ouachita/Lafourche/Terrebonne: Agricultural BMPs

3. SW Louisiana: Winter water holdings

Also considered: Homeowner onsite waste systems outreach
Theme 1. Florida Parishes: Dairies nutrient management and BMPs

RPI Score (darker blue = better condition; paler = possibly more loading)
Theme 1. Dairies nutrient management: four highlighted factors

Legend
% Pasture in WS (2011)
- 0.00 - 2.83
- 2.84 - 5.66
- 5.67 - 8.49
- 8.50 - 11.32
- 11.33 - 14.15
- Not Analyzed / No Data

Legend
% Pasture in RZ (2011)
- 0.00 - 0.20
- 0.21 - 0.40
- 0.41 - 0.60
- 0.61 - 0.80
- 0.81 - 1.00
- Not Analyzed / No Data

Legend
% Pasture/Hay in WS (2011)
- 0.00 - 0.20
- 0.21 - 0.40
- 0.41 - 0.60
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Legend
% Pasture

Legend
% PASTURE

Legend
% DONE TMDLS

Legend
% PASTURE RIPARIAN

Legend
% HEADWATERS HUCS

Legend
Counts NRU TMDLs to impairments (2015)
- 0.00 - 0.20
- 0.21 - 0.40
- 0.41 - 0.60
- 0.61 - 1.00
- Not Analyzed / No Data

Legend
Headwater HUC12 Flag
- 0.00 - 0.20
- 0.21 - 0.40
- 0.41 - 0.60
- 0.61 - 1.00
- Not Analyzed / No Data
Theme 3. SW Louisiana winter water holdings
top quartile of “% AG IN HCZ”
Theme 3. SW Louisiana winter water holdings: other highlighted factors

USDA PRIORITY PROJECTS

LDAF WINTER WATER MGT

HIGH AG, HCZ AND RICE %

RPI SCORE FOR LDAFS
Theme 3. SW Louisiana winter water holdings: Bubble Plot

Note: Circle size increases with Social Index score
Where the RPS Tools Were Useful

Compare many watersheds based on their condition and the opportunity to improve it (2 main options):

- Better watershed health, more restoration success
- Stressor exposure, more opportunity for load reduction

Enable many more managers and staff to do rapid desktop comparisons of watersheds

Provide “Discussion Support”
Recovery Potential Screening
www.epa.gov/rps

Monitoring under the Clean Water Act has identified tens of thousands of polluted US water bodies that are in need of restoration. Many healthy waters without watershed protection strategies are also at risk of becoming polluted. This Recovery Potential Screening (RPS) website provides technical tools and methods to help government and private programs compare watersheds and plan their efforts for greater likelihood of restoration and protection success. RPS users during the past ten years have included over 20 state water quality programs, local watershed groups, river basin managers (US and international), tribes and federal environmental agencies.

Projects in 37 states and territories

RPS Data and Tools for all states/territories

step by step instructions – indicators – tools
(for more watershed indicator data also see www.epa.gov/wsio)