Accelerating Project Delivery: The Next Generation of Environmental Streamlining

October 20, 2013

Matthew Garrett
Director, Oregon DOT
Demands On DOT’s in Project Development

How can Eco-Logical meet these demands?

Risk Management: Having a clear approach to the project while building proactive relationship with resource agencies

Performance: Balanced outcome for transportation and environment

Investment: Avoidance and mitigation costs justified

Schedule: Increases predictability of environmental actions (permitting)

Governance: Shared effort in collaborating with approving agencies and stakeholders
Ecosystem Approach to Developing Infrastructure Projects

Prepared by the Steering Team
April 2000

Signed by the Steering Team Partners’ Leadership

Dale Bosworth, Chief of Forest Service
Forest Service
U.S. Department of Agriculture

J. Richard Capka, Acting Administrator
Federal Highway Administration
U.S. Department of Transportation

Kathleen Clarke, Director
Bureau of Land Management
U.S. Department of the Interior

George S. Dunlop, Principal Deputy
Assistant Secretary
Department of the Army

H. Dale Hall, Director
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U.S. Department of the Interior

Fran Mainella, Director
National Park Service
U.S. Department of the Interior

Anne Miller, Director
Office of Federal Activities
U.S. Environmental Protection Agency

Diane Regas, Director
Office of Wetlands, Oceans, and Watersheds
U.S. Environmental Protection Agency

James R. Walpole, General Counsel
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
What is the Eco-Logical Approach?

- Predictability
- Connectivity
- Conservation
- Transparency
• Integrated Eco-Logical Conservation and Transportation Planning Framework (IEF)
  • Structured process to avoid or minimize environmental impacts through the prioritization of natural resources in early infrastructure planning.
  • Scientific and technical processes and tools needed to support the IEF.
  • Pilot projects explored implementation of the IEF steps in California, Colorado, Oregon, and West Virginia.
FHWA Eco-Logical Implementation Program

Map of the United States showing the implementation status of various projects in different states:

- Green Star: Completed in 2011
- Yellow Star: Completed prior to 2011
- Cyan Star: Grant projects still open

Note: Alaska and Hawaii are not to scale.
Currently funds 14 assistance projects—seven Lead Adopter Incentive recipients ($200,000-250,000 each) and seven User Incentive recipients ($25,000 each).
Resources for Practitioners – Coming Soon

- Survey
- Practitioner's Handbook
- Starter Kit
- Case studies
- Workshops
- Peer exchanges
- On-call technical assistance
Today’s Agenda: Benefits of an Eco-Logical Approach

• **Laura Mester**, Chief Administrative Officer, Michigan Department of Transportation.
  *Improving the Health of the Western Lake Erie Coastal Zone*

• **Karla Sutliff**, Project Delivery Deputy Director and Chief Engineer, California Department of Transportation.
  *Success in Partnership and Planning Along Three Highway Corridors in California*

• **Douglas Simmons**, Deputy Administrator Planning, Engineering, Real Estate and Environment, Maryland State Highway Administration
  *Streamlining Project Development through the Watershed Resources Registry*
Improving the Health of the Western Lake Erie Coastal Zone

October 20, 2013

Laura J. Mester,
Chief Administrative Officer
Michigan DOT
Western Lake Erie - Degrading Ecosystem

- Aquatic Environment
  - Dead zones
  - High nutrient concentrations

- Coastal Ecosystem
  - Impaired wetlands, uplands, migratory stopover sites, fish passages

- Conservation Efforts Ongoing by other Stakeholders

- How does MDOT plan projects in this watershed and address these issues?
Unique Opportunity for MDOT

- I-75: A Gateway into Michigan
- Western Lake Erie Coast
- Partnering and stakeholder input
- Selected for a SHRP2 Pilot project
Goal of the Project

- To develop and implement a Collaboratively-based Landscape Scale Conservation Plan that facilitates rebuilding the I-75 Corridor while maximizing conservation and restoration outcomes in the region.
Expectations for Project Success

• Natural resource objectives for Project clearly defined
• Balanced solution addressing natural resource and transportation needs
• Long term strategy with resource agency consensus
• Transparent process that includes existing stakeholders with natural resource concerns
• Leverage existing tools and materials from stakeholders to drive cost-effective process for project
I-75 Corridor

- $500 million project
- Total reconstruction
- 5 phases
- Environmental Concerns
  - Wetlands
  - Threatened and Endangered Species
  - Water quality

![Map of I-75 Corridor with environmental concerns](image)
Ecosystem Based Planning

- 2006 Eco-Logical Approach
  - 6 Federal Agencies
  - Time Savings
  - Maximize environmental benefits
  - Wetland banking
  - Leads to the Integrated Ecological Framework or IEF
SHRP2 Implementation
Pilot Project

• Set up an Integrated Ecosystem Framework (IEF)
• Core Team:
  – MDOT – Project Lead
  – MNFI – Facilitate Conservation Planning
  – SEMCOG – Outreach, communication, ownership
• Technical Advisory Committee (MDOT+ SEMCOG + FHWA + Federal Resource Agencies + State Resource Agencies + Nature Conservancy + Monroe County)
• Stakeholder Outreach
Value to MDOT

IEF will:
- Identify conservation priorities to guide future mitigation
- Meld transportation and conservation planning
- Get early buy-in from key national, state and local agencies
- Streamline permitting process
Proposed Role of TAC

- Define project scope and ID conservation priorities
- Identify key stakeholders
- Provide data and information
- Expertise
- Review all materials and suggest changes
- Approve the final product
- Facilitate implementation by serving as liaison
- Make decisions
IEF = Integrated Ecological Framework

Step-by-step, peer-reviewed, science-based process that guides transportation and resource specialists in the integration of transportation and ecological decision making.

The IEF responds to two critical needs:
1. Identify potential impacts early in the planning process
2. Assure that mitigation provides effective, measurable, and high-quality environmental outcomes
Integrated Ecological Framework (IEF)

- Step 1: Build and Strengthen Collaborative Partnerships
- Step 2: Characterize resource status; Integrate cons. plans
- Step 3: Create Regional Ecosystem Framework
- Step 4: Assess Land Use and Transportation Effects
- Step 5: Establish and Prioritize Ecological Actions
- Step 6: Develop Crediting Strategy
- Step 7: Develop Programmatic Consultation, BO or Permits
- Step 8: Implement Agreements and Adaptive Management
- Step 9: Update Regional Plan/Ecosystem Framework
Tools to Facilitate IEF (Steps 1-5)

- Weight conservation values
- Model ecological condition
- Assess cumulative impacts
- Create conservation solutions

NatureServe Vista – Spatial Analysis
Resources to Inform IEF

- **Existing Cons. Plans**

- **Data Layers**

- **Models**

- **Research**

- **Experts**
Final Products

- Biodiversity Conservation Strategy (targets, threats, actions, goals, obj’s)
- Regional Conservation Priority Map
- Measured impacts from I-75 project
- Identified mitigation opportunities
- Mitigation agreements
- Western Lake Erie IEF Website
• Relationship improvements with agencies and stakeholders, already benefitting other projects
• Approach to project design also benefits natural resources
• Cost-effective approach in applying existing tools and materials to project study
• Collaborative approach by multiple agencies recognized by public
Success in Partnership and Planning Along Three Highway Corridors in California

October 20, 2013

Karla Sutliff, Project Delivery Deputy Director and Chief Engineer, Caltrans
Applying Eco-Logical to three corridors in California:

- Highway 37 – User Incentive
  - Stakeholder coordination
- Highway 89 - C21 Pilot
  - Mitigate wildlife mortality
- Highway 101 - C40 Pilot
  - Regional model evaluation
California SHRP2 Efforts
Promoting Stewardship Principles to Gain Consensus on a Vision for Highway 37, California

HIGHWAY 37
HTTP://HWY37.UCDAVIS.EDU
Challenges for Highway 37
Approach for Highway 37
## Data Findings

<table>
<thead>
<tr>
<th>Land Cover Type</th>
<th>Impacted Area (Ha)</th>
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<tbody>
<tr>
<td>Lacustrine</td>
<td>1042</td>
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<tr>
<td>Annual Grass</td>
<td>465</td>
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<tr>
<td>Coastal Oak Woodland</td>
<td>26</td>
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<tr>
<td>Urban</td>
<td>681</td>
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<tr>
<td>Saline Emergent Wetland</td>
<td>915</td>
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<tr>
<td>Fresh Emergent Wetland</td>
<td>568</td>
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<tr>
<td>Blue Oak Woodland</td>
<td>12</td>
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<tr>
<td>Barren</td>
<td>131</td>
</tr>
<tr>
<td>Cropland</td>
<td>1394</td>
</tr>
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</table>
Overall Benefits

- Build collaborative partnerships and vision for SR 37 that meets multiple goals.
- Create framework for integrated planning and decisions in the corridor.
- Establish potential ecological and transportation actions that could be proposed for SR 37.
- Working in collaboration with resources agencies, test value of impacts, avoidance and mitigation.
- Develop foundation for model analysis agreements among infrastructure and resources agencies.
Generating Success for Wildlife Beyond the Right of Way: Planning for Cost Effective Mitigation along California’s Highway 89
A Partnership Approach: Wildlife Mortality along Highway 89
SHRP2 Eco-Logical: User Incentive Recipient

- Supports the stakeholder outreach for the project, through the development of the Highway 89 Stewardship Team
- Objective to reduce vehicle collisions and preserve wildlife movement corridors through
  - Education
  - Research
  - Identify Mitigation Recommendations
Partnership Benefits
Agency Benefits

- ‘Working beyond the right-of way’.
- Anticipate if mitigation is needed, where an appropriate expenditure of mitigation funds would best serve the resources impacted.
- Demonstrating a process by which the mitigation strategy was determined.
- Unique partnership allows for flexibility in solutions for wildlife movement that extend beyond the DOT right-of-way.
Cross-testing transferability of national mitigation planning tools with California’s Regional Advance Mitigation Planning (RAMP) framework on a new pilot region (450 miles of US 101)

HIGHWAY 101
**SHRP 2 Project**

### C40 - A

- Develop an integrated, geospatial ecological screening tool
  - Conduct user-needs assessment
  - Work with C40-B team to test the new product

### C40 - B

- Demonstrate workability and value of geospatial tools and data in early stages of long-range transportation planning
- Test the transferability of regional methods by performing the analysis on a new pilot study area.
SHRP 2 101 Pilot

C-40 A Ecological Screening Tool

Regional Advance Mitigation Planning Tools

C40 – B Pilot
Regional Advance Mitigation Planning (RAMP)
- Caltrans and Dept. of Water Resources = Infrastructure Agency Leads
- Estimate the mitigation needs early in the timeline
- Consider the environmental impacts of several infrastructure projects
- Benefits
Methods

- 2 sets of data needed
  - Transportation projects
  - Resource data
- UCD in process of outreach to 4 different districts
Pilot Area – 450 miles of Highway 101

- **District 1: North Coast**
  - Aquatic impacts
  - Bridge retrofits

- **District 4: Bay Area**
  - Highly urbanized
  - Impacts to personal property, farmland

- **District 5: Central Coast**
  - Oak woodlands, grasslands, farmland
  - Habitat corridors
Conclusion

Photo by Daniel W. Bachman
Streamlining Project Development through the Watershed Resources Registry

Douglas Simmons, Deputy Administrator Planning, Engineering, Real Estate and Environment, MDOT/SHA

October 20, 2013
Watershed Resources Registry initiated in 2007

- Comprehensive web based GIS mapping tool that assists with improving the regulatory process efficiency on a watershed scale.
- Intended to integrate the Clean Water Act (CWA) Sections 319, 401, 402, and 404, TMDL implementation practices, and multiple state programs.

- Collaborative approach with EPA Region III, U.S. Army Corps of Engineers, MDE, DNR, USFWS and MES.
Why Did SHA Develop WRR?

• Resolve agency conflicts on by-pass project that had significant wetland and forest impacts

• Models developed to evaluate alternative options and environmental stewardship opportunities
What is WRR?

• Interactive Geographic Information System (GIS)-based screening tool that:
• Contains natural resource data that can be queried real time.
• Data web based and shared outside DOT
• Can be applied to large or small projects
WRR is Transferable

- Readily available, public domain datasets
- State datasets can be incorporated
- Reflects shared federal/state priorities

<table>
<thead>
<tr>
<th>National Datasets</th>
<th>Maryland Datasets</th>
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<tbody>
<tr>
<td>USFWS NWI wetlands</td>
<td>Green Infrastructure</td>
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<tr>
<td>NRCS soils</td>
<td>Blue Infrastructure</td>
</tr>
<tr>
<td>USGS land use/land cover</td>
<td>GreenPrint</td>
</tr>
<tr>
<td>USGS streams, rivers, lakes, estuaries, etc.</td>
<td>Wetlands of Special State Concern</td>
</tr>
<tr>
<td>USGS Watershed boundaries</td>
<td>Tier II Waters</td>
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<tr>
<td>EPA impaired watersheds</td>
<td></td>
</tr>
<tr>
<td>and more…</td>
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</table>
Benefits to WRR

- Reduces schedules and costs
- Less review/site assessment/coordination time
- Maximize avoidance and minimization efforts and identify mitigation opportunities that optimize ecological outcomes
- More informed and integrated decision making among multiple users
- Provides access to updated, consistent, and defensible data
- Is transparent, predictable, and reliable
- Because of its success, other agencies are also using it for their projects
**WRR Development Framework**

- Recognition of Needs
- Identification of Partners/Stakeholders
- Initial Inter-Agency Agreement
- Cataloging, Evaluation, & Comparison of Data, Literature, Tools, Needs & Gap Analysis
- Application of Spatial Analysis Tools/Models
- Development of Spatial Analysis Tools and Suitability Models
- Final Structuring and Agreement on Agencies’ Visions
- Field Verification
Avoid and Minimize Using the WRR

Considerations for Potential Alignments:

- Wetlands
- Streams
- Floodplains
- Green/Blue Infrastructure
- Land Use/Land Cover
- Forest Interior Dwelling Species
- Targeted Ecological Areas
- Sensitive Species Area
- Chesapeake Bay Critical Area
- Property Owner Information
**Avoidance and Minimization Results**

<table>
<thead>
<tr>
<th>Impact Types</th>
<th>No-Build Alternative</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>Alternative 3A</th>
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<td>Community Impacts</td>
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<td>Residential Displacements</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
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<tr>
<td>Residential Properties Impacted</td>
<td>0</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>6</td>
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<table>
<thead>
<tr>
<th>Range of Natural Environmental Impacts</th>
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<tr>
<td>100-Year Floodplain Affected (acres)</td>
<td>0</td>
<td>1.64</td>
<td>1.78</td>
<td>1.77</td>
<td>0</td>
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<tr>
<td>Wetlands Affected (acres)</td>
<td>0</td>
<td>1.35</td>
<td>1.36</td>
<td>0.56</td>
<td>0</td>
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<tr>
<td>Streams (lf)</td>
<td>0</td>
<td>289.3</td>
<td>409</td>
<td>113.7</td>
<td>11.1</td>
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<tr>
<td>Woodlands Affected (acres)</td>
<td>0</td>
<td>7.6</td>
<td>3.8</td>
<td>4.1</td>
<td>1.1</td>
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<table>
<thead>
<tr>
<th>WRR Preservation Opportunity Impacts</th>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Wetland Preservation (acres)</td>
<td>0</td>
<td>1.77</td>
<td>10.6</td>
<td>0.6</td>
<td>0</td>
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<tr>
<td>Upland Preservation (acres)</td>
<td>0</td>
<td>15.4</td>
<td>11.45</td>
<td>11.29</td>
<td>8.5</td>
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<td>Riparian Preservation (acres)</td>
<td>0</td>
<td>8.9</td>
<td>6.6</td>
<td>5.09</td>
<td>3.02</td>
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<td><strong>TOTAL ACRES</strong></td>
<td>0</td>
<td><strong>26.07</strong></td>
<td><strong>28.65</strong></td>
<td><strong>16.98</strong></td>
<td><strong>11.52</strong></td>
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Typical PACM Matrix Using the WRR Results

Watershed Resources Registry Case Study

9/03/2013
Potential Preservation Impacts

Upland Preservation

Wetland Preservation

Riparian Preservation

Stormwater Preservation
Using the WRR to Identify Mitigation Sites

Upper Big Pipe Creek Watershed

Project Area

Potential Mitigation Site

Stormwater Restoration

Upland Restoration
## Capital Program Savings

<table>
<thead>
<tr>
<th></th>
<th>Costs</th>
<th>Time</th>
<th>Cost Savings with WRR</th>
<th>Time Savings with WRR</th>
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</thead>
<tbody>
<tr>
<td>Site Search</td>
<td>$50,000</td>
<td>4 months</td>
<td>$37,500</td>
<td>3 months</td>
</tr>
<tr>
<td>Design</td>
<td>$210,000</td>
<td>18 months</td>
<td>$60,000</td>
<td>6 months</td>
</tr>
<tr>
<td>Agency Coordination/ Regulatory Review</td>
<td>$10,000</td>
<td>12 months</td>
<td>$2,500</td>
<td>3 months</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$270,000</strong></td>
<td><strong>2.8 years</strong></td>
<td><strong>$100,000</strong></td>
<td><strong>1 year</strong></td>
</tr>
</tbody>
</table>

*Cost/time savings would be post Location Approval and includes only mitigation tasks.*
SWM Restoration/Preservation
Wetland Restoration
Upland Restoration/Preservation
Riparian Restoration/Preservation
Stream Restoration - Future
Stormwater Facilities
Roadway Maintenance

- Identification of sensitive resources areas in close proximity to our maintained ROW areas
- Allows crews to avoid impacts in sensitive areas
- Avoidance/modification of work in sensitive areas
- Reduced potential for non-compliance
- Opportunity to further the benefit of WRR through Operations
• Ensures a holistic approach to transportation planning – Better Decision Making

• Process supports a balanced approach to project implementation that moves closer to meeting both the transportation and natural resource needs.

• Integrated approach (saves time/money)

• Improved stakeholder relationships
WRR Works Beyond SHA

- Web based tools allows use by other agencies

- Resource agencies validate data and analysis

- Charles County recommends it to development applicants

- MDE recommends it to consultants for use on their projects (mitigation site identification)

- Collaborating to ensure clean water in the Chesapeake Bay for all
Similarities to Eco-Logical

• SHA has developed and implemented new procedures, policies and tools for more effectively integrating ecological resource values into the transportation project-development process.

• Utilization of the WRR is expected to improve review times and add a layer of consistency in the process.
Contact Us

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Website:
http://watershedresourcesregistry.com/
Contact Information

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AASHTO
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(202) 624-3635
We Want to Hear What You Think About Eco-Logical!

- Directly after this session, we are offering an open microphone/videographer to capture what you think about Eco-Logical

- We would like to know….
  - Are you considering *Implementing Eco-Logical* in your state? Why?
  - If you are already *Implementing Eco-Logical*, what benefits are you experiencing?
  - How has *Implementing Eco-Logical* improved your schedules, budgets, or relationships?
  - How can AASHTO and FHWA help you to advance your program to *Implement Eco-Logical* in your state?
Open House Interview Logistics

- Room: Governors 12
- Time: 3:30 to 5pm
- Sign up sheet available
- Plan for about 10 to 15 minutes of your time

Thank you!